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The Universal Simulator

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1. ABSTRACT

The Universal Simulator (US) is an open extensible system providing a dynamic infrastructure for generating hypermedial learning resources.

2. Keywords

Learning resources, infrastructure, multimedia, hypermedia.

3. Learning Visions

The US is the result of an effort to develop an easy to use infrastructure for the distribuition of multimiedial learning resources. Along with the evolution of Internet-related technologies we have seen the emergence of novel applications and standards providing for simple, yet powerful ways of navigating information, as well as ways of presenting information using a variety of modalities. It is our firm belief that Internet-related technologies harbor hypermedial possibilies that could benefit the learning situation in K12 schools and beyond. Our approach is to build on existing standardly used technologies that are easily accessible and to create a susbstrate for the growth of hypermedial spaces that are easily accessible and administred.

4. Infrastructure

The infrastructure of the US is best thought of as a minimalistic set of substrate technologies allowing for dynamic generation of hypermedial structure as well as content adding.

4.1 The US Server

At the heart of system is the Universal Simulator Server (USS) which is a dynamic webserver enabling the generation of hypermedial structure and content in the form of a website harboring visualizations and interactive components. Administrators of the USS log on to generate, and

maintain this website from anywhere on the Internet, and as they engage in the process they are transparently building a learning tree harboring multimedial components.
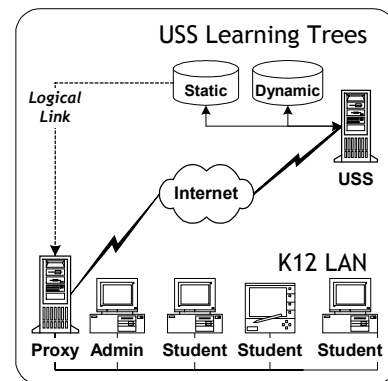

Figure 1 US Infrastructure

4.2 Mirroring on LANs

While the USS is a substrate technology allowing for the generation of the USS dynamic learning tree website, a static version of the USS is mirrored on servers within LANs at participating schools. Such a static version is always generated transparently and in parallel with the dynamic version. Students interact with the static version of the learning tree, and are not allowed to generate new content, unless such interactivity is thought to further aid the learning situation. USS-servers could then be placed on the LANs of participating schools.

4.3 Interacting with the USS-static version

Interacting with the USS-static mirrored site entails navigating a subject-based index of learning resources such as texts, visualizations and other interactive components. In the first version of the US, students use standard web-browsers to browse the learning tree and to access its resources such as visualizations and interactive components based mainly on java-technologies. We are also examining how the learning tree could be accessed through PDAs with wireless technologies.

5. Demonstration

The demonstration will show how learning trees can be dynamically generated by adminstrators as well as accessed and employed by students.