
The Centre for International ePortfolio Development (CiePD)

Report on the CIEPD-led XCRI strand for the Leap Ahead Lifelong Learning Network (LLN)

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1. Summary of Impact

XCRI-CAP stands for 'eXchanging Course Related Information – Course Advertising Profile' and is the UK data standard for course advertising data. It is used to share courses information dynamically between UK education institutions and aggregators, with adoption growing nationwide amongst institutions, data agencies and vendors.

The East Midlands is at the leading edge in XCRI implementation and emerging outcomes from the ClePD-led regional pilots have been shared with the Department for Children, Schools and Families (DCSF) and are informing the Department's recommendations at a national level.

The Leap Ahead XCRI strand has provided efficient and compatible solutions for managing the aggregation of local and regional information on the Your Future East Midlands (YFEM) website, as well as producing standardised high quality data sets for institutions and data collection agencies.

Co-ordinated sister projects have enabled all East Midlands Area Prospectuses to work towards implementing XCRI as an efficient solution to importing learning provider data onto their systems, making cross-border course information available.

A significant benefit resulting from this combined approach will be an improvement in the flow of constantly accurate and up-to-date courses information, available for learners and employers, as well as informing Information Advice and Guidance (IAG) practice.

1.1 Impact of the Leap Ahead LLN XCRI Strand

- Improved access to current and timely course information and progression routes
- Step-change improvement to current regional business processes
- Five Leap Ahead partners exporting course information automatically
- Major contribution to the sustainability of Your Future East Midlands
- Widening interest both regionally and nationally
- Development of underpinning IT infrastructure to join up regional data sources

Five Colleges and Higher Education Institutions in the region have already produced XCRI-formatted course information.

Through sister projects, 5 East Midlands Area Prospectuses are developing XCRI exports and imports.

2. Background

Your Future East Midlands (YFEM), an East Midlands Information Advice and Guidance website conceived in 2007, is jointly funded by EMDA and Aimhigher East Midlands with further developments funded by Leap Ahead LLN and Skills for Sustainable Communities LLN. YFEM is an important resource to improve guidance for vocational learners as well as to direct information about educational routes to employers through creation of dynamic online progression routes.

The website holds information about 19,000 East Midlands' courses, which initially were entered manually, taking 2 members of staff around 8 months. However, as current and accurate course information is vital for learners to be able to identify real-time progression routes and opportunities, a method for updating this large resource with courses information from learning providers was key to its sustainability and currency.

Learning Providers already provide course information to various courses aggregators, such as Hotcourses, Area Prospectuses, fdf, UCAS etc. This is often typed manually through updating online forms, or creating spreadsheets via the Management Information Systems (MIS). Many hours of staff time are spent on these activities, particularly in ensuring that course data is current and consistent.

The Centre for International ePortfolio Development (ClePD) were responsible for delivering the Leap Ahead LLN's ePortfolio and eSystems strand of work, with a remit to undertake "... a large-scale exemplification, national in its significance, of service-oriented IT provision for lifelong learning"⁽⁶⁾. The ClePD's previous projects implementing data interoperability through JISC funding placed the Centre in an advantageous position, having knowledge of and connections with the XCRI community. Implementing XCRI seemed the most obvious solution, with benefits in terms of efficiency and accuracy for both provider and aggregator.

2.1 What is XCRI?

XCRI-CAP (eXchanging Course Related Information – Course Advertising Profile) is an XML standard for course advertising data and is used to share information about courses between UK education institutions and aggregators with take-up growing amongst institutions, data agencies and vendors.

Originally developed from a JISC project in 2004, XCRI has proliferated nationally, with use growing through JISC mini-projects, vendor interest and other LLNs. In 2009, the UK Government's Information Standards Board for Education Skills & Children's Services approved XCRI-CAP 1.1 as the national e-prospectus standard, thus, endorsement from the DCSF/BIS and HEFCE (via JISC). An EU harmonisation process is also underway.

The XCRI-CAP standard means that XML data feeds can flow in (import) and out (export) of existing database systems. Standardisation also allows course information from different organisations to be grouped together and for specific parts of course

information to be extracted as required. With no new systems or hardware to implement, XCRI XML feeds are developed via transformation of courses data into the XML standard (see Appendix One).

Organisations such as the National Learning Directory, fdf and UCAS intend to support and implement XCRI feed imports into their systems in the near future.

2.2 XCRI and the Lifelong Learning Network

Implementation of XCRI with Leap Ahead LLN partners supports the flow of information about learning around the regional landscape.

Five Learning Provider Leap Ahead LLN partners have developed XCRI-CAP exports from their systems, accessed either via web service, or through publicly available XML via the web.

Your Future East Midlands have developed an 'import module' to harvest and aggregate Learning Provider export feeds.

Sister projects, the JISC 14-19 Area Prospectus XCRI project and the X-Border project (described in section 4), have overseen the development of XCRI-CAP feeds from the five 14-19 Area Wide Prospectuses (AWP) in the East Midlands, piloting the first aggregation of AWP course data using XCRI in the UK.

3. Leap Ahead LLN Partners and XCRI

Enthusiasm of Leap Ahead LLN partners for this initiative has arisen from an existing business need within institutions. With up to 20 different external agencies requesting course information from them at any one time, all partners saw XCRI as a positive solution, and as there was a demonstrable central aggregation (e.g. Your Future East Midlands) resulting in a purpose for generating exports, the strand had immediate real-world tangible benefits.

XCRI implementation centred on immediate requirements to supply learners with accurate and up-to-date information about courses, progression routes and other learning opportunities.

In the longer term, we anticipate partners will adopt this method of export and data collection with Your Future East Midlands initially and also will further explore solutions with other external data collection agencies as a potential solution to the practical issues surrounding the sharing of course information.

3.1 Making it work

XCRI can be a difficult concept for those who are not from a technical background. To implement XCRI successfully, a cross-institutional approach must be taken – it cannot just be a project undertaken by the IT or MIS team because it impacts on marketing and admissions teams as well as institutional business processes as a whole.

The following ensured the success of the XCRI project:-

- Strong partnerships within the region
 - Through Leap Ahead LLN or existing regional groups
- Central “brokerage” role of the ClePD
 - To coordinate and support those wanting to get involved
- **Practical technical and expert support**
 - Arguably the most important success factor (see below)
- Understanding stakeholder requirements and underlying data diversity
 - Not underestimating the complexity that exists amongst disparate systems
- Support from JISC and existing XCRI expertise
 - ClePD contacts, such as Alan Paull (APS Ltd.), were invaluable in ensuring that these pilots had excellent support as well as a route for recommendations into the Information Standards Board and government departments.

Through working directly with technical staff and managers and providing lightweight software applications and support, the pilots have been able to develop rapidly. This was largely facilitated by the ClePD's LLN team consisting of an Applications Developer and technical Project Manager who understood data systems and the developments that were required. Additional expertise was also

gained from Alan Paull through the JISC-funded projects running concurrently (see section 4). The Applications Developer provided a significant role in getting many of these feeds up and running, through mapping institutional courses data to XCRI, to supporting development of lightweight web services with the developers at the institutions. The approach to implementing XCRI was generally aimed at middle management and their teams. This was successful in that those at the 'coal face' immediately could see the benefits of using XCRI and understood how to implement services. However, as a result, sometimes senior managers were not necessarily aware of the work occurring within their institutions. In response to this, a briefing paper was produced early on, and latterly, a leaflet promoting XCRI from a Learning Provider viewpoint. ⁽⁵⁾

3.2 Main reasons for Learner Provider engagement

- Less time and resource spent updating external websites
 - Onus on aggregators of course information to collect and transform data
- Accuracy of information for learners and employers
- Control over course information
 - Turning the aggregator relationship on its head - "here is our data, take it"
- Ensuring that course advertising was consistent across institutional media
 - For instance, versions of course information shown in brochures, websites and Management Information are often not consistent within institutions.
 - The XCRI projects exposed some of these inconsistencies and prompted institutions to examine their processes for course advertising, from data capture within MIS, to how this data connects with marketing information, and the website
- Exploring a different advertising media
 - Making the XCRI feed available for future developments

Engagement was established through meetings and workshops (see Appendix three). Leap Ahead LLN Partners who developed XCRI feeds following engagement with the meetings are:

- Castle College
- Derby College
- New College Nottingham
- Nottingham Trent University
- West Nottinghamshire College

The Open University also has a publically available XCRI feed developed through APS Ltd.

Encouragingly, pilots showed that XCRI can be implemented internally and autonomously within a larger institution, although brokerage in terms of agreed vocabularies was important for this strand and for XCRI development nationally. Smaller institutions than those shown in the list do not necessarily have the

development capacity and may benefit from outside support, or by another service transforming data into XCRI for them.

One result was an approach to one or two of these institutions by Hotcourses as a result of these meetings to pilot their XCRI feeds with the National Learning Directory.

An example of XCRI being embedded into mainstream activity for one college in particular is the addition of XCRI to the recruitment, admissions and marketing agenda, and inclusion as a core service in a newly developed courses management system.

Leap Ahead LLN partners have contributed to the development of the XCRI standard, including input into recommended vocabularies and testing the practicalities of interoperability. Extra data elements proposed will inform the next iteration of the standard, XCRI 2.1.

4. Impact within the Region

4.1 XCRI Sister Projects

Running the Leap Ahead LLN pilots, and specifically dealing with the requirements of YFEM, put the ClePD into a very good position to take the XCRI work further by engaging with the 5 East Midlands Area Wide Prospectuses (AWP) and linking this work to a JISC initiative to pilot the aggregation of their course data.

The JISC sponsored 14-19 XCRI project ran from November 08 to April 09 and the purpose was to investigate issues for the AWP's in XCRI-CAP implementation and to pilot aggregation of the course information from the 5 systems. This was tested with the Leap Ahead sponsored YFEM import module, illustrated in Appendix One.

Furthermore, from July 09 to December 09, additional JISC funding was secured by the ClePD to extend 14-19 XCRI into addressing cross-border targets for the AWP's to provide practical solutions for XCRI import and export for searching across boundaries, as well as investigating issues around cross-border applications and the development of XML standards.

This project work is being fed upwards to the UK's Information Standards Board and is directly influencing DCSF policy around cross-border search and application for the AWP's. The DCSF's *Action Plan for the 14-19 Prospectus and Common Application Process* recommends that government⁽¹⁰⁾ "... would like all local areas to adopt these data standards by 2010" p.19 with a direct reference to this East Midlands work.

Development of XCRI import test modules by the Nottinghamshire and Derbyshire AWP's has strengthened the business case for XCRI adoption by the Leap Ahead LLN partners.

For an illustration of all XCRI East Midlands work run by the ClePD, see Appendix three. The net result of this combined body of work is that, at this present time, the East Midlands is at the forefront of XCRI implementation countrywide. The ClePD's delivery of the Skills for Sustainable Communities Lifelong Learning Network's (SSCLLN) XCRI strand in 2010 will further strengthen this position by engaging wider East Midlands' institutions.

5. Sustainability and Continuation

With both Your Future East Midlands and the Nottinghamshire and Derbyshire Area Prospectuses developing live XCRI data imports to populate their websites, there is a clear purpose for institutions within the Leap Ahead LLN (and wider) to undertake XCRI work. Those partners who did not develop XCRI feeds are now aware of these initiatives, and virtually all, plan to work with XCRI in the near future.

As a direct result of the Leap Ahead LLN XCRI project and the JISC funded sister projects, there are now 7 institutions/agencies involved in XCRI exporting/importing in Nottinghamshire and Derbyshire, and 4 in the remainder of the East Midlands.

An XCRI-CAP export feed was developed by the ClePD/Leap Ahead Applications Developer on the YFEM database. This offers an opportunity for a re-usable service, and was demonstrated in a discreet piece of work to sustain the Collaborative Higher Education Alliance (CHEA) course directory following the project's end, via a dynamic XCRI search whereby data is not moved, rather aggregated and viewed on the fly. ⁽¹²⁾

The ClePD are running the SSCLLN XCRI implementation in 2010, further supporting East Midlands' institutions and Your Future East Midlands, as well as the Area Wide Prospectus services.

XCRI processes run on partners' servers, so there is no central hardware/software required for upkeep.

We anticipate partners will adopt this method of export and data collection more widely as a potential solution to the practical issues surrounding the sharing of course information.

There is evidence of organic peer-support community building, through developers from different organisations working together, to dissemination and discussion of practice at cross-institutional user groups (such as the Common Application Meetings in Nottinghamshire).

The ClePD commissioned a Leap Ahead funded report into the feasibility of automatic data transfer of Labour Market Information (LMI). Central sources of well constructed LMI data exist at the Office of National Statistics and the ClePD are investigating the possibility of combining regional/local information with XCRI to provide a dynamic and rich picture for stakeholders.

6. Technical summary

The technical methods developed for import and export will serve as an example of best practice to the wider community.

Implementation

- Used the XCRI Implementation Model (XIM) to establish 'XCRI readiness' ⁽⁹⁾
 - Institutions with streamlined internal processes (generally between MIS and marketing/website data) find it easier to implement XCRI-CAP
 - Establishing the most accurate dataset(s) to extract data from and that data has appropriate granularity and consistency
 - Mapping courses data to XCRI and also to YFEM requirements
 - Testing the XCRI-CAP feeds with the YFEM import

For interoperability, courses in XCRI must have a persistent identifier – this allows the aggregators to keep the course information up to date on their websites. Implementing XCRI as a cross-institutional project demonstrated where process improvements could be made in both data quality and flow between systems, such as between MIS and marketing databases.

Different methods were used for XCRI exposure. These were:-

- Exposing the feed via an XML document on the web, updated on refresh
- Exposing the feed via a static XML document, updated periodically via Data Transformation Services
- Web service available for requesting for download or a system to system update

A standardised approach was applied to overcome importing barriers

- Mapping to a list of pre-defined subjects (e.g. QCA)
- Used QAN to identify course
- Course code and static URL to define the course
- Utilisation of recDateTime as the most appropriate method of identifying course modification
 - This will be incorporated into the next XCRI-CAP version, 1.2
- Standardised course title recommended (National Learning Directory standard⁽¹³⁾)

Further technical information is available in the XCRI 14-19 report. ⁽⁸⁾

7. Conclusions and Recommendations

Further development of this lightweight service-based approach can be construed as a response to the current climate whereby IT services are being streamlined⁽¹⁴⁾ to create a more efficient and cost-effective infrastructure without losing quality of service.

Once course information can be standardised and linked with other standardised information, various new services can be offered to stakeholders.

An Ecosystem of interconnected web-services can provide an infrastructure to provide user-defined services, which can be re-used and re-purposed in response to changing agendas where a spirit of openness exists amongst stakeholders.

Once the XCRI services exist, these can be re-used in a variety of different ways, and combined with other sets of XCRI to produce bespoke and targeted services, such as 'a regional employer courses portal', 'adult courses in Derby' – without reinventing the wheel.

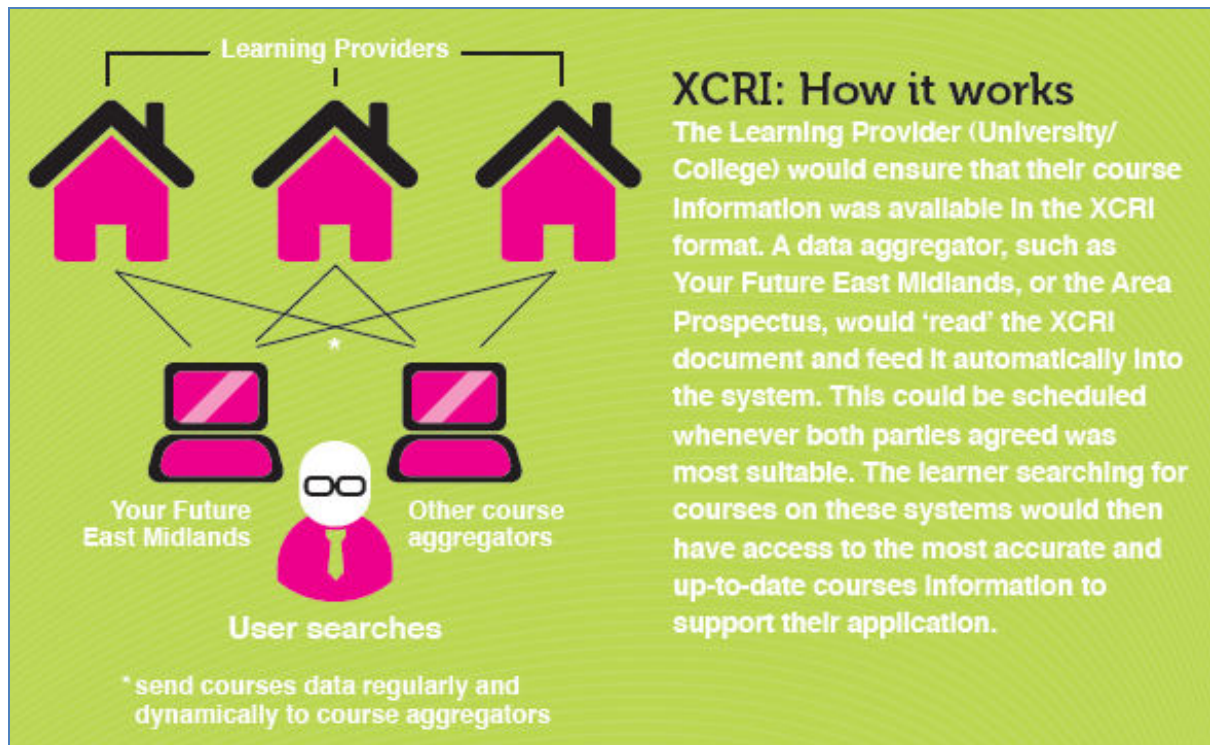
It would be beneficial to build on this infrastructure, whereby 'agents' choreograph the flow of data using web services that call/respond dynamically, much in the manner of the Systems Interoperability Framework (SIF). ⁽¹¹⁾

New methods of data transfer create new possibilities for re-modelling existing regional business processes to reflect the changing landscape and respond to policy drivers.

Regional XCRI 'service' - to draw in other agencies who may not have the capacity to develop their own XCRI feeds (e.g. Schools, Training Providers, Adult/informal learning).

Appendices

Appendix One: Data Aggregation with Your Future East Midlands



Appendix Two: Regional XCRI Projects

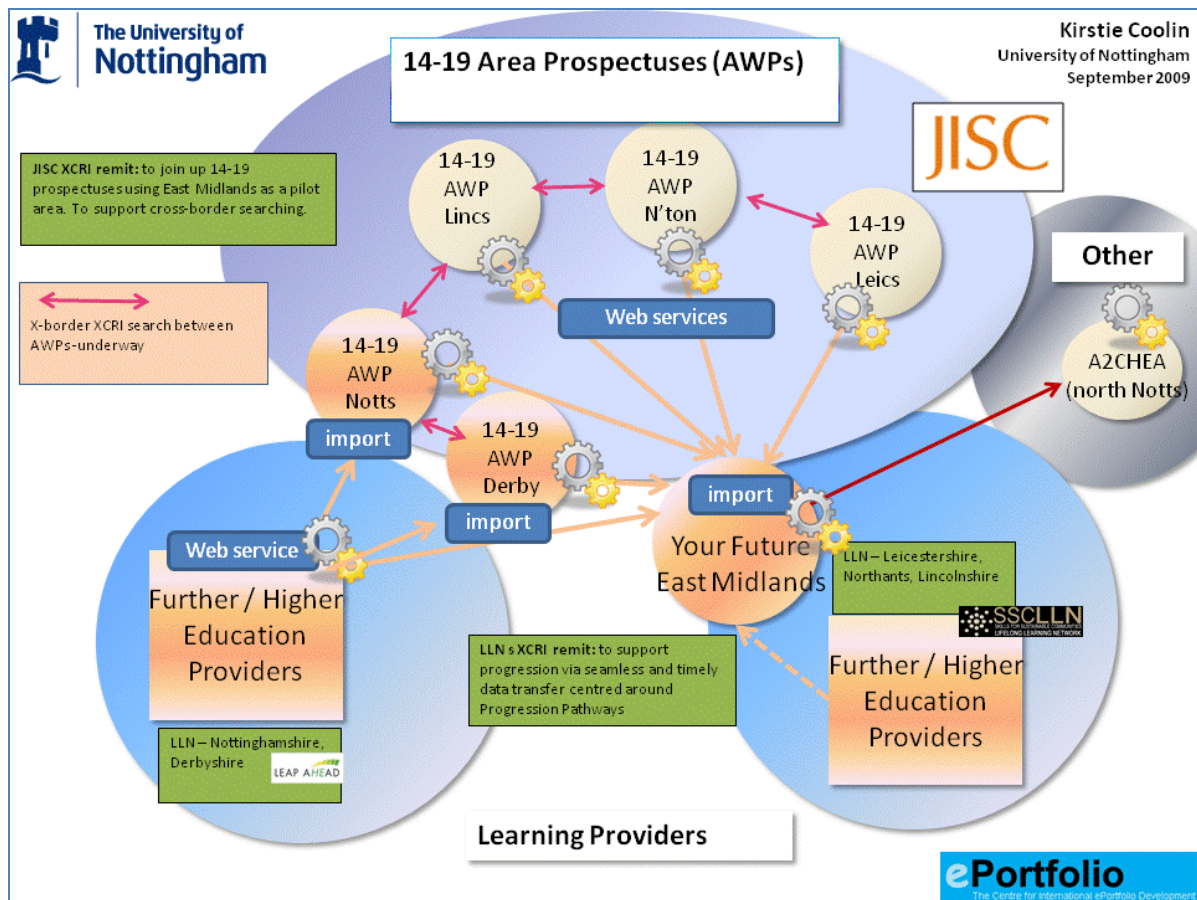


Fig: Illustrates how the Leap Ahead LLN XCRI project, the JISC 14-19 projects and collaboration with SSCLLN has resulted in a substantial amount of regional activity. The practices implemented here support a future vision of joined up services supporting seamless interaction for learning and skills agencies and their users.

Appendix Three: XCRI Dissemination and Partner Engagement Activities

Engagement Events for LLN Partners				
01/04/2008	MIS Managers meeting	CIEPD	FE/HE data managers	Presentation of XCRI
23/05/2008	MIS Managers meeting	CIEPD	FE/HE data managers/IT	XCRI engagement and discussion of current data issues
06/01/2009	XCRI workshop	CIEPD/Aimhigher East Midlands	FE/HE data managers, Connexions, Aimhigher East Midlands, vendors, hotcourses	Workshop - progress, next steps and engagement
02/03/2009	XCRI workshop	CIEPD/ Aimhigher East Midlands	FE/HE data managers, Connexions, Aimhigher East Midlands, vendors, hotcourses	Workshop - progress, next steps and engagement
External Events				
10/06/2009	Towards a Regional Ecosystem: e-Portfolio Showcase, Streamlining Progression Pathways, 14-19 landscape	ClePD	FE,HE,Awarding bodies, sector specific, connexions, aimhigher, JISC, LLN, 14-19, Consultancies, Sector Skills councils, Training providers, EMDA	Presentations of regional work, joining up systems, new ecosystem concepts. 'Café style/speed dating' presentations/showcases from pilots - demonstration of media for capturing evidence, production of materials etc.
05/03/2009	LLN eSystems event: Workstrand Showcase	LLN National Forum, Birmingham	National LLNs/JISC	Showcase of eSystems work
27/03/2009	XCRI Dissemination event	WYLLN, Leeds	LLNs, FE, HE, vendors, Local authority	XCRI Projects and regional impact. Presentation and showcase of regional XCRI work and discussions
21/04/2009	SSCLLN XCRI workshop	SSCLLN/ Aimhigher East Midlands	FE, HE	Presentation of XCRI and discussion of engagement

30/10/09	MEDES Conference	MEDES	International IT audience	Presentation of paper
24/11/2009	Leap Ahead Annual Conference	Leap Ahead	LLN partners and stakeholders	Workshop
Publications				
Feb 09	LLN National Forum Newsletter	LLN National Forum	National LLNs and other stakeholders	Article
Sep 09	Connected Nottingham Autumn Newsletter	Connected Nottingham	Regional, IT,	Article
Sep 09	XCRI Leaflet	ClePD/ Aimhigher East Midlands	Regional, national, FE/HEIs, JISC	Flyer, about XCRI, why engage?

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Glossary

Leap Ahead	Learners Employers And Providers Advancing Higher Education Accessibility And Delivery – the Lifelong Learning Network for Nottinghamshire and Derbyshire
LLN	Lifelong Learning Network
XCRI-CAP	eXchanging Course Related Information – Course Advertising Profile
XCRI	eXchanging Course Related Information (used in this document to refer to the XCRI-CAP)
SSCLLN	Skills for Sustainable Communities – the Lifelong Learning Network for Leicestershire, Northamptonshire, Lincolnshire and Rutland
YFEM	Your Future East Midlands – Aimhigher East Midlands' Progression Pathways website
ClePD	Centre for International ePortfolio Development – the University of Nottingham's department delivering the XCRI strand
XML	Extensible Markup Language
QAN	Qualification Accreditation Number
LMI	Labour Market Information
MIS	Management Information System
IT	Information Technology
JISC	Joint Information Systems Committee
AWP	Area Wide Prospectus
CAP	Common Application Process
CHEA	Collaborative Higher Education Alliance
QCA	Qualifications and Curriculum Authority
URL	Uniform Resource Identifier

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Media

JISC