



# Field Force Automation for Outage Management

## One system for planned and unplanned work

Traditionally, field force workers who are responsible to build, maintain, operate and fix complex infrastructures have been organized into specialized departments, each having their own planning system and mobile solution. This created individual “stovepipe” systems where IT and mobile systems were “procured and developed to solve a specific problem, characterized by a limited focus and functionality, and containing data that cannot be easily shared with other systems.”\* Such an approach can be expensive and can negatively impact efficient mobile processes.

In contrast, GE’s Field Force Automation™ (FFA) for Outage Management Systems (OMS) works with a utility’s GIS system to handle different types of planned and unplanned field work. Delivered as one integrated solution, GE’s FFA for Outage Management leverages functionality like mobile maps, routing directions, crew timesheets, and service intelligence, and delivers it in an easy-to-use mobile application.

FFA for Outage Management allows users to:

- Seamlessly communicate all outage and investigation orders as they are managed by OMS dispatch centers into the field.
- Dynamically update the predicted outage location, crew and workflow status, estimated restoration times and other key operational data from either the OMS or FFA.
- Electronically receive and process critical information from field crews regarding the outage confirmation, location (move-up or move-down), restoration time, cause codes, damage and repair data and information for the immediate generation of follow-up orders.

The result is the real-time flow of information between the control room and remote crews on the status of the distribution network, orders and safety. With GE’s FFA for Outage Management, utilities have been able to achieve productivity improvements—by up to 25%—through the reduction of voice dispatch time, route optimization, elimination of idle times and task optimization.

## Eliminate crew dependency on centralized dispatch

- Data relayed directly to and from field crews improving data accuracy and timeliness
- Decreased idle and travel time resulting in increase in productivity by up to 25% and reduced fuel consumption by up to 50%
- Task optimization delivering reduced project completion time

## Single mobile application

- Suitable for most smart phones and tablet devices
- Easy-to-use, intuitive user interface

## Improved customer satisfaction

- Data entered and jobs updated directly by field crews, eliminating delays and manual errors
- Customer appointment windows are tighter, more accurate and more often met (by up to 50%)



# Key Solution Elements

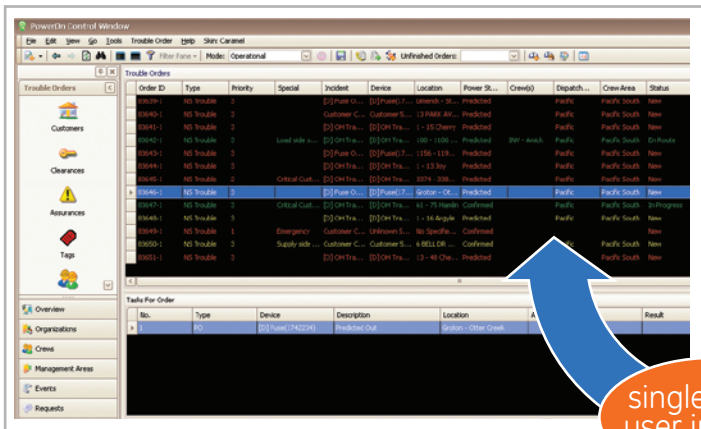
Built and designed as a fully interoperable and modular system, GE's FFA for Outage Management is expandable to become a true enterprise system for work, resource, inventory and outage management.

The availability and robustness of mission critical systems such as an OMS is fundamental to a utility's operation. As such, in emergencies each element of GE's enterprise system is able to operate independently.

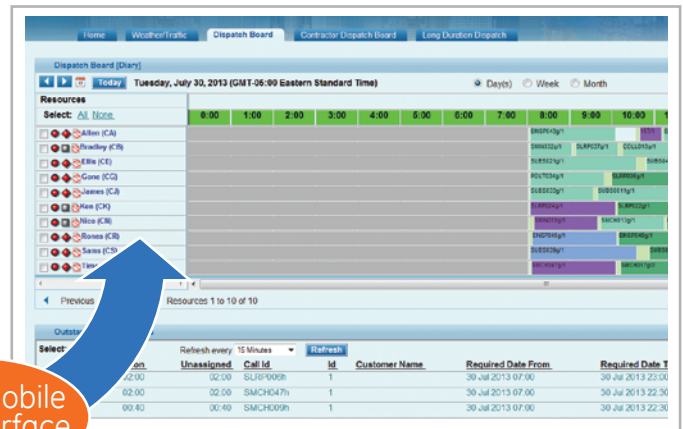
## The full solution comprises of the following key elements:

- **Outage Management System:** Ensures impacts of planned and unplanned outages and incidents are minimized, based on a common network model for engineering and operational applications supported by exceptional workflow capability and a user-friendly interface.

- **FFA Workforce Management:** Unified resource, inventory and work management, with dynamic schedule optimization, including (certified) integration with standard ERP systems.
- **FFA Mobile Application:** Single platform for all different mobile business processes. Comprehensive but still easy-to-use with real-time capabilities and the ability to support multiple operating systems and mobile devices.
- **(Optional) MapFrame™ FieldSmart Mobile Mapping:** Move GIS, map, customer and facility data out of the office, into the field and streamline all related tasks.

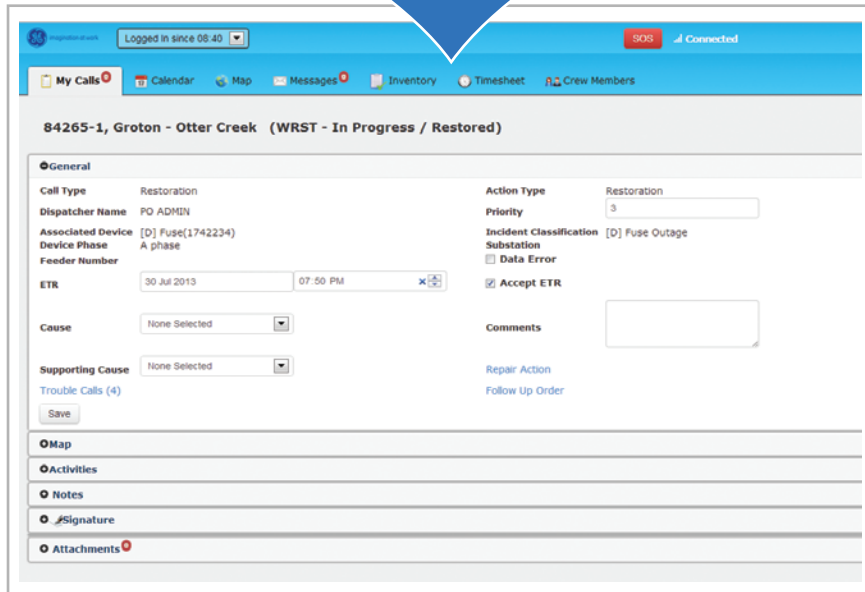


Outage Management System



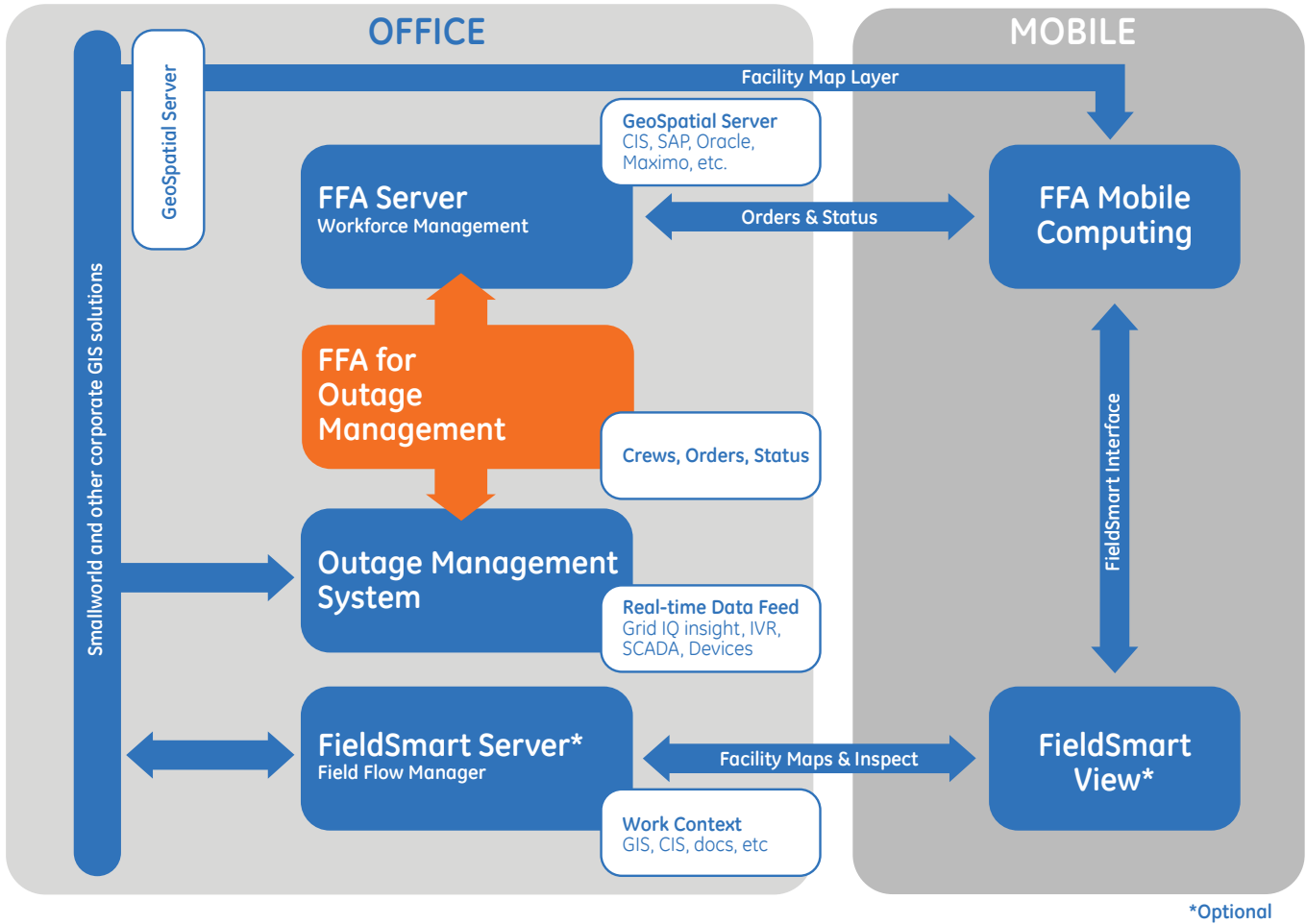
Field Force Automation

single mobile user interface



Information from FFA and OMS is relayed to mobile work crews via a consistent user interface for all work, across all mobile devices.

# Information Flow within FFA for Outage Management



## Pre-configured, Distributed Business Processes

FFA for Outage Management ensures accurate and reliable orchestration between all the different systems that are required to effectively support planning, execution, monitoring and closing of field work. This is achieved using standardized BPM (Business Process Management) technology and pre-defined processes, including:

- **Crew Synchronization:** Ensures that all systems that need awareness of field workers (or crews) have the same information available regarding IDs, names, skills, telephone numbers, availabilities, working hours, number of hours worked, etc. This also includes ERP and HR systems in order to directly receive timesheet information captured in the field.
- **Fatigue Management:** Configurable rules that ensure that all applicable safety regulations are being met and adhered to.
- **Emergency Order Handling:** Ensures that emergency orders are handled with absolute priority, for instance by alerting dispatchers and field workers and providing quick escalation mechanisms.
- **Order Completion and Follow-up Creation:** The completion of an order may lead to the creation of follow-up activities, for instance the substitution of a temporary fix by a sustainable solution. These follow-up activities might need to be handled in various systems, such as OMS, DMS or ERP.

## Application Example

### Challenge

A North American utility was looking to improve productivity and reduce costs associated with assigning planned and unplanned work to their emergency service field personnel. In particular, the utility needed to ensure they were assigning useful maintenance work during non-storm conditions as well as during emergency situations. The solution needed to be easy-to-use and seamlessly integrate into the existing network and operations management system.

### Solution

Utilizing GE's FFA for Outage Management solution, the utility leveraged FFA dispatchers to identify and assign useful maintenance work to emergency service workers during non-storm conditions, reducing non-productive/idle time. Under emergency situations, the same application automatically transfers control to the OMS dispatcher. The dispatcher then identifies the best crew for the situation and communicates directly to the team using the FFA Mobile Computing Platform, improving resource allocation by 15 to 30%. As an added benefit, GE's FFA for Outage Management is able to capture "after the fact" information, such as cause codes and follow-up orders, ensuring complete situational awareness and reducing the potential for errors.

Field Force Automation for Outage Management is a component of GE's comprehensive Software Solutions portfolio. Software Solutions is a suite of operational technology applications designed to provide visibility and control for the entire power system. FFA for Outage Management allows utilities to eliminate crew dependency on centralized dispatch, improve customer satisfaction and offers a single, device-agnostic mobile application. These benefits can translate into productivity improvements of up to 25% and fuel savings of up to 50%.

## Software Solutions Portfolio Overview

GE's portfolio of software operation systems designed for utilities around the globe provide a suite of software, ranging from asset management and control to advance analytics and hosted and consulting services, all to improve operator situational awareness, reduce operating costs and enhance electric reliability.



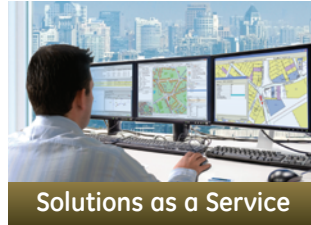
### Geospatial Systems

Design and planning services, field automation and workforce management



### Utility Operation Systems

Real time control systems for the management of transmission and distribution networks



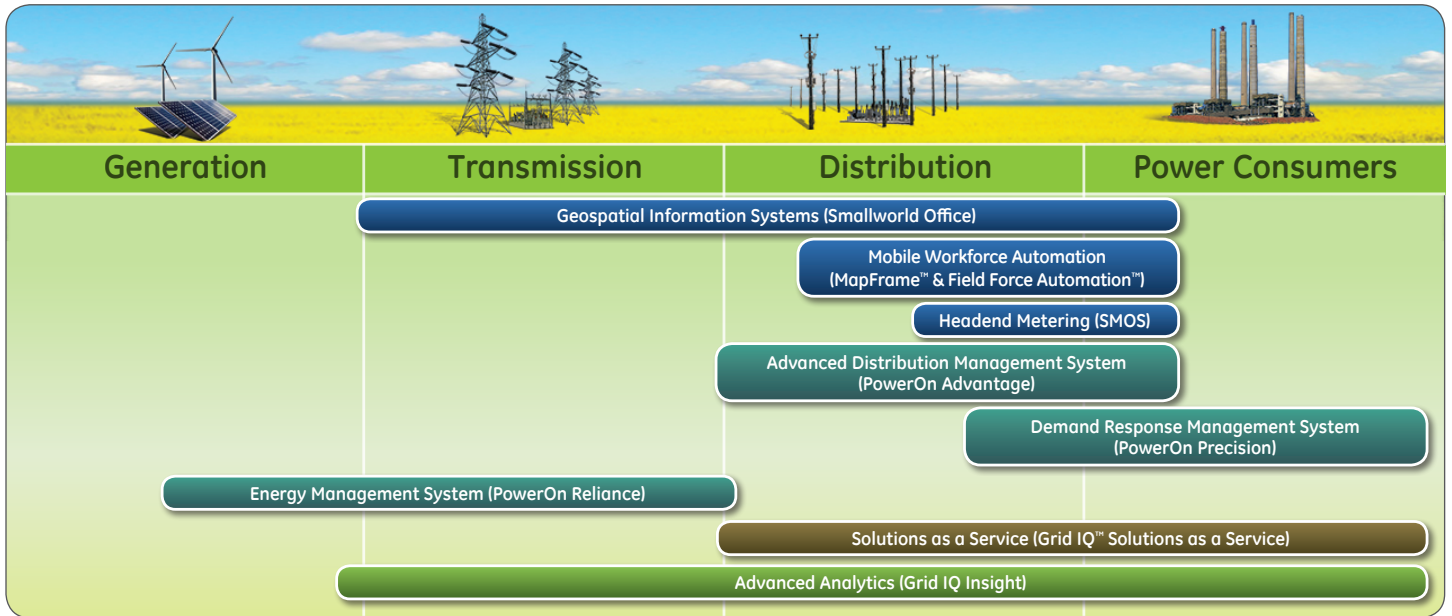
### Solutions as a Service

Hosted services to shift integration, financial and deployment risks



### Advanced Analytics

A flexible, real-time, scalable platform that enables utilities to put big data into action



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