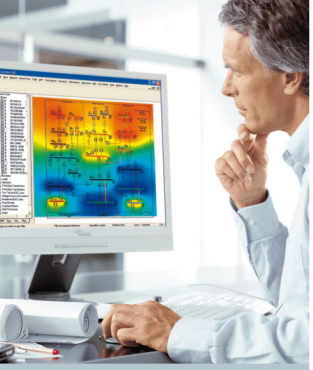

MOD® – Model on Demand

State-of-the-art software for managing transmission planning data

At a glance

The Model on Demand (MOD®) product of Siemens Power Technologies International (Siemens PTI), the provider of network consulting, software solutions and T&D training in the Siemens Energy Sector, revolutionizes traditional approaches to managing transmission network models. MOD® is being used by large and small planning departments to coordinate generation of major base cases as well as to synchronize interconnection and reliability models across multiple planning engineers. MOD® coordinates model inputs from numerous sources and will generate a base case for any point in time specified by the user.

MOD® benefits

Small and large utilities are able to reap significant gains in efficiency and accuracy from their use of MOD®:

- improved projects' synchronization, management and bookkeeping, particularly with numerous parallel projects;
- one button "On Demand" model generation for any specified target date / time considering all of the projects in the queue;
- one data entry synchronizes equipment "in-service / out-of-service" status in all planning models;
- efficiently apply any of a multitude of branch rating sets to reflect the specific time represented by the model;
- fine tune the model to planning or operations needs using Python scripting and PSS®E functionalities;
- data checking (down to the solution level) allows screening model changes from external or internal sources prior to accepting changes into the model environment;
- interfaces to PSS®E increases efficiency in generating base case updates and in uploading these to a coordinating body;
- organize non-electrical project data and documents; and,
- restrict or permit access to data types on individual user basis.

The challenge

Each year, utilities and coordinating bodies generate yearly and seasonal power flow and stability cases for representative benchmarks of the system evolution over a 5-20 year horizon. These cases require the incorporation of new planned projects, different rating sets based on season or other criteria, different load, generation and shunt patterns and equipment maintenance schedules. In addition to these benchmark study models, generation interconnection studies need to be performed, with an awareness of the interconnection dates for not only the interconnection under study but also of the dates for every other interconnection. The serial nature of these interconnection studies must be maintained and their dependencies honored.

Such complex model building requirements are very labor intensive, time-consuming and prone to consistency errors. The model building processes have traditionally used proprietary files to update the model (such as IDEV and DYRE) and program automation techniques (such as IPLAN or Python).

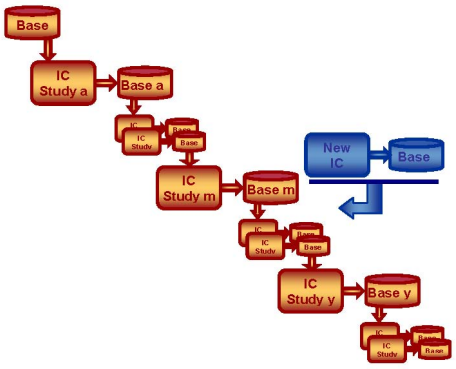

Figure 1: MOD® Data Flow Process

Siemens PTI – Software Solutions

Answers for energy.

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Because of the market impact and sensitivities to the models, extensive documentation must be kept to track model evolution, changes, and data approvals. The user must develop and store extensive comments for each case and / or interconnection study.

Now consider the effort required when an interconnection re-schedules its service dates. All data relating to the interconnection must be updated and interdependencies between this interconnection and all others must be re-evaluated. In theory, all cases that are affected by the schedule change must be re-run. This process is greatly confounded and becomes much more demanding on the part of the ISO or RTO who is coordinating potentially hundreds of model inputs from just as many utilities and market participants. The needs to document model changes, and to maintain hundreds of error-free cases are immense.

Our solution

MOD® is a database with a web-based interface that allows the planning coordinator or planning engineer to:

- organize and reorganize study case service dates without the need to generate a multitude of “base cases”;
- store a single master network model;
- accommodate explicit and scalar profile data sets for load, generation, and bus shunts;
- generate projects, as containers for data changes that are applied serially in any order specified by the user;
- account for equipment commission / de-commission dates and out-of-service and in-service dates in the generated model;
- define and accommodate an unlimited number of sets of branch ratings;
- incorporate operational transaction schedules in exporting the network model;
- manage Voltage Control Profiles;
- coincidently manage model data for power flow, short circuit, and dynamics studies;
- validate input data, log user processes, generate model differences, manage solution parameters and solve the target model in PSS®E; and,
- grant permission to remote users to view / edit / add data while restricting access to data submitted by others.

MOD® addresses these issues by providing a database for case creation and storage and a web-based GUI for user interaction. MOD® is designed to expedite model development while minimizing the probability of introducing modeling errors. There is one central repository of data with a web interface for data upload, model interaction and download.

MOD® provides the user with the capability to manage a great number of change cases. MOD® assembles sets of model changes into “projects,” which can be decomposed into smaller “phases.” Projects (and phases) can then be managed and organized in various fashions depending on the needs of the user. Projects are coupled with seasonal (explicit) and annual (scalar) profiles to provide the user with a procedure for organizing and re-organizing system investigations. This is accomplished without the need for generating a great number of base cases, or repeatedly re-running the cases when project implementation sequences change. A major feature of MOD® is its change and approval tracking processes that generate an audit trail. User permissions can be set individually for specifying the capabilities of each user of the system. Permissions can be set for viewing all or some data, for allowing changes by only the user who owns the data, etc. are all available for customization within MOD®.

A special benefit of MOD® by Siemens PTI is that it is based on similar technologies as the Siemens PTI PSS®ODMS software platform. This means for the MOD® user that as their needs expand they can look toward upgrading to a MOD® environment that incorporates data sharing with other software applications throughout the enterprise. PSS®ODMS provides data exchange using Common Information Model and Generic Interface Definition standards (CIM – IEC61970; GID – IEC61968).

Remote web access

Certain utilities, in addition to ISOs and regulatory authorities, need to manage a vast amount of planning data changes and coordinate the generation of the base cases for all participating members. Hence remote access to MOD® is a key component of the product. Users who need access to a subset of MOD® data can be easily accommodated in a secure manner, such that the administrator can configure the software to allow users to only access the relevant portion of their member model data while restricting or completely blocking access to view or change other members’ or users’ data.

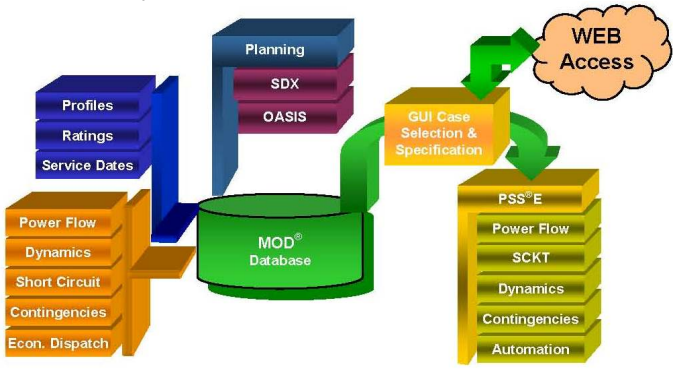

Figure 2: Types of Data MOD® Manages

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