ABB is pleased to announce the general availability of the ABB Ability™ e7 platform, version 17.1. This marks another milestone in the platform’s evolving functionality to offer the best of breed in modeling software.

ABB is constantly investing R&D into the e7 solution suite and the result is cutting-edge, off-the-shelf software that streamlines tasks and allows users to focus on what’s important: modeling and generating results quickly to save more money.

ABB also continues to expand on its strategic partnership with Microsoft® to offer clients incredible functionality in two key areas: grid computing and dashboard reporting. As illustrated below, leveraging the Azure® Service Fabric has enabled clients to tackle large studies with multiple iterations either locally or on the Azure cloud:

Clients can also now take advantage of the EPM reporting component, which is available as a fully-integrated dashboard reporting solution across ABB modules and other third party software solutions. Two example reports are provided below:

Figure 1: Environment leveraging grid computing with e7

Figure 2: Interactive dashboard reports allow users to visualize data quickly and effectively
Enhanced stochastic modeling

The e7 suite of solutions has enhanced stochastic modeling and risk analysis capabilities. Stochastic draw values can be calculated on any input variable modeled as an index using the Draw Generation task. These draw values can be saved to the index, for repeatability of results. Inputs have been added to the index entity so that a user can define any index as a stochastic index with the choices on the distribution and the appropriate distribution parameters, frequency of the draws, etc. After draw calculations, the results can be seen in the Stochastic Values input on the index. Draw Generation also allows correlation between indexes when calculating the stochastic values for each index. When a run is designated as a Stochastic Run, e7 will iterate through each draw, using the appropriate draw value for these indexes and the expected values for all other indexes in the scenario. New for 17.1 is the Regression Tool. This tool will calculate the regression parameters of the stochastic index from historical data, and will also calculate the correlations between indexes.

More from e7 PROMOD

Superior performance & user experience

PROMOD is recognized in the industry for its flexibility and breadth of technical capability, incorporating extensive details in generating unit operating characteristics and constraints, transmission constraints, generation analysis, unit commitment/operating conditions and market system operations. For over 40 years, energy firms have been using PROMOD for a variety of applications such as locational marginal price (LMP) forecasting (hourly and sub-hourly), financial transmission right (FTR) valuation, environmental analysis, asset valuations (generation and transmission), transmission congestion analysis, and purchased power agreement evaluations. It also provides valuable information on the dynamics of the marketplace by determining the effects of transmission congestion, fuel costs, generator availability, bidding behavior, and load growth on market price.

Manage real world complexities

PROMOD tackles complex operating rules (nomograms), multiple pool modeling, unit commitment, managing loop flows, and more. With its superior nodal and zonal market simulation capabilities, PROMOD can lead to better investment decisions. ABB’s high-value clients are using PROMOD not only for planning but also setting rules to coordinate with their members.

Simulate large footprints

PROMOD is able to simulate large footprints such as the Eastern Interconnect. It can also provide the model with Simulation Ready Data, which is an accurate and consistent representation of the power system, synchronize with ABB Ability™ Velocity Suite generator and transmission historical data and Reference Case data for additional forward looking.

Platform themes: technology, user experience, optimization, and integration capabilities

PROMOD 17.1 utilizes cutting-edge technology to enable faster development of new features and reach high-quality standards. It also facilitates more in-depth QA testing of new features, in-code unit testing, and regression testing.

The first thing users will notice is the striking interface refresh, which includes new workflow management features, in-application reporting and charting, and an in-application formula tool that gives users the ability to create custom variables. These enhancements, among others, give the user a far greater amount of flexibility within the software, and also offer the ability to view resolved data in a single view and visualize both input and output data together.

PROMOD utilizes Xpress Solver and able to use grid processing (multi-processing) for segmenting runs and getting diagnostic outputs for analyzing the results in detail. Users can also define a set of tasks (activities) to execute automatically to reduce repeatable steps, reduce data input errors, and ultimately reduce the time to obtain valid results.
Migration/deployment
PROMOD comes with a seamless upgrade from current or legacy installations to limit IT impact and expedite the upgrade. Flexible deployment options include the cloud, a client-server environment, or on a standalone desktop.

Value added from e7 Capacity Expansion
Although already a widely-used and industry-accepted resource planning tool, e7 Capacity Expansion in version 17.1 delivers on the promise of integration and technology improvements features that simplify workflows and decrease run-times. Capacity Expansion users also have a unique and powerful linear programming (LP) and mixed integer programming (MIP) solution optimization methodology at their fingertips. A flexible and robust modeling software that provides the details needed to satisfy both management and regulators, Capacity Expansion offers the benefits of seamless integration and technologies that simplify business processes.

Seamless integration
Capacity Expansion is now fully integrated with our detailed production cost & operations model, Portfolio Optimization, and our sub-hourly market simulation tool PROMOD. Plans generated by Capacity Expansion can now be saved and used in both Portfolio Optimization and PROMOD simulation runs. Built on the SQL Server® architecture allows multiple users to work with the database and run the model simultaneously and with faster processing times. Results may be viewed directly in the e7 user interface, sent to the Microsoft Power BI™ Desktop reporting application for more flexible and robust reporting and graphics, automatically sent to Excel®, spreadsheets, or automatically pushed to other downstream post-processing processes and applications.

Technology built for speed & simplicity
The graphical user interface update makes navigating the tool even easier than before along with significant new data management and graphics capabilities. The solution engine is written on the most recent version of C (C#) and uses XPRESS Solver, which gives users much faster run-times than previous versions. Regional data for our models is also now available for the Eastern Interconnect ERCOT, and WECC regions, providing the analyst with comprehensive data for the resources both inside and outside their own service territory as well as the surrounding market. This data can be used as the basis for building a starting point database for the analyst’s own utility, or for building a comprehensive market model to be used in conjunction with PROMOD, utilizing a truly integrated database for both portfolio and regional energy market studies.

Upgrading to e7 Portfolio Optimization

Modeling improvements
e7 Portfolio Optimization enables the use of advanced modeling capabilities that will result in better unit commitment/decommitment decisions and lower-cost schedules. Some of those features include:

- Access to all the data management capabilities and tools of the e7 platform
- Short-term to long-term optimization; latest MILP optimization techniques
- Robust combined-cycle modeling including mode transitions and operating constraints at both mode and plant levels
- Global optimization of complex portfolio assets including cascading hydro, pumped storage facilities, combined heat and power plants, renewables and demand response/distributed generation resources (modeled as virtual power plants)
- Detailed generation asset modeling with ramp rates, initial startup conditions, forbidden zones, etc.
- Advanced cascading hydro model including pump storage
- Advanced energy storage modeling for batteries and other energy storage options
- Complex combined heat & power modeling with detailed heat topology and co-optimization of heat and electric
- Comprehensive fuel model including fuel availability and pipeline constraints for fuel planning budgeting
- Robust emission modeling for allocation of long-term emission limits
- More flexible reserve modeling and co-optimization of reserve and energy
- Robust stochastic modeling to capture uncertainties in fuel prices, weather, load forecast, renewable generation profiles, market prices, etc.
- Direct integration between e7 Portfolio Optimization and e7 Capacity Expansion, providing the ability to utilize selected optimal expansion plans in portfolio planning scenarios
- Improved in-application reporting (retirement of Data Explorer) and charting (rather than using report agent) for advanced visualization and graphing

Take advantage of the new features in e7. Contact an Account Executive to upgrade an existing software instance or request a demonstration.