



PSS®ODMS

Advanced network modeling and applications software suite for operations and planning

Answers for energy.

SIEMENS



PSS®ODMS – advanced, robust and efficient network modeling and network applications software suite

Siemens Power Technologies International (Siemens PTI) is a provider of network consulting, software solutions and T&D training. The PSS®ODMS software solution by Siemens PTI offers advanced network model management and real-time network analysis software plus a data and applications integration platform that manages transmission and distribution models for operations and planning.

PSS®ODMS is a CIM-based (Common Information Model — IEC 61970) and GID-compliant (Generic Interface Definition IEC 61968) product, which can be installed as a stand-alone CIM data repository in an open architecture, or can be installed as an integration platform for Technical Applications Integration™ (TAI™).

PSS® ODMS architecture – data exchange

The core of PSS®ODMS is its CIM-based data repository that provides a model schema for detailed network models and pertinent asset data. The data repository is fully open and accessible via a.NET API, CIMdbNET, ODBC queries, Oracle® Forms and other database manager tools, thereby exposing the CIM model to external applications. Optionally, this database can also be exposed to create or participate in an enterprise integration solution via its

GID-compliant Generic Data Access (GDA) layer. This layer adds the functionality to access the network model data from other GID-enabled software over enterprise middleware. Various automated data filtering functions exist to import network and graphics models from a wide variety of applications. These are then maintained using the PSS®ODMS rich GUI or through a database environment.

TAI™ Functionality

Modeling	Data/Model Exchange	Graphic Exchange	Real-Time and Study Mode Network Application	Model and Diagram Management
CIM-based data model	CIM/XML-based (full, partial, incremental)	SVG	Topology processor	Model merge
Transmission planning	PSS®E	DXF graphics	Power flow	Planning to operations model transforms
Transmission operations	PSS®SINCAL	AREVA graphics	State estimator	Comprehensive operations to planning transforms
Distribution planning	Proprietary	SNC-EMS graphics	Contingency analysis	
Distribution operations	AREVA		Outage ranking	Transformer winding relocation
	GE/Harris		Scripting automation	PSS® OneLine Diagram Autobuilder
	Siemens			PSS® OneLine WorldViews
				Historical case builder



PSS® ODMS – benefits at a glance

Diverse functionality guided by diverse customer needs delivers:

- Model aggregation tool and model server that:
 - Removes data redundancy
 - Decreases data errors across all models
 - Decreases model maintenance expenses
- Integrated applications to openly share data across the enterprise using IEC standards
- Managed transmission and distribution, operations and planning, network models within a single data structure
- Managed future and historical models for any point in time (Network Model Continuum™).

Real-time network applications run online or in study mode (off-line using a real-time snapshot). These modes provide powerful study tools and model integrity checkers for:

- Full suite of real-time network applications (power flow, state estimator, contingency analysis and short-circuit analysis)
- Rapid retrofit/upgrade of real-time network applications

- New add-on capability for existing SCADA systems
- Advanced contingency analysis functions include full representation and evaluation of protection schemes
- Real-time results publish to ICCP for SCADA display
- Used to validate model integrity for modeling only installations
- Flexible topology processor exports a planning model from an operations model that generates a user-specified PSS®E or CIM planning model
- Powerful Python interface for scripting.

Interoperability lays the foundation for enterprise-wide applications integration including:

- Use of IEC-defined software interfaces provide a flexible and expandable foundation for applications integration within a fast and dynamically changing utility operating environment
- Integration bus approach adopts the GID - IEC 61968 for information exchange across middleware, which can eliminate expensive point-to-point interfaces.



Adoption of industry standards provides a consistent data integration platform with:

- Fully open Common Information Model (CIM) database to quickly establish the CIM data model for enterprise access
- Support for full, partial and incremental CIM/XML import and export
- User-extendable data schema and data displays
- GIS import module that imports/exports to/from the CIM Data Repository for data exchange with major GIS systems.

Extensive model maintenance application library that provides:

- Import and merge data models from a variety of operations and planning systems into a single model
- Extensive tools for pre- and post-merger modeling activities that save time and preserve accuracies in model aggregation.

User-inspired data and applications interface – PSS®OneLine:

- Single-line diagrams are auto-generated for operations and planning diagrams based on the actual network data in the data repository - integrated full graphics interface to the data model reduces data errors
- Various graphics imports and exports provide the possibility of exchanging graphics as well as data across applications.

Product architecture and flexibility provide you a cost effective solution with longevity!

- CIM-based architecture allows interoperability and extendability to integrate CIM applications
- Modular design:
 - Users purchase only desired functionality
 - Easily expanded to support the user's growing needs
 - Customizable to unique user requirements with minimal cost
 - Commercial off-the-shelf solution with proven support and extend ability.



PSS®ODMS – advanced network applications with on-line and study modes and model validation

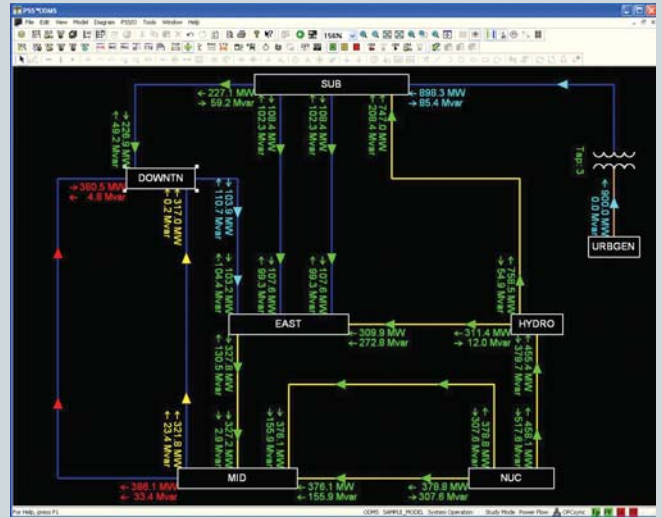
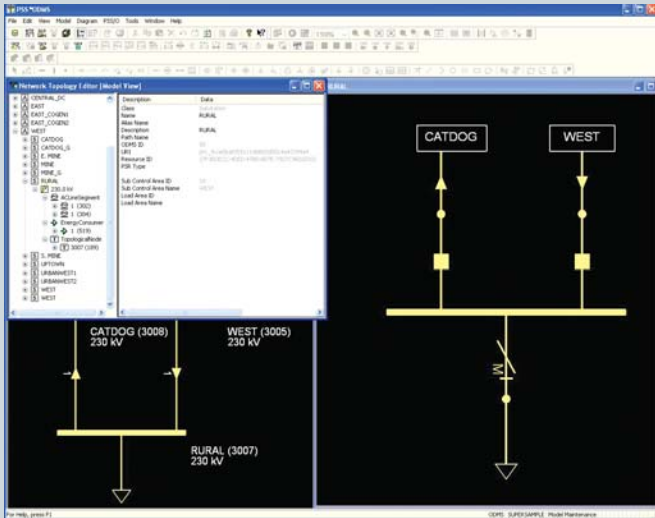
PSS®ODMS provides advanced real-time network applications, which are attractive for EMS upgrades/retrofits and in new installations to expand SCADA systems. In addition, these capabilities are used in PSS®ODMS data management applications and enable the user to evaluate model convergence characteristics prior to sharing it with other applications or entities. The following analytical modules are available with the PSS®ODMS base package.

Topology processor

Converts the detailed bus-breaker (operations) model to bus-branch (planning) model based on real-time, historical or “normal” system state. PSS®E-specific identifying information is preserved and, using rich business rules, the user can produce a model that mimics the network model used in the planning department.

Power Flow

Provides a variety of modeling tools that adjust the network model to match conditions in the existing power system or establish a realistic operating schedule for planning purposes. Since these tools can be used with real-time SCADA data or an historical snapshot, they provide users with a powerful facility for studying operating strategies.



State Estimator

Processes telemetered and calculated SCADA to obtain an estimate of the magnitudes and phase angles of bus voltages across the power system for buses that are not measured.

The State Estimator can be used in a real-time mode or study (simulation) mode. The State Estimator algorithm identifies critical measurements and bad measurements and provides switch status correction. A convenient State Estimator Tuning graphical interface is provided to quickly pinpoint and resolve common problems.

Contingency Analysis

Performs the dual process of Outage Ranking (Contingency Screening) and full alternating current (AC) simulation of either dynamically-generated contingencies or user-defined contingencies. Identifies the most severe multiple-outage cases with the highest probability of occurrence using real-time ranking triggers. Also identifies the most severe single branch or generator outage that might trigger multiple outages in the current real-time cycle. Supports modeling of special protection schemes (or manual corrective actions) via Python scripting. Study mode capabilities include full integration with alarm displays and one-line diagrams.

PSS®ODMS – enables integration

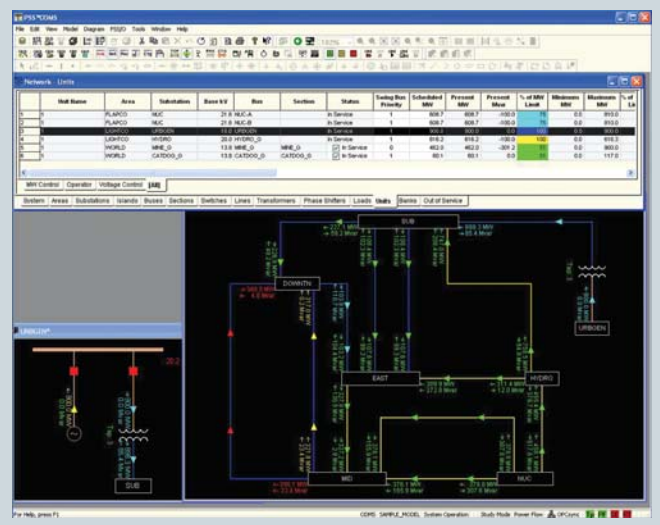
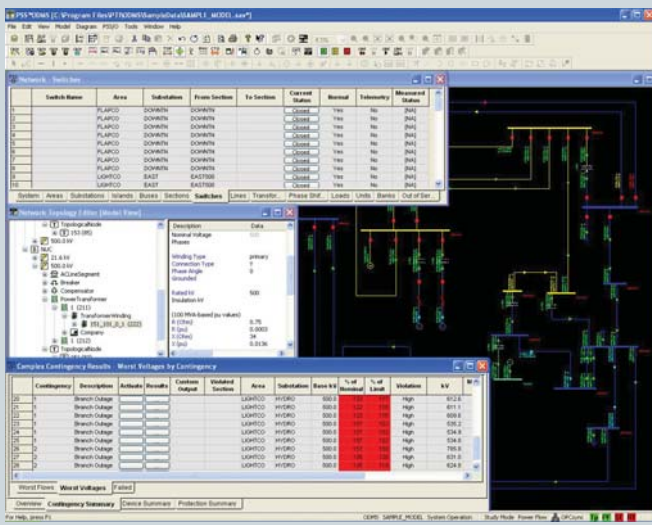


PSS®ODMS provides easy-to-use database management tools, a full graphic interface, plus standard database interfaces and CIM/GID interfaces. These interfaces allow system modelers to exchange electrical network data quickly and easily between diverse EMS systems, planning group and middleware enterprise integration processes. PSS®ODMS converts operations information into the International Electrotechnical Commission (IEC) Common Information Model (CIM). The PSS®OneLine software provides easy and accurate graphical editing and/or topology building of the CIM compliant database.

The PSS®ODMS Data Repository uses the CIM as its model schema and allows for defining a single model, with projects to represent future model enhancements and historical model snapshots. The Project Modeling module and the Historical Case Builder module allow PSS®ODMS to represent, within its single model, the Network Model Continuum™, a network snapshot for any time from the furthest reaches in the future to the furthest past operating configuration.

A true planning model for a past time or event operations can be quickly exported for study. PSS®ODMS compiles a single detailed chronological model and then, on command, exports either an operations model or a planning model from the base data set and future projects for any point in time. Siemens PTI has coined this representation as the Network Model Continuum™.

PSS®ODMS is also the building block for Technical Applications Integration™ (TAI™) in a fast and dynamically changing utility operating environment. Today's needs for efficiency gains and productivity increases mandate adoption of standard interfaces such as OLE for Process Control (OPC), Generic Interface Definition (GID), Software Oriented Architecture (SOA), etc., and flexibility, upgradeability, and the ability to select the "best-in-class" software and hardware for implementation within the enterprise. PSS®ODMS meets all of these objectives including providing an extendable solution for eliminating database spreads.



PSS®ODMS – productivity, efficiency, system security and cost effectiveness

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