Evolution of a scenario-based method in development of requirements for a ubiquitous and cross platform e-learning environment

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Abstract: In this paper, we describe the early requirements gathering stage of an EU FP6 project[1] using a distributed scenario-based method. Through the collaborative development of scenarios among project partners in nine different countries, enabling the derivation of requirements for the overall architecture for the system.

Keywords: Ubiquitous e-learning, requirements gathering, scenario-based method

1. Background

Scenarios are used in systems design to describe typical or important uses of the system as narratives or stories [1]. They are designed to give designers, developers, users and managers a shared understanding of the purpose of the system. In this paper we discuss the development process of an authoring and delivery environment for ubiquitous e-learning currently under development in the context of LOGOS, a multi-partner European FP6 research and development project [2]. The major aim of the LOGOS project is to provide ubiquitous access to e-learning materials via digital video broadcasting (DVB), mobile and IP-based communication channels. Like many large European projects, it involves fifteen partners from nine different countries are pooling their different skills, knowledge and interests. In this paper, we concentrate on the scenario-based method that was employed to gather early requirements to direct the development process.

2. Scenario development method

There are a number of different interpretations of the term scenario and a range of different approaches to developing them. One reasonable approach is to take some general requirements, informed by theory. The general requirements for the LOGOS system, informed by work in andragogy, e-learning and informal learning, were to generate an authoring system for cross platform learning materials and a delivery mechanism to presentation of these materials to learners. Potential users form another valuable source of inspiration for scenarios, and in the LOGOS project we decided to take advantage of the availability of such potential users to develop our scenarios from user input and have any developer-generated scenarios validated by user feedback. The stages in the development of the LOGOS scenarios were as follows:

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[1] LOGOS: FP6-2004-IST-4

1. A first scenario workshop was held at each partner site, each with one homogeneous group of potential users. Learners were introduced to the media objects/archive materials the partners intended to use, plus the range of technologies on which they proposed to implement learning materials. Participants were encouraged - using role play and discussion, often incorporating lo-tech prototypes in paper, cardboard and so on, to imagine scenarios or stories in which they would use the materials for learning tasks of their own.
2. LOGOS partners refined and sifted the ideas generated at the first workshop to create a number of scenarios that combine the key points raised in the workshops.
3. A second scenario workshop was held at each site, with different individuals from same type of user group. The LOGOS team presented or acted out the scenarios and gathers users' feedback. LOGOS partners reflected on feedback and incorporated it into a second version of the scenarios.

This process was broadly followed by each partner. In total, 26 scenarios were developed that would illustrate the use of the authoring and end delivery systems in as wide a range of combinations, subject areas and contexts as possible.

3. Ubiquitous e-learning platform

From a number of scenarios developed it was apparent that the development of ubiquitous learning in LOGOS is dependant on a number of roles linked to different tasks to move through the phases of the authoring and learning processes. Here we provide an overall non-technical picture of the authoring and delivery systems. The details of cross platform architecture are discussed elsewhere [3].
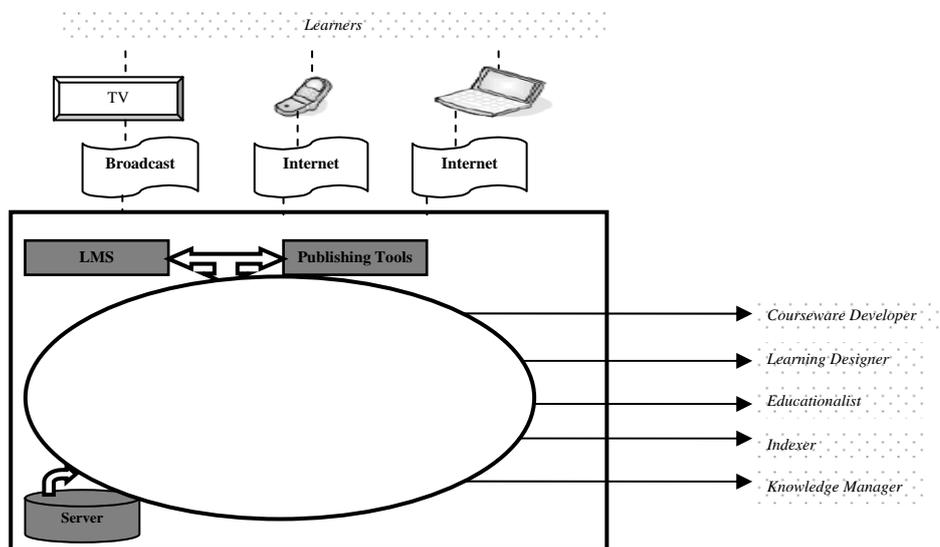

Figure 1: Ubiquitous e-Learning Platform

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