CASE STUDY:
Modern Network Model Management Solution change to Modern Grid Network Model

This utility powers the quality of life for 2.4 million electric customers and more than 900,000 natural gas customers. The utility generates a net capacity of nearly 10,200 megawatts of electricity and own more than 7,500 circuit miles of transmission lines. Partnering with Xtensible for consulting services:

- Business & Technology Consulting
- Strategy & Architecture
- System Integration

THE NEED

The utility needed a common approach to network model management to support operation, planning and customer services with ability for upgrades and the ability for ongoing maintenance as the network evolves.

BUSINESS VALUE

A consistent network model will provide overlapping business functions with accurate and timely data, will reduce complexity and provide flexibility for product evolution.

RESULTS

A design for a network model management system was created in conjunction with the needed archterural consideration forming the foundation for the Grid of the Future.

OPPORTUNITY

While there are many approaches to having a strategy for the grid of the future most would state that providing digital capabilities for safely planning and operating the evolving grid to improve customer value, the co-worker experience, enable new products and services, and increase reliability and resiliency of the grid is a must. One Xtensible utility customer broke down their overarching strategy to include the ability to utilize digital twins for simulations of future conditions. They know that they need to optimize the impact of distributed energy resources for a more diverse generation portfolio to drive lower carbon emissions. They also say an opportunity in the exponential increase in meter, device, and sensor data to drive asset utilization, workforce utilization, and to secure energy production insights.

GETTING THE FUNDAMENTALS RIGHT

Some key challenges based on their current operating methodology is that data resides in multiple data sources, thus there is a lot of manual effort spent on data management, including keeping it up to date and accurate. Their technology architecture is evolving based on the changing operational environment adding additional complexity when adding new capabilities and when upgrading existing technologies. They quickly realized that a single, reliable source of truth, based on a standard grid network model, for transmission and distribution, would facilitate automation and maximize the value of operation and planning applications.

> “Overlapping business functions should have consistent data.”

The functional requirements for the Network Model Management Solution include:

- Power system model data management and analysis application
- Data management
- Network Validation and Quality Control
- Publish Power System Network
- NMM support object registry services to manage the names of network modeling canonical objects in different contexts

The Xtensible Enterprise Information Management framework and strategy development is used to establish the strategy and approach for a framework, reference architecture, methodologies and recommendations for data modeling and model-driven design and development for the Network Model Management Solution.

Xtensible
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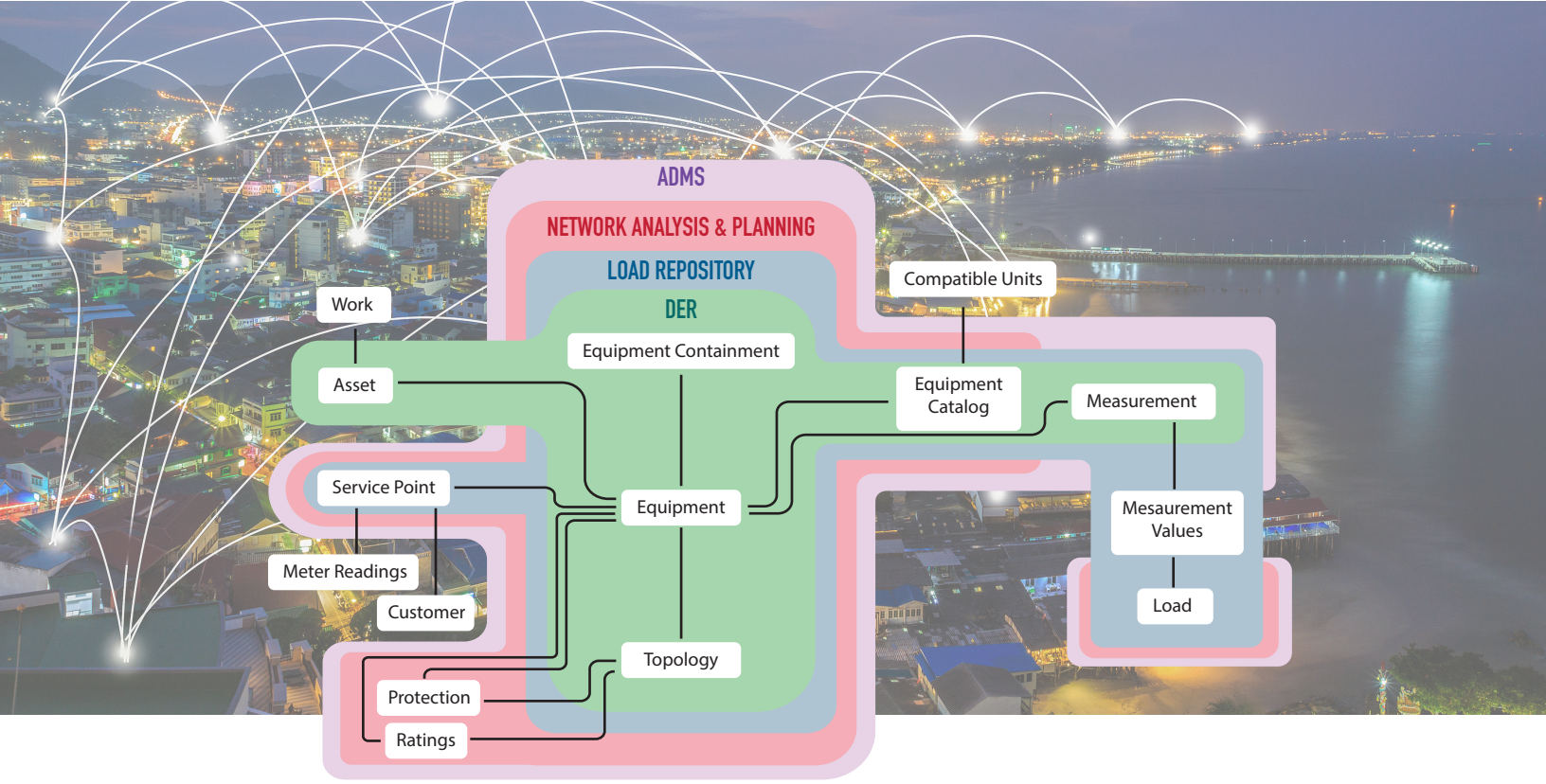

RESULTS

Xtensible has been leading the effort to architect and design the requested Network Model Management Solution (NMMS). This project focused on the key delivery elements of:

- Proof of Concept for Network model data integration to support ADMS loadflow function
- Network Model Management Strategy and Conceptual Design
- Network Model Management Roadmap, Implementation Plan and Budget
- Network Model Management Solution Implementation
- Data Architecture and Data Governance

The NMMS will be the system or reference for network model data required for both the planning and operation groups. It will include a single organized repository (as opposed to numerous flat files) for all projects / scenarios, model data, seasonal ratings, and cases. The NMMS is the system of record (single version of the truth) for network model data for planning, operational and customer service functions.

As the utility network models require ongoing maintenance to ensure it accurately reflect the real-world infrastructure, new installations, repairs, or replacements, must are also reflected in the model. This involves data updates, revisions to asset attributes, and adjustments to the network topology.

WHAT IS HAPPENING NEXT?

Network model management is a crucial component for both operations and for planning purposes. Some of the planning cases to be included in the future include:

- As-Built network
- Proposed future network extension defined in projects
- Loading scenario (e.g. Winter, Summer, Emergency, etc.)
- DER scenarios
- Generation scenarios
- Limits evaluated (normal or emergency)

BUSINESS UNITS INVOLVEMENT

- Grid Operations
- Grid Modernization
- Planning
- Asset Management
- Customer Service
- Information Technology

TECHNOLOGIES & STANDARDS

- GIS
- ADMS
- Synerrgi
- CYME
- ASPEN
- Sub-Tx
- OpenGrid
- IPS
- PSS/E
- IEC CIM 61980/61968/62325

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