

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



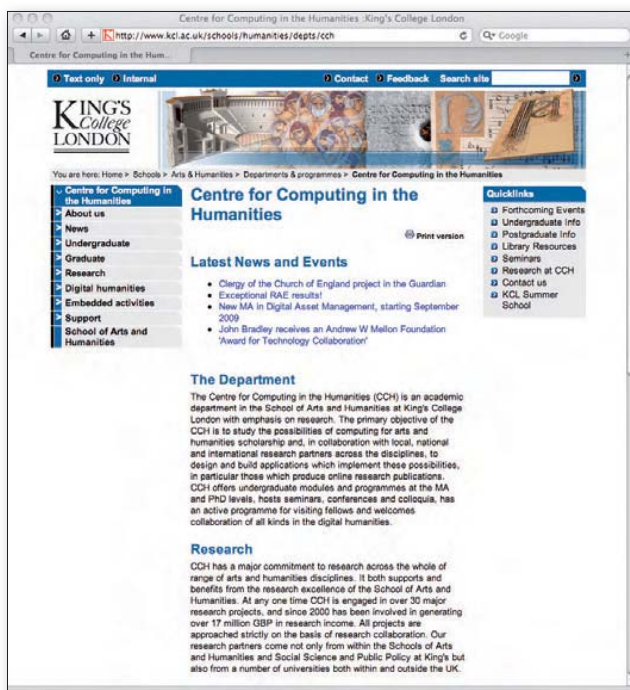
The Centre for Computing in the Humanities (CCH) at King's College London (KCL), an academic department focused on the advancement of the digital humanities, engages in a wide variety of research projects that often lead to the creation of electronic scholarly outputs. Using a model that is rare among 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.



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



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

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.

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 uncategoryed. RAE 2008, 'RAE 2008 Quality Profiles: King's College London', <http://submissions.rae.ac.uk/results/qualityProfile.aspx?id=132&type=hei>

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.



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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

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

clients, services are also offered internationally; for example, a 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

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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.