CVDS - TOWARDS A COLLABORATIVE VIRTUAL DESIGN STUDIO

Introduction
A Collaborative Virtual Design Studio (CVDS), accessible via the World Wide Web, is being developed by Online Planning at the Centre for Advanced Spatial Analysis, University College London. The CVDS is a result of research into the visualisation of urban form using Internet based communications. The visualisation of urban form is central to the design process, involving parties as wide ranging as Architects, Town Planners and Urban Designers to special interest groups and the general public.

Communicating Design Information
Central to effective design is communication. Information on the urban realm is often communicated, both in design education and practice, using two dimensional base maps which are central to a plan led design system. Base maps, which although of use for site layout, are of limited application in communicating general information on the urban realm. Indeed, the use of detailed base maps in public participation exercises may even alienate the public from the design process. It is more natural and communicative, for both professionals and the public, to view design in three dimensions. The use of three dimensional design in practice and education has so far been limited to either the use of CAD, running on high end workstations, or artists’ visual impressions. CAD, while being a powerful tool in itself, is asynchronous with models being navigable by only one user at a time. The models are often highly detailed when presented to the public to illustrate design. This creates the impression that the design is already ‘fixed’ and may reduce the willingness of the public to comment on the presented design. The CVDS has been developed to allow all participating parties to freely navigate three dimensional virtual reality worlds on a PC running Windows 95 with an Internet connection. The CVDS allows communication of three dimensional models on the World Wide Web in a collaborative, shared virtual environment. Figure 1 illustrates the interface.

The CVDS is based on software developed by Active Worlds (http://www.activeworlds.com). It is supplemented by the use of an Internet GIS, a Java based Whiteboard and a World Wide Web integrated database system. CVDS uses a Multi User Virtual World system where users are represented within the virtual realm as Avatars (an individual’s visual embodiment in the virtual environment). This provides an
all important visual and social presence in the Virtual World. Early trials of the CVDS are illustrated in Figure 2.

As users interact with the Virtual World, various powers of “modification” can be permitted, such as changing building colours or textures, altering size and plot position, or removing buildings and objects (such as street furniture or landscaping features). Completely new structures and layouts can be created. Figure 3 illustrates the concept of collaborative design within the CVDS.

Permission can also be set in order to determine who has the power to make certain changes to the model (Development Control). The CVDS includes an extensive library of design objects which may be supplemented, so allowing each aspect of the virtual built environment to be customised. Each object is integrated with a World Wide Web database containing details of costing. The inclusion of a World Wide Web site allows the use of supplementary information to aid the design process.

Metadata

All movements and design decisions carried out in the CVDS are logged, creating an extensive database of ‘metadata’. The data is further enhanced by the creation of a final costing of the design via the integrated World Wide Web Page. Such data is useful for creating a range of design options.

Educational Participation

As part of an educational initiative with participating universities, a number of global virtual design scenarios will be run as part of the CVDS. Virtual environments will be created with two distinct categories of design scenario “Virtual Real Places” and “Real Virtual Spaces”. The first type, “Virtual Real Places,” will be scenarios using 3D models of real world places, for example real development sites in London. These real world examples will be used in experimental exercises to assess the use of the CVDS for public participation.
“Real Virtual Spaces” will be fictional models, unrelated to any real location. These scenarios will initially be used by four design teams consisting of planners, architects and built environment students. They will login to the virtual design studio from around the world. Each scenario will be duplicated four times in the virtual environment, enabling each design team to take part in the same scenario. The production of identical scenarios allows each design team to view the work of others, thus allowing educated discussion on the outcome of each scenario. Feedback from each session will be provided on the CVDS World Wide Web Site.

**Reality Rooms**

The ‘Virtual Real Places’ scenarios will be supplemented by the use of ‘Reality Rooms.’ Reality Rooms provide a 360 degree photorealistic panorama of the design scenario. Specific scenarios will also feature a live World Wide Web camera fed into the Reality Rooms. The use of the latter will allow the user to view the real world in the virtual reality environment, an important consideration when using semi immersive virtual reality for design.

**Virtual Planning System**

The CVDS provides an insight into the development of a Virtual Planning system. The use of networked digital technologies to present planning information is becoming increasingly common, not only in education but also in practice. For example, a number of Councils now have digital versions of their Development Plans available on the Internet. The use of World Wide Web Sites to provide information on urban form may be seen as the ‘First Wave’ of digital design on the Internet. The Second Wave may be seen as the use of Internet based Virtual Reality, of which the CVDS is an example. The use of systems such as CVDS, running on home based personal computers, creates the opportunity to greatly enhance the level of public participation in the design process. The public and special interest groups will be able, via public access terminals or their own machines, to walk around virtual representations of real world developments with the site developers, architects and planners, all represented as Avatars. Such developments hold many implications for both the process as a whole and the professionals involved in designing the built environment. The CVDS provides an insight into these changes as the design process becomes increasingly public orientated and is facilitated by digital networked technologies.

**QUALITY LEARNING WITH TECHNOLOGY**

As part of the CTI Northern Ireland Forum in May, the CTI Centre for the Built Environment ran a day of workshops to demonstrate and discuss current developments in information technology in built environment education. The workshops featured a review of on-line learning courses and management systems, as used by the School of the Built Environment, University of Ulster at Jordanstown and an assessment of the use of panoramic VR in built environment teaching.

The CTI forum, Quality Learning with Technology, was supported by the VIRGIL Centre at the University of Ulster and the Institute for Computer Based Learning at Queen’s University, Belfast (QUB). The three day event incorporated a Colloquium at QUB. Minister for Education in Northern Ireland, Tony Worthington, gave a speech in which he noted the importance of C&IT in the province and praised the CTI for its ‘collective strength’.

The keynote speaker was Professor Roger King, Vice Chancellor of the University of Lincolnshire and Humberside and Chair of the new Institute for Learning and Teaching Planning Group. His talk gave delegates the opportunity to learn about the mission and aims of the Institute, which has been charged with leading the academic profession into the next century. There was also a talk from Professor Graham Chesters from CTI Modern Languages who discussed Technology Strategies for the future. In addition, there were a number of case studies and demonstrations of innovative uses of technology as well as an Exhibition. A full CTI report is available at http://www.cti.ac.uk/news/features/ni.html