

Spatial Technology

For Utilities, Public Safety and Security Solutions

Dr. Horst Harbauer, SG&I Senior Vice President for EMEA at Intergraph, talks about the company's software solutions for the utilities industry, public safety and security solutions. Also, the distinction between GIS and security is addressed and how Intergraph is in a unique position to deliver critical infrastructure protection to different but related markets. Lastly, Harbauer speaks about integration real-time sensor feeds with maps and how that experience leads towards new innovations.

By the editors

How does Intergraph support the 'Smart Grid' needs of the utilities industry?

Horst Harbauer: The term "smart grid" means the availability of intelligent and flexible grids. More and more power is being generated by decentralized power sources (photovoltaics, wind power). This leads to higher grid structure requirements with regard to load distribution and grid stability, which can be secured by intelligent and flexible grids. Contrary to regular power plants, photovoltaic plants directly feed into medium and low voltage networks creating significantly higher effort to conduct networks analysis. Wide area power generation equally broadens the volume of requests for network analysis software solutions (e.g. voltage drop and R&X-calculation) from not only the headquarters and the power plant, but also in some of the subsidiaries of the regional supplier and municipal utilities.

G/Technology is Intergraph's focused application for utility and communications customers. It was developed from the foundation of our GeoMedia technology to provide advanced workflows that meet the data capture, maintenance, analysis and reporting requirements of utility and communications companies. To provide maximum openness, flexibility and scalability, both applications support native Oracle Spatial. Previous versions of G/Technology initially remained on Oracle's relational spatial data model when GeoMedia



Dr. Horst Harbauer

upgraded to the object data model. Today, both G/Technology and GeoMedia utilise Oracle's object data model. For earlier versions, customers made use of Oracle stored procedures to simultaneously populate both geometry types, allowing both applications to access common records.

In Europe, when performing disaster management simulations, the heavy security at government institutions impedes the exchange of (geo)data. The real problem seems to be massive firewalls. In what way can Intergraph help government agencies with this issue?

Horst Harbauer: This is really a matter of approaching the requirement from the correct direction. Major events (whether natural disasters, acts of terrorism or sporting events of the scale of the Olympics) are unparalleled in their operational and organisational complexity. Their safe and effective management requires timely and

well informed decision making coupled with the ability to communicate and coordinate across geographically dispersed locations and a bewildering range of diverse organisations. These can involve critical responders and resources from emergency services, national government, municipal and regional government, the private sector (such as utility operators, communications companies, transport operators, etc.), the military, security services and the voluntary sector, amongst others.

To achieve this requires a significant degree of coordination, control and resilience. In the absence of secure, reliable and predictable process and access control, data sharing invariably becomes reduced to non-sensitive themes that can be exploited by organisations downloading data from portals for use in their local projects. The overheads, hinted to in the question, and the lack of real-time interaction, tend to limit the application of GIS to the planning and recovery phases of disaster management. Intergraph has drawn on its experience as the leading provider of map-based public safety and security solutions to develop a robust, collaborative, process-driven emergency planning and response suite that fuses workflow, real-time data integration, secure role-based access and advanced geospatial functionality. The security and coordination provided by this platform enables users from different organisations to use data directly from the source, avoiding the overhead and disconnect caused by downloading datasets. This platform has already helped manage major events successfully, including the recent G8 Summit in L'Aquila, Italy, and is being deployed for regional civil protection centres across Europe.

The same questions as the one before, but with a focus on security and infrastructure? How can Intergraph use its knowledge of the energy and utilities infrastructure industries to direct its expertise toward security concerns? And because security in government agencies and energy companies is not in the same hands as GIS, is there any contact at all between both divisions and what is Intergraph's strategy to enter these divisions?

Horst Harbauer: In a perfect world, the GIS/security distinction would not exist. However, some GIS technologies are harder to integrate with real-time information and operational business systems. Intergraph is in a unique position, having experience and products in the three prerequisite areas of capability necessary to deliver critical infrastructure protection. Intergraph offers core geospatial technology, as well as integrated security platforms and industry solutions for infrastructure design and management.

Today, Intergraph solutions are providing integrated security for airports, ports, mass transit systems, rail, national borders and nuclear power plants. Besides SG&I (Security, Government & Infrastructure), Intergraph Process, Power and Marine (PP&M) which is Intergraph Corporation's second division, is the world's leading provider of enterprise engineering software for the design, construction and operation of process and power plants. Our close relationship with and insight into the energy sector means we work with clients wishing to protect next generation nuclear, petrochemical plants and oil production facilities.

The utilities industry has quite a high pressure to reduce its operating cost. What solutions can Intergraph provide to achieve this goal?

Horst Harbauer: The German Federal Grid Agency has requested the utility industry to reduce its operating costs and – at the same time – to compensate the power losses which occur during the transmission. To secure this, many power suppliers focus on status oriented maintenance. Intergraph's GINIUS solution provides all necessary methods and functions needed to collect and document the status of the production equipment. This covers the full workflow of production equipment data into the grid, graphical user interface for result entry in the field, and recirculation of the collected data into the office. The funds allocation is then based on the findings of the results of the status oriented maintenance plan. Furthermore, Intergraph does return the result data back into the central ERP-SAP system, where cost calculation can be done.

The placement of safety cameras with a known position that recognizes pixels is rapidly bringing digital camera technology into the spatial domain. What can be expected from Intergraph in the field of cameras and location, pixel recognition and the real-time monitoring of suspected movements with multiple cameras?

Horst Harbauer: While this is 'bleeding edge' technology for conventional GIS vendors, Intergraph has a long history of working with video, and the company holds a number of patents in this space. We first integrated camera feeds with our emergency management environment over a decade ago and also produce a forensic video enhancement and analysis product. This experience has enabled us to lead innovation in a number of directions.

The security and public safety markets have driven the need to integrate real-time sensor feeds with maps to maintain a clear picture of the situation on the ground and as a way to manage and make sense of the ballooning and bewildering range of real time data feeds like intelligent CCTV, radar, access control and UAVs.

The spatial framework also helps the operator understand situations more quickly by showing the context of an alarm with clear links to supplementary information that can help them determine whether action is required. For example, when an alarm is raised by an access control system or a sensor, the operator is shown its location along with CCTV that covers the area in question and the location and status of nearby personnel. Video footage 10 seconds from either side of the alarm can be accessed by clicking a camera location. Similarly, a patrol can be dispatched to investigate and CCTV cameras can be panned and zoomed by simply clicking their icon within the map. Intelligent CCTV enhances this process by continuously monitoring multiple feeds for conditions that fall outside acceptable parameters. When an exception is detected, an operator is shown the video sequence and location of the event on a map display, providing direct access to all of the supplementary information to assess the alarm and deploy the most effective response. These capabilities are used extensively in critical infrastructure protection and border security.

Intergraph also has just launched GeoMedia Motion Video Analyst to enable wider and more effective exploitation of the terabytes of data that are produced by the hundreds of thousands of hours of video produced annually by UAV flights. Motion Video Exploitation combines video feeds from aerial platforms directly with mapping, enabling live video to be viewed in its geographic context and in combination with other data for enhanced situational awareness during operations. It also unlocks valuable information in archived footage by providing a simple and reliable means of searching by location as well as date and time.

For more information, have a look at www.intergraph.com