



Digital Energy

Smallworld* GIS - Electric Office

Geospatial Network Modeling For Electric Utilities

STREAMLINED WORKFLOWS AND DATA GOVERNANCE FOR GEOSPATIALLY CONNECTED NETWORK ASSETS. PROVEN SCALE AND INTEROPERABILITY FOR A SHARED NETWORK MODEL ACROSS THE ENTERPRISE.

GE's Smallworld Electric Office GIS provides an end-to-end view of the electric transmission and distribution network for managing the plan, design, build, operate and maintain stages of the network asset lifecycle. Consistent and quality network model data is made available and actionable from the back-office, to the field, in the control room and beyond.



BUSINESS CHALLENGE

Utility operators must understand where their network is located and how network assets are connected out in the real world. They need to analyze the network as it exists and behaves today, to understand how it will be impacted by the evolution of the modern grid architectures of tomorrow.

Accurately representing the asset network and providing traceability of assets and completeness of data requires all business processes that rely and act on that data to be optimized and coordinated. This data needs to be an integral part of strategic planning, network design, construction planning and execution, as well as during operations, asset inspections and maintenance, in order to retain accuracy over time.

Streamlining business processes and workflows enables network asset data to be designed in the system of record and leveraged across different device types and contexts (back-office, field operations, control rooms, etc.). This reduces redundant data capture and avoids update lags and data entry errors and enforces data governance to improve the network data over time.

OVERVIEW

Market-leading network-based geospatial modeling application for electric networks

Smallworld Electric Office (EO) helps utilities reduce operations and capital investments by improving network utilization, increasing workforce productivity, and reducing planning and engineering time. The network data from EO can be leveraged to accelerate responses to network outages and reduce risk of asset failure or outages.

EO is a proven, scalable solution with data quality and integrity enforced to support a fully connected, phase aware, network model that is the solid foundation for your grid modernization and network modeling needs. EO provides the flexibility required to meet the unique needs of each utility to support operations from a few thousand to millions of service endpoints and hundreds of system users and data consumers. EO goes far beyond the traditional GIS by providing an electric network data model and industry applications ready to enable your specific business operations.

EO is a strategic business resource, providing access to comprehensive, up-to-date network information. Designers, planners, field engineers, network operators and service staff can securely access electric asset data in whatever format is most appropriate; from geographic or map view, schematic/one-line views, and internal world views. EO data can be shared across the enterprise via web services and mobile app clients, and enable other business user specific workflows. EO data can also be used in situ with GE's GeoSpatial Analysis and various open source tools, to mash-up with other data sources for thematic mapping, regulatory reporting and operational dashboarding.

EO is an integral part of GE's Grid Software Solutions portfolio of industry leading electric utility operational solutions. EO is natively interoperable with GE's industry leading Advanced Distribution Management Solution (ADMS), and leverages IEC CIM standards and web services architectures to orchestrate sharing the network data consistently, in a workflow driven manner, with other consumers across the enterprise.

As a foundation for your network digital twin (NDT), EO enables a single source of truth about your as-built network model. EO data can be leveraged for advanced analytics, machine learning and upcoming technologies such as augmented reality and artificial intelligence to drive new and innovative use cases and network level optimization value for your operations.

REAL RESULTS

Share the network model

Reduce redundant network modeling by up to 30%, improve cycle time for data quality by up to 50%.

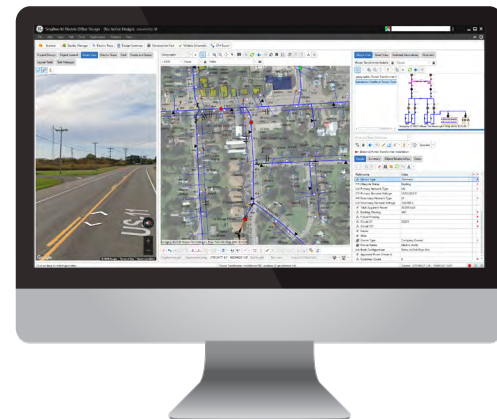
Decrease CAPEX

Optimized designs for lower material cost and consistent network tolerances across designs.

End-to-end Orchestration

Orchestrate network model from planning & design through to commissioning & control and maintenance.

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END-TO-END NETWORK ASSET LIFECYCLE

GE's Electric Office and related workflow oriented capabilities enable utilities to manage a single shared view of the as-built network asset model.

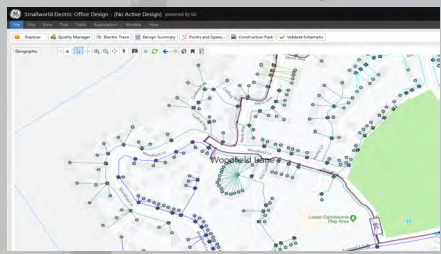
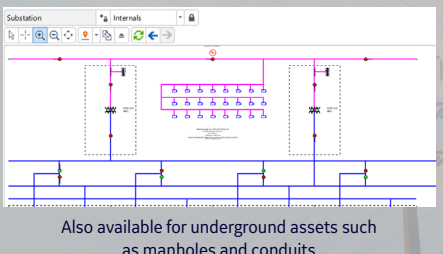
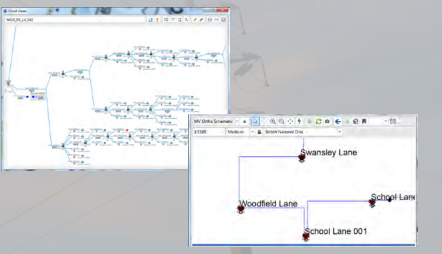
Plan	Design	Build	Operate	Maintain
Grid Asset Manager/Planner	Grid Designer / Engineering Supervisor	Designer/Field Technician/ Crew Supervisor	Control Operator/Switch Planner/ Field Crew	Customer Service Rep/Asset Inspector/Veg Manager
<p>Increase network resiliency and stability for projected growth and update of new technologies.</p> <ul style="list-style-type: none"> Analyze and plan future network expansions and upgrades. Perform geospatial analysis, reporting, thematic maps. Share network data for long range capacity planning and study New connection and other workflows 	<p>Reduce design and build costs by rapidly creating cost-optimized network designs in office/field and prepare construction package for permitting and build.</p> <ul style="list-style-type: none"> Efficiently create designs that meet standards for optimal cost/reliability Generate cost estimates and construction packages for permit/build 	<p>Enable construction crews to streamline as-built updates from field through digital worker enablement and data view and edit in the field.</p> <ul style="list-style-type: none"> Coordinate between back-office and field users (via Mobile Enterprise & ME Web) to capture as-built edits back to design and prepare for network commissioning 	<p>Streamline interoperability between EO and operational systems to coordinate planning and operational model with network management systems (ADMS, others).</p> <ul style="list-style-type: none"> Consistent and shared view of the network model across the enterprise 	<p>Accurate asset inspection and mitigation work plan with geospatial data to improve customer quality of service, meet regulatory requirements, process new connections, trim trees and improve data quality.</p> <ul style="list-style-type: none"> Leverage network model for advanced analytics (AI/ML), i.e., to automate risk mitigation plans and priorities for veg mgmt.

Consistent modeling, streamlined workflows and orchestrated data sharing across the enterprise

KEY SMALLWORLD ELECTRIC OFFICE CAPABILITIES & ADD-ON MODULES

 <p>Network Design Tools, Quality Assurance & Business Rules</p> <p>Network update tools enable network designer to update assets and design network changes while maintaining connectivity and data integrity. EO documents the normal state of the network and proposed future state based on design workflow with integrated validation.</p>	 <p>Design Construction Pack & Plotting</p> <p>Provides tools to manage plots and other related documents in the context of the design itself, and provides tools for generating plots from dynamic layout document templates and augmenting with annotations, stencils, stickers, as well as detail and internal views.</p>	 <p>Network Schematics & Circuit Builder/Viewer</p> <p>Network schematic views are configurable and generated in an automated fashion and validated for refresh when network changes. Circuit building supports isolatable circuit sections and modeling of meshed networks. Circuit viewer displays a connectivity schematic.</p>	 <p>Electric Office Web, Mobile Enterprise & Geospatial Services</p> <p>EO Web and Mobile Enterprise make EO data available via web or mobile apps, using the Smallworld GeoSpatial Server (GSS). EO Web is extensible and provides a base map (default is Google Maps™), "color by" tool, asset/address search, tracing, sketching, query/ export, plotting and navigation options.</p>
 <p>Network Design Analysis & Optimization</p> <p>This add-on module for EO invokes engineering and analysis calculations iteratively until a least-cost, best-engineered solution is derived for LV and MV networks, reducing engineering time and cost by optimizing the network during the design process.</p>	 <p>CYMDIST™ Interface</p> <p>This add-on module for EO provides support for extracting network data from EO and managing the exchange process and relationship between the EO and CYMDIST™ database objects, for use with the CYMDIST™ distribution system analysis software provided by Eaton.</p>	 <p>Geospatial Reporting & Analytic/Thematic Mapping</p> <p>GE's GeoSpatial Analysis portfolio is a powerful reporting, analytic/ thematic visualization and historized data warehouse tool for "mash-up" use with Smallworld, other GIS data and easily configurable data sources (over 35 data formats supported).</p>	 <p>Business Integration & GIS Adapter for Network Model Orchestration</p> <p>Integrate EO network asset workflows with SAP's Enterprise Asset Management system using Smallworld Business Integrator (SBI). Share the EO network asset data with operational systems (natively or via IEC CIM standard profiles) with GE's Smallworld GIS Adapter add-on module.</p>

VISUALIZE, VALIDATE & TRACE THE NETWORK MODEL

 <p>Geospatial Network Modeling View</p>	 <p>Substation Internal Views</p> <p>Also available for underground assets such as manholes and conduits</p>	 <p>Circuit & Schematic One Line Views</p>
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With more than 25 years' experience and a proven geospatial network-based model, GE's Smallworld Electric Office provides today's utilities with powerful solutions and software to model and manage location and connectivity of electric T&D network assets, including HV, MV, LV and distributed energy resources (DERs).

Contact Us

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