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ascilite Report on Key Practitioner Interviews for the Carrick Exchange Project

R. Philip

Dominique R. Parrish
University of Wollongong, dparrish@uow.edu.au

Geraldine E. Lefoe
University of Wollongong, glefoe@uow.edu.au

Meg O'Reilly
Southern Cross University

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Abstract

This report is one of several data gathering processes implemented as part of Stage 2 of the ascilite research (January to September 2007). Full details of the ascilite project are provided in the ascilite/Carrick Exchange Proposal and Project Plan 2007. (See also reports by Phillips, Orrell and Millea (2007), and Lefoe, O'Reilly, Parrish, Bennett, Keppell and Gunn (2007)). For this segment of the research, ascilite conducted twenty-nine phone interviews with key practitioners drawn from Australian higher education, the Vocational Education and Training (VET) sector and a number of international projects. The data was analysed within a design-based research methodology. The findings will be validated by three ascilite reference groups and will form the basis for further research and data gathering from the sector.

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August 2007

Robyn Philip, Dominique Parrish, Geraldine Lefoe and Meg O'Reilly

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ascilite Report on Key Practitioner Interviews for the Carrick Exchange Project

Executive Summary

As part of the development of the Carrick Exchange *ascilite* was engaged to conduct research into:

- users' needs within the higher education sector for collaborative and communication spaces for learning and teaching;
- the conditions and contexts of use of resources available for sharing and reuse within the higher education sector; and
- the policies necessary to facilitate engagement of the higher education sector with the Carrick Exchange.

This report is one of several data gathering processes implemented as part of Stage 2 of the *ascilite* research (January to September 2007). Full details of the *ascilite* project are provided in the *ascilite*/Carrick Exchange Proposal and Project Plan 2007. (See also reports by Phillips, Orrell and Millea (2007), and Lefoe, O'Reilly, Parrish, Bennett, Keppell and Gunn (2007)). For this segment of the research, *ascilite* conducted twenty-nine phone interviews with key practitioners drawn from Australian higher education, the Vocational Education and Training (VET) sector and a number of international projects. The data was analysed within a design-based research methodology. The findings will be validated by three *ascilite* reference groups and will form the basis for further research and data gathering from the sector.

The three main areas to which interviewees responded were:

- Engagement: What can be learnt from how individuals and groups engage with their institutions, associations, repositories and projects that will inform the development of the Carrick Exchange?

- Resource contribution and sharing: The Carrick Exchange wants to support sharing and reuse of resources across all disciplines in higher education. What are the barriers and incentives that will encourage greater sharing of resources and contribution to a system like the Carrick Exchange?

- Peer review and commentary: What are the issues around peer review and informal commentary about resources? What can we learn from current practice and what would key practitioners like to see implemented in the Carrick Exchange?

Key Findings

1.1. Engagement

1. The purpose of the Carrick Exchange must be well articulated so that the Carrick Exchange evolves in accordance with the needs of the target user group and provides the services required by the sector. It is important that the Carrick Exchange does not duplicate what is already available in the sector.

2. Individual universities and their senior staff have an important role in promoting and supporting the Carrick Exchange at the highest level, encouraging 'buy in' by individuals within the higher education sector, and establishing consistent policies across institutions which support equitable contribution and sharing of resources.

3. To promote use and establish credibility, the Carrick Exchange must be easy to use, integrated with other university systems, and well maintained into the future.

4. The Carrick Exchange should target special groups or individuals (for example librarians, staff and educational developers, and staff within research offices) particularly in the early phases of the project to promote effective use of the system and provide models of usage and community building.

5. The Carrick Exchange will need to devise strategies of engagement relevant to different stakeholders, e.g. senior managers, lecturers, support and technical staff.

6. The Carrick Exchange must be proactive in promoting and supporting contribution to the system and its communities. Carrick Champions should be identified and supported to promote and foster the Carrick Exchange.

7. There should be alignment with other national, higher education and institutional initiatives.

8. Perceived or actual disincentives or barriers to use must be addressed, for example: lack of ease of use of the system, including authentication and metadata procedures; currency and quality of the resources in the repository; maintenance issues of the resource for the originating author; perceptions about increased workloads as a result of contribution to the Carrick Exchange; the cost of contribution or membership; voluntary versus compulsory contribution procedures; fears of losing ownership of resources, intellectual and/or moral rights; lack of alignment between institutional policies on ownership of resources, intellectual property rights and copyright, and individuals' understanding of the policies; cross-institutional rivalry and competition; procedures and perceptions about the impact of formal and informal peer review and commentary processes; lack of benefits and rewards for contributing to the Carrick Exchange.

1.2. Resource contribution and sharing

9. The Carrick Exchange could have an important role in providing shared workspaces for collaborative and cross-institutional groups.

10. There is a perception that the Carrick Exchange could foster opportunities for cross-discipline and cross-institutional initiatives which would meet a need within the higher education sector. Activities in this area do not need to be conducted only online, but may include a combination of face-to-face and online activities.

11. To engage the sector, effort and resources must be put towards managing cultural and pedagogical change around the issues of sharing.

12. The Carrick Institute should make it conditional that Carrick Institute grant holders contribute to the Carrick Exchange as part of their obligations in return for financial support. As a consequence there would be an expectation of high quality resources being placed in the Carrick Exchange.

13. A national repository which contains, or provides links to, an extensive range of materials on learning and teaching and professional development is likely to be well received by the sector.

14. The Carrick Exchange could provide useful resources for academics new to higher education.

15. There are issues of trust that must be addressed: trust in the system (ease of use and methods of access from individual institutions); credibility of informal peer review processes (e.g. the validity of a ratings system); trust in the management of intellectual property rights by individuals and their institutions that will affect the practice of sharing; and trust that there will be adequate rewards and incentives to support contribution to the system.

16. To ensure the benefits of sharing and reuse are realised amongst individuals and institutions within the higher education sector, mechanisms and strategies for reward and recognition for contribution to the Carrick Exchange should be established. Awards from the Carrick Institute for excellence in resource development, contribution and sharing would be well regarded. Certificates noting contribution to the Carrick Exchange and the extent of re-use of resources could contribute towards teaching portfolios for promotion and tenure. Rewards and recognition from the Carrick Institute should be linked to institutional promotional systems and acknowledged.

1.3. Peer review and commentary

17. The Carrick Institute is well placed to provide rewards and incentives for contribution and sharing that carry prestige and can be used by teaching and support staff towards promotion and tenure.

18. Formal peer review based on the system used for scholarly peer review of journal articles is considered to be a good model for peer review of educational resources. However, the Carrick Exchange must develop processes and criteria that enable reviewers to adequately assess problematic areas such as ‘educational effectiveness’. Review teams should include a mix of experts, e.g. discipline, educational and technical specialists.

19. The benefits of formal peer review must be weighed against the need to make resources readily accessible within short time frames, so as to maintain currency and value of the resources.

20. Formal peer review of resources is recognised as a resource intensive procedure and more in the domain of a national repository such as the Carrick Exchange compared to institutional repositories which may operate on less formal practices.

21. Informal peer review or commentary on content contributed to the Carrick Exchange is generally perceived as a valuable form of feedback, especially for resources under development.

22. Resources contributed to the Carrick Exchange should be identified by the level of review they receive, for example, formal peer review, limited review (quality assured), expert review, user reviewed, not for review.

Introduction

2. Background and context

This report of interviews conducted by *ascilite* with key practitioners drawn from Australian higher education, the VET sector and some international projects, is a component of the *ascilite* Stage 2 sub-project of the Carrick Exchange Project (January to September 2007), sponsored by the Carrick Institute. This research activity will inform policy development for the Carrick Exchange, user needs for collaborative and communication spaces for learning and teaching, and the conditions and contexts of use of resources available for sharing and reuse within the higher education sector. Further details about the Carrick Exchange project can be found in the *ascilite*/Carrick Exchange Proposal and Project Plan 2007, Phillips, Orrell and Millea (2007), and Lefoe, O'Reilly, Parrish, Bennett, Keppell and Gunn (2007).

There are three key drivers for the *ascilite* Stage 2 project: consolidation of knowledge and current practice, engagement of the higher education sector and the development of communities of practice. The aim is to channel information into the development of a functional, searchable, engaging, useful and respected resource to be known as the Carrick Exchange. The Carrick Exchange is:

> *a new online service that will provide learning and teaching resources, and functions to support communication and collaboration across the national and international higher education sector.*[1]

Consolidation: Stage 2 of the *ascilite*/Carrick Institute project builds on the research undertaken in Stage 1 informing the technical development of the Carrick Exchange by reporting on a broad range of user needs and contexts of use of resources and communication environments.

Engagement: Repositories and online services emerging in education world-wide report a general lack of user engagement. There is a need for ongoing investigation into the contributing reasons for this. Through an examination of professional groups that have knowledge and expertise in developing and adopting learning and teaching resources, the *ascilite* investigation will support the development of, and engagement with, online services and digital repositories. The project will also consider engagement with informal repositories of knowledge via Web 2.0 technologies and explore the issues of capturing information and networks of users in this context.

Developing communities of practice: Consideration of how communities of practice are built and sustained is key to the on-going success of the Carrick Exchange. Communities of practice are not formal arrangements or bodies but are informal entities that exist due to the members' shared problems and areas of interest. Communities such as those around existing online services will be investigated: e.g. MERLOT (North America), CD-LOR (UK), the Minister of Communications Digital Strategy Advisory Group (NZ), the Australian Partnership for Sustainable Repositories (APSR), and Australian Research Repositories Online to the World (ARROW). Factors considered in this research include organisational, social and technological aspects, and individual factors - including those that depend on organisational support such as peer review.

[1] http://www.carrickinstitute.edu.au/carrick/go/home/rin/pid/381

3. Aims and outcomes

3.1. Aims

The aims of the interviews, as one of a number of research activities within the *ascilite*/Carrick Exchange project, were to:

- inform the development of the Carrick Exchange, and generate a set of recommendations for further development;
- consult with key practitioners and networks in both national and international settings; and
- distil the available knowledge and expertise from the literature, current practice and exemplary community developments which foster engagement with online services.

Key practitioners interviewed were those identified as requiring, or with a knowledge of, online communities, services, collaboration and resource sharing.

3.2. Outcomes

This report of interviews reflects the outcome for this stage of the research process. It will inform the development of the Carrick Exchange project and will be complemented by a comprehensive literature review. This will in turn inform further development of the Carrick Exchange and be subject to a validation process undertaken by reference, focus and pilot groups.

4. Methodology

The interviews analysed in this report form the first stage within a design-based research methodology ('Analysis of the Problem', see Figure 1). This phase begins a cycle of data collection, analysis and reporting. Design-based research is also known as development research. It is an iterative and collaborative process linking researchers and practitioners in the discovery of new knowledge, identifying possible solutions to design issues and testing those solutions in real world contexts, using evaluation to inform the design process. The final outcome is a set of design principles linked to the theory (Design-Based Research Collective, 2003; van den Akker, 1999).

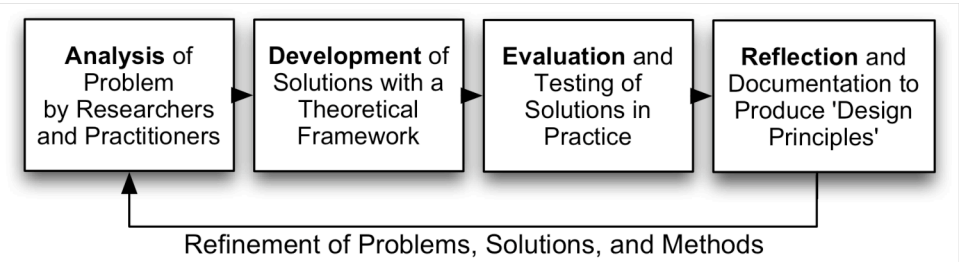

Figure 1: The design research cycle. Adapted from Reeves (2000)
Source: Lefoe et al. (2007)

The project team approached thirty-five key members of the higher education community, liaising with organisations within Australia and overseas as part of the process of developing a well grounded understanding of the needs of potential users and of current repositories and their communities, based on evidence and experience.

Twenty-nine participants agreed to interviews (see Appendix A). National and international interviewees were chosen from across disciplines, institutions and fields of interest and identified as those with:

(a) a need for online collaboration and communication services for learning and teaching; and/or
(b) significant experience in the field.

Representation included:

- 6 international projects
- 3 national initiatives
- 4 Technical and Further Education/Vocational Education and Training initiatives
- 3 institutional repositories, including one from the UK
- 9 associations (discipline and professionally based)
- 2 Australian tertiary institutional users (educational developers)
- 1 Deputy or Pro Vice-Chancellor
- 1 Carrick Grant holder or Carrick Fellow

Each interview was conducted by a single interviewer (one of the five *ascilite* project team members) either face-to-face or by phone, and recorded with the participant's consent. Interviewers took notes during the session and a summary of the interview was made. In five cases records were created from notes only, due to failure of the technology. Transcripts were returned to interviewees for validation and then entered in an NVivo database for identification of emerging themes and analysis. Cross-checking of themes by two *ascilite* project team members was undertaken to increase reliability. This assisted in the validation and preliminary interpretation of findings reported in the next section.

Focus groups in three Australian capital cities responded to the key findings in this report and provided a further level of analysis (to be reported separately as the focus group findings of the project). Expert reference groups of *ascilite* members have been formed to review and comment on the data collected and the theoretical findings to ensure accurate representation of the results. This will assist in the validation and preliminary interpretation of findings. Feedback will also be sought from four pilot groups that will engage with the Carrick Exchange.

The central themes explored in the interviews were:

(1) user engagement;

(2) resource identification and contribution; and

(3) peer review and commentary.

The interview questions are attached as Appendix B. Initial findings from the interviews, focus groups and pilot groups will be validated with findings from a review of the literature.

4.1. Research questions for Stage 2 of the *ascilite* project

Research questions	Sub-questions
1. What Peer Review and commentary protocols and mechanisms can be derived from the higher education community?	• What new and current methods exist for peer review and commentary of resources that can be adapted for use for the reviewing of teaching and learning resources? o What gets peer reviewed? o What methodologies apply to different types of resources? o What process for peer review is used? o Who are the reviewers? • What recommended policies and procedures are currently in use? • What are the policy implications for the Carrick Exchange?
2. What resource[2] contribution and identification methods will engage and encourage users to contribute and collaborate within the Carrick Exchange?	• What are the key factors to support resource contribution, identification and reuse? • What types of resources will be contributed? • What recommended policies and procedures are currently in use? • What are the policy implications for the Carrick Exchange?
3. What are the successful methods for establishing and maintaining engagement (i.e. use, reuse and recognition) by the higher education community with the Carrick Exchange?	• What are the key factors for establishing and maintaining engagement in academic and non-academic online communities e.g. online support groups, interest and resource sharing groups etc? • What recommended policies and procedures are currently in use? • What are the policy implications for the Carrick Exchange?

4.2. Project Team

Project Leaders	Dr Geraldine Lefoe, University of Wollongong Meg O'Reilly, Southern Cross University
Project Manager	Dominique Parrish, Learning Achievements & Solutions
Research Manager	Robyn Philip, Consultant
Project Team	Dr Cathy Gunn, University of Auckland Dr Mike Keppell, Hong Kong Institute of Education
Project Steering Group (ascilite Executive)	Dr Joe Luca, Edith Cowan University, Kar-Tin Lee, Queensland University of Technology, Dr Barney Dalgarno, Charles Sturt University, Dr Bob Corderoy, University of NSW, Caroline Steel, University of Queensland Allan Christie, Netspot Pty Ltd
International Adviser	Dr Allison Littlejohn, Glasgow-Caledonian University
Data collection (interviews)	Dominique Parrish, Dr Geraldine Lefoe, Robyn Philip, Dr Cathy Gunn, Professor Mike Keppell,
Transcription, data entry and identification of preliminary themes	Dominique Parrish
Analysis of interview data and report writing	Robyn Philip

[2] Resources may include formal and informal items, sequences, products, processes, reviews, criteria, learning objects

4.3. Acknowledgements

The research team would like to thank all the interviewees who took part in the research and willingly shared their experience, ideas and time.

5. Summary literature review

A full literature review will be completed as part of the *ascilite* research project report for Stage 2; however some background is provided here to contextualise the data analysis.

5.1. Engagement of the sector and communities of practice

To promote knowledge sharing in the domain of learning and teaching, and engage the Australian higher education community within the Carrick Exchange, it is not sufficient to build a repository of resources, nor merely to provide social networking software and spaces for collaboration and community building. The literature increasingly documents a general lack of user engagement with repositories and online services (e.g. Gunn, Woodgate & O'Grady, 2005; Hummel, Tattersall, Brugos, Brouns, Kurvers and Koper 2005; Littlejohn, 2003). It is acknowledged that effort should be directed towards the process of engaging the target audience, familiarising groups with the affordances of the Carrick Exchange 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. Ignoring the sociocultural issues relating to learning object repositories is to run the risk of creating an under utilised service. It cannot be assumed that reuse will follow existence of the repository (Margaryan & Littlejohn, 2007; Philip, 2007). 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.

The use of social networking software to facilitate communication, networking and collaboration amongst users is an important aspect of the Carrick Exchange. In general, social software supports collaborative online spaces such as blogs and wikis; sharing of and commentary on photo, audio and video files; digital storytelling; 3D virtual worlds; and social spaces such as Facebook (http://www.facebook.com/). Technology usage by individuals is undergoing a change from consumption of content to user-centric creation of content and collaboration via networks. However, there is often an unchallenged assumption that the software on its own promotes communities. The critical elements for successful use of social software are identified in the Australian Flexible Learning Framework report for the VET sector (Evans 2007, p.13) as,

- 'Authenticity' – there is a real and established need to use the software;
- Relevancy - its use is 'relevant to the need, and appropriate for the client'; and
- Support - there is support for the software within an 'enabling culture'.

Furthermore, Evans (2007) indicates that the best strategies to help staff learn how to use social software tools are action learning, just-in-time mentoring, coaching and work-based learning. The tools considered to be most useful in assisting staff to learn how to use social software are virtual conferencing and online forums. The best professional development strategies were reportedly blended ones using a variety of opportunities and strategies. The importance of modelling as an enabler as well as a professional development strategy was emphasised. Digital storytelling through the use of multimedia case studies was considered very effective, along with 'learning by stealth', i.e. blending usage into everyday practices and inviting managers to 'see, hear and feel what happens' (p.22).

The Carrick Exchange may well support fully formed communities of practice plus other looser and more brittle networks. 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. Further, development of the necessary domain of knowledge, the community and shared practice over time (through sharing of stories, experiences and methodologies) will present ongoing challenges. McDonald and Star (2006) point to five key challenges in the formation of a community of practice: the need for financial support; issues of academic time poverty; the need for well-placed institutional champions; the difficulty of identifying and quantifying outcomes from communities of practice; and the question of sustainability and ongoing support.

In addition, policies should be stated clearly 'and not form unwanted obstacles' for communities to develop and the threshold for entry into the system should not be unnecessarily complicated or high (Hummel et al., 2005, p.66). There must be sufficient room for the community to self organise its own structure and facilities. Hummel et al. also suggest that the system should begin with a minimal set of activities and forums and, when more participation is required, this might be better promoted through synchronous collaboration rather than through asynchronous means.

5.2. Resource contribution, identification and models of use

As well as the communities, networks and workspaces expected to establish around the Carrick Exchange, there will be a repository of quality learning and teaching materials either deposited on the site or linked from websites and databases elsewhere. In a review of repository development in the UK (the CD-LOR Report), the authors warn all repository managers to clearly establish the *need* for any collection (Margaryan, Milligan & Douglas, 2007; Margaryan & Littlejohn, 2007). This view is shared by findings from the research of Gosper, Woo, Gibbs, Hand, Kerr and Rich (2005), and Ringan, Corley and Campbell (2005). Communicating the purpose of the repository and its community will be important to the success of the Carrick Exchange. The Australian Partnership for Sustainable Repositories (APSR) investigation into the ten major issues facing repository service providers, relating to research output in Australia (Henty, 2007), noted that *defining the collection* was essential communication task in the process of repository development and user engagement. In addition, the APSR research uncovered similar issues of lack of engagement to those noted in the CD-LOR report. Senior academics responsible for repository services and data management were interviewed for the APSR research. It was noted that open access repositories have not been taken up with great enthusiasm: an exception was the Cornell University Physics eprint archive (http://www.arxiv.org). An interesting finding was that in the research context, mandating article deposit resulted in high levels of contribution, as illustrated by the Queensland University of Technology experience. However the high cost and effort required to deposit articles in the system was seen as a barrier by some senior managers.

This lack of engagement with repositories has been reported elsewhere (Margaryan et al., 2007; Wenger et al., 2002). While studies such as Najjar, Ternier and Duval (2004) may document usage patterns from the logs of repositories, they do not reveal the broader picture of engagement. Some studies of digital repositories and engagement (Bradley & Boyle, 2004; Littlejohn, 2003; Hand, Gosper, Woo, Gibbs, Kerr & Rich, 2004) list incentives for use put forward by target users, but engagement still remains relatively low. Repository managers catering to more diverse users, e.g. around national rather than discipline-based repositories, are likely to face greater problems in this area (Margaryan & Littlejohn, 2007). Furthermore, the way repositories are used depends not only on the 'dimensions of repositories' (purpose, scope, target audience etc), but also on 'key characteristics' of communities (p.4336).

One of the design aims of the Carrick Exchange is to promote processes characterised by Stuckey and Arkell (2006, p.7) as 'connection' not just 'collection'. Therefore, diverse communities and database or repository models are being explored to determine the elements that contribute to success. Examples as varied as amazon.com (which markets books, DVDs etc.), domain.com.au (real estate), Wikipedia.org (a collaborative encyclopaedia), Youtube.com (video sharing), Edna (edna.edu.au) and MERLOT (merlot.org) (educational exchange) are being reviewed. Their strategies

for engagement and networking, using Web 2.0 technologies, may inform the development of personal and group workspaces on the Carrick Exchange. On amazon.com, for example, registered users are greeted by name and have delivered to them recommendations and updates about available products. The user can collate chosen resources from the site, and develop their own profile of recommendations, ratings and preferences. The system monitors users' preferences, locates resources based on previous searches and feeds back information that connects users with other like-minded members. A mix of these features may be of value to the Carrick Exchange. MERLOT (http://www.merlot.org) uses similar techniques to support its educational community.

5.3. Peer review and commentary

The quality and currency of resources added to a repository is critical to ensure user needs are met. A national repository is well-placed to implement a formal peer review system. Peer review as quality assurance could include an assessment of the currency, educational design and construction of resources; compliance with copyright, intellectual property and digital rights management policies; and technical accuracy and reliability. Formal peer review, a lengthier and more demanding review process, might replicate the scholarly peer review process which leads to publication in the higher education sector. Peer review may also be an informal process whereby members of the community voluntarily respond to others' contributed resources, or resources stored elsewhere but linked to via the Carrick Exchange. These resources might be finalised products which the authors are happy to publish and share, or resources under development. This informal sharing of ideas could be an important element of the Carrick Exchange and the basis for various communities of practice.

One of the best models of formal peer review for educational resources is that of the MERLOT system in the USA (McMartin, 2004; Nesbit, Belfer & Vargo, 2002). This system is based on the academic peer review practices for scholarship and publication in higher education, an 'expertise-orientated' approach (Worthen, Sanders & Fitzpatrick, 1997). Peer review is recorded for formal recognition of contributors, and usage pattern updates are sent to contributors each year. Building on the MERLOT model, Nesbit et al. (2002) have created a convergent participation model for evaluation of learning objects where resources undergo a two cycle process: two individual experts assess the resource, then a combined group assessment is made, amalgamating the feedback from both assessments. Students are included on the panel of reviewers. The Australian ACELL project, Advancing Chemistry by Enhancing Learning in the Laboratory (http://acell.chem.usyd.edu.au/),is an example of a discipline-based repository which also makes use of learner feedback in the evaluation process. Other repositories which implement peer review are Intute in the United Kingdom (http://www.intute.ac.uk/policy.html), and Educause in the USA (http://www.educause.edu). The Jorum national repository in the UK (http://www.jorum.ac.uk/) is currently investigating peer review processes.

Though peer review is seen as a value adding process, realisation of peer review processes is problematic. The Taylor and Richardson report on *Validating Scholarship in University Teaching* (2001) concluded that at the time of publication, there was a 'window of opportunity' to establish a peer review scheme to assess information and communication technologies in Australian universities (p.87). The project set out to develop conceptual and procedural bases for a national scheme. Reviewers would be editors of journal and conference proceedings and it would be the responsibility of these editors to advertise the scheme. A supporting professional development strategy was to be developed and resourced. The project generated a number of options for the peer review process. Despite the positive outcomes of the project, the scheme has not been adopted nationally.

Findings

Each interview covered a number of areas of interest, including the design, management, utilisation and associated processes of repositories. Depending on background and experience, interviewees were able to add more depth to some questions than others.

Table 1 provides an overview of the areas discussed.

- *Utilisation* of repositories, covering issues such as engagement, communities of practice, collaboration and communication was discussed in all 29 interviews (100%).
- *Management* generally, including content, data and rights management was covered in 25 (86%) of the interviews.
- *Repository processes and systems*, including peer review, data collection and contribution processes was covered in 25 (86%) of the interviews.
- *Repository design,* including provision of services and emerging technologies, was covered in 23 (79%) of the interviews.
- *Repository engagement* was the most common single issue explored, i.e. how should the sector become engaged and involved with the project. 23 (79%) of the interviews covered this issue.
- *Peer review* was covered in 22 (76%) of the interviews.
- *Systems for recognising contribution and engagement* was covered in 21 (72%) of the interviews.
- *Repository Management* was covered in 19 (66%) of the interviews.
- *Provision of Services* was covered in 18 (62%) of the interviews.
- *Discussion Tools,* i.e. communication tools that might be used within the Carrick Exchange, was the only identified focus area not addressed in any of the interviews.

The main findings and implications drawn from the interview analysis and literature review are discussed and synthesised below in three areas: engagement, resource contribution and identification, and peer review and commentary. It is acknowledged that there is some necessary overlap in the discussion of these claims, issues and concerns.

Table 1: General issues covered in the interviews and the focus taken by the interviewees. (n=29)

Issue	*Special focus (design, management, utilisation or processes of repositories)*	*Number of interviews which discussed the issue*	*Percentage of interviews which discussed the issue*
Repository Engagement	*Utilisation*	*23*	*79%*
Repository Content	*Management*	*16*	*55%*
Repository Management	*Management*	*19*	*66%*
Community and Collaboration Spaces	*Utilisation*	*10*	*35%*
Collaboration	*Utilisation*	*9*	*31%*
Rights Management	*Management*	*5*	*17%*
Peer Review	*Processes*	*22*	*76%*
Provision of Services	*Design*	*18*	*62%*
Distributed Information Networks	*Utilisation*	*5*	*17%*
Data Management	*Management*	*7*	*24%*
E-Learning	*Utilisation*	*2*	*7%*
Online Technologies	*Design*	*6*	*21%*
Social Interaction	*Utilisation*	*3*	*10%*
Social Networking	*Utilisation*	*7*	*24%*
Data Collection	*Processes*	*4*	*14%*
Learning Content	*Design/Utilisation*	*4*	*14%*
Emerging Learning Technologies	*Design*	*5*	*17%*
Discussion Tools	*Utilisation*	*0*	*0%*
Digital Rights Management	*Management*	*5*	*17%*
International Collaboration	*Utilisation*	*3*	*10%*
Organising Resources for Academics	*Management*	*4*	*14%*
Contribution Process	*Processes*	*16*	*55%*
Recognition System	*Management*	*21*	*72%*
Other: Models of Use	*Design*	*1*	*4%*
Other: Guidelines for Repository Development	*Design*	*1*	*4%*

6. Engagement

6.1. Use of collaborative spaces

The availability within the Carrick Exchange for cross-institutional and professional association collaborative spaces was seen as a positive new initiative. In particular, cross-institutional consortiums were seen to have special needs. As one interviewee said:

> *[There is a need for] spaces outside their own institutions that are easily accessible and not restricted by institutional firewalls, administrative practices and other technical constraints. People use what is easy, especially as there are so many people out there who do not use technology to a great degree. (Interview)*

However, it was noted that there are 'plenty of spaces out there and ways to share on the net – so why use the Carrick Exchange?'. There has to be a common interest and compelling reason for people to engage in online spaces of the nature of the Carrick Exchange. The Carrick Exchange must support existing working relationships and cultures, so the needs of the group will determine what is appropriate. Again this reiterates the warnings of the RMIT University repository project representative, the CD-LOR repository report from the United Kingdom (Margaryan et al., 2007) and the earlier findings of the COLIS project (Gosper et al., 2005; Ringan et al., 2005). The Carrick Exchange needs to make clear its purpose to potential users and the advantages of the system.

On a more technical level, the Carrick Exchange was also encouraged to develop collaborative spaces by taking the best of what is available in open source applications and integrating or enhancing the relevant applications.

6.2. Advocacy, leadership and engagement

Participants expressed the view that there was undoubtedly a need for leadership to achieve 'buy in' from the sector and effective uptake of the services to be provided by the Carrick Exchange. Leadership should be more than average, 'visionary' according to one international participant. 'Investment now will have a profound impact in the future.' Some key practitioners thought that advocates and champions should be found from within the Carrick Institute and the academic community to promote the Carrick Exchange. This view echoes that of McDonald and Star (2006), who note the need for both sponsorship and champions in order to create successful communities of practice. According to many of the interviewees, Carrick Fellows should be involved with the Carrick Exchange and engagement should be sought from grant holders, probably as a condition of grants. A Carrick Institute grant for resource development should carry the presumption that the recipient produce something of 'high quality' for the Carrick Exchange in return for the grant.

Champions should also be found with the academic community. The idea that champions might 'travel around' or go to academics and support staff within institutions and initiate contribution to the Carrick Exchange was seen as a viable strategy. In the Learning Object Repository Network (LORN) project, Flexible Learning Coordinators within the VET sector act as champions for their state jurisdiction encouraging and supporting use of the repositories. Project representatives work actively to integrate and network the repositories across four states of Australia: DET NSW, the NSW Centre for Learning Innovation (CLI), TAFE NSW, TAFE South Australia, TAFE Victoria, TAFE Tasmania and the Flexible Learning Toolboxes Project. LORN's mission is to link repositories with teachers. There is also a technical link across the repositories via the LORN search facility.

Securing 'buy in' from individuals and institutions was agreed to be one of the major challenges facing the Carrick Exchange. Senior staff will be particularly important for this to be achieved. As a direct result of the interview process for this research some Australian institutional representatives had already begun discussions regarding the implications of the Carrick Exchange project with their senior colleagues. It was noticeable that the key practitioner interviews began the Carrick Exchange dissemination process within the sector.

Consistency and alignment in the way all universities engage with the Carrick Exchange was considered necessary to avoid management issues. One interviewee observed that 'there has been a higher uptake of e-learning approaches from medium sized institutions; this may be because of [issues of] scale'. There seemed to be a perception that it was more difficult to implement change across large organisations.

The representative from the RMIT University repository warned that there must be a clear demand or need for the repository, and that the repository must meet those demands or needs. This echoes the findings from the literature (Margaryan et al., 2007; Margaryan & Littlejohn, 2007; Gosper et al. (2005); & Ringan et al., 2005). If there is a perception in the sector that the Carrick Exchange offers little added value, then academics will not use the tools, share resources or commit time to sharing ideas. Nonetheless, while overall there was a healthy skepticism about the Carrick Exchange there was a willingness to engage and promote it.

Strategies to consider:

- *Champions:* It is recommended that Carrick develop a strategy to support, encourage and manage champions from within the Carrick Institute and the academic community to promote the Carrick Exchange.

- *Collaboration:* Collaboration should be encouraged amongst institutions as a means of fostering contribution to the Carrick Exchange.

6.3. Targetting special contributors

To engage the higher education sector, there is a need to win over key stakeholders. Some interviewees suggested that to improve engagement and contribution specific groups or individuals should be targeted who could make 'worthwhile contributions'. Two repository representatives commented that engaging managers requires different strategies to those necessary to engage teaching and support staff or other individuals. In one case, it was noted that some managers tended to think that a repository would be of limited use because the institution already had a learning management system. Some practitioners believe that educational support and development staff are the key to engaging the sector .

Research Office staff may be another target group to approach because of their growing interest and experience in research repositories. Collaboration amongst institutions was cited as another means of promoting the Carrick Exchange. One interviewee observed that 'It would be really useful to have a number of universities put up a nominee or someone to be part of a reference group or expert group or user group'. This might encourage institutional representation and collaboration.

There appears to be an emerging and important role for librarians in promoting and supporting the process of contribution to the Carrick Exchange. Librarians are well placed to target special contributors and disseminate knowledge about the system. Two interviewees observed: 'Librarians have a role to play in the engagement of teachers in this area, by showcasing the types of resources that are available and can be accessed' and 'enticing teachers to explore the Exchange for what might be available for their purposes and to meet their needs'.

The new role for librarians in the support of repository use and engagement was flagged within the findings of the Murdoch University research on the use and usability of learning objects (Phillips, Rai,

Sudweeks, Gururajan, Jones, Shiers & O'Neil, 2005). It should be noted that librarians are now involved in the implementation of the Regional Universities Building Research Infrastructure Collaboratively (RUBRIC) project. Further, the Meta Access Management Project (MAMS), a national infrastructure project concerned with managing multiple solutions to authentication, authorisation and identities across systems, has had discussions around the future role of librarians in providing help with metadata and resource contribution associated with research teams.

Some disciplines already contributing to and sharing within repositories could be targeted for the Carrick Exchange project. This might include disciplines such as the sciences (e.g. mathematics, statistics, engineering). Business and science faculties are already sharing in the smaller regional universities research infrastructure project, the Rubric Project (http://www.rubric.edu.au/).

By supporting collaboration around special events and targeted groups of users, it was suggested that engagement could be promoted. An 'event', for example, could begin as a face-to-face session and be followed by subsequent activities facilitated via the Carrick Exchange. The VET sector adopts this proactive strategy within the LORN project. Nonetheless, there are still many teachers in the higher education sector who use technology in a very limited way. However, some younger or beginning higher education teachers may find the resources at the Carrick Exchange very useful, particularly resources on teaching methods and strategies and professional development.

Strategies to consider:

- *Invite engagement:* Send personal invitations to target personnel and their managers.
- *Address diversity within the higher education sector:* Devise strategies of engagement relevant to different stakeholders.
- *Link events with the Carrick Exchange:* Use the Carrick Exchange as a mechanism for ongoing support and collaboration following face-to-face events.
- *Target academics new to higher education* because of their specific needs.
- *Appoint coordinators:* Create a group of coordinators whose task is to encourage use of the repository and its community.

6.4. Communities

As indicated earlier, the Carrick Exchange aims to learn from communities of practice and networks that exist within and outside professional and educational settings. A representative from the MERLOT community and repository was interviewed for this research. MERLOT is a peer reviewed repository which originated at the California State University Center for Distributed Learning in the USA. MERLOT is working on the development of discipline-based communities of practice around the MERLOT resources. This could probably be a model of community development for the Carrick Exchange. In the MERLOT system, individuals from the disciplines participate as contributors, and sometimes as editors, engaging with and reporting on other people in the discipline 'who are doing exciting things in teaching and learning', and thereby generating interest in the community. A number of the interviewees advised the Carrick Exchange to learn from the MERLOT experience:

> *It's important to conceive of the Exchange as a community supported by a repository (or an exchange mechanism or transaction mechanism) as opposed to being a repository supported by a community . . . You have to see this as a case of building relationships and helping people to find others who share their interest and who can contribute value to their work, as opposed to a more traditional library of resources way of thinking. (Interview)*

Alignment with discipline communities and with other important related initiatives were considered to be two of the most important success factors for MERLOT.

SNUSE, the Sydney Basin Network of University Science Educators provided useful insights into how loosely networked groups cooperate and collaborate where the prime reason for their engagement is not technical. This group shares 'anything of interest' with group members. The representative from SNUSE consulted members before the interview with *ascilite* presenting and discussing the interview questions with the SNUSE members. It can be seen that the process of consultation with the SNUSE association began the process of dissemination about the Carrick Exchange. SNUSE suggested that there is likely to be an active core group of users within any project, while others will engage at a low level, and Carrick Exchange will need to be aware of this and cater for all users. This is consistent with the findings of Hummel et al. (2005) regarding the factors that encourage engagement of potential community members.

Ongoing attention will need to be given to maintaining and growing the communities that develop around the Carrick Exchange. One interviewee commented that interest in communities wanes over time. For example, users might for a while use Flikr (http://www.flickr.com/, for photo sharing), or Delicious (http://del.icio.us/?url, a social bookmarking manager) or Youtube (http://www.youtube.com/, a video sharing website), but few will remain consistent users. Some users may only come to the Carrick Exchange once a year, some only during the life of a collaborative project, and others will turn up every week.

The Carrick Exchange was urged to look at active communities such as Moodle (http://moodle.org/) which has over 200,000 registered users in the community and the LAMS Community (http://www.lamscommunity.org). The latter uses an informal peer review system of rating learning designs contributed to the community. Evidence from this community according to the interviewee suggests that users are more cautious about contributing resources (in this case learning designs), than they are contributing to educational forums. It has also been noted in this community and the Sakai Virtual Learning Environment community, that technical forums are far more active than the pedagogical communities (Dalziel, 2006); and that comparatively few users are inclined to rate or comment on contributed resources.

Strategies to consider:

- *Use the MERLOT model of discipline-based resource and community development* to promote the Carrick Exchange.
- *Conceive of the Carrick Exchange as a community supported by a repository* rather than vice versa.
- *Factors that contribute to strong educational communities such as Moodle.*

7. Resource contribution and identification

7.1. The resources that may be contributed and shared

The issues of competition and the culture of sharing were raised when interviewees were asked what resources are now shared, and what might be shared in the future. Some institutions may have a problem with academics sharing courseware related resources that could be reused by competitors. These same institutions may be more likely, however, to share more generic resources that do not raise the same concerns.

It was suggested that Carrick Fellowships may be one way in which particular resource development could be commissioned and promoted. This would to some extent emulate the Camp CLOE initiative (http://tlc.uwaterloo.ca/projects/cloe/CaseStory/) where teachers and designers from partner institutions meet to design learning objects during intense workshop sessions.

There was little mention of student created resources that might be included in the repository; however, the Intute representative from the UK noted that Intute works with institutions to develop and house a subset of student resources. These resources are differentiated in some way from those resources that meet the quality criteria of Intute and those that are provided to students as a service. Additionally, the Engineering Faculty at the University of Southern Queensland (USQ), (lead institution of the RUBRIC project) indicated that they have been using the repository as a teaching tool and have instigated a requirement that their fourth year Masters students upload their final year projects to the repository.

In relation to contributed and reused resources, the LORN project and the VET repositories associated with it are actively working on version control and unique identifiers to manage and promote reuse and repurposing of content. It should be noted that this policy of reuse and re-contribution of resources contrasts with the Jorum repository, a national repository in the UK, which does not allow content to be repurposed and returned to the repository.

One way that the Carrick Exchange can make an immediate impact within the sector is to create a national database of existing professional development and teaching materials.

A few interviewees commented that *contextualised* resources are important to some teaching staff, as well as resources that can be amended. Resources that are associated with commentary that includes discussion of how the resources were or could be used and whether implementation was successful would be valuable. One interviewee from the VET sector commented that some staff will present the reverse view and say that there is no time to read through additional commentary and that teachers just need to quickly locate and download resources 'put out there for sharing'. It may be that it depends on the resource in question, the expertise of the user and the context. The findings of Gosper et al. (2005) drew similar conclusions.

Strategies to consider:

- *Use the Camp CLOE model* for developing high quality resources and disseminating ideas about best practice.
- *Monitor the LORN project approach to reuse and version control.*

7.2. Issues of sharing

Generally, the concept of sharing ideas and the development of communities across disciplines was appealing to those interviewed. For some the notion of private and public universities accessing and contributing to a universal repository was not a problem. For others this was definitely an issue. For example:

> *The shared repository aspects can be problematic . . . there is a limited culture of sharing, and we do not have such a culture of sharing [amongst] institutions that are in direct competition.*

Another key practitioner took the altruistic view that 'There is a culture of sharing for the greater good that needs to be promoted to not only individuals but also institutions'. Another saw the benefits of sharing as follows:

> *If like journal articles teaching resources are developed and given away through repository sharing and [assessed via] peer review, this reflects positively on the individual for tenure and promotion, the quality of the university and the quality of teaching at that university. (Interview)*

Some indicated that there was currently a level of inter-departmental sharing happening. Others pointed out that because of healthy inter-institutional competition it may be that sharing was more acceptable with an institution on the other side of the country rather than one closer and more directly in competition.

While it appears to some in higher eduction that there is more sharing within the VET sector, representatives interviewed did not necessarily subscribe to this view. However, jurisdictions within the LORN project for example are working actively to encourage sharing within and amongst the various state repositories.

The notion of sharing should probably be introduced carefully, perhaps starting small within the faculty and then broadening out to the university.

> *People in an academic environment are so used to thinking around the idea of IP and are [so] nervous about how polished their material is and [whether] it should go out if it's not polished, so there needs to be a staged process in the movement to a sharing culture. (Interview)*

One interviewee expressed a concern that the Carrick Exchange repository should not be viewed as a replacement for textbook based resources, but as added value. The Carrick Exchange should not be seen to disenfranchise the publishing houses. However, another commented that publishing houses have 'a vested interest in keeping universities separate, or wedding universities to the resources they produce, therefore there is a commercial objective which runs at cross purposes to an educational sharing objective'.

However, while competition between universities may have an impact on academics' willingness to share, as one interviewee pointed out it may be worth considering whether this competitiveness relates specifically to resources or the processes associated with learning and teaching. The Massachusetts Institute of Technology (MIT) open courseware model (http://ocw.mit.edu/index.html) is an example of a system where the university believes that the value it adds is not so much in the resources, which are freely available, but the learning processes put in place around the resources.

Repositories built directly to meet a need seem to have a strong reason to exist, and that need may not be for sharing in the first instance. For example, the RMIT University repository was built to manage, archive and control resources for the Business and Creative Media disciplines. It is now broadening its focus across the institution, and institutional policy and strategic documents are beginning to cross reference the repository. The focus initially was on managing and storing resources; the notion of sharing is being introduced over time.

Some disciplines were pointed out as more open and used to sharing, for example Astronomers were identified by one interviewee as more likely to share, but Biotechnologists were seen as more wary, perhaps because of the commercial interests that may play a part in the activities of this discipline. Another interviewee suggested that the less generic a degree program (e.g. Veterinary Science) the more staff within the discipline seem to share. There are other disciplines like the Performing and Creative Arts which are quite competitive, but are used to commentary, i.e. exposing their work to others for comment and interrogation.

Strategies to consider:

- *Start small,* targeting teaching teams to share resources amongst themselves, then move beyond those small groups over time.
- *Systemically address the culture* surrounding sharing in higher education.
- *Target team teaching programs:* Sharing may be more likely to occur in programs where there is team teaching and large student cohorts. Potentially the teachers of such courses could be encouraged to consider sharing and participation in the forums and networks of the Carrick Exchange.

7.3. Metadata

While metadata was seldom referred to by most key practitioners, several with repository experience commented that a successful repository is based on good metadata. Ease of use and use of already familiar search mechanisms were considered factors that might affect success and uptake of the system. Business processes and the management of intellectual property and rights management were also issues commented on, requiring appropriate metadata to allow effective management. Loughborough University in the UK indicated that they were using a folksonomy approach to cataloguing, i.e. a system that is generated by the users of the system. Additionally they also remarked:

> *It is important to use familiar processes that the target audience are used to, for example most people are used to Google. So to mirror the search protocols on the Google search mechanism is a good idea. (Interview)*

7.4. Submission policies

When asked about the policies required for the Carrick Exchange, access and rights, management of resources, intellectual property (IP), rewards and recognition were commonly raised for discussion. The need for the Carrick Institute to take a national approach regarding submission policy across institutions was emphasised. One interviewee representing an association said:

> *The Carrick Exchange needs to set two or three policies or models for submitting resources to the Exchange, which will negate the possibility of each university setting their own policy and thereby potentially ending up with thirty-eight different versions for submission of resources. Academics who want to submit to the Exchange are also able to go to their department or university and indicate the exact details of their engagement and contribution. . . the department or university can then make an informed decision about the benefits etc. This also means those engaging with the Exchange have some consistency in their use of the Exchange. (Interview)*

Most interviewees seemed to assume that contribution to the Carrick Exchange would be on an individual basis rather than an institutional one. This may be a preferable model and possibly the simplest to implement initially. One interviewee commented that the Jorum repository in the United Kingdom which has an institutional model of resource contribution provided a barrier for some users.

> *All the materials are contributed through institutions, so for example, adjuncts in hospitals could not access it. It left me asking serious questions about how much can individuals contribute. (Interview)*

Other policy suggestions:

- Contributors agree to share a resource for at least two years. The resource is then reviewed for continuing inclusion in the collection after a five year period (CLOE policy).
- If the resource has not been accessed for two years it should be archived.
- While the repository is open to the world, licensing can be restricted to Australian and New Zealand members. (LORN project policy. AESharenet is the broker for sharing arrangements.)
- See the ACELL submission and review policy and procedures (http://acell.chem.usyd.edu.au/Submission-and-Review.cfm), including submission of the chemistry experiment, testing, in-semester testing, completed submission, peer review and publication. All submissions must include student notes, technical notes, hazard risk assessment and any other documents required to carry out the experiment.
- There is a need for a trusted authentication system, not just a self-asserting system.

- Access permissions might follow the categories used by the Rights and Rewards in Blended Institutional Repositories project (RRBIP): categories include Private (just for own use); logged on user access; restricted open access; and public access.
- Licensing policies should be kept simple; use the Creative Commons system. (RRBIP)

7.5. Marketing, communication and dissemination

Clear communication and promotion to the higher education sector were considered essential to the success of the Carrick Exchange, especially clarification and clear communication about intellectual property. This is also part of the process of achieving 'buy in'. The RUBRIC project representative commented that showcasing was an important means of communicating achievements and effective use of resources. One repository manager said it was necessary to communicate to institutions early that 'investment now will have profound impact in the future' in terms of resource allocation.

Lessons learned from other projects:

- One repository project offered the following possibilities for the lack of success of their initiative. All three are communication related.
  a) The lack of a wide publicity campaign;
  b) A perception of a lack of ease of use: 'Academics saw it as a lot of trouble for them to submit their resources'; and
  c) Inadequate resourcing: 'There were limited resources provided to the project at the university level, [and] there was only one person in the university devoted to the project and responsible for promotion, marketing, maintenance and communication with key stakeholders. This lack of institutional support for the project was probably a major cause of its demise.'
- The Co-operative Learning Object Exchange (CLOE), in Canada noted that advertising could have been improved in their project because 'many people knew about CLOE but not many people knew where to get the content from and people weren't quite sure whether they could use CLOE material or not, except those people who were actively involved in CLOE'.

Strategies to consider:

- *Good communication with key stakeholders* and other interested parties so they are clearly informed about availability, stages of developmental and future plans.
- *Take the book publishers' approach,* i.e. proactively market the Carrick Exchange within universities. 'This commercial outlook is an essential component to getting the Carrick Exchange going.'
- *Clearly communicate to institutions the policies and protocols* for the Carrick Exchange and be explicit about the institutional position on IP and academic exchanges that the Carrick Exchange fosters.
- *Promote the repository in face-to-face forums,* taking time to explain the details and purposes of the Carrick Exchange.
- *Quickly resolve any issues that arise.* Communication is key to resolution of problems and finding rapid solutions as the project unfolds.
- *Disseminate information* about the Carrick Exchange via online newsletters a couple of times a year with links to stories and updates about projects, as this generates interest, even if the reader does not go to the complete linked story.
- *There is a need for 'push' technology* to disseminate and encourage the higher education sector. Initial contact should be followed up by personal and/or face-to-face interactions.

7.6. Integration with institutions, other projects and national initiatives

Participants suggested making a strong connection between the project, institutional repositories and other projects, particularly Carrick Institute projects. They could see there was a strong case for tying provision of Carrick Institute grant money with a requirement to contribute to the Carrick Exchange and promote use of the system and sharing of resources. The issue of intellectual property and institutional contribution versus individual contribution also arose from these considerations. Some participants also suggested looking at current working models such as MERLOT and CLOE, and the LORN project which networks state based repositories.

Some viewing the Carrick Exchange from an institutional perspective warned that an institution committing resources to a national repository and community exchange initiative needs to know and evaluate the implications of this act. This was viewed as a concern for individuals committing their discretionary time and for the institution as a whole.

Strategies to consider (quote marks indicate interviewee comments):

- *Centrality of the Carrick Exchange:* The Carrick Exchange should be central to all the Carrick Institute functions. As one interviewee commented, 'It should sit across everything that Carrick does. [For] anything to do with the Carrick Institute, the Carrick Exchange is where you go. Even the forms for grant applications should reside on the Exchange. There has to be a degree of integration that makes it work, otherwise it will just be a great idea that's not sustained over time'.
- *Alignment with other initiatives:* The activities of the Carrick Exchange should align with other initiatives in progress in the sector. MERLOT, for example, has specific institutional strategies where it offers help to initiatives already in progress to be more effective. In return a small portion of that investment is spent on behalf of the larger 'teaching commons'. 'By offering to optimise investments, to which investment has already been made, you have a much easier time getting people's attention.' Each project leverages off the other.
- *Scaffolding staff involvement:* Encourage universities to understand their role in 'scaffolding staff and getting them used to shared teaching resources'. As one interviewee remarked, the Carrick Exchange project needs support from within each university to be a success: 'They have to learn how to do it in their own backyard'.
- *Reciprocal relationship for grant holders:* Carrick grant holders should be required to produce resources of high quality for the sector in return for the investment granted to them by the Carrick Institute.
- *Awards:* Engagement with and sharing in the repository and its community should be used as a mechanism to support applications for internal and external awards at the home institution.
- *Institutional commitment:* Commitment from the universities that any teaching and learning resource developed using university funds will be made available through the Carrick Exchange.
- *Membership:* In addition to individual membership, implement institutional membership of the Carrick Exchange binding both the institutions and the Carrick Exchange in a relationship of shared responsibility.
- *Technical integration:* The Carrick Exchange should be integrated with existing national infrastructure and technical systems, for example ANDS (the Australian National Data Service, part of NCRIS project), the Australian Access Federation Project, the ARROW project (Australian Research Repositories Online to the World), and FEZ (a PHP/MySQL front end to Fedora).

7.7. Intellectual Property (IP)

Engagement with the Carrick Exchange will be affected by issues of intellectual property (IP) and digital rights management. As previously stated, clear communication and clarification of IP issues is paramount, otherwise it will be a considerable barrier to sharing and reuse. Those sharing resources need to know they will not be disadvantaged by so doing. It is very important to ensure that there is an appropriate licence in place for depositors and that there are user agreements which clearly indicate what end users can do with the accessed materials. While universities understand that competition brings benefits, as one academic noted, there is a shift in the understanding of licensing, copyright and patents with the use of open source software and creative commons approaches to resource sharing.

The experience at Deakin University suggests that not only will it be 'very difficult to get people to participate' but also:

> *There is . . . a sense of proprietary ownership of intellectual property . . . Generally academics are keen to look at the resources of others but more reluctant when it comes to sharing their own work.' (Interview)*

It was generally perceived that academics are somewhat reluctant to contribute to a repository because they are 'suspicious of losing ownership of their resources, of intellectual property and moral rights'.

The Carrick Exchange was encouraged to consult the OAK Law Report regarding IP (http://www.oaklaw.qut.edu.au/). The Open Access to Knowledge (OAK) project is funded by a Department of Education, Science and Training (DEST) Systemic Infrastructure Initiative grant. The project aims to develop legal protocols 'for managing copyright issues in an open access environment'. This will include investigating rights expression language, and integration with existing open access repositories at legal and technical levels (http://www.oaklaw.qut.edu.au/about).

Issues for the Carrick Exchange (italics and quotes indicate interviewee comments):

- At the institutional level:

  To communicate to academics that they don't own the intellectual property they produce, that in fact the institution paying their salary owns the resources, and so it is not a matter of the academic giving their property away. (Interview)

- Facilitating the sharing of resources beyond the university where the resources originated:

  This requires some consideration of who the Carrick Exchange should be negotiating with to encourage sharing of resources and . . . it is not with the individual academics but the institutions and the appropriate people within the institutions who have control over this sharing of institution owned intellectual property. (Interview)

- Competitive advantage:

  There are perceived issues about 'giving away competitive advantage' through the sharing of resources and intellectual property outside the home institution.

  There will be resources and intellectual property that will require specific sign off from the University before broad sharing can be enabled because of the compromise to the 'competitive advantage' that sharing may evoke. (Interview)

- Rights and attribution:

  Some academics fear that 'credit for a resource will be inaccurately or unevenly given'.

Strategies to consider:

- *Simple templates and processes for submission of resources:* Templates are used in the RUBRIC project, and librarians undertake responsibility for the copyright and IP of resource submissions.
- *Communication:* While intellectual property issues need to be managed the VET sector acknowledges that teachers understand that 'resources become obsolete very quickly. . . For teachers to cope with this they are realising that they have got to collaborate and share resources' and therefore find solutions to issues such as IP.
- *'Acceptable use' policies:* The NSW Department of Education and Training is developing policies around 'acceptable use' of the Internet and email for schools (K-12) and TAFE. The documents deal with a number of issues including IP and acknowledgement.
- *Use of the online discussion space to address issues about IP and digital rights:* It would be useful to follow the LORN project example in this respect. Practitioners collaborate about the issues with a view to real life solutions and applications. This is also the process of building shared experience, stories and practice which is important to building communities of practice.
- *Access and copyright management:* Loughborough University in the Rights and Rewards (RRBIR) project manages copyright in the institutional repository by storing files under the profile of the person who uploads the resource; however, Loughborough University owns the copyright, as stated in the depositor licence. The Creative Commons licensing system is used at Loughborough. Loughorough cautioned that managing levels of access is important.

7.8. Educational support, culture and change management

Ease of use of the system was repeatedly raised as a pre-condition for effective use of the Carrick Exchange by those already using and managing repositories and others with limited experience in this area. The danger of showing the sector a system that is not quite ready was emphasized. As one interviewee put it: 'The sceptics will not come back'. RMIT University and Loughborough University (both managing institutional repositories) are conducting studies on workflows which may be of use to the Carrick Exchange team (e.g. see Loughborough University (http://rightsandrewards.lboro.ac.uk/index.php?section=21). The Carrick Exchange was encouraged to have tools that are really simple, accessible and 'invisible' in the sense that they do not intrude on the cognitive space of users who want to get the task done rather than learn to use software tools.

Concerns were expressed over provision of sufficient support for technical, educational and cultural requirements, including change management support. Those already familiar with the management of repositories spoke about addressing the culture of universities commenting that this can be more time consuming than training people in the use of the system. This has ongoing resource implications (provision of staff and educational development support, support from librarians etc). Further, 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 suggested by the interviewees in this research, commitment at the highest organisational level will be required (e.g. Ely, 1999; Kenny, 2002, in Kenny 2003; Mckenzie, Alexander, Harper, & Anderson, 2005). From the CLOE community and repository experience, it seems that university staff will not necessarily understand the benefits of sharing educational resources. But as one key practitioner noted:

> *The scholarship of teaching brings academics together. The Carrick Institute has brought the concept of learning and teaching more status since its inception in 2004, so the Carrick Institute should use its credibility, status and power in the sector to initiate change in the culture. (Interview)*

Another key practitioner commented that universities are now expected to act in the role of publisher, a role they are not familiar with, and this brings issues of change management at many levels. Publishing raises issues of quality assurance, peer review, copyright, distribution and rights, and system of rewards: all issues associated with cultural change.

Many of those interviewed encouraged the Carrick Exchange to spend time communicating the benefits of the new community to the sector, and supporting any new pedagogical processes and strategies that will be required. Experience from the UK CD-LOR project representative indicates that considerable thought needs to be put into 'pedagogy and educational approaches and how and what it is that we are trying to support with these tools'. With regard to training, Loughborough University (see the Rights and Rewards project: http://rightsandrewards.lboro.ac.uk/index.php?section=1), said that while training staff in use of the system took only about half an hour (setting up a profile, orientation to the system and encouraging usage of the system), embedding usage in learning and teaching was seen as a much more complex, time consuming task.

A problematic issue that some raised was 'getting both the pedagogy and the technology right at the same time'. Both have to work, and continue to work. Information about what works and various models of use need to be embedded in the Carrick Exchange. 'Sharing this sort of information will contribute to enhancing the learning culture of the whole sector and individual institutions' one interviewee observed.

It should be noted that discussion during the interviews did not focus greatly on how academic staff might effectively integrate resources located via the Carrick Exchange into the curriculum. However, it may be that staff will require assistance in this area, just as many will require assistance in developing an understanding of the benefits of sharing, confident that management of copyright, IP, rights and rewards are all well attended to. This is certainly an area where further research could be undertaken into the needs of users.

Strategies to consider:

- *Provide training and support* with respect to:
  a) technical capability;
  b) the use and operation of the repository; and
  c) development of teaching and learning expertise and practices to integrate the interactive and innovative resources available through the repository.

- *Consider the project in three phases:* A New Zealand representative said that the Carrick Exchange needs to think of the phases as:
  a) developing the technology solution;
  b) populating the repository with suitable content that is valuable to the end user; and
  c) identifying someone to keep the momentum and interest in the repository going.

- *Bring different stakeholder groups including academics and support staff together,* sharing resources and expertise (suggested by the RRBIR project and the VET sector practitioners). As the 'novices' develop expertise and skills, they in turn become mentors to others.

- *Support cultural change from the top* so that it 'filters down' and is given credibility, as well as from the bottom up.

- *Begin with the notion of resource management,* then move to the 'new' notion of sharing resources (RMIT University approach).

- *Rights:* Communicate to all staff within the sector, new and continuing, the IP, copyright and moral rights that pertain to individuals and institutions regarding ownership and sharing of learning and teaching resources.

7.9. Tracking and evaluation mechanisms

Some interviewees recognised the need for regular evaluation of the initiative, and measurement of uptake and engagement to inform ongoing development and maintenance of the repository and its community. A technical evaluation of the Carrick Exchange would also be useful as a quality assurance measure.

Suggested reporting mechanisms:

- *Download and usage reporting:* Have mechanisms for reporting how those extracting content from the repository are using that material. CLOE in Canada reported having great difficulty in ascertaining this. They noted that this information is very useful in demonstrating the importance and value of the repository and community to key stakeholders and potential funders.
- *Track and document individual and institutional contributions to the Carrick Exchange.* In addition, provide parameters for the use of information about resource contribution for promotion processes within institutions.
- *Conduct an annual audit:* The Toolbox project model (VET sector) conducts an annual audit of resources, providing concrete measures of the value of the various resources.
- *Track the establishment of the project.* The CLOE representative noted that it is important to track the project evolution from the start, through traditional research practices, to ensure that lessons learned can be properly documented. The Carrick Exchange is advised to keep good records and 'apply a critical research lens to the process and to the objects themselves, to the development schema, [and] to the workflow'.
- *Provide reporting mechanisms about peer review processes* and explicitly communicate these to academics' home institutions.

7.10. Incentives, rewards and recognition

Key practitioners readily volunteered views on the issue of incentives, rewards and recognition. The need to ensure the effort put towards contributing in any way to the Carrick Exchange was rewarded and recognised was strongly communicated by most interviewees. Some of the suggestions and comments from key practitioners are provided below.

7.10.1. Incentives

- *Create a repository that meets user needs:* If user needs are clearly addressed then there is an incentive to use the repository. Successful examples include the use of the repository at the University of Southern Queensland by Engineering Faculty Masters students; and RMIT University experience with Business and Media faculties.

- *Institutional promotion and branding:*
  a) Clearly brand resources as being created by the particular institution from which they originate. This could provide a vehicle for institutions to demonstrate how well they are doing in a given area.
  b) Institutions contributing to the Carrick Exchange might be able to use this as a 'PR advantage' in the attraction and retention of staff.
  c) Membership fee rates might be linked to activity and contribution rates: the more resources contributed to the repository by academics from the institution, the lower the membership fee that the institution might be charged.
- *Seamless link with databases and university systems and infrastructure (single sign on):* Linking the Carrick Exchange to existing university databases is important. Seamless connection would be an incentive simplifying the number of search systems a staff member would need to learn.
- *Quality assurance and standards*: In the VET sector the Statewide Quality Assurance Group (QAG) oversees the quality of the resources produced for state run courses. This group can ensure certain standards by, for example, commissioning a suite of resources to address specific competencies in courses offered by different TAFEs across the state. This top down approach if adopted in the university sector would require acceptance at all levels including from managers and policy makers.
- *Reported institutional repository incentives:*

  Loughborough University reports the following incentives for using and engaging with their repository. Use of the system:
  a) Is time saving - staff do not have to create every resource from scratch;
  b) Provides the opportunity to improve teaching, and feedback provides assistance for changing and improving resources;
  c) Provides the opportunity to share good practice; and
  d) Assists with preservation of materials.

7.10.2. Disincentives for engagement and contribution

- *Cross-institutional rivalry and competition:*

  Some interviewees remarked that there could be a stigma attached to utilising a repository with content from another university. This may be a disincentive not only to academics accessing resources but also for universities promoting use of the Carrick Exchange. For example, more prestigious universities may not want to publicise the fact that they use resources created outside their university. One interviewee suggested this could be an argument for not giving the originating institution attribution for a contributed resource.

- *A perception that rewards are of little value:*
  There was consensus that all staff are extremely busy and the demands on their time continually increase, so unless there are real incentives to contribute, regardless of their support for the concept, contribution in any form may be limited. Incentives need to be at both the institutional and the national levels to be worthwhile according to some.

- *Other concerns and disincentives raised:*
  a) Costs associated with contribution or membership;
  b) Low quality resources in the repository;
  c) A perception that the repository is difficult to use or too time consuming;
  d) Difficult authentication and sign on procedures;
  e) Metadata that is too detailed or time consuming to work with;
  f) Enforced contribution – contribution must be voluntary;
  g) Fears of losing ownership of resources, intellectual property and/or moral rights;
  h) Ongoing requirements for the originating author to field enquiries about a resource; this could become a burden to the author;
  i) A perception that there are no rewards or benefits for contributing, that there is only extra work;
  j) Conflict of interest - objections from departments or institutions to sharing, versus the willingness of staff to share as individuals;
  k) Formal peer review – the formality may be a disincentive;
  l) Feedback and commentary – this may be a disincentive to those who do not want to receive feedback;
  m) A ratings system – a low rating may produce unacceptable negative results and disincentives to contribute.

7.10.3. Rewards

The following were suggested as possible rewards for various forms of contribution to the Carrick Exchange:

- *IP protection:* Provide IP protection for individuals and/or institutions for shared resources.
- *Time release:* Give staff time for developmental work on resources so that it is factored into workloads, not just something educators do on the side.
- *Promotion and tenure:*
  - Examples of contributions to the repository could be submitted as part of promotion and tenure documentation.
  - Recognition of sharing and reuse via the Carrick Exchange could be used to build a case for promotion. This could be linked to criteria pointing to contribution to the advancement of teaching and learning. (The Australian RUBRIC project already uses engagement and sharing in the repository as a mechanism to support promotion applications, and applications for internal and external awards.)
- *Financial rewards:* Those interviewees who suggested rewards of a financial nature for contribution or engagement, suggested money for time release (marking etc.) or project money, rather than salary remuneration. Only the Rights and Rewards project representatives (see also Bates et al., 2006) suggested that teaching staff would respond to direct payment for contribution to a repository. (It should be noted that the way the question was presented in the UK survey may have affected the result in the findings.)
  - *Carrick seeding grants:* The Carrick Institute was encouraged to deliberately seed contributions to the Carrick Exchange through a competitive grants scheme.
  - *Reuse as a return on investment:* One of the incentives for sharing in the LORN network has been the return on investment that contributors can achieve. Each State based TAFE institution is keen to share if they can receive some return on their investment in development of resources. Resources created in one state system can then be shared for profit or reward with teachers based in another state.

7.10.4. Recognition

Strategies to consider:

- Give academics full attribution for their work – however, there may be tensions and issues to be resolved regarding individual versus institutional copyright/intellectual property (IP) policies;
- Provide acknowledgement and commendation from the university executive and local supervisors;
- Acknowledge contribution and engagement in newsletters;
- Recognise effort through formal staff awards – institutional and/or the Carrick Institute awards;
- Showcase initiatives at internal teaching and learning forums; and
- Disseminate information about contribution and achievement at conferences.

Three examples of projects that are investigating methods of recognition for contribution to a repository are the RUBRIC project, the LORN project (which recognises institutions that contribute resources and advertises this to the sector), and the Rights and Rewards project which is investigating this whole issue (see the project website and the report, Bates et al. 2006).

7.11. Management

7.11.1. Funding Models

The need for stable and ongoing funding was reiterated in several of the interviews. Below are possible funding models.

- *Provide long term stable funding:* The experience of the Australasian Association for Engineering Education is that 'engagement costs money!' CLOE reiterated this sentiment and suggested the Carrick Exchange not be reliant on grant funding alone.
- *Explore funding opportunities*: Include advertising, sponsorship and income generation through innovative project work to ensure sustainability of the project, employing stable and experienced paid to ensure capacity.
- *Provide development assistance to universities*, particularly the smaller, less affluent and resource-poor universities, to develop Carrick Exchange resources.
- *Act as a broker between individual academics and commercial customers:* The Carrick Exchange could provide onsite resources free of charge to academics and act as broker for sale or licensing of resources sold outside the higher education sector to professional development practitioners and organisations. The academic would be paid a small royalty fee for their resource.
- *Provide assistance for resource contribution* to institutions whose staff contribute resources to the Carrick Exchange.
- *Seek return on investment:* Within the VET sector there is a need for return on investment in resource development, especially as resources are developed across State-based jurisdictions.
- *Learn from the VET sector management models:* The Carrick Exchange could learn from the management models and possibly the future e-commerce system to be established in the LORN project. LORN aims to build further on the AESharenet licensing system: some resources are free but the user pays system prevails.

7.11.2. Management strategies beyond the first phase of development

Recognising the need for strategic and thoughtful implementation beyond the early phases of the project was emphasised by those with experience of similar repositories and communities. Careful attention to the phased rollout of the project was stressed by experienced repository managers.

Strategies to consider:

- Intute in the UK works closely with other organisations, services and products within UK higher education networking different repositories and sources of information for the user community. This is similar to the work done in the VET sector in Australia by the LORN group.
- CLOE in Canada once a year brings a team of developers together for CAMP CLOE. From this development camp, CLOE is able to seed leaders and change agents at a variety of levels across universities.

7.12. Roles and responsibilities of the Carrick Exchange

Participants identified a number of formal and informal roles for the Carrick Exchange to promote usage of the system and sharing:

- Recognition and reward for academics sharing resources, such as specific Carrick Awards.
- Using engagement and sharing in the repository as a mechanism to support applications for internal and external awards.
- The Carrick Exchange has a responsibility to learn from other repository projects that are in place (e.g. the RUBRIC project, the LORN and Toolbox projects in the VET sector, the RMIT University and Deakin University repositories, MERLOT, the Rights and Rewards project at Loughborough University in the UK, CLOE in Canada, Engineering Australia, the ARROW and APSR projects).
- The developers of the Carrick Exchange should ensure that it is based on need and does not duplicate what is out there already. The Carrick Exchange must have unique features.
- Use of institutional repositories may be different to national ones, and there are different fields of competition and collaboration between institutions. The Carrick Institute should use its influence to bridge the gap between institutional repository use and use of the Carrick Exchange. Sharing is a complex issue: IP, digital rights, permissions and control of access must be well managed.
- A national system may need to be more formal and ensure higher standards of quality control than institutional systems. It will be the role of the Carrick Exchange to manage this.

8. Peer review and commentary

Peer review may be formal and conducted by teams of experts, it may be limited and more of a quality assurance process, or it may be informal and include discussion, feedback and comments made on resources and ideas contributed to the Carrick Exchange.

One repository representative suggested that the success of the Carrick Exchange was dependent on:

- the role the Carrick Institute plays in recognising staff achievement and contribution to the Carrick Exchange; and
- the standard and effectiveness of the peer review process.

Participants tended to accept that if a formal peer review system were in place, an acceptable choice would be one that replicated the current scholarly research systems and practices. However one senior academic commented that peer review of an educational resource would not have the same status as a peer reviewed journal article. MERLOT is reviewing this issue in the USA, experimenting with developing more scholarly peer review processes.

One repository manager commented that peer review would be 'nice to have' at the institutional level but is too resource intensive, especially in the early stages of repository development. It was seen as something a national repository or exchange should implement. However there are examples of discipline based repositories implementing peer review: the ACELL chemistry database, supported by four Australian universities is one such instance (http://acell.chem.usyd.edu.au/homepage.cfm). Resources on the site are not published until they have been through a thorough evaluation by staff and students. In addition, ACELL aims to support professional development and facilitate a community of practice, much as the Carrick Exchange aims to do.

When presented with a three tier model of quality control for the Carrick Exchange those asked seemed to agree that the following classifications would be workable:

a) formally peer reviewed items;
b) limited review or quality assured items; and
c) items submitted 'as is', i.e. with no quality assurance or peer review.

The CLOE representative suggested that in addition, resources could be identified as those reviewed by experts and those reviewed by users of the system. Some interviewees also suggested that resources generated by Carrick funded projects be labelled as such.

Many interviewees suggested that all resources should be clearly identified as to their status regarding peer review, quality assurance etc. Repository managers indicated that they had quality assurance or editorial processes in place for their resources, and where possible quality assurance should be as automated as possible (e.g. alerts to notify of broken links, automated metadata tagging etc.). Quality assurance has both educational and technical dimensions. To speed up the process of sharing resources once placed in a peer review workflow, it was suggested that resources could still be made available to the community prior to peer review but be labeled as 'under review'.

The question of peer review of educational resources was considered more complex than peer review of scholarly research papers. Those familiar with this type of assessment point to the greater number of variables and the difficulty of assigning criteria. For example: How do you measure educational effectiveness? How do you assess efficacy with students? Will evidence of implementation and evaluation be provided at the time of submission of the resource to the Carrick Exchange?

Evaluation from multiple perspectives was considered important by those with experience in this area, assessing for example the:

- quality and accuracy of the disciplinary content of the resource;
- pedagogical soundness;
- technological soundness and interoperability; and
- the user's perspective on the resource (e.g. the student's view).

The issue of formal blind peer review versus review with known reviewers was raised by some interviewees. Loughborough University suggested that peer review should not be 'blind' so as to encourage greater accountability amongst reviewers. In any case, given the small size of the Australian higher education community there may be difficulties implementing a blind peer review process. Certain key practitioners thought that formal peer review could be a barrier to contribution for some academics, hence the need for contributors to have the option to elect whether their resource would or would not be peer reviewed.

8.1. Commentary

Informal commentary can be seen as another useful mechanism for peer review and academic recognition. It can be recognised as a support mechanism for peers around best practice in learning and teaching and essential to the development of communities of practice. It can also be a mechanism by which individuals can show leadership in the field. Commentary provides an indication of what one interviewee called 'productivity . . . with respect to effort around teaching'.

Being able to informally comment on others *developing* work was considered positively, but there may be a need to restrict access to work under development. Not all users will want their incomplete resources to be publicly available for comment beyond a smaller trusted community. Some will not want feedback in any form and should be able to indicate this when they submit a resource. One academic suggested that the telephone was still a useful way to provide informal feedback to resource developers and authors. The Carrick Exchange could provide a registry of staff willing to provide feedback via the telephone or other means and act as community reference group members.

Loughborough University in the Rights and Rewards project (RRBIR) began engaging staff with their repository by encouraging commentary on resources, using social networking software, and is now working towards building the repository aspect. Initially commentary on resources was all strategically from project team members, not wider university members.

8.2. Ratings system

A ratings system could be implemented by nominated reviewers within the formal peer process, and/or it could be used as an informal review mechanism for any resources that are either quality assured, formally peer reviewed, or contributed 'as is'. A ratings system was seen as desirable by some but others questioned its validity. Issues raised were as follows:

- Would this be an anonymous rating system, and therefore lack credibility?
- How do you compare one rating of 5 stars with another rating of 5 stars? What is being measured? What are the rating criteria?
- Who will rate others' contributions?
- Who will go back and comment on a resource once they have downloaded it from the system? Why would you bother?
- What if a resource gets a poor rating? Is this detrimental for the contributor as well as the Carrick Exchange? Or does the idea of 'accountability when public', assume a certain standard and avoid this issue?

8.3. Who should review resources?

Informal commentary was accepted as a right of members of the Carrick Exchange. While key practitioners during the interviews did not necessarily assume that members' comments would be either anonymous or identifiable, it would seem that for the community to work well it would be preferable if all comments were attributable to identified members. This would help foster trust and credibility within the community.

It was indicated that teams of experts with a mix of expertise should undertake the formal peer review process. For the formal peer review processes, MERLOT utilises individuals who are engaged in other institutional initiatives to, at the same time, look for exemplary learning resources and act as peer reviewers. It is assumed that institutions invest in an academic's time and that the task of peer review comprises or complements their institutional duties, as part of community sharing and outreach.

MERLOT's method of choosing and finding peer reviewers is as follows:

a) Staff volunteer, receive training in the peer review system and then move through a series of steps before becoming a full reviewer, an associate member of the editorial board or an editor. With experience, as qualifications and the quality of work is established, individuals progress up the ladder.

b) Institutions nominate peer reviewers who go through a training process and prove themselves to their colleagues. As these individuals are noticed and the quality of their work acknowledged they are asked to take on more responsibility.

8.4. Strategies to consider for peer review and commentary

- *Identify resources submitted to the Carrick Exchange as 'completed' or 'under development'.*
- *On submission to the Carrick Exchange, identify resources as one or more of the following classifications:*
    - For/not for formal peer review;
    - For/not for limited review, i.e. quality assurance;
    - For/not for commentary and feedback;
    - For public release/for limited (small group) release.
- *Establish a rating and commentary system for formal and informal reviews.*
- *Influence national policy regarding peer review:* Carrick Institute has a role in lobbying universities, vice chancellors and those involved with promotional processes to bring parity between peer reviewed scholarship and formally peer reviewed resources submitted in the Carrick Exchange context.
- *Link peer review to sharing resources:* Carrick Exchange should disseminate the message that resource sharing is not dissimilar to publication of articles and to this end peer review is the key.
- *Use formal peer review as evidence for promotion.*

- Consider membership of a peer reference group or an editorial board as a role with prestige, valued as part of an academic's professional development.

9. Key Findings

The key findings are summarised in the Executive Summary, pages 5 – 7 of this document.

10. Conclusion

While the key practitioners interviewed were generally positive about the Carrick Exchange, they nevertheless viewed the project with caution. This may be because many have considerable experience with technology and ICT initiatives in universities and know that creative innovations need more than good will to sustain them. Getting the technological, cultural and pedagogical change management issues 'right' was seen as a considerable challenge. Nonetheless, given the credibility and status that the Carrick Institute has within the sector, those interviewed saw that the Carrick Institute was in a position to lead effective change at a national level.

There were other issues raised by key practitioners which indicated tensions that the Carrick Exchange will need to resolve. For example, there needs to be more clarity over issues of intellectual property, digital rights management, moral rights, academic rights and institutional ownership of resources, otherwise uncertainty will continue about the benefits and legitimacy of sharing and reuse. Behind this is the tension between academics' general desire to share effective pedagogy and resources, and the inherent competition that exists within the sector. The competition is not only amongst individuals but also institutions. So the answer to the question, 'Why should I share my resources, time and experience?' must be clearly communicated to the sector.

Formal peer review was seen as a positive initiative and one that few institutional repositories had the resources to implement. Therefore a national approach to peer review was considered beneficial. However, again there are tensions, in this case between the attractiveness of formal peer review as a means of rewarding and documenting good learning and teaching, the disincentives of the formality itself, and the time taken to complete thorough peer review. Most were positive about informal peer review and commentary on developing or fully developed resources, and about forums, networks and workspaces which might promote and support learning and teaching. Nonetheless, some cautioned that there could be contributors who may not want feedback or commentary on their resources, nor would they necessarily have the personal capacity over time to field questions from other users about their shared resources.

Clearly the Carrick Exchange will need to show leadership, provide champions and act as a sponsor beyond the early stages of the initiative. Communication with the sector will be key to achieving engagement in the short and long terms. The literature, current repository managers and other key practitioners have emphasised that, to be effective, the Carrick Exchange needs to be based on identified needs. The Carrick Institute Grants Scheme for learning and teaching could provide a natural focus for activity on the Carrick Exchange, and a database of resources created by and for Carrick Institute projects would be well received by the sector. An incentive and rewards scheme linked to promotion and tenure policies, and applied consistently across the sector, is likely to encourage participation as recognition at the institutional level for contributions in all areas of the Carrick Exchange will be essential to encourage engagement.

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Appendices

Appendix A: Key practitioners interviewed

Category	Stakeholders	Expected contribution to project	Project focus area
International connections (6)	MERLOT (USA)	Comparisons with international initiatives	Models of use and peer review
	Intute (UK)		
	CLOE (Canada)		
	MOD4L Project (UK)		
	NZ E-learning Collaborative Development Fund & Open Educational Resources (NZ)		
	EduForge (NZ)		
National initiatives (3)	Digital Repository Team, Griffith University	Comparisons with national initiatives	Resource identification and contribution
	RUBRIC project (regional initiative)		
	MAMS – Meta Access Management Systems		
Technical and Further Education (TAFE) sector (4)	National Research and Policy Advice Project - Australian Flexible Learning Framework	Comparisons with national initiatives	Models of use, peer review
	Learning Object Repository Network Project (LORN) - Australian Flexible Learning Framework		
	Teaching and Learning Exchange		
	TAFE (general)		
Institutional repositories (2)	Rights and Rewards in Blended Institutional Repositories (UK)	Institutional repositories perspective	Peer review, models of use, resource contribution
	Deakin University		
	RMIT University		
Associations (discipline and professionally based) (10)	Open and Distance Learning Association of Australia (ODLAA)	Association's needs for communicating and resource sharing	Resource identification and contribution, peer review, models of use, engagement
	Council for the Humanities, Arts and Social Sciences (CHASS)		
	Sydney-Basin Network of University Science Educators (SNUSE)		
	Australian Council of Deans of Science		
	Australian Council of University Art and Design Schools		
	Engineering Australia		
	Australian Mathematical Society		
	Higher Education Research & Development Association (HERDSA)		
	Australian Council of Deans of Science		
	Council of Australasian Directors of Academic Development		
Australian Tertiary Institutional Users (educational developers) (2)	University of Queensland	User perspectives on the development, utilisation and review of digital repositories	Resource identification and contribution, models of use, engagement
	University of Wollongong		
Deputy/Pro Vice-Chancellor (1)		User perspectives on the development, utilisation and review of digital repositories	Models of use, peer review
Carrick grant holders and/or Carrick Fellows (1)		Project needs for communication and resource sharing	Resource identification and contribution

Appendix B: *ascilite* interview questions

1: ENGAGEMENT

Question 1: With respect to your involvement in <interest group>, what might the Carrick Exchange learn from your engagement with this group?

(Prompts)

1a. How do you engage with others in this group?
1b. What prompts you to engage in these ways? (give examples)
1c. What makes it work for you? (give examples)
1d. Where does it miss out?
1e. What about for others?
1f. What would prompt you to engage
1g. Are there other networks where you share ideas and resources?

2: RESOURCE CONTRIBUTION & SHARING

Question 2. The Carrick Exchange wants to support sharing and reuse of resources across all disciplines in Higher Education. With regard to sharing – what are the conditions or practices that would encourage people to contribute resources?

(Prompts)

2a. Do you see anyone doing this now?
2b. How are they doing this?
2c. What are the incentives for them to do this?

Question 3. With regard to people accessing and using these resources - Who does this now?

(Prompts)

3a. How are they doing this?
3b. Why are they doing this?

Question 4. What are the rewards / incentives for individuals to contribute?

3: PEER REVIEW AND COMMENTARY

Question 5. In these kinds of exchanges there are issues around quality or peer review. Should it be a formal system of peer review on submission of resources? Or an informal user rating system? Or both?

(Prompts)

5a. What teaching and learning resources currently get peer reviewed or invite informal commentary?

5b. What processes for peer review or providing commentary about teaching and learning resources have you been involved with? How effective are these?

5c. Are there or should there be different strategies for peer reviewing different resources?

5d. What about providing informal commentary for resources that are contributed to the Carrick Exchange; How could this be encouraged and managed?

5e. What form do you think this commentary should take?

5f. How are reviewers chosen for the communities or resource sharing initiatives you are familiar with? Who should the reviewers be for the Carrick Exchange?

5g. What policies and procedures would you recommend for the processes of peer review and commentary for the Carrick Exchange?

Appendix C: Repositories, associations and projects referred to in the report

Repository, association or project	*Description*
ACELL Advancing Chemistry by Enhancing Learning in the Laboratory	ACELL is a peer reviewed database of resources for undergraduate chemistry. ACELL aims to provide educationally sound chemistry experiments, evaluated by students and academic staff; professional development opportunities for chemistry academic staff; and facilitate the development of a community of practice in chemistry education http://acell.chem.usyd.edu.au/homepage.cfm
AESharenet	AEShareNet's role is to help create a comprehensive, efficient system that is needed to streamline reciprocal copyright licensing practices in education. http://www.aesharenet.com.au/
ANDS the Australian National Data Service	ANDS has outreach services which bring in data that needs to be archived for the nation; it has stewardship services, metadata, and federation services.
APSR Australian Partnership for Sustainable Repositories	APSR aims to establish a centre of excellence for the management of scholarly assets in digital format. The partnership includes major research universities, the National Library of Australia, and APAC (the Australian Partnership for Advanced Computing). http://www.apsr.edu.au/
ARROW Australian Research Repositories Online to the World	The ARROW project identifies and tests software or solutions to support best practice institutional digital repositories comprising e-prints, electronic theses, e-research and electronic publishing. The project is funded by the Australian Commonwealth Department of Education, Science and Training, under the Research Information Infrastructure Framework for Australian Higher Education. http://www.arrow.edu.au/
ascilite The Australasian Society for Computers in Learning in Tertiary Education	A society for those involved in tertiary computer-based education and training, including educational interactive multimedia. It provides a forum to stimulate discussion in the educational use of technology as well as promoting research and evaluation. http://www.*ascilite*.org.au/
Australian Access Federation Project	National infrastructure and authentication project http://www.aaf.edu.au/)
Australasian Association for Engineering Education AAEE (A^2E^2)	AAEE is a professional association committed to fostering excellence and innovation in engineering education, bringing together people across Australia and New Zealand. http://www.aaee.com.au/
Australian Flexible Learning Framework	The Australian Flexible Learning Framework provides the vocational education and training (VET) system with e-learning skills, professional development opportunities, products, resources and support networks to meet today's increasingly technology-driven learning environment. The Framework is a national strategy collaboratively funded by the Australian Government and all states and territories. http://www.flexiblelearning.net.au/flx/go/home
CD-LOR Community Dimensions of Learning Object Repositories	The CD-LOR project in the United Kingdom aims to identify and analyse the factors that influence practical uptake and implementation of learning object repositories within a range of different learning communities. The aim is to benefit UK higher and further education. http://www.academy.gcal.ac.uk/cd-lor/
CLOE	A collaboration between Ontario universities and colleges in Canada for the

Repository, association or project	*Description*
the Co-operative Learning Object Exchange	development, sharing, and reuse of multimedia-rich learning resources. This occurs through the CLOE Learning Object repository. http://cloe.on.ca/index.html
Council for the Humanities, Arts and Social Sciences (CHASS)	As a peak body for the humanities arts and social sciences, CHASS aims to represent the interests of the sector; to promote the contribution of the sector to government, industry and the public; to provide a forum for discussion between the humanities, arts and social sciences sectors in Australia; and to build the innovative capacity of Australia, through better linkages between the sector and industry, science and technology. http://www.chass.org.au/
Edna Education Network Australia	Free online network for educators housing online resources and offering a collaborative network for the education and training community. http://www.edna.edu.au/edna/go
Fedora	An operating system that contains only free and open source software. http://fedoraproject.org/wiki/
FEZ	A PHP/MySQL front end to the fedora repository software. Developed by the University of Queensland Library as an open source project. http://dev-repo.library.uq.edu.au/wiki/index.php/Main_Page
HERDSA, Higher Education Research and Development Society of Australasia	Scholarly society for improvement of teaching and learning in higher and tertiary education. http://www.herdsa.org.au/
Intute	The Intute service is created by a network of UK universities and partners. Subject specialists select and evaluate websites in the database and write high quality descriptions of the resources. http://www.intute.ac.uk/
LORN project Learning Object Repository Network	Part of the Australian Flexible Learning Framework, LORN is an initiative supporting the Australian VET community, providing access to high-quality learning and teaching resources across a number of repositories. http://lorn.flexiblelearning.net.au/lorn/go/home/pid/119)
MAMS Meta Access Management Project	The MAMS project is concerned with the infrastructure and integration of multiple solutions to managing authentication, authorisation and identities across systems, together with common services for digital rights, search services and metadata management. http://www.melcoe.mq.edu.au/projects/MAMS/
MERLOT Multimedia Educational Resource for Learning and Online Teaching	A user-centred, searchable collection of peer reviewed, higher education, online learning materials created by registered members, and a set of faculty development support services. where learning materials and pedagogy are shared by the members. http://www.merlot.org/merlot/index.htm
Minister of Communications Digital Strategy Advisory Group (NZ)	The NZ Digital Strategy is an government action plan for ensuring New Zealand is a world leader in using information and technology. http://www.digitalstrategy.govt.nz/
MIT open courseware model	Massachusetts Institute of Technology http://ocw.mit.edu/index.html
NCRIS National Collaborative Research Infrastructure Strategy	Through NCRIS, the Australian Government provides funding to researchers for major research facilities, supporting infrastructure and networks necessary for world-class research. http://www.ncris.dest.gov.au/
OAK Law Project Open Access to Knowledge	The project aims to make sharing knowledge across domains, and the world, both legal and efficient. The project will develop legal protocols for managing copyright issues in an open access environment. At a technical level it will investigate provision and implementation of a rights expression language. The project will integrate with existing open access repositories at both legal and technical levels. http://www.oaklaw.qut.edu.au/about
ODLAA Open and Distance Learning Association of	ODLAA is a professional association that aims to advance the practice and study of distance education in Australia; foster communication between distance educators; and maintain and extend links with other national and

Repository, association or project	*Description*
Australia	international associations with related aims and objectives. http://odlaa.une.edu.au/
RRBIR Rights and Rewards in Blended Institutional Repositories	University of Loughborough institutional repository, UK http://rightsandrewards.lboro.ac.uk/index.php?section=1
RUBRIC Regional Universities Building Research Infrastructure Collaboratively	This DEST funded project aims to: build capability across smaller research universities in the IRUA group and country areas; enable the research output of those institutions to be available trans-nationally; and contribute to the research mission of higher education in Australia and internationally through collaboration with New Zealand partners. Partners are: the University of Southern Queensland (USQ), the University of New England, the University of the Sunshine Coast, the University of Newcastle, and Massey University in New Zealand. http://www.rubric.edu.au/
SAKAI	Open source VLE (Virtual Learning Environment) http://sakaiproject.org/
SNUSE, Sydney Basin Network of University Science Educators	Network of Science Educators http://www.science.unsw.edu.au/guide/slatig/snuse.html