

Host Utilities



ORGANIZER



India SMART UTILITY Week 2025

Supporting Ministries



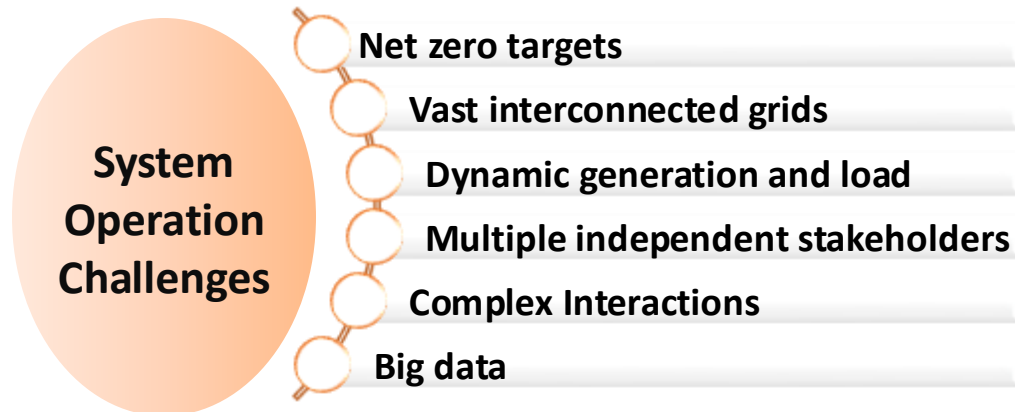
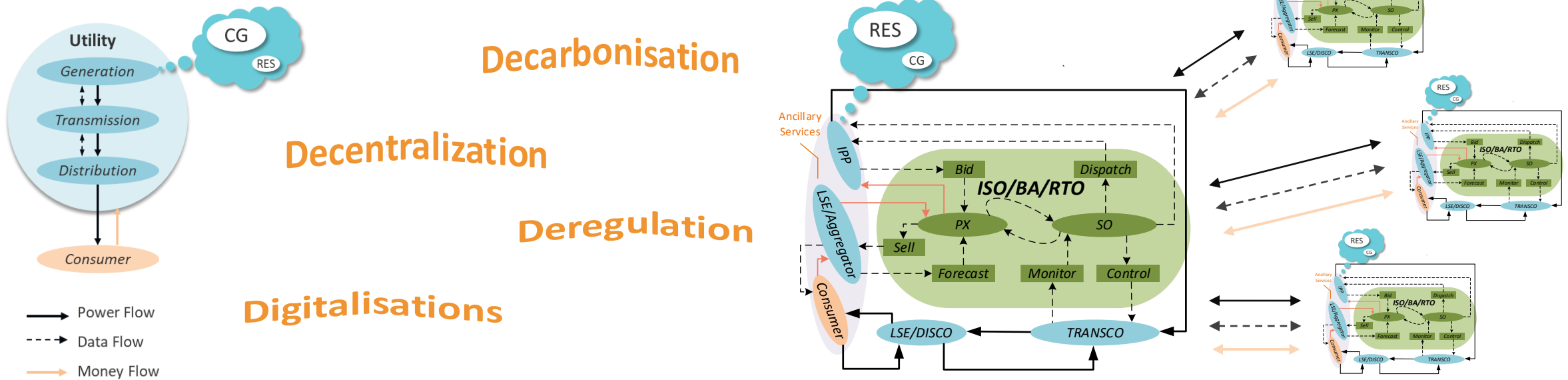
Session : Disruptive Innovations for Utilities

A CIM BASED NETWORK MODEL MANAGEMENT FRAMEWORK FOR LOAD DISPATCH CENTRES

Presented By

Dr. NAJDA V M, SENIOR POWER SYSTEM RESEARCHER, tnei

Era of Revolutionary Transition in Power Sector



Necessitates Interoperable Solutions

Digital Twins

System Operators Requires

Advanced
Power
Applications

- Reliable
- Resilient
- Robust
- Economical

Operates on

- Data rich environment
- Multiple data source
- Harmony

Standard
Representation
for

- Power system networks
- Assets
- Data exchange

CIM

CIM: Common Information Model

- Developed by EPRI as Control Centre Application Programming Interface
- Foundational block for developing virtual representation of power system – DIGITAL TWIN
- Vendor independent interoperable solutions for
 - Power system analysis and visualization
 - Various power system data handling
 - Models
 - Scenarios
 - Sensor data etc.
 - Decision support
- Evolved into IEC 61970, IEC 61968 & IEC 62325 series

CIM Based Coordinated Power System Operations

Power system model exchange among control centres

- Expansion planning studies
- Operational planning studies

Model related information exchange under various scenarios

- Pre- scheduling
- Real time operation
- Post settlement

Standard way to exchange model and related information

- Vendor applications will have standard interfaces
- Enhance scalability and flexibility

CIM extensions to meet special requirements

- ERCOT – CPDMS
- ENTSO-E – CGMES

Cross Border Interconnections



One Sun One World One Grid

- Transcontinental power transmission grid

Prof. Khaparde and team were pioneers in CIM adoption activities in Indian power system context

- Focus were in implementing CIM based information exchange for scheduling applications
- Identified relevance of **CIM MAS** in managing the regional and national level CIM network and exchange

IS 16336 series

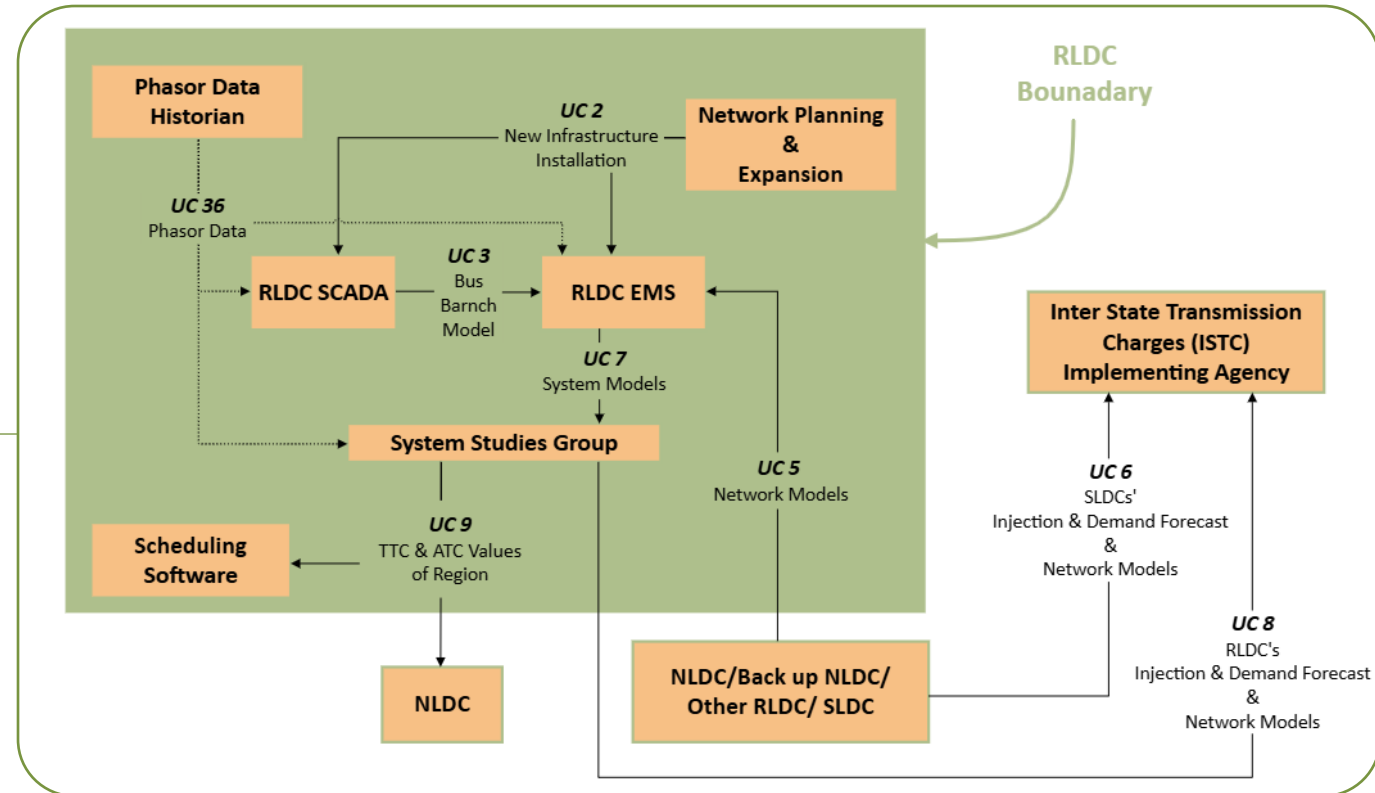
Facilitate CIM based interface specifications for application vendors

Identify country specific information exchange use cases

Provide standard or extended model exchange profiles for information exchange

IS 16336 – 3: Identifies inter application interactions at RLDC level and presents system operation applications' **use cases (UC)** where CIM integrations are expected

Process boundaries of NMMA & UCs identified by IS 16336 - 3

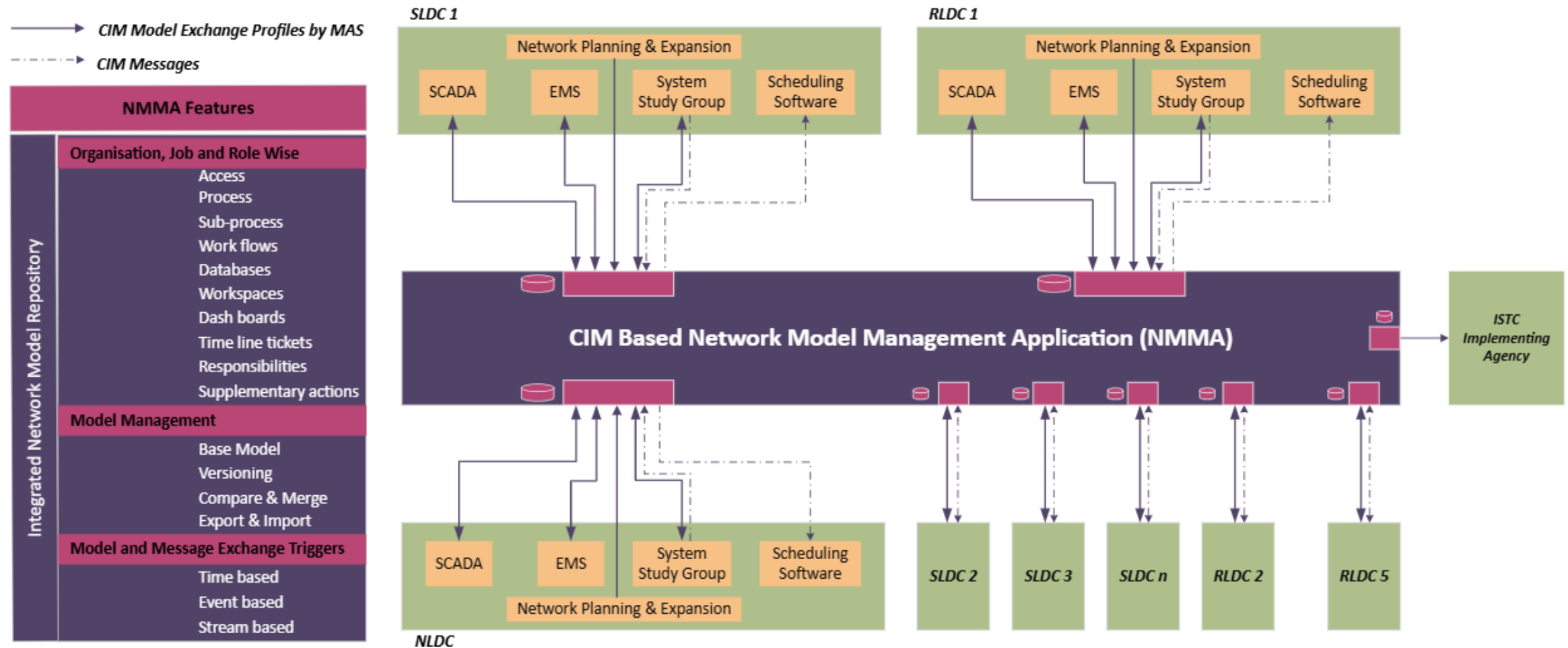


NETWORK MODEL MANAGEMENT APPLICATION



India
SMART UTILITY
Week 2025

ISGF
India Smart Grid Forum



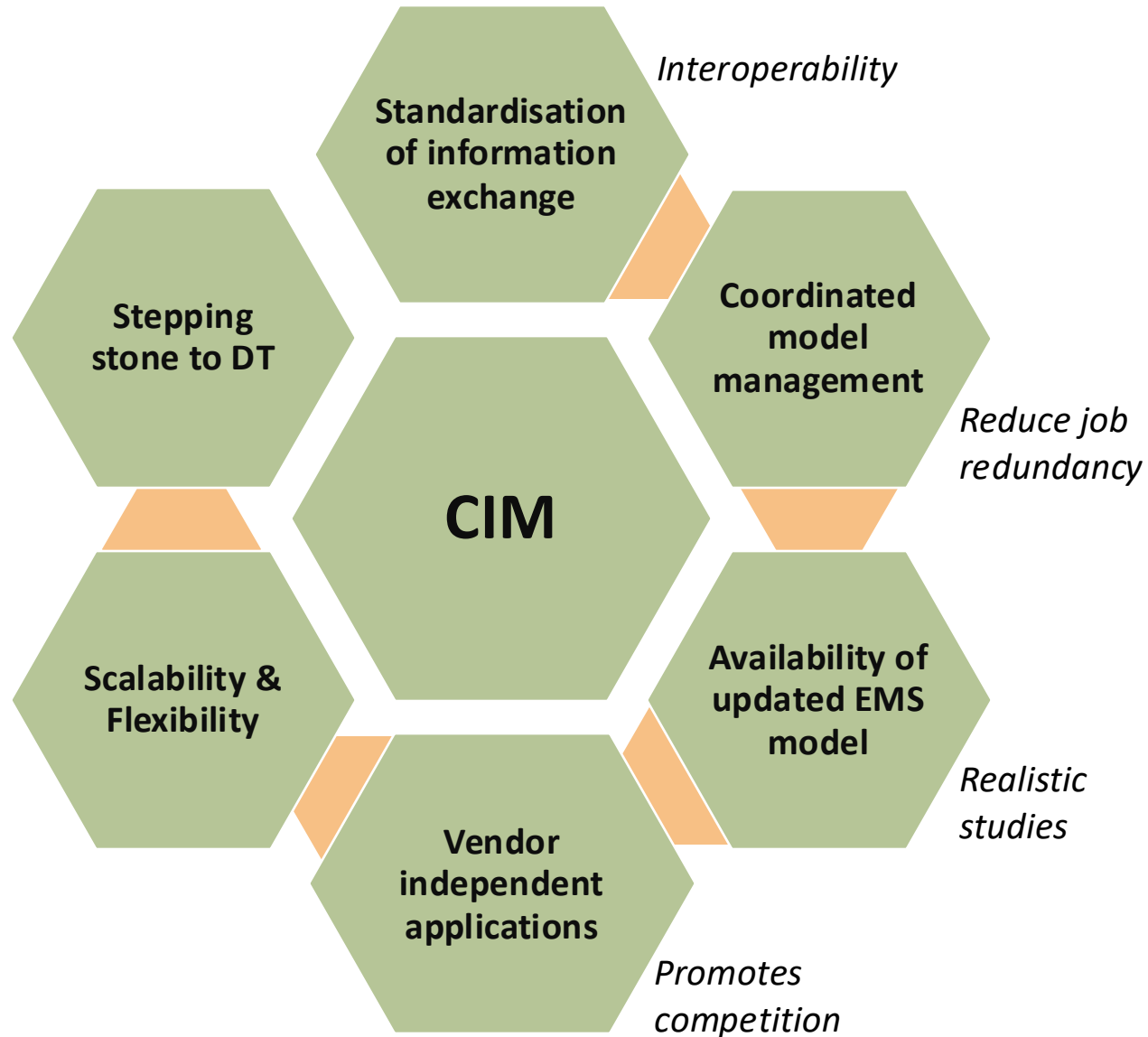
- ERCOT and ENTSO-E has adopted CIM and specific extensions such as CPDMS and CGMES suiting their special requirements, as platform for network model and associated information exchange.
- CIM has been applied in many Chinese Electrical Power Control Centers (EPCCs)
 - Exchange model between system wide AVC system & EMS Jiangsu Provincial EPCC
 - Hierarchical network remodelling system between RCC and PCC
- NSTAR, an investor-owned utility adopted CIM based EMS and SCADA to coordinate with ISO-NE
- CAISO created CIM extensions for
 - Different market & grid applications and network models
 - To ensure interoperability among systems acquired from different application vendors

KEY TAKEAWAYS / RECOMMENDATIONS

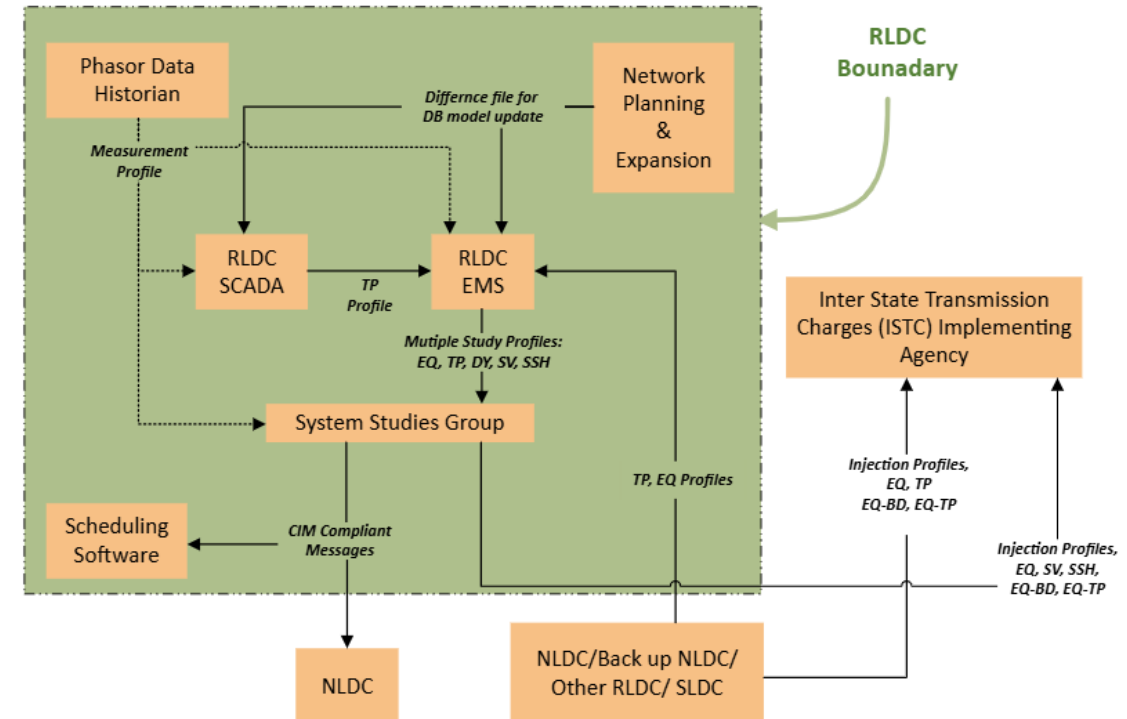


India
SMART UTILITY
Week 2025

ISGF
India Smart Grid Forum



Requires collaborative research with system operators to develop specific CIM extension for India



Host Utilities



ORGANIZER



India SMART UTILITY Week 2025

Supporting Ministries



THANK YOU

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

www.isuw.in

[Links/References \(If any\)](#)