PSS®ODMS and the Common Information Model

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In the early days of energy management systems (EMS), vendors often delivered entire systems based on proprietary hardware and software in a tightly controlled environment. As these systems became uneconomical to produce, the hardware and operating systems were often standardized on one of the prevalent platforms such as those provided by IBM, HP and Sun. The software remained proprietary and restricted the transfer of data between systems, effectively locking the customers into a particular vendor unless they wanted to invest a substantial cost and effort into migrating the data from one vendor’s format to another’s format.

PSS®ODMS was originally designed to handle this data migration. One vendor’s data could be transformed into another’s format and allow for an effective, low-cost data migration. Rather than doing direct transformations, which would quickly multiply depending on the number of vendors that needed to be supported, a common model was needed so that each format could easily be migrated to any of the other supported formats. The emerging standard called the Common Information Model (CIM) was the ideal solution.

The CIM was designed for the purpose of exchanging power system data in an easily extensible and self-describing way. In the early 1990’s there was an increasing need to transfer data among the various electric utilities and ISOs/RTOs. By using the CIM, this data could be produced and understood by the major EMS vendors that pledged to support the standard. As a result, PSS®ODMS became a major player in the CIM arena with its central data repository designed completely on the CIM.

The Common Information Model differs from most standards in one respect. Early on, the authors of the CIM knew that if it was to work, it had to be proven to the industry. With each new edition of the CIM, a test must be conducted amongst the software community to prove the standard can be used in proper transmission of network data. The test points out where corrections need to be made to make the standard usable.

PSS®ODMS has been a forerunner in CIM interoperability testing since the beginning. The first “interop” was conducted by EPRI in November of 2000 in Palo Alto, Calif., and PSS®ODMS participated. The CIM standard being developed at this time was used in communicating EMS models. Each interop consists of a number of tests using a published test file. The tests involve importing, exporting and solving the test model. In addition each software vendor uses other vendor’s exported data as import for their software. This manner of testing proves that a vendor can import another vendor’s data along with any extensions and export all of the data provided by the other vendor. This also increases the number of tests executed at an interop. PSS®ODMS has not only participated in these tests but has consistently executed as many as, if not more than, any other vendor participating in the interop tests. It is important to mention that PSS®ODMS has never failed a single test at an interop.

In 2008, PSS®ODMS assisted EPRI in testing the new planning model CIM standard, followed in 2009 with the Dynamics CIM standard. In both years we participated in the annual CIM interop to test the CIM network model for EMS systems. Also in 2009, Union for the Co-ordination of Transmission of Electricity (UCTE) invited participants to the first interop in Europe. This interop tested a continuation of the Planning CIM standard so that the members of the European Union could exchange models on a daily basis. This
year PSS®ODMS participated in the UCTE interop in March and the CIM for Dynamics in November. EPRI decided to cancel their interop because of the workload required for vendors to prepare for the two other interop tests.

EPRI sponsored an interop for the EMS CIM standard for the last time in 2010. That year ENTSOE, the European Union's group for overseeing electric operations in Europe, took over the testing in preparation for model transfer for next day operational planning. ENTSOE has sponsored interop testing since 2010 and participation in these tests has increased fourfold. PSS®ODMS continues to successfully execute a vast majority of the tests and remains in the forefront of CIM vendors. ENTSOE is assisting the CIM working group with finalizing CIM version 16, which will define all of the data required for the European data transfer. PSS®ODMS will continue to remain as a leading software application in the CIM industry.

The CIM is currently controlled by the International Electrotechnical Committee (IEC), which is responsible for many international standards. The IEC has separated the CIM into two major pieces. Standard 61970 covers the transmission parts of the CIM model as well as the foundation of the full electrical model. Standard 61968 covers the extensions for the distribution model. Standard 61970 is governed by IEC Working Group 13, which is responsible for standards concerning EMS application program interfaces. Chuck DuBose, senior staff software engineer at Siemens PTI has been a member of Working Group 13 for the past four years. Working Group 13 meets weekly on a one-hour conference call and three times a year for several days to conduct business. Mr. DuBose has worked closely with the other Working Group members on issues to extend the CIM to accommodate the changes of the evolving electrical power industry.