

Cover Sheet for Proposals (All sections must be completed)		JISC Capital Programme JISC Circular 3/06	
Name of Capital programme e-Learning			
Name of Lead Institution: Nottingham Trent University			
Name of Proposed Project: Hosted Shibboleth Based CV Builder for the East Midlands area.			
Name of Project Partners: West Nottinghamshire College. New College Nottingham.			
Full Contact Details for Primary Contact: Francis Lowry Data Warehouse Manager Information Systems Barnes Wallis Building Burton Street Nottingham NG1 4BU Direct Line : 0115 8488514 Email : francis.lowry@ntu.ac.uk			
Length of Project:		2 Years	
Project Start and End Dates:		October 2006 – October 2008	
Total Funding Requested from JISC:		£117,200	
Funding Broken Down over Project Years:		Year 1 £64,300, Year 2 £52,900	
Total Institutional Contributions:		£32,429	
Outline Project Proposal This tender proposes the development of a Web Service based Curriculum Vitae builder constructed by dynamically accessing remote Personal Data Profile (PDP) data using Shibboleth for authentication. The proposal would build upon the work undertaken by Nottingham Trent University as a sub-project within the "Regional Interoperability Project on Progression for Lifelong Learning" (RIPPLL) project funded by JISC and undertaken jointly with the University of Nottingham.			
I have read the Circular and associated Terms and Conditions of Grant at Appendix B (Tick Box)		YES ✓	NO

1.0 Executive Summary

This tender proposes the development of a Web Service based Curriculum Vitae builder constructed by dynamically accessing remote Personal Data Profile (PDP) data using Shibboleth for authentication. The proposal would build upon the work undertaken by Nottingham Trent University as a sub-project within the "Regional Interoperability Project on Progression for Lifelong Learning" ([RIPPLL](#)) project funded by JISC and undertaken jointly with the University of Nottingham.

The aim is to set up a Shibboleth based PDP data collection service hosted at NTU with the initial aim of CV creation. This CV Service would be designed to enable any Shibboleth authorised learner to create, generate, print and web publish a customisable CV which integrates learner data from both local (database storage) and Shibboleth protected Web Service provided content.

Following initial development and proving, the proposal is that this would be offered as a service to institutions in the East Midlands to use.

2.0 Introduction

This proposal seeks to build on the developmental work done within the Nottingham University [RIPPL](#) project and the JISC Early Adopter programme exploratory work undertaken on Shibboleth at Nottingham Trent University. For the RIPPL project, UKLeap formatted PDP data files were used to provide the building blocks to create a mini CV using Web Services protected by Shibboleth. This was a small scale model development. This project seeks to extend this model to a real-life working system which will demonstrate how Shibboleth can be used in a practical way for life-long learners, including as prototypes FE and HE students and staff.

By focusing on a specific application of PDP data and providing a real-world practical system we aim to produce a service where all learners will be able to record or reference the information required to generate a CV and have the facilities to allow this information to stay with them as they move from institution to institution and onwards through employment.

The project would run for 2 years from October 2006 to October 2008 with the focus on development and implementation during year 1, and the emphasis on usage, usability and sustainability in year 2 with the expectation of more FE colleges having Shibboleth access during the life of the project. Although the system is designed to be protected by Shibboleth, in order for the data to remain in the control of the learner we envisage several mechanisms to allow the learner to manage this. Recognising that the majority of learner data, where it actually exists, is enclosed in local institutions internal systems and security frameworks, a large part of the project will be working with partner institutions to identify what learner data is held within the institution and how it can be referenced via an appropriate Web Service and made accessible to the learner through this CV Service.

Although the primary focus of this project is to enable the learner to construct CV's; using Shibboleth as the security framework will demonstrate a practical implementation of the technology and will also open up the discussion as to how learner material can be made available outside institutional boundaries.

3.0 Project description

The primary aim of this project is to develop, build and deploy a service which will enable any learner with a Shibboleth account to create dynamic CV. The service will consist of a data repository containing a mixture of:

- manually created content stored in a relational database
- remotely referenced material where appropriate indexes [url(s)] are stored along with appropriate information to allow the release of this referenced material dynamically

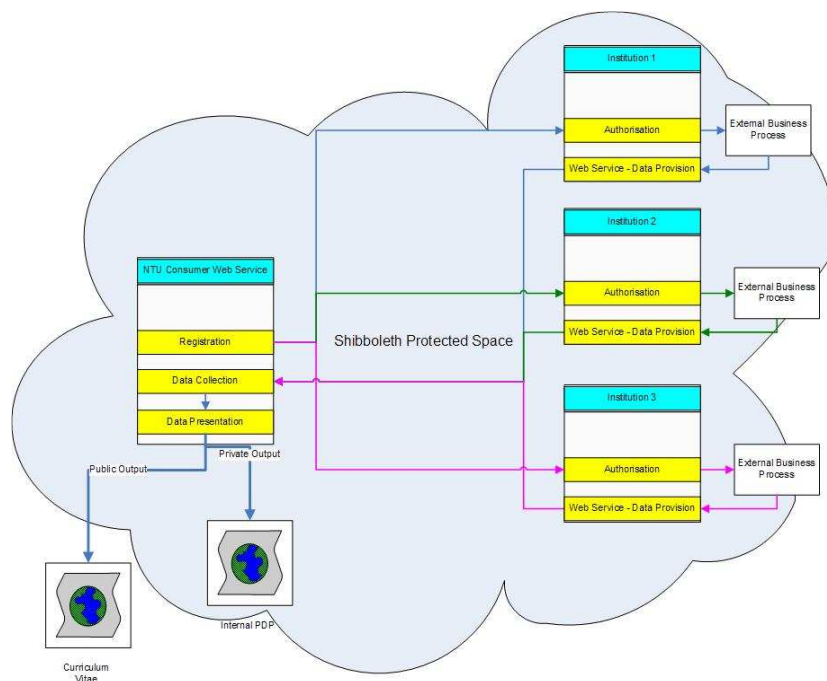
This project will focus on learner data specific to creating a CV - i.e. personal data, mini academic transcript, employment / skills history etc. The final product aims to give the learner full control over the publication of this data using various media formats including for example a web reference to a prospective employer, printed output or export in a specified format such as UKLeap.

As well as ensuring full security on personal data we will also explore mechanisms for validating information (such as qualifications) using mechanisms such as digital signatures

The main areas for work are highlighted below:

- Develop a CV Builder data repository where the learner can store all the components required to build a CV in a relational database with appropriate web based data entry and management screens.
- Implement Shibboleth IdP at partner institutions where it does not already exist so that members of each partner institution can access the CV Builder.
- Identify local learner data (where the data already exists) that can be referenced by the CV Builder service. Where possible, these basic PDP components required to build a CV will be made available via web services from each partner institution.
- Develop a framework to allow remote learner data to be referenced by the CV Builder service using Web Services protected by a Shibboleth SP at each partner institution.
- Develop a mechanism to allow a learner to access or publish their own CV data outside of the Shibboleth protection i.e. for self promotion or migration to another PDP system.
- Explore the mechanisms to digitally sign local qualifications and evidence of learning etc. from each institution.

The diagram below describes the layout for the web services created for the RIPPL project.



This project will take RIPPL forward to a more distributed model. It will concentrate more on the facilities for the learner at the CV building end, provide locations for storing all of the components required to build a CV in a local database and also provide facilities to link dynamically to data stored on other remote systems protected by Shibboleth.

The use of Shibboleth in this context is purely as an enabling technology and the emphasis will be on leveraging the technology to allow the learner to control, manage and publish their own data.

One of the key areas for exploration is how can this data be made available to the learner once they complete their course or change employer and are no longer registered with a shibboleth compatible authentication system. One idea is to provide each learner with an alternative login mechanism such as a personal email address. A fundamental part of this project we will be looking at the various mechanisms both manual and electronic to allow the learner to regain access to their stored data once they move on.

One of the more important components of a CV is the proof of ownership of qualifications and supporting statements, or evidence of learning. Part of this project will cover the feasibility and practicalities of digitally signing components of the CV for reference on-line. This will cover areas like evidence of learning, references and perhaps some of the local qualifications obtained while attending a particular institution.

3.1 Timetable

The proposed timetable is:

October 2006

- Create a data model and development of the basic CV builder service.
- Installation of Shibboleth IdP at partner institutions where it does not already exist.

February 2007

- Identification of learner data that can be referenced at each partner institution.
- Development of web services to allow this data to be referenced securely through Shibboleth.
- Refinement of data model
- Integration of partner web services with CV Builder service.

July 2007

- Test CV Generation with web services to Web format, Microsoft Word document format etc.
- Test CV Extraction to UKLeap XML format.
- Test ancillary login mechanism.
- Exploration of digitally signing evidence of learning and local qualifications.

September 2007

- End user testing with Staff and Students at partner institutions.
- Service promotion and recruitment of additional institutions as users

February 2008

- Service review and refinement of facilities.
- Test implementation of digitally signing evidence of learning and local qualifications.

June 2008

- Service review and refinement of facilities – including service usage and implementing changes for on-going support and maintenance.
- Conversion of JISC supported project into locally supported project.

October 2008

- Ongoing support and enhancements for locally supported project.

After October 2008, we anticipate that a significant number of institutions within the East Midlands (possibly beyond) will be utilising this service. The latter part of the project, from June 2008 onwards, will be exploring additional or alternative funding and support models for the project using local resources.

3.2 Deliverables

In addition to the main CV Builder service, the project will also deliver all documentation and software developed throughout the project to enable service replication in other regions. It will also act as a good promotional tool for a Shibboleth installation at FE level. IP for the CV Builder will remain with NTU, this will be made available to all under a standard open source agreement.

3.3 Risk Analysis

Technical problems.

As the basic mechanics of the CV Builder and the Shibboleth protected services have already been developed, we do not envisage that there are any fundamental technology issues which we will have to deal with. However the mechanisms to allow institutions to digitally sign evidence of learning or qualifications are not in place yet and as such we plan to use this project as a test bed to explore possible solutions to this problem. Another area of potential impact is the performance of remote web services; part of this project will perform timing and usability tests with the aim to keep these services as streamlined and efficient as possible.

Loss of key staff.

In the event of a short-term staff availability issue, the funding would be used to bring in other specialists who already have an understanding of the area to carry out this work. In the event of a partner institution being unable to provide appropriate technical staff to implement and support Shibboleth Nottingham Trent University will provide support for the initial installation and basic training.

Partner participation and availability.

This project has been constructed in such a way that all core development will be managed at Nottingham Trent University so that the majority of deliverables can be met even if the identified partners have to withdraw support during the project. The main areas to be affected would be the real-life web services and some of the end-user testing. This project also complements other work in this area and feeds directly into the partners' adoption of Shibboleth which is a key driver for their involvement.

Lack of on-going funding

It is anticipated that once the project is up and running and providing a service for the East Midlands Nottingham Trent University will be able to fund and provide support for the on-going life of the project using local resources and possible income for services provided. If this is not viable, then the service will be supported by NTU in any case until 2010 whilst other funding avenues are explored.

3.4 How this project will benefit the JISC community

We believe that extending the NTU Shibboleth work within the RIPPL project will bring the following benefits:

- This work is focused on a learner centric PDP service which will give an immediate benefit to any learner looking to progress to employment or further education.
- This project is carefully aligned to the existing RIPPL work and will dovetail in with and hopefully extend the UKLeap specification work already underway there.
- The same test / production hardware for the previous JISC work will be reutilised.
- We will demonstrate a use of Shibboleth in terms that both FE and HE learners will immediately recognise and appreciate.

- Local and other FE institutions will gain an immediate appreciation of the diverse applications of Shibboleth as an enabling technology.
- This will be a good example of cooperation between FE and HE institutions.

3.5 Exit Strategy at the end of the project.

It is anticipated that given the main deliverables of this project a local interested in retaining its functionality will be maintained for the foreseeable future. As stated in section 3.3 above, if the service is not considered viable and we have been unable to obtain the necessary funding locally to support it, NTU will continue to fund the service until 2010.

The operational costs of the service at this point will be based on the hardware and software components for the primary database server hosting the local CV content, along with any administrative costs in managing and administering the service. NTU and each other institution utilising the service will be funding their own shibboleth infrastructure.

4.0 Budget Summary.

The following costs will be incurred by the project. These have been posted to the FEC model (see Appendix 1 for full details), to arrive at the FEC costs shown

For period October 2006 to October 2008		
Item,	Year 1 costs	Year 2 costs
Staff Costs		
Developer/programmer/analyst (0.4FTE)	£13,200	£13,600
Project Management/System architecture (0.2FTE)	£12,000	£12,400
Implementation/Testing at partner sites (2)	£4,000	£2,000
Implementation/testing at beta testing sites (not partners) (3)		£3,000
Workshops (8 person workshops at £300pp pd including expanses; 4 in year 1, 2 in year 2)	£9,600	£4,800
Admin Support (nominal)	£1,000	£1,000
Equipment costs		
6 servers	£18,000	
Travel, subsistence, etc.		
Workshop costs	£4,000	£4,000
Steering committee costs	£500	£500
Travel	£1,000	£1,000
Dissemination (8 days at £400pd)		£1,600
Project Documentation	£1,000	£4,000
Contingency		£5,000
Total for period	£64,300	£52,900

Summary

Direct Costs	£117,200
Indirect costs using FEC model	£32,429
Total cost for project	£149,629
Contribution from Nottingham Trent University	£32,429
Total bid for project tender	£117,200

5.0 Key Personnel

Please see appendix 2 for details of key personnel

6.0 Supporting Letters

Please see appendix 3 for supporting letters. Liz Butterworth at West Nottinghamshire College has agreed to support the project; unfortunately her letter has not arrived in time for the submission. It will be forwarded on as soon as it arrives.

Appendix 1

FEC model

FEC model for Other Income Generating (OIG) projects & activities

All values are per annum (or for whole project if less than 1 yr duration)
Enter values in ALL yellow cells (if no value for a particular cell, enter a zero)

Values in BLUE cells are calculated automatically - no data entry required

Annual Project Values

1 DIRECTLY-INCURRED COSTS

1a Staff-related

	Cost	FTEs	Numbers
Academic Staff	0	0.0	0
Research Staff	0	0.0	0
Support Staff	0	0.0	0
Total D.I. staff-related	0	0.0	0

1b Non-staff costs

	Cost
Equipment	18,000
Consumables	0
Staff Travel & Subs.	0
Supplies & Services	0
Other D.I. items	0
Total D.I. non-staff costs	18,000

2 DIRECTLY-ALLOCATED COSTS

2a Staff-related

	Cost	FTEs	Numbers
Academic Staff	0	0.0	0
Research Staff	0	0.0	0
Support Staff	76,600	1.0	1
Total D.A. staff-related	76,600	1.0	1

2b Non-staff costs

	Cost
Equipment	0
Consumables	0
Staff Travel & Subs.	2,000
Supplies & Services	0
Other D.A. items	20,600
Total D.A. non-staff costs	22,600

3 TOTAL DIRECT COSTS

117,200

4 Cost of Ac Staff Support time

0

5 Gross Cost before Overheads

117,200

6 Cost drivers for Indirect Costs

6a Staff FTEs	FTEs
Academic Staff (D.I. & D.A.)	0
Research Staff (D.I. & D.A.)	0
Support Staff (D.I. & D.A.)	1
Total staff FTEs	1

6b Student numbers	Numbers
Overall number (incl Intl)	0
International	0

6c Users (Staff & Student H/Count)	1
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6d Estates - space usage (M2)	Area used(M2)	Days	Annual M2
Standard office space	0	0	0.00
Specialist space at cwf of 2x			0.00
Specialist space at cwf of 3x			0.00
Space total (wtd M2)			0.00

7 INDIRECT COSTS	Actual Value	Charge	Units
ASQ Centre for Academic Practice	0	909	0
BDU Bus. Innov. & Creation Centre	1,002	0.9%	117,200
CAS Careers Advice & Emp Serv	0	17	0
CIS Management Information Systems	68	68	1
COM Communications & IT Services	60	60	1
DEV Development Office	501	0.4%	117,200
DIR Directorate	2,260	1.9%	117,200
EBS E Business Solutions	23	23	1
EQO Equal Oppor & Conciliation	190	190	1
FIN Finance	4,096	3.5%	117,200
GOV Governance Services	227	0.2%	117,200
HAS Safety Office	272	272	1
HSS HR Systems Support	75	75	1
IAS Internal Audit Service	253	0.2%	117,200
INO International Office	0	531	0
ITL Local IT Support	84	84	1
LIB Library & Information Svcs: Core	258	258	1
LSE Legal Services	399	0.3%	117,200
MAR Marketing Services	1,478	1.3%	117,200
PER Personnel Services	723	723	1
PPR Corp Affairs inc. Press Office	544	0.5%	117,200
PUR Purchasing Office	344	0.3%	117,200
REG Registry	0	54	0
REP Reprographics	394	0.3%	117,200
RES Research Office	0	4547	0
SSS Student Support Services	0	107	0
TDU Training & Development Unit	262	262	1
888 888 Corporate Items	9,638	8.2%	117,200
ESD Direct Estates	0	150	0
C&I TRAC COCE & Infrastructure Costs	9,279	7.9%	117,200

Total Indirect Costs	32,429
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8 FEC Costing Summary

Gross Costs before Overheads	117,200	
Indirect Costs (Overheads)	32,429	28%
FEC for the Activity/Project	149,629	

Appendix 2 Key Personnel

Appendix 2 Key personnel and previous relevant experience

Management and development of proposed Project

Francis Lowry, BSc (Hons)

Development Manager – Information Systems

Having already managed the technical aspects of several key university implementations, including Finance (QSP Financials), Student Administration (Banner 2000) Francis has been working in various positions within Nottingham Trent University for 7 years. Having taken over from Richard Massey, he has managed the development work with the previous JISC bids with the Nottingham University RIPPLL project and Shibboleth Early adopters. Francis has extensive experience in Database Administration (Oracle and SQL Server) and many different programming languages. In addition to managing the project, he will play a key role as part of the design and development of the system.

Development/implementation will be carried out by staff from the following pool ...

Matthew Holmes, BSc (Hons)

Software Development Analyst - Information Systems

Matthew graduated from the Department of Computing at Nottingham Trent University in June 2002 with a (2:2) in Computer Studies. He has worked for the Development group since 2002 (one year placement, part time during final year, full time since completing his degree) on a wide range of Web-development projects associated with the on-going development of the Virtual Learning Portal (VLP). He has built up a good knowledge in ASP, VBScript, JavaScript, PHP, HTML and CSS and most projects have involved the use of relational database technologies (Microsoft SQL Server 2000, MySQL) and XML. Matthew also has an active interest in Accessibility issues and the Semantic Web. In addition to a working knowledge of Java, C++ and UML Matthew is keen to build up his experience of Web application development on the .Net platform. Matt was the lead developer for Nottingham University's work on the RIPPLL project and designed and built the prototype CV Builder service.

Craig Gibson BSc (Hons)

Senior Software Development and Support Analyst - Information Systems

Craig graduated from the Department of Computing at Nottingham Trent University in June 2000 with a (2:1) in Computer Studies. Whilst working as an Assistant IT Support Officer during his industrial placement year Craig was seconded part time to the Exchange Development Project to research and develop an Exchange 5.5 based distance learning system. This work provided the base for the continued development of NTU's learning environment. After graduating Craig joined the University full time and has continued the development of the Virtual Learning Portal (VLP) through to its current version running on Exchange 2003 in a fully load balanced multi-site environment. In addition to this Craig has worked on many web based university systems based on Microsoft Server technologies including SQL Server 2000, Exchange 2000/2003 and Windows 2003 Server. Together with other experiences colleagues Craig is looking towards future development using the .NET platform. Craig played a key role in the investigation of Microsoft's IIFP for Nottingham Trent's Shibboleth Early Adopters project and worked with the UKLeap XML transitions for the RIPPLL project.

Asher Hudson, BSc (Hons)

Software Development Analyst - Information Systems

Asher Hudson graduated from the Department of Computing at Nottingham Trent University in June 2001 with a (2:1) in Computer Studies. Whilst working as an Assistant IT Support Officer during his industrial placement year, Asher was involved in various Web-development projects including Transparency Review, work on a Timetabling system, and an on-line Questionnaire Creator. The latter formed the basis of a First Class dissertation during the final year of his degree studies. Asher joined the group full time in summer of 2001 and continued development work on a wide range of projects including the above and enhancements to the Virtual Learning Portal (VLP) until he left in autumn 2002 to spend time traveling around the world. Rejoining the group in 2003 Asher has continued to work on a range of projects associated with the VLP including the on-line register and external user systems. These projects have allowed him to gain a wide range of experience including SQL Server 7.0/2000 administration (stored procedures, backup, triggers, and replication), Windows Active Directory scripting, IIS and Apache Web servers and Apache-Tomcat. Programming languages used include, VBScript, JavaScript, MS-SQL, and HTML.

John Spence, BSc (Hons)

Software Development Analyst - Information Systems

John graduated from the Department of Computing at Nottingham Trent University in June 2002 with a (2:2) in Computer Studies. He has worked for the Development group since 2001 (one year placement, part time during final year, full time since completing his degree) on a wide range of Web-development projects including the Question Mark online assessment project, Census at School Dynamic Worksheet Creator and added services for the Virtual Learning Portal (VLP). Within the group John has gained a wide range of experience including SQL Server 7.0/2000 administration (backup and replication), server configuration and maintenance, IIS configuration for the production of Active Server Pages, and increased knowledge of scripting languages including Perl, .Net family and PHP. Current projects include the continued enhancement of the VLP, integration of further learning support services and an increased use of Linux.

Appendix 3
Supporting Letters
New College Nottingham:

New College Nottingham 

ncn Course Information Call Centre 0115 9 100 100
Web site www.ncn.ac.uk
email enquiries@ncn.ac.uk

ncn City
The Adams Building Stoney Street
The Lace Market Nottingham NG1 1NG
Telephone 0115 9 100 100
Fax 0115 910 4501

JISC Circular 3/06: Cross institutional use of e-learning to support lifelong learners

On behalf of New College Nottingham, I am pleased to confirm our support to the proposal attached and offer the full support of New College Nottingham. In so far as to the contribution from New College Nottingham is concerned I certify that the information contained within this tender submission is accurate at the time of writing and that the resources required to perform this work will be made available so as to meet the timescales indicated.

Signed: S. Blakemore

Date: 20/6/06

Mrs Shirley Blakemore
Director of ICT

ncn Basford Hall ncn College in the Community ncn Clarendon ncn City
ncn High Pavement Sixth Form College ncn Hucknall **Principal:** Geoff Hall
Registered Office: ncn City, The Adams Building, Stoney Street, The Lace Market, Nottingham NG1 1NG
Letters to the Principal should be addressed to the College's registered office.



JISC Circular 3/06: e-Learning Programme – A Shibboleth protected CV Builder service.

Clive Church of Edexcel and the CETIS Lifelong Learning SIG, was the external evaluator to the RIPPLL project and is keen to see the prototype CV Builder service extended into an operational system.

20/06 2006 13:11 FAX

002/002

edexcel

Our Ref: Nottingham 200606

Francis Lowry
Development Manager
Information Systems
Nottingham Trent University
Burton Street
Nottingham
NG1 4BU

One90 High Holborn
London
WC1V 7BH

Tel: 0870 240 9800
Fax: 020 7404 0520
Minicom: 0870 240 3941
www.edexcel.org.uk

20th June 2006

Dear Mr Lowry

JISC Circular 3/06: Cross institutional use of e-learning to support lifelong learners.

Shibboleth protected CV Builder service

Edexcel Ltd consider the outcomes of the bid proposed by Nottingham Trent University will not only support the production of CVs from disparate data sources but also provide an important authentication model that can be applied in arrange of different scenarios.

We are therefore happy to support the bid and contribute to the monitoring of the process and dissemination of the outputs.

Yours sincerely



Andrew M Wilson
Head of Employer Solutions

Nottingham Trent University

NOTTINGHAM
TRENT UNIVERSITY 

JISC Circular 3/06: Cross institutional use of e-learning to support lifelong learners

On behalf of Nottingham Trent University, I am pleased to confirm our support to the proposal attached and offer the full support of Nottingham Trent University. In so far as to the contribution from Nottingham Trent University is concerned I certify that the information contained within this tender submission is accurate at the time of writing and that the resources required to perform this work will be made available so as to meet the timescales indicated.

Signed: Susan Clarke

Date: 22/6/06

Sue Clarke
Director of Information Systems

