

ePortfolio Initial Reference Model

1. ePortfolio and the eStrategy

An increasing range of information is being held by an increasing range of organisations about individual learners in education, training, employment or seeking to return to work. ePortfolio is a means by which the subject of this information, the learner, can make active use of this information in order to achieve their personal, educational and career goals. ePortfolio enables a learner to: -

- Access information held about herself and ensure that it is correct;
- Add to this partial information to provide a context for the profiles it provides;
- Integrate the information to develop a personal profile of herself and her progress;
- Present aspects of this holistic personal profile to different audiences for different purposes;
- In particular, identify for service providers the learner's individual needs and preferences.

ePortfolio is therefore a means by which the subjects of information can take control of their learning. In particular, by integrating information about themselves learners can develop an awareness of their needs and preferences and make available profiles of themselves to providers in order that services can be tailored to the learner. Increasingly learners will expect to be able to personalise services for themselves. Personalisation is a key requirement of the eStrategy.

2. ePortfolio Enabled Services

Increasingly learner information is being used as an active resource for the 'services' supporting the learner's development. For example, 'guidance services' in a school help learners understand their educational and career options. These depend on other 'services', for example a teacher's estimate of a learner's potential in a particular subject or skill, which in turn depends on assessment services.

The attached use case illustrates how ePortfolio provides information to a service in this chain and maintains the information which that service provides for the next service to consume. The services in this instance are 'domain services' for which 'ICT services' are currently being developed in the context of ePortfolio in order to produce an Individual Learning Plan (ILP).

3. The nature of ePortfolio

A national and international invitation seminar in summer 2005 began to scope the domain services which may make use of ePortfolio and how far these are covered by current ICT developments. The provisional conclusion is that ePortfolio is best defined in terms of the services making of use it. This supports Scott Wilson's suggestion that ePortfolio looks more like an application than a service in its own right.

In the use case diagram (Annex A, section f.), the plan is produced by a sequence of services supported by an ePortfolio application. It is this through the use of the ePortfolio application that the learner is able to integrate their experience and personalise their plan. The development of the plan and the plan itself represent a sequence of services and each service a sequence of activities. This may best be described in terms of Learning Design.

ePortfolio therefore has a key pedagogic and technical role in orchestrating and choreographing services in ways which meet the learner's individual needs and preferences.

4. The Technical Approach

One important function of the initial eProgress File Reference Model is to support a detailed review of the IMS ePortfolio specification in Spring 2006. This specification encompasses a significant proportion of IMS LIP, which members of CETIS helped develop into a British Standard: UKLeaP / BS8788. UKLeaP has been piloted to exchange information between school, college and university by the University of Nottingham in partnership with UCAS, who will use it to make applicant information available to HEIs for 2007 entry.

This UK work (and that undertaken on the Europass for CEDEFOP) demonstrates that UKLeaP works but could be significantly improved. The profiles of UKLeaP being developed

for pilots suggest the need for a simpler information model that could more readily be extended consistently and . UKLeaP: -

1. Covered about 70% of each domain reviewed. UKLeaP needs to be extended in a consistent way to deliver the eLearning Strategy;
2. UKLeaP can be interpreted in different ways which may not interoperate. It needs to have a tighter focus in order to deliver the eLearning Strategy;
3. The XML binding is unnecessarily heavyweight (but is not normative).

The initial reference model project suggests how this can be achieved by:

- a) Identifying chains of services within the context of scenarios of practice and use cases;
- b) Identifying priority areas in which ICT services are known to be developing or need to be developed;
- c) Scoping current specifications and standards to propose: -
 - the profiles of the interfaces between each service and ePortfolio;
 - the profiles of the domains within ePortfolio
 - the functions of an ePortfolio for Lifelong Learning application
- d) Developing a policy scenario identifying how ePortfolio can enable the coordination of services to learners to deliver the eLearning Strategy, especially personalisation.

5. Next Steps for JISC and its partners

1. From April 2006 Scott Wilson will review the initial Reference Model with colleagues and propose changes to existing specifications (in particular IMS ePortfolio) intended to provide lightweight profiles capable of delivering the eLearning Strategy across sectors, designed for ease of implementation and taking specific account of bindings. The results of this work will be proposed to IMS;
2. From June 2006 a set of guidelines should be developed setting out how this work builds on and supersedes UKLeaP. This could be reported to ISO SC36 as a working document;
3. A detailed assessment of the use of Learning Design to render chains of ePortfolio enabled services and activities within services should be undertaken;
4. An extended version of the Requirements Resource Pack should be provided enabling practitioners and policy makers to express their requirements in a form that can support the rapid development and implementation of software, specifications and standards; that is to say in terms of ePortfolio enabled services and chains of services;
5. Priority domain services should be identified and specified alongside ePortfolio enabled ICT services;
6. Profiles of the information provided and consumed by each service and of learning flows involving several services should be developed.
7. These services and chains should be piloted in conjunction with an ePortfolio (but the emphasis should be on the needs of the service and the support that ePortfolio can provide.)

6. Managing Information Across Partners (MIAP)

Where JISC originally limited the eFramework to eLearning, the MIAP initiative led by DfES has focused on management information, although this will also "...benefit learners by supporting the drive to deliver quality and value whilst helping to remove wasteful bureaucracy from post 16 education." (MIAP Programme Strategy Document 2.1). The long term benefits of MIAP to the learner from short term initiatives to improve information management are not as clear as the administrative benefits but are evident, for example "Better Information Advice and Guidance (IAG) to improve service delivery" (4.2).

The attached use case looks at the world from the learner's perspective and does not take explicit account of the IAG service provider's requirements. However, the ICT chain of services outlined in the use case could not be implemented without both perspectives being taken fully into account. It is for this reason that the eFramework now encompasses administrative processes and that MIAP identifies the importance of its work for the learner.

The work of JISC could complement and strengthen MIAP's work in important ways, but it is difficult for a practical initiative such as MIAP to engage with an overarching concept such as ePortfolio. The use of ePortfolio to improve an IAG service or produce a learning plan offers quantifiable benefits that could be mapped to MIAP success criteria. It may be worth considering whether JISC should develop long term projects to complement MIAP projects and connect learner and administrative perspectives onto key ePortfolio enabled services such as those noted in the Annex.

(Peter Rees Jones 2005 08 31)

Annex A: - Illustration of a chain of services

a. Introduction

This use case illustrates the approach that is proposed: -

- i. to identify *domain services*, that is to say the actual and intended practice involving ePortfolio, within which *services*, that is to say ICT services supporting practice linked to ePortfolio, have been developed, are being planned, or should be developed.
- ii. to make recommendations for the coordinated development of *ICT services* to meet priorities and cover gaps. It is expected that in future most *ICT services* will be rendered as webservices.

It is intended that this work should form the basis of technical work: -

- iii. to scope the types of information required to support the *domain services* and the *ICT services* supporting practice in terms of existing specifications, standards and required extensions, in order to produce formal interfaces between an *ICT service* and ePortfolio.

What emerges strongly from the diagram is the importance of workflow, both for the sequencing of activities for the negotiation of a formal plan and within the plan itself, where the plan is an active resource that prompts the actors where actions are required.

b. Use Case: - orchestrated services producing a learning plan

This abstract use case is drawn from a variety of ILP (Individual Learning Plan) practice for young people who are 15 years old in Year 11 of the English school system. It is intended to illustrate a chain of services producing a formal plan. The same chain may have other results. The abstract use case may form a basis for practitioners to propose concrete examples of practice which, it is expected, will identify variations of services and additional services producing learning plans. This should yield a richer and more complex picture of this domain of practice.

The types of information passing into and from the ePortfolio can be scoped from this more complex picture. The interfaces required to support the domain planning service may then be specified. This will involve some existing ICT services which will be listed and categorised. This will in turn suggest other areas in which ICT services should be developed. A report can then be made: -

- Outlining the interfaces between ePortfolio and domain services;
- Identifying the actual or specified ICT services and their nature (e.g. if they are webservices; whether/how they conform to specifications or standards)
- Identifying the gaps in provision for which ePortfolio webservices should be developed
- Identifying common sequence patterns, including common loops initiated in given circumstances.

c. Negotiating a Formal Learning Plan: - outline

- Human Actors: - a learner and a teacher
- An ePortfolio provided by an institution in which: -
 - Some information provided by the institution is known to both the learner and the teacher;
 - Information provided to or developed in the ePortfolio by the learner is owned by the learner and cannot be viewed by any other actor without the learner's permission;
- The learner may make informal use of ePortfolio in conjunction with other generic services such as blogs, moblogs and MSN. This is acknowledged in the narrative of the use case (d) but not in the diagram (f.).
- Trigger: - assessment results
- Inputs: -
 - Assessment results
 - Pathway information (e.g. entry requirements for a module or course)
 - Historical information held in the ePortfolio
- ePortfolio enabled services: -
 - Assessment
 - Personal Development
 - Guidance

- Pathway (a service that is indirectly linked to ePortfolio)
- Outputs held in the ePortfolio:-
 - Learner reflection
 - Learner-teacher dialogue
 - Learning Plan

d. Workflow

(Told from the learner's perspective)

- i. I have submitted a piece of work for formative assessment. A teacher sends comments on my work and a grade to my ePortfolio. (Information provided by an Assessment Service)
- ii. I review the grade and comments against the requirements of one of the A levels I wish to take next year (information provided by a Pathway service) against previous comments and grades (held in my ePortfolio) and my longer term goals (held in my ePortfolio). There is a problem. (This whole process is supported by a Personal Development service)
- iii. I chat with my friends about my problem using MSN (this is currently out of scope for the *eFramework* not connected to the ePortfolio and not acknowledged in the diagram at f. below)
- iv. I prepare to meet my form teacher. I email her with the problem. I do not wish to change my goals. I identify some ways I think I could resolve the problem. I give her access to several parts of my ePortfolio which I think are relevant. (preparation for Guidance)
- v. I meet with my form teacher face to face but we work through the problem using her PC and set out the actions each of us will undertake to resolve the problem (Guidance) (At this point there could be iteration between stages ii. and iv. leading to a further guidance meeting not shown on the diagram at f.)
- vi. We review the pathway information (Pathway) and the options for how I could qualify myself for various pathways. My teacher identifies several options which we discuss and I select a preferred and a backup option. (Planning)
- vii. I suggest ways in which one option could be adapted to meet my specific needs. My teacher shows me how to customise a pathway to meet my needs on the computer so that I can do this in future for myself. (Planning)
- viii. We agree a plan a date for a further review and the circumstances in which we should meet earlier. (Planning)
- ix. My teacher and I agree a record of our spoken conversation (dialogue)
- x. I activate my individual learning plan.

e. Learning Plan as an active resource

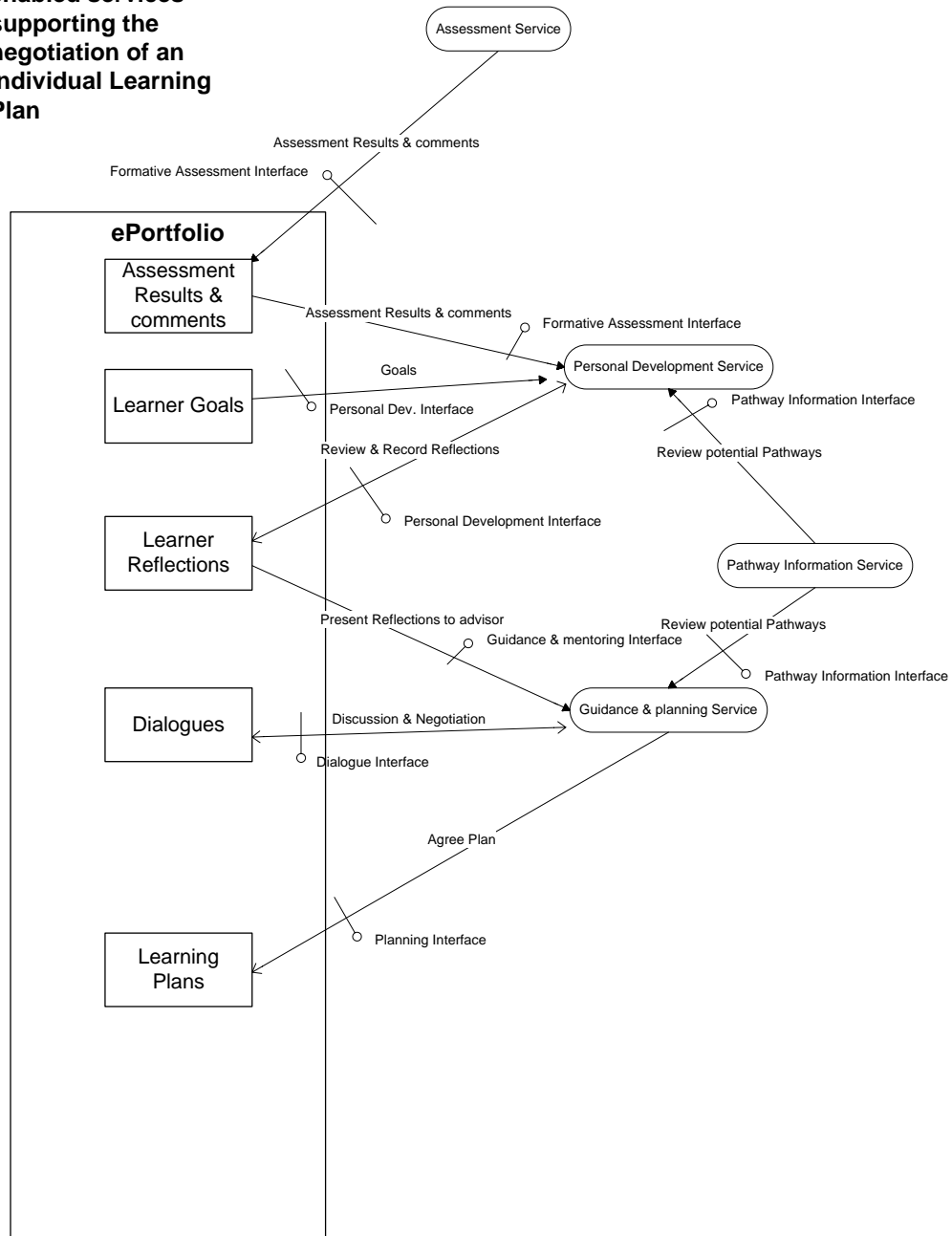
The abstract use case could deliver a plan that simply provides a checklist of what the actors will do next. However the plan itself could be an *active* resource alerting the actors in certain circumstances and offering advice. How would an *active* Learning Plan affect the use case?

■ Pre-conditions

- There is a Pattern Book which any of the actors can use to find a particular type of plan for a particular type of learner, job, learning problem or goal
- There is an agent which can help any actor to navigate the Pattern Book, customise the learning and the learning flow
- Each actor can specify conditions when the plan will alert them, for example in response to poor diagnostic assessment results or attendance
- The plan is therefore a learning flow and an active resource
- The teacher identifies the gaps required to bring the learner up to the minimum standard;
- The learner identifies the gaps required for his / her long term ambitions;
- The human actors assisted by a planning agent negotiate a customised learning flow;
- The plan is executed
- The plan can be set to issue alerts to specific actors in specified circumstances
- The plan will propose workflow loops from the pattern book
- The plan will propose other resources which actors may find helpful (for example a means of addressing a problem within a particular domain of competency).

f. Diagram

A chain of ePortfolio enabled services supporting the negotiation of an Individual Learning Plan



g. Discussion and applicability to other domains

How practicable is an active learning plan? At lower levels of attainment there have been extensive moderated ICT projects yielding hard research evidence of effective remedial approaches for literacy and numeracy. Effectively pattern books exist, offering approaches that have been proven to work for particular types of learner with particular types of problem. Learners' individual learning plans set out the progress they can realistically be expected to make and the distance travelled

The work undertaken with learners in the top decile, and at higher levels of attainment, has been much more limited. This includes unpublished work on PDP related approaches, such as the use of learning diaries which identified no measurable effect.

These approaches are intended to measure the improvement in a learner's performance. There are simpler problems that could be more readily assessed. For example a significant proportion of Year 11 English learners do not progress to work, training or formal education, or drop out soon after making the transition. Here it would be practicable to evaluate the effect of ePortfolio-enabled guidance services on retention in education or training and to review the relative effectiveness of different types of Learning Plans for different types of learner.

As with literacy at lower levels of attainment, the use of ICT provides an audit trail of evidence for evaluation. In the same way, effective practice could be identified and ineffective practice amended or discontinued.

These same techniques could be applied to transitions from college to university or work and could be applied to other services and chains of services.