



**Digital Electronic Library Integration
within Virtual EnviRonments**

DELIVER EVALUATION

Final Evaluation Report

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1. Introduction

This report forms deliverable EVAL: 030 of the DELIVER project. The aim of the report is to both reflect on and evaluate the work of the DELIVER project, and the deliverables and outputs that DELIVER has produced for the JISC community. This will include consideration of the processes undertaken by the project, lessons learnt and potential 'hidden' outcomes that may be of use to the community.

This report uses the evaluation criteria set out by the LINK^{ER} project: inputs, processes, outputs, outcomes and impacts.¹ It was felt that these headings encompassed the variety of areas in which DELIVER was able to contribute and develop. Each heading is considered in turn, and supplemented by an analysis of the QA process adopted by the project and an examination of the exit strategy for the project.

2. Inputs

The specific institutional focus of the DiVLE programme and the short timescale of the programme dictated the necessity for projects to develop a very precise and clear work plan. It was also essential that this process was informed directly by relevant stakeholders in a timely manner. As well as seeking institution-wide input into the initial bidding process, the DELIVER project dedicated a significant amount of time to user needs analysis and detailed functional specifications for the project. The full process is documented on the DELIVER website.² A separate formative evaluation was also undertaken for the commercial systems investigated by the project. The time spent on this process has helped support and guide project development throughout the 10 month period. The team has been able to proceed with development as planned, and very few changes in focus have been made.

A consideration of the different structures and working practises of the two institutions involved in DELIVER was essential. These differences provided a range of opportunities for the project, but also posed a series of challenges. Both institutions have libraries and associated support systems with similar names and functions, but the customer base and aims of the two institutions means that these central support systems operate in very different ways. The library at DMU provides books, journals and support for undergraduate and post graduate learning and teaching across a large number of different degree subjects. The LSE focuses on a more focused range of subjects and specialist research requirements. This meant that any system or process selected by either organisation would have to meet a wide range of evaluation criteria if it was to be used once the project was completed.

Stakeholder requirements and specifications remained a priority for the DELIVER project throughout development, and were revisited on several occasions by the project team. Stakeholders were given several opportunities to restate their ideas and opinions, notably through (evaluated) training sessions and consultation exercises. Specific care was taken to gather feedback on the commercial systems in place within the project, and for this information to be fed back to the suppliers involved to help inform their own development programmes and

¹ Brophy, Peter. "JISC 07/02 Programme: Evaluation." Programme Meeting: 25th October 2002.
<<http://www.jiscmail.ac.uk/files/JISC-DiVLE/oct02.zip>>.

² Harris, Nicole. "User Needs Analysis Report." DELIVER Formative Evaluation.
<<http://www.angel.ac.uk/DELIVER/deliverables/#UNA>>.

processes. A clear example of this can be seen in the 'wishlist' developments as part of the ReadingListDirect evaluation undertaken at LSE.³

The timescale of the project and the use of several part-time seconded staff across the two partner institutions made project and time management a high priority for the DELIVER team. It was essential that all staff were fully informed and aware of deadlines and team requirements in order to meet the deadlines laid out by the project plan. Any slippages or lost time within a 10 month framework would have had a significant negative impact on project development and success. To support this process, the project made use of Projectplace – a web-hosted project management system.⁴ This product was appropriate in terms of take-up and use (the interface and tools were generally deemed to be intuitive) and enabled effective reporting and tracking of staff time and development, and was easily accessible for both partner institutions. The project management reports were useful for feeding into the reporting framework required by the JISC. This process has been generally successful, and would be recommended to other projects.

3. Processes

The detailed functional specification developed by the project divided work into several streamed processes:

- UNA: User Needs Analysis. This process is fully outlined in section 2.
- ASD: ANGEL⁵ Server Development. The DELIVER project made use of core ANGEL middleware to inform and support the tools developed within the project. The functional requirements specification identified key areas of development work required for ANGEL tools to support DELIVER development.
- CTI. Customised Tools and Interfaces. Tools were developed by the team to address specific functional requirements within DELIVER. The Universal Harvesting Tool (UHT) and Smart Link Finder (SLF), allow users to 'shop' for and discover resources, submit resources to an ANGEL Resource Manager, and add a stable URL for the resource to a course page. The list of resources created by the user can then be easily annotated and reformatted for course use.

Another important development was the Library Template (CTI.021). The design and the tools used to fully create this template are fully explained and documented on the DELIVER website.⁶

- DCT: DEVIL Customised Tools. The DELIVER team undertook some development work on behalf of the DEVIL⁷ project to support development.
- IDD: Institutional Development and Deployment. This necessarily formed an important part of the project, as the team aimed to fundamentally change current working practises

³ Harris, Nicole. "Detailed Analysis of ReadingListDirect (Sentient Discover)." DELIVER Evaluation. <<http://www.angel.ac.uk/DELIVER/deliverables/#EVAL>>.

⁴ Projectplace. <<http://www.projectplace.com>>.

⁵ ANGEL (Authenticated Networked Guided Environment for Learning). <<http://www.angel.ac.uk>>.

⁶ Secker, Jane and Nicole Harris. WebCT Library Template. <<http://www.angel.ac.uk/DELIVER/deliverables/#CTI>>.

⁷ Project DEVIL (Dynamically Enhancing VLE Information from the Library). <<http://srv1.mvm.ed.ac.uk/devilweb/index.asp>>.

within both partner institutions through the project work. A key element of this work was constant communication between team members and the staff, working groups and committees at both LSE and DMU.

- **EVAL:** Evaluation. These processes were ongoing throughout the lifetime of the project, and addressed the specific and changing needs of both institutions. It is important to note, however, that these processes were limited by the framework of the project. As far as possible, similar methodologies and practises were adopted at both sites to allow for full comparative evaluation. This was achieved by the project team members meeting and agreeing a series of methods that were suited to the evaluation task and working as though they were in one location and institution rather than two. It clearly indicates that projects can be carried out successfully between physically separated institutions provided regular and clear discussions occur.

Running across all of these work areas was a strong focus on continued communication between all stakeholders in a timely manner. This included the commercial partners directly involved in, or connected to the project, staff involved in the DiVLE programme as a whole, and the wider community, through dissemination. A full list of both internal and external dissemination activities can be found on the DELIVER website.⁸

4. Outputs

The main purpose of the project was to develop a suitable Library area within a Virtual Learning Environment to allow course designers to make use of the most appropriate tools to access and display directed learning resources. DELIVER development has focussed on this area, evaluation of tools to feed this development, and development of tools to address areas not covered by commercial applications.

The tables below detail the deliverables produced by the DELIVER project.

PM - Project Management			
PM.010	JISC Basic Project Information	01/10/02	Basic Information (doc format). Basic Information (pdf format).
PM.020	Project Plan	01/11/02	Project Plan (doc format). Project Plan (pdf format).
PM.030	Project Web Presence	18/11/02	http://www.angel.ac.uk/DELIVER/.
PM.040	DELIVER Consortium Agreement	20/12/02	Complete (internal only).
PM.050	Service Level Agreement with DEVIL	20/12/02	Complete (internal only).
PM.061	JISC Monitoring Report 1	31/01/03	Monitoring Report 1 (doc format). Monitoring Report 1 (pdf format).
PM.062	JISC Monitoring Report 2	30/04/03	Monitoring Report 2 (doc format). Monitoring Report 2 (pdf format).
PM.063	JISC Monitoring Report 3	21/07/03	
PM.070	JISC Formative Report	28/02/03	Formative Report (doc format). Formative Report (pdf format).

⁸ DELIVER Dissemination. <<http://www.angel.ac.uk/DELIVER/dissemination/>>.

PM.080	JISC Summative Report	31/07/03	(this report).
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UNA - User Needs Analysis			
UNA.010	UNA Design (LSE)	15/11/02	Complete, see UNA report.
UNA.020	UNA Design (DMU)	15/11/02	Complete, see UNA report.
UNA.030	User Needs Report The formal User Needs Report will be the most useful document for stakeholders. The Excel list provides a non-formatted complete list of recommendations.	18/12/02	User Needs Report (doc format). User Needs Report (pdf format). Primary list of identified needs (excel format).

TRS - Technical Requirements			
TRS.010	Feasibility Report on DEVIL user requirements	10/01/03	Complete.
TRS.020	Development spec: ANGEL	17/02/03	(Various docs in ANGEL Team workspace).
TRS.030	Development spec: DELIVER	17/02/03	DELIVER Development Specification (doc format). DELIVER Development Specification (pdf format).
TRS.031	RLM Systems: Evaluation Report This report will be of interest to any institution wishing to adopt a Resource List Management System. It contains a review of the following systems: Talislist, ReadingListDirect and Bookworm.	28/02/03	RLM Evaluation Report (doc format). RLM Evaluation Report (pdf format).
	Evaluation Report: Formal Response from Talislist. This link will take you to the formal response by Talislist to the Evaluation Report, which gives useful updates on Talislist progress.	13/06/03	Formal Response from Talislist (html format).
	Evaluation Report: Formal Response from RLD. his link will take you to the formal response by RLD to the Evaluation Report, which gives useful updates on RLD progress.	06/03/03	Response from RLD (pdf format).
	Evaluation Report: Response from Loughborough. An update on the Loughborough Reading List System, and response to the evaluation	06/05/03	Response from Loughborough (rtf).

	report.		
TRS.040	Development spec: DEVIL	17/01/03	Agreed with Project DEVIL.

ASD - ANGEL Server Development			
ASD.010	ASD Development Plan	24/02/03	ASD Workplan (xls format) ; Review 10 April.
ASD.020	ASD Development Phase 1	16/04/03	Complete.
ASD.030	ASD Development Phase 2	16/07/03	Visit ANGEL download pages for software developed.

CTI - Customised Tools and Interfaces			
CTI.010	CTI Development Plan	24/02/03	CTI Workplan (xls format) .
CTI.020	CTI Development Phase 1	16/04/03	Complete.
CTI.021	WebCT Library Template	11/07/03	Library Template (doc format) . Library Template (pdf format) .
CTI.030	CTI Development Phase 2	16/07/03	Visit ANGEL download pages for software developed.

DCT - DEVIL Customised Tools and Interfaces			
DCT.010	DCT Development Plan	24/02/03	Agreed with project DEVIL.
DCT.020	DCT Development Phase 1	16/04/03	Complete.
DCT.030	DCT Development Phase 2	16/07/03	Complete.

IDD - Institutional Deployment and Dissemination			
IDD.010	Release Alpha (pilot) System	16/04/03	Complete.
IDD.020	Release Beta System	18/06/03	Complete.
IDD.030	Run DMU Staff Workshop	16/06/03	Complete.
IDD.040	Run LSE Staff Workshop	16/06/03	Complete.

EVAL - Evaluation			
EVAL.010	Evaluation of ReadingListDirect	01/07/03	Detailed Analysis of ReadingListDirect (doc format) . Detailed Analysis of ReadingListDirect (pdf format) .
EVAL.020	Evaluation of TalisList	01/07/03	Detailed Analysis of TalisList (doc format) . Detailed Analysis of TalisList (pdf format) ..
EVAL.030	Final Evaluation Report	31/07/03	(This document).

5. Outcomes

A significant part of project development was focussed on resource list management and as such the project outcomes are mostly focussed in this area. The detailed evaluations of both TalisList and ReadingListDirect (now Sentient DISCOVER) have helped inform product development in line with community requirements. Both vendors have demonstrated a willingness to engage with the product requirements and recommendations identified by stakeholders throughout the lifetime of the DELIVER project.

Through the assessment of ReadingListDirect the importance of e-coursepack developments, and subsequently the HERON service, for developments at LSE was highlighted to Sentient, the vendor of ReadingListDirect. Both Sentient and HERON⁹ have responded to this requirement, and the two parties are currently investigating ways in which they can work together to provide services for the community.

The IMS Charter for Resources List Interoperability¹⁰ is a major development arising from input from projects involved in the DiVLE programme. A requirement for a standard specification for describing resources lists was identified at the second JISC DiVLE programme meeting, in order to support exchange of data between systems such as Virtual Learning Environments, Library Systems, and dedicated Resource List Management Systems. This requirement was fed, through the Centre for Educational Technology Interoperability Standards, to an appropriate group within IMS. This work will be an important element of Digital Library developments within the IMS arena.

The joint effort of projects involved in the DiVLE programme, such as that shown towards the IMS Charter, has in itself had positive outcomes for the community. This was highlighted at a JIBS meeting held in Oxford, where several of the DiVLE projects presented.¹¹ As a project, DELIVER has engaged in several other dissemination activities with the community, particularly to promote useful outcomes such as the Resource List Management System evaluation. Full details can be found on the DELIVER website.¹²

The specific institutional outcomes will not, and cannot, be measured until the new academic year. The funding period of the DiVLE programme did not allow a realistic framework for embedding technology within institutions, and reflecting on practical results. The work in this area will therefore be driven forward by specific internal groups within the partner institutions. Although it is likely that internal evaluation will be documented, it is unlikely that this information will be shared strategically with the community without further funding and effort for all DiVLE projects.

An outcome at DMU that may now be possible is to provide academics throughout the university with some guidance of the most effective manner in which to provide students with resource lists. Without the DELIVER project is likely that most academics would each continue with their own "self styled" resource lists. However, the introduction of Talislist gives the university the opportunity to provide a consistent method of giving students resource list material in an apposite and structured manner.

6. Impact

As expected by the case-study approach of the DiVLE programme, the major impact of the work of the DELIVER project will be on the partner institutions as they look at taking forward the lessons learnt by the project. For LSE and DMU, this will involve a reflection and decision-making process, using information produced by the project, and recommendations made.

⁹ HERON. <<http://www.heron.ingenta.com/>>.

¹⁰ Heyer, Oliver and Mladen Maljkovic. IMS Project Team Charter: Resources List Interoperability. <<http://www.imsproject.org/rliCharter.pdf>>.

¹¹ JIBS. Digital Libraries and VLEs. <<http://www.jibs.ac.uk/meetings/vle/index.html>>.

¹² DELIVER dissemination. <<http://www.angel.ac.uk/DELIVER/dissemination/>>.

The DELIVER has, however, had a significant impact on the JISC community. This can mainly be seen in the work put into the IMS RLI Charter, and the role of the project in bringing together Sentient and HERON to discuss joint opportunities. It is much too early to assess the true impact of these developments, but it is likely that they will have important consequences for the community.

Reports produced by the DELIVER project have also had a demonstrable impact on the community. The project team is aware of at least four UK HE institutions that have utilised the DELIVER Resource List Management System Evaluation Report as a basis for internal decision making.

7. Quality Assurance (QA)

The project was guided by two main bodies in developing QA for materials and processes: the advice provided by the QA Focus at UKOLN, and the requirements and advice supplied by the individual institutions. It was important to satisfy the needs of both of these bodies, as tools and developments will potentially be used by both the institutional community, and the wider JISC community.

- Web QA. The DELIVER website validates as XHTML 1.0 transitional, in line with recommendations made by the JISC QA Focus post. This site is also CSS compliant in line with W3C guidelines.
- VLE QA. The project consulted the most appropriate groups within the two partner institutions, namely the Learning Technology Centres, in order to best meet the needs and guidelines set down by the two partner institutions. The template designed for WebCT meets all of the requirements laid down by LSE for quality assurance within the VLE. Any institution wishing to develop a similar template should look for advice and guidance from internal staff.
- Accessibility. All accessibility guidelines have been followed where possible, taken advice as appropriate. Compliance with W3C accessibility guidelines was made a requirement for commercial system evaluations.

8. Exit Strategy

The focus of the DiVLE programme has clearly directed projects, and their affiliated partner institutions, towards internal developments and solutions. As such, the DELIVER project has documented guidelines for the partner institutions that will inform future take-up and development decisions in-house. In the process, the project has also tapped into broader concepts that will be of general interest to the JISC community. It is important that these initiatives continue to be supported appropriately by stakeholder groups to best inform both community and institutional development in the areas of information and learning environment join-up. This will involve commitment where possible from the JISC, educational institutions, and commercial vendors, who are already reporting an increased demand for such a focus as a result of the programme developments.

The categories below describe key areas where development work may still be required.

- Resource List Management Developments

A key outcome of the DiVLE programme has been the development of the IMS Charter for Resources List Interoperability in response to demands from the programme community. This initiative brings together key players from library systems vendors, resource list management system suppliers, and e-learning vendors. It is hoped that this interest continues as the Charter is developed, and is seriously addressed in implementation by the parties involved.

Individual institutions have a clear role to play in the success of any interoperability standards, by placing a clear requirement on the vendors to engage with and implement the specifications. Such activity requires support within the community and JISC is ideally placed to engage at this level through the work of CETIS (Centre for Educational Technology Interoperability Standards). The risk to be considered through this approach is the increased demands placed on the time of CETIS staff as IMS specifications increase in both number and usage. Clear support for any new standards may require additional funding.

There is a growing interest in the use of Resource List Management Systems within the community, although there appears to be relatively few unique systems available for use in this context. The DiVLE projects have suggested a need for a survey of resource list management techniques across HE and FE to help support this growing interest and the role of initiatives as laid out in the IMS Charter. Such an activity has not been undertaken by any of the projects engaged in the DiVLE programme.

- In-house

Internal developments at both the London School of Economics and De Montfort University will be informed by reports prepared throughout the DELIVER project. These will be passed to appropriate decision-making groups, for implementation and take-up decisions. Such activities will rely heavily on continued communication across the school that has been fostered throughout the project lifetime.

Implementing systems that directly affect the business processes of more than one department within an institution requires very specific management. It would be very easy for the initiative to be driven forward by one group, at the expense of the needs, requirements and workload of another. Departments necessarily have different goals and agendas, and each must learn to understand and accommodate those of other departments for cross- institutional initiatives to be successful.

The ideas laid out in the DELIVER project will directly affect working practices within Libraries, E-Learning Centres, and Information Services, with a planned outlook for changing the working practices of all institutional staff. Such a process must be carefully managed and fully supported by working groups across the institutions.

A significant area of work identified by the project, but not directly addressed through project development, is access management requirements for the initiative. These ideas will need to be developed by the partner institutions for successful join-up between information and learning environments to occur. LSE has some level of support in the form of the JISC funded SECURE project¹³, but a long-term strategy to address the issues raised will be required.

- Key Product (ANGEL)

¹³ SECURE (Secure Environment for Certificated Use of Resources). <<http://www.angel.ac.uk/secure/>>.

The work carried out in the DELIVER project has built on the tools developed in the JISC funded ANGEL project¹⁴. The specific development of the harvesting tools and the Smart Link Finder provides a clear application of ANGEL middleware that has been requested by the community. This focus was deliberate, and the DELIVER project has been 'branded' as part of ANGEL development to support this interest.

Such development would benefit from renewed promotion within the community. The set-up of the Open Source Advisory Service¹⁵ may also provide a clear channel for information on archiving, licensing and community development for open-source tools within the JISC community. It would be useful for the project to utilise this opportunity to properly license and open-source both ANGEL and DELIVER product, following the example of JAFER¹⁶ and the advice of OSS Watch, although this will be dependent on available staff time and resources.

The ANGEL website has been appropriately updated to include DELIVER developments, and will continue to be maintained as per the ANGEL exit strategy planning.¹⁷

9. Conclusion

The DELIVER project has successfully met the aims, objectives and deliverables as laid out in the initial project plan submitted to the JISC. Through development work, internal and external communication, and effective dissemination the project team has ensured that the outputs of the project have been developed into positive outcomes for and impacts on the partner institutions and the wider community.

¹⁴ ANGEL (Authenticated Networked Guided Environment for Learning). <<http://www.angel.ac.uk/>>.

¹⁵ OSS Watch: Open Source Advisory Service. <<http://www.oss-watch.ac.uk/>>.

¹⁶ JAFER: Java Access for Electronic Resources. <<http://www.lib.ox.ac.uk/jafer/>>.

¹⁷ Harris, Nicole. "ANGEL Project Summative Evaluation Report." ANGEL Evaluation. <http://www.angel.ac.uk/public-files/pdf/WP7_final.pdf>.