



Overview of Project

1. Background

This project builds on the work done in the Learning Matrix (LMX) project, one of the distributed e-learning pilot projects in the northwest region. The partners in this proposed project include the three fully funded Lifelong Learning networks (LLNs) of the region and Phosphorix Ltd. who developed the open-source software at the heart of LMX. The proposal is oriented towards improving interoperability between institutions involved in the LLNs and is a technology-focussed collaboration of the institutions comprising the LLNs.

The LMX project set out to pilot an approach that would be able to support subsequent lifelong learning networks in the region and nationally. Working with Phosphorix Ltd., the previous work done by the SHELL project (MLE programme) was considerably extended and later incorporated into the work of other projects in the distributed e-learning programme (EELLS in particular). The components of the completed system together enable an interoperability network (ioNetwork) reaching out to a group of HE/FEIs and composed of nodes associated with each institution (ioNodes) networked over VPN into a hub-satellite configuration. The functionality provided the ioNetwork is designed to allow sharing of information about courses and learners between institutions, which is an issue of immediate and pressing concern for the lifelong learning networks in this partnership.

The overarching aim of the project is to set up an interoperable network of institutional nodes connecting the institutions involved in Lifelong Learning network activities in the northwest with management interfaces and tools supporting the administrative needs of LLN activities.

The work done by this project will enable the processes alluded to in the following scenario.

The LLN administrative context

All additional student numbers (ASNs) allocated to the GMSA (Greater Manchester Strategic Alliance) Lifelong Learning Network for distribution to member institutions are routed through MMU, and MMU is responsible for the HESA return.

A Credit Framework and the associated modules (Unit Bank) provide small (CPD type) elements of learning, which can ultimately be built up to the level of a specific award (e.g. Cert HE or Foundation Degree). They also allow individual programmes to be delivered within the GMSA LLN which comprise units delivered at, and validated by, a number of institutions.

The GMSA Hub hosts the Unit Bank (where course offerings are described in XCRI) and therefore acts as the indexing system for all module level information in terms of mapping individual college/university data (and codes) to MMU codes. Each institution has an administration interface to the ioNetwork where they can select courses they are validated to offer and add the extra information about where and when it will take place.

The learner perspective

Paul is a technical assistant working for an independent TV production company. He has a level 3 NVQ in electronics, but is now working exclusively in postproduction. He has decided to upgrade his qualifications in this area, and has done some research on the GMSA website, from this he has decided to apply to the Certificate of Higher Education in Postproduction delivered jointly by City College and MANCAT. Having registered and entered personal data on the GMSA Learner Portal site, Paul can easily make an online application to the part time route of the programme by adding some more specific data to his personal information already entered and mapped to a GMSA unique student identifier. The application is then automatically forwarded directly to MANCAT (who are the lead institution).

MANCAT are then able to process Paul's application, and decide to offer him a place. Paul's details stored on the GMSA Hub are used to partially pre-complete MANCAT enrolment, other details being added in the usual way. When all the enrolment process is complete at MANCAT, this data is sent

through the ioNW2 admin interface to City College who can then enrol Paul onto their systems, whilst keeping his details mapped to the GMSA unique identifier. Paul receives notification and sees his course enrolment listed in his “my courses” area of the portal.

When Paul successfully completes the programme, achievement data is sent initially from MANCAT and City College to Salford, and then onwards to MMU through the GMSA Hub. During this process Paul’s achievement data is captured within the Hub and stored in Paul’s personal record where Paul can see it and use it to prepare CVs or e-portfolios.

Paul continues to work successfully in postproduction for a number of years, but gradually moves into a supervisory role. At a point five years after completion of the Cert HE, Paul decides to add to this achievement by putting the 120 credits already gained towards a 240-credit foundation degree. MMU have in the intervening period validated a ‘Shell Scheme’ Foundation Degree based around a GMSA Foundation Degree Framework.

Paul logs on to the learner portal, where he can check his online transcript. He is also able to identify the new Foundation Degree as his target award, and at the same time choose a menu of suitable modules from both MMU and Salford. He is able to make an application for the part time FD programme directly from the GMSA Portal, and his details (including an e-transcript) are forwarded directly to MMU through the ioNW2 portal. MMU are then able to make a decision on Paul’s application (including the 120 credits advanced standing from previous study), and having accepted him, are able to forward his data through the ioNW2 administration interface to all the module providers.

2. Aims and Objectives

The overarching aim of the project is to set up an interoperable, standards-based network of institutional nodes connecting the institutions involved in Lifelong Learning network activities in the northwest. Management interfaces and tools operating over this network will support the administrative needs of LLN activities. Within this the project aims to:

1. To take the existing set of software tools further along an open-source maturity model path so that it can be more readily taken up by institutions, including the partner LLN institutions.
2. To enhance the set of software tools with management interfaces and additional services that will provide the functionality needed to track learners over learning episodes spanning more than one institution.
3. To investigate how information about the skills/competencies addressed by a course can be represented within the XCR1 schema, and prototype data preparation tools for this aspect
4. To build a pool of expertise and publish case studies that will help IT managers in institutions establish processes for interoperability between institutions’ data management systems and ioNetwork services.
5. To monitor and support institutions in putting the interoperable network, “Interoperable Network North West”, in place and in using its functions to administer learners and publish information about learner opportunities.

The specific objectives, supporting the realisation of the scenario, will be to:

- Package the existing code and improve documentation so that the task of adding an institution into an interoperable network is simplified.
- Gather detailed requirements about the essential administrative tasks that need to be accomplished, add any additional ioNetwork webservice necessary for these tasks and adapt the administrative interface giving access to the ioNetwork services.
- Continue the work done in the LMX project to allow institutional data managers to capture external data and share information contained in local IMS databases via their institutional ioNetwork nodes
- Investigate the methods that could be used to incorporate metadata about skill content into course/module descriptions
- Implement the interoperability network (Interoperability Network North West) across institutions involved in the three LLN partners, and monitor its use in administering their learners

3. Overall Approach

The software base developed by Phosphorix Ltd for the Learning Matrix and other projects has been developed quickly in response to the needs of the projects, which were piloting working systems in a relatively short timescale. The resultant software set addresses a very broad range of functionality, as use-cases and requirements emerged from each of the project using the ioTechnology approach. At the beginning of this project, there are two subsets of the technology: (a) components concerned with networking, data management and institutional interoperability, and (b) components for building portals that can utilise services provided by the ioNetwork technologies. It is the first of these that ioNW2 is concerned with.

The technologies are Java, service-oriented (particularly web-services) and make use of existing, well-developed open-source products such as Tomcat and Apache. Although the open-source code will be provided by Phosphorix upon request, the pace of development has meant that packaging and documentation are lagging behind. In short, it is not currently very easy to read about and understand what the software is for, and to download and deploy it. An important part of the project is to take stock off the current position in terms of software development, and to package and document a subset of it so that it can be readily taken up and built upon. There will also be some strengthening of the functionality of certain aspects as they relate to the scenario above.

The work is in three phases

Phase 1 – Requirements gathering and packaging

- Working with LLN managers and others involved with learner administration, generate specifications for learner administration management interfaces to ioNetwork services for subsequent implementation by developers.
- Ongoing work on re-conceptualising, simplifying and generating documentation for the base-services required to deploy an interoperability network structure that a number of institutions can use to enable the activities in the scenario.
- The outcome of this will be downloadable software packages and accompanying documentation.
- Additionally, working with LLN managers, Sector skills experts, XCRI project and developers, investigate requirements and strategies for skills representation in metadata. Agree and implement a “first approximation” approach

Phase 2 - Rollout

- First trial of packaging and documentation with selected institutions for evaluation and adjustments
- Wider rollout to those NW institutions involved in the SOLVS project, and start of interoperation connection work with institutional data systems where possible

Phase 3 – Usage of system with learners across the network

- Monitoring of the system in use in the different LLN contexts
- Evaluation and reporting

Interoperability issues

The approach taken within the project allows for data generated through the tools and services provided to be exposed in interoperable standard formats. This is done through a flexible approach catering for the fact that the standards in this area are not yet firmly established and will certainly change even in the timeframe of the project.

The project and the related SOLVS project will contribute substantially to the articulation of the Extended Course Related Information (XCRI) standard and will work closely with Mark Stubbs who is leading that initiative. In the SOLVS project learners are able to search for learning modules relating to their skills needs. This implies some searchable resource of learning opportunities, and a mechanism for describing them in a way that relates to skills development. The project will provide a

mechanism for the aggregation of information about courses in LLN schemes into a “module bank”. This course information sharing will be carried out by way of the Exchanging Course Related Information (XCRI) schema. The ioNW2 network services will include the means to prepare and publish this course information and the outputs of the two projects combine at this point.

Scope and boundaries

As mentioned above, the software already developed covers a broad range of functions. This project only looks at a subset of this. The project will be mainly concerned with **ioNetworkNode** packaging, a recently coined term which refers to an installation enabling secure messaging transactions, data storage, standards conversion, indexing and associated admin tasks. These ioNetworkNodes can be linked into various network configurations.

With regard to the representation of skills within a packet of XCRI data about a course, it is recognised that this is a very complex area at a variety of levels. The scope of the work here will be limited to investigations of an approach to representing the skill/competency information maintained in the National Occupational Standards maintained by the Sector Skills councils. A proof of concept demonstration will be produced.

There are a large number of provider institutions involved in the three LLN partners in this project. It is anticipated that individual institutions will be engaged in the network at different levels. Some will participate fully and have robust linkages to their internal data systems, but others will engage less fully. However the project will aim to offer clear and documented pathways to fuller participation for any institution.

Critical success factors

Engagement with educational institutions at the appropriate levels is critical. The SOLVS project will rely on the services provided by this project to present pan-institutional information to learners through learner portals.

The quality of the software packages and documentation will also be crucial to this. Participants need to be clear about the functions and features being offered, and to feel confident about installing and working with them.

4. Project Outputs

- An interoperable network allowing LLN institutions in the North West to track work-based and vocational learners undertaking courses in the LLN programmes
- Installation packages and documentation for deploying and configuring ioNetwork components
- An evaluation report on the operation of the system, highlighting challenges, implications, successes and areas for further work
- Use cases, case studies and scenarios illustrating and clarifying the utility of the systems
- Feedback to the e-Framework reference model on how skills information about individual courses or modules could be carried within the XCRI schema

5. Project Outcomes

- The project tackles issues common to Lifelong Learning Networks, and will impact on national developments. The project will look for opportunities to work synergistically with other similar projects for mutual benefit.
- The project will clarify business process changes implied by LLN operation, and have a continuing influence on practices in the Northwest region
- Increased institutional awareness of the benefits of publishing course information in XCRI format for aggregation by different services.
- Contribution to the e-Framework through the work on skills/competencies. Working directly with Sector Skills Councils' National Occupational Standards will maximise the impact of this work.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
LLN managers in Northwest	Project outputs integral to operations	High
LLN institutional partners, various management levels	Will be crucial to implementation	High
Phosphorix ltd business managers	The extent to which the project work can be a part of their business model	High
Sector Skills Councils	Partners to LLNs, links to employers, and competencies work	Medium
Vocational based learners	Beneficiaries of systems through SOLVS project work	High
Other LLN managers in other regions	Inform own strategy	low
XCRI eFramework project	Support to project, feedback from project	medium

7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Staffing				
Staff with appropriate skills and experience cannot be recruited to project team	2	5	10	A suitable project manager has been identified and involved in the bid process. Phosphorix have agreed to be project partners
Critical staff leave during the project	3	4	12	Project planning documentation clear and kept up to date. Open style of management so others can step into new roles if needed
Organisational				
LLNs withdraw from project	1	5	5	The LLN partners aims and requirements and activity built into design of systems so intrinsically motivated to support project work. A statement of the aims and terms of the partnership will be agreed.
Participating institutions not willing to do required work	2	4	8	Early consultation with IT service departments. Project management group to take responsibility for their organisational inputs
Project “drift” from aims, or stuck on particular problems	3	4	12	External evaluator in “critical friend” mode to alert early. Management of expectations e.g. some problems will need temporary “kludges”
Technical				

Technology not capable of meeting operational needs in the timescale	1	5	5	"Fallback" processes designed into delivery planning
Solutions fall short of partner expectations	2	3	6	Involvement of partners in requirements gathering and development cycle
Partnership difficulties with developer partner	1	4	4	Relationships established in previous projects. Communication channels explored, e.g. Skype, Blog Phosphorix will expect to visit frequently during the project
External suppliers				
Legal				
Data protection issues not resolvable	2	5	10	Early examination of issues and agreement on strategy

8. Standards.

Name of standard or specification	Version	Notes
XCRI	CAP	Will contribute to further development
HRXML		Exploratory
IMS LIP/UK LeAP		Exchange of Learner data
Webservices, SOAP		Used throughout

9. Technical Development

The project will work with development partner Phosphorix to mature open-source technologies around the ioNode approach. Phosphorix will fully engage with the programme arrangements for peer commentary on software developments.

The technology employed will build on the work already done within the Learning Matrix project and projects in other regions that have also been working within the same technological framework (EELLS, PDP4LIFE). This technology, being developed by Phosphorix Ltd on an open-source maturity model, is open-source, java-based and standards oriented. It takes a service oriented approach with Webservices/SOAP as the primary implementation technology. Nodes (ioNetworkNodes) deploying the technologies are linked into an interoperable network (operating over VPN if required) referred to as an interoperable network (ioNetwork).

The technology set has several components built around a secure messaging framework. It supports learner information in IMS LIP/UK LEAP, and includes functionality for describing and publishing learning opportunities (courses) in XCRI format. There are also additional webservices (ioMorph) to aid in the transfer of data from institutional databases to the interoperable network of nodes.

The work in this proposal will contribute to the further development of these technologies, and will be available to the JISC community as open-source software. Information about the technologies is available at www.phosphorix.co.uk

10. Intellectual Property Rights

IPR is not expected to be a substantial concern. All generated learning resources and e-portfolio activities will be placed in public domain. Software produced will be available on open-source license at project close.

Project Resources

11. Project Partners

Greater Manchester LLN (Manchester Metropolitan University)

1st Floor Tresco House
149–153 Oxford Road
Manchester
M1 7EE
Contact: Cath Walsh cath.walsh@gmsa.ac.uk

Cheshire and Warrington LLN

University of Chester
Warrington Campus
Crab Lane
Warrington, WA2 0DB
Contact: Selina Green s.green@chester.ac.uk

Greater Merseyside and West Lancashire Lifelong Learning Network

2nd Floor, Silkhouse Court
Tithebarn Street
Liverpool
L2 2LZ
Contact: Gary Mallon mallong@edgehill.ac.uk

Phosphorix Ltd

Seolea
Tedburn Road
Exeter
Devon
EX4 2HD
Contact: Selwyn Lloyd Selwyn.Lloyd@phosphorix.co.uk

12. Project Management

Executive Management group: ioNW2 and SOLVS

Members: Representatives from the three LLNs, Employment sector representatives and key stakeholder organisations

Function: To oversee both projects' progress and make high level strategic decisions affecting the projects. To assist project management in matters of institutional, regional and national involvement

Operational Management Group: ioNW2 and SOLVS

Members: Individuals with operational responsibilities in organisations directly involved in the project, project manager, project leader, project officer, CI sector lead

Function: To support the project management team by liaising and taking responsibility for critical work within their organisation. To assist with operational decision making and to report on progress to the Executive Management group. Sub groups will address project specific activities.

Projects Director: ioNW2 and SOLVS

Dr. Roger Clark, Roger.Clark@gmsa.ac.uk 0.50 FTE

- Regional strategic development
- Co-ordination of the two projects' work
- Maintaining implementation plans for both projects
- JISC community involvement

Project Manager: ioNW2

Dr. Roger Clark, Roger.Clark@gmsa.ac.uk 0.50 FTE

Function: To manage the project according to JISC guidelines. To liaise closely with key individuals and groups among partners and contributing organisations on the one hand, and the development partners on the other to produce requirements and specifications for software systems and interfaces.

Project Officer: ioNW2

Adele Edgar Adele.Edgar@gmsa.ac.uk 0.8 FTE

Function: To assist the Projects Director/ ioNW2 Project Manager with the tasks of project management and help in activities such as staff development and training. Also is externally funded to provide sector specific expertise to the SOLVS project.

13. Programme Support

No additional support requirements anticipated

14. Budget

Use the budget template and attach the project budget as Appendix A. Explain any changes from the budget in the agreed project proposal.

Detailed Project Planning

15. Workpackages

*Use the workpackages template to plan the detailed project work and attach as Appendix B. Clearly indicate project deliverables and reports (in **bold**), when they are due, phasing of workpackages, and explain any dependencies. You may also attach a Gantt chart, diagram, or flowchart to illustrate phasing.*

16. Evaluation Plan

Evaluation will be carried out in conjunction with Glenaffric Ltd who are developing a programme wide evaluation framework for JISC. The project will pilot the application of this framework. Glenaffric will be involved in project planning and throughout. The aim of evaluation will be to draw out the value of the project for the stakeholder groups. A detailed evaluation plan will be produced after early discussion with Glenaffric.

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
	Institutional			

	engagement in ioNetwork			
	Admin staff experience in operation		interviews “over-the-shoulder” observation.	
	Competencies in XCRI contribution	Sector bodies engagement		
	LLN perceived value			
	Open-source maturity progress			Against JISC open-source maturity model

17. Quality Plan

Explain the quality assurance procedures you will put in place to ensure that project deliverables meet quality expectations and acceptance criteria. Complete the table below for each of the major deliverables providing as much detail as possible. Repeat the table as many times as necessary to accommodate all deliverables.

Output	Administrative Interfaces				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
	Functionality acceptable to LLNs	Early prototyping, and feedback-improvement cycle	LLN manager evaluations	Project management, Phosphorix	
	Course bank info XCRI –CAP compatible		Exported Course data validated by JISC XCRI aggregator	Phosphorix	

Output	Software packages and documentation				
Timing	Quality criteria	QA method(s)	Evidence of compliance	Quality responsibilities	Quality tools (if applicable)
	Understandable and usable	Testing by potential users	Evaluations and case studies	Project management	

18. Dissemination Plan

Explain how the project will share outcomes and learning with stakeholders and the community. List important dissemination activities planned throughout the project, indicating purpose, target audience, timing, and key message.

Timing	Dissemination Activity	Audience	Purpose	Key Message
--------	------------------------	----------	---------	-------------

	Project Weblog reporting progress including issue specific discussion areas	JISC community	Encouraging ongoing contribution	
	Periodic reporting and presentation to NW LLN group	Lifelong Learning network managers	Keeping project on track, and forward planning	
	Contribution to CETIS enterprise and ePortfolio SIG events and publications	JISC and international communities		

19. Exit and Sustainability Plans

Project Outputs	Action for Take-up & Embedding	Action for Exit
Interoperability network	Continuous dialogue with LLNs, forward planning to extended coverage. Planning for long-term hosting and increased load	Arrangements for hosting and load management beyond project end
Competency/skill additions to XCRI	Demonstration of potential uses	Link to demonstration available, presentation to SSCs

List any project outputs that may have potential to live on after the project ends, why, how they might be taken forward, and any issues involved in making them sustainable in the long term.

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address
Software packages and documentation	Of interest to other LLNs etc	Available in a repository. Development & management community broadened	Who can take the burden of managing this as an open-source development community

Appendixes

Appendix A. Project Budget

Appendix B. Workpackages

Management structure

