VIRTUAL ENVIRONMENTS - ENHANCING THE DECISION MAKING PROCESS IN URBAN PLANNING USING GIS DATA AND VIRTUAL REALITY

Philip James

BuHu, School of Construction and Property Management, University of Salford
Tel: ++441612952133 Fax: ++441612952138 Email: P.James@salford.ac.uk
Andy HAMILTON, BuHu, School of Construction and Property Management, University of Salford,
Steve R. Curwell, BuHu, School of Construction and Property Management, University of Salford,
Terrence FERNANDO, Future Workspaces Research Centre, University of Salford,

Keywords: Virtual environments, Urban spatial planning, Stakeholder involvement.

Abstract

With some 70% of Europe's population living in urban areas it becomes increasing important to deliver environments in which people want to live and work and which contribute to their sense of well-being. The situation is not unlike that in other parts of the globe who are entering the post-industrial era.

The most significant barrier to more sustainable urban re/development of cities is the lack of consensus between citizens, politicians and business over actions and targets. Current patterns of consumption and production plus business and political decision-making paradigms are locked into current models of demand for goods and services because citizens do not have ownership, nor a common vision, of change towards more sustainable communities and life-styles.

An approach to the feeling of exclusion is to recognize that participation in the planning process is educational in itself and to consciously enhance the process to promote learning. It can be argued that the problems facing the planning process relate to a complex of communication and learning process. In order for greater participation within the planning process, there must be an effective communication system to complement changes in attitude. For participation to lead to better decision making, however, learning must take place, where learning is defined as the synthesis and analysis of information obtained through communication. Decision-makers need to learn and understand the views and needs of stakeholders, and all participants need to learn about the likely long term consequences of their decisions.

One objection to greater participation in the planning process is that the complex issues are only fully understood by "professionals". Urban spatial planning, however, is not a "rules based" discipline and does not depend solely on regulation. Thus views on matters such as transport and crime, vary greatly amongst professionals, and there are no definitive solutions to most urban problems.

This demonstrates tensions between-actors in the urban spatial planning process. Although it may not always be possible to resolve conflicts of opinion a society can seek consensus and development by becoming a "Learning Society" in which conceptual models of urban areas are built using computer software and used to simulate the outcomes from particular policies and actions.

Visual Systems Technologies: VR, GIS and the Internet, as part of a knowledge based society offer potential for addressing these issues. The range and variety of information and communication technologies is increasing and providing a growing digital tool kit that can be applied to find solutions to real world problems. As with any tool kit it is important to select the appropriate tools for the job. In relation to the construction of learning systems for planning we have already defined the aspects that need to be addressed. In order to analyze expected benefits of visual urban spatial planning systems, the technologies used in such systems are classified in terms of their potential to enhance learning aspects.

Whilst GIS, VR and the internet can be used to assist learning, it is only by combining them into one system that a rich and free standing learning environment can be created. This can be a resource for all stakeholders that can enable them to participate in the decision making process.

Based on this background the work reported in this paper consists of a critical review of emerging policies relating to e-governance, and

a sustainable knowledge-based inclusive society. This review is based on work undertaken as part of European funded projects including BEQUEST (Building Environmental Quality Evaluation for Sustainability through Time), INTELCITY (Towards Sustainable Intelligent Cities), INTELCITIES, ROADCOM, and LUDA (Improving the Quality of Life in Large Urban distressed Areas). The review also considers links between the environment and health particularly the contribution made by urban greenspaces to well-being. The review draws out the critical drivers of change in urban spatial planning particularly the inclusion of all stakeholders in the process. The responses to these drivers suggested from the review of these international research programs. In particular BEQUEST provided a Toolkit to aid decision making for sustainable areas. This can be integrated with the roadmap for the use of ICTs to promote the knowledge society in cities and through that a more open debate on sustainability provided from the INTELCITY program. INTELCITIES builds on that to set out to build city systems for the knowledge society. The paper also suggests scenarios which incorporate advanced ITC (Information and Communication Technologies) into urban planning systems.