Shared online content and services

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Introduction

Currently there exist a number of outstanding national Australian Internet services developed and managed by education.au. These can be conceived of as web-based applications, tools, services and content or generically as ‘web services’. An integrated visual description of these web-based services showing their state of development and user expectations is at Attachment 1. Access to high quality education resources will change the landscape of learning, education and training. In the words of a NetRatings analyst:

> The flexibility and ready access to high-quality, multimedia content is changing the userscape of the internet, with 1.5 million people – around 21 per cent of active home users in Australia – connected to broadband as at August 2003.’

The other interesting aspect of the growth of the Internet and its use according to Fred Baker, Chair of the IETF, is that the Internet is becoming a utility in the same way as water, sewerage, electricity, natural gas and the telephone. Also in commenting on the future of the Internet, Fred Baker suggested that in the future:

> Internet access and facility is (will be) assumed in education, business, and increasingly in society.

Purpose

The purpose of this paper is to introduce thinking about shared national online content and services which are commonly used and required by stakeholders in education and training.

Background

Three separate developments that share common thinking have occurred over the last year: a paper about ‘web-services’ conceived by The Le@rning Federation; the development of federated search technology by EdNA technical staff; and, the notion of ‘common services’ being discussed in the AITCEC Standards and Interoperability sub-committee (ASIC).

Web-services described by The Le@rning Federation are a way of closely relating the curriculum support materials of EdNA with the learning objects of The Le@rning Federation. This is contained in a paper prepared by Simon Sinnott, Nigel Ward, Geoff Hendrick and Garry Putland. Their notion utilises the Basic Elearning Tool Set (BELTS) of The Le@rning Federation to provide easy access to

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1 ‘web-based services’ should not to be confused with ‘Web Services’, which is technical jargon now used to describe XML-based applications or software components that bring together information systems and business processes. They are accessible via a URI and provide ‘loose coupling’ with other services when accessed.

2 Internet Engineering Task Force
learning objects stored on the Learning Exchange and curriculum support resources aggregated on EdNA Online.

**Federated search** is a development of the new EdNA Online which enables EdNA Online to integrate brokered resources, so that users can search across a number of distributed quality collections. This was done through development of a shared software applications layer into which both services and repositories were able to connect thus avoiding the tedious and repetitive harmonisation of data between each service and repository.

The ASIC has been developing and discussing a **common services** concept that has emerged through the work of IMS and the Open Knowledge Initiative. Common services describe a number of web-based services that share common standards and protocols in a shared services software application layer or integrated set of applications. These services focus particularly on ‘access management’ (identity management and single sign-on).

**Issues**

Although there may be many issues which are pertinent to this discussion, three are appropriate for reflection here.

- At present there are a range of separate and discrete national web based services which are not easily accessible by users.
- Additional repositories are difficult and expensive to integrate without an agreed standards framework and services software application layer.
- Many web base services could be integrated with a number of other needed services to enable easy access for users to a comprehensive national set of applications, tools and services on a shared basis.
- The integrity of each shared web based service can be maintained through connection with and facilitation through a national services software application layer.

**Service to stakeholders**

Currently, around Australia a number of people who are engaged with education systems in developing and managing technological and communication services are being redeployed. There is a need to reduce the costs of ICT but to also increase the services to users. Consideration is being given in a number of States to integrating services through a common architecture hence reducing costs and increasing services to users. This in effect could see a reduction of web service silos and development of sophisticated learning architectures at the State level.

**education.au** as a national ICT agency in education and training exists to provide value added services to stakeholders as well as to lead ICT thinking and collaborate nationally with stakeholders in developing new ideas and services.

In fact this can be described as:

- Maximising available funds and reducing duplication of State level costs
- Leveraging national effort and reducing duplication
- Leveraging existing infrastructure and building on a base of developed national assets
- Leveraging scarce expertise at the national level
- Maximising national investment through standards frameworks and interoperability of services. Efforts to advantage stakeholders through applying the above principles have a high likelihood of support and success as well as maintaining Australia’s leading status in ICT in education and training.

**What’s new technologically**

There have been a number of interesting education technology developments recently within Australia that have attracted international interest.

**Federated Discovery Services**

*education.au ltd* has developed a powerful federated search tool that can provide an end user with a single search experience across any number of quality education repositories. This tool exposes its functionality as a set of XML web services. This web service (along with a number of other EdNA Online Web services) provides an initial set of shared online web services that can be accessed by other education institution web sites and portals.

**Learning Object Exchanges**

The Le@rning Federation has developed a Learning Object Repository Exchange (LEX) and a lightweight e-learning toolset (*BELTS*).

**Learning Activity Systems**

Learning Activities Management System (LAMS) developed by Professor James Dalzeil at the Macquarie E-Learning Centre of Excellence (*MELCOE*).

**Dynamically Generated Metadata**

The OpalTree system utilises a dynamically generated database which can apply metadata on a use-case scenario. A pilot developed by OpalTree with *education.au* showed that metadata could be applied automatically to EdNA Online resources, including indexed items and EdNA Online harvested items, both of which could be closely linked through metadata to The Le@rning Federation learning objects.

**Shared national services**

A number of initial concepts are introduced below.

**Concept 1—applications infrastructure**

A number of national and international repositories and national web based services would be able to connect into a shared services layer or infrastructure, once built. The shared services layer could enable access to common applications, tools, services and content. Other common services such as identity management, single-sign-on and authorisation services and security management would enable user entry to the shared services layer, to be moderated.
Such a scenario could be designed as shown in Figure 1 below.

**Figure 1**

[Diagram showing a network of portals and services connected by arrows labeled "Applications, services, tools, content," "Identity management, security, single sign-on, authorisation," "Web services," and "Common services." Portals are labeled as Portal 1, Portal 2, and Portal 3, with EdNA, TLF, and MERLOT connected to the central hub.]
Concept 2-learning activity delivery

EdNA Online and The Le@rning Federation learning objects can be accessible through a methodological or activity centred front end such as LAMS.

Using LAMS as a front end for an EdNA Online and The Le@rning Federation learning objects service, a comprehensive digital service which can be extensible could be established. BELTS could be used as an integration mechanism. Such a service could be made available, through a single screen, to include:

- learning activities [from LAMS] into which selected content could be included by a user
- curriculum learning objects [content]
- curriculum support [support materials] through the EdNA Online federated search would be available,
- and community learning tools [collaborative and community services] for interactive asynchronous and synchronous knowledge sharing.

This can be captured diagrammatically as in Figure 2.

Figure 2
Attachment 1

Web based services