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More Users, More Solutions, More Projects
Delivered with 100% Customer Satisfaction

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OSI Overview

- Leading supplier of Operation Technology (OT) solutions
- Founded in 1992, acquired by Emerson in 2020
- Headquartered in Minneapolis, MN
- All USA developed Technology
- Over 600 Systems in Operation
- Strong in Cyber Security and NERC CIP



Served Markets:

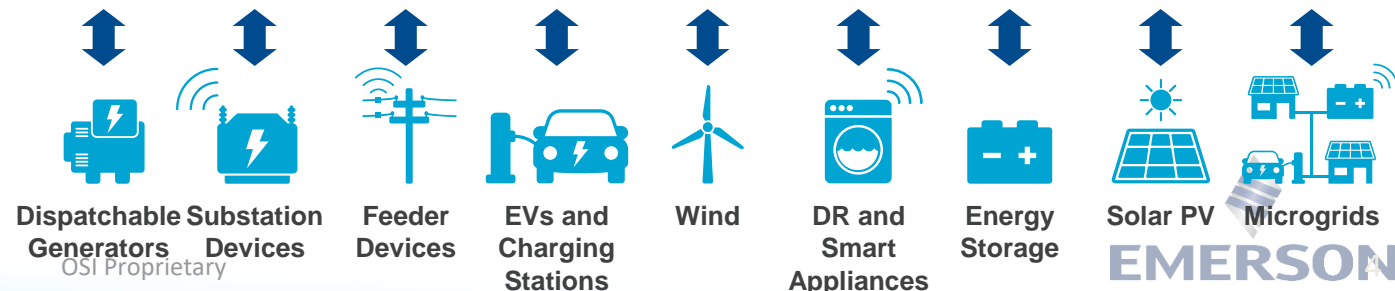
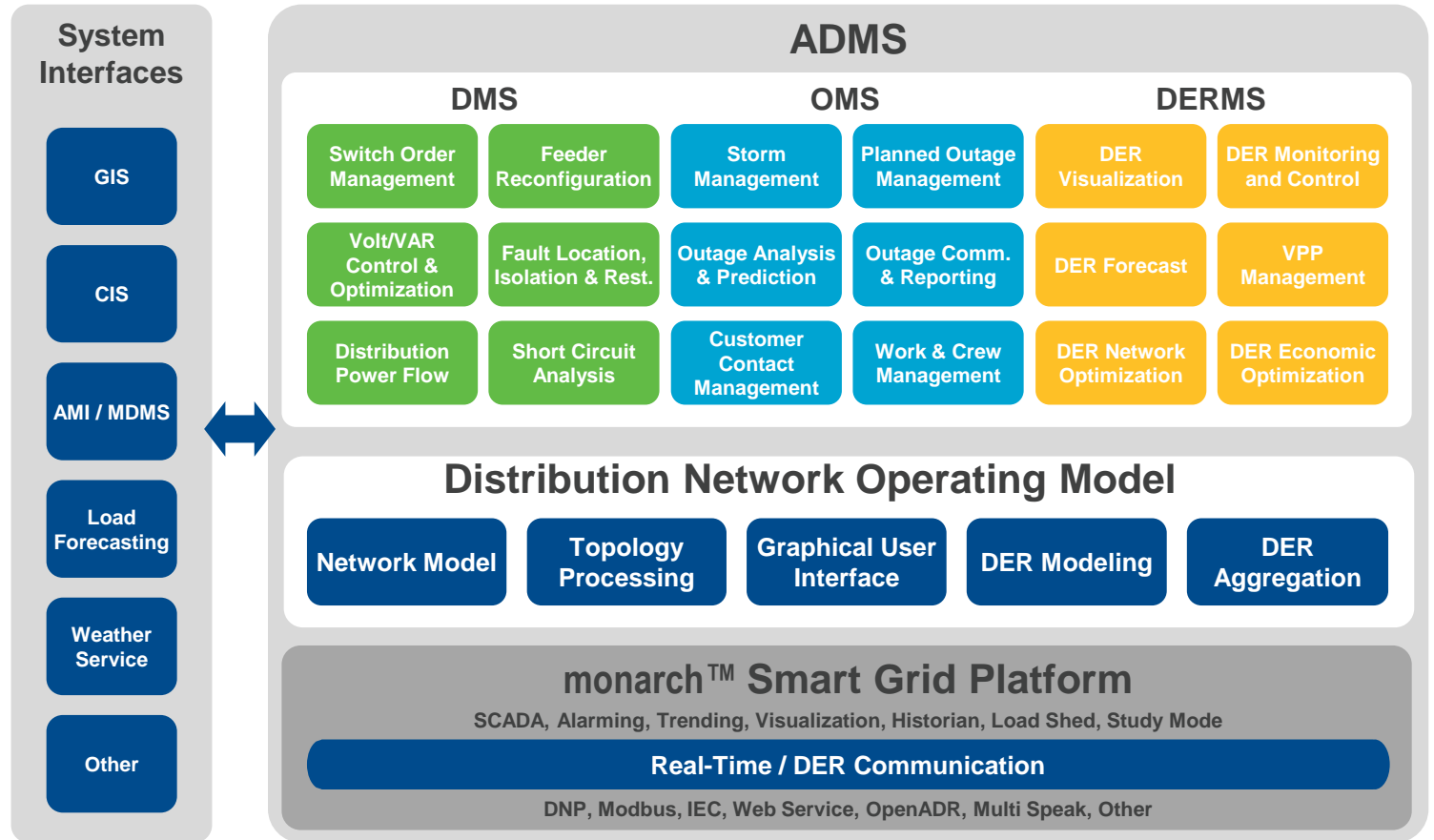
- Electricity
- Generation
- Transmission
- Distribution
- Renewables
- Micro-grids
- Oil and Gas
- Water

Technology Needs of DER in Grid Management

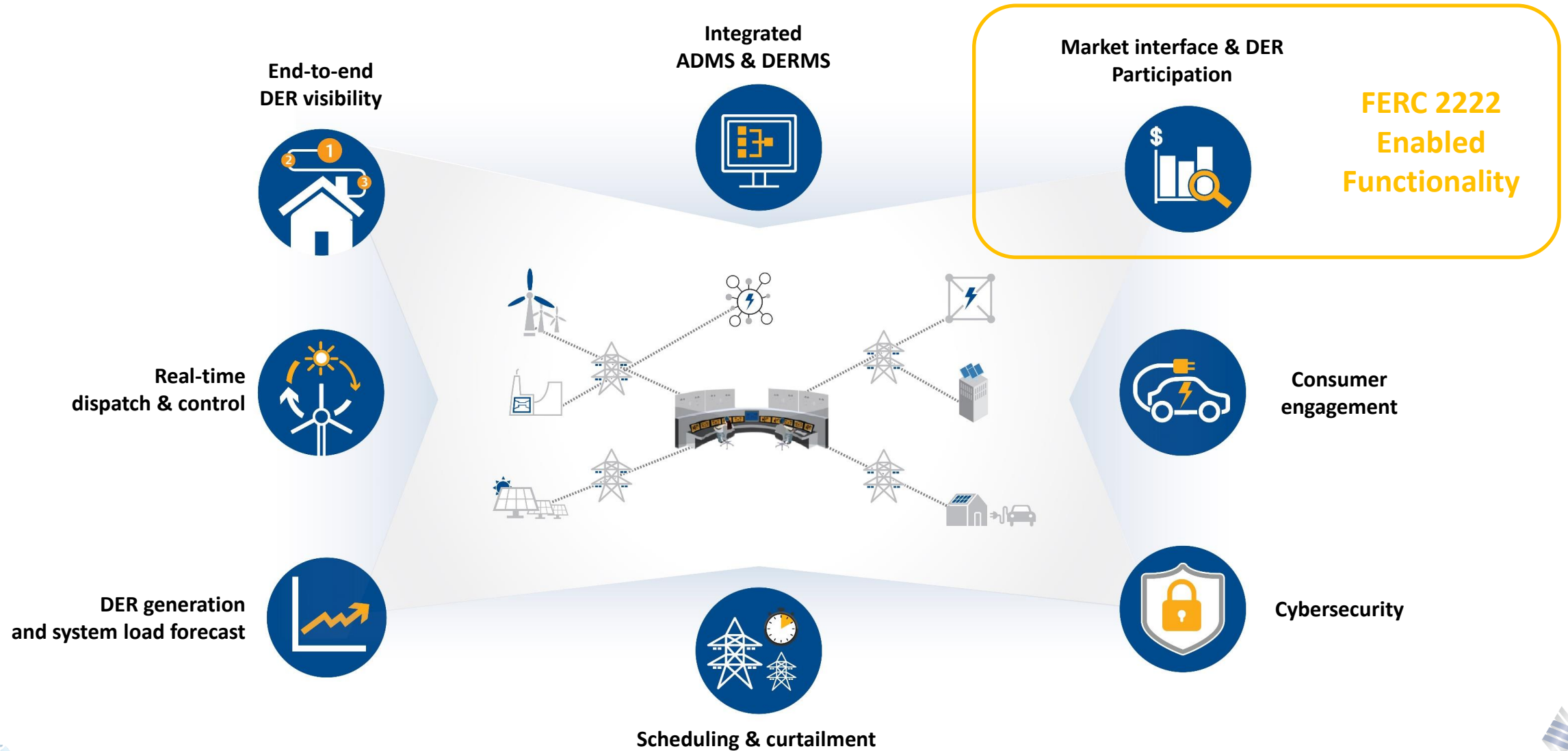
- **Increased System Reliability**
 - Provide real-time situational awareness of network conditions from all grid devices including DER
 - Alarm and respond to avoid adverse grid conditions (overloads, outages, etc.)
 - Ensure balanced network with orchestrated management of all distribution grid resources, both retail and wholesale (Powerflow, Volt/Var Optimization, etc.)
- **Enhanced Visibility and Operational Safety**
 - Improved network visibility of distribution real-time conditions for operators and field crews (can include over 1,000 people)
 - Safely control all grid distribution equipment in a coordinated way
 - Reduce time to analyze and respond to network conditions (i.e. improving outage restoration times)
- **Focus on Customer Experience**
 - Provide accurate network information in real-time (i.e. outage restoration time)
 - Smarter grid management to avoid adverse grid conditions (i.e. brown outs)
 - Enablement of state jurisdictional approved DER programs

Building a Comprehensive DER Management System (DERMS)

- Connectivity to all end-devices in real-time (SCADA, DER, etc.)
- Significant software functionality and configuration of data
- Multiple System Interfaces
- Cyber Security and networking considerations
- Disaster Recovery/Back-up contingency planning



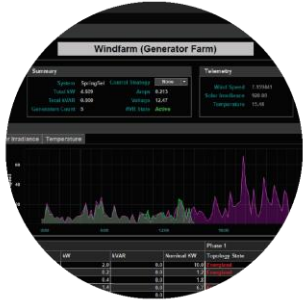
Solving Challenges Through Distributed Energy Management



Functionality Enabled with FERC 2222

Grid Management

System/Market Interaction



Dispatch

Schedule flexible DER assets and manage them while distribution grid configuration and conditions change



Curtailment

Use DER to resolve adverse grid conditions (overloads, etc.) and ensure service reliability



Ancillary Services

Enable coordination and balancing between Transmission and Distribution networks



Balancing Services & Grid Stabilization

Increase/decrease energy generation of manageable assets in real-time



Renewable Energy Trading

Combine diverse energy sources and participate in energy markets

Software Approach for Enabling FERC 2222



- Ability to model diverse DERs & renewable generation assets, aggregate DERs and group logically

- Uses data profiles for individual DER and forecast/schedule functions to determine capacity
- Enable operators to schedule and forecast individual and aggregated DERs

- Evaluates available DER and dispatches based on grid optimization
- Allow utilities to aggregate DERs and offer in real-time or day-ahead markets

- Monitor and dispatch controls to generation resources; ability to disaggregate control to DER
- Determines optimal individual DER dispatch based on network constraints

- Near real-time performance assessment and real-time individual DER non-compliance reporting

Key Takeaways

- **Reliable and safe grid operations must be the utility #1 priority which requires holistic view of all grid activity including DER impact**
- **Utilities need real time visibility and control to DERs to ensure safe and reliable service**
- **Significant benefit to grid reliability will be enabled as DER is adopted and included in real-time grid management activities**
- **Software functionality to manage the electric grid is already complex, adding DER management and FERC 2222 capabilities requires even more centralized orchestration**
- **Success will also depend on ensuring harmonization with individual state public policy initiatives so utilities can continue implementing state programs and discharging any state required obligations**

Thank You!

Sally Jacquemin

**Associate Vice President,
Distribution & Smart Grid Business Unit**

Sally.Jacquemin@osii.com

#: 763.551.0559

