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India SMART UTILITY Week 2024

Session : 8TH IEC - IEEE SMART ENERGY
STANDARDIZATION COORDINATION
WORKSHOP - Session 1: Emerging Smart Energy
Technologies and Standardization Landscape

Transition to DSO & emerging scenario

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Supporting Ministries



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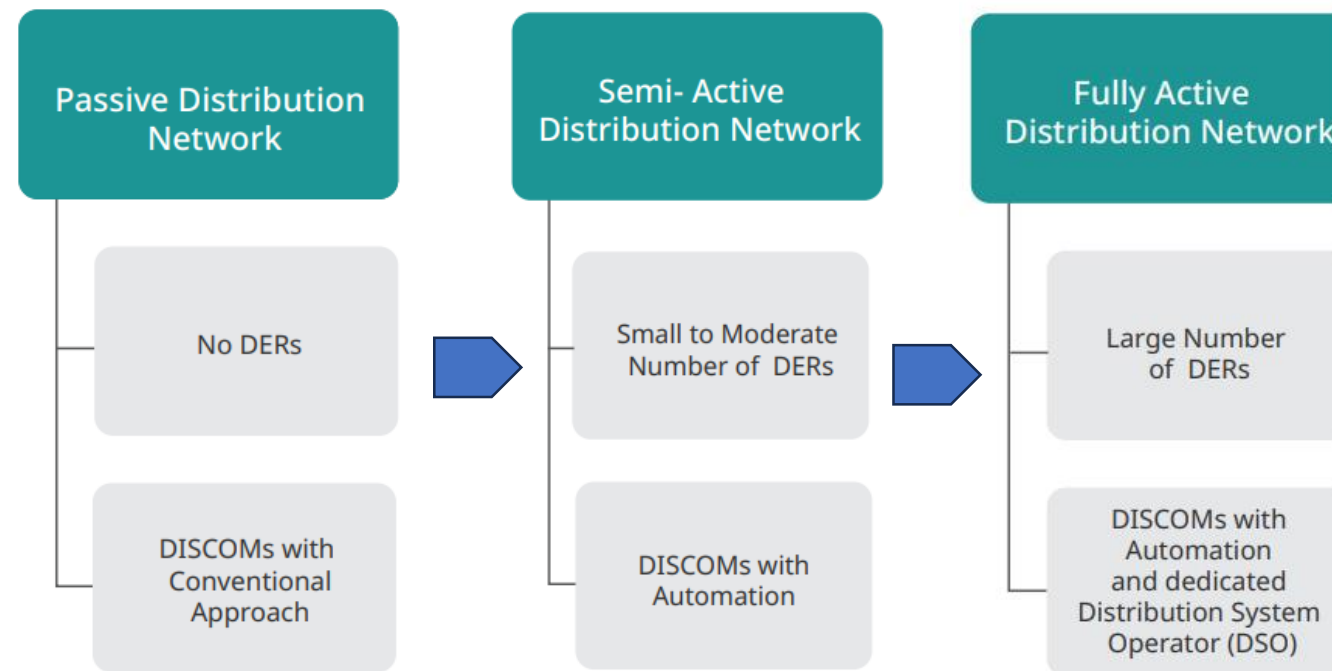
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INTRODUCTION – Evolution of DSOs and Network

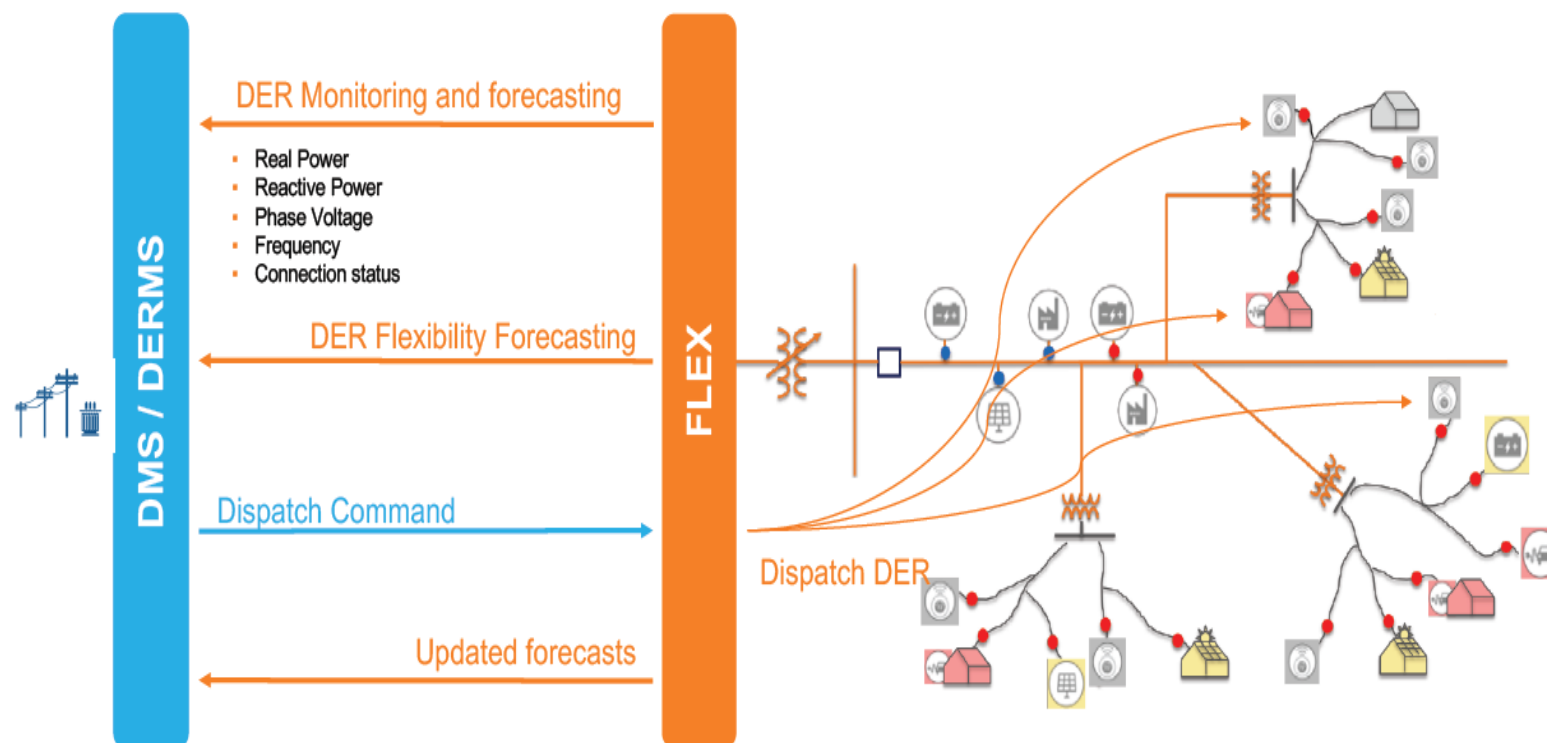


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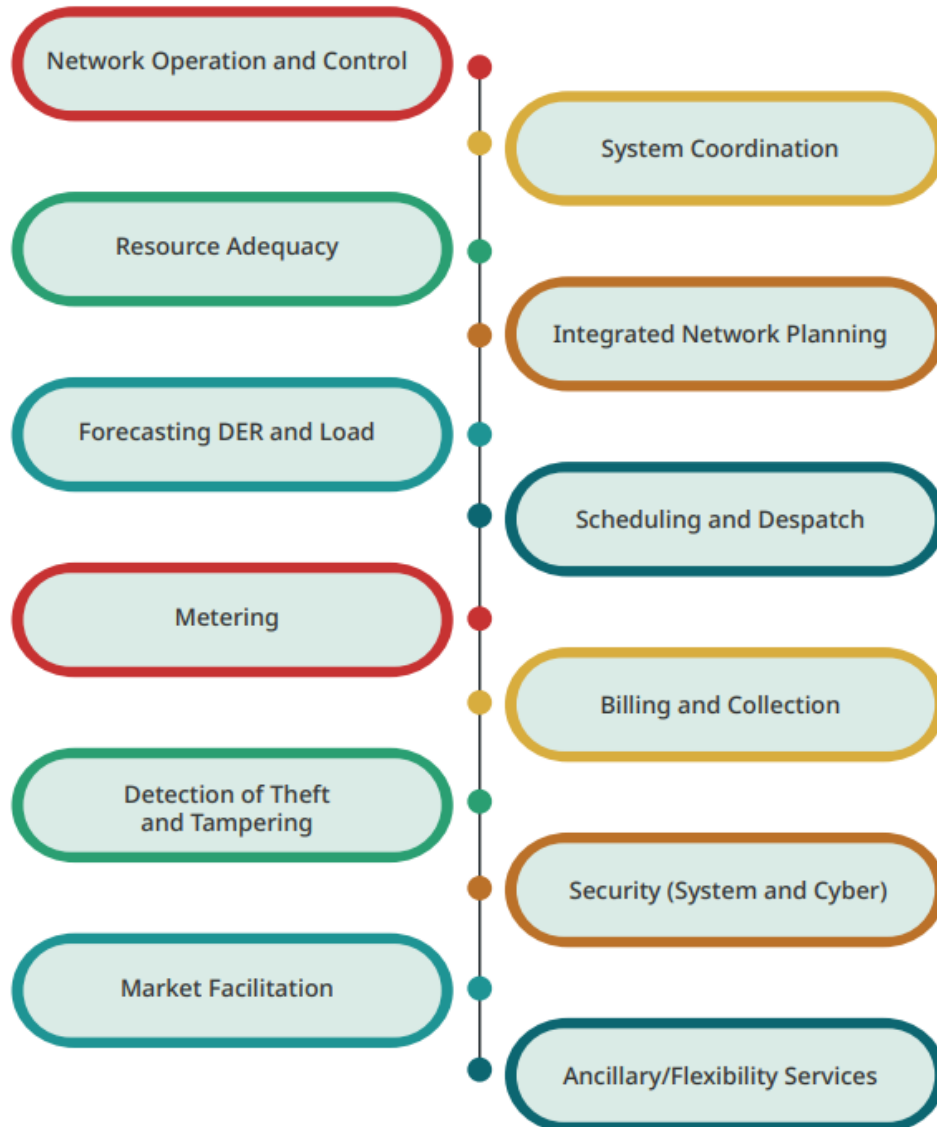
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- Solar Rooftop – Grid connected
- Energy storage system (Battery, Flywheel, Hydrogen)
- Electric vehicle V2G and G2V – Smart charging
- Distributed Gensets
- Micro/Mini wind stations – Grid connected
- Biomass generators
- Fuel Cells & Electrolysers



- DSOs shall manage millions of DERs at lowest granular time-block level.
- Seamless and uninterrupted communications (bi-directional) is key
- Together with highest level of Cyber security measures
- The communication standards for DERs to promote interoperable operations across different classes of DERs at DSO level.



• Connectivity Standards for DER:

- Central Electricity Authority (Measures relating to Safety and Electricity Supply) **Regulations, 2010** and subsequent amendments thereof (Safety)
- **IEEE 80** (Grounding) IEC 61000-4-30 and Central Electricity Authority (Installation and Operation of Meters) Regulations 2006 and subsequent amendments thereof (Metering)
- **IEC 61000** – Relevant standards and IEEE 1453 (Flicker, Rapid Voltage Changes)
- **IEEE 519** (Harmonics)
- **IEEE 1547** and NERC DERs Task Force Report (Distributed Energy Resources: Connection Modelling and Reliability Considerations) (Connectivity standards in general)

- Power Scheduling and System operation – Variability in demand as well as Supply (RE)
- Managing DERs (Voltage / Reactive power / Reliability / Power Quality issues)
- Distribution Asset planning & operation – Balancing peak load management vs avg. annual asset loading
- Maintaining Distribution loss at low levels
- Accurate assessment of Net Load (net of embedded RE generation)
- Providing support to TSO (Ancillary)
- Managing Ancillary services within DSO

Need for standard for communication with DERs for AS & Energy services
Interoperability & Scalability is the key

THANK YOU

*For discussions/suggestions/queries email: **isuw@isuw.in**
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