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Community Dimensions of Learning Object Repositories (CD-LOR): Deliverable 10, Recommendations to JISC for Future Research and Development

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Community Dimensions of Learning Object Repositories

Deliverable 10
Recommendations to JISC
for Future Research and Development

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Introduction

The Community Dimensions of Learning Object Repositories (CDLOR) project[1] was funded by JISC in June 2005-May 2007 to identify and analyse the barriers and enablers that influence implementation and use of learning object repositories (LORs) within a range of learning communities. Such communities include those based in individual and federated institutions and those that exist across institutions (regionally, nationally and internationally), e.g. discipline based communities, or communities coalescing around use in teaching and learning of particular formats, such as sound files.

This document summarises the key recommendations to JISC for future research and development. The recommendations draw upon and are a synthesis of the following main activities and outputs of the CDLOR project:

1. ***Desk research and consultation with project partners and repository research and development community*** aimed at reviewing current LOR and community models and practices, as well as elucidating the pedagogic, socio-cultural, organisational and technological barriers and enablers to the implementation of LORs within learning communities (focusing, in accordance with the remit of the project, on the former three groups of barriers and enablers). The deliverable from this work is the *Report on Learning Communities and Repositories*[2].

2. ***Investigation of LOR users' perspectives***, aimed at exploring the specific community dimensions and teachers' and students' views on barriers and enablers to the implementation of LORs. The findings are summarised in the *Report on Interviews with LOR Repository Users*.[3]

3. ***Survey of personal resource management strategies*** of members of teaching and learning communities. The aim of the survey was to explore how individuals in teaching and learning communities find, create, store and share their educational resources and how they collaborate on the development of these resources with colleagues in their departments, subject area and beyond. The deliverable from this work is the *Report on Personal Resource Management Strategies*[4].

4. ***Prioritising, developing and testing a range of potential solutions to barriers***. This work was carried out in collaboration with CDLOR Project Associates[5]. The outputs from this work include *Scenarios of LOR Use*[6], which were prioritised by repository curators and users and developed into *full Use Cases*[7]. Based on these use cases, repository functionalities aimed at solving some of the identified barriers were developed, tested and evaluated within a range of LORs. The results of these evaluations are summarised in the *Report on Testing and Evaluation of the Use Cases* (this report is currently under development and will be made publicly available by the end of June 2007).[8]

5. **Developing structured guidelines for setting up LORs.** The *Structured Guidelines*[9] are based around a set of key questions, aimed at eliciting the relevant community and repository dimensions, and key enablers and barriers for various types of LORs and communities.

The recommendations are divided into two sections. Section 1 outlines the recommendations for future development and Section 2 lists recommendations for further

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[1] CDLOR, http://www.academy.gcal.ac.uk/cd-lor/
[2] Margaryan, A., Currier, S., Littlejohn, A., & Nicol, D. (2006). *Learning communities and repositories.* CDLOR Deliverable 1. JISC, UK (52 pp.). Available from http://academy.gcal.ac.uk/cd-lor/learningcommunitiesreport.pdf
[3] Margaryan, A, & Currier, S. (2006). *Report on interviews with LO repository users.* CDLOR project deliverable on Workpackage 3.1, public version. JISC, UK. Available from http://academy.gcal.ac.uk/cd-lor/CDLORdeliverable_UserInterviewsReport.pdf
[4] Margaryan, A. (2006) *Report on personal resource management strategies survey*. CD-LOR Deliverable 7. JISC, UK. Available from http://academy.gcal.ac.uk/cd-lor/CDLORdeliverable7_PRMSreport.pdf
[5] CDLOR Project Partners, http://academy.gcal.ac.uk/cd-lor/ppart.html
[6] LOR Use Scenarios, http://academy.gcal.ac.uk/cd-lor/UseCaseScenarios.pdf
[7] Extended LOR Use Cases, http://academy.gcal.ac.uk/cd-lor/extended_usecases_v1p0.pdf
[8] *Report on Testing and Evaluation of the Use Cases*
[9] Margaryan, A., Milligan, C., & Douglas, P. (April, 2007). *Structured Guidelines for Setting up Learning Object Repositories*. CDLOR Deliverable 9. JISC, UK (17 pp.). Available from http://academy.gcal.ac.uk/cd-lor/documents/CD-LOR_Structured_Guidelines_v1p0.pdf

research in the area of Learning Object Repositories.   In accordance with the remit of the project, the recommendations are focused primarily on addressing socio-cultural, organisational and pedagogic issues.

These are by nature complex issues and cannot be solved in a straightforward way. The recommendations reflect this complexity. We would like to urge JISC to take forward the more difficult recommendations rather than considering only the technical recommendations.

Section 1. Recommendations for Future Development

Recommendations in this section are structured around the following key themes that emerged from the CDLOR findings:
1) Integration of user needs in LOR developments
2) New functions that LORs could serve
3) Alignment of LORs with existing systems, tools and strategies
4) Development and support of LOR users
5) Funding and integration with other JISC initiatives

Recommendations related to integration of user needs

1.1. **LORs should be based firmly on the needs and context of the end user communities that the LORs aim to serve.** A key element of the scoping process for a new LOR should be to ascertain exactly who the target users are and what problem the LOR is being asked to solve. This will necessitate greater consideration of the needs of the communities when designing LORs including surveying the needs of potential users, and the processes by which they make decisions about adopting technology. Similarly, incentives and rewards that will be necessary to encourage adoption of LORs should be linked with community dimensions: users' needs, goals and underlying motivations must be investigated and understood in order to provide the most appropriate incentives. CDLOR project has developed a set of guidelines that can support LOR managers and developers in understanding needs of the potential users; the guidelines are available from http://academy.gcal.ac.uk/cd-lor/documents/CD-LOR_Structured_Guidelines_v1p0.pdf . JISC should make it a criterion for funding   that all new repository and other educational technology development projects carry out user needs analysis using these guidelines. *(Source: Report on Learning Communities and Repositories; Structured Guidelines for Setting Up LORs).*

1.2. **LORs should be developed by multidisciplinary teams.** The existing gap between user needs, community technology dimensions can be bridged by ensuring that LORs are developed by multidisciplinary teams made up of learning technologists, pedagogy experts, software developers, key representatives of end-user community and information specialists. LORs should be designed and developed using rapid prototyping models, based on thorough end-user needs analysis (see 1.1.) and involvement of users at each stage of design, development, testing and implementation. JISC should make it criterion for funding that all new repository and other educational technology development projects are multidisciplinary *(Source: Report on Learning Communities and Repositories)*.

1.3. **Impact and added value of using LORs must be demonstrated to users.** Evidence is needed to demonstrate to potential users that LORs can positively impact their learning and teaching processes on the level of individuals and communities. The value of LORs should be demonstrated to the user communities, through showing how the LORs add value, save time, or solve problems. JISC should fund studies into collecting evidence of such impact and added value. *(Source: Report on Learning Communities and Repositories; Use cases implementations report (see feedback on use case 28)).*

1.4.   **Examples of successful use of LORs should be collected and made available to users.** JISC should fund studies investigating and collecting exemplars or case studies of successful use of LORs in teaching and learning. These examples should relate both to current practices as well as to innovative approaches. These exemplars and case studies could be made available either through the LORs themselves or through workshops and training sessions provided by the project teams or staff developers. These exemplars and case studies can be one way of demonstrating impact and added value to users (see recommendation 1.3.). In addition to collecting current good practice, JISC should urge those who implement LORs to think laterally about the affordances and the educational potential offered by LORs. *(Source: Report on Learning Communities and Repositories; Report on LOR User Interviews).*

Recommendations related to new functions that LORs could serve

1.5.   **LORs could play a useful role in supporting collaboration on development of resources (among expert resource developers as well as individual users) rather than only being used to store completed resources**. Don't try and build functionality into repositories, look for the ways in which people are using existing tools and integrate them (e.g. box.net). Both Aberdeen and IVIMEDS were using repositories to highlight sharing between small groups of users rather than for discovery. JISC should fund new developments that allow repositories to fulfil this functionality *(Source: Report on Personal Resource Management Strategies)*

1.6.   **Repositories should be used to clarify copyrights and usage of content.** LORs could do this by using simple and easy-to understand upload guidelines such as Creative Commons licenses and licenses utilised by flickr. *(Source: Report on Personal Resource Management Strategies)*

1.7.   **LORs should be web 2.0-enabled.** LORs should be extended to include functionalities that allow collaboration, communication, feedback, and other forms of social networking activities around the resources; for example, recommendation mechanisms and user feedback functionalities, such as LORs proactively soliciting comments about usage form a user a few weeks after they have downloaded a resource. JISC should fund studies exploring how the LOR interfaces can be extended to enable this *(Source: Report on Personal Resource Management Strategies; Use Cases Implementation Report (see Use case 28); Structured Guidelines).*

Recommendations related to alignment of LORs with existing systems, tools and strategies

1.8.   **Product innovation should involve process innovation** LORs are product innovations, but their wider adoption and implementation will not be possible without process innovations. Example of process innovations are changes in pedagogic processes, organisational support of innovations, mechanisms for recognitions and rewards, etc. Repositories need implementation support and embedding beyond initial development and trial efforts. JISC should 1) Fund projects focused on implementation and embedding of existing LORs in practice; 2) Through funding criteria, encourage new LOR development projects to plan for implementation and embedding. *(Source: Deliverable 1; Deliverable 6)*.

1.9.   **Integration of LORs with existing tools and systems used in the communities.** LORs should be easy to integrate with other tools and systems, such as VLEs as well as the existing institutional collections of digital and web-based resources. JISC should fund more research and development focused on realising interoperability of LORs and their linkage with personal resource management tools and strategies, as well as wider institutional information environment, tools and systems. It must be ensured that all these systems work together to support learning within communities. *(Source: Report on Learning Communities and*

Repositories; Report on Personal Resource Management Strategies; Report on LOR User Interviews)

1.10. **LORs linked to organisational strategy and objectives.** Development of LORs should clearly fit with the institutional strategy and the learning and teaching objectives. Management buy-in is a key variable in implementation of LORs. JISC should make it a condition of funding of all new LOR developments that these be linked closely with the institutional strategies and are explicitly endorsed by senior managers of institutions where such new LOR developments will be implemented. It is however important to realise that a major factor that will impact such linking is the geographic scope of the community to be served by repository. For example, institutional embedding of a LOR serving a closely knit community (such as DIDET) will face different types of challenges than embedding of a LOR aimed at a diverse group (such as communities served by JORUM). *(Source: Report on Learning Communities and Repositories; Structured Guidelines; Report on LOR user interviews)*.

Recommendations related to user development and support

1.11. **User development and support in information literacy.** User information literacy and development is an important factor in adoption of LORs. Therefore LOR development and implementation strategies should explicitly plan for user development and support in information literacy, particularly resource discovery, customisation and integration. Such support should be based on understanding of skill gaps and community needs in information literacies, as well as personal information management strategies and tools used by individual users within the communities (see 1.1.). *(Source: Report on Learning Communities and Repositories; Report on LOR user interviews; Report on Personal Resource Management Strategies; Structured Guidelines; Report on Use Case Implementation).*

1.12. **Provide appropriate user support strategy.** Research indicates that in their acceptance of innovation people move through several stages, from awareness, curiosity and envisioning to tryout and use. To promote LORs and to support users, a support strategy that corresponds to the stage where prospective users are is needed. Too often user support strategies are limited to training, which is only useful if users have already passed through the first 4 stages and made a decision to use the LOR. If potential users and communities are at the awareness stage, there will be little value in pushing them to use the LOR or provide demonstration or make training available. Such strategies could even be counter-productive. In funding future LOR developments, JISC should ensure that the projects include a clearly articulated user support strategy, which is explicitly linked to the users' position on the continuum from awareness to adoption of LOR (see 1.1.) *(Source: Report on Learning Communities and repositories; Report on LOR user interviews; Report on Personal Resource Management Strategies; Structured Guidelines).*

Recommendations related to vision for funding and integration of CDLOR findings with other JISC initiatives

1.13. **Pedagogy pull vs. technology push.** LORs, as an educational technology tool, should be understood in the context of use, and the pedagogic, socio-cultural, and organisational variables should be paid greater attention to. Future developments in this are should be driven by pedagogy and user pull rather than technology push. In initiating new development, therefore, it is important to first identify explicitly the market/users and user needs so that the market then could identify the technology requirements (see 1.1). *(Source: Deliverable 1; Deliverable 6).*

1.14. **Funding initiatives to target the developments with a pedagogic vision rather than technology-driven developments.** Longer-term focus in funding will be needed to ensure embedding of LORs within institutions and communities, and funding models can be a major variable for successful implementation. Funding models should include:

> Staged and supported bidding for funds
>
> Strong requirement for user needs analysis
>
> Strong requirement for rapid prototyping models of development involving members of the target user community at each stage of the LOR design, development and evaluation
>
> Strong requirement for adoption-focused approaches to dissemination, consultation, collaboration and support for ongoing dissemination after project completion.
>
> Explicit planning for implementation and embedding of LORs beyond development and testing *(Source: Deliverables 1-8).*

1.15. **Integration with other JISC initiatives.** The findings of the CDLOR project should be integrated with other ongoing JISC-funded initiatives and programmes on authentication, IPR, trust, rewards and incentives, sharing and reuse of practice models and representations, as well as digital repositories programme projects. Most importantly, LOR work should be integrated with the JISC e-Framework, exploring standards and technologies which could be used and the appropriate level of integration. *(Source: Deliverables 1-8).*

Section 2. Recommendations for Further Research

The CDLOR study was a first attempt to unpack some of the complex and intertwined community and repository dimensions and an initial exploration of actual users' perceptions and experiences with using different types of LORs. However more studies with much larger number of actual users are required to investigate the community dimensions in depth and to validate and if necessary refine the findings of the CDLOR project (e.g. the integrated framework of community and repository dimensions).

Further studies should in particular explore the following aspects:

2.1. **Development, implementation and (longitudinal) evaluation of Use Cases.** This relates to the following use cases/scenarios that were developed but that could not be carried out within the CDLOR project due to time and resource limitations (for details see CDLOR Extended Use Cases[10]):

2.1.1. Integration of LORs and Virtual Learning Environments
2.1.2. Bulk upload of resources (use case 02)
2.1.3. Disaggregating complex resources (use case 03)
2.1.4. Community support for LO adaptation (use case 12)
2.1.5. Reflective practice when embedding Learning Objects (use case 28)

2.2. **Institutional knowledge management strategies and practices related to LORs,** including:

2.2.1. Reviewing institutional strategies and policies on knowledge management and management of digital resources, especially those relevant to LORs;
2.2.2. Developing institutional use cases and recommendations on organisational and staff development policies and strategies

2.3. **The Structured Guidelines for Setting Up LORs should be tested and validated** on existing LORs as well as on new LORs to be introduced (for

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[10] Extended LOR Use Cases, http://academy.gcal.ac.uk/cd-lor/extended_usecases_v1p0.pdf

example, as part of a transformational change project). Research should aim to identify whether these guidelines enable LORs to be taken up more rapidly and effectively. Research in this area should address questions such as: "Are LORs that were developed by using these guidelines more likely to be adopted by institutions, teachers and learners than those LORs that did not make use of the guidelines". Such studies will provide a comparative base to help determine the effectiveness of the guidelines in practice.

2.4. Investigation of the **robustness of the repository and community framework of dimensions proposed** (see Report on Learning Communities and Repositories) **,** including:

    2.4.1. Investigation of the **value of the dimensions in other domains,** for example when applied to implementation of VLEs, Web 2.0 tools and other types of (educational) information and communication technology

    2.4.2. Investigation of **relative importance of the individual dimensions depending on the type of the repository/community.**

The limitation of this study was that the repositories CD-LOR collaborates with are largely in a development stage and have not been rolled out to significant numbers of users yet. This caused problems with data collection. However, a critical question is: why do repositories have few users? Is it only because they are in the early stages of development? Or is it because the repositories do not take into account user needs, current practice, organisational realities and cultural preferences?