CESS SCADA-EMS/WAMS Platform

Energy network control centers will face several **challenges** in the future to:

- Deal with the increase share of renewable energies
- Reduce carbon dioxide production
- Improve grid stability, resilience, and system security
- Smart control of networks and the use of PMUs followed by big data streams
- Increase system productivity and real-time analysis of the system status

Need for the design & development of new management & control systems is unavoidable

The **CESS SCADA-EMS/WAMS** is a state-of-the-art **platform** designed to enhance the management and operation of power networks. It ensures **real-time** monitoring, network control, and operational security with **Windows** and **Web-based** flexibility.

Backed by extensive research and engineering expertise, the system continuously evolves with **AI-driven** analytics, predictive insights, and smarter grid management, delivering **efficiency**, **reliability**, and **innovation** for modern power systems.

Industry Compliance & Standards

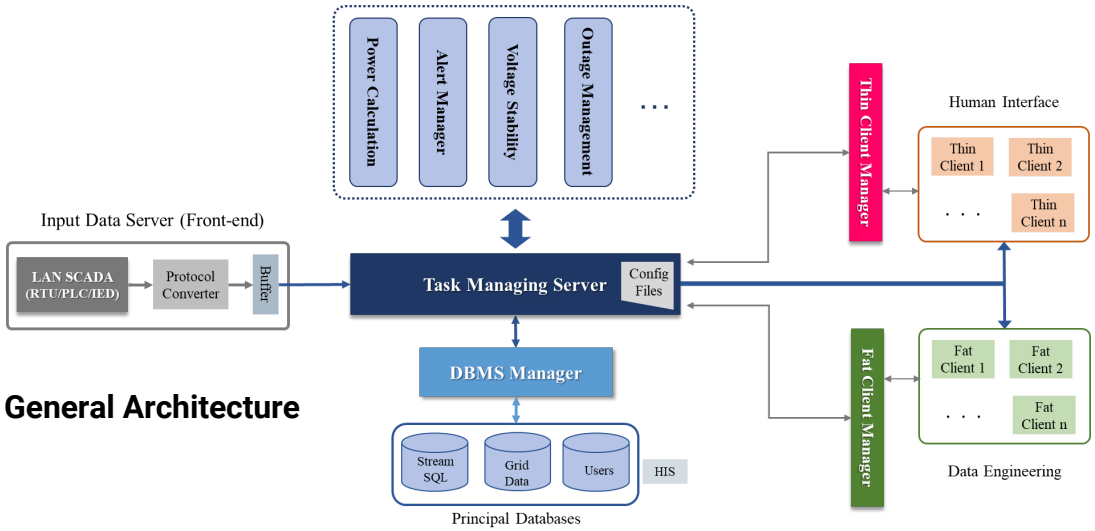
- IEEE Std C37.118.1™-2011
- IEEE Std C37.118.2™-2011
- IEEE Std C37.247™-2019
- IEEE Std C37.244™-2013
- IEEE Std C37.111-1999
- IEC60870-5-101, 104
- IEC60870-6-TASE.2
- IEC61850
- ISO 9506 MMS
- ISO 8650 ACSE

General System Parts

- **Input Data Server:** Handling data acquisition and processing using the latest protocols.
- **Application Server:** Handling computational processing, and ensuring optimized system performance.
- **Database Management System (DBMS):** Efficiently managing data storage, enabling real-time and offline access.
- **Task Management Server:** Functions as the central control hub, managing interconnections between system components.
- **User interface modules**
  - Thin & Fat Client Modules
  - Manager Modules: Interfaces for communication between different types of users and the task management server.

Key Features

- **Advanced Data Reception, Storage, & Visualization**: Ensuring professional-grade data management, real-time monitoring, and historical data analysis.
- **Intelligent Fault Detection & Resolution**: Rapidly identifying voltage deviations, overloads, and anomalies to maintain system integrity.
- **Integrated Multi-functional Platform**: A versatile **EMS** supporting **WAMS** and **ADMS.**
- **High Security & Compliance**: Implementing robust security protocols and standards to guarantee safe operation.



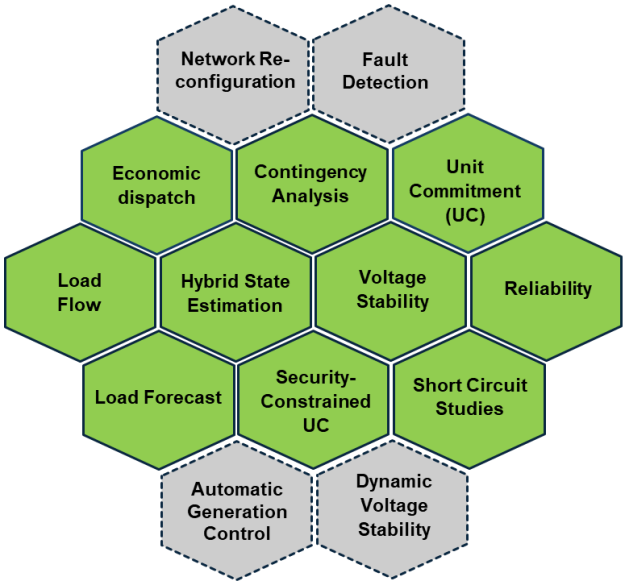
General Architecture

CESS SCADA-EMS/WAMS Platform

System Capabilities

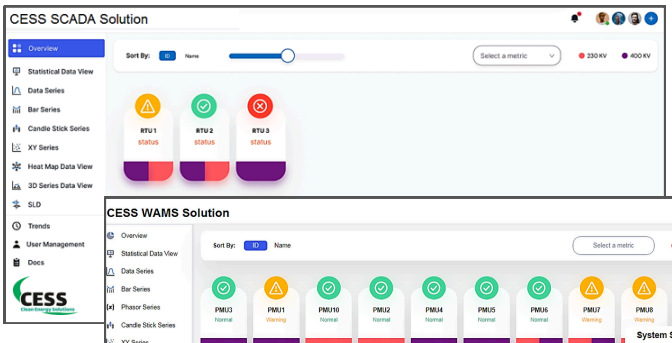
- Real-Time and Play-Back Functionality
- Ability to communicate and receive information from PMUs & RTUs with different brands and frame rates.
- Microsoft SQL Server Database
- Storage of data in NoSQL format
- Web-Based and Windows Application architecture
- Real-time display and analysis of data
- Ability to send signals and alerts to users via SMS, Email, and voice alarms
- Ability to upload raw files
- Transmission network single-line diagram (SLD) module with editable post-substation arrangement.
- Parallel processing, cybersecurity, reliability, accessibility, redundancy, and firewall protection
- User-defined variable support
- Transmission network dynamic hybrid state estimation module based on combined data of RTUs & PMUs.
- Application of intelligent methods (Machine Learning & Deep Learning) to increase the accuracy and speed of power system analysis.

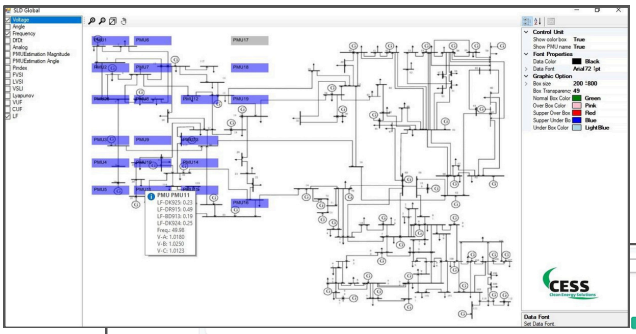
Computing Modules

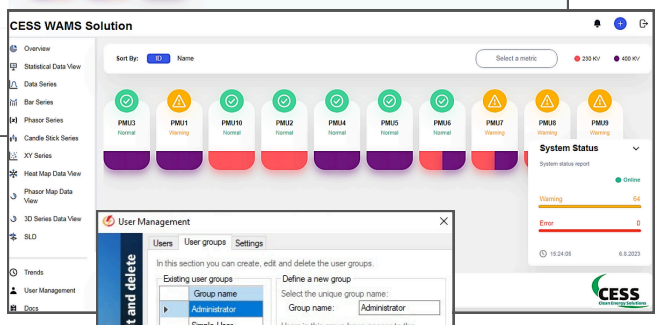


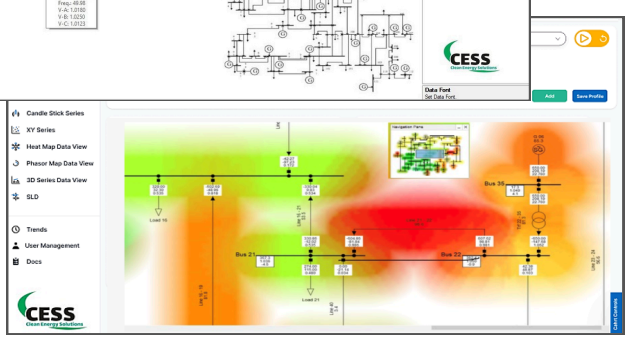
R&D Activities

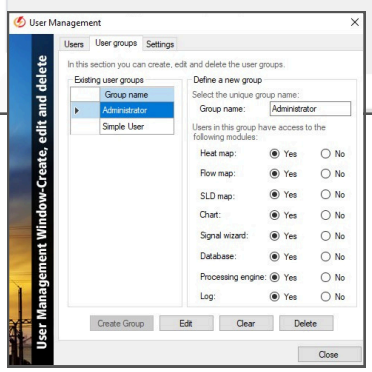
- **Enhanced Protocol Capabilities:** Upgrading to industrial-grade servers.
- **AI-Driven System Enhancements:** Implementing machine learning for improved fault detection and optimization.
- **Intelligent Dashboards:** Introducing next-generation visual analytics.
- **Multi-vector energy system platforms:** Capturing interaction between electricity, gas, water, heat, and transport systems











Contact us

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