A Dynamic Personal Portfolio Using Web Technologies

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INTRODUCTION

With the ubiquitous availability of the Internet, the possibility of creating a centralized repository of an individual’s knowledge has become possible. Although, at present, there are many efforts to develop collaborative systems such as wikis (Leuf & Cunningham, 2002), Web logs or blogs (Winer, 2002) and sharable content management systems (Wikipedia, 2004), an area that is overlooked is the development of a system that would manage personal knowledge and information. For example, in an educational setting, it has been found that most lecturers customize content to suit their particular delivery styles. This article outlines a framework that uses Web technologies allowing the storage and management of personal information, the sharing of the content with other personal systems, and allows for annotations to be captured within context from people who visit the personal knowledge portfolio.

BACKGROUND

Continuing with the case of a lecturer, a vast amount of knowledge will be accumulated. This needs to be organised in a way so that it can be delivered in a variety of contexts. For example, a piece of knowledge about image resizing could be useful in the following domains: Web page design, databases, multimedia, and digital photography. But, this knowledge is continually changing as printed media are read or other people contribute with their comments or observations. Also, knowledge does not exist in one format, for example, an image can be used to illustrate a concept, a video can be used to show directions, and so forth.

With the ability to manage a wide variety of digital formats, Web technologies have become an obvious way to organise an individual’s knowledge. In the early 1990s, the Web was primarily made up of many static Web pages, where content and layout were hard coded into the actual page, so managing the ever-changing aspect of content was a time consuming task. In the late 1990s, database technologies and scripting languages such as ASP (active server pages) and PHP (A recursive acronym for personal home page: hypertext pre-processor) emerged, and with these opportunities to develop new ways to capture, manage, and display individual and shared knowledge.

But, what is knowledge? Generally, it is attached to an individual, and can be loosely defined as “what we know” or “what you have between the ears” (Goppold, 2003). Experience shows that as an individual’s content is personalized, as mentioned earlier, lecturers tend to customize content to suit their particular delivery style. So combining the notions that knowledge is something dynamic and is attached to an individual, that it may be enhanced and modified by other individuals, and that Web technologies can assist in its management, the “Virtual Me framework” has been developed.

THE Virtual Me FRAMEWORK

Figure 1 illustrates the concept of Virtual Me framework. The framework essentially is made up of three parts, the sniplet model which includes the multimedia object model, and an annotation capability.
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Figure 1. Rich picture of Me framework

Sniplet Model

In order to manage knowledge, the smallest useful and usable piece of content needs to be defined. Several prototypes indicated that a workable size for the content is that the one which can be represented by a single overhead projection. In order to refer to this, the term sniplet was coined (Verhaart, 2002). A sniplet needs to maintain context of the content with respect to everything else in the environment. Hence, they are initially classified in a backbone taxonomy (Guarino & Welty, 2002). The proposed Virtual Me framework allows for alternative taxonomies to be created where the content can be used in other domains.

In an electronic sense, an overhead can consist of many media elements, or digital assets, such as images, sounds, animations, and videos. But a digital asset also has other issues that need to be considered. For example, an image displayed on a computer screen (at 75 dpi) produces poor quality results when produced in hardcopy (600 dpi and above). If accessibility issues are included, then the ability to represent a digital asset in multiple forms is required. For example, an image needs to be described in text, or alternatively in a sound file, to assist screen readers or for those visitors who have sight impairments. Finally, if the digital asset is to maintain its original context and ownership, some meta-data needs to be attached to it. There are many meta-data standards available, for example, Dublin Core (DCMI, 2004) describes the object, and vCard (1996) describes the creator. Extensible Markup Language (XML) is a portable way for data to be described on the Internet, by providing a structure where data is easily categorized. For example, an XML file could contain <author>Verhaart</author> vCard is commonly distributed using its own format, but in a paper for the World Wide Web Consortium W3C (Iannella, 2001) described vCard in the Web formats XML and the Resource Definition framework (RDF) (Miller, Swick, & Brickley, 2004). Another important feature is that the digital asset has some permanency, that is, in the future it can be located. On the Internet, the Uniform Resource Identifier (of which a Uniform Resource Locator—URL—is a subset) is one way to give a resource an address. The Resource Definition Framework (RDF) takes this a stage further and also structures the resource using eXtensible Markup Language (XML) (W3C, 2004b). This is one of the cornerstones of the semantic Web where objects of the Web maintain some meaning.

To cope with the available standards, a digital asset is described in the Virtual Me framework using a multimedia object (MMO) (Verhaart, Jamieson, & Kinshuk, 2004). An MMO essentially is a manifest of files that address the issues described previously. It is made up of the actual files that form the digital asset (multiple images, maybe a sound file) plus a special file that manages the meta-data.
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