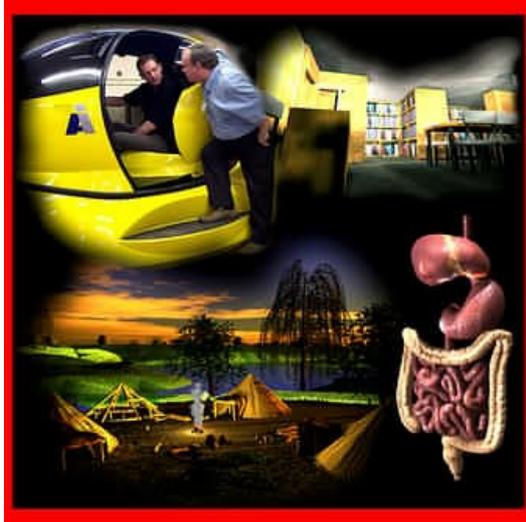


Virtual and synthetic environments - HIT - Electronic, Electrical and Computer Engineering research

Virtual and synthetic environments

The HIT Team also has a particular interest in Virtual or Synthetic Environments, in particular the application of emerging games engine and Web-sourced 3D modelling / run-time resources to real-world problems and the exploitation of VR, Augmented Reality and related technologies to applications in defence, healthcare, psychology and archaeology.



The HIT Team is involved with the international **Virtual Heritage Network** (<http://www.virtualheritage.net/>) and the **Institute for the Visualization of History** (<http://www.vizin.org/>), and has been involved in such exciting projects as the **Cuneiform tablet writing system study** (<http://www.cuneiform.net/>) and the reconstruction of the floor of the North Sea as it existed (and was populated) over 10,000 years ago.

This project combines the very best in VR modelling and run-time practice, using seismic survey data from the oil and gas industry for reference topography, but also introduces artificial life – the propagation of flora based on geographical, geological and meteorological knowledge – driven by microscopic elements (eg. pollen) extracted from geological core samples.

Games engine technologies and “Serious Gaming”

Contemporary role-playing and “first person” computer gaming technologies, as exemplified in titles such as Half-Life 2, Far Cry, Sim City, Full Spectral Warrior, Halo 2 and others are demonstrating how the underlying software modules – the games “engine” and content generation packages – are evolving into important and influential tools in the development of “serious” simulation pursuits, from evacuation training for offshore oil platforms and surgery to planning the deployment of emergency services in the context of an urban terrorist attack, and from cultural heritage pursuits to mainstream education.

The HIT Team is pioneering the application of low-cost, even free (Web-delivered) 3D modelling, physics, AI and run-time tools to the development of data-rich interactive 3D environments, including engines from Valve (Half-Life 2), Epic (Quake), Id (Doom 3), Crytek (Far Cry) and Microsoft (Flight Simulator), together with popular 3D content generation tools, such as gmax and gmax Tempest software, developed by **Discreet** (<http://www.discreet.com/products/gmax>), the DarkBasic 3D games creator and **MilkShape 3D** (<http://www.swissquake.ch/chumbalum-soft/>).