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Sustaining Digital Resources: An On-the-Ground View of Projects Today

Ithaka Case Studies in Sustainability

Nancy L. Maron, K. Kirby Smith and Matthew Loy

With a foreword by Kevin Guthrie and Laura Brown

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Prepared by:
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Ithaka S+R **http://www.ithaka.org/ithaka-s-r/** is the strategy and research arm of Ithaka, a not-for-profit organization dedicated to helping the academic community use digital technologies to preserve the scholarly record and to advance research and teaching in sustainable ways. The Ithaka S+R team supports innovation in higher education by working with initiatives and organizations to develop sustainable business models and by conducting research and analysis on the impact of digital media on the academic community as a whole. Insights from these efforts are shared broadly, with more than a dozen reports freely available online. JSTOR and Portico – two efforts to increase access to scholarly materials and preserve them for future generations – are also part of Ithaka.

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Foreword

Writing about the economic sustainability of digital resources in June 2009 requires a certain sangfroid: if multinational corporations that thrived for decades can capsize in the rough waters of today's economy, what chance do the new digital resources we are most concerned with – non-profit initiatives run by academics or other content specialists as labours of love – have for long-term survival?

To be sure, the current economic downturn has hit hard, with direct and indirect impact on each and every sustainability model we discussed in *Sustainability and Revenue Models for Online Academic Resources* (2008). University endowments have fallen, triggering cutbacks in library budgets, leading to a downturn in subscription fees for resources that rely on them. Programmes with endowments or other investments of their own take a direct hit when the market falls steeply. Individual donations slow. Online advertising, though still a tantalising possibility, is still not supporting even those industries that increasingly depend upon it for survival.

But the news is not all dire. The Ithaka Case Studies in Sustainability project, sponsored by the Joint Information Systems Committee (JISC) and the Strategic Content Alliance in the UK and by the National Endowment for the Humanities (NEH) and the National Science Foundation (NSF) in the US, allowed us to take an on-the-ground look at just how the leaders of digital initiatives are managing their businesses. Rather than focus only on methods for generating revenue, we sought to capture a fuller range of the activities carried out by projects today to develop creative strategies for both revenue generation and cost management. We found that projects are experimenting with and have deployed a wide range of revenue generating models while at the same time finding ways to minimise their direct outlays by reducing the scope of their work or by taking advantage of opportunities for assistance and subsidy from host institutions and outside partners.

So, at this stage of their development, most of the projects covered in this collection of case studies rely on a mix of generated revenue and host support. While a couple of them have been around long enough to demonstrate financial viability, for most of the cases we studied it is too early to tell whether the mix of sustainability strategies employed will succeed over the long run. To some degree, many of these projects have a major benefactor in the form of their host institution, and they must make the case for the importance of their activities to fulfilling that institution's broad organisational mission. To what extent is this a reliable sustainability strategy for a project leader? To what extent are parent organisations failing to realise how much these projects really cost to run? Future work might examine ways to assess the risk or reliability of various revenue and cost strategies, in order to better guide project leaders in assembling not just individual revenue models, but a diversified portfolio of organisational support that, much like a carefully managed financial portfolio, reduces the risk associated with over-reliance on a single approach.

In the description of these cases, we have attempted not just to uncover the mechanics of a project's financial model, but also to illustrate the choices that its leaders made, and the evolutionary stages that brought the model to where it is today. Typical questions project leaders have faced include: how were decisions made to outsource a particular area of activity? If we try to generate revenue from the resource, do we have the expertise on staff to accomplish this, or will we need to bring in others who do? What mix of revenue sources will provide us with the reliable revenue we need to operate and grow into the future?

It is impossible to draw definitive conclusions from digital initiatives that are very much works in progress. There is much to admire in the visionary leadership, entrepreneurial spirit, community values and community support that emerges from these stories but there is also cause for concern that those same community values can starve investment and tie projects to sources of support that are tangential to the benefit they generate for their users, and therefore potentially less dependable.

We hope that in assembling these stories about digital resources, the choices their leaders make and some outcomes, we have provided a set of data that that others will pore over, study, criticise and even build upon. Indeed, while preparing these case studies, each profile was the subject of a lively in-house group discussion, with colleagues kicking the tires, challenging assumptions and debating each other on the virtues and shortcomings of each of the models presented.

This rewarding, if arduous, process suggests something else to us, too. There really are no right answers here, no rule book with clearly indicated steps from A to B (no less to Z). We hope that when you read the report, and the cases that it is drawn from, you find yourself scrawling in the margins and yelling at the text 'How could they do that?', 'What a brilliant idea!', 'Will this method cause problems for them later?', 'Note to self: try this tomorrow'. We hope that substantive annotations will be added by you, the community for whom this report holds some interest.

In this light, we should add that feedback from project leaders, funders and others who attended our peer review sessions on this work from December 2008 through May 2009 suggested that there are still other types of examples needed, among them multi-institutional partnerships, more failure cases and projects from other countries. While we hope, over time, to be able to expand the types of cases profiled, and even revisit some of the ones we have profiled here to see how they are faring, in the end we expect that the greatest value of these cases will come from people in the community discussing and debating them in meetings, at workshops, on our website and wherever the conversation about digital resource sustainability is taking place. Finding a reliable and ongoing means to support the creation and evolution of digital resources will take the combined efforts of all those who care about their survival, so the more voices at the table, the better.

We look forward to continuing this conversation with you.

Kevin Guthrie
President, Ithaka

Laura Brown
Executive Vice President, Ithaka S+R

1. Introduction and background

The past decade has witnessed a rush to create digital content in the not-for-profit sector, as organisations from a wide range of communities – from cultural heritage, to health care, to education and scholarship – have come to embrace the internet as a means to publish, collect, distribute and preserve the fruits of their work. The range of projects now living on the web is breathtaking – from a site housing one scholar's passion for crop yields in medieval England to massive government-sponsored national archives – but the business models that will enable long-term access and preservation are still unclear. Despite the great value of the work being entrusted to a digital format – and the substantial investments that foundations, universities and government funders have made – basic issues of continued cultivation and long-term accessibility of the content have yet to be assured for many of these projects.

The for-profit sector provides a cautionary tale for those looking to sustain not-for-profit digital resources. If the bursting of the dot-com bubble can be shrugged off as a necessary market correction, the shifts we are witnessing in 2009 are more troubling, as the emergence of the web-based economy has started to undermine more well-established businesses, such as the newspaper industry. Revenue models that worked for decades in print have not made an easy transition to the internet, and the commercial world is scrambling to develop new business plans to support existing operations. The not-for-profit community must similarly realise that old models – dependence on foundation support and institutional largesse – are unlikely to be reliable over the long term. As government, foundation and university budgets tighten, helping projects develop sound sustainability plans becomes more critical than ever.

In a multi-phase programme that began in late 2007, Ithaka studied the factors influencing the sustainability of not-for-profit digital resources. In a report issued in 2008, *Sustainability and Revenue Models for Online Academic Resources*[1], we examined factors that leaders of online initiatives face when developing sustainability plans for their content-based projects. The report presented overall guidelines for leaders to consider, as well as detailed descriptions of the success drivers and challenges for a range of different revenue models. In two workshops held in London and New York in the spring of 2008, Ithaka staff met with project leaders, programme officers at foundations and library administrators to discuss the report's findings. A strong consensus emerged that the framework and guidelines would be even more useful if tested against real-world examples illustrating the range of theoretical business models the report described. While *Sustainability and Revenue Models* presented the theory, readers wanted to see how the models were working in practice. How did project leaders define their mission and revenue goals? What steps did they take to develop revenue-generating and cost-management strategies? How did these align with the organisations' missions? To what extent were certain models successful, and how did project leaders define that success? Where were they running into problems?

Based on the community's interest in seeing concrete examples, we embarked on an exploration of the sustainability models of 12 selected digital resources. Our goal is to help illuminate the ways in which the general principles outlined in the first report play out in the real world, as well as to highlight lessons for leaders of other digital projects and other stakeholders in the community. Of

1 Kevin Guthrie, Rebecca Griffiths and Nancy Maron, *Sustainability and Revenue Models for Online Academic Resources: An Ithaka Report* (May 2008). Available at **http://www.ithaka.org/strategic-services/sca_ithaka_sustainability_report-final.pdf**.

course, there is no formula that will guarantee a project's sustainability, but as these case studies demonstrate, there are certain steps that leaders can take to maximise the value a project creates and to leverage that value to better position a resource for success.

It is our hope that by examining in detail the strategies different project leaders have adopted and the processes by which these strategies evolved, we are not just presenting our understanding of these models, but are also developing and sharing data for those in the community to assess and analyse. While the case studies pay special attention to the role of the project leader and others directly responsible for determining and implementing the strategies, we hope that this work will also serve as a rich foundation for further discussion among funders, policy makers, institutional leaders and all those interested in the important questions raised here.

2. Methodology

With the support of the UK Joint Information Systems Committee (JISC) and the Strategic Content Alliance (SCA), the US National Endowment for the Humanities, and the US National Science Foundation, Ithaka S+R set out to identify a range of projects that would illustrate the business models we outlined in the initial report, including models drawing on advertising income, author fees, content licensing, corporate sponsorship, endowment revenue, memberships, subscriptions and premium services. We also sought projects with leaders who were willing to share details about the inner workings of their organisations and the challenges of developing a sustainable model.[2]

Additional factors came into play during the selection process as well. We aimed for diversity across the cases in terms of geography, sector, discipline, scale and content type (ie text, data, still images, audio and video). We explored projects in different organisational settings: some projects were completely independent entities, some were discrete projects embedded in or hosted by institutions, and some were separate departments in large organisations, or in some cases, particular initiatives within a department.

Ithaka S+R conducted preliminary reviews of nearly 90 organisations before selecting the 12 digital projects that are the subjects of the case studies and of this report.[3] Because our goal was to highlight the issues involved in the implementation of a sustainability model, including its risks and rewards, we specifically targeted projects that had been in existence long enough to have a track record using their selected revenue model, with measurable results. (Although in researching possible objects for study we came across many interesting or promising models in early stages, in many cases these plans had been put in place so recently that results would not be easy to gauge.) Another important criterion was willingness to participate. Not all those approached were interested in offering their project as the subject of a case study, some for reasons of time, but more often for reasons of privacy. Even when a project leader agreed to participate, some information was unavailable due to non-disclosure agreements or other factors.

In researching each case, the Ithaka S+R team began by interviewing a primary representative of the organisation, such as the principal investigator of the project, the library director or the head of the department managing the resource.[4] These initial meetings and our own research led us to other interviewees within and beyond the organisation. Seeking to develop as full a picture as possible, we interviewed stakeholders from outside the organization to learn more about the project's relationships with its users, funders, subscribers and partners. As often as possible we conducted interviews on site and in person, although in some cases they were conducted on the phone. Initial interviews of 60–90 minutes were followed up as needed via phone and email and by a final fact-checking process. The interviews were supplemented by an examination of relevant documents such as annual reports, strategic plans and grant reports, as well as any press that might relate to a project.

2 For a more detailed discussion of methodology, see Appendix A.

3 See Appendix B for short descriptions of each case study.

4 Complete lists of those interviewed are found at the end of each individual case study as well as in the Acknowledgements.

The case studies, completed in May 2009, are a hybrid of narrative and analysis.[5] Introductory sections present the history and context of the project and outline its sustainability goals and methods. A section on key issues explores those factors that appear to have had a strong impact on the success of the sustainability model the project employs – for example, how the project leaders understand their users, communicate the value of the project to others, and seek to innovate and experiment in order to grow. Additional sections assess the benefits and the challenges of the particular sustainability path the project has chosen to follow, in terms of meeting the goals the project has set for itself and the extent to which that path might serve as a useful exemplar for others. A final section highlights the broader implications of the findings from the case, underlining the general lessons that other project leaders might want to consider for themselves. The analysis does not focus on ranking different sustainability models, nor on making predictions about whether a particular project will or will not succeed over the long term. Instead, we highlight the strengths and risk factors associated with different models in order to help inform other project leaders of important issues to consider in their own work.

The final roster of projects and organisations we studied includes, in alphabetical order:

BOPCRIS Digitisation Centre, Hartley Library, University of Southampton (UK)
A university library-based digitisation centre experimenting with public–private licensing partnerships to help it plan for long-term access to and preservation of its digitised content.

Centre for Computing in the Humanities (CCH), King's College London (UK)
A degree-granting academic department supporting research projects in the digital humanities that diversifies its government and institutional funding through outside research grants and consulting fees.

DigiZeitschriften, Göttingen State and University Library (Germany)
An archive of German-language scholarly journals supported by a library partnership model and institutional subscriptions.

eBird, Information Science Department, Cornell Lab of Ornithology, Cornell University (US)
A web-based database that captures millions of amateur birdwatcher observations each year for use by researchers, pursues a range of entrepreneurial activities, and demonstrates a keen understanding of its users.

Electronic Enlightenment (EE), Bodleian Library, University of Oxford (UK)
A collection of 18th-century correspondence that transitioned from a grant-funded university-based project at a foundation to a subscription-based product embedded in a university library and partnered with a university press for distribution.

Hindawi Publishing Corporation (Egypt)
A for-profit publishing company that provides an example of rapid innovation and quick response to market demand to deliver Open Access content via an author-pays model.

Inamédiapro and ina.fr, L'Institut national de l'audiovisuel (France)
Divisions within the National Audiovisual Institute that demonstrate revenue generation through rights licensing (Inamédiapro) and finding an appropriate balance between Open Access and innovative revenue-generating models on the public website (www.ina.fr).

Licensed Internet Associates programme, The National Archives (UK)
An initiative within The National Archives (TNA) that has worked with commercial partners to digitise over 80 million pages of archival documents in just four years, and make them available online.

5 The 12 case studies are available here: **http://www.ithaka.org/ithaka-s-r/strategic-services/ithaka-case-studies-in-sustainability/case-study-abstracts**

Middle School Portal 2: Math and Science Pathways, National Science Digital Library (US)
A programme funded by the National Science Foundation to improve discoverability of resources for middle-school maths and science teachers, which is considering possible ways to transition from government grant funding when its support ends in 2011.

Stanford Encyclopedia of Philosophy (SEP), Stanford University (US)
An online Open Access encyclopedia with user-contributed content that has developed a community of advocates to build an endowment, supplemented by contributions from its host institution.

Thesaurus Linguae Graecae (TLG), University of California, Irvine (US)
A digitised collection of ancient Greek texts whose leaders have developed – over the course of nearly 40 years – a hybrid economic model consisting of subscriptions, university funding and an endowment.

V&A Images, Victoria and Albert Museum (UK)
A department of the Victoria and Albert Museum's commercial trading company that licenses photographs of objects in the museum's collection for commercial, educational and personal use.

3. Sustainability beyond the numbers

Whether a project is 'sustainable' or not depends entirely on how sustainability is defined. Many of the projects we studied are able to cover their direct costs through a range of revenue-generating strategies. Of these, however, few would be able to develop and maintain their resource independently, without the contributions of their host institutions – contributions that may leave those projects vulnerable to budgetary decisions beyond their control. Others, while meeting their costs, run on budgets so low that their continued growth and development may be impeded. At the same time, we saw some cases that were not entirely recouping their costs but that appeared to be extremely vibrant, demonstrating value to their users and continuously testing or modifying their revenue models. How, then, do we define sustainability, if it is not simply through financial performance?

In *Sustainability and Revenue Models for Online Academic Resources* (2008), we defined sustainability as 'having a mechanism in place for generating, or gaining access to, the economic resources necessary to keep the intellectual property or the service available on an ongoing basis.'[6] This definition suggests that project leaders ought to seek to cover the costs of the tasks essential to the development, support, maintenance and growth of their projects. While this is true, this series of case studies suggests that the ways in which this occurs are often highly complex.

From a financial perspective, the sustainability plans we observed rarely incorporated only a single approach; they were hybrid strategies involving a variety of revenue-generating and cost-control techniques working in concert. While economic resources are obviously critical, and while the digital projects we studied demonstrated many creative revenue models, equally remarkable was the range of strategies they had adopted for managing the direct costs of developing the resources through a reliance on volunteer labour, partnerships and in-kind contributions.

Furthermore, sustaining the value of the resource requires more than just 'keeping the lights on'. As new technologies develop and user expectations shift and grow, a resource risks fading slowly into irrelevance if it does not constantly grow and innovate in ways that continue to benefit its constituents. Not doing this, in the most extreme cases, can result in a resource becoming inaccessible. More often, though, a static resource will lose value over time. Not only does this diminish the ability of the project to achieve its mission, but also the declining usefulness of the resource will make it even more difficult to generate the revenue needed to sustain a minimal level of activity. Project leaders must devote time and resources towards enhancing the value of the project and developing financial strategies to ensure that it will continue to offer value to the community over the long term.

With this in mind, we propose a new, more nuanced definition: *sustainability is the ability to generate or gain access to the resources – financial or otherwise – needed to protect and increase the value of the content or service for those who use it*. A sustainable project covers its operating costs through a combination of revenue sources and cost-management strategies and continues to enhance its value based on the needs of the user community. Covering operating costs is necessary but hardly sufficient: a project must not only meet the financial criteria required to cover these costs, but must also demonstrate ongoing development of the resource itself. Not all of the resources required to do this are strictly financial; non-financial resources may be quite important, too. A cadre of professors who contribute and edit content or the presence of a strong and vocal community of advocates, for

6 Guthrie, Griffiths and Maron, *Sustainability and Revenue Models*, 18.

example, can play a vital role in the long-term success of a resource. When a project creates real value for users, its leaders are likely to have at their disposal a richer array of tools when assembling a strategy for leveraging that value to both its direct and indirect beneficiaries.

As in the 2008 sustainability report, we do not attempt to prescribe which revenue models projects should rely on, whether a resource should be Open Access or have gated content, or which categories of costs a project should be prepared to pay for directly. These variables will differ for every project based on its mission, history and environment. Strategies that are plausible for one project – a reliance on ongoing cash from a host institution, for example, or the use of volunteer labour to lower the costs of creating content – may not be replicable in every case. Each project will need to determine the combination of revenue sources and cost-management measures that suits it best.

There is no simple formula to determine whether or not a resource will succeed – all the projects studied in this series have different strengths and risk factors, and all are continuing to evolve. Still, we believe that evaluating projects in terms of the value of their content to end-users and the strength of their financial model can provide clues about the prognosis for their long-term health. Through learning about the strengths and weaknesses of a variety of projects, we hope that project leaders and other stakeholders will become better able to assess the health of their own projects, to use the tools and strategies available to them to maximise their project's value to the community, and to capitalise on all the options available for their support.

What does it take to build and operate a digital resource?

The operation of a digital resource is a complicated task involving the coordination of several different types of activities. Projects may need to focus on these functions to varying degrees at different phases of their life cycle, as they move out of a start-up phase and into ongoing maintenance and development. Grouped broadly, these essential functions include:

- *Project management and administration*, including goal setting, strategic planning, staff management, report writing and other activities
- *Content development*, including content selection and rights evaluation, content creation (and any relevant digitisation), metadata generation and quality control
- *Technological infrastructure*, including code maintenance and bug fixes, major redevelopment and feature enhancement and IT/user support
- *Revenue generation*, including business planning; marketing, sales and other outreach activities; grant writing (where applicable); and billing and account management

Many of these functions are tasks that can be accomplished by project personnel, so it is unsurprising that staff was the largest category of expense for nearly every project we examined. It is also worth noting, however, that performing these activities may entail significant costs that are not staff-related. These include:

- *Hardware and software*, including servers, systems administration programs, software maintenance contracts, internet bandwidth, digitisation equipment and personal computers for project staff
- *Overheads*, including rent, utilities, financial and human resources services, and basic office expenses
- *Miscellaneous expenses*, such as staff travel and marketing materials

All of these activities and infrastructure create up-front and ongoing costs that successful projects must find ways to cover. In their early years, many of the projects in our case studies covered these costs primarily through a significant investment of time and money, often from grants. Over the long term, however, project leaders must find different ways to ensure that these activities will continue. Since very few projects can rely on the perpetual largesse of a philanthropic organisation or parent institution to cover all their costs, their leaders must develop financial sustainability models that are less subject to the whims of a single funding source.

4. Key factors for sustainability

Across this group of case studies, we found that projects that have made the most progress in developing successful sustainability strategies tend to pay attention to a set of core critical factors. They empower project leadership to set and achieve goals; they craft a strong value proposition by understanding and responding to user needs; they establish relationships that lower the costs the project must bear; they cultivate sources of revenue to cover direct expenses; and they establish systems of measurement and accountability. Not all of the projects studied excel in every area. By assembling the best practices of each, however, we hope to present a composite profile of how projects are trying to work towards sustainability today. Below, we discuss each of these key factors, highlighting notable examples from the case studies that demonstrate the approaches projects have taken to achieve success.

4.1 Dedicated and entrepreneurial leadership

What sustainable projects do:

Empower a project leader or a management team to define and articulate the mission of the project and the steps needed to reach goals.

How they do it:

Select leaders and key staff with requisite experience; clearly communicate mission and goals of the organisation; and create an atmosphere that encourages an entrepreneurial spirit, including a willingness to test new ideas.

In *Sustainability and Revenue Models* (2008) we emphasised the importance of a creative, entrepreneurial mindset in developing sustainable digital resources. This collection of case studies demonstrates the importance of having committed leaders in place. Leaders lay the groundwork for success by identifying and communicating the core value proposition of the resource, developing strategies to secure its financial health, and continuously revisiting and developing the resource's content and services.

While dedicated leadership is important to a project, this does not always mean that its leaders are assigned to spend 100% of their time focused on the resource. While at larger organisations a project leader may be a manager who spends all of his or her time running the resource, we saw many other project leaders, particularly those at academic institutions, splitting their time among several responsibilities, including research and teaching.[7] More important than the percentage of time spent on a project was the leader's passion and tireless attention to setting and achieving goals and his or her ability to serve as a creative problem solver and chief advocate of the resource.

7 Of our 12 profiled projects, only in four cases were members of the project management team committed to the project full-time, and these four projects were developed in the context of heavily staffed organisations. In the eight other projects, management duties were often allocated by a host institution at between 0.5 and 1.0 FTE.

Even if it is not possible to have one person fully allocated to management of the resource, having staff with the needed expertise in key positions is important. We saw several cases – the National Archives' licensing programme, the Victoria and Albert Museum's V&A Images division, and eBird, for example – where staff had been recruited from outside the organisation, sometimes from the private sector, in order to provide leadership on new initiatives that required skills and capabilities not possessed by staff in the organisation.

Among the traits that appeared most often among the leadership of the more robust projects we studied was an entrepreneurial mindset: leaders are keenly aware of the rapidly changing landscape, understand and embrace the need to experiment with content and revenue models, and are willing and prepared to change course as the situation warrants. In *Sustainability and Revenue Models* (2008), we stressed the importance of creating an environment for creativity and risk-taking, pointing out that since there is no magic 'rule book' for online projects, experimentation is often the only way to see what works best. The University of Southampton's Hartley Library is currently testing several different licensing agreements to provide for long-term hosting and access to the content their BOPCRIS unit has digitised. Hindawi Publishing Corporation, a for-profit company, provides another example; before committing to a new journal, they test a concept by offering a topic-oriented special issue of an existing journal and measuring interest by the number of submissions. The public, Open Access website of L'Institut national de l'audiovisuel, www.ina.fr, serves as a test bed for different revenue strategies the publishing group decides to try. Obviously, not all projects can engage in a large number of experiments – for a resource with 2.0 full-time employees (FTEs), even a small experimental project can eat up a large portion of the overall staff time available. What we *did* observe, however, is the willingness of project leaders and staff to be nimble and open to change.

While projects based at large organisations may have a deep bench of talent to draw from as a project evolves, many projects created and led by a small group of individuals, such as academics at universities, face a different sort of challenge to a project's long-term sustainability. As one founder of a project described it, the 'what would happen if we were hit by a bus' scenario seems far from settled for many project leaders.[8] The strong identification of a creator with his project, paired with the highly specialised knowledge and skill set often needed to balance the scholarly and entrepreneurial requirements of such a position can make finding likely successors difficult. Whether the need for new leadership arises due to an individual's shifting interests, decision to change jobs or inability to continue leading the project for another reason, the possibility that change may be necessary makes succession planning an area worthy of future investigation.

4.2 A clear value proposition

What sustainable projects do:

Craft a strong value proposition.

How they do it:

Create a resource that offers unique value and continue to add value to the resource based on an understanding of users' needs.

It has been previously noted that it is not realistic for project leaders to expect that simply creating a work of high quality is enough to ensure its sustainability; you may build it, but there are no guarantees that anyone will come. Digital resources do not exist in a vacuum – sustaining them requires that project leaders understand the unique value that the resource provides and where it fits within the competitive landscape. What does a digital resource contribute that sets it apart? Is its content rare or unique or otherwise in particularly high demand? Does the resource provide important services or functionality that can be found nowhere else? What groups really care about this resource,

8 This topic notably did not come up directly through our case study research, but was brought to the fore by leaders of SEP, TLG and other projects at a Roundtable on Sustainability that was held on 5 May 2009 to discuss an early version of this report.

and are there any secondary beneficiaries beyond its primary audience? How does service to this audience fit in with the organisation's overarching mission? Furthermore, as the landscape changes, what must the project do to keep pace with the changing needs of its users?

The projects we examined that are most successful in attracting large, dedicated user communities have a deep understanding of the value their resource contributes and can answer these questions well. They are able to make the case for why their resource is important both to users and to other interested parties (foundations, host institutions and others), which in turn positions them well to develop a robust sustainability model. Creating value and presenting the value proposition to users does require investment, but we saw many examples of projects finding this investment to be worthwhile.

Creating value

There are a variety of ways in which digital resources provide something valuable to users. In some cases (such as SEP, eBird, the digital projects developed by CCH and the journals published by Hindawi) the value resides in the original, high-quality content they provide. The value these projects create relates to the extent to which they become important parts of the workflow of their user communities and the extent to which users rely on them to do their work. Understanding the way in which a project can enable users to do new things – which requires an appreciation for the uniqueness of a resource and a grasp of a user's current practices and unmet needs – not only helps build audience, but also helps create devoted advocates who can be an important component of a sustainability plan.

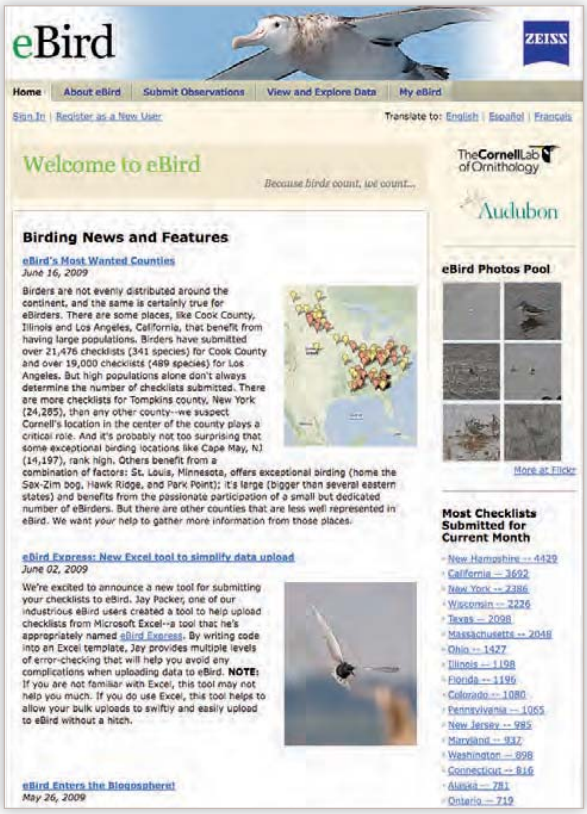
Other projects, particularly those originating from library, archive and museum collections (such as TNA, V&A Images, Southampton's digitisation projects, INA and DigiZeitschriften), benefit from the wealth of content they have at their disposal. Their challenges are different; they may initially create value through digitisation, making physical materials available, discoverable and more useful in digital form.

While the process of digitisation itself creates value for end-users, many projects go further, investing in tools and features to aid users in discovering and using the content in innovative ways. The Thesaurus Linguae Graecae (TLG) consists of a collection of nearly 10,000 Greek texts and has become a must-have for scholars of antiquity, enabling the project to charge subscription fees that help sustain the project. Similarly, the Electronic Enlightenment (EE) assembles over 53,000 letters from the long 18th century. The value in these resources is not just in the scale of the digital content they amass. Both projects stand out for the features that make them valuable to users: TLG has added search functionality specific to Greek and Byzantine documents, including fields for searching by the editing style used or by Greek root words; EE has developed dynamic links among its documents, so that scholars can explore the 'web of correspondence' among philosophers and their families, friends and colleagues. In both cases, these functionality upgrades add value sufficient to justify subscriptions from libraries, even those that already hold print editions of those texts on their shelves.

To some, creating a unique value proposition for a body of content may seem to suggest that this unique value should be held close. In fact, in many cases, we observed just the opposite mindset at work. By seeking out ways to place content alongside other relevant content, projects can increase their exposure to a wider range of users. Examples include The National Archives, whose genealogy

content has found an audience of many millions through the commercial genealogy sites that license it; INA, whose widget, the INA Player, presents content on the websites of several French national dailies; and the University of Southampton, which by licensing its digital content to ProQuest and JSTOR is assured of higher exposure of that content to the broad audiences of those two subscription services.

Understanding and responding to user needs



The projects we examined illustrate how a rich understanding of the user community can improve the resource and, by extension, its revenue streams. Project leaders have many tools at their disposal when undertaking market research, from interviews and surveys to analysing web traffic statistics and more,[9] but the first step – acknowledging the central importance of the user to the resource – is by far the most important. We examined several cases that demonstrated how attention to users plays an integral role in continuing to build up the content of a resource, while also helping to drive revenue and advance the organisation's mission.

Shortly after its launch, management of the avian observation database eBird noticed that the number of user contributions had reached a plateau. The new project managers – themselves committed members of the birding community – knew that amateur bird watchers were not necessarily motivated to contribute their observations to a database for scientific use, but would get excited about having an online platform for creating and storing the birdwatching 'checklists' that they all keep. By taking into account the needs of this broader audience – rather than focusing on data collection for research – eBird decided to build user-facing features that more closely supported the activities the amateur birders already engaged in. The number of submitted observations soared above ten million in 2008.

Understanding the needs of users can also help projects identify new revenue streams. Management of the INA's website for the general public, www.ina.fr, had noted that download fees for video content had levelled off, despite strong traffic on the site. Research suggested that visitors to the site, most of whom belonged to an older-than-average demographic, were confronting obstacles that were preventing them from purchasing downloads – the technical transaction required several steps and the format of the

9 For more on audience analysis, see the report commissioned by the Strategic Content Alliance and authored by Rachel Quark, Martin Olver, Max Hammond and Claire Davies, 'The Guide to Researching Audiences: Case Studies' (Guildford, Surrey: Curtis+Cartwright Consulting Ltd, December 2008). Available at **www.jisc.ac.uk/media/documents/themes/eresources/sca_audiences_case_studies_v1-03.pdf**.

files limited their portability once downloaded. Management hypothesised that their audience would appreciate a DVD-on-demand service, where for a fee, users could select clips online and have a DVD burned for them and delivered via post. By providing the content in the way users wanted it – not expecting users to adjust their behavior to fit the site – the initiative achieved great success. In its first month alone the programme generated 20,000 euros, recouping the cost to launch the service.

4.3 Minimising direct costs

What sustainable projects do:

Find creative ways to lower the direct costs of running the project.

How they do it:

Secure contributions from the host institution; outsource work through vendors and other external partnerships; work with volunteers.

While our case studies show some of the specific strategies project leaders are adopting to generate direct revenue, equally impressive is the range of ways in which project leaders are controlling the costs of their projects. Project leaders have garnered in-kind support from host institutions and other partners, outsourced elements of the work that could be more efficiently done elsewhere, and harnessed considerable volunteer efforts. We found that these strategies are every bit as important to the sustainability models of the projects we studied as their revenue-generating approach.

In-kind support from host institutions

The in-kind support of host institutions – ranging from rent and utilities, to free technical support and server space, to the contributed time and effort of staff – emerged as a fundamental component of the sustainability plan for every not-for-profit project we examined.[10] Though many of the projects we studied generate enough revenue to cover their direct costs, this is because shifting many expenses to the parent organisation helps to keep those direct costs low.[11]

Though this kind of institutional support is critical for so many projects in this space, it is important to note that there are significant risks associated with it. We found that few project leaders have made efforts to quantify the monetary value of these contributions, and few have developed a plan for what to do if they dry up. Some leaders may assume that their project is relatively inexpensive to run – and some institutional administrators may believe the same. In many cases, however, these unquantified in-kind contributions obscure the full cost of running a project. If the host institution were to account for all of its contributions and decide that the resource did not merit such funding, or that because of broader budgetary concerns at the institution the funding had to be cut back, the project could not survive without a drastic and quick shift in funding strategy. As parent institutions experience budget crunches, these in-kind contributions are likely to receive more scrutiny.[12] It may not be realistic to assume that the current level of non-monetary support will always be available.

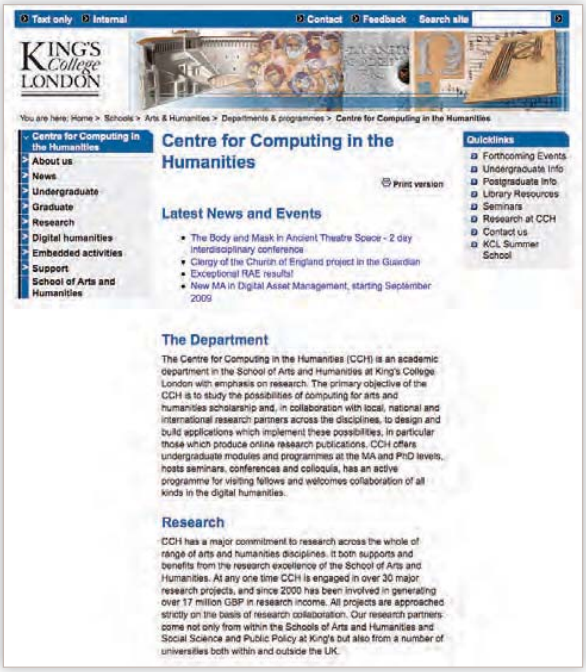
In addition to relying on in-kind contributions, several of the projects in our series of case studies rely on some degree of direct financial support from their host institution to cover their operating expenses. Some projects have formal arrangements to receive a set amount each year from their host institution: the Thesaurus Linguae Graecae, for example, gets cash from its host university to cover slightly more than one-fifth of the project's annual budget. Other projects receive a variable amount

10 The for-profit Hindawi Publishing Corporation is an exception because it has no 'host institution', or parent company, from which to draw subsidy.

11 In some cases, the 'contributions' predate the resource itself: INA's Inamédiapro derives revenue from licensing content, an activity made possible by years of government investment in creating that digital content; much of V&A Images' image database was digitised by the museum's photographic studio, at no direct cost to the licensing operation.

12 Scott Carlson, 'Campus Officials Seek Building Efficiencies, One Square Foot at a Time', *Chronicle of Higher Education*, 17 April 2009. Available at **http://chronicle.com/weekly/v55/i32/32a00104.htm**.

of direct funding from the host institution to meet the gap between revenues and direct expenses: the Stanford Encyclopedia of Philosophy receives bridge funding from Stanford to cover the gaps between endowment payouts and expenses, provided that the SEP continues to make progress toward its endowment goal. Although a host institution could, in theory, decide to cut or eliminate these financial contributions at any time, the more formal arrangements are likely to be more stable.

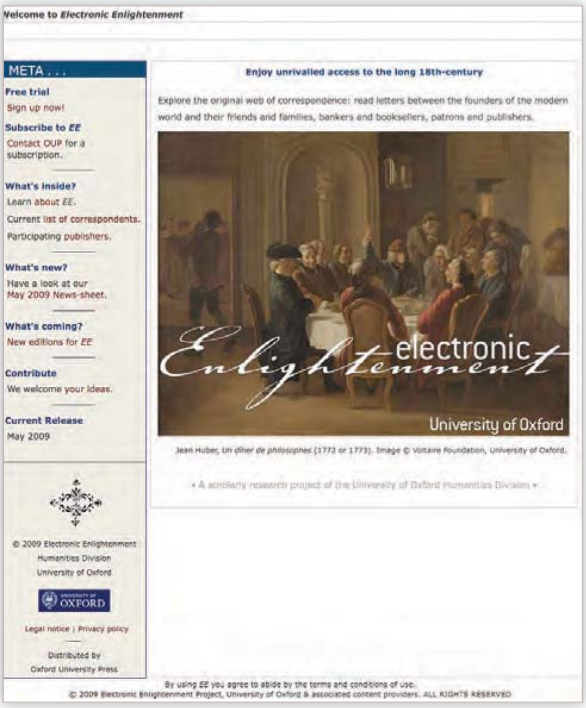


Reliance on the largesse of a third party such as a parent university is inevitably riskier than a strategy built on revenue tied more directly to the value of the content, as this institutional support is subject to environmental factors – such as the budgetary needs of other departments, or a new provost's priorities – that have nothing to do with the project itself. But, to the extent that institutional contributions do form a component of the sustainability strategy for many digital resources, it seems increasingly important that project leaders think about ways to assess the reliability of these contributions and how best to express the value their projects provide to the host institution. Figuring out how to demonstrate return on mission is a challenging prospect. Many projects and institutions have the sense that valuable non-financial contributions are made by these resources – branding, expansion of public access and use of a collection, general advancement of and service to valued disciplines, decreased wear and tear on physical materials, and so forth – but there seems to be little consensus on how to understand and measure the extent to which a project advances mission in these areas.

Large cultural institutions with established governmental funding, such as TNA, INA and the Victoria and Albert Museum, are required to have formalised systems in place for evaluating and demonstrating return on mission. In many cases, these institutions have specific targets they must meet – for example, in terms of number of visitors to the website, or number of users served – that help them quantify a mission-based return from their resource. In the case of V&A Images, in 2007 a mission-related decision was made to stop charging academics licensing fees for some uses of images from the collection; in this case, the number of academics served becomes an important demonstration of the department's value, even if serving the group is not itself profitable.

We also saw some examples of university-based efforts that were able to clearly demonstrate their value to a parent institution. For example, the Centre for Computing in the Humanities at King's College London was able to establish itself as an academic department in part because it demonstrated its value in a way that was easy for the university to understand – through research grants received, and through the quality of research produced. It is also likely that other university-based initiatives are demonstrating their value to their hosts in less formal ways, such as through raising the profile of the university and its scholars, or through anecdotal reports of a resource's value to a particular discipline. In most cases, however, the way in which these projects help to advance the mission of the university is less formally defined and is likely an area for further research and clarification.

Outsourcing and partnerships

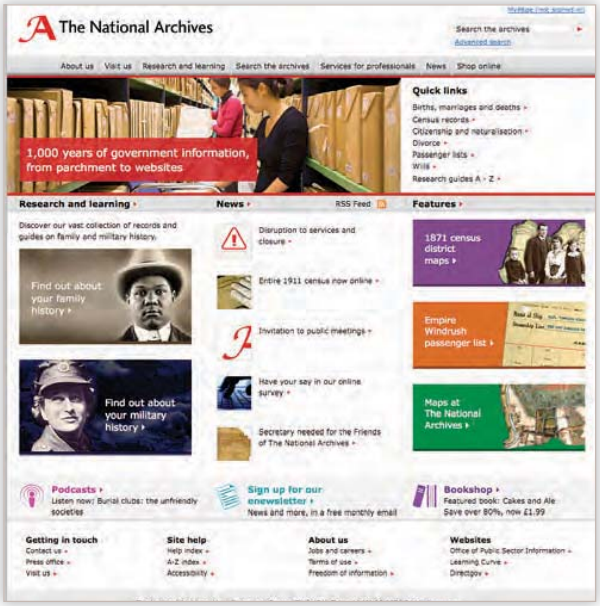


Project leaders may instinctively prefer to perform all of the project's functions in-house – allowing for customisation and complete control over the resource. However, a home-grown solution is not always the best one. The range of functions needed to run even a modest digital resource is considerable, and the costs mount quickly. This series of case studies suggests that successful projects often leverage the talents, skills and capabilities of strategic partners from beyond the walls of the organisation. This collaboration can assume a variety of forms, from 'content swaps' or linking relationships to more formal vendor contracts. The cases we examined highlighted two particularly powerful ways in which collaboration can increase the value of a project: as a means to build a more significant or useful resource by aggregating content from different sources, and as a means for projects to efficiently gain expertise or support that may not be native to the organisation itself. The National Science Digital Library Pathways Portal for Middle School Math and Science Teachers, or MSP2, has been developed as a partnership among three organizations that each contribute their different strengths to the project. Content development is led by staff at Ohio State University, outreach is being spearheaded by staff at the National Middle School Association (NMSA), and the Educational Development Center is responsible for creating student-focused content for the site. The partnership model as seen here demonstrates clear strengths and opportunities related to sustainability, as each partner provides skills and expertise that would be difficult to develop within a single organization.

Some digital projects outsource work to vendors to perform tasks that would otherwise require costly investment. For example, the Thesaurus Linguae Graecae saves money on data-entry costs by outsourcing that function. Similarly, the Electronic Enlightenment (EE) contracts with an outside provider for data hosting, which for them was more cost effective than operating servers themselves. Projects also outsource functions for which they have no internal staff skill set, whether by contracting with a vendor or forming a mutual partnership. For example, EE contracted with Oxford University Press (OUP) for sales and marketing, after determining that hiring staff for these functions would be prohibitively expensive and that it could not easily replicate OUP's network and reputation within the library community.[13] Similarly, while SEP was building its endowment, it partnered with Southeastern Library Network (SOLINET); SEP was responsible for much of the outreach and advocacy to libraries, while SOLINET brought to bear its expertise and established billing relationships with potential library donors.

13 Although the Electronic Enlightenment and Oxford University Press are both divisions of Oxford University, their relationship here is a formal one: as the official distributor of EE, OUP charges the project 30% of gross sales revenues generated through the subscriptions it secures.

Collaboration is also possible, and perhaps less problematic, among peer institutions with closely aligned, complementary goals. DigiZeitschriften, for example, was created as an association of partner libraries, each with an established specialty in certain subject collections. The partnership requires each member library to contribute its expertise in identifying the journals to add to the collection, and to take responsibility for negotiating with the publishers who hold rights for that content. With the content specialists and 'publisher-relations' functions taking place at each partner library, the organisation functions with only a very small centralised staff to coordinate their efforts.



Other types of partnerships may affect the shape of the resource more profoundly. Through its Licensed Internet Associates programme, TNA licenses its content to commercial partners, effectively outsourcing many significant activities and costs including digitisation, hosting and access. This strategy has been the principal means by which TNA has quickly achieved 80% of its mission goal of providing digital access to 100 million documents. Deep relationships like this may have many benefits: this major digitisation effort has taken only four years and it reaches a large audience, as the partner sites record much higher traffic statistics than does The National Archives site itself. (When the 1911 census file went live on Findmypast.com in early 2009, this one series of documents generated 18 million page hits from 645,000 unique visitors on the day the service launched; by comparison, TNA's website records an average of 900,000 unique visitors per month.) The programme generates considerable annual royalty revenue, but most significant are the access benefits – 24/7, worldwide, simultaneous usage of historical resources. TNA estimates that external commercial partners have invested £53 million in digitisation and ongoing hosting costs over the past four years.

While digital resources can derive great benefits from such collaborations, these partnerships do require a great deal of up-front planning and ongoing relationship management and assessment. Finding the right vendor or partner – one that can fill a needed function in a way consistent with a non-profit organisation's mission – can be difficult given the highly specific needs of digital projects. Once that vendor is found, leaders should think about what recourse they will have should the vendor or partner end the relationship in the future. This seems especially important for partnerships in which the hosting and commercial exploitation rights to digitised content are licensed to a third party; such partnerships may widen online access to important holdings, but they may also weaken the organisation's control over the digitised content. Leaders of projects that depend on a partner for these vital functions should put in place contingency plans that address the fate of the digitised content and the generated metadata once that relationship ends.[14]

Harnessing volunteer efforts

Several of the projects we looked at rely on the volunteer efforts of users – particularly user generated content – to fuel their resource. While professional researchers have well-established reasons to offer their time and work to journals, the appeal to other kinds of volunteers is more subtle: interns at V&A Images provide their time in exchange for professional training, while eBird's network of data editors volunteer their time out of a love for birding. In all these cases, the project leaders are well aware that they must make the experience fulfilling for the volunteers or risk losing this source of labour.

14 This issue points to a challenge of the case study method: some of our case study subjects were willing to speak about difficulties with partners only off the record.

One of the most creative and intricate uses of volunteers we observed in our research was in the case of the Stanford Encyclopedia of Philosophy. The volunteer efforts of SEP's user community have benefited the project through lowering two major direct costs: content creation, and sales and marketing. First, the project leaders reached out to academic philosophers and convinced them to contribute entries to the encyclopedia for free. This is a known model for academic research projects – many scholarly publications do not pay for contributed articles or entries, or pay only a nominal fee. The SEP's project leaders took special care, however, to ensure a rigorous editing process – a step meant to reassure philosophers that although the SEP is not a print volume, their work would still receive a high degree of editorial scrutiny and would become part of an encyclopedia with similarly high-quality reviewed and edited entries.

Second, the project leaders built a community effort to help generate revenue. They wanted the Encyclopedia to remain Open Access, and sought out advisors and informal partners, creating an unofficial advisory committee of Open Access advocates from libraries and library consortia, and other key members of the community willing to devote time and resources to helping SEP establish its strategy and build the billing and processing infrastructure needed to implement it.

While these academics and librarians are not 'customers' in a traditional sense, they are users whose needs must been deeply considered; if rightly engaged, their contributions can be significant. The SEP's use of volunteers may not be exactly replicable – it seems unlikely that academic librarians would be willing to undertake this effort for a huge number of resources. However, the mindset of involving the people who value a resource is generalisable to many other projects.

4.4 Developing diverse revenue sources

What sustainable projects do:

Cultivate sources of revenue to cover both direct costs and ongoing upgrades.

How they do it:

Experiment with different revenue models to find the ones that are the best fit for the project; show willingness to try new models; cultivate the ability to identify and communicate the value of the resource to the target audience (of customers, authors, subscribers and so forth).

While most not-for-profit digital resources get start-up funding from grants and other donations, these sources cannot be relied upon to cover ongoing costs as funders are more likely to finance innovation than ongoing operations. While many projects keep direct expenses low through contributions from a host institution, these arrangements are often informal and are to some extent beyond the control of project leadership. It is clear that most, if not all, not-for-profit digital projects must seek other sources of revenue to underwrite ongoing operating expenses.

Our case studies were selected in large part to highlight the range of revenue strategies being employed by digital projects in academic and cultural sectors today. Projects are tapping into a wide range of revenue sources, both earned and donated. Projects we examined employed a range of methods for earning revenue, including subscriptions, content licensing, pay-per-use, custom services and consulting, and corporate sponsorships and/or advertising. Sources of donated revenue include contributions made by other interested entities and grants.

All of the cases we studied incorporate multiple strategies to generate revenue, which often derives from a combination of earnings and donations. As we noted in the 2008 report, this diversification of revenue sources acts as an important hedge against the risk of losing one revenue stream. In addition, a multifaceted revenue-generating strategy allows projects to leverage the value of their resource for different audiences with different interests and abilities to pay.

It is worth noting that all of these revenue models themselves create new costs for projects – often in terms of staff time and sometimes in terms of other investments. We found that in adopting a particular model, project leaders had to carefully consider the costs incurred to implement a given revenue strategy, as well as the trade-offs that may be necessary when balancing the urgency to create revenue streams and digitise content against the core missions of the organisation.[15]

Each case study delves in detail into the mechanics of an organisation's revenue model, highlighting the decision-making process and underscoring the trade-offs required. The cases assess the benefits and challenges of each revenue model and make recommendations about the extent to which elements of the model may be replicable by others. We recommend that for the most complete presentation of these complex processes, readers seek out the cases that address the sustainability strategy or themes of greatest interest to them. Below are short summaries of some of the ways we observed projects in our study employing these models.

Subscription

Offering a resource through subscription can provide a recurring revenue stream for digital projects, particularly those targeted towards libraries and institutions.[16] Several projects studied here employ this model, which is well-suited to the framework of accepted library purchasing practices.

The projects we examined that support themselves through subscriptions all have content that users see as unique or exceptional. This content may appeal to those in a wide range of disciplines, such as the digitised correspondence in the Electronic Enlightenment or the German-language scholarly articles in DigiZeitschriften, or it may be essential to a niche audience, such as the digitised Greek texts of the Thesaurus Linguae Graecae (TLG). In all cases, projects with subscription-based sustainability strategies have content for which there is enough demand from the target audience to justify paying for access.

15 In addition, at least with respect to US non-profit organisations, the tax treatment of different revenue models may vary. Thus organisations are encouraged to be mindful of this issue when considering certain revenue models.

16 As noted in Guthrie, Griffiths and Maron, *Sustainability and Revenue Models* (2008), a related model is a one-time payment for perpetual access to a content collection. Though none of the projects we examined in this selection employ this model, many of the findings about a subscription model will hold true for this model as well.

As pointed out in *Sustainability and Revenue Models* (2008), a subscription model creates a variety of additional costs for the project, including marketing, sales and billing expenses. In addition, subscribers tend to have high expectations about the quality and frequency of updates to content and functionality, as well as about user support. In short, subscribers expect more from the resources they pay for than they do from resources they may access for free, creating additional costs and requirements. Two of the cases we examined, TLG and DigiZeitschriften, have chosen to administer their own subscription plans, with some success. TLG has gradually built up a network of over 2,000 customers through its decades of operation, and relies on five-year licences to cut down on administrative costs. DigiZeitschriften has kept operations on a fairly modest scale, with 84 subscribing entities representing 192 institutions. On the other hand, Electronic Enlightenment has chosen to outsource sales and marketing through Oxford University Press, hoping that the publisher's expertise in the higher education market will help to quickly build a strong base of subscribers for the resource.

Licensing to publishers

Rather than create their own subscription-based, restricted-access product, projects may generate revenue by licensing their digital content to commercial or not-for-profit publishers.

In our case studies, we observed organisations such as the BOPCRIS unit at the University of Southampton and The National Archives that are licensing digitised content to publishers (ProQuest or commercial genealogy sites, for example) in exchange for a percentage of the revenue generated by the third party's distribution of the material. In both these cases, generating revenue was just one of a range of monetary and non-monetary benefits the partnerships provide. Licensing content to publishers enables projects to recoup some of their expenses while achieving significant cost savings associated with outsourcing hosting and access. In addition, the publisher partners may add value to the content they license by aggregating it with other relevant materials or by adding new metadata.

The projects we observed engaged in these licensing agreements must deal with a variety of risks involved in enabling long-term access to and preservation of the content through a third party. If a commercial publisher were to go out of business or decide to stop offering the relevant product, it is often unclear how the content owner would continue to provide that material to the user community. In addition, this model can create complications for projects that are obligated to make the digitised content freely available under the terms of their funding; some projects work around this by ensuring that the resource is freely available to individuals making on-site visits, or in a particular geographic region, or that it is freely available to communities prioritised by funders, such as higher education.

Licensing to users

Rather than create their own subscription-based, restricted-access product, projects may generate revenue by licensing their digital content to commercial or not-for-profit publishers.

While some projects license large collections of content to third parties that will distribute it, other organisations we examined license content directly to end-users. Both V&A Images and INA license their institution's digital content to the professional market.

They also sell content directly to the general public through print-on-demand and pay-per-view options, although these activities generate significantly less revenue than commercial licensing strategies.

Though the professional licensing business can be lucrative – professional clients, in particular, have the ability and motivation to pay for this content – there are significant costs associated with meeting the unique needs of these demanding customers in a competitive environment. Professional clients require custom tools, functionality and metadata to address their specific needs, and labour-intensive customer support must be available. For example, V&A Images has to create custom metadata that responds to the way commercial clients prefer to search for content – for images that represent emotions, for example. In the cases of V&A Images and INA's Inamédiapro, care must also be taken to carefully differentiate the value of the licensed content from the value of the Open Access content that many cultural institutions provide as a core part of their mission.

When projects seek to license their content directly to consumers, the challenges are just as great. The general public interested in still images, video and audio has many options available, many of them free. Identifying the customers who will pay to download materials which are 'better than free' is of critical importance when attempting to sell digital content.[17] To succeed in this business requires a suite of strategies to drive traffic to the site and to make the content easily discoverable by those who may want it. INA's ina.fr does this, for example, by continually highlighting selections from its archival footage related to current events and trends of the day, featuring these items on its homepage, and placing them on partner sites as well (an illustration accompanying an article in *Le Monde online*, for example).

Custom services and consulting

Some projects are able to generate revenue by leveraging their experience and expertise for the benefit of other groups outside the organisation, by offering consulting and custom services. This revenue model was not included in our 2008 sustainability report, but it proved to be an important part of the business model of several of the projects we surveyed. In many cases, these custom services involved not-for-profit projects developing customised versions of their tools and resources for other organisations for a fee. For example, the project leaders at eBird have developed customised versions of the eBird portal for nature centres and wildlife preserves; the King's Digital Consultancy Service and the King's Visualisation Lab at the Centre for Computing in the Humanities provides consulting services for projects in the digital humanities as well as custom development of interactive and visualisation media; and INA provides similar consulting services to clients seeking to digitise their audiovisual collections.

Regardless of the specific approach, these custom services allow projects to transfer knowledge, skills, or tools developed for one resource and audience to another interested audience, extending the organisation's impact while also generating supplementary revenue to sustain continued activities. To make this work, all these projects have to develop a rich understanding of the scope and nature of community needs. It is also important that projects seeking to offer premium services such as these understand the associated costs; these services are often labour-intensive and expensive to provide, and it is important that they are priced accordingly.

Corporate sponsorships and advertising

As noted in *Sustainability and Revenue Models* (2008), advertising is a common strategy for generating revenue employed by commercial websites, but is uncommon among digital resources in the not-for-profit sector. Relatively few projects studied in this series of cases employ an advertising model, and those that do balance it with a variety of other revenue-generating strategies.

17 For more on this concept, see Kevin Kelly, 'Better than Free,' *The Technium* blog (31 January 2008). Available at **www.kk.org/thetechnium/archives/2008/01/better_than_fre.php**.

There are at least two ways to interest advertisers: either by attracting a large number of 'eyeballs' to the site, or by having access to a valued niche audience. One of the two examples we saw using advertising, ina.fr, records approximately 7.2 million unique site visitors annually. The other example, eBird, records a more modest 200,000 unique site visitors per year – but these enthusiastic birders are very appealing to the corporate sponsor, a provider of birdwatching binoculars.

As with every revenue model covered in this report, there are staff-related and other costs associated with generating funds from advertising. Both ina.fr and eBird found effective ways to minimise the cost of attracting this revenue: ina.fr outsources ad sales to a third-party agency, while eBird leveraged the professional expertise of its host institution's major gifts manager to attract its corporate sponsor.

Author fees

A hotly debated issue in scholarly publishing is the emergence of the author-pays model in which an end-user pays a fee when his or her contribution is accepted for publication. One organisation in our sample, Hindawi Publishing Corporation, charges these author fees for publication in its Open Access science, technology and medical (STM) journals. Many elements of the Hindawi case – the organisation's for-profit status, its ability to capitalise on low-cost overseas labour, and so forth – make it unique, but some broader conclusions may be drawn from it with regard to the importance of understanding and meeting user needs and the balance between generating revenue and ensuring the development of quality content.

Endowment

The appeal of an endowment-funding model – the sustainability strategy employed by the SEP and TLG – is clear. In this model, an intense period of fundraising generates a large fund that subsequently provides sufficient annual return on investment to keep the resource running (and, possibly, freely available), permitting project leaders to focus their energies on content development rather than on ongoing revenue-generation efforts.

As described in *Sustainability and Revenue Models* (2008), these advantages must be balanced against the model's intrinsic challenges. First, raising the initial capital for an endowment is not easy, and the degree to which this will be feasible for other projects in difficult economic times seems unclear. Foundations – a standard source of start-up funding for not-for-profit digital projects – have not always been willing to donate funds to support an endowment, and grant-makers may be particularly cautious about making such contributions in a down market. The TLG needed many years to reach its endowment fundraising goal, even during the boom years of the 1990s; the SEP is still in the process of soliciting membership dues from academic libraries to support its own fund. The immensity of this task cannot be underestimated.

Even when the large initial fund is raised, challenges remain. The dire economic environment of 2009 has highlighted the risk associated with reliance on investment income. Project leaders using this model are watching the values of their endowments drop, suggesting the importance of diversification of revenue streams. For example, while the SEP model relies on its endowment payouts to cover more than half of its operating expenses, TLG uses its endowment alongside a subscription model,

which it sees as a way to bolster its revenue strategy in lean times. (Of course, the market for a subscription product, the advertising market, and markets for other earned-revenue-generating models are affected by the broader economic climate as well, albeit less directly than is the value of an endowment.)

And as the value of the resource to users grows, the endowment model may also make it difficult for project leaders to adjust the 'price' by raising more contributions for the fund from users. While a subscription resource or a licensing organisation can raise its prices, an endowment depends on the strength of an appeal to potential donors. This could limit the extent to which projects are able to afford significant system upgrades and migrations, without additional grant funding. In addition, because the endowment model decouples the degree to which users value a resource from the resource's funding, a project funded by endowment may run the risk of eventually becoming too isolated from the needs of its users. Projects relying entirely on this model must remain particularly vigilant about the changing needs of users as well as about day-to-day issues such as bug fixes, updates and upgrades, even though their financial sustainability may not appear to depend on these user-satisfaction safeguards.

Grants

There is growing consensus that reliance on grants to cover the ongoing costs associated with digital projects is an unsustainable strategy. While many online academic resources reasonably benefit from grant funding at start-up, the academic world is littered with dormant projects that were unable to chart a new course for financial sustainability once their main grantor withdrew support. Projects that diversify their revenue streams and are able to gain some measure of independence from a never-ending cycle of grant applications are better positioned for long-term financial health.

However, even projects that have non-grant-dependent sustainability models in place can pursue foundations or government agencies for funds for specific, well-defined initiatives – for example, the development of new features, modules or content. Funders are most interested in their grants having impact, and adding value to successful operations can be an appealing proposition. Leaders of several projects, including eBird and the Electronic Enlightenment, told us that while they no longer depend on grant funds, grantors can still be essential partners at key points in a project's life cycle.

Other sources of donated revenue

As discussed in the earlier section on cost control through relationship with a host institution, some of the projects in our sample receive cash from their parent organisation, in addition to a variety of in-kind contributions. It is also worth noting that several projects in this sample, including SEP and TLG, have in the past solicited donations from their user communities. Fundraising campaigns such as these can be labour intensive, however, and no project told us that such campaigns were a meaningful part of their ongoing sustainability plans.

4.5 Clear accountability and metrics for success

What sustainable projects do:

Establish a system of accountability and measurement of the success of the resource and the revenue model.

How they do it:

Establish goals and targets and determine the balance between financial and mission-related returns; assess progress towards mission-based and financial goals and targets.

Systems of accountability that encourage setting ambitious but realistic targets and measuring progress toward them can help organisations focus on collective goals related to both resource quality and revenue generation.

First, there are quantitative measures that project leaders can marshal to demonstrate the impact of their endeavour. The amount of content made available (whether number of documents, volumes, hours of video footage, or the like) and the usage statistics for a site are among the most obvious. Indeed, some of the larger organisations we observed are required to set and attain certain key indicators as a condition of their government funding. In the case of INA, the system of measures was begun in response to poor performance. The 2005-2009 Contract of Means and Objectives with the French government set specific targets in terms of number of hours of content digitised, number of hours available free to the public online, and amount of the budget (34%) that INA would be expected to generate through its own revenue strategies.

Another quantitative yardstick, the success of a revenue model, may be among the easiest things to measure. Reports of subscriptions, sales or other objective financial measures, balanced against the cost of generating them, provide a clear picture of how well the model is performing. If a product or service appeals to users or meets a need, their approval, in the form of their payment, tells the story. Yet we heard from only a few of our case study leaders that their host institutions pay close attention to the success or failure of their revenue strategies.

Second, and less obvious, is how a project effectively measures and communicates intangibles: the effectiveness of the project, and its value or return on mission. This often involves 'proving' value not just to a host institution, but also to the other indirect beneficiaries and stakeholders who often are a critical part of a sustainability strategy. In the case of The National Archives (TNA), having management clearly define organisational goals and departmental accountabilities, and tie performance standards to them, has reportedly made it much easier to gain cooperation among different departments. In other cases, we heard that project leaders proactively contact new institutional administrators to talk with them about the history of a project and the value it brings to the host institution.

5. Conclusion and looking ahead

Examining these 12 cases has demonstrated that sustainability requires more than maintaining the status quo by covering basic, ongoing costs, narrowly defined. Instead, a more dynamic approach to sustainability is required – one that provides a reliable source of revenue to support the resource, while encouraging growth in a way that is informed by the needs of all of its stakeholders, and particularly the needs of the users who interact most directly with the content.

In addition, these case studies highlight the diversity of options available to projects seeking to develop a sustainability model that serves both mission and revenue needs. The variety we observed, both in the scale of the challenges each faces, and in the ways they have chosen to address them, reminds us that no single sustainability strategy will work for every project. While some guidelines apply across the board, the circumstances of each project – the type and volume of content it has at its disposal, the base of users and what they require from a resource, the skill and mindset of the project leadership, the depth of support of a host institution – will all have a determinative impact on what type of plan will be possible for a given project.

And yet, we do believe that the most successful projects have several things in common. They have passionate, dedicated leaders who are accountable for the success of the project, and who actively seek creative ways to keep operating costs low through relationships with a host institution, recruitment of volunteers or a range of types of collaboration. Successful projects look for ways to continue to develop and enhance their content by staying in close contact with the people who use the resource. Through experimentation and flexibility, they find new ways not only to generate revenue, but also to share the content – through links or widgets, by licensing materials to larger publishers, or by seeking out other content partners. They see the future of content through the lens of the user and understand that content gains value by being put to use, regardless of which revenue models support it.

While *Sustainability and Revenue Models* (2008) focused squarely on methods for generating revenue, the case studies have helped to expand this discussion to include the full range of strategies that projects are currently using to piece together the support they require. Our research underscored the important role that host institutions play in financing the operation of their digital resources. Even the most dynamic, entrepreneurial projects we examined – with the exception of our one for-profit example – demonstrated strong dependence on their host institutions, whether for office space, server space, additional staff time or even direct cash payments.

While many of our case studies, particularly the studies of projects embedded in larger institutions, suggest that this level of host support is a normal state of affairs, we caution project leaders not to take this support for granted. Project leaders should regularly ask themselves whether the host institution will continue to provide these contributions, particularly as more and more digital resources emerge and their collective costs may become more of a burden to bear. Leaders will have to continuously make the case that the project advances the mission or otherwise supports the interests of the host institution. In the absence of clear measures of how this support advances the mission of the host institution, these contributions are at risk, particularly in a time of economic uncertainty.

Twelve case studies can only provide a snapshot of the challenges and successes projects around the world have experienced as they work to provide permanent access to online resources. Yet even within this small set, important themes emerge. It is our hope that these case studies will provide a rich and valuable resource to help guide project leaders, policy makers and funders as they work to increase and accelerate the broad dissemination of knowledge in digital form today and in the future.

BOPCRIS Digitisation Centre: Experimentation with Sustainability and Partnerships for Library Digitisation Projects

Hartley Library, University of Southampton, Southampton, UK
www.bopcris.ac.uk/bopcris/digbib/home

The University of Southampton's Hartley Library has been engaged in a number of large-scale, grant-funded digitisation initiatives focused on heritage materials such as parliamentary papers and British pamphlets. These projects left the library with a challenge familiar to many grant-funded projects – developing a strategy to preserve access to the content after the grant period concluded. Early experiences suggested to the leadership of the library that they were not well positioned to host this content locally, so with subsequent projects they began to experiment with different models of partnership with aggregators of scholarly content, such as ProQuest and JSTOR. These partnerships enable the library to focus on content creation while allowing the partner organisation to take responsibility for facilitating public access. This case study will trace the evolution of the library's thinking about how best to provide access to these collections, explore the characteristics of the partnership models with which they are experimenting, and highlight some of the benefits and challenges associated with this approach to sustainability in terms of both content and infrastructure.

This case study was researched and written by K. Kirby Smith as part of the Ithaka Case Studies in Sustainability project.

Introduction

The University of Southampton's Hartley Library is home to the BOPCRIS Digitisation Centre, a specialist unit that, over a series of major grant-funded initiatives, has developed a significant degree of expertise in the digitisation of delicate documents.[1] The library's early ventures into digitisation began in 1994, when it received a grant to digitise the Ford Collection of breviates to British official publications, a collection of great scholarly value which had previously been available only at the University of Southampton.[2] As more public money became available to fund digitisation efforts in subsequent years, the library expanded its activities through a series of large grants, often in partnership with other universities, to create digital resources of British heritage materials, such as parliamentary papers and pamphlets.

At the end of these grants, the library has been faced with a challenge familiar to many university library projects as they move out of their grant-funded development phase and into their long-term maintenance phase. How does an institution fulfil its commitments to make the digital content available to the public after the grant period is over? As will be detailed in this case study, for early projects Southampton hosted content on an Open Access basis with local servers. However, library leadership felt that Southampton was not well positioned to provide ongoing support for these digital resources, and so began exploring a variety of partnerships that would allow the library to focus on the digitisation of content, while granting responsibility for maintaining the content to another provider.

Today, the University of Southampton Library defines sustainability for the digital content they create in terms of maintaining the ability of the public to access and use it. According to Mark Brown, university librarian, 'We are

1 BOPCRIS stands for 'British Official Publications Collaborative Reader Information Service', the name of one of the Hartley Library's early digitisation projects. The library now uses the name to refer to the digitisation unit as a whole.

2 The Ford Collection contained breviates – summaries, brief descriptions and detailed abstracts of documents – of 39,000 British official publications compiled by Southampton scholars to help other researchers locate content of value. The University of Southampton received one of the 154 grants awarded by the £50 million New Opportunities Fund digitisation initiative to support the digitisation of these breviates into a searchable finding aid, which covered approximately 39,000 publications from 1688 to 1995.

moving away from local hosting. We like to think that we could collaborate [with partner organisations] to deliver content through a hosting model that is friendly to the ideals that we have, which are very much about Open Access, cross-searching.'[3] Their strategy to sustain the content they have created is therefore not about generating revenue to cover the costs of hosting and maintaining collections locally, but rather about pursuing beneficial partnerships with both for-profit and not-for-profit organisations that have expertise in providing access to digital resources.

> *"Ensuring that content is accessible to the public is only half of Southampton's sustainability challenge..."*

Ensuring that content is accessible is only half of Southampton's sustainability challenge, however. As their most recent grant nears its end, with no other large projects lined up, library leadership has realised that they must also answer questions surrounding the sustainability of the library's digitisation infrastructure. This infrastructure consists of hardware, software and human expertise, and has been created through a large investment of public money via a series of digitisation grants. Southampton would like to keep this unit in operation, but needs to develop a business plan for generating revenue to support the costs of its continued activities.

This case study will examine both facets of Southampton's sustainability challenge. It will begin by describing three of Southampton's major digitisation projects, charting the evolution of the library's thought from local hosting to partnerships, and describing some of the characteristics of experiments with different partners. It will also highlight some of the issues relating to infrastructure sustainability and the library's current business planning process for the BOPCRIS unit.

Sustainability models

EPPI: Enhanced British Parliamentary Papers on Ireland, 1801–1922: local hosting

One of the University of Southampton Library's early digitisation efforts was EPPI: Enhanced British Parliamentary Papers on Ireland. This project, funded through a £290,782 grant from the Arts and Humanities Research Council (AHRC), 'aimed to create a comprehensive bibliographic database and full-text digital library of the British Parliamentary Papers relating to Ireland for the period 1801–1922'.[4] From February 2002 to January 2005, the BOPCRIS unit digitised approximately 11,000 documents representing 550,000 pages of text relating to the Anglo-Irish Union and built a bibliographic finding tool for them.[5]

When this project began in early 2002, funding agencies and universities alike were 'naive' about sustainability requirements, according to Brown; virtually no planning for long-term access and preservation was required or conducted before the project began. 'I think when we got to the end [of the digitisation] we breathed a sigh of relief and thought we'd finished it, before we realised it wasn't really the end,' said Deputy Librarian Richard Wake. The library's leadership quickly found that they had not anticipated the server traffic that digitised collections might sustain, or the need to be responsive to users with support queries. The library found itself responsible for unanticipated ongoing costs. Supporting projects like EPPI – valuable to the community, but not necessarily central to the work of the university – is not considered part of the core role of Southampton's IT department, so the library was required to contract on a fee basis with them for these services.

These issues created 'real dilemmas in terms of sustainability of free access at point of use to the community' that led the library to conclude that it was not well positioned to host digitised content.[6] According to Wake, 'we're quite good at getting the original documents, scanning them, and doing quality checking, but we're not necessarily so good at making them available 24/7 over a long period of time'. Library leaders are committed to supporting public access to the existing EPPI resource indefinitely – they feel that letting it go dark would violate both the implied terms of their funding agreement with the AHRC and their mission as a university library – but they do not plan to add to EPPI or enhance available tools and features. In addition, they decided that for future digitisation initiatives, they preferred to find alternative models for providing long-term access to project output.

Eighteenth-Century Parliamentary Papers: partnership with a commercial publisher

In early 2005, the BOPCRIS unit received a large grant from the Joint Information Systems Committee (JISC) Digitisation programme to digitise British official publications from the 18th century. JISC felt there was a need for this sort of digital collection, in large part because 'the paper copies of this material that still exist are not generally held on libraries' open shelves and are poorly indexed, whereas this digital resource will allow universal access to high-quality, fully searchable digital surrogates of the complete records'.[7] By the March 2007 conclusion of the project, 1,260,062 pages of printed and hand-written material from the 'long 18th century' (1688 to 1834) had been digitised, covering the first 18 Parliaments of Great Britain and the first and second Parliaments of the United Kingdom of Great Britain and Ireland. The bulk of this content – around 60% – was from the University of Southampton's own library, but the rest came from the collections of partner organisations. About 30% of the digitised content was from British Library collections, and 10% from the University of Cambridge.

The total cost for this two-year project was £1,430,222, of which a significant amount went towards investment in infrastructure. Over half of the total grant amount was dedicated to capital expenditures: £501,885 was spent on the purchase of digitisation equipment, including flatbed scanners and a robotic scanner – the first in the UK – capable of scanning 500 pages an hour; an additional £133,878 was spent on the purchase of a content management system, and £91,480 on other capital expenditures

3 Unless otherwise noted, all quotations from staff members and other individuals knowledgeable or associated with Southampton's digitisation initiatives are drawn from interviews conducted as part of this case study between December 2008 and February 2009. A full list of interviewees is included in Appendix A.

4 Peter Gray, 'EPPI: Enhanced Parliamentary Papers on Ireland 1801–1922', End of Award Report to the Arts and Humanities Research Council, 2005.

5 All financial data were either supplied by project leaders or drawn from external sources cited in the text.

6 Mark Brown, 'BOPCRIS 18th Century Parliamentary Papers Digitisation Project', Final Report to JISC Development programmes, 2007.

7 JISC, '18th Century Parliamentary Papers', **www.jisc.ac.uk/whatwedo/programmes/digitisation/britishofficialpublications**

related to upgrades and physical modifications necessary to bring the BOPCRIS lab environment up to archival standards. The next largest cost category was the digitisation itself: £504,822 was spent on the digitisation, and £36,551 was spent on producing end-user formats from the digitised TIFF masters. An additional £161,604 was spent on a delivery infrastructure and launch costs, such as development of the project website, design and printing of promotional booklets, and travel to conferences and meetings to promote and disseminate the resources.[8]

When the University of Southampton applied for this grant, the EPPI project was still under way, so little was understood about the life-cycle costs associated with sustaining digital resources, particularly as these costs related to maintaining access and supporting users. Although in their proposal to JISC Southampton had envisioned hosting this content locally, during the course of the two-year grant the library's growing experience with the EPPI collection highlighted the challenges of providing a library-hosted platform to support the preservation of and access to digitised collections. Project leaders decided that they needed to change course; as they stated in their grant report to JISC, 'In terms of sustainability the concept of delivery directly from a platform at the University of Southampton shifted towards partnership working with the external host.'

The idea of licensing the content to a commercial publisher was initially suggested by Stuart Dempster, then manager of the JISC Digitisation programme, who was aware that ProQuest already offered digital collections of parliamentary papers from the 19th and 20th centuries, along with a search-and-access interface custom designed for this content, that enabled searching across the collections. JISC Collections was engaged at that time in negotiations with ProQuest surrounding the purchase of perpetual access to the 19th-century collection on behalf of the UK higher education (HE) community, and these conversations grew to include the licensing of 18th-century content from Southampton as well.

> *"The Southampton team felt that co-locating their 18th-century content along with ProQuest's other collections of British official publications would add value for researchers..."*

The Southampton team felt that co-locating their 18th-century content along with ProQuest's other collections of British official publications would add value for researchers; this 'user benefit was primary' in their decision to license the content to ProQuest, according to Brown. JISC Collections helped negotiate the deal between the two parties. Although the exact terms of the contract are protected by non-disclosure agreements, some information is available. As part of the contract with Southampton, ProQuest

8 Brown, 'BOPCRIS', Final Report.

agreed to make the content freely available to the UK higher education community through JISC Collections for several years, though ProQuest reserved the right to sell the content elsewhere. In addition, ProQuest returns a royalty (a set percentage of their revenue) to Southampton. The content is sold by ProQuest on a perpetual-access basis; reviews indicate that a similar collection, Nineteenth-Century Parliamentary Papers, is sold by ProQuest for a flat fee of $90,000 (USD), plus a small annual hosting fee.[9]

> *"Revenue generation, though welcome, was a secondary factor in Southampton's decision-making process."*

The partnership helped Southampton achieve its primary goals – solving the hosting dilemma, fulfilling its obligation to the funding agency to deliver the content free to the UK HE community until March 2011, and adding value for the user by enabling cross-searching with similar content. Revenue generation, though welcome, was a secondary factor in Southampton's decision-making process. In part, this was because little data was available about the terms of other, similar partnerships, so library leaders were unable to estimate with confidence how much revenue they would be likely to receive. According to Christine Fowler, head of Electronic Library Services, 'we were really pleased that we would have our digital content on a robust platform and would have a partner with a global name, so this was good. In terms of the revenue, we had no idea what sort of revenue we would get back…We didn't market test before we created the content, so our expectations were quite low because there was no way we could say strategically that we could confidently predict a certain amount of income that would pay for the robotic scanner, for example.' Being able to predict the revenue stream is also complicated by the fact that the collection is sold to libraries on a perpetual-access basis, so the level of revenue Southampton receives in the early years will likely drop off as the market for the project becomes saturated. The library intends to use what revenue it does receive from this partnership to support the digitisation of new content. Brown says these efforts will focus on 'rare material that adds to the corpus' they have already digitised, though it is unclear whether this additional content will be licensed to ProQuest or made available through some other means.

While ProQuest is responsible for delivering content to the UK HE community and to paying subscribers, responsibility for the long-term preservation of the master files remains with Southampton. The library keeps the master TIFF files at an Oxford-based dark store for the UK HE community. While storage rates are set on a cost-recovery basis, and are thus significantly below commercial data-storage rates, Southampton still pays approximately £10,000 a year for the preservation of about 15 terabytes of data. This is a significant cost for the library, particularly at a time when rising serials expenditures are squeezing budgets. The library's leaders are currently trying to 'untangle' the understanding between themselves and funders concerning their preservation obligations and are evaluating whether continued storage of the master files is worthwhile. If Southampton decides to stop supporting the dark archive, the library would likely give the British Library the TIFF files for the content digitised from that library's collection, and would offer the University of Cambridge the same. Southampton might save JPEGs of local content, but they would get rid of the master TIFF files for the content digitised from the Hartley Library's collection. Discontinuing the long-term preservation of the TIFFs creates a small risk of catastrophic data loss, but because the original documents are being safely stored and curated, that risk might be considered acceptable. 'You don't want to recreate this stuff, but you could,' said Fowler. 'Paper has lasted hundreds of years…you do the risk assessment, and if it's low, I think that is £10,000 we could be spending on something else.'

Another risk the BOPCRIS team must face is the chance that, at some point, ProQuest might cease to offer the collection – for example, if it proves to be unprofitable, or if the company is bought out or changes direction. Were this to happen, ProQuest has 'no obligation to give [the content] a good home,' Fowler acknowledged. 'We've got break points in the contract,' he said, allowing renegotiation of terms after a certain amount of time, 'but I don't think we've covered what happens if they lose interest, or change their mission or business function.' Were this to occur, BOPCRIS would be in the position of either needing to find another partner to adopt the content, or taking on the responsibility of hosting it themselves.

It is also unclear what will happen to the collection after March 2011, when ProQuest's commitment to provide it free of charge to the UK HE community expires, and the agreement between ProQuest, Southampton and JISC Collections will be renegotiated. It is possible that ProQuest could require British universities to start paying for access. In fact, many JISC-funded digitisation projects are in a similar situation, which Brown thinks could turn into a 'time bomb'. 'We've all got this free content, and we all think it's great, but after five years what is going to happen? Are we all going to get these bills that libraries won't be able to pay?' he commented.

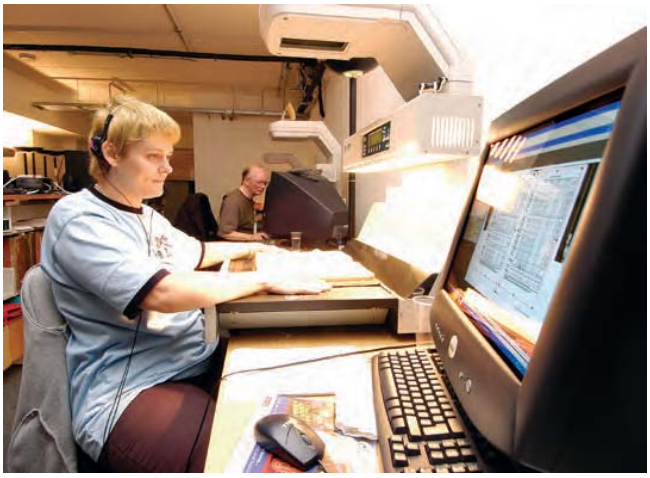
Nineteenth-Century Pamphlets Online: partnership with a not-for-profit publisher

In March 2007, Research Libraries UK (RLUK) received a grant under the JISC Digitisation programme's second round of funding to support the digitisation of 19th-century pamphlets.[10] The project was based on an earlier RSLP/CURL study that had catalogued 180,000 19th-century pamphlets from 21 research libraries.[11] Although the finding aids that were created improved the discoverability of these collections, 'having discovered the existence of a pamphlet, a researcher will then often face the barrier of having to travel to a distant library to view the item, since 19th-century pamphlets are usually held within special collections and seldom loaned out'. The University of Southampton was named the lead institution for this project because of the BOPCRIS unit's existing technological infrastructure and their experience in digitising delicate primary-source materials and coordinating multi-partner digitisation

9 Martin Myhill, 'Review of House of Commons Parliamentary Papers Online (HCPP) – Nineteenth Century', *The Charleston Advisor* 7, no. 4 (April 2006), p. 23.

10 In summer 2006, JISC awarded the project partners £6,239 to conduct a scoping study to refine their proposal. The study surveyed relevant pamphlet collections and digitisation technology and produced a series of findings and recommendations related to content selection, intellectual property issues, OCR and metadata collection, and a proposed workflow. JISC, 'Digitisation Scoping Study', **www.jisc.ac.uk/whatwedo/programmes/digitisation/scopingstudy**

11 CURL, the Consortium of University Research Libraries – now known as RLUK – is an organisation with a mission to advance research libraries in the UK. Research Support Libraries Programme (RSLP) was an initiative funded by the UK's four higher education funding bodies to develop new forms of research support.



projects. Other partners included the University of Bristol, Durham University, the University of Liverpool, the London School of Economics, the University of Manchester and the University of Newcastle. At the conclusion of this project in mid-2009, BOPCRIS will have digitised approximately 26,000 19th-century pamphlets representing one million pages of content.

The overall budget for this project was £1,100,000; £778,991 of this came from a JISC digitisation grant.[12] (No detailed breakdown of expenditures is available at the time of writing because of the project's recent conclusion.) The largest cost category, in the end, will be staff salaries, which will include a half-time project manager, a half-time technical project manager, a full-time inventory project officer, a full-time quality assurance project officer, a part-time (0.63 FTE) software developer, five full-time scanning operators and, for six months, a full-time research officer. (Most of the staff is based at Southampton, though the project manager is based at Cambridge and the research officer is based at Durham.) The grant supported some re-equipment of the lab, including the purchase of several new flatbed scanners. The valuable pamphlets required secure packaging and shipping, and expenses related to the physical transport of pamphlets from disparate libraries to the central digitisation site at Southampton represented another 'considerable' cost category, according to Brown. In addition, the grant built in funds to reimburse partner institutions £1.50 per pamphlet to cover approximately half of their estimated staff costs for preparing and shipping the material to be scanned. Some funds were also included to support dissemination efforts, such as the development of a project website and publication of a promotional booklet.[13]

By leveraging the investments made through prior grants, Southampton and RLUK planned to achieve cost savings in several expensive areas of this project. In addition to avoiding 'considerable infrastructure, equipment and training costs by centralising the scanning within the well-equipped BOPCRIS laboratory', they minimised the expense of 'metadata creation by utilising the existing high-quality catalogue record', created through a prior grant-funded initiative to catalogue pamphlet collections at institutions across Britain. (The fact that the pamphlets had already been catalogued was a significant factor in motivating RLUK to propose the digitisation of these collections, rather than other options they considered.) Southampton and RLUK achieved additional cost savings through their content selection process. Rather than pre-select individual documents to digitise, the project selected whole collections. Database controls were implemented to prevent the digitisation of duplicate pamphlets when possible, but even where duplication occurred, the time spent on digitisation was less than what would have been spent on meticulous pre-selection. Collection selection was made by research assistants based on criteria such as 'relevance to the themes of the great 19th century debates', 'usefulness in addressing gaps' and 'feedback and demand from collection users'.

From the beginning of the planning process, JSTOR, the not-for-profit digital archive of scholarly content, was included as a partner and as the eventual destination of the digitised pamphlets.[14] According to Brown, the inclusion of JSTOR as a partner from the planning stages highlights the way in which 'sustainability has gone up the agenda' for funders and project leaders. The idea of partnering with JSTOR was suggested both because it was a well-known and trusted organisation and because of a desire to experiment with other kinds of partnerships in addition to the ProQuest model. The JSTOR partnership, which will provide free access to the digitised pamphlets to UK HE institutions, schools and libraries for 25 years, enabled Southampton and RLUK to avoid costs associated with both the archiving and the delivery of the content.

> *"This in-kind contribution eliminates the need for Southampton to pay to hold the files in a dark store."*

Although the central goal of both the ProQuest and the JSTOR partnerships was the same – finding an organisation to adopt the responsibility and cost for access and delivery of digitised content – the relationships are structured differently. ProQuest pays Southampton a royalty fee, enabling BOPCRIS to fund the digitisation of additional materials, but does not ensure the long-term preservation of the digital files. While JSTOR does not pay Southampton or the other RLUK project partners a royalty, it does assume responsibility for long-term preservation of the content, something it is well positioned to do because of its not-for-profit mission to act as a trusted archive that preserves scholarly content for posterity. This in-kind contribution eliminates the need for Southampton to pay to hold the files in a dark store.

Brown said that Southampton feels a mission affinity with not-for-profits like JSTOR, in part because of its 'interest in a development partnership…they engage us with some conversations about hosting, interface, the way the material should appear…we can learn more'. (This may be attributable to the fact the JSTOR was involved as a partner from the outset of the project, and so had more opportunity to engage in the content creation process. It may also be influenced by the fact

12 Grant Young, 'Large-scale Collaborative Digitisation: 19th Century Pamphlets Online', presentation to Libraries@cambridge 2009 Conference, Cambridge, UK, January 2009. Presentation available at **www.lib.cam.ac.uk/libraries/conference2009/presentations/Young_pamphlets.ppt**

13 Grant Young, Julian Ball, Mark Brown and Richard Wake, '19th Century Pamphlets Online – Project Plan', 2007.

14 On 25 January 2009 JSTOR and Ithaka announced the merger of their organisations under the single name Ithaka. Ithaka S+R division, the author of these case studies, strives to be independent and objective in its research and analysis, but it should be noted that the division and JSTOR are part of the same organisational structure.

that pamphlets represented a new content type for JSTOR, and so required more research.) Despite this mission affinity, some significant differences exist between JSTOR's model and the library's ideal model. In particular, the library would prefer that the output from their digitisation projects be available on an Open Access basis, but JSTOR operates on a subscription basis. The library recognises, however, that it is unlikely that a partner will emerge to support access to digitised content without some way to recoup costs, so working with an organisation that sells subscriptions to the content is considered a necessary compromise.

Key factors influencing success of sustainability model

Sustainability of infrastructure

While Southampton's partnerships provide a way to ensure that the community has access to the content digitised through grant funding at the BOPCRIS lab, they do not address needs surrounding the sustainability of the BOPCRIS unit's technical and human infrastructure. All told, a significant amount of public money has gone towards the purchase of scanning equipment and software and resources have been invested in training to develop the expertise of the lab's scanning technicians. Although, as noted earlier, existing equipment and expertise may help an institution make a convincing case when submitting grant proposals, most funders do not consider it their responsibility to continue to leverage prior investment by channelling work towards institutions like Southampton that house this infrastructure. Ultimately, it is up to the BOPCRIS unit to find ways to support its own continued operations. According to Brown, the sustainability goal for the BOPCRIS infrastructure is to generate enough revenue to maintain operations in order to 'use the facility...to increase the amount of digital content that's available to the community'.

> *"...costs associated with keeping BOPCRIS running include £25,000 a year to maintain and service scanning equipment..."*

The library is engaged in a business planning process to help them understand the true costs of the BOPCRIS unit so that they may better predict the level of annual revenue they need to support operations moving forward. According to Fowler, if someone – a foundation, the university, etc. – were to ask 'how much the unit costs to operate at 100%, at 50%, and what are the costs of starting and stopping – we haven't got those numbers, and we feel that's a weakness'. Although library leadership is still collecting data and developing metrics to evaluate the unit's costs, some information about this is already known. In addition to the salaries for the BOPCRIS staff who are paid through the library budget rather than from project money – including one full-time digitisation manager on a professional salary, one 0.6 FTE business manager on a senior administrative salary and two full-time scanning operators – costs associated with keeping BOPCRIS running include £25,000 a year to maintain and service scanning equipment, licensing fees for content management software, and the opportunity costs of devoting several rooms in the library to scanning equipment.[15]

Another component of the business planning process will be an evaluation of opportunities for BOPCRIS to generate sustaining revenue. While Brown hopes that large-scale grant-funded projects will continue to form a significant portion of the income that supports the BOPCRIS unit, in the future less public money for digitisation may be available than before. Studies suggest that approximately £130 million in public funds has been spent on digitisation in the UK since the mid-90s,[16] but Brown thinks that funders may be disinclined to continue this level of support, both because their priorities may change, and because of the current economic downturn. He envisions a future in which universities come together on a consortial basis to fund – either directly or indirectly through external grants – the digitisation of content the community feels is important, and in which revenues generated through partnerships might help fund a 'virtuous cycle' of content

15 It is worth noting that UK law requires that employers make efforts to redeploy project staff on temporary contracts, so there are significant costs in terms of management time to let staff go at the end of a project and to hire them back when new work comes in. In addition, if project-based staff are let go between grants, BOPCRIS loses their expertise, and has to invest in training new employees when a new project begins.

16 JISC, 'Evaluation of JISC Digitisation programme, Phase One' (2007), **www.jisc.ac.uk/whatwedo/programmes/digitisation/reports**

creation. In such a case, Southampton could be well positioned to serve as a centre of digitisation for certain types of delicate paper materials. Universities do not yet seem prepared to fund this kind of work, however, so BOPCRIS will have to cultivate other funding streams in order to support itself as a division.

This is complicated by the fact that library leadership feel sure that they do not want BOPCRIS to become a 'bureau' or a vendor of basic digitisation services. Although they are open to BOPCRIS's taking in a limited amount of work on a contract basis, and the unit's staff currently conduct some straightforward digitisation of theses and dissertations on behalf of the university, they prefer to focus their time on projects and initiatives that leverage and extend their expertise in digitising primary-source documents requiring curatorial care and that relate to library interests. This puts library leadership in the challenging position of developing a sustainability model for the BOPCRIS unit based on an intentionally limited range of revenue sources.

A variety of options exist for organisations that want to digitise their content, and Southampton will need to develop an understanding of their own strengths and weaknesses against this competition, as well as an understanding of the size of the overall market for these services. The current landscape of digitisation efforts is shaped powerfully by Google's book digitisation programme and by the near-ubiquity of its search engine. BOPCRIS has developed expertise in the digitisation of primary-source content that requires the careful, hands-on attention of specialists and a level of curatorial care. In this way, it has cultivated a niche not filled by Google's mass digitisation efforts, which seem to leave out materials that cannot be scanned by robot technology. It is unclear, however, how much demand there is for this expertise, how much funding will be available to support this kind of digitisation in the future, and whether potential partners (including, but not limited to, ProQuest and JSTOR) will be willing to ingest the content digitised through this work.

Benefits and challenges

Experimentation with partnership models to support digitised content has allowed the University of Southampton's Hartley Library to focus their efforts on their area of emerging expertise – the digitisation of primary-source documents requiring specialist handling and curatorial care – while outsourcing the access and delivery components, which they do not feel as well positioned to provide. Although these partnerships are still in their early stages, initial evidence suggests that they have helped Southampton answer important questions about meeting its commitments to provide access to content over the long term while eliminating some of the costs associated with maintaining locally hosted resources.

Partnering with large aggregators of scholarly content may add significant value to the content Southampton has created. The ProQuest partnership adds value by putting the content in relationship to comparable content from different historical periods, and the JSTOR partnership adds value by connecting primary-source content with relevant secondary literature. In both cases, the content becomes part of a database that is already in a scholar's workflow, facilitating easy use. Instead of hosting content on a website that may not rank highly in a Google search, and that exists in a silo apart from other related content, working with aggregators adds value through collocation, cross-searching and linking.

Hartley Library, University of Southampton

There are some challenges inherent to the partnership strategy, however. Partner organisations such as JSTOR and ProQuest will be interested in ingesting content that they believe will be both valuable to scholars and marketable to libraries. Funding agencies today expect grant proposals to include evidence of potential impact and viable sustainability plans, so Southampton's ability to attract future grants becomes heavily dependent on locating and selecting collections that match the interests of these third-party partners. The BOPCRIS unit has been fortunate that, thus far, there has been significant interest in the content they have wanted to digitise, but this might not always be the case. Southampton was also fortunate to benefit from the role JISC took in negotiating partnership agreements with ProQuest and JSTOR. It may be important to have the leverage provided by a large organisation like JISC when negotiating partnerships and contracts, to ensure a level playing field for project leaders who may be unfamiliar with the operations of other entities.

> *"Centralising digitisation activities in the BOPCRIS unit has allowed Southampton to develop valuable infrastructure to support the digitisation of primary-source documents."*

Centralising digitisation activities in the BOPCRIS unit has allowed Southampton to develop valuable infrastructure to support the digitisation of primary-source documents. Leveraging the investments that have been made in hardware and in training highly skilled scanning specialists and project managers has helped Southampton attract subsequent grants and has enabled it to serve as a central partner in large collaborative initiatives.

It has been able to transfer its experience with earlier projects to inform and refine subsequent efforts, lowering overall project costs and giving clarity to timelines and deliverables. Southampton is now in the challenging position, however, of trying to find a way to sustain the BOPCRIS infrastructure without developing it into a digitisation bureau – in a sense, seeking to support the business of the unit without turning it into a business itself. Although royalties from existing partnerships may support some digitisation, it is not clear that these funds will support the sort of large-scale projects in which Southampton has been engaged. Until such time when a consortium of universities might fund more of these digitisation projects, this model still relies heavily on outside funding to support the costs of content creation. Although grant funding can be a valuable source of support for digitisation projects, requirements from funders regarding Open Access and long-term preservation requirements may constrain certain new partnership opportunities. Other revenue strategies will have to be developed to ensure that Southampton can continue to support the human and technical infrastructure it has developed.

Broader implications for other projects

Projects need to think through every phase of a resource's life cycle to avoid unexpected costs. Early digitisation initiatives, such as the EPPI project, were developed without a clear understanding of the costs and requirements associated with sustaining access to and preservation of a digital resource over the long term. Projects need to think carefully, early on, about how to support the ongoing costs of resource maintenance – which may include contract-based IT services for work not central to an institution's mission, and periodic redevelopment to migrate content as technology develops – after the start-up phase has concluded.

A willingness to experiment helps projects identify successful solutions. Over the course of a series of digitisation projects, Southampton's BOPCRIS unit has experimented with several different models for providing sustained access to content, including local hosting, partnership with a for-profit company around access and delivery, and partnership with a not-for-profit organisation around preservation, access and delivery. The ProQuest partnership represented a change from what had been planned in the grant proposal, and the JSTOR partnership was established more or less concurrently so that Southampton could gather information about and compare the success of different models. Although it is, of course, preferable to develop a strong plan from the beginning to avoid unexpected costs, exhibiting a willingness to experiment – to change course based on new information, and to explore a range of options to learn more – may also serve projects well by helping them to identify and adapt successful solutions to the unexpected challenges that inevitably emerge.

Understanding core strengths and competitive advantage can help projects focus on maximising value. Early experience with digitisation initiatives suggested to the leadership of the BOPCRIS unit that their area of expertise was in the scanning of specialist primary-source materials requiring curatorial care, but that they were less well positioned to host and maintain the content they created. Having a clear understanding of the core value they provided allowed them to explore a range of partnerships around content access, so efforts could be concentrated on the unique value the BOPCRIS unit believes it can provide. Similarly, the BOPCRIS unit needs to understand the competitive advantage associated with its expertise so that it can develop a strategy to generate revenue to support its activities in the future. Projects leaders need to have a strong sense of where their initiative sits in the landscape of digital projects, so they can capitalise on what they do best and avoid trying to replicate what others might do better.

> *"Maintaining infrastructure can be a challenge without predictable revenue streams."*

Maintaining infrastructure can be a challenge without predictable revenue streams. Although Southampton library leaders have developed a number of partnerships that promise to help provide access into the future to the content they have created, these partnerships do little to help fuel future digitisation, to maintain expensive scanning equipment or to support the salaries of individuals trained in the context of grant-funded work. Because they do not wish to operate BOPCRIS as a bureau or vendor of digitisation services, it may be particularly challenging for them to maintain the human and technical expertise they have developed. Project leaders should think carefully about the sustainability not only of the content of their projects, but also of related infrastructure investments, which require consistent sources of revenue to operate.

Appendix A: Interviewees

Mark Brown, University Librarian, Hartley Library, University of Southampton, 2 December 2008 and 17 February 2009

Christine Fowler, Head of Electronic Library Services and Head of Medicine, Health and Life Sciences Library Services, Hartley Library, University of Southampton, 2 December 2008

Richard Wake, Deputy University Librarian, Hartley Library, University of Southampton, 2 December 2008

Appendix B: Summary of revenues and costs

Because this case study examines multiple projects, no single summary of revenues and costs is included here. For financial information, please refer to documents cited in the text.

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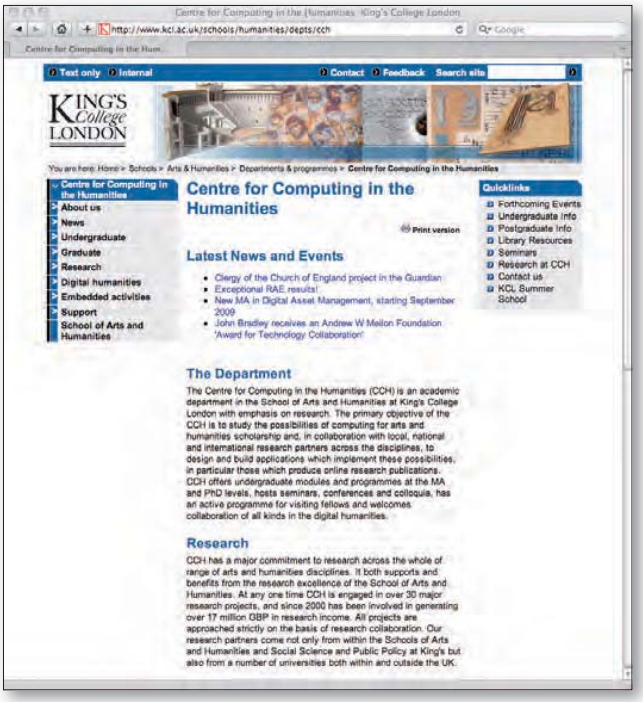
Centre for Computing in the Humanities: Leveraging Shared Infrastructure and Expertise to Develop Digital Projects in an Academic Department

Kings College London, London, United Kingdom

www.kcl.ac.uk/schools/humanities/depts/cch

The Centre for Computing in the Humanities (CCH) at King's College London (KCL), an academic department focused on the advancement of the digital humanities, engages in a wide variety of research projects that often lead to the creation of electronic scholarly outputs. Using a model that is rare among humanities departments, CCH supplements government and institutional funding for research and teaching with a remarkable number of outside research grants, and with revenue generated through knowledge-transfer activities that leverage the department's expertise to provide consulting and development services to the broader community outside the department. This case study will explore some of the advantages that CCH enjoys through leveraging shared human and technical infrastructure for the benefit of multiple projects, and will discuss some of the implications of creating digital resources in a research-focused, rather than a user-focused, context.



This case study was researched and written by K. Kirby Smith as part of the Ithaka Case Studies in Sustainability project.

King's College London

Introduction

The Centre for Computing in the Humanities at King's College London is an academic department with the goal to 'study the possibilities of computing for arts and humanities scholarship and, in collaboration with local, national and international research partners across the disciplines, to design and build applications that implement these possibilities, in particular those that produce online research publications'.[1] The digital humanities, as defined by CCH, are characterised by fundamental methods and processes for incorporating technology into scholarship. The aims of the department, according to CCH Director Harold Short, are to a) offer the best digital humanities courses to the best students, b) collaborate with the best humanities scholars to deliver the best research outputs, c) enhance the development of the digital humanities within KCL, and d) help develop the digital humanities nationally and internationally.[2] CCH does not view itself as a service provider; rather, department members are equal partners in a collaborative research process with other scholars in humanities and social science fields.[3] The department is currently engaged in 34 research projects (six of which are in their second stage) and has completed another 24 projects. New digital resources

1 CCH, **www.kcl.ac.uk/schools/humanities/depts/cch**

2 Unless otherwise noted, all quotations from staff members and other individuals knowledgeable or associated with CCH are drawn from interviews conducted as part of this case study between December 2008 and February 2009. A full list of interviewees is included in Appendix A.

3 This cultural factor is particularly important in contributing to CCH's success, and will be discussed in more detail in the 'Key factors' section.

are a significant output of many of these research projects but are considered secondary to the research and teaching aims.

The department traces its roots back to 1989, when KCL first offered classes in the digital humanities and an undergraduate minor in applied computing through a group jointly funded by the School of Humanities and by KCL Information Service. CCH became an academic department in the School of Humanities in 2002, offering Master's programmes in Digital Humanities and Digital Culture and Technology and, since 2005, a PhD in Digital Humanities. According to Short, the large number of successful research projects the group completed, the range of teaching activities in which it was engaged at the undergraduate and postgraduate levels, and the university's support for the collaborative model of digital humanities scholarship were the key factors that led to CCH's establishment as a full academic department.

Sustainability model

Goals and strategy

CCH's sustainability strategy focuses on maintaining a budget that can fund its research and teaching activities and the technology necessary to support them. Its income comes from a variety of sources, including research, teaching and services to outside clients. The department also received institutional funding on a short-term basis to support its start-up. In some ways, CCH seems to have adapted the model of the university-based science lab for use in the humanities; the department has a constant stream of various grant-funded projects that provide it with a significant portion of its operating budget and a certain amount of independence.

In addition, CCH leadership thinks about sustainability in terms of the intellectual and technical aspects of the department's research outputs. The department makes a commitment to sustaining digital resources created through departmental research for at least ten years. CCH commits to updating their projects' technical infrastructure during this time, so the department emphasises building projects according to national and international standards. After ten years, the long-term sustainability of CCH's research outputs is a more open question. Short said that he expects that within that time, community-based infrastructure initiatives will emerge to meet the technical sustainability needs of born-digital research. 'It's fundamental to our mission to keep these resources alive. We can't claim they'll last as long as a book, although that would be the goal,' he said.

Revenues

CCH's operating budget has averaged between £1,500,000 and £2,000,000 over the past few years.[4] These funds are generated through external research grants, institutional support (soon to be replaced by government research funding), teaching activities and knowledge-transfer services to outside clients. The following sections will discuss each of these income streams in turn.

External research grants. Grant funding in support of specific CCH research projects typically represents between 45 and 50% of the total budget. Approximately 80% of these external grants have come from the UK Research Councils; the remaining 20% come from the Joint Information Systems Committee (JISC) or from philanthropic organisations such as the Andrew W. Mellon Foundation. This level of outside funding is remarkable for a department in the School of Humanities; since 2000, CCH has generated over £17,000,000 in research grants.

Although some of the projects in which CCH is involved are quite large in scope, others are more modest. For example, the grants from the Arts and Humanities Research Council (AHRC), which have supported 30 projects, include £958,440 to fund the AHRC Centre for the History and Analysis of Recorded Music, as well as smaller grants in the £100,000 to £150,000 range to support projects such as Relics & Selves, an investigation of institutions of cultural nationalism in Argentina, Brazil and Chile from 1880–1890. The average research grant from AHRC, the department's biggest external funder, is around £330,000 for work lasting from one to five years.[5]

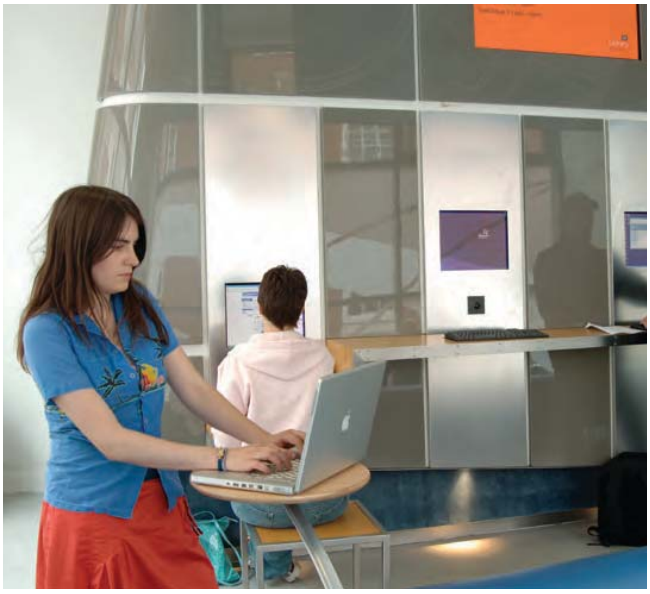
Institutional support and government research funding. Departments at UK universities receive additional funding from the government to support research activities; the level of support is determined by the quality of the department's past research output as determined by a national Research Assessment Exercise (RAE). This represents a major source of income for academic departments, but because CCH was established as an independent academic department after the 2001 RAE was conducted, it has been ineligible to receive this quality-related research allocation from the Higher Education Funding Council for England. To bridge the gap until the 2008 RAE, King's College London elected to provide CCH with a subsidy representing approximately 35 to 40% of the department's budget. Short suggested that KCL felt this investment was justified because CCH was seen as a source of strategic benefit and competitive advantage for the School of Humanities and for the college as a whole in attracting research income, high-quality faculty and institutional recognition.

It was also clear that KCL's investment would be relatively short term, lasting until the results of the next scheduled RAE. CCH scored well in the 2008 RAE, with 65% of the research produced classified as either 'world-leading' or 'internationally excellent.'[6] Short said that the department was 'delighted with these results', which placed CCH highest among departments in the library and information management sector, and tied for third-highest among KCL departments in terms of the percentage of research receiving the top classification. This result was also important because it was the first time a digital humanities department had been evaluated in an RAE; the department views the positive outcome as a strong statement about the value of the digital humanities as an academic field.

4 All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

5 These figures are drawn from the database of AHRC-funded research, available at **www.ahrc.ac.uk/FundedResearch/BrowseResearch.aspx**

6 The RAE judged 35% of CCH's research to be of 'quality that is world-leading in terms of originality, significance and rigour', 30% to be of 'quality that is internationally excellent in terms of originality, significance and rigour but which nonetheless falls short of the highest standards of excellence', 15% to be of 'quality that is recognised internationally in terms of originality, significance and rigour' and 15% to be of 'quality that is recognised nationally in terms of originality, significance and rigour.' The remaining 5% was uncategorised. RAE 2008, 'RAE 2008 Quality Profiles: King's College London', **http://submissions.rae.ac.uk/results/qualityProfile.aspx?id=132&type=hei**



> *A significant portion of CCH's budget will be based on the RAE result.*

A significant portion of CCH's budget will be based on the RAE result. As of this writing, the formula the government will use to allocate research funds based on the RAE has not been released, so the level of government research funding is still unknown. Short expects, however, that these funds will fully replace institutional support from KCL. Although research funding – both from the RAE result and from external grants – will continue to form a large part of CCH's budget, the department's strategic plan focuses on expanding other income sources so that it relies on externally funded research for closer to 40% of its budget, and on government research support for closer to 25% of its budget.

Teaching. A smaller percentage of CCH's operating budget – generally around 5% – is generated through teaching activities. Much of this income is from the government, based on a formula that takes into account the number of students the department supports and the degree programmes in which they are enrolled. The remainder comes from tuition income, particularly from overseas students, channelled from the university to the department. In 2009–2010, CCH will add a new MA programme in Digital Asset Management in collaboration with the college's Centre for e-Research; these additional students would bring in more revenue to the department. Short said that he hopes the department's expanded teaching activities will eventually contribute closer to 10% of revenue.

Knowledge transfer and outside services. CCH supplements these revenue streams with additional income from a range of services that leverage the department's expertise for the benefit of outside groups. KCL as a whole is placing strategic emphasis on the expansion of these 'knowledge-transfer' or 'innovation' activities as an additional revenue stream for the institution. Although many humanities departments are engaged in generating these outside revenues through engagement with institutions in the UK cultural heritage sector, CCH is highly unusual in the extent to which it participates in this field. Simon Tanner, director of the King's Digital Consultancy Service (KDCS) – provider of many of CCH's knowledge-transfer activities – said that it is also unique for services like these to remain embedded in their parent departments after reaching maturity, rather than spinning off into independent companies. Thus far, CCH has continued to host these services because of a strong commitment to integrating their activities with the research and teaching activities of the department.[7]

Taken as a whole, CCH's innovation activities typically account for approximately 10 to 15% of the department's budget.[8] The surplus revenue from these services is valuable to the operations of the department, as it helps provide a financial cushion for the department when, for example, reinvestment in infrastructure is required, or when a project could benefit from additional technical research or encounters unexpected challenges. Short hopes that by expanding these activities – particularly the King's Visualisation Lab and the King's Digital Consultancy Service – the department could also generate enough revenue to support additional PhD students.

The King's Visualisation Lab (KVL) is led by a group of theatre historians who focus on developing 3D models and reconstructions of architectural space. Using techniques originally developed in their research projects, KVL has completed contract-based projects with the Museum of London, the Royal Shakespeare Company, Kew Gardens and others. For example, KVL worked with a group of archaeologists to model what they expected the still-buried portions of the Pompeii Theatre in Rome might have looked like; the archaeologists then used this interactive model to convince Roman authorities to let them excavate in specific locations.

> *Although much of KDCS's work is for UK clients, services are also offered internationally...*

The King's Digital Consultancy Service (KDCS) provides 'expertise and consultancy for the creation and management of digital resources for cultural organisations within the UK and internationally'.[9] KDCS has provided consulting services for national libraries, universities and museums about their digitisation programmes, and also runs a five-day workshop called Digital Futures which focuses on the 'strategic and management issues of developing digital resources from digitisation to delivery.'[10] Although much of KDCS's work is for UK clients, services are also offered internationally; for example, a

7 For example, KDCS worked with the National Library of Ireland on a project to convert large volumes of metadata about manuscripts into XML. CCH department members with expertise in this area were brought in to work on the project. The National Library benefited from its access to the wide range of skills in the department, and CCH benefited from the ability to apply what it had learned to other internal research projects.

8 Although this is remarkable for the humanities sector, it is worth noting that the revenue generated from knowledge transfer in science, technology and maths fields can be orders of magnitude larger.

9 KDCS, 'About Us', **www.kdcs.kcl.ac.uk/content/aboutus.htm**

10 KDCS, 'Digital Futures', **www.kdcs.kcl.ac.uk/digifutures**

Digital Futures workshop was recently held in Australia. Thus far, KDCS has been run almost entirely by Tanner, but the unit will soon add an additional consultant to help respond to demand for its services.

In addition, CCH is hiring an 'innovation manager' to help coordinate and leverage opportunities to generate outside revenue to maximise benefit for the department. Short expects that the services of the innovation manager will be especially helpful for KVL, which is staffed by academics with deep expertise in visualisation techniques, but with less experience in prioritising and negotiating business opportunities. As CCH scales up its outside services, it may take on 'a few more' small projects that are focused more on simple revenue generation than on the department's research interests, Tanner said, but will strive to maintain a focus on projects that embody 'synergies between the research agenda and revenue generation'.

Short hopes to expand knowledge-transfer activities so that they generate closer to 25% of revenue. This is a particularly important component of CCH's strategy, given the effects the current economic climate may have on their budget. The department's goal, according to Short, is to 'balance risks across the different streams of income' and generate a sustainable surplus.[11] Growth in income from the services provided to outside clients through KVL and KDCS may help to offset potential declines in other areas. Short feels relatively confident that CCH will be able to maintain or increase current levels of teaching income; government support of education for British students is likely to remain relatively stable, and the depreciation of the pound may make it easier to attract tuition-paying international students. Levels of research-related income may be more in question, however. Although the department is relatively insulated from the immediate impact of the economic climate because many of their research grants were awarded before the recent crash, in the next 12 to 18 months reductions in funding from both government sources and independent foundations may lead to a reduced number of new grants. CCH has not yet seen a decline in demand for its outside services, though. Tanner speculates that this may be because the organisations they work with are still interested in pursuing new projects but feel unable to take on new staff due to budgetary uncertainty. Working with consultants on a short-term, contract basis may enable them to achieve some of their goals without making an investment in permanent hires. Short feels that the 'critical mass of expertise' the units have achieved will also help them expand in this area.

Costs

Staff costs constitute between 85 and 90% of CCH's annual budget. Between 33 and 43 people work at CCH at any given time. Twenty-eight of these are core staff members, including five professors/directors, three lecturers/senior lecturers, three research project team leaders, 11.5 project research staff, 1.5 technical support staff and four administrative staff. Twelve of these core staff are in established academic posts, and 16 are on 'open-ended' contracts. In addition, at any time there may be between five and 15 staff employed directly by particular project grants.

11 If and when a surplus is achieved, CCH hopes to return some of the extra money to the School of Humanities (a standard practice for departmental surpluses, and one particularly important to Short because of the degree to which the School has supported CCH in past years), and use part of the surplus to fund additional PhD students.

Departmental projects are usually a collaboration between a technical research team composed of CCH staff and a domain research team comprising scholars in a discipline such as history or literature. For example, the technical research team for the Fine Rolls of Henry III, a project which created a digital resource of royal fines and taxes from the first half of the 13th century, included two co-technical research directors, two lead analysts, one support analyst, one lead interface analyst and five technical development staff. (The domain research team for this project included five historians, archivists and research fellows.) Almost all of CCH's research staff are involved with multiple projects at any given time; senior project managers may be involved with a dozen projects simultaneously. This concentration of expertise enables projects to leverage the talents of highly qualified analysts and developers on a part-time basis, something that can be difficult for independent projects to achieve. This benefit helps CCH attract more projects to the centre, including projects from universities without digital humanities centres.

> *"Given the large number of projects under way at any given time, capacity at CCH can sometimes be stretched, particularly in the areas of project-management support and programming."*

Given the large number of projects under way at any given time, capacity at CCH can sometimes be stretched, particularly in the areas of project-management support and programming. A challenge for the department is supporting 'human infrastructure development' – retaining talented analysts and others and helping them to advance. The department is somewhat constrained in terms of the professional development opportunities it can offer, although Short hopes that the arrival of government research funding will enable the department

to make some structural changes that will help to address this problem. Even then, the department may still face some retention challenges as it competes for talent with higher-paying commercial institutions in London. In addition to these staff costs, CCH is responsible for some overhead costs. The department spends about 10% of its annual budget on operational expenses, including the overhead it is charged by KCL for things such as rent and utilities.

Technological infrastructure is another cost centre for the department. CCH spends approximately 5% of its annual budget on storage infrastructure. (This figure is an average; actual expenditures may be higher some years. For example, CCH recently made a large investment in storage infrastructure for their 20 terabytes of data; their servers can now support up to 80 terabytes if needed. They expect to recoup these costs through externally funded research grants over the next few years.) Licensing software to manage these servers is an additional cost. The department is able to keep other software costs relatively low by relying as much as possible on open source solutions such as Linux, rather than on proprietary software (although in some cases, when a project requires it and a grant covers it, proprietary technology might be involved). Although some funding bodies may be disinclined to provide research projects with funds for capital investments, most are willing to contribute some monies to cover servers. Because CCH is able to describe its existing servers and infrastructure as a service it provides to projects, it is able to attract funds to cover the marginal cost of new projects and a certain amount of upgrading, even from those funders who do not support investments in hardware.

All CCH projects utilise common infrastructure built by CCH developers. Because the guts of the technical infrastructure for any new project have already been built, CCH programmers can focus their attention on project-specific custom elements while keeping development costs considerably lower than the costs of starting a new project from scratch. Also, the shared infrastructure helps CCH to fulfil its commitment to providing ten years of support to the digital resources produced through its research projects. By building multiple projects on the same technical core and with adherence to international standards, software developments made in the context of a current project can be used to update the infrastructure of a variety of other projects at a small marginal cost.

Key factors influencing the success of the sustainability model

Culture of the digital humanities

CCH's departmental model is made possible by the unique academic culture in the UK, and at KCL in particular, that enables collaboration on an equal footing between digital humanities specialists and other humanities scholars. The department's culture is based on breaking down what Short sees as a 'false distinction' between 'people who think' (scholars) and 'people who do' (technologists). Instead of functioning as, in effect, a 'vendor-for-hire' building software for humanities scholars, CCH faculty are treated as equal partners in the research process. This unique status is reflected in the authorship status technologists are accorded on projects developed at CCH; whether called 'co-investigators', 'technical research directors' or 'associate directors', they are granted more credit than might ordinarily be extended to them by digital humanities projects. By giving greater status to technologists than they might enjoy elsewhere, the department may enable them to proactively aid in the creation of more innovative digital projects.

> *"The support of decision-makers and faculty was critical in laying the foundations for the eventual establishment of the unique department."*

Although Short hopes that CCH's recent success in the RAE will encourage other institutions to consider developing their own digital humanities departments, it is worth noting that the culture of the department may be difficult to replicate elsewhere. The formation of the department was possible both because of the long history of humanities computing at KCL – early projects date back to the 1970s – and because high-level university administrators and digital humanities specialists had a 'shared vision' for making the institution a centre of excellence in this field. In addition, Short said that since he and his colleagues had shown great success in helping humanities scholars attract research grants when activities were based in a computing services unit, the creation of CCH as an academic department was seen as a positive development which could benefit multiple departments by attracting additional research income to support new projects. The support of decision-makers and faculty was critical in laying the foundations for the eventual establishment of the unique department. Short has been approached by several other institutions interested in replicating the CCH model, but he said that 'turf wars' often prove challenging for other universities looking to develop a similar department. He suggests that overcoming traditional distinctions between faculty and staff could be a significant cultural hurdle – particularly for institutions in the United States, where such distinctions are more ingrained – but that emphasising the 'win-win nature' of jointly produced research projects may be key in facilitating this.

Defining the impact of digital humanities scholarship

As an academic department, CCH measures its impact based on the quality of the research and scholarship produced, in all its forms. Many of the scholars who partner with CCH on research projects publish a portion of their work in traditional venues such as journals and monographs, which can be evaluated using established peer-review practices. No comparable formal system for evaluating quality exists for the other outputs of CCH's research endeavours, the 'software artefacts designed to assist research in other disciplines but which themselves constitute research in the digital humanities', according to the department's definition.[12] 'There is a lack of infrastructure to assess digital publications of any kind,' Short said. At least two factors contribute to this situation. Few reviewers have both the domain and technological expertise required for evaluating this kind of work; and peer review is traditionally coordinated by journal

12 CCH, 'CCH Publications', **www.kcl.ac.uk/schools/humanities/depts/cch/research/publications**

and monograph publishers, but there are no publishers involved in the release of CCH's research outputs. For these reasons, humanities scholars who collaborate with CCH may occasionally have trouble getting their work reviewed. To help address this challenge, CCH has participated in a number of multi-institution partnerships, such as the recent AHRC Information and Communications Technology (ICT) Methods Network and arts-humanities.net, which have sought to develop standards and best practices across the digital humanities.[13]

> *To help ensure that the digital outputs of these projects are meeting high scholarly standards, a variety of informal measures are also built into project design.*

To help ensure that the digital outputs of these projects are meeting high scholarly standards, a variety of informal measures are also built into project design. To begin with, all projects funded by research councils must be approved and selected by a board of scholars, which Short describes as a 'significant kind of peer-review process'. Most CCH projects have international scholarly advisory boards, so some additional review is built into the research process itself. Occasionally, periods of trial use of the resources with target audiences of scholars are built into the development process, to enable some feedback to be incorporated into the final design, although this is not universal. While CCH does capture some usage metrics for the resources it develops, it tends not to rely on these to determine project quality. It is important to Short that this data not be used in 'an unthinking way'. He is more interested in scholarly engagement with the work than in high numbers of hits.

Instead, the fundamental criteria CCH looks for when evaluating projects is 'evidence of value' – mostly non-numerical determinations of what the project enables that could not have been done before. A project could demonstrate value by developing new methods for digital humanities scholarship, by using new kinds of sources to create outputs, by enabling new research questions to be answered, or by otherwise demonstrating its uniqueness. CCH could consider a project highly successful even if it attracts little traffic, in the same way that text-based humanities scholarship can be of high quality even if it is not widely read.

Outreach to end-users

CCH's projects are built with research questions – not potential use or community needs – at their heart, and this is reflected in several aspects of the projects' design. Although project analysts encourage their partner scholars to think about how their research might be useful to others and try to build tools to enable as many use cases as possible, relatively little time is spent researching the needs of those who might eventually use these resources. In addition, the websites for many of the projects, such as InsAph: Inscriptions of Aphrodisias,[14] foreground funders, project leadership and related publications on their homepage, rather than providing a user-focused point of entry into the content. This responds to the fact that research funding is the department's major source of financial sustainability. Short notes that, as concern from funders and project leaders about outreach to non-specialist audiences grows, more and more projects are beginning to include outreach plans to promote the wider dissemination of resources within the context of the grant period. The extent to which resources achieve wide dissemination among potential users after the grant period, however, may still be limited by this orientation.

CCH has a strong commitment to making its research output freely available, and there is little consideration of instituting revenue-generating models for any of the more popular resources. In addition, development of the resources ceases after a particular research grant is over. Some CCH projects, such as the Clergy of the Church of England Database, have attracted significant attention and usage, but no funds are generated specifically to enhance or expand these resources.

> *By aggregating the creation of a wide variety of digital humanities initiatives into one department, CCH is able to achieve significant economies of scale that benefit the range of its projects.*

Benefits and challenges

By aggregating the creation of a wide variety of digital humanities initiatives into one department, CCH is able to achieve significant economies of scale that benefit the range of its projects. Some of these benefits may be quantifiable, such as the cost savings associated with building on top of established hardware and software infrastructure. Other benefits, though harder to quantify, are equally important. For example, CCH projects can secure the expertise of highly qualified analysts and developers skilled in the digital humanities on a part-time basis – something that may be difficult to achieve for projects that attempt to hire part-time staff independently. In addition, the culture of the department, with digital humanities specialists placed on an equal footing with content-focused humanities scholars, may facilitate the creation of more interesting projects than would a typical vendor-client relationship; it may also foster increased opportunities for receiving research grants.

13 The AHRC ICT Methods Network which was funded through March 2008, was based at CCH and was led by Harold Short. For more information, see **www.methodsnetwork.ac.uk**

14 Inscriptions of Aphrodisias Project, 'Home', **http://insaph.kcl.ac.uk**

The department also demonstrates the importance of becoming invaluable to a parent institution. By engaging deeply in research with prestigious humanities scholars to develop innovative research projects that attract grant income, CCH has become embedded in the academic life of the university. This model has helped to attract noted digital humanities scholars to King's College, enabling CCH to position itself as a prestigious asset that merits university support. This perception of value undoubtedly contributed to KCL's willingness to help CCH cover its budget shortfall in the years prior to the recent RAE, for example.

Knowledge-transfer activities such as the King's Visualisation Lab and the King's Digital Consultancy Service are also strengths of the department's approach. In the sciences, this sort of activity might roughly be considered 'tech transfer', but the extent to which CCH engages in entrepreneurial activity in an academic context is highly unusual in humanities fields. These services not only help spread the knowledge developed at CCH to others in the community, they also provide additional revenue streams that feed back into the department to support its research and teaching goals – something that may be especially important in times of economic uncertainty. It is worth noting, however, that to the extent that the capacity to provide these services is bound up in a single individual, such as Simon Tanner, rather than in institutional knowledge, CCH may leave itself vulnerable to loss of a revenue stream should that individual decide to pursue other opportunities. It seems important to ensure that the expertise and ability to provide these services is grounded in institutional memory.

> *"In addition, some unanswered questions remain about the long-term preservation of the department's scholarly output."*

Other challenges exist with CCH's model, as well. The department's research orientation might be well-suited to projects focused on using technology to answer new research questions, and this orientation is consistent with its goals as an academic department. For other projects, however – those that seek to create online academic resources that will be responsive to user needs and valuable to the broader community over the long term – the CCH model may present hurdles. For example, CCH has little capacity to promote digital resources outside of the outreach activities funded through project grants, and there are no systems to support the continued development of resources, other than securing a new grant.

In addition, some unanswered questions remain about the long-term preservation of the department's scholarly output. A ten-year preservation commitment seems relatively short compared to the scholarly expectation that research outputs will be available to the community in perpetuity. Although preservation solutions exist for some forms of digital content, such as e-journals, no comparable solution exists yet for CCH's software artefacts, which may be at a small though significant risk both for catastrophic data loss and for technological obsolescence. For this reason, participation in community initiatives that seek to address digital preservation challenges is a priority for the department.

Broader implications for other projects

Centralising diverse digital projects with a 'laboratory' model can help achieve economies of scale. Research projects that work with CCH benefit from economies of scale related both to technology and to human resources. Individual initiatives may be able to save money on server space and software development, because costs for these are spread across a range of projects. The department model also allows CCH specialists to split time between multiple projects, giving each project access to talented and experienced analysts and developers on a part-time basis – something that can be difficult for stand-alone efforts to realise. Other projects might benefit from considering what other initiatives already exist at their host institution, to see whether opportunities exist to share resources.

New relationships between scholars and technologists may help create innovative work. The culture of CCH is characterised by a unique relationship in which technologists and content-focused humanities scholars collaborate as equals, rather than operating as vendor and client. Short cites this as a factor contributing to the high quality of work that emerges from the department – which in turn contributes to CCH's ability to attract grant funding for future work. Academic projects seeking to develop innovative technology may want to think carefully about the way they structure their organisational models; in some cases, involving the input of technology specialists in a deeper way may advance the work.

> *"Projects should consider whether they would be similarly well-positioned to offer consulting or development services to other organisations..."*

By leveraging experience to provide services to outside organisations, some projects may be able to generate new revenue streams. The King's Visualisation Lab and the King's Digital Consultancy Service employ knowledge gained in the course of CCH projects to provide services to others in the community. This not only helps spread the benefit of the work done in the department to other initiatives in the community, but also creates a new revenue stream that is relatively uncommon among humanities departments. Projects should consider whether they would be similarly well-positioned to offer consulting or development services to other organisations, and whether they would likewise benefit from the involvement of staff with business-related skills to maximise these opportunities.

Appendix A: Interviewees

John Bradley, Senior Analyst, Centre for Computing in the Humanities, King's College London, 4 December 2008

Harold Short, Director, Centre for Computing in the Humanities, King's College London, 4 December 2008 and 26 February 2009

Simon Tanner, Director, King's Digital Consultancy Service, Centre for Computing in the Humanities, King's College London, 19 September 2008 and 26 February 2009

Paul Vetch, Research Fellow, Centre for Computing in the Humanities, King's College London, 4 December 2008

Appendix B: Summary of revenues and costs

Centre for Computing in the Humanities

Revenue Category	Description	Est. amount (2008) (% of budget)
External research grants		45–50%
Institutional funding	To be replaced by QR funds post-RAE	35–40%
Teaching funds		5%
Knowledge transfer activities	From KVL, KDCS services	10–15%

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	Professors/directors	5	yes		
Content selection & production	Lecturers, research project team leaders, research project staff, contract-based project staff	22.5 to 32.5	yes		
Sales & marketing	N/A	0	no		
Technology & support	IT support & admin. staff; (technical research staff included in 'Content selection & prod.')	5.5	yes		
Total personnel costs		33 to 43		**85–90% of budget**	
Non-personnel costs			Included in budget?		
Administration & overhead	Includes payment to KCL for use of space		yes	10% of budget	
Scanning, metadata, etc.	Performed by CCH personnel (covered in personnel budget)		no		
Hosting & technology infrastructure			yes	5% of budget	
Other			no		
Total non-personnel costs				**15% of budget**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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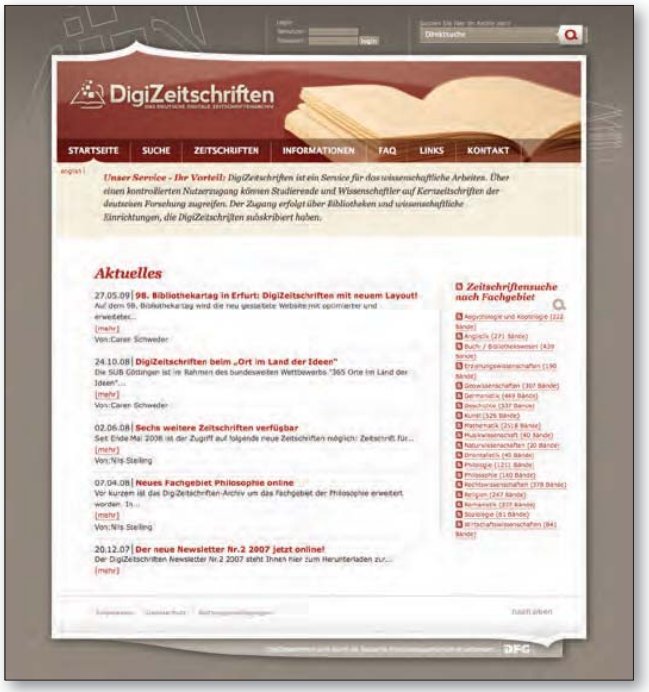
DigiZeitschriften: Library Partnership and a Subscription Model for a Journal Database

Göttingen State and University Library
University of Göttingen, Göttingen, Germany
www.digizeitschriften.de

DigiZeitschriften, a German-language archive of scholarly journals, was created in 1997 with funding from the German Research Foundation. Since launching as an online service in 2005, DigiZeitschriften has implemented a sustainability model that includes a partnership of libraries contributing their time and expertise, and a financial model of institutional subscriptions that more than covers its operating costs. This case study will examine the decisions leading DigiZeitschriften to adopt this plan for sustainability, as well as the benefits and challenges inherent in a partnership of this kind.



The new DigiZeitschriften website is slated to launch in August 2009

Introduction

In the late 1990s, as libraries faced pressure regarding space and budgets, a group of library directors at several German research universities decided to work together with the support of the German Research Foundation (Deutsche Forschungsgemeinschaft, or DFG) to undertake a large-scale digitisation of back issues of scholarly journals, something no one library would be able to accomplish easily alone. The timing for this seemed right: in the US, JSTOR had launched its service, a digital archive of scholarly journals, in 1995, providing a useful example of how such a venture might function, and there was broad support for trying something similar in Germany.

'The idea to create direct access to important research materials started after we learned about JSTOR', according to Berndt Dugall, library director at the University of Frankfurt and one of the founding partners of DigiZeitschriften. 'We carefully checked the collections and their business model…and we saw that in JSTOR the focus was very clearly on English-language materials…Therefore we thought it could be of interest to create a similar model, but with a focus on German-language research papers and materials.'[1] So, with nine founding library partners and funding from the DFG, planning began in 1997 to find a way to support libraries in times of 'drastic budgetary and cost-saving measures' while still providing access to significant scholarly content.[2]

Today, DigiZeitschriften operates as a registered not-for-profit organisation, headquartered at the Göttingen State and University Library at the University of Göttingen, a leading research university established in 1734. First launched as a service in April 2005, DigiZeitschriften supports itself through institutional subscriptions sold to research libraries and institutes and through the contributions of its partner libraries. As of December 2008, DigiZeitschriften contained 3.5 million pages of content, making up 330,000 scholarly articles from 144 journals and 18 subject areas, including German language and literature, history, art, philosophy, mathematics and economics. At present, articles can be retrieved in PDF format by browsing or by searching keywords in metadata and tables of contents; an upgrade is planned for 2009 to allow full-text searching as well.

1 Unless otherwise noted, all quotations from staff members and other individuals knowledgeable or associated with DigiZeitschriften are drawn from interviews conducted as part of this case study between December 2008 and February 2009. A full list of interviewees is included in Appendix A.

This case study was researched and written by Nancy L. Maron as part of the Ithaka Case Studies in Sustainability project.

2 Caren Schweder, 'DigiZeitschriften: A Service Provided by Libraries for the Academic Community: The Retrospective Digitisation of Journals from Specialised Collections in Germany', *The Serials Librarian* 47, no. 1/2 (2004): pp. 181–90.

Sustainability model

Goals and strategy

The sustainability model for DigiZeitschriften relies on subscription revenue combined with a very low cost structure, which is possible due to its partnerships with 14 member libraries and by its being housed at the Göttingen Library. In addition, the goals for growth of the resource are modest and are determined as a function of the surplus revenue generated each year. Ongoing digitisation to accommodate new issues of the journals already in the database (the 'moving wall') is completely covered by the subscription fee. If there are funds remaining once these costs have been covered, DigiZeitschriften's board decides what to do with the surplus. In the past, surplus funds have been used to add new journals to the database or to make improvements to the site's functionality. For major new digitisation work, additional outside grants can be sought.

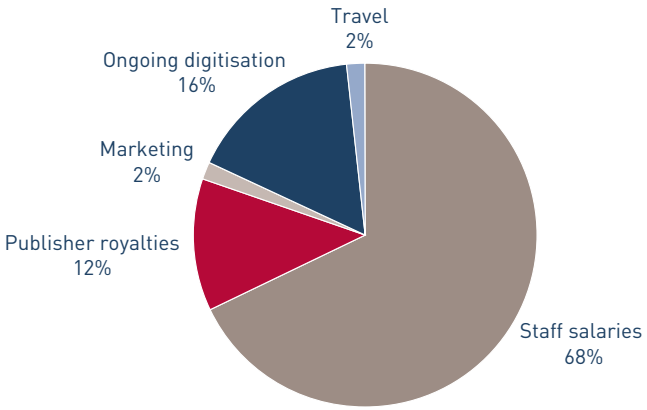
The notion that DigiZeitschriften should be able to cover its direct costs and fund the expansion of the service was, in fact, explicit from the project's earliest days. Among the conditions of the initial two-year grant (feasibility study) from the DFG was that DigiZeitschriften had to create a business model to ensure that the project would have enough revenue to continue its activities without the need for further grants. Its three main types of costs included administrative costs, storage and access costs and further digitisation activity in order to expand the collections.

In 2002, at the end of that first grant period, the partners arrived at the organisational structure still in place today. The Association for the Retrospective Digitisation of Scholarly Periodicals – Verein DigiZeitschriften e.V., or DigiZeitschriften – is a not-for-profit association run by its partners, which now include 14 member libraries throughout Germany. The product generates revenue through an institutional subscription strategy, based on a tiered pricing model. In addition, as new institutions subscribe, they are required to pay a one-time fee equal to three times their annual subscription rate. The partner libraries also pay for subscription but are exempt from this initial fee.

"The notion that DigiZeitschriften should be able to cover its direct costs and fund the expansion of the service was, in fact, explicit from the project's earliest days."

The 14 DigiZeitschriften member libraries are all SSG libraries, or Special Collections libraries, a designation given to 34 German research libraries that share responsibility for the development of collections in particular fields of scholarship. Library directors at these member institutions serve on the DigiZeitschriften board, which meets once a year to vote on measures brought to them by the board's chairman, Norbert Lossau, who is also the library director at the University of Göttingen. The member libraries serve as content selectors, using staff at their institutions to identify the most important journals in their areas of expertise to add to the collection. Once the content has been selected and approved by the board, it is the responsibility of the administrative office, with support of the library that initiated the selection, to negotiate terms with rights-holding publishers.

DigiZeitschriften Annual Budget (€122,250 per year)



Costs

The initial costs for starting up DigiZeitschriften were covered by a series of six grants from the DFG totalling €850,000, part of a larger programme of investment (about €4 million per year in total) in retroactive digitisation that the DFG was supporting at the time. These funds covered hardware and software as well as digitisation and administrative personnel.[3]

Today, the ongoing operational costs for DigiZeitschriften are €122,250 per year, which according to Dugall include 'wages for the staff, hardware investments, software investments, storage facilities…and then when we know [how much money we need] for this…We see what money is available for including additional digitisation activities. When this is possible we try to enlarge our collection by including more journals.' In addition, each year DigiZeitschriften must digitise another year's worth of issues as a result of the 'moving wall', about 20,000 new pages each year.[4] Library staff devote about two months of production time to digitising this content; the hours spent add up to the equivalent of approximately one full-time employee (FTE), and this time is paid for from the DigiZeitschriften budget. Direct costs each year must cover staff time of €83,000; royalties to publishers totalling €15,000; moving-wall digitisation of €20,000; and travel costs of €2,000. Other direct expenses for DigiZeitschriften include a small marketing budget of about €1,500 to €3,000 per year, which supports the creation of leaflets, posters and other collateral sales material to promote the service to academic institutions.

The daily administration of DigiZeitschriften requires many different activities which are handled by just two individuals, each working part time.[5] The primary administrator, Project Manager Caren Schweder, is responsible for everything from customer services and developing marketing copy, to coordinating the work of the partner libraries regarding new content, to assuring the invoicing and receipt of payments from the institutional subscribers. When significant new digitisation is needed – say, the integration of an entire back file of a journal new to the database – up to 25 temporary digitisation staff are hired on a per-project basis and brought in to accomplish this. Sometimes students are hired for this digitisation work, though often, more skilled workers, including librarians on staff, are assigned to work on the more complex elements such as metadata creation. Treating new digitisation on a per-project basis allows DigiZeitschriften to keep its regular operating costs quite low.

Finally, DigiZeitschriften must share revenue from its subscription income with the participating journal publishers holding copyright. This is done in two ways. When a journal is first digitised, DigiZeitschriften pays a one-time, 2-cents-per-page fee. Then, each year, DigiZeitschriften pays the publisher a percentage of its annual revenue (3% up until 2007, and 5% starting in 2008). Both types of payments are based on agreements negotiated at the founding of DigiZeitschriften among the German Publishers and Booksellers' Association, the VG Wort (an author royalty collecting society) and DigiZeitschriften. All royalty payments are made directly to the VG Wort, which in turn distributes them to authors and publishers in a 20–80% author–publisher split for articles published in the last ten years, and an 80–20% split for those published more than ten years ago.

3 All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

4 The 'moving wall' concept allows publishers to determine the delay between a publication's original date of issue and when it can first appear as part of the DigiZeitschriften collection (an approach also used by JSTOR). In general, the 'moving wall' is between two to three years, though for some materials it may be as long as seven years post-publication.

5 These two administrators account for 1.5 FTE; both are library employees whose salaries are paid from the DigiZeitschriften budget.

German universities		German public libraries		Non-German universities	
Enrolment	**Price**	**Size tier**	**Price**	**Enrolment**	**Price**
Over 25,000	€4,500	Tier 1	€1,500	Over 15,000	€1,500
15,000 – 25,000	€2,800	Tier 2	€950	Up to 15,000	€600
5,000 – 15,000	€1,500	Tier 3	€500		
Under 5,000	€600	Tier 4	€200		

Revenues

Among the original publishers to offer content for DigiZeitschriften, Georg Siebeck of Mohr Siebeck remembers 'urging them to have a subscription to cover ongoing costs: as a means to insure income that would allow continuing development of the resource and provide a reliable revenue stream. Having 100 sponsors all over the world is a lot safer than having one sponsor. If he [goes away] the system breaks down…'

The revenue model of DigiZeitschriften follows an institutional subscription model, combined with a one-time initial fee equal to three times the subscribing institution's annual fee. The pricing is based on the size of the institution, as summarised in the table below. The pricing for subscribers outside of Germany is lower, since it was assumed that there would be less demand for a German-language resource outside the country. In addition, prices for consortia are negotiated separately. As of late 2008, there are 192 institutional subscribers to DigiZeitschriften, 65% from Germany and 35% from other countries.

> *"The revenues from subscriptions, about €180,000 in 2008, along with the one-time fee paid by all new participants, more than cover the operating expenses of DigiZeitschriften."*

The revenues from subscriptions, about €180,000 in 2008, along with the one-time fee paid by all new participants, more than cover the operating expenses of DigiZeitschriften. The DigiZeitschriften governing board votes each year to determine how the surplus is to be spent in the following year. In the past it has been used to expand coverage by choosing new journals to digitise in existing fields, or to expand into new disciplines.

DigiZeitschriften's goals for 2009 include adding 500,000 pages of new journal content, improving the functionality of the service by adding full-text search, and expanding DigiZeitschriften's international customer base, particularly in Asia, Russia and Poland.

Key factors influencing the success of the sustainability model

Göttingen and the Digitisation Centre

DigiZeitschriften's place within the Göttingen State and University Library is a key element of its sustainability model, allowing it to benefit from the scale of the larger institution. When digitisation work first began in 1997, it was done by commercial vendors; by 1998 the Digitisation Centre (DigitalisierungsZentrum, or GDZ) was established at Göttingen, and by 1999 digitisation was being done on site there. According to DigiZeitschriften Chairman Norbert Lossau, 'The GDZ was one of the reasons to host DigiZeitschriften in Göttingen'.

DigiZeitschriften is but one of six or seven digitisation projects that the library has going at any given time, and accounts for only a small part of the centre's workload, which in 2009 will include digitising an estimated three million pages. Among the benefits DigiZeitschriften enjoys are the ongoing software development and scanning expertise developed by staff at the Digitisation Centre, as well as its sophisticated hardware. This hardware includes a recently acquired 'scan robot', financed by the state ministry of Lower Saxony. According to Digitisation Manager Martin Liebetruth, this piece of equipment allows for a much smaller opening angle to scan fragile books, and it accomplishes this three times faster than is possible by hand on the flatbed scanners the library typically uses.

Although DigiZeitschriften does not contribute anything to the library or GDZ overheads, Lossau explains, 'Our library sees the hosting of DigiZeitschriften as part of its mission to provide the widest possible access to scholarly content resources… It's important to understand that, although we serve primarily our university, we serve with a number of services and service developments also the national and, in some areas, also the international community. The outreach of our library is recognised (also by the University Governing Board) to go far beyond the university, which justifies some of our own resources we spend on DigiZeitschriften.'

Governance

DigiZeitschriften has a board of three people: two deputies and the chairman, who is traditionally the library director of the State and University Library of Göttingen, the headquarters of DigiZeitschriften. The other 11 members constitute DigiZeitschriften's General Assembly, which meets at the end of each year to vote on strategy and the next year's budget, including any plans for upcoming digitisation or changes in policy. No one, not even the chairman, is paid for this work. Lossau, the current chairman, reports that the General Assembly meetings are rarely contentious, as the members are supportive of the board and 'are all committed to the growth of the collection and have no personal agendas in this field.'

DigiZeitschriften's leadership, specifically Lossau and Dugall, have been closely involved in the project from the start, Lossau as the head of digitisation at Göttingen from 1996–2001, as the programme got under way, and Dugall as one of the chief planners of the service. In preparation for the launch of the service, both travelled extensively in the US in 1997 and 1998, meeting with project teams at American universities involved in similar digitisation projects, including Michigan, Cornell and Stanford.

The long-standing relationships and streamlined nature of the management of DigiZeitschriften help to make decision-making relatively efficient. On the other hand, the project is run with no one single person in a full-time management role. Even Project Manager Caren Schweder wears many hats, from billing and invoicing, to library liaison, to marketing, promotion and sales.

Partnership model

The DigiZeitschriften model derives important benefits from its member libraries in the area of content development. The partner libraries are all considered Special Collections libraries. The DFG's Special Collections Programme, begun in 1949, 'uses a decentralised subject plan to insure that at least one copy of every scholarly relevant publication is present in Germany and thus available through inter-library loan of the original or photocopies.'[6] Göttingen, for example, is the designated library for 17 special collections, including history and politics of Anglo-American cultures, theoretical mathematics, natural sciences, astronomy and English language and literature.

Selection criteria concerning which journals to include in DigiZeitschriften come from the specialists at each partner library, with the requirement that the journals digitised be 'the core publications in various fields, those which were frequently used and were of great research value',[7] and with the expectation that DigiZeitschriften will include the most recent issues the publisher will allow. The initial list of journals was compiled by subject specialists at the cooperating libraries, and was subsequently assessed by 20 well-respected scholars in the fields being considered.

The coordination of the community was critical in making DigiZeitschriften a possibility. The initial plan for the resource was the idea of three librarians: Berndt Dugall, Elmar Mittler, former director of the Göttingen State and University Library, and Hermann Leskien of the Bavarian State Library. They devised the initial plan and then recruited six other librarians to join the project and help identify the core journals to include. Leaders of DigiZeitschriften feel that the project's governance by a library partnership has had an impact on its success. As Dugall said, 'We are still part of the library community. We are not seen as being providers from outside.'

Of course, that role is complicated by the fact that DigiZeitschriften does, indeed, count on the subscription fees from the library community. 'We have two different types of relationships: one is partnering, and the other is that our library colleagues are our clients…which is an interesting model,' explains Dugall. 'We are ourselves our clients.' Indeed, even the partner libraries who donate their staff time to content selection and to working with publishers are required to pay the annual subscription fee for access to DigiZeitschriften, though they are not charged the one-time fee that other institutional subscribers pay.

DigiZeitschriften's other 'partners': participating publishers

In the early days, DigiZeitschriften's founders promoted the service in face-to-face talks with publishers, leveraging personal contacts and making it clear to prospective publishers that all costs of digitisation would be covered for them by DigiZeitschriften, initially through the DFG funding it had secured, and beyond that, through the revenue to come from subscriptions to the service. 'Because everyone was insecure on the publisher side, it was all due to personal commitment,' explains Lossau, describing the pitch for participation: 'Give us a chance to make some revenue…and you will have no risk.'

One of the earliest publishers to support DigiZeitschriften, Georg Siebeck of Mohr Siebeck, understood the appeal of letting the libraries take the lead on the project. 'The library is concerned with those things that have been published. As publishers we are concerned with those things that are to be published.' In addition, many of his journals are over 100 years old, 'and we cannot sell these old copies. It is in the interest of a publisher who still publishes a journal that it be as visible as possible.' Besides, 'physical preservation was an issue – digitisation would help [libraries] do what they had always done [make content accessible to scholars] and would in no way hinder us.'

Intellectual property rights

Having worked out terms with the authors' and artists' guilds, VG Wort and VG Bild-Kunst, DigiZeitschriften could also assure publishers that authors' rights would be protected, and the publishers would be remunerated for the content they provided. One further incentive proved very important as well. As had happened with JSTOR in the United States, DigiZeitschriften instituted a model of the 'moving wall' of content, describing the period of time that would elapse between the original publication of a new issue of a journal and the time when that issue would first appear in DigiZeitschriften. The appeal of the moving wall, often a period of two or three years, is to allow the publishers to protect the business models they have in place for subscriptions to the current issues of their journals.

Content selection

Although DigiZeitschriften's leaders observed that commercial publishers, including Wiley and Elsevier, had already taken a strong position in the hard sciences, they felt there was still plenty of content to be aggregated. According to Dugall, 'Our advantage at that time was that in Germany in the case of research materials, there was not a strong concentration in the research market. There were a lot of smaller publishers.' So they went to look for those journals the large publishers were not already covering, and to identify the library collections with strengths in those subject areas. In some cases, they were just too late: When Dugall approached the German Society of Chemists, for example, he learned that they had already sold all their rights to Wiley. Other German publishers, like de Gruyter, chose not to participate, preferring instead to create their own platform.

> *"But having the greatest volume of content is not as important to DigiZeitschriften as having the right content for its audience of researchers and scholars."*

But having the greatest volume of content is not as important to DigiZeitschriften as having the right content for its audience of researchers and scholars. 'Our objective is to support science [ie

6 For more information, follow the link for the Virtual Subject Libraries from the SUB Göttingen website, **www.sub.uni-goettingen.de/index-e.html**

7 Schweder, 'DigiZeitschriften', 184.

scholarship] and research,' according to Dugall. 'Therefore, we are not interested in covering as much as possible, but in making available the core journals in different disciplines. Whether we can achieve this goal mainly depends on the cooperation of publishers or copyright holders.'

Understanding users

As of late 2008, the DigiZeitschriften site records over 35,000 downloads of articles per month, up from 15,000 in 2006. While its end users are mainly faculty and students at subscribing institutions, DigiZeitschriften does not seek to communicate with them directly. Rather, its main contacts are the librarians at the subscribing institutions who in turn are expected to inform their patrons about the resource and respond to their needs.

'Most activity for the end users is done by the libraries. We inform the library community and the research community about our...offers. It's part of the library's role on campus. Scholars go to the campus library catalogue, which alerts people that the article is available here, in electronic version,' according to Dugall. The Electronic Journals Library (EZB) is a portal that university libraries use to allow researchers to see 12,000 digital journal titles, indicating which are available at that institution. Those institutions subscribing to DigiZeitschriften, for example, would see the listings for DigiZeitschriften content marked with an icon of a green traffic light, signalling that indeed the institution has full access to that content.

DigiZeitschriften leaders are starting to examine more closely just where its traffic is coming from, though an initial analysis suggested, according to Lossau, that 'only a very small percentage comes from Google, with a much higher percentage coming directly to DigiZeitschriften'. While this sounds counterintuitive, it may be the consequence of several restrictions that have kept DigiZeitschriften from building more traffic from search engines. First among them is that DigiZeitschriften is not permitted to allow search engines to crawl the full text of the first page of its articles. Publisher contracts prohibit it from allowing Google to index PDF files or display a full page or even a full-text excerpt.

> *"On the other hand, not all publishers are necessarily as fearful as DigiZeitschriften believes."*

According to Lossau, 'We have discussed this with publishers, but we simply have problems with the copyright situation in Germany.' The original publisher contracts did not account for this, and as Dugall explains, 'Perhaps it would have been possible to include this in the contract six to seven years ago, but at that time, we had no idea...that Google would be the dominant search engine five years later, [so] nobody had any idea that this question should be part of the agreement with publishers...When we mention we want to make the first page [available] in Google, I think then the fears and resentments against our activity would increase, so we have to live with the situation.'

On the other hand, not all publishers are necessarily as fearful as DigiZeitschriften believes. Publisher Georg Siebeck of Mohr Siebeck is quite supportive of the notion of displaying the first page of an article and having Google search the text, so long as it improves the visibility of the resource. He suggested that publisher support or fear about Google was more of 'an ideological issue'. Almost all of his books are in Google, because he is convinced this will not harm the sales of the books. As another possible advertising idea, he suggested including advertisements in current journal issues announcing that the backfile of this particular journal is now also available electronically through DigiZeitschriften.

Benefits and challenges

As one of many projects situated at Göttingen, DigiZeitschriften strongly benefits from its affiliation with the Digitisation Centre in terms of the expertise available in functions such as metadata creation, and in the hardware in which the centre has invested, such as the flatbed and robot scanners.

DigiZeitschriften's library partners share some of the burden of the staff time needed to accomplish important tasks of the operation, including content selection and publisher rights clearance. By being able to draw on the volunteered efforts of content specialists in the Special Collections libraries, DigiZeitschriften benefits from their expertise, while spreading the work and cost of content development across several institutions. In this way, the partnership operates as a kind of contributed content model.

DigiZeitschriften's subscription model has generated sufficient revenue to cover its operating costs while continuing to allow some degree of ongoing digitisation beyond that required by the moving wall. Its current model addresses library mission goals regarding space and preservation issues while also providing access to these materials to the scholarly community.

And yet, while DigiZeitschriften sees itself as serving the library community, relatively little effort has been undertaken to anticipate or respond to the needs of its end users: the scholars, students and other library patrons who use it. DigiZeitschriften's main stakeholders are its partners and other subscribing libraries, and up until now, this has been reflected in its priorities: to digitise quickly, while spending much less effort on user features such as full-text searching. In this respect it lags behind where many similar services are today.

DigiZeitschriften's small core leadership team allows its leaders and administrator to make everyday operational decisions quickly. But at the same time, DigiZeitschriften's board members are also library directors, with very demanding full-time jobs, and the lead administrator is responsible for a wide variety of functions. Without adequate staffing, it will likely be difficult to grow and improve the resource. For example, while there are plans for expanding the customer base in 2009, there is currently no dedicated sales staff on hand to accomplish this.

Issues of intellectual property rights, as protected in the early DigiZeitschriften publisher contracts, appear to have hindered DigiZeitschriften's ability to optimise its exposure on the internet via the major search engines. While there seems to be support both from DigiZeitschriften leadership and from some publishers for DigiZeitschriften to allow search engines greater access to

content, agreements currently in place regarding publishers' and authors' rights remain an obstacle.

Broader implications for other projects

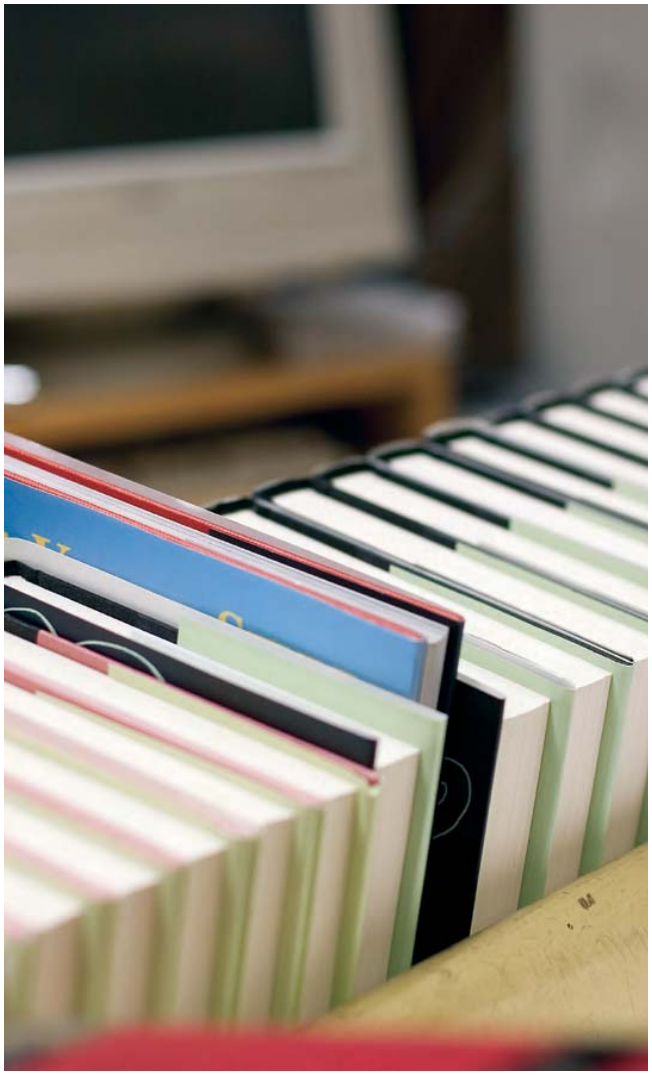
Partnerships among those with common goals can help to lower costs. The partner model used by DigiZeitschriften works well by drawing on the strengths of each Special Collection library. Having each partner volunteer time to accomplish the work of editorial selection and publisher solicitation also helps to keep project costs low.

Subscriptions are a worthwhile option when the content is highly valuable to customers with the ability to pay for it. DigiZeitschriften provides good value to libraries, particularly those in Germany or with strong German-language collections, helping them with practical issues of storage and preservation as well as allowing them to provide their patrons with easier access to back issues of older journals.

A good fit with a host institution can be a key aspect to sustainability. By establishing DigiZeitschriften at the Göttingen Library, both the project and the institution derive benefits that each values. The library is proud to have played a critical role in the creation of an important resource in the community, and at the same time, DigiZeitschriften strongly benefits from the expertise and equipment of the Göttingen Digitisation Centre, as well as the content hosting, preservation and office space that the library provides.

An active feedback loop with users helps a site stay current with evolving user expectations for online academic resources. This has been a challenge for DigiZeitschriften because it rarely interacts directly with the end users of the resource. Without a productive feedback loop or other means of gauging what researchers and scholars require of and like about DigiZeitschriften, the service risks losing its usefulness to the community, which could hinder its chances of maintaining and expanding its customer base.

Continued growth and innovation requires committed leadership and dedicated staff. DigiZeit has ambitious goals for the year ahead, from implementing full-text searching to adding new content areas and seeking additional subscribers in countries outside Germany. With only a small part-time office staff in place, the project may find it a challenge to meet all of its goals.



Appendix A: Interviewees

Berndt Dugall, Board Trustee and founding member of DigiZeitschriften and Director/Librarian, University Johann Christian Senckenberg, Frankfurt, 3 December 2008

Martin Liebetruth, Digitisation Manager, Göttingen State and University Library, 3 December 2008

Norbert Lossau, Chairman, DigiZeitschriften and Director, Göttingen State and University Library, 3 December 2008

Caren Schweder, Project Manager, DigiZeitschriften, 20 January 2009 and 17 February 2009

Georg Siebeck, Publisher, Mohr Siebeck, Tübingen, Germany, 19 February 2009

Appendix B: Summary of revenues and costs

DigiZeitschriften

Revenue Category	Description	Approx. amount
Subscription fees		€180,000
Total revenue		**€180,000**

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	1 PT project manager & 1 PT administrative assistant	1.5	yes		DZ Chairman is Library Director at Göttingen; two other trustees have FT appointments at their institutions.
Content selection & production		0	no		14 partner libraries contribute their time for content selection.
Sales & marketing	(part of project manager's role)	0	yes		
Technology		0	no		Programming staff at Digitisation Centre develops platform & tools which DZ also uses
Total personnel costs		1.5		**€83,000**	
Non-personnel costs			Included in budget?		
Administration & overhead			no		Office space provided by Göttingen State and University Library
Scanning, metadata, etc.	Temporary scanning technicians are hired to scan new journal issues as part of the moving wall each year		yes	€20,000	
Hosting & technology infrastructure			no		Supported by the Digitisation Centre at Göttingen
Royalties	Royalties paid to author rights' society		yes	€15,000	
Other	Travel costs for annual partner meeting; marketing materials		yes	€4,250	
Total non-personnel costs				**€39,250**	
Total budgeted costs				**€122,250**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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Document N°: 557a

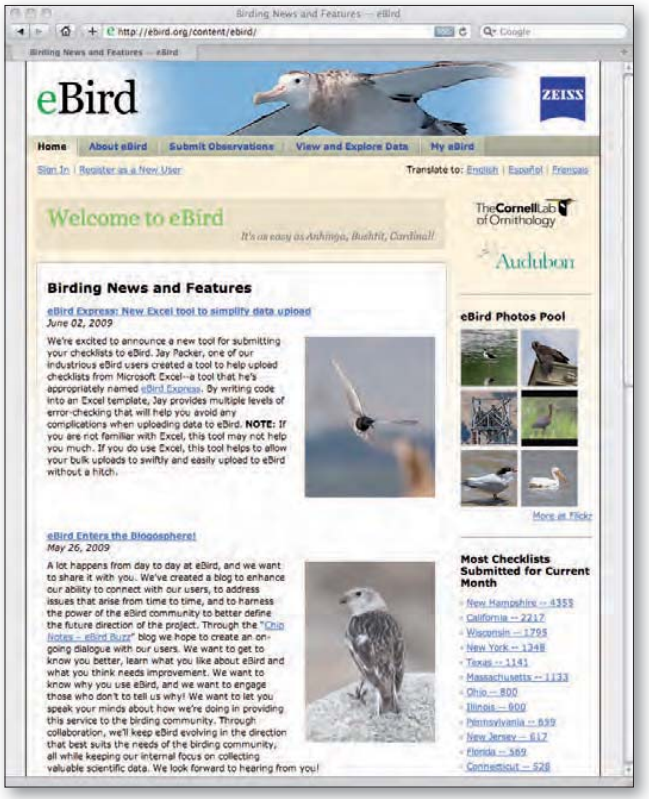
eBird: A Two-sided Market for Academic Researchers and Enthusiasts

Information Science Department, Cornell Lab of Ornithology
Cornell University, New York, USA
www.ebird.org

The Information Science Department at the Cornell Lab of Ornithology is home to eBird, a site where birdwatchers of all levels – from weekenders to academic researchers – can record their avian sightings and upload them for future use by scientists. The site serves a two-sided market: on one side, the birdwatchers (or 'birders') who record and share their observations, and on the other side, the scientists who use that data for research. This project is notable for the level of interest it generates from users; for the range of revenue streams it draws from, including a corporate sponsorship and a franchising service for its core software; and for its home in a department which, despite its academic roots, encourages entrepreneurial activities. Through an examination of eBird, this case study will approach several larger questions for digital project leaders: How can academic digital projects think about increasing user interest? In what ways can a project maintain an Open Access core while generating revenue from premium services? And how might digital resource leaders approach the tension between project mission and revenue generation through a combination of sustainability strategies?

Introduction

If Facebook revolutionised social networking for college students, then the Cornell Lab of Ornithology spearheaded a similarly path-breaking online community for bird lovers. Launched in 2002 as a joint project of the Cornell Lab of Ornithology's Information Science Department and the Audubon Society with a National Science Foundation (NSF) start-up grant, bird enthusiasts can use the eBird website to record their avian sightings and share those observations with other birders and with scientists. Users log in to their 'my eBird' account and enter information from their latest birdwatching trip, save those observations in their personal lists, upload old sightings from spreadsheet software or use the site's mapping tool to learn which bird species have recently been seen in a given region. By aggregating online the data that birders had previously been collecting offline, the project strives to create a dataset useful to scientists: birders' observations



are funnelled into a separate Open Access virtual repository, the Avian Knowledge Network (**www.avianknowledge.net**), where researchers can download data from eBird and other projects.[1]

> *If Facebook revolutionised social networking for college students, then the Cornell Lab of Ornithology spearheaded a similarly path-breaking online community for bird lovers.*

This case study was researched and written by Matthew Loy as part of the Ithaka Case Studies in Sustainability project.

1 Steve Kelling, the director of information science at the Cornell Lab of Ornithology, reported that there are at least 12 complete downloads per week of the Avian Knowledge Network's dataset, which includes more than 58 million records as of May 2009.

The Lab of Ornithology at Cornell University is home to several projects and units related to ornithology, including formal academic research projects, educational outreach programmes, an ornithology library and a membership organisation for bird enthusiasts, all housed at the Imogene Johnson Center for Birds and Biodiversity in the Sapsucker Woods nature sanctuary in Ithaca, New York. One of these units, the Information Science Department, is tasked with connecting the ornithology community with new technologies for data collection, distribution, management and analysis.[2,3] This mission includes engaging a wide spectrum of users, from academic researchers who require a massive volume of data for their projects, to casual bird enthusiasts who want to learn more about their hobby. The eBird website was designed, then, with two audiences in mind: individual birders who submit data, and scientists who will eventually download that data for use in research. To satisfy birders, the observation–submission process needs to be simple and rewarding; to satisfy scientists, the data must be appropriately standardised and detailed.[4] As this case study will outline, accommodating the needs of both audiences has been a key challenge for the project.

Sustainability model

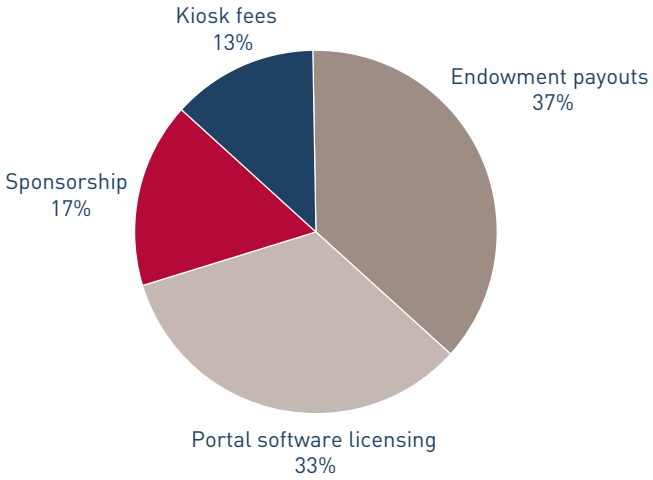
Goals and strategy

As a project of the Information Science Department, eBird has been able to develop a sustainability model that relies in part on the benefit of being nested within a large department, and in part on the revenue streams that the project itself has been able to generate from a range of entrepreneurial efforts. In particular, access to the existing human and technical infrastructure supported by the Information Science Department's total budget keeps eBird's staff costs low: seven of eBird's eight budgeted staff members are full-time department employees, part of whose time is devoted to the project, while the rest of their time is allocated to other projects in the Information Science Department. This cross-subsidisation is crucial: if eBird had to operate independently, it is unlikely that the project would be able to find people with the requisite skills who would be willing to work part-time.

Costs

For 2008–2009, the eBird project has an estimated budget of approximately $300,000, of which $232,000 covers salaries and benefits for 4.25 full-time employees (FTEs).[5] This includes the full time of one web developer and the partial time of three project co-managers (each at .66 FTE), three department administrators (each at .25 FTE) and one database administrator (.5 FTE). The project incurs modest non-personnel charges of approximately $30,000, including hosting and other technology costs. The department must also return 20% of any incoming grants and earned income to the Lab of Ornithology to support the broader organisational infrastructure (estimated at $38,000 for 2008–2009).

eBird's Revenue Sources



eBird's budget must be read in the context of the entire department's financial resources, since the project benefits from this larger infrastructure. In 2008–2009, the department's budget (including eBird) was estimated at $1.9 million; revenue for the department will total an estimated $1.92 million, including $1.25 million from government and foundation grants. Salaries and benefits for the department's 20 full-time staff cost $1.2 million; the remaining $700,000 of the department's budget covers travel, software and other licensing fees, administrative support, hardware and internet access for the unit's 15 servers. The Information Science Department does not have free access to Cornell University's IT services and must pay for data hosting and back-up, but the university does provide access to the network backbone and other services. In addition, the Information Science Department's grant funding supports eBird's sustainability model. While the eBird project does not depend directly on any of the grants received by the department, these grants support other projects in the department that use the partial time of eBird employees – effectively subsidising eBird. So while grants are not reflected in the project's bottom line, they are still crucial for keeping the project's staffing costs low.

Revenues

eBird draws funding from two sources: payouts from the endowment of the Lab of Ornithology, and entrepreneurial activities, which include a sponsorship deal with a binoculars manufacturer, software customisation fees and rentals of on-site eBird kiosks.

2 For more information, see the website of the Lab's Information Science Department: **www.birds.cornell.edu/is**

3 Note that the Information Science Department of the Lab of Ornithology, under study here, is a separate entity from Cornell University's degree-granting, interdisciplinary Information Science programme in the Faculty of Computing. As a further clarifying point, the Lab of Ornithology's Information Science Department does *not* generally provide services to other departments at Cornell; it is embedded in the lab.

4 For example, if a birder notes only that she saw a sparrow in Central Park in New York City, that observation will be of very little use to scientists. Researchers need more specific information: the exact location of the birding walk, the time of day, the distance covered during the walk, the sex of the bird and other information. Observations that are of greatest use to scientists are those that include a count of *every* species the birder saw during her outing, not only birds that are rare or colourful. It is just as important for a scientist using the aggregated data to know that a birder saw 15 common tree sparrows as it would be to know that a birder saw the rarer yellow-bellied sapsucker. (If rare species alone were reported, the aggregated demographic and migration data would be skewed and thus less valuable for research purposes.)

5 All budget figures and estimates were provided by the project leader. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

Endowment. Approximately $110,000 of the Information Science Department's share of the Lab of Ornithology's endowment payout figure is allocated to eBird. Steve Kelling, Director of Information Science at the lab, expects the endowment payouts to drop over the next several years as a result of the broader economic slowdown; as a result, the department may need to shift more endowment funding to projects that, like eBird, do not directly receive NSF funding.[6]

Earned income streams. eBird receives approximately $190,000 from its revenue-generating side projects: $100,000 from customised versions of the eBird portal software, $40,000 for on-site kiosk rentals and $50,000 through a sponsorship deal with Zeiss Optics. These projects help expand eBird to a wider audience while balancing the budget. In addition, cash from entrepreneurial projects can contribute to a leaner budget: Kelling sometimes prefers to use revenue generated from these sources to pay salaries, as using grant money for salaries can entail paying additional fringe benefits.

Franchising eBird: customised eBird portals and on-site eBird kiosks. As the audience for eBird grew, the Information Science Department was approached by independent wildlife and conservation organisations who wanted to use eBird's software for their own members and visitors – and were willing to pay to do so. The department has taken advantage of this opportunity to actively promote eBird to new audiences in two ways: by licensing customised versions of the eBird portal to other groups, and by renting on-site 'eBird Trail Tracker' kiosks to nature centres and wildlife refuges. The franchised portals and kiosks leverage existing eBird technology – which is available free to users online – to generate revenue. These projects also help advance the mission of the department: data submitted to the customised portals and the Trail Tracker kiosks feed back into the central eBird database, adding to the richness and value of that resource. Perhaps most important, according to project co-manager Chris Wood, is the kiosks' potential to bring eBird to audiences who might not otherwise know of the project.

The department franchises eBird software by licensing customised versions of the database portal to individual wildlife and conservation societies. The department charges these organisations an initial fee (around $10,000) for customisation and set-up, and an annual maintenance and hosting fee of 10% of the initial payment. There were nearly 30 customised eBird portals operating as of February 2009; approximately one-third of these are for regional US birding or wildlife societies, one-third are for birding organisations in the Caribbean and Latin America, and one-third are for organisation-specific projects (for example, the Department of Defense eBird portal).

The cost of the portal set-up is mostly staff-related. Each new portal requires around a week of programme development time to brand the site with the host organisation's logo and customise it to highlight content of interest to their users, such as information about local species. After that, one of eBird's three project co-managers usually spends an additional week training the new organisation how to use and maintain the resource. Other costs, according to Kelling, are 'pretty minor'.

The department also licenses the eBird Trail Tracker kiosks to nature centres and wildlife preserves. Nature centre visitors can use these stations to see which birds have been spotted recently in the area and can enter their own bird sightings into eBird. The kiosks also have an educational component laid on top of the eBird data-submission interface to help nature centre visitors identify birds: they provide species profiles that include descriptive text, images and audio files of birdsongs. Although the Trail Trackers are located at nature centres, their data is hosted at the Lab of Ornithology, so eBird staff members can push new content and features onto the kiosks regularly. Nature centres pay the department $3,000 for the set-up of the machine, with an ongoing $2,000 annual maintenance fee. Approximately 40 kiosks were being rented to nature centres as of December 2008.

> *"eBird generates between $20,000 and $50,000 in annual revenue from its corporate sponsor, Zeiss Optics."*

Corporate sponsorship. eBird generates between $20,000 and $50,000 in annual revenue from its corporate sponsor, Zeiss Optics. This maker of binoculars approached eBird about sponsorship because of the strong match between their products and the site's birding audience. Kelling believes that Zeiss perceives significant value in reaching eBird's 200,000+ unique visitors per year: the US Fish and Wildlife Service has estimated that Americans spend as much as $32 billion annually on products, services and travel related to birdwatching, of which $471 million is spent on binoculars and spotting scopes.[7]

Negotiating this sponsorship – the value of which is connected to the number of eBird users who click through to the Zeiss website from the company's logo in the eBird site banner – was possible for the department in part because they could rely on the expertise of the Lab of Ornithology's full-time development officer, who negotiates sponsorship deals across the lab's

6 Unless otherwise noted, all quotations from project staff members and other individuals knowledgeable or associated with the project are drawn from interviews conducted as part of this case study between August 2008 and March 2009. A full list of interviewees is included in Appendix A.

7 Genevieve Pullis La Rouche, *Birding in the United States: A Demographic and Economic Analysis: Addendum to the 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation* (Washington, DC: US Fish and Wildlife Service, August 2003), p. 15. Available online at **www.fs.fed.us/outdoors/naturewatch/start/economics/Economic-Analysis-for-Birding.pdf**

various units.[8] Kelling believes that this revenue stream, however, is particularly vulnerable: as the economy worsens, the sponsor may want to renegotiate the amount it pays to eBird.

Key factors influencing the success of the sustainability model

Recognising the two-sided market: Birders and scientists

eBird's value to scientists depends in part on the site's ability to attract a large number of users who frequently submit their birdwatching observations. However, when eBird launched in 2002, it was designed with the needs of scientists in mind. According to Kelling, the working assumption was that birdwatchers would submit their observation checklists out of an altruistic desire to help scientists (and birds), and that this level of participation would be sufficient for scientists; relatively little planning was done with individual users' needs in mind. With this approach, eBird was able to build usage to a plateau of 40,000–50,000 observations per month, but submissions did not rise above that point. The novelty of the project and the altruistic instinct to contribute to the scientific process were apparently not enough to grow the site's audience or encourage more frequent submissions of checklists. To maintain and increase the value to scientists, the project would need to address its other core audience.

> *"According to Kelling, the working assumption was that birdwatchers would submit their observation checklists out of an altruistic desire to help scientists (and birds), and that this level of participation would be sufficient for scientists..."*

'What do birders want?': Creating incentives for users and editors

In light of the need for a greater quantity of data, the department's leader realised within two years of the project's launch that the site needed to be re-focused on the needs of the birdwatchers who provide the initial observation data. By doing so, he hoped

to increase both the total number of contributing birders and the frequency of their observation submissions. To address these user needs, Kelling turned to the birdwatching community to find new leadership for eBird. In 2005, he hired Brian Sullivan and Chris Wood and later Marshall Iliff, and tasked them with creating a new, user-centred experience for eBird. All three had significant prior experience in ornithological fieldwork but also had contacts in the larger world of birding enthusiasts. Kelling valued both these connections and the three new hires' 'vision' of the tools and functionality that would draw birders to the site.

The three project co-managers agreed that the early version of eBird 'didn't have what birders wanted', according to Wood. 'So we tried to think of things that birders like. And birders love lists – life lists, state lists, backyard lists, year lists, month lists...' The early version of eBird did not allow for birders to create and store such lists; instead, the observations, once submitted, disappeared into the large, anonymised database for use by scientists. To engage birders, the department created tools to allow them to generate and store these records in user accounts on the eBird site. Today, these simple records account for 80% of the project's page views. In addition, the project leaders wanted to add a visualisation element to the site, so they used Google Maps to develop a function for mapping the locations of bird observations.

These features were envisioned as the 'candy' to attract a larger audience of birders to the site. And this user-centred approach seems to have worked: in 2008, eBird attracted 227,000 unique visitors, and nearly 10 million individual bird sightings were recorded on the website. Statistics from the month of January, a popular month for birdwatching because of the appearance of migrating birds, are particularly telling: the number of observations submitted in January 2008 was 25% higher than the number from January 2007, and the number submitted in January 2007 had increased by 20% over the January 2006 total.[9]

'What do scientists want?': Quality control of data with user-generated content

Although eBird has shifted strategy to emphasise the needs of individual birders, the aggregated dataset is still intended for end use by scientists. To ensure the usability of the data, the project leaders have instituted both automated and hands-on quality-control mechanisms.

8 In 2008–2009, the Lab of Ornithology was supported by 20 sponsors at the $1,000–9,999 level, and six corporate sponsors, including Zeiss, at the $10,000+ level. Many of these sponsors sell optics equipment or otherwise cater to the birding community.

9 One potential measure of the value of the eBird concept may be that at least one commercial competitor has emerged. Birdpost (**www.birdpost.com**) is an online community for birders which boasts its emailed 'Rare Bird Alerts', a function for mapping sightings of birds and an iPhone app. Although use of the site was free as of March 2009, the project's founders have said publicly that they plan to convert the site to a $50 per month subscription-based resource (without advertising). See the video presentation at: 'Birdpost | TechCrunch 50 Conference 2008, available at **www.techcrunch50.com/2008/conference/presenter.php?presenter=85**

eBird's content-submission procedures were designed to ensure that the data is as useful as possible to scientists. Birders who wish to submit their observations to the eBird website first complete a free registration process, which includes optional collection of demographic information. Then, the user pinpoints the location where he or she went birdwatching and enters more detailed information: the number of each species spotted, the length of the birding walk, the time of day and other factors. Once the report is submitted, it passes through a series of data filters which were manually built for the project and are constantly adjusted by eBird's project managers and its network of 400 volunteer regional editors. These filters flag any suspect sightings – for example, if an eBird user has claimed a sighting of the relatively rare ash-throated flycatcher in the middle of a New York summer, the filter automatically flags the submitted observation.

Flagged submissions are automatically forwarded to one of eBird's volunteer regional editors. The editor reviews the observation and then corresponds by email with the submitting birder to verify the data. The editor might do this by helping the birder think about whether he or she misidentified a common bird as a rare one, or by suggesting that the birder submit supporting documents such as photographs to verify the sighting. Entries that pass through the automatic filter or that are validated by a volunteer subject editor are then fed into the larger eBird database; this data, in turn, is funnelled to the Avian Knowledge Network virtual repository, from which scientists can extract data for research purposes. (Even observations that aren't verified, including casual observations, are not lost or rejected. Although the unverified data are not funnelled into the Avian Knowledge Network, users can still save those observations in their personal 'my eBird' space on the website.)

> *"The eBird project managers also work to educate the community about how to create more valuable observations."*

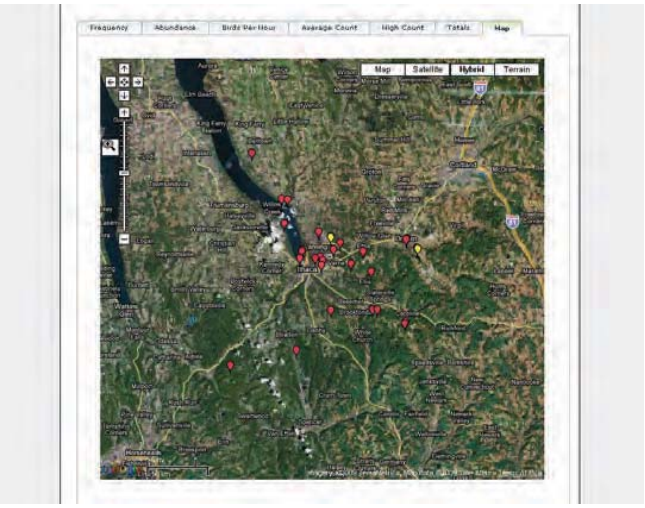
The eBird project managers also work to educate the community about how to create more valuable observations. Some of this training occurs one-on-one, through the correspondence described above; other education occurs system-wide. The project managers think of user-submitted observations as falling into one of two broad categories: 'casual observations' and 'effort-based observations'. Casual observations offer very little in the way of data beyond the species of bird sighted, and they don't claim to be an exhaustive list of all birds seen on a particular birding trip. Effort-based observations are much more valuable to scientists: they include contextual data about the birding observations such as time, place and distance walked, and the birders who submit these observations also try to include a record for *every* bird sighted – not just the unusual species. (The project managers have found that the more granular the data requirements, the less likely birders are to submit observations – so it is important to balance the specificity of the data the managers ask for against the need for a large quantity of submissions.) To encourage a greater number of effort-based observations, the eBird project managers began posting blog entries on the site's homepage encouraging more scientific techniques in birdwatching. The director of the department believes these posts are having the desired impact on the quality of the observations: as of December 2008, approximately 70% of submitted observations were effort-based.

Building bridges between users: eBird's regional editor network

As mentioned above, quality-control measures made possible by computerised filters and human subject editors are critical to maintaining the scholarly value of the resource. This labour-intensive process would not be possible without the 400 regional volunteer editors who offer their time to spot-check questionable submissions. Some of these editors are professional ornithologists; others are bird enthusiasts taking part in the long tradition of intense non-academic participation in ornithology. These editors devote anywhere from one hour every three months (in a region with relatively low eBird participation, like North Dakota) to 15 minutes per day (in a high-participation area, like eastern Massachusetts) to checking submitted observations that the data filters have flagged.

> *"...quality-control measures made possible by computerised filters and human subject editors are critical to maintaining the scholarly value of the resource."*

Much of the three project managers' work involves cultivating the data-curation network of regional editors: recruiting and maintaining participation from regional editors and ensuring that eBird meets their needs. (Because the three project managers were well known in the birding community before Kelling hired



them, eBird's regional editors are often personal contacts interested in supporting the project.) The project co-managers told us that in many cases, the regional data editors are already deeply embedded in local ornithological communities, and may appreciate the recognition that working with eBird confers – for these regional editors, participation in eBird at this level is an extension of their professional or personal passion for birding. In addition, the project co-managers see these regional editors not just as unpaid data cleaners, but as a key part of the eBird experience: they view the back-and-forth emails between editors and individual birders as an online correlate to the mentor–mentee relationship that they say has always existed in the birding community.

Fostering an entrepreneurial mindset in an academic setting

The Lab of Ornithology actively encourages the Information Science Department to develop revenue-generating projects that complement the mission of the lab. Kelling and others from the Information Science Department can consult with the Lab of Ornithology's board, which includes business professionals from outside the ornithology community. And to foster revenue-generating initiatives, the lab has agreed to provide 'loans' to specific programmes of the department in the past; in these situations, the Lab of Ornithology allows an individual start-up project's account to carry a deficit. The expectation is that the lab will be repaid for covering the project deficit – meaning that the lab must be confident that these initiatives have a solid, workable business plan. The development of the eBird Trail Tracker kiosks was funded in this way, as was a portion of the development of another Information Science Department project, the Birds of North America ornithology reference e-resource.[10] Although the department does not release the exact amount of the loan or the timeframe for repayment, Kelling points out the significance of the Lab of Ornithology assuming the risk associated with such loans. If one of these loans were not repaid, the lab would likely not make a similar gesture in the future, curtailing the range of possible activities around eBird and other projects.

> *"As Kelling likes to say, 'It's not like we're going to get a raise' for pursuing entrepreneurial projects."*

At the same time, the motivation for entrepreneurial behaviour is the advancement of the department's mission as a whole rather than financial gain *per se*. As Kelling likes to say, 'It's not like we're going to get a raise' for pursuing entrepreneurial projects. That eBird can generate revenue through these efforts is a clear sign that the project is filling a niche in drawing citizens into the scientific process – and the revenue powers the department's further work in this space. Kelling also believes that the department's attention to entrepreneurial projects has contributed to a positive reputation for the department among funding organisations: funders who see the success of the department's previous initiatives may feel comfortable that their money will be spent on carefully planned, sustainable projects.

10 The Birds of North America reference resource is available at **http://bna.birds.cornell.edu**

Benefits and challenges

The Information Science Department generates revenue from multiple streams to cover the costs associated with eBird. This allows the project a measure of security in a challenging economic climate: the effect of a drop in one revenue stream may be minimised by the stability of other streams. And because eBird is embedded in an established and relatively well-resourced department (within an equally established and well-resourced research centre, the Lab of Ornithology), the project has access to the extensive pre-existing technical and human infrastructure to make this possible. For example, the Information Science Department employs web designers who can devote parts of their time to eBird while also performing work on other department projects; as another example, the marketing manager for the department's Birds of North America reference e-resource also devotes some of his time to promoting the eBird Trail Tracker kiosks to nature centres (even though his time is not explicitly covered by the eBird budget).

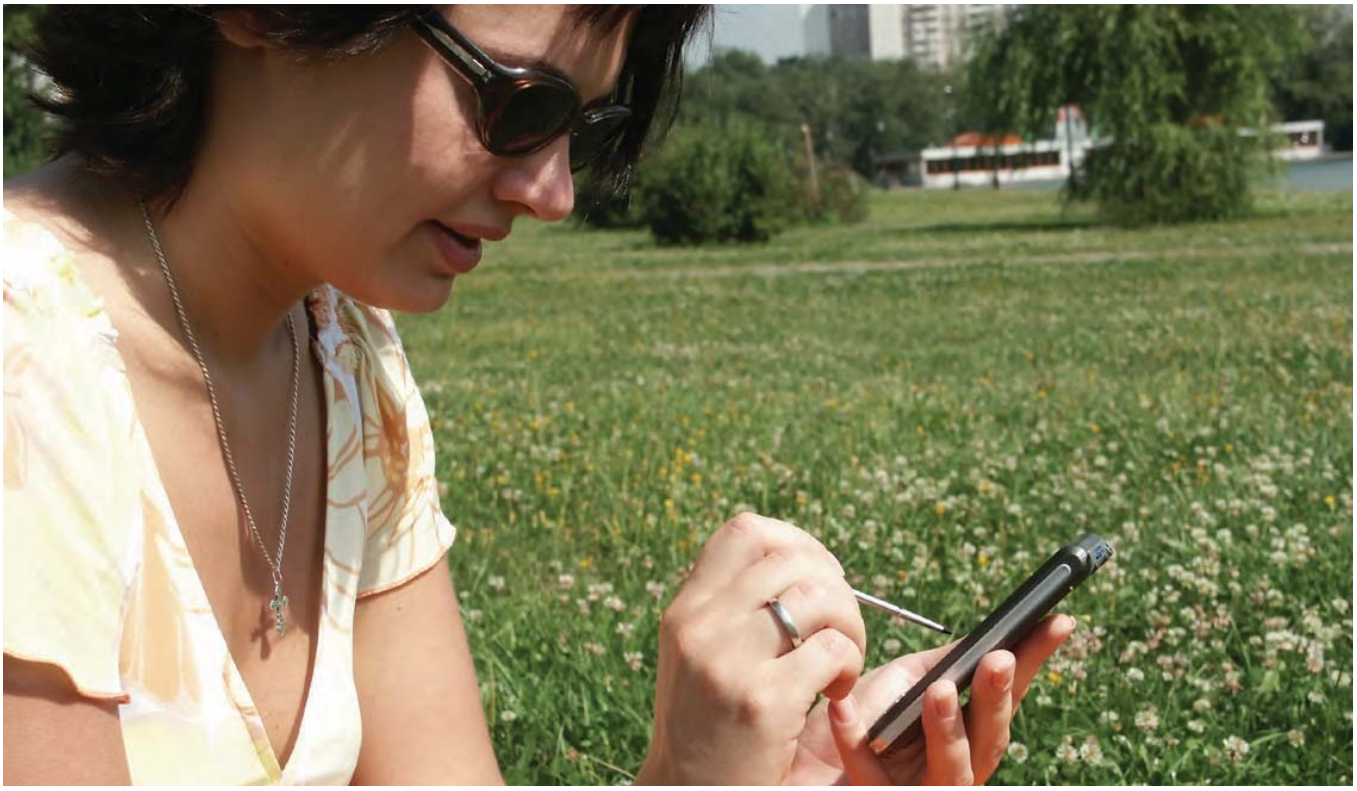
The success of the eBird project's mission depends in part on attracting a large quantity of data for eventual use by scientists – so the more eBirders, the better. These visits from eBirders help drive revenue, by attracting a corporate sponsor interested in reaching this niche audience. At the same time, the volume of use may increase the difficulty of quality control for the data. As it is, the three eBird project managers devote much of their time to communicating with the project's 400 regional editors, who act as the project's last line of data quality control. As the resource grows, the challenge of recruiting and maintaining qualified editors – without more concrete incentives for volunteering these efforts – will likely grow as well.

Broader implications for other projects

Rapid strategy shifts may be necessary to maximise a project's value. At its launch, eBird focused on the needs of scientists and did achieve some success with that approach. But after the first two years, the department's director made a decision to pursue a user-centred strategy – and bring in new leaders well positioned to carry out that approach. While no one should discount the importance of long-term planning, the reality is that projects may need to make relatively rapid, experimental adjustments in order to create the greatest value to users.

Successfully engaging with users requires deeply understanding them and their needs. The eBird project successfully identified the unmet needs of individual birders, the second side of its two-sided market. As a result of the project managers' efforts to serve this second market, scientists are getting a greater quantity of data. This would not have been possible without understanding the various constituencies the site can serve, and investing the resources necessary to study and address the needs of those audiences.

Diversifying revenue streams can be beneficial, but requires expertise and infrastructure. The Information Science Department draws revenue from an impressive number of sources, and this is possible in great part because of the human expertise and financial infrastructure available to the department. They have a staff member committed to helping draft grants to private foundations and to the NSF, Cornell provides endowment management, and the Lab of Ornithology voluntarily provides funding from its endowment directly to the department.



Furthermore, the department can draw on the programming skills of internal staff and external Cornell computer and information science students, who are hired for part-time work-study positions.[11]

eBird provides an example of supporting Open Access content and tools through the sale of customised services. The Information Science Department supports eBird as an Open Access resource by selling customised versions – without apparent detriment to the central mission of the project. This is an appealing (if highly unusual) business model for digital projects, as it makes content freely available to attract eyeballs, while monetising specific iterations or customised tools which work with that content.

A project's organisational structure can build in incentives for innovation. The Lab of Ornithology allows the Information Science Department to generate additional funds through the side projects it operates alongside the Open Access eBird portal. This acts as a driver for the department to forge ahead with new revenue-generating ideas. Although there are no individual bonuses given for the department's overall financial performance, the structure encourages members of the department to see the benefit that pursuing these projects will bring directly to their unit. In part, this may be a function of the fact that eBird is situated in the natural sciences, an area in which research units are often judged partly on how much grant funding they bring in, and in which the 'tech transfer' process allows scholars and their host institutions to benefit financially from research innovation. But no matter which discipline a project is situated in, organisational incentives for efficiency, innovation and revenue generation can be incorporated in the overarching mission goals.

11 Readers who are not familiar with the US Federal Work-Study Programme for college students can learn more here: **www.ed.gov/programs/fws**

"No matter which discipline a project is situated in, organisational incentives for efficiency, innovation and revenue generation can be incorporated in the overarching mission goals."

Appendix A: Interviewees

Note: An asterisk (*) denotes a primary contact.

Paul Allen, Assistant Director of Information Science, Cornell Lab of Ornithology, 9 December 2008

Barry A. Bermudez, Marketing Manager, Information Science Department, Cornell Lab of Ornithology, 10 December 2008

Rick Bonney, Director of Program Development and Evaluation, Cornell Lab of Ornithology, 9 December 2008

Marshall Iliff, **Brian Sullivan** and **Chris Wood**, eBird Project Co-Managers, Information Science Department, Cornell Lab of Ornithology, 9 December 2008

***Steve Kelling**, Director of Information Science, Cornell Lab of Ornithology, 12 August 2008, 9 December 2008, 18 February 2009 and 13 March 2009

Appendix B: Summary of revenues and costs

eBird, Estimates for 2008–2009

Revenue Category	Description	Approx. amount
Endowment payouts*	eBird's share of the annual payout from the Lab of Ornithology's endowment	$110,000
Trail Tracker kiosks	Rental fees from nature centres	$40,000
eBird customised portals	Licensing fees from wildlife organisations and others	$100,000
eBird sponsorship	Payment for placement of logo on the eBird banner	$50,000
Total revenue		**$300,000**

*Based on pre-recession endowment value.

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	3 PT project co-managers; 3 PT administrators	2.75	yes		
Content selection & production			no		400 volunteer regional data editors
Sales & marketing			no		Provided by the Lab of Ornithology
Technology	1 FT developer; 1 PT database administrator;	1.5	yes		
Total personnel costs		4.25		**$232,000**	
Non-personnel costs			Included in budget?		
Administration & overhead	20% return of revenue to the Lab of Ornithology (excludes endowment payout revenue)		yes	**$38,000**	Endowment & fundraising managed by Cornell University; office space provided by the Lab of Ornithology
Scanning, metadata, etc.	N/A				
Hosting & technology infrastructure	Software and licensing fees; hardware		yes		
Total non-personnel costs				**$68,000**	
Total budgeted costs				**$300,000**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The data, which are presented in the local currency of the project, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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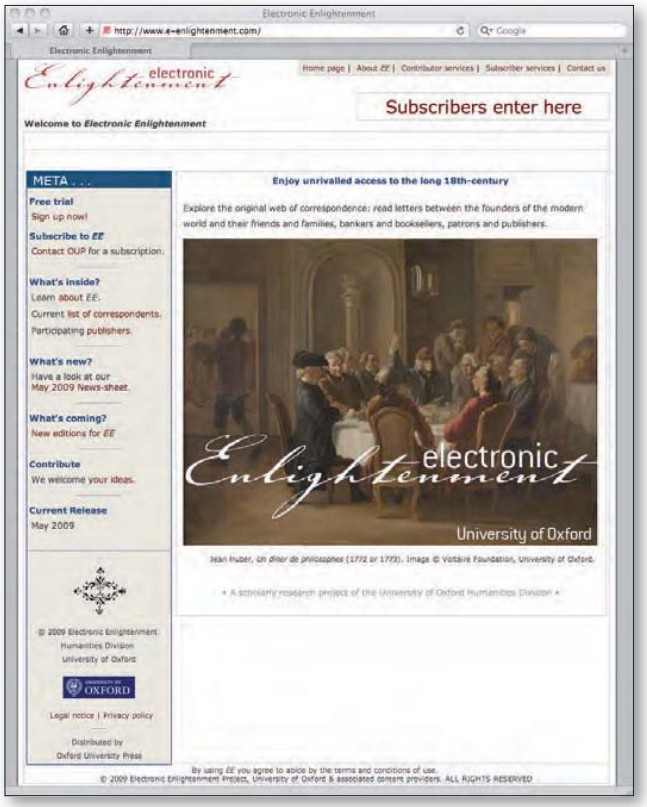
Document N°: 558a

Electronic Enlightenment: Subscription-based Resource Sold Through a University Press

University of Oxford, Oxford, United Kingdom

www.e-enlightenment.com

After several years of reliance upon foundation support, Oxford University's Electronic Enlightenment (EE) – a database containing the digitised correspondence of over 6,000 thinkers and writers from the long 18th century – needed to transition to an independently sustainable model. After hiring a business planning consultant to help them think through different options, the project leadership concluded that a sustainability model based on institutional subscriptions to the resource was the best fit for the project's needs. In addition to the revenue model, another important component of the sustainability plan was the establishment of a new set of institutional relationships, including the project's move from its prior home at the Voltaire Foundation to a new base at the Bodleian Library, and the development of a sales, marketing and delivery agreement with Oxford University Press. This case study will explore the factors that made EE well-suited for a subscription model, the reasoning behind the establishment of its new institutional relationships and the challenges surrounding the continued development of this unique resource.



Introduction

The Electronic Enlightenment is a database that allows users to search and discover the digitised correspondence 'between the greatest thinkers and writers of the long 18th century (1688 to 1834) and their families and friends, bankers and booksellers, patrons and publishers' through rich interlinking and cross-searching.[1] The database includes over 53,000 letters in a variety of languages by over 6,000 different individuals. Content currently in the database is drawn from published documentary editions, and so includes almost 230,000 scholarly annotations explaining the context and significance of the material. The resource provides value to users not just through enabling them to search and locate digitised correspondence – something which is unique today, but which could be replicated through mass digitisation initiatives eventually – but also through giving users the ability to move among and between letters related to one another in a wide variety of ways. The project's goal was expressed by one of its early leaders, Robert Darnton: by 'digitising the correspondence of Voltaire, Rousseau, Franklin, and Jefferson – about 200 volumes in superb, scholarly editions – [the Electronic Enlightenment] will, in effect, recreate the transatlantic republic of letters from the eighteenth century'.[2]

The resource's origins go back to 1995. The director of the Electronic Enlightenment, Dr Robert McNamee, recalls sketching out the initial idea for the project with Darnton on the back of a napkin. He 'had heard about the web, and thought it would be a great fit,'[3] McNamee said. The internet seemed to be the perfect match for digitised correspondence because of the similarities in their networked natures. In addition to being relatively short and easy to read on a computer screen, letters by definition refer and 'link' to ideas, people and places described in other letters;

1 Oxford University Press, 'Electronic Enlightenment', **www.oup.com/online/ee**

This case study was researched and written by K. Kirby Smith as part of the Ithaka Case Studies in Sustainability project.

2 Robert Darnton, 'The Library in the New Age', *The New York Review of Books* 55, no. 10 (12 June 2008).

3 Unless otherwise noted, all quotations from staff members and other individuals knowledgeable or associated with the Electronic Enlightenment are drawn from interviews conducted as part of this case study between December 2008 and February 2009. A full list of interviewees is included in Appendix A.

'we thought if it all got digitised properly...the links [between the documents] would be the ones made by the people themselves'.

Development of the Electronic Enlightenment (EE) began as a research project at Oxford University's Voltaire Foundation, with the initial goal of providing digital access to critical editions of the letters of Voltaire, Rousseau and others published by the Voltaire Foundation. Over time, the project grew to include the papers of thinkers and writers from across the 18th century. The project's initial funding came from a series of grants from the Andrew W. Mellon Foundation. Between 2001 and 2008, the Foundation awarded eight grants totalling $2,742,100 to support the ongoing maintenance and development of the resource. As is the case with many grant-funded projects, philanthropic funding to support ongoing costs could not continue indefinitely; EE needed to establish an independent sustainability plan to support the ongoing costs of maintaining and developing the resource. With the help of a business consultant with expertise in scholarly publishing, the project leaders developed a plan that they hope will leave them well positioned for sustainability into the future.

Sustainability model

Goals and strategy

The Electronic Enlightenment had long planned to transition from a grant-funded project to an independently sustainable research project. The Mellon Foundation made it clear that this would be necessary as early as the second and third project planning and research grants, and in the fifth grant the Foundation supported the project's hiring of a business planning consultant, Judy Luther, to help them think through the ongoing costs they would need to cover (including staff, digitisation, technology, licensing fees to publishers and institutional overheads), to evaluate different revenue-generating options and to develop budget projections for the first few years. EE's sustainability goal is to generate enough revenue to support the continued development of content and tools for the resource; the project is in the early stages of using a subscription model to achieve this.

> *"The EE's sustainability goal is to generate enough revenue to support the continued development of content and tools for the resource."*

Costs

Electronic Enlightenment's annual operating budget is approximately £220,000, before variable expenses such as data capture.[4] Staff is the project's major expenditure, totalling approximately 60% of the total budget. McNamee, the head of the project, works for EE four days a week; one day a week he continues to do consulting work for the Voltaire Foundation. The correspondence editor works four days a week, and the project's technical editor works two days a week. They soon plan to hire a full-time project manager. In addition, the project benefits from the contributed time of individuals from the Bodleian Library, including Richard Ovenden, keeper of the Special Collections and associate director of the Bodleian Library, but this occurs in a collegial context and so is not built into the project's budget. The project contributes £7,700 to the Bodleian Library to cover overhead expenses associated with office space and utilities. Other costs, including accounting and administration, total around £21,000.[5]

There are a variety of costs associated with content creation. After signing licensing agreements with publishers, project staff must track down and purchase volumes to be digitised; many of these are available only through auction, and can create significant expense. Digitisation and data-capture work is not done in-house; instead, the books are scanned by a supplier in the UK, and the PDFs are converted into XML by a contractor in India, in close consultation with the EE team. Fees for this outsourced work are variable, based on the amount of content added in a year, but average around £45,000 annually.

> *"In addition to these fixed costs, the project has variable costs dependent on revenue."*

Technology is another source of expense for the project. EE pays approximately £4,000 a year to a commercial vendor specified by Oxford University Press (OUP) for data hosting, which includes electricity, bandwidth, air conditioning, security, rack rental and back-up, and £11,000 a year for 24-hour live monitoring, support and maintenance for the servers. The project keeps software costs low by using open-source solutions when possible. Because of its association with Oxford, the project is able to license proprietary software at educational rates: it pays approximately £150 a year for its text editor, and £750 a year for FileMaker Pro.

In addition to these fixed costs, the project has variable costs dependent on revenue. OUP retains 30% of sales revenue for providing sales and marketing services, access control through their authentication system and technical support for users. Since publishers still hold copyrights for much of the content in Electronic Enlightenment, the project must also return royalty fees to rights holders; McNamee estimates these will total around 15% of revenue.

Revenues

Oxford University Press offers Electronic Enlightenment through institutional and annual subscriptions in the UK, the US and across the world. EE was a strong candidate for becoming a subscription product because of the uniqueness and depth of its content, and because new content and new functionality would be added to the resource over time. UK higher education institutions

4 All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of costs.

5 This figure includes funds to cover the partial time of Nicholas Cronk, director of the Voltaire Foundation and one of the principal investigators for the Electronic Enlightenment, until the end of the current Mellon grant.

Christchurch College, Oxford

benefit from consortial pricing through JISC Collections; for 2009, annual EE subscription fees for these institutions range from £2,550 for the largest institutions to £518 for the smallest, with prices set to increase approximately 5% a year for at least the first three years.[6] An individual subscription option also exists.

The subscription offer was launched in September 2008. Within three years, Electronic Enlightenment expects to attract between 250 and 300 subscribers. As of this writing, subscriptions have not yet become available for a full library budget and billing cycle, and many institutions are still engaged in evaluating the resource through a free trial, so it is difficult to predict how much revenue will be generated in the first year. However, those involved with the project are optimistic that they will meet their sales targets. As of the beginning of February 2009, 47 institutions had subscribed to the resource, including 32 in the United States and 15 in the rest of the world. An additional 175 institutions from the United States alone were participating in the free trial. These 47 subscribers place Electronic Enlightenment 'a little over halfway' towards their uptake goals for 2008–2009. Claire Dowbekin, senior marketing manager at Oxford University Press, stated that she has been 'very happy' with the early uptake of the subscription offer. 'There's still a ways to go,' McNamee said, but he feels optimistic that the project will meet its sales targets. Given the current economic climate, however, McNamee is 'realistic' about the fact that meeting these targets may be more challenging than anticipated, as library acquisitions budgets at many institutions are shrinking.

Grant funding may play a limited but important role in generating revenue for Electronic Enlightenment in coming years. The project will continue to apply for grants 'in closed-up projects', but not for operational expenses. For example, it might apply for grants to support the digitisation of specific bodies of content, like a collection of Locke letters, or the addition of functionality to process new types of content, like the Bodleian's collection of portraits – projects that will add to EE's infrastructure, but that have defined start and end points. A challenge with grant funding is that many foundations require content to be Open Access; in the future, EE plans to handle this requirement by providing institutions that own the content with digital copies of content that EE has digitised with the support of grant funding. The contributing institution can then make that content freely available, and EE will preserve the added value of its search tools and aggregation.

Outsourcing sales, marketing and delivery

An important component of the Electronic Enlightenment's subscription-based model is the outsourcing of marketing and sales to Oxford University Press. When still a part of the Voltaire Foundation, the project leadership considered conducting these activities in-house, but decided that they did not have the internal capacity to cultivate and manage so many customer relationships. 'We would have had to hire a half-dozen marketers,' McNamee said. They concluded that their resources would be best spent concentrating on the development of the content, while outsourcing sales to an entity with expertise in that area.

> *"They concluded that their resources would be best spent concentrating on the development of the content, while outsourcing sales to an entity with expertise in that area."*

After evaluating a number of potential partners including ProQuest, Gale and Alexander Street Press, Electronic Enlightenment concluded that Oxford University Press would be the best match for its needs. 'There's no other academic press near that size, with that global reach or with those established digital projects,' McNamee said. First, as the world's largest university press, OUP had a network of established sales relationships with most of Electronic Enlightenment's potential customers. In the first months after the product's release, for example, institutions had already subscribed from the US, UK, Italy, Spain, Germany, China, Australia and elsewhere; this global reach would be difficult for a project to achieve on its own. Second, the press already offered a number of digital resources and reference works – such as the Oxford Dictionary Online, Oxford Music Online and others – which gave them experience with the issues surrounding the marketing and sale of these types of products and the technical expertise to support them.[7] Third, OUP's not-for-profit, scholarly mission also felt like a good cultural fit for the Electronic Enlightenment. The fact that both OUP and Electronic Enlightenment are part of Oxford University

6 JISC, 'JISC Collections – Electronic Enlightenment', **www.jisc-collections.ac.uk/catalogue/ee#cost**

7 Another benefit of contracting with OUP is that this relationship facilitated the development of cross-linking capability with other Oxford digital resources such as the Oxford English Dictionary Online, Grove Music and Art, the Oxford Dictionary of National Biography, the Encyclopedia of the Enlightenment and others. These links could have been built even if EE had gone with a different publisher – in fact, EE is currently in negotiations with Cambridge University Press and Taylor and Francis to develop cross-links with other projects – but the close relationship with OUP made this easier.

was also a major advantage, as this option would enable them to 'keep the work and the income within the university'.[8]

Typically, OUP develops its Oxford Online products in-house; Electronic Enlightenment is the only digital project for which the press acts as a marketing and sales agent. Several factors led to their interest in EE when approached about it by project leaders. Dowbekin said that the press felt it was an innovative project that fit in well with the press's areas of disciplinary strength. 'It covers content in so many different areas that OUP publishes – history and literature for example – so EE can sit in lots of different catalogues.' In addition, the project fit well with the press's scholarly mission, and felt like a good match because of the Oxford connection. Although the press has no editorial control over the content in EE, they feel confident of the high scholarly standards of the work, both because it has been developed by Oxford scholars and because much of the content has already been published by other presses.

As the exclusive marketing, sales and distribution agent for Electronic Enlightenment, OUP's responsibilities include promoting and selling the product, taking care of customer set-up for free trials and online accounts and providing first-line support for customer queries. Despite being the only digital product OUP distributes on behalf of another organisation, 'from a sales and marketing viewpoint, we treat it just like one of our own,' Dowbekin said. EE's marketing managers developed promotional material following similar formats and templates to those used for other products; the only difference is that, in this case, all the promotional copy must be run by McNamee and Ovenden for approval. Electronic Enlightenment is sold by the sales team of online product specialists responsible for selling OUP's line of digital resources in regional and institutional territories.[9] 'When a member of the sales team is talking to someone about Oxford Scholarship Online, there's no reason why they shouldn't also be talking about Electronic Enlightenment,' Dowbekin said. 'We wanted the sales team to just think of it as another product they could sell.'

Early results suggest that marketing efforts that are more customised might be necessary to maximise uptake of EE, however. OUP's other digital products are all reference works; Electronic Enlightenment is different in that it includes

8 The fact that both the press and Electronic Enlightenment are part of the same legal entity, Oxford University, did cause some complications in establishing the terms of the relationship, as the units could not formally contract with each other. With some effort, the parties were able to develop a Memorandum of Understanding that met their needs.

9 The department has been increasing the number of staff in the past few years, but they did not have to take on anybody new just for this project – their sales team is regional and focused on electronic products, so this became simply another item on their lists. In this way, the Electronic Enlightenment obtains access to 'fractional people' who are experts in sales and marketing, something that would be difficult to achieve if this work was all performed in-house.

primary-source material, so strategies that are successful for reference products might not apply. 'With something like EE, we're discovering it's not that easy to sell on the phone' or with traditional marketing materials, McNamee said. Librarians have a clear understanding of what electronic dictionaries and encyclopaedias look like, so the sales pitch for a product like the Oxford English Dictionary Online is relatively straightforward. More personal advocacy may be required to explain and demonstrate what a digital resource of correspondence can do. In addition, although the fact that Electronic Enlightenment includes content touching a wide range of disciplines – philosophy, history, literature, political science and more – is one of the strengths of the product, this breadth also creates some challenges in marketing it to libraries, because recommendations about digital product purchases are often made by discipline-specific librarians who might not focus on the cross-disciplinary value of the resource.

Electronic Enlightenment is responding to this challenge in a variety of ways. In addition to working closely with the OUP team to refine the marketing approach, McNamee travels extensively to conferences and campuses to act as an advocate for the project. He is developing targeted promotional materials highlighting the unique features of EE and will co-sponsor a variety of public events at places such as the New York Public Library to promote the resource. Although these strategies could help increase the number of subscribers, they also require greater levels of marketing-related time and resources from project leadership than were anticipated when the agreement with OUP was penned.

Finding an appropriate institutional home

After finding a sales and marketing agent, an important component of the Electronic Enlightenment's sustainability plan was finding a new institutional home. The Voltaire Foundation – a unit within the Humanities Division of Oxford University with the core mission to edit and publish definitive scholarly editions of the works of Voltaire and other French Enlightenment figures – is focused heavily on the research and editing of these print-based critical editions. It had been a logical base of operations when the project was in early research stages focused largely on the digitisation of Voltaire Foundation content, but as the Electronic Enlightenment project expanded in scope, McNamee began to think about moving the project to a division of the university with more resources and experience in supporting large-scale digital projects.

Oxford University's Bodleian Library quickly emerged as the most promising candidate. McNamee felt that a library would be an ideal host for a 'scholarly technology' project, because 'librarians are used to dealing with information and technology, and feel they belong together'. (He contrasted this with other areas of academia, in which 'too many people see the editor and the techie as being in distinct worlds. If you think that, you're not going to build this thing!') The Bodleian Library had experimented with a variety of digitisation initiatives in the past, and so might be more receptive to thinking about EE's potential. McNamee felt that associating the Electronic Enlightenment with the Bodleian Library would help attract more content to the project. EE would have easier access to Oxford's own collections, and the library's excellent reputation would provide an incentive for other publishers to contribute their scholarly editions to the database – an incentive that might help overcome concerns another publisher might have about contributing their content to a resource sold by a competing press. In addition, the library could provide robust administrative support, and it has a high profile within the university, which may be valuable as the project looks for ways to expand.

McNamee made 'a sales pitch' to the leadership of the Bodleian Library about why they might be interested in adopting the project. A few reasons were particularly convincing. According to Ovenden, the project fits very well with the library's mission to support Oxford faculty, to promote scholarship, and to make valuable resources accessible to their community. Also, the project provided valuable infrastructure that the library thought it might be able to leverage to help bring together a variety of its own internal digitisation efforts.

The fact that the project had already hired OUP to act as its sales and marketing agent may have helped instil confidence that the project would be able to generate revenue to support itself. This was important, because although the library was interested in adopting Electronic Enlightenment, leadership was concerned about the expense of the move. Although EE's business plan suggested that revenues would cover the project's costs within three years, 'it was important that the library didn't make a loss' during the intervening years, according to Ovenden. To bridge this gap, a $100,800 grant from the Mellon Foundation was secured to support the 'embedding' of Electronic Enlightenment in the library during the first year, covering the estimated deficit that it will incur until subscription revenues have reached a sustainable level.

Even if Electronic Enlightenment were to fail to generate enough revenue to cover its costs in three years, McNamee feels that the library and the university would find ways to continue to support it. In part, this is because Electronic Enlightenment's infrastructure will be leveraged to support a variety of other initiatives at the Bodleian Library; if EE can function as a 'node' for digital projects at the library, the institution will have more of an investment in its ultimate sustainability. Also, McNamee says that EE is 'an integral part of the University of Oxford', and a 'flagship' library project, giving him confidence that the institution will find ways to bridge any gap that may remain after the embedding grant runs out.

Key factors influencing the success of the sustainability model

Content development strategy

Thus far, most of the primary-source content included in Electronic Enlightenment has been drawn from scholarly editions of letters and papers published by university presses and societies such as the Voltaire Foundation. These publishers license their content to EE in exchange for a small revenue share, based roughly on the number of editions and volumes they contribute and on the number of subscribers to the resource. Many of these licences were signed several years ago, but McNamee said that even more recently he has seen little resistance from publishers to contributing their content. He feels that publishers see it as prestigious to have their content included in EE and associated with the Bodleian Library. Also, it is unlikely that publishers would be able to develop a competing resource independently; the costs of development were so high that they 'could only have been funded by someone like Mellon,' McNamee said, and the volume of proprietary metadata the project has created would be difficult to replicate.

Initial content-development priorities focused on the correspondence of the Enlightenment's big names, such as Voltaire, John Locke, Adam Smith and others. Additional content selections were influenced by a combination of factors – adding historical and scholarly value, maximising the interconnections within the resource and expanding the geographic reach of (and the market for) the content. For example, EE sought to include the correspondence of Americans such as Benjamin Franklin not only because of their historical importance, but also because they would make the resource more appealing to US libraries.

Electronic Enlightenment plans to continue adding correspondence from important individuals, but 'over the next couple of years we will get most of the famous [people] in,' McNamee said. In order to continue expanding the resource, the project plans to include more content obtained directly from special collections. Unlike the content currently in the database, however, documents of this type will not come complete with the high-quality scholarly annotations that contribute to EE's value. Project leaders have begun to think about ways to leverage community contributions to create this important layer of scholarly commentary. Although plans are still in early phases, they are thinking about ways for scholars to 'publish' new primary-source materials and associated annotations in the database, or to engage in collective annotation and tagging in a siloed area of the site; material judged to meet the project's scholarly standards could then be admitted to the larger database.

Meeting the needs of users

As with all products offered through an institutional subscription, the Electronic Enlightenment has to respond to the needs of the scholars and students who constitute the project's user community, and to the needs of the librarians who make purchase decisions for their institutions. McNamee said that the needs of end-users have always been a central focus of the Electronic Enlightenment project. Now that EE is offered through subscription, Oxford University Press provides front-line user support as part of their sales and marketing agreement. The press handles issues related to access and technical support directly, and aggregates other content- and design-centred comments to pass on to the project periodically. In the first months since the product's launch, a significant amount of user feedback has related to requests for additional metadata or search fields, which the project then builds into its normal development cycle. Based on user feedback, the project is also investing in a major redesign of their webpage and interface, to create a sleeker, more user-friendly design that will make it easier for first-time users to find their way around the content.

In addition to responding to the needs of the scholars who are the end-users of the product, both by incorporating their feedback and by planning to develop ways for scholars to contribute to the content of the resource more directly, EE has taken steps to meet the needs of the library community that constitutes the bulk of the market for its institutional subscriptions. Before the subscription product was launched, and based on a recommendation from OUP, EE built in metrics so that librarians could evaluate the usage of the content. In the next months, EE plans to start updating the resource with new content monthly, rather than biannually. More frequent updates will not only provide more opportunities to reach out to the user community, but may also help cement the value of EE as a dynamic and evolving resource worth recurring expense.

Governance and organisation

Now that the project is based at Oxford's Bodleian Library, McNamee reports to Ovenden on issues relating to the project's budget and its relationship to other areas of the university. The project also recently established an academic advisory board including noted scholars from Oxford, Cambridge and the University of London to provide input on content-related issues surrounding the development of the resource. For most decisions, however, responsibility falls to McNamee. This structure allows the project to make decisions and reprioritise quickly, while maintaining regular periodic oversight related to the direction and stability of the resource. The dedication of the core Electronic Enlightenment team is important to the project's ability to develop a resource on a limited budget. The members of the team are stretched to the limits of their current capacity; 'there are a lot of nights and weekends' to meet deadlines, McNamee said.

> *"McNamee feels that blending business experience with scholarly expertise is important for similar digital projects."*

In addition to a doctorate in English Language and Literature, McNamee has a background in business, science and technology, which he feels has been a particular asset to him in developing Electronic Enlightenment from a grant-funded digitisation project into a digital resource that will be sustainable and valuable to the community. This experience helped emphasise the importance of pragmatism, long-term planning and continued innovation; he said he 'always saw that this needed to be viewed in terms of the users...and where they would want [the resource] to be ten years from now'. McNamee feels that blending business experience with scholarly expertise is important for similar digital projects. 'I would never agree to have a business person [with no scholarly background] in charge of something, but there should be a partnership,' he said.

Benefits and challenges

Electronic Enlightenment is managing its transition from a grant-funded project to a subscription-supported resource by maintaining a pragmatic focus on the value it provides to users, and by leveraging relationships with other units at Oxford. It is too early to determine how much revenue Electronic Enlightenment will ultimately generate from its subscriptions, and therefore to know whether this model will enable independent sustainability. Early participation in free trials and uptake of subscriptions suggests, however, that there is significant library interest in the product. If sales targets are met, subscription revenue – possibly augmented by some grant funding and light institutional support – should provide the product with a steady, recurring revenue stream that will continue to support its very lean staffing model.

For several reasons, the resource seems well suited to a sustainability model based on institutional subscriptions. Electronic Enlightenment contains a tremendous volume of unique primary-source content (much of it still in copyright), with

search and linking functionality that cannot be easily replicated by competitors or by mass digitisation initiatives. Unlike some other projects focused on niche content of interest to a relatively small group of scholars, EE's content is accessible to users of different ages and backgrounds (including some individuals and secondary school students), and relevant to a wide variety of disciplines, making it more attractive for libraries interested in investing in resources that will benefit many on their campus.

Although the resource's origins are as a not-for-profit research project, the OUP subscription offer raises user expectations for quality to levels comparable to those typical of commercially developed products. The choice of the subscription model also means that Electronic Enlightenment has to meet expectations that the resource will continue to grow in terms of both content and functionality. Frequent and regular updates help justify the recurring expense to libraries, who may be more accustomed to investing in primary-source content – print-based scholarly editions or digital resources like Early English Books Online (EEBO) – on a one-time-purchase basis.

A culture of continued innovation has helped Electronic Enlightenment develop beyond a straightforward digitisation project into a resource that offers additional value for the user. Moving forward, this may help ensure that the project keeps abreast of new developments in technology and help focus the team's limited resources on key tasks. The latter element seems particularly important, since EE operates with a tiny staff. Although a team of this size has been sufficient to meet the project's needs so far, it is worth considering the fact that in the future, increased expectations about content and functionality may require the project to add more internal capacity, thus increasing its costs.

By outsourcing sales and marketing to Oxford University Press, the Electronic Enlightenment is able to tap into a large outreach network much more easily and efficiently than it would be able to do had it tried to sell subscriptions in-house. The project benefits not only from OUP's expertise in marketing digital products, but also from its established relationships with librarians, who may be more inclined to purchase additional content from OUP than they would be to set up a new sales channel for a one-off resource. Personal outreach by project leadership is still necessary, however, to promote the resource to libraries, so the real costs of marketing and outreach are currently higher than the 30% of revenue that EE pays OUP.

The Electronic Enlightenment seems uniquely positioned for success because of its strong institutional relationships. The project is fortunate in that it is based at the same university as the world's largest university press, which happened to offer a line of digital resources for which the product was a good match. Similarly, it benefits from its position as a project of Oxford's Bodleian Library, as that institution's strong reputation helps EE attract content to the resource and raises the project's profile within the university. In addition, the project's relationship with the Andrew W. Mellon Foundation at a time when the foundation was investing heavily in digitisation projects provided the funding that enabled EE to develop to the size where OUP might be interested in a sales and distribution relationship. Although the ultimate results of the revenue model are still unknown, it is clear that without these three relationships, Electronic Enlightenment would have had an even more challenging time developing a sustainability plan. It also seems important that the project started thinking about sustainability planning early, as the existence of a robust business plan contributed to EE's ability to establish these institutional relationships and to receive additional grants.

Broader implications for other projects

Institutional subscriptions can provide a steady revenue stream for some projects, but the model also raises expectations for quality and growth. Electronic Enlightenment seems well suited to an institutional subscription model because of the unique value of its content to a wide range of academic disciplines, and because it plans to continue adding to and developing the resource over time. These features help make the case to librarians for committing to annual expenditures on the resource. Projects considering implementing a similar model need to evaluate carefully whether their resource is of sufficient scale to attract library attention, and whether they are similarly able to commit to the continual reinvestment in the resource that a subscription model requires.

Outsourcing sales, marketing and distribution to a third-party publisher can be an efficient and effective way to promote a resource to a broader audience. By outsourcing sales and marketing to Oxford University Press, Electronic Enlightenment has been able to reach many more potential customers than it would be able to do independently, and has avoided having to develop and implement expensive systems to support billing and access. Developing a partnership with a scholarly publisher might be an attractive solution for other projects with valuable, marketable content. Such an arrangement allows the project team to focus on developing the resource, while leveraging an established outreach network. However, projects need to be sure that the publisher is willing to invest in crafting a message well-suited to the resource, and they need to recognise that even after outsourcing sales and marketing, they may still have to spend additional time on direct outreach and promotion to users. It is also worth noting that there are relatively few presses and publishers with experience in the sales and marketing of subscription-based digital resources, particularly with primary-source content.

Demonstrating value can help forge stronger relationships with partner organisations. The Electronic Enlightenment was able to establish strong relationships with other university entities, like the Bodleian Library and Oxford University Press, in part because it was able to make a clear case for the value it could contribute to the other organisations. This value has both financial components, as demonstrated by the business plan, and mission-related components, such as advancing the institution's scholarly goals, or providing valuable infrastructure for future initiatives. By developing a similarly robust understanding of both the quantitative and qualitative benefits of a resource, other project leaders may be able to make a more convincing case for developing close relationships with other entities at and beyond their institutions.

Appendix A: Interviewees

Claire Dowbekin, Senior Marketing Manager, Oxford University Press, 5 December 2008

Robert McNamee, Director, Electronic Enlightenment, University of Oxford, 5 December 2008 and 19 February 2009

Richard Ovenden, Keeper of the Special Collections and Associate Director, Bodleian Library, University of Oxford, 5 December 2008

Appendix B: Summary of costs*

Electronic Enlightenment

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	Project director; EE soon plans to hire an FTE project manager	0.8	yes		
Content selection & editorial	Correspondence editor	0.8	yes		
Technology & programming	Technical editor	0.4	yes		
Other					Input/feedback from Bodleian Library staff
Total personnel costs		2.0		**60% of budget**	
Non-personnel costs			Included in budget?		
Overhead	To Bodleian Library, to cover expenses associated with rent and utilities		yes	£7,700	
Administration costs	Accounting, etc.		yes	£21,000	
Hosting & technology infrastructure	Data hosting, live monitoring and software		yes	£15,900	
Digitisation and data capture	Scanning done by vendor in UK, XML markup done by vendor in India (costs are variable depending on volume of content)		yes	£45,000 on average	
Marketing and sales**	Returned to OUP for sales, marketing and front-line user support		yes	30% of revenue	Additional staff time from project leader
Royalty fees**	Returned to publishers for use of content in copyright		yes	15% of revenue	
Total non-personnel costs	**(Not including marketing and sales or royalty fees)**			**40% of budget**	
Total costs	**(Not including marketing and sales or royalty fees)**			**£220,000**	

* Because EE only began offering a subscription service in mid-2008, no revenue data was available at the time of this writing.

**Marketing and sales costs and royalty fees are based on a percentage of annual revenue, and thus are variable from year to year. As EE's subscription offering is too new to predict annual revenue, these important expenditures are not included in this chart.

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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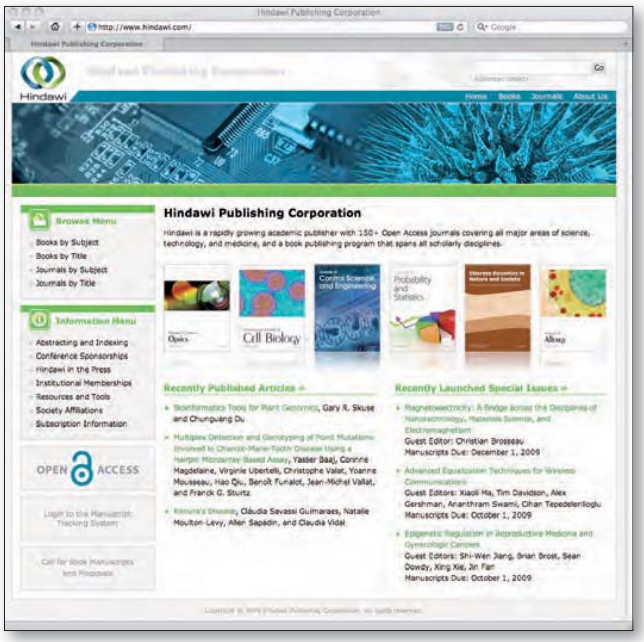
Hindawi Publishing Corporation: The Open Access Contributor Pays Model

Cairo, Egypt

www.hindawi.com

Hindawi Publishing Corporation, a Cairo-based for-profit publisher of journals in science, technology and medicine, was founded as a subscription-based publisher in 1997. By 2003, Hindawi had begun exploring Open Access (OA) models, and by 2007 had become an entirely OA publisher; its current list consists of 160 OA journals. Hindawi's financial model is based on charging contributors a fee per article published, a model also currently used by BioMed Central and the Public Library of Science (PLoS), among others. Since 2007 Hindawi has continued to refine its business model, in particular through its partnership with the scholarly publisher SAGE and by introducing institutional memberships earlier this year. This case study will explore Hindawi's path to choosing this financial model, the opportunities this choice has offered and the challenges it has posed.



This case study was researched and written by Nancy L. Maron as part of the Ithaka Case Studies in Sustainability project.

Introduction

Hindawi Publishing Corporation began in 1997 as a small scholarly publisher of subscription-based peer-reviewed online journals. Its founders, Ahmed Hindawi and Nagwa Abdel-Mottaleb, were motivated to start their company because of their belief that the 'low cost base and access to a large workforce of ambitious, well-educated young professionals' in Cairo would allow them to offer 'a labour-intensive service at a level that is not economically viable for most publishers based in the West'.[1] In particular, they built their business by stressing the administrative and editorial support they could offer their editors and referees, the strength of their custom-built web-based submission and publication platform, and the efficiency of their highly automated production process.

After some early success in building the subscription-based business, the owners became keenly aware of the increased competition among publishers for a shrinking pool of subscription dollars from libraries. Seeking another model, they decided to experiment with Open Access, and in 2004 launched a hybrid model that permitted journals to include both subscription and OA content. In the following years they expanded the OA side of the business, selling off some subscription journals and converting others to the OA model. The company was profitable well before its conversion to Open Access, and since February 2007 it has been an exclusively OA publisher, sustained entirely by its article processing charges. Originally specialising in mathematics and engineering, Hindawi has since moved into

1 Paul Peters, 'Case Study: Going All the Way: How Hindawi Became an Open Access Publisher', *Learned Publishing 20*, no. 3, (July 2007), pp. 191–95.

other areas including biomedicine, perceiving this as a growth area for journals. As of January 2009, Hindawi publishes 160 OA journals, and it expects to publish over 3,500 articles this year, with a target of publishing 10,000 articles per year by 2011. New journals are scheduled to continue launching at a rate of eight per month, as Hindawi seeks to grow its business from approximately $2 million in revenue in 2008 to $3 million in 2009.[2]

Sustainability model

Goals and strategy

A subscription-based journal publisher assumes the up-front costs of developing and producing a work that it then hopes to sell. This model, still in use by the vast majority of publishers of traditional print journals, relies on building a base of institutional and individual subscribers who pay an annual fee to gain access to the content, whether in print or online. In recent years, this financial model has been challenged by experiments with Open Access, whose proponents seek to make scholarly materials freely available to the widest audience possible. 'Open Access' refers specifically to the fact that anyone is permitted to read the content at no charge – without prejudice to the business model that supports it. The predominant business model that has emerged in recent years for financing Open Access journals has been the 'contributor-pays' model.

> *"For Hindawi, the initial transition away from subscription journals took place at the high and low margins of the business."*

The contributor-pays model, also referred to as an 'author-side' contribution model, relies on the authors to subsidise the publication of their articles, often with the help of research grants or contributions from their university departments. Hindawi administers this system through its article processing charges. Whereas a subscription-based model seeks to cover costs through the fees paid by subscribing institutions or individuals, under the author-pays model a publisher must think about the volume of articles, rather than the number of subscribers required for a journal to achieve its financial goals. Article fees are established to cover variable costs and a share of fixed costs, with the publisher determining the required minimum number of articles in order to recover costs. Hence, rather than focusing on the cost and price of a journal, the author-pays model focuses on the costs of the discrete unit of the article.

For Hindawi, the initial transition away from subscription journals took place at the high and low margins of the business. For its subscription-based journals, Hindawi determined the equivalent per-article revenue by dividing a journal's revenue by the number of articles published per year. In the case of four subscription-based maths journals, they felt that the per-article revenue was too high to successfully translate to article processing charges, and so these journals were sold to Oxford University Press. For those journals for which the subscription revenue was low (and therefore forgoing it would not be a risk to the company), a per-article equivalent cost was determined for each journal. An interesting middle-ground approach was taken in the case of one of Hindawi's first and most successful journals, the *EURASIP Journal on Advances in Signal Processing from the European Association for Signal Processing*. Although it was a successful subscription product, the transition was already under way: the journal had offered an OA option to authors, and over 35% of its articles were in fact already being paid for by article processing charges. Hindawi management was persuaded that this percentage was likely to increase.

Revenues

Article processing charges. Hindawi's article processing charges range from nothing, for publication in *Advances in High Energy Physics*, to $1400 per article for publication in its best-established journal, the *EURASIP Journal on Advances in Signal Processing*; of the 160 Hindawi journals listed as of February 2009, 119 carry charges of $550 per article or less.[3] Article processing charges are determined by Hindawi management based on market research assessing both the subject area and competitive pricing. For example, according to Head of Business Development Paul Peters, maths journals, even those with high impact factors, tend to carry low fees per article, and the field simply will not support higher pricing. While the average marginal cost to publish an article is $500, some new journals may launch with lower charges or no article processing charges at all in order to remove barriers to participation; once a journal is better established, prices can be raised to a level that makes the journal 'more sustainable for us'.[4]

Institutional memberships. Recently Hindawi introduced an institutional membership programme to complement its article processing charge model. Starting in August 2008, institutions were presented with the option of paying a flat yearly fee that would allow scholars at that institution to contribute articles to Hindawi journals without needing to pay article processing charges from their own individual research budgets. In most cases, the membership is held by the library.

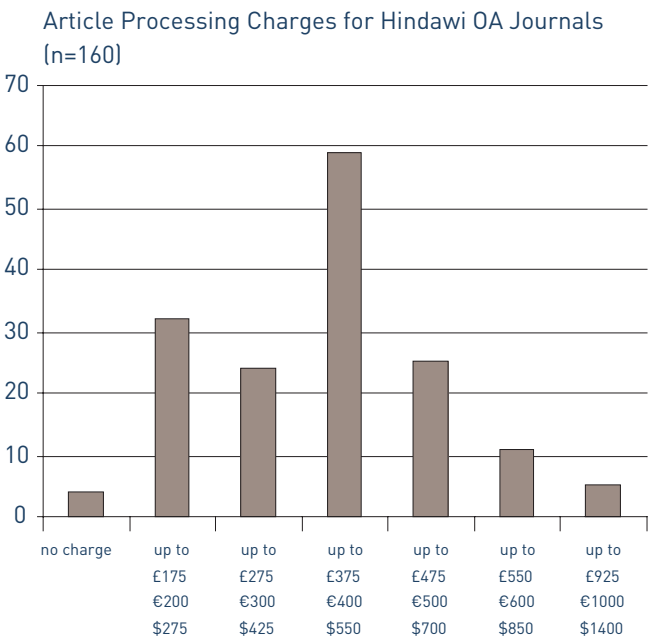
This feature, already a staple of other OA publishers including BioMed Central and PLoS,[5] was not initially favoured by Hindawi management. According to Peters, they felt that it eliminated an important feature of the contributor-pays business model, namely that this model made 'the costs of publication visible to authors and thus helped to create more price-based competition in the publishing market'. While institutional membership eliminates some of these incentives, Hindawi felt they needed to

2 All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

3 As of December, 2008, Hindawi has begun billing authors in their local currency: euros and pounds for Europe and the UK, and US dollars for everywhere else. This was in response to the economic downturn that began in autumn 2008, and to significant losses due to the company's dependence on the euro. They see this new policy as both making business easier for their customers and an effort to diversity their revenue sources.

4 Unless otherwise noted, all quotations from Hindawi staff members and other individuals knowledgeable or associated with Hindawi are drawn from interviews conducted as part of this case study between October 2008 and February 2009. A full list of interviewees is included in Appendix A.

5 For more details on the BioMed Central model, see **www.biomedcentral.com/info/about/instmembership**. For further details on the PLoS model, see **www.plos.org/support/instmembership.html**.



take this step in the interest of their authors who wanted it, and because they felt there were institutions that were interested in supporting OA in this way.

Unlike subscription fees, which tend to remain fairly stable from year to year, the fees Hindawi charges under its institutional membership model are closely tied to the volume of articles published by faculty on the campus in question. While this has the effect of protecting the publisher's per-article revenue model, it can result in wide year-to-year variations in cost to the institution, to keep pace with the output of its authors. Annual membership fees are calculated by examining the past output of scholars from that institution and using that as a basis for estimating what publication charges may total over the next 12 months. Peters says that this figure is expected to be an 'underestimation' of the cumulative charges that year, 'since we expect that the membership will result in an increase in submissions from member institutes'. So, as the number of articles published by a university's faculty increases, so will its financial contribution to Hindawi.[6] This protects Hindawi's revenue but can be difficult for librarians, who may support the OA concept but find the year-to-year variations in pricing difficult to manage.

Print editions and new content types. Another, smaller revenue stream for Hindawi, bringing in about 10% of its annual revenue, consists of print editions of its e-journals and a new line of scholarly monographs.

Containing costs: the Cairo effect

Perhaps the most important element that has permitted Hindawi to accomplish what it has is its location in Cairo, Egypt. Cairo is home to a plentiful labour market of college graduates, and the company makes an effort to provide their staff of 250+ with benefits the management feels are exceptional: generous holiday entitlement, medical coverage and free transportation to work, benefits that are apparently not common. Salaries in Cairo are substantially below those typical in Europe or in the United States, with a full-time editorial staff member earning the equivalent of $3,000–4,000 per year. There is some anecdotal evidence from past employees who set up their own Facebook page that while Hindawi's salaries are not high, the company is considered a great place to start a career because of its training and emphasis on high standards.[7]

> *"And it is this staff that Hindawi deploys to create the value of its enterprise..."*

And it is this staff that Hindawi deploys to create the value of its enterprise: The 250+ employees include 40 business development staff who research new subject areas in order to develop new journals and topic-oriented special issues; 30–40 editorial staff who liaise with authors, editors and reviewers; 60–80 editorial production staff who meticulously prepare manuscripts for publication; and 20 in-house programmers who build and maintain the platform and functionalities on which the entire enterprise relies. Given that many publishers are already in the habit of outsourcing certain labour-intensive activities, such as production, to countries with a low cost base, Ahmed Hindawi estimates that the company's costs in these areas are on a par with those of its competitors. It is in the areas of editorial and business development that Hindawi's location is most likely to result in significant cost reductions, since it is much less common for publishers to outsource these functions to countries with a low cost base. Salaries make up approximately half of Hindawi's operating expenses; with overheads – including everything from office space, to marketing costs, to editorial fees – comprising the other half.[8]

Key factors influencing the success of the sustainability model

As the scholarly community continues to explore sustainable paths to providing content to an unlimited audience free of charge, the OA author-pays model that Hindawi and other publishers have adopted continues to be closely watched. Several

6 A case in point is the decision of Yale University Libraries to drop BioMed Central membership in 2007. Yale explained that 'while the technology proved acceptable, the business model failed to provide a viable long-term revenue base built upon logical and scalable options. Instead, BioMedCentral has asked libraries for larger and larger contributions to subsidise their activities. Starting with 2005, BioMed Central article charges cost the libraries $4,658, comparable to single biomedicine journal subscription. The cost of article charges for 2006 then jumped to $31,625. The article charges have continued to soar in 2007 with the libraries charged $29,635 through June 2007, with $34,965 in potential additional article charges in submission...As we deal with unprecedented increases in electronic resources, we have had to make hard choices about which resources to keep. At this point we can no longer afford to support the BioMedCentral model.' See 'Library Drops BioMed Central's Open Access Membership', Science Libraries News, 3 August, 2007, Yale University Science Libraries, **www.library.yale.edu/science/news.html**.

7 See **www.facebook.com/home.php?#/group.php?sid=eb4b3cf1447cb4f45b7413dd56968172&gid=4514932615&ref=search**

8 Details of the financial arrangements Hindawi has with its partners SAGE, EURASIP and its editors-in-chief are confidential.

factors stand out in the path Hindawi has taken that are worth highlighting, some replicable and others not.

Understanding and creating value for users: authors as customers

With the shift from subscriptions to article processing charges came a significant shift in understanding users. No longer required to sell subscriptions to libraries, Hindawi turned its attention to its new customers, the authors themselves. This new focus, according to Peters, has helped to clarify Hindawi's mission to be a 'service provider for authors...With authors as the customer, it is always very clear'.

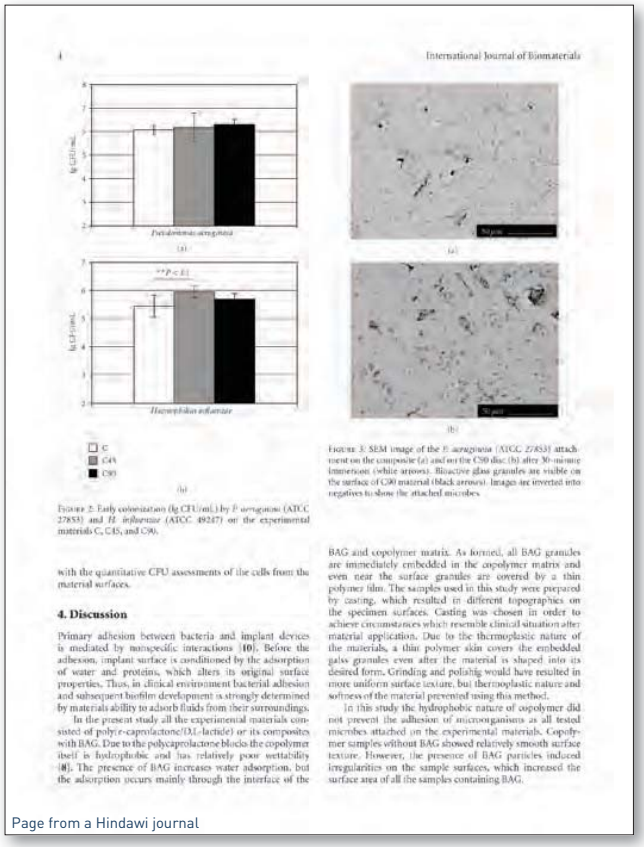
Among the things Hindawi feels authors care most about are the scholarly excellence of the publication, the prestige that participating in a well-regarded publication confers, high-quality production services and increased visibility of their work.

> *"As of early 2009, only 10% of Hindawi journals have an impact factor, which is still considered a very important mark of a journal's weight in the field."*

Building reputation. As of early 2009, only 10% of Hindawi journals have an impact factor, which is still considered a very important mark of a journal's weight in the field. This is largely because 90% of Hindawi's journals have only been in existence for a few years. 'Technically, it isn't difficult to set up a journal,' according to EURASIP president Marc Moonen, who has worked in partnership with Hindawi for seven years, and who was the publications officer for EURASIP when the society started moving its journals towards Open Access. Rather, he said, the biggest challenge for starting new journals is in building a credible reputation: 'that's the hard part and a slow process'.

Many of the issues that Moonen feels are important in developing a digital Open Access journal are similar to the issues for print journals: 'You have a handicap because you start from zero reputation-wise, and in terms of impact factors (which can take five years or so); many authors would never submit to a journal that doesn't have an ISI ranking.' One way to jump-start the process of reputation-building, he said, is to 'get many people involved, a well-reputed editor-in-chief, with a good collection of reputed colleagues to populate the editorial board, and that's the first step'.

Other specific strategies Hindawi has found useful include creating special issues with guest editors who can invite colleagues to submit papers. This strategy works particularly well for creating interest in the new community-edited journals Hindawi is launching. As Moonen explains, the goal is to create excitement around a special issue so that scholars start to think, 'Who can afford not to be represented on this topic?'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with the quantitative CFU assessments of the cells from the material surfaces.

4. Discussion

Primary adhesion between bacteria and implant devices is mediated by nonspecific interactions [10]. Before the adhesion, implant surface is conditioned by the adsorption of water and proteins, which alters its original surface properties. Thus, in clinical environment bacterial adhesion and subsequent biofilm development is strongly determined by materials ability to adsorb fluids from their surroundings.

In the present study all the experimental materials consisted of poly(ε-caprolactone/D,L-lactide) or its composites with BAG. Due to the polycaprolactone blocks the copolymer itself is hydrophobic and has relatively poor wettability [8]. The presence of BAG increases water adsorption, but the adsorption occurs mainly through the interface of the BAG and copolymer matrix. As formed, all BAG granules are immediately embedded in the copolymer matrix and even near the surface granules are covered by a thin polymer film. The samples used in this study were prepared by casting, which resulted in different topographies on the specimen surfaces. Casting was chosen in order to achieve circumstances which resemble clinical situation after material application. Due to the thermoplastic nature of the materials, a thin polymer skin covers the embedded glass granules even after the material is shaped into its desired form. Grinding and polishig would have resulted in more uniform surface texture, but thermoplastic nature and softness of the material prevented using this method.

In this study the hydrophobic nature of copolymer did not prevent the adhesion of microorganisms as all tested microbes attached on the experimental materials. Copolymer samples without BAG showed relatively smooth surface texture. However, the presence of BAG particles induced irregularities on the sample surfaces, which increased the surface area of all the samples containing BAG.

Page from a Hindawi journal

Where there is an editor-in-chief, the main responsibility for attracting authors generally falls to him or her. 'It takes tremendous effort and focus [to attract authors],' says Badr, 'a constant awareness of the field, who publishes what and from where; knowing quality work from less-than-quality work... Contacting colleagues, attending conferences, inviting people with certain reputations to submit work...'

Building brand through affiliation: partnerships. For authors considering where to publish their work, journal reputation matters, and so another strategy Hindawi has employed is to forge partnerships with well-established societies and publishers.

> *"...another strategy Hindawi has employed is to forge partnerships with well-established societies and publishers."*

About seven years ago, Hindawi began working with EURASIP, which also publishes some subscription journals with Elsevier, and together Hindawi and EURASIP launched a new OA title and experimented with optional OA for one of EURASIP's subscription journals, before eventually also converting it to the OA model. This partnership in particular has been very valuable for Hindawi: in 2008, EURASIP journals accounted for about one-quarter of the total number of articles Hindawi published, as well as one-third of Hindawi's annual revenue of $2 million (the proportion of revenue is higher than the

proportion of articles because these journals carry the highest article fees).[9]

In 2008 David Ross, business development manager at SAGE Publishing, was investigating new revenue models and saw that several Open Access publishers in this space were having some success: BioMed Central, PLoS and Hindawi all appeared to be profitable or on the way to profitability. The benefits of a partnership appealed strongly to both sides. SAGE was eager to experiment with this new model by working with a partner who had strengths in technology and business models. Hindawi benefited, in turn, from SAGE's established brand and its strengths in the more traditional publishing functions of editorial management and marketing efforts. By working with SAGE to develop a collection of Open Access journals, Hindawi would benefit from SAGE's established reputation within the academic community, while SAGE would be able to enter the Open Access arena without the financial risk of major new investment in technology.

While the contributor-pays model is built to sustain itself on the fees paid by authors, it relies, however, on the assumption that there will be a sufficient number of contributors each year to cover the operating costs of the enterprise. Each journal need not generate a pre-determined revenue level, per se, but the total collection of OA journals must bring in enough contributors' fees to cover costs for all. With two OA journals launched in 2008 and another four just launched in early 2009, the SAGE–Hindawi partnership is not yet at break-even.[10]

Delivering quality production services and tools. Hindawi must also appeal to the scholars who volunteer their time to edit journals, many of whom may be authors themselves. By removing much of the 'clerical side' of the job by creating a system that makes the process of trafficking manuscripts through the peer review process less cumbersome, Hindawi sees itself as providing a valuable service to the editors who donate their time. In exchange, Hindawi offers them discounted article processing charges for their efforts. One editor, who has also contributed articles of his own, raved about the article-tracking system in comparison to those of other companies with whom he has published.

Increasing visibility. Advocates of Open Access often cite in its favour the increased visibility that OA can provide for published work. Peters agrees that this is a major advantage of the model, in terms of benefit to the authors: 'We encourage people to take their articles and put them everywhere they want without worrying about revenues, so we work with content-aggregation services to distribute content just to increase visibility, without having to worry about revenue. This has simplified our mission in a lot of ways.' Mostafa Z. Badr, associate professor of pharmacology and editor-in-chief of PPAR Research, launched his journal with Hindawi in 2005, and has been pleased with the range of submissions he has received from all over the world – the result, he feels, of the journal's Open Access status.

While Hindawi journals' Open Access policy, by definition, makes the articles available to anyone with an internet connection, the company also works actively with content-aggregation services, in order to increase visibility even further. To measure impact, Hindawi analyses statistics on PDF downloads and watches general usage trends to get an idea whether the journals are being discovered. While citation and impact factors are a widely accepted measurement of an article's importance in the field, many of Hindawi's journals are still too new for this.

Developing innovative growth strategies: community journals

Hindawi's continued growth depends on increasing the number of articles it publishes, while maintaining a high quality of scholarship to continue to encourage participation from authors and editors. Recently, Hindawi is starting partnerships – for example, the one with SAGE – as a strategy to develop new journals, though so far, the number of new publications through this channel has been modest, with a total of six to date.

> *"...Hindawi has set a rapid pace for launching its 'community journals'..."*

At the same time, Hindawi has set a rapid pace for launching its 'community journals', a format whose decentralisation and automation make it the motor behind the Hindawi strategy for growth. Within the business development group, Hindawi allocates 20 people to the function of researching the scholarly landscape to identify promising areas in which to launch new journals. Working in small teams of three to four people, staff research a promising field, assemble editors and launch new publications, a process that takes, on average, three to four months. In 2008, these teams launched eight new 'community-edited' journals and one new 'editor-in-chief' journal per month. Unlike staff in journal development positions at many other publishers, Hindawi's staff do not travel extensively, but rather they identify potential editors for their journals using objective selection criteria based on data from a number of publication databases as well as from academic websites. To reach potential authors, Hindawi runs display advertisements in areas where journals have strong readership, conducts email marketing to reach out to new authors, and launches topic-oriented special issues.

Community journals are run by a large editorial board, ranging from 30 to over 100 members, recruited by Hindawi staff. An author seeking to have an article considered is asked to determine which board member would be the most appropriate reader for his or her paper, based on examination of board members' research interests and recent publications. Hindawi staff monitor the process to control for conflicts of interest, but aside from that, they leave the process in the hands of the editorial board. The benefit of these community-based journals is that they can cover broad subject areas while at the same time ensuring that every submitted manuscript is handled by an expert on the subject of the article, since each editorial board member is expected to handle only those articles that are closely related to his or her area of expertise. Although Hindawi's management admits that many of its strongest journals are

9 For example, the Hindawi journal that published the most articles in 2008 was the *EURASIP Journal on Advances in Signal Processing*, with 105 regular-issue articles and an additional 183 articles appearing in 14 special issues over the course of the year. At a rate of $1,400 per article, this journal may have generated as much as $403,200 in article processing charges.

10 Four of the journals that have been launched in 2009 as part of the SAGE–Hindawi partnership will be subsidised initially by the publishers, enabling authors to publish in these journals without charge while the journals are in the process of establishing their reputations.

those run by designated editors-in-chief, they see a number of advantages in developing journals that are not run under the leadership of a single editor. One important benefit is that this enables Hindawi's editorial staff to manage the editorial boards of its journals, replacing editors who do not act in a timely manner with editors who more promptly handle the submissions assigned to them. The board members, who are asked to handle an average of two submissions per year, are unpaid, but they receive a discount of 50% of publication charges for any articles of their own that they submit.

The board members can discuss issues among themselves via an electronic mailing list, but there are generally no in-person meetings or regular conference calls. The community journals have been in existence for only about a year and a half, so it is still too early to gauge their success long-term.

Balancing volume with quality

For a financial model that generates more revenue the more articles are published, the question of quality control must be raised. While in theory a publisher stands to make more money the more articles are published, the reality is more subtle than that. First, all of those interviewed stressed that allowing sub-par work to be published would only backfire by lowering the prestige of a journal and its publisher. Indeed, Hindawi rejects, on average, 60% of the submissions it receives. Its leaders point out that their success will rest, ultimately, on maintaining the high quality of the work they publish.

Technology and innovation

Several elements in the organisational structure of Hindawi contribute to what it sees as one of its greatest strengths: the ability to shift gears quickly in response to the market and to user needs. Rather than engage outside programmers, Hindawi has custom-built its platform with its staff of 20 programmers, which Paul Peters sees as critical to providing 'better quality control and providing much more flexibility, since changes can be implemented in a matter of hours or days, rather than weeks or months'.[11]

> *"Hindawi's technological solutions and a decentralised editorial process have been important factors in allowing it to quickly scale up its volume of articles."*

Hindawi's technological solutions and a decentralised editorial process have been important factors in allowing it to quickly scale up its volume of articles. A strong selling point to the editors who must manage the traffic flow of hundreds of articles is the Manuscript Tracking System, an automated system that Hindawi developers created to follow the workflow from submission through peer review, and then through production. Other recent examples of innovation include releasing of articles in the ePUB format which, according to Peters, combines the 'beauty of a PDF with the flexibility of HTML', allowing greater portability of the journal content without any loss to the production values Hindawi feels are important. In general, having highly qualified, inexpensive full-time programming staff on hand has helped the publisher be flexible and respond quickly to changes.

Another interesting use of technology is illustrated by the first co-published journal from the SAGE–Hindawi partnership, *Human Genomics and Proteomics*. Launched by SAGE–Hindawi in September 2008, the journal is notable for its connection to a database. As Ross said at the time, 'We keep hearing, as publishers, that open data is going to be the next big development. With the internet, we can now disseminate the datasets that underpin articles, and in genomics there is a willingness to share data.'[12]

Benefits and challenges

The most obvious benefit of the contributor-pays model is that it supports the mission of providing free and unlimited access to all readers with access to an internet connection. Hindawi's management hopes that this will increase readership and expand the audience for published work. In addition, supporting the Open Access movement itself confers a certain prestige, or at least the endorsement of many in academia who believe Open Access is a value that deserves to be championed.

A second advantage of the model is the securing of revenue in advance of publication. The cost-recovery level is established and covered as each article comes in, so that in theory, the publication is paying for itself as it goes, in contrast to a situation in which the publisher is hoping to recoup costs only after having made all of the investment.

A third benefit to the publisher of an author-pays publication is the lower barriers to entry for new journals. While creating a new subscription journal today requires competing with deep-pocketed and well-established publishers for a share of the shrinking pie of library collections (serials) budgets, the relatively new OA model can appeal directly to authors seeking venues in which to publish and who have funds available to them through research grants or departmental budgets.

A fourth benefit, at least in the case of electronic journals, is the absence of a limit on the number of articles that can be published in an issue. In this respect an electronic journal is very different in concept from a print journal, for which there are fairly clear minimum and maximum numbers of articles or pages that an issue can accommodate. As applied to electronic journals, the contributor-pays model acknowledges that there is no need for these limits due to space constraints; as the volume of articles increases, so will the revenues to cover the costs of producing them.

There are, however, several challenging factors to be considered with regard to this model.

11 Peters, 'Case Study', 193.

12 David Ross, quoted in Siân Harris, 'Journal Unites Research Articles with Raw Data', *Research Information*, August/September 2008, **www.researchinformation.info/features/feature.php?feature_id=186**

The first challenge is that not all authors may have access to the funds needed to pay article processing charges. While these charges have become a standard practice in many science, technology and medical (STM) fields, they are nearly unheard of today in the humanities and social sciences. And even within STM, while journal prestige is likely to be the most important factor in attracting authors, all things being equal it is not clear that all authors would necessarily choose to pay fees to support the logic of Open Access, if there were available a publishing venue of similar or better quality that did not charge for publication.

The institutional membership model may facilitate author participation by shifting the burden of payment to departmental or library budgets, but in practice, this ends up looking very much like a subscription, albeit a subscription whose price may change widely year to year. The variability of the annual charges may not be acceptable to all librarians, and may be even more difficult to manage when budgets are shrinking. So far, Hindawi's institutional membership has been quietly rolled out to those institutions who feel it suits their needs.

Another challenge is the concern that allowing authors to pay for publication could produce an incentive to accept a higher volume of articles, of lower quality. Because this model places more emphasis on the unit of the article than on the journal, there may appear to be less incentive to create a corpus of scholarly content of consistent quality. When there are no paying subscribers at stake, the peer review process takes on even greater importance than it has had traditionally, as it becomes the only direct control on the quality of the articles accepted for publication. Determining the right balance of attracting sufficient volume and sufficient quality is a difficult but necessary step.

And the flip side of rapid expansion of the volume of material published is the demand this makes on readers' attention, particularly in the system of community-based journals, where the subject areas are broad and the journals lack the vision of a single person or board responsible for shaping the content of the journal. The special issues have been one means to focus attention on specific themes, and this seems a necessary strategy to guide readers to the material they are most likely to want to read.

Finally, several elements critical to the success of the Hindawi model – a responsive technology group, meticulous production standards and a large team of people focused on market research and new product development – have been feasible for Hindawi due to the lower average salary paid by its Cairo office. Without the number of skilled workers who make these features possible, reaching a financial break-even point would be much more challenging.

Broader implications for other projects

In an OA/author-pays model, it is critical to find the right balance between scale and quality. This should be an obvious concern for any publisher employing a revenue model based on contributor payments. While publishing as much as possible would, in theory, lead to greater returns, Hindawi is aware of the delicate balance between driving volume while maintaining high scholarly standards: if the volume is not sufficient, the entity will not be sustainable, and yet if publishing a high volume of articles permits inferior articles to be published, the reputation of the journal will suffer, making it more difficult to attract future authors, which will in turn harm the sustainability of the enterprise. It is a difficult balance that must be carefully maintained.

Look for areas in which you can offer a competitive advantage. Hindawi had the benefit of a highly educated but inexpensive workforce which it could leverage to build and maintain a competitive infrastructure and to offer personal attention to authors. The company also chose a business model based on attention to authors as customers that favoured this low-cost-base advantage. The exceptional circumstance of location and a favourable labour market may make some of Hindawi's best features impossible to replicate elsewhere.

Experimentation is a valuable and ongoing part of business development strategy. Hindawi's market research exploring new areas of growth within STM has allowed them to rapidly increase the number of journals they publish year to year. Once the journals are launched, the experimentation does not stop: the special-issues concept allows Hindawi to continue to try out more specialised journal topics at little risk, and to foster the ones that perform best.

Seeking out partnerships that complement your organisation's strengths can allow it to focus its energy on the things it does best. Hindawi's partnerships with established publishers such as SAGE have allowed Hindawi to continue to develop content, build its audience and explore new ways of publishing, while benefiting from SAGE's established brand and strength in editorial management and promotion.

Customers are not necessarily the same as end users, and the needs of both must be considered. Hindawi focuses great efforts on attracting and serving its main customers, the authors who pay the article processing charges to have their work published. But these authors make up only a part of the full audience of a journal. Making it easy for end users to find the articles they need, whether through various online discovery mechanisms or by the framing of topics that special issues provide, is a critical part of maximising the impact of the articles.

Appendix A: Interviewees

Note: An asterisk (*) denotes a primary contact.

Mostafa Badr, Associate Professor of Pharmacology, University of Missouri, Kansas City, and Editor-in-Chief of PPAR Research, 25 February 2009

Ahmed Hindawi, President and Founder, Hindawi Publishing Corporation, 10 February 2009

Marc Moonen, President of EURASIP and former Publications Officer for EURASIP, 9 January 2009

Ann Okerson, Associate University Librarian for Collections and International Programs, Yale University, 17 February 2009

***Paul Peters**, Head of Business Development, 12 October 2008, 13 January 2009 and 12 February 2009

David Ross, Business Development Manager, SAGE Publications, 22 December 2008

Appendix B: Summary of revenues and costs

Hindawi Publishing Corporation

Revenue Category	Description	Approx. amount
Article processing charges		$2,000,000
Sales of books and print journal copies		$200,000
Total revenue		**$2,200,000**

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	7 FT upper management	7	yes		
Content selection & production	80 FT production staff 50 FT editorial staff	130	yes		In addition, journal editors, members of editorial boards and peer reviewers volunteer their time
Sales & marketing	40 FT journal development 10 FT marketing and design staff	50	yes		
Technology	20 FT programmers 10 FT content management staff	30	yes		
HR, Financial, Accounting	50 HR, Accounting, Administration staff	50	yes		
Total personnel costs		267		**$1,000,000**	
Non-personnel costs			Included in budget?		
Administration & overhead	All organisational overheads		yes	$700,000	
Scanning, metadata, etc.	Database subscriptions		yes	$50,000	
Hosting & technology infrastructure	External costs related to hosting and infrastructure		yes	$100,000	
Other	Revenue shared with societies, editors and partners		yes	$150,000	
Total non-personnel costs				**$1,000,000**	
Total budgeted costs				**$2,000,000**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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L'Institut national de l'audiovisuel: Free Content and Rights Licensing as Complementary Strategies

Bry-sur-Marne and Paris, France

www.ina.fr and www.inamediapro.com

Since its founding in 1974, L'Institut national de l'audiovisuel (INA) has undergone a profound shift in its role, from protector of the audiovisual heritage of France to a more dynamic position of manager of diverse media assets reaching a variety of audiences, including the general public. Today INA is deeply committed to its mission to enhance and communicate the value of its holdings to end users, and it supports these efforts through a range of economic models. This case study will examine two divisions of the organisation responsible for providing access to and monetising the collection in different but complementary ways: the public website, www.ina.fr, which offers free access while serving as a laboratory for experimentation with online revenue models; and Inamédiapro, an audiovisual licensing service for professionals. Both function as entrepreneurial efforts at the heart of this large not-for-profit organisation. This case study will examine ina.fr and Inamédiapro in light of the business models they employ, their focus on understanding users, and the necessary balance between generating revenue and fulfilling the broader missions of the organisation.

Introduction

The National Audiovisual Institute (L'institut national de l'audiovisuel, or INA) possesses a rich collection of French television and radio recordings from the past 70 years. It is among the largest audiovisual archives in the world, with 1.5 million hours of video and sound archives from France's public radio and television stations dating back to the 1940s. Included in the archives alongside the television, radio and newsreel content are substantial collections of photographs, music videos and print materials, ranging from trade magazines and monographs to materials documenting the daily business of television stations, including screenplays and programming grids.

INA was founded in 1974, when the Office de radiodiffusion-télévision française (ORTF), which until then was responsible for producing all French radio and television programming, was disbanded and split into three public television stations, a public radio station, a production company and a broadcasting transmission network. Once those entities were spun out, the hodgepodge of functions remaining – the archives, a research and production division and a training department – was reconstituted as the organisation now known as INA. Today, INA still performs a variety of functions: in addition to preservation and archiving, the organisation includes divisions for professional training and education, research, and production and publishing of films, DVDs, CDs and more.

This case study was researched and written by Nancy L. Maron as part of the Ithaka Case Studies in Sustainability project.

In terms of content, INA holds two major but distinct categories of material. First, the organisation holds the audiovisual archive of France's public stations, dating back to radio broadcasts from the 1930s and filmed news footage starting in 1940. This archive continues to receive new material from the public stations each year. Second, INA holds France's legal deposit archive, consisting of an additional two million hours of broadcasts from nearly 100 television stations and 20 radio stations, private as well as public.[1] As the national depository for this content, INA captures 24 hours of programming a day for both public and private stations, a collection that grows at a rate of 500,000 hours per year. While the content that enters INA through legal deposit is kept strictly separate and is only available to scholars for research purposes, INA is authorised to exploit the archive of the public television and radio stations in a variety of ways, whether to generate revenue, for educational purposes, or to share freely, as a public service. These holdings are rich in French political, social and cultural artefacts, from national news broadcasts and popular talk shows to coverage of local town meetings and ribbon cuttings. The arts and letters are well represented, with videos of artists, thinkers and performers, from singer Serge Gainsbourg giving an audacious interview on live television, to artist Salvador Dali speaking about love and paranoia, to footage of journalists interviewing Jean-Paul Sartre and his neighbours when he refused to accept the Nobel Prize in 1964.

INA has sought to develop the value of its public television and radio archive in many ways: by monetising its holdings through rights licensing both to professionals and to the general public; by using the material in the archive as the basis for original video productions and films that INA sells online and through traditional retail channels; and by leveraging the deep knowledge amassed by those working at INA as the basis for an ambitious menu of degree-granting, vocational and continuing education programmes in France and around the world.

This study will focus on INA's strategies regarding two of its units: the marketing and sales division that licenses video and audio content to the professional market via www.inamediapro.com, and the public website www.ina.fr, which provides to the general public 25,000 hours of content online. While both units create value from INA's archives, they accomplish this in distinct but complementary ways. The commercial licensing group operates as a professional service, using the base of 500,000 digitised hours of content to license content to the professional market, with the goal of increasing sales year to year. The mission of the public website is primarily to provide broad access to a smaller pool of rights-cleared content, and in doing so to build audience and recover costs through a variety of revenue strategies including fee-per-download, customised services and advertising.

1 Emmanuel Hoog, *L'INA*, Que sais-je? 3716 (Paris: Presses Universitaires de France, 2006), p. 43.

Sustainability model

Overall goals and strategy

From the time INA was created in 1974, it was understood that the organisation would generate a share of its budget through its own commercial activities, though the specific proportion of its budget it is responsible for generating has changed over time.[2] With the introduction of privately owned television stations in the 1980s, INA's commercial receipts at one point covered as much as 70% of its costs, while a decade later, as INA solidified its role as guardian of the nation's audiovisual heritage with the addition of a legal deposit service, its reliance on public funds increased significantly.

The five-year agreement signed by INA and the French government establishing its budget for the period 2005 to 2009 requires that approximately 34% of INA's total budget be generated through earned-revenue activities. In 2008, for example, INA's operating budget of €120 million came from two sources: 66% (€79 million) from the French government via the audiovisual tax (an annual flat fee levied on all households owning a television set),[3] and 34% (€41 million) from a variety of commercial activities, including:

- Commercial rights licensing through Inamédiapro (to be discussed in detail below): €14.5 million
- Archiving services provided to the public television and radio stations: €12.3 million
- Continuing education courses and degree-granting programmes: €8.2 million
- A production and publication unit focused on the public website www.ina.fr (also discussed in detail below) with a variety of revenue streams from the general public, including publication and sale of DVDs produced or co-produced by INA staff, download fees for rental or purchase of video clips, advertising and more: €4.1 million
- A research division licensing INA software and providing consulting services: €1.6 million[4]

While Inamédiapro generates the most revenue (35%) through rights licensing to professionals, www.ina.fr generates the most exposure and broadest access, serving as the public face of the entire organisation. Its contribution to the bottom line is more modest (10%), but its role in developing an audience for INA and as a sandbox for innovation and experimentation to test new revenue models has been very important. We will discuss these two units in detail in the following sections.

Inamédiapro: rights licensing for the professional market

From the start, one of the key functions of INA was to preserve the French audiovisual *patrimoine,* or national heritage, while also providing content to television stations and others who required it. While the enormous expense of restoring, digitising and cataloguing the material would be subsidised by state funds, the commercial activities, including the rights-licensing operation, were expected to at least cover their costs.[5] In the late 1990s not only was this not the case, but according to Emmanuel Hoog, current president and general director of INA, the clients themselves – the public television and radio stations – were complaining, finding the prices too high and the level of service inadequate.[6]

Marketing Manager Stéphane Cochet, who has been with INA for over ten years, outlines several steps that were taken at the time to clarify the mission and implement it. The first involved understanding how INA's clients perceived the organisation's value, a step that was accomplished through customer satisfaction surveys. The answer was a revelation: customers felt the content was 'a treasure' – but that this treasure was, as Cochet put it, 'locked in a chest, which is lying at the bottom of the ocean, with everyone sitting on top of it'.[7]

To address this issue, the first challenge was to speed up the pace of both the digitisation of INA's content and the development of metadata and other editorial materials, such as transcriptions of speeches, that add value to the collection by helping users more easily discover content of interest. Eight additional digital workstations were added at INA's Paris location in 2001, making it easier for producers to come in and select the materials they needed. A dedicated sales team was developed, so that customers could now have the name of someone they could reach out to for assistance. Next, the Inamédiapro platform was conceived of and developed as an extranet where external clients could conduct research and place their orders. In the past, clients had expressed a lack of confidence in the service due to long, unexplained delays and unavailable material; the platform now includes a workflow tracking tool so that customers can see the status of their order and better understand the many steps involved in licensing the video content, from restoration, to digitisation, to rights clearance. Cochet reports that since INA began doing a better job of managing expectations and educating clients about the complexity of the process, customer satisfaction ratings have risen considerably.

Officially launched in 2004, www.inamediapro.com is INA's client-facing interface for archival content, providing user tools and the ability to navigate among the vast holdings of INA's audiovisual archives, including those materials yet to be digitised, as organised and described by INA's staff of over 100 archivists. More than a professional sales website, it is the layer that provides a 'window' into the complete body of content for INA staff as well as for external users: all of INA's digitised content is visible through www.inamediapro.com, and the tools that www.inamediapro.com users have access to are the same ones used by INA staff to navigate the archives. The content is browsable by over 400 thematic topics and searchable by keywords in the metadata, descriptions and other documentation, such as any transcripts that accompany the audiovisual files. In addition, longer video clips can be quickly viewed as storyboards in pre-set time intervals, and can be edited to create shorter clips of just the material that is desired.

The marketing and sales division, responsible for licensing video footage to commercial clients, has a total staff of 67 responsible for client relations (20), back-office sales administration (20), rights licensing (20), marketing (5) and project management (2). In 2008 INA's rights-licensing business processed over 8,000 orders, generating €14.5 million, up from €7 million in 2001. The website www.inamediapro.com has over 8,000 registered users representing over 6,000 companies from France and around the world, about one-third from outside the country. Of these, 800 companies are considered active customers, having placed an order within the past 12 months. According to Cochet, digitisation and the automation provided by the web interface have allowed

2 Created as a type of government entity known as an EPIC (établissement public de l'état à caractère industriel et commercial), INA has a specific legal standing under French law that, while establishing a public service mandate, also allows it to engage in commercial activities.

3 This tax, called the 'redevance audiovisuel', was €116 per household in 2008.

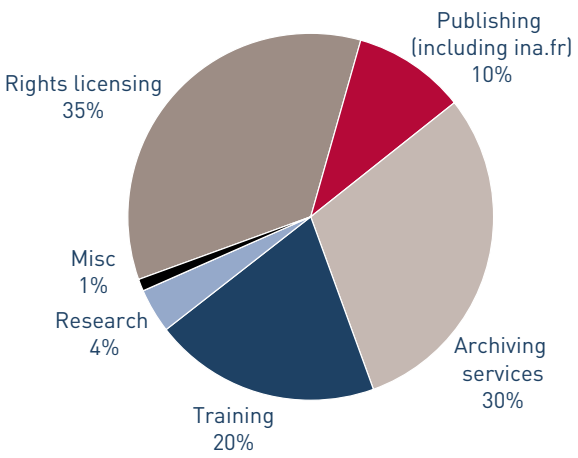
4 All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

5 Cour des Comptes, 'Annual Public Report, 1 February 2001', 218. Available at **www.ccomptes.fr**

6 Hoog, pp. 34–35.

7 Unless otherwise noted, all quotations from staff members and other individuals knowledgeable or associated with INA are drawn from interviews conducted as part of this case study between December 2008 and February 2009. A full list of interviewees is included in Appendix A.

INA's Sources of Earned Revenue (€41 million per year)



prices to drop by 20% from 1999 to 2006, and delivery time has dropped from three weeks to 48 hours.[8]

About 75% of Inamédiapro's customers are companies that use video footage, including broadcasting companies, producers, advertising agencies and internet sites. Another 10% of its customers, mainly television stations, are interested in licensing full programmes, and about 15% are video and music publishers, looking for interesting footage to include in DVDs, 'bonus' DVD clips and DVD/CD packages. At least 10% of annual revenue comes from the international market, and so www.inamediapro.com includes an English-translation feature. The field is competitive, and Inamédiapro management is aware that it must communicate the value of its services to its audience. The launch of the Inamédiapro website in 2004 was a significant event, with advertisements, mailings and banners at the annual industry trade fair for audiovisual content at Cannes (MIP TV). A great deal of care has been taken in developing communications campaigns to describe the features and benefits of the service to its target audience.

Ina.fr: providing public access and experimenting with revenue models

Part of INA's mission to 'open, share and transmit' the content of its collection, as stated in the five-year agreement with the government, is to 'build an offer for the general public'.[9] Well into the internet age, INA's archives were largely inaccessible to anyone except professionals licensing rights and scholars viewing materials on site at the National Library in Paris. The original www.ina.fr website offered some videos free to visitors, but it was primarily a corporate homepage, and functioned as little more than a public relations tool managed by the office of communications, according to Michaël Swierczynski, ina.fr's marketing manager.

In April 2006, INA launched the 'Archives for All' campaign, unveiling an Open Access site where anyone could view a selection of videos from the archive. Since its launch, the new www.ina.fr website has put 25,000 hours of content online, and 5,000 new hours are to be added each year. This content – about 100,000 separate audio and video clips, ranging from a few seconds to over an hour in length – consists of rights-cleared videos organised in thematic categories to facilitate browsing. As of November 2008, www.ina.fr was recording about four million page views, 1.5 million videos streamed, and one million visits per month from 600,000 unique visitors. The site serves as the public face of INA and has two principal aims: to build audience by finding ways for people to engage with INA's content, and to generate revenue by monetising both the content itself and the value of INA's audience.

Roei Amit, the publisher of the ina.fr website, joined INA just before the site launched the Archives for All campaign, and he is responsible for the site's strategic development, including the content it provides and the various revenue streams it creates. He describes its revenue target as 'ambitious but grounded in reality'. The ina.fr group is expected to cover all project-based (variable) costs and to contribute to fixed costs as well. On the other hand, they are not accountable for several significant categories of costs, such as digitisation, creation of metadata and the legal department that handles rights-clearance issues.

Several types of revenue generation are facilitated by www.ina.fr, including annual advertising revenue of €300,000, revenue from downloading and rental of video clips of €300,000, and as of 2009, a newly created DVD on Demand programme (€25,000 per month to date). In addition, the website includes an e-commerce boutique which sells DVDs, CD and books developed by INA based on the content of the archives.[10] The total revenues that the website generates are approximately €1 million per year. Amit is the first to admit that the group has not yet found an economic model to cover the costs of the website. As he points out, 'If I don't count seven years of digitisation, and I don't count 35 years of metadata creation or the legal expense [intellectual property documentation]...If I only count current operational costs, we *still* don't cover our expenses.'

Yet the activities of this group cut right to the heart of INA's mission to provide access to the public and to present INA not simply as a site of conservation, but as a dynamic 'centre for media assets' which have a value that can be developed and shared. '*Patrimoine* [national heritage] by itself means nothing,' says Amit. 'To give content meaning...we need to think of what kind of relevance it can have for someone, somewhere, at some time.' While the volume of original and exclusive content INA holds may be impressive, 'The public doesn't have a fundamental need for this...Offering [access] is in itself not enough.' To that end, Amit's team of web-content producers works to find ways to forge new ties with www.ina.fr users. Internally, the site is considered very important as the public face of INA and is closely followed by INA's president.

To keep the site's content up to date, Amit's online publishing team of 25, including four editors, develops three types of content for the site:

- Current events: Working in close collaboration with the archivists, the editors track the news and quickly load content that provides context or commentary on current events. This can range from seasonal celebrations and holidays to current happenings in politics, culture and sports
- Longer programmes: A selection of films and documentaries are published on the site regularly
- Short-format uploads: Each month, the editorial staff creates or supervises the upload of 400–500 hours of programming based on the content of the archives

8 Pricing of the videos is based on several elements including the type of content (news clips, fiction and documentary, entertainment and live performances), the length of the piece, and factors relating to the type and frequency of its intended use.

9 Contrat d'objectifs et de moyens entre l'Etat et L'Ina, 2005–2009, p 12. The full text of the Contract of Means and Objectives can be found here: **http://ina.fr/sites/ina/medias/upload/ina-en-bref/DP_Ina_COM2.pdf**

10 The ina.fr website team is a part of the Production and Publications group. The work of this group also includes developing films and video compilations, which are sold both through the INA online boutique and through traditional retail channels. The combined revenues for the entire Production and Publication division were €4.1 million in 2008, or 10% of INA's total earned revenue.

- Short-format productions: The editorial staff compiles and edits archival content into short video formats, a new activity that they expect will generate approximately 150 new video clips per month

The site also serves as a test bed for experiments with new online revenue models and audience-building initiatives. 'As for revenue models,' says Swierczynski, 'we are trying almost everything.' Described below are three examples of recent initiatives that illustrate ina.fr's strategies of audience building and revenue generation, based on an understanding of users and their needs.

Paris Remix. Over the course of four months in 2008, the Paris Remix contest allowed registered visitors to www.ina.fr to make use of a predetermined collection of INA footage to craft their own videos. The goal of the effort was to encourage visitors to engage with the content on the site in a new way, to explicitly reach out to a younger demographic with something that felt new and innovative, and to create new original, rights-cleared content – the video contest submissions – for INA to monetise.

The contest was run in partnership with www.dailymotion.com, the popular Paris-based video-sharing site, which launched the contest by notifying its large base of registered users. The submitted videos are hosted on the Dailymotion site, which has a reach of 36 million unique visitors monthly. Dailymotion hosts commercial ads opposite the streamed videos, so there is the possibility for INA to share some incremental advertising revenue as well, though to date this has been negligible. The result of the campaign was 200,000 visitors and 100 submissions, which ina.fr staff whittled down to 20 finalists, out of which they will ultimately select two winners.

The costs of running this contest were modest: staff time to plan the contest and select the rights-cleared clips that contestants could use, negotiate the partnership with Dailymotion, and determine the contest winners, who will receive free tuition for two courses at INA. Benefits of the effort included increased exposure and the repositioning of the archives as raw material for people to use and engage with creatively.

DVD on Demand. DVD on Demand is another innovative experiment that the staff of ina.fr devised and launched this past autumn. Unlike Paris Remix, the goals of which were audience-based, DVD on Demand focuses more squarely on revenue generation, based on close observation of the users of www.ina.fr. Amit had noticed that while sales for videos on demand through the website had generally been strong, in 2008 they plateaued, despite evidence that more and more people were online and that more online users had access to high-speed connections. At the same time, sales of INA's DVDs in stores were up. Amit hypothesised that some obstacle must be preventing users from downloading video content from the ina.fr site. And, in fact, feedback from users suggested that some found the download process too technically difficult, that downloading from the site was not compatible with all software, and that digital rights management restrictions made portability an issue.

The solution consisted of taking what to some may have seemed like a conceptual 'step backward': offering to burn DVDs for visitors to the site who wanted to order compilations of digital video clips. The cost of outsourcing the programming for this was €20,000, plus three to four months of internal development time, relying on editorial and technology staff from INA. Running a little behind schedule and still untested, what was imagined as a 'soft launch' turned into a very public national launch a week earlier than planned, when the national daily *Le Figaro* ran a story on it. The result was quite positive: despite some short-term pain from the high volume of orders to fulfil before the end of the year, the service generated €25,000 in sales its first month, and is now considered a permanent part of the website, with future campaigns planned to formally promote the service to new users.

Advertising. When Amit joined INA just months before *Archives for All* went live in April 2006, he put out a call for proposals from advertising agencies and subsequently hired France Television Publicité (FTP), the agency responsible for placing advertisements on all the public TV stations and their websites. In 2007, www.ina.fr earned €300,000 in ad revenue and was particularly pleased with the performance of the pre-roll video ads (online video advertisements that run before the content the viewer has selected to watch) which commanded higher ad rates than other formats. Yet in 2008, President Sarkozy's announcement of a ban on television ads on public stations during the peak evening broadcast hours resulted in advertisers defecting from FTP, and www.ina.fr revenues suffered as a result. While Amit is still in the process of finding a new ad agency for www.ina.fr, some elements of the experience so far are instructive.

At first, the website needed to be reconfigured to allow for standard ad sizes and formats. These elements had not been considered earlier, in part because those designing the site were mainly from IT and in part because few in the organisation imagined that site traffic would be as high as it is today, with one million visits per month. Without the necessary ad sales expertise in-house, INA chose to hire an agency, which sold ad space through three main channels: in 2007, 35% of ad revenue came from advertisers who specifically chose to place their ads on www.ina.fr; 35% came from advertisers who purchased space on www.ina.fr as part of a bundle including other, similar sites; and 30% came from video pre-rolls, both direct and as bundles. FTP's strategy of bundling was necessary since while the profile of www.ina.fr's users – 60% male, 60% over age 35, and 70% of 'high professional standing' – is appealing to advertisers, according to Amit, the volume of traffic is still considered too low to appeal to the larger ones. Among the advertisers choosing to place ads on www.ina.fr have been the public television station ARTE, Editions Montparnasse and Cahiers du cinema. For special promotions, such as one focusing on the Cannes Film Festival, large consumer companies have participated, including Café carte noire (coffee) and Jacques Dessange (hair products).[11]

Key factors influencing the success of the sustainability model

Balancing Open Access with revenue generation

From INA's earliest days, licensing content has been one of the primary means the organisation has used to support its activities. Since rights licensing is such an important part of INA's revenue strategy, when planning to make some content freely available to the public through www.ina.fr, several controls were put in place to ensure that the offer of free content would not cannibalise Inamédiapro's business of licensing rights to professionals:

- Legally, the public content on www.ina.fr cannot be used for commercial purposes, and those who download a file must agree to terms of sale specifying this restriction
- All images coming from www.ina.fr are digitally watermarked

11 Because most advertisers on www.ina.fr tend to find it useful for building brand affiliations rather than for triggering online sales, the ads are priced using the standard cost per thousand (CPM) model, which charges advertisers a fixed price per thousand page views. In 2007, video pre-roll ads sold for €40 CPM; now the average price is €20 on www.dailymotion.com, a site with 36 million viewers per month, and €10 CPM on www.allocine.fr, with 5.5 million unique visitors per month. For a more detailed discussion of online advertising models, see Ithaka's *Sustainability and Revenue Models for Online Academic Resources*, pp. 39–46 **www.ithaka.org/strategic-services/sca_ithaka_sustainability_report-final.pdf**.

- Images on www.ina.fr are in a format of insufficient quality for professional use
- The Open Access www.ina.fr site includes several navigational buttons and menus to re-direct professionals to www.inamediapro.com

This effort has worked to date; while the Open Access content on www.ina.fr is a subset of the full archive available through www.inamediapro.com, both the ina.fr group and the professional rights-licensing group have seen their sales grow since the 'Archives for All' initiative launched in 2006.[12]

Rights protection is a vital element of this system, and it was made possible by the activities of another division at INA. The research and innovation group is tasked with developing new technologies that can advance the quality and efficiency of work at INA and be commercialised outside of the organisation as well. One of its projects is software called 'Signature', which digitally watermarks each licensed image, whether from www.ina.fr or via inamediapro.com, identifying INA as its source of origin. As the stations transmit their broadcasts and INA records them, the Signature software reads the 'fingerprint' of the image, flagging those which may have been improperly used. INA reports that since the software has been in use, it has recouped €500,000 in licensing fees. The ability to protect this content in this way is very appealing beyond INA as well, and Signature has already been licensed to Dailymotion.

Understanding users

As part of the sea change at INA in the late 1990s, providing access to its content was to become a central element of the organisation's mission. To accomplish this, according to Cochet, management identified four main types of audiences INA would need to address:

- Academics and researchers, via the legal deposit, accessible at the National Library
- Students and teachers, through special subscription and Open Access web-based programmes
- Professionals, via www.inamediapro.com
- The general public, via www.ina.fr

All of these audiences are quite different, and the staff of both ina.fr and Inamédiapro regularly study their audiences in several ways. A major audience survey was undertaken before the launch of the new www.ina.fr in 2006; in addition, types of assessments the ina.fr staff now conduct include:

- Monthly audience analyses, provided by their advertising agency
- Online surveys (the most recent one reached over 3000 users)
- Monitoring and assessment of feedback from the website and website forums

The editorial staff of www.ina.fr are responsible for developing new ways to interest viewers in the INA content, and they have noticed that the clips that are placed in editorial context tend to be downloaded more frequently. Some editorial features the group has developed include Archive of the Day, a word cloud showing the most frequently searched terms on the site, and a feature that allows viewers to look up video and radio clips of news broadcasts for the day of their birth. Since the archival footage is no longer 'news', the staff looks for ways to find connections with the present, to offer what Amit describes as a 'historical perspective on breaking news'. During the height of the American presidential campaign, for example, www.ina.fr featured original footage of a young wounded American soldier in Vietnam speaking to a French reporter from his hospital bed: John McCain.

In addition to devoting staff to focusing on customer relationships, Inamédiapro regularly conducts client satisfaction surveys, and in late 2008 began conducting a series of in-depth interviews with clients. It is well aware of the different market segments it serves and the types of content they require. This is also reflected in the range of targeted marketing materials Inamédiapro creates, and in user-oriented features such as the workflow tool and English-translation feature.

Organisational scale and internal synergies

Amit describes a true 'synergy' among the activities of the archive and both the business-to-business and business-to-consumer divisions. For example, the Inamédiapro platform was developed as an interface for INA's commercial customers, facilitating rights licensing to clients by allowing them to conduct their searches and place and track their orders via the web. But this platform is also of vital importance for the publishing group. The structure of the interface allows ina.fr staff (as well as others throughout the organisation) to easily browse and search the archives to identify new content to present on the public website. And while the main audience for www.ina.fr is the general public, its frequently updated content and branding efforts draw a great deal of attention to the site, which serves as something of a portal, helping to re-direct professional users to www.inamediapro.com.

Partnerships

Sharing INA's content through partnerships is a key part of INA's strategy to reach a much greater audience than might visit www.ina.fr directly. 'It doesn't make sense for our videos to only be seen on ina.fr. So, we have made our archives available to partner sites...*Libération*, *Le Monde*, *Le Figaro,*' according to ina.fr publisher Roei Amit. 'Each site is free to embed the videos as suits their audience, and INA benefits, as well. The videos are still hosted on the INA site, but can be seen everywhere by an embedded "INA Player."'[13] For the viewer, the experience is seamless; for INA, the benefit is twofold: it vastly expands the audience and awareness of INA's archive, while simultaneously increasing INA's traffic statistics, which helps raise advertising revenues. In the future the INA Player could become a direct source of revenue, displaying integrated ads generating revenue that would be shared with the partner sites, a model similar to the one used in the Paris Remix contest with Dailymotion.

The professional rights-licensing group sees partnerships as a critical part of its future success, but for them the goal is to attract new sources of content to license to their client base. 'Partnership is the future for us,' according to Cochet. 'If we do not follow this strategy, we will not have enough content to offer our clients.' The rights-licensing team has found this particularly important in areas such as sports, where clients prefer a catalogue that includes every year of an event such as the Tour de France. Since 2007, the team has signed up 45 partners, including the French Open tennis tournament, the Olympic Games, the Tour de France, private television station TF1 and Agence France-Presse. Building up content through partnerships has become a business priority, and in 2008 revenues from licensing partner content totalled nearly €500,000.

12 Cochet reports that providing Open Access on www.ina.fr does not threaten the professional licensing side of the business, but he does stress the importance of framing the offer as 'allowing access to' rather than giving away 'free' content, which he contends gives users the false impression that the content is of little value and that they can do whatever they like with it.

13 'L'avenir de l'audiovisuel passe-t-il par le web? Interview with Roei Amit', 12 December 2008. See **www.ina.fr/observatoire-medias/dossiers/avenir-av-web/article-7.html**

A culture of innovation and experimentation

The public site www.ina.fr exemplifies the need to 'constantly learn and upgrade as needed', according to Amit, whose team will launch an upgraded version of the site in June 2009. And the experimentation taking place on www.ina.fr serves as a testing ground for new revenue models. The team that manages the site has tried a wide variety of models, including pay-per-download and advertising. While generating revenue is not the group's primary goal, this strategy has been beneficial. For example, this year, as web advertising is likely to continue to plummet, the new DVD on Demand initiative at least offers the hope of covering some of the loss.

Establishing a clear mission and measurable progress towards goals

While INA's status as a public enterprise in some ways limits the ways in which its commercial groups can conduct business – for example, in terms of setting prices for download fees – other by-products of this status, particularly the need to adopt and deliver on an agreed-upon set of clearly stated objectives and measurements, seem to have contributed to INA's success.

The five-year Contract of Means and Objectives between INA and the French government does not just spell out the expectation that INA's commercial activities will account for 34% of its annual operating budget, it also outlines specific targets and metrics by which their success will be measured. The sales and marketing staff who run Inamédiapro's commercial licensing operation understand the need to set and reach targets related to sales volume, customer satisfaction and efficiency of the service. The management of ina.fr understand that while seeking to cover as much of their operating cost as possible is a clear goal, they also deliver considerable value to the organisation and its brand through their efforts to attract and engage the audience of the public website. The clearly established goals and mission, in turn, help to ensure that neither group risks compromising the efforts of the other.

Benefits and challenges

There is sufficient differentiation between the free content provided on www.ina.fr and the professional rights-licensing business so that both markets operate without detriment to the other. By devising the Archives for All programme in such a way that it would not threaten the sale of commercial video rights, INA has been able to develop revenue streams on www.ina.fr via pay-per-view and other customisable downloads, while still building the professional market for video programmes and footage. Customised tools and services and access to the full archive directly address the needs of the professional market for video content that Inamédiapro serves.

The www.ina.fr website uses its open content as a way to build both audience and revenue. The free content is editorialised and promoted to attract visitors, which in turn drives advertising and download revenues on the site. By developing partnerships that share INA content via the INA Player on other high-traffic websites, the organisation benefits from an additional channel to increase awareness and drive traffic to the INA site.

In turn, the robust activity on www.ina.fr makes it a good place to test a wide range of financial models to see what works best. The team's willingness to experiment with different strategies for both audience-building and revenue-generation has led to some strong new programmes such as DVD on Demand, a viable new revenue stream. In other cases, projects that do not yield the desired results can be abandoned.

An inherent challenge of trying to monetise the content of the archive is that the content is quite rich but also quite out of date, and is often incomplete due to a range of different arrangements with private versus public stations (depending on dates of broadcast and other legal restrictions). A complex legal template for each audiovisual document means that it is still difficult and time-consuming to clear rights on much of the content INA holds.

Finally, the crucial step of transforming INA's raw content into something useful to the professional market and of interest to a general audience of users has taken a great deal of time and money. Teams of people in editorial and archiving functions, working over many years, have helped to create the metadata and subject groupings that all users of the sites rely on, and the legal staff spend time clearing rights for use of content on the public website and by professional clients. Without this investment, however, the content would be much less valuable to its users.

Broader implications for other projects

The value of content often lies in how it is used, not simply in the content itself. Not many archives may have access to the depth of content that INA has, but INA's history demonstrates that having rich content is not by itself a guarantee of success. INA's transformation from an inefficient government department to a dynamic enterprise engaged in managing its 'media assets' was not a foregone conclusion but the result of years of strategic planning, market research and constant experimentation with revenue-generating initiatives.

A coherent mission with measurable targets helps unify an organisation and keep it focused on achieving its goals. In the case of INA, a clearly defined mission of providing access provides a framework for understanding and setting priorities throughout the organisation, even in divisions dealing with very different audiences and activities. In particular, this clear mission has helped INA staff to conceptualise the different groups of users of INA's content in such a way that the content provided by one division need not negatively impact the business interests of another. INA's official contract with the government sets out clearly defined objectives, and all divisions are keenly aware of what they are expected to deliver. Each division has a clear set of quantifiable targets to reach in each year of the contract; while some goals concern costs and revenue, others address content and audience.

Free content can be instrumental in driving revenue. So long as the markets for free and paid content are clearly delimited and needed controls are put in place, it is possible for free content to generate traffic without cannibalising sales. On www.ina.fr, short excerpts of videos are shown at no charge to permit viewers to sample content prior to purchase, and partnerships encourage content sharing that helps to increase interest in the INA archive.

Setting up a low-risk environment for experimentation helps foster innovation. INA has benefited by having a place to experiment with revenue models without too much up-front expense or risk. The revenue strategy of ina.fr itself could best be described as 'experimental'. And this has served it well. Paris Remix and DVD on Demand are just two examples of how an organisation can find ways to support experimentation without the pressure to launch something perfect, and can give itself the time to see where a new idea can go.

A deep understanding of users is critical to developing new products and services. INA has invested in a variety of strategies to understand its users, both of the professional services and of the public website, and has used this understanding as a tool to shape new offerings and to reach out to secondary audiences through new products and services specifically geared for them. By carefully shaping each offer to the audience for which it is designed, both the rights-licensing business and the public website have been able to drive revenue and build audience, strengthening their services.

Appendix A: Interviewees

Note: An asterisk (*) denotes a primary contact.

***Roei Amit**, Head of Publishing and Assistant Director of Production and Publishing, 1 and 2 December 2008 and 8 January 2009

Christophe Barreyre, Director of Production and Publishing, 2 December 2008

Lydia Boutot, Communications, 1 December 2008

Max Benoît, Finance and Strategic Planning, Special Advisor to the President, 1 December 2008

Hélène Bettembourg, International Sales, Training and Education Division, 2 December 2008

***Stéphane Cochet**, Marketing Manager, Inamédiapro, 2 December 2008 and 17 February 2009

Stéphanie Godbert, International Affairs Manager, 1 December 2008

David Hivet, Sales Manager, Training and Education Division, 2 December 2008

Xavier Lemarchand, Hypermedia Studio, 2 December 2008

Eric Rault, Technical Systems Manager, Legal Deposit, 1 December 2008

Michaël Swierczynski, Marketing and Development Manager, ina.fr, 2 December 2008 and 5 January 2009

Appendix B: Summary of revenues and costs

L'Institut national de l'audiovisuel (INA): ina.fr

Revenue Category	Description	Approx. amount
Advertising		€300,000
Video downloads		€300,000
DVD on Demand programme	Projected revenue in 2009	€200,000
Hypermedia partnerships		€300,000
Total revenue		**€1,100,000**

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	1 project manager	1	yes		
Content selection & production	4 staff work on content for the public site; 5 staff work on 'Hypermedia studio'	9	yes		
Sales & marketing		5	yes		
Technology	10 total, but only 6 are charged to the ina.fr budget	6	partial		5 webmasters & 5 programmers are assigned to ina.fr; 4 in IT unit are not paid for by ina.fr
Total personnel costs		21		**€1,050,000**	
Non-personnel costs			Included in budget?		
Administration & overhead*			no		Provided by INA
Scanning, metadata, etc.			no		Costs related to scanning, metadata creation and transcriptions, and legal research regarding rights holders are not charged to this division.
Hosting & technology infrastructure			no		Costs related to hosting and technology are not charged to this division.
Marketing	Marketing costs, including advertising on Google AdWords		yes	€300,000	
Royalty payments	Royalty payments to rights holders, based on advertising and downloads		yes	not available	
Total non-personnel costs				**€300,000**	
Total budgeted costs	**Note: does not include royalties**			**€1,350,000**	

*For the purposes of this analysis, costs have been broken out for ina.fr, though it is part of the INA Publications and Production Department. Some of these shared costs, such as administration, were not available, since this is not the way they are generally accounted for.

Appendix C: Summary of revenues and costs

L'Institut national de l'audiovisuel (INA): Inamédiapro

Revenue Category	Description	Approx. amount
Rights licensing		€14,500,000
Total revenue		**€14,500,000**

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	Project director	1	yes		
Content selection & production	Researchers	3	yes		
Sales & marketing	Sales and marketing staff	67	yes		
Technology		0	no		
Total personnel costs		71		**€3,700,000**	
Non-personnel costs			Included in budget?		
Administration & overhead			yes	€200,000	
Marketing materials			yes	€200,000	
Scanning, metadata, etc.			no		Costs related to scanning, metadata creation and transcriptions, and legal research regarding rights holders are not charged to this division.
Hosting & technology infrastructure			yes	€480,000	
Royalties	Royalty payments to rights holders, based on advertising and download revenues		yes	€3,500,000	
Total non-personnel costs				**€4,380,000**	
Total budgeted costs				**€8,080,000**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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The National Archives (UK): Digitisation with Commercial Partnerships via the Licensed Internet Associates Programme

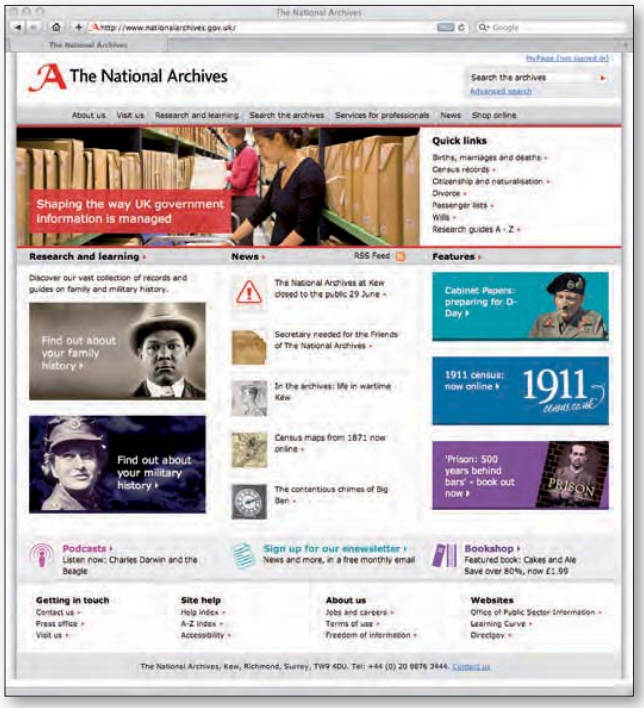
London, United Kingdom

www.nationalarchives.gov.uk

The challenges of digitising, preserving and providing access to over 1,000 years' worth of material held by The National Archives (TNA) are considerable. In recent years, TNA has developed a strategy to digitise content quickly though its Licensed Internet Associates programme. These commercial partnerships, closely managed by TNA staff, have allowed the institution to digitise millions of pages of material at minimal direct cost. This case study explores the model developed by TNA, describing the opportunities that commercial partnerships can provide for public service organisations. This study also highlights the challenges that such partnerships can bring to bear on a number of critical questions, including user needs, balancing mission and commercial partners' desire to maximise revenue, and long-term preservation and access considerations.

Introduction

The National Archives (TNA) holds an invaluable collection of archival materials from across the UK spanning the past 1,000 years. One of TNA's goals is to set standards and support innovation in information and records management in the UK by providing a practical framework of best practice for opening up and encouraging the re-use of public sector information.[1] A critical part of this mission involves 'bring[ing] history to life for everyone' by providing increasingly universal, realistically priced access to archival documents. In keeping with this goal, the ratio of online to on-site document delivery has grown quickly, doubling to almost 200 to one over the past year alone.[2] TNA's online strategy, and in particular its willingness to create partnerships with commercial entities, has thus become an increasingly critical part of both fulfilling the organisation's mission and maintaining its economic sustainability.



The opportunities presented by the web also create challenges for TNA's leadership: within the constraints of its resources, how can the Archives launch new services online while continuing to fulfil other mandates? How do its digital activities relate to its long-standing preservation mission? How can TNA generate additional resources to pursue these new opportunities, and what role can commercial partnerships play? How does the web change the organisation's relationship with and understanding of its constituents? And what changes in the organisation itself are required to meet these demands? TNA has taken a number of steps to address these questions in recent years.

Sustainability model

Goals and strategy

This section focuses on two main aspects of TNA's sustainability strategy: generating resources to fund digitisation projects, and pursuing practical ways to outsource or recover the ongoing costs of providing content online. As of early 2009, The National Archives has digitised about 80 million documents, with about 20 million more in the pipeline – an impressive achievement, though this still represents only approximately 9% of TNA's full

1 The broad online and offline goals and mission of The National Archives are described in a set of strategy documents available on its website at **www.nationalarchives.gov.uk/about/operate/plans.htm**. This case study focuses on a subset of TNA's online goals that mainly concern getting content digitised and making it available online. It does not address online goals related to liaising with other government agencies to ensure deposit of digital records, or providing leadership in areas such as the creation of digitisation standards. Nor does this case study address the offline goals and mission of TNA.

2 Oliver Morley, Director of Customer and Business Development, interviewed 6 October 2008. Unless otherwise noted, all quotations from staff members and other individuals knowledgeable about or associated with The National Archives are drawn from interviews conducted as part of this case study from October 2008 until January 2009. A full list of interviewees is included in Appendix A.

This case study was researched and written by Rebecca Griffiths and Nancy L. Maron as part of the Ithaka Case Studies in Sustainability project.

collection, according to Caroline Kimbell, head of Licensing. By 2011, TNA 'aims to provide digital copies of all of its most popular records online, through commercial partners and its own DocumentsOnline system'.[3] By the organisation's estimation, the 'most popular' records include about 100 million documents, and as of early 2009, it is 80% of the way towards reaching this goal. According to Director of Customer and Business Development Oliver Morley, TNA is pursuing a 'portfolio' approach to generating resources for digitising content, which involves the following strategies:

- Developing commercial partnerships, referred to as the Licensed Internet Associates (LIA) programme, as well as granting secondary commercial licences and academic licences, all of which are on non-exclusive terms
- Raising grant funds
- Employing institutional funds for projects deemed important but for which good external sponsor candidates are lacking
- In the longer term, harnessing the work of visitors to the Archives (taking advantage of 'user generated content')

Morley believes that TNA's current balance of strategies is 'about right for a public-sector organisation'. He is optimistic about the potential for 'scanning-on-demand', although he recognises some significant challenges with this approach (explored below).

The LIA programme is by far the primary route for digitising content at TNA, accounting for roughly 90% of the documents online. The second major source of funding for digitisation comes from grants, which may be available particularly when a strong case can be made for the academic or public service value of putting a collection online. Sources of grants include government agencies such as the Joint Information Systems Committee (JISC), research councils and private foundations. One major project just completed is the Cabinet Papers, for which TNA received a grant of £600,000 from JISC. The project entailed digitising 60 years' worth of records, totalling over 500,000 pages. This content is now freely available on TNA's website.

TNA also houses some series of documents that are unlikely to appeal to commercial or academic partners, but that in TNA's view must be digitised because they have strategic or particular historical significance, or are heavily used and suffering damage from repeated handling. Documents of this nature are selected for digitisation throughout the year by a system of proposals by staff and academics; they are voted on by the Digitisation Forum, and the digitisation is paid for through the annual operating budget of the Archives. These in-house digitisation projects provide content to TNA's digital document collection 'DocumentsOnline', and this material is freely searchable and accessible to all on-site and online users of the archive. In most cases, the cost to download is £3.50 per document.

For the future, TNA is considering ways to harness the energies of its users to contribute to digitisation. For example, when visitors come to the Archives and scan documents, they could be asked to put their digital files into a user-contributed collection. This approach has the potential both to digitise large volumes of content at low cost, and to allow users a very direct voice in determining what should be put online. At the same time, according to Morley this practice would require major organisational rethinking and 'a huge cultural shift', as TNA would need to deal with incompletely digitised series/collections, and there would be 'no real way of validating the information' of some of the scans contributed by the public. That said, this approach has promise, and some user pilots are already under way.[4] The Archives already hosts a wiki catalogue called 'Your Archives' which allows users to post metadata and research papers about its collections.

A practical solution for digitisation and delivery: the LIA programme

The Licensed Internet Associates programme is a cornerstone of TNA's mission to digitise its content in order to provide the public with greater access to its documents. The LIA programme contributes in two ways: the companies chosen to digitise content pay an ongoing royalty to TNA, based on all sales of the records made from the service, equalling between £1 million and £2 million in revenue per year.[5] This revenue, though, is not seen as the programme's primary benefit. While the commercial entities that participate in the LIA programme see the value of The National Archives' content as a source of revenue generation, the TNA, as a public service organisation, sees the real value of its commercial licensing agreements as the cost savings the organisation enjoys when commercial partners undertake the digitisation process. Morley stated that up-front digitisation costs are far higher than long-term hosting and maintenance, though preservation of digital surrogates could be very expensive depending on what approach is taken. According to Caroline Kimbell, head of Licensing, over the past six years TNA's partner companies have invested about £53 million in the digitisation and ongoing support of this content, 'so that's where the real value for TNA comes from'. Moreover, Kimbell believes that vendors are able to do far more with this level of funding than TNA could do internally, given its high cost structure as a public organisation. She estimates that as a public entity, with public sector working practices and high overheads, the digitisation costs would be 'exponentially higher' if TNA did the scanning itself, probably costing as much just to do scanning as vendors spend 'on the entire cycle' including marketing and customer service.[6]

> *"...over the past six years TNA's partner companies have invested about £53 million in the digitisation and ongoing support of this content..."*

LIA partnerships are structured as renewable ten-year non-exclusive licences whereby partners are responsible for digitising an agreed set of content and hosting it on their websites; in exchange, the companies secure the right to exploit the content for commercial gain, and they benefit from TNA branding and

3 The National Archives Digitisation programme, 2005–2011, **www.nationalarchives.gov.uk/documents/digitisation-programme2005-2011.pdf**

4 TNA's Digital Express programme allows users to request any document they require via the website, and for a fee, TNA will scan the document and supply page images to the user. These images (with few exceptions) are not uploaded, however, into the online collection.

5 All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

6 Kimbell estimates that vendors spend 15–20p per frame for scanning, 8p per frame for human transcription, and less than 5p per frame for preparation of documents to make them 'scannable'.

Researching – the National Archives, Kew

linking to the TNA site, which receives about 20 million visits per month. Other companies are also permitted to digitise the same records, but they do not benefit from the TNA association in any formal way. According to Morley, if TNA's only interest were the maximising of revenue, it could charge more by seeking bids for ten-year exclusive licences for a body of content, but the organisation would 'never do it because it would conflict with public-service obligations'. Rather, all licences are non-exclusive: while the partner that wins the bidding process is permitted to digitise the content first and benefits from a special affiliation with TNA, any number of other private companies may subsequently arrange to create their own digital copies, to use as they will. While they do not enjoy the benefit of being permitted to link to the TNA website, these secondary licensees are still obliged to pay a royalty to TNA, based on a percentage of sales of their product. All partners are permitted to charge subscription fees for the products they create, but their pricing must be approved by TNA to assure that it is not beyond the means of most potential users, and access to the material must remain free to on-site visitors to TNA. Oliver Morley noted that free on-site access at the Archives' location at Kew helps the organisation fulfil its commitment to making records available to the public. Partners are also required to provide TNA with image files of the scanned material, which TNA can choose to make available after the expiration of the agreement, but the partners retain full ownership of the metadata they create.

Of the £53 million in in-kind contributions generated during the four years the LIA programme has been in place, 90% represent licences for content related to genealogy and family history. The remaining 10% of licences are for academic, military and other kinds of records. Materials that are of interest to genealogists and family historians, such as census records, ships' passenger lists, military service records, and birth, marriage, death and burial lists, tend to be licensed by commercial websites such as Ancestry.com and Findmypast.com. According to Kimbell, these companies have limited ability or desire to proactively seek out valuable content from the Archives; instead, the TNA's licensing team puts together information packs for each defined set of content, describing the materials and the market opportunity. Vendors are then invited to submit bids for rights to these packages, providing information about their technology platforms, business plans and corporate profile, and other relevant details. Kimbell estimates that the up-front sales process costs about £10,000 per project in staff time.

Although academic content attracts far less interest from licensing partners than does family history content, the academic content is still seen as important from a mission perspective. While commercial partners prefer to bid on packages of material that TNA presents to them, academic publishers have their own views about what archival materials have commercial potential in their sector (usually based on the number of postgraduates in a particular field). They typically approach TNA regarding a specific collection that they believe will be of interest to academic libraries and scholars, and thus ask less of TNA in terms of staff time to research and describe the content. While it is not uncommon to have several commercial partners eager to use the same set of content for different competitive projects, the academic publishers tend to work in specialised fields, and therefore it is rare for more than one of them to be interested in the same documents. 'They tend very deliberately not to compete for the same content, but rather try to offer unique selections of records,' says Kimbell. Royalties from this type of content tend to be much smaller, as they are targeted to niche academic audiences rather than to the general public. At the same time, TNA's preparation costs are lower, as TNA does not have to prepare information packets for the organisations involved.

TNA effectively outsources hosting, maintenance, customer service and the underlying technology development for all content digitised through the LIA programme. This enables the organisation to keep its own costs for providing access to content extremely low: it spends roughly £30,000–40,000 per year to support ongoing LIA projects, basically covering staff time for customer enquiries and some marketing support for partners (most of which is concentrated around the initial launch). Up-front sales and marketing costs are also around £30,000–40,000 per year. That said, TNA is now evaluating options for storing the copies of digital surrogates they receive from partners, and the organisation expects that this cost will be in the millions of pounds.

Meanwhile, Kimbell estimates that LIA partners spend roughly 30–40p per image for ongoing costs such as customer service, hosting, linking, marketing and outreach. The breakdown of this cost varies widely by vendor. This is roughly half of the total in-kind value contributed by these partners, which comes to 60–70p per frame. Therefore, of the £53 million in value created through the LIA programme, nearly half is in the form of ongoing cost savings. In addition, TNA receives approximately £1 to £2 million per year in royalties through LIA contracts, though this revenue goes into the Archives' general operating funds and is not used to directly offset the costs of running the LIA programme (which are, in any case, a small fraction of these revenues).[7]

On the other hand, for those digitisation projects that are funded internally or by grants, TNA must host content and support users itself. In at least some cases it plans to cover these costs by charging for access. For the Cabinet Papers project, JISC requires the organisation to provide free public access to the digitised papers for five years, but subsequently TNA plans to

7 TNA's typical licensing agreements are based on 'industry standards', according to Caroline Kimbell: 14% of base revenue for licences to LIA partners; 7% of base revenue for secondary non-LIA licences, and 15% of base revenue for licences to academic publishers.

start charging for access.[8] The organisation's current thinking is that users affiliated with institutions that subscribe to the content will have user IDs to enable them to access that content from anywhere, while the general public will be able to purchase access to the Cabinet Papers on a pay-per-view basis. TNA anticipates a substantial drop-off in usage once access is restricted, but believes that this is a necessary evil to support the service.

> *"Therefore, of the £53 million in value created through the LIA programme, nearly half is in the form of ongoing cost savings."*

Morley cautioned that 'it is easy to underestimate the process costs of running a paid service – e-commerce facilities and help-desks are a considerable investment, and for marginal content, it might actually be more cost-effective to simply provide content free'. He also said that there are not always economies of scale in setting up the infrastructure for charging – it can be very 'transactional'. So, for example, people expect help to be available when they are paying for content, and a service call can cost £10–15 in staff time. If the content is free, he explained, users tend to make fewer calls for support.

Key issues influencing the success of the sustainability model

Content decisions

The question of what to digitise is critical to the sustainability strategy. Morley stated that although TNA has extensive customer demographic information, 'digitisation decisions haven't been taken in the direction of "we have a customer base who could really do with having this content"'. Instead, the main goal has been getting records digitised based on the general observation that 90% of the on-site visitors to TNA are genealogists. Morley believes this has been 'a little opportunistic, but you have to admire TNA for taking the opportunity because quite a few haven't. The driving force really has been to digitise, and that's a good thing, although we could probably pay more attention to the customer base'. Name-rich materials have been pushed to the fore, because the institution is more confident of the commercial interest in family history. For other content, TNA looks for non-commercial sources of funding. According to Jess Ahmon, preservation officer in Collection Care, the main criteria used to determine digitisation priorities are commercial viability, demand, copyright issues and any sensitivity issues. Collections are rarely selected for digitisation based solely on condition or desire to preserve.

These decisions may grow more difficult. Morley noted that much of the 'low-hanging fruit' may have been digitised already – 'most of the really commercially attractive stuff is tapped out…[There is] an incredibly long tail of documents delivered on-site' and not much of a 'fat front'. As the most commercially attractive material is digitised, people are becoming more interested in other sorts of records that will supplement or enrich basic genealogical data. But while royalties from new digitisation projects will probably be lower than those from past projects, the partnerships will still be worthwhile because of the value of getting the content digitised.

In the meantime, TNA staff have already taken steps to capitalise on the demand for the name-rich documents, to the benefit of other, less sought-after content. By requiring commercial vendors to bid on pre-set bundles, staff can make sure to include some less attractive archival series alongside the highest interest ones. This allows TNA to ensure that each digitised package truly represents a thorough survey of a topic – for example, all surviving documentation on immigration to the UK, not just the lucrative transatlantic traffic. A rigorous process has been devised to prioritise materials for digitisation, taking into account possible funding sources as well as mission. A number of TNA stakeholders, including Collection Care, Customer and Business Development and the person responsible for grant proposals, are included in the process.

Optimising value to users

To assure interest in the LIA programme, TNA takes great care in creating value for its potential licensing partners when it carefully selects and packages the sets of archival series that it puts up for public bid. The team works to design the offering, from selection, to research and rights clearance, to presentation of the offer to potential commercial partners. This effort is seen as a requirement for attracting the LIA partners. In turn, the UK public gains web access to millions of pages of archival documents they would otherwise not have.

The value TNA creates for all of its users is an important part of its case for public funding, and the number of users served online increasingly dwarfs on-site visitors. For example, in November 2008, 12 million TNA documents were downloaded from the web, compared to 42,800 physical documents delivered in the reading rooms – a ratio of 283:1. Therefore, TNA has worked to optimise the value created online through its efforts to understand online user behaviour and to design services that address the needs of online users. This focus on users is prominent throughout TNA's set of online strategy documents, which call for efforts to examine user intelligence from across the organisation, fill gaps through research and testing and involve users in the development of online services.[9]

Gemma Richardson, head of Customer Experience, was hired three years ago to address these goals. Since June 2008 she has been designated as leader of a Customer Experience 'Team' which is to consist of herself and two staff members to be hired in 2009. She says that in the past TNA had had direct contact with its users, who visited the site in person to access archival materials. But as online usage grew, there was no mechanism in place to find out who these online users were or what they were trying to accomplish. The Archives tended to build out the website and then do some user testing, but by then it was too late

8 TNA uses its existing DocumentsOnline platform for this purpose, though it will need some improvements.

9 See the National Archives Online Strategy Executive Summary, 'Provide and Enable', available at **www.nationalarchives.gov.uk/documents/provide-enable-summary.pdf** and The National Archives Online Strategy, available at **www.nationalarchives.gov.uk/about/operate/online-strategy.htm**.

to change anything. Richardson has pushed for a more iterative approach that involves smaller groups of users of the TNA site at multiple stages of development.

This change of approach has impacted content decisions as well as website design. One example is the revision to plans for the Cabinet Papers service. The original grant proposal to JISC, which was drafted quite hastily, said that TNA would develop six 'study packages' targeted to a mix of secondary and university students. Once the grant was awarded, further efforts were made to determine whether this approach was, in fact, the best use of resources – and the conclusion was that it was not. Educational materials for A-level students (16- to 18-year-olds) are structured around National Curriculum standards, so study packages work well for this cohort. Through an informal process of about 20 telephone interviews, TNA staff learned, however, that study packages would not be appropriate for undergraduate students, as instructors at this level do not work from pre-set curricula. So TNA's new plan is to develop two study packages for A-level students and about 100 higher-level entry points for undergraduates. These entry points provide some context but do not attempt to lead students through the content in a prescribed way. For this cohort and other advanced researchers, general introductions and browsing by theme are provided, but mostly the site will be geared to help such users do their own research. User input has also led to the development of a new resources section, which includes features such as a timeline map that allows users to see how borders within Europe have changed over time, and 'whiteboard' interactivity. These features were conceived through talking with teachers about how they would use the materials in class.

A second example demonstrating the importance placed on user needs is an ethnographic research project that was instigated by the redesign of TNA's website. There was a realisation that the generic market segments used to describe users – academic, family historians, military historians, etc. – did not tell TNA staff anything about how users behave or what they are trying to achieve. Richardson noted that 'if you design for everyone, you end up designing for no one – or worse, you end up designing for yourself'.

So Richardson led a project to develop a new behavioural segmentation that would inform the redevelopment of TNA's main website. She worked with a vendor called Amberlight through a five-stage process:

- Shadowing people in the reading room
- Conducting an online questionnaire to screen for level of expertise across a number of dimensions, such as archival understanding and computer literacy
- Recruiting 34 people to do a one-month diary study
- Interviewing these people in their homes to understand or recreate their behaviour and working environment in more depth
- Performing cluster/trends analysis

The outcome was the identification of three behavioural groups: a) *ramblers*, who tend to be beginners, love finding things serendipitously, and are not very goal oriented; b) *explorers*, who tend to be more intrepid, want to further their knowledge, are often academics, relish the untravelled route, and take the time to do exhaustive searches, eg reviewing 10,000 records; and c) *trackers*, who are usually professional, paid researchers, have their own methodology, and know exactly what they want and are vocal about it. These three groups were then translated into six 'personas'. With these personas in mind, TNA staff found it much easier to prioritise the needs of certain groups; for example, they determined that some 'ramblers' should be directed to other, more accessible websites. They also determined that serving 'trackers' tends to consume a disproportionate level of resources.

This market research exercise cost nearly £90,000. To justify this expenditure, Richardson had to ensure that the exercise was practical and results-oriented, as opposed to doing research for its own sake. Now there are a handful of projects throughout TNA using these personas, so the benefits are becoming clear.

Organisation and culture

By several accounts, the organisational culture and leadership of TNA has been a key factor in the success of the LIA programme to date, and thus a critical factor in TNA's progress toward its digitisation goals. With the appointment of a new chief executive three years ago, TNA has experienced a great deal of change both structurally and culturally. CEO Natalie Ceeney's background includes private sector experience at the management consulting firm McKinsey and Company, and public sector experience at the National Health Service and the British Library. According to one interviewee she has brought a 'corporate' approach to the institution; while an enterprise division existed prior to her coming, she is credited with having 'picked it up and run with it'.

First, there has been substantial restructuring of the organisation, and now only one of the original set of directors is still in place. The TNA's size, around 600 employees, has remained fairly constant, while the mix of responsibilities has changed substantially, with the creation of new departments such as Customer Experience, Licensing and Commercial Delivery. Second, people with experience in the commercial sector have been hired for key positions within the organisation to reflect the growing importance of its online strategy.[10] As one interviewee pointed out, it would not have been realistic to expect records specialists to take on completely new tasks, such as negotiating licences. A few key hires in strategic roles were needed to implement the new strategic direction.

Third, the culture has changed 'dramatically'. There has been a big 'hearts and minds campaign' to transmit the new vision and values. The goal of offering broad, reasonably priced access to materials online is a key element of the organisation's vision and strategy. One interviewee stated that it has become far easier to get things done that involve cross-departmental cooperation, as people 'are coming around to the idea that their job is to support the broader organisation's goals'.

This results orientation is reflected in the types of decisions TNA has made in its digitisation programme. A pragmatic, 'good-enough' mindset seems to prevail in many cases. For example, digital surrogates created through the various digitisation programmes are not intended to be of preservation quality. For an organisation with archiving as its mission, this choice may have seemed incongruous to some. Furthermore, according to some, Ceeney's five-year planning horizon precludes long-term strategic planning, though others suggest that the quickly changing landscape makes longer-range plans impractical. Similarly, the ten-year contracts with commercial partners leave

10 Some examples include Oliver Morley, brought in from Reuters to lead the Customer and Business Development group, which encompasses online strategy. Caroline Kimbell was brought in from Thomson Learning, where she had extensive experience in commercial licensing. Gemma Richardson came over from the Home Office, where she gained expertise in user-centred design. Another member of Morley's team came over from Barclays Bank, where she was responsible for handling customer complaints, and the new commercial services manager is from Amazon and WH Smith Online.

longer-term questions open-ended. What if commercial partners do not want to renew their contracts, and no other bidders are forthcoming? How will TNA ensure that the investments that have gone into these digital projects are not wasted, especially since partners retain ownership of all metadata? But the licensing team has taken a practical view that they should resolve such issues if and when they arise, rather than trying to push through licensing agreements now that protect TNA from such risks, but are unpalatable to partners.

> *"There has been a big 'hearts and minds campaign' to transmit the new vision and values."*

These choices do lead to occasional friction. The Collection Care group, which sees its mission as the welfare of the collections, sometimes needs to fight for a place at the table to make sure that materials are protected. It is, by its own admission, perceived as somewhat of a bottleneck in digitisation projects. The very concept of a five-year planning horizon augmented by ten-year planning is discordant for staff in preservation functions, where they normally think in terms of 100 years.

Measuring impact

Performance measurement is a critical part of the new culture. Kimbell noted that tracking usage is 'really important, really key'. Because TNA's website does not require registration, it cannot track usage by demographic characteristics of visitors to the site, so a number of other methods are used.

Different kinds of projects are evaluated on different criteria. The success of commercial partnerships is measured by revenue, how well the contract is managed and user statistics, which LIA partners are required to provide; these statistics include the number of images downloaded, the number of transcripts viewed, the number of unique visitors per month and other measures. TNA also uses key performance indicators that aggregate data across partners to evaluate the overall performance of the LIA programme. The Cabinet Papers project, which is essentially publicly funded through JISC, uses a variety of government-endorsed methodologies, including Web Trend software to track usage by category of content, and Prince2 as a project management tool to manage benefits, successes and measurement. In addition to tracking these metrics, the project will bring in an independent evaluator who can provide 'colour' on some of the less tangible, more difficult-to-measure benefits.

Some of these measurement activities are required because TNA is a public body. Richardson cited a directive on measuring Return on Investment (ROI) from the central government, which is providing guidelines on how to quantify subjective or mission-based goals. Financial measures alone are not adequate; for example, increasing website traffic could actually increase costs by attracting more people to the physical site. Goals have to be more about satisfaction.

Benefits and challenges

This mix of approaches to digitisation has yielded a number of advantages for TNA. First, it has already been able to put 80 million pages online. Some of this content is freely available to the public, and all of it is freely accessible to on-site visitors. According to Kimbell and Grants Manager Christine Lawrence, TNA is far ahead of most other European archives. In part, this is because TNA's content is very commercially attractive – genealogical records can be sold to English-speaking people all over the world. It is also because many national archives are not willing or allowed to form commercial partnerships or to charge for access, so they simply do not have funds for this scale of digitisation.

An ancillary benefit is that putting content online can advance TNA's preservation mission. Jess Ahmon, preservation officer in the Collection Care department, noted that monthly accesses of 1911 Census materials have fallen from hundreds of requests per month to single digits. It is also possible that storage costs can be reduced as digitised content has been shifted to lower-cost off-site storage. Ahmon says, however, that the net impact on costs is probably mixed: while many potential users no longer visit the Archives in person, interest in the materials has grown substantially due to increased awareness and accessibility, so visits to TNA itself are at least as high as they were before all this content was put online. At the same time, this increased awareness and usage is surely an advantage for the institution's sustainability, as its case for public funding is strengthened.

Finally, TNA has learned valuable lessons by implementing these strategies and has adjusted its processes accordingly. For example, during the first commercial licensing arrangement (for 1901 Census data), the organisation did not allow time to review the condition of the archival materials. This oversight resulted in substantial cost and time overruns, as the documents needed a fair amount of preparation before they could be scanned. Subsequently, the Collection Care group has been involved from early stages in the process and estimates preparation requirements as part of the bid solicitations.

There are also some drawbacks to the approach TNA has taken, particularly with regard to the LIA programme.

First, several people acknowledged that the selection of materials has been more opportunistic than mission-driven, leaving the important work of understanding customers in the hands of the commercial partners who bid on the packages TNA creates. To what extent, then, do the content demands of the commercial vendors who sell to the general public mirror the demands of the overall base of users of the Archives? And where the content demands most likely diverge – for example, where the needs of scholars differ from the interests of commercial vendors – are the Archives still able to create alternative sources of funding to cover these needs? This is increasingly mitigated by a partnership with Essex University's UK Data Archive, which takes census metadata from the commercial providers and cleans and re-brands it for free use by the academic sector, whose research needs are more statistical and analytical than dependent on individual name searches.

Second, the user experience of the digital archive could be compromised, because content is housed in different programmes, on different platforms, with no one way to search across all of the digitised content at once. As a result, users are required to conduct individual searches on the partner sites, which, as one staffer explained, means that the 'user

experience can get a bit fragmented'. A related issue is that this hosted arrangement can lead to some branding confusion, as commercial partners and TNA are required to link to each other, and users may not realise sometimes that they are going to a new site.

Third, while TNA screens partners extremely carefully and imposes a great deal of control on the business models the vendors propose, the vendors' creation of metadata may be to lower or at least different standards than TNA would like. And in any case, TNA does not have rights to this metadata, which is the intellectual property of the private companies. TNA is currently experimenting with free hosting of images in the form of 'digital microfilm', inviting users to create and post metadata in the form of databases and analytical work – so far with remarkably successful results (see 'DocumentsOnline').[11]

Looking to the future, there are concerns that the sustainability of LIA content could be compromised should the partner companies choose to change policy or direction at the end of their ten-year agreements. Though TNA itself does not have plans to host this content, it mitigates this risk by keeping sets of the document images for unlimited future use, and by licensing multiple versions of the same high-demand content to a growing number of companies. Nor does TNA currently have rights to the metadata created by partners, specifically that relating to named individuals, as this is the partners' intellectual property. While this metadata provides the basis for the searching that visitors to the partners' sites become accustomed to, TNA is likewise mitigating this risk by improving its own catalogue data, among other initiatives.

Broader implications for other projects

In-kind contributions may play just as great a role as revenue, if not a greater role, in the overall sustainability model. One must be realistic about how much revenue can be generated through commercial licensing agreements. TNA receives £1 to £2 million per year in royalties for tens of millions of pages, a far greater content base than most organisations are likely to have at hand. Moreover, TNA's content is particularly rich in names, which attracts a huge general audience interested in researching family history; those with content that primarily appeals to niche audiences cannot expect the same level of interest (or of revenue generation). TNA's focus on in-kind contributions rather than actual revenues may be a good model for other enterprises.

Collaborating with outside partners can help an organisation accomplish goals more efficiently than it could on its own. TNA's strategy of working with commercial partners acknowledges that the organisation itself should not try to do everything internally – including hosting its own content. There may be cases where outside organisations can accomplish tasks more efficiently than the project itself can, particularly when tasks such as sales and distribution can require costly infrastructure and expertise that may not exist within the organisation or is not consonant with the institution's mission.

When making business decisions in a rapidly changing landscape with no 'right' answers, a 'good-enough' mentality can be important. A pragmatic mindset underlies many decisions at TNA, whether they be about quality of digital surrogates, the way content is selected for digitisation, terms of commercial licences, the need to charge for access to some content to cover future operating costs, or the usefulness (or lack thereof) of trying to see too far out into the future. There is an acceptance that technology and business models change quickly, so allowing for some uncertainty is considered okay.

Certain key positions require expertise that may need to be brought in from outside the organisation. TNA seems to have done well by bringing in people in key positions with a mix of backgrounds and skill sets that are needed to provide a successful online service, while still relying on the core of the existing staff. It is sometimes possible to change the mix of responsibilities among staff, thus creating a more responsive and effective organisation within an existing budget, while limiting new hires to a few strategic managerial positions.

Within an organisation, a culture of accountability and results orientation can aid the progress of mission goals. By inculcating a results-oriented culture, TNA staffers have found it easier to work across departments toward common goals. The staff understand the need to attain digitisation targets and create strong services, as opposed to focusing on the narrower needs of a specific department.

The commercial value of one's content is not necessarily obvious, especially to mainstream vendors. Initiatives may need to invest some of their own time in packaging and pitching what they have. At the same time, it is important to keep track of selling costs to ensure that they are commensurate with the revenue being generated.

In a partnership, elements important to the mission of the organisation can and should be carefully spelled out at the outset. By requiring a thorough, competitive bidding process, TNA is able to control some very important aspects of the digitisation and dissemination of its content, including pricing, to assure that the finished resource meets its standards and provides wide access, even to users beyond TNA's walls. That said, other elements, such as creation and retention of metadata, are beyond the organisation's control, which may cause complications later on.

Appendix A: Interviewees

Note: An asterisk (*) denotes a primary contact.

Jess Ahmon, Preservation Officer, Collection Care Department, 17 November 2008

***Caroline Kimbell**, Head of Licensing, 6 October and 17 November 2008; 13 and 29 January 2009

Christine Lawrence, Grants Manager, 6 October 2008

Oliver Morley, Director of Customer and Business Development, 6 October 2008

Gemma Richardson, Head of Customer Experience, 17 November 2008

Laura Withey, Project Manager, JISC Cabinet Papers project, 6 October 2008

11 Partners do deposit archival surrogate copies with TNA in the form of uncompressed, raw TIFF images (**www.nationalarchives.gov.uk/documentsonline**).

Appendix B: Summary of revenues and costs

The National Archives (UK): Licensed Internet Associates programme (LIA)

Revenue Category	Description	Approx. amount
Royalties from LIA partners	Based upon a percentage of LIA partners' sales	£1,500,000
Total revenue		**£1,500,000**

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management/content selection	Proportion of management team attributable to LIA	1.4	yes	£54,600	
Finance	Proportion of finance & contracts team attributable to LIA	0.32	yes	£12,500	
Content selection	(included in management role)	0	yes	£-	
Sales & marketing	Proportion of media & press team attributable to LIA	0.5	yes	£19,500	
Technology		0	no	£-	LIA partners are responsible for any technical development of their own sites
Total personnel costs		2.22		**£86,600**	
Non-personnel costs			Included in budget?		
Administration & overhead			yes	£26,600	
Scanning, metadata, etc.			no		LIA partners conduct scanning and metadata creation at their own expense
Hosting & technology infrastructure			no		LIA partners host content on their platform
Other					
Total non-personnel costs				**£26,600**	
Total budgeted costs				**£113,200**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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The Middle School Portal 2: Math and Science Pathways, National Science Digital Library: Early Sustainability Planning for a Grant-Funded Digital Library

The Ohio State University, Ohio, USA

www.msteacher2.org

The Middle School Portal 2: Math and Science Pathways project (MSP2) aims to provide middle school teachers with high-quality materials they can use in the classroom, and to foster greater sharing and communication within the middle school teaching community. The original Middle School Portal was a prototype for the 'Pathways' projects funded under the umbrella of the National Science Digital Library (NSDL), and MSP2 remains today entirely funded through NSDL. But the project faces a challenge: how will it cover the costs of operation and development when its current three-year grant runs out in 2011? This case study examines how the leaders of MSP2 are planning for the long-term sustainability of the resource. First, they are exploring a range of revenue-generating activities that build on current strengths of the partner organisations involved in the project; second, they are considering a 'plan B' of building a community-run site that would rely on a free social networking platform, the technical infrastructure of NSDL, and user-generated content – a site that its leaders hope could function even with limited staff.

This case study was researched and written by Kate Wittenberg and Nancy L. Maron as part of the Ithaka Case Studies in Sustainability project.

Introduction

Since 2000, the National Science Digital Library (NSDL) programme sponsored by the National Science Foundation (NSF) has funded over 200 projects to create collections, services, and tools for teachers and learners at all levels of math and science education. As the Library's content grew, users reported having difficulty finding relevant resources within it, and so in 2003 NSF developed the idea of 'Pathways' – portals to the overall NSDL site that would be curated by different communities to improve the selection, annotation, and discoverability of NSDL resources.[1] NSF has continued to fund the NSDL programme and is currently considering the latest round of proposals for new Pathways grants, which will be awarded in the autumn of 2009.[2]

In 2002 NSF created a 'Core Integration' group to support the smaller, individual NSDL projects by providing central functions including technology, access management, and outreach. In addition to providing these shared services to projects under the NSDL umbrella, this central services group was also asked to help identify gaps in the content, tools, and functionality of the overall NSDL collection. The Middle School Pathway owes its existence to the Core Integration group, which in 2004 decided to use a portion of its own budget to fund Professors Len Simutis and Kimberly Lightle at The Ohio State University to create a portal designed to help middle school teachers.

The self-stated goal of the original NSDL Middle School Portal (MSP) was to add value to the larger body of content in the overall Library by offering 'a middle school view into excellent online materials' drawn from both within and beyond projects funded by the NSDL initiative. By selecting and annotating online materials for inclusion in MSP, Lightle sought to capitalise on the promise of the NSDL by providing middle school math and science teachers with easy access to superior digital resources and teaching tips for important or challenging topics. Project staff members were responsible for reviewing available teaching resources for middle school science and math, selecting and annotating those materials, and uploading metadata records to the NSDL data repository, thus making the resources discoverable through both the NSDL site and MSP. Going beyond the mere provision of links to resources, MSP staff developed special Explore in Depth (EID) units to provide grade-level-appropriate guidance to teachers on subjects ranging from algebra and geometry, to rocks and minerals, to global warming.

1 NSDL Pathways cater to specific audiences, as defined by educational level, discipline, or resource or data type, and they enable users to more easily navigate and make sense of the wealth of resources that are part of the overall NSDL structure. Today, Pathways exist for community colleges and technical schools, the biological sciences, chemistry, physics and astronomy, computational science, computer science, engineering, materials science, mathematics, middle schools, the social sciences, informal science education, and multimedia resources.

2 The 2009 NSDL grant proposal solicitation can be found here: **www.nsf.gov/pubs/2009/nsf09531/nsf09531.html**

In 2005, with the original Middle School Portal already up and running, Lightle applied for NSF funding for a 'next generation' Pathway for middle school science and math teachers, but she was turned down. According to Lightle, her 2005 grant proposal 'lacked this whole idea of sustainability. There was no professional organisation or university who said they would work with project folks at the end of funding to make sure the project would continue.... We did not have that'.[3] She reapplied two years later, this time with co-principal investigators at two partner institutions, the Education Development Center (EDC) and the National Middle School Association (NMSA) – and received funding in September 2008.

The current grant is funding the next generation of the NSDL Middle School Portal – now called MSP2 – as an NSDL Pathway. MSP2 still seeks to serve as a reference source for the community, as did the previous site, but it also takes advantage of digital tools that allow for users to participate in the process of resource creation and knowledge sharing. The original MSP site is still maintained, but it encourages users to 'Connect with Colleagues' through the MSP2 social networking site.[4] Lightle feels that the participation of EDC and NMSA was a critical factor in securing funding, and that the integration of digital tools to develop content and support community building represents the 'next level of evolution of digital libraries'.

Yet as an entirely grant-supported initiative, MSP2's particular sustainability challenge is quite clear: its leaders must identify funding sources to support the continued development and maintenance of the MSP and MSP2 sites and all of their content, including blog posts and wiki pages, after their Pathways grant ends in 2011.[5] This case study will explore the core elements of their strategy: the partnership model with NMSA and EDC, including the options for revenue generation that these partnerships may facilitate; the leaders' plans for developing a robust user community that will not only use but contribute content to the social network, blog, and wiki space; and the project's relationship to the larger NSDL infrastructure.

Sustainability model

Goals and strategy

The original NSDL Middle School Portal was designed to be a digital library of exemplary middle school teaching materials that would include a browsable collection of catalogue records, plus 'Explore in Depth' publications that would contextualise the resources in the MSP collection. Based on the model of a 'first-generation' digital library, the collection is used by teachers seeking materials to use in their classrooms. In the year before MSP2 was funded, MSP had over 300,000 visitors. MSP2 moves beyond MSP's passive, text-based model of a digital library to include Web 2.0 tools such as blogs, wikis, Diigo,[6] and social networking software. Unlike the original MSP site, MSP2 is designed to promote the creation, modification, and sharing of resources and to facilitate collaborative professional development among users. Its core feature is a Ning-based social networking component; once registered with MSP2, teachers can create their own pages, join interest-based community groups, and post to the site blog. All MSP content, such as the Explore in Depth units created for that site, is also accessible through the MSP2 site.

In their Pathways grant proposal, MSP2 project leaders identified a number of possible sustainability strategies, most of which involve building on initiatives already in place at partner organisations NMSA and EDC. Among these are fee-based educational workshops and webinars, digital publishing opportunities, and the instituting of fees for access to selected sections of the site. Lightle has also mentioned the possibility of applying for additional grants to support both new and ongoing work on MSP2. The original plan for sustainability calls for researching and investigating possible e-commerce and sponsorship opportunities in Year One of the three-year grant, and continuing to research and pilot e-commerce activities in Year Two. Goals for Year Three are to reach agreements with sponsors and 'launch an e-commerce model for selected MSP2 features and services'.

At this stage, however, MSP2 project leaders have not defined how much supporting revenue these models would need to – or be able to – generate. Rather, Lightle and her partners have been exploring what could be characterised as a backup plan that would depend for its success on three key assumptions: 1) that the community of middle school teachers using MSP2 will remain sufficiently committed to contributing content and tools to MSP2 to ensure the site's continued relevance and vitality; 2) that the project's relationship to NSDL will mean that the MSP2 site can remain on the central NSDL technical platform at Cornell University, its technological infrastructure secure; and 3) that the project leaders can identify one or more new partnerships willing and able to provide long-term solutions (for hosting and/or developing content) once the grant period ends. Should these conditions be fulfilled, project leaders hope that MSP2 could be sustained even without e-commerce revenue streams, perhaps with new content added to the site at a significantly slower pace, and relying on just those tools and functionality available through the central NSDL technical services group.

Costs

The MSP2 is funded for the period 2008–2011 through an NSF grant of $2,369,699, of which $1,026,200 covers salaries and benefits for the equivalent of ten full-time staffers (10 FTEs), located at the partner institutions as well as at the Ohio Evaluation and Assessment Center for Mathematics and Science Education at Miami University of Ohio. Staffing at The Ohio State University, the lead partner institution, accounts for 5 FTEs and includes the lead PI at 50% and time from three math and science content specialists, an editor, and a website developer. Staffing at the Education Development Center adds up to 3 FTEs; this total includes a co-PI at 30% and time from two research assistants and a technology associate. The National Middle School Association, tasked with outreach and sustainability planning for MSP2, devotes just 1.50 FTEs,

3 Unless otherwise noted, all quotations from staff members and other individuals knowledgeable of or associated with MSP2 are drawn from interviews conducted as part of this case study between March and June 2009. A full list of interviewees is included in Appendix A.

4 **www.msteacher2.org/page/about-1**

5 In 2008 NSF put in place a programme called Pathways II, which is designed to assist existing Pathways in their continued development after the end of their first grant. The program solicitation reads: 'Projects in this *Pathways* track will have accomplished the major stewardship goals set out above for an identifiable audience of learners, and would use Stage II support to ensure the expansion and stability of the original *Pathways* effort'. Assuming that this funding track is continued, it is possible that MSP2 could apply for one of these additional NSDL grants. But securing a Pathways II grant would not in itself provide long-term sustainability for the project; it would merely extend the amount of time available to the project leaders to seek other funding sources.

6 Diigo is a web research tool and a social information network; see **www.diigo.com**.

including a co-PI at 25%, an e-learning project manager at 25%, and a content management specialist at full-time. In addition, staffing includes 0.5 FTE at the Ohio Evaluation and Assessment Center (a co-PI at 10% and a senior researcher at 40%). Overall, the budget is weighted toward personnel with expertise in developing new content for the site. While some of the activities of current staff are likely to be specific to the start-up phase, other activities, such as site moderation, are likely to be needed on an ongoing basis.

Other non-staff-related costs include travel for PIs and other staff to attend meetings to present MSP2 to potential users and at the annual NSDL All Projects meeting, stipends for the Teacher Leaders (described below), some equipment costs, and indirect costs for each partner's university or organisation. As a condition of its grant, the MSP2 project is also required to allocate 15% of the total grant funds to the central NSDL Technical Network Services, which provides hosting, tools, and technical support to all NSDL grant-funded projects.

Key factors influencing the success of the sustainability model

Creating a team of three institutions and the evaluation center was instrumental for receiving a Pathways grant in 2008, according to the co-leaders of the project. Each partner institution contributes particular areas of expertise to the endeavour: the team at Ohio State is responsible for editorial content of the site; the National Middle School Association is charged with identifying and training Teacher Leaders and providing outreach on behalf of the site to the NMSA membership of 200,000+ educators; the Education Development Center is responsible for creating student-designed interactive learning tools; and the Ohio Evaluation and Assessment Center for Mathematics and Science Education serves as an external evaluator, gauging the extent to which the project meets its overall goals. Sections below highlight how the contributions of each partner support the project's overall sustainability strategy, how the project attempts to understand its users, and the project's relationship to the NSDL as a whole.

Building the user community: The National Middle School Association team

In focusing on a specific audience – middle school math and science teachers – rather than on a single discipline, MSP2 differs from most of the other NSDL Pathways. Indeed, one of the core features of the sustainability plan for MSP2, according to Lightle, is engaging the target audience of middle school math and science teachers as both contributors and users. By developing a robust community of educators who use and share the materials on the site, the project's leaders hope that MSP2 will become something users rely on and feel committed to in the long run. Co-PI Mary Henton of the National Middle School Association says that her own vision for the social networking site is to see 'groups formed around specific topics, around specific areas of interest, ongoing conversations; people actively sharing ideas and resources, teachers volunteering or offering to teach a session to another teacher's students, for example, through conferencing or Skype…'. Henton sees the community itself as the key to the ultimate sustainability of the site. She envisions 'a flurry of different types of activities that are rolling ahead and managed by the members of the community [so that] the active presence of those who are designated as co-PIs would [eventually] fade into the background'.

To this end, the MSP2 team at NMSA, led by Henton, is responsible for creating and mobilising a cadre of Teacher Leaders, who are recruited and offered an annual stipend of $1,000 to help create content, welcome new visitors to the social network, stimulate community involvement and contributions through the blog posts and discussions, and lead web-based professional training seminars. By recruiting and educating others to use the social networking site, the Teacher Leaders are in many ways the primary driver for developing this community.

The plan outlined by the MSP2 leadership team in their 2008 NSDL grant proposal calls for an initial group of ten Teacher Leaders to:

- Cultivate and facilitate at least one MSP2 virtual learning community
- Actively recruit and engage new participants in the learning community
- Contribute to the development and refinement of MSP2 curriculum resources
- Participate in at least two professional development activities
- Attend a one-day symposium at the NMSA annual conference
- Present or facilitate at least one live event (eg, webinar, NSDL brownbag)
- Assist in identifying and screening the next group of Teacher Leaders[7]

And yet in the first nine months of the grant, results of the Teacher Leaders initiative have been mixed. According to Lightle and Henton, at least three factors have hampered the Teacher Leaders' ability to have an impact on MSP2. First, the project leaders have had difficulty recruiting Teacher Leaders: as of June 2009, only three of the ten budgeted positions have been filled. This is in part due to cutbacks at the National Middle School Association that have decreased the amount of time and attention NMSA staff have been able to devote to recruiting the Teacher Leaders.

Second, the Teacher Leaders who have been recruited may be finding elements of their tasks overwhelming. According to Henton, the problem is not a technical one; all of these teachers are proficient with web-based technologies. Rather, Henton fears that the Teacher Leaders may simply feel 'overwhelmed', wondering where to start in their efforts on behalf of the site when faced with so many choices and the competing needs of their busy schedules.[8] With so much content and so many possible places to contribute to the project, the hard part is 'just navigating the content, knowing where to start'. As a result, Henton is now considering offering the Teacher Leaders smaller, more discrete tasks to accomplish.

Third, the project leaders feel that in their recruitment efforts they may have targeted teachers at the wrong career stage. Lightle and Henton initially focused their recruitment on teachers who have had five to ten years of teaching experience. They have found this not to be as ready an audience, however, as they had hoped, perhaps in part, they now realise, because teachers at this career stage are more likely to leave the classroom altogether, either by going into administration or moving out of education entirely, than are teachers at earlier stages of their careers.

7 An abstract of the NSF proposal is available here: **www.nsf.gov/awardsearch/showAward.do?AwardNumber=0840824**

8 As of late June 2009, Lightle reports that with the school year at an end, the Teacher Leaders have become much more active.

Lightle and Henton have been rethinking that recruitment strategy and plan to recruit more actively among both novice and more experienced teachers.

Given how difficult it has proven to recruit Teacher Leaders, even with the incentive of a stipend provided by the NSDL Pathways grant, what steps will be needed to get rank-and-file teachers to actively participate in the social network? When asked what incentives might entice teachers to contribute content, Lightle said that increasingly, teachers are requesting a letter from the project leaders acknowledging contributions to MSP2 as a professional development activity. If their MSP2 work comes to be considered professional development, she believes that teachers will be much more willing to serve as active contributors.

In addition to recruiting Teacher Leaders, whose work at this time has been focused on encouraging interaction among those already visiting the site, the National Middle School Association conducts several ongoing activities that it can leverage to draw traffic to the MSP2 site. The Association promotes MSP2 to its core audience of middle school educators through its annual meetings, online conferences, membership newsletters, and other means. A network of 58 affiliate organisations in the United States, Canada, Europe, and Australia enables NMSA to reach a total of over 200,000 middle school principals and teachers, professors, college students, parents, community leaders, and policymakers at the local, regional, and national levels. It is worth noting that middle school educators specialising in math and/or science – the primary target audiences for MSP2 – are a subset of this larger NMSA audience.

Supplementing the efforts of the project staff of MSP2 is the NSDL Resource Center, which provides outreach and support for all NSDL-related projects; the Center has assisted MSP2, for example, by running a web seminar series for middle school teachers to introduce them to material on the MSP2 site. Susan Van Gundy, the Center's Deputy Director and head of Strategic Partnerships, and Robert Payo, Outreach and Professional Development Manager, understand their strategy as leveraging their own relationships with NSDL partners to assist MSP2. For example, the Resource Center has a relationship with the Southern Regional Education Board (SREB), an organisation with a particular interest in improving middle school education. Van Gundy and Payo believe that by brokering an arrangement between MSP2 and a group similar to SREB they may be able to find an organisation that would support the activities of the MSP2 project as a service to its membership.

Identifying online resources and creating content: The Ohio State University team

The MSP2 team at Ohio State, led by Lightle, is responsible for creating the MSP2 content and taking advantage of the technical infrastructure of NSDL and free Web 2.0 tools. They identify subject priorities to cover, search out relevant web-based resources (whether from NSDL-funded projects or from other sources), and catalogue the resources using the NSDL cataloguing interface. The staff also create original content via the NSDL wiki (this is how the Explore in Depth publications are created) and NSDL's Expert Voices blog. Once the OSU team introduces new content to the MSP2 site, it can be developed further by the other project partners and the community of users through the addition of comments on the blogs and links to related resources. At the same time, MSP2 and the other Pathways gain value by bringing content and tools from other NSDL partners into their resources, and thus they rely on the larger Library to provide background citations, tools, and a rich collection of content as they shape material aimed at their own communities of users.

In addition to leading the content-creation elements of the Pathway, OSU provides overall leadership for the project and is the liaison with the other two partner organisations; with the NSDL Resource Center and Technical Network Services; and with the evaluation group. In addition, OSU represents the MSP2 project at NSDL annual meetings and at NSF briefings on NSDL.

Lightle is also responsible for initiating and managing contact with the project's advisory board. This board, which is made up of twenty middle school teachers, middle school administrators, and education professors, met for the first time in February 2009. So far, Lightle feels that the board has been a great resource for dissemination and outreach. The board also recently encouraged the project leaders to develop a plan for approaching a senior administrator at Ohio State to talk about how the institution might be able to help sustain the project.

Developing content for middle school students: The Education Development Center team

The Education Development Center (EDC) is a non-profit organisation that designs, delivers, and evaluates programmes to address challenges in education. EDC is involved with several NSDL-funded projects, including the Gender and Science Digital Library, the Effective Access research project, and Fun Works, a resource that uses children's current interests, such as music and sports, to help them explore science and math careers through interactive tools. The MSP2 team at the Education Development Center is headed by co-PI Sarita Pillai, who is funded to work on the project for 30% of her time, and includes three other staff members who devote portions of their time to the project.

While the team at Ohio State focuses mainly on developing tools and content for teachers, the team at the Education Development Center is developing materials that will be part of the MSP2 site, and which will help introduce MSP2 to a student audience in after-school programmes, museums, and in other informal educational settings such community centres. A series of youth-based Virtual Learning Experiences are to be developed in collaboration with design teams of students, and are meant to adopt the same inquiry-based learning and collaborative site-design techniques used in the development of the Fun Works project.

Other partnerships for sustainability

In the first nine months of the current grant, very little has been done concerning revenue-generating strategies. MSP2 leadership has not yet determined what it would cost to run a pared-down version of the project in the post-grant period and has not developed revenue models that would support such a pared-down version, focusing instead on the start-up phase of site and content development. 'This year has been about migrating static content into a wiki space, building the social network, figuring out what digital tools will have the most impact on users, and having conversations and establishing relationships with other organisations who can help us with sustainability,' according to Henton.

The project leaders have, however, started actively considering scenarios involving partners who might eventually take responsibility for care and feeding of the MSP2 content and user community. One possible partner is Curriki, a site for

collaboration among educators around freely-available curriculum resources. MSP2 leadership is exploring how bridges could be built to connect content coming in through Curriki to MSP2 and vice versa.

Another possible partner identified by the project leaders is Elluminate, a platform for online videoconferencing for educators.[9] MSP2 leadership is looking at this service because it has capacity to host events and training, but also because it has launched a beta prototype of a social network meant to cater to the whole K-12 field. MSP2 is considering moving from the Ning-based social networking platform it currently uses over to Elluminate's new network, called 'Learn Central', as a way to 'open up other sustainability possibilities' and gain access to the broader audience of educators they feel Learn Central will reach.[10]

Lightle also hopes the project's partner organisations will build on current revenue-generating products and services to provide ongoing support for MSP2. She notes that Ohio State, for example, is able to work with other institutions and organisations to offer course credit for workshops or online classes, and that the National Middle School Association has existing capacity to market and conduct fee-based workshops, seminars, and webinars. At this point, however, project partners have no formal obligations to provide support for MSP2 beyond the initial term of the grant, and this year, the NMSA itself has been buffeted by budget cuts and layoffs that have already had an adverse effect on the MSP2 project staff. Furthermore, the project partners have not yet outlined a clear plan for revenue-generating activities, so relying on this strategy as a sustainability plan is risky.

Understanding users

While the NSDL Middle School Portal site (the predecessor to MSP2) continues to be updated and draws high traffic – from 1 September 2008 through 31 May 2009, the MSP site had 315,687 sessions with almost a million page views[11] – the social networking site of MSP2 is also starting to show progress. It launched on 1 February 2009; at the end of April 2009 there were 517 visits with 2,299 page views, and at the end of May 2009 there were 873 visits and 3,501 page views.

MSP2's leaders lament the difficulty in obtaining clear web statistics on traffic[12], and they realise that middle school science and math teachers are not the site's only visitors. 'Just because we are developing resources for middle school teachers, it has no impact on who actually is visiting our site,' according to Lightle. In addition, for the first several months after its launch, signing up on the social networking site required provision of very little personal data, making it difficult for the project to learn much about even those users signing up for personal pages. Since late April 2009, the sign-up function has requested (but still does not require) additional information including teachers' subject area, grade level taught, number of years in the classroom, and how the user found out about MSP2. Already, Lightle has noticed some important trends, in particular that the teachers signing up on the site are more experienced than she would have imagined.

MSP2 as part of NSDL

NSDL as a whole has undergone a significant change since late 2008. In October 2008 the NSDL transitioned to a new phase of development and organisation, with the granting of awards for the NSDL Resource Center and Technical Network Services (TNS). TNS, based in the Computer Science Department at Cornell University, provides operational support, tools, and technical development for the NSDL Pathways, and is partially supported by contributions from the Pathways grantees. The NSDL Resource Center, located at the University Corporation for Atmospheric Research in Boulder, Colorado, provides community outreach, data gathering, and services and support for teacher training for all of the Pathways projects.

Starting in 2008, all new Pathways, as part of their funding arrangement with NSF, have been required to allocate 15% of their grant funds to TNS; they are not required to allocate funds to support the services of the Resource Center. Lightle has taken steps to ensure that MSP2 is making use of the tools and services available through the NSDL technical platform, and the project is already integrated with and to some extent dependent on the larger NSDL organisation. 'I have taken advantage of every tool that they have,' says Lightle, 'even when their tools are not as easy to use as other free Web 2.0 tools.' MSP2 uses the NSDL central data repository to generate and hold its resource metadata. This strategy is important for MSP2: it thoroughly integrates MSP2's collection into NSDL, ensuring that all MSP2 materials are discoverable, at an item level, within the larger Library, as well as through the MSP2 site.[13] The project is also using the NSDL-designed Expert Voices blogging technology for community blogging.

But there have been cases where MSP2's desire for certain functionality and the technical requirements of the project have led its leaders to look beyond TNS, making use of tools and applications freely available elsewhere. In developing MSP2, project staff have used Ning for building the social network, Twitter for microblogging, and Diigo for sharing site bookmarks. In some cases, they have found that the tools available to them via TNS would require significant tweaking to serve MSP2's needs. By Lightle's estimate, the OnRamp content management system offered by TNS would have cost more to reconfigure for use in creating the Education Develoment Center's MSP2 Virtual Learning Experiences than the equivalent of 15% of the MSP2 grant. This consideration led the Education Development Center to use instead the open source content management system Moodle. Using non-TNS tools and software makes MSP2 less dependent on the central NSDL infrastructure, but also more vulnerable in terms of needing technical staff and expertise to support these tools.

Benefits and challenges

Since MSP2 is in its grant phase and a sustainability model is still being formulated, it is premature to assess the success of the model. It is not too early, however, to consider the potential benefits of the model being considered, as well as the challenges MSP2 is likely to face in establishing long-term sustainability. The project is in the fortunate position of still having two more years in which to thoroughly explore and evaluate its options before the grant period ends in 2011.

9 www.elluminate.com

10 www.learncentral.org

11 In addition, the two project blogs had 66,590 sessions and 142,767 page views.

12 The difficulty stems from several factors: content is coming from multiple tools and servers, different metrics packages are in use, and data is spread across several different blogs.

13 Not all of the Pathways employ this strategy. Some of them have decided not to expose item-level metadata in the NSDL repository. This decision is significant, because if a Pathway does not provide NSDL with item-level metadata, its content will not appear in a search conducted through NSDL unless a user employs as a search term the official title of the Pathway collection.

By establishing a partnership with the National Middle School Association, the project has laid the foundation for developing a potentially large and committed user base. The project leaders have also understood the importance of proactively building user communities by establishing the Teacher Leaders programme, recognising that communities will not emerge automatically just because a resource has been created.

In addition to the core audience of those who visit and use MSP2, the Teacher Leaders, who contribute content and facilitate interactions on the site, constitute another MSP2 user group. The project leaders have recognised the importance of setting clear expectations and creating incentives for Teacher Leaders, and they are already gaining valuable feedback about the effectiveness of those incentives. More must be understood, however, about what motivates (or could motivate) this group to participate, to further invigorate the Teacher Leaders to develop content and to draw more people to the site. By establishing some measurable targets for the number of users and contributors the project leaders expect and suggesting tactics the Teacher Leaders might use to attain these targets, project leaders will find it easier to establish clear strategies and goals to be reached in specified time frames.

If developing the user community is a key factor in the sustainability plan for the resource, nothing is more important than developing a very clear understanding of the target users of the MSP2, and determining why and how they would want or need to use the site. A critically important challenge in the next two years will be to assess the true size of the potential market for MSP2 and the different segments that comprise its audience. By requesting information from users when they register on the site, as the project is now doing, the project leaders can gain valuable insight about users' backgrounds, experience, and interests. Project leaders may be able to learn much from early adopters who supply contact information; a pool of such users can be drawn on for focus groups, for example. The information users provide can also be employed to create connections among people with similar interests. Once the potential core users and secondary users of the site have been identified and their needs have been understood, the project leaders can introduce incentives, such as professional credentials or continuing education credits, which could encourage greater participation. As part of this stage, researching the 'competition' for teachers' attention in this space will be very important in understanding how to best position the resource for its audience of teachers.

> *"The project leaders have also understood the importance of proactively building user communities... recognizing that communities will not emerge automatically just because a resource has been created."*

First, the project needs to assess the costs of ongoing development. This might involve seeking further in-kind contributions from one of the partner institutions. It is certainly possible that the project could be sustained at well below the annual budgets allotted in the grant period (Year 1: $991,765; Year 2: $833,743; Year 3: $544,191).[14] At the same time, paring the staff to such a low level that the resource cannot be regularly updated will rob the project of potential future revenue for reinvestment, as it would be difficult to sell yearly subscriptions to a relatively static project. As part of their sustainability planning, the project leaders and advisory board will need to evaluate the ongoing costs associated with sustaining the project at an operational rather than a development level, and identify the job functions that will be required for continued development of the project.

Second, the project leaders should assess potential sources of earned revenue. The project currently has the benefit of substantial start-up funding to help build the resource and establish a strong user base. But that grant funding comes with a clear end date, so the project leaders need to think immediately about realistic possible sources for revenue and in-kind contributions. Potential revenue streams should be modeled to show the revenue attainable in various scenarios, such as offering fee-based educational programs or charging for access to designated sections via institutional subscriptions. (The information to be gathered about audience and market segments, as described above, would be invaluable in the planning process, and could be used to estimate revenue streams for each model under consideration.) By identifying possible sources of revenue and eventually reinvesting income in MSP2, the project leaders could continue to enhance its value to users.

The MSP2 has an advantage over many start-up projects in that it is closely affiliated with well-established institutions that have compatible missions and that are interested in the success of the project. The Ohio State University serves as the lead institution, with the National Middle School Association and the Education Development Center serving as partner institutions, the Ohio Evaluation and Assessment Center serving as an external evaluation partner, and the NSDL Technical Network Services and Resource Center providing central infrastructure and outreach services.

The multi-institutional nature of the project, however, also creates clear challenges for management and coordination. One such challenge is the fact that MSP2's leaders are each assigned to the project for only 25-50% of their time; it seems likely that the leaders could exert greater impact if at least one of them were devoted to the project at a larger percentage of time. Turmoil at one of the partner institutions has complicated matters further, as some people originally assigned to the project have left or been laid off when departments were downsized. In a complex case like this, it may be worth exploring whether the operational phase of the resource should involve a more

14 Assuming that the community takes on responsibility for a significant amount of content contribution, one possible scenario would be to maintain the site with a much smaller staff than it currently employs – perhaps with just one project editor and a part-time web developer. The costs for technology staff associated with tool building could potentially be transferred to the NSDL Technical Network Services group, further decreasing MSP2's budgeted costs involved in ongoing maintenance of the site.

centralised organisational structure than has existed during the development and launch phase.[15]

Coordination among multiple organisations is a complicated task in the best circumstances. While there is obvious value in collaboration, the scattering of employees and responsibilities among five separate institutions will make it even more important for MSP2 leaders to continue to establish clear deliverables for each partner institution. Furthermore, it is important to ensure that organisational commitments and priorities are maintained, even if the individuals originally responsible for particular tasks move on.

Perhaps the most significant governance challenge for a project like MSP2 is the continued need for advisors with experience in sustainability and business planning. Of the 10 FTE employees and 20 advisory board members, most come from an academic background, which is suitable for working on an educational project. For projects like MSP2, however, there should be room on an advisory board for some members with extensive business experience who can help make the tough decisions around building a sustainability plan. The kind of business planning and revenue modelling described above may require staff abilities that have not been adequately built into the design of the project.

Broader implications for other projects

Sustainability planning must start in earnest at the very beginning of the project in order to allow the time needed to fully explore and test the available options, well before the grant period ends. While most grant-funded projects include funding for staff involved in the project's development, they often do not have capacity for sustainability planning. This raises two questions: who will have the time, experience and resources available for the research and analysis necessary to plan for sustainability, and at what point in the project should its leaders begin exploring ongoing operating costs and revenue?

The risks of not addressing these questions are significant – in this case, not just for MSP2, but for NSDL as a whole. NSDL is a large organisation whose value is intended to derive from the aggregated content, tools, and community developed by the Pathways; thus, letting parts of the organisation falter puts the whole enterprise at risk. Yet currently, there are no mechanisms built into the NSDL central organisation for assisting the Pathways with post-grant business planning. Project leaders, then, should ask themselves as they draft a grant proposal whether the grant would allow them access to the expertise needed to help plan for the long-term sustainability of the resource.

There can be multiple sources of value in a single resource, and project leaders must identify which most need sustaining. There are three elements to the MSP2 project that might be sustained: the content and metadata created for middle school science and math teachers; the centralised NSDL technical infrastructure that supports the project; and the project's user community of teachers. As the project develops, its leaders will need to ask themselves what priority should be assigned to each of these three categories as they think about allocating resources for continued sustainability.

In the example of MSP2, this is an interesting question: to what extent does the value of a project like MSP2 lie in the content on the site? In many cases, the content existed in the larger National

> *"NSDL is a large organization whose value is intended to derive from the aggregated content, tools, and community developed by the Pathways; thus, letting parts of the organization falter puts the whole enterprise at risk."*

Science Digital Library before the original MSP was developed; this Pathway project was intended partly to help expose the content, but the content itself would not necessarily disappear if MSP2 were no longer functioning.

Likewise, a project's central infrastructure should offer benefits in terms of cutting costs and providing services and a stable platform for individual collections. In this case, the NSDL central infrastructure has created challenges (including mandatory overhead costs), but it also offers potential benefits (the possibility of long-term access to the pre-existing structure, even in the event that MSP2's sustainability plans do not come to fruition). This question of central infrastructure versus distributed infrastructure is one that many funding agencies, universities, libraries, and individual digital projects are grappling with right now, and it has implications for technology, costs, organisational models, staffing, and sustainability.[16]

In addition to content and infrastructure, project leaders must cultivate users. In the case of MSP2, maintaining an active and loyal community of users is the very basis of the project's value proposition. The MSP2 project leadership team clearly values the community of teachers who contribute to and utilise the site's features; this community adds value to the MSP2 site by collaborating around existing content, creating new content, drawing new users to the site (through the work of the Teacher Leaders), and building relationships with other users to address common teaching challenges. In the time remaining on the grant,

15 There is an active debate in the not-for-profit funding community over the wisdom of encouraging collaboration between organisations on grant applications, and whether these relationships hamper grantors from seeing optimal results. For more on this, see Francie Ostrower, 'The Reality Underneath the Buzz of Partnerships: The Potentials and Pitfalls of Partnering', *Stanford Social Innovation Review* (Spring 2005), pp. 34–41.

16 The NSDL project as a whole is an example of a digital resource that is experimenting with the model of a centrally funded and managed infrastructure to support, in various ways, a group of smaller independently funded and managed digital resources. In 2003 the NSF created a blue ribbon committee to write a report on the emerging needs of the nation for a technical infrastructure for science, math, technology, and education. The report, available at **www.nsf.gov/od/oci/ci_v5.pdf**, underlined the need to 'define and build cyberinfrastructure that facilitates the development of new applications, allows applications to interoperate across institutions and disciplines, ensures that data and software acquired at great expense are preserved and easily available, and empowers enhanced collaboration over distance, time, and disciplines'. If the NSDL Technical Network Services and Resource Center can be considered an example of the logic of a common cyberinfrastructure in action, observing the Pathways' efforts towards sustainability will provide a valuable example of how this model might work.

the project leaders will need to find ways to learn as much as possible about these users so that they can build a resource that is highly valued by the community that will need to play a major role in sustaining it for the future.

Appendix A: Interviewees

Mary Henton, Co-Principal Investigator and Manager, MSP2 Grant, National Middle School Association, 1 May 2009, 28 May 2009

Kaye Howe, Principal Investigator and Director, National Science Digital Library Resource Center, 12 December 2008

Kimberly Lightle, Principal Investigator and Director, MSP2, and Digital Library Director, The Ohio State University, 16 March 2009, 5 May 2009, 22 June 2009

Robert Payo, Outreach and Professional Development Manager, National Science Digital Library Resource Center, 29 May 2009

Sarita Pillai, Co-Principal Investigator, MSP2 Grant, and Senior Project Director, Education Development Center, 16 April 2009

Susan Van Gundy, Co-Principal Investigator and Deputy Director and Strategic Partnerships, National Science Digital Library Resource Center, 29 May 2009

Appendix B: Summary of revenues and costs

Because this case study examines MSP2 at a point when it does not have any revenue stream other than its original NSDL grant, no summary of revenue and costs is included here. The case study contains sections on project costs and potential revenue models.

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Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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Stanford Encyclopedia of Philosophy: Building an Endowment with Community Support

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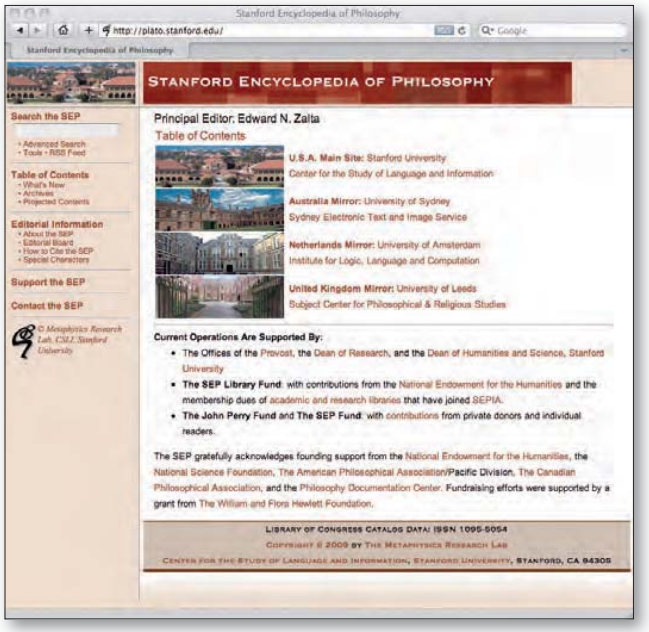
Endowments are often thought of as a source of reliable support for established institutions such as universities and foundations, but in recent years online academic resources have also begun experimenting with the endowment model as a means of sustainable funding. The model holds forth the promise of guaranteeing access to a resource in perpetuity, with the investment returns from the endowment continuously generating funds to sustain the resource. Since 2004, the Stanford Encyclopedia of Philosophy has successfully raised three-quarters of a planned $4.125 million endowment. This case study will highlight the factors that make a project a strong candidate for an endowment model, describe the steps that are necessary for implementing such a model and explore the advantages and disadvantages of endowment funding.



Introduction

In the mid-1990s, Edward Zalta, a researcher at Stanford University's Center for the Study of Language and Information, and John Perry, a philosophy professor at Stanford, recognised a problem: the major print reference works in their field were slipping out of date. One such work, the *Macmillan Encyclopedia of Philosophy,* had last been updated in 1967, and a planned multi-volume compendium, the *Routledge Encyclopedia of Philosophy*, would not be introduced until 1998 – leaving a three-decade gap during which no updated major reference work was available to the philosophy community.[1]

Noting the time lag between updates, Perry and Zalta began thinking about how an online resource could help meet the reference needs of philosophers. Would it be possible to create an alternative to print encyclopaedias, which quickly become outdated and take decades to revise? Even today, with online resources widely available, making plans for such a large-scale, academically rigorous project is ambitious. In the mid-1990s – well before the appearance of Wikipedia and Google Scholar – the task was immense.

Starting in 1995, Zalta worked with a postdoctoral programmer to plan and develop an online 'dynamic reference work [which] maintains academic standards while evolving and adapting in response to new research'.[2] The result, the Stanford Encyclopedia of Philosophy (SEP), is an internet-based reference source built on a platform that allows authors and editors to manage the process of updating entries entirely online and to revise entries as frequently as required. This custom-built program provides a password-protected web interface for authors to upload and update their work; an editorial function that allows subject editors to manage the selection and review processes online; and a tracking system that makes it possible to manage hundreds of contributors with only a small central staff.

As of February 2009, the resource included 1,000 entries (with several hundred more commissioned) from nearly 1,300 authors in the academic philosophy community. The entry contributors use the SEP's online editing interface to upload their drafts, which are then dispatched to the appropriate subject editors for evaluation. The subject editors are drawn from a group of over 100 volunteer faculty members from philosophy departments around the world; they vet entries in their area of research expertise for quality and suggest new topics for coverage, ensuring that the SEP develops according to an editorial taxonomy. If the submitted entry meets formal guidelines, and once changes suggested by the subject editors are made, the

1 John Perryand Edward N. Zalta, 'Why Philosophy Needs a Dynamic Encyclopedia', November 1997, Stanford Encyclopedia of Philosophy, **http://plato.stanford.edu/pubs/why.html**

2 Stanford Encyclopedia of Philosophy, 'About the SEP', **http://plato.stanford.edu/about.html**

This case study was researched and written by Matthew Loy as part of the Ithaka Case Studies in Sustainability project.

piece is formatted and uploaded to the encyclopaedia through the SEP's online submission system. The entries are substantial, with an average length of more than 10,000 words.[3] The resource is well known in the philosophy community and won a readers' award for 'best content in an online scholarly resource' from the *Charleston Advisor* in 2005.[4]

> *"The SEP started as a grant-funded project, but the project leaders' goal is to transition it gradually to dependence on its own endowment for its annual budget."*

The SEP started as a grant-funded project, but the project leaders' goal is to transition it gradually to dependence on its own endowment for its annual budget (approximately $214,050 in 2008–2009). In 2007–2008, the SEP's pre-recession endowment provided enough payout funding to cover nearly three-quarters of its annual budget; Stanford University has been contributing funding for the remainder as the project works to build its endowment. This case study will highlight the planning and execution of the SEP's strategy and will address a number of key questions surrounding the use of an endowment model for an online academic resource: how and why was an endowment strategy developed, and how has the project been able to raise endowment funds successfully? What roles do users and contributors play in determining the success of the endowment and the development of the resource? What challenges does an endowment model pose for a project like the SEP, and how might this model be replicated by other online resources?

Sustainability model

Goals and strategy

In 2002, after the SEP had succeeded in securing $700,000 in funding from the National Endowment for the Humanities (NEH) and the National Science Foundation (NSF), the project's NEH programme officer, Helen Agüera, suggested that the SEP's leadership draw up plans for long-term financial sustainability.[5] 'Given that writing grant proposals every two years was kind of an iffy thing,' Zalta recalled, 'we didn't want to leave that to chance – you never know with a referee panel.'[6] To support this planning process, the SEP used grant money from the Mellon Foundation to hire a business consultant, who recommended that rather than acting as or working with a vendor, the project instead form partnerships with academic library consortia.

With this idea in hand, Zalta sought support from academic librarians. Zalta and Perry were committed to the idea that the SEP should remain an Open Access resource, which limits the range of potential funding models – annual institutional subscriptions, for example, were not a possibility. But, in fact, the project leaders' Open Access ambitions aligned well with academic librarians' concerns about the increasing costs of annual subscriptions to print and electronic resources. At a 2003 academic library conference, representatives from several academic library consortia formed a funding planning committee for the SEP. After discussions, Zalta and the committee settled on building an endowment with funds raised from academic libraries; this plan would obviate the need for SEP to charge an annual subscription fee or enter into a licensing relationship with a commercial vendor, and at the same time would test a funding model that the library consortia might be able to extend to other scholarly resources in the future. The National Endowment for the Humanities Office of Challenge Grants endorsed the endowment plan by awarding one of the SEP's supporting library consortia, the Southeastern Library Network (SOLINET), a $500,000 Challenge Grant to provide the bedrock for the SEP's endowment.[7] (The grant matched $1 of federal funding for every $3 of non-federal funding received, and Zalta believes that this matching grant incentivised academic libraries to contribute to the endowment.) Stanford University further promised to help raise $1.125 million for the project's endowment.

Costs

The project's estimated budget for 2008–2009 is $214,050. Staff salaries and benefits account for $198,000 of this; the SEP has 1.95 full-time employees, including Zalta as principal editor and Uri Nodelman as senior editor (each at 75% of full time), two document editors (one at 20% and one at 15%) and a student administrative assistant (10% of full time). In addition, the budget includes $4,050 for administrative expenses and $12,000 is paid back to Stanford in overhead infrastructure fees. Not included in this budget are extra costs associated with significant upgrades to technology and functionality beyond routine costs for replacing hardware; the project leaders hope to obtain grant funding for such upgrades as needed.[8]

Revenues

In 2003, working from an estimate of $200,000 in annual direct costs, the project's leaders set an endowment fundraising goal of $4.125 million, assuming a 4.8% annual endowment payout. Their plan called for the academic library community to contribute $3 million and for Stanford to raise $1.125 million. A $500,000 NEH Challenge Grant provided the foundational money for the endowment, leaving $2.5 million to be raised from the library community.

3 PKP Scholarly Publishing Conference Blog, 'The Stanford Encyclopedia of Philosophy's Publishing and Funding Model: What It Means for Open Access and the Library Community', 12 July 2007, **http://scholarlypublishing.blogspot.com/2007/07/stanford-encyclopedia-of-philosophys_12.html**

4 The California Digital Library, 'Stanford Encyclopedia of Philosophy', *CDLINFO Newsletter* 9, no. 2 (26 January 2006), **www.cdlib.org/inside/news/cdlinfo/cdlinfo012606.html#3**

5 The project received NSF funding through the Foundation's Digital Libraries and Archives programme within its Division of Information & Intelligent Systems. See: **www.nsf.gov/awardsearch/showAward.do?AwardNumber=9981549**

6 Unless otherwise noted, all quotations from SEP staff members and other individuals knowledgeable or associated with the SEP are drawn from interviews conducted as part of this case study between October 2008 and May 2009. A full list of interviewees is included in Appendix A.

7 SOLINET wrote the grant for the SEP in part because of a quirk of government grant-making: universities can only submit one candidate for certain grant programmes, and the Stanford Encyclopedia of Philosophy had already lost an internal competition to be Stanford University's nominee for an NEH Challenge Grant. SOLINET agreed to step in, write the grant, collect any contributions to the endowment, and then pass those funds along to Stanford University, which took charge of investing the funds.

8 All budget figures and estimates were provided by the project leaders. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

The project solicits donations at specific levels from academic libraries; these tiers are keyed to the highest-level philosophy degree offered by the institution (under the logic that schools with more advanced programmes should shoulder a greater burden of the cost). PhD-granting schools are asked to pay a one-time fee of $15,000; MA-granting schools, $6,000; and BA-granting schools, $3,000. To ease the burden on libraries' annual budgets in a given year, contributions may be split into three equal, consecutive, annual payments. As of the end of 2008, after nearly four years of appealing to university librarians, nearly 600 institutions have contributed $1.72 million towards the $2.5 million goal.

> *"...after nearly four years of appealing to university librarians, nearly 600 institutions have contributed $1.72 million toward the $2.5 million goal."*

Stanford has met its goal and raised $1.125 million (which included a single $1 million donation). Thus, including the $500,000 NEH Challenge Grant, the SEP's total endowment stands at approximately $3.3 million – three-quarters of the way toward its original $4.125 million goal. As of March 2009, the project was set to receive at least $160,000 in payouts from its endowment, with the university committing $56,250 to meet the project's remaining budgeted needs for the coming year.

In addition to endowment funding and direct support from Stanford, the project receives indirect contributions and volunteer support from a number of sources. Stanford provided fundraising help, investment management for the endowment and direct support to bridge the project's budget gap during the endowment-building process. (According to Zalta, Stanford administrators have committed a total of $181,250 in direct funding from 2006 to the end of the 2008–2009 fiscal year.) Additionally, in return for an infrastructure charge assessed to the SEP (paid partly through endowment funds), Stanford provides office space, networking and administrative support. The SOLINET library consortium contributed billing and invoicing services for endowment contributions collected from academic libraries. The encyclopaedia's contributors and subject editors contribute their writing and editing expertise, and the project also benefits from the efforts of the informal committee of academic library officials who provide guidance on the project's endowment fundraising, and from the SEP's advisory board (made up of members of Stanford's philosophy department), who play a large role in selecting the project's subject editors.

Key factors influencing the success of the sustainability model

Building support in the community

A critical factor in the success of the SEP's model has been winning the support of the library community for this novel approach to sustaining an online resource. While Zalta promoted the resource through speaking engagements at library conferences, outreach to philosophy department faculty members and other means, academic librarians from supporting consortia lobbied for the project within their home institutions and to peers at other libraries. Their pitch was framed not only around the intellectual rigour of the content (including the substantial review process by subject editors) and the size of the resource, but also around the appeal of the idea of the endowment as a test for a new funding model for scholarly resources. As described by Tom Sanville, executive director of the OhioLINK library consortium, 'The notion of trying to keep a resource that is free out of a subscription model on a sustained basis is something we were trying to pursue.'

The funding model was not, however, universally welcomed. Some librarians balked at the idea of supporting an Open Access resource, complaining that they did not want to pay for something anyone could read for free. Others did not feel that they could find the extra money in their budget. At least one librarian asked Zalta what incentive there would be for the SEP's leaders to maintain the quality of the resource if libraries could not voice their disapproval by cancelling a subscription. In response, Zalta pointed out that the project benefits from the guidance of its subject editors and an advisory board of Stanford philosophy professors. Furthermore, according to Zalta, since the project reports to Stanford's Dean of Research, there is an institutional incentive for maintaining the quality of the resource.[9]

9 When the endowment reaches its original $4.125 million goal, Zalta plans to convene a more formal board of trustees which would include representatives from academic libraries.

Despite these voices of dissent, nearly 600 institutions have contributed funding to date. In addition to strong community support for the SEP's content – many librarians knew of faculty members at their institutions who were contributors – other factors that influenced the decision to participate included the appeal of this new financial model based on its promise of a one-time payment for perpetual access. Another factor was the leadership and governance of the project team. The tireless advocacy of Zalta and the core of advisors he gathered lent credibility to the strength of the effort and the sense that the project was going to be around for the long term. Other protections the SEP put in place, including a decision to return library-contributed funds (minus expenses and plus any unspent income) to the contributing libraries should the project shut down, were further intended to reassure participating librarians that their investment was not a risky one.

Creating business infrastructure partnerships

Planning an endowment requires more than just fundraising. The SEP, as a relatively small academic project, was not equipped to handle the collection or management of funds. To build these capacities, the SEP's leadership formed partnerships with academic library organisations. Engaging the library community in the planning of the endowment gave Zalta access to the expertise and enthusiasm of the key stakeholders needed to help the fundraising succeed. With the funding model sketched out, the group worked on securing three key elements of the project's fundraising infrastructure: a system for billing and collecting funds from academic libraries, investment management for the project's endowment, and a membership model that would allow libraries to contribute.

> *"The project's staff had no internal capacity to bill or invoice libraries, and little experience in selling to library customers."*

The project's staff had no internal capacity to bill or invoice libraries, and little experience in selling to library customers. The complicated nature of billing practices within large research libraries means that there are standardised practices for handling invoices from larger, familiar publishers – an advantage not held by smaller projects such as the SEP. As suggested by Margaret Landesman, former head of collection development at the University of Utah's Marriott Library and an advocate for the SEP in the academic library community, leaders of independent projects that lack sophisticated billing and order-fulfilment mechanisms need to think carefully about 'how easily [they] fit into the [library's] workflow'.

The leadership of one of the project's partner library consortia, SOLINET, agreed to put their billing services department to work for the project by invoicing and collecting funds from library contributors and then transferring those funds to the Stanford-hosted endowment. Because SOLINET served as an intermediary between libraries and library vendors, most of the target libraries already had accounts with the organisation and were familiar with their billing procedures. To support the SEP's fundraising, SOLINET contributed one quarter of a full-time employee to addressing the SEP's billing needs over the first two years of the endowment campaign.[10,11]

With a system in place to collect the funds, the SEP then leveraged its connection with Stanford to obtain investment management services for the endowment. With the support of the university's provost and dean for research, the Stanford Management Company (the overseers of Stanford University's endowment) agreed to invest and manage the funds collected by SOLINET on behalf of the SEP. This money (the 'SEP Library Fund') is invested alongside Stanford's other holdings, but the endowment agreement stipulates that if the project ever shuts down or leaves Stanford, the money will be returned to libraries in proportion to their original contributions.

One last structural roadblock remained: restrictions on library spending generally preclude donations to other organisations. Libraries *are* able, however, to pay dues to join membership organisations, so the SEP partnered with the Indiana University Libraries to form the Stanford Encyclopedia of Philosophy International Association (SEPIA). The 'dues' paid by academic libraries to this organisation fund the project's endowment.[12]

Understanding users

An important factor for an online academic resource that wishes to appeal to funding sources is demonstrating that it addresses the needs of its users. Because the SEP receives freely contributed content from scholars, it must address the needs of two audience segments: its entry contributors as well as the wider range of readers who visit the site. The SEP's leaders have taken steps to think about both (overlapping) sets of users, and about what they value and require from the resource.

For the SEP to remain financially sustainable, it must continue to attract voluntary article contributions of a sufficiently high quality; otherwise, faculty members would eventually desert the resource, which would in turn dissuade libraries from contributing funds to the project's endowment. At the same time, because librarians are willing to pay for electronic resources in part because of faculty demand, the high opinion of scholars can result in a greater willingness on the part of librarians to make a financial contribution to the resource. One librarian, Michael Stoller from New York University, commented that the 'genuinely enthusiastic' response of the philosophy community to the SEP

10 The SEP was later able to reimburse SOLINET $40,000 for two years of their billing work through a 2005 grant from the William and Flora Hewlett Foundation.

11 Since the drafting of this case study in January 2009, SOLINET merged with another library consortium. As that new combined organisation will be realigning its goals, the SEP plans to shift its billing services to the Philosophy Documentation Center, a not-for-profit organisation that serves the academic philosophy community (**www.pdc.org**).

12 According to interviews with academic librarians, in order to write a membership fee into the library's budget, that organisation must provide member benefits to the library. Access to an Open Access resource, however, obviously cannot be counted as a benefit. The situation was further complicated by a condition of the NEH Challenge Grant, which stipulated that the SEP could not offer any membership benefits that carry a tangible value. (NEH Challenge Grants cannot be used to match funds which have been collected in exchange for a membership benefit with monetary value. For example, if the SEP had offered academic libraries a free tote bag for contributing to the endowment, the NEH would only have matched the libraries' donations minus the cost of the tote bag.) To navigate between these two constraints, the SEP advisory committee devised several creative membership 'benefits' that satisfied both the library community and the requirements of the NEH grant. One is the addition of a banner to the SEP website which uses IP addresses to identify a user's home institution as an SEP contributor – considered a 'branding' benefit. (Contributing libraries are also listed on a page of the SEP site.) Another benefit is the option of single-click archival downloads of the resource, and permission to serve those archives to the public if the central SEP project ever shuts down.

Stanford University

was one factor in his institution's decision to contribute to the project's endowment.

> *Thus, there is a clear incentive for the project leaders to solicit a steady stream of high-quality work.*

The incentive for scholars to contribute to the SEP appears to be a cycle: when the quality of the content is high, the resource's reputation is favourable, and when the reputation of a resource is favourable, scholars benefit from being published in it – and when scholars benefit from being published in a resource, they are apparently willing to do so without payment. Thus, there is a clear incentive for the project leaders to solicit a steady stream of high-quality work. One contributor, Susanna Siegel of the philosophy department at Harvard University, described the revision process for the SEP as equal in rigour to that of a scholarly journal: 'The editors are terrific…They know who to invite to write entries, they solicit sub-entries on topics that people want to read about, and their editing is superb.' Perhaps more important is that she believes SEP entries can garner attention in the academic hiring process; she noted that her own SEP entry was specifically mentioned in her tenure offer letter. But she also mentioned a more general affinity for the SEP as an Open Access resource, both because it means entries will be more widely read and because she believes there is a need for more alternatives to subscription-based journals: 'As it stands, we're basically robbed blind by [commercial academic publisher] Kluwer, and to no good end.'

The project leaders echo Siegel's assertion that Open Access to the resource attracts writers. However, they also feel that *not* offering Open Access to the SEP would be a disincentive for philosophers to contribute entries. First, if the SEP were offered as a subscription product, senior editor Uri Nodelman believes that contributors would be unwilling to write articles without payment – and the costs of implementing a subscription service and paying writers would, he believes, make the project significantly more difficult to sustain. Second, subscription-based resources may not rank as highly in search engine search algorithms, potentially limiting the project's reach and thus also discouraging professional philosophers from contributing (the logic being that they would especially like their work to be widely disseminated if they are not to be paid for it).

In addition to addressing the concerns of entry contributors, the project leaders must also pay attention to its readers; these readers can be divided into two broad categories. First, there are research scholars, the audience for whom the resource was originally conceived. According to Zalta, scholars can assume that the resource provides quality articles in part because of the oversight by subject editors and an emphasis on detailed analysis – and this perception of quality, in turn, keeps them coming to the site.

And yet, while the SEP's leaders initially assumed that philosophy faculty members and researchers would comprise the majority of the audience for the resource, a survey of the site's users convinced them otherwise. The survey, conducted in 2002, showed that the SEP reaches a significant non-scholarly market:

students made up slightly more than half the site's user base.[13] With that finding in mind, the project's leadership adjusted their editorial guidelines to advise that contributors' entries be targeted to graduate students and advanced undergraduates as well, and should function as introductions to more advanced primary and secondary sources.

Organisational culture

The governance structure of the SEP has permitted its leadership a great deal of latitude in setting up structures for fundraising and forging key partnerships in the academic community. The SEP is overseen by a core staff of three: Zalta currently manages the project with support from Uri Nodelman, an artificial intelligence researcher at Stanford, and Colin Allen, a professor of the history and philosophy of science at Indiana University. The group operates on a consensus model: the three negotiate and reach agreement before moving ahead with a decision concerning the administration of the project. Any matters that might impact the project's long-term relationship with Stanford, or which deal with a conflict of interest, are referred to John Perry, who serves as the project's Stanford faculty advisor.

Siegel, the SEP entry author and Harvard philosophy professor, praised Zalta's 'imagination' in bringing the project into existence. In her estimation, there is a valuable lesson in this for other academic disciplines: the foresight to know what research resources and tools will be necessary will likely come from someone who is 'enmeshed' in that particular academic community. 'It would be difficult,' she said, 'for someone outside [the] philosophy [field] to antecedently decide what a resource like the SEP would look like.'

Zalta attributes the early progress of the project to the support provided by Stanford. 'It's because we had the freedom to innovate that the encyclopedia has become a success,' he told us. 'If there were more restrictions in place, it would have taken longer.' A significant amount of Zalta's Stanford appointment and all of Nodelman's appointment are allocated to work on the SEP, and neither holds teaching responsibilities, allowing them to focus their efforts on developing the resource. Perry, a professor emeritus of philosophy at Stanford and the SEP's cofounder and faculty sponsor for many years, speculated that Stanford supports the SEP in part because the project brings the university valuable public recognition and, as a web-based resource, advances its reputation as a promoter of cutting-edge technologies. And a project like this would not thrive, even at a well-resourced university like Stanford, without commitment from key university leaders. (In the case of the SEP, Perry notes that Stanford's provost, John Etchemendy, is a philosopher.) Still, he indicated that the resource would 'probably need to be funded differently' at a less well-resourced school.

Benefits and challenges

Endowment funding is a new business model for digital scholarly resources, and an innovative funding model can attract supporters. In the case of the SEP, academic librarians were eager to support a non-subscription model. The value of the content to faculty members and students seems to be the first concern for librarians, but the novelty of the funding model is an important secondary consideration – although there is the risk that it may lose that novelty over time. In addition, the endowment model used by the SEP capitalises on relationships in a wider community. Academic library leaders need to believe in the value of the resource and the strength of the business model to feel comfortable contributing. Because the SEP has been able to demonstrate the community support on both these points, librarians have been willing to promote it to their peers.

The most obvious benefit of the SEP's model is that, in a strong economy, an endowment provides a stable yearly income. However, by the same token, it also commits a project to a relatively fixed rate of growth, thereby constraining the potential for the project to grow more rapidly should circumstances warrant (without new infusions of funding). The SEP's leaders have a clear target for the amount of money they want the endowment to generate (an amount needed to cover their current annual budget), with the expectation that for anything beyond that they will have to apply for new grants.

On the other hand, as recent developments have dramatically demonstrated, in a weak economy endowment payouts fall, and project leaders may need to think about cutbacks and strategic shifts to other income sources. The current economic downturn has had a well-documented impact on university endowments: during the second half of 2008, the value of Stanford University's endowment dropped 20 to 30%.[14] Because the SEP's funds are invested alongside Stanford's money, its endowment will likely follow a similar trend. The fund's investment managers have taken steps to mitigate this: the endowment's payouts are disbursed based on an average of the fund's performance over a set number of previous years (a process known as 'smoothing'). Still, if a prolonged economic slump depresses the SEP's endowment payouts, the project's reliance on internal funding from Stanford may increase proportionally – but those funds are themselves dependent on the university's endowment and overall financial health. If the SEP continues to experience budget shortfalls, Zalta and Nodelman say that they may cut costs by slowing the pace of work (by commissioning fewer new entries) or by retrenching the project's travel budget. It is unclear that these cost-controlling measures would be sufficient, given that staff salaries and benefits are the project's largest expense. [15]

The economic downturn may also impact the SEP's ability to raise the remaining funds toward the original goal of $4.125 million. That goal assumes average investment returns of 4.8% per year, which may not be realistic in the present economic climate. Currently, the project lacks between $35,000 and $50,000 per year in its operating budget, which Stanford is covering. Regardless, Zalta pledges, 'the central staff will do everything possible to ensure the SEP does not disappear'.

The SEP has been fortunate in its support from Stanford; this level of support from the host may not be easy for other projects to replicate. Not all institutions would be willing (or able) to commit the necessary resources to fundraising, investment management and budget shortfall funding for an emerging digital scholarly project, as Stanford has. At the same time, the SEP demonstrates that high-quality resources do return reputational

13 This examination of SEP usage included a random user survey with more than 1,000 responses, an analysis of the SEP's appearance in Google search rankings and an examination of the usage statistic logs collected by the SEP.

14 Lisa M. Krieger, 'Stanford suspends $1.3 billion in construction projects as endowment plunges', *San Jose Mercury News*, 23 January 2009. Reposted at **http://blogs.csun.edu/news/clips/2009/01/26/stanford-suspends-13-billion-in-construction-projects-as-endowment-plunges**. Accessed 22 May 2009.

15 The SEP also accepts private donations via its website, and it is planning a more structured annual membership programme for individuals, who will then receive access to downloadable, formatted PDF files of the SEP's entries.

benefits to their host institutions, which can be leveraged into critical institutional support during a downturn.

> *"The SEP has been fortunate in its support from Stanford; this level of support from the host institution may not be easy for other projects to replicate."*

Broader implications for other projects

Community support is essential. The SEP created value for its users with high-quality material, but it also rallied a wide range of allies to its cause: the faculty members who volunteer their time to write and edit entries, the librarians who promote the resource in their community, and the internal university allies who arranged access to funding and other resources. And the endowment planning effort was spearheaded by several academic library organisations – the International Coalition of Library Consortia (ICOLC), SOLINET and the Scholarly Publishing and Academic Resources Coalition (SPARC) – along with the Indiana University Libraries and Stanford. (Stephen Ross, the director of the NEH's Office of Challenge Grants, praised the community effort behind the SEP, calling the coordination 'unique' among grant applications his office has handled.) In the case of the SEP, there are clear incentives for these various audiences to participate. Leaders of other projects need to think not just about recruiting volunteers, but about what benefits the project can offer those volunteers. The SEP would have much greater difficulty reaching financial sustainability without the volunteered content creation, promotion and indirect contributions offered by the team supporting this effort.

Different users may have different needs. The SEP's leaders – who are themselves philosophers – understood what other philosophers would need from the resource they planned; they incentivised volunteered writing from scholars by implementing a rigorous peer review process and recruiting well respected philosophers to serve as subject editors and writers. But they also adjusted the project's editorial guidelines to encourage use of the site by a slightly less advanced audience – making the resource valuable to a wider audience.

Dedicated leadership is crucial to the success of a project. All those interviewed for this case study pointed to the strong and committed leadership of Zalta as key to the success of the SEP. Committed leadership is necessary to any project's success, but it may be particularly difficult to attract leaders to a digital project in a university environment where qualified candidates already could have significant teaching and research duties. Project leaders need to be realistic about the commitment needed to foster a project's success – and institutional heads who aim to support high-quality digital resources should think about how to recruit, encourage and maintain these dedicated leaders.

Projects can benefit by outsourcing to external partners. By assessing which functions are core to a project's mission and which can be delegated to an external partner, projects can minimise costs and maximise their comparative advantages. The SEP recognised the costs and time associated with billing and money management, and found partners willing to donate these services – but even without these in-kind contributions, the SEP might have been well-served to outsource these tasks for a fee.

The endowment model to some extent severs the link between the service and its market. Project leaders should weigh the advantages and disadvantages of becoming insulated from the needs of the scholars and librarians who use a resource. The endowment model appeals to many in the community because of its promise of adequate long-term funding – and an endowment-funded project may still respond well to its constituents out of a mission-based desire to serve the user, as the SEP has. But in a difficult economic climate, an endowment-funded resource may be less able to generate needed short-term funding quickly by drawing directly on the value it provides to users – for example, by raising subscription fees or advertising rates.

A project's relationship with a host institution can play a key role in its success. Stanford has provided a number of valuable services and contributions to the SEP. Without discounting the important roles played by the rest of the SEP community, it is fair to say that a similar project would face greater challenges at a less well-resourced institution. Accordingly, digital projects nested within host institutions should think about how they can communicate the value of their work to decision-makers and better leverage the host's resources.

Appendix A: Interviewees

Note: An asterisk (*) denotes a primary contact.

Tim Cherubini, Director of Information Resources, Collections and Scholarly Communications, Southeastern Library Network (SOLINET), 31 October 2008

Rick Johnson, Former Executive Director, Scholarly Publishing and Academic Resources Coalition (SPARC), 11 November 2008

Heather Joseph, Executive Director, SPARC, 10 November 2008

Margaret Landesman, Former Head of Collection Development, Marriott Library, University of Utah, 30 October 2008

***Uri Nodelman**, Senior Editor, Stanford Encyclopedia of Philosophy, 28 October 2008 and 8 December 2008

John Perry, Professor Emeritus, Department of Philosophy, Stanford University, 16 January 2009

Stephen Ross, Director, Office of Challenge Grants, National Endowment for the Humanities, 13 May 2009

Tom Sanville, Executive Director, OhioLINK, 28 October 2008

Susanna C. Siegel, Professor of Philosophy, Harvard University, 9 January 2009

Michael Stoller, Director of Collections and Research Services, New York University Libraries, 4 November 2008

***Edward N. Zalta**, Principal Editor, Stanford Encyclopedia of Philosophy, 28 October 2008, 8 December 2008

Appendix B: Summary of revenues and costs

Stanford Encyclopedia of Philosophy

Revenue Category	Description	Approx. amount
Endowment payouts*	Estimated between $160,000 to $214,000 in 2008–2009	$160,000
University support	Direct funds from Stanford University	$56,000
Total revenue		**$216,000**

*Based on pre-recession endowment value.

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	1 PT principal editor & 1 PT senior editor	1.5	yes		Endowment management provided by Stanford
Content selection & production	2 PT document editors; 1 PT admin. Asst.	0.45	yes		Over 100 volunteer subject editors; 1,300 volunteer author contributors
Sales & Marketing	Partial support from senior editors	0			Librarians from consortia contribute their time
Technology	Partial support from senior editors	0			
Total personnel costs		1.95		**$198,000**	
Non-personnel costs			Included in budget?		
Administration & overhead	$4,050 admin. costs; $12,000 overhead to Stanford		yes	$16,050	Office space provided by Stanford; billing & fulfillment services provided by SOLINET
Scanning, metadata, etc.	n/a		no		
Hosting & technology infrastructure			no		Hosting; hardware/software upgrades by Stanford; mirror sites at Universities of Amsterdam, Leeds, & Sydney
Total non-personnel costs				**$16,050**	
Total budgeted costs				**$214,050**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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NATIONAL ENDOWMENT FOR THE HUMANITIES

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The Thesaurus Linguae Graecae®: Specialised Historical Content for a Niche Audience

University of California, Irvine, California, USA

www.tlg.uci.edu

Online resources are often described and evaluated in terms of their ability to serve vast amounts of diverse content to wide audiences, but well-targeted, specialised digital projects can have a profound effect on an academic discipline. The Thesaurus Linguae Graecae® (TLG®), a digital corpus of over 12,000 works of Greek literature ranging from the ancient era to the modern age, has proven its value to scholars and has been able to convert that value into a sustainability model that incorporates multiple revenue streams. The resource is targeted towards academic classicists and medievalists, who rely on it as the only comprehensive body of historical Greek-language works available online; it also offers a small Open Access selection of canonical Greek works for use by a wider audience. The project, which is hosted at the University of California, Irvine, depends on three main revenue streams: subscription fees, direct financial support from the university and a project endowment. The endowment was originally intended to supplement the other two revenue streams, but the project's goal now is for the fund to some day cover all of the ongoing costs for the TLG. This case study looks at some of the questions facing the TLG and outlines the broader implications for other resources with highly specialised content: How does such a project build an audience and keep users excited and engaged? What characteristics make a project a strong candidate for a subscription model? And how do the leaders of the TLG envision their resource – and its funding – evolving in the future?

Introduction

The quest to publish and preserve the entirety of Greek literature has a rich history, stretching back to the efforts of humanist scholars and printers in 16th-century Europe. Only in the past four decades, however, has technology provided a solution to this problem, through a unique digital humanities project hosted at the University of California's Irvine campus. The Thesaurus Linguae Graecae® (TLG®) is an online compendium of Greek-language works, ranging from Homer to the 15th century CE. The original goal of the project was to create an electronic resource of all ancient Greek texts; having now largely accomplished that, the project leaders have expanded the historical scope of the TLG to include texts from the Byzantine and modern periods. The digitised texts are displayed in Greek font (rather than as page scans) and are searchable by standard criteria – author, title, date of composition – as well as by specialised fields such as author epithet, geographical origin and publication information. In addition, users can search the entire TLG database using either Greek or Latin transliteration. The site is updated two to three times a year, with between 20 and 30 newly digitised works added each time.

The TLG was initially funded not with a grant from a charitable foundation but through a donation from a graduate student. In 1972, Marianne McDonald, a PhD candidate in classics at the University of California, Irvine (UCI), gave $1 million to start the project at the university, where it was led by classics professor Theodore Brunner for its first 25 years.[1] Over the past four decades, the project's computer-ready texts have migrated formats, from magnetised computer tape, to CD-ROM, to online access. Today, the TLG has nearly 1,000 subscriptions from

This case study was researched and written by Matthew Loy as part of the Ithaka Case Studies in Sustainability project.

1 McDonald, now Professor of Theatre and Classics at the University of California, San Diego, is well known for her beneficence; her gift-giving was itself the subject of a general-interest case study. See Jerold Panas, *Mega Gifts: Who Gives Them, Who Gets Them* (Medfield, MA: Emerson and Church, 1995).

higher education institutions and another 1,000 from individual scholars.[2] The project is overseen by Professor Maria Pantelia of the UCI Classics Department and Assistant Director Betsy Shanor. At the time of Pantelia's appointment to the directorship, the university promoted the TLG as 'the largest humanities-based electronic resource ever created in the United States'.[3]

Sustainability model

Goals and strategy

The TLG has two chief strategies for covering its direct costs: drawing revenue from multiple streams (including an endowment and five-year-long subscription contracts) and keeping costs low through careful prioritising and selective outsourcing of digitisation projects.

> *The project currently pays a digitisation firm in China that charges $1.58 per 1,000 keystrokes. These cost savings allow the project to focus resources on editing and correcting the digitised works.*

Costs

The TLG's greatest costs are salaries and benefits for the project's nine staff members (7.15 FTE), which account for about $400,000 annually, or 80% of the TLG's overall budget of approximately $500,000.[4] Part of the director's salary is paid by UCI through its direct cash contribution to the TLG; the university counts Pantelia's leadership of the TLG as one-half of her appointment, and teaching two courses per year (alongside research and other faculty duties) as the other half. (The half of her appointment related to teaching and standard faculty research and administration is not part of the TLG's budget.) The project's assistant director is employed full time and is also partially paid by UCI. In addition, the TLG's budget covers the salaries of three programmers (two at full time and one at 40%), one full-time researcher to oversee text and data entry, one part-time researcher and one graduate student researcher (each at 50%) and an in-house distribution and licensing specialist (at 75%).

The TLG enjoys considerable cost savings by outsourcing elements of the digitisation process. The project has a long tradition of farming out its data entry, starting with the production of computer tapes in the 1970s; as Pantelia jokingly likes to say, 'We invented out-sourcing!'[5] The project currently pays a digitisation firm in China that charges $1.58 per 1,000 keystrokes. These cost savings allow the project to focus resources on editing and correcting the digitised works. First, the project's researchers locate a text they wish to digitise, which can often be difficult given the requests they receive from users, which are often for obscure texts. Then, the researchers photocopy the volume and ship the copy to the Chinese firm, where the text is hand-keyed to create an electronic file. TLG staff still must devote considerable time to editing and correcting the resulting file.[6] A software program developed in-house scans the text for irregularities, after which the graduate student and the full-time researcher check the text a second and third time, often comparing the text to existing print sources, reviews and relevant bibliographies to correct errors and flag ambiguities. Any particularly difficult editing questions are then passed on to Pantelia, who has the final jurisdiction. According to Pantelia, the TLG text may have up to 100 changes per page compared to the printed original.

Revenues

The project takes in approximately $500,000 per year from a combination of three sources: institutional and individual subscriptions (which account for approximately half of the project's total income), investment returns from the project's endowment and direct financial support from UCI. Aside from the donations and grants which provided start-up funding for the project, subscriptions are the longest-running source of funding for the project; UCI began providing grant support in 1987, and the endowment was founded in 1992.

Subscriptions. The TLG began offering subscriptions in the mid-1980s with a CD-ROM version of the corpus, which was licensed for individual or campus single-workstation use. The release of the subscription CD-ROM product was concurrent with a time when the project was struggling with financial sustainability. 'It [was] daunting,' Shanor says, recalling years in the 1980s which included four staff members being laid off and uncertainty about the long-term survival of the resource. She credits the subscription fees not only for generating revenue but for smoothing the year-to-year income of the project: 'We don't have the highs and lows of fundraising...We now have a steady stream of income.'

Individual subscriptions to the TLG cost $100 for one year or $400 for five years. Institutional subscriptions can be purchased for discrete numbers of computer terminals or for unlimited campus-wide use; in either case, the institutional subscriptions are available for five-year periods only. A five-year subscription for up to three terminals on a campus costs $1,500. Approximately 60% of institutional subscribers, according to Shanor, opt for the unlimited campus-wide access plan. Most institutional subscriptions for campus-wide access range from $3,500 to $10,000 for a five-year period, although multi-campus institutions are charged higher fees.

2 This number includes a small number of subscriptions to the TLG's pre-internet incarnation as a CD-ROM (on which more later in this case study). These subscriptions are slowly being phased out.

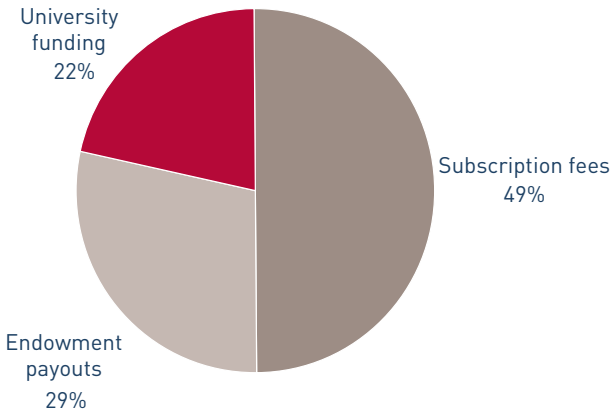
3 'Native of Greece to Oversee UC Irvine's Pioneering Computer Data Bank of Ancient Greek Texts'. *Today@UCI* (30 October 1996), **www.today.uci.edu/news/release_detail.asp?key=234**

4 All budget figures and estimates were provided by the project leaders. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

5 Unless otherwise noted, all quotations from staff members and other individuals knowledgeable or associated with the TLG are drawn from interviews conducted as part of this case study during December 2008 and January 2009. A full list of interviewees is included in Appendix A.

6 Unlike some digitisation projects, the TLG digitisation process does not involve scanning the pages of the documents to mount digital facsimiles, but rather involves creating a highly accurate transcription of the original text.

TLG's Sources of Revenue



"Shanor credits the subscription fees for smoothing the year-to-year income of the project: 'We don't have the highs and lows of fundraising…We now have a steady stream of income.'"

The TLG considers several factors when determining the price of an initial five-year subscription. Some are typical of online resources (eg total student enrolment), while others are keyed to the pool of potential users in classics departments, including the number of classics faculty members and the highest degree offered by the department. (The TLG collects this information from schools through a pre-subscription questionnaire.) Pantelia and Shanor use this information to place the school in one of three tiers of pricing, based on an estimate of how much the TLG will be used on the campus. At the time of renewal, the actual usage on each campus is taken into consideration (in addition to the factors listed above) in determining the subsequent five-year renewal subscription fee.

The subscriptions are priced in five-year increments in part to save time and money on billing services. It is possible that these costs could be decreased further if billing services were outsourced, but the project leaders want to retain quality control over this function. Subscribers usually pay the full five-year subscription fee up front, but they have the option of making annual payments, and may cancel at any time to receive a refund for the unused portion of the subscription fee.

Endowment. In the early 1990s, it became clear to Theodore Brunner, the project's first director, that the long-term survival of the TLG was in jeopardy. Brunner believed that the five-year subscription fees for the CD-ROM product were insufficient to sustain the TLG, but he worried that raising the subscription price would put the product out of reach of individual subscribers and less well-resourced institutions. Eager to ensure the long-term viability of the TLG, Brunner submitted a challenge-grant proposal to the National Endowment for the Humanities (NEH) to start building an endowment. Although the project had received approximately $7 million in funding up to this point, the bulk of its private and government grants were for digitisation and data-creation activities, not long-term maintenance, preservation or upgrades; the endowment was intended to supplement, rather than replace, subscription fees and university support.[7]

The endowment fund was built from private donations raised alongside a $500,000 three-to-one matching-funds Challenge Grant from the NEH from 1993–1999, as well as a matching grant from the Andrew W. Mellon Foundation. The endowment is managed by the Office of the President of the University of California system, alongside the university's endowment as a whole.

The current project leader, Pantelia, would like the TLG to be completely Open Access at some point in the future. She estimates that the endowment would need to grow to $8–10 million to meet her goal of making the resource freely available. Although there is no firm time frame for a concentrated capital campaign, she plans to focus fundraising efforts on private donors, rather than seeking larger commitments from charitable foundations or academic libraries. She feels that the first endowment-building phase demonstrated strong support from donors, and the project's $7 million in prior funding included two major gifts from individual classicists.

In an interview at the end of 2008, Pantelia estimated the pre-recession value of the endowment at $3 million. As of January 2009, the impact of the recent economic downturn on the project's endowment was still not clear to the project leaders. Although Pantelia and Shanor were uncertain how significant the short- and long-term effects will be for their fund, they expressed confidence that the TLG is on a relatively firm financial footing. 'Because our endowment is not our only source of income,' Pantelia said, 'so far, we are okay.' For now, they plan to keep costs low and defer any hiring (in accordance with a university-wide hiring freeze).

University support. In 2008–2009, UCI will provide the project with approximately $108,000 in direct funding. (From the project's inception, the university had made in-kind contributions of office space and accounting and payroll services, as well as providing direct support by paying some salaries.) Shanor acknowledges that there is some inherent uncertainty in the level of ongoing university support, since UCI's endowment is also being affected by the broader economic slowdown.[8] This has already impacted these payments: the 2008–2009 figure already includes a 10% budget cut over the previous year.

Pantelia notes that the university began providing this $100,000+ segment of direct funding for the project as a condition of an NEH grant and has continued to do so since then. The project was founded only seven years after the Irvine campus was chartered in 1965, so it has a long history at the university, and Pantelia

7 'The resultant $2,000,000 [of the planned endowment] is to be established as a permanent TLG endowment, the annual yield of which – combined with user fee revenues and UCI contributions – would sustain TLG operations on a permanent basis.' See 'NEH Challenge Grant', *Thesaurus Linguae Graecae Newsletter*, 20 (May 1992), 3.

8 Between 31 December 2007 and 30 September 2008, the University of California system's endowment dropped from $6.7 billion to $5.7 billion. For more on this, see Tanya Schevitz, 'UC's Endowment Plunged $1 Billion', San Francisco Chronicle (13 November 2008), B-3. Available at: **www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2008/11/13/BA781436M4.DTL**

believes this may have helped the TLG win continuous support from administrators. Still, administrators 'come and go', she points out, so she considers reaching out to new campus officials and talking to them about the TLG an important part of her job.

Key factors influencing the success of the sustainability model

Understanding value to the users

The audience of the TLG is very different from the audiences for other online academic resources such as the Stanford Encyclopedia of Philosophy, which appeals to a wider range of users than the academic philosophers for whom it was originally intended, or the UK National Archives' projects to digitise genealogical records, which are popular with the public at large. Formal researchers are the primary audience for the TLG – Pantelia told us she often hears from scholars who say they could not do their research without access to an online compendium of texts – so project outreach focuses on them. Pantelia promotes the resource at professional meetings such as the annual conference of the American Philological Association, and forwards news of site updates to relevant blogs and listservs. 'Because we are directed at a particular audience,' she says, 'it's not a question of letting people know that we exist, but of informing people about what we are doing.' Outreach to secondary audiences – high school and beginning undergraduate students, casual readers and others – is minimal. In addition, there is a non-academic audience of individual subscribers (some of them in Greece) who use the resource for pleasure reading rather than for academic research.

> *"...the TLG has attracted its audience in part because of a first-mover advantage: it is the only complete, centralised compendium of ancient and Byzantine Greek texts on the internet..."*

Beyond the specialised nature of the content and its applicability to research needs, the TLG has attracted its audience in part because of a first-mover advantage: it is the only complete, centralised compendium of ancient and Byzantine Greek texts on the internet, with approximately 105 million words. Its major online counterpart, the Open Access Perseus Digital Library hosted by Tufts University, holds only 8.1 million words of Greek texts, and it aims to serve high school and introductory-level undergraduate students rather than scholars.[9] Because the TLG is such a unique resource, it seems well positioned to charge a subscription fee – while classics scholars are a very small audience, the TLG's content and search capabilities are crucial to their work.

> *"To gauge the needs of these users, the project leaders conduct occasional user surveys, and they respond to user suggestions."*

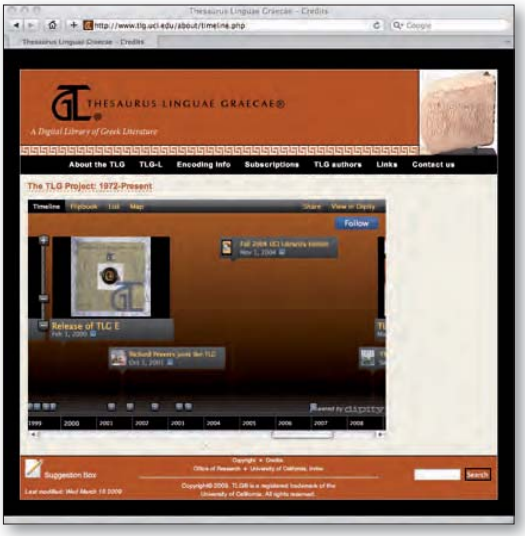
To gauge the needs of these users, the project leaders conduct occasional user surveys, and they respond to user suggestions. The project's staff members prioritise functionality suggestions if the change would benefit a large number of users. If the upgrade seems like a great deal of work for a low impact, staff members try to work around the problem individually with the user (for example, by doing a one-off extraction of specialised statistical data, rather than programming a new advanced search function to the site). When a user requests that a text be digitised and added to the TLG collection, the project leaders move ahead with the request '99% of the time,' according to Pantelia; in rare cases, the correct volume cannot be found or the text exists in a very old edition and cannot be digitised easily.

Adding value to the historical content

Because the TLG deals in historical texts rather than original content, there is some risk that the resource might lose appeal for users if it were to consist only of a static canon of texts, or if a mass digitisation project like Google Books were to build a rival corpus. To maintain the value of the resource to users – which, in turn, drives continued subscription renewals – the project team digitises new texts, edits these texts meticulously and layers on search functionality and specialised types of research unique to this content. Because nearly all the available works from the ancient period have been digitised, the project has widened its scope to include texts from the Byzantine period and the 16th and 17th centuries, and it will continue to expand forward in time as texts move out of copyright and financial resources allow for digitisation. The project's leaders hope that the addition of these later works will draw new scholars to the TLG.

Still, Pantelia believes that tools are vital to the future of the resource; merely adding new works will not be sufficient to guarantee the TLG's survival. 'Digitisation is slowing down,' Pantelia said. 'The question now is infrastructure: how can we organise data and offer it to the world? And what tools will we use?' While these are also open questions for future development of the resource, the previous attention paid to the TLG's search functionality reflects the staff's concern with the user experience. The search engine supports the Latin and Greek alphabets and includes a lemmatised search function through which a user can enter a dictionary word form and receive a myriad of different word forms that would otherwise have to be searched for one at a time. Several other search features specific to ancient and Byzantine Greek texts are available, including the ability to search by the degree to which the texts were corrected by their original editors ('diplomatic' and 'vernacular' editions). Pantelia believes that this functionality is a significant part of the resource's value to its subscribers, and that this partially insulates the project from future competition with mass-digitisation projects like Google Books: 'Humanities collections are very idiosyncratic... We'll always need specialists to look at the particularities.'

9 Perseus Digital Library, Greek and Roman Materials, 'Word counts by language', **www.perseus.tufts.edu/hopper/collection.jsp?collection=Perseus:collection:Greco-Roman**



Consistent leadership

The project has retained leaders and staff for a strikingly long time. Over its nearly four decades of operation, the TLG has had only two directors: Theodore Brunner, who founded the project in the 1970s and led the TLG until his retirement from academia in 1997, and Pantelia, who has taken charge of the project since then. In addition, Shanor has been the assistant director of the TLG for 28 years, and the TLG's head informational technology specialists, Nishad Prakash and Nick Nicholas, have been with the project for ten years.

Shanor credits the dedication of Brunner and Pantelia for the continued existence of the project, highlighting the need for committed leadership for similar digital resources. 'These projects really become part of you. [For] Professor Brunner, [the TLG] became his personality; he really wanted it to survive. I think you need a leader who is that committed to make these things survive, and Professor Pantelia is like that, too.' And Pantelia emphasises the commitment that these projects demand: although UCI allocates half of her time to the TLG and half to teaching, research and university service, she notes that leading the resource is effectively a 'very demanding' full-time job.

The TLG also has an advisory board that offers advice to the project leaders on fundraising, the scholarly direction of the TLG (including future additions) and legal issues. Its members are mostly scholars of the classics and Byzantine studies, and two of the members are appointed by the American Philological Association. The board does not formally set subscription prices (those decisions rest with Pantelia and Shanor), but they do make general pricing recommendations – for example, that subscription fees should correlate with institution size and intensity of usage.

Open Access versus gated content

The project's leaders have occasionally faced criticism for charging subscription fees for cultural heritage content; some believe that these works should be freely available. Pantelia and Shanor both spoke of their concern on this point. 'Sometimes you feel guilty charging [for the content],' Shanor commented, 'but you just have to…How do we sustain and improve [the TLG] if we don't have an income?' Still, Pantelia's ultimate goal for the project is to grow the endowment to the point that the entire resource can be offered free of charge and sustain itself through annual payouts from investments.

For now, the TLG serves a wider, non-subscribing readership through an Open Access selection of canonical texts by 68 writers (including Homer, Plato, Sophocles and Xenophon). These works are familiar to a wider readership and readily available in print editions, so there is little danger that this side project will cannibalise subscription revenue. Pantelia intends this portion of the site for beginner-level undergraduates, as well as for secondary students whose high schools cannot afford a subscription to the TLG. She hopes the Open Access selection will meet the needs of a non-scholarly audience, advance the goals of sharing Greek literature and promoting the classics profession, and partially address criticism from Open Access advocates.

Benefits and challenges

A significant benefit of the TLG's sustainability model is its reliance on multiple streams of funding, which can lessen the impact of a drop in any one stream. Thus, the TLG can rely on its subscription revenue and internal university funding if endowment payouts drop.[10] Conversely, when the market is on an upswing, some excess funds can be used to reinvest in the resource and fund upgrades. The long history of the TLG demonstrates the critical importance of having sufficient resources for periodic upgrades and data migrations to meet evolving technology standards.

> *"Because the TLG's content is unique and considered indispensable to a core group of faculty, its subscription revenue is somewhat insulated from economic downturns…"*

Because the TLG's content is unique and considered indispensable to a core group of faculty, its subscription revenue is somewhat insulated from economic downturns; academic librarians who make purchasing decisions based on faculty needs might drop other, non-core resources before the TLG. At the same time, the TLG's leadership recognises the importance of augmenting the value of the content to its users by investing in the development of tools and features.

The TLG is exceptional in that its host university manages the endowment and provides significant direct funding, and the project has taken steps to keep spending low on project marketing and billing for subscriptions. At the same time, the costs of editing and quality control are relatively high because the project targets scholars with exacting needs.

The five-year subscription period decreases billing costs, but it also hampers the project's ability to adjust prices quickly. The TLG's staff credits the subscription cycle for helping them achieve a more stable flow of income. But the initial five-year cost of an institutional subscription is based on an *estimate*

10 See the case study on the Stanford Encyclopedia of Philosophy elsewhere in this report for a detailed analysis of the benefits and challenges of the endowment funding model, many of which apply to the TLG's endowment as well.

of usage, leaving a 60-month period during which the staff can do nothing to correct an underestimate of an institution's usage or respond to external market forces. Similarly, endowment funding can limit flexibility in responding to market opportunities.

Broader implications for other projects

Specialised niche resources, even with small audiences, can be good candidates for a subscription model if the resource is of high enough value to its users. The TLG can charge subscription fees to supplement its other revenue streams in part because the content is well suited to a subscription package. Its content is irreplaceable to scholars working in this field, and they, in turn, are willing to ask academic libraries to subscribe or to purchase individual subscriptions themselves. At the same time, the content is so specialised that there is no other comprehensive digital library of primary sources to which scholars of ancient and Byzantine Greek can turn.

Developing a strong relationship with users is as important as providing valuable content. Although the TLG has a targeted core audience for its content, the project leaders do not take their users' loyalty for granted. They invest resources to keep content offerings from stagnating by developing search functionality, and by digitising new texts from later periods. Because the TLG deals in out-of-copyright works, the project's subscription revenues would potentially be vulnerable if a content aggregator were to digitise a duplicate corpus. Such a scenario seems unlikely now, given the heavy workload involved in digitising and editing classical texts, which are of interest to a relatively small audience and thus not commercially attractive. But the digital landscape is changing quickly, and it is difficult to foresee what content for-profit and not-for-profit digital resources might some day want to incorporate. For that reason, maintaining the loyalty of core users by responding to digitisation requests and adding value through new tools and search functionality may act as an insulator against competition for smaller, niche projects with relatively limited resources.

Multiple revenue sources may reduce risk and offer greater financial stability. The benefit of being able to depend on an alternative revenue source if a primary source falters seems obvious – and the TLG's endowment helps supplement its subscription model in just that way. That said, the development of multiple revenue streams can be difficult to achieve, as it may require significant staff time, expertise and pre-existing infrastructure. (Indeed, there is a debate in the not-for-profit community over the desirability of diverse revenue streams.[11]) Still, the TLG's three-pronged funding approach may serve it well during the current economic downturn.

Cost management is vital to sustainability, even when a project's overall budget is modest. Keeping direct costs low, as the TLG has done through digitisation outsourcing, a five-year billing cycle and close management of the project's budget, is also necessary for a niche resource that is highly dependent on its host institution and has limited prospects for exponential future subscriber growth.

The potential importance of a host institution to a project's sustainability cannot be underestimated. For small, high-value scholarly resources, nurturing a strong relationship with a host institution can be a key element of long-term sustainability. The TLG has been successful in this, winning significant direct financial support. Other projects may need to think about how they communicate value to their own host institutions, given that the true cost to the host institution includes the 'hidden' costs of in-kind contributions (such as office space and overheads). The value of these in-kind contributions may be much greater than the value of the direct funding.

> *"The TLG's project leaders do not believe that their current business model could support Open Access to the material."*

A balance can be struck between free and gated content. The TLG's project leaders do not believe that their current business model could support Open Access to the full body of TLG material – current endowment payouts and university support would be insufficient for the TLG's financial needs. However, they are able to serve up a substantial amount of free content, while keeping the bulk of the texts behind a subscription wall to generate needed revenue for sustainability.

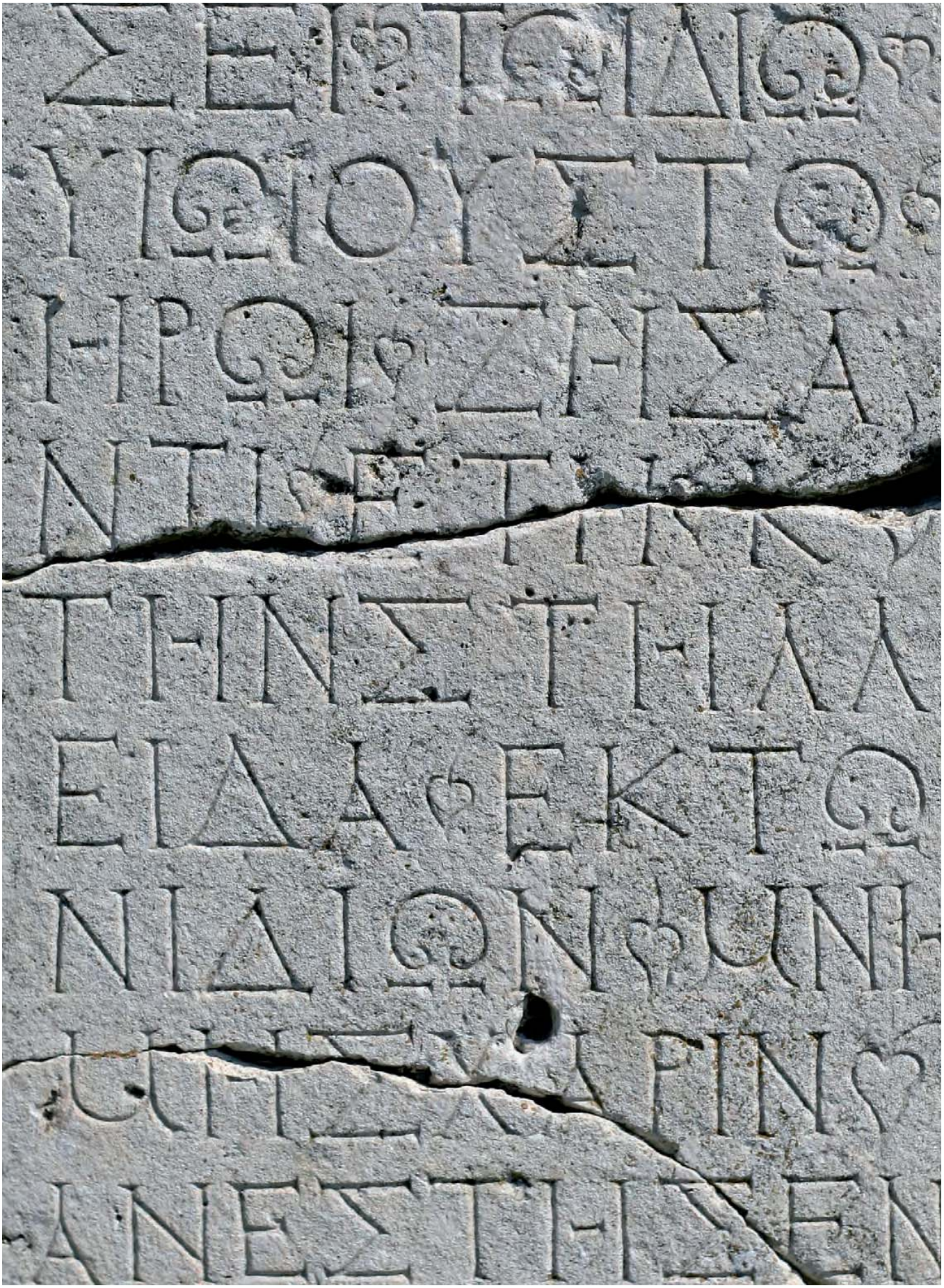
Host institutions can encourage digital projects by recognising their scholarly value. At least in the US, tertiary institutions recognise the value of print scholarship in the tenure and promotion process. The impact of a digital project – particularly one that is not an e-monograph or online journal article – on a researcher's career is much less clear, despite the real benefits that the scholarly community realises from such work. In the case of the TLG, UCI includes the project management as part of a tenured position. This publicly recognises the scholarly value of the resource and provides a clearer picture of how the leadership of the resource will be handed on in the future: presumably, the leadership will be part of a future search to fill a tenured position.

Appendix A: Interviewees

Maria Pantelia, Project Director, *Thesaurus Linguae Graecae* and Professor of Classics, University of California, Irvine, 17 December 2008 and 23 January 2009

Betsy Shanor, Assistant Director, *Thesaurus Linguae Graecae,* 15 December 2008 and 15 January 2009

11 See William Foster and Gail Fine, 'How Nonprofits Get Really Big', *Stanford Social Innovation Review* (Spring 2007), 46–55. The authors, both at the Bridgespan Group, isolated financial data for 110 high-growth nonprofits and found that nearly 100 of these received more than 90 % of their funding from a single source. In a separate report on the same study, Bridgespan analysts hypothesise that this might be due to the relative expense and difficulty of pursuing multiple revenue streams (among other possible reasons). For those hypotheses, see William Foster, Ben Dixon, and Matt Hochstetler, 'In Search of Sustainable Funding: Is Diversity of Sources Really the Answer?' *The Nonprofit Quarterly* (Spring 2007), pp. 26–29.



Appendix B: Summary of revenues and costs

Thesaurus Linguae Graecae

Revenue Category	Description	Approx. amount
Subscription fees	Approximately 2,000 subscribing institutions and individuals	$248,000
Endowment payouts*	Returns from the project's endowment	$144,000
University support	Direct funds from the University of California, Irvine	$108,000
Total revenue		**$500,000**

*Based on pre-recession endowment value.

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	1 FT project manager & 1FT assistant manager	2	partial		Half of management salaries paid by UCI
Content selection & production	1 FT researcher, 1 PT researcher, 1PT graduate student researcher	2	yes		
Sales & Marketing	1 PT distribution and licensing specialist	0.75	yes		
Technology	2 FT & 1 PT programmers	2.4	yes		
Total personnel costs		7.15		**$400,000**	
Non-personnel costs			Included in budget?		
Administration & overhead	Furniture & office maintenance		partial		Office space provided by UCI; endowment management provided by UCI
Scanning, metadata, etc.	Approx. 20 works added every 6 mo; outsourced to China ($1.58/1000 keystrokes)		yes		
Hosting & technology infrastructure	Project maintains its own servers and pays all software licences. Systems admin. provided by UCI (approx. $450/mo)		yes		
Other					
Total non-personnel costs				**$100,000**	
Total budgeted costs				**$500,000**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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V&A Images: Image Licensing at a Cultural Heritage Institution

Victoria and Albert Museum, London, UK

www.vandaimages.com

For many museums and cultural institutions, the digital environment provides an exciting opportunity to expand access to their collections and enhance their brand. At the same time, the high costs of creating and maintaining digital collections lead some organisations to think about ways to generate revenue from these assets. V&A Images, a department of the Victoria and Albert Museum's commercial trading company, licenses photographs of objects in the museum's collection for commercial, educational and personal use. The unit is tasked with the sometimes competing goals of generating profits for the museum while also encouraging access to the collections and fostering scholarship in the field of art and design. Its challenges are to compete successfully in a crowded commercial licensing marketplace, to cover costs and to balance revenue-generating imperatives with the museum's other digitisation efforts. This case study will focus specifically on V&A Images, while contextualising its activities within the museum's broader digitisation programmes. It will highlight some of the factors that are important to the success of an image licensing operation, and will discuss challenges related to balancing market imperatives and mission-based goals.

Introduction

The Victoria and Albert Museum (V&A), in South Kensington, London, is the world's largest museum of decorative arts and design. Founded in 1852, the collection includes 'ceramics, furniture, fashion, glass, jewellery, metalwork, photographs, sculpture, textiles and paintings.'[1] Like many museums, the V&A is increasingly emphasising digital access to its collections. It is rapidly expanding the number of images that are available on its public website, and thus far has made over 50,000 high-resolution images freely available through its Search the Collections portal. The V&A's strategic plan describes the museum's vision of a website that is 'the best in the world for art and design and a model for user participation'. The museum hopes to use the web as a marketing and branding tool and to increase access to the collections. Goals include increasing annual web traffic to 34 million visits a year by 2012 (for comparison, in 2007–2008 there were 24 million visits to the website) and continuing the systematic digitisation of the collections.[2]

Progress towards these website goals is a component of the museum's funding agreement with the Department for Culture, Media and Sport (DCMS).[3] While the museum relies heavily on these government funds – GIA (grant-in-aid) from the DCMS comprised about 60% of the museum's income in 2007–2008 – its most recent strategic plan acknowledges that this source 'is far from adequate to meet the museum's real needs, let alone our ambitions for the future'.[4] To supplement its income, the museum uses its assets to generate funds through a for-profit commercial subsidiary called V&A Enterprises (VAE). VAE accomplishes this goal through five separate business units, each with a different focus: V&A Licensing, V&A Publishing, V&A Retail, V&A Corporate Events and V&A Images.[5]

1 Victoria and Albert Museum, 'Your Visit – V&A Museums', **www.vam.ac.uk/your_visit/va_museums**

This case study was researched and written by K. Kirby Smith as part of the Ithaka Case Studies in Sustainability project.

2 Victoria and Albert Museum, 'Strategic Plan 2007–2012:2008/09', **www.vam.ac.uk/files/file_upload/46398_file.pdf**

3 Victoria and Albert Museum, 'DCMS/V&A Funding Agreement 2005/06 – 2007/08', (26 April 2006), **www.culture.gov.uk/images/publications/fa_va_0506_0607.pdf**

4 Victoria and Albert Museum, 'Strategic Plan'.

5 V&A Licensing is responsible for merchandise produced under the V&A brand. V&A Images licenses images for non-branded use.

The focus of this case study is V&A Images, which licenses photographs of objects in the museum's collection for a variety of commercial, educational and personal uses. The museum has a long history of generating revenue from images of its collection: photographic reproductions have been sold by the V&A since 1858. Only recently has image licensing activity been part of the museum's commercial division, however; until 2003, V&A Images was known as the V&A Picture Library and was operated as a part of the Photographic Studio, a division of the Collections Services Department. V&A Images currently offers approximately 20,000 digital images through its online catalogue and provides custom services for clients needing images not available in that collection. The audience for these services includes commercial clients who are willing to pay market rates for licensed content, as well as scholars from whom the division may not generate much revenue, but who are important to the museum's mission. As this case study will demonstrate, because V&A Images' core business relates to the distribution of images of the museum's collections – the museum's most valuable asset – mission-focused and revenue-generating objectives must be balanced carefully.

Sustainability model

Goals and strategy

The goal of V&A Images is to generate revenue to cover the direct costs of its operations, while providing valuable internal and external image-related services and safeguarding the museum's intellectual property.[6] The unit generates revenue in a variety of ways, including image licensing for commercial clients, custom photography and research services, and on-demand generation of prints.

> *"While the goal of V&A Images…is to generate profits to support museum activities, its revenue-generating activities are balanced by, and sometimes in conflict with, its not-for-profit mission as part of a museum."*

While V&A Images shares with all the other VAE business units the goal of generating profits to support museum activities, its revenue-generating activities are balanced by, and sometimes in conflict with, its not-for-profit mission as part of a museum. This inherent tension is captured in the way V&A Images describes its objectives: to 'use the museum's brand, collections and international exhibition programme…to maximise revenue for the V&A, covenanting our profits back in full to the museum at the end of each financial year, whilst at the same time reflecting the wider aims of the V&A in terms of access, education, diversity, outreach, presence and the promotion of creative design.'[7] As Jo Prosser, managing director of VAE, said, 'We are here to maximise commercial value to the institution, but always with an eye towards the non-commercial objectives. The goal is to generate revenue for a purpose over and above just making money.'[8] Each business unit makes decisions that attempt to balance market requirements with mission imperatives; V&A Corporate Events, for example, rents out space to high-paying clients less frequently than it could, because it is important for the mission of the institution that it to be able to host its own events as well.

This balancing act shapes the operations of V&A Images even more than it does the operations of the other VAE departments, in large part because of the museum's current strategic focus on enhancing online access to its collections. Decisions to prioritise access to and use of the museum's image collections affect V&A Images' bottom line in significant ways. In early 2007, for example, the Trustees of the V&A Museum decided to eliminate the licensing fees that V&A Images had been charging scholars for use of images from the V&A collection because supporting research and education is part of the museum's mission. According to Mark Jones, the director of the museum, 'We want to respond to the needs of the academic and education community by making collection images available with greater convenience and minimum costs. High charges have acted as a barrier to spreading knowledge, and we want to play a part in removing this.'[9] Academics may still be charged fees for services, custom photography and research, but as long as their intended use of an image meets certain criteria, permission fees no longer apply.[10] This decision was based on a 'philosophical case, not a business case', according to Andrea Stern, head of V&A Images, who estimated that the department lost approximately 25% of its annual academic revenue because of this decision. Thus, in fulfilling its not-for-profit mission, the museum makes decisions that constrain its revenue-generating potential in favour of increasing access to its collections.

The tension between V&A Images' revenue-generating and mission-focused goals is also reflected in the fact that, unlike VAE's other units, it frequently has difficulty covering its direct operational costs, much less generating profit for the museum. Research suggests that this is characteristic of many museum image licensing programmes. In his 2004 report '*Reproduction Charging Models and Rights Policy for Digital Images in American Art Museums*', Simon Tanner writes, 'everyone interviewed wants to recoup costs but almost none claimed to actually achieve or expected to achieve this…Commercial transactions are therefore vital to offset the costs of providing discounted

6 Andrea Stern, 'Revenue or Bust', Presentation to the ACE, October 2008, in London, UK.

7 V&A Prints, 'About Us', **www.vandaprints.com/aboutus.php**

8 Unless otherwise noted, all quotations from staff members and other individuals associated with V&A Images are drawn from interviews conducted as part of this case study during December 2008 and January 2009. A full list of interviewees is included in Appendix A.

9 Caroline Lewis, 24 Hour Museum, 'V&A Scraps Image Reproduction Feeds for Academic Publications', **www.24hourmuseum.org.uk/nwh_gfx_en/ART41936.html**

10 In order to avoid licensing fees, an image must be used in an academic, educational or scholarly publication, for private study or critical editorial use, or in a newsletter for a charity, society or trust. An image may not be used on a publication's cover, may not be manipulated beyond simple cropping, may not appear in a print run of over 4,000, may not appear larger than 210 x 148.5 mm, and may not be used in an electronic format (although waivers may be granted on a case-by-case basis, for electronic editions of scholarly journals, for example).

services to education and non-profit sectors.'[11] Prosser and Stern describe V&A Images as 'profit-neutral'. (In 2007–2008, direct costs for V&A Images, as reported in the V&A Strategic Plan, ran to £405,000. This figure falls short of reported revenues by £57,000.[12] However, these reported costs include the salary of an archivist in the Photographic Studio who does not report to V&A Images. Stern's department is not responsible for generating funds to cover this expense, so the unit is considered to have met its revenue target.) Although the department does not turn a profit for the museum, it does provide a variety of valuable services to other units within VAE and to the museum as a whole. For example, V&A Images prepares pictures for some of the books produced by the publishing division. V&A Images rarely cross-bills other museum units to recoup costs for these activities. Prosser said that it is not worth the staff time to cross-bill for some of these internal services.

Costs

The vast majority of V&A Images' costs – between 85 and 90% of its annual expenses – go to support salaries for the division's 8.4 paid staff members. The remaining 10 to 15% support the unit's marketing budget, general office expenses, legal fees, a contribution to VAE accounting fees, up-front costs for print-on-demand kiosks, and some technology fees including hosting for its website, which is independent of the museum's website and is hosted overseas.[13]

> *"High staff costs are due to the labour-intensive nature of supporting both commercial and academic audiences."*

High staff costs are due to the labour-intensive nature of supporting both commercial and academic audiences. The Academic and Education Rights sub-unit of V&A Images includes a manager and two researchers, as well as one unpaid intern. While scholars and students are free to independently search for and use images from the Search the Collections public site, when academics have enquiries that require hands-on support this sub-unit serves their needs. The goal of the group is to provide a valuable service to its clients; fees for research assistance are designed to cover costs, not to generate surplus revenue for the institution. This unit does no marketing or outreach; indeed, it is a challenge for the team to keep on top of the large numbers of requests that come in and to eliminate the backlog.

The Reproduction Rights/Commercial Requests sub-unit, which is responsible for generating and responding to licence-fee-generating requests, includes a sales manager, two account managers and one unpaid intern. Unlike the Academic Unit, which tries only to cover costs for providing a valuable service, the Commercial Unit's efforts are designed to maximise revenue.

In addition to staff costs, this unit also has costs associated with marketing efforts, including direct email, client visits, advertising in trade magazines, travel to trade shows and promotional gifts.

The Production sub-unit is responsible for content development of the V&A Images database; this unit has one full-time staff member and a cadre of six unpaid interns. Most of their work involves scouring the V&A's content management system, known as VADAR, for already-digitised images that might be suitable, based on content and image quality, for inclusion in the V&A Images catalogue. They also create metadata suitable for commercial purposes (explained in more detail below) and search the museum's photography archive – an extensive resource that includes hard copies of images created by the museum from 1856 to the present – for images with commercial potential. Approximately half the content in the V&A Images catalogue was found in VADAR or the archive, and about half was scanned specifically for the division. In addition, one part-time staff member is responsible for all requests for personal prints – both those requiring custom photography, and those through print-on-demand kiosks.

It is important to note that most of the costs associated with the creation of the high-quality digital images licensed by V&A Images – both the digitisation of photographs from the image archive and the creation of a significant number of new photographs – are covered by other museum units. For example, V&A Images often relies on the services of the museum's Photographic Studio (which is part of a separate division, outside VAE), with its 12 photographers and several €35,000 cameras.[14] Because the Photographic Studio is tasked with supporting the

11 Simon Tanner, 'Reproduction Charging Models & Rights Policy for Digital Images in American Art Museums: A Mellon Foundation Study' (2004), 35, **www.kdcs.kcl.ac.uk/USart.htm**

12 Cost estimate based on turnover and profit figures from V&A Museum, 'Strategic Plan'.

13 All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

14 James Stevenson, 'Digitisation Programmes in the V&A', in *Digital Heritage: Applying Digital Imaging to Cultural Heritage*, ed. Lindsay MacDonald (Amsterdam, etc: Butterworth-Heinemann/Elsevier, 2006), pp. 69–92.

Victoria and Albert Museum, London

image-creation needs of a wide variety of museum units, V&A Images does not need to reimburse it for the costs of its work. The curatorial departments, and the divisions responsible for object transport are not compensated for their time either. 'We're all part of the same institution in the end,' said Stern, so there is little cross-billing between museum units. In addition, most of V&A Images' overhead costs are covered by the museum; for example, because V&A Images is housed in the museum's South Kensington campus, the unit is not responsible for any rent or utilities. Basic accounting and legal fees, however, are not covered by the parent institution; VAE and V&A Images are responsible for these.

V&A Images is also able to realise significant cost savings through the volunteer efforts of a large team of interns. Because the unit engages in substantive work that requires knowledge, attention and skill, V&A Images must ensure that it is able to recruit, train and keep highly qualified interns. To this end, the unit has developed a formalised internship programme requiring meaningful training and a significant time commitment (depending on the sub-unit, either several days a week or full time over the course of several months). The programme ensures that the interns have an enriching experience: 'they get V&A on their CV, and get a variety of skills they can transfer and use later,' Stern said. Without their crucial contributions, V&A Images would have even greater difficulty covering its costs.

Revenues

V&A Images generates revenue in a variety of ways, including image licensing for commercial clients (both directly and through picture licensing agencies), custom photography and research services, and on-demand generation of prints. In 2007–2008, V&A Images collected £348,000 in revenue; in 2008–2009, projected revenues are £350,000. (After covering costs, however, no profit is returned to the museum from V&A Images' activities.)[15] The unit expects that in 2008–2009, 13% of its revenue will come from academic publishing; 23% from commercial publishing; 26% from commercial uses such as advertising and design; 13% from agencies; 6% through on-demand print generation and other public uses; 15% from other museums and institutions in conjunction with loans of V&A objects; and 4% from research institutes and heritage societies.

> *"Much of the licensing revenue comes from publishing companies who rely on V&A imagery in the design of book covers or DVD and CD covers."*

The bulk of these revenues come from the licensing fees charged by V&A Images for the use of its content. These fees are levied for all forms of commercial usage, as well as for scholarly and educational books with print runs of over 4,000 or which use a V&A image on their cover. The Commercial Unit invoiced for around 120 image requests in November 2008. Licensing fees vary, but are based roughly on industry standards, and are negotiated based on factors including the number of images and range of rights desired. Much of the licensing revenue comes from publishing companies who rely on V&A imagery in the design of book covers or DVD and CD covers.[16] V&A Images is engaged in a variety of marketing and outreach efforts to expand non-publishing commercial uses of their content – for example, on product packaging; such uses have grown from 10% in 2002–2003 to (as described above) to an expected 26% in 2008–2009. While V&A Images would have worked to expand this market sector regardless of other events, the decision described above to waive licensing fees for academic publications made this concern even more pressing, according to Stern.

V&A Images generates additional business (about 13% of total revenue, as described above) through placing images with a variety of commercial stock photography agencies. For example, a collection of 1,124 images is available through Alamy; the agency takes a 40% commission on all images it licenses, turning the rest of the revenue over to V&A Images.[17] Although V&A Images generates less revenue per image licensed through a stock photography agency than it does for images licensed directly to a client, working with these agencies allows V&A Images to reach new international markets that would be difficult to penetrate on its own. Also, staff do not have to expend time on supporting these clients directly; staff time is required, however, to prepare images for each agency, and to monitor and administer these relationships. The department is currently engaged in a review of stock photography contracts and revenues to ensure that each is worthwhile.

In addition to licensing fees, V&A Images charges service fees for custom photography. Publicly listed sample prices for custom photography range from £40 for a book page to £165 for a large three-dimensional object, although discounts are often negotiated for bulk requests. These custom photography fees, along with additional service and research fees, are the costs that V&A Images recoups from academic clients. Academics might question having to pay to use an image in a scholarly article, but

15 During this period, VAE delivered £1,945,000 in profit to the museum. These funds are the pooled profits of all the VAE business units, after covering their own operating costs. The most profitable unit was V&A Retail, which provided the museum with £1,005,000; the second-most profitable was V&A Corporate Events, which brought in a profit of £449,000 for the museum from rental of museum space (Victoria and Albert Museum, V&A Strategic Plan).

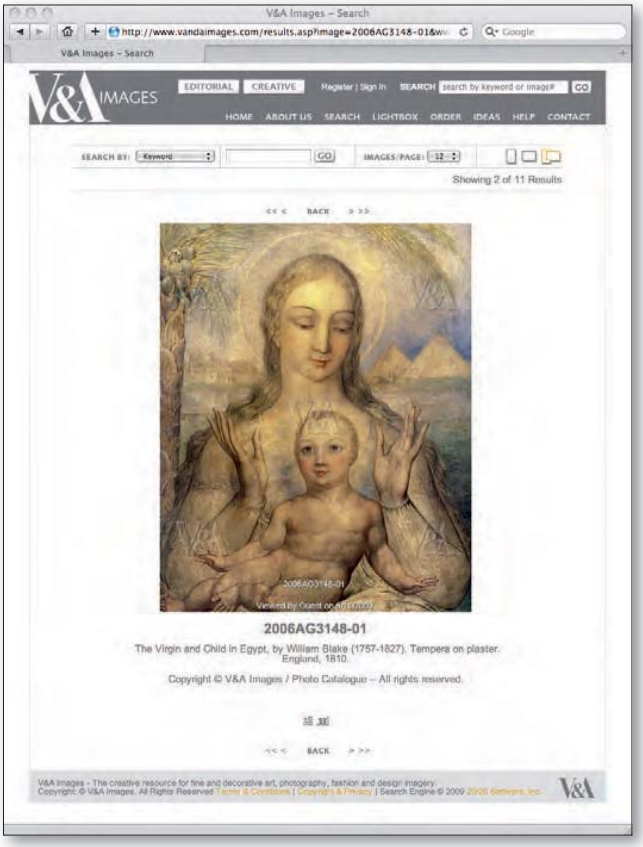
16 These opportunities are somewhat restricted by the breakdown of responsibilities between V&A Images and V&A Licensing. As mentioned earlier, V&A Images generates no revenue from products branded with the V&A name.

17 Alamy, 'Alamy stock photography – Submit images', **www.alamy.com/contributors**. Alamy does not charge content contributors placement or data-storage fees, though many stock photography agencies do.

they understand the need to cover the cost of locating, creating and delivering that image, according to Stern. In November 2008 alone, the Academic Unit of V&A Images responded to over 140 requests, resulting in 64 contracts for over 350 images, including 102 requests for new photography (a single request might be for one image, or for dozens of images). In 88 cases in November 2008 these fees were waived, because the use was to be so restricted or because the scholar had limited ability to pay.

> *"A large amount of V&A Images' licensing revenue comes from a relatively small number of its most commercially valuable images..."*

A large amount of V&A Images' licensing revenue comes from a relatively small number of its most commercially valuable images – principally those in which the V&A retains the primary copyright. The museum is known for its rich holdings of patterns, William Morris designs and 1960s fashion photography; this content is a significant revenue driver for the division, so V&A Images promotes it heavily. Unlike in the commercial market, where V&A Images can anticipate and support trends in popular content, image needs in the academic sector are harder to predict. An academic may be studying 'an absolutely obscure chair that no one has ever heard of before, and they want images of the bolts on the back,' Stern said; the uniqueness and specificity of these requests makes images generated for academic purposes difficult to reuse or repurpose.



Key factors influencing the success of the sustainability model

Understanding users

V&A Images expends significant resources on understanding the needs of its commercial clients. (Although academic clients are also an important audience from a mission perspective, they tend to have highly idiosyncratic needs that are difficult to predict, as described above. In addition, they do not bring in surplus revenue to support the institution.) For example, the staff monitors website traffic and catalogue queries of the images database, as well as data from agencies about frequently licensed images, so they can identify trends in user interests and add more content in popular areas. In addition, V&A Images must respond to commercial demand for high-quality, high-resolution files. Although both Search the Collections and V&A Images can pull images from VADAR, in some cases the legacy images created by the Photographic Studio are of unsuitable quality for V&A Images' needs. Stern said that the industry standard for files is at least 50MB. The picture licensing agencies V&A Images works with do not accept images that fail to meet this standard, and the commercial clients that the unit serves directly have similar requirements. Some of the legacy images in VADAR, created for other areas of the museum or created when standards were different, may not be of sufficient size, resolution, or quality for V&A Images. In these cases, the department may have to request re-photography of an object.

An understanding of user needs is also reflected in the custom metadata V&A Images creates for its online catalogue, which commercial clients use to search for images to license. The curatorial metadata associated with museum objects, which may only describe what an object is and when it was made, is often insufficient to support the discovery needs and search styles of these clients. '"Jug" won't do it,' Andrea Stern said. A potential client might need a picture that represents a certain emotion; a museum curator would not describe an object in that way, so V&A Images staff have to supply this metadata. Other clients might search for an image representing a specific period or style. Because of scholarly debate about the precise definition of artistic movements, curatorial staff at the museum sometimes avoid applying such labels to objects, but for commercial purposes the V&A Images team may have to assign them. This metadata-creation process is labour-intensive, but is a critical investment in meeting customer needs.

Governance and organisational culture

V&A Images has a great deal of independence, allowing it to make quick decisions and compete in a marketplace dominated by big commercial players. All VAE units, including V&A Images, have leaders empowered to make entrepreneurial decisions for their units. Stern was recruited because of her experience in the private sector: she ran her own commercial picture licensing agency before being hired to lead the new enterprise unit. Some decisions must be coordinated with her supervisor, the director

of VAE, who is responsible for coordinating the efforts of the different units, setting financial targets and acting as a liaison to the rest of the museum. Also, some decisions must be referred to a higher level: for example, advertising materials must be approved by the museum's administration, because they relate to institutional branding. However, day-to-day decisions can be made in rapid fashion by the head of V&A Images.

This relative independence enables V&A Images to operate in a fast and flexible fashion that is responsive to customer needs. It can also lead to challenges, however, when dealing with changes in the rest of the organisation; some of the museum's strategic, mission-related decisions may conflict with the needs of a revenue-generating unit like V&A Images, and the unit has to work hard to ensure that it has a seat at the table when relevant discussions are occurring. For example, when the decision was made to stop charging academic users licensing fees for V&A content in their publications, Stern argued that the function of serving academic users should be taken out of V&A Images. As there was no other logical unit to adopt this function, however, a decision was made to keep academic services in the unit, even though a major source of revenue generated from this group was taken away. In addition, Stern had to make a strong case for the inclusion of certain restrictions in the licence agreement for the free images available through Search the Collections, related to the uses that would be considered 'academic or educational', and the information that would be collected about users. The museum, through its Digital Future Plan group, is attempting to develop a centralised, integrated strategy to help coordinate the institution's wide range of digital activities, but currently some confusion still exists between various museum departments about the use and distribution of digital images, particularly as it relates to free versus licensed access.

> *"Intellectual property issues have serious implications for V&A Images' business, and the expansion of freely available content on the museum's public website may negatively impact its bottom line."*

Intellectual property

Intellectual property issues have serious implications for V&A Images' business, and the expansion of freely available content on the museum's public website may negatively impact its bottom line. The Search the Collections website makes high-resolution images freely available for academic, not-for-profit, educational and personal uses. Beyond a basic online registration form, however, there are few formal procedures and little staff capacity to follow up with users to ensure that the email addresses and personal information they provide are accurate, and that they abide by the terms of these licences. This is a big concern for Stern; 'once [a digital image] is gone,' she commented, 'there's no way to call it back'. In addition to piracy, branding is a concern. While V&A Images can ensure through licence terms and follow-up that its clients do not use images in a way that could in some way be damaging to the museum (ie cropping, editing or altering a photograph in an unflattering, unscrupulous or salacious way), the institution has no such control over the high-resolution images distributed through the Search the Collections website. In addition, it can be difficult to ensure that Search the Collections users appropriately credit the Victoria and Albert Museum for use of the images, which could have mission-related impacts on building awareness of the museum's collection.

Rights management is also an issue. Freely available digital collections make it difficult for V&A Images to assure commercial clients that they have exclusive use of the images they are interested in licensing (or to be able to tell them definitively, at least, about prior licences of the same image). Although the terms of use for Search the Collections preclude commercial use, if those terms are not respected it would have the long-term effect of lowering the commercial value of the museum's assets, and therefore its ability to earn revenue from them. For this reason, V&A Images requests that the team responsible for adding content to Search the Collections refrain from including the most commercially valuable content in the public database.

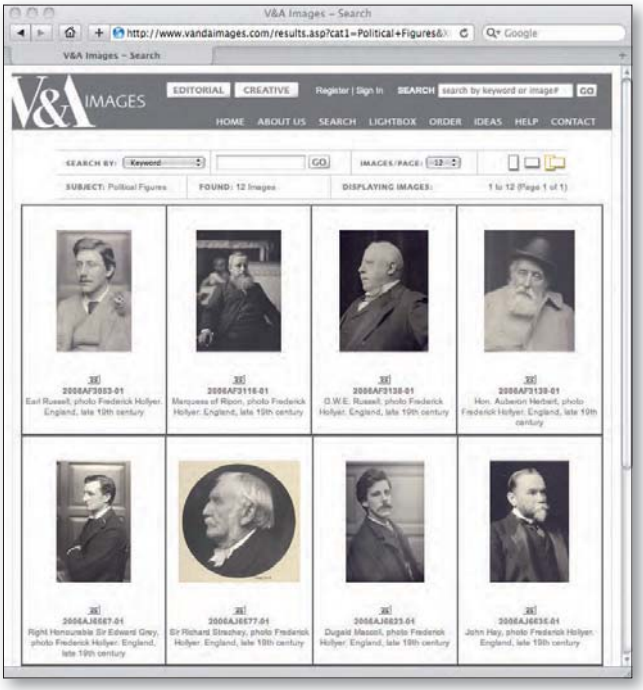
Benefits and challenges

The revenue generated through V&A Images' licensing activities covers most of the direct costs of the image-related services the unit provides to commercial clients and scholars who use V&A content, as well as to other museums to which V&A objects have been loaned, and to in-house colleagues working on publishing projects. In addition, the division enables outreach to a wide range of commercial audiences, helping to further the museum's mission to inspire the next generation of design.

V&A Images would find it impossible, however, to be fully self-sustaining without access to the services of other museum units such as the Photographic Studio. Although it is true that cross-billing for services between museum units would, in essence, just move money around in the same budget, not doing so makes it difficult for V&A Images to estimate the true costs of its activities and the value of the services it provides. Even given the reduced costs of digitisation activity due to institutional support, the unit has difficulty breaking even on the direct costs of distribution and outreach; it does not currently generate surplus revenue to support other activities at the museum, unlike the other VAE units.

> *"Rather than looking solely to financial returns, V&A Images must demonstrate its value to the museum in alternative ways..."*

Rather than looking solely to financial returns, V&A Images must demonstrate its value to the museum in alternative ways, through providing services to other internal units and through



emphasising the importance of its activities to the scholarly and educational communities. This is particularly important given the limits placed on its revenue-generating activities by the museum's mission-driven goals. Maintaining a clear understanding of the ways in which a museum's overall goals for its digital collections affect commercial opportunities is critical for evaluating the success of a content-licensing operation.

In this respect, the Victoria and Albert Museum's experience is similar to that of other museums. In his report on licensing programmes in American museums, Tanner writes: 'A museum does not carry out image creation or rights and reproduction activity because of its profitability. These services exist because of the internal need for image creation and rights clearance matching up with an external desire to publish and use museum images. The need to promote the museum collections, to gain appropriate credit and to honour the artist and their work are the real driving factors that underlie these services.'[18] In its strategic plan, the V&A recognises that 'the images commercial market remains challenging'. V&A Images' sustainability, then, hinges not only on the revenue it generates to defray the costs of its services, but also on its ability to demonstrate that it merits institutional support because of the ways in which it helps advance the institution's aims.

The experience of V&A Images also highlights the significant expenses associated with providing its services. Supporting the image-related needs of scholars is an important part of the museum's mission, but it is an expensive, labour-intensive service for which it is challenging to recoup costs even when charging service, licensing and photography fees. Some additional activity can be supported through commercially generated revenue but, as other studies of licensing programmes at not-for-profit institutions emphasise, even for institutions with a strong brand, it can become difficult to become a 'destination site' for image licensing.[19] A successful image licensing operation entails marketing and outreach to attract and work with commercial clients directly, as well as efforts to prepare images for and analyse the success of contracts with third-party picture licensing agencies. It also involves the labour-intensive process of creating new metadata. Given the fact that not-for-profit institutions interested in image licensing, like the Victoria and Albert, are participating in a highly competitive market with a number of large commercial players, it is important for project staff members to have experience in the field and a keen understanding of the needs of their audience – which may be very different from those of other groups the institution serves.

Broader implications for other projects

Evaluating the trade-offs between mission-related decisions and revenue-generating activities is critical. The Victoria and Albert Museum views its collections as a public good, and it strives to make them available as broadly as possible to academics and to the public. Particularly in a digital environment, this mission-related goal can restrict the potential of a commercial unit like V&A Images to generate revenue. Developing a clear sense of this trade-off not only informs business-related decisions, but helps projects demonstrate their value to a parent organisation in terms of both revenue and supporting the institution's mission.

Cross-subsidisation of services within the institution is important to evaluate when thinking about sustainability. V&A Images' sustainability is dependent not just on direct costs and revenues, but also on its integration into the work of the museum. The unit exists in an institutional context in which it receives a variety of services, such as photography, for which it does not pay, and in which it provides a range of services – support for curatorial departments, a search tool for other VAE departments, and others – for which it does not charge. Although contributions like these may be difficult to quantify, projects need to evaluate the degree to which their sustainability model relies on this kind of institutional cross-subsidisation to help understand the true costs of the services they provide.

Commercial and academic users may have different needs, and different ability to pay. Academic researchers working with V&A Images often have narrowly defined interests that require labour-intensive support and offer limited revenue-generating potential, while commercial clients have greater ability to pay but also have highly specific needs related to content type and quality. Projects may not be able to provide support for both audiences using the same service model or schedule of fees.

Appendix A: Interviewees

Jo Prosser, Managing Director of V&A Enterprises, 22 December 2008

Andrea Stern, Head of V&A Images, 3 December 2008 and 28 January 2009

18 Tanner, 'Reproduction Charging Models and Rights Policy', 40.

19 Ricky Erway, 'Seeking Sustainability' (2008), 4, OCLC Online Computer Library Center, **www.oclc.org/programs/publications/reports/2008-03.pdf**

Appendix B: Summary of revenues and costs

V&A Images

Revenue Category	Description	Est. amount (08–09) (% of budget)
Commercial image licensing fees	Includes fees from agencies	62%
Academic/non-profit image licensing fees		17%
Fees related to loans to museums		15%
Other fees	eg public print-on-demand	6%

Cost Category	Budgeted Costs (2007–2008)				In-kind/volunteer contributions
	Description		Approx. cost		
Personnel		FTE	Included in budget?		
Management	1 FT unit head	1	yes		
Content selection & production	Production (1 FTE); Print requests (0.4 FTE)	1.4	yes		6 unpaid interns in Production unit
Sales & marketing	Academic & Education Rights (3 FTE); Reprod. Rights/Commercial Requests (3 FTE)	6	yes		1 unpaid intern in Academic & Educ. Rights; 1 unpaid intern in Reprod. Rights/ Commercial Requests
Technology	No dedicated staff, but Prod. unit works with back-end database	0	no		Support for VADAR content management system provided by V&A Museum
Total personnel costs		8.4		**85–90% of budget**	
Non-personnel costs			Included in budget?		
Administration & overhead	Budget covers courier fees, some general office expenses, & legal fees.		partial		Office space provided by V&A Museum; accounting services are shared among VAE units.
Scanning, metadata, etc.	Not currently a cost; some scanning & keywording outsourced in early years		no		Digitisation services provided by V&A Museum's photography studio
Hosting & technology infrastructure	Budget includes overseas hosting service & limited IT assistance		partial		Basic IT support provided by V&A Museum
Other	Travel to trade shows, advertising, & other expenses		yes		
Total non-personnel costs				**10–15% of budget**	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.

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Document N°: 555a

Appendix A: Methodology

If *Sustainability and Revenue Models for Online Academic Resources* presented theoretical models, these case studies were conceived to illustrate the real-world scenarios as they are playing out today, with all the particularities that each unique project brings to the table. The cases do not just focus on static 'models' but examine the team leaders and the choices they must make when deciding how to balance mission with revenue generation, and how to consider the near-term benefits against the longer-range risks. In sharing the valuable experiences that actual project leaders have had while confronting their sustainability challenges, we hope to provide the community with a set of detailed narratives of a process that is central to the survival of these resources, and yet rarely openly discussed.

Choosing the cases

To arrive at the set of 12 case studies, it was necessary to establish clear selection criteria. The primary requirement for the set was that it should illustrate a wide range of sustainability models, beyond the grant funding and institutional support that many projects rely upon. We sought cases that demonstrated experience using the following models:

- Advertising
- Author pays
- Content licensing
- Corporate sponsorship
- Donations
- Endowment
- Membership
- Pay-per-view (-per-download, -per-unit of time, etc.)
- Premium services
- Subscription

While identifying a range of revenue models was the priority, other elements were important as well. The Joint Information Systems Committee (JISC) and the Strategic Content Alliance (SCA), as the primary sponsors of this project, requested that we develop several cases studies of projects in the United Kingdom, and some of projects in European countries. Our US-based funders supported the writing of cases located in the US. Other elements we took into consideration included:

- *Sector*: Cultural heritage, education, public health, academia
- *Organisational model*: Independent board, dependent on a larger organisation, consortium, virtual organisation
- *Outcomes*: Independent sustainability; alternatives including merging, being bought or closing down operations
- *Access model*: Open Access, Open Access with registration, paid registration or subscription

While the notion of a 'digital resource' is quite broad, for this study we chose to focus in particular on those projects that are content-based rather than on software-development projects, and we have made efforts to include examples of various media types, including text, data, still images and video.

Once we had our targets assembled, we approached project leaders to invite them to participate. Not all were interested in having their project become the subject of a case study, sometimes citing lack of time, but more often citing privacy concerns. The topic we were most interested in exploring was the ability of digital projects to sustain themselves – a sensitive subject, particularly for those projects or divisions of organisations that may find themselves struggling at this time. On the other end of the spectrum, we encountered some projects in the for-profit arena that appeared to be thriving but were not keen to share the valuable methods they had developed, for fear of weakening their competitive edge. Even among not-for-profit organisations, those with contracts involving for-profit partners can be required to maintain confidentiality on details relating to terms of service and financial results.

The group of 12 projects selected in the end represents quite a range, from small projects deeply embedded in very large organisations, to independently run resources; from projects whose sites register millions of visitors per month, to those whose sites register just thousands per month; from projects whose goal is to generate a profit, to projects whose leaders acknowledge that their revenue streams will never be able to fully support the costs of running the sites without additional sources of support, but who define 'sustainability' in terms of fulfilling the mission of the host institution.

Interview process

To discover as much as possible not just about the revenue model, but also about the cost structures of the organisation and the strategic decision-making processes that led the organisation's leaders to the model they are using, we attempted to interview key personnel most familiar with the model at hand. In most cases this involved the project leader, who frequently served as the point person for arranging other interviews within and outside the organisation. Often this process led us to interview others, sometimes outside the organisation, in order to obtain a richer view of the strengths and weaknesses of the models under investigation. Interviews were conducted on site where possible, and most often by at least two team members: one to conduct the interview and the second to take notes. The interviews were followed up with additional queries by phone or email, as needed, and supplemented by documents researched or supplied by the interviewees, including sample forms, annual reports, planning documents and presentations.

Case study framework

The case studies as written are intended to accomplish two main goals: first, to present in as much detail as possible the inner workings of the sustainability models that these projects are currently using, including revenue-generation and cost-savings strategies; and second, to highlight the strategic decisions that leaders of these initiatives have had to make, including the trade-offs inherent in many of the choices.

Thus, the case study format that we have used is a hybrid of description and analysis. The opening sections of each case help to situate the project within its larger organisational structure and outline its sustainability goals and methods. The next sections are analytical in nature, addressing key issues in sustainability that appear to have had a strong impact on the success of the sustainability model: how the project leaders understand their users, communicate the value of the project to others, and seek to innovate and experiment in order to grow. Finally, the last sections assess the benefits and the challenges of the particular sustainability path the project has chosen to follow in terms of meeting the project's goals, as well as our assessment of the strengths and weaknesses of the model and the extent to which it might serve as a useful exemplar for others.

Appendix B: Case study abstracts

BOPCRIS Digitisation Centre: Experimentation with Sustainability and Partnerships for Library Digitisation Projects

Hartley Library, University of Southampton
Southampton, United Kingdom
www.bopcris.ac.uk/bopcris/digbib/home

The University of Southampton's Hartley Library has been engaged in a number of large-scale, grant-funded digitisation initiatives focused on heritage materials such as parliamentary papers and British pamphlets. These projects left them with a challenge familiar to many grant-funded projects – developing a strategy to preserve access to the content after the grant period concluded. Early experiences suggested to library leadership that they were not well positioned to host this content locally, so with subsequent projects they began to experiment with different models of partnership with aggregators of scholarly content, such as ProQuest and JSTOR, that enable the library to focus on content creation while the partner organisation takes responsibility for facilitating public access. This case study traces the evolution of the library's thinking about how best to provide access to these collections, explores the characteristics of the partnership models with which they are experimenting, and highlights some of the benefits and challenges associated with this approach to sustainability, in terms of both content and infrastructure.

Centre for Computing in the Humanities: Leveraging Shared Infrastructure and Expertise to Develop Digital Projects in an Academic Department

King's College London
London, United Kingdom
www.kcl.ac.uk/schools/humanities/depts/cch

The Centre for Computing in the Humanities (CCH) at King's College London, an academic department focused on the advancement of the digital humanities, engages in a wide variety of research projects that often lead to the creation of electronic scholarly outputs. Using a model that is rare among humanities departments, CCH supplements government and institutional funding for research and teaching with a remarkable number of outside research grants and with revenue generated through knowledge transfer activities that leverage the department's expertise to provide consulting and development services to the broader community outside the department. This case study explores some of the advantages that CCH enjoys through leveraging shared human and technical infrastructure for the benefit of multiple projects, and it discusses some of the implications of creating digital resources in a research-focused rather than a user-focused context.

DigiZeitschriften: Library Partnership and a Subscription Model for a Journal Database

Göttingen State and University Library, University of Göttingen
Göttingen, Germany
www.digizeitschriften.de

DigiZeitschriften, a German-language archive of scholarly journals, was created in 1997 with funding from the German Research Foundation. Since its launch as an online service in 2005, DigiZeitschriften has implemented a sustainability model that includes a partnership of libraries contributing time and expertise, and a financial model of institutional subscriptions that has more than covered its operating costs to date. This case study examines the decisions leading DigiZeitschriften to adopt this plan for sustainability, and explores the benefits as well as challenges inherent in a partnership of this kind.

eBird: A Two-sided Market for Academic Researchers and Enthusiasts

Information Science Department, Cornell Lab of Ornithology, Cornell University
New York, United States
www.ebird.org

The Information Science Department at the Cornell Lab of Ornithology is home to eBird, a site where birdwatchers of all levels – from weekenders to academic researchers – can record their avian sightings and upload them for future use by scientists. The site serves a two-sided market: on one side, the birders who record and share their observations, and on the other side, the scientists who use that data for research. This project is notable for the level of interest it generates from users; for the range of revenue streams it draws from, including a corporate sponsorship and a franchising service for its core software; and for its home in a department that, despite its academic roots, encourages entrepreneurial activities. Through an examination of eBird, this case study approaches several larger questions for digital project leaders: How can academic digital projects think about increasing user interest? In what ways can a project maintain an Open Access core while generating revenue from premium services? And how might digital resource leaders approach the tension between project mission and revenue generation through a combination of sustainability strategies?

Electronic Enlightenment: Subscription-based Resource Sold Through a University Press

Bodleian Library, University of Oxford
Oxford, United Kingdom
www.e-enlightenment.com

After several years of reliance on foundation support, Oxford University's Electronic Enlightenment (EE) – a database containing the digitised correspondence of over 6,000 thinkers and writers from the long 18th century – needed to transition from a grant-funded project to an independently sustainable research project. After hiring a business planning consultant to help them think through different options, project leadership concluded that a sustainability model based on institutional subscriptions to the resource was the best fit for the project's needs. In addition to the revenue model, another important component of the sustainability plan was the establishment of a new set of institutional relationships, including the project's move from its prior home at the Voltaire Foundation to a new base at the Bodleian Library, and the development of a sales, marketing and delivery agreement with Oxford University Press. This case study explores the factors that made EE well suited for a subscription model, the reasoning behind the establishment of its new institutional relationships, and the challenges surrounding the continued development of this unique resource.

Hindawi Publishing Corporation: The Open Access Contributor-Pays Model

Cairo, Egypt
www.hindawi.com

Hindawi Publishing Corporation, a Cairo-based for-profit publisher of science, technology and medical journals, was founded as a subscription-based publisher in 1997. By 2003 Hindawi had begun exploring Open Access models; by 2007 it had become an entirely Open Access publisher, and it now publishes 160 Open Access STM journals. Hindawi's financial model is based on charging contributors a fee per article published, a model also currently used by BioMed Central and PLoS, among others. Since 2007, Hindawi has continued to refine its business model, in particular through its partnership with scholarly publisher SAGE and by introducing institutional memberships earlier this year. This case study explores Hindawi's path to choosing this financial model and the opportunities and challenges it has posed.

L'Institut national de l'audiovisuel: Free Content and Rights Licensing as Complementary Strategies

Bry-sur-Marne and Paris, France
www.ina.fr
www.inamediapro.com

Since its founding in 1974, L'Institut national de l'audiovisuel (INA) has undergone a profound shift in activities, developing from its role as the protector of the audiovisual heritage of France to the more dynamic role of manager of diverse media assets reaching a variety of audiences, including the general public. Today INA places great emphasis on its mission to enhance and communicate the value of its content to end-users, and it supports these efforts through a range of economic models. This case study examines two divisions of the organisation responsible for providing access to and monetising the collection in different but complementary ways: the public website, www.ina.fr, which offers free access to the public while serving as a laboratory for experimentation with online revenue models; and Inamédiapro, an audiovisual licensing service for professionals. Both function as entrepreneurial efforts at the heart of this large not-for-profit organisation. This case study examines them in light of the business models they employ, their focus on understanding users, and the necessary balance between generating revenue and fulfilling the broader missions of the organisation.

The Middle School Portal 2: Math and Science Pathways, National Science Digital Library: Early Sustainability Planning for a Grant-Funded Digital Library

The Ohio State University
Ohio, United States
www.msteacher2.org

The Middle School Portal 2: Math and Science Pathways project (MSP2) aims to provide middle school teachers with high-quality materials they can use in the classroom, and to foster greater sharing and communication within the middle school teaching community. The original Middle School Portal was a prototype for the 'Pathways' projects funded under the umbrella of the National Science Digital Library (NSDL), and MSP2 remains today entirely funded through NSDL. But the project faces a challenge: how will it cover the costs of operation and development when its current three-year grant runs out in 2011? This case study examines how the leaders of MSP2 are planning for the long-term sustainability of the resource. First, they are exploring a range of revenue-generating activities that build on current strengths of the partner organizations involved in the project; second, they are considering a 'plan B' of building a community-run site that would rely on a free social networking platform, the technical infrastructure of NSDL, and user generated content – a site that its leaders hope could function even with limited paid project staff.

The National Archives: Digitisation with Commercial Partnerships via the Licensed Internet Associates Programme

London, United Kingdom
www.nationalarchives.gov.uk

The challenges of digitising, preserving and providing access to over 1,000 years' worth of material held by The National Archives (TNA) are considerable. In recent years, TNA has developed a strategy to digitise content quickly though its Licensed Internet Associates programme. These commercial partnerships, closely managed by TNA staff, have allowed the institution to digitise millions of pages of material at minimal direct cost. This case study explores the model developed by TNA in light of the opportunities that commercial partnerships can provide for public service organisations. This study also highlights the challenges such a partnership can bring to bear on a number of critical questions, including user needs, balancing mission and the commercial partner's need to drive revenue, and long-term preservation and access considerations.

The Stanford Encyclopedia of Philosophy: Building an Endowment with Community Support

Stanford University
California, United States
plato.stanford.edu

Endowments are often thought of as a source of reliable support for established institutions such as universities and foundations, but in recent years online academic resources have also begun experimenting with the endowment model as a means of sustainable funding. The model holds forth the promise of guaranteeing access to a resource in perpetuity, with the investment returns from the endowment continuously generating funds to sustain the resource. Since 2004, the Stanford Encyclopedia of Philosophy has successfully raised three-quarters of a planned $4.125 million endowment. This case study highlights the factors that make a project a strong candidate for an endowment model, describes the steps that are necessary for implementing such a model, and explores the advantages and disadvantages of endowment funding.

The Thesaurus Linguae Graecae®: Specialised Historical Content for a Niche Audience

University of California, Irvine
California, United States
www.tlg.uci.edu

Online resources are often described and evaluated in terms of their ability to serve vast amounts of diverse content to wide audiences, but well-targeted, specialised digital projects can have a profound effect on an academic discipline. The Thesaurus Linguae Graecae® (TLG), a digital corpus of over 12,000 works of Greek literature ranging from the ancient era to the modern age, has proven its value to scholars and has been able to convert that value into a sustainability model that incorporates multiple revenue streams. The resource is targeted toward academic classicists and medievalists, who rely on it as the only comprehensive body of historical Greek-language works available online; it also offers a small Open Access selection of canonical Greek works for use by a wider audience. The project, which is hosted at the University of California, Irvine, depends on three main revenue streams: subscription fees, direct financial support from the university, and a project endowment. The endowment was originally intended to supplement the other two revenue streams, but the project's goal now is for the fund to some day cover all of the ongoing costs for the TLG. This case study looks at some of the questions facing the TLG and outlines the broader implications for other resources with highly specialised content: How does such a project build

an audience and keep users excited and engaged? What characteristics make a project a strong candidate for a subscription model? And how do the leaders of the TLG envision their resource – and its funding – evolving in the future?

V&A Images: Image Licensing at a Cultural Heritage Institution

Victoria and Albert Museum
London, United Kingdom
www.vandaimages.com

For many museums and cultural institutions, the digital environment provides an exciting opportunity to expand access to their collections and enhance their brand. At the same time, the high costs of creating and maintaining digital collections lead some organisations to think about ways to generate revenue from these assets. V&A Images, a department of the Victoria and Albert Museum's commercial trading company, licenses photographs of objects in the museum's collection for commercial, educational and personal use. The unit is tasked with the sometimes-competing goals of generating profits for the museum, while also encouraging access to the collections and fostering scholarship in the field of art and design. Its challenges are to compete successfully in a crowded commercial licensing marketplace, to cover costs and to balance revenue-generating imperatives with the museum's other digitisation efforts. This case study focuses specifically on V&A Images, while contextualising its activities within the museum's broader digitisation programmes. It highlights some of the factors that are important to the success of an image licensing operation, and discusses challenges related to balancing market imperatives and mission-based goals.

Appendix C: How to read the financial data in the case studies

The financial data included in each case study's Appendix B: Summary of Revenues and Costs are intended to provide a picture of the major sources of revenue and ongoing costs for each project studied. The data were compiled as part of the interview process with project leaders and staff, and in some cases supplemented with publicly available documents such as annual reports. Project leaders were asked to review this financial data prior to publication.

We chose to develop these charts in order to make it easier to assess at a glance some of the financial aspects of each project's sustainability plan. Below are explanations of ways in which we feel the data can be most useful, followed by a cautionary note on the limitations of this data.

These financial data illustrate:

- How project revenues compare to the direct costs of the resource. Is the project currently generating more in revenue than it must pay each year in direct costs?
- How much the project spends each year in direct (budgeted) costs. What does it cost to run this project or service, and what types of costs make up the greatest part of the budget?
- The other types of expenses currently covered through in-kind contribution of resources or volunteered efforts. (One common example of this is an in-kind contribution of office space to a project from its host institution.) In these cases, the value of these contributions was often unknown or unavailable, but cataloging the types of contribution as well as the range of sources – from host institution, to outside partners, to volunteers – shows just how important this strategy is for keeping projects afloat.

Limitations of the data:

- The financial data provide a relative measure of a project's operating budget, not an absolute one, so we advise against any direct financial comparison between line items in project budgets. There are several reasons for this: many leaders provided rounded numbers or estimates for the categories for which we sought data. Other leaders preferred not to offer figures at all, but suggested percentages instead. In many cases, we were asking project leaders to provide us with information they do not typically render in this way. For example, some departments might share staff with other departments in a long-standing informal arrangement; we asked leaders to determine how many FTEs that might constitute. While project leaders have made their best estimate of these figures, we stress that these charts are most useful as an overall picture of the balance within a project budget.
- Data is provided in different currencies, from different financial years, and with different levels of precision. In dealing with projects in several different countries, we have chosen to present the financial figures project leaders provided during our interviews in the currency in which the data was reported to us.

- Different organisational structures have very different ways of budgeting. While some of the projects we studied were accustomed to budgeting for all or most of their costs, several of the cases Ithaka chose to examine are digital initiatives residing within a larger institution. While the budgeting practices of the organisation might understand the initiative as just one project within a larger department or unit, we asked that costs for the project itself be broken out. All project leaders did their best to estimate these direct costs and staff allocations in cases where no figures were readily available.

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Sustaining Digital Resources: An On-the-Ground View of Projects Today

Ithaka Case Studies in Sustainability

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