

ILUDS

An Interactive Land Use Database System for Intelligent Cities

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This paper presents the i-putra business channel, a portal that has been completed with a comprehensive database of information relating to commercial and residential properties, and other on-going development components of Putrajaya, one of Malaysia's intelligent cities. Designers were provided with multimedia-rich information of spaces before making a selection through the Interactive Land Use Database System (ILUDS) which hosted more than 67,000 units of residential and commercial areas in Putrajaya. The database was developed based on category searching features that aimed to be the one-stop brief explanatory system on the Internet. ILUDS depicts an innovative idea for city and urban development to prepare information and virtual interactivities for a better usage in a 'soft city' design. The system has the underlying structure that allows for partitioning and ease of handling within which the data can be structured under a graphical interface that facilitates editing, manipulation, attribution and updating. This attribute of city information and associate data offers users a different level of interactivity and provides effective use on architectural and city information.

Keywords: *ILUDS; intelligent community; intelligent cities; database.*

Introduction

According to the Intelligent Community Forum (ICF) (2001), all high-tech corridors established in Asia including in Europe and America share the same goal that is to prepare what is known as Intelligent Community (IC). It is the community, whether a town, city, county or region, that views communications bandwidth as the new essential utility, as vital to economic growth and public welfare as clean water and dependable electricity (Rafi, 2005). They suggested that in the industries of tomorrow, citizens will benefit from the Information and Communication Technology (ICT) facilities and services in doing

business and education, and to deliver government services electronically with speed and cost effective of processing and delivering. Developing countries such as Malaysia, Singapore, Philippines, Thailand and South Korea for examples feature Internet, Cable TV, Satellites and Telecommunications within the city infrastructures (often referred to as High-tech Corridors) primarily to establish an information hub that is competitive enough towards attracting, connecting and growing the leading-edge industries and communities for a better quality of life and economy for the 21st Century.

In many cases, 3D city models were developed with integrated dynamic database systems to allow

for information search, visualisation, engaging urban activities, edutainment, entertainment and city management. According to Chiu and Peng (2005), there is a wide acceptance of the role of 3D city modelling; however, there is no one preferred strategy for model development that has emerged as being the most appropriate. They further explained that digital cities become a platform of digital repository of urban information, a digital service of urban planning, cultural navigation, or commercial advertisement. While the idea of the intelligent city is noble, one of the key challenges that arises is how do we ensure that the 'information hub' plays an active role to support life in physical cities? We presented earlier in the CAADRIA International Conference 2003, Thailand the first phase of www.i-putra.com.my, an interactive portal to improve and accelerate the 'virtual activities' within the intelligent city of Putrajaya, Malaysia. This paper continues to demonstrate one of the key channels, Interactive Land Use Database System (ILUDS) that provides users not only access to databases of information relating to commercial and residential properties, but also to e-commerce applications as part of encouraging and engaging intelligent cities activities.

Intelligent city concepts

ICF (2001) has listed out five key points to measure the level of 'city's intelligent' and this paper uses this as a foundation for the study and implementation of the design of the main portal. This includes (1) Broadband Infrastructure, (2) Knowledge Force, (3) Venture Capital, (4) Digital Democracy and (5) Marketing Prowess. This section summarises these points based on an article presented by the author in Information and Communication Technology (ICT) and Intelligent Cities: A Malaysian Experience, CAAD Talk 4: Insights of Digital Cities, Rafi (2005).

Broadband Infrastructure

The development of a strong, superior services and reliable ICT infrastructure is a pre-requisite for intel-

ligent cities to remain competitive. The Multimedia Super Corridor Malaysia (MSC Malaysia) promises 2.5 to 10 gigabits backbone network, fibre links, digital multimedia network and competitive tariffs.

Knowledge Force

MSC Malaysia identified seven pilot flagships namely Electronic Government, Multipurpose Card, Smart School, Tele-health, Research and Development (R&D) Cluster, Technopreneur Development and E-Business to activate the virtual activities within the physical cities. This idea has attracted more than 1400 local and multi-national companies including Microsoft, Nippon Telegraph and Telecommunication (NTT MSC), Sun Microsystems Malaysia, Nokia and Motorola, and universities to be the catalyst and breeding ground for the knowledge workers within MSC.

Venture Capital

The Malaysian Venture Capital Association (MVCA) was established to channel funds through programmes, allowing good incubators to network for business gains while building the confidence of venture capitalists. Funding schemes include the National Unipreneur Development Fund (NUDF) and the National Incubation Development Fund (NIDF), Multimedia Grant Scheme (MGS), the Demonstrator Applications Grant Scheme (DAGS), the Technology Acquisition Fund (TAF) and Industry R&D Grant Scheme (IGS) estimated at RM4.3 billion (US\$1.26 billion).

Digital Democracy

The ICT Literacy Gathering on 17 February 2001, has marked the government's initiatives that has attracted more than a thousand participants to take part in a mass simultaneous computer tutorial prepared by the Manpower Department held in all states of Malaysia. With e-Government estimated at US\$100 million of expenditures, this sector has set a new benchmark of delivering services to the public with speed and adaptation of the changes of the citizens need.

Marketing Prowess

Multimedia Development Corporation (MDC) suggested three key milestones that is (1) the creation of the MSC, (2) link the MSC to other cyber-cities local and worldwide and (3) transform into a total knowledge society. Effort towards this set of milestones is marketed aggressively through the official website (www.msc.com.my) and media means of communication. The International Advisory Panel (IAP) yearly meeting reports and updates the cyber cities achievement and suggests the ways to improve and sustain the quality.

The interactive channels

Intelligent Cities require an integrated use of ICT to serve the communities' demands. In the case of i-putra.com.my, five social-based core channels (i.e. Kids, Teens, Gen-X, Family and Business) were developed to cater and 'connect' the residential and business communities. Each channel was designed and clustered under interactive content namely i-education, i-asset, i-content, i-community, i-government, i-lifestyle and i-others.

As for the business activities, i-Putra Business Channel was introduced to manage and service databases relating to commercial and residential properties. Potential developers, architects and designers for example can even zoom into the sub-channels to search for the plot ratio, costing of the properties, planning submission detail and availability status through Interactive Land Use Database System (ILUDS) and Interactive Properties Database System (Putra Properties). Visitors can search and reserve a property through its e-commerce hub and interactive mode of illustrating and providing the information in the form of 2D, 3D, VRML, panoramic view, and images.

The Design of ILUDS

ILUDS is designed in such a way that its integrates with the existing main portal where all services are

interactive, accessible anytime, anywhere and by anyone. Four areas of information are established namely the Overview, Commercial Sector, Putrajaya Holdings and the Web. The Commercial Sector section, the main interactive section presents detail information on the commercial land development at Putrajaya consisting of four regions (1) Southern Region Business District, (2) Central Business District, (3) Western Region Business District and (4) Northern Region Business District.

Each region allows viewers to search for the plot detail, and to experience the spaces through visualisation and virtual visit. Users can access the space plot together with the types of land area usage such as commercial, mixed development, government, residential, utility and public spaces. Each plot number is specifically tabled with the plot area, plot GFA and plot ratio. Some may include car parks availability. With this information, the users can search and view the development controls consisting land use and suggested activities, horizontal control (ground level and street level), vertical control and landscape horizontal control. As for the visualisation, 3D images, animations, and VRML or Quicktime VR are some of the suggested preferences to give better understanding to the architectural spaces. All inquiries will then be linked to the main portal (Figure 1).



Figure 1
ILUDS web site (source from
<http://www.i-putra.com.my>)

Conclusion

ILUDS is one of the interactive platforms within www.i-putra.com.my that promises improvement especially in sustaining the quality of life, changing the community mindset and reducing the 'digital divide' in developing country like Malaysia. Using the Intelligent Community (IC) benchmark is beneficial to sustain and ensure Putrajaya City is on right track in the Digital Age. The portal also demonstrates opportunities to improve and accelerate 'shared-activities' within the cyberspace via ICT platform and multimedia-rich content as the determining factors for other virtual cities that are to follow and refer.

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