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Repository Thrills and Spills

[Sue Manuel](#) and [Charles Oppenheim](#) take a look at recent developments in the digital repositories field and present a light-hearted project narrative.

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Introduction

Much can be learned from looking back and reflecting on events in the repository arena over the past few years. Repository systems, institutional managers, repository managers, advisory organisations and repository users have all come a long way in this short time. Looking back acts as a way of grounding prior activity in the present context. It can also provide invaluable insights into where repositories are headed. The activity of deliberating on past events may be of value to a range of individuals engaged in repository activities. This might include funding bodies, professional organisations, publishers, institutions with an existing repository; or those in the process of considering the deployment of one, repository managers, repository project workers, and repository contributors and content consumers. Some possible areas for consideration are technical and non-technical factors that encompass the whole range of the repository spectrum, from development through deployment, to advocacy and use.

This article introduces this reflective process from the perspective of a repository project funded under the Joint Information Systems Committee (JISC) Digital Repositories Programme (JISC DRP) over the period 2005-2007 [1]. The Rights and Rewards Project's [2] focus for the last two years has primarily been directed towards repositories with teaching and learning content. Although we consider repositories from the perspective of our local focus, i.e. an Institutional Repository, we also address issues from a wider sphere of influence. It is also worth bearing in mind that in the development of a repository of teaching resources we have benefited from prior studies by those setting up and maintaining research repositories. This invaluable background information has been extended to encompass a teaching perspective by the research undertaken by this and other projects.

We present a brief background to repositories, and suggest some areas where shifts in perceptions may be occurring. This overview covers current context, the marketplace for repositories, actors and their roles, managing expectations, and service requirements. We also offer a light-hearted metaphorical view of the Rights and Rewards Project's "repository adventure" [3]. Areas for additional research activity are also discussed.

Background

Prior to the start of the JISC DRP in 2005, repositories were at the early stages of deployment in UK Higher Education Institutions (HEIs). In the main, their purpose was to house and showcase the research outputs of an institution. The overarching principle was to provide Open Access (OA)

to this type of institutional asset. During the initial DRP conference the talk was of existing formal repository systems (mainly DSpace [4] and EPrints [5]); workflow; standards for metadata, content packaging and harvesting; preservation; interoperability between systems; and models and frameworks. There was also debate about the legal aspects to repositories, policy decisions and cultural barriers to be overcome. The focus was very much on getting the technical aspects right, and indeed this is still one of the key areas for the development and implementation of repositories.

Current State of Play

Two years on, discussions have moved on to the possibilities afforded by Web 2.0, folksonomies, service-oriented architecture (SOA), systems and services, repository ecology, communities, inclusivity, informal repositories, and so on.

That is not to suggest that some of these topics were not being discussed two years ago, or that these are the only issues currently being investigated. There does, however, seem to be greater awareness of alternative approaches to setting up a repository, and a more relaxed view of the range of available options. It may be worth considering the question: Are developers, institutions, repository implementers, researchers, or a combination of these leading this shift in priorities? Are users of repository systems driving this research activity as a reaction to existing provision? To borrow the repository as ecology metaphor from the recently released 'An ecological approach to repository and service interactions' [6], it may be a natural evolution from the pre-existing repository foundation.

To illustrate this expansion of ideas consider a current project, SWORD (Simple Web-service Offering Repository Deposit) [7]. This project aims to bring a flexible and adaptable deposit protocol to the repository landscape. A few years ago the concept of a common deposit interface for four of the main repository platforms (EPrints, DSpace, Fedora and IntraLibrary) may not have been envisaged by many.

And yet, we still need the formal, fixed, quality-assured, preservation-minded, standards-based repositories to ground the informal, flexible, 'drop-and-go' repository described by the TrustDR team in their draft version of: 'Managing intellectual property rights in digital learning materials: a development pack for institutional repositories' [8]. Without this background and ongoing work, it is hard to imagine that we would have arrived at the position we find ourselves in today.

Those researching informal and social repository spaces might agree with a note of caution in the repository ecology document. This alerts us to the fact that within ecologies, there are parasitic, saprophytic, and symbiotic relationships.

Educause conducts an annual survey of its member institutions to gather information about what IT issues are at the forefront of college and IT leaders' minds. Responses to their 2007 survey included for the first time course and learner management systems [9]. The intense efforts and singular focus required by an institution to source, implement and embed systems of this type into the working practice of teaching and support staff hints at the scale of the task facing the successful introduction of a teaching and learning repository.

In the authors' experience, academics are aware of some of the issues that come with increased reliance on electronic systems and services for teaching. Furthermore, there is a willingness to explore new systems to support teaching, but there are also concerns that need to be addressed. These include the need for support and training, reducing the learning curve for IT systems and services, building use of new tools into everyday practice and the rewards for doing so. Some possible solutions are to provide a portal for easy access to all information and tools relating to teaching practice, offer a desktop tool to access teaching and learning systems, provide appropriate levels of support and encourage community support. The ideal scenario would be for systems to interoperate; so that conflict over ownership of systems and services would be minimised, control becomes less of an issue, existing roles are secure or transformed, and an ethos of collaboration rather than competition prevails. This ideal applies to systems, institutions and individuals. CETIS (Centre for Educational Technology Interoperability Standards) [10] plays

an important role in bringing the issues of interoperability and standards to the attention of the teaching and learning community. Through their Special Interest Groups (SIGs), they also provide an invaluable forum for a range of practitioners to come together to share their experience, expertise and visions for the future.

In the following section we describe the Rights and Rewards Project's reflections, which, inspired by the ecology metaphor, are illustrated by using the metaphor of a developing theme park.

Repositories: A Voyage in a Metaphor-laden Landscape

Approaching the gates to the theme park can leave one feeling excited, optimistic, eager, and slightly apprehensive at the thought of the scale of the park and the complexity of the rides (task ahead). One of the first places for new visitors to look over is the JISC visitor attraction and information suite. Here you can pick up complimentary tickets for free rides and a wealth of advice and guidance. Then off to the CETIS tea party tent, where you can meet up, and share experiences with novice and expert park employees. This is also a good place to load up with armfuls of practical guides. Along the way, you will also encounter a smattering of international stands where you can learn about theme parks and rides in other countries.

As with all good theme parks, there is also a darker side, so beware as you encounter the publisher's ride. Here you may well be asked to assign copyright before you can climb on board. Leave them copies of reports on open access, and IPR instead.

Then begin the process of setting up a ride with colleagues, seeking advice from existing owners, enticing customers, refining the experience, adding features and collaborating with others. This can be accompanied by a thorough exploration of the rest of the park. For the best view of the park, head for the very top of the roller-coaster ride. From here the whole park is laid out before you. Do not be tempted to linger here too long though, be bold, take the brakes off, ride through the subsequent trough and prepare to tackle the next stage in your ride. As you navigate the park, you will no doubt enjoy watching and learning from others who are setting up their rides or stands.

One experience not to be missed is the park employees' final banquet. This is a spectacular event that is held in an elaborately decorated hall. The meal is prepared in the 'Old Mother Hubbard' style of catering. Yes, the cupboards are bare but the chefs always manage to find a few choice items lurking at the back of the shelves. They skilfully assemble these ingredients into what can best be described as an eclectic mix of individual dishes. But, you will be treated to a most interesting and unique dining experience. If you should find that your hunger is not satisfied, fear not, for there are complimentary biscuits in every theme park hotel room.

As you approach the exit still stuffed full of theme park fare, feeling slightly dizzy, you may be having some regrets. You may feel that you have missed out on some of the things that you think you should have experienced along the way. No doubt you will have enjoyed the companionship of others along the way, and you will have relished the opportunity to marvel at the creations of others.

There will be plenty of highs and lows, as you would expect from a theme park. The highs might include all those you met along the way who were full of understanding, help, advice and support. The lows might include a particularly rough ride towards the end of your park adventure. You know the type of ride that leaves you reeling, your head spinning, slightly giddy and with legs wobbling.

Perhaps your path can be likened to a roller-coaster ride in a spinning teacup. This trip has seen you sitting in a teacup, spinning around, head thrown back, flung against a wall, scraped up cartoon style, re-assembled and set off again. But, you made it to the finish line, slightly worse for wear, but buoyed up by a supportive community of theme park personnel.

So what does it all mean? As you look back, you will be heartened to see that the park carries on, new ideas for rides are being proposed, and new visitors are entering the gates. Some of the people who embarked on their expeditions at the same time as you did are still there, keeping things on track.

And, what do you leave for those who enter the park as you depart? Your own personal theme park trail (metadata) of course. Yes, a description of your journey for others to consider, to follow or to navigate away from. It may provide a patchy description in the places where you did not always fully comprehend what was happening to you, and where you did not always understand the value of charting your path. But where it is faint, and where appropriate, you can be sure that the experience of others will fill any gaps.

Lessons Learned

Coming to the close of one set of JISC-funded DRP projects is an ideal time for projects and the JISC to reflect on the events of the past two years, to evaluate what has been achieved, what it was not possible to accomplish, and what were the key factors for success and conversely for failure. Were any setbacks due to technical difficulties, problems with infrastructure, institutional or cultural issues, or with individuals? What were the outcomes that were predicted? What were their triggers? And, ultimately, where do we go from here?

JISC's aims [\[11\]](#) for the period 2007-2009 suggest a pulling together of some of the factors we have discussed here. Innovations in ICT are to be grounded in considerations of infrastructure and effective use. Institutions will be encouraged to engage with the wider community, and ideally initiatives will align with institutional strategy to ensure sustainable outputs.

Indeed, what does this reflection mean in the repository context? Simply that you are not alone in your efforts, although it may feel that way sometimes. There is expert advice and support available when you need it. What you are attempting locally sits within a wider context, and there are opportunities for collaboration and interconnectedness. Your successes and failures will be made in a public arena, but this is what it is all about. We are all facing the same learning curve and shared experience can ultimately advance us all. You will probably be in awe of the achievements of others, as they will appreciate yours. And finally, this is a work in progress, mistakes are rectified, systems begun anew, revelations made and new visions realised.

Next Steps: Future Areas for Evaluation

As technology systems and services mature, perhaps the focus for future research needs to shift to repository service users. Topics of interest to teaching and learning repositories might include usage tracking (metric evaluations), institutional and/or practitioner readiness for repositories, key training and support issues, and technological developments.

Based on the theories of information architecture, human-computer interactions, and on the work of information professionals, it is possible to study user needs, user testing and user experience. Involvement in the use of mature repository systems by a greater number of users would provide valuable information on experience and expectations of repository systems. Thus, the perceptions versus the reality of repository use could be explored. Other questions that could be examined include what is the uptake of Web 2.0 features where these are offered, and do users make use of personalisation features?

The necessary skills to use (contribute to and consume) repository services effectively are complementary to those required in the production of effective e-learning. The availability of training and support are crucial elements in the repository mix. This gap in provision was highlighted by the Educause survey [\[9\]](#) mentioned earlier.

Research into the use and reuse of open access materials and the influence on teaching and learning that repositories bring would provide valuable evidence to senior managers and teachers alike of the value of this type of service. The benefits for teachers in having greater access to resources, and the knock on effects for improvements to the student learning experience should be explored. One notable example of positive end results can be seen in the DIDET Project [\[12\]](#)[\[13\]](#). Here, students used an informal repository environment to share and work together as part of a team-based engineering design project. Access to completed copyright-cleared projects was via a formal repository. This collaborative project involved lecturers, librarians, learning

technologists and coaches. The project is being embedded in the Department of Design, Manufacture and Engineering Management at the University of Strathclyde.

Another avenue for investigation is the formal / informal repository debate. Which is best? What are the advantages of both types to managers and users? Should the two operate in tandem, as in the DIDET Project, or is it more appropriate to devise a tight specification of requirements?

Several factors have hampered investigations into repositories for teaching and learning. The number in operation and the user base remain small. Wide publication of successful examples, like the JORUM [14] and DIDET Project, can help to raise awareness of their potential.

Returning to the theme park analogy for a moment, it is easy to see how a range of options can come together to form a coherent whole. Yes, we need the spectacular, the flashy, thrilling and show-stopping rides. In the field of repositories, examples of these types of service are: for research, the Cream of Science [15], arXiv [16]; and for teaching, MERLOT [17] and the JORUM. We also need the intermediate attractions, trusted and secure, instilling confidence in park managers and users alike. This option could be covered by a recently launched Depot [18]. This can be used as a staging post, making repository systems accessible whilst providing time for further investigations, seeking funding and the setting up of an institutional repository. Next comes the family ride, a showcase for a local group; IRs fit nicely into this category. There is the travelling show, opportunistic, personal, flexible, adaptable, possibly short-lived. Personal repositories and some social software systems might apply here. All these repositories come together to provide a satisfying experience for a whole range of users.

Conclusion

The JISC DRP brought together a diverse group of repository projects. Each one aspired to achieve the aims set out in its project plan and any new objectives set out along the way. Individual efforts were tightly focused, but opportunities for 'cross-pollination' were explored. We aimed to pursue repositories that were essentially formal in nature. However, conditions, expectations and the requirements of users directed some projects to consider other possibilities. Towards the end of this two-year period, discussions on more informal social approaches to repositories and repository like-systems have surfaced.

One may be left wondering what the next transformation in this 'repository adventure' will bring. Perhaps the recent interest in Second Life [19] might lead to its use in a virtual repositories world. We will probably have to revisit the theme park in another two years. One thing is certain: the theme park will have changed a lot by then.

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