

# Smallworld™ Electric Office



## Managing Electric Assets

Today's electric utilities are demanding smarter, more complete products to help deliver business process solutions more effectively and efficiently.

GE's Smallworld Electric Office software solution provides a consolidated cross-technology end-to-end view of the electric transmission and distribution network. This comprehensive and integrated view of the network combines the fully connected electrical system with robust industry common applications to support end-to-end critical business processes.

Benefit from GE's leading-edge capabilities to capture and visualize complex spatial data. This powerful solution enables customers to efficiently plan, build, operate and maintain the network. As a result, customer engineers can use network resources more cost effectively, providing and maintaining services to customers more quickly and efficiently.

Smallworld Electric Office suite is a strategic business resource, providing access to a single version of comprehensive, up-to-date network information. Designers, planners, field engineers, network operators and service staff can access electric asset data in whatever format is most appropriate, from geographic maps to spreadsheets or database reports via desktop, laptop, field systems, intranet and Internet.

## Solution Strength

The Smallworld Electric Office suite is a market-leading solution backed by the experience of more than 400 electric utilities worldwide that use Smallworld GIS. Today, customers who are using or implementing Smallworld Electric Office are experiencing these same key benefits backed by the experience of those electric utilities worldwide that have used Smallworld solutions for years.

Smallworld Electric Office is a fully integrated suite of applications and software products used by electric distribution and transmission utilities to plan, maintain, and manage their electric networks and related assets. This solution meets the demands of electricity-based operators where many of the competing products appeared to have failed. True scalability means Smallworld Electric Office can meet the needs of all utilities - from the smallest with a few service endpoints to the largest with millions of service endpoints and hundreds of system users and data consumers,

Service technicians, field representatives, distribution and transmission planners and engineers can display the electric network and assets on a geographic or map view to work with customers who need new, upgraded or repairs to their services.

Smallworld Electric Office helps utilities reduce operations and capital investments by improving network utilization, increasing workforce productivity, reducing planning and engineering time, accelerating responses to network outages and reducing risk of asset failure or outages.

## Customer Benefits

- Up to 10% reduction in new build costs with the ability to design within the same system that holds the as-built network data. One solution versus multiple standalone applications
- Up to 20% reduction in planning time through accurate and complete documentation of the asset network
- Up to 15% productivity improvement in design through more efficient and automated designs
- Up to 7% increase in field data collection productivity through integrated office and field activities utilizing MapFrame™ FieldSmart
- Up to 10% data as-built update productivity through streamlined as-built update processes and productivity aids
- Up to 10% increase in inspection and maintenance productivity through integrated office and field activities utilizing FieldSmart
- Up to 5% reduction in customer outage time due to the current and accurate view of the network; accurate records reduce outage related research



# Addressing Business Challenges

## Strategic Planning

The major challenges facing electric utilities are increased demand for electricity on an aging infrastructure and frequent, more restrictive regulatory requirements. To accurately represent their asset network and provide traceability of assets and completeness of data, electric utilities need to optimize all key processes within the plan, build, operate and maintain lifecycle. Due to the inherently spatial nature of networks, a geospatial system like Smallworld provides the best way to support these key processes.

## Network Planning

Smallworld Electric Office's pre-integration with CYMDIST™ plays a key role in sizing the network for identified demands and growth areas. It enables users to quickly and accurately perform analysis studies on the identified network or networks, reducing time and increasing the accuracy of the analysis results. Using the geospatial network data held in Smallworld and other corporate asset systems, optimization engines can quickly compare the load and flow for a given network and maximize the correct network size for the least cost.

## Network Design

Smallworld Electric Office, Smallworld Design Manager and Smallworld Analysis and Optimization provide a powerful set of tools to design, cost, maintain and analyze planned additions to the network. Alternate designs for size, route, material, load or demand provide users with significant savings by designing better networks that are cost-efficient to build, maintain and support future expansion. Design it right in your system of record the first time.

## Construction Execution and As-built Processes

The integration of Smallworld Electric Office and GE's FieldSmart solution plays a significant role in the overall network management. The ability to capture the "What was constructed view" aids in data accuracy and reduces data latency. The ability to capture and maintain traceability of asset data is a key benefit to help satisfy regulatory requirements. As-built updates are typically a process that most utilities have a difficult time maintaining. Multiple month backlogs are not uncommon. Smallworld Electric Office with FieldSmart integration can reduce the latency time from months to weeks or no occurrences at all. This provides the ability to see exactly what your network looks like at any given time and supports many other significant business processes that rely on current and accurate data.

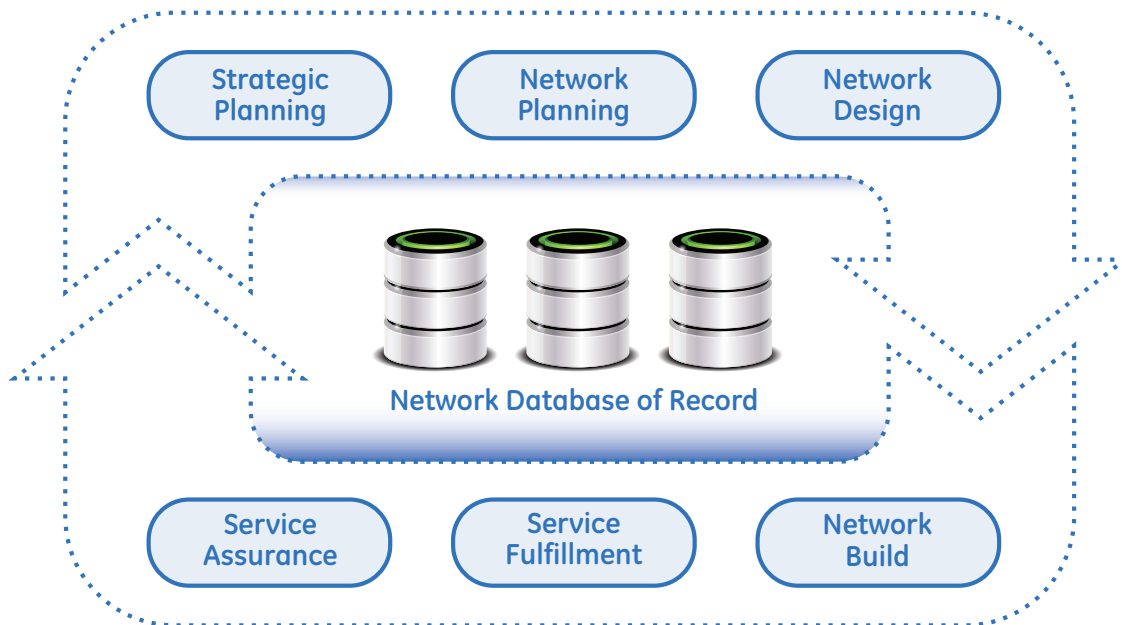
## Inspection and Maintenance

The Smallworld Electric Office and FieldSmart components can be used to perform field inspections required for maintaining the quality and accuracy of data which provides confidence in asset management, risk assessment and analysis.

## Emergency Response and Operations

Smallworld Electric Office provides an automated ability to introduce the network to outage management and maintenance systems using industry standard business workflows and data standards. It ensures data accuracy across the construction and operations businesses, provides consistency in results and effective business process, provides functionality to a broader working group, and increases customer satisfaction scores through reduction in outage area and time to restoration and notification of planned outages.

## Full Life-Cycle Support



# The Smallworld Solution

Smallworld Electric Office is a comprehensive portfolio that provides end to end solution support for the electric asset management lifecycle, from planning and design through replacement and refurbishing. Built on the proven network technology of GE's Smallworld solutions, Smallworld Electric Office contains the underlying data models, industry applications, and productivity tools required to support the essential utility operations.

**Smallworld Electric Office** is a suite of applications and data models capable of representing the entire electric network from the generation plant to the meter. It contains all the critical interfaces that allow the automated introduction of network data across the enterprise.

**Smallworld Electric Office Design** is a comprehensive set of electrical design tools capable of interacting and driving workflow throughout the enterprise.

**Smallworld Analysis and Optimization** provides load flow and design optimization tools that enforce enterprise asset design standards, enabling the business to design the network right the first time.

**Smallworld Electric Office SIAS** provides Internet and Intranet access to the data and applications within the Smallworld Electric Office database.

**Smallworld Electric Office CYMDIST** Interface enables fully automated introduction of the electrical network to CYMDIST's advanced planning and forecasting tools.

# Market Leading Capability

Smallworld Electric Office offers unique and unparalleled value to electric utilities:

## Low risk

GE offers a mature, market leading Smallworld solution with rich functionality that has been deployed successfully in a wide range of customer environments.

## Single network view

GE's fully integrated Smallworld geospatial solution provides a consolidated view of the whole network, avoiding having to maintain data in multiple systems.

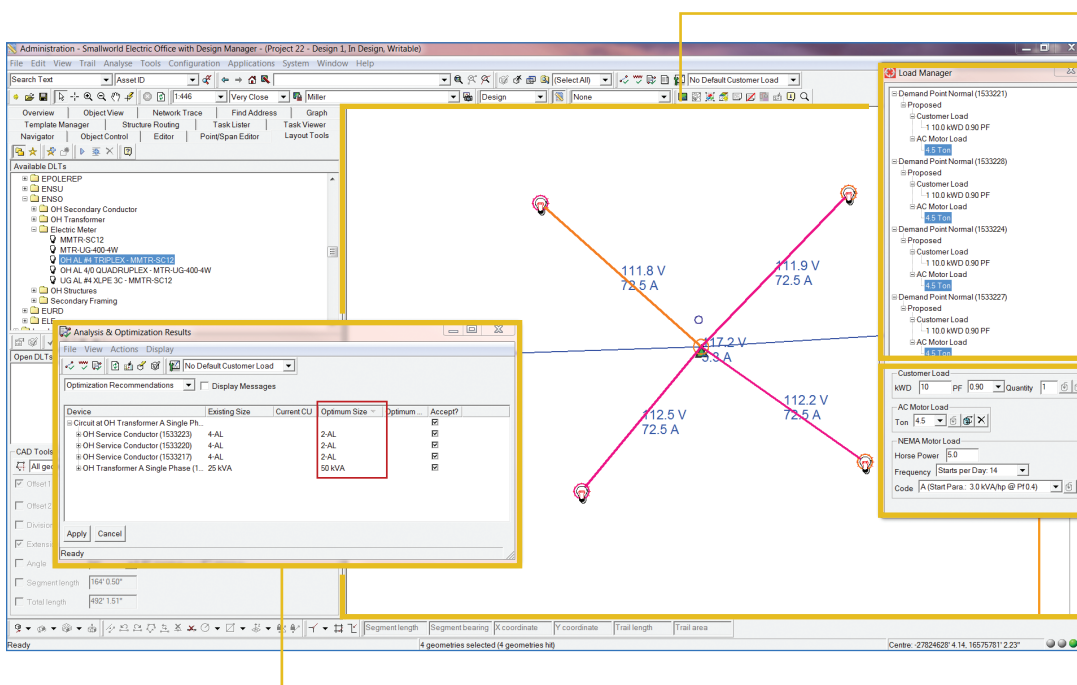
## Reduced integration costs

GE uses the latest industry data standards to support enterprise interoperability. Use of OGC® (OpenGIS® Consortium) 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 Electric Office means GE can support customer requirements through simple configuration and minor extensions rather than expensive customization.

# GE's Smallworld Analysis and Optimization



The Map window provides a highlighted thematic view of electrical analysis results during the design process indicating success or failure of designed changes.

Load Manager displays current load information at identified consumption point on a circuit. An engineer can also model future demand as part of the design as well.

Multiple motor start scenarios can also be modeled within a design, helping understand the intermittent load problems multiple motor starts can have on your network.

The Analysis and Optimization main results window provides interactive information about the proposed design and its affects on the supporting network. Provides the engineer with the ability to optimize the design based on recommendations from the system.

## Delivering Business Value

Smallworld Electric Office enables the generation of significant business value in many areas of the plan, design, build, operate and maintain lifecycle.

### Strategic Analysis

Strategic planners need to make informed decisions about where new electric network capacity is required. The Smallworld Analysis and Optimization solution and the interface to CYMDIST allow strategic planners to combine data from a variety of sources and visualize this in one environment. The resulting benefit is better use of existing network resources that can reduce new build costs by as much as 20%.

### Network Planning

Deciding how to build the network to meet new levels of consumption or forecast peak demands has a significant impact on the cost of building the network. Using the network data held in Smallworld combined with other data from enterprise systems, Smallworld Analysis and Optimization engines can quickly help a designer compare network designs and engineering design choices. The benefit is selecting the correct design choice that maximizes network efficiency for the least cost, increasing reliability and stability.

### Network Design

Detailed network design must be completed efficiently and quickly to ensure timely delivery of infrastructure and equipment to provide reliable electric service when needed. Smallworld Electric Office Design solves this challenge by providing automated design functionality to quickly design the required network and electrical equipment changes. The resulting benefit allows utilities currently using Smallworld Electric Office designs to see a productivity increase of up to 15% for their network designers.

## Construction Execution and As Built Processes

It is vital to ensure the final as-built equipment in the field is correctly reflected in the enterprise system at the conclusion of the field build process. GE's FieldSmart solution allows construction crews to electronically update the designed network with the final as-built. The automation of the as-built update process can increase productivity savings by up to 15%.

### Inspection and Maintenance

The ability to proactively maintain the existing network and associated electrical equipment and report progress to government and regulatory agencies is vital. The Smallworld solution provides an accurate view of the network and associated assets as well as the ability to seamlessly share this data across the enterprise. Scheduling and performing preventative maintenance on the network can become more efficient and predictable. Eliminating data inconsistency across the enterprise can increase inspection efficiency by up to 15%.

### Emergency Response and Operations

An efficient restoration and network maintenance process is critical to maintaining customers' service reliability and satisfaction. Smallworld Electric Office provides vital data and functionality to automatically introduce network data to the outage and network maintenance applications and processes. The benefits include an accurate view of the as-built and as-operated network that can reduce a utility's restoration times by up to 10%.

## Worldwide Contact Information

Digital Energy  
2018 Powers Ferry Road  
Atlanta, GA 30339  
1-877-605-6777 (toll free in North America)  
678-844-6777 (direct number)  
SmartGrid.Solutions@ge.com

## GEDigitalEnergy.com

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