ScateX ADMS

Advanced Distribution Management System

Overview

ScateX# ADMS is the unified, open, modular and scalable solution by Efacec, for the ADMS segment. This solution is the result of more than 30 years of experience in the distribution grid management and automation. Designed to combine real-time monitoring and control, network predictive analysis and optimisation and outage management capabilities under a single platform with a unified user experience, enables utilities to manage the grid for high, medium and low voltage levels with maximum security and return of investment.

ScateX# ADMS is built upon a real-time cybersecure infrastructure with a single network model easy to maintain which provides quick and easy access to real-time information, improving situational awareness and readily providing enhanced decision support to the control room operator. A full suite of applications for network analysis, optimisation and management of unplanned or planned outages are available improving the operator performance in the day to day activities.

ScateX# ADMS is an open, flexible and scalable platform supporting open standards and industrial protocols enabling seamless integration with other OT/IT utility systems and efficient functional extensibility enabling customers to leverage stepwise investment strategies. Moreover, it can be tailored to meet the specific needs of each customer to deliver unmatched cost/benefit solutions.

Recognising that straightforward deployment, integration and maintenance is a fundamental requirement, **ScateX# ADMS** presents end-to-end engineering and management of the whole infrastructure from control room, through communications infrastructure and remote plant or field equipment. Additionally, it includes a complete solution for operator training that enables you to maintain operator team readiness.

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Key features

- Open API to allow seamless system extension and third-party systems integration
- Common Information Model GIS integration
- Powerful engineering tool unifying the configuration of all aspects of the ADMS, including SCADA, grid equipment, grid connectivity and diagrams (geographic, schematics and installation diagrams)
- Real-time monitoring and visualisation
- Grid monitoring and control console for predictive and reactive identification of voltage violations or overloaded assets
- Fault location, isolation, and service restoration (FLISR)
- Volt/VAR optimisation to manage voltage levels and reactive power to improve efficiency
- Integrates and manages DERs such as solar and wind production, and battery storage
- Integrated operation of high, medium and low voltage
- Grid works management including planned and unplanned outages
- Field crews management and mobile support to field works
- Ensures safe and efficient switching operations for maintenance or restoration
- QoS and compensations reporting and dashboarding
- Easy to use engineering tools
- Operator training system
- High availability and cyber-secure platform

Benefits

- No vendor lock-in: open platform allowing functional evolution without vendor dependency
- Highly adaptable and seamlessly integration with other client systems, such as GIS, ERP, and BI platforms
- Easy to maintain unified network model providing intuitive real-time dispatch operation
- Improved situation awareness inside and outside the control room
- Improved system reliability and efficiency reducing the impact of outages
- Optimising the outage lifecycle process
- Advanced engineering tools designed to significantly enhance system configuration and administration efficiency
- High performance and scalable solution
- Maximises the client return on investment

Unified user interface

The **ScateX# ADMS** platform presents a high voltage, medium voltage, low voltage unified user interface environment for all users inside and outside the control room, thus empowering remote operations and real-time management as well as enabling smooth integration with field and facility operations.

Multiple choices of local and remote user interface are possible, such as control room workstation, video wall, distributed operating stations, web access or mobile.

Innovative features such as the powerful tagging engine, synchronised views, side-by-side study and real-world views, on-the-fly schematics or object-oriented navigation increases operator efficiency reducing time to decision on grid management actions.

The full integration of the control centre with mobile devices enables switching work orders to be electronically sent to field crews. The crew can directly confirm the switching manoeuvres improving the visibility of other crews, increasing safe working.

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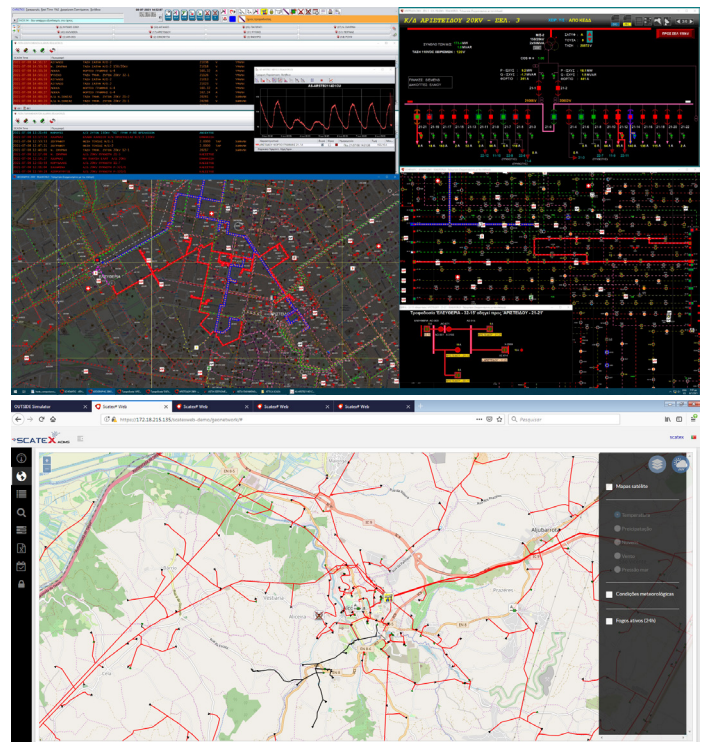
Increased operational awareness

ScateX# ADMS combines the SCADA real-time data, including event processing, event recording and smart alarming with grid topology, grid hierarchy and geo-referenced data in a single unified model. Features such as electronic wallboard, integration of geographic and schematic screens, tracing and topological-aware colouring and asset information are combined with network applications such as distributed power flow providing an advanced platform base for operations management.

ScateX# ADMS also includes an historical information system (HIS) that enables long term information storage to be fed to statistical calculation engines or real-time reporting and alerts providing integrated supervisory accounting and performance management or historical data for analysis.
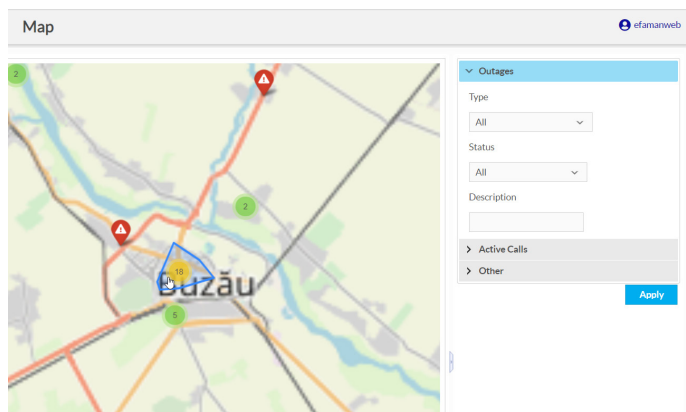
Advanced network applications

Specifically designed for electrical network management, Efacec network applications enable operators to optimally manage their networks and assets according to economic, technical and performance requirements.

ScateX# ADMS provides a set of field-proven network applications for operational support and network optimisation, including distributed power flow and VVO (Volt/VAR Optimisation). Algorithm performance allows applications to run in study mode as well as in real-time.

ScateX# ADMS was designed to allow fast and safe outage restauration. When an outage occurs, the centralised FDIR automatically generates and executes a switching order to isolate the faulty area maximising the recovered network. If necessary, the operator may then request to the FDIR additional switching orders that may be dispatched to the crew's mobile devices for manual execution. After manoeuvres completion the crew may confirm its execution directly in the system by a secure channel.

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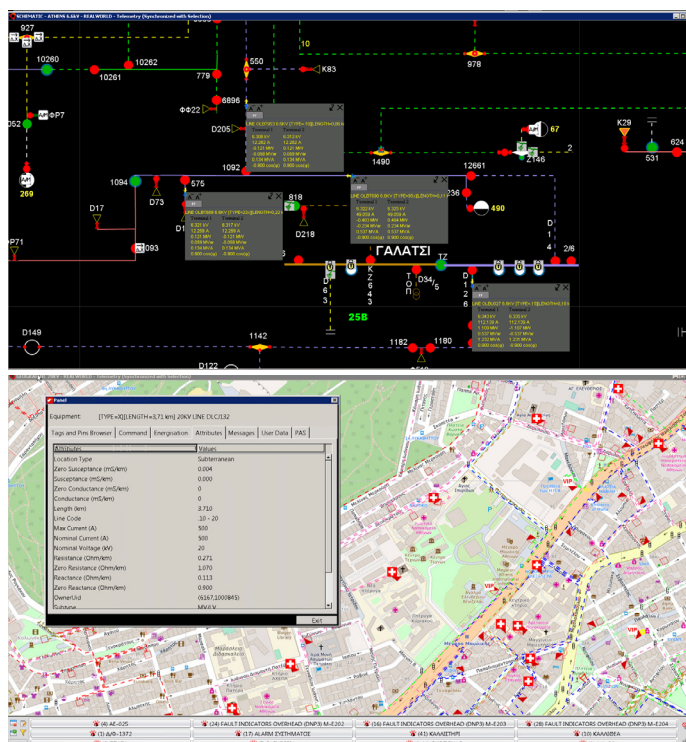
Low voltage power analysis

Due to the current lack of real-time visibility of the low voltage grid, **ScateX# ADMS** provides a digital twin of the real existing grid infrastructure, which works with a hybrid approach of real-time and model data. The continuous bottom-up calculation of the load flow, including all assets, consumers, and generators, creates a real-time model of the low voltage grid.

Based on voltages and currents of this model, **ScateX#** supports distribution network operators in avoiding network bottlenecks. To detect such bottlenecks in advance, this function continuously determines the state of each network resource using load flow calculations and network state assessments. For this purpose, network models (bottom up including the entire topology as well as all consumers and generators), current measured values from the real network, modelled load profiles as well as generation and consumption forecasts are combined.
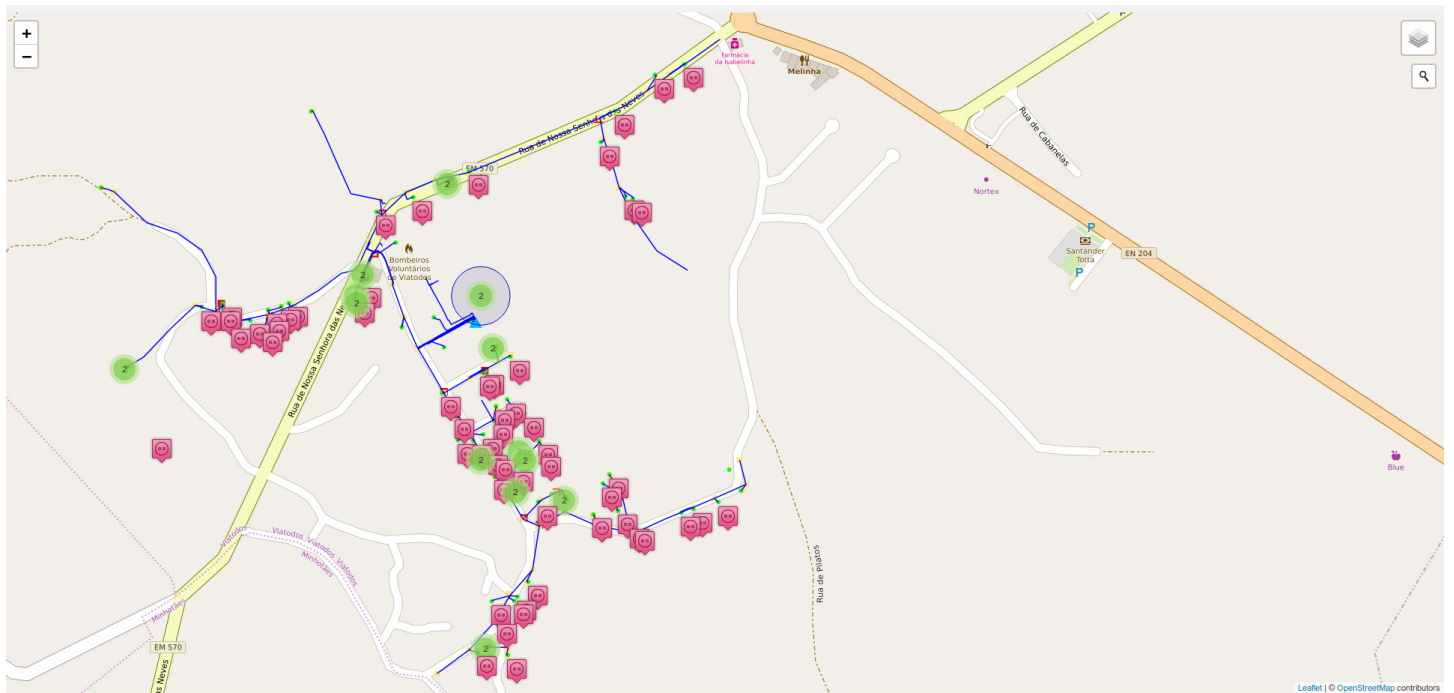
Outage management system

The state-of-the-art OMS of **ScateX# ADMS** derives its analysis, calculations and conclusions from all available operational data including SCADA real-time data, client calls, AMI events, advanced network applications.

The **ScateX# OMS** module enables utilities to quickly identify outages, assess their impact, and coordinate an effective response for an efficient restoration covering the following key functions: outage detection and location prediction, customer communication providing automatic notifications about known outages and estimated restoration times, dispatching field crews and tracking restoration activities enabling field crews to receive assignments, update status, and report issues from the field, assisting operators in prioritising and managing restoration efforts based on outage severity, affected population, and critical facilities. On top of its historical database of outages, the ScateX# OMS also enables the generation of quality of service and compensations reports adapted to local regulation.

Workorders management

The **ScateX# ADMS** allows the management of planned and unplanned work orders, including the management of the lifecycle of work orders - creation, scheduling, execution, close and reporting. It ensures that all physical work, whether routine maintenance, emergency repairs, inspections or capital projects, is tracked systematically and completed efficiently.

Engineering efficiency

ScateX# ADMS supports current engineering requirements with an online integrated interactive CAD environment that includes template-based and object-oriented model editing tools, together with powerful deep copy, import/export and model validation. The engineering environment supports database and network model design, user programming and diagram editing together with standard symbols with flexible dynamic behaviour and templates for industry-specific applications, enabling engineers to customise and adjust the system instead of configuring it end-to-end. Full model version-based edition is supported for diagrams, network equipment, network connectivity, SCADA model and communications model. GIS integration based on CIM is available for grid model and diagrams.

Open architecture

ScateX# ADMS provides an open architecture that promotes interoperability, flexibility, and scalability by using standardised, publicly available interfaces and protocols allowing seamless integration with other utility systems, applications, and devices, reducing vendor lock-in and fostering innovation.

A well-documented REST API and Kafka based stream facilitates the integration with other utility legacy systems and the development of external applications allowing the functional expansibility of the system.

Extensibility

By offering a REST based Open API, standard file format import/export facilities, SQL interface and CIM-compatible adapters, **ScateX# ADMS** minimises the required effort when external applications need to be integrated.

Adapters and data exchange allow users to benefit from seamless integration with external or existing systems such as geographical information, workforce/field-crew management, call centre, asset management, customer information, advanced metering, video-surveillance, public information or other technical systems.

Operator training simulator

Designed to provide realistic training sessions for **ScateX# ADMS** power network operators, the Operator Training Simulator (OTS) is a standalone system that includes the electrical network simulation engine with optional protection and automation simulation engine, including telemetry and telecontrol. The OTS system may also be setup to include any set of power applications, including automation applications.

The training session management model allows training sessions to be created from historical or current network configurations and snapshots and executed with manual or template-based incident/fault simulation.

Comprehensive support

The ScateX# ADMS flexible and open platform ensures that your system is equipped with future-proof technology and that stepwise investment strategies are not hindered.

Efacec further supports users with a full range of services from training and product support, through software customisation, to project management, engineering and maintenance that ensure you have the best fitting solution for your requirements considering the full system life-cycle.

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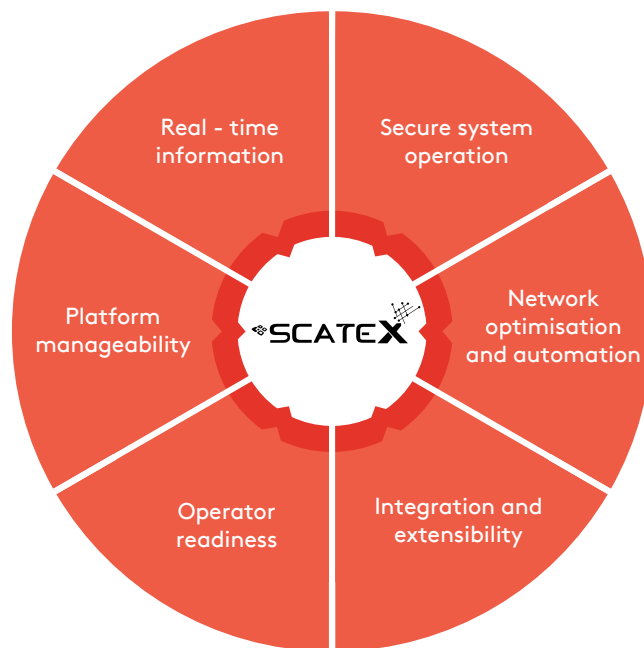
Short summary of available features

Unified user interface environment

Full vector graphics for schematics and geographic screens, lists and model browsers, advanced navigation and windowing, flexible tagging system; reports; dashboards

Advanced alarms system

Auto-generated fully functional schematics, colouring, tracing, redlining and pattern/model-driven diagrams

Side-by-side real world, study mode and engineering mode

Operational or switching orders interface; management of planned and unplanned occurrences or outages

Multi-language

IP video integration

Secure web access and mobile applications

SCADA engine and multi-protocol front-ends

Cartography and GIS integration

Historical information system

Statistics, reports and alerts

Power Application System (PAS)

Operational applications

State estimator, load allocation and power flow

Monitoring of outages

Automation applications

Fault Detection, Location, Isolation and Reconfiguration (FDIR)

Load shedding

Analysis and optimisation applications

Load profile modelling

Short circuit analysis

Distribution Optimal Power Flow (DOPF)

Contingency Analysis (CTA)

Forecast applications

Short-term load forecast

Outage management applications

Condition monitoring and technical supervision software

Communications and telecontrol infrastructure

Inter control centre integration

Integrated engineering system (with versioning support)

Distributed real-time bus, scalability & redundancy options

CIM-compatible adapters for external application and systems integration

Operator training simulator

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