The Universal Simulator
Anders Hedman and Eva-Maria Jacobsson
The Universal Simulator

Anders Hedman
CID–Centre for User oriented IT-Design
NADA, Dept. Computing Science
Royal Technical Institute of Technology
+4687909283
Ahedman@nada.kth.se

Eva-Maria Jacobsson
CID–Centre for User oriented IT-Design
NADA, Dept. Computing Science
Royal Technical Institute of Technology
+4687909283
Eva-maria@nada.kth.se

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 distribution of multimedia 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 possibilities 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 substrate for the growth of hypermedial spaces that are easily accessible and administered.

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

LEAVE BLANK THE LAST 3.81 cm (1.5”) OF THE LEFT COLUMN ON THE FIRST PAGE FOR THE COPYRIGHT NOTICE

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

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 administrators as well as accessed and employed by students.