ABB Ability™ e7 platform
Version 17.3 generally available

ABB is pleased to announce the release of version 17.3 of the ABB Ability e7 platform, offering best-in-breed energy market and portfolio modeling software capabilities.

Key features in this release come directly from customer requests and include:
- Improved application performance, runtimes and usability
- Expanded migration capabilities
- Grid processing enhancements.

All of these improvements are focused on reducing the time between the beginning and end of your modeling studies.

Next level energy-data management
The e7 data management platform provides a single interface for ABB’s market and portfolio solutions, creating a common environment for analysis, simulation, mid- to long-term portfolio planning and short-term portfolio operations.

For example, e7 enables your market & transmission analysts to feed price forecasts and expansion plans directly into your risk assessments within a single interface; this means the end of stale data. Data is automatically available, from many sources, all in one place. e7 streamlines the business management process regardless of whether modeling a small portfolio deployed on a single machine or modeling multiple markets in the cloud on thousands of nodes.

New e7 data management features
High-performance user interface (UI)
Large generation portfolios benefit from enhanced filtering functions, which help users to easily locate information, while the redesigned “show dataset” workflow provides a consistent and intuitive UI experience.

Integration & reporting capabilities
With the Web Service API, the e7 software suite seamlessly integrates with other enterprise IT systems with no restriction on the volume of data being exchanged. We’ve also added Rest API paging functionality to minimize the risk of an “out of memory” exception. The reporting component is available as a fully-integrated dashboard reporting solution across ABB modules and other third party software.

Robust grid processing
e7 grid processing is now able to support concurrent simulations from multiple databases and in local and grid environment.

Growth in the Microsoft® Azure® Cloud
ABB continues to grow 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:

Environment leveraging grid computing with e7
Create multiple expansion plans during a single run
Capacity Expansion can now create multiple expansion plans during a single mixed-integer programming (MIP) optimization run. Depending on the number of proposed resources and each resource’s building constraints, Capacity Expansion can produce additional plans after the optimal plan is produced without having to rerun the scenario or modify any data. Each plan generated in a single MIP optimization run has a different mix of the proposed resources.

Store & access results from different expansion plans
When creating new expansion plans, the analyst can access the detailed results of each run, save any individual plan for more detailed analysis using PROMOD or Portfolio Optimization, and can publish individual plans or the entire run for use in downstream reporting tools like Microsoft Power BI™.

Enhanced Portfolio Optimization (PO) in e7

Energy storage enhancements
"Storage" is the buzzword of 2017 across the industry, and Portfolio Optimization now offers a new energy storage station type. ABB has developed charging characteristics such as charging max capacity, charging min capacity, minimum charging up and downtimes, charging startup costs, and charging variable operation & maintenance (VOM) cost. Likewise, there are similar discharging characteristics such as discharging max capacity, discharging min capacity, etc. The charging and discharging functions are similar to the hydro production function, which ties the amount of energy – discharged or charged – given a certain power level and amount of stored energy.

Efficiency from e7 PROMOD

Benchmarking MISO MTEP16 Data
Three major ISOs (MISO, PJM, SPP) use PROMOD as a key component of their economic transmission planning processes. In order to prepare for their migration from legacy PROMOD to e7 PROMOD, ABB has undertaken an effort to benchmark e7 PROMOD to legacy PROMOD, using MISO’s MTEP16 2024 PROMOD database. So far, this process has focused on a one-week run (7/1/2024 to 7/8/2024).

The benchmark results are examined in terms of total generation and cost by generation type, flows and flowgate sensitivities for monitored flowgates, and LMPs at key generator buses as well as for hubs and zones. This process identified a number of gaps in the Powerbase migration tool, which is provided with e7 PROMOD to migrate legacy PROMOD databases to e7 PROMOD.

Through this process, ABB is validating not only the engine calculations and generated reports but also capturing gaps in our migration tool that helps existing customers to migrate their database from legacy software to the new e7 platform. Meanwhile, the current benchmark activity will help the validation process by MISO and eventually other ISOs.

Adjusted production cost
ISOs use adjusted production cost (APC) savings to measure the economic benefits of potential transmission upgrade options. These savings are based on the difference in total production costs of a generation fleet adjusted for import costs and export revenues with and without the proposed transmission upgrade as part of the transmission system. The formulation for APC can be different depending on a separate settlement that is calculated for pool-to-pool interchange and interchange within the pool, and depending on what price is used for these settlements. Control area interchange (CAI) outputs from e7 PROMOD have been improved, to provide easier use in the calculation of APC. The CAI energy transfer outputs are separated into energy transfer sale and energy transfer purchase for easier reporting.

Log message improvement
In e7 PROMOD, the log message category has been delineated such that “fatal error” is reserved to flag failed runs only. Some of the important warnings have been promoted to “error” to help users prioritize investigation of data problems. Also, more details have been added to the error messages to make them more descriptive.

More information
Contact ABB Enterprise Software about e7, ABB’s integrated energy market & portfolio solution. Subscribe to receive email updates on all the latest developments in energy portfolio management at ABB Enterprise Software.