

Personal Learning Environments

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Abstract

Personal Learning Environments (PLEs) are attracting increasing interest in the e-learning domain. PLEs may be characterised in a multidimensional space. Examples of PLEs are discussed.

1. Introduction

Personal Learning Environments (PLEs) are a relatively new phenomenon in the e-learning domain, motivated by:

- The needs of life-long learners for a system that provides a standard interface to different institutions' e-learning systems, and that allows portfolio information to be maintained across institutions.
- A response to pedagogic approaches which require that learner's e-learning systems need to be under the control of the learners themselves.
- The needs of learners who sometimes perform learning activities offline, e.g. via mobile system in a wireless-free hospital, or on a remote mountainside.

As such, a PLE is a single user's e-learning system that provides access to a variety of learning resources, and that may provide access to learners and teachers who use other PLEs and/or VLEs.

However, ideas about PLEs are still forming. As an aid to the development of the PLE field, this paper discusses dimensions that form a space of PLEs, providing the basis of a taxonomy for current and future PLEs. Possible changes to the dimensions are anticipated as the field matures.

2. Dimensions of a space of PLEs

Dimensions appear in three categories below. Not all dimensions are orthogonal. Dimensions are identified by comparing three PLEs [1], [2] and [3], and by thinking about the characteristics of future PLEs.

2.1 Pedagogy, personalisation, control

Pedagogic approach. Wide variation is possible on this dimension, thereby influencing resources which appear in a PLE.

Non-collaborative / Collaborative. Related to the dimension above, this indicates the extent to which users may collaborate in learning activities, e.g., collaborative activities motivated by social constructivism. Colloquia [1] is built around conversations and collaborative activity.

Closed / Open. A totally closed system may not be extended, whereas an open system may be extended easily. Some commentators believe that an open PLE can be constructed entirely from various web servers (e.g. elgg, flickr), but this undesirably reduces application interoperability.

Fixed / personalisable. The extent to which PLEs may be fixed in scope, functionality and interface, or may be personalisable on an individual basis during use. Somewhat related to, but not the same as the closed / open dimension.

Locus of control. There is increasing awareness of a major limitation in many VLEs, namely teacher or institutional control of resources. Control of PLEs may be vested in their individual users.

2.2 Connectivity and compatibility

Single / multiple institution connectivity. Whereas single institution connectivity only allows use of PLEs for a limited time, lifelong learners will require that their PLEs connect to multiple institutions and to suppliers of CPD courses. The use of standard communications protocols will facilitate this, and one may thereby envisage a 'World' or 'Universe of PLEs' that interoperate with a variety of servers.

Server / hybrid / Peer-to-peer based. Characterises the implementation of communications paths for inter-user communication via PLEs, and for sourcing learning material and applications. Generally there will be some server as a source for materials and

pluggable applications. Colloquia, despite often being represented as a peer-to-peer system, is a rich client for an e-mail system. The Manchester Framework [2] provides PLEs that use one or more VLE servers.

Online usage only / online and offline usage. As per section 1, it is of real value for a PLE to be usable off-line. The Manchester PLE is one such PLE.

Plugability. Plug-ins are a specific extension mechanism. The Manchester PLE and its VLE are pluggable via JSPs and servlets. PLEX [3] is pluggable via Eclipse plug-ins.

Package compatibility. E-learning standards imply the use of standard content packages. These may be drawn from one or more server sources and used on a package-compliant PLE.

Application compatibility. PLEs and their servers, or different kinds of PLEs, may allow the same applications or plugins to be run on them. The Manchester Framework is designed for PLE and VLE application compatibility.

2.3 Platform

Heavy-weight platform / light-weight platform. Desktop and laptop systems are heavyweight hardware platforms for PLEs, whereas PDAs and converged PDA-like devices are a particularly exciting lightweight platform to host PLEs. As yet no PLEs run on PDAs.

3. Exemplars

Three PLE systems are described here. Of the exemplars, the only system that has been used by end users is Colloquia. The other two are still, to different degrees, under development.

Colloquia [1] uses peer-to-peer communication mediated by an e-mail server, and provides support for a conversational and activity based model of learning. Colloquia maintains information about people, resources, and tasks. Teachers set up activities and sub-activities at different levels of granularity and allocate people, resources and tasks to those activities. Learners may create sub-activities. Personalisation is only possible in a limited sense in that teachers and learners may add resources for an activity or sub-activity. Colloquia is neither plugable nor functionally extensible, and offers neither package nor application compatibility. Colloquia could be used across institutions, although probably with a centralised e-mail server.

The Manchester Framework [2] consists of a servlet container (Tomcat), underpinned by a virtual file store

(VFS) that provides servlet and JSP authors with a variety of primitive operations that support the implementation of e-learning systems. The VFS includes an XML database. The Framework may be instantiated repeatedly as either a PLE or a VLE. Multiple PLEs may be served by one or more VLEs, potentially in different institutions. While a user is online a VLE is expected to be the system of choice, and while s/he is offline the PLE is the only system that s/he can use. The framework allows application compatibility across both the PLEs and VLEs, subject to some security constraints. VPTP [4] is an HTTP-based protocol suitable for the implementation of PLE-VLE communication, and possibly, for use in the implementation of a Universe of PLEs (Section 3.1).

PLEX [3], the CETIS PLE, exists in two versions based on two different technologies. The primary Exist-based version of PLEX is discussed here. This version is highly pluggable via Eclipse's plug-in architecture. The basic structure of the PLEX has echoes of Colloquia: There is a resource manager, a people manager, and activities consisting of resources and people. People and resources are discoverable. PLEX allows users to represent learning opportunities which may later be transformed into activities.

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5. References

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