

ePortfolios: Policy Issues and Interoperability.

Jerry Leeson, education.au limited

1. Abstract

This paper summarises and provides an update on a recent investigation into the development of e-portfolios for the VET sector, and particularly into the associated policy and interoperability issues. The initial investigation was commissioned by the e-Standards Expert Group, an initiative of the Australian Flexible Learning Framework (<http://e-standards.flexiblelearning.net.au/>).

Interest in and use of electronic portfolios (e-portfolios) has increased dramatically in recent years. The concept of managing personal portfolios, however, pre-dates the Internet age and many earlier ideas about the use of portfolios in education and training are finding new expression. New possibilities arise through the adoption of standard approaches to e-portfolio development, enabling institutions to share and exchange e-portfolio data. In the education and training sector this could lead to streamlining of the processes associated with recognition of prior learning, student transitions through courses, and training that involves either sequential or parallel movement through multiple institutions.

Moving into the future, eportfolio services may need to interact with many other applications or services. Some of these will be other eportfolio services while others will be related services that exchange information or support eportfolio activities. It is worth considering the broader range of interoperability requirements beyond 'eportfolio to eportfolio' communication. This type of interoperability includes integrating with other applications found in organisations as well as other critical infrastructure such as authentication and authorisation services, digital rights management, persistent identifier services etc.

While other countries have worked for sometime on developing systemic approaches to eportfolios, Australia is really only just beginning to engage in this area. Our research examines emerging needs of the sector, policy implications for it and looks at some of the technical standards which may underpin a systemic approach to eportfolio development.

2. Introduction

New possibilities are arising through the adoption of standard approaches to ePortfolio development, enabling institutions to share and exchange ePortfolio data. In the VETsector this can lead to new approaches to teaching and learning, streamlining of the processes associated with recognition of prior learning, supporting student transitions through courses and training that involves either sequential or parallel movement through multiple institutions.

EPortfolios are being used to support both students and workers in their quest for life-long and life-wide learning. Broadly speaking, there are a number of functions or characteristics of ePortfolios:

- profiling;
- publishing;
- presentation;
- packaging;
- portability; and
- persistence.

While these functions or characteristics exist for non-electronic portfolios, the use of Internet technologies such as Web Services is enabling a whole new range of possibilities. Indeed, popular web services such as Myspace, Facebook and Linked-In are providing serious challenges to the perceived value of 'traditional' organisation based ePortfolios. This paper will look at some of the challenges, both technical and policy wise, that we are faced with.

3. Project Summary

The scope of ePortfolios covers a broad range of applications across each of the education and training sectors. Learners of all ages are using ePortfolios for a range of activities including formal education activities, training purposes, and for personal and other interests. ePortfolio services may be generally used for supporting planning, reflection, providing evidence and for presentation.

The purpose of this study was to identify current practice and trends in ePortfolio systems and implementations, to inform policy development, and to identify where further research into technical standards is required to enable effective systems implementations.

The study included an environmental scan of ePortfolio use relevant to Australian Vocational Training and Education. Issues regarding standards, interoperability and policy areas for implementation were also identified and discussed.

The methodology used in the project involved:

- a review and analysis of relevant national and international projects relating to ePortfolio specification, development and standardisation via desktop research;
- review of international conference proceedings;
- and individual contacts with organisations currently using ePortfolios;
- development of use case scenarios for the VET system;
- consultation with Australian VET stakeholders to confirm and build on use case scenarios; and
- Identification of relevant ICT specifications and standards via desktop research.

Five use case scenarios were developed to demonstrate the potential of ePortfolios for the VET sector. The use case scenarios explored the application of ePortfolios for the following stages of a learner's involvement with the VET system:

1. transition into the VET sector;
2. learning within the VET sector;
3. transition from the VET sector to further education or work;
4. managing a VET workforce; and
5. transition into self employment

The use case scenarios were based on the premise that the owner of the ePortfolio is the learner. Functionality, ePortfolio services, and potential relevant business and/or policy areas were identified. Business rules, policy areas and technical standards required to facilitate the implementation of ePortfolios were then considered.

All use case scenarios were provided to stakeholders within the VET sector to gain feedback regarding the scope and validity of the scenarios.

The environmental scan identified and analysed a selection of national and international ePortfolio services in order to gain insight into current practices. EPortfolio services selected for the scan included those that have been developed to facilitate learning during enrolment in an educational institution, to assist in the recognition of prior learning or current skills, and to assist with transitions. The services selected were those outlined in the research project brief and other services that have been established for some time or for specific purposes.

The research brief also called for a scan of ePortfolios to identify best practice. While it is recognised that the use of ePortfolios in education and training has been gaining momentum, at the time of the original investigation, many services and projects were still evolving or in their infancy. What constitutes best practice in regard to teaching, learning and systemic solutions will be better understood as rigorous evaluations of services are conducted. For this reason, the project instead concentrated on current use and trends.

EPortfolio uses

The purpose of most ePortfolios examined was to provide learners with a space to record, reflect and present information about themselves and their education and training experiences for the purposes of learning, assessment, and making transitions, particularly to employment. Good examples of these reside in the higher education sector in particular, where they have been implemented for a number of years. The Queensland University of Technology's Student Portfolio and Florida State University's Career Portfolio are examples of this.

Functionality and services

The range and sophistication of functionality and services offered by ePortfolio services was varied. Some ePortfolios had been designed for a very specific purpose such as preparing an application for recognition of prior learning, and did not enable the user to save an electronic record. Other services offered a wide range of functionality and templates to record and manipulate information, upload and manage a range of artefacts, create multiple versions of curriculum vitae, provide permission to other parties to view and comment on entries, and to send information to third parties. Others, such as the TAFE VC ePortfolio have extended functionality such as creating and joining common interest groups to share content and information.

Digital content such as word documents, pdf files, video footage and audiocasts are known as 'artefacts'. They are a crucial element of some ePortfolios, where they can be used to provide evidence of skills, competencies, qualifications, employment and other information relevant to education, training and employment. Approximately half of the ePortfolios examined allowed artefacts to be uploaded and stored within the service. In other cases, only artefacts created within the service could be stored or artefacts could not be attached at all.

Artefacts impact greatly on storage issues associated with the provision of ePortfolios. The amount of storage space provided to primary users varied considerably. Higher education sector ePortfolios in the sample varied from 3MB to 512MB. It is assumed that cost is the major influencer in developing policies for storage allowances. However, this needs to be investigated further to ascertain whether there is a need for high levels of storage space or more effective artefact management practices. In some cases, the nature of the course of study could impact on the amount of storage space required and perhaps institutions may consider thresholds for students in specific programs of study.

Standards and Interoperability

The extent to which the ePortfolios examined have adopted particular standards was difficult to establish. Some respondents stated that their ePortfolios met the information technology standards of their institutions. Others mention W3C XHTML, W3C CSS and compatibility with any browser.

The project team was keen to ascertain the adoption of any ePortfolio specific standards. The first release of the IMS ePortfolio Specification occurred during 2005; however, the development of many of the ePortfolios selected for this environmental scan pre-dated the release. Adoption of this specification was difficult to ascertain.

Further research into the uptake of standards would be required to gain in-depth insight into the application of standards when existing services are enhanced and new ePortfolio services are developed across the VET sector. This is particularly important if portability of information regarding qualifications and competencies using ePortfolios is considered to be a priority.

EPortfolio services may need to interact with many other applications or services. Some of these will be other ePortfolio services while others will be related services that exchange information or support ePortfolio activities. It is worth considering the broader range of interoperability requirements beyond 'ePortfolio to ePortfolio' communication. This type of interoperability includes integrating with other applications found in organisations as well as other critical infrastructure such as authentication and authorisation services, digital rights management, persistent identifier services etc.

2008 Project Review

Since the original report was produced there have been a number of developments worth commenting upon. The concept of 'learner-owned' rather than 'institutionally provided' ePortfolios seems to be attracting greater levels of discussion and possibly

acceptance. In many cases this implies a rethink if not of the policies governing ePortfolios, then the implementation of them. In particular there are three initiatives that while not specifically addressing the needs of the VET sector, are national in scope and offer useful insights for a systemic approach to ePortfolio related services. These are:

- the Australian ePortfolio Project (AeP)
- the PILIN Project
- the Australian Higher Education Graduation Statement.

Australian ePortfolio Project (AeP)

The Australian ePortfolio Project, a Higher Education initiative, is funded by the Carrick Institute for Learning and Teaching in Higher Education. It is a research project that is being undertaken by the following universities:

- Queensland University of Technology
- The University of Melbourne
- The University of New England
- University of Wollongong

The Australian ePortfolio Project has the following goals (AeP, 2008):

- Analyse ePortfolio practice in the higher education sector in Australia and internationally
- Review the range of ePortfolio applications used in universities
- Identify significant issues related to ePortfolio use in Australian education
- Examine the potential relationship with current National Diploma Supplement / Australian Higher Education Graduate Statement project
- Consider the impact of ePortfolio use on student learning outcomes
- Recommend ways to share excellent practice in the implementation and use of ePortfolios
- Identify opportunities to advise and support further development of ePortfolio initiatives in the higher education sector
- Establish a project website to facilitate national and international sharing and discussion of ePortfolio issues
- Develop an ePortfolio community of practice initiative to support the future use of ePortfolios in Australia
- Consider the future policy direction required to engage and inform ePortfolio adoption in academic institutions
- Position Australia on the international ePortfolio scene through leadership in research into ePortfolio practice in Australia
- Host a two day symposium to facilitate the sharing of ePortfolio experiences both in Australia and overseas.

The two-day symposium was held on 7th and 8th February 2008 and was well attended by representatives from each of the education and training sectors in Australia in addition to the Higher Education sector. In her report back to the Symposium on Day 2, Associate Professor Angela Smallwood (Director, Centre for International ePortfolio Development, UK) highlighted a number of key concepts (Smallwood, 2008) that emerged from day 1. These included but were not limited to:

- Learner owned versus institutionally provided ePortfolios
- An ‘enabling approach’ to ePortfolios

There seemed to be considerable support for the notion of learner-owned ePortfolios. In such an environment, individual ePortfolios will consist of content and services drawn together from across the Web using both institutionally provided services and public web services. In this environment, teaching organisations will be invited into students ePortfolios.

The ‘enabling approach’ referred to proposes organisations should implement ePortfolio functionality incrementally. There was a desire to ‘start where the pedagogical need is greatest’. It is clear there is no ‘one size fits all’ solution for ePortfolios. This draws on work such as the eFramework’s ‘service oriented approach’ and also the JISC ePortfolio Reference Model whereby discrete services (eg resume builder, build RPL claims, planning and goal setting, presentation etc). The service oriented approach allows for aggregation of services from a number of providers. For example, an institution may provide some planning and reflection tools yet draw on public photo services such as Flickr to bring images into a portfolio. The learner (ePortfolio owner) may choose one of several resume builders, blogs etc to include into their ePortfolio which may or may not be provided by the institution. Most importantly the ePortfolio owner will decide not just which services they wish to use, but how their ePortfolio is presented and to who.

The architecture of an ePortfolio composed of (potentially) many distributed services is an interesting challenge in itself and begs the question of ‘how can this be provided?’ Where is the best place to provide an ePortfolio aggregation service? In the ePortfolio symposium audience there seemed to be a reasonable level of comfort with the notion of a nationally/systemically provided service however it was considered crucial that such a service was not seen as, and was not controlled by Government. ePortfolio services that are provided externally to the teaching institution seem to have more applicability to a person’s lifelong learning journey. They are active representations that go well beyond the boundaries of a person’s time spent within a particular organisation. Rather than having a number of institutional ePortfolios over a lifetime, which may or may not be accessible, modifiable etc, a lifelong ePortfolio can evolve with the learner themselves.

In terms of policy considerations this opens up a number of issues, some of which go far beyond the scope of the ePortfolios themselves. Both institutional and systemic ePortfolio (services) have a number of major policy considerations. Ownership and rights management are obviously areas which need to be clearly understood by both organisations and learners. Privacy, security and safety are also major considerations which also vary across each of the education sectors.

Storage is another interesting challenge. In our initial research storage was seen as a major issue for a number of organisations and continues to be so. How much storage to allow and how long can that content be reasonably kept for? Since the initial research a number of examples are starting to appear where organisations use public/free web services to store at least parts of their learners ePortfolio content. One example of this is where YouTube (<http://www.youtube.com>) is being used to store video content for some ePortfolios. This is where policy and usage

considerations go well beyond the scope of the ePortfolios themselves. Firstly, for some educational institutions, web services such as YouTube are banned or not accessible from within the institution for many reasons. If web services such as Youtube were to be used for part of a learner's ePortfolio, this would create a number of challenges for these organisations, both technically and policy wise. In addition, some education on the use of such services is clearly required. Matters such as how to select the most appropriate service, use it responsibly and safely, understanding the implications of using such services all demand a level of sophistication on both the learner and the organisation. Another consideration is the longevity and associated guarantees that really need to be in place for 'lifelong' ePortfolios. What guarantee is there that Youtube or whoever else you are using will still be there, and your content with it, in 5, 10, 15, 20 etc years time? The same applies for any component of an aggregated ePortfolio.

The PILIN Project

The PILIN (Persistent Identifier Linking Infrastructure) Project (PILIN, 2008) principally examined the use of persistent identifiers applied to eLearning, eResearch and eScience. The project was concerned with the management of massive amounts of data in these areas over many different time periods. As an example, it is not unusual for information that is stored on the Web to shift locations from time to time. As a result, it can often be hard to locate that information once it has moved. Persistent Identifiers are an enabling technology that could be used to track data/content as it moves from one location to another.

The PILIN project considered many other uses of identifiers during the course of the project but this is one use that could be applied to ePortfolios. For example, if I stored some content (evidence of my achievements) on a particular server for in an institution, then linked to that in my ePortfolio, as an individual I may not have reason to regularly check that content is still accessible until I really needed it. I am likely to try to access it during a time of transition (eg from education to work, work to education, changing jobs etc). If, at some point the institution shifts that content, it is quite likely that the link to that content will be broken and a valuable part of my ePortfolio could be lost to me. Using persistent identifiers and attaching them to my content, it is possible to implement services such as tracking its movement. Rather than linking to a url, I simply link to the persistent identifier service which will provide me with the updated location of my content.

The Australian Higher Education Graduation Statement

The Diploma Supplement (European Commission, 2008) was originally developed by a Joint European Commission – Council of Europe – UNESCO initiative which looked at 'improving international transparency, and at facilitating the academic and professional recognition of qualifications (diplomas, degrees, certificates etc). In parallel to the Diploma Supplement for Higher Education, the Certificate Supplement for vocational qualifications was also developed.

Following these initiatives, the then DEST commissioned an initiative into the development of a National Diploma supplement for Australia. This has become known as the Australian Higher Education Graduation Statement. While targeting Higher Education, it is worth considering the concept beyond the boundaries of that sector. Grant Harman (University of New England) gave a presentation at the

ePortfolio Symposium which summarised this project (Harman, 2008) and also offered a very good comparison between ePortfolios and the Graduation Statement. This comparison is shown in Table 1, ePortfolio and Graduation Statement.

Table 1: ePortfolio and Graduation Statement.

ePortfolio	Graduation Statement
Information pertaining to broad range academic and non-academic achievements	Information regarding a single award conferred on an individual
Maintenance is an individual responsibility	Compilation and verification is the responsibility of the University
Authenticated and unauthenticated information	Only authenticated information
Continually evolving	Static, snapshot at one point in time
ePortfolio information may later be authenticated for inclusion into the Graduation Statement	Once issued the Graduation Statement might be included in the ePortfolio
Not a secure document	Secure document

The table, while an excellent comparison between characteristics of the ePortfolio and the Graduation Statement also highlights a number of important facets of what a learner-owned portfolio may look like. It draws a clear delineation between what areas of an ePortfolio are the responsibilities of the individual and what are the responsibilities of the institution. The notion of authentication is critically important. ePortfolios make a number of claims and provide evidence of accomplishments but not all can or should be taken at face value. Verification and authentication of such claims are vital to the credibility of the ePortfolio and could provide a very important ePortfolio service in a distributed environment.

4. Findings and discussion

The implementation of an ePortfolio service in the VET sector impacts on a number of policy and business areas within a system and organisation, and also on individuals and the VET workforce. Several issues related to this have been identified including:

- the general development and management of ePortfolio services;
- the portability of information about qualifications and competencies;
- the recognition of prior learning;
- the management and provision of secure and verifiable personal information; and
- privacy.

As learners move within and between education and training sectors they require access to information to demonstrate their learning, qualifications and competencies. Where learners are required to record and store information in an institutional based ePortfolio, there needs to be the capability and capacity for information to be exported and imported across ePortfolio services. Standards and specifications to support interoperability needs to be agreed upon; however, this needs to happen at a number

of levels. EPortfolios can be quite complex. To unambiguously move an ePortfolio (or part thereof) from one environment to another requires agreement on the communications method, common data formats, and perhaps most importantly, a shared understanding on what the content in the portfolio actually means (eg shared vocabulary, semantics, competencies etc). Guidelines for the development of ePortfolios should also highlight the need for information for students to map skills and competencies frameworks from one education sector to another.

The IMS ePortfolio specification addresses many of these areas however would be difficult to implement across multiple organisations. Other, more lightweight, generic specifications (such as RSS, Atom) are more easily implemented but lack the definition offered by more specialised specifications.

Web 2.0 is having a major impact on the functionality demanded of ePortfolios and on the orientation of ePortfolio applications and services towards a user-centred view rather than an organisational view. Social networking services such as those provided by Elgg, MySpace etc are challenges to the institutional and systemic views of ePortfolios. Since ePortfolios are used in a broad range of settings with quite disparate goals and objectives, both ends of this 'ePortfolio spectrum' are valid in differing circumstances. Any approach to mapping relevant standards and specifications needs to be aware of this.

Web 2.0 is a label that addresses a number of areas. One that is becoming more prevalent and relevant to ePortfolios is social networking. Networks can be an important facet of an ePortfolio. With the increasing number of social networking platforms it is likely that valuable parts of an individuals ePortfolio may be spread across a number of networks. Of course social networks come and go – many will have their moment in the spotlight and then simply disappear. What will be important in these circumstances for users will be the portability of that information. Some of these networks at the moment are considered to be 'walled gardens', or closed off to the outside world. It is difficult for users to get their own content out of these networks. Open Social, an initiative from Google, is worth following. It looks at the portability and interoperability between social networks and a number of providers have got behind it. Widely adopted and open standards and specifications should be an important consideration in both the development of ePortfolio services and also guidelines on how to best utilise web services that could be incorporated into an ePortfolio.

From our consultation process there was anecdotal support put forward of the notion that older students tended to value organisational ePortfolios more than younger students however this insight was only provided by a single institution. It was postulated that since they were closer to seeking employment, they may see the value for them in terms of assistance gaining employment. Younger audiences were believed to perceive this type of ePortfolio as 'teacher controlled' than learner focussed. It is also apparent however that learners themselves, of all ages, have quite different views on ePortfolios in general. It would be a mistake for example to equate learners of specific age groups to be expert in the use of technology in general and then to be able to apply that knowledge in the area of ePortfolios. Education and support on the ways in which ePortfolios can assist in learning are clearly required if learners are expected to use them effectively.

5. Conclusions

Acceptance of organisational/systemic ePortfolios will continue to be challenged by the attractiveness of alternative Web 2.0 services. This is more likely to be the case with certain audience demographics and should be seen as an opportunity as well as perhaps a threat to more 'traditional' ePortfolio applications. Policy governing both organisational ePortfolios and a systemic approach to ePortfolio services needs to consider the use of widely used Web services as part of an overall ePortfolio strategy. This includes consideration of the opportunity and pitfalls that the use of such services provides. Targeted Education and support will be required using such an open approach.

Standards adoption in many ePortfolio solutions to date seems to have been sporadic. It is more likely that lightweight, simple to implement standards and specifications will be used in the development of ePortfolio solutions than some of the more complex, comprehensive specifications that are available.

6. Acknowledgements.

We would like to acknowledge the Australian Flexible Learning Framework and in particular, the E-Standards Expert Group for providing the opportunity to undertake the initial study and also the Australian ePortfolio Project for the Australian ePortfolio Symposium which provided us with an excellent opportunity to build upon our initial findings.

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