Digital Acceleration – The PSU Perspective

POWERGRID Journey
Institutional framework – Power Sector

Central
- MoP & MNRE
- CEA
- CERC
- GENCOs
- CTU
- TRANCOs
- NLDC
- RLDC

State
- State Government
- SERC
- State GENCOs
- STU
- SLDC
- Distribution Licensee
- Trading Licensee

Appellate Tribunal

Private Players in Generations, Transmission & Distribution

Trading Licensee
Digitization Historical Initiatives

- Asset & Operation management – GENCOs
- Transmission by Grid Operation Requirements → CTU
- Unified load dispatch and communication (ULDC) Scheme 1998-2008 > 1500 (now 3500) RTUs and > 30 RLDC/SLDC

- GIS → State 16 → DISCOM 22
- ERP 23 → 39
- IT 24 → 46 → Towns 1588
- RT-DAS 21 → 35 → 1643 S/S → 3936
- AMI xx xx Million

- URTDSM (2013-2016): Phasor Measurement Units (>1800 PMUs)
- State/Regional and National Operator
- Enhance RE awareness REMC (2015 -18) → 14
- Whether Forecast and RE footprint → 14+4

Digitization in distribution sector was optimization driven and gained momentum with schemes like APDRP, RAPDRP, IPDS and now RDSS

One nation-One Grid initiative precipitated Situation Awareness (SA) Requirement

Power Exchange and attended data for Market (Exchange) 2008-onward

Digitization has been primarily through Central Initiatives Public Utilities

One nation-One Grid initiative precipitated Situation Awareness (SA) Requirement
Digitalisation – Decision Making

- Digitalisation cannot evolve without internal critical mass.
- Projects are initiative for Tooling in Digitalization, Business reengineering gives internal pull ("Catalyst").
- Organisation need to demonstrate clear positive benefits to stakeholders ("Business Case").

- Investment Approval
- Deploying Tools
- Delivering planned project objectives.
- Expanding value and buy-in from other process owners.
- Promoting end use, Discovering Interfaces to be evolved.
- Providing Add ons and transforming connected Systems.
Digitalisation Initiatives of POWERGRID summarised as

✓ **Digitization of Data**
  ✓ SAP for business transactions
  ✓ SCADA for Control & Protection
  ✓ ESS for Employees personnel & financial automation
  ✓ E-office for file movement

✓ **Digitalization of processes**
  ✓ Automatic Fault Analysis System (AFAS) for accurate fault localization
  ✓ Logging of grid parameters via PMU and WAMS
  ✓ Recording Substation maintenance data through robotic inspections
  ✓ PALMS for asset lifecycle management
  ✓ PG-DARPAN for Transmission Line Patrolling
  ✓ Bill Tracking system
  ✓ Inspection Management system
  ✓ Digital Procurement to pay process etc.
Digitalisation Initiatives of POWERGRID summarised as .... Contd.

✓ **Digital Transformation models**
  ✓ Remote Operation of Substations via NTAMC & RTAMC
  ✓ Use of GIS tools for proactive emergency response
  ✓ Creation of Digital Substations
  ✓ Creation of Chatbots for operational queries and self help
  ✓ Dashboards for decision making etc.

**Impacts**
- Improvement in efficiency and performance
- Optimization of human resources
- Reduction in manual interventions
- Real time visualization of substation assets
- Centralized real time monitoring of substations
Digitalisation is Step-by-step and Continuous

Digital Entity
- Paperless in all Domain

Integrated
- Procure to Pay, Build to Retire, Design to Deliver

Values
- PALMS, On-Boarding Ext Services (GEMS)

Connect and Build
- AFAS, PGDARPAN

Individual
- SAP, SCADA, ESS, E-office

Radial feeder without backup and manual fault location identification, rectification and system restoration

Fault location detection through FPI

Real-time analysis & control of systems with FLISR

With the use of AMI, OMS, PQM, PLM, GIS, SCADA

Digitalisation of the eco system requires
- Business Process Reengineering,
- Internal Partnerships,
- Build-up on as is
- Digitalisation first/ only as conviction

Together these are ultimate solution
and

Journey continues ......