WEBSET
Web-based Standard Educational Tools

Weaving a web of learning
The Web is expanding at a frenetic pace. It now extends into every facet of life as developers apply it to all walks of life while users learn of its potential. As a shared network, its educational value is immense. WebSET aims to harness that power. Recognising the need for interoperability, it will develop advanced Web-based technologies to implement innovative cost-effective learning tools that can be run on any workstation platform including a standard PC of average capacity. The technology developed will be generic and applicable to a wide range of learning disciplines.

Assessing the needs of the user
Continuous assessment performed by targeted user groups has to guarantee that the WebSET environment lives up to the required user needs. WebSET plans to provide an e-commerce outlet on the Web to display and sell the objects, generated by the project.

WebSET is using Extensible Markup Language (XML) to generate document objects for the production of re-usable information material, Virtual Reality Modelling Language (VRML) ISO standard for the creation of 3D graphics, and Web3D technologies to design interactive features, which constitute the programming tools to build the virtual multi-user environment. Fully integrated with the specific learning contents, the set-up will result in a series of comprehensive training packages for local as well as distributed use via the Web. The development of sophisticated avatars in order to represent the learning sessions participants in their different roles will facilitate collaboration among users.

WebSET enables trainees to access the learning tools anywhere and at any time, either alone, in which case there is no-one to check errors, or interacting with a teacher or other learners.

As for the surgical training aspect, the WebSET team intends to support and augment both pre-qualification lessons, learnt by surgeons during training and in performing actual procedures, and refresher training for infrequently executed interventions. In this regard, the consortium is working with major European learning centres, such as the Royal College of Surgeons in England and the Royal Belgian College of Surgeons. Minimally invasive, thoracic and vascular surgery and neurosurgery are the initially selected specialities. The clinical partners in WebSET indeed include a neurosurgical and laparoscopic surgery unit in the United Kingdom, at Leeds General Infirmary and at St. Mary’s respectively. Although the training will not be as realistic as the actual operations or as complete as totally immersive virtual reality, the fidelity will be quite sufficient
for cost-effective learning and practising of procedures.

**A surgical taxonomy**

One of the project goals consists of identifying both a standard taxonomy for surgical learning and associated metadata for surgical learning objects. In addition, a library of VRML anatomic and user interface components will be designed for re-usability purposes. The aspect of physiological education will be addressed by the Faculty of Engineering at the University of Ljubljana in Slovenia. Researchers will develop virtual worlds and Web pages to describe the morphology and the physiology of organs and living beings. In turn, the Slovenian Ministry of Education and Sport is responsible for the organisation of tests and evaluations of the training packages in schools via teachers and students, by making use of standard metadata in the physiology discipline.

The WebSET team strongly insists on receiving assessment information from key end-user groups in their fields at regular intervals, as the project evolves. In this respect, a special user group of appropriate participants from all over Europe, for example the Medical School at the University of Athens, will be established. The hospital partners, from their side, have the task of defining the WebSET exemplar application and provide clinical imaging as well as expertise in the design of the simulators. They will also determine target groups and validate the simulators. The overall project management is in the hands of the Victoria University of Manchester Visualisation Centre, that will co-ordinate the end-to-end utilisation scenario from authoring to use in five milestones. The Belgian and Austrian industrial partners, Space Application Services and Uma, will implement the 3D visualisation and interactive multimedia technologies, in close collaboration with the Manchester Visualisation Centre.

**Composing through XML**

The finishing WebSET touch will consist of a composition tool based on XML, to enable the creation of packaged introduction texts, documentation files to accompany the module, and the establishment of an overall structure. This tool will equally serve as a framework for presenting the generated objects to potential buyers by means of an e-commerce outlet on the Internet. First, the interested public will have the opportunity to browse demonstration previews of the available WebSET objects. IDEC, a Greek industrial development and education centre, will install this service as a distributed application on the Web, mirroring the other partners’ sites to enhance e-commerce facilities.

Genias, as the Dutch XML expert, will be actively involved in all the stages of implementation, integration, exploitation and dissemination.

WebSET will take surgery training as their exemplar application for development.