



Smallworld* Global Transmission Office



Customer Benefits

- Up to 25% reduction in data maintenance costs through the usage of automated tools that optimize GIS technician productivity.
- Up to 25% productivity improvement in centerline correction, utilizing powerful centerline correction tools that manage hundreds of thousands of data points.
- Up to 20% productivity improvements in loading and aligning In-line Inspection (ILI) Data through integrated data import, alignment and inspection management tools.
- Up to 25% reduction in Class and High Consequence Area (HCA) analysis using powerful and accurate analysis tools that meet the 49 CFR 192.5, 49 CFR 192.903 and 49 CFR 195.452 regulations.
- Up to 30% data collection productivity improvement through integrated and streamlined data collection processes.
- Increased confidence in data and analysis through integrated processes, data currency, accuracy, traceability and quality.
- Smallworld 5: Architected for the future with continued adoption of the latest technology standards that simplify system integration through open technologies; faster, smarter decisions through modern web and mobile technologies; and increased productivity through focus on a modern user experience.



Managing Pipeline Assets and Networks

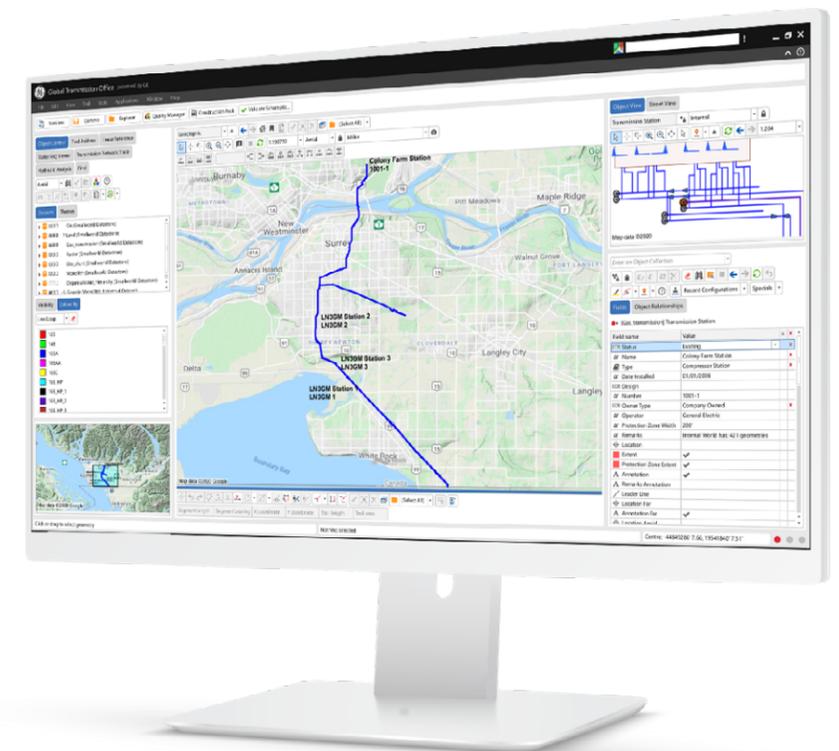
GE's Smallworld Global Transmission Office (GTO) provides operators with a powerful and comprehensive fit-for-purpose pipeline data model, a set of geospatial business applications, and integrity management and analysis tools that are designed to integrate with existing operators' business processes. Our unique approach of having a pre-configured and pre-integrated spatial solution that is sustainable is a key benefit for operators. GTO is a proven scalable solution that supports small to very large operators with large geographic territories.

Smallworld Global Transmission Office's approach to implementation with a pre-configured and pre-integrated application allows for significant reduction in implementation time compared to traditional customized solutions. Using this solution provides a faster return on investment by allowing users to perform their daily business processes more efficiently. Smallworld Global Transmission Office provides a single source solution and focuses on business issues, not IT issues:

- Maintain and manage complete and complex spatial asset networks throughout the pipeline asset lifecycle since the applications are integrated into the operator's business processes.
- Experience a single user environment that has more than 22 business, analysis, data quality, and user productivity tools to support engineering, asset management and operational business processes.
- Enable standardization utilizing an industry data model that supports fundamental pipeline operations and integrity work processes.
- Improve productivity for risk and integrity management.

Solution Strength

The Smallworld Global Transmission Office suite is a market-leading solution backed by the experience of more than 120 gas utilities worldwide that use GE's Smallworld GIS solution. Smallworld Global Transmission Office is a set of software business applications used by the pipeline operators to document, plan, operate, assess and manage their networks. Users can have a complete view of assets, linear references and integrity data from a Single Source of Truth, providing faster access to information and reducing training requirements. Smallworld Global Transmission Office holds accurate up-to-date network information to effectively control the deployment of the critical infrastructure and integrity data on which all end users depend.



Addressing Business Challenges

Addressing Business Challenges The major challenges facing pipeline operators today include regulatory compliance, risk management, and integrity management. To meet these challenges, pipeline operators need tools that allow them to accurately model their asset network, support traceability of the asset lifecycle, assure completeness of data, and support integrity management. Users need to have confidence in the data and they need to be able optimize all of the key processes within the plan, build, operate and maintain lifecycle.

Data Maintenance

Data maintenance is a key and fundamental process for pipeline operators. The ability to maintain current, accurate, complete, traceable, and high quality data is at the root of support for all other processes. Smallworld Global Transmission Office supports the data maintenance processes, utilizing a variety of tools to easily maintain asset data, load asset and GPS data, maintain quality, and manage extremely large amounts of related data, all driving towards reducing data maintenance costs.

Market Analysis

System planners need to be able to combine data from a variety of sources and visualize this in one environment. Smallworld GeoSpatial Analysis allows planners to make informed decisions about where new capacity is required.

Network Planning

Hydraulic analysis plays a key role in sizing the network for the identified demands and any potential growth. Smallworld Global Transmission Office provides the ability to quickly and accurately perform analysis on the network model and increases the accuracy of the analysis results. Unique to GTO is the ability to maintain not only the current “as-built” network model, but also one or more future network models. Using these multiple network “states” held in Smallworld Global Transmission Office, optimization engines can quickly compare the critical operating parameters for a given network supporting better decisions.

Full Life-Cycle Support



Network Design

When combined, Smallworld Global Transmission Office and Smallworld Design Manager provide a powerful set of tools to design, cost, and optimize a planned network. Alternate designs can easily be compared to identify areas of network optimization, resulting in significant savings.

Consequence Area Determination

Regulatory directives demand that operators continuously review, and potentially modify, class locations and high consequence areas (HCAs). This process is intense and using traditional approaches requires significant resources to complete. Integrating Smallworld Global Transmission Office’s Class/HCA Analysis tools into the existing business process can provide up to 25% reduction in class/HCA analysis.

Construction Execution

Reducing data latency and increasing data quality has a positive impact on all business processes. Using streamlined data collection processes integrated with GE's GE Mobile Enterprise solution, operators can expect to see up to 25% productivity improvement in as-built posting as well as improvement in enrichment, traceability, quality and currency of data.

Risk Analysis

Risk analysis processes require data from multiple corporate resources. Smallworld GeoSpatial Analysis is a powerful spatial business intelligence software that is used for risk analysis, market studies, growth analysis, long range planning, and capital investment planning. Smallworld GeoSpatial



Analysis allows the risk engineer to access multiple data sources and create risk scenarios quickly and without third party support, reduces or eliminates third party vendor costs and improves productivity by up to 25%.

Integrity Management

Integrity management requires confidence in data and analysis that results from integrated processes, data currency, accuracy, traceability and quality. Smallworld Global Transmission Office provides the integrity engineer with the ability to view this information from a single point of entry. This ensures reduced training time, improved productivity, reduction in software required to perform the processes and a single source of truth.

Maximum Allowable Operating Pressure

The Maximum Allowable Operating Pressure (MAOP) Calculator allows utilities to calculate the MAOP for a line loop in accordance with 49 CFR 192 (US Code of Federal Regulations) for steel transmission pipelines for natural gas in a verifiable, traceable and complete method. This calculator fundamentally integrates the calculation of the MAOP with your current GIS which allows for ease of reporting by creating a living analysis of the current and future system design. The MAOP calculator also provides the following benefits:

- Out of the box reporting on line data
- Capability to compare assessment configurations and results

- Full ability to view results in band view diagrams, maps or input data tables
- Ability to track data origin
- Audit proof tracking of changes to data
- Full capability to edit and manipulate line data outside of the GTO environment to fill gaps, correct data or run what-if scenarios
- Versioning of line data to preserve snapshots in time

Data Enrichment

New regulatory pressures on operators are requiring comprehensive investigation of records to prove asset "Fitness for Purpose". Operators are finding that more data is required about the assets to satisfy the new regulations. GE's GE Mobile Enterprise technology can play a key role in the Data Enrichment process, providing the ability to quickly and accurately collect the required data elements and return the data to Smallworld Global Transmission Office to help satisfy new regulations.

Inspection & Maintenance

The Smallworld Compliance Manager application, with integration to GE's GE Mobile Enterprise provides powerful tools to support the overall maintenance, inspection and compliancy processes. The ability to schedule, capture and return results addresses many of the regulatory rules for compliance management, asset traceability and data completeness.

The Smallworld Solution

GE's portfolio of products provide end-to-end integrated solutions within the Smallworld Global Transmission Office product suite. The products are built upon Smallworld Core Spatial Technology, one of the most extensive and scalable GIS technologies available.

Smallworld Global Transmission Office has a comprehensive data model representing transmission pipeline in a complete linear, network and asset maintenance lifecycle. There are 22 business focused applications, including robust data maintenance tools, analysis applications, compliance support, and risk and integrity management support.

Smallworld Global Transmission Office Base Product is the comprehensive pipeline data model, the linear reference management base, 5 business applications, common office tool set and auto stationing management.

Smallworld Global Transmission Office Compliance Component has 4 powerful applications to meet the day-to-day compliance management needs of pipeline operators.

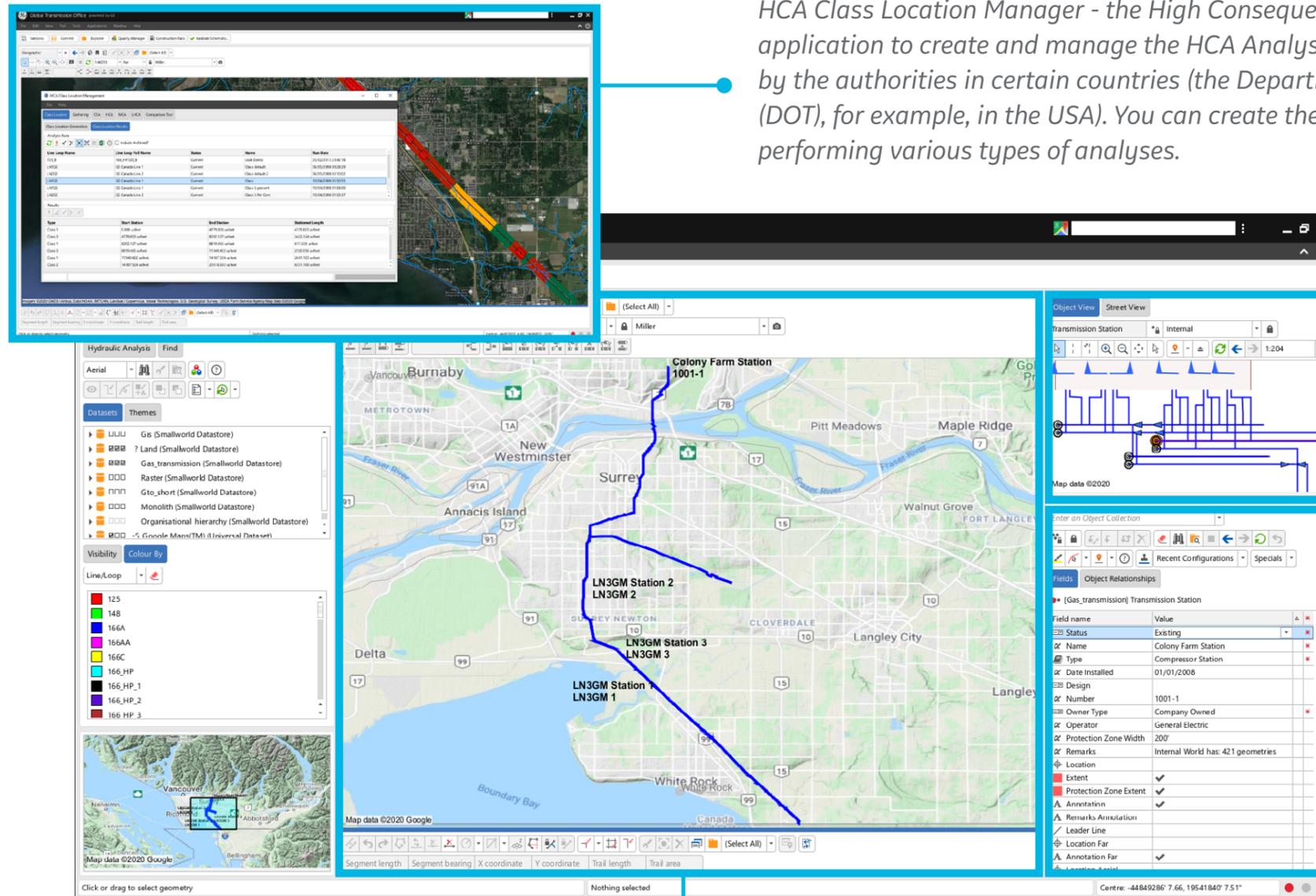
Smallworld Global Transmission Office Data Management Component has 7 robust applications that leverage the data model and provide the user with a variety of tools to manage pipeline and associated data throughout its life.

Smallworld Global Transmission Office Integrity Management Component consists of 6 analysis and integrity management focused applications that are used by integrity engineers to support the risks and integrity management processes.



Service Hierarchy Reporter

HCA Class Location Manager - the High Consequence Area (HCA) Analysis application to create and manage the HCA Analysis data that is required by the authorities in certain countries (the Department of Transportation (DOT), for example, in the USA). You can create the HCA Analysis data by performing various types of analyses.



The Map window – Displaying the HCA Analysis results overlaid on the LineLoop and building information.

Review the details of the asset and be able to modify asset details if required.

The Detail Map window provides a detailed display of the object selected in the main map view.



Market Leading Capability

Smallworld Global Transmission Office offers unique and unparalleled value to pipeline operators:

Low risk

Smallworld Global Transmission Office is a commercial off-the-shelf (COTS) product that is proven in large scale production deployments reducing the risk of implementation and upgrades.

Single network view

GE's fully integrated geospatial solution provides a "Source of Truth" for the entire gas network, eliminating the need to maintain data in multiple systems.

Reduced integration costs

Smallworld Global Transmission Office is a fully integrated solution. Use of standards and a Service Orientated Architecture reduces integration costs and insulates the system from change.

Total cost of ownership

The rich functionality provided by Smallworld Global Transmission Office means support for customer requirements is often through simple configuration rather than expensive customization.

Architected for the Future

The Smallworld solution is based upon modern industry standard technology such as HTML5 and Java, which reduces total cost of ownership, simplifies integration with other solutions, and maximizes reuse.

Delivering Business Value

Smallworld Global Transmission Office enables you to generate significant business value in many areas of the plan, design, build, operate, assess and maintain lifecycle by addressing specific challenges.

Data Maintenance

Reduce the burden put on pipeline operators to satisfy PHMSA mandates by providing an easy and reliable standard method to maintain data currency, accuracy, quality, integrity, and completeness. Smallworld Global Transmission Office supports the data maintenance processes, utilizing many different tools such as the Re-Route Tools, Centerline Adjustment Tool, and Survey Points Manager to easily maintain asset data, load assets and GPS data and correct centerline position.

Market Analysis

Provide strategic planners with the proper tools and data sources to make informed decisions about network expansion and capacity requirements based upon many external and internal factors. Utilizing existing network resources more effectively can reduce new build costs by as much as 7%.

Network Planning

Deliver current and complete as-built "as-is" and proposed "to-be" pipeline network models that yield the most accurate and up-to-date results quickly and accurately for network planners. The hydraulic extract and export application gives the network planning engineer the ability to quickly export both the current view of the network data in a connected node and link format for hydraulic modelling tools. Using

accurate, up-to-date and complete pipeline network documentation, as well as proposed network modifications, can reduce planning time by up to 10%.

Network Design

Provide designers with a single environment that allows for the complete lifecycle management of asset design - from conception, routing, environmental impact, design and materials BOM, to as-built construction - establishing "fitness for purpose" and commissioning of those assets. Smallworld Global Transmission Office integrated with Smallworld Design Manager provides a powerful set of functions and workflow management tools to manage the complete process of design, build, commission and documentation of assets. Using more efficient tools and managed workflows to build process consistency within the operators' environment can improve design productivity by up to 15%.

Consequence Area Determination

Reduce the burden put on pipeline operators to satisfy PHMSA mandates by providing an easy method to maintain accurate record of class locations and high consequence areas. Smallworld Global Transmission Office's Class/HCA Analysis application meets 49 CFR 192.5, 49 CFR 192.903 and 49 CFR 195.452 regulations and is an easy to use application that provides a fast and accurate solution for maintaining proof of historical Class Location and HCA analysis results. The Class/HCA Analysis application provides up to 50% reduction in time when performing the Class/HCA analysis as compared to other industry analysis methods.



Construction Execution

Institute an efficient method to capture “what was constructed”, aiding in data accuracy, reducing data latency, and maintaining traceability of asset data to help satisfy requirements placed upon operators by regulatory agencies. The integration of Smallworld Global Transmission Office and GE's Mobile Enterprise plays a significant role in overall asset management. Utilizing Mobile Enterprise for integrated office and field activities can increase field data collection productivity by up to 7%. Collecting what was constructed when it was constructed provides data traceability and reduces data latency.

Risk Analysis

Provide data access to multiple defined data sources, allowing risk engineers the ability to perform analysis and assessment of risk on assets from multiple unrelated sources to yield a set of credible results utilizing a single environment. Using Smallworld GeoSpatial Analysis can reduce or eliminate the costs for third party solutions and improve productivity by up to 25%.

Integrity Management

Assure that the integrity management processes have access to the required data and the analysis results meet the requirements of the regulatory rules. Smallworld Global Transmission Office's Risk Analysis tools provide integrity and risk engineers with the ability to execute and view integrity and risk result information from a single point of entry.

Data Enrichment

Fill the data gaps identified during the Risk Analysis and Integrity Management process and provide traceability and completeness of data to satisfy regulatory requirements. Using GE solutions, operators will rapidly realize the benefits from the ability to quickly and accurately collect and process newly required data elements and return the data to Smallworld Global Transmission Office.

Inspection and Maintenance

Optimize Inspection and Maintenance compliance and efficiency while reducing overall process costs. Global Transmission Office's Compliance Manager Application, with the integration to GE's Mobile Enterprise software, provides powerful tools to support the overall maintenance, inspection and compliancy processes. Utilizing Mobile Enterprise for integrated office and field activities can increase inspection and maintenance productivity by up to 15%. The ability to schedule, capture and return results addresses many of the regulatory rules for compliance management, asset traceability and data completeness.





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