

# CIM-based Network Model Management

Embrace the next chapter of grid evolution

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# Software portfolio and expertise to support the entire grid lifecycle

## PSS® Portfolio

70%+ of the world's energy used flows through infrastructure simulated by PSS

## Spectrum Power®

Grid Control with 1,300 systems in operation

## EnergyIP® Meter Data Management

100 m meters contracted

## Grid Resiliency

Market leading highly detailed protection simulation software

## Grid Edge Software

Interface to infrastructure and industry:  
>4 GW of DER assets managed

## PTI Consulting

Delivering ~1,800 customer projects per year



**Comprehensive portfolio**  
Speed & agility



**Domain expertise**  
across IT, OT, and the grid



**Scalability of innovation**  
Future-proof your grid

2,400 people with a mission and purpose to support customers to tackle the DER growth challenge with digitalization

## Sustainability: Net Zero Challenge

Changing consumption and generation patterns



## DER growth challenge

7x DER growth increases complexity



## Digitalization

Accelerate and secure energy transition with software



Siemens Grid  
Software

# Preparing for a DER-centric world with Siemens NMM

*A software solution for utilities to sustainably synchronize model data across their enterprise, and establish a foundation for embracing the energy future*

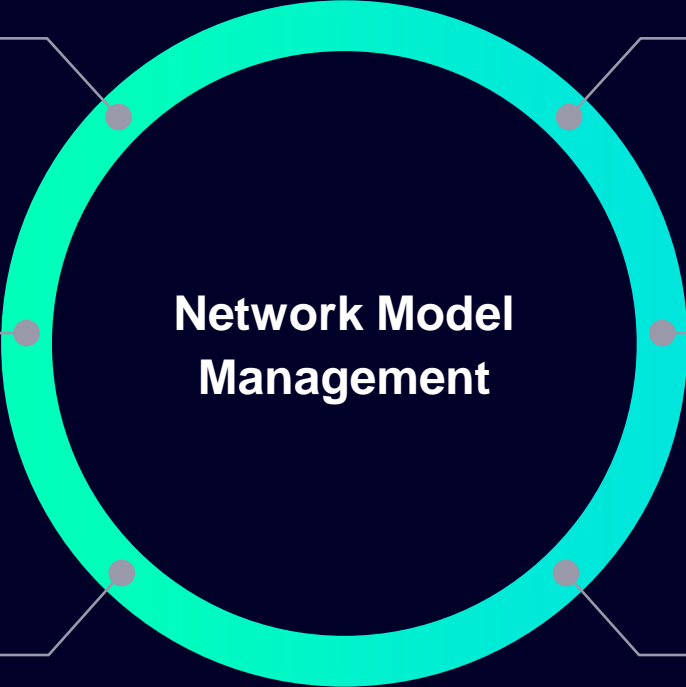
- Creating long-term planning cases
- Exchanging model data with ISOs / other utilities
- Synchronizing the basecase with the as-built / SCADA model



- Creating cases for post-event analysis
- Creation of studies for near-term planning



- Generating / synchronizing distribution planning models based on GIS data
- Situational awareness of the distribution / low-voltage grid



- Updating the protection model with the latest relay settings (e.g. from AMS)
- Synchronizing the protection model with the latest as-built model (or a long-term planning basecase / scenario)



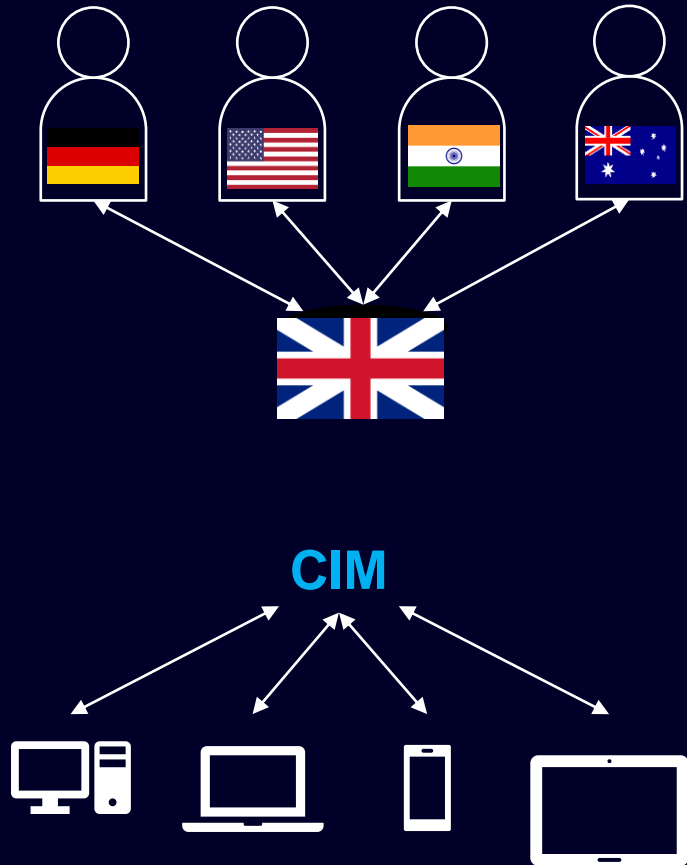
- Maintaining the as-built / SCADA / State Estimator model
- Synchronizing network changes across planning, engineering, and operations



- Maintaining an integrated master model across Transmission and Distribution

# CIM Introduction

## Unlocking communication between different systems



### Communication is the key to success

- **Communication is required** on a daily basis to understand, tackle and solve problems
- Humans speak **different languages** all around the world
- By agreeing on one **common language** to speak we all can **communicate with each other**
- We **use that commitment every day**, right now we are using it

### Communication for machines is also a key

- Machines and **application** do all have their **own data and interfaces**
- **Data exchange** is very complicated and requires a huge **manual effort**
- Introducing a **common language** for machines help to improve the communication (e.g., TCP/IP)
- Introducing a **common information model** helps to **exchange data** between application

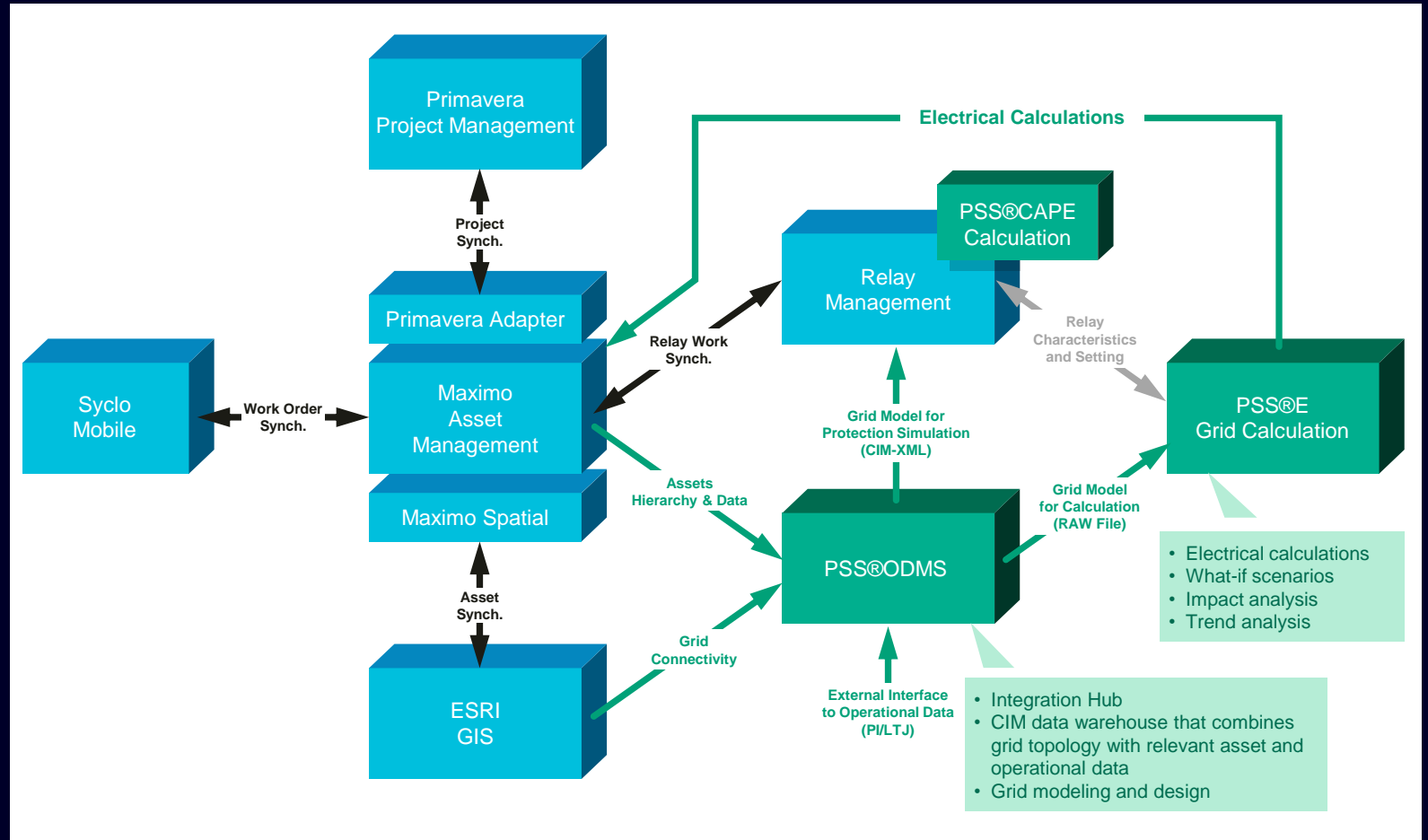
Common Information Model (CIM) enables data exchange between different application on different platforms

# Fingrid, Finland

## Integration hub enables efficient case creation from various data sources

### Network Model Management and Simulation solution...

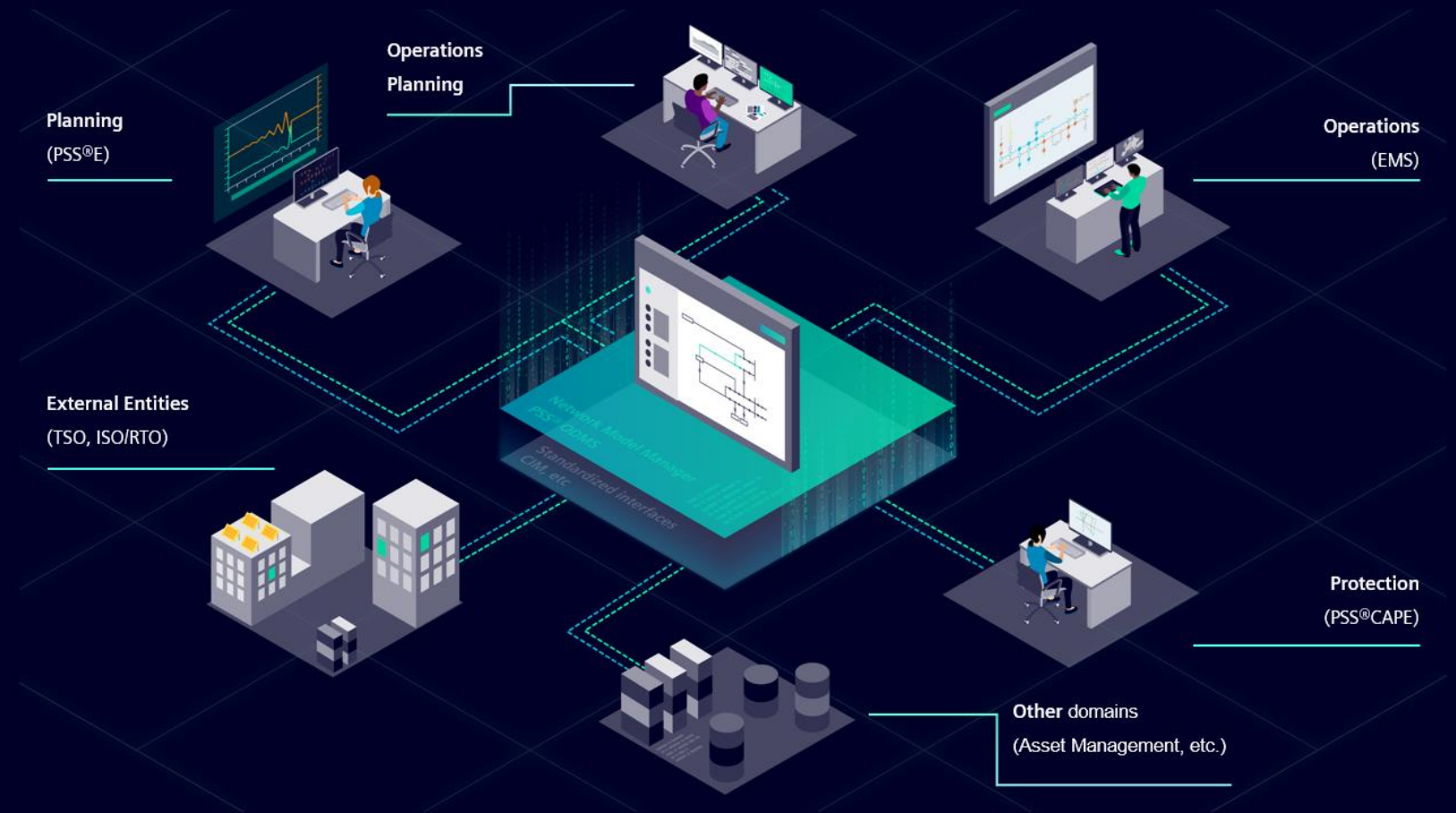
- Connects a variety of IT-systems, enabling most efficient data utilization in one integrated solution
- Improves processes and reuses data to optimize system planning
- Realizes end-to-end protection asset data management & relay coordination by linking network and protection models (PSS@CAPE)
- Establishes the “single source of truth” for all data across operations, planning, protection, and market domains



# Electrical Digital Twin | AEP, USA Network Model Management

## The solution will...

- “...give AEP an advantage in a competitive business environment by enhancing the company’s ability to exploit data”
- “...greatly reduce the time and costs associated with manual model coordination efforts”
- “...accelerate the ability to capture value”
- “...improve the ability to manage growth in the number and mix of transmission projects”

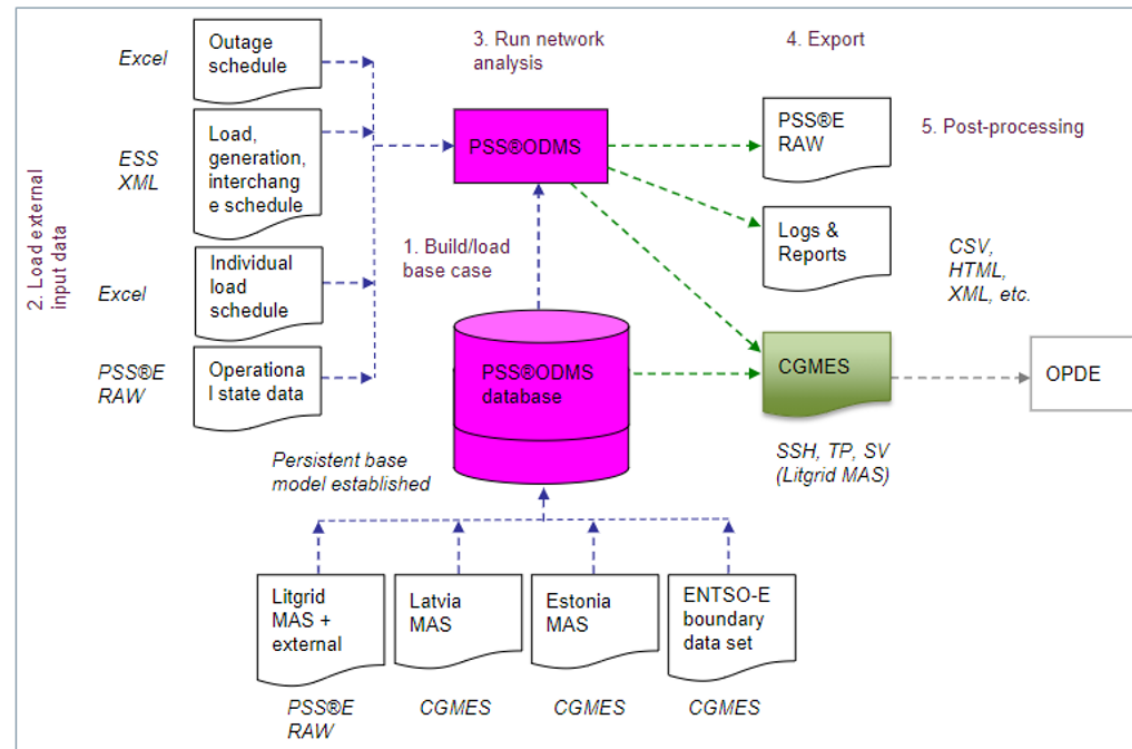


# Litgrid, Lithuania CIM-based network model exchange with neighbors and ENTSO-E



## PSS®ODMS as an integrated solution enables...

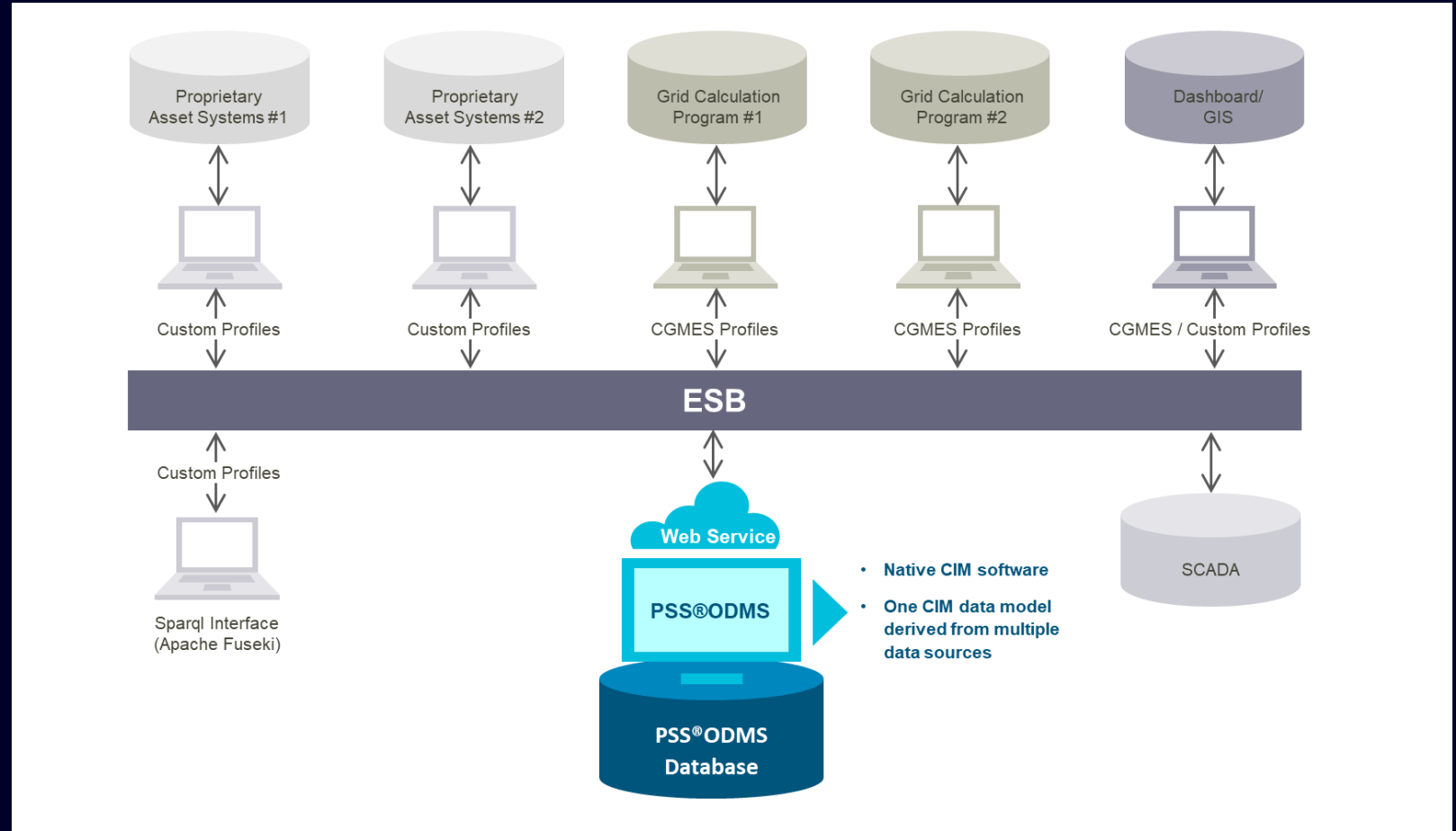
- Centralized network model management
- Integration of network models from neighboring TSOs
- Exchange of network model information with ENTSO-E
- Integration of different data sources like outage schedule, load/generation forecast, operational state, and PSS®E for automated case creation





### PSS®ODMS as a shared CIM database enables...

- Scheduled data exchange
- Native CIM data storage
- Usage of custom profiles and queries
- Tailored data pre-/ postprocessing
- Version history, incremental handling, time-based modelling for planend projects
- Identification of assets via GUIDs

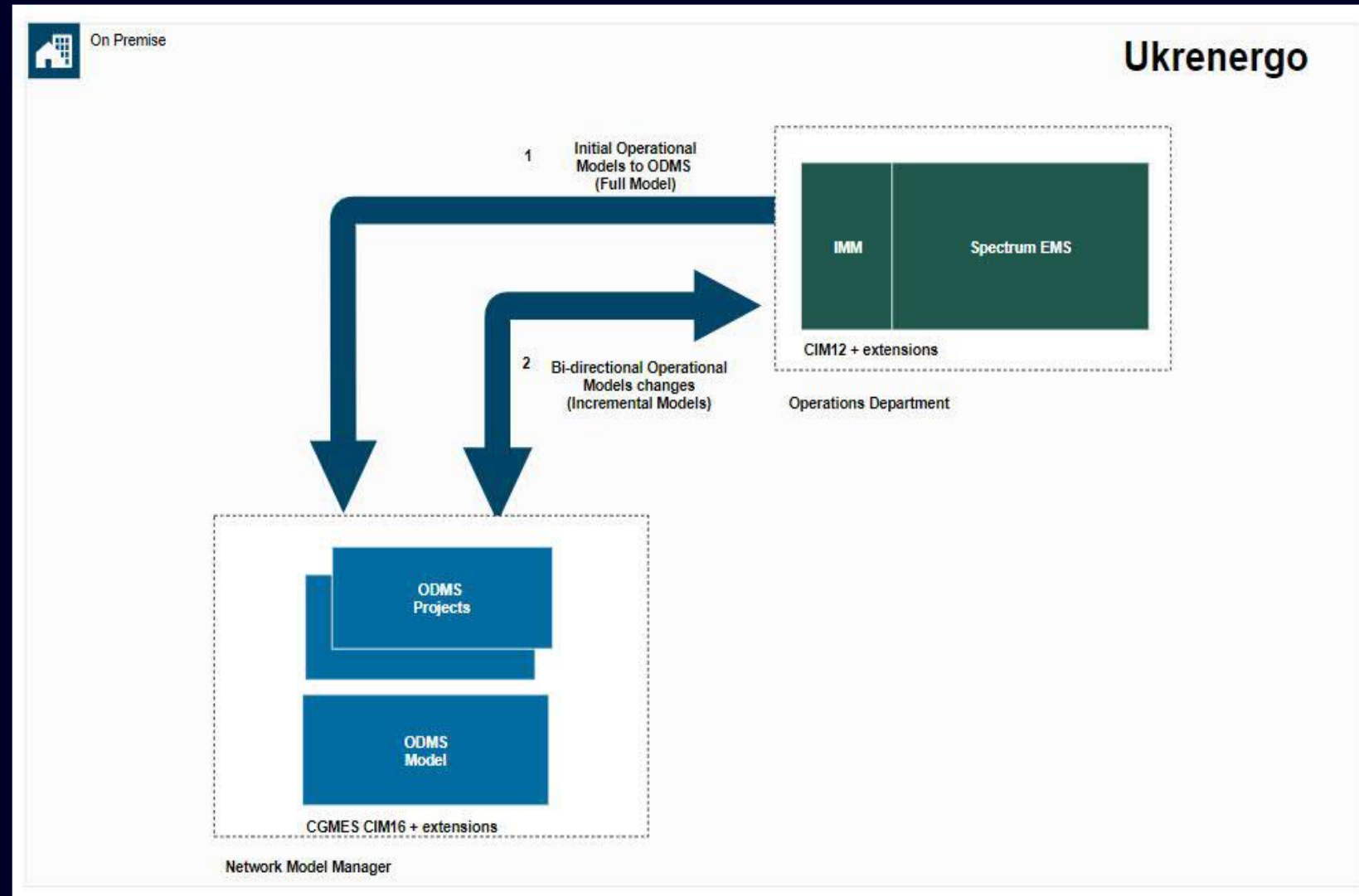




# Ukrenergo (Ukraine): CIM-based network model management for planning and operations

## PSS®ODMS bridges models from planning and operations

- **Centralized CIM-database** enabling bi-directional data exchange between PSS®ODMS and Spectrum Power 7 EMS
- A **custom interface** to convert CIM16 (CGMES) used by ODMS to CIM12 that is supported by SP7, and vice versa, for both full and incremental models
- Supports seamless integration between planning model and EMS model with bi-lateral incremental data exchange

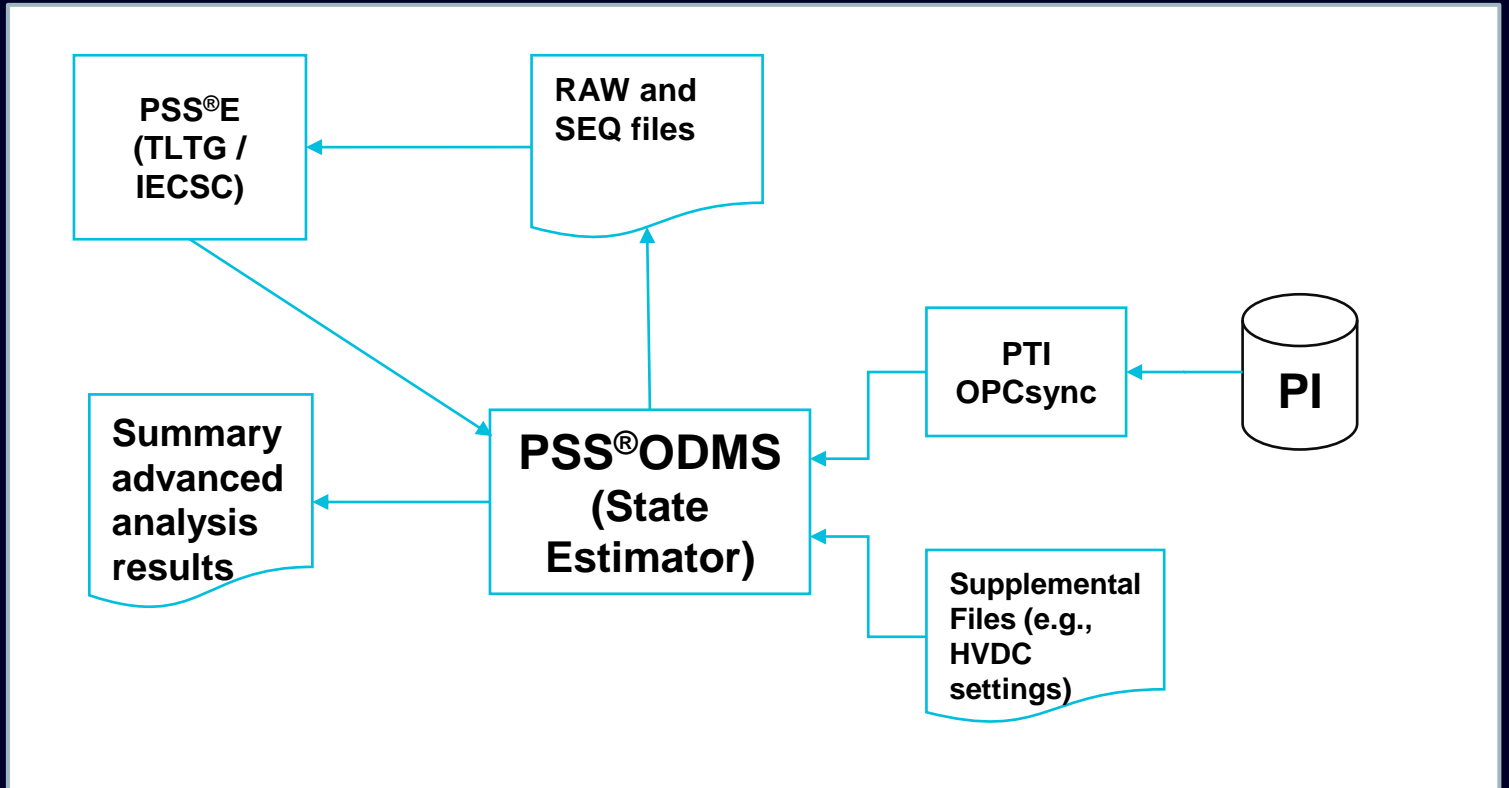


# Transmission System Operator, EU

## Advanced real-time analysis with a combined PSS®ODMS-PSS®E solution

### Solution highlights

- PSS®ODMS baseline model sourced from PSS®E and maintained in sync
- Integration of **real-time measurements** from the measurement server (PI Historian) using OPCsync module
- Seamless PSS®E integration via Python to automate TLTG / IECS calculations and retrieve and process the results
- Custom HTML results summary displayed in the PSS®ODMS UI for **operational awareness**
- The entire process is **fully automated** (runs on a timer) for system operator users



# Thank you: Q&A

## Contact us with any questions:

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