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The Carrick Exchange for Higher Education: Design Factors for User Engagement

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THE CARRICK EXCHANGE FOR HIGHER EDUCATION: DESIGN FACTORS FOR USER ENGAGMENT

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Abstract

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Introduction

The Carrick Exchange is currently being designed and developed in Australia to become "an online service that will provide learning and teaching resources and functions to support communication and collaboration across the national and international higher education sector" (Carrick Institute, 2007). This has come about as the Carrick Institute for Learning and Teaching in Higher Education funded a research project to investigate the prospective user needs, contexts of use and policies necessary to facilitate engagement of the higher education sector with the Carrick Exchange. Over the past two years a six member research team of the Australasian Society for Computers in Learning in Tertiary Education (*ascilite*) has been responsible for conducting research to inform the development of the Carrick Exchange. This research investigated resource identification and contribution, engagement with the repository and user community, and peer review and commentary processes associated with engagement and contribution. While these questions are interrelated, this paper focuses primarily on engagement of potential end

users. It reports a literature review and findings of four cycles of data collection with specific focus on the issues of engagement.

Background

An extensive review of the literature on digital repositories, learning objects and communities of users of such resources revealed many themes, issues and concerns that are common across institutional and international contexts (Philip et al., 2007). The idea of having access to high quality, up-to-date learning resources for reuse in a range of teaching and learning contexts and technical environments is one which generally appeals to the higher education sector in an increasingly competitive market (Woo et al., 2004). The prospect of reuse is extremely attractive given the time and input required in the creation of learning objects and learning resources (Hatala & Nesbit, 2001; Hirwade & Hirwade, 2006; South & Monson, 2000). Similarly the question of reuse raises the issue of the time needed for adapting resources for inclusion in well designed learning activities. Henty (2007) reports that half of Australian universities had established institutional repositories for their staff by mid-2006 and that among the ten major issues relating to repository management that were reported by a group of thirty-three senior academic administrators, were the key issues of sustainability and engagement. It is the key issue of engagement that we consider in this paper.

Whilst there has been extensive research in the area of repository development, lack of engagement by users is a well reported trend (Henty, 2007; Margaryan & Littlejohn, 2007a). Despite the literature in the area of engagement espousing the benefits of use of repositories it would seem that the human factors are by far the most important aspects to consider, in particular the importance of end-user and stakeholder involvement in the development of these systems should not be underestimated. Bates et al., (2006) assert that since users will have such diverse needs, it is the intended purpose of the repository that will largely determine whether people ultimately use it. The propensity to adopt the facilities and products of repositories hinges not just on usability, but is influenced by the diverse characteristics of end-users and contributors, in terms of cultural, interdisciplinary, organisational and/or institutional differences. One study of a community of users raises particular issues of support, trust and simplicity as being paramount to their concerns in relation to engagement (Williams, 2006). Others indicate the importance of involvement of users to the development of the system and warn that if their concerns are neglected, then a lack of uptake will be apparent (Woo et al., 2004). To prevent this, end users need to be identified and consulted about their needs and concerns for the system.

It is, however, insufficient to focus simply on the development and usability of the repository itself. Key to the success of engagement as identified by Carey (2007) with the North American MERLOT project, and Margaryan and Littlejohn (2007a) and the United Kingdom CD-LOR project, is the need to foster networks and community. We support this premise in an earlier paper: 'The Carrick Exchange may well support fully formed communities of practice plus other looser and more brittle networks' (Philip et al., 2007, p. 845). Wenger, McDermott and Snyder (2002), in defining communities of practice, support the notion that a website on its own is not a community of practice. Communities of practice are 'groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise… by interacting on an ongoing basis' (p. 4). Wenger et al. suggest that domain, community and practice are not only defining terms for a community of practice, but that they represent 'different aspects of participation that motivate people to join a community' (p. 44). Some members will join because they are interested in the domain, the specific area of knowledge; some will join because it is the community aspect they seek; others will be seeking to learn about practice, the standards, the tools and the lessons learned by experts in the field.

Dimensions of Engagement

'To promote knowledge sharing in the domain of learning and teaching, and engage the higher education community, it is not sufficient to build a repository of resources, nor merely to provide social networking software and spaces for collaboration and community building' (Philip et al., 2007, p. 845). As previously highlighted, the literature increasingly documents a general lack of user engagement with repositories and online services (e.g. Gunn, Woodgate & O'Grady, 2005; Hummel et al., 2005; Littlejohn, 2003; Phillips et al., 2004). Foster and Gibbons

(2005, p. 1) emphasise that 'Whatever the particular focus of the university IR [institutional repository], to be successful it must be filled with scholarly work of enduring value that is searched and cited'. The willingness to engage with systems and populate them with useful resources are key components in the success of any enterprise (Woo et al., 2004).

Further to this focus on the users and their reasons for engagement, Subramani (2004) conducted research with 1000 contributors of reviews on Amazon.com and examined the questions of pro-social behaviour. He considered motivations for contribution such as altruism, and other motivations arising from intangible benefits such as reputation and name recognition as well as psychosocial rewards such as positive feelings from a sense of belonging to a community. Subramani's research suggests that in spite of the somewhat impersonal nature of the process, contributors to repositories perceived their actions as being a social act. Altruistic motives with no expectation of returns of any kind are significant in influencing contribution as is the need for social affiliation and the need for professional self-expression. Extrinsic rewards such as reviewer ranking also appears to play an important role, though this was seen as contrary to the idea that social capital is engendered largely by interpersonal interaction in face-to-face situations. In this case, there was evidence that social capital in the form of obligations, trust and identification with the community play an important role in stimulating contributions.

Realising the advantages of engagement is a complex task. It cannot be assumed that reuse will follow existence of the repository (Margaryan & Littlejohn, 2007a; Philip, 2007). Ignoring the sociocultural issues relating to learning object repositories is to run the risk of creating an under utilised service. Margaryan and Littlejohn point to the effect various cultural dimensions (organisational, professional, disciplinary and national) may have on the impact, uptake and usage of the system. These factors are further influenced by community size, member proximity to the resource, the roles of stakeholders and types of tasks for which the resources in the repository are intended and used (Philip et al., 2007, p. 845).

Others suggest that in order for such systems to become integrated into the everyday work practices of the Australian higher education sector, change management issues should be addressed early (Casey, Proven & Dripps, 2006). Further, Shea, McCall and Ozdogru (2006) further note that new ideas that are at variance with existing values and norms are unlikely to be quickly adopted. People will not necessarily change their practices in response to external pressure. They will only change if there is a good reason to do so, such as a benefit to their learning or teaching (Bates et al., 2006).

The change management processes required to assist in a shift towards increased sharing amongst academics may be significant. The literature confirms that to effect major educational change, commitment at the highest organisational level will be required (e.g. Ely, 1999; Kenny, 2002 in Kenny, 2003; McKenzie et al., 2005). Support championed and led from the top, with 'bottom up' support for innovators, and provision of well supported resource development for those in the middle is the best model (Nicol et al., 2004 in Weedon, Bricheno & Chidwick, 2004).

Furthermore, research into the phenomenon of resistance to contributing to online repositories has received significant attention with several research reports revealing common barriers. Foster and Gibbons (2005) found that while wanting to embrace the benefits of sharing research and ideas, potential contributors were concerned about overwork and resisted any additional activity that might erode their available time for research and writing. A survey conducted by Bates et al., (2006) revealed that the main reasons for not contributing were personal factors including: lack of time; lack of knowledge/awareness of the issues; lack of confidence in one's own materials and not realising that other people would want them. One participant in their survey stated that:

> … without adequate time, resources, appropriate skills, recognition, and backup support it is virtually impossible for academic staff to produce reusable learning objects to the required standard themselves. A key point is that this requires the development of new approaches to assessment, learning and teaching that is recognised in deployment, reward and promotion (Bates et al., 2006, p. 25)

The same study revealed the most significant reason for not contributing was a lack of awareness regarding any repositories, and this highlights the need to increase awareness of the community of users around repositories.

Extensive sector consultation was undertaken in 2006–2007 to determine how such networks and communities

could be supported through Web 2.0 technologies in order to ensure engagement with a national repository. Web 2.0 technologies can include communally edited resources found within wikis, blogs and YouTube, and other social networking tools such as del.ici.ous, MySpace, Flickr, Twitter and Facebook. Incorporating these features into the Carrick Exchange thus moves beyond the idea of simply sharing high quality resources to concepts of engagement through community development, facilitation of professional networks, access to key information about teaching and learning, new technologies and areas for communication and collaboration (http://www.carrickinstitute.edu.au/carrick/go/home/rin/pid/381). The paper also draws from significant research in the area especially by MERLOT and many UK projects, including the CD-LOR project (Harrigan, Carey & Ld team, 2005; Margaryan & Littlejohn, 2007b).

It is acknowledged that effort should be directed towards the process of engaging the target audience, familiarising groups with the affordances of the repository and its potential to support user needs, and proactively facilitating the development of networks and communities of practice engaged in sharing and developing high quality resources. It is this last element, the attention to be expended on development of and support for related networks and communities that distinguishes the Carrick Exchange from other national repositories. This paper reports on the research conducted to inform the development of the Carrick Exchange through extensive national and international consultation and identifies the key recommendations made by *ascilite* to inform the development of this national system with respect to promoting engagement.

Methodology

In accordance with the consistent theme emerging from the literature, and in order to obtain data directly from prospective users, a design-based research approach was adopted for the research. The approach involves four elements in the research process: (1) analysis of the problem by practitioners and researchers; (2) development of solutions within a theoretical framework; (3) evaluation and testing of solutions in practice; and (4) reflection and documentation to produce design principles (Reeves, 2000).

These four elements of the research process were applied to a series of four cycles of data collection, which were completed over an eighteen-month period from June 2006 till December 2007. Cycle 1 data was derived from twenty-nine interviews of individual practitioners, key members of the higher education community. Interviewees were selected to include a range of disciplines, institutions, fields of study, and to represent a diversity of needs for online collaboration and communication in learning and teaching. With respect to user engagement with the Carrick Exchange, the interview questions explored existing practices that succeeded in establishing and maintaining engagement of the higher education community online. Recordings of interviews were transcribed and validated by interviewees.

Cycle 2 data was obtained through three focus groups with a total of twenty-two participants representing higher education institutions from all Australian states except Tasmania. Neither the Australian Capital Territory nor the Northern Territory were represented. The three primary purposes of the focus group interviews were to validate the analysis of data from Cycle 1 including identification of missing data, prioritise the issues that arose from Cycle 1, and generate strategies and draft policies to address these issues. The draft strategies and policies were then circulated for review in Cycle 3.

In early 2007 an Expression of Interest was called from which a selection of *ascilite* members was chosen to participate in a reference group for the Carrick Exchange project. Members were selected on the basis of their stated interest and expertise, and included representation across the sector both geographically and institutionally. Cycle 3 thus involved the circulation of reports of Cycle 1 and Cycle 2 data and analysis, with recommendations for review and critical comment by members of the *ascilite* reference group. Ten of the twenty-four members of the reference group were able to provide comment in the given timeframe. Those unable to comment were encouraged to attend the Cycle 4 data collection at the annual conference and provide input at that time.

Cycle 4 data collation was completed at the 2007 annual conference of *ascilite*. A symposium was held during this conference in Singapore where international perspectives from the MERLOT project in North America and the CD-LOR project in the United Kingdom were presented, as well as a showcase of *ascilite's* research findings to date from the Carrick Exchange project. Prior to the symposium Report 4 by the *ascilite* research team was provided to

reference group members. In addition the three refereed papers, prepared for this symposium session, were circulated to all *ascilite* members in advance as background to the discussion. The papers aimed to report on current issues in repositories and their communities developed in the UK, North America and Australia. The authors and papers were as follows and can be found on the 2007 *ascilite* conference website http://www.ascilite.org.au/conferences/singapore07/procs/:

Paper 1 – Anoush Markaryan and Allison Littlejohn, Caledonian Academy Glasgow Caledonian University, UK. Representing the CD-LOR project: *Communities at cross-purposes: Contradictions in the views of stakeholders of learning object repository systems*

Paper 2 – Tom Carey, University of Waterloo, Canada and California State University, USA. Reporting on his MERLOT and CLOE experience: *From repositories supported by communities to communities supported by repositories: Issues and lessons learned*

Paper 3 – Robyn Philip, The University of Sydney; Geraldine Lefoe, University of Wollongong; Meg O'Reilly, Southern Cross University, Dominique Parrish, University of Wollongong. From the *ascilite* research team, for the Carrick Exchange Project: *Community, exchange and diversity: The Carrick Exchange*.

Final data collection was completed through the input that participants provided at the symposium. An estimated forty people attended over the three and a half hour session. Notes and an audio recording were made of the session. About twenty people participated in the final discussion session, facilitated by one of the *ascilite* Project Leaders. The key themes derived from the discussion served to further direct the proposed strategies, policies and implementation plans for ensuring engagement. A final online forum was run after the symposium for the reference group members to provide another opportunity for feedback and additional comments on the ascilite reports and the three symposium papers. A complete report of Cycle 4 data is to be finalised in January 2008.

Findings

The findings of the literature review clearly point to a need for thorough consultation with user groups and communities of practice in order for the Carrick Exchange development to be tailored, ensuring best engagement. A series of recommendations was derived from the findings of each of the cycles of data collection, reflecting the views of those interviewed and consulted. As far as possible the researchers aimed to involve stakeholders with an interest in learning and teaching and technology, as well as those who might benefit from access to the new initiative whose technology skills or levels of use might be quite low. However, as expected, those with less concern for, or knowledge of repositories and online teaching and learning resources, were more difficult to invite into the research to share their views. This is a limitation of the research to date, and indicative of the difficulty of demonstrating the benefits and relevance of a new system to potential end users, thereby activating their participation and contribution.

Recommendations for engaging users with the Carrick Exchange covered five key areas: i) communication of the purpose of the Carrick Exchange; (ii) strategies for catering to multiple levels of engagement, (iii) management of the system to ensure sustainability and archival functions; (iv) functionality and ease of use of the system; and (v) promotion of the initiative within the target sector. Research participants, from all cycles combined, whose responses form the foundation for the recommendations below were sufficiently well acquainted with university systems to realise that an initiative of this magnitude should not be left to ad hoc processes to evolve. Therefore resourcing, planning, integration and management of engagement across institutions and for different users and purposes were issues emphasized in the feedback. Nonetheless, the literature cautions against "over managing" informal communities and networks – these associations should be allowed to evolve and self-manage according to need. Whether the Carrick Exchange will attract existing communities and networks or only provide a communication space for new organizations was a question put to attendees at the final symposium. Their response was that the new system has to fulfil a need to attract either new or "old" groups, by, for example, successfully crossing institutional, geographical, discipline, organizational, cultural, pedagogical or technical boundaries.

The key to all engagement is management of communication: when, how, by whom and for whom. Too much and users will be put off; too little and users will be unaware of the benefits. As the research progressed it became apparent that champions to promote the system were required not only in the initial stages of development, but also

in an on-going capacity. The practice adopted by MERLOT of discipline groups and champions who promote evolution of the collection and communities over time was seen as a suitable model to follow. The model recognises that repositories should not be conceived of as static systems. To remain relevant and attractive to new and current members they must link to well-maintained resources and offer benefits for continuing and active membership. While MERLOT has a current membership of 54,223, 'active' membership in 2003 was thought to be about 27,000 users who visited the site monthly.

Whilst initial users of the Carrick Exchange will be Carrick grant holders, Carey (2007) cautioned against the repository being filled predominantly with reports of these Carrick funded projects as they could seem to be 'Tombstones of the projects' signifying completion and thus cessation of project-related activity. While one of the primary intentions in the early stages of the Carrick Exchange is to seed its content with project reports, a live system is ensured if the end-user is able to actively determine the ongoing development of the Carrick Exchange. Tension also arises here from the views provided to the research project by prospective users of the Carrick Exchange who expressed their hopes for direct access to all resources and documents generated from Carrick-related projects, as opposed to the caution provided by MERLOT experiences to maintain a living repository. Stimulation and management of user engagement will be the key. It will be important to balance the contradictory perspectives of repository users with those of the curators on what user engagement means as suggested by Margaryan and Littlejohn (2007).

Recommendations

With specific relevance to the issue of engagement, the *ascilite* recommendations, not listed in priority order, were as follows.

1.   The purpose of the Carrick Exchange should be well articulated to the sector.
A clear statement of the purpose of the Carrick Exchange with explicit details of the advantages of the system and how it is differentiated from existing institutional repositories, databases, work spaces and communities should be communicated to potential users. Defining the collection, its standards and quality assurance methods, and effectively communicating these is an essential strategy in the process of developing the Carrick Exchange, and enhancing user engagement.

2.   The quality of the processes, resources and functionality of the Carrick Exchange should meet the expectations of the sector.
According to the research participants, the expectations of the higher education sector for the Carrick Exchange is that it will be the focal point for sharing ideas, resources and expertise about learning and teaching in the Australian higher education context. Research participants warned that there must be a clear demand or need for the Carrick Exchange, and that it must meet those demands or needs. Quality was seen as a key success factor for the Carrick Exchange. Therefore, a strategic plan and operational policies, procedures and systems should ensure that the Carrick Exchange delivers a superior standard of services and products.

3.   A strategic plan for the engagement of the sector at multiple levels should be developed and implemented.
A plan that aims for optimum engagement in the Carrick Exchange, with strategies that address the stages of acceptance across the sector should be established and implemented. This plan should focus on a staged process for the implementation of the Carrick Exchange and strategies to support engagement by the sector and should address issues of sustainability into the future. At the same time the Carrick Exchange should also consider the various key stakeholder groups across the sector when developing a strategic plan for the engagement of the sector.

4.   Membership and the conditions of membership for the Carrick Exchange should be specified.
The Carrick Exchange is being developed for those who teach, manage and lead learning and teaching in Australian higher education. This criterion for members needs to be clearly communicated to the sector so that those who qualify for membership are made aware of their entitlement. It is also imperative that the corresponding conditions of Carrick Exchange membership are communicated.

5.   The Carrick Exchange should meet the diversity of members' needs and contexts of use.
The shape of the Carrick Exchange and the networks and communities that develop will emerge with the diversity of users' needs. Ongoing attention needs to be given to maintaining and growing the communities that develop around

the Carrick Exchange, and supporting existing and future working relationships and cultures. To some degree communities should be able to self organise their own structures and facilities within the Carrick Exchange. The use of social networking software to facilitate communication, networking and collaboration amongst users is an important aspect of the Carrick Exchange and there is a need to promote and support the effective use of these tools.

6.   The Carrick Exchange policies and practices should be aligned strategically with institutional policies and practices.
The Carrick Exchange is being developed for the Australian higher education context. The governing policies and operational practices of this broad target group are not currently aligned. However, as a national online service the Carrick Exchange policies and practices will need to align to those of institutions thereby alleviating obstacles to engagement. Engagement with the Carrick Exchange should be recognised by Australian institutions as an important part of core teaching and learning activities.

7.   The Carrick Exchange should engage with the National Authentication Framework to ensure integration.
The Carrick Exchange, as a national initiative, should be integrated and authenticated with existing national infrastructure and technical systems, for example:
*   The Australian National Data Service (ANDS), part of National Collaborative Research Infrastructure Strategy (NCRIS) project,
*   the Australian Access Federation Project, and
*   the Australian Research Repositories Online to the World (ARROW) project.

8.   A strategy should be developed to support, encourage and manage champions to promote the Carrick Exchange.
Promoting a "human face" to the Carrick Exchange will be a key success factor. Developing networks and communities will require people as well as technology. Advocates and champions from within the Carrick Institute and the higher education community should be identified. These champions are critical as leaders, driving and promoting the Carrick Exchange and enlisting help from others within institutions and the sector to encourage and facilitate engagement.

9.   Partnerships with Australian universities should be established to ensure longevity and sustainability of the Carrick Exchange.
Managing the issues of sustainability and ongoing support for the Carrick Exchange is critical. Carrick Exchange resources and functions that support communication and collaboration across the higher education sector must be well maintained into the future. The investment of financial and human resources to establish and operate the Carrick Exchange must not be lost as a consequence of limited long-term planning.

10.   Collaboration should be encouraged and supported as a means of fostering engagement and contribution to the Carrick Exchange
Use of the Carrick Exchange for collaboration and communication in Carrick projects should be promoted and recognised.

11.   The Carrick Exchange should support the needs of networks and communities of practice.
The target audience for the Carrick Exchange will comprise existing networks and communities of practice within the higher education sector. These networks and communities have communication and collaboration needs that the Carrick Exchange may be able to support.

12.   An evaluation plan should be developed to measure levels of engagement including participation, collaboration and contribution.
The Carrick Exchange must demonstrate its value if it is to be regarded as a success. The value of the Carrick Exchange must be seen in relation to the needs of the primary target audience – university staff. Therefore it is important that the evaluation plan gather information specifically detailing the uptake and engagement of these users.

13.   The Carrick Exchange should devise strategies of engagement for the varying levels of technical capability of users.

There will be varying levels of technological skill, ability and experience across the target audience. Therefore, the experience and expertise of all users should be addressed in the functionality of the system and the additional support provided not only through documentation but through personal assistance.

14.   The Carrick Exchange should be easily accessible and intuitive to use.
People use what is easy. Many of the target audience may be those who do not use technology often, consequently the mechanism for conducting a search and using the functions of the Carrick Exchange must be intuitive.

15.   There should be a strategic plan and adequate support for the promotion and publicity of the Carrick Exchange to ensure successful engagement by the sector.
The Carrick Exchange needs to be proactively promoted and publicised within universities to ensure members of the sector engage with it, know where it is and how to use it. Effective engagement strategies and adequate resourcing are required in support of this.

16.   There should be regular opportunities to disseminate and encourage engagement of the higher education sector with the Carrick Exchange.
The *ascilite* research findings identified "push" technology (e.g. alerts to notify when new items have been submitted in a particular area of interest or by a particular person and regular updates, such as electronic newsletters which inform members of recent developments and contributions) as an important design feature for the Carrick Exchange. As a strategy for promoting engagement "push" technology can facilitate and sustain discussions or remind and inform members and potential users about the Carrick Exchange, its resources and functions. Members should be able to adjust the level of engagement and amount of publicity they receive.

17.   Web 2.0 technologies should be promoted and supported as a mechanism for enhancing engagement with the Carrick Exchange.
The Carrick Exchange should provide access to communication technology (e.g. web conferencing for virtual meetings, technological support tools with automated feedback on learning), and Web 2.0 tools for collaboration and social networking. The successful use of social software should be addressed in the overall Carrick Exchange strategic plan for promoting and enhancing engagement.

Conclusion

This paper has provided an overview of *ascilite*'s research project to investigate the prospective user needs, contexts of use and policies necessary to facilitate engagement of the higher education sector with the Carrick Exchange. The focus of the paper was on the issues of engagement raised by the literature, and reinforced by the data collected throughout four cycles of data collection across both the Australian higher education sector and from international repository projects of similar scope. The options for establishing and maintaining engagement with the Carrick Exchange remain critical to the successful uptake of the initiative across the sector. The Carrick Institute is currently seeding the content of the Carrick Exchange with existing resources from higher education institutions and more significantly from the reports, working documents and templates from Carrick funded projects. If they are to remain alive and not stand as the 'tombstones' of completed projects, then a plan for actively engaging the people who may benefit from referring to such reports and building upon them needs to be developed. With an eye on the importance of keeping the user community engaged, will the Carrick Exchange be able to take on board the lessons learned from other repository projects? In addition to collecting and analysing all the data so far obtained through this project, we do know that future research on engaging and sustaining current and potential users of the system, and the necessary rewards and recognition processes to support this, could further benefit from the inclusion of the views of educators with a diversity of skills from low skill levels in the use of technology, and little awareness of the value of sharing resources to high level of awareness and engagement.

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