Spatial Information Technology

The Urban Spatial Information Group at Sejong University carries out research and development in the creation and dissemination of urban spatial information. The group brings about revitalisation in the urban information industry of Seoul metropolitan region. A new technology is to be introduced into current urban GIS for the transition to a standardised web-service system handling urban 3D-topographic models. This standards-based interoperable GIS system with urban 3D topographic base models will be used for various purposes and applications, such as urban planning, traffic management, environmental monitoring, property, emergency-situation handling and building management.

Co-operation
The research group comprises a variety of departments (Geoinformation Engineering, Urban Engineering, Civil Engineering and Information and Industrial Engineering) from three different universities. Three local companies are involved as partners in software and business development. Over the past few years the research group has worked closely with international academic organisations such as Glasgow University and the University of Calgary, as well as Canadian and Belgian companies.

Research
Our research activities are classified under three main areas: GIS Software, GIS Database, and GIS Application. GIS Software research is focused on established OGC standards, making it possible to offer information services through the OpenGIS Web Map Service, Web Feature Service, Web Coverage Service and Web Processing Service Interface Standards. Planned research efforts include Catalog Services (CS-W), Geospatial Rights Management (GeoRM) and Sensor Web Enablement (SWE). Most of our development activities are based on GIS open-source programmes, which have matured significantly in recent years.

Automation
The two most important objectives of our GIS Database research are automation of 3D-digital building modelling and real-time stereoscopic viewing of urban perspectives and building interior perspectives. Lidar data plays a major role in automation efforts, and standards such as CityGML and KML are used to provide stereoscopic web services involving geospatial data.

Application
The role of GIS Application research at the Urban Spatial Information Group is to collaborate with domain experts to make their domain knowledge spatially intelligent. For instance, urban planners render spatial evaluation models of urban plans, traffic engineers investigate the impact of proximity of traffic facilities on house prices, and environmental engineers map data-streams from environmental sensors.

Results
Various results can be anticipated from the fusion of the co-operative research effort. A real-estate website has been developed offering planning, traffic and environment information using OGC standards (WMS, WFS, WCS, WPS) from distributed servers. We expect selected house interiors will be available for stereoscopic viewing. If available, video from a nearby real-time, closed-circuit TV film will be superimposed on the 3D-topographic model. Our corporate partners look forward to commercialising and marketing the results of our research among local customers. Seoul metropolitan government has provided funding for the Group's research activities.

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