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Final Report

Project: LEAP2A Nottingham ePortfolio Interoperability

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1. Organisation and technical issues

For our ePortfolio Interoperability pilot, we chose to work with the Connexions Nottinghamshire system, Passportfolio, which is being rolled out in schools within Nottinghamshire. The Centre for International ePortfolio Development (ClePD) already has a partnership history with Connexions from previous JISC projects, as well as access to the development servers and knowledge of the Passportfolio system, both pedagogical and technical.

Organisational issues were minimal due to the good working relations with external colleagues. Connexions Nottinghamshire are already rolling out the system with schools, and having direct access to the staff involved in Passportfolio development, without the encumbrances of operating in a large institutional environment, organisational barriers could be avoided.

There was an additional challenge worth noting in that the Passportfolio work (and its redevelopment), not being owned or developed by Nottingham, meant that inherent detailed knowledge of a system, including control over access and development, could not be assumed as a prerequisite for this project.

In terms of technical issues, the system was in a stage of redevelopment at the start of the PIOP project and was relaunched to schools in January 09. Some delays in release and therefore access to the server meant that the importing work was pushed back a little, but despite this, both Connexions and the Passportfolio development staff were extremely cooperative in giving access to development servers.

Passportfolio is developed in .NET and resides on a Windows 2003 Server. The PIOP code for import and export is developed using VB.NET, so technically the PIOP work aligns to the Passportfolio platform.

To conclude, organisation and technical issues were minimal in this particular pilot.

2. Evaluation of and feedback on the LEAP2A specification

The LEAP2A specification has evolved throughout the project. Following the initial pilots in 2007/8, a draft standard was developed which was used as the baseline for further developments.

A main aim of this project was to widen the range of ePortfolio systems and establish convergence with other systems in order to identify a core set of ePortfolio data and to determine what would be in scope both for Passportfolio and for the standard in general.

Data such as personal information and qualification data had not been addressed in the initial pilots so a task for this project was to investigate how other standards could be used, or which parts should be core to the ePortfolio standard.

2.1 Scope

Initial mapping of the Passportfolio data into the Leap2A standard made it less convenient to map certain areas of the system which were deemed not suitable for meaningful transfer. Different types of flash based quiz are used within Passportfolio in order to further engage the user with the software, i.e 'write 10 words which describe how you feel today' – this was not seen as vital data to transfer as it would not only have limited value as an individual statement but also within the context of another system.

Following consideration of the scenarios produced from the point of view of a Passportfolio user, as well as converging with the other PIOP partners, we decided to concentrate on the following elements for transfer, which provide the core information for the Passportfolio system:

- Work Experience
- Plans
- Skills
- Qualifications
- Personal Achievements
- Referees
- Personal Statement
- CV Data
 - Consisting of one or more of the other elements

2.2 Interfacing with other standards

We produced a mapping of personal CV type data [1] which was collated and mapped against that of other systems, the HR-XML standard and SIF. From this, as a group, we could decide on what elements were of scope for LEAP2 and which should be referenced from other standards.

Personal data

The project co-ordinator, Simon Grant, took a central role in investigating other standards as he had core overview over PIOP partner mapping documents and it made better sense for this to be done centrally rather than duplicate effort. However, in looking carefully at Passportfolio fields and function, we were able to pull out the elements we most thought were better represented by other standards and flag these to Simon. It was decided that some personal data could be covered by LEAP2A for Portfolio transfer. It may be that use of SIF/MIAP standards would be undertaken internally for institutional interfacing.

2.3 LEAP2A usability

The original idea behind LEAP2A was to draw from the flexible syndication methods existing on the web. This lightweight approach is what differentiates LEAP2A from some previous interoperability standards and it is important that this focus is maintained and that the standard is truly scalable.

It is quite feasible that the standard will be used for transferring or importing 'bits' of ePortfolio data, for instance, selecting parts of ePortfolio process, or for exchanging lightweight bits of data for specific purposes or processes, instigated by the user.

The standard could also be used for system to system bulk transfer of portfolio data which may be more appropriate for younger learners in transition.

2.4 Identification of any problem areas and suggestions for improvements

As the specification has grown the Wiki has increased in size with navigation becoming complex. This can be attributed to the success of the projects in driving the standard forward with the additional information required for a standard in development, however now would be the time to create a clean, easy to use website with all information well documented and easily reachable. This new website could then entice new implementations and further disseminate the standard. Some suggested headings could include 'Why use LEAP2A', 'Who is using LEAP2A', 'Getting started with LEAP2A', 'XML examples', 'LEAP2A elements', 'Documents and support', 'Forum'.

Further development areas can be included also to facilitate discussion, however, implementation areas ought to be free from discussion and rationale, demonstrating Internet convention for usability.

The different project implementations, examples of both the import and export process from each of the partners will provide an ample starting point for future implementations of the standard by new partners. Smaller adaptations of the standard could also be shown, to demonstrate the scalability of the standard for simpler implementations.

In order for system owners and developers to pick up and use the standard, clear reasons as to why they should use the standard together with examples of use for the benefit of learner or institution ought to be outlined.

2.5 Resource/time implications as a guide for other developers implementing the specification

The implementation of the standard can be as complex or straightforward as required. The work that has gone into the projects has meant that the standard has evolved to cope with large systems such as Mahara or Pebblepad, while also still providing for statement based Individual Learning Plan (ILP) systems such as Leicestershire and myProgressFile. This scalability provides a powerful solution for the larger systems with stronger development teams able to put time into fuller implementations. The complexity could potentially put off smaller adaptations as one-person teams struggle to quickly implement the standard with the limited time and resource they may have.

It is recommended in section 3 that an easy to use website is created to cater for both extremes of implementation – saving valuable time for smaller adaptations while providing whole solutions for larger systems.

3. Recommendations to JISC on further development activity needed in this area

Further activity on standards development and implementation ought to focus on the lightweight elements of transfer. In terms of uptake, it may be unlikely that system developers implement the standard in full, so the project could concentrate on some lightweight mini-projects dealing with existing scenarios that will result in implementation.

Now that there are several systems that have developed importing mechanisms, further project opportunities, much in the spirit of the XCRI model, would be beneficial to engage institutional partners in encouraging them to work with their vendors to export Portfolio data.

For any kind of standards implementation, it is important that information is clear and targeted, so we would recommend that LEAP2A implementation documentation available on the web is clear and concise with simple presentation and navigability, containing examples of use and a community space. Lists of adopters from the projects together with case studies may help to promote LEAP2A (see section 2.4).

Interoperability is frequently a question that is raised by our regional practitioner contacts. As a vital component in ePortfolio for lifelong learning, it would be useful if JISC could provide a clear lead on ePortfolio standards. An issue for developers of systems is that there is no obvious message about which ePortfolio standard to use.

Other ePortfolio work outside of the JISC sphere of influence must be included with the right messages targeted at different audiences and their business concerns: Not to ignore

- Other standards and Government initiatives
- Sector Skills Council portfolios
- Vendor initiated interoperability
- eAssessment data standards

4. Importing and Exporting

Collaboration with other partners

We met twice with PIOP Leicestershire as our systems were similar in terms of audience and purpose.

Our common data that we agreed to transfer is as follows:

- Personal statements
- Transcript
- Targets
- Skills
- ILP

A useful outcome from these meetings was agreement that a good first stage would be for both projects to map ILP data to LEAP2A. This would fit directly with the scenarios as outlined in section 7.

Informal collaboration has taken place with (mainly) Pebble Learning and Newcastle University. However, with LEAP2A data becoming available from other project partners, test interoperation has been able to take place with almost all of the other partners, and it is also apparent that other partners have used this system to test their import and export.

Whilst mapping as much system data as possible was an important piece of work in order that synergies with other project systems could be evaluated thoroughly, the intention was not to implement everything. We felt that for this particular system and user, that would not be appropriate as some features are heavily learning process oriented, such as the Flash game activities. This was also the case with the other 14-19 systems in the project and we discussed how fine-grained export should be.

The import will determine ultimately which fields the system deems important to their system, so a

summary of which elements the projects chose to import would be telling in terms of which parts are core to the systems.

5. Success or failure of meaningful import

Once the export had been created for the Passportfolio system, a model was then available to use for the import. This proved an efficient method in determining which elements should be imported and was an important first test of the export. Once we were able to successfully import much of our own export we could then attempt to import others systems' content.

The Passportfolio system is quite straightforward in that it has relatively little linked information. All entries created in the system can be exported as singular entries with only the CV/ILP containing elements from other areas of the system. While advantageous when interoperating on a basic level, more complex imports from larger systems could potentially lead to a loss of structure within linked entries.

The Leicestershire and myProgressFile imports resulted in a high percentage of one line personal statement type entries ready to import. The personal statement context within Passportfolio is targeted at inclusion within a CV, so these individual statements appear limited in context of value.

The larger ePortfolio systems PebblePad, ePet and Mahara faired better on import as many different types have been used within their export process so the Passportfolio import has a greater range of types to import. Because of the relative complexity of the three systems compared to Passportfolio only simple data can currently be transferred although these systems strengths lie in their linked documental structure and scalability.

Qualification data proved problematic in that it was difficult to prescribe to a recommended model in order to transfer levels, types and grades of qualification into Passportfolio. Levels and Types mean different things within different systems so it would be useful if a model was recommended so that systems are able to export into that within Leap2A and import out of it.

Local terms, while useful for within-system import and export, are not necessarily helpful for external system transfer. The more detail the better in terms of importing, and if this was a live implementation with more time available, other areas of the Passportfolio would have been included. Due to the redevelopment of Passportfolio, some features (e.g. Webfolio) were not available for testing until near the end of the project.

Far from a full import, further development of the importer could lead to more detailed mapping of the Passportfolio system against the Leap2A specification, notably the Person and Organization Leap Types. These have not been implemented so data at this stage of import is lost as only primary referee data is transferred. Some late changes to the standard as discussion progressed meant that not all could be implemented.

While file imports were not in scope for this project, we have considered the issue in relation to the Passportfolio system. Passportfolio contains a 'work area' or document store and contents are not linked to specific entries. In line with the scenarios outlined and the method in which the import was developed, we have the choice to package the files with the XML for user controlled upload, or leave the files where they are for programmatic download via the URL.

5.1 Approach taken to import

The Passportfolio importer is available at <http://80.249.109.45/passportfolio/export/import.aspx>. The importer requires an active Passportfolio account (available at <http://80.249.109.45/passportfolio>)

within which to import. Currently the importer will only import specific data into the areas outlined section 2.1. Any data falling outside of these elements can be imported as blog type data meaning minimal data is lost.

See Annex 1 for screenshots.

The importer is a two step process, firstly, allowing the user to browse to a feed in order to submit and secondly, once processed, allowing the user to select which elements they would like to import. Once the feed has been processed the interface displays all the separate entries of the feed and where they will be distributed within the Passportfolio system. On selecting an item the user is able to drill down to find out more information about what can be imported within an individual entry. Where more than one Passportfolio type is able to accommodate an individual element the user can select into which area they wish to import the entry. On import, the user is required to enter an active Passportfolio username and password and upon validation, a list showing the success of the import is displayed.

The import uses the syndication set of classes from the Microsoft .NET 3.5 Framework. The syndication object model allows the feed to be serialized into an Atom 1.0 instance. Once into this instance, .NET syndication provides a powerful set of methods to extract information ready for processing.

Because of the additional non-standard elements featured within a LEAP2A feed, further processing using the xmlReader class is required to access Type, Spatial, Category and Date information. This method of processing has allowed the rapid development of a working tool. Further development would look to improve upon these methods by creating thorough class libraries able to better adapt to more complex imports.

6. Export

6.1 Approach taken to export

The Passportfolio demonstration system can be accessed at <http://80.249.109.45/passportfolio>. Here a user is able to create their own account and operate the system as any live user would. By adding different elements to the portfolio users can then export the content using the exporter tool available at <http://80.249.109.45/passportfolio/export/default.aspx>

See Annex 2 for screenshots

The export process requires the user to submit username and password details (created within the login stage when accessing the demo system – see section 5.1) and uses these to create the LEAP2A feed, accessible to the user on submit and validation. From here the user can view the feed in its LEAP2A format and save a copy if they wish to use it to import into another system.

If this work were to be developed further, the user friendly interface would remain, and more work undertaken on the latest Passportfolio features (unavailable to the project at the time) and also to investigate how a batch process could work. Documentation for learners using the system would be included within the user interfaces. As the export/import stands, there is minimal support required as it is very straightforward.

7. Scenarios of practice

The Passportfolio is primarily a schools-based ePortfolio, with further intentions to roll it out to post-16 over the coming year. Interoperability scenarios with this system are primarily about transition. The type of transition will inform which artefacts they will either want or be required to transfer.

Individual Learning Plans

One of the main artefacts produced in Passportfolio is the Individual Learning Plan (ILP).

We investigated the generic features of our ILP with that of PIOP Leicestershire, and in investigating which elements of the standard fit with which parts of the ILP, were able to see where LEAP2A could be further developed in line with 14-19 systems.

The scenarios below represent the types of usage envisaged.

7.1 Scenario One – Moving from school to school

Practice: Jenny is a year 8 student. She has an account with Passportfolio, an institution-free ePortfolio system, which she uses during PSHE sessions to record her achievements, experiences etc. to feed into her Individual Learning Plan. Jenny's family is moving from Nottingham to Leicester so she is changing schools. Her Passportfolio data will be transferred from her Passportfolio into the eProgress system available to students in Leicestershire schools. The new school will want her to have as much data as possible transferred into their system so that her records of learning and achievement are retained.

Interoperation:

1. As a one off import, her new school in Leicester request the Passportfolio data from the Nottingham school as a zipped up file, and it is manually imported into their eProgress system

7.2 Scenario Two – Moving from school to FE

Practice: Freya is in year 11 and is about to leave school to attend the local FE college to study Catering. She has been using the Passportfolio system for 3 years, to record her progress and to build her Individual Learning Plan and a CV. Freya also used the Common Application Form attached to the Passportfolio to apply to college. All of these artefacts use existing Passportfolio data and are developed over time. The FE college use both PebblePAD and Passportfolio as their ePortfolio systems, however, PebblePAD is used more on her catering course, and she would like to stick with the one system. She logs into PebblePAD and selects the 'import' option. She selects Passportfolio from the list and provides her Passportfolio username and password so that PebblePAD can grab her information. Before the information is finally imported, Freya has the opportunity to select the items she would like to import.

Interoperation:

1. System to system import instigated by user

7.3 Scenario Three: Bob has a Passportfolio account; he also has used a Word Press blog in the past to document his outside interests, namely, membership of a local football club. When speaking to his tutor, he mentions this so she takes a look and says that he can use this blog as evidence for a range of skills. Bob could link out to his Blog, but as it requires a Word Press password, his tutors would be unable to view it, and he would also like his tutors to feedback to him via Passportfolio. He uses the Passportfolio import function to enter the Atom URL so the system can transform and import the XML as a Passportfolio blog. This is a snapshot of the blog at download time, and Bob can now refer to the individual posts to evidence skills and experience.

Interoperation:

1. Manual download of the Atom file and one off import of a feed.
2. Live link to a URL updated and displayed when accessed

Deliverables:

1.	A brief project outline within two weeks of the project start date.	✓
2.	A static test account as described above in paragraph above .	✓
3.	The documentation given to learners using the system.	✓
4.	Any scenarios of practice, as detailed in paragraph above .	✓
5.	A table mapping information fields, as detailed in paragraph above .	✓
6.	A glossary, as detailed in paragraph above .	✓
7.	Documentation of the success or failure of meaningful import, as described in paragraph above .	✓
8.	Documentation of the approach taken to import, as paragraph above .	✓
9.	Documentation of the approach taken to export, as paragraph above .	✓
10.	A report or case study that includes:	
	<ul style="list-style-type: none"> ○ discussion of the organisational and technical issues encountered during the course of the project; 	✓
	<ul style="list-style-type: none"> ○ evaluation of and feedback on the LEAP2A specification, including 	
11.	evaluation of its usability for work such as this,	✓
12.	identification of any problem areas and suggestions for improvements,	✓
13.	resource/time implications as a guide for other developers implementing the specification;	✓
14.	Recommendations to JISC on further development activity needed in this area.	✓

Annex 1. Screenshots – Import

Fig. 1. For this demonstration the user browses for a LEAP2A feed.



Fig. 2. The feed is broken up into its constituent parts and laid out visually with direction about where the data will map into Passportfolio. The user can click onto the titles to view extra information about that item, and then select the items to import.

Export | **Import**

Passportfolio Import

Please enter your feed

Select All | Deselect All

Entry Title	Passportfolio Type	Import
Director	Work Experience	<input checked="" type="checkbox"/>
ID: portfolio:work_experience_1 Content: Directorial Duties Updated Date: 30/01/2009 16:14:46 Leap Type: leaptype:activity Leap Category: Work Location: Atomic Has Parts: Start Date: 1991-02-01 00:00:00 End Date: 2003-07-01 00:00:00		
Removal Man	Work Experience	<input type="checkbox"/>
Book appointment at careers centre	Plan	<input type="checkbox"/>
Apply for Work Experience over Summer	Plan	<input checked="" type="checkbox"/>
ID: portfolio:plan_6 Content: I want to improve my customer facing skills so it is very important for me to get some experience in this area over the summer. Updated Date: 30/01/2009 16:14:47 Leap Type: leaptype:plan Leap Category: Location: Has Parts: portfolio:plan_95 portfolio:plan_97 Target Date: 2007-02-28 00:00:00		
Apply to University	Plan	<input type="checkbox"/>
Ask careers expert questions based on Retail	Plan	<input type="checkbox"/>

Fig. 3. A summary of imported items is then displayed.

Export | **Import**

Passportfolio Import

Please enter your feed

Access Passportfolio to view your import

Successfully Imported | Work Experience | Director
Successfully Imported | Plan | Apply for Work Experience over Summer

Fig. 4. Logging back into the Passportfolio system reveals the imported items.

The screenshot displays the Passportfolio ePortfolio system interface. At the top, there is a navigation bar with the Passportfolio logo and a menu containing: Home, Inbox, My Details, My Webfolio, My Docs, My Blog, My Actions, My Stickies, and Getting Started. Below the navigation bar, there are tabs for "Before Work Experience", "At your Work Experience", and "Finishing Work Experience". The main content area shows the user's profile, logged in as Stuart Wood, with a "Logout | Edit" link. A "Quick Links" sidebar on the left lists various sections: My Details, My Quizzes, My Hopes for the Future, My Achievements, My Interests, My Subjects/Qualifications, Work Experience, My Skills, My options at 13+, My options at 16+, and My options at 18+. The central "Work Experience" section features a list of imported items, each with an "edit" and "delete" icon. The items listed are: Removal Man (Pickfords Manhire, Moving Furniture, 01/01/1991 - 03/01/1991), Royal Institute of Navigation (Honorary member, 01/01/1900 - 01/01/1900), Strategic Planning Society (Chairman, 01/01/1900 - 01/01/1900), Carpentry (NVQ) (Units: Health and Safety, Carpentry 101 ..., 01/01/1900 - 01/01/1900), Business Administration (BSc) (Main units of study: Risk management, logistics, financial marketing, 01/01/1900 - 01/01/1900), and Ship mate. On the right side, there are sections for "Latest Stickies" (Add a sticky) and "Sub Menu" (Before Work Experience, At your Work Experience, Finishing Work Experience).

Annex 2. Export

Fig. 5. The complete export is readable as an ATOM feed



The screenshot displays a web interface for subscribing to an ATOM feed. At the top, there is a yellow header area containing a subscription form. On the left is an RSS icon. To its right is the text "Subscribe to this feed using" followed by a dropdown menu currently set to "Live Bookmarks". Below this is a checkbox labeled "Always use Live Bookmarks to subscribe to feeds." and a "Subscribe Now" button.

Below the header is a grey horizontal bar. Underneath, the main content area shows the title of the feed: "Passportfolio Export - Stuart Wood 2009-04-16T14:36:51Z".

The feed contains several entries, each with a bold title, a timestamp, and a description:

- App Developer**
16 April 2009 15:36
Making tea
- Director**
16 April 2009 15:36
Directorial Duties
- Removal Man**
16 April 2009 15:36
Moving Furniture
- Director**
16 April 2009 15:36
Directorial Duties
- Removal Man**
16 April 2009 15:36
Moving Furniture
- Director**
16 April 2009 15:36
Directorial Duties
- Removal Man**
16 April 2009 15:36
Moving Furniture
- Director**
16 April 2009 15:36

Annex 3. LEAP2A example

Fig. 6. This is the LEAP2A XML source from Fig. 5.

```
<?xml version="1.0" encoding="utf-8"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:leap="http://wiki.cetis.ac.uk/LEAP_predicates#" xmlns:leaptype="http://wiki.cetis.ac.uk/LEAP_classes#" xmlns:categories="http://wiki.cetis.ac.uk/PIOP_categories/" xmlns:portfolio="http://www.nottingham.ac.uk/eportfolio/test/leap2a/" xmlns:localschemes="http://www.nottingham.ac.uk/eportfolio/test/leap2a/"
  <title>Passportfolio Export - Stuart Wood 2009-04-16T14:36:51Z</title>
  <updated>2009-04-16T14:36:51Z</updated>
  <author>
    <name>Stuart Wood</name>
    <email>Stuart.Wood@nottingham.ac.uk</email>
  </author>
  <id>http://www.nottingham.ac.uk/eportfolio/test/leap2a/</id>
  <entry>
    <title>App Developer</title>
    <id>portfolio:work_experience_217</id>
    <updated>2009-04-16T14:36:51Z</updated>
    <content>Making tea</content>
    <leap:spatial>Uni of Nottingham</leap:spatial>
    <rdf:type rdf:resource="leaptype:activity" />
    <category scheme="categories:life_area#" term="Work" />
    <leap:date leap:point="start">2000-06-01T00:00:00Z</leap:date>
    <leap:date leap:point="end">2006-06-01T00:00:00Z</leap:date>
  </entry>
  <entry>
    <title>Director</title>
    <id>portfolio:work_experience_291</id>
    <updated>2009-04-16T14:36:51Z</updated>
    <content>Directorial Duties</content>
    <leap:spatial>Atomic</leap:spatial>
    <rdf:type rdf:resource="leaptype:activity" />
    <category scheme="categories:life_area#" term="Work" />
    <leap:date leap:point="start">1991-01-02T00:00:00Z</leap:date>
    <leap:date leap:point="end">2003-01-07T00:00:00Z</leap:date>
  </entry>
  <entry>
    <title>Removal Man</title>
    <id>portfolio:work_experience_292</id>
    <updated>2009-04-16T14:36:51Z</updated>
    <content>Moving Furniture</content>
    <leap:spatial>Pickfords Manhire</leap:spatial>
    <rdf:type rdf:resource="leaptype:activity" />
    <category scheme="categories:life_area#" term="Work" />
    <leap:date leap:point="start">1991-01-01T00:00:00Z</leap:date>
    <leap:date leap:point="end">1991-01-03T00:00:00Z</leap:date>
  </entry>
</feed>
```

Annex 3

Glossary

ILP – Individual Learning Plan – an action plan developed over time by the student with input from their tutors to support their learning journey

Passportfolio – the 14-19 institution-free ePortfolio system run in schools throughout Nottinghamshire by Connexions Nottinghamshire

HR-XML – Set of XML schemas designed to support Human Resource business processes

SIF – Systems Interoperability Framework – XML schema used to link school data systems to facilitate interoperability

PSHE – Personal, Social and Health Education

PIOP – Portfolio Interoperability Projects