

ePortfolio UK: - a Personal View

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This paper provides a briefing of the work of the ePortfolio Reference Model, directed by Dr Angela Smallwood. It summarises some of the materials which will be included in the interim report to be published at the end of March 2006. This work builds on the work of the Specifying an ePortfolio Project and colleagues may also wish to read:

- *Specifying an ePortfolio* executive summary:
<http://www.nottingham.ac.uk/eportfolio/specifyinganeportfolio/keydocuments/Executive%20Summary.pdf>
- *Specifying an ePortfolio* recommendations:
<http://www.nottingham.ac.uk/eportfolio/specifyinganeportfolio/>

“...this is a really important point; we will have to re-engineer the data so that wherever you are in the education system the individual learner can demonstrate to another institution, an employer, or to a parent, what they have done, how they are succeeding and who they are.”

**(Michael Stevenson head of DfES Technical Group January 2006
http://www.tes.co.uk/search/story/?story_id=2166552)**

1 Introduction

By the end of 2005 a broad consensus has been achieved within the UK about the potential benefits of ePortfolio to learners and for meeting key policy objectives such as personalised and lifelong learning.

However there is a serious question about the feasibility of ePortfolio: There are lengthening, undifferentiated lists of user requirements, competing stakeholder agendas, disconnected ePortfolio initiatives for Personal Development and Assessment and significant issues of how ePortfolios within separate VLEs can support Lifelong and Lifewide learning.

In addition there is a significant technical problem. JISC has piloted the use of an existing interoperability specification for ePortfolio, IMS LIP, and demonstrated that it works. However, the specification is over-complex and therefore costly. A simpler solution is required than a monolithic specification. BSI has agreed to publish its version of IMS LIP, UKLeaP, as a *draft in development* rather than a *formal standard* in order that a simpler solution can be developed and JISC is planning technical demonstrators to assist with this.

Is ePortfolio for lifelong learning feasible? This paper reviews how the eFramework is helping to reduce a complex problem to the simpler terms in which in which ePortfolio for Lifelong Learning can be widely implemented.

2 Background to UK developments

From 1984 the UK Ministry of Education supported pilot projects on “records of achievement”, especially for those leaving school at age 16, which were intended to contribute towards personal development and progress as well as providing a short summary document of record. The Dearing Reports into education from age 16 to 19 of 1996 and into higher education of 1997 led to further initiatives: -

- Work in colleges tended to concentrate on a Progress File that supported the learner in developing a repository of personal information which could be used to apply for work or university.
- For universities the emphasis was on the Personal Development Planning (PDP) processes by which a learner made use of a Progress File. PDP may be defined as a

structured and supported process undertaken by an individual to reflect upon their own learning, and / or achievement, set challenging but realistic goals and to plan for their personal, educational and career development.

- Professions such as Nursing, Medicine and Teaching have independently developed similar processes for their members.

In 1998 the Ministry sponsored 6 university recording achievement projects involving the use of ICT to explore ways of encouraging students to reflect on and record their development¹. Subsequently JISC has made a sustained investment in technology to allow the personal profile that a learner has developed in one episode of learning to be made available in the next episode in order to support the transition.

From 2002 JISC ran a major Lifelong Learning Programme encompassing schools, colleges, universities, trade unions and employers. This included a pilot in which learner information within the Nottingham Passport was transferred to different ICT systems, in schools, colleges and the university using IMS LIP discussed in section 3 below.

Because of JISC's investment some institutions involved in the projects of 1998 are now in a position to build a continuing record of lifelong learning. The new possibilities opened out by the technology have led to the term "ePortfolio" replacing "progress file" to describe the emerging new generation of practice which it enables.

Since 1998 many young people have taken advantage of the wider possibilities that new web technologies create for personalisation, in particular to support semi formal and informal discussions that mobile technologies enable. It is important that old, individualistic definitions of PDP predicated on paper based practice are revised to take account of new technical developments of obvious potential for educational benefit.

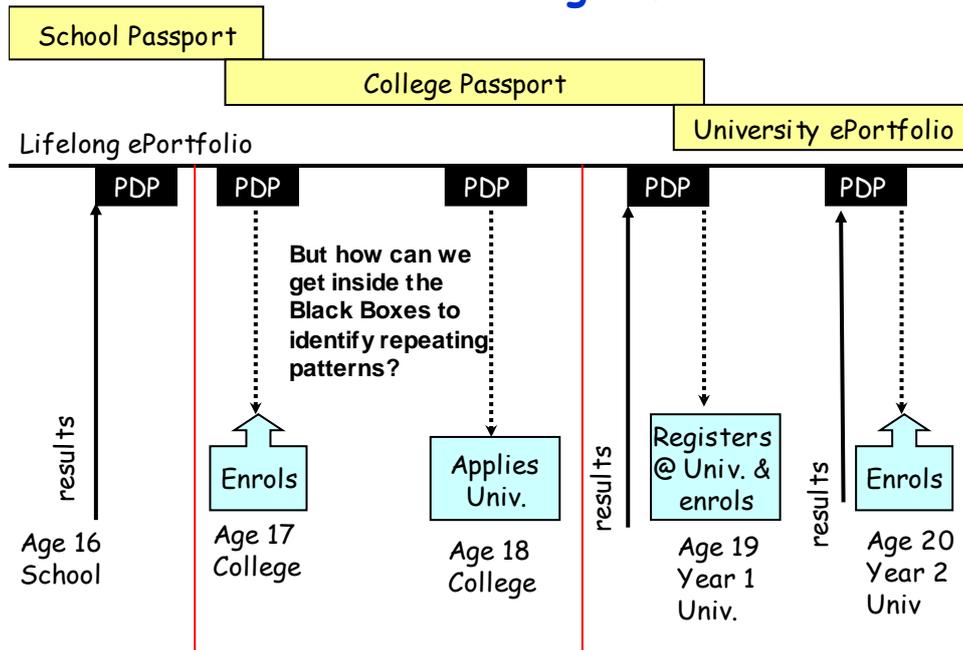
Rather than responding to requirements, the new phase of technical developments (or "Web 2.0") will open out further possibilities which educational practitioners, open source developers and vendors should exploit. Scenarios are a potentially important means of enabling practitioners to understand the possibilities that the new technology opens out and their potential to transform education. This is the positive case for ePortfolio. The negative case is the spontaneous and enthusiastic take up of leading edge collaborative and mobile technologies by young people. Unless current PDP systems embrace these technologies they are unlikely to persist. It is the social dimension created by these technologies that most appeal and in which current PDP is weak. **Because of these new possibilities, the working definition used in this paper is that ePortfolio is a resource owned by the learner best defined in terms of how it will be used.**

3 Specifying Lifelong ePortfolio for a region

For over 20 years schools, colleges and universities in the East Midland region of England have been developing Records of Achievement, then Progress Files and now ePortfolios. By 2003 there was a shared vision of how an ePortfolio for Lifelong Learning could move with the learner from school to college to university and ultimately employment. The original diagram for the JISC funded *Specifying an ePortfolio project* expressed this aspiration and has proved the technical feasibility of exchanging ePortfolio information across these episodes of learning. There is in this overview an obvious broad pattern across the different episodes of learning. But what is happening within the Black Boxes marked PDP? And is there a shared pattern within the detailed processes?

¹ See the section on 'recording achievement' on <http://www.dfes.gov.uk/dfee/heqe/publication.htm>

Nottingham 2003



The initial findings of the Specifying an ePortfolio Project were discussed at an invitation seminar in June 2004: -

The Scenarios of Practice developed by the University of Nottingham suggest that both PDP and the processes by which learners apply for work and education at different levels of attainment exhibit common patterns of behaviour and process such that the ICT developed to support practice at one level should be re-useable at another. If this is the case, the complexity and cost of implementing e-portfolios for Lifelong Learning will be significantly reduced and the practicability of achieving interoperability will be increased.

“Proposition 1”

Colleagues in Cabinet Office and the English Ministry of Education, DfES, were members of the Steering Group and in March 2005 Peter Rees Jones was commissioned to provide a report on the capacity of ePortfolio to deliver key aspects of the recently published eLearning Strategy. This set out the agenda that the initial phase of the Reference Model has followed.

The potential benefits of the successful implementation of ePortfolio are clear: -

The definition of e-portfolio should take account of the active services and tools that a learner uses in conjunction with his or her e-Portfolio to review and plan development, acquire new abilities throughout life and present achievement

By developing the capability of a learner at any level of attainment to take increasing control of his or her own learning and achieve challenging but realistic goals, the opportunities open to a learner will increase and the need of a modern economy for a highly skilled and flexible workforce will be met.

If learners from certain groups are less likely to acquire these capabilities informally, a formal policy for Lifelong Learning may be expected to impact on these groups especially and to promote social inclusion and enhance social mobility.

“Proposition 2”

However, the lists of detailed requirements developed by practioners are increasingly long and complex such that no simple definition of ePortfolio for the UK has been agreed. The key issue that JISC should address is whether ePortfolio is practicable. This is a key task for the Reference Model for which an alternative to traditional Requirements Gathering techniques is needed.

4 **ePortfolio Reference Model**

A key issue for the Reference Model is how to identify “common patterns of behaviour” at different levels of granularity. The eFramework has proved an excellent means of breaking out the black boxes into discrete modules, or “domain services” and reviewing the “flows of services” into which they can be assembled.

The Reference Model has developed exemplar flows of these “domain services” (See 5.2) which suggest common patterns of behaviour that alongside learning may also include “administrative services” and “analytic services” (that is the statistical services required to assure the quality of a process and how well it meets policy objectives; see 5.6).

Within the *domain service* experienced by the human actors unseen *web services* are encapsulated. These *web services* are potentially re-useable in a number of different *domain services* in the way required to lower complexity and cost set out in proposition 1.

A significant issue here is the appropriate level of granularity of the *domain* and *web services* at different levels of attainment:

The second phase of the Reference Model should review whether services are more granular at lower levels of attainment, where learners are acquiring basic blocks of knowledge and competences, in contrast to higher levels of attainment where learners tend to integrate the knowledge and competences they already have and apply it in a wider range of contexts.

The next phase of the Reference Model will therefore use the eFramework:

- to define the **services** supporting a learner which may (or may not) involve another person but will require one or more **web services**.
- reviewing these chains of **domain services**, identifying gaps and priorities for the development of **ePortfolio enabled web services**,
- in this way specify the outlines of the interfaces required between ePortfolio and the domain services
- work closely with other Reference Models on services which are indirectly connected to ePortfolio (for example course information, an administrative service, and analytic services, for example for quality assurance)

The Reference Model will produce a matrix showing: -

- At the macro level, *processes* like application to employment or University against the organisational stakeholders who work together to deliver them
- At the median level the *domain services* which form the flows delivering a process, revealing shared patterns of behaviour between distinct processes
- At the micro level the *web services* choreographed by each *domain service* revealing shared patterns of behaviour between distinct *domain services*.

Different groups of practitioners will identify the types of stakeholders for key processes and the relative priorities they assign to different domain services and the web services they contain. Using the methodology developed for the MLEs for Lifelong Learning Programme practitioners will identify the pragmatic constraints within which different stakeholders must work.

Rather than gather requirements for ePortfolio from stakeholders, JISC should enable stakeholders to develop scenarios of the use of ePortfolio centred upon how ePortfolio enabled services achieve key objectives taking account of the shared patterns of behaviour identified through the matrix.

In this way the propositions developed by the Reference Model can be verified. Without an approach like that of the eFramework it is not clear the ePortfolio for Lifelong Learning would be feasible.

This work has significant implications for specifications, standards and architectures for report to the June 2006 meeting of IMS and should deliver a set of profiles from which lightweight specifications can then be built.

This should be presented within a landscape centred upon stakeholders revealing the pragmatic constraints within which scenarios for the instantiation of processes can be constructed and where policy makers may need to intervene to enable progress.

5 The feasibility of ePortfolio

"Every pattern we define must be formulated in the form of a rule which establishes a relationship between a context, a system of forces which arises in that context, and a configuration, which allows these forces to resolve themselves in that context." *The Timeless Way of Building* (C. Alexander, 1979)

5.1 Reducing the problem to simpler terms

The task is not to provide a solution for each specific set of requirements, but rather to provide a technical space within which practitioners and their students can develop their own solutions for many requirements. The eFramework is proving itself a useful means of providing a set of abstract models which can be instantiated in different ways appropriate for different contexts each of which facilitate a range of potential behaviours as illustrated by the Negotiated Individual Learning Plan use case in 5.2.

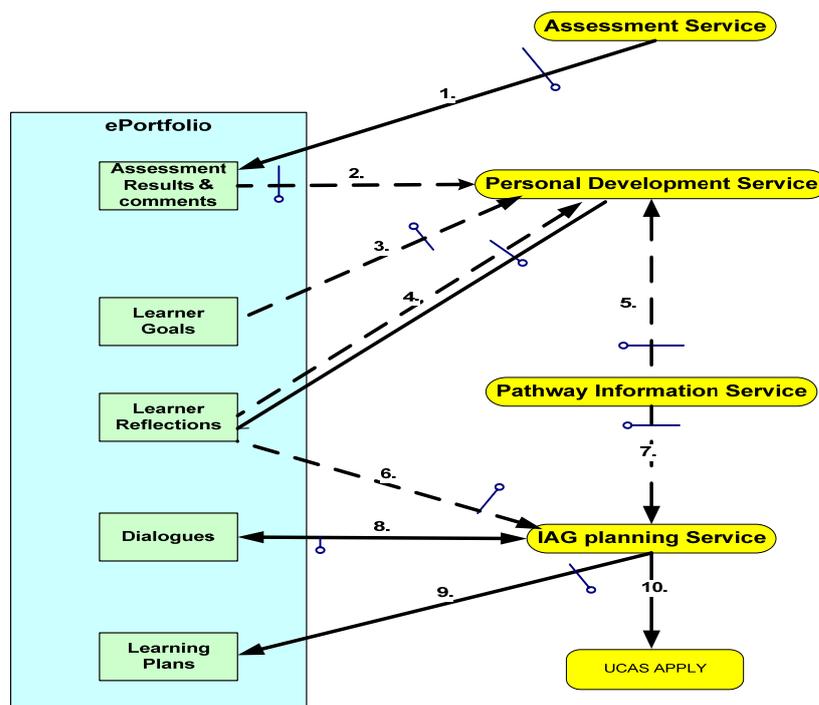
5.2 Exemplar flow: - Domain Services

The following use case centres on the development of an Individual Learning Plan. ILPs are common in UK schools, colleges and some universities. They can customise learning to the individual and therefore offer potential for an individual to personalise learning. The use case focuses on the negotiation of a plan between an advisor and a learner, which exemplifies the flow.

(The more interesting question is less relevant to this paper. How does the learner learn to adapt the situated plan to meet unexpected developments? PDP can provide the scaffolding for this in educational and work contexts but the skills that will be required also require the ability to exploit web 2.0. Services in the PDP domain will help develop the autonomous web literacy which will be required for most employment.)

Although at first sight the use case appears to be a learning flow centred upon PDP it includes an eAdministration course information service and leads directly to a further eAdministration service as its immediate outcome. A preliminary stakeholder analysis reveals further flows of analytic services for quality assurance of the learning process. A key initial finding of the Reference Model is the mixed nature of flows within the eFramework.

USE CASE



1. **Trigger An assessment result;** a mark and comments. (The hatpin indicates a standard interface.)
2. I call this information into an ePortfolio enabled Personal Development Service.
3. I review the results against my goals;
4. in the context of past reflections.
5. I take account of pathway information about the grades I need to meet my goals.
6. I make some of my reflections available to my formal advisor in an Information Advice Guidance Planning Service
7. My advisor also calls pathway information
8. Our dialogue is recorded
9. We negotiate a formal learning plan
10. **Outcome: in this instance the plan sets out what I will do to apply to HE.**

5.3 Gaps: Informal Personal Development & institutionally bound PDP

Past JISC funded work on PDP has concentrated on individual learners who make occasional presentations; the pattern "Progress Files" were designed to support. Yet the actual behaviour of young learners (perhaps especially from affluent families) is to create their own learning networks within friendship groups using free services such as MSN which work on a mobile phone as readily as a home computer.

Whereas MSN (for example) is group orientated, under the learner's control, visual and fun, there is a danger that ePortfolios may appear an official, and essentially lonely activity which, like Progress Files, will fail to engage many classes of learner.

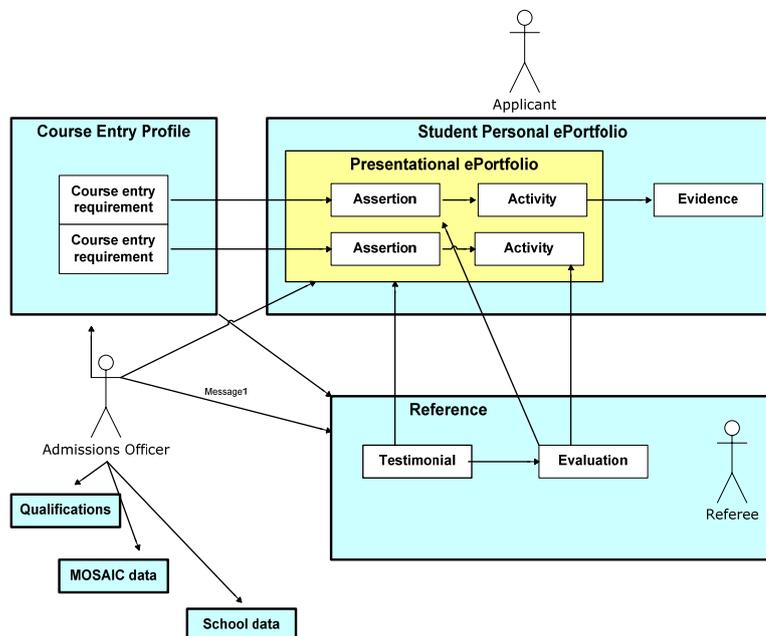
ePortfolio enabled services in the PDP class should exploit these rapid developments in informal collaborative learning and ensure that they are available to learners from all social classes. This requires an ePortfolio enabled service to manage dialogue, including the symbolic auditory and visual means of dialogue that are in increasingly common use.

In order to engage learners from all backgrounds with ePortfolio, empower them to personalise services and construct their own futures, JISC should commission work on how learners' may make effective use ePortfolios in conjunction with mobile technologies, in particular the relationship between dialogue and chat services and PDP class domain services.

5.4 Comment:

The Reference Model rethinks the conceptual model of ePortfolio in terms of the eFramework. It might have been expected that the MLEs Lifelong Learning Support Project would lead to a PDP Reference Model, but that was not considered practicable. Without an understanding of PDP behaviours, technical work on PDP would be restricted; a serious threat to the feasibility of ePortfolio in a key area. The Reference Model proposes that PDP is not a domain service but a class of services. By disaggregating PDP into the services making up the class (*Personal Development, Information/Advice/Guidance, Negotiated Planning and Situated Planning*) patterns involving chains of services can be identified. A number of web services are proposed to JISC for development which will suggest more granular patterns (and gaps) which the Reference Model will identify for wider discussion between stakeholders.

5.5 Demonstrating feasibility: HE admissions through UCAS



A use case for applicants aged 18 or 19 in full time education would be as follows: -

Precondition: That the applicant has an ePortfolio or eProgress File and the provision of Course Entry Profiles (an eAdministration service developed by the XRCI Reference Model).

- 1 Web service 1 calls the requirements of a course (or “prompts”) into a template of a “Structured Personal Statement” provided by a particular department in a particular university for a particular course.
- 2 Web service 2 helps the applicant to draw down material from her ePortfolio to assert how she meets a requirement and indicate the activity leading to this outcome.
- 3 Web service 3 helps the applicant link an assertion and activity to authenticated evidence in their ePortfolio
- 4 Web service 4 will post this “Presentational ePortfolio” through UCAS APPLY..

Subject to funding these webservices will be available for demonstration in May 2006.

A further web service could allow the referee to link his comments to a specific piece of text in the Personal Statement.

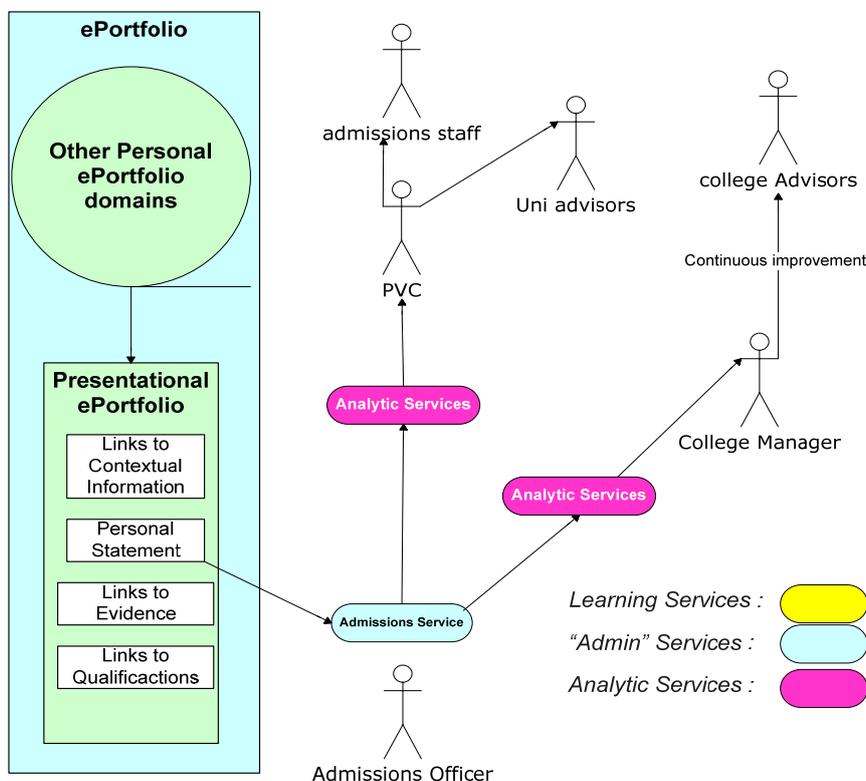
Because of the explicit relationship between these pieces of information and with the Course Entry Requirements it becomes possible for admissions staff to repurpose the information so that they can make use of richer information at no additional cost in terms of time. Subject to funding, further web services to support this will be developed

The Admissions Officer assesses all this evidence (perhaps by scoring to a formal set of criteria) alongside the score yielded by the qualifications (typically GCSE at age 16; AS at age 17 and A2 at age 18). These scores may be weighted with reference to MOSAIC data (“postcode data” about the social rank of the applicant’s home address) and school data, about the average level of attainment in the school or college the qualifications were obtained in.

All UK student record vendors pay close attention to the UCAS process. If the XRCI and ePortfolio Reference Models demonstrate their viability and become part of the mainstream UCAS process all UK universities and colleges will develop the ability to make use of course information and ePortfolio and develop a practical appreciation of their potential benefits. They will begin to think of these processes in terms of the eFramework.

5.6 Mixed Service Flows

Scenario A Phase 3c
Feedback: Application to University at age 19



There is proposal that HEIs should provide feedback to individual applicants who are not offered a place covered by a separate use case. Individual advisors will gain informal anecdotal feedback from unsuccessful applicants and an anecdotal impression of how a college could enhance its support. This diagram illustrates “analytic” services providing quantified feedback which will need to be reviewed and developed as HE admissions process are reformed.

5.7 Scenarios

The Reference Model should develop a close understanding of the types of stakeholders within institutions shown on the diagram and the services each type relates to. In this the pragmatic landscape within which these actors operate will become clearer. By surfacing the conflicts between stakeholders and their core interests it becomes possible to identify what senior managers within an institution or government needs to do to incentivise and remove roadblocks on the path to key objectives.

A key recommendation to the Ministry of Education in April 2005 was that sector based organisations such as JISC and Becta should develop a learning landscape of the kind that underlay the kind of scenarios that Prof David Wood developed through European Schoolnet. These could then be used as the basis for the development of scenarios of the kind developed by OECD and the World Bank.

This provides a potential means of establishing an iterative cycle in which: -

- Government proposes policy objectives;
- Educational organisations develop scenarios for how objectives may be achieved (and what government needs to do to facilitate their achievement)
- A set of indicative quantified and qualitative criteria are developed establishing criteria demonstrating success
- Demonstration projects are evaluated against these criteria

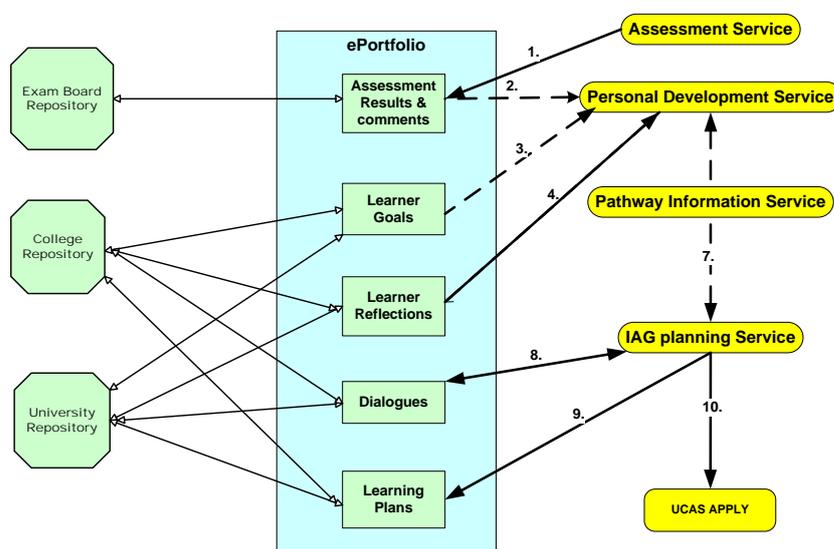
- The landscape is amended and new / revised scenarios are developed to inform the development of future policy / practice.

The original Nottingham *Specifying an ePortfolio* project began from the scenario set out in section 3 and formed the basis of the *Resource Pack* developed for the MLEs for Lifelong Programme projects. The *Reference Model* project has trialled new conventions to introduce users and technicians to the eFramework.

The ePortfolio Reference Model should produce an *eFramework edition* of the *Resource Pack* and provide an additional module providing a means of analysing stakeholders and producing a landscape within which broad policy scenarios may be developed for ePortfolio and other eFramework Reference Models.

A trial learning landscape should be provided for ePortfolio and a full trial scenario developed. This may form the basis for joint developments with HE colleagues in the Netherlands. Becta and DFES should be involved.

5 Thin ePortfolio for Lifelong Learning



Current ePortfolio systems are often specialised VLEs containing both the domain services given here to the right and act as a repository. This diagram breaks out repositories to the left as well as the services. VLEs have a finite life and this model provides a migration path to a web 2.0 which breaks commercial monopolies by reducing costs and providing easy entry to the market for vendors and open source developers, leading toward true "personal learning space"

6 The implications for specifications and standards

The rationale for a monolithic specification such as IMS LIP is that it provides a solution to a complete domain. However, it is clear from the service flows developed by the Reference Model that a single process will often require the use of several specifications and standards. The interface between each service domain and the ePortfolio will require a profile of one or more specifications / standards.

It is proposed that the function of a specification for learner information is to provide a high level ontology within which profiles for discrete services may be developed. Because it is slow changing it may be appropriate to standardise the high level ontology.

Some of the profiles developed within a high level ontology will have a short life, others will stabilise and become de facto and then formal standards, and some may be designed to become standards to support lifelong learning from the outset.

What is required for ePortfolio is both a map of the specifications and standards that are relevant to the ePortfolio domain and also a map of the ePortfolio enabled services that need to be developed.

The Matrix of services and stakeholder priorities is the starting point for the development of this second map.

Scott Wilson of CETIS will be leading a review of IMS LIP from March 2006 in preparation for new JISC programmes which will demonstrate the use of lightweight profiles of specifications.

7 Sketching out the Technical Landscape

By the end of February I will produce a sketch of the technical landscape within which JISC funded implementations will demonstrate the approach outlined here.

"E-portfolios....are personal online spaces for students to access services and store work. They will become ever more useful as learners grow up and start moving between different types of learning and different institutions." (Ruth Kelly Secretary of State for Education, January 2006)

Peter Rees Jones

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