



Supporting personalised learning pathways for Postgraduate students in a regional context

***A report produced as part of the North East regional collaboration for
personalised, work-based, and life-long learning (EPICS-2)***

<http://www.epics.ac.uk>

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Full EPICS-2 project report and acknowledgements:

<http://www.epics.ac.uk/report>

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1 Summary

This work is summarised in this section, and then expanded in more detail in sections 2 - 9 and in the appendices.

1.1 Introduction

This piece of work has looked at the possibility of sharing training opportunities for Postgraduate Researchers (PGRs) amongst the 5 universities in the north-east of England (Durham, Newcastle, Northumbria, Sunderland and Teesside). It examined whether this sharing would be useful, and how it could be implemented, before going on to develop specifications for making this sharing possible, and prototype and “proof of concept” systems based on the specifications. The work addressed the whole lifecycle of training in the context of shared training opportunities; this ranged from advertising shared training events, through attendance at shared events, and on to importing records of attendance at shared events in an ePortfolio or other system.

The work built on the existing cooperation among training providers in the 5 universities (the North-East Collaboration Group for Researcher Development). Most of the work was done carried out on a case study of 3 of the 5 universities (Durham, Newcastle and Northumbria) in order to keep the scope manageable.

This work fits into the broader context of the EPICS-2 project addressing the personalised learning agenda. This agenda is pertinent for PGRs, since their learning is often largely self-directed. Making a wider range of learning opportunities available to PGRs aims to make it easier for them to choose learning that meets their specific needs at a particular point in their research, as determined by their own requirements or training needs analyses.

1.2 Aim

The aim of the work is to help address issues of availability of training for part-time and distance PGRs, who may not be able to easily access courses at their home institution, and also the provision of a wider range of opportunities at all institutions.

1.3 Outcomes

The outcomes that have come from this work include:

- a “proof of concept” regional information hub which integrates feeds of information from multiple training providers, presenting them to PGRs as a single navigable, searchable menu of events from across the region

see www.dur.ac.uk/regional.events/

- two event feeds which have been added to existing Training Course Booking Systems (at Durham University, and at Newcastle University Faculty Of Medical Sciences); these feeds are used by the regional information hub described above

- a specification for an event feed, based on the XCRI-CAP format; this specification was used to specify the feed format for the regional information hub, and in the design of the two event feeds described above
- a specification for a mechanism (based on Web Services) to allow training records to be exported from a training provider and imported into an ePortfolio or other system; this specification has been prototyped, with test records being moved from a system at Durham University into a system at Newcastle University
- a common understanding across the stakeholders in the 5 universities. The information gathering and consultation phase was crucial in getting a high-level of buy-in from stakeholders, and helping to ensure that this project worked towards something for which there is real support and demand

During the information gathering phase, it became apparent that many PGRs would also like be able to find out about other types of event in the region, such as research seminars. The subsequent specification and design work was expanded to include this possibility.

1.4 Methodology

The work kicked off with discussion and information gathering at the North-East Collaboration Group for Researcher Development in order to get support and buy in from staff running PGR training in the partner universities. The work then progressed through a formal information gathering phase based on 3 of the 5 partner universities (Durham, Newcastle and Northumbria), with 30 PGRs participating in 3 focus groups, in parallel with semi-structured interviews with 10 key personnel at the 3 universities. The information gathered was used to develop a requirements specification, which led to the specifications, prototypes and proof of concept system described in Section 1.3.

A key decision was the adoption of XCRI-CAP as the feed format for course details. This is described in more detail in Section 5.

1.5 Future developments

The system is already useful in its “proof of concept” form, but it could be greatly enhanced with further development, for example:

- developing event feeds for more providers
- developing event feeds for other types of events (e.g. research seminars)
- extending the regional information hub to incorporate booking a PGR onto an event, and sending attendance records from providers back to ePortfolio or other systems

A full list of suggested future developments is given in Section 7.

2 Functional overview

2.1 Principles of the proof of concept system

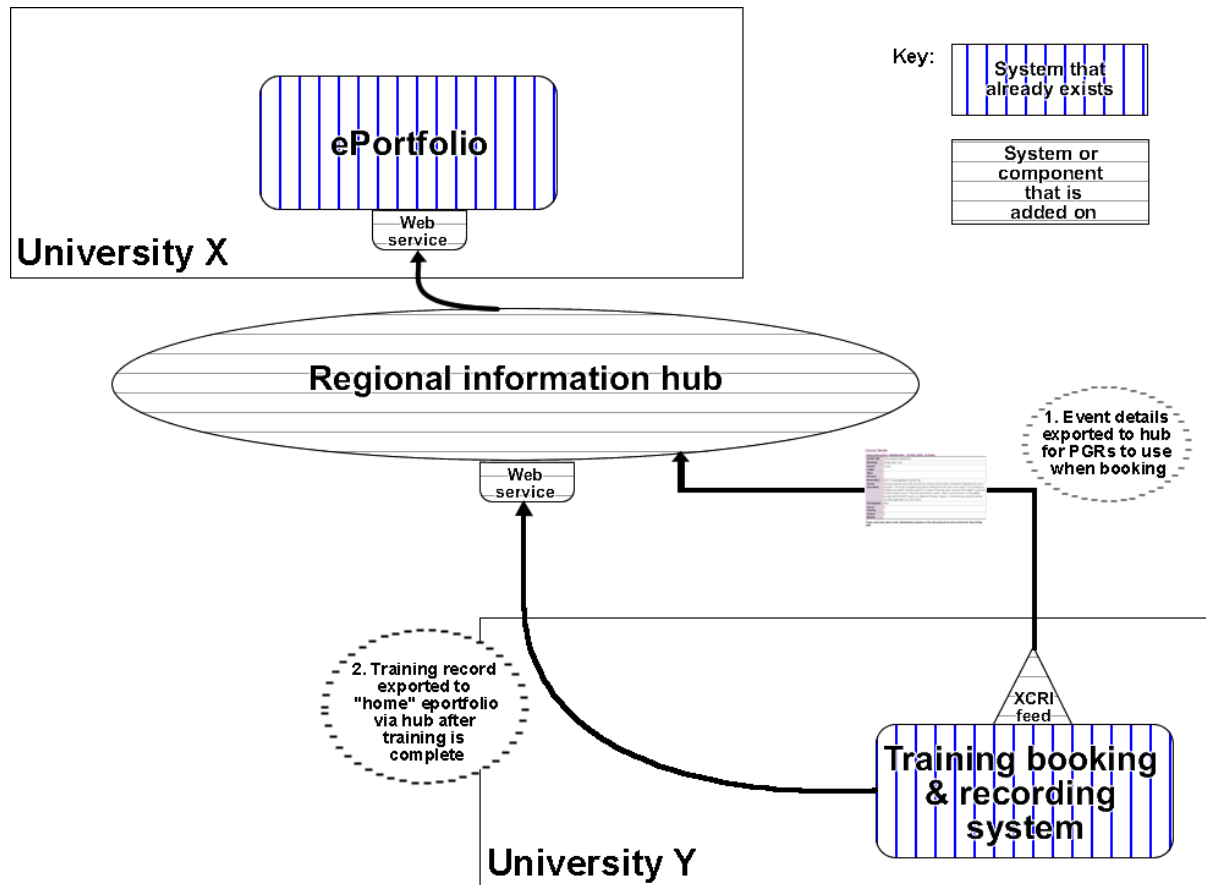


Figure 1 - system overview

The basic idea of this work is to build on existing systems and procedures wherever possible, since these are already well established and familiar to PGRs. The diagram above shows a simplified view of one way this can be achieved.

The paragraphs below describe Figure 1 in detail, via an imaginary scenario.

An existing Training Booking system at University Y is shown. This has had an XCRI-CAP feed component added to it, and this feed is being used by the regional information hub to contribute to its list of training courses available to PGRs (although only one XCRI-CAP feed is shown in Figure 1, in practice the regional information hub is receiving feeds from multiple providers, and it could equally be receiving a feed of seminars or other events).

A PGR from University X uses the regional information hub to view details of events, and sends email to book a place on an event at University Y, and attends the event there. This event attendance is recorded on the Training booking and recording system at University Y, and this record is then exported from University Y back to University X, via the regional information hub. The web service in University X accepts the incoming record and stores it in the ePortfolio record of the PGR.

2.2 Functions of the proof of concept system

The proof of concept system is visible at

www.dur.ac.uk/regional.events/

The screenshots below give an idea of how the system looks and works:

This site lists events for postgraduate researchers (PGRs) in the north-east of England. This system is **under development** and you must check with providers whether events are open to people beyond their institution. See [About](#) for full details.

Start ▼	Title ▼	Provider ▼	Venue ▼	Places available ▼	Duration ▼
10 Feb 2009 Tue 09:00	Emergency Aid [more]	Durham University	Dowrick Room, Trevelyan College	3	4 hours
10 Feb 2009 Tue 09:30	An introduction to PowerPoint [more]	Durham University	Level 4 Classroom, University Library	0	3 hours
10 Feb 2009 Tue 10:00	Develop Your Skills as an Intrapreneur [more]	Durham University	Derman Christopherson Room, Calman Learning Centre	24	3 hours
10 Feb 2009 Tue 10:00	Academic Writing [more]	Newcastle University FMS	DENT LT RBGreen	51	2 hours
10 Feb 2009 Tue 12:00	The Key Skills Award for Postgraduate Research Students II. Collecting Evidence [more]	Durham University	Turner Room, Van Mildert College	43	1 hours
10 Feb 2009 Tue 13:30	Finding and managing information for your PhD (including Endnote) : the basics [more]	Durham University	Level 4 Classroom, University Library	0	3 hours
10 Feb 2009 Tue 14:00	Posters- Practical Advice [more]	Newcastle University FMS	DENE PC Cluster	21	1.5 hours

[previous](#) [next](#) [back to list](#)



Title Develop Your Skills as an Intrapreneur

Event type Training

Description What is an intrapreneur? Someone who is enterprising in their workplace. Why are these skills important for a researcher? Because whether you want to stay in academia, move into research in industry or work in a completely different sector, good positions are highly competitive.

Many organisations want their employees to be innovative, good at spotting opportunities and motivated to explore change. As a postgraduate or a postdoctoral researcher, you have been developing some of these skills as part of your work.

This workshop will explain more about what it means to be an intrapreneur in practice. We will look at case studies from the private, public and not-for-profit sector and explore how you can recognise and develop your your enterprise skills in your current place of study or work and convey these to future employers.

Provider Durham University

Provider URL <http://www.dur.ac.uk/training/course/>

Event URL http://www.dur.ac.uk/training/course/browse/item/?course_id=785

Start Tue 10 Feb 2009 10:00

End Tue 10 Feb 2009 13:00

Duration 3 hours

Attendance mode Campus

Places available 24

Figure 2 Screenshots

2.3 Shortcomings and compromises in the proof of concept system

The proof of concept system is a practical implementation, but its functionality falls short of the original design. Certain elements could not be implemented within the scope of this project, because these would require major changes to the existing systems. Although partners were willing to discuss these changes, they would require extra resource to implement the changes.

These shortcomings are documented here in order to form a basis for future developments.

The existing design consists of weakly coupled systems, linked by standard data transfer mechanisms. For this reason, it should be possible for parts of the system to be changed in a piecemeal fashion without changing the underlying architecture.

2.3.1 Federated or centralised model?

The proof of concept system uses a centralised model, with data flows going to the regional information hub, and PGRs mainly interacting with the hub. However, the original design was intended to use a federated model, with individual systems at individual universities exporting and importing data to/from each other, and making that data available to their own PGRs.

In practice it made sense to route everything via a central hub, thus avoiding the need for each individual university system to have to know details of all partner systems (this is especially relevant when new feeds or a new partner are added). But this doesn't mean that display of information has to be centralised, merely that it helps for it to be routed through a central hub.

As explained in 2.3.2, the scope of the EPICS-2 project wasn't sufficient for the large-scale re-working of existing systems that would be needed to develop a system with federated display of event details. However it should be possible to adapt the existing proof-of-concept system to allow for this in future.

At the moment, the regional hub acts both as an information exchange hub, and as an information display hub, but these two functions are not closely connected, so it should be possible to migrate to a more federated model in future.

2.3.2 Where event details are displayed

Ideally the details of events would be fed from the regional information hub into other universities, so that PGRs can view the details without having to go to an external system. For example, in Figure 1, we would want PGRs at University X to view events in their familiar Training Booking system at University X. Getting data out of Training Booking systems in a fixed format proved a realistic proposition, but importing data in a fixed format into multiple dissimilar systems without rewriting those systems wasn't possible. Because of this the regional information hub is used to display event details to PGRs.

2.3.3 How PGRs book onto events

Similarly, getting existing Training Booking systems to automatically accept training bookings for PGRs from other universities in a standard way hasn't proved possible. For the time being, the regional information hub provides an email address for PGRs to use when booking.

In addition, an automatic booking mechanism raises certain Data Protection issues, since it requires some data about a PGR to be exported outside their university. The data gathering phase revealed that the best way to address this would be to get PGRs to agree to a Data Protection statement when a booking is made. This is particularly important if, for example, information about a PGR's disability needs to be transferred to an external university in order to ask for necessary adjustments to be made.

2.3.4 Exporting training records

The web service based mechanism for exporting training records from University Y back to University X, via the regional information hub has been specified and prototyped, but not implemented in practice. Again, to implement this would require significant changes to existing Training Recording systems, which wasn't possible in the scope of this work.

2.3.5 How PGRs find out about events

During the data gathering phase, some PGRs expressed an interest in being able to receive notification of certain types of new event by email – in effect they want to be able to subscribe to the event feed, or a filtered version of it. This extra functionality could be added to the existing regional information hub.

3 Information gathering

The information gathering consisted of:

- Kick off meeting, held at a meeting of the North-East Collaboration Group for Researcher Development
- Focus groups, with 30 PGRs participating in 3 focus groups based on 3 of the 5 partner universities (Durham, Newcastle and Northumbria)
- Semi-structured interviews with 8 key personnel at the same 3 universities

3.1 Questionnaire

The initial plan was to get input from PGRs by sending a questionnaire to all PGRs in the region. However, this plan had to be adapted after it was presented to the North-East Collaboration Group for Researcher Development – members of that group were very unhappy with the idea of sending “yet another questionnaire” to their PGRs. The Group instead recommended using focus groups to get input from PGRs.

3.2 Focus groups

30 PGRs participated in 3 focus groups – one each at Durham, Newcastle and Northumbria Universities. Help from the Graduate Schools in those institutions was essential in recruiting participants, and organising a venue. The focus groups were recorded, and then written up in an anonymised form. The focus group reports are visible via the EPICS-2 project blog:

- Durham University:
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=213&blogid=131>
- Newcastle University:
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=239&blogid=131>
- Northumbria University:
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=277&blogid=131>

The questions discussed at the focus groups are available at

<http://www.epics.ac.uk/EPICS/report/focus-group.ppt>

3.3 Interviews

The interviews were written up, and are visible via the EPICS-2 project blog at the locations given below:

Durham University

- David Heading (Postgraduate Training Team)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=209&blogid=131>
- Eleanor Loughlin (Postgraduate Training Team)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=210&blogid=131>
- Matt Jones (Web team)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=282&blogid=131>

Newcastle University

- Simon Cotterill (School of Medical Education Development)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=219&blogid=131>
- Paul Fletcher (DMS Systems)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=281&blogid=131>
- Richy Hetherington (Faculty of Medical Sciences)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=211&blogid=131>
- Gail de Blaquiére (Faculty of Science, Agriculture and Engineering)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=218&blogid=131>
- Robin Humphrey (Faculty of Humanities and Social Sciences)
this interview was written up, but Robin hasn't given clearance to publish it

Northumbria University

- Laura Smailes (Graduate school)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=212&blogid=131>
- Richard Manley-Reeve (Web team)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=279&blogid=131>

The reports from the focus groups and interviews were used to develop the functional requirements (see 4.1).

4 Functional detail

4.1 Functional requirements

A brief list of the functional requirements is available at

<http://www.epics.ac.uk/report/functional-requirements.doc>

This was derived from the information gathering phase of this work.

Not all of these requirements have been implemented in the proof of concept system, partly due to limited time, and also because it is not possible to implement some functional requirements without significant changes to existing systems. Some of the functional requirements need data to be present in the underlying existing systems that are not currently available (e.g. travel and access details for venues).

4.2 Regional information hub

The proof of concept regional information hub has been coded using PHP 5 and MySQL 5.1. The code is available at

<http://www.epics.ac.uk/report/proof-of-concept.zip>

and the working system is visible at

<http://www.dur.ac.uk/regional.events/>

4.2.1 XCRI-CAP feed configuration

Each new XCRI-CAP feed is added to the system by adding a new record to the database table tblFeeds. The following fields have to be set

- identifier – unique identifier for this feed, normally a URI
e.g. “<http://faculty-tools.ncl.ac.uk/training>”
- code – unique short code for this feed (not currently used)
e.g. “NCL-FMS”
- providerName – full name for the feed provider
e.g. “Newcastle University FMS”
- url – URL of the XCRI-CAP feed
e.g. “<http://faculty-tools.ncl.ac.uk/training/xcri/feed.xcri>”
- updateInterval – how frequently the feed should be re-read
e.g. “7 hours”

4.2.2 XCRI-CAP feed reading

The regional information hub keeps a local copy of the XCRI-CAP feed data it receives from each provider, and only re-reads an XCRI-CAP feed on a pre-defined interval (updateInterval – see 4.2.1 - this is necessary to avoid unnecessary load on the systems involved).

In practice, the regional information hub will only read its XCRI-CAP feeds on demand (i.e. when a PGR views the hub), so updateInterval specifies a maximum frequency of reading. It is sensible to use values of updateInterval that minimise multiple feeds being read simultaneously, i.e. use of intervals that are prime numbers.

4.3 Web service importAttendanceRecord

The web service specifies a mechanism for transferring training records from training providers to training record storage systems, such as ePortfolios. It is a SOAP 1.2 web service, which specifies a single operation: importAttendanceRecord

The specification for the web service and its associated message formats is given at

<http://www.epics.ac.uk/report/web-service-specification.doc>

4.3.1 Web service prototype

The exact details of how a web service server (code to receive attendance records) or client (code to send attendance records) should work will be specific to the system it is attached to. However, sample code is available at

<http://www.epics.ac.uk/report/web-service.zip>

and the web service mechanism has been prototyped. The prototype client is at

<http://www.dur.ac.uk/regional.events/soap/importAttendanceRecordClient.php>

and the prototype server is at

<http://www.dur.ac.uk/regional.events/soap/importAttendanceRecordServer.php>

with its WSDL file being at

<http://www.dur.ac.uk/regional.events/soap/importAttendanceRecord.wsdl>

The prototype simply sends a record from the client to the server (the record is hard coded in the client code). The prototype client then simply displays the importAttendanceRecordResponse message that it receives back from the prototype server. If the <verbose> setting was used in the importAttendanceRecordRequest message, then that original importAttendanceRecordRequest message should be displayed by the prototype client.

5 XCRI-CAP feed

5.1 Implementation

The XCRI-CAP feed is being used in this project as the mechanism for getting event data out of existing systems, and into the regional information hub. The XCRI-CAP feed mechanism used in this project is based on the specification published by the XCRI project at:

http://www.xcri.org/wiki/index.php/XCRI_Course_Advertising_Profile

but extended to fulfil the needs of this work. The specification for this feed including the extensions is given at

<http://www.epics.ac.uk/report/xcri-cap-feed-specification.doc>

A feed provider needs to be able to supply a URL for its XCRI-CAP feed, and to be ready to respond to requests sent to the URL on demand.

Examples of this feed are available at

Newcastle University Faculty of Medical Sciences:

<http://faculty-tools.ncl.ac.uk/training/xcri/feed.xcri>

Durham University:

<http://php5.dur.ac.uk/feeds/trainingcourses/xcri/pgr/>

5.2 Adoption of the XCRI-CAP format

5.2.1 RSS with extensions

At the beginning of this project, the intention was to generate course feeds in a format described as “RSS with additions”. In the event, it was felt that this wouldn’t give the necessary level of granularity (which is needed, for example to make it possible for a user to search based on a particular keyword).

5.2.2 Customised XML format

The idea of using a custom designed XML format was considered, and a specification was designed, based on an amalgamation of the data available in the training course booking systems in the 3 case study universities, along with extra data elements to satisfy all the needs of the functional requirements (see 4.1). However, at this stage, the XCRI project was mentioned (after being seen at the JISC Innovation Forum), and it seemed that this would offer nearly all of the functionality of the customised XML format, and so was worth considering.

5.2.3 Standard formats

While examining XCRI-CAP, other existing course feed formats were briefly examined (e.g. CDM, CDM-FR, EMIL, PAS1068), but these didn't prove to be suitable.

5.2.4 XCRI-CAP

After examining the XCRI-CAP format, a handful of shortcomings were found where the XCRI-CAP format did not have an element for data required by this project. Apart from this handful of issues, XCRI-CAP was found to be a very good fit to the needs of this project, and it has the added advantage of being a published standard which is becoming more widely adopted.

5.2.4.1 Shortcomings of XCRI-CAP

It is worth emphasising that the focus of XCRI-CAP has been exchanging data about things such as 3 year degree courses, so it wasn't really designed with one off events of a few hours duration in mind. Nevertheless, XCRI-CAP has proved to be very successful in this project.

5.2.4.1.1 Liaison with XCRI project team

The XCRI project developers were contacted about the shortcomings, and they responded with suggested extensions to address these needs.

The text of this discussion is available at

<http://www.xcri.org/forum/topic.php?id=46>

5.2.4.1.2 Extensions to XCRI-CAP standard

For reference, the elements that were added to the XCRI-CAP standard for this project are:

- seeAlso – indicating other events related to a given event
- presenter –the presenter of an event
- provider – the provider of the event (if different from the provider of the data feed, e.g. where training is delivered by a consultant or external company)
- geoLat – decimal latitude of the event venue (useful to allow maps to be displayed)
- geoLong – decimal longitude of the event venue(useful to allow maps to be displayed)
- roomNumber – room number of the event venue
- buildingName – building name of the event venue
- access - details of access features for the venue (steps, lifts, induction loops, etc.)

The use of such extensions is a planned feature of the XCRI-CAP standard. The full specification of the XCRI-CAP feed as used in this project (including extensions) is available at

<http://www.epics.ac.uk/report/xcri-cap-feed-specification.doc>

6 Evaluation

The proof of concept has been briefly evaluated by showing it to the PGRs who contributed to the focus groups, members of staff who contributed to the information gathering phase, and the Postgraduate Training Team at Durham University.

In general the responses have been very positive – it seems that the biggest source of comment relates to data that are not being provided by the current event providers, such as detailed location data. These issues are an effect of the decision to use existing systems, rather than designing an ideal system from scratch.

6.1 Feedback from PGRs:

1. "... you may recall my comments were more ... about the limited postgraduate training opportunities that are available to part-time students - by virtue of them tending to be working during the standard 9-5. This situation has not improved locally, however the regional joining-up may improve this situation."

response: this is a good example of why this project was initiated. As more feeds from other providers are added in the future, this should improve things further.

2. "In general seems good. Would be good to have information on where the rooms are linked in, or at least a link to the relevant campus map/search page.

response: the hub system is ready to receive and display this information, but neither of the current information providers is able to supply this information

How the University supports students with disabilities and Fire Safety for Fire Wardens seem potentially rather specific to a particular university - perhaps a screen-out of certain courses might be needed?

response: some tuning is needed of the XCRI-CAP feeds to ensure that all the courses listed in the feed should really be there. The hub system simply displays whatever it is fed

Finally, at [my university] they are currently trying to make the links to the different researcher development categories clearer, so you can more easily find courses to help out a personal development plan. It might be good if you could search by those categories as well as key words."

response: the XCRI-CAP feed specification includes space for this detail, but it isn't currently being provided by either of the information providers

3. "Thank you for the update and very good luck in completing a rather challenging project I would like to add a link to the postgraduate qualitative theory group which we have established at Newcastle University. Organisers of these meetings are nominated postgrad students who contact experts in qualitative research to lead sessions and follow up on requests of the members. The group emerged when we as students felt lost doing qualitative research for the first time, books & articles were not giving us hands on guidance on how to apply what we are reading about and how to go about the obstacles in the field.

This term students from Northumbria, Durham and Sunderland universities were invited and several students from Northumbria University have joined the group"

response: we are starting to look at how feeds of seminar data can be added to the system – hopefully these could include the PG Qualitative Theory Group mentioned.

6.2 Feedback from staff:

4. "I think this is a very useful facility. Provided we are clear about the availability of training at other institutions I see no reason why we shouldn't make it available to our PGR students. We will also need to consider how we manage requests to attend Durham training if there are lots of those.

response: this was discussed in the Durham Postgraduate Training Team, who were comfortable with trying this out to see what the extra workload proves to be in reality.

5. "Thanks - this is fantastic; and provides a demonstrator for proof of concept for aggregating multiple XCRI feeds and a very usable system!"

Duration (presumably calculated) may be exaggerated for workshops spread over multiple days. "Developing a Time Management Strategy" is 224 hours"

response: the duration is supplied in the XCRI-CAP feed, so any anomalies such as this need to be addressed in the generation of the feed.

6. "... this looks really excellent. My only slight concern is that there are workshops advertised there in careers subjects offered by Newcastle, which Durham offered last term, and will offer again in the future, but will our researchers know this? They should as they are in our training handbook and the booking system.

response: this concern was discussed by the Durham Postgraduate Training Team. The conclusion was that if Durham PGRs chose to go on a course in Newcastle without checking whether that course will be offered in the future in Durham, that is their decision.

7. "This is just what's needed - thanks for all your work on this.

One thing that occurs to me - when PGRs from other HEIs book on our workshops, they inevitably ask for directions or for a URL for Durham Uni. maps. This isn't a big deal but I wonder if it would be possible to include links to University maps."

response: the hub system is ready to receive and display detailed venue information, but neither of the current information providers is able to supply this information. We will investigate ways of achieving this

7 Future developments

At the time of writing, there is real interest amongst the project partners in developing this system further. The recommended areas for future work are:

- Further develop the ways that the information hub displays data – at the moment it simply displays the text of most of the data it is sent in its XCRI-CAP feeds. Certain pieces of data (e.g. location details) would be better displayed in other forms, such as via a map
- Progress the web service based attendance record transfer mechanism. At present this has been prototyped, but it needs to be built into a proof of concept test-bed using real data, and eventually into production systems
- Expand the system by adding XCRI-CAP event feeds from other providers
- Expand the system by adding XCRI-CAP event feeds of other types (e.g. research seminars)
- Add a Subscribe function, to allow a PGR to register to receive email or RSS feeds of events (preferably as the result of a search query – “save/subscribe to this search”)
- Expand the system by making it possible for PGRs to book onto events (they currently have to request a place by sending an email). In the case of Newcastle’s FMS event, this should be relatively straightforward, but the other training booking systems studied don’t have a suitable mechanism in place for allowing individuals to book on a course who aren’t members of that institution, so this will be quite a difficult expansion to complete.
- Expand the system to make it possible for PGRs to use their own university’s training booking system to view events of other universities. None of the training booking systems studied has a mechanism for importing training events, so this would be a difficult expansion to complete without considerable input from stakeholders and rework of existing university systems.

8 Lessons (expected and unexpected) learned from the project and from the process of doing the project

1. Don't underestimate the time needed for consultation & user needs analysis in collaborative projects

This project planned from the onset to include a high level of consultation with stakeholders around the region and included running focus groups at each partner site. As such we believe that the subsequent technical outputs from the project are more 'fit for purpose' and probably more importantly, there is significant stakeholder interest and buy in which makes the chance of embedding and continuation more likely. Whilst the Project Officer doing this work was primarily appointed as a technical post his non-technical skills were at least equally important in the successful delivery of this part of the project. Large collaborative projects should consider these skill requirements when appointing technical Project Officers.

2. Where possible, design project activities to have side-effects with immediate direct benefit to stakeholders

All of the focus groups were set up to allow Graduate Training staff to observe – in 2 cases by attendance at the session, and in the third case by receiving a copy of the audio recording. In all 3 cases, the Graduate Training staff got useful feedback insight into the views of PGRs about their training programme and administrative systems. In once case, a PGR was identified who was completely unaware of the training programme, and somehow had been missed by most of that university's central administration!

Taking this approach was valuable in getting further buy-in and support from the stakeholders concerned.

3. Focus groups need to be carefully planned and co-ordinated, and run in a formal, structured way

The focus groups were run with a very carefully controlled format

- fixed questions, displayed one by one on an overhead projector (to avoid participants from reading ahead, and to keep participants focussed on the question under discussion)
- small numbers of participants (7-10 is recommended)
- it's best to make an audio recording of the focus group, rather than trying to write notes during the focus group – the facilitator needs to concentrate on facilitating the session, and will not have time to record or analyse the discussion while it is taking place

Such an approach is necessary to keep the discussion focussed on the matter in hand, to ensure that the views of all participants are heard, and to make sure that the focus group delivers useful results.

One of the Graduate Training staff who observed a focus group commented “That was the best-run focus group I’ve ever seen”, so it seems that this approach is successful.

4. Collaborative projects need to be designed and developed iteratively, incrementally and flexibly

This is becoming a common way of working in software development, but is especially important for a collaborative project such as this one, where existing systems are being made to interact.

During the course of the work, several of the initial plans and assumptions were changed, and many of the technical details were evolved during the course of prototyping. This would have been extremely difficult to achieve if we had taken a sequential “waterfall model” Big Design Up Front approach.

In addition, a modular design was used, with a number of independent parts interoperating. This means that it will be possible to incrementally add/upgrade functionality. For example, at the moment PGRs who want to book on a training course have to send an email, but it will be possible in the case of Newcastle FMS to change this mechanism so that the PGR can book a place using the Newcastle FMS system. As this becomes possible at other institutions, the booking mechanism can be changed as needed.

5. Be prepared to sacrifice functionality in favour of developing a workable solution

During the information gathering phase it became clear that certain functionality (e.g. automatically exporting training records for PGRs from other institutions) would not be possible unless significant changes are made to existing systems, and that the owners of these systems would not be willing or able to do this within the project timescale. It made more sense to concentrate on developing prototypes and proof of concept systems that actually worked, leaving out or simplifying functionality that could not be achieved within the project timescale.

9 Recommendations for other institutions taking a similar route

1. If available, build on existing collaboration between institutions

The first major activity in this project was a presentation at the North-East Collaboration Group for Researcher Development. This gave the project officer a high level of visibility and support in the partner institutions at a senior level (e.g. Dean of Graduate School), which made it easier to get cooperation at other levels (e.g. Graduate School staff, IT staff, etc.)

2. Where possible, find solutions that work with existing systems, and which don't require significant change to those existing systems

Changes to production systems are always risky, and best avoided. In addition, during the information gathering phase, it became clear that in several cases changes to these systems would be very difficult to achieve (either because nobody was available to make those changes, or because the systems were "legacy" systems which had been written by somebody who had left the organisation, and as such were treated as a "black box" which could be used but not modified).

As far as possible, the proof of concept system in this project has been designed without the need for major changes to those existing systems. For example, the XCRI-CAP feed for Durham University was developed using copies of the training database, because access to the live database was not granted. After development, the feed was handed over to Durham's web team, who connected it to the live database. This "hands-off" approach means that an XCRI-CAP feed was added to Durham's Training Course Booking System without that system being modified at all.

3. Use established standards and technologies

The use of XCRI-CAP as the feed format means that existing standards are available for all development partners to refer to, and a user community is available which can help out if there are problems.

The use of web services and SOAP made the development of the prototype system for exporting/importing training records relatively quick and easy, as standard code libraries could be used for creating and consuming web services using SOAP.

4. Listen to the stakeholders and respond to their suggestions

During the focus groups, it became clear that for most PGRs, what was being offered (i.e. access to training courses in other institutions) was moderately attractive at best. However, when the idea was suggested of access to other types of event (such as research seminars), the PGRs were extremely interested. This is also clear in the feedback received from PGRs who have seen the proof of concept system (see 6.1). This idea was incorporated in the XCRI-CAP feed specification, as it was seen to be of significant benefit to the PGRs.

Discussing this idea with training providers has led to the view that inclusion of research seminar details in the proof of concept system is a good way to attract PGRs to the system, and thus to raise the profile of training events. In effect, they see the training events being advertised on the back of research seminars – a “win-win” situation.

Appendix 1 – online resources

Rather than attaching code listings and detailed specifications to this document, these have all been made available on the web, and are listed below. In addition, this project has led to the development of some online exemplar systems, which are listed below.

9.1 Online exemplar systems

9.1.1 Proof of concept system

The proof of concept system is visible at

<http://www.dur.ac.uk/regional.events/>

The XCRI-CAP feeds are available at:

Newcastle University Faculty of Medical Sciences:

<http://faculty-tools.ncl.ac.uk/training/xcri/feed.xcri>

Durham University:

<http://php5.dur.ac.uk/feeds/trainingcourses/xcri/pgr/>

9.1.2 Web service prototype

The web service prototype is online as follows

Prototype web service client:

<http://www.dur.ac.uk/regional.events/soap/importAttendanceRecordClient.php>

Prototype web service server:

<http://www.dur.ac.uk/regional.events/soap/importAttendanceRecordServer.php>

Web service WSDL file:

<http://www.dur.ac.uk/regional.events/soap/importAttendanceRecord.wsdl>

9.2 Online reference documents

The reference documents are as follows:

1. Questions asked at focus groups

<http://www.epics.ac.uk/EPICS/report/focus-group.ppt>

2. Interview reports – Durham University

- David Heading (Postgraduate Training Team)

<http://www.epics.ac.uk/eportfolio/blog/entry?uid=209&blogid=131>

- Eleanor Loughlin (Postgraduate Training Team)

<http://www.epics.ac.uk/eportfolio/blog/entry?uid=210&blogid=131>

- Matt Jones (Web team)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=282&blogid=131>
3. Interview reports – Newcastle University
 - Simon Cotterill (School of Medical Education Development)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=219&blogid=131>
 - Paul Fletcher (DMS Systems)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=281&blogid=131>
 - Richy Hetherington (Faculty of Medical Sciences)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=211&blogid=131>
 - d. Gail de Blaquiere (Faculty of Science, Agriculture and Engineering)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=218&blogid=131>
 4. Interview reports – Northumbria University
 - Laura Smailes (Graduate school)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=212&blogid=131>
 - Richard Manley-Reeve (Web team)
<http://www.epics.ac.uk/eportfolio/blog/entry?uid=279&blogid=131>
 5. Proof of concept system - functional requirements
<http://www.epics.ac.uk/report/functional-requirements.doc>
 6. Proof of concept system - source code (PHP)
<http://www.epics.ac.uk/report/proof-of-concept.zip>
 7. Proof of concept system - database table specification (MySQL)
<http://www.epics.ac.uk/report/proof-of-concept.sql>
 8. XCRI-CAP feed specification
<http://www.epics.ac.uk/report/xcri-cap-feed-specification.doc>
 9. Web service and SOAP message specification
<http://www.epics.ac.uk/report/web-service-specification.doc>
 10. Web service prototype source code (PHP)
<http://www.epics.ac.uk/report/web-service.zip>

Appendix 2 - Glossary

- **North-East Collaboration Group For Researcher Development** – a group of people who work in the area of training and development of researchers in the 5 universities in the north-east of England (Durham, Newcastle, Northumbria, Sunderland and Teesside). Most people in this group are Deans of Graduate Schools, Postgraduate Training Managers or similar people working in Graduate Schools.
- **PGR (Postgraduate Researcher)** – an individual who is carrying out a research degree such as a PhD, Masters By Research, DMin, EdD, etc.
- **SOAP** – “SOAP is a simple XML-based protocol to let applications exchange information over HTTP. Or more simply: SOAP is a protocol for accessing a Web Service “ (source: www.w3schools.com/soap/soap_intro.asp)
- **XCRI-CAP (eXchanging Course-Related Information –Course Advertising Profile)** – a specification for an XML feed format. XCRI-CAP allows learning providers to publish their course information in a format that can easily be collected by course search services such as UCAS.
- **XCRI (eXchanging Course Related Information)** - XCRI is a JISC-funded, UK-oriented project to establish specifications to support the exchange of course-related information. XCRI-CAP is one of the specifications output by this project.