

ADMS

Advanced Distribution Management System

Grid Modernization Redefined



Integrated Distribution Planning,
eSCADA, DMS & OMS Solution

etap.com

Advanced Distribution Management System

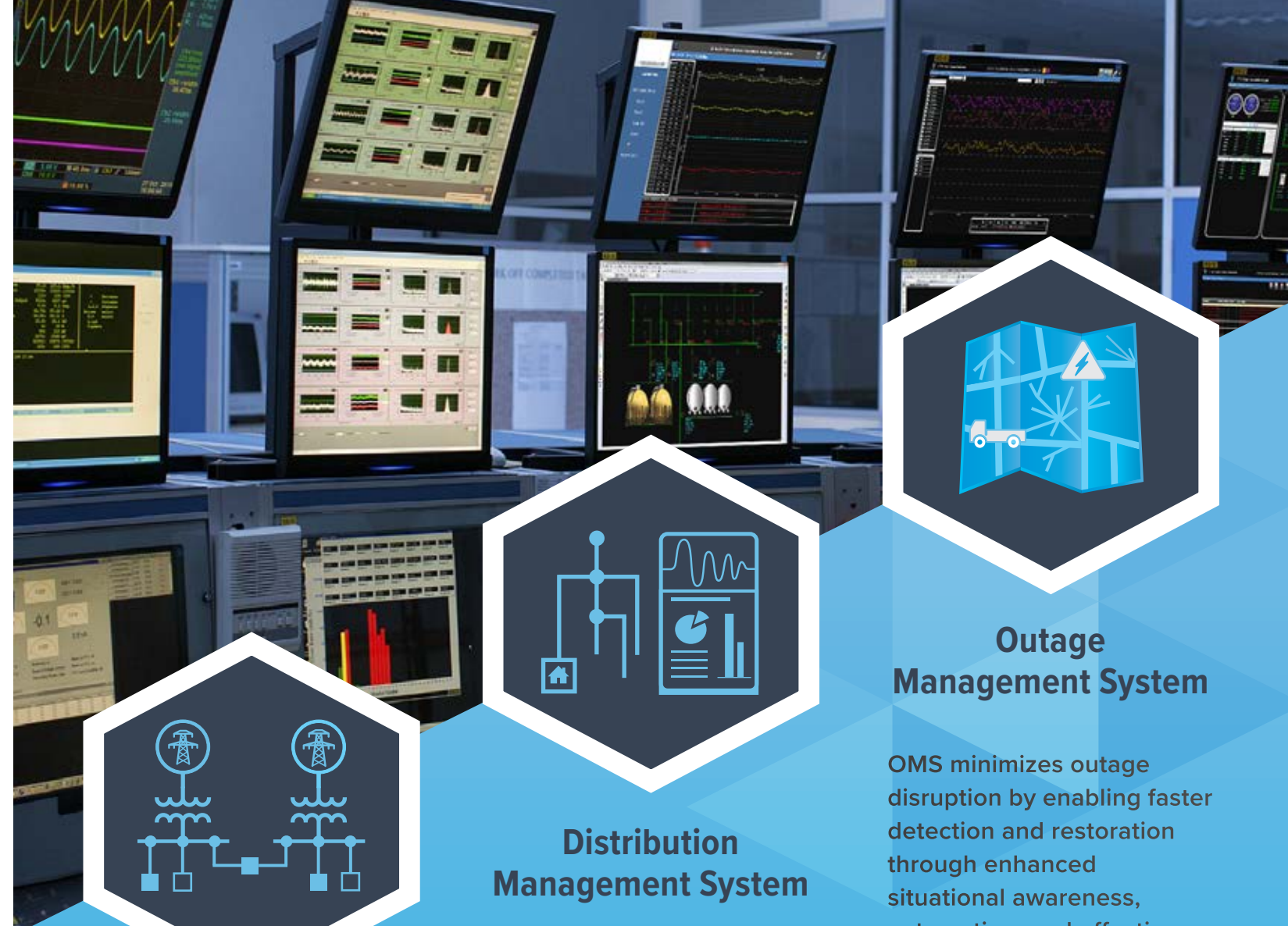
Intelligent | Integrated | Comprehensive

ETAP ADMS™ is a combined planning and operation solution to manage, control, visualize, and optimize electrical power distribution network comprising of:

- Geospatial Information System (GIS)
- Electrical Supervisory Control & Data Acquisition (eSCADA)
- Distribution Management System (DMS)
- Distribution Network Applications (DNA)
- Outage Management System (OMS)



- > **Scalable and modular** solution to manage, control, visualize, optimize and automate utility distribution networks from large cities to rural cooperatives.
- > **Integrated** network model for planning, protection, reliability and operations.
- > **Intuitive** and user-friendly graphical user interface used by Distribution Network Operators (DNOs), Dispatchers, Planning Engineers, Reliability Analysts and Managers.
- > **Advanced Analytics** including Distribution State Estimation, Volt/VAR Optimization (VVO), Conservative Voltage Reduction (CVR), Fault Location, Isolation & Service Restoration (FLISR), Outage Prediction, Load Forecasting, Unified AC & DC Power Flow, Distributed Generation Modeling, Protection, Load Shedding and more.
- > **Situational Intelligence** provides efficient and reliable grid analysis and management during rapidly changing network state.
- > **Standardization** with majority of industry applications and easy integration with legacy and third party software.



Outage Management System

OMS minimizes outage disruption by enabling faster detection and restoration through enhanced situational awareness, automation, and effective use of field crews.



Distribution Management System

DMS proactively reduces peak demand, optimizes network assets, while assisting distribution networks deliver electricity more efficiently, reliably, securely and economically.

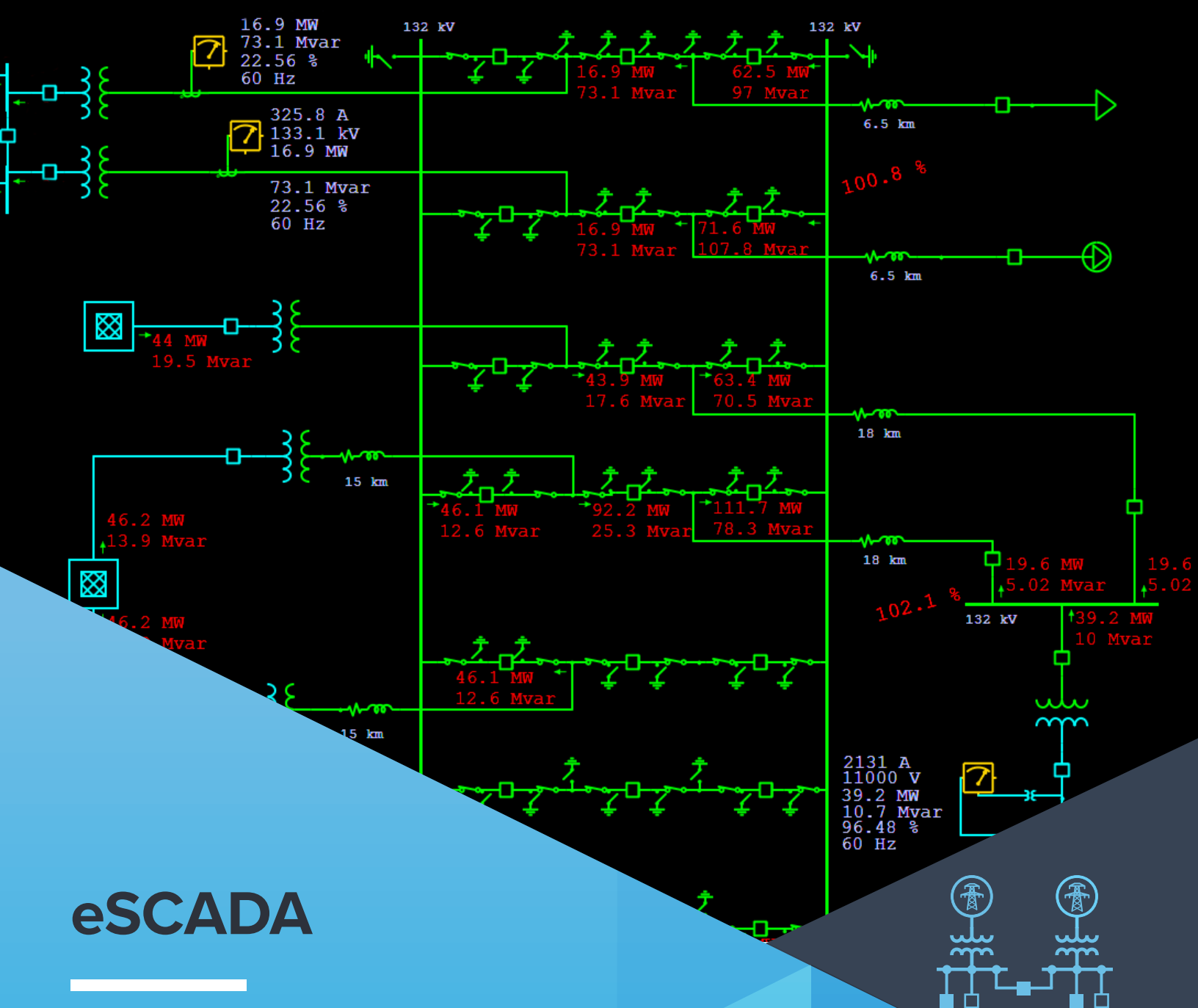


Electrical SCADA

eSCADA provides real-time visualization via intelligent graphical user interface comprising of one-line schematics, substation views, distribution feeder layout, geospatial diagrams and analytical dashboards.

ETAP ADMS™

Integrated eSCADA - DMS - OMS



eSCADA

Distribution electrical SCADA with intuitive real-time visualization & analyses

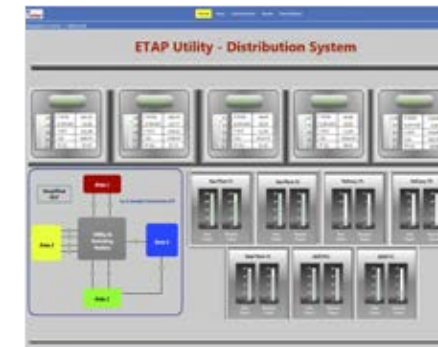
ETAP eSCADA is a model-driven, real-time data acquisition system in a common integration framework and secure infrastructure. eSCADA bridges the gap between network operators and field crew allowing for informed decisions from any location using latest web-based technologies.

Distribution networks with various service territory size or capacity can benefit from state-of-art applications and embedded protocols for critical operations and business decisions.

Electrical SCADA

Visualize | Control | Record

ETAP eSCADA solution enables effective management of an increasingly complex distribution network and allows for maintenance of operational reliability.



Monitoring & Visualization

SCADA Human Machine Interfaces (HMI) provides a modern graphical dashboard with electrical intelligence and situational awareness.

Smart visualization views, combined with predictive analytics, enable the system dispatcher to effectively view and analyze key performance indicators.



Alarm & Trending

Alarming & Notification management system prioritizes sequence of events via graphical and tabular views. Automatically download, visualize, trend, and archive electrical waveforms from relays, meters, PMUs, etc. Operation Monitor tracks, alarms and schedules maintenance for field equipment based on number of operations.



Supervisory Control

Supervisory Control provides comprehensive and flexible online control including intelligent switching interlock enforcement, control validation, programmable schemes & scripts, sophisticated built-in control & protection algorithms, and local & remote control inhibition.



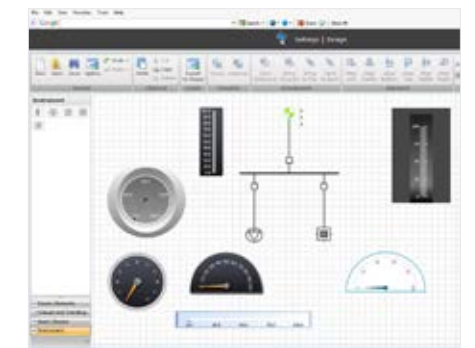
Communication Protocols

ETAP's communication architecture integrates seamlessly with third-party hardware, substation automation equipment, RTUs, PLCs, etc. regardless of manufacturer model and protocol. Direct communication protocols include Modbus®, DNP3, IEC 101/104, IEC 61850, OPC-UA™, etc.



Event Playback & Data Historian

Event Playback is useful for root cause and effect investigations, improvement of system operations, exploration of alternative actions, and replay of what-if scenarios. ETAP Event Playback capabilities translate into reduction of maintenance costs and prevention of costly shutdowns.



SCADA Integrator

SCADA Integrator tool enables quick creation of standardized and reusable one-line diagram and HMI templates for efficient system integration and rapid deployment across the entire organization.

Distribution Management System

Informed Decisions | Advanced Analytics | Optimum Operation

ETAP Distribution Management System (DMS) is an intelligent and robust collection of GIS based advanced distribution network applications that enhance electric utility performance.

ETAP DMS proactively reduces peak demand, optimizes network assets, while assisting distribution networks deliver electricity more efficiently, reliably, securely and economically.



Network Connectivity & Topology Analysis

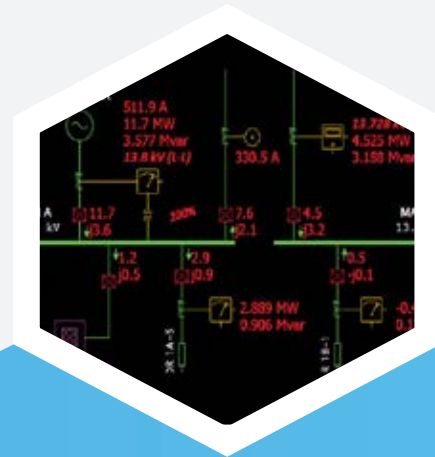
Continuous electrical topology processing of the system based on real-time operating conditions.

DMS applications rely on an accurate 'as operating' network model to generate alarms and appropriate recommendations.



Distribution State Estimation

High performance distribution state estimation and non-technical loss calculations that factor in unbalanced nature of distribution network operations as well as increasing penetration of distributed generation on utility network feeders.

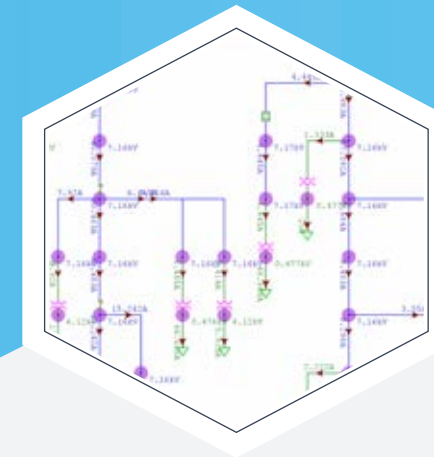


Switching Sequence & Switch Order Management

Request, build, verify, approve a complete switching sequence plan and execute it, all in one-step.

Advanced simulation and prediction capabilities for unbalanced network feeders with embedded system control logic & procedures.

Visualize, Design & Analyze



Feeder Balancing & Loss Minimization

Distribution Switching Optimization automatically determines the optimal system topology to balance feeder loading and/or combined with loss minimization to eliminate abnormal operating conditions.

It provides optimal status of existing switching devices and suggests locations for new tie open points in the system.



Volt/VAR Optimization & Conservative Voltage Reduction

ETAP VVO optimally manages system-wide voltage levels and reactive power flow to achieve efficient distribution grid operation.

ETAP VVO assists distribution operators reduce system losses, peak demand or energy consumption using CVR techniques.



Fault Location, Isolation & Service Restoration

ETAP FLISR locates the section of the network that will be isolated due to a forced outage and provides information to the operator or dispatcher regarding the customers affected.

FLISR is crucial for decision-making under emergency conditions and provides insight into feeder reliability.

Distribution Management System is built on existing and proven ETAP Real-Time™ solution and integrates with GIS, eSCADA, OMS and other applications such as Automated Meter Reading (AMR), and Customer Information Systems (CIS).

DMS and DNA provides advanced decision support capabilities for safe and reliable operation of the distribution network. ETAP ADMS provides a user-friendly environment and comprehensive functionality to enhance the management of medium and low voltage radial or looped distribution networks.



Outage Management System

Predict Outages | Faster Response | Optimize Crew Assets

Integrated Outage Management System (OMS) and Mobile Workforce Management (MWM) solutions minimize outage disruption by enabling faster detection and restoration through enhanced situational awareness, automation, and effective use of field crews.



Planned Outage Management

Planned Outage Management System is used by the Projects or Maintenance department to partially or completely deenergize electric circuits.

- Notifications & work permits
- Generate & validate switch plans



Trouble Call Management

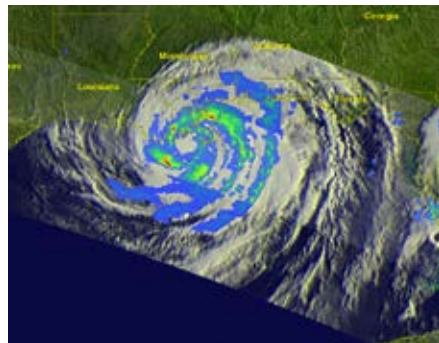
Customer outage-related Trouble Call Management summarizes all of the ticket information to analyze location of any ticket (prediction or confirmed outage) and to monitor the repair progress.



Outage Prediction & Analysis

Automatically track outages, predict their most likely source and share information across the network.

- Reduce duration of individual outages by identifying the locations
- Uses customer call data and external event data



Storm Assessment

Used in situations where major network damage is present and requires quick response.

- Geospatial network map with Storm Damage information
- Summarized damage location records



Outage Analytics & Reporting

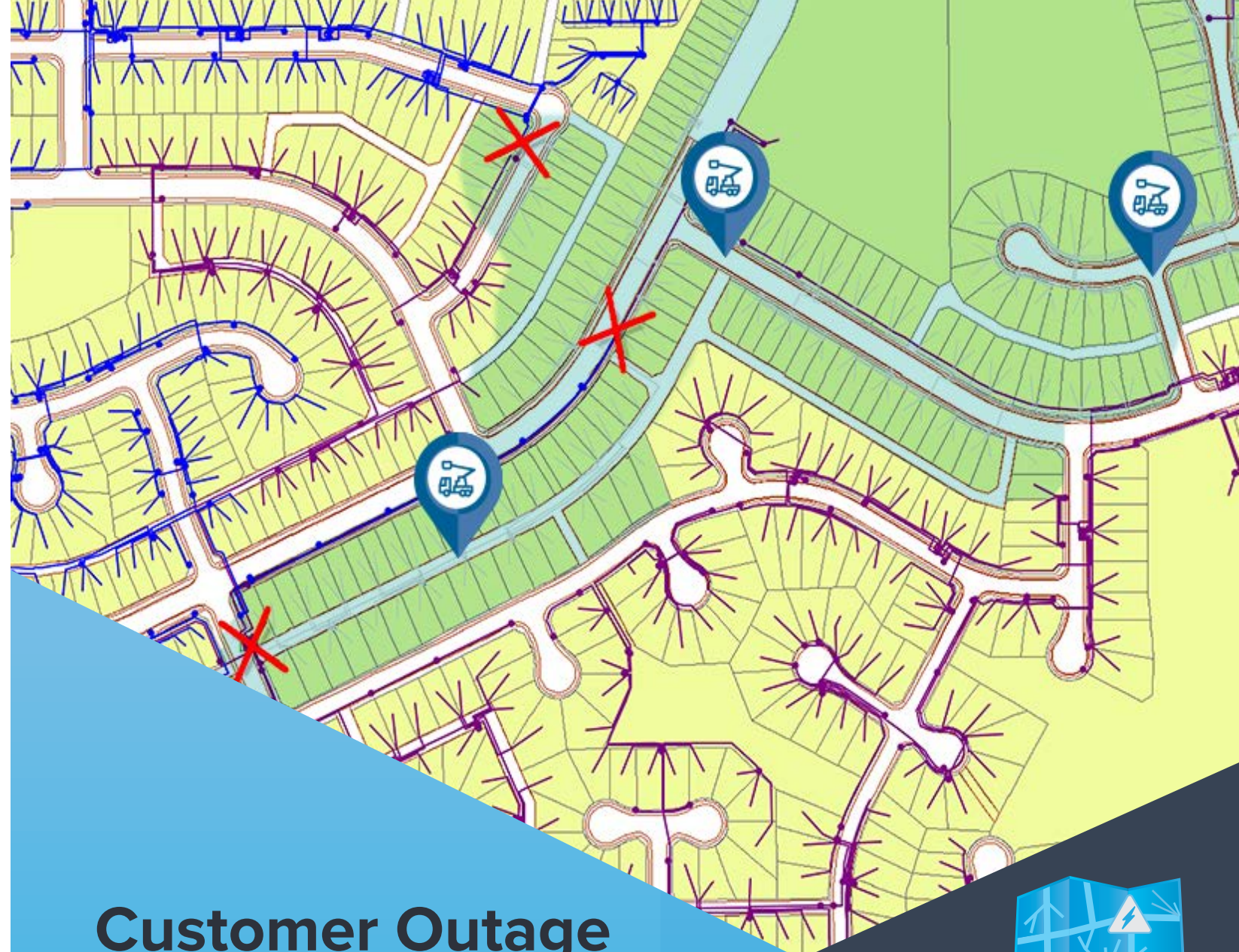
Real-time dashboard summaries and tabulation of outage data and quality of service indices.

- Create custom reports using drag and drop from the data model
- Create, verify, and edit user-defined QoS formulas



Crew Dispatch & Management

Provides an organized and efficient way to manage the correlation of crews to work orders or tickets. Crew Management user interface enhances the dispatcher's / supervisor's situational awareness via an easy to use and visual progress of outage restoration or work resolution.



Customer Outage & Mobile Workforce Management

OMS and MWM solutions provide the foundation for improving outage response and restoration times.

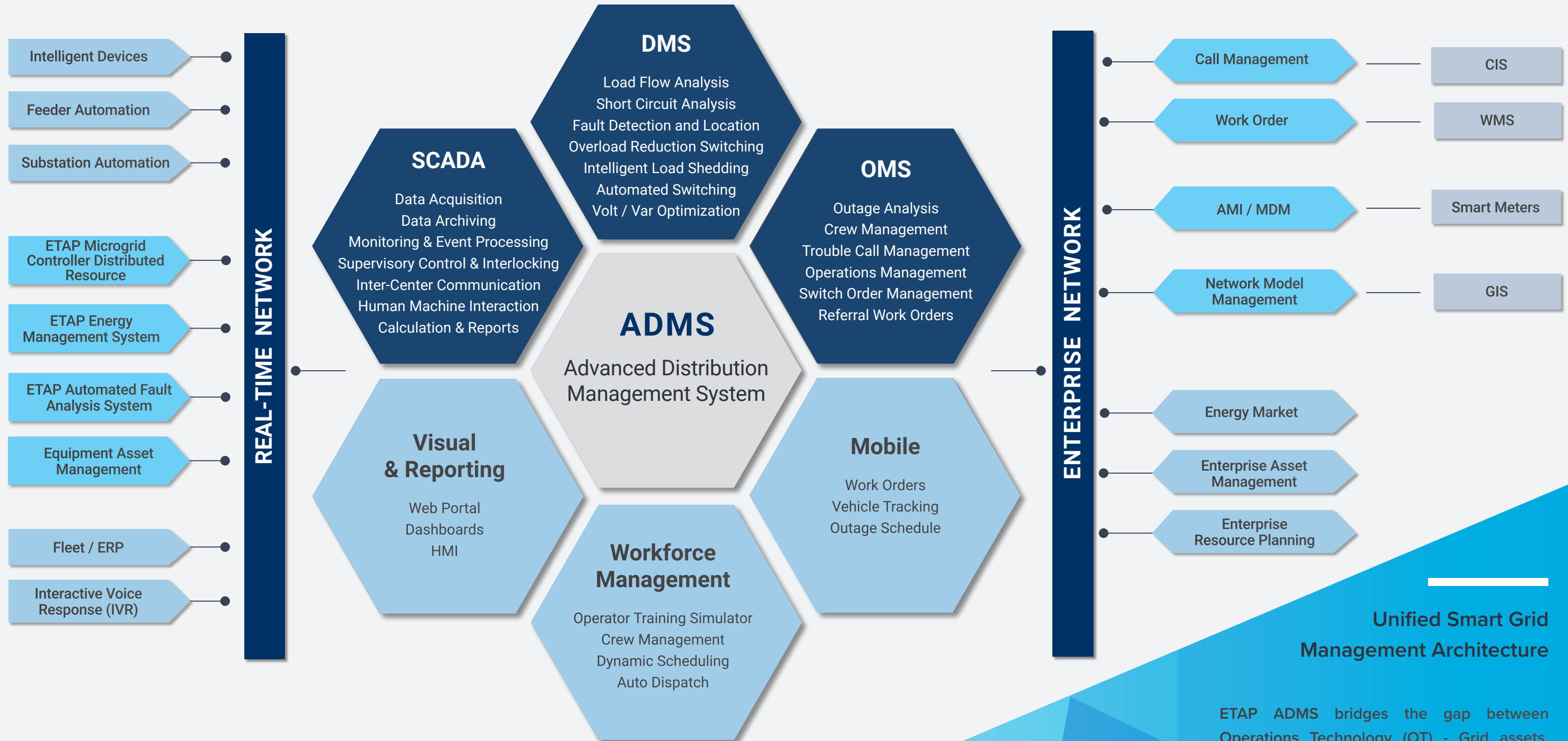
Track outages and restore service, feed customer communications, monitor and operate the distribution system, provide grid analysis and optimization, manage and inform field crews, and provide an invaluable source of operational intelligence to the enterprise.

ETAP ADMS Enterprise Integration

Unified Smart Grid Management Architecture

ETAP Unified Smart Grid Architecture includes integrated communication with other ETAP solutions:

- Automated Fault Management System (AFAS)
- eProtect Central Relay Database Management
- ETAP Grid™ Distribution Planning & Analysis



- Communication front end & protocol conversions
- Communication with enterprise systems & protocol conversions

Unified Smart Grid Management Architecture

ETAP ADMS bridges the gap between Operations Technology (OT) - Grid assets, infrastructure and applications with Information Technology (IT) - Situational Intelligence for rapid and informed decision making.



Automatic Generation Control
Common Information Model
AGC Operator Training Simulator
Power Management System
Optimal Power Flow
IEC 61850
Intelligent Load Shedding
Intelligent Substation
FLISR
DNA
GMS
SCADA
ADMS
ICCP
OPC
Smart Grid
Advanced Distribution Management System
Energy Management System
OTS
iSUB **Volt / Var Optimization**
Fault Location, Isolation & Service Restoration
ILS

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