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## **e-portfolios in post-16 learning in the UK: developments, issues and opportunities**

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A report prepared for the JISC e-Learning and Pedagogy strand of the JISC e-Learning Programme

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## 1.0 Introduction

In the UK, the use of portfolios for the collection and management of assessment evidence has been a feature of vocational and professional programmes for a number of years. Recent announcements from the Tomlinson group<sup>1</sup>, the DfES e-Learning Strategy<sup>2</sup> and Skills Strategy<sup>3</sup>, and Universities UK<sup>4</sup>, all envisage the possibility of a personal electronic portfolio (e-portfolio) that would collate evidence of an individual's achievements over a lifetime of learning and employment. This could be used to support continued personal development planning and reflection.

The present report provides a brief overview of current e-portfolio developments in relation to both the management of assessment evidence within programmes and the development of a repository of evidence of lifelong learning progress and achievement. It deals successively with *potential applications and purposes*, *technical developments*, and *organisational issues*. In each section, a number of key issues are identified as priorities for further investigation and development, with the final section summarising the implications for the JISC e-learning and pedagogy programme. The *policy framework* for these developments is covered in more detail in Appendix 1.

The focus of the analysis is on learners in the 14-19, HE, Adult, Community and Lifelong Learning sectors in the UK. The history of collaborative development, which has placed the UK in a world-leading position with respect to e-portfolio systems and standards, has ensured a degree of convergence across the different sectors. There remain, however, considerable differences in terms of policy, practice and systems in use, and these will be indicated where there is space to do so.

### 1.1 Scope and definitions

A *portfolio* is simply a collection of documents relating to a learner's progress, development and achievements. Portfolios have been used for many years within learning programmes, particularly vocational and professional programmes, to

- provide a record of progress;
- collate evidence for assessment of outcomes;
- encourage reflection on the process of learning and development.

The term 'portfolio' is still in use in the context of within-programme collation and assessment of evidence. However, portfolios are increasingly used to collate evidence across different learning programmes, providing an overview of learners' progression and achievements to date, and more extended opportunities for reflection and personal development planning. Examples of such schemes in the UK include DfES Progress Files (14-19), Records of Achievement (HE) and Individual Learning Plans (FE and Adult/Lifelong Learning). Many professional bodies and larger employers also encourage the maintenance of portfolios<sup>5</sup>.

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<sup>1</sup> See [http://www.14-19reform.gov.uk/reports\\_consultation/index.cfm/](http://www.14-19reform.gov.uk/reports_consultation/index.cfm/)

<sup>2</sup> See <http://www.dfes.gov.uk/elearningstrategy/assessment/goals/index.cfm> for goals relating to e-portfolios and e-assessment

<sup>3</sup> The skills strategy highlights the need for an adult credit framework – an important pre-requisite for a credible national record of achievement – and promises to invest in e-learning and e-assessment to help meet government targets on skills development: see [http://www.dfes.gov.uk/skillsstrategy/pdfs/whitePaper\\_PDFID2.pdf](http://www.dfes.gov.uk/skillsstrategy/pdfs/whitePaper_PDFID2.pdf) for a summary.

<sup>4</sup> Now known as *Progress Files for Higher Education*, available from the QAA web site: <http://www.qaa.ac.uk/academicinfrastructure/progressFiles/default.asp>

<sup>5</sup> For example the NHS, Teacher Training Agency, the Armed Forces, the Chartered Institute of Building, the Chartered Management Institute; the Royal Institute of British Architects and the Royal Society of Chemistry.

Although the majority of transcripts, personal development records and portfolios are still paper-based<sup>6</sup>, there are some specific benefits from recording this information electronically. The Government's e-Learning strategy (DfES 2003) notes that '*e-learning and e-delivery have the potential to offer complete and personalised support for learners' needs throughout the learning process, from information, advice and diagnostics through to an electronic learning log at the completion of a course*'

The term e-portfolio or electronic portfolio simply indicates that some or all of the evidence is collected in digital form. Definitions of an **e-portfolio**<sup>7</sup> tend to include the following elements:

- A collection of digital resources
- that provide evidence of an individual's progress and achievements
- drawn from both formal and informal learning activities
- that are personally managed and owned by the learner
- that can be used for review, reflection and personal development planning
- that can be selectively accessed by other interested parties e.g. teachers, peers, assessors, awarding bodies, prospective employers.

Because they need to support transition between different learning providers, or between learning and work, information in these portfolios must be presented according to common standards and terminology. The terminology used in this document is based on that set out in *Mapping Personal Developments to IMS LIP*<sup>8</sup> (CETIS 2003).

A **Learner Profile** is the archive of all the information currently recorded and maintained about a learner's progress and achievements. It will typically include two elements:

A **Transcript**, comprising an official record of assessed achievement, mandated by the relevant institution or accrediting body. In standards documents this is also called the Diploma (or Certificate) Supplement.

A **Personal Development Record** (PDR), comprising non-formally-assessed achievements and other evidence of the learning and development process, maintained by or on behalf of the learner. A PDR may include:

- formative assessments and evaluations;
- evidence of non-accredited competences, skills and achievements;
- information on personal aspirations, needs and preferences;
- outcomes of the Personal Development and Planning (PDP) process such as reflections, self-assessments, action plans etc.

At particular moments in their career, for example when making an application, or undertaking professional development and accreditation, learners will want to extract and

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<sup>6</sup> Kneale 2002: this finding was supported by a recent survey of e-portfolio practice across learning providers in the SW of England (Ward *et al* 2004).

<sup>7</sup> See for example: NLII ([http://www.educause.edu/content.asp?page\\_id=2600&bhcp=1](http://www.educause.edu/content.asp?page_id=2600&bhcp=1)); EPICC (<http://www.epiccproject.info/>)

<sup>8</sup> Grant S, Jones PR and Ward R (2003): *Mapping Personal Developments to IMS LIP: Consultation Document*, JISC, CRA and CETIS: available from [http://www.recordingachievement.org/downloads/UK\\_LPI\\_1B\\_Final.pdf](http://www.recordingachievement.org/downloads/UK_LPI_1B_Final.pdf). This forms part of the latest UK Learner Profile standard (version 1.2, November 2003).

present information from their Learner Profile to another party. This 'snapshot' will be termed a ***Presentation Profile***<sup>9</sup>.

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<sup>9</sup> This term is not taken from *Mapping Personal Developments to IMS LIP* but has been suggested to the authors of that document as an alternative to 'portfolio', which is potentially confusing. The European Portfolios Initiative Coordination Committee (EPICC) terms this a 'showcase' portfolio (see <http://www.epiccproject.info>).

## 2.0 Potential applications and purposes of e-portfolios

Most commentators recognise a difficulty in attempting an inclusive definition of the term e-portfolio, in that while a wide range of functions are envisaged by policy-makers and champions, systems styling themselves e-portfolios often have a narrow focus. This section takes as its starting point the different processes which e-portfolios can support:

- **summative assessment:** demonstrating competence according to criteria set out within a programme of study or by an accrediting body;
- **learning and 'learning to learn':** enabling the learner to identify and reflect on their strengths and weaknesses, making use of formative feedback, and enabling professionals to support learners in ways appropriate to their achievements and preferences, by drawing on information in the profile;
- **presentation:** showcasing the learner's best or most relevant achievements in the context of a specific learning or career opportunity, for example on application to a university or during a professional development review;
- **personal and professional development planning:** supporting the general process of reflection, self-evaluation and action planning for lifelong learning, including guidance on educational and/or career pathways.

These potential uses are explored in more detail below. Note that each could be supported by different electronic tools or services, drawing on a single archive of electronic information about the learner, and that once such an archive exists it may support other uses and services not yet imagined. The archive may exist in a single centralised location, implying that some central (e.g. government) body takes responsibility for the upkeep of learner records, or it may be distributed among a number of institutions, each maintaining the records and evidence associated with a particular period of learning.

### 2.1 Support for summative assessment

Outcomes-based assessment strategies are increasingly favoured<sup>10</sup> because they give learners greater choice in how they meet the requirements of a particular learning programme. Evidence collected in a portfolio can give a much richer picture of learners' strengths and achievements than, for example, a test score, and may help employers distinguish between candidates with similar grades. Assessment by portfolio is also less intimidating for some learners than a traditional examination.

Electronic data systems are particularly useful for collating and managing this kind of evidence. Digital repositories which allow for electronic collation and submission of evidence are already used by Awarding Bodies, though not necessarily regarded as e-portfolio systems. A number of proprietary systems are available, most of which use a relational database to record evidence and a web-based interface to manage and present it for assessment. In principle, however, any file-management system could be used for this (e.g. Windows Explorer or a web-authoring tool). Many larger organisations have chosen to develop their own database and interface for learners to use<sup>11</sup>.

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<sup>10</sup> This has long been the accepted mode of assessment in vocational and professional development programmes where competence is the explicit focus of learning and teaching. Increasingly, academic programmes are also adopting an outcomes-based approach because it is seen as being flexible enough to accommodate different learner preferences and aptitudes within common performance criteria.

<sup>11</sup> See for example Southampton University's PGCE e-portfolio: <http://www.pgce.soton.ac.uk/eps/overview/>

Currently, if e-portfolio evidence is accepted for assessment or moderation, the marks are usually recorded and returned using an entirely separate system. This was true for a recent OCR pilot in the use of e-portfolios for assessment of a GCSE in ICT<sup>12</sup>. The pilot concluded that the moderation process took longer, and that e-portfolio products were not ready for mainstream implementation yet. EdExcel's new range of qualifications in Digital Applications (DiDA) at GCSE level<sup>13</sup> will also require submission of an eportfolio in the form of a web page or set of zipped files, to be separately accessed and assessed.

However, some existing systems, especially those available in the US, offer an integrated assessment facility<sup>14</sup> or are interoperable with separate e-assessment systems<sup>15</sup>. This allows evidence to be collated, presented and assessed and feedback given within the same user environment, and suggests that assessment and moderation of e-portfolios could be considerably streamlined (an important consideration for Awarding Bodies).

Other emerging technologies allow new kinds of evidence to be recorded for assessment, for example transcripts of online discussions, captured video and audio files, messages from mobile phones and PDAs, or tracking data from virtual learning systems. One awarding body is collaborating with Careers Wales Online to allow 'naturally occurring' evidence collected within that portfolio to be used towards preparation for work qualifications. Again, there is increasing interoperability between proprietary e-portfolio systems and the systems from which such evidence may be passed (e.g. WebCT has built links with NuVentive's iWebfolio and Masterfile's eportfolio systems that allow data to be transferred directly from the VLE to the electronic archive), but little evidence yet of uptake in the UK.

The emphasis is on administrative efficiency, flexibility for learners, and building a rich picture of learners' achievements. There is less emphasis on reflection and personal development processes between programmes, or on transferability<sup>16</sup>.

#### **Issues relating to the use of e-portfolios for summative assessment**

- Interoperability between e-portfolio and e-assessment systems
- Transferability between learning providers and external awarding bodies
- Security and authentication of user information and of assessment decisions
- Acceptability and credibility of data authenticated by Awarding Bodies and accrediting institutions
- A range of 'views' on to the data, with associated accesses and permissions
- Efficiency of assessment process – potentially a benefit, currently a risk
- Problem of piloting new systems in high-stakes summative assessment contexts
- Designing assessment strategies to make effective use of the new tools and systems (current lack of innovative work in the use of technologies to capture evidence)

<sup>12</sup> Greator J (2004) *Moderated e-portfolio project evaluation*, OCR. See:

[http://www.ocr.org.uk/OCR/WebSite/Data/Publication/E-Assessment%20Materials/Moderated\\_82372.pdf](http://www.ocr.org.uk/OCR/WebSite/Data/Publication/E-Assessment%20Materials/Moderated_82372.pdf)

<sup>13</sup> See <http://dida.edexcel.org.uk/home/>

<sup>14</sup> See for example Masterfile's ePortfolio Manager (<http://www.concord-usa.com/epm.htm>); Epsilon (<http://www.epsilon.com/product.aspx>); Foliotek (<http://www.foliotek.com/features.aspx>); TrueOutcomes (<http://www.trueoutcomes.com/index.html>); College LiveText (<http://college.livetext.com/college/portfolios.html>).

<sup>15</sup> For example a partnership exists between ePortaro and QuestionMark Perception to enable data transfer between their two products. A form of interoperability 'lite' allows assessment criteria to be imported into an e-portfolio system and used to structure evidence for submission. The open-source OSPI portfolio tool will shortly include this functionality.

<sup>16</sup> Barratt (2004) argues that such systems are effectively assessment management tools rather than tools for personal development and reflection.

- Ensuring enhanced outcomes for learners, e.g. higher motivation, greater choice over evidence, assessment around capabilities and strengths

## 2.2 Support for the process of learning

E-portfolios are currently seen as a key plank of the DfES' 'personalisation' agenda: that is, the capacity to tailor learning to an individual's current skills, knowledge, needs and preferences. Once evidence of learner progress and achievements, and information about learner preferences, is recorded in a transferable form, opportunities arise to use that information to support the learning process. It should be emphasised that the capacity to record evidence about individual learners is no guarantee that the evidence can or will be used to personalise their learning experience in a meaningful way. Research into how learning should be adapted to accommodate specific learner differences, and into the actual costs and benefits of doing so, is in its infancy, while the capacity to record complex learner data races ahead.

Evidence that may be useful for personalising the learning experience comes from pre-course *diagnostics* and on-course *learner tracking*. Diagnostic tests can be used to assess a learner's relevant knowledge, skills and aptitudes for a particular programme. Evidence of previous achievements can be used diagnostically: a simple search of the profile will identify records of pre-requisite subjects and key skills. Tests (or inventories) are also available for more general characteristics such as a learner's preferred medium for learning, learning 'style', accessibility issues, ICT confidence and language skills. Indeed some study programmes in the US refer to the e-portfolio as a 'diagnostic profile'. All the current UK policy initiatives see it as desirable that information of this kind should be recorded<sup>17</sup>, both to help learners understand how they learn and to share this information with learning organisations and tutors/mentors.

In the area of accessibility there has been some development in the linking of standards, and therefore in the potential for e-portfolio to hold data about learner preferences that can be used by other e-learning systems. Loughborough College, in partnership with the RNIB, has developed a preference field within their progress file which allows partially-sighted students to determine screen settings. Settings are then applied automatically at log-in to suit the individual's needs. This project, funded under the JISC *Managed Learning Environments for Lifelong Learning* (MLE4LLL) has contributed to the UK ACCLIP (accessibility) specification<sup>18</sup>.

In the area of learner styles and preferences, however, there is little consensus on what constitutes useful information. The DfES 'Widening Horizons' Progress File materials use a series of questions which appear to be linked to a VARK<sup>19</sup>-type index of preferred medium for learning, and these questions also appear in the Careers Wales Online tool. Other systems use questions relating to the Learning Styles model of Honey and Mumford<sup>20</sup> or make no reference to a recognised model. Two recent reports from the Learning and Skills

<sup>17</sup> See for example the QAA Guidelines for the HE Progress File and the DfES E-Learning Strategy.

<sup>18</sup> See [http://www.jisc.ac.uk/index.cfm?name=project\\_0103\\_loucoll](http://www.jisc.ac.uk/index.cfm?name=project_0103_loucoll)

<sup>19</sup> <http://www.vark-learn.com/english/index.asp>

<sup>20</sup> <http://www.peterhoney.com/product/learningstyles> One of the earliest UK 'learner profile' systems, developed at the University of Lincolnshire and Humberside, included a set of web-based diagnostic tools including 'Approach to Study', based on Honey and Mumford's four 'learning styles'.

Development Agency<sup>21</sup> offer a critical overview of thirteen influential ‘learning style’ indices and consider their relevance to practitioners. The authors’ conclusions about the validity and usefulness of these measures are largely negative.

The LSC places a requirement on post-16 institutions to undertake appropriate pre-programme diagnostic assessment as part of the Individual Learning Plan. ILPs are then used, for example within 14-19 Pathfinder projects, to direct learners to appropriate programmes of study. However, there is little evidence that information held within the ILPs is routinely transferred across institutions to provide continuity of guidance, or that this information might be used to tailor learning within the selected programmes. Outside of key skills provision, few practitioners in post-16 learning have the time, resources or specialist training to provide each learner with a uniquely appropriate experience.

During learning, formative assessment strategies and monitoring facilities – for example within VLEs – can be used to keep track of how learners are performing. This can be used to identify students that may need extra support or more challenging activities. At present this is mainly a theoretical benefit, as monitoring facilities are poorly used within VLEs and poorly integrated with e-portfolio functions. Some work is currently under way in HE to integrate VLEs, student record systems and e-portfolio tools to improve the efficiency of giving formative feedback and supporting the learner in using feedback for review and planning. Again, though, simply monitoring this information does not guarantee that individual provision or support will be available, and there is no evidence that learners want such information recorded, particularly once it has ceased to have any remedial function.

A recent trend has been to see the e-portfolio as a ‘digital space’ or a ‘personal learning space’ within an integrated e-learning and assessment environment. Learners can carry on a range of activities in this space, some of which will later be presented for assessment. Potentially the e-portfolio could capture and record every aspect of the learning process for reflection or continuous assessment. Siemens (2004) foresees the inclusion of collaborative tools within the e-portfolio to allow contact with peers, mentors, tutors, experts etc, as well as interaction with external resources. A study of the eViva e-portfolio system by Ultralab<sup>22</sup> concluded that:

*‘Exhibiting their work in an online portfolio appears to give students a sense of audience, lifts their expectations and boosts their confidence... The eVIVA system provides evidence of students’ work and thought processes. This enables teachers to make a fairer assessment of [their] capability.’*

Not all commentators would be willing to define e-portfolios as broadly as this – the eViva system included online collaboration and an oral assessment by mobile phone – in case this obscures some of the specific benefits of digital profiles. But certainly the interoperable standard opens up new possibilities for integrating learning, assessment (both summative and formative), reflection, planning and recording of achievement.

#### **Issues relating to the use of e-portfolios to support the learning process**

- Developing effective and credible diagnostic tools
- Integrating diagnostics, learner tracking and e-portfolio functions
- More research into adaptive/personalised learning, including work on accessibility

<sup>21</sup> LSRC (2004a), *Learning Styles and pedagogy in post-16 learning: a systematic and critical review*: see <http://www.lsd.org.uk/files/pdf/1543.pdf>. LSRC (2004b), *Should we be using learning styles? What research has to say to practice*: see <http://www.lsd.org.uk/files/PDF/1540.pdf>.

<sup>22</sup> See <http://www.qca.org.uk/10359.html>.

- Cost/benefit analysis of personalised provision
- Staff training in use of learner profiles to recognise needs of learners
- Integration of systems storing Learner Profile with CMS/VLEs, Student Record systems, and Learning Design systems
- Prioritising the learner experience e.g. through personalisation, recognition of individual needs and preferences, effective choices and pathways

### 2.3 Support for presentation and transition

As well as presenting evidence from a single learning programme for assessment, individuals can use the archive of learning held in their e-portfolio to present a wide range of their achievements, for example at a job interview, professional development review or application to university. A key selling point of commercial software such as ePortaro's Folio<sup>23</sup> or Nuventive's iWebfolio<sup>24</sup> is the capacity for learners to select their own evidence and to present it in their own style. Reviewers can be sent a digital 'passcard' that gives access to those parts of the portfolio that the learner wants them to see. Potential reviewers could even prescribe some aspects of the selection process themselves: professional bodies could ask for evidence in a specific format; selection panels could standardise the way they view applications; evidence of pre-requisite outcomes could be sought before learners were accepted onto courses<sup>25</sup>. Even if open standards made it possible for assessors to request specific information from the profile, the owner of the profile would retain access control.

National Key Skills portfolios have successfully bridged the gap between assessment and presentation. There is evidence that employers and learning providers find them easy to interpret – a crucial issue when individuals are presenting rich data rather than simple qualification scores to back up their applications for learning or work.

Tomlinson has also emphasised the value of an e-portfolio system at transition between different learning providers. The JISC MLEs for Lifelong Learning projects have led the way in developing interoperable standards and toolkits for sharing learner information in the UK<sup>26</sup>. With a single standard for learner records:

- learners can present all their relevant information to a new provider;
- learners need not fill in multiple forms with their personal data and learning history;
- learners studying with several providers can keep one integrated record of their progress;
- learning support staff have immediate access to information about the learner's history.

Using e-portfolios for presentation at transitions raises some of the same issues as using them for summative assessment. Accredited qualifications require authentication from an institution or awarding body, and the reviewer (employer or receiving institution) must have confidence that such records are secure and authentic.

<sup>23</sup> See <http://www.eportaro.com/>

<sup>24</sup> See <http://www.iwebfolio.com/login/index.jsp>

<sup>25</sup> For example, at the University of Newcastle a generic e-portfolio system ([www.eportfolios.ac.uk](http://www.eportfolios.ac.uk)) was used to support contract research staff in building a portfolio of research skills. The actual skills profile was defined by a separate project, the Research Career Builder (<http://www.shef.ac.uk/~gmpcrs/rcb.html>). A CV template was included in the package, which a structured CV with evidence of conferences, courses and development work undertaken in each of the relevant areas.

<sup>26</sup> See [http://www.jisc.ac.uk/index.cfm?name=mle\\_lifelonglearning\\_info](http://www.jisc.ac.uk/index.cfm?name=mle_lifelonglearning_info)

### Issues relating to the use of e-portfolios for presentation and transition

- Portability: credibility and recognition of information by different parties
- Flexibility: different kinds and degrees of access while retaining learner control of information
- Interoperability and open standards wrt learner records
- Interoperability of business processes across organisations and sectors
- Motivating learners: learner control over look and feel; the potential to include multimedia files as evidence; professional and appealing outcomes

## 2.4 Support for personal and professional development

In the UK, and particularly through the work of the Centre for Recording Achievement, there has been considerable emphasis on the use of portfolios to support personal development planning, career planning and continuing professional development. The rich information contained in the learner archive provides material for reflection and self-evaluation, action planning, goal setting and the identification of personal strengths and weaknesses. Reflection can be integrated into course processes as well as offered outside of programmes in the context of tutorials, appraisals, guidance sessions, and career planning. Both the Tomlinson Report and the QAA's *Guidelines for HE Progress Files* note evidence that these skills enhance learners' retention and achievement.

Higher level and professional learners might be expected to become relatively self-sufficient in the exercise of these skills, but learners with less confidence and experience are recognised to need structured personal development opportunities. This support could be provided by an electronic service – even by sending reflective prompts in text messages<sup>27</sup> – but most commentators regard this as an area in which human interaction remains the gold standard. There are at least as many examples of best practice with paper-based as with electronic systems, all of which will need to be drawn on if learner profiles are to be used successfully for personal development.

Several of the early systems developed in-house by HE institutions place great emphasis on personal development and the potential for inducting learners into habits of recording and reflecting on their progress. For example, the University of Exeter's PESCA student profile allows students to build their own electronic records in personal, employment, social, competence and action categories<sup>28</sup>. This has been used in development projects across four schools of the University and has also been piloted by the NHS Devon Trust.

Since 2004, the DfES Progress File<sup>29</sup> materials have been available nationally to '*assist learners to manage their own learning by promoting the skills of setting learning goals, action planning, reviewing and recording achievement*'<sup>30</sup>. The 'Widening Horizons' pack is now used in 80 per cent of schools, and its effective use in action planning, career guidance and transition to FE/HE is considered by Ofsted inspectors<sup>31</sup>. In the near future, a majority of

<sup>27</sup> This was one use of SMS explored in an Australian project to reach disengaged learners: see [http://www.flexiblelearning.net.au/projects/media/txt\\_me\\_evaluation\\_report.pdf](http://www.flexiblelearning.net.au/projects/media/txt_me_evaluation_report.pdf) for a report.

<sup>28</sup> See: <http://www.latis.ex.ac.uk/pesca/>

<sup>29</sup> This replaced the National Record of Achievement in 2002, after a series of 10 demonstrator projects found that it helped improve learners' motivation, confidence and attitude to learning; and their planning and management of learning. See: <http://www.dfes.gov.uk/progressfile/> for further information and materials for download.

<sup>30</sup> Hall J and Powney J (2003) *Progress File: an evaluation of the demonstration projects*, DfES (Briefing Number 426): <http://www.dfes.gov.uk/research/data/uploadfiles/RB426.pdf>

<sup>31</sup> See: <http://www.dfes.gov.uk/progressfile/docs/ofstedsuppdec03.doc>

post-16 learners may be familiar with the concept and practice of personal development planning. The 'Broadening Horizons' pack, aimed at adult learners, is also gaining currency. Progress File materials can be presented as evidence of achievement, for example at job interviews or at transition to HE and FE. As these materials are now available in an interactive format – online and on CD-ROM – the basis for a lifelong e-portfolio will increasingly be laid in schools. At present, however, they are designed to be used and supported at a single institution, and are not highly portable.

The Centre for Recording Achievement web site has details of a number of projects, based on the DfES demonstrator Progress File materials<sup>32</sup>, that promise greater portability. These include the Oldham Progress File, the Nottingham City Passport, the Loughborough College Progress File and the Careers Wales Online portfolio.

**Issues relating to the use of e-portfolios for personal and professional development**

- Developing learner skills in self-evaluation, reflection and PDP
- Understanding and enhancing learner motivation, particularly once they move out of a structured PDP context
- Developing practitioner skills in supporting reflection and PDP
- Further development of electronic tools to support reflection and PDP
- Integration with advice and guidance services
- Integration with electronic services such as CV building, job search, access and social inclusion services, and services provided by professional bodies
- Focus on best practice in the process of PDP rather than the enabling systems

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<sup>32</sup> See: [http://www.recordingachievement.org/Current\\_Projects/default.asp?catid=4&offset=6](http://www.recordingachievement.org/Current_Projects/default.asp?catid=4&offset=6)

### 3.0 Technical developments

An extensive study of e-portfolio systems commissioned by JISC is currently being undertaken by Helen Richardson and Rob Ward of the Centre for Recording Achievement<sup>33</sup>. This will provide a more detailed view of technical developments than is possible in this paper.

#### 3.1 Functional requirements

The CRA, working in collaboration with the CETIS LIP SIG, has developed some imaginative approaches to specifying the functional requirements of e-portfolio systems. These include developing a list of thirty-three ‘generic activity types’<sup>34</sup> that formalise the tasks typically carried out by learners in relation to an e-portfolio system, and a set of ‘use cases’ which represent more complex processes or work-flows that may be undertaken by different stakeholders<sup>35</sup>. Taken together these two specifications provide a rich picture of user requirements, including requirements not yet supported by existing systems.

The European Portfolio Initiative Coordination Committee noted in February 2005 that:

*Scenarios can be used for many purposes such as defining better specifications for e-portfolio applications, help decision making as regards to the use of e-portfolios, and to promote and transfer good practices. Eventually, they can also be used to identify the needs of specific communities of users to create an application profile that fits to their needs*<sup>36</sup>.

At present the most fully developed cases involve transition from further to higher education, but other scenarios are in development to deal with school and college-based learning, lifelong learning and work-based and professional learning.

Siemens (2004), using a more systems-based protocol for establishing user requirements, argues that:

*an ideal eportfolio system should allow flexible **input** (each item can carry its own metadata and be treated as a unique object), **organization** (objects/artifacts can be hierarchically organized in folders), **retrieval** (objects can be searched based on eportfolio owner’s specifications), and **display** (items can be grouped and permission granted to intended audience).*

However, these functions relate only to the individual user requirements. There are considerably more complex requirements if the e-portfolio system is to interoperate with other systems such as learner records, virtual learning environments or assessment systems, and if it is to allow learner data to be shared with other organisations (e.g. for accreditation, transition or presentation).

Siemens identifies five levels of functional requirement, with increasing institutional and cross-institutional embedding. Levels 1 and 2 could be met by individual solutions, where learners collate their own evidence, often relating to a specific course or programme of study. At these levels the issues of input, organisation, retrieval and display are paramount. Levels 3 and 4 could be met by enterprise solutions, at which the organisation manages and authenticates at least some aspect of the information, e.g. in relation to accreditation of

<sup>33</sup> The title will be *Developing and Implementing a Methodology for Reviewing E-Portfolio Software*, due to be published shortly and accessible from the JISC website at <http://www.jisc.ac.uk/>

<sup>34</sup> See <http://www.cetis.ac.uk/members/PDPcontent/viewActivityTypes>

<sup>35</sup> See <http://www.elframework.org/general/requirements/scenarios/>

<sup>36</sup> Vuorikari R and Rees Jones P (2005) *How Scenario Building can help to create Application Profiles?*, available at <http://www.epiccproject.org/>

learners. The e-portfolio system needs to interoperate with other institutional systems and issues of data security and authentication, systems and interface integration and scalability/sustainability are paramount. Level 5 demands whole-community solutions (for which see the section on standards, 3.3, below).

This summary is based on Siemens' functional levels but comments in the third and fourth columns are the present author's.

Level	Technology	Functional requirements (individual)	Functional requirements (institutional)
Level 1	Static file structure e.g. web page, wiki, blog	<i>Learner control of input, organisation, retrieval and presentation of materials</i>	
Level 2	Dynamic, database-driven file management system	<i>As above plus multiple input, organisation, retrieval and presentation options</i>	
Level 3	Institution-sponsored system, typically integrated with learner records	<i>As above plus institutional authentication of evidence, ease of transition between programmes, integration of basic personal data</i>	<i>Interoperability of e-portfolio system with learner records, internal data security and authentication, accessibility issues</i>
Level 4	Integrated into institutional systems and services for learning, assessment and personal development	<i>As above plus single sign-on for all institutional systems, use of profile to customise learning and assessment options, profile routinely shared with peers, tutors, mentors, guidance officers etc...</i>	<i>As above plus interoperability of e-portfolio system with VLE and other learning systems, single sign-on, multiple modes and contexts of access</i>
Level 5	Conforming to open standards, transferable, interoperable	<i>As above plus ease of transfer across institutions ,interoperability with extra-institutional services e.g. job search, use of profile for lifelong learning and development</i>	<i>As above plus external data security and authentication, transferability, distributed data ownership and management under learner control.</i>

A further possible approach to functional requirements based on the potential benefits to learners and other stakeholders is outlined in Appendix 2.

The current preferred model for maintaining learner records across providers involves a Personal Information Aggregation and Distribution Service<sup>37</sup> (PIADS) which can call information from distributed data stores via web services. There is some debate over what 'enablers' are required for this vision to be realised, in particular around whether a Unique Learner Number, common across all applications to identify to whom any data belongs, is strictly necessary. This vision is further discussed in section 3.3.

### 3.2 Existing systems and solutions

This section does not analyse existing solutions in terms of the functional requirements, but does outline the types of system currently in development and use and raise generic issues of functionality.

<sup>37</sup> See <http://www.jisc.ac.uk/ws4rl.html>

E-portfolio systems in use in the UK have generally been developed by:

- HE institutions, often with external funding at start-up (e.g. LUSID, ePARS)<sup>38</sup>
- Commercial organisations offering dedicated e-portfolio solutions (e.g. Learning Assistant, ePortaro, QuickStep)
- Commercial organisations offering e-portfolio functions within other e-learning systems (e.g. WebCT, Blackboard, LearnWise).
- Government departments or regional bodies working in collaboration with commercial organisations (e.g. Careers Wales Online with Vitaevity, DfES with 3T for Widening Horizons)
- HE/FE consortia with funding from the JISC (e.g. the MLE4LLL projects)

The last of these are increasingly focused on web and interoperability services for e-portfolios rather than on the development of complete systems, and so will be dealt with separately in the following section.

The systems in use, issues affecting take-up, and priorities for future development vary across different sectors of UK learning and work.

In Higher Education, a number of *innovative, in-house systems* were developed from scratch with funding from the DfEE<sup>39</sup> initiative in the late 1990s. The focus was on personal development planning, and systems were often built around skills audits, reviews and explicit support for planning and reflection. e-PARS (University of Nottingham)<sup>40</sup>, LUSID (University of Liverpool)<sup>41</sup>, RAPID (Loughborough University)<sup>42</sup> and the RSC tool continue to be developed and used. PACE (University of Wolverhampton)<sup>43</sup> is a more recent development which offers interoperability with mobile devices. These systems work well in their original contexts and are regarded as models of best practice, but there is some frustration at the difficulty in scaling them to other institutions.

The ‘Managed Environments for Reflective Learning’ project<sup>44</sup>, based at the University of Newcastle, is the main ongoing development from the phase. This project now offers a generic ePortfolio known as e-Pet that can be customised for different programmes of learning on a stand-alone basis, but is intended to be customised on an institutional basis and embedded into a managed learning environment. E-Pet uses *open source* tools<sup>45</sup> – zope and MySQL – for maximum uptake, re-use and interoperability<sup>46</sup>. This approach reflects the concern that HEIs have for internal integration with learner record systems and MIS, which arises in part because they accredit their own awards and now have a statutory responsibility to provide authenticated, transferable transcripts to their award-holders. Other open-source e-portfolio initiatives include the OSPI in the US<sup>47</sup> and the European EPICC initiative<sup>48</sup>.

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<sup>38</sup> See <http://www.cetis.ac.uk/profiles/uklip/experience> for a recent report on the impact of these projects.

<sup>39</sup> Fund for the Development of Teaching and Learning, supported by the joint UK Higher Education Funding Councils.

<sup>40</sup> See <https://winster.nottingham.ac.uk/epars/shared/htm/about.htm>.

<sup>41</sup> See <http://lusid.liv.ac.uk/>.

<sup>42</sup> See <http://rapid.lboro.ac.uk/>.

<sup>43</sup> PACE does not yet have a public website: see <http://www.worc.ac.uk/LTMain/NOFProject/Website/Partners/partners.htm> for a description of its functionality.

<sup>44</sup> See <http://www.eportfolios.ac.uk>. This project is based at the Universities of Newcastle (lead site), Leeds, Sheffield and Dundee.

<sup>45</sup> Open source software is freely available for use, re-use, customisation and further development. See

<sup>46</sup> The equivalent open source portfolio in the US, OSPI, uses tomcat and Java to call up data that may be held in a number of database applications including MySQL, oracle, and postgresql.

<sup>47</sup> See <http://www.theospi.org/>.

<sup>48</sup> See <http://www.epiccproject.info/>.

In schools and colleges *stand-alone commercial solutions* are gaining in popularity and there has been less original development, though FE colleges involved in JISC MLE4LLL programme are an exception to this rule. While they do not offer integration with other institutional systems, these systems can integrate assessment (and occasionally learning support) at the level of the programme of study. For example, the eViva system incorporates online collaboration, annotation and a viva by mobile phone as well as the more usual functions of evidence-building, tutor feedback and learner tracking. Continuous assessment and monitoring tend to be well supported by these products, and additional functions such as customisable look and feel are often appealing to learners.

Systems that are widely used in schools and colleges include Paperfree, Quickstep and Learning Assistant. The MAPS product from TAG learning<sup>49</sup> and the DigitalBrain e-portfolio<sup>50</sup> are currently being targeted for assessment at key stages 3 and 4, but both are beginning to make inroads into post-compulsory learning. Training providers have found a proliferation of systems for managing NVQ outcomes, which tend to be web-accessible, robust and easy to use. FD Learning/Tribal, another big player, includes among its products SkillsFolio for NVQ assessment<sup>51</sup>.

Because of the reliance on external bodies for accreditation, the driver in schools and colleges is not the internal integration of systems but efficient production of acceptable evidence for award-bearing programmes. Awarding bodies have generally been supportive of the use of e-portfolios, and have been pro-active in projects such as the OCR pilot of MAPS software and the QCA-sponsored research project with eViva. At present there seem to be few if any efficiency gains in submitting evidence electronically – in fact OCR concluded that e-portfolio is ‘*not ready for mainstream implementation*’ – but as systems for publishing selective aspects of portfolios become more sophisticated, relationships between schools/colleges and external examiners, moderators and awarding bodies could be streamlined.

Several *partnership solutions* have been developed to support specific projects or programmes. For example, assessment management systems developed in partnership include the following:

- eNVQ, with over 10,000 candidates over the four years of implementation, can interface with mobile phones and PDAs. Candidates, assessors, colleges and awarding bodies have separate log-in arrangements and separate views of the evidence submitted by candidates into the database<sup>52</sup>.
- CTD Training Ltd supply Quickstep<sup>53</sup> e-portfolios, with over 9,000 candidates across 120 centres, which have been endorsed by City & Guilds for use with NVQs.

PDP-based partnership solutions include the following:

- DigitalBrain, who worked with OCR to develop an e-portfolio product for remote assessment and moderation, have targeted the same product at health and local government organisations for professional development purposes, and at regional Grids for Learning.
- 3T (owned by Research Machines) developed the web-based version of the DfES post-16 Progress File material<sup>54</sup>.

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<sup>49</sup> See <http://www.maps-ict.com>

<sup>50</sup> See [http://corporate.digitalbrain.com/contentcategory.php?cat\\_id=160](http://corporate.digitalbrain.com/contentcategory.php?cat_id=160)

<sup>51</sup> See: [http://www.tribaltechnology.co.uk/html/products/education\\_systems/skillsfolio.htm](http://www.tribaltechnology.co.uk/html/products/education_systems/skillsfolio.htm)

<sup>52</sup> See <http://www.envq.com/cgi-bin/rollingdemo.exe?Sis=1108399914.978089773.80d0263>

<sup>53</sup> See <http://www.ctdquickstep.co.uk/index.html>

- The Oldham Progress File originated in one of the DfES Progress File Demonstration Projects and has been further developed by Positive Steps Oldham, with the company Interactive Solutions, using money from Oldham 14-19 and Bury Enterprise Pathfinder projects<sup>55</sup>.
- The Vitaevity e-portfolio<sup>56</sup> has been adopted by the Welsh National Assembly to support Careers Wales Online, potentially the largest community of e-portfolio users in Europe.

All of these developments show public-private partnerships working effectively. These projects are proving particularly relevant to providers of adult, continuing and lifelong learning, who may not be resourced to manage their own systems but who are keen to offer their learners access to e-portfolio services, in partnership with commercial providers. From the perspective of integrating policy and strategy, the success of regional partnership projects such as Oldham and Wales is of particular interest.

In HE, public development funding has largely shifted away from whole systems towards the *web and interface services* that support interoperability. Most of these are funded under the JISC MLE4LLL programme previously referred to. These open-source products will be of benefit to other institutions and even other sectors providing new users have the expertise to install, integrate and maintain them. For example, Phosphorix<sup>57</sup>, a software development company, has worked with the JISC-funded SHELL project<sup>58</sup> to produce 'IoNode'<sup>59</sup>, a web-accessible interoperability product which allows data to be exchanged between any systems that can output CSV files. IoNode also provides the capacity for the long term storage of data.

It may be fair to say that some smaller colleges, and universities without experienced development teams, are less enthusiastic about the open source/web services direction that HE development has taken. Having invested in commercial *Virtual Learning Environments*, many education providers are encouraging their teachers to use the e-portfolio functions that are becoming available within Blackboard, Learnwise and WebCT<sup>60</sup>. Advantages include commercial support and familiarity to users, though the facilities usually come at an additional cost. Unlike stand-alone systems, VLE-based systems can offer an integrated look and feel, and where VLEs are interoperable with other institutional systems, the e-portfolio function can in theory be integrated into a complete managed learning environment (e.g. enabling single sign-in to the whole range of e-learning services)<sup>61</sup>. However, these too are still primarily HE developments.

#### Issues for system developers

- Conformance with international standards
- Development of a UK standard to meet specific requirements (e.g. the greater focus on reflection and PDP, and on learner ownership of records)
- Development of web services to link systems and tools seamlessly

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<sup>54</sup> See <http://www.dfes.gov.uk/progressfile/> and <http://www.3t.co.uk/Portfolio/Projects.aspx?ProjectId=82&SectorID=2&FormatID=0&ClientID=0>

<sup>55</sup> See <http://www.myprogressfile.com/>

<sup>56</sup> See <http://www.arcsoftwareconsultancy.com/>

<sup>57</sup> See <http://www.phosphorix.co.uk/>

<sup>58</sup> See [http://www.jisc.ac.uk/index.cfm?name=project\\_shell&src=alpha](http://www.jisc.ac.uk/index.cfm?name=project_shell&src=alpha)

<sup>59</sup> See <http://www.ioagent.org/>

<sup>60</sup> See <http://www.recordingachievement.org/downloads/100092.pdf> for discussion of a project at Edge Hill College where Geography students collected PDP evidence using WebCT.

<sup>61</sup> A JISC-funded project is under way to develop a skills reflection and guidance service for integration with the open-source Boddington VLE: see <http://www.jisc.ac.uk/ws4rl.html>

- Sharing best practice across development sectors, regardless of whether systems are proprietary, in-house or partnership solutions.

#### **Issues for institutional ICT managers**

- System interoperability at institutional level
- Cost effectiveness of systems e.g. purchase, support, maintenance, integration
- Bespoke vs off-the-peg systems – weighing up flexibility against greater demands for development and support
- Proliferation of alternative systems, all requiring maintenance and support
- Examples of best practice in choice and implementation that match the size, funding model and culture of the organisation
- Robustness of ICT infrastructure – guaranteed security of data, delivery to learners, and compliance with external requirements e.g. ABs
- External partnerships e.g. regional.

#### **Issues for staff and learners**

- Fit with existing practices and expectations (may be poor)
- Loss of control by staff? Lack of skills to assume control of their own learning by students?
- Access and ICT capability of staff and learners (especially if working remotely and/or without paper-based alternatives)
- Acceptability and appropriateness of e-portfolio use, e.g. for non-ICT subjects, for personal development planning (more of an issue with older learners)

### **3.3 Developments in technical standards and services**

Current JISC-funded projects in the area of e-portfolios are focused on services that provide interoperability between systems, and on influencing the development of open standards. The end products of these projects are intended for use in HE, FE and ACL institutions, especially those working with a service-based, open source technical framework. However, there is also room for collaborative development with commercial providers (for example ioNode mentioned earlier) to solve specific development issues.

Open standards are necessary if information is to be shared effectively by all the organisations involved in an individual's learning, assessment, review, and personal development. As learning opportunities are increasingly available across national boundaries, and as individuals travel further to study and work, it is important that standards are internationally recognised. UK standards are largely based on those developed under the umbrella of the Instructional Management Systems (IMS) organisation, of which the Centre for Educational Technology Interoperability Standards (CETIS) is the UK's representative, though CETIS also works closely with other standards bodies such as Prometheus in Europe, SCORM, and the British Standards Institute<sup>62</sup>.

The development of the technical standard for the learner information held within an e-portfolio is being coordinated for the UK by the CETIS Learner Information Package Special

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<sup>62</sup> For an up-to-date survey of UK F&HE Developmental LIP schemas, examples and documentation see <http://www.cetis.ac.uk/profiles/uklip>.

Interest Group (LIPSIG). The IMS LIP specification<sup>63</sup> was one of the first to be developed and provides the normative basis for a number of UK standards in this area. UK LeaP<sup>64</sup> has been developed through consultation with users to meet the needs of the FE and HE community and continues to evolve. A significant advance on IMS LIP is the introduction of a new field for personal statements which indicates clearly how this and other fields can be used in specific applications to support the process of personal development and planning. There is also guidance on how to express the relationship between statements made in the personal development record and institutionally-authorized statements of achievement made in the transcript.

The functional requirements for data held in an e-learning portfolio – and therefore the purpose of standards such as UK LeaP – are that it should be:

**Transferable:** the information must be capable of being recorded, updated, maintained, transferred, accessed and used in a wide range of different technical and organisational contexts.

**Interoperable:** systems involved in producing, maintaining and exchanging the learner information must be interoperable with one another. The JISC e-Learning framework indicates how e-portfolio systems and services intersect with other systems and services in a managed learning environment.

**Accessible** it is clearly essential that an e-portfolio service should enhance access to opportunities, rather than placing barriers in the way (*accessibility*).

**Secure:** From a technical point of view, it is equally important that *access* is structured around different user profiles, e.g. learner, peer, tutor, appraiser/assessor, awarding body, interviewer, with associated permissions to view and amend information. With such personal information at stake, learners must be confident that there is end-to-end security across all systems and services that handle their information.

**Owned and maintained:** The model currently favoured by the CETIS LIP SIG is one of learner-owned and other-owned information held in a 'learner-coordinated framework'. Particular issues arise if the Learner Profile is distributed, as it becomes essential to know who has responsibility for maintaining each aspect of the information in an accessible form.

**Credible:** the provenance and status of the information must be clear to all potential users. There is a close relationship between the use of e-portfolios and the harmonising of credit systems, to ensure that the information contained in transcripts is widely recognised and understood.

**Usable:** the information must include those qualities that make it meaningful in its various contexts of use. For summative assessment, the e-portfolio must include appropriate evidence. To support learning effectively, it must contain rich information about the learner's goals, interests, preferences and aptitudes. To support an application, it must present the relevant achievements concisely and appealingly. It is this aspect of the data standard that has received the most attention from CETIS LIP SIG, and it was felt that the IMS standard did not support certain kinds of information that were necessary for personal development planning.

Most of the current JISC-funded projects deal with one or more of these issues. For example, the SHELL and NIMLE projects have enabled the transfer of learner records at transition

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<sup>63</sup> It should be noted that IMS is an industry consortium body which has no statutory or governmental status and its specifications are therefore NOT international standards.

<sup>64</sup> Or BSI 8788, since it is maintained and recognised by the British Standards Institute.

between FE and HE; PROSPERO extends this work to employers' record systems. Under the Distributed e-Learning programme, the WS4RL project explores a web services definition for the whole PDP domain which will allow rapid integration of e-portfolio functions on an open platform, while SHELL-FISH, an offshoot of the SHELL project, is developing a web services tool for providing rapid feedback on learner submissions, the outputs of which can be lodged within the SHELL learner record.

#### **Issues for standards and services developers**

- Standards must be seen to meet the needs learners and staff who support them, for example to record information that is highly usable in a LTA context
- Consistency of provision must not be at the expense of suitability to specific contexts – one standard, multiple implementations
- Web-services approach will not be suitable for all institutions – need to learn lessons from institutions following the off-the-peg route as well
- Open standards lead to real diversity of products – benefits and risks for institutions e.g. choice and flexibility vs multiplication of SLAs, support and maintenance requirements, responsibilities
- Open standards must improve ease of use, not make additional demands on ICT or administrative staff

#### **General issues arising from the technical development situation**

- Technical interoperability raises real challenges for organisational processes and for partnerships with other institutions and agencies
- Sector differences in terms of priorities, pressures, and resources for development – need specific solutions but lessons shared across boundaries
- Institutions need clear strategies for interoperability, and to identify responsibilities (providers vs institutional managers)
- Organisational capacity and market readiness lagging behind technical development
- Proliferation of practices and systems has both benefits and risks
- Standards-based development more effective than post-hoc fixes for interoperability – described as 'clunky'
- Outside risk that market will become so fragmented that development will cease to be profitable
- Coherent guidance on choosing and implementing e-portfolio systems at institutional level – x-refed with VLE guidance!
- Guidance on choosing and implementing also needed at the programme level – especially from awarding bodies
- Learn lessons from effective public-private partnerships

## 4.0 Organisational, management and regulatory issues

Organisational stakeholders in the e-portfolio agenda include the following:

1. national and regional policy makers, as outlined in appendix 1 (policy);
2. accrediting and awarding bodies, including Universities acting in that capacity;
3. organisations delivering learning, including schools, colleges, universities, LearnDirect centres, training organisations, trades unions, professional bodies and other providers of lifelong learning;
4. organisations receiving, reviewing and maintaining records of learning, including learning organisations as per (3) and employers;
5. organisations developing software and systems to support the delivery of learning, including the developers of e-portfolios, learning environments, and management information systems;
6. (potentially) organisation(s) providing services to support the maintenance of the lifelong learning record – at present this responsibility is distributed among the organisations listed 1-5, but a distributed model may not be preferred in the future.

The potential benefits and risks associated with e-portfolios are different for these different categories of organisation. However, some general benefits and risks can be outlined.

### 4.1 General issues of data ownership and maintenance

Many of the technical issues raised in section 3.3 are also – and even primarily – organisational issues. Data interoperability and transferability, accessibility, security and maintenance all depend on organisational processes as well as technical standards. There are significant costs associated with standards compliance, as well as with providing the relevant software and server space, and maintaining learner records for an indeterminate period of time.

For some organisations there are political concerns over the management and authentication of data. Institutions and awarding bodies must retain ownership of qualifications data which only they are in a position to authenticate; at the same time, however, learners must be able to access that data, and to grant others access to it. What responsibilities does an organisation have with respect to these learners and their information? These issues remain relatively untested.

An evaluation of the JISC MLE4LLL programme<sup>65</sup> found that technical developments for interoperability were often in advance of organisational structures and practices. Projects were *‘exposing and addressing mainstream issues of institutional process and quality management, such as the consistency and equality of learner experience across different sites, sectors and partners’*. There were also very different strategic and organisational contexts in FE and HE, with the need to meet mandatory requirements often pulling against the research and development agenda.

The costs of maintaining learner information are particularly significant for smaller organisations: schools and colleges among learning providers, and small or medium-sized businesses among employers. For example, while HEIs are relatively relaxed about maintaining learner information over the long term, seeing a benefit to themselves in offering

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<sup>65</sup> Glenaffric (2005) *MLEs for Lifelong Learning: Formative Evaluation Project Report*, JISC.

a hosting service to alumni, schools are often struggling to maintain relevant data even for current students.

The distributed e-portfolio model addresses some data management concerns, as accredited information is retained by the institution or awarding body that originally authenticated it. However, the resource implications of taking on a lifelong commitment to every learner are significant, and again impact more highly on FE colleges and adult training providers which often enter into extremely short-term relationships with learners.

## 4.2 Other organisational benefits and risks

There are potential benefits to all organisations of adopting and integrating e-portfolio systems. These include:

- rationalisation of administrative processes, particularly in the areas of learner records and assessment management;
- enhanced provision to individual learners, due to better information about their needs and preferences<sup>66</sup>;
- enhanced selection processes, due to better information about individuals' achievements;
- credibility for learning opportunities and programmes offered, through participation in a recognised framework for recording achievement;
- enhanced role in learners' ongoing development<sup>67</sup>;
- enhanced collaborations with other organisations, due to better data sharing and interoperability of systems;
- improved organisational research, quality assurance and planning through access to richer information about learners.

There are also potential risks. These include:

- lack of staff and learner skills to make effective use of e-portfolios and associated systems (alternatively: high cost of appropriate staff and learner development);
- ongoing time costs for both staff and learners in maintaining e-portfolio records;
- technical teething problems, especially risk of staff and learners being used as guinea-pigs with poorly-tested technologies;
- over-investment in infrastructure and systems, ahead of staff skills and acceptance;
- risks associated with maintenance of confidential learner information (see data ownership below);
- compliance costs – regulatory and technical;
- development costs – technical and organisational.

## 4.3 Specific issues for learning providers

Many of these issues were highlighted in the MLE4LL report, referenced above.

- Business and administrative processes – these need to be analysed, and their scheduling addressed, before e-portfolio systems can be effectively integrated.
- Consistency and quality of processes across different sites and partnership institutions – implementing an e-portfolio system will highlight any shortcomings

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<sup>66</sup> There is evidence that this can lead to better outcomes for learners in terms of achievement, self-development and employability. See Gough DA, Kiwan D, Sutcliffe S, Simpson D and Houghton N (2003), *A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning*, Evidence for Policy and Practice Information Coordinating Centre, Institute of Education and LTSN Generic Centre.

<sup>67</sup> Siemens (2004) reports that organisations can benefit from greater loyalty if they help individuals maintain a lifelong learning/professional development record.

- Communication within and across institutions, especially across staff in different teams and roles – again, any shortcomings will be highlighted
- Diverse and overlapping responsibilities for management of e-portfolios and related systems – there is ‘*need for a whole-institution approach to organisational change through technology and need for strong management support*’<sup>68</sup>
- Diverse sources of funding for e-portfolio development, leading to sometimes contradictory priorities and reporting requirements.
- Strategic and technical leadership, essential for scaling up from islands of good practice to organisational coherence.
- Developing institutional policy – conformity model versus consensus model with recognition and reward for good practice.
- Robustness of IT infrastructure, especially in schools and small colleges.<sup>69</sup>
- Need to invest in staff development among administrative and management staff as well as learning and teaching staff.
- Can be too much focus on problems of data and systems, rather than on the learning, teaching and development processes that are enabled.
- Tension between desire to collaborate across institutions and sectors, and the need to meet immediate requirements of the funding body/ies.

#### 4.4 Specific issues for awarding/accrediting bodies

Some of these issues were raised in interviews with representatives from the 14-19 Awarding Bodies (ABs) conducted by the CRA<sup>70</sup>. However, they are also issues for HEIs insofar as they are assessing learners, and validating and awarding their own qualifications.

- There is a need for more research into assessment through e-portfolio, including outcomes for learners, reliability/QA issues, and process management.
- While many awarding bodies are increasingly flexible on the acceptance of e-portfolio materials, they will need to be pro-active encouraging innovation if the potential of assessment by e-portfolio is to be realised.
- Current systems are not clearly enough structured around access rights for the learner, teacher, examiner and verifier, and other roles.
- Current systems also lack the flexibility needed, for example to move students’ work easily across different contexts, systems and processes
- ABs and awarding institutions may feel caught between the need to develop their own robust standards, QA processes and evaluation criteria for e-portfolios, and pressure to comply with international standards (that are not yet fixed).
- Organisations may be reluctant to invest actively in standards and systems development when the situation is changing so rapidly.

#### 4.5 Regulatory and policy issues

There seems to be a consensus that not enough work has been done by policy groups to highlight the potential of e-portfolios to support learning and assessment, or the need for learning and assessment to be integrated at the level of policy.

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<sup>68</sup> Glenaffric *ibid*.

<sup>69</sup> A recent discussion in the TES online forum highlighted concerns that school students would suffer if their school IT systems were unable to deal with the large e-portfolio files being proposed by the DfES.

<sup>70</sup> Reported separately to Becta: CRA (2005).

The onus is currently with institutions to create and maintain learner records, in the absence of a clear cross-sectoral common standard. Not all learning providers will have the resources to do this effectively. Organisations may also have limited incentive to maintain learner records for the benefit of future employers or learning providers. The issue of support and incentives for institutions needs to be addressed.

Given the previous point, there may be a case for organisations beyond the individual learning providers to take some responsibility for supporting e-portfolio systems and records (for example the DfES, RDAs, LSCs or LEAs). The opportunities and risks of this approach should be considered.

An appropriate balance needs to be found between mandating the use of e-portfolios and supporting best practice. There is evidence that mandatory approaches can lead to a form-filling attitude by institutions, with the focus on meeting regulatory requirements rather than on embedding processes and supporting learners. With so much potential unexplored, it is important that policies actively promote experimentation in this area.

A number of regional projects<sup>71</sup> have highlighted the lack of joined-up thinking across learning sectors, and between education policies and policies on employment and skills. Some of the gap is due to practical differences in the available technologies and in priorities for development, but the potential for e-portfolios to provide an integrated learning and development experience will remain theoretical unless there is greater integration at the level of policy. The regional projects themselves are beacons of excellence, and it may be that the region will emerge as the most appropriate level for integration of policies around the potential of e-portfolios for lifelong learning.

The European Institute for e-Learning e-portfolio survey<sup>72</sup> identifies the following priority areas that are relevant to policy makers, all of which could be translated meaningfully to the UK context.

- *Integration of ePortfolios in national and regional learning strategies*
- *Integration of ePortfolios in the learning/working infrastructure*
- *Integration of ePortfolios with employment agencies and job services*
- *Education of trainers, teachers and educators*
- *Education of human resource managers*
- *Development of flexible schemes for accreditation of competencies*

#### **Issues for regulators and policy makers**

- Integration of policies on e-portfolios with policies on: learner records; learning, teaching and assessment; skills and employment; workforce development.
- Policy implications of data sharing across organisational and sector boundaries – e.g. need for policy on data protection, security and authentication
- Credibility and recognition of information across sector boundaries (may involve further rationalisation of credit?)
- Resources for creation, management and long-term maintenance of learner records
- Human resource implications of e-portfolios, especially staff development and changes in administrative roles and responsibilities
- Flexibility of policy mandate, and promotion of innovation

<sup>71</sup> These are described more fully in a report to Becta (CRA 2005).

<sup>72</sup> See <http://www.eife-l.org>

- Financial incentives for institutions to implement, integrate and promote the use of e-portfolio systems
- Sustainability and scalability of best practice initiatives

**Issues across all contexts of use**

- Functional interoperability – technical and organisational
  - Resource implications including HR
  - ICT access and capability for learners, teachers, assessors and reviewers
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## Appendix 1: The policy framework

Objective 3.4 in the HEFCE *Strategy for e-learning*<sup>73</sup> encourages ‘e-based systems of describing learning achievement and personal development planning (PDP)’. Specific actions under this objective are:

- *JISC and the academy to continue to investigate the use of e-portfolios and other systems to support learner achievement and progression; and to promote and disseminate good practice in the development of new approaches for the use of e-portfolios and PDP.*
- *JISC to continue with the development of technical tools to support the use of e-portfolios across institutions and sectors.*
- *HEFCE to encourage the Europe Unit to support collaboration with European partners on the European Diploma Supplement.*
- *JISC and the academy to promote links with agencies such as the Universities and Colleges Admissions Service, the Qualifications and Curriculum Authority and the British Standards Institution in developing e-based systems for PDP.*

The 1997 report of the National Committee of Inquiry into Higher Education, *Higher Education in the Learning Society* (NCIHE 1997)<sup>74</sup> first recommended the introduction of an HE Progress File, comprising:

- *‘A transcript recording student achievement which should follow a common format devised by institutions collectively through their representative bodies;*
- *A means by which students can monitor, build and reflect upon their personal development (Personal Development Planning/Recording).’*

Responsibility for moving this policy forward fell to the CVCP (now, Universities UK and including Universities Scotland), SCOP, QAA and LTSN. The agreed *Guidelines for HE progress files*<sup>75</sup> have now been implemented with respect to the transcript element, with all UK Universities being required to provide a transcript to learners since 2002/03. The Personal Development Record component will become similarly compulsory in 2005/06, and many institutions have already made significant progress towards achieving this. However, the processes of personal development planning are not as well embedded in many higher education institutions as they are in colleges or centres of adult learning.

The Department for Education and Skills’ e-learning strategy: *Harnessing Technology*, promises for every learner:

*A personal online learning space: where you can store electronically everything related to your learning and achievements, course resources, assignments, research, and where you can plan your next steps, and build links for professional advice and support. And being online, it will be accessible from home, from school, and, in the longer term, from each new organisation as you progress.*

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<sup>73</sup> HEFCE, JISC and HE Academy (March 2005), *Strategy for e-Learning*: see [http://www.hefce.ac.uk/pubs/hefce/2005/05\\_12/05\\_12.doc](http://www.hefce.ac.uk/pubs/hefce/2005/05_12/05_12.doc)

<sup>74</sup> Also known as the Dearing Report, see <http://www.leeds.ac.uk/educol/ncihe/>

<sup>75</sup> See <http://www.qaa.ac.uk/crntwork/progfilehe/contents.htm>

***Towards a Unified e-Learning Strategy***<sup>76</sup> emphasises individualised learning, joined up across different sectors, organisations and learning environments. This joining up is to be achieved in part through the universal provision of an ‘electronic portfolio’, which will ‘*allow both summative assessment and information about personal aspirations and interests to be owned by the learner*’. Over the medium term, the draft strategy proposes to ‘*establish the principle that all provider organisations have a responsibility for contributing to a learner’s e-portfolio*’ (though not explicitly for maintaining it). Over the longer term it proposed to ‘*establish the feasibility of a wider roll-out of a unique learner number*’.

The strategy notes the potential for e-assessment techniques to contribute evidence towards the e-portfolio, for example by supporting peer- and self-assessment and through formative and diagnostic tests. The five priorities for assessment include ‘*e-learning skills for life*’ and ‘*a credit framework to fit e-learning*’, both of which would be necessary pre-requisites for a universal e-portfolio system.

The Qualifications and Curriculum Authority’s ***Blueprint for e-assessment***<sup>77</sup> envisages that within five years ‘*all awarding bodies should be set up to accept and assess e-portfolios*’. There is strong encouragement for e-assessment in all its forms, and a commitment to at least 10 new qualifications that will be delivered and assessed electronically. The medium-term steer is towards joining up systems and standards, but meanwhile there is encouragement of e-portfolio use in whatever format is easiest for providers. Potential links with Tomlinson (see below) include consideration of e-portfolios to assess the core skills of communication, ICT and maths, and to assess vocational learners in work-based settings<sup>78</sup>.

The Tomlinson Report, ***14-19 curriculum and qualifications reform: final report of the Working Group on 14-19 Reform***<sup>79</sup> recommends that the qualifications currently taken by 14-19 year olds should be replaced with a diploma framework, with a single diploma transcript as an authorised record of achievement. There is also support for the process of personal development planning: ‘*personal review, planning and guidance is crucial to underpin the proposed programme and diploma framework, and to help young people develop the common knowledge, skills and attributes that will be of benefit to them throughout life*’. It is suggestive, then, that Tomlinson sees the transcript ‘*acting as an on-line gateway to further more detailed information about the learner*’, implying a link to a more comprehensive personal development record.

Since the first Tomlinson report, ***14-19: Extending opportunities, raising standards***<sup>80</sup> Individual Learning Plans (ILPs) have been a pre-requisite for drawing down funding for 14-19 year-old learners and have therefore become widely used in FE and ACL. This means that all learners receive some form of advice, guidance or personal development planning in the context of choosing appropriate learning courses. A recent study<sup>81</sup>, however, found little evidence of ILP records being transferred across providers, and there has been understandably less focus on individual ownership of and reflection on this information than on accountability at the organisational level.

A number of UK regions are looking to develop their own policy agenda with respect to e-portfolios, taking in adult and work-based learning. For example the ***Careers Wales***

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<sup>76</sup> DfES (2004): see <http://www.dfes.gov.uk/elearningstrategy/assessment/goals/index.cfm>

<sup>77</sup> QCA (2004): see [http://www.qca.org.uk/2586\\_6997.html](http://www.qca.org.uk/2586_6997.html)

<sup>78</sup> Martin Ripley (2004) *The e-assessment vision*, QCA: see <http://www.becta.org.uk/etseminars/presentations/2004-09-12/4/slides/slides.pdf>

<sup>79</sup> DfES (2004): see [http://www.14-19reform.gov.uk/reports\\_consultation/index.cfm](http://www.14-19reform.gov.uk/reports_consultation/index.cfm)

<sup>80</sup> DfES (2002)

<sup>81</sup> CRA (2004) *South West Regional Feasibility Study on Recording Achievement*.

*initiative*<sup>82</sup> has made a 5-megabyte e-portfolio available to every citizen to support learning and career development. Both the NW and the SW Regional Development Agencies have commissioned detailed studies of the use of portfolios from school through to employment in order to formulate an integrated regional policy<sup>83</sup>.

Beyond the UK, the Europortfolio consortium<sup>84</sup> has launched a manifesto committed to *e-Portfolio for All by 2010*. Founding members include the European Institute for E-Learning (EifEL), the UK's CETIS, and IMS in Europe. In December 2004 the European Commission announced the launch of a EuroPass e-portfolio service, based in Maastricht. In the US, a collaboration of HE institutions and commercial players have formed the EportConsortium<sup>85</sup> to achieve interoperability across e-portfolio systems, against the trend of divergent commercial developments.

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<sup>82</sup> See <http://www.careerswales.com>

<sup>83</sup> Both reports produced by the CRA: see their web site <http://www.recordingachievement.org/>

<sup>84</sup> See <http://www.europortfolio.org>

<sup>85</sup> See <http://eportconsortium.org/>

## Appendix 2: An alternative approach to functional requirements

Requirements based on potential benefits for learners across all four contexts of e-portfolio use:<sup>86</sup>

Potential benefit	Functional requirements
Enhanced learning experience through: <ul style="list-style-type: none"> <li>personalisation of provision;</li> <li>ownership of process of learning;</li> <li>continuity of support</li> </ul>	<ul style="list-style-type: none"> <li>Integration of e-portfolios and learning environments</li> <li>Interoperability of learner records and learning design systems</li> <li>Access to diagnostic tools from e-portfolios</li> <li>Rich representations of learning needs, skills, preferences and experiences within profile</li> <li>Facilities for learner annotation/comment on materials</li> </ul>
Enhanced assessment experience through: <ul style="list-style-type: none"> <li>selection of own evidence;</li> <li>rapid feedback;</li> <li>security and efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Range of access permissions and views on to the data</li> <li>Learner control and selection of evidence</li> <li>Integrated assessment functions e.g. feedback facility</li> <li>Effective transition of data across organisations</li> <li>Secure and credible authentication</li> </ul>
Capture of learning process for reflection, review, self-evaluation and (where appropriate) assessment	<ul style="list-style-type: none"> <li>Interoperability with VLEs and other data capture systems;</li> <li>e-portfolio as integrated 'digital learning space'</li> <li>Recording of PDP process and outcomes</li> <li>Facilities for learner annotation/comment on materials</li> </ul>
Monitoring of progress in learning and appropriate feedback/response	<ul style="list-style-type: none"> <li>Links between e-portfolio and monitoring facilities in VLEs</li> </ul>
Regular opportunities for planning, review and guidance	<ul style="list-style-type: none"> <li>Links to reflective tools/prompts or processes</li> <li>Links to calendrical/scheduling functions in VLEs</li> <li>Integration of learner information across programmes and institutions</li> <li>Recording of PDP process and outcomes within e-portfolio.</li> </ul>
Recognition and development of competences, across as well as within programmes	<ul style="list-style-type: none"> <li>Access and interoperability across programmes</li> <li>Access to diagnostic tools within e-portfolios</li> <li>Links to key skills materials</li> </ul>
Management of own learning outcomes and processes	<ul style="list-style-type: none"> <li>Entire profile accessible through a single interface</li> <li>Anytime anywhere access</li> <li>Interface integrated with other institutional services (portalised) and/or personalised for learner</li> <li>Learner control over content of the personal development record</li> </ul>
Ease of transfer and progression	<ul style="list-style-type: none"> <li>Interoperability/transferability issues resolved</li> <li>Integrated access to learner data across different sites</li> <li>Learner data readily accessed, recognised and authenticated by reviewers</li> </ul>
Improved access to learning	<ul style="list-style-type: none"> <li>e-portfolios fully accessible</li> <li>Further development of and compliance with ACC LIP</li> </ul>

Requirements for staff supporting learners, based on potential benefits for these staff (and assuming that these staff also benefit if the requirements for learners are met, as above):

Potential benefit	Functional requirements
Streamlining of administrative processes	<ul style="list-style-type: none"> <li>Learner records integrated with other institutional systems e.g. assessment, class management,</li> </ul>

<sup>86</sup> The JISC e-learning and pedagogy strand has recently produced a review of learner differences (Mayes, T. (2004) *Learner-centred pedagogy: individual differences between learners.*; available online from [http://www.jisc.ac.uk/uploaded\\_documents/learner-differences.doc](http://www.jisc.ac.uk/uploaded_documents/learner-differences.doc)) which will be used to develop a more sophisticated set of requirements. These are general requirements for learners making use of e-portfolios for any of the four purposes explored in this report.

	timetabling
Improved planning of individual and group learning	<ul style="list-style-type: none"><li>• Access to pedagogically-relevant information about individuals, where approved by the learner</li><li>• Access to summative information about learners in groups, where appropriate</li></ul>
Recognition for value-added aspects of teaching and learning	<ul style="list-style-type: none"><li>• Capacity to record learner outcomes in relation to competence, motivation and engagement, self-awareness, and progression</li></ul>

All potential benefits for staff and learners require data ownership, maintenance, access, security and transferability/interoperability issues to be resolved (see section 2.3).