CIM for Power System Model Exchange
How Model Exchange Works

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Common Information Model in Smart Grid, Distribution, Transmission Workshop
Date
Washington D.C. Sept. 8-9, 2010
What is Model Exchange?
Transmission Network Model Exchange

• Many applications require this type information
  – SCADA systems
  – State Estimator
  – Real-time Contingency Analysis
  – Operation Power Flow applications
  – Planning Power Flow applications
  – Dynamic Analysis applications
  – Market Systems
  – Outage Management applications
Traditional ways of maintaining Transmission Network Models

• Developing and maintaining a data model for each application.
• Purchasing a suite of applications from a single vendor that utilizes the same data model.
• Custom conversion programs that converts a data model from one format to another.
Road to Nowhere
Problems with the traditional methods

• Model development is expensive.
• More models that that to be maintained the greater the expense.
• Is error prone. Consistency between different applications become questionable.
• Applications become stale do to cost of converting data models.
• Cannot easily upgrade applications to “Best in Class”.

Paradigm Change

- Centralize model development.
- This can be distributed across multiple environments.
  - GIS
  - Asset Management
  - Network Model Manager
- Let each system manage the data it's best at.
- When viewed as a single source, this approach should be able to provide all your data needs.
- Add systems as you need too that provide additional functionality.
  - Workforce Management
A solution

The Common Information Model or CIM brought structure to the exchange of EMS and Distribution models. It provides the capability of exchanging data not dependent on a propriety vendor solution and brought a semblance of order to the issue of exchanging modeling data.
An approach to this problem
Information exchanges for a new transmission facility

• Planning or Engineering creates a project.
• Operations, Asset Management, and ERCOT notified of the new project, it’s expected in-service date, and the information required for modeling in a planning power flow.
• Equipment is ordered and Asset Management notifies Operations.
• Operations completes the required data to model the project in real-time systems, and update in-service information and required project management information. Information is then transferred to ERCOT and internal real-time systems. Project timing is based on its impact to system operations.
• ERCOT updates their “Network Model Management System” and publishes data back to the participates in planning and operational CIM formats.
How many data exchanges?

- Planning
- Engineering
- Operations
  - SCADA
  - Real-Time Applications (SE, RTCA, etc.)
- Asset Manager
  - Vendor information
  - GIS locations information
- ERCOT
  - SCADA
  - Real-Time Applications (SE, RTCA, etc.)
CIM data exchanges

Oncor’s CMMS

Oncor’s TNA Server

Asset Data Manager

Oncor’s Message Broker

ERCOT NMMS
Benefits of Managing Network Transmission Models using the centralized approach

• Only need is entered the information once
• All systems that require the information is extracting the data from the same source.
• Reduces or eliminates errors in data entry
• All systems using the same information from the same source.
• Reduces personnel effort to support data requirement for multiple systems
• Ease of adding new applications.
Oncor’s Plans for this approach
Questions?