



Enabling Technology Solutions for Geospatial Resource Management (GRM)

Setting the pace for geofacilities management within a GRM environment

Demand for engineering-based automation in the utility, pipeline, water, and communications industries has never been greater. Intergraph's G/Technology-based geofacilities management systems provide a much broader scope than traditional AM/FM/GIS applications. They form the enabling technology that links critical workflow processes into an integrated GRM environment, reducing the cost of designing, operating, and maintaining the assets that deliver utility and communications services to your customers.

G/Technology integrates geofacilities management with operational-support and service-delivery applications, enabling these systems to cooperate seamlessly to manage a company's planning, design, construction, operations, maintenance, and emergency response functions. Thus, companies can respond more quickly and efficiently to market opportunities and customer demands.



GRM is proving crucial in today's competitive utilities and communications climate because its ability to integrate geographic and other corporate data maximizes resources.



The value of GRM integrated workflows

As a suite of applications pre-integrated with G/Technology, GRM provides a seamless workflow among the business processes - those that deal with provisioning and sustaining a company's service delivery network. G/Technology also manages the geospatial assets within the geofacility model and coordinates with other corporate systems, such as work management, outage and workforce management, and network analysis. In doing so, it acts as the enabling engine for decision support within a GRM workflow.

The hallmark of G/Technology is an unprecedented openness that empowers GRM by making facility information directly available to relevant corporate systems and users throughout the enterprise. G/Technology is designed with industry-specific functionality representing the best practices of Intergraph's electric, gas distribution, pipeline, water, and communications customers.

Open database – optimized for GRM and enterprise data sharing

Intergraph's objective is to continuously enhance our solutions to take advantage of leading-edge data management strategies and the spatial initiatives of relational database management system (RDBMS) vendors such as Oracle. G/Technology provides the capability to organize all your data in a single corporate database environment accessible through common tools. Now, your data can be leveraged into other applications and integrated into mainstream information technology (IT) computing. Employees can share a common database from a variety of clients. G/Technology openness is characterized by the following:

- Geometry information is stored in tables in the corporate database.
- Corporate applications can read and write data directly to the corporate geospatial facility database; proprietary geographic information system (GIS) applications are eliminated.
- Integration with external applications occurs through standard, open development tools.

- Updated data is immediately available to all authorized users.
- Multi-user, long- and short-term transactions of spatial data occur inside the RDBMS. This is a breakthrough in database technology, allowing geofacilities management applications to interoperate with other aspects of IT more effectively.

Configurable COTS-based solutions that adapt to technology changes

Proprietary code is expensive to customize, maintain, and integrate. Commercial off-the shelf (COTS) solutions, based on G/Technology, allow you to model important feature behavior

and relationships, from simple to complex, without the need for programming. This lowers the cost of GRM ownership with configurable components that address your unique viewing and legacy integration needs without changing the underlying industry-based structures.

G/Technology represents an optimized database structure into which Intergraph will routinely incorporate new core functionality in successive releases. This leads to smooth upgrades and allows companies to take advantage of product enhancements. Each new version will be provided as an automatic upgrade to customers under maintenance agreements.

Scaleable and performant – high-speed graphics accelerator

G/Technology uses an optimized caching technology to transform the complexities of GIS/geospatial processing into applications that follow traditional Online Transaction Processing (OLTP) models. This means that standard RDBMS technology can be used to scale applications to the desired size. Direct connection to the open database provides the most accurate information; however, RDBMS spatial query technology is limited in how fast it can display data. Complex GIS data is very slow to display when requested directly from the spatial RDBMS. To solve this performance problem, we developed a high-speed Dynamic Display Cache (DDC) for rapid display on client machines and leveraged existing database transaction management notification to inform users of any changes to the master data. Now users have the best of both worlds: rapid graphics display and up-to-date information.

Productized interfaces and application integration

Integrating the geofacilities management application with other physical models of the delivery infrastructure - such as SCADA, work management systems, and workforce management systems – is essential to staying competitive and provides a significant return on investment.

G/Technology offers an architectural foundation that supports both customized and productized interfaces. Because the integration of non-GIS data and the geofacilities management applications takes place at the database level instead of the application level, G/Technology can make external data available to the various operational systems, without the need for proprietary middleware.

Intergraph's GRM solutions offer integration to the following systems:

- **Work Management System (WMS).** Integrating G/Technology with a WMS provides design engineering functions and compatible unit data structures, plus detailed work request, scheduling, and material costing information. Even a small improvement in the productivity of the company's crews results in significant savings, while providing better use of company and contracted personnel.
- **Engineering Analysis.** Engineering analysis represents a standard interface between G/Technology and popular analysis software.
- **Mobile Workforce Management System (MWFMS).** Our InService mobile workforce management supports dispatch, scheduling, and mobile computing solutions for all types of field work-planned and unplanned, short term and long term.
- **Outage Management System (OMS).** Our InService OMS uses the geofacilities model with links to customer information systems (CIS), automated voice response units (VRU), supervisory control and data acquisition systems (SCADA), and automated meter reading systems (AMR) to predict probable cause of the outage and quickly and efficiently dispatch crews to repair the problem.
- **Customer Information System (CIS).** The database provides configurable and customizable integration to various CIS applications, providing consumption averages and loads. Additionally, the data model supports the relationship between the customer and supply assets.

Industryware models

Industryware is Intergraph's term for our industry-specific data models for utility, pipeline, water, and communications companies. It augments the COTS industry-specific functionality and provides a starting point that results in rapid solution implementation. To companies with standard needs, it provides a cost-effective, out-of-the-box application. To companies with the goal of full integration, it provides a basic foundation.

Industryware is the starting point for our QuickStart program, which provides the project and implementation services to install and deploy geofacilities management solutions quickly and efficiently. The Industryware software modules are managed by Intergraph Customer Services.



For more information or a demonstration, call 1-877-818-4171 in the United States.

