



**Interoperability Pilots II
(Scotland Wales and Northern Ireland –
SWaNI)**

Programme Final Report

**Glenaffric Ltd
January 2004**

Acknowledgements

This final programme report is based on documentation produced during the programme by a number of contributors and from various sources. In particular the report draws on the findings, conclusions and recommendations expressed in the final reports submitted by the projects, and by representatives of vendor organisations. The report also draws on the minutes and supporting papers of the SWaNI Programme Steering Group, information supplied by the Programme Manager, and the Formative Evaluation Report.

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Executive Summary

The Joint Information Systems Committee (JISC) Interoperability Pilots II Programme (Scotland, Wales and Northern Ireland – SWaNI) was announced in April 2002. Building on the experiences and outputs of the Interoperability Pilots programme in English further education (FE) colleges, SWaNI aimed to establish interoperability between MLE systems using application profiles based on specifications developed by the IMS Global Learning Consortium, with extensions appropriate to the FE sectors in Scotland, Wales and Northern Ireland.

The expected outcomes of the programme were:

- Further proof that vendors can achieve interoperability between core component systems found in MLEs by designing and building each component system to agreed specifications
- Test and evaluate the application of these systems to learning situations found in Colleges in Scotland, Wales and Northern Ireland
- The outcomes and lessons learnt from these studies can be used by the JISC community to inform further MLE related work
- The outcomes and lessons learnt from these studies can be used to encourage vendor commitment to developing standards compliant systems

A consultation exercise was carried out prior to the publication of the programme call, which indicated that the programme should concentrate on the following areas of interoperability, using IMS or other appropriate standards and specifications:

- VLE systems and Student Record Systems within a college
- VLE systems and content repositories
- VLE systems and Library/Learning Resources/Catalogue Systems
- VLE systems and college Student Record systems and other stakeholder systems needed to create and access lifelong learning logs

A Steering Group was established to oversee the development and management of the programme, and a dedicated programme manager was appointed.

The total budget for the programme was £560,000. Projects ran from September 2002 until July 2003 and the maximum budget for each project was £40,000.

Seven projects were funded through SWaNI, three in Scotland and four in Wales:

Project Name	Lead Institution	Consortium Members	Scope of Project	Vendors involved
Engaging with Skillnet	Banff & Buchan College		Intranet/ Lifelong learning	learndirect scotland, SITS
Scottish Teknical User Group	Falkirk College	Fife College, Glenrothes College, Stevenson College, Stow College	MIS/VLE	TekniCAL, Capita, SITS
Data Validation between a VLE and an MIS	Coleg Llandrillo		MIS/VLE exchange validation	TekniCAL, Fretwell Downing (Tribal Technologies)
MLE Interoperability (MIS/VLE)	Coleg Menai		MIS/VLE with Welsh language element	Granada Learnwise, Microcompass (Distinction Systems)

Project Name	Lead Institution	Consortium Members	Scope of Project	Vendors involved
Enigma	Perth College	Lauder College, Inverness College, Lews Castle College, Sabhal Mor Ostaig, UHI	MIS/VLE	WebCT, Granada Learnwise, Capita
South West Wales Interoperability Project	Coleg Sir Gâr	Swansea College, Pembrokeshire College, Neath/Port Talbot College, Gorseinon College	VLE/Content repository	Granada Learnwise, Fretwell Downing, TekniCAL, Digital Brain, Intrallect
IL3R	Ystrad Mynach College	Learning Industries Ltd	MIS/VLE/Lifelong Learning Record	learndirect, TekniCAL

The programme also developed generic training materials and briefing papers for the sector on issues of MLE development, and organised workshops in Northern Ireland to raise and maintain awareness of interoperability issues.

A formative evaluation of the programme was commissioned in October 2002, with the broad aim to maximise the long-term benefits to the sector and synergy with the MLEs for Lifelong Learning Programme (01/01). Ongoing evaluation findings and issues were discussed with project teams, vendors and the Steering Group on a regular basis. The final formative evaluation report offers commentary and contextual observations on key areas of interest for MLE programmes that emerged through SWaNI:

- Project management structures and processes
- Programme management and JISC support
- Developing relationships with vendors
- Organisational factors
- Impact of the formative evaluation

A total of eleven vendor organisations contributed to the activities of the seven SWaNI projects, some involved with multiple projects. Vendor reports include observations on project scope and management, working with JISC, and involvement in the ongoing development of specifications and standards. SWaNI helped to consolidate working relationships between colleges and their system vendors, and also between vendors and JISC.

A major focus of SWaNI was on technical developments. Projects were required to consider business processes in the institutions involved, and develop appropriate use case scenarios. With support from the relevant vendor organisations, projects were also required to produce application profiles based on their use cases using an eXtensible Mark-up Language (XML) schema. Simple Object Access Protocol (SOAP) was to be used for data transfer.

A technical report on the SWaNI programme was commissioned in October 2003, with the aim to review the products and processes developed through the programme. The report identifies issues with regard to the selection of specifications, XML compliance and quality, vocabularies, timescales, vendor input, version control, data symmetry and implementation.

The technical report concludes that the SWaNI projects showed technical progress, but none was completely technically successful, with all projects indicating that further work was needed for a robust solution to the identified business needs. It also concludes that, in the context of the SWaNI programme, it was correct to use XML and IMS, and correct to investigate SOAP, but the programme was too short for robust implementation and testing to take place.

SWaNI has given rise to a number of comments and observations that may inform future JISC MLE programmes. Some significant areas for further consideration have been identified:

- Programme scope, scale and timelines – programme preparation and lead-in, quality of the bids received, over-ambitious project proposals, timing of the bid, significance of project activities in institutional strategies, regional differences
- Technical issues – implications of the use case methodology, application profile and transport mechanism requirements
- Objectives, outputs and outcomes – ongoing amendment to project scope and scale, dependence on the vendors, technical outputs, project outcomes in terms of the impact on individuals and organisations, raised awareness
- Programme management and support – maintaining momentum for JISC of positive engagement with FE, tension between the need for pragmatic responses to operational issues and generic standards-compliant solutions, role of CETIS in programme support, quality of interim reporting, formative evaluation process

Sources of formal recommendations arising from the SWaNI programme are principally the formative evaluation report, the final reports from the projects, the technical report and the vendor reports. The collated recommendations have been further analysed to identify the key points and generic messages. The emerging points may be summarised into the following six overarching categories, ordered according to their frequency of occurrence in the source reports:

1. Project management
2. Vendors
3. Standards
4. Programme management and the bidding process
5. MLE systems development
6. Sustainability

The following table details the key recommendations under these categories, together with a note of some of the actions that the JISC is currently undertaking in these areas.

Key recommendations	JISC actions
1. Project management	
Resource commitment – project teams need to ensure that they have adequate time, authority and expertise to undertake project activities without compromise, or appoint external consultants to manage project	JISC Programme Management Framework
Exemplars – these should build on previous project experience, noting good practice in project management and logging the lessons learnt	JISC infoNet MLE infoKit SWaNI case studies
Requirements – projects should have a clear understanding of aims, objectives, roles and responsibilities at the outset	JISC Programme Management Framework
Communications – mechanisms for project administration and communicating between all parties involved should be agreed and logged at the outset	JISC Programme Management Framework

Key recommendations	JISC actions
2. Vendors	
Commitment – involvement of vendor organisations should be formalised in project agreements, and vendors need to consider commitment requirements of involvement in multiple projects and programmes	JISC Programme Management Framework Vendors io Forum CETIS MLE Development Bay
Priorities – projects need to be aware of vendor commercial commitments and drivers	JISC Programme Management Framework
Clarity on profiles – vendors require clear and consistent guidance on current 'live' specifications	Vendors io Forum
3. Standards	
Dissemination – standards developments need to be widely disseminated to ensure that institutions and agencies who have not participated in IMS developments are kept apprised of progress and encouraged to participate in wider discussions	Ongoing development from MLE Landscape Study
Generic components – a toolkit approach should be taken to produce XML transactions for numerous specifications that are based on systems rather than individual implementation in particular institutions	MLE Development Bay
Compliance – systems development processes should provide for increasing compliance with emerging standards	MLE Development Bay
Vendors – vendor organisations should be actively engaged in the development of standards and agree to implement them	MLE Development Bay
4. Programme management and the bidding process	
Programme timetable/roadmap – bid documents and circulars should give a clear rationale for programme aims and objectives in the context of the wider framework of developments	Frameworks Programme Exit strategy for UK LeAP 01/03 Programme
Clear objectives and deliverables – projects require guidance from the outset on scoping projects within the overall programme parameters, and programme timelines should be appropriate for the realistic achievement of project objectives	JISC Programme Management Framework 01/03 Programme Formative Evaluation Project
Monitor technical developments – technical developments, issues and outputs should be actively monitored through the programme	JISC Programme Management Framework MLE Development Bay
Evaluation and support provision – formative evaluation provision should be established at the start of the programme and continue throughout, with clear processes for iterative feedback	01/03 Programme Formative Evaluation Project
Reporting procedures – reporting requirements should be clarified for projects, including the need for and purpose of reflective interim reporting and the submission of interim financial statements, and timely and constructive written feedback should be provided	01/03 Programme

Key recommendations	JISC actions
5. MLE systems development	
Institutional strategy for development – there should be a clear relationship between the project objectives and the operational and strategic MLE developments for all participating institutions	
Technical staff development – systems developments need to be supported by ongoing staff development and the provision of accredited training for technical staff, including planning, implementing and documenting technical innovation	
6. Sustainability	
Business processes – institutional managers require a clear understanding of the context and opportunities to change for e-business practices	
Pace of change – technological innovations need to be introduced at a pace and level that promotes their sustainability over the longer term	

1 Introduction

- 1.1 The Joint Information Systems Committee (JISC)¹ Interoperability Pilots II Programme (Scotland, Wales and Northern Ireland – SWaNI) is part of a larger programme of work on the development of Managed Learning Environments (MLEs) in further and higher education.
- 1.2 During the academic year 2000 – 2001, JISC funded an Interoperability Pilots programme in English further education (FE) colleges (11/00). The aim of this programme was to implement and prove the feasibility of interconnection between systems within an MLE using the international standard of IMS, with FE extensions. The pilot projects were mostly successful in demonstrating that IMS with English FE extensions is a sensible route to achieving systems integration. However, further work was identified as necessary to achieve fuller systems integration and to ensure that the needs of colleges in the rest of the UK were met.
- 1.3 In 2001, JISC agreed to fund SWaNI as an extension to the interoperability pilots programme. Building on the experiences and outputs of the English pilots, SWaNI aimed to establish interoperability between MLE systems using application profiles based on specifications developed by the IMS Global Learning Consortium, with extensions appropriate to the FE sectors in Scotland, Wales and Northern Ireland.
- 1.4 The call for projects under the SWaNI programme was announced in April 2002 (Circular 04/02). The expected outcomes of the programme were as follows:
- Further proof that vendors can achieve interoperability between core component systems found in MLEs by designing and building each component system to agreed specifications
 - Test and evaluate the application of these systems to learning situations found in Colleges in Scotland, Wales and Northern Ireland
 - The outcomes and lessons learnt from these studies can be used by the JISC community to inform further MLE related work
 - The outcomes and lessons learnt from these studies can be used to encourage vendor commitment to developing standards compliant systems
- The call noted that it was not the intention of these studies to provide recommendations to colleges as to which specific components to procure in order to create an MLE.
- 1.5 Prior to the circulation of the call, a consultation exercise involving FE Colleges and the relevant JISC Regional Support Centres (RSCs) indicated that the projects should demonstrate some or all of the following:
- Interoperability between VLE systems and Student Record Systems within a college
 - Interoperability between VLE systems and content repositories
 - Interoperability between VLE systems and Library/Learning Resources/Catalogue Systems
 - Interoperability between VLE systems and College Student Record systems and other stakeholder systems needed to create and access lifelong learning logs
- Projects investigating other areas of interoperability, using IMS or other appropriate standards and specifications, would also be considered.
- 1.6 A total budget of £560,000 was allocated for the programme. Projects were to be of short duration (10 months) and a maximum budget of £40,000 was available for each project in the programme.

¹ A list of abbreviations and acronyms used in this report is included in Appendix A.

- 1.7 The programme consisted of seven funded projects, three in Scotland and four in Wales. Projects ran from September 2002 until July 2003.
- 1.8 The development of generic training materials and briefing papers for the sector on issues of MLE development were also produced through SWaNI. Workshop materials were piloted in Northern Ireland. The briefing papers were intended to meet a temporary need pending the production of the JISC MLE infoKit.
- 1.9 SWaNI was one of a number of MLE programmes due for completion in July 2003, including the Building MLEs in Higher Education programme (7/99) and the first phase of the MLEs for Lifelong Learning: Building MLEs across FE and HE programme (01/01). Appendix B offers a diagrammatic overview of SWaNI in the wider context of the JISC MLE programme.

2 Programme Management and Support

2.1 SWaNI Steering Group

- 2.1.1 A Steering Group was established to oversee the development and management of the programme, and the work of the Programme Manager. The Steering Group was chaired by Andrew Comrie, Assistant Principal at Lauder College, Dunfermline. With a view to achieving a balance of strategic and operational focus, the Steering Group included members and expert advisors from the JISC Executive, the JISC Committee for Learning and Teaching, the Centre for Educational Technology Interoperability Standards (CETIS), the bodies responsible for FE funding in the three SWaNI countries, the relevant JISC Regional Support Centre (RSC) managers, and FE sector representatives.
- 2.1.2 The terms of reference of the SWaNI Steering Group were as follows:
 - to oversee the planning, development, dissemination and exit strategy of the Interoperability Programme II (Scotland, Wales and Northern Ireland) funded by the JISC Committee for Learning and Teaching
 - to oversee a call for proposals for the programme and to participate in the reviewing and selection of bids
 - to monitor progress of the programme and advise the Programme Manager
 - to oversee and steer the development of extensions or alternatives to the English FE IMS interoperability extensions to produce an extended IMS specification that is also appropriate to Scotland, Wales and Northern Ireland
 - to recommend other extensions to the IMS specification to meet the needs of FE learners
 - to recommend the allocation of the budget for the programme
 - to advise on an evaluation strategy for the programme and oversee its implementation
 - to advise on suitable dissemination mechanisms for the programme, and to disseminate information about the programme within their own community
 - to advise the programme on relevant issues as appropriate, in particular with regard to their own areas of expertise
 - to build upon the findings of the English MLE Interoperability pilots, and the experience of the MLE Steering Group.
- 2.1.3 The Steering Group met in Edinburgh on a two-monthly basis, with videoconferencing (VC) facilities generally available to enable participation at a distance. It was recognised that the Group was a short-term body existing for the duration of the programme only.

2.2 Programme manager

- 2.2.1 Working under the direction of the SWaNI Steering Group, the role of the Programme Manager was to set up and co-ordinate the SWaNI programme, including project and programme co-ordination and monitoring, project support and organisation of events, programme dissemination and evaluation. Duties also included liaison with the Funding Councils, representatives from commercial organisations, CETIS and JISC RSC representatives, and the organisation of a series of appropriate dissemination and awareness-raising activities across the UK about MLEs and about the programme.
- 2.2.2 Dawne Hodgkinson was appointed SWaNI Programme Manager in January 2002 on secondment from her post as Community Learning Manager at Perth College. Following Dawne's return to Perth College in July 2003, the final stages of the SWaNI programme were managed by Glenaffric Ltd consultants, who had undertaken the formative evaluation of the programme.

2.3 Call for proposals

- 2.3.1 Building on the experiences and outcomes of the English pilot projects, the specific focus for SWaNI was determined by a process of sector consultation using a web-based form disseminated by the RSCs and the Scottish Further Education Unit (SFEU). This generated a high response rate from colleges in Scotland, Wales and Northern Ireland, and helped to determine the four interoperability strands in the SWaNI Call for Proposals:
- VLEs and student records systems
 - VLEs and content repositories
 - VLEs and library/learning resource systems
 - Lifelong learning logs.
- 2.3.2 To assist institutions and consortia in preparing submissions for SWaNI funding, a series of regional Town Meetings was organised in Belfast, Perth and Cardiff. A total of twelve bids were received by the deadline at the end of June 2002 (five from Wales, four from Scotland and three from Northern Ireland). Despite the feedback from the sector indicating the demand for a range of interoperability investigations, the majority of the bids were for projects testing MIS/VLE exchange.
- 2.3.3 A guide and schema were developed to try to ensure a common understanding of the project bids and a consistent approach to bid marking. Eight proposals were selected for funding (four in Wales, three in Scotland and one in Northern Ireland), subject to a number of conditions and in some cases the submission of revised documentation. Funding for the Northern Ireland project was subsequently rescinded as a result of delays in the procurement of the national student record/management information system for Northern Ireland. Below is a summary of the seven SWaNI funded projects including lead institution, consortium members, vendor organisations and main project focus:

Project Name	Lead Institution	Consortium Members	Scope of Project	Vendors involved
Engaging with Skillnet	Banff & Buchan College		Intranet/ Lifelong learning	learndirect scotland, SITS
Scottish Technical User Group	Falkirk College	Fife College, Glenrothes College, Stevenson College, Stow College	MIS/VLE	TekniCAL, Capita, SITS

Project Name	Lead Institution	Consortium Members	Scope of Project	Vendors involved
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MLE Interoperability (MIS/VLE)	Coleg Menai		MIS/VLE with Welsh language element	Granada Learnwise, Microcompass (Distinction Systems)
Enigma	Perth College	Lauder College, Inverness College, Lews Castle College, Sabhal Mor Ostaig, UHI	MIS/VLE	WebCT, Granada Learnwise, Capita
South West Wales Interoperability Project	Coleg Sir Gâr	Swansea College, Pembrokeshire College, Neath/Port Talbot College, Gorseinon College	VLE/Content repository	Granada Learnwise, Fretwell Downing, TekniCAL, Digital Brain, Intrallect
IL3R	Ystrad Mynach College	Learning Industries Ltd	MIS/VLE/ Lifelong Learning Record	learndirect, TekniCAL

2.4 Programme meetings

- 2.4.1 The programme induction meeting took place in Belfast in September 2002. Key staff from all seven projects and a number of vendor representatives attended. The main aims of the meeting were networking and sharing information about the scope and objectives of the different projects, to explain the work and role of CETIS, and to confirm reporting structures.
- 2.4.2 In October 2002, CETIS organised two workshops specifically for SWaNI project representatives, one in Glasgow focusing on content interoperability and one in Bolton on use case development.
- 2.4.3 Joint programme meetings were held as follows:

Date	Venue	Main focus
December 2002	Glasgow	Agreement of use cases, application profiles and transport mechanism
March 2003	Cardiff	Planning for testing and implementation
May 2003	Edinburgh	Final reports, dissemination and further developments/ sustainability

- 2.4.4 To gather synergies with the related MLEs for Lifelong Learning Programme (01/01) and provide networking opportunities, the Glasgow and Cardiff meetings were also attended by representatives from the Southwest Hosts Enhancing Lifelong Learning (SHELL) and the Northern Ireland Integrated MLE (NIIMLE) projects. Representatives from the Ystrad Mynach SWaNI project attended 01/01 programme meetings in Plymouth and Belfast.
- 2.4.5 Project staff reported that the main benefits of attending programme meetings included networking, keeping up to date with progress of other projects, access to vendors, access to CETIS and contributions from guest speakers. Feedback also indicated that

the quality of accommodation and facilities arranged and paid for by JISC contributed to project team members' sense of being valued and their project activities appreciated.

2.5 Project reports

- 2.5.1 Projects were required to submit interim reports on a bi-monthly basis (October 2002, December 2002, February 2003 and April 2003) and a final report in July 2003.
- 2.5.2 A reporting template was provided for both the interim and final reports. Projects were encouraged to reflect on their experiences and lessons learned from the process of engagement with SWaNI.
- 2.5.3 The Steering Group received summary reports from the programme manager on a project-by-project basis. These were based largely on the interim reports submitted by the projects as well as discussions and meetings with project representatives.

2.6 Formative evaluation

- 2.6.1 A formative evaluation of the SWaNI programme was commissioned in October 2002. The main aim of the commission was:

To provide a formative evaluation of the SWaNI projects which will maximise the long-term benefits to the sector and synergy with the MLEs for Lifelong Learning Programme (01/01).

- 2.6.2 The broad evaluation objectives set out in the commission were as follows:

1. to develop an evaluation framework
2. to identify common themes across the two programmes
3. to undertake formative evaluation activities with the SWaNI projects
4. to undertake an analysis of common themes with the MLEs for Lifelong Learning Programme (01/01) and SWaNI projects
5. to provide feedback in the form of a detailed report

The formative evaluation commenced in November 2002 and was undertaken by eLearning consultants, Glenaffric Ltd.

2.7 Technical support

- 2.7.1 CETIS staff attended and made presentations at the programme induction meeting and the Glasgow and Cardiff programme meetings. They also contributed to specific project activities. The Centre for Recording Achievement (CRA) provided support and advice to the Ystrad Mynach project.
- 2.7.2 Project team members were encouraged to engage with the CETIS Special Interest Groups (SIGs), and received regular communication about SIG events, publications and discussions. The level of project staff engagement with the CETIS SIGs increased during the lifetime of the programme. Representatives from the Sir Gâr and Falkirk projects have subsequently been asked to help to organise the activities of the JISC FE Special Interest Group (SIG) in Wales and Scotland respectively.

3 Overview of Projects

3.1 Banff & Buchan College – Engaging with Skillnet

- 3.1.1 Banff & Buchan College of Further Education is a small college situated in the fishing town of Fraserburgh on the north-east coast of Scotland, some 50 miles north of Aberdeen. The project was run in partnership with the Scottish University for Industry (SUfi) and involved interoperability with SUfi's Skillnet system. One of the key objectives of this organisation is to identify, explore and address barriers to learning, and the

project presented an opportunity for practical exploration of some of the issues surrounding interoperability. The project also involved SITS as the vendor organisation that supplied the college's MIS system.

3.1.2 The aims and objectives of the project were as follows:

Aims

- To promote the use of e-learning by developing interoperability between B-Net (the College Intranet system), SITS (MIS) and Skillnet (VLE)
- To provide a cost effective solution that can be applied to all colleges

Objectives

- Link the student record system in SITS to the user accounts system in Skillnet and the college Intranet
- Automate enrolments for online courses and share access to support materials
- Enable transfer of data between components to create a synchronous lifelong learning log
- Exchange content between repositories of the systems
- Use IMS standards to achieve the above

3.1.3 The main reasons for undertaking the project were that the college was keen to develop a cost effective MLE and needed the support of partner organisations with complementary skills and experience. The college was also keen to support the development of the SUfl Skillnet system, and to develop its own Intranet to current standards.

3.1.4 The main activities of this project included working with SUfl to populate SITS with student enrolment data across all of the necessary domains via a central staging point for student records (central database server). System user information was stored as XML data conforming to LIP standard. The project also involved the conversion of the existing college Intranet content repository to a system that was capable of handling legacy documents and learning objects that conform approximately to the Dublin Core specification for learning objects, and publishing content to the VLE.

3.1.5 The key project outputs have been achieved, albeit beyond the formal project timescales. Feedback from the project director in November 2003 indicated that single and batch users could be created directly from SITS in Skillnet using the IMS Learner Information Packaging (LIP) specification and Simple Object Access Protocol (SOAP) for data transfer. The project has also been of benefit to the college in developing staff skills, knowledge and competence, and the need for a detailed overview of all college processes is acknowledged. The project has demonstrated that interoperability is achievable between SITS and B-Net, and from B-Net to the Skillnet VLE.

3.1.6 In the longer term, the development of systems interoperability in this project has highlighted the need for a detailed overview of all college business processes. The partnership approach has also proved successful for both the college and SUfl, and an application has been made to NILTA for further funding to progress the activities of the partnership. SUfl has also instigated changes to the Skillnet user interface as a result of this project, with positive implications for the national effectiveness of the platform. Project staff estimate that five other organisations with an approximate learner base of 30,000 students will benefit from the solution that was developed through this project.

3.2 Falkirk College – Scottish Technical User Group

3.2.1 This was a consortium project involving five colleges in central Scotland (Falkirk, Fife, Glenrothes, Stevenson and Stow Colleges). The consortium sought funding for this project in order to resolve a business problem requiring a common solution across all five colleges. Each college had recently purchased and implemented TekniCAL's Virtual

Campus as their VLE, and required integration of this VLE with the college administration systems which were provided by either Capita or SITS.

3.2.2 The team initially submitted an ambitious project plan based on application of IMS LIP, which later proved to be impossible within the context of the project. Midway through the project, the decision was taken to abandon the idea of using LIP and attempt to implement interoperation of student records systems with VLEs using the IMS Enterprise specification.

3.2.3 The revised aim of the project was:

To provide a specification for and implementations of interoperability software that allows the transfer of data between systems.

The revised objectives were as follows:

- To produce a specification for the production of interoperability software that satisfies the needs of the partner colleges
- To test and implement this interoperability software in three of the five partner colleges. The testing would adhere to a formal testing methodology
- To survey people involved in the business processes to measure the impact of the implementation of the software on the respective organisations
- To document differences in business processes involved in Student Record System/Virtual Learning Environment Interaction across the five partner colleges
- To prepare reports for technical and user audiences and project reports
- To disseminate the project to the JISC Community through participation in events and publicity materials

3.2.4 Project outputs include a specification for the production of interoperability software that meets the needs of the five partner colleges, and comprehensive testing plans. Interoperability software has been supplied by Capita (non SOAP compliant) and TekniCAL (SOAP compliant). The impact of implementing interoperability has been measured through a staff survey, and differences in business processes across the five partner colleges have been documented.

3.2.5 Two of the vendor organisations involved were not able to commit to implementing the agreed SOAP transport mechanism during the life of the project. The consortium lost motivation and momentum, and despite programme management intervention there was significant slippage with the project plan. An abridged final project report was submitted more than two months after the initial deadline. This project has raised issues about project management, communication, consortium working and vendor engagement, and has highlighted a general need for more rigorous scrutiny of interim reporting.

3.3 Coleg Llandrillo – Data Validation between a VLE and an MIS

3.3.1 This college is located in Colwyn Bay, some 15 miles from Bangor on the North Wales coast. Building on the work of the English pilot at Colchester Institute, the project was concerned with data exchange validation between the college's MIS system supplied by Fretwell Downing (Tribal Technologies Ltd) and TekniCAL's Virtual Campus. One of the main reasons for funding this project was its concern with identifying additional data fields that needed to be integrated in future developments to comply with the requirements of the Lifelong Learning Wales Record (LLWR) which was to be implemented in September 2003.

3.3.2 The project aimed to achieve the following:

- Build on previous data transfers tests
- Ensure data validity and integrity
- Ensure systems security

- Take into account data requirements of LLWR

- 3.3.3 A key driver in stimulating the institution's bid for funding was senior management understanding of the wider needs to find ways to integrate its current systems and consideration of the JISC initiatives on Managed Learning. It was also hoped that the impetus to implement systems integration across the college network would be an additional benefit. The project therefore enjoyed significant senior management support and engagement from the outset, and project representatives made regular reports to appropriate college committees.
- 3.3.4 The project team experienced considerable difficulties in engaging with the MIS vendor, and the main objective of implementing a system of data transfer between the FD Learning EBS Management Information System and the TekniCAL Virtual Campus VLE has not been completely achieved within the lifetime of the project. However, both vendors are committed to the implementation of the recommended transport mechanism and preparations for testing at Coleg Llandrillo are ongoing.
- 3.3.5 Despite delays in the achievement of the technical objectives, the project has resulted in significant development outcomes for the institution and the project team. These have included the opportunity to assess working practices, departmental collaboration and communications both internal and external. Project team members report that they have learned a lot about the processes of being involved in a JISC funded project and have benefited from access to support from organisations such as CETIS and the SIGs. The team also embraced the opportunity to evaluate or re-evaluate internal systems and processes and to maintain senior management awareness of current sector developments.
- 3.3.6 The main challenge identified by the project team relates to communication between diverse and geographically disparate project partners, including identifying the right contact person in each institution. A specified communication strategy is recommended from the outset, and a clear documentation of all partners' commitment to and understanding of the processes and outcomes of the project.

3.4 Coleg Menai – MLE Interoperability (MIS-VLE)

- 3.4.1 Coleg Menai is a medium-sized FE college based in Bangor in North Wales that serves a predominantly rural and Welsh-speaking community. Building on the work of the interoperability pilot project at Stoke on Trent College, the aim of this project was to use IMS Enterprise 1.1, where possible conforming to the UK FE profiles, to transfer data about students and courses between the Coleg Menai MIS (Distinction-Systems QLS) and VLE (Granada Learnwise 2).
- 3.4.2 Further beneficial changes to Coleg Menai were also anticipated in terms of streamlined VLE administration, the pump-priming of wider MLE developments, and in developing systems to meet learners' language (English/Welsh) preferences.
- 3.4.3 The main objectives of the project were as follows:
- To populate courses held within the VLE with students using MIS records
 - To return student results from the VLE to the MIS
 - To transfer information about student status (eg active/withdrawn etc) between MLE components
 - To examine the possible impact of the implementation and use of multi-lingual software on MLE interoperability
- 3.4.4 The main activities of the project team included the development of use cases, identifying and agreeing solutions with vendors, setting up a test-bed, testing the interoperability of the system, and contributing to the development of a wider MLE strategy for the institution.

3.4.5 Project outputs include simplified Learnwise administration with definitive student course data populated from the college MIS, and the opportunity for learners to interact with the VLE in their preferred language (English/Welsh). However, the most significant output identified by the team is the rapid advancement in the college's MLE thinking and implementation. Other benefits identified by the project team include the development of close internal links with the college MIS operators, and particularly the development of positive working relationships with the vendor organisations. Both vendors have been very supportive of the project. Granada Learnwise has made changes to an older version of their product to allow for testing. The new Learnwise Olympus will allow the team to return the results of assessments completed to the MIS as part of the LLWR.

3.5 Perth College – Enigma

3.5.1 This project was led by Perth College in central Scotland, with significant input from Lauder College in Dunfermline, Fife. At the time the bid was submitted, both institutions shared the same MIS/SRS system – Capita DITA – with Perth College using WebCT and Lauder College using Granada Learnwise as their respective VLEs. The other project partners were Inverness College, Sabhal Mor Ostaig Gaelic college on Skye, Lews Castle College in Stornoway, Isle of Lewis, the UHI Millennium Institute and the Scottish Further Education Unit (SFEU).

3.5.2 The aim of the project was to develop a data transfer engine to allow course and student information to flow freely between the partner institutions' existing VLEs and student records systems. The project title reflected the aspiration to produce code-breaking 'vanilla' middleware that was not hard coded to specific systems and vendor products. In effect, the project was mainly concerned with prototyping a data transfer engine developed by Capita, and enhancing the functionality of the Capita MLE Exporter.

3.5.3 The specific objectives of the project were as follows:

- To evaluate the translator provided against the IMS Enterprise specification + FE Extensions and specify required refinements
- To refine the translator provided in accordance with the refinements specification
- To define a test matrix for vendors and college partners with test criteria for both technical and pedagogical evaluation
- To have each VLE vendor work with the SIS Vendor to test the translator in pre-defined simulated data exchange situations between the VLE and the SIS
- Further refinement of the translator resulting from test results
- For each partner institution to trial the use of the translator using pre-defined test strategies and data exchange situations
- To prepare formative, summative, technical and pedagogical evaluation reports and appropriate project documentation
- To undertake dissemination to the JISC community

3.5.4 Project activities were undertaken by a technical team and a user implementation team. Despite showing a robust project management methodology in the bid documentation, some early issues with project management skills and commitment were identified, and an external project manager was appointed on a consultancy basis some four months into the project. The team also experienced difficulties aligning project activities with vendor commercial priorities and development timescales, and acknowledge that more should have been done at an early stage to scope and confirm vendor involvement.

3.5.5 Project outputs include:

- Technical Specification of the MIS Link
- Definition of User Requirements

- Test Matrix for Testing and Evaluation
- Trial Test Results
- Evaluation Report

The enhanced Capita MLE Exporter is installed and implemented in Lauder College for session 2003/04. Lauder College student data has been successfully transported from Capita DITA to Learnwise. However, during the project lifetime UHI took the strategic decision to procure the SITS student information system, so the other colleges in the consortium are no longer using Capita. UHI is also planning to implement an open source VLE. The project benefits for the UHI colleges are therefore less tangible than expected at the outset, but include enhanced experience of organising and managing funded projects, cross-college, inter-college and vendor cooperation, internal understanding of the wider organisational issues of interoperability, and technical knowledge about interoperability processes.

3.6 Coleg Sir Gâr – The South West Wales Interoperability Project

- 3.6.1 This project involved six colleges from an existing consortium in South West Wales: Coleg Sir Gâr, Gorseinon College, Neath Port Talbot College, Pembrokeshire College and Swansea College. It was the only project in the programme concerned specifically with the interoperability of learning content and VLEs, and involved a number of vendor organisations, including Intrallect, Granada Learnwise, FD Learning, TekniCAL and DigitalBrain.
- 3.6.2 The overall aim of the project was to evaluate the interoperability between locally developed IMS compliant e-learning content and a range of different VLE products used by the development consortium.
- 3.6.3 The specific objectives of the project were as follows:
- To demonstrate the ability to move web-based content from one learning environment to another
 - To demonstrate the re-use of learning object across different platforms and learning environments
 - To provide searchable learning content for storage and retrieval using an IMS compliant digital repository
 - To evaluate the current level of interoperability between five different VLE systems and the student record systems of the participating FE Colleges;
 - To work with a VLE and repository vendors to identify and action opportunities to improve interoperability at a local level
 - To report widely to the FE sector on outcomes through the project reporting schedule, conferences and seminar presentations.
- 3.6.4 Detailed system testing took place within the lifetime of the project. While full interoperability of all the consortium partners with the digital content repository was not achieved, each of the colleges was able to import or export data to and from the digital repository and the college VLE. Those colleges with the TekniCAL Virtual Campus VLE were able both to import and export content to and from the digital repository. The project concluded that content interoperability is possible, providing that there is consistency in the standards used for the content, the VLE and the digital repository. It recommends continued research and development into the application of content interoperability standards, content packaging and re-use involving all key software products and vendors.
- 3.6.5 The project also gave rise to some concerns about the potential re-usability of content, and the pedagogical implications of breaking the materials down into small segments to enable maximum re-use. There is a concern that the introduction and incorporation into

elearning materials of additional specifications such as Accessibility, Simple Sequencing and Learning Design will start to take precedence over the content, with a potentially detrimental effect on core learning and teaching activities. The project recommends further research into the pedagogical implications of collaborating in the development of learning objects, their storage using a central digital repository, and the ability to construct pedagogically consistent elearning programmes from those learning objects.

3.6.6 Representatives from this project have contributed actively to the work of the CETIS Content SIG. The accessibility issues raised by the project are being pursued in other contexts. Through wider consortium links, the experience and outcomes of this project are also informing JISC MLE development work in other Welsh FE and HE institutions.

3.7 Ystrad Mynach College – Interoperability of Lifelong Learning Records within FE and beyond (IL3R)

3.7.1 Ystrad Mynach College is located in the Rhymney Valley in South Wales. The college has developed an outreach culture to meet the Welsh agenda for widening participation and inclusive learning. The project was managed in partnership with Learning Industries Ltd, a Cardiff University spin-off company developing a Personal Development Record (PDR) to support the delivery of online vocational education. Other organisations involved were Ufl, which holds the contract for the delivery of the Learndirect for Business product within Wales, and manages and administers all learning centres delivering this product to individual, academic and business communities, and TekniCAL, as the supplier of the Ystrad Mynach College VLE.

3.7.2 The aim of the project was to develop a functional lifelong learning record using the IMS Learner Information and Competency Definition standards to operate within the wider vocational training market, and interoperate with FE VLE systems and the Learner Information Management (LIM) systems of other providers in the lifelong learning market. The ultimate aim of this work on interoperability is to pass ownership of the learning, the record of the learning and the management of the learning process to the learner.

3.7.3 The specific objectives of the project were as follows:

- Research and appropriately implement the IMS LIP Specification
- Suggest any modifications to the above required
- Design and develop messaging interfaces to the Learning Industries PDR system
- Consult with vendors on the implementation of the specification with their own LIM and Lifelong Learning Record systems
- Demonstrate the transfer of records between systems
- Document and disseminate the results

3.7.4 Project activities focused on three principal use cases that were identified for specific consideration:

- The migration an entire PDR record
- The transfer of learning activity data
- The import of published competency (goals) frameworks

For each use case, application profiles were created detailing the fields and their purpose for the data proposed for transfer between systems.

3.7.5 Research into the appropriate implementation of IMS LIP commenced from an early stage within the project. It became evident as the project progressed that the amount of time allocated to the task of developing an understanding of the LIP Specification had been underestimated. Through consultation with specialist support centres such as CETIS and the CRA, it became evident that the project was relatively unique in looking

at the practical implementation of LIP within the PDR/P area and that there was little documentation and few 'real world' examples upon which to call.

- 3.7.6 Due to time constraints the project was unable to consider the automated transfer of data between systems. However, by focusing upon the data formatting requirements necessary for a manual export and import of data the project was able to address the important issues of IMS LIP implementation without becoming embroiled in the technicalities of automated data transfer and the associated security requirements. The project demonstrated that LIP alone is not sufficient to facilitate interoperability, that alternate implementations of LIP are possible, and that detailed negotiation on field semantics, data format and vocabularies is required for successful interoperability. It became clear from the work of the associated projects on the SWaNI Programme implementing IMS Enterprise systems that automated data transfer protocols for LIP would be similar to those being adopted for Enterprise, based upon SOAP. Trials undertaken under controlled conditions showed that data from one system was able to be formatted in an IMS LIP compliant package and imported into another independent system, and demonstrated that the approach developed in this project is capable of offering a generic interoperability solution.
- 3.7.7 This project has given the college an opportunity to contribute to a leading edge research-based project. Additionally, as part of the SWaNI programme the college has gained the experience of being part of a larger diverse programme. However, college staff members were not fully immersed in the project at a technical level. The majority of the research took place away from the college campus, and the anticipated involvement in project activities sometimes came late or, in the case of testing, did not happen at all. Nonetheless, it is anticipated that the results of the project and the experience gained will be crucial to the long-term development of a coherent elearning programme for the college.

3.8 Project objectives and outcomes

- 3.8.1 The table at Appendix C summarises the project objectives in the project bids, the final reported project objectives and the reported outcomes.

3.9 Project recommendations

- 3.9.1 The table at Appendix D summarises the recommendations made across the SWaNI programme, including the specific recommendations in the project reports.

4 Formative Evaluation

- 4.1 A formative evaluation framework for SWaNI was developed and refined following consultation with the Steering Group. The framework established a set of nine specific objectives for the evaluation and defined the evaluation methodology. This included analysis of programme documentation, interviews with key respondents, and evaluation visits to project lead institutions, which took place during March 2003.
- 4.2 Given that the formative evaluation aimed to enhance project experiences and the overall achievement of the programme, regular feedback on emerging issues was central to the process. Ongoing evaluation findings were discussed with the project teams, vendors and other representatives informally on a regular basis and formally at the programme meetings. The project evaluation visits provided opportunities for constructive review and reflection on ongoing project activities
- 4.3 An interim report was presented to the Steering Group in April 2003. The final SWaNI Formative Evaluation Report was presented to the Steering Group in July 2003, and following feedback from the Group was subsequently published on the JISC website. The report includes a brief contextualisation of the programme, outlines the evaluation methodology, analyses the key findings, and provides commentary and contextual

observations on key areas of interest for MLE programmes that emerged through SWaNI:

- Project management structures and processes
- Programme management and JISC support
- Developing relationships with vendors
- Organisational factors
- Impact of the formative evaluation

4.4 The formative evaluation report concludes with a number of recommendations for projects, the sector, vendors and JISC. These recommendations are organised generically in terms of:

- Organisational and sectoral capacity
- Communication and collaboration
- Issues of cultural change

These recommendations are included in Appendix D to this report. The final report was produced and published towards the end of the programme, and the recommendations are therefore largely summative. The Steering Group agreed that this report, and the proposals for a review of all JISC MLE activities, would obviate the need for a specific summative evaluation of the SWaNI programme.

4.5 The formative evaluation of the SWaNI programme has informed the development and implementation of an evaluation framework for Phase 2 of the MLEs for Lifelong Learning programme (01/03). The experience has also informed the development of JISC guidelines on evaluation for project managers.

5 Dissemination Activities

5.1 A dissemination strategy for the SWaNI programme was presented to the Steering Group in April 2003, and a revised strategy, updated in the light of programme experiences and outputs, was agreed in September 2003.

5.2 Each project was required to disseminate their activities and outputs internally, including senior management briefings, and to provide documentation to support this. The project website was to be given a high profile within the institution and to be maintained after the lifetime of the programme. They were also tasked with producing project flyers, and distributing these and the SWaNI programme flyer along with general institutional mailings.

5.3 Regional dissemination of SWaNI project activities and outputs took place via the JISC RSC electronic distribution lists and newfeeds. In Scotland, the SFEU publicised details of the programme via their regular channels, and an article by the Programme Manager was published in the SFEU Broadcast magazine in Winter 2002. The Programme Manager also moderated a synchronous online discussion on MLEs through the Virtual Learning Space hosted by the Robert Gordon University and the Scottish Centre for Research into Online Learning and Assessment (SCROLLA).

5.4 Many of the projects have made presentations at national workshops and conferences. These are detailed in the project final reports, and include contributions from the three Welsh projects to the RSC Wales national conference in Gregynog in May 2003, participation by the Coleg Menai and Coleg Sir Gâr projects to the programme of workshops held in Northern Ireland in May/June 2003 and the presentation on behalf of the Ystrad Mynach project at the ALT-C conference in September 2003. Over the lifetime of the programme, input from the projects to events organised by the CETIS SIGs and the SFEU increased significantly.

- 5.5 The RSC Northern Ireland is holding a conference in March 2004 at which it is planned to launch the new elearning strategy for Northern Ireland. This event will provide further opportunities for disseminating the outputs and experiences of the SWaNI programme. The RSC Scotland North and East and RSC Scotland West and South are also planning a national MLE update event for March 2004, including contributions from a number of the SWaNI projects.

6 Northern Ireland Workshops

- 6.1 The SWaNI Steering Group was keen to raise and maintain awareness of interoperability issues in Northern Ireland during the programme. Two workshops took place in May and June 2003, organised with the support of the RSC Northern Ireland, CETIS, Learning and Teaching Scotland, and representatives from the Coleg Sir Gâr and Coleg Menai projects.
- 6.2 The aim of the first workshop was to highlight the importance of interoperability standards and specifications pertaining to reusable learning objects and to the development of content in general. The workshop presented overviews of specifications for interoperability that are central to the development of reusable content. Some of the available content packaging software tools were described and demonstrated, and participants were given the opportunity to test content editing and creation tools.
- 6.3 The aim of the second workshop was to highlight the importance of interoperability standards and specifications pertaining to the transfer of data from student record systems to VLE systems and to the development of an MLE in general. The workshop was run in the context of the imminent launch in June 2003 of the Northern Ireland College Information System (NICIS) procured from Microcompass/Distinction Systems.
- 6.4 Both workshops met their objectives in terms of raising awareness of the issues. Unfortunately travel problems prevented the key speaker from Microcompass/ Distinction Systems attending the second workshop.
- 6.5 A third workshop was originally proposed on the administrative and support implications of interoperable systems, but it was felt that this might cause confusion with some of the work being undertaken by NIIMLE project team within the 01/01 programme.

7 MLE Briefing Papers

- 7.1 In July 2002 the JISC Committee for Learning and Teaching (JCLT) agreed to fund the further development of the series of MLE briefing papers, to be managed as part of the SWaNI programme.
- 7.2 JCLT recognised that some of the existing short briefing papers required minor updating whilst others needed major revision. The revised or additional papers were to be made available as a resource to the sector, and as a fundamental component of the proposed MLE Developers' Pack.
- 7.3 Four briefing papers were proposed on the following general themes:
- VLEs
 - Technical Issues
 - Organisational and Cultural Change
 - Administration

Writers were commissioned for these papers by February 2003. One paper was not completed due to illness, and three papers were considered by the Steering Group in July 2003. It was decided that while these papers contained valuable and important

information, it was no longer appropriate to pursue their publication as stand-alone resources given the imminent publication of the MLE infoKit.

- 7.4 JISC infoNet have subsequently reviewed the MLE Briefing Papers, and two papers – on VLEs and on Technical Issues – will be repackaged for an FE audience as an additional resource within the MLE infoKit.

8 Technical Overview

8.1 Use cases

- 8.1.1 Projects were advised at the programme induction meeting of the need to consider business processes and produce appropriate use case scenarios. A workshop on the topic was run by CETIS in October 2002.

8.2 Application profiles

- 8.2.1 At the start of SWaNI, discussions with the vendor organisations from the English pilots were still ongoing with a view to agreeing and finalising application profiles with extensions for use in FE. At the Glasgow programme meeting in December 2002, there was apparent agreement in principle among the SWaNI vendors of the set of application profiles to be used within the programme.
- 8.2.2 Projects were required to produce application profiles based on their use case scenarios. An eXtensible Mark-up Language (XML) schema was produced in order to facilitate adherence to the agreed profiles.

8.3 Transport mechanism

- 8.3.1 One of the outstanding issues from the English pilots was the development of an agreed transport mechanism. Most of the pilot projects had used Hypertext Transfer Protocol (http) or File Transfer Protocol (ftp), which were not appropriate for secure large-scale data transfer operations.
- 8.3.2 At the Glasgow meeting, the vendor organisations agreed to implement SOAP. Support from CETIS was available for the production of drafts for discussion. However, at the Cardiff meeting in March it was apparent that few of the vendors were able to implement SOAP within the required timescales.

8.4 Testing

- 8.4.1 The projects were required to devise a testing strategy on two levels – systems testing and user testing. Due to delays and the short programme timeframe, projects were able to offer little comment on actual test results in their final project reports.

8.5 Technical report

- 8.5.1 A technical report on the SWaNI programme was commissioned in October 2003. The aim of the technical report was to review the products and processes developed through the programme, in the context of international technology developments, and to ascertain their potential relevance to the sector.
- 8.5.2 The specific objectives of the technical report were:
- To explore the extent to which the technical solutions devised by the SWaNI projects were able to build on the MLE Interoperability Pilots programme in England
 - To examine the development of use cases and the extent to which the SWaNI projects were able to utilise these use cases effectively

- To examine the process of developing application profiles from the use cases in conjunction with the vendors
- To examine the transport mechanisms developed by the vendors
- To review the procedures for system testing and user testing carried out by CETIS and the projects, and the results
- To make appropriate recommendations for the JISC, the sector and the vendors

The technical review was undertaken by Franklin Consulting and the report was produced in December 2003.

8.5.3 The report was derived from analysis of the reports produced by the project, together with discussions with members of CETIS, the programme management team and some project staff.

8.5.4 The technical report provides background information on the context of standards development, IMS specifications, XML, application profiles and the SOAP transport mechanism. It describes the technical problems encountered by the projects and the implementation and testing of technical solutions that took place. It offers a summary of each project in terms of:

- Technical aims
- Current status
- Specification used
- Transport mechanisms proposed
- Transport mechanisms used
- Issues encountered

The report describes the processes involved in developing use cases, identifying systems and mapping data, identifying specifications, developing transport mechanisms, implementing and testing.

8.5.5 The following technical issues are identified:

VLE to student record systems (five projects):

- Selecting the specification
- XML compliance
- Vocabularies
- Timescales
- Vendor input

Content packaging (one project):

- Ability to export learning objects
- Quality of XML
- Unique identifiers
- Version control

Personal Development Planning/Record (one project):

- Asymmetric data
- Implementation by all parties

8.5.6 The technical report discusses the development of MLEs and IMS standards and specifications in the context of the Gartner ‘Hype Cycle’.² The report concludes that the SWaNI projects have each shown some progress, but none has been completely technically successful, with all projects indicating that further work is needed before they can deliver a robust solution to the colleges’ needs. It also concludes that in the context of the SWaNI programme:

- It was correct to use XML
- It was correct to use IMS
- It was correct to investigate SOAP
- The programme was too short

8.5.7 The recommendations of the technical report are summarised in Appendix D.

9 Vendor Overview

9.1 A total of eleven vendor organisations contributed to the activities of the seven SWaNI projects. As the table below indicates, some were involved with multiple projects:

Vendors	learndirect scotland	Teknical	SITs	Fretwell SIS	Granada	Microcompass	Web CT	Capita	DigitalBrain	Intrallect	learndirect
Banff & Buchan	x		x								
Falkirk (STUG)		x	x					x			
Llandrillo		x		x							
Menai					x	x					
Perth					x		x	x			
Sir Gar (SWC)		x		x	x				x	x	
Ystrad Mynach		x									x

9.2 Eight vendors subsequently submitted reports on the project activities and their views of the programme as a whole. Some of these reports followed the reporting template supplied, some were submitted as appendices to the final project reports, and others were based on follow-up information supplied by telephone and email. Where appropriate, these reports are published on the JISC website (one vendor report was submitted in confidence).

9.3 These reports include observations on project scope and management, working with JISC, CETIS and the FE sector, and vendor involvement in the ongoing development of specifications and standards. Vendor recommendations for future collaborations are included in Appendix D.

9.4 Many of the issues affecting vendor relationships are discussed in some detail in the programme Formative Evaluation report. These include:

- commercial drivers and market forces that impact on vendor organisations
- perceived ‘kudos’ of involvement with JISC research projects
- customer relations imperative or vendors to participate in collaborative developments with their clients
- need to communicate with people at an appropriate strategic level in vendor organisations

² See <http://www4.gartner.com/pages/story.php.id.8795.s.8.jsp> for an introduction.

- 9.5 SWaNI helped to consolidate and enhance working relationships not only between the colleges and their system vendors, but also between the vendors and JISC. The Cardiff programme meeting in March 2003 provided a forum for the airing and sharing of grievances and concerns, which helped to reach a shared understanding of the organisational needs and drivers of the vendors, the colleges and the JISC.

10 Commentary

10.1 Programme scope, scale and timelines

- 10.1.1 SWaNI had a relatively long lead-in time from the original conception of the programme by JCLT in 2001 to the projects starting in September 2002. During this time, JISC went to considerable efforts to research and provide information on the background and focus of the SWaNI programme. This preparation included the production and dissemination of expert papers on current interoperability issues and practice, the establishment of a high-level Steering Group, and wide consultation with the sector about their interoperability needs to inform the programme focus.
- 10.1.2 These efforts are not reflected proportionately in the quality of the bids received. This may be due in part to a lack of specificity in the call – FE is more used to projects aimed at addressing particular, recognised sectoral needs than responding to invitations to conduct open research. Furthermore, understanding in the sector at that time about interoperability issues was not particularly mature among senior managers and technical staff alike. The majority of the proposals received addressed MIS/VLE data exchange. However, the formative evaluation indicated that most college VLE implementations were relatively immature, and there was apparent resistance from some quarters to the implementation of innovative technical solutions to ongoing business processes.
- 10.1.3 Project teams do not seem to have reflected sufficiently at the bidding stage on the information they were given, and how to apply this usefully in their own context. Most of the bids ticked almost every box in the table of anticipated project deliverables, which indicates both the inexperience of the bidders and the over-ambitious scope of the project proposals. Some projects recognised with hindsight that they should have spent more time at the outset specifying the business need and context for the project focus. However, they were constrained in this by the relatively tight timescale of the programme.
- 10.1.4 The timing of the further negotiation of funding conditions took place over the summer months when communicating with project staff was problematic, which may have impacted on the ability of some projects to ‘hit the ground running’ at the start. Projects needed to have a clear idea of what they were attempting to achieve in the context of their institutional operations and planned developments.
- 10.1.5 A specific evaluative focus in SWaNI was the extent to which regional and cultural differences impact on interoperability in the FE sector. The most significant of these differences identified by the projects lies in the data reporting requirements of the various UK Funding Councils. Initial scoping of projects and negotiations with vendors should include awareness of any proposed changes to Funding Council data reporting requirements and the impact of any planned changes on institutional systems.

10.2 Technical issues

- 10.2.1 JISC and CETIS were concerned the use cases, application profiles and transport mechanisms developed and implemented through SWaNI should conform to appropriate specifications, schemas and protocols. This gave rise to a certain tension within the programme between the institutions’ need for short-term fixes to address business problems, and the JISC/CETIS longer-term view of the need to produce generically applicable specifications and standards-compliant solutions.

- 10.2.2 Despite the introduction of the use case requirement at the programme induction meeting in September 2002, a workshop specifically on the development of use cases in October 2002 and further discussion at the Glasgow programme meeting in December 2002, many of the projects struggled to produce viable use cases. Some saw the use case methodology and the requirement to produce application profiles as a deflection from project activities, and the source of some communication and collaboration issues with the system vendors. The introduction of the requirement to use the SOAP transfer protocol also caused difficulties for some projects.
- 10.2.3 Projects noted with hindsight that they should have paid more attention to the concept and application of the use case methodology. Furthermore, the importance of taking a long-term standards-compliant approach to the development of interoperable systems within MLEs was widely acknowledged. The programme management also recognised the need for more proactive and overt support from JISC and its agencies when introducing apparently complex and abstract methodologies to project teams.
- 10.2.4 The SWaNI application profiles are now largely superseded by the new IMS Enterprise Web Service specification, which provides a standard messaging specification and tighter data requirements.
- 10.2.5 One of the specified objectives of the programme technical report was an investigation of the appropriateness of the use case methodology in SWaNI. Evaluation of the projects' understanding and experience of the methodology itself, and the information and development they received, would be useful in informing the development of use cases and scenarios in other related programmes such as 01/03. This evaluative work may now be taken forward through the review of all JISC MLE activities that is currently underway.
- 10.2.6 The use of the Gartner 'Hype Model' in the programme technical report as a means of contextualising the SWaNI technical developments requires some qualification. MLEs are not a technology per se, but a concept involving various technical instruments and processes. Furthermore, recent research indicates that the term 'MLE' is not in common parlance in the FE and HE sectors to which the concept applies, and therefore cannot be considered to be 'hyped' in this way.³

10.3 Objectives, outputs and outcomes

- 10.3.1 In general terms, SWaNI achieved its stated aim to establish the concepts of interoperability using IMS within managed learning environments in the FE sectors of Scotland, Wales and Northern Ireland. However, the extent to which the specific objectives of the programme (see para. 1.4) were achieved requires some qualification. In contrast to the precise contextualisation of the English FE interoperability pilots programme, the expected outcomes of SWaNI were relatively general and explorative. They also placed considerable onus on the vendors to design and build specified components for systems interoperability.
- 10.3.2 SWaNI aimed explicitly to build on the experience and recommendations of the English FE interoperability pilots programme. This programme gave rise to a number of specific recommendations to colleges, the Learning and Skills Council (LSC), the JISC, and vendors⁴. Broadly, these recommendations were addressed by the management of SWaNI and in the activities of the project teams and vendors. The recommendations to colleges from the English pilots reflect a reliance on the MLE conceptual framework as a guide to planning IT infrastructure to support a holistic organisational approach to development planning, taking into account pedagogic, business and technical factors. However, there is no indication of how this conceptual framework is actually to be applied. The experience of SWaNI indicates that colleges are less interested in

³ See the Study of MLE Activities in FE and HE across the UK ('MLE Landscape Study'), commissioned by the JISC and the Universities and Colleges Information Systems Association (UCISA), http://www.jisc.ac.uk/project_mle_activity.html

⁴ See Managing the Future with MLEs, <http://www.jisc.ac.uk/mle/>

speculative exploration than in testing viable solutions to real business problems, and that over-reliance on conceptual models may be counter-productive in engaging FE in applied research projects.

- 10.3.3 The summary table of the project bid objectives, final reported objectives and project outcomes (Appendix C) indicates that there was a significant shift in the thinking of some projects over the lifetime of the programme. Over-ambition at the bidding stage is reflected in considerable amendment to the scope and scale of the project objectives in some project final reports. These changes should be viewed not as the rewriting of history, but as an indication of increasing maturity and developing understanding of the issues involved in technologically innovative project work.
- 10.3.4 The programme technical report concluded that none of the projects had been entirely successful in technical terms. To some extent, the technical reporting process struggled to make sense of the projects in specifically technical terms. There was very little technical documentation, as many projects were directed by people without specific expertise in technical process development and documentation. Some of the projects were almost entirely dependent on their vendors for technical expertise and the production of the project deliverables. In this context, it is important to view the achievements of the SWaNI projects less in terms of technical outputs and more in terms of outcomes, that is changes in individual and organisational behaviour that lay a foundation for positive longer term developments.
- 10.3.5 There is evidence that SWaNI has had a significant impact on the individuals involved in the projects. Project team members report that SWaNI has raised their awareness of standards and technologies, has increased their experience and helped develop an expertise in technical development and project management, and has provided networking opportunities and contacts. There is also evidence of the impact of SWaNI on the project institutions in terms of developing the staff skills base, technical and management competence, and raising awareness of other sectoral developments and initiatives. Partnerships have been established and maintained, relationships with vendors have been consolidated, and foundations of knowledge and skill have been laid that will inform and enhance future technological change processes in the institutions. There is evidence of continuing engagement of SWaNI project staff in the work of the CETIS SIGs. Perhaps most significantly, there are indications that SWaNI has acted as a catalyst for business process analysis and improvements in business efficiency in many of the institutions involved. In this context, there is considerable evidence of the extent to which SWaNI built on the experiences of the English interoperability pilots. The technical report for this programme highlighted the role of the pilots in helping colleges with planning and implementing MLEs, including reviewing business processes and the staff development requirements of MLE implementation.⁵ The report particularly commended the role of the programme in bringing competing vendor organisations together in collaborative projects with educational establishments, relationships that were further consolidated through SWaNI.
- 10.3.6 In outcome terms, then, SWaNI has helped significantly to move forward understanding of MLEs, the importance of standards-compliant systems, and the opportunities presented by technology to improve and enhance core organisational activities in the FE sectors of Scotland, Wales and Northern Ireland

10.4 Programme management and support

- 10.4.1 SWaNI helped to maintain the momentum of positive engagement by JISC with the FE sector that was developed in particular through the English interoperability pilots, not just by extending the geographical scope but also by enhancing the qualitative nature of the engagement. However, the programme also highlighted an emerging conflict at the nub of JISC's activities with FE. Traditionally, the FE sector tends to be concerned with

⁵ The Managed Learning Environments Steering Group Technical Report. A report on the interoperability programme, March 2002

adopting pragmatic approaches to solve operational issues, and is less interested in general speculative research. Many of the colleges involved with SWaNI projects were interested in developing practical solutions to specific operational problems. To some extent, they were deflected from this course by the requirement to comply with emerging specifications and standards-compliant processes. A potential source of tension became apparent, with project funding aimed at moving the whole sector forward being applied in respect of mission critical operations within FE colleges.

- 10.4.2 CETIS staff attended and presented at programme meetings, and attended SWaNI Steering Group meetings in a strategic advisory role. They also arranged a workshop on specific technical issues and encouraged project teams to participate in SIG activities. Despite this, there was some confusion about the role of CETIS in the programme and the level of support they were able to provide. Some project teams seemed to expect CETIS to provide technical solutions to their specific problems. Many project representatives recognised with hindsight that they should have been more proactive in seeking support from CETIS, and in availing themselves of the opportunities for support that were presented.
- 10.4.3 The quality of interim reporting by the projects varied considerably. Some projects used the reports as an opportunity to reflect on their activities, and offered useful insights into the processes and emerging issues. Others seemed to view reporting as a wearisome paper exercise, and made more use of the 'cut and paste' function than is appropriate to a developmental project. However, the quality of project interim reports did improve generally over the lifetime of the programme.
- 10.4.4 Despite the efforts of the programme manager and the Steering Group to identify and address any issues affecting project success at an early stage, one of the SWaNI projects was unsuccessful. The clawing back of a substantial proportion of the funding for this project did not result from its failure to achieve the planned project outputs, but from the lack of communication with regard to changes to the scope and scale of the project mid-programme, and the failure to submit an acceptable final report within the required timescales.
- 10.4.5 This experience highlights some shortfalls with the interim reporting process. Projects were not required to provide an interim financial statement, beyond a cursory narrative account of 'performance against project costs'. More detailed interim financial reporting could provide early indication of any lack of activity or inappropriate activity, and the need for programme management intervention, without placing excessive reporting requirements on project teams.
- 10.4.6 The initial objectives specified for the formative evaluation (see para. 2.6.2) did not really reflect or underpin the supportive element of the process as it evolved during the programme. The evaluation process provided opportunities for the project teams to reflect on their activities and their longer term impact and implications. This complemented the interventionist, trouble-shooting approach of the programme manager, by highlighting issues that were not reported through formal channels. Support to projects from the programme formative evaluation could have been enhanced if the evaluation process had commenced at the same time, or even prior to, the start of the projects.

11 Recommendations

11.1 Sources and format

- 11.1.1 There are many sources of formal recommendations arising from the SWaNI programme. These are principally the formative evaluation report, the final reports from the projects, the technical report and the vendor reports. Reports were asked to target their recommendations at four specific audiences: future projects, the FE sector, vendors and the JISC (and its agencies). Appendix D is a collation of the recommendations from these SWaNI reports and outputs.

11.1.2 The collated recommendations have been further analysed to identify the key points and generic messages. The emerging points may be summarised into the following six overarching categories, ordered according to their frequency of occurrence in the source reports:

1. Project management
2. Vendors
3. Standards
4. Programme management and the bidding process
5. MLE systems development
6. Sustainability

Key recommendations and JISC actions

The following table details the key recommendations under these categories, together with a note of some of the actions that the JISC is currently undertaking in these areas.

Key recommendations	JISC actions
1. Project management	
Resource commitment – project teams need to ensure that they have adequate time, authority and expertise to undertake project activities without compromise, or appoint external consultants to manage project	JISC Programme Management Framework
Exemplars – these should build on previous project experience, noting good practice in project management and logging the lessons learnt	JISC infoNet MLE infoKit SWaNI case studies
Requirements – projects should have a clear understanding of aims, objectives, roles and responsibilities at the outset	JISC Programme Management Framework
Communications – mechanisms for project administration and communicating between all parties involved should be agreed and logged at the outset	JISC Programme Management Framework
2. Vendors	
Commitment – involvement of vendor organisations should be formalised in project agreements, and vendors need to consider commitment requirements of involvement in multiple projects and programmes	JISC Programme Management Framework Vendors io Forum CETIS MLE Development Bay
Priorities – projects need to be aware of vendor commercial commitments and drivers	JISC Programme Management Framework
Clarity on profiles – vendors require clear and consistent guidance on current ‘live’ specifications	Vendors io Forum
3. Standards	
Dissemination – standards developments need to be widely disseminated to ensure that institutions and agencies who have not participated in IMS developments are kept apprised of progress and encouraged to participate in wider discussions	Ongoing development from MLE Landscape Study

Key recommendations	JISC actions
Generic components – a toolkit approach should be taken to produce XML transactions for numerous specifications that are based on systems rather than individual implementation in particular institutions	MLE Development Bay
Compliance – systems development processes should provide for increasing compliance with emerging standards	MLE Development Bay
Vendors – vendor organisations should be actively engaged in the development of standards and agree to implement them	MLE Development Bay
4. Programme management and the bidding process	
Programme timetable/roadmap – bid documents and circulars should give a clear rationale for programme aims and objectives in the context of the wider framework of developments	Frameworks Programme Exit strategy for UK LeAP 01/03 Programme
Clear objectives and deliverables – projects require guidance from the outset on scoping projects within the overall programme parameters, and programme timelines should be appropriate for the realistic achievement of project objectives	JISC Programme Management Framework 01/03 Programme Formative Evaluation Project
Monitor technical developments – technical developments, issues and outputs should be actively monitored through the programme	JISC Programme Management Framework MLE Development Bay
Evaluation and support provision – formative evaluation provision should be established at the start of the programme and continue throughout, with clear processes for iterative feedback	01/03 Programme Formative Evaluation Project
Reporting procedures – reporting requirements should be clarified for projects, including the need for and purpose of reflective interim reporting and the submission of interim financial statements, and timely and constructive written feedback should be provided	01/03 Programme
5. MLE systems development	
Institutional strategy for development – there should be a clear relationship between the project objectives and the operational and strategic MLE developments for all participating institutions	
Technical staff development – systems developments need to be supported by ongoing staff development and the provision of accredited training for technical staff, including planning, implementing and documenting technical innovation	
6. Sustainability	
Business processes – institutional managers require a clear understanding of the context and opportunities to change for e-business practices	
Pace of change – technological innovations need to be introduced at a pace and level that promotes their sustainability over the longer term	

12 References

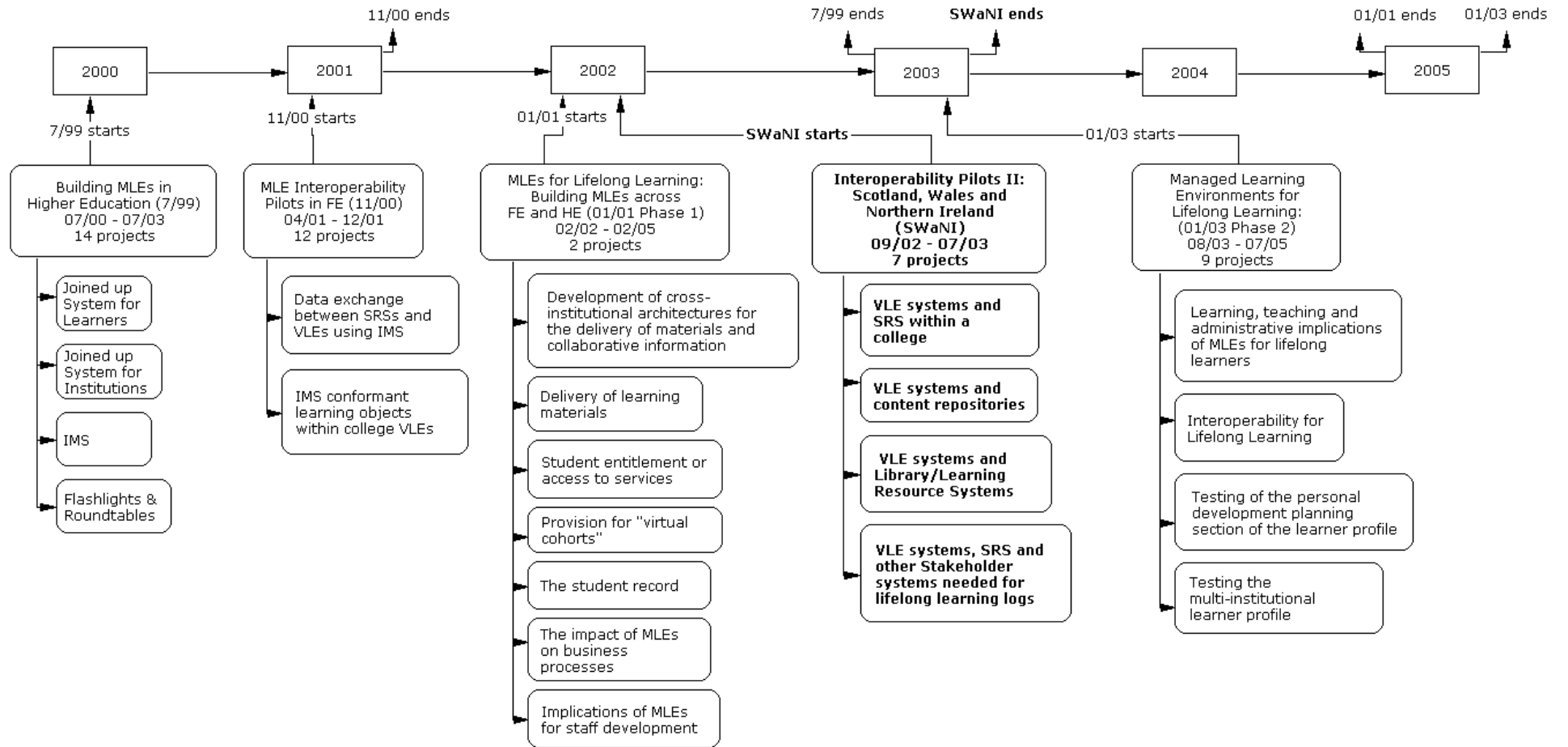
SWaNI Programme Website	http://www.jisc.ac.uk/index.cfm?name=programme_swani
Project Websites	
Banff & Buchan	http://banff-buchan.ac.uk/
Falkirk College	http://swani.falkirkcollege.ac.uk
Coleg Llandrillo	http://www.llandrillo.ac.uk/
Coleg Menai	http://www.menai.ac.uk/swani
Perth College	http://extranet.lauder.ac.uk/quickplace/enigma/main.nsf
Coleg Sir Gâr	http://jisc.virtualcollege.ac.uk http://swwetn.virtualcollege.ac.uk
Ystrad Mynach College	http://www.learningindustries.com/il3r/
JISC Reports	
JISC/UCISA	Study of MLE Activities in FE and HE across the UK ('MLE Landscape Study') http://www.jisc.ac.uk/project_mle_activity.html
JISC MLE Steering Group	The Managed Learning Environments Steering Group Technical Report. A report on the interoperability programme, March 2002
JISC MLE Steering Group	Managing the Future with MLEs, June 2002 http://www/jisc.ac.uk/mle/

Appendices

Appendix A – Abbreviations and Acronyms

CETIS	Centre for Educational Technology Interoperability Standards
CRA	Centre for Recording Achievement
ICT	Information and Communications Technologies
JISC	Joint Information Systems Committee
LIP	Learner Information Profile
LSC	Learning and Skills Council
LLWR	Lifelong Learning Wales Record
MLE	Managed Learning Environment
NICIS	Northern Ireland College Information System
PDP/PDR	Personal Development Planning/Personal Development Record
RSC	JISC Regional Support Centre
SCROLLA	Scottish Centre for Research in Online Learning and Assessment
SOAP	Simple Object Access Protocol
SFEU	Scottish Further Education Unit
SWaNI	Scotland, Wales and Northern Ireland – Interoperability Pilots Programme II
VLE	Virtual Learning Environment
X4L	Exchange for Learning – JISC-funded programme about repurposing content
XML	eXtensible Mark-up Language
01/01	JISC MLEs for Lifelong Learning Programme (Phase 1)
01/03	JISC MLEs for Lifelong Learning Programme (Phase 2)

Appendix B – MLE Programme Overview



Appendix C – Summary of Project Objectives and Outcomes

Project	Objectives (Bid document)	Objectives (Final)	Reported Outcomes
Banff and Buchan College	<ul style="list-style-type: none"> • Link SRS to the user accounts system in Skillnet and the college Intranet, to automate enrolments for online courses and share access to support materials • Enable transfer of data between components to create a synchronous lifelong learning log • Exchange content between repositories of the systems promoting the creation of online learning material • Use IMS standards to achieve the above thus ensuring that the packaging of online content is appropriate for alternative environments 	<ul style="list-style-type: none"> • Link SRS to the user accounts system in Skillnet and college Intranet • Automate enrolments for online courses and share access to support materials • Enable transfer of data between components to create a synchronous lifelong learning log • Exchange content between repositories of the systems • Use IMS standards to achieve the above 	<ul style="list-style-type: none"> • The project was of great benefit to the college, as it developed skills knowledge and competence previously lacking within the college staff. • The development of interoperability between systems creates a need for a detailed overview of all college processes. • After a lot of development the project has shown that interoperability is achievable between the SRS and B-net and from B-net to the Skillnet VLE • The partnership approach has been successful and both organisations have benefited from the project
Falkirk College	<ul style="list-style-type: none"> • Build on previous interoperability projects • Contextualise interoperability to Scottish FE • Use IMS specifications to resolve interoperability issues • Ensure standards based solutions work in Scottish FE • Ensure standards based solutions work across different systems • Develop FE extensions for IMS Learner Information Package Specification • Ensure interoperability solution meets the needs of Scottish FE stakeholders, ie Student Records departments, teaching departments, VLE administrators, tutors and students. 	<ul style="list-style-type: none"> • Produce a specification for the production of interoperability software that satisfies the needs of the partner colleges. • Test and implement this interoperability software in three of the five partner colleges • Survey people involved in the business processes to measure the impact of the implementation of the software on the respective organisations. • Document differences in business processes involved in SRS – VLE interaction across the five partner colleges. • Prepare reports for technical and user audiences and project reports • Dissemination to the JISC Community through participation in events and publicity materials 	<ul style="list-style-type: none"> • UNIT-E student record system, have supplied their interoperability software to the colleges, which is non-SOAP compliant, as agreed • Teknical have written interoperability software, following the specified SOAP definition • The consortium has: <ul style="list-style-type: none"> ○ produced a specification for the production of interoperability software that satisfies the needs of the partner colleges ○ produced comprehensive testing plans for the delivered software ○ surveyed people involved in the business processes to measure the impact of the implementation of the software on the respective organisations ○ documented differences in business processes involved in SRS – VLE interaction across the partner colleges

Project	Objectives (Bid document)	Objectives (Final)	Reported Outcomes
Coleg Llandrillo	<ul style="list-style-type: none"> • Verification of the automated data transfer process for both quantity and accuracy of transmission • Description of how data transmission can be resumed under conditions of interrupted transfer and confirmation of data • Description of common and shared methods for the validation of the data transfer process • Transfer of student data from MIS to VLE and records of achievement from VLE to MIS • Error reporting protocols will be outlined in readiness for detailed attention in future projects • Identification of additional data fields for the STIR • Testing of the processes described above with the new STIR fields 	<ul style="list-style-type: none"> • Build on previous data transfers tests • Ensure data validity and integrity • Ensure systems security • Take into account data requirements of LLWR • Record Welsh specific data • Ease VLE access for students 	<ul style="list-style-type: none"> • Learned as much about the processes of being involved in a JISC project as the expected outcome • Opportunity to: <ul style="list-style-type: none"> ○ assess working practices, departmental collaboration and communications both internal and external ○ be a part of formulating solutions for the sector with access to support from organisations such as JISC and CETIS as well as colleagues in other institutes has been invaluable ○ evaluate or re-evaluate systems and processes as well as keeping senior management in tune with current sector developments
Coleg Menai	<ul style="list-style-type: none"> • Ensure that interoperability results in a reduced impact on the administration of courses within the VLE • Identify and produce reports that assist the college in its needs • Courses held within the VLE to be populated with students using MIS records • Student achievements returned from the VLE to the MIS records • Information about student status (ie active/withdrawn) transferred between MLE components • The impact of bilingual delivery of courses on interoperability • Use biographical information stored by MIS to modify the interface options presented to the learner 	<ul style="list-style-type: none"> • Courses held within the VLE to be populated with students using MIS records • Student results returned from the VLE to MIS • Information about student status (i.e. active/withdrawn etc.) is transferred between MLE components • To examine the possible impact of the implementation and use of multi-lingual software on MLE interoperability 	<ul style="list-style-type: none"> • Interoperability is not 'Plug and Play' • Bespoke solution for propagating learner language preference needs to be followed up with a standardised approach • The learner status values in IMS Enterprise 1.1 may not meet the needs of the UK FE sector

Project	Objectives (Bid document)	Objectives (Final)	Reported Outcomes
	<ul style="list-style-type: none"> • Transfer information from the VLE to MIS about the use of learning materials and assessments in the medium of Welsh • Explore issues created through the existence of 'parallel' resources and assessments • Prepare a report on the possible impact of the implementation and use of multi-lingual software on MLE interoperability • Prepare a report on how our findings may be applicable to other accessibility needs 		
Perth College	<ul style="list-style-type: none"> • Evaluate the translator provided against the IMS Enterprise specification + FE Extensions identifying any refinements that may be needed • Refine the translator provided in accordance with the refinements specification • Define test matrix for vendors and college partners • Have each VLE vendor work with the SIS Vendor to test the translator in pre-defined simulated data exchange situations between the VLE and the SIS • Each academic partner to trial the use of the Translator using pre-defined test strategies and data exchange situations • Prepare formative, summative, technical and pedagogical evaluation reports • Dissemination to the JISC Community 	<ul style="list-style-type: none"> • The aim of the project is to prototype a data transfer engine which has been developed by Capita to allow course and student information to flow freely between existing virtual learning environments and existing student records systems used by the Academic Partners to create the beginnings of a managed learning environment • Enhance the functionality of Capita MLE Exporter 	<ul style="list-style-type: none"> • Bid, funding and project management experience further enhanced • Cross college and vendor cooperation • Internal understanding of wider organisational issues of interoperability and technical knowledge of processes • MLE Exporter functional at Lauder College as part of E Learning strategy • Data transferred from Capita DITA to Learnwise • The knowledge, learning and network remains!
Coleg Sir Gâr	<ul style="list-style-type: none"> • Demonstrate the ability to move web-based content from one learning environment to another • Demonstrate the re-use of learning content objects across different platforms and learning environments • Provide searchable learning content for 	<ul style="list-style-type: none"> • Demonstrate the ability to move web-based content from one learning environment to another • Demonstrate the re-use of learning object across different platforms and learning environments • Provide searchable learning content for 	<p>Successful testing of :</p> <ul style="list-style-type: none"> • learning object transfer one way between digital repository and three VLEs • bi-directional transfer of learning objects between digital repository and two VLEs • bi-directional transfer of learning objects between two VLEs

Project	Objectives (Bid document)	Objectives (Final)	Reported Outcomes
	<p>storage and retrieval using a compliant digital repository</p> <ul style="list-style-type: none"> • Evaluate the current level of interoperability between five different VLE systems and the student record systems of the participating FE colleges • Work with VLE and repository vendors to identify and action opportunities to improve interoperability at a local level • Report widely to the FE sector on outcomes through the project reporting schedule, conference and seminar presentations 	<p>storage and retrieval using an IMS compliant digital repository</p> <ul style="list-style-type: none"> • Evaluate the current level of interoperability between five different VLE systems and the student record systems of the participating FE colleges • Work with a VLE and repository vendors to identify and action opportunities to improve interoperability at a local level • Report widely to the FE sector on outcomes through the project reporting schedule, conferences and seminar presentations 	
<p>Ystrad Mynach College</p>	<ul style="list-style-type: none"> • Research the appropriate implementation of the IMS Learner Information and IMS Competency Definition specifications (+ FE Extensions) within LLR systems operating within the FE and vocational training sectors • Suggest appropriate modifications and/or extensions to the above specifications • Design and develop additional messaging interfaces, to a new PDR that comply with the adopted standards • Consult with Vendors on the appropriate implementation of the resulting standards • Undertake trials to demonstrate the transfer of appropriate LIPs • Document the application of the IMS specifications (+FE Extensions) and feed this information into the IMS Project • Publish and disseminate the results of the work via the web and appropriate academic forums 	<ul style="list-style-type: none"> • Investigate the application of IMS LIP • Develop a working interoperability specification • Demonstrate interoperability between Lifelong Learning Records (PDR/P systems) 	<ul style="list-style-type: none"> • Demonstrated Interoperability of LLRs • Detailed Interoperability Specification • Demarcation of PDR and PDP Data • LIP Only Initial Interoperability Framework

Appendix D – Summary of Recommendations

	Recommendations for project teams	Recommendations for the FE and HE sectors	Recommendations for vendors	Recommendations for JISC (and its agencies)
Formative Evaluation Report	<p>Undertake skills audit to ensure teams have the right range and mix of expertise</p> <p>Ensure project leaders have appropriate project management skills</p> <p>Undertake project risk analysis and devise risk management strategy</p> <p>Develop and implement a communications strategy in project plans and consortium agreements</p> <p>Actively seek out collaboration opportunities with other projects and initiatives</p> <p>Make appropriate use of the services of support agencies</p> <p>Consult JISC website and other sources of information regularly to keep informed about relevant developments and initiatives</p> <p>Recognise potential impact of external factors influencing project activities and outcomes by conducting a SWOT analysis</p> <p>Ensure project activities are linked to organisational strategic aims and operational objectives</p> <p>Conduct internal dissemination and keep managers informed of project activities</p>	<p>Recognise and support the need for developing project management skills</p> <p>Ensure appropriate time and resources available for project staff</p> <p>Encourage greater use of a range of communication methods and techniques within and between organisations</p> <p>Encourage appropriate use of the services of support agencies</p> <p>Raise awareness of various drivers for change, and impact on core business processes</p>	<p>Ensure project contacts have appropriate level of technical understanding</p> <p>Engage as appropriate with JISC and the sector for strategic planning of research and development</p> <p>Advise and consult internal management as appropriate about issues relating to project activities</p> <p>Support activities of product user groups</p> <p>Maintain levels of information about ongoing developments through contact with SIGs</p> <p>Raise awareness within organisation of the national context for products and systems</p>	<p>Co-ordinate provision of appropriate staff development opportunities in staff development and organisational capacity building</p> <p>Introduce supportive processes and guides to accompany complex technological methodologies</p> <p>Develop and implement a communications strategy for programmes</p> <p>Lead by example to encourage use of audio and video conferencing for programme communication</p> <p>Co-ordinate provision of staff development and implementation of communication strategies</p> <p>Encourage appropriate use of the services of support agencies</p> <p>Broker inter-project collaboration by encouraging geographical or thematic clusters</p> <p>Actively inform projects about other related developments and initiatives</p> <p>Continue research, reporting and dissemination of cultural change processes and implications</p>

Project Reports				
Banff & Buchan College	<p>All future developments must be convergent</p> <p>Systems should comply with emerging standards e.g. IMS</p> <p>Detailed map and clear understanding of business processes are required to ensure that opportunities from e-business are exploited fully</p> <p>We need to make commitments to resource requirements</p> <p>Ensure that developments in systems are supported by ongoing staff development.</p> <p>We need to be clear how we sustain the current pace of change but build safeguards in terms of long term sustainability</p>	<p>Ensure that sector contributes to the development of specifications by participating in collaborative projects such as this</p> <p>In choosing a VLE/CMIS colleges should draw on the expertise of organisations such as JISC and CETIS, to ensure that they ask the right questions of system vendors at the consultation stage</p> <p>Colleges should consider working in partnership with other learning organisations in order to make effective use of existing expertise</p>	<p>Vendors should work closely with college partners in the development of their products</p> <p>Vendors should agree to implement emerging standards and specifications</p>	<p>JISC should review its relationship with vendors to ensure that they are sufficiently recompensed for their time and effort</p> <p>Clearer guidelines should be given at the outset of the project in relation to the expected deliverables from colleges and vendors</p> <p>College project managers should be given examples of good practice in relation to effective project management</p>
Falkirk College	No specific recommendations made			
Coleg Llandrillo	<p>Where possible, a clear framework of the project aims, objectives and time scales should be documented, agreed and signed by all partners.</p> <p>Agree and adhere to a clear method of progress reporting with outcomes, positive or negative.</p> <p>Pay due regard to the commercial needs of vendors.</p>		<p>Vendors and the JISC may wish to consider the number of projects a partner should be involved with to avoid over-commitment</p>	<p>Project requirements should be made completely clear at the outset and any changes to these requirements should result in flexibility of deadlines.</p> <p>Parameters must be clearly set at the beginning of projects, perhaps even stated as part of the JISC bid call.</p>

<p>Coleg Menai</p>	<p>Define roles and responsibilities at the start of the project. Also agree the time allocation to the project.</p> <p>The project manager must be able to assign tasks to team members and agree completion dates for which the team member is accountable.</p> <p>Ensure the project board is inclusive and includes all key stakeholders</p> <p>The project's communication mechanisms need to be agreed at the start.</p> <p>The project manager should keep a journal and lessons-learned log.</p>	<p>Have a clear strategy for what interoperability you want and why you need it. Interoperability is not yet 'plug and play'. Think about whether you will need to test you interoperability before setting it up on your live servers – seek advise from your vendors and other colleges. Clarify with vendors exactly what they will be doing when they set your interoperability up. Consider future project calls from JISC in terms of potential alignment with your college's MLE/ILT strategy</p>	<p>Give the application profiles closer scrutiny and clearly communicate to colleges which application profiles your system supports including making exemplar XML files available.</p> <p>Display interoperability case studies on your websites that detail the interoperability achieved and the benefits that resulted.</p>	<p>Introduce use cases at the start of the project</p> <p>Clearly communicate the programme's suggested project timetable at the start of the project.</p> <p>Use of the application profiles in the programme should have been monitored more rigorously.</p> <p>The discrepancy between the binary (active/inactive) vocabulary for learner status in Enterprise 1.1 and the richer vocabulary (5 states or so) used by MIS and VLE systems requires further investigation.</p> <p>The FE/HE sector in the UK, especially in Wales, needs to agree how learner language preference information can best be passed between MLE systems.</p> <p>Publish a 'roadmap' of planned programmes and developments to aid colleges and software vendors to match their development cycles with strategies supported by JISC programmes.</p>
<p>Perth College (Enigma)</p>	<p>Project Management – projects of this type should use external project consultants unless internal resources can be committed without compromise</p>		<p>Vendor Participation – there needs to be a stronger link made to the vendors through the JISC where formal commitment to the project is agreed and documented and not just, as in this case, a gentleman's agreement</p>	<p>Programme manager should attend project board meetings.</p> <p>Set up vendor and project groups to discuss products and ideas</p> <p>A project toolkit should be developed at an early stage outlining all the items required along with best practice tips from previous projects</p> <p>External evaluation process should be involved at the project inception and carry right through the project timeline</p>

<p>Coleg Sir Gâr (South West Wales Interoperability)</p>		<p>Further dissemination of IMS and SCORM standards and the work of CETIS and JISC to those institutions not currently involved in interoperability and e-learning.</p> <p>Research into the pedagogical implications of collaborating in the development of learning objects</p>	<p>Continued research and development into the application of content interoperability standards, content packaging and re-use involving all key software products and vendors</p> <p>There should be greater vendor input into the design and development of the standards</p>	<p>JISC and CETIS should seek a greater input from the FE Sector to events and seminars outside the SWaNI project relating to e-learning and interoperability specifications & standards.</p>
<p>Ystrad Mynach College (IL3R)</p>	<p>The college should be more realistic with future projects with allocating time required and to undertake more thorough background research before bidding.</p> <p>Future projects should build upon vendors and partners experience in other projects before the bidding process.</p> <p>Recognise the technical nature of the project and assign appropriate staffing from the outset, thus enabling staff to become fully immersed at all levels within the FE institute.</p> <p>The college should take the majority of the burden of project management with future involvements in projects that have a specific FE focus.</p> <p>Build upon the technical expertise and project experience gained to improve effectiveness in future projects particularly in the areas of setting realistic</p>	<p>(Recommendations for the SME Partnership)</p> <p>The further development of the LIL Personal Development Record should incorporate facilities to import and export IMS LIP compliant packages to cover the 3 main use cases identified by the project.</p> <p>The wider development of e-learning content and systems within the Partnership should consider the requirements for, and appropriate implementation of, interoperability features as a matter of priority.</p> <p>Further research should be undertaken into the broader use of PDR/P in the wider work-based learning sector and the additional interoperability</p>	<p>Vendors and system developers should consider the implementation of appropriate practical IMS LIP compliant interoperability features to support the development and maintenance of lifelong learning records using electronic PDR/P systems.</p> <p>In the case of VLE and analogous course management systems, facilities should be developed and implemented to export learning activity data to external PDR/P systems.</p> <p>In the case of wider learner management systems facilities should be developed and implemented to facilitate the extraction of appropriate data for use in</p>	<p>The JISC should consider the need for a rationalised development of generic interoperability specifications to enable vendors and other systems developers to implement the IMS LIP specification to a common schema.</p> <p>Further consideration should be given to the work currently being developed by the SHELL Project on Interoperability Agents as a potential solution to the above problems and those of evolving standards.</p> <p>CETIS/IMS should take forward the CRAs proposal for a <statement> element within LIP as the first stage in extending LIP to carry PDP process data.</p>

	objectives and project management.	requirements necessary to facilitate this.	appropriate data for use in external PDR systems.	
Vendor Reports	<p>All meetings should be planned in advance (part of the bid) and agreement made as to the responsibility for minutes, ownership of actions etc</p> <p>Projects need clear and strong project management.</p> <p>Dedicated resource must be available</p> <p>Clear objectives must be defined</p> <p>Projects should avoid scope creep</p>	<p>We would recommend that the sector look towards a toolkit approach that provides the components and design environment it needs to produce XML transactions to be used with the numerous emerging specifications and standards.</p> <p>FE should realise that vendors have other customers, contracts and commitments that require servicing.</p>	<p>Future development will be increasingly focused on compatibility with emerging interoperability standards and as such, the JISC projects provide the most forward looking opportunities available internationally.</p> <p>Vendors should only be involved in one project at a time thus avoiding any division of effort issues.</p> <p>Continue to be actively involved in JISC/CETIS/IMS initiatives (both technological and pedagogical)</p> <p>Ensure better communications with partners</p>	<p>Develop a separate “content” project. This could include the development of guidance, tutorials and tools to provide a consistent, FE wide approach to content creation.</p> <p>Formative discussion about “What is an effective learning object” and how the context of a VLE can effect content.</p> <p>Development of digital library specifications and a study into Web Services for uploading, querying and retrieving content from them.</p> <p>Future pilots should only be accepted if the vendors have been involved in and have supported the bid and have been involved in any proposed changes to project scope</p> <p>Develop an ‘issues register’</p> <p>JISC need to play a more active role attending project meetings and commenting on minutes actions etc</p> <p>Implement JISC account management with vendors and regular face to face meetings or events</p> <p>Flush out from the vendor community when features such as SOAP transport methodologies are planned..</p> <p>JISC/CETIS can provide a key function in ratifying standards but they need to be specific and relevant at the time</p> <p>Impose conditions on funding relating to project deliverables</p> <p>All deliverables and expectations should be clearly defined prior to proposal submission</p> <p>All parties must be made of any commercial imperatives that have a bearing on the project</p>

				<p>CETIS should provide clearer best practice guidance earlier in the project</p> <p>CETIS should adopt a more approachable consultative 1 on 1 approach rather than lecturing to the programme group as a whole</p> <p>Ensure that the specifications/ standards that vendors are expected to work with are “fit for the purpose” so that vendors can provide functioning systems that meet FE sector expectations within the timescales of the project</p> <p>JISC need to be realistic on the impact on timescales of changes decided upon part way through a project e.g. use of SOAP</p>
Technical Report	Projects should test interoperability of each system with multiple other systems		Interoperability projects should be based on systems rather than colleges. Where the projects are college based there is little need for the vendors to provide general solutions.	<p>JISC should fund the colleges that made up this programme to write up their progress since the end of the project.</p> <p>More advice should be provided to colleges and vendors on which specifications, and which application profiles to use</p> <p>JISC should consider calling a conference of interested parties to agree on a set of application profiles</p> <p>Greater consideration should be given to the length of projects to enable them to deliver in the time available. Greater flexibility should also be available to extend the period of projects when external factors cause delays</p>