

Disruptive Innovations for Utilities

Centralized & Decentralized Approach for Safe, Reliable Power Supply using IT-OT

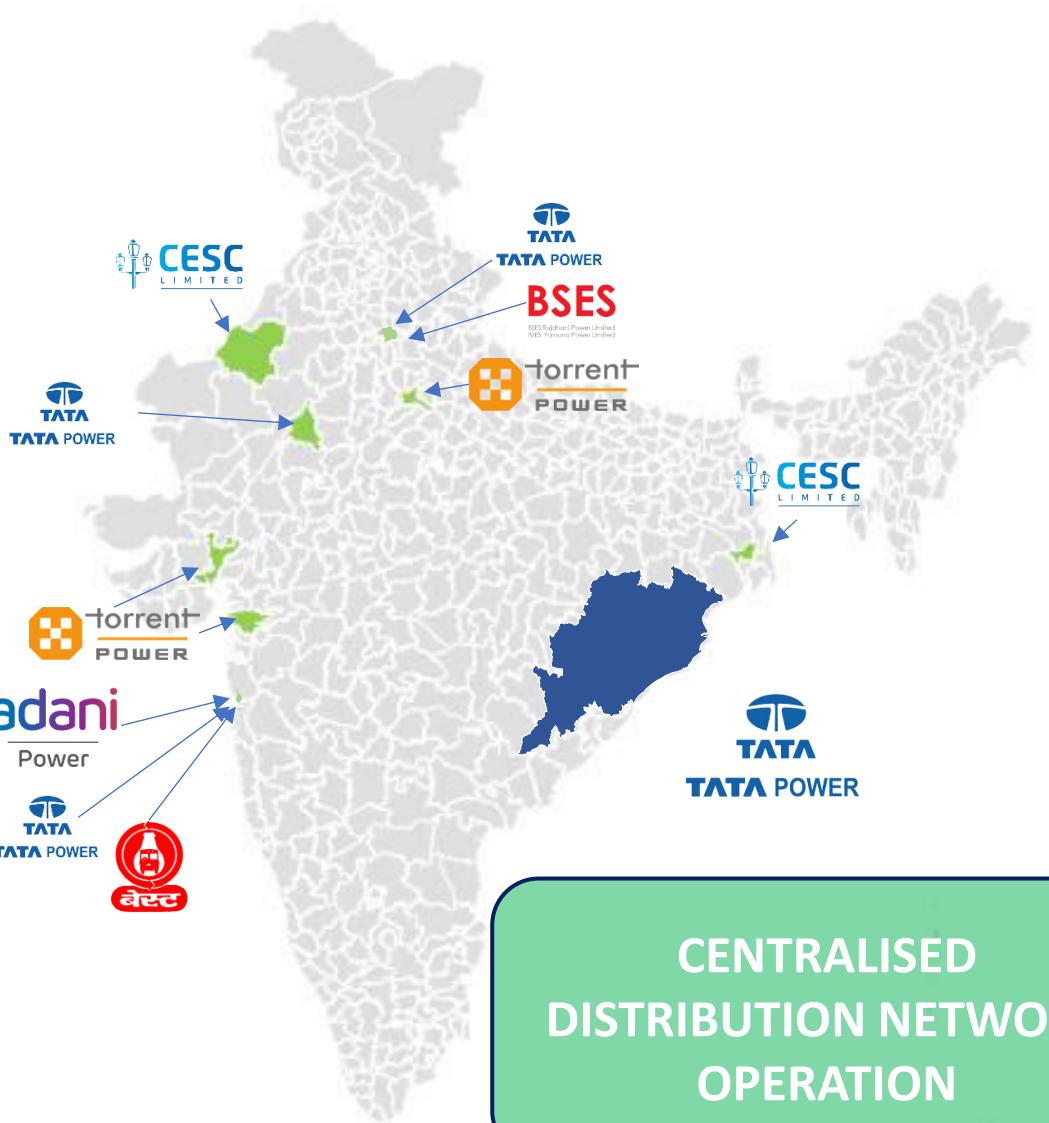
Rabindranath Tripathy -Team Lead ,Power System Control

Chintamani Chitnis -Head ,Power System Control



Introduction- Distribution Network Operations ,India Scenario

TPC ODL



- Conventionally Centralized Distribution Network Operations is identified with Automated (OT -SCADA) Operations
- Centralized Distribution Network Operations are confined to Compact Urban Geographies with High Load Density
- Most of the Discoms in India are a mix of Urban- Rural & Automated –Non Automated Networks spread over Large Geographies
- Disparity of Operational Control & Service levels both for the Consumer & Discoms in the same geography
- Need for Distribution Network Operations Model for mix of Automated –Manual ,Urban Rural Networks Spread over Large Geographies

Context — ENERGY & ECONOMIC INDICATORS ODI SHA Vis-a-Vi s Other States

TPC ODL

ODISHA

SCENIC . SERENE . SUBLIME



JAGANNATH TEMPLE . PURI

1.0 (toe)

2ND HIGHEST
TOTAL FINAL CONSUMPTION
PER CAPITA

1.6 (MWh)

7TH HIGHEST
ELECTRICITY DEMAND PER
CAPITA

1.6 Lac.
(Sq. Km.)

8TH HIGHEST
DISTRIBUTION AREA

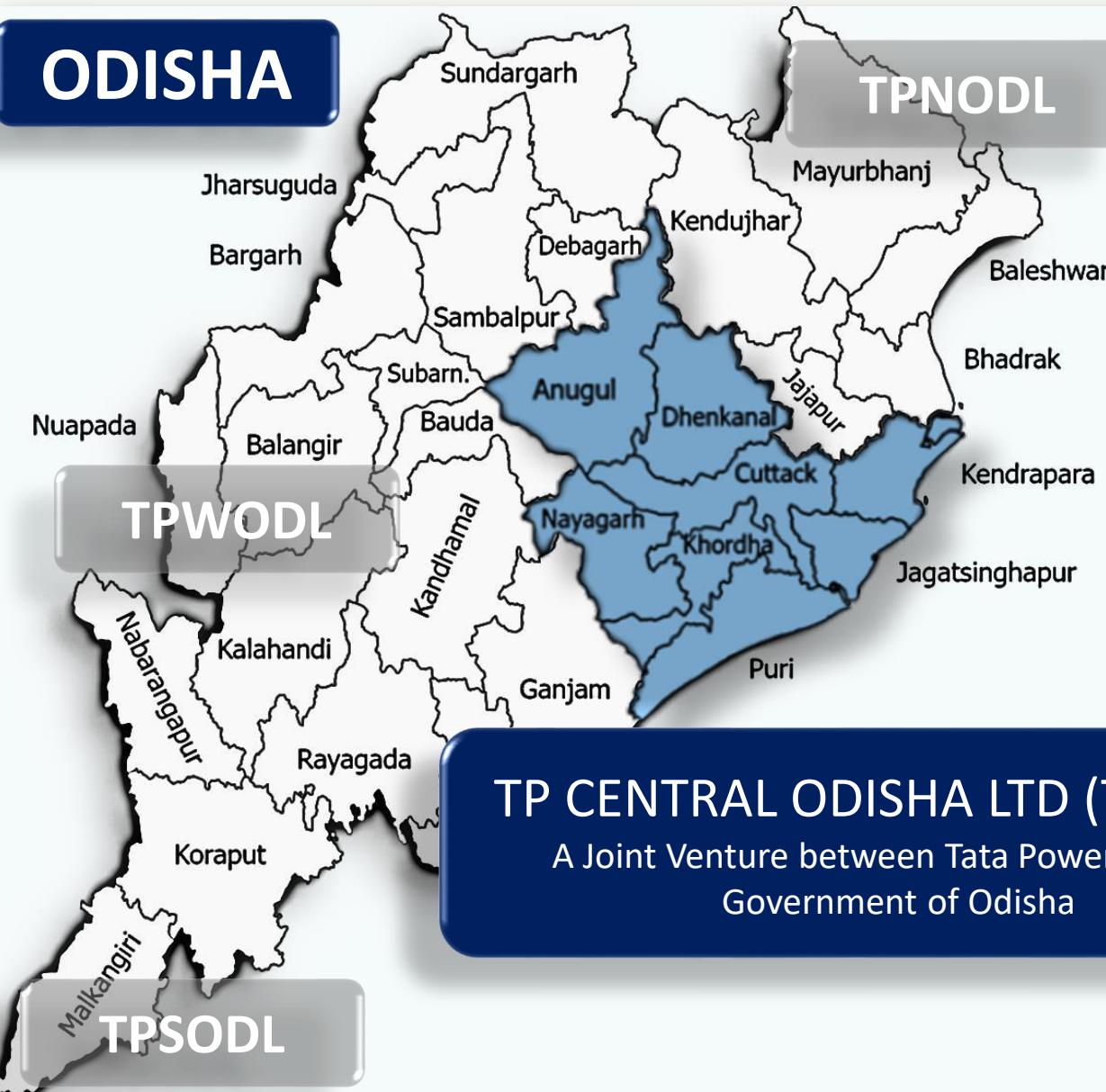
4.2 Cr.
(Nos.)

11TH HIGHEST
POPULATION SERVED

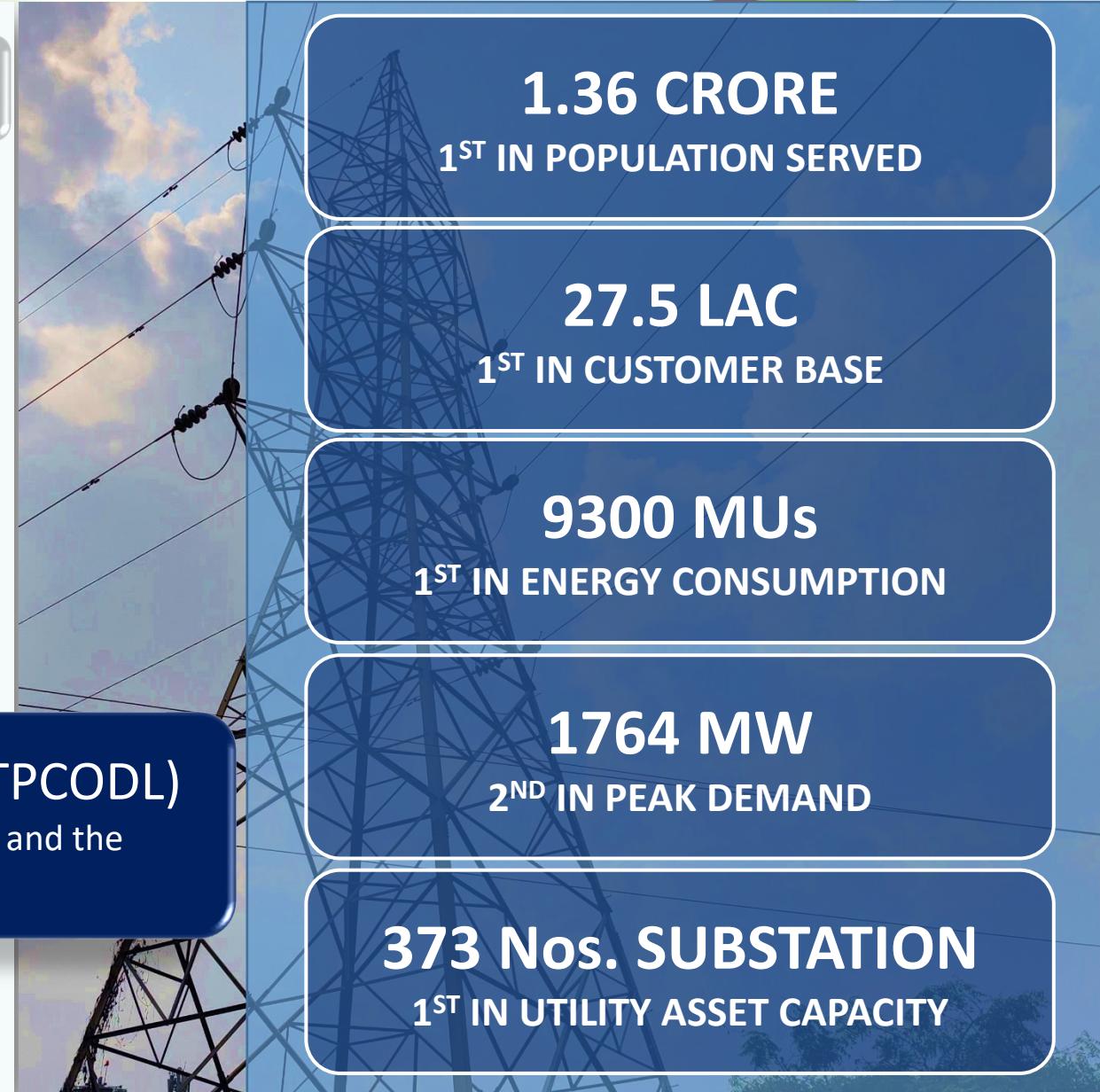
Relevance – ODISHA DISCOMS & TPCODL

TPCODL

ODISHA



TP CENTRAL ODISHA LTD (TPCODL)
A Joint Venture between Tata Power and the
Government of Odisha



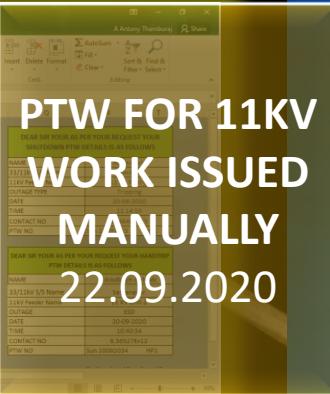
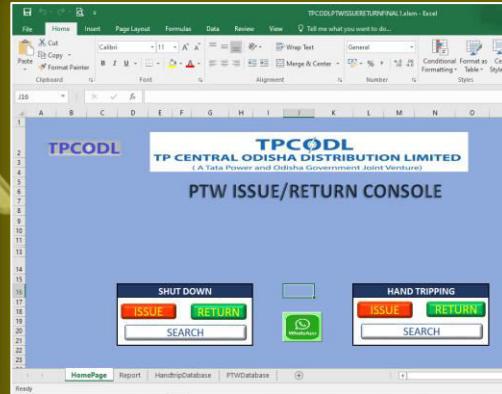
CENTRALIZED AUTOMATED DISTRIBUTION NETWORK OPERATIONS

TPCDL

POWER SYSTEM CONTROL CENTER 26.06.2020



TPCDL
ESTABLISHED
01.06.2020



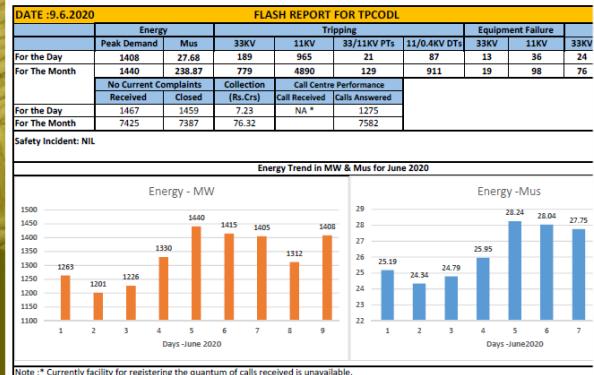
PTW FOR 11KV
WORK ISSUED
MANUALLY
22.09.2020



TPCDL
TP CENTRAL ODISHA DISTRIBUTION LIMITED
Suraksha
Kavach
PTW MANAGEMENT SYSTEM
Login ID
a.antonny
Password
Login

WEB APPLN.
ROLL OUT -
04.01.2021

6 MONTH TURN AROUND

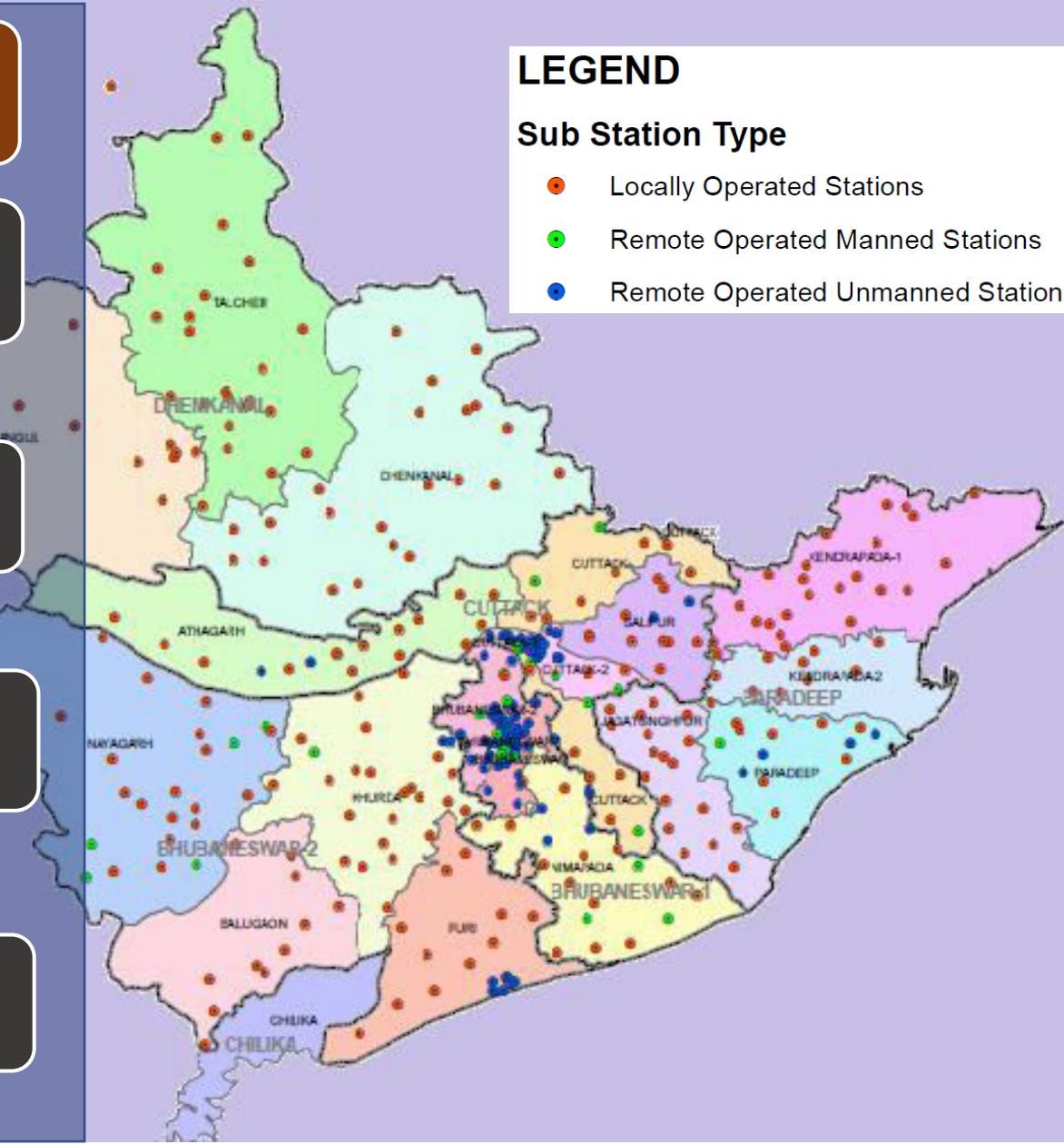
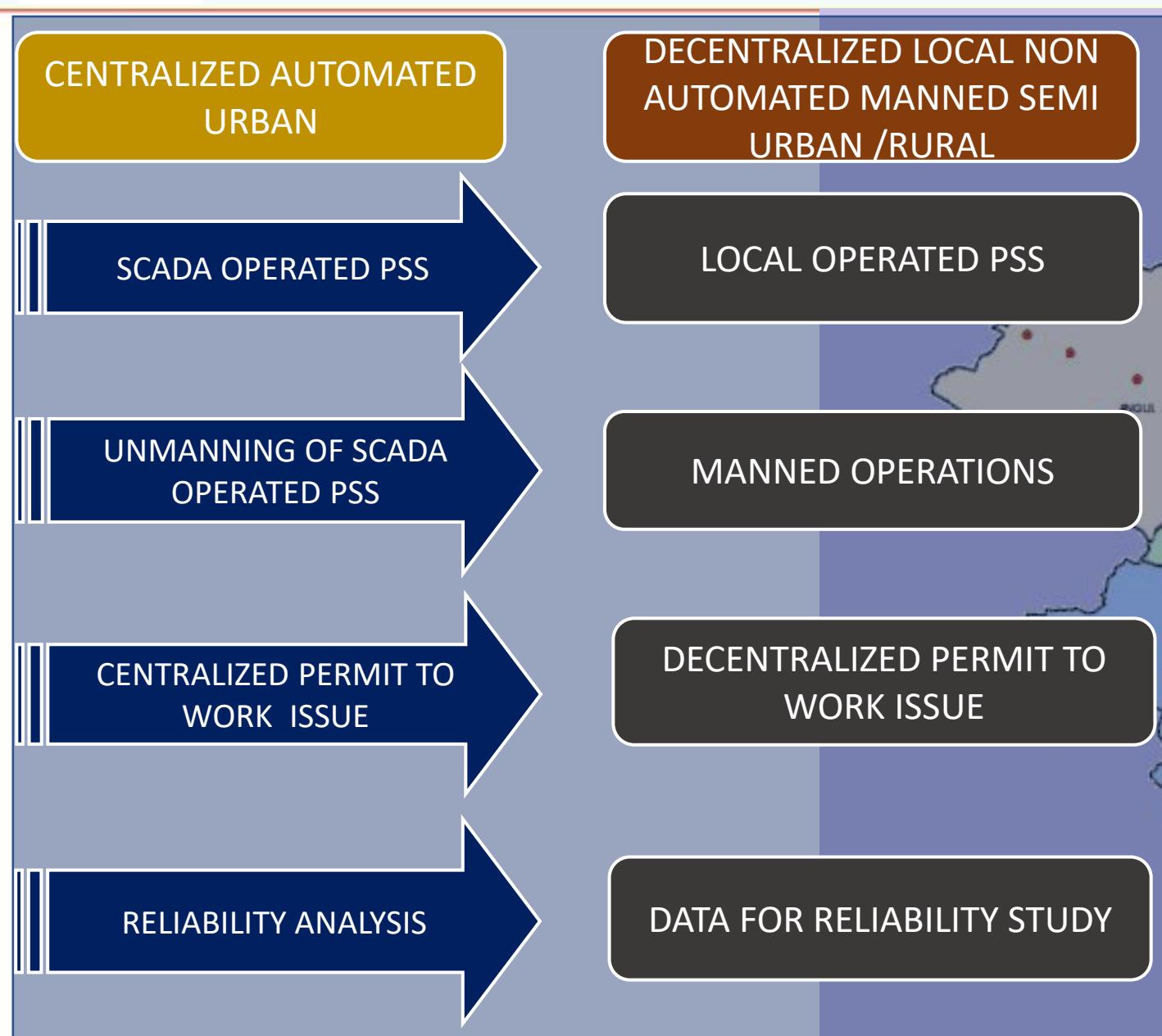


TPCDL DAILY
FLASH REPORT
PUBLISHED
04.06.2020

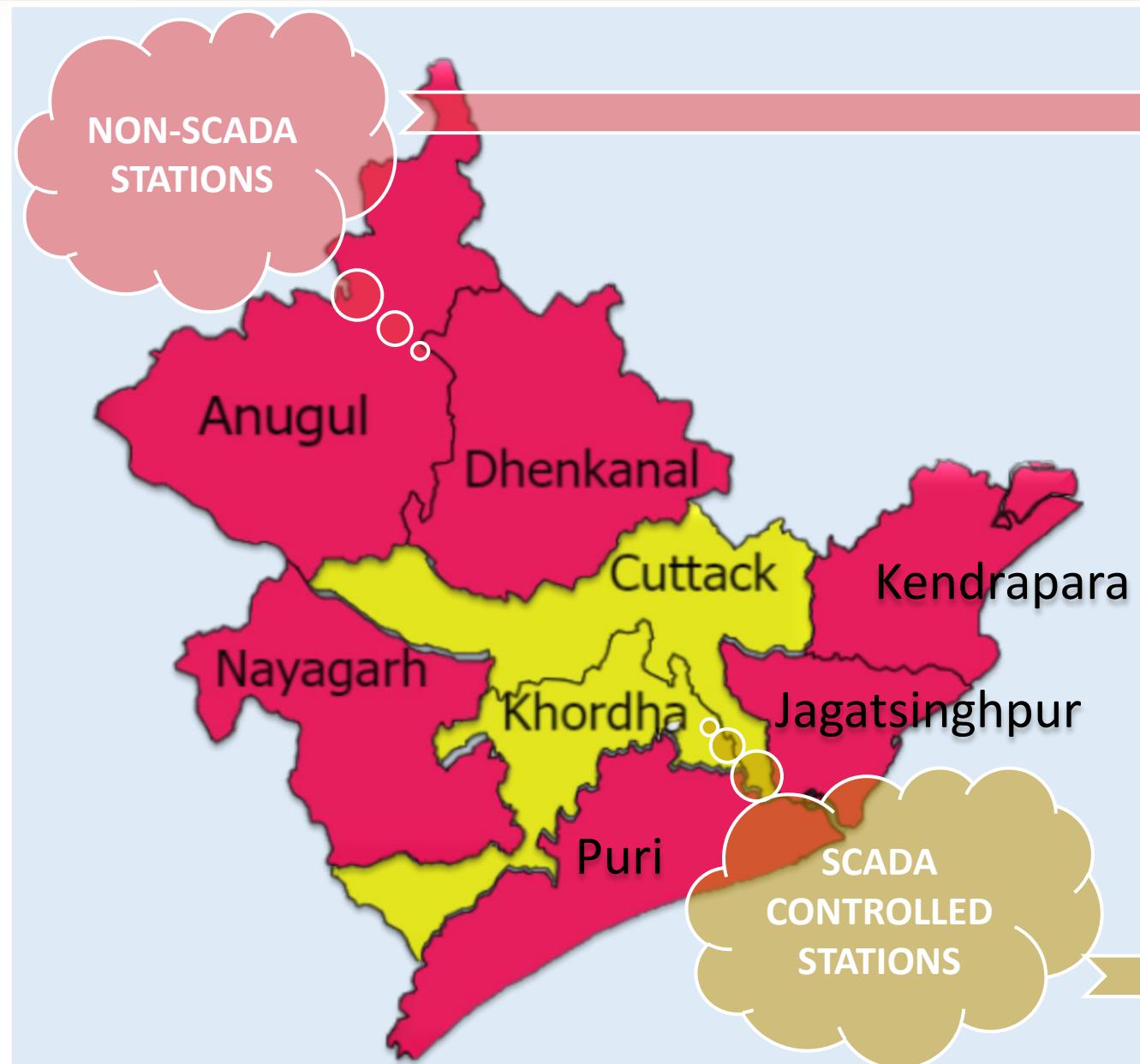


OT IMPLEMENTATION
Twin Cities BBSR & CTK with 51nos.
Of PSS - 03.12.2020

EXPANDING TO DECENTRALIZED CONTROL



APPROACH



DE-CENTRALIZED APPROACH

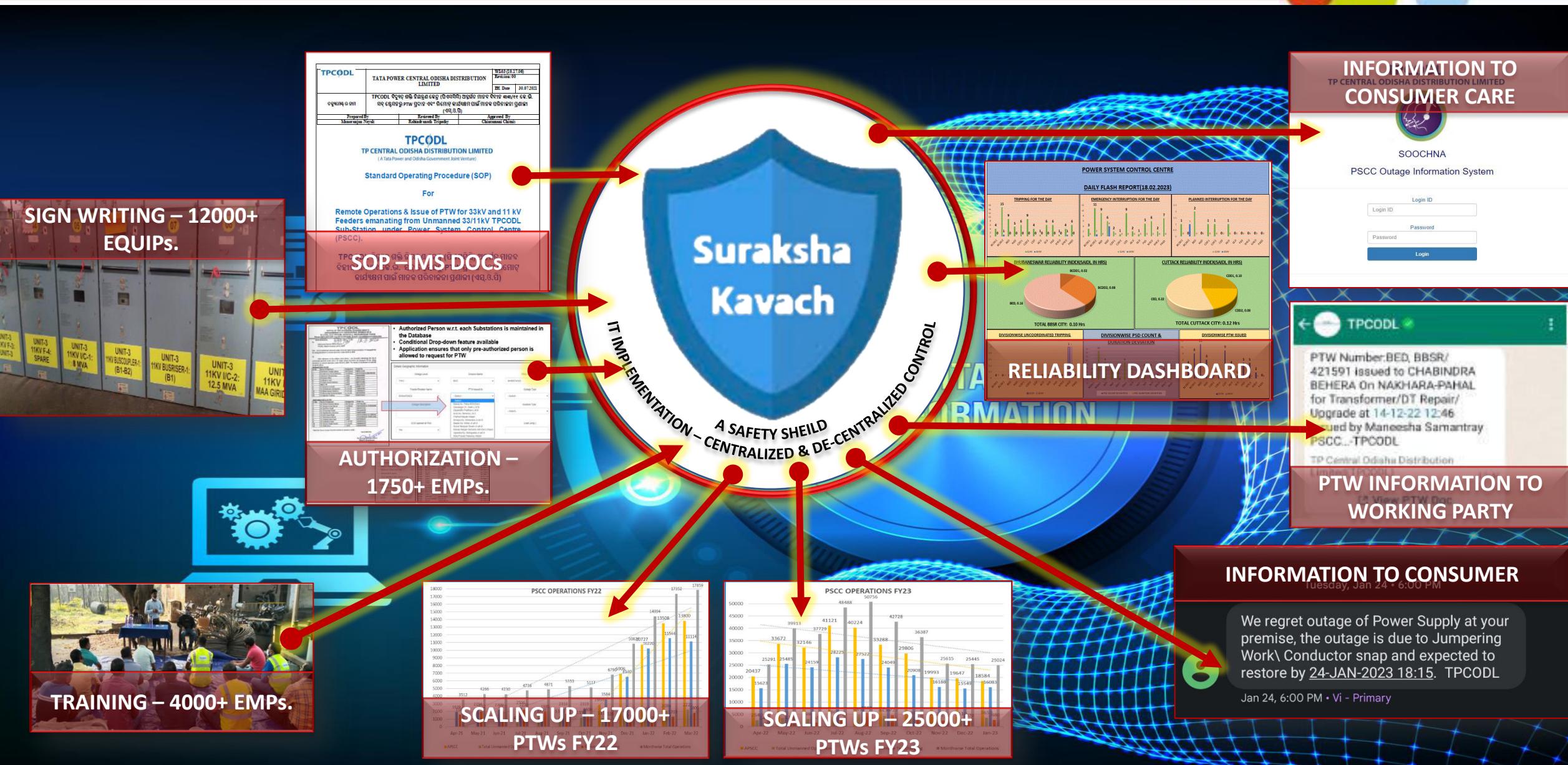
FOCUS ON IT IMPLEMENTATION

IN TANDEM

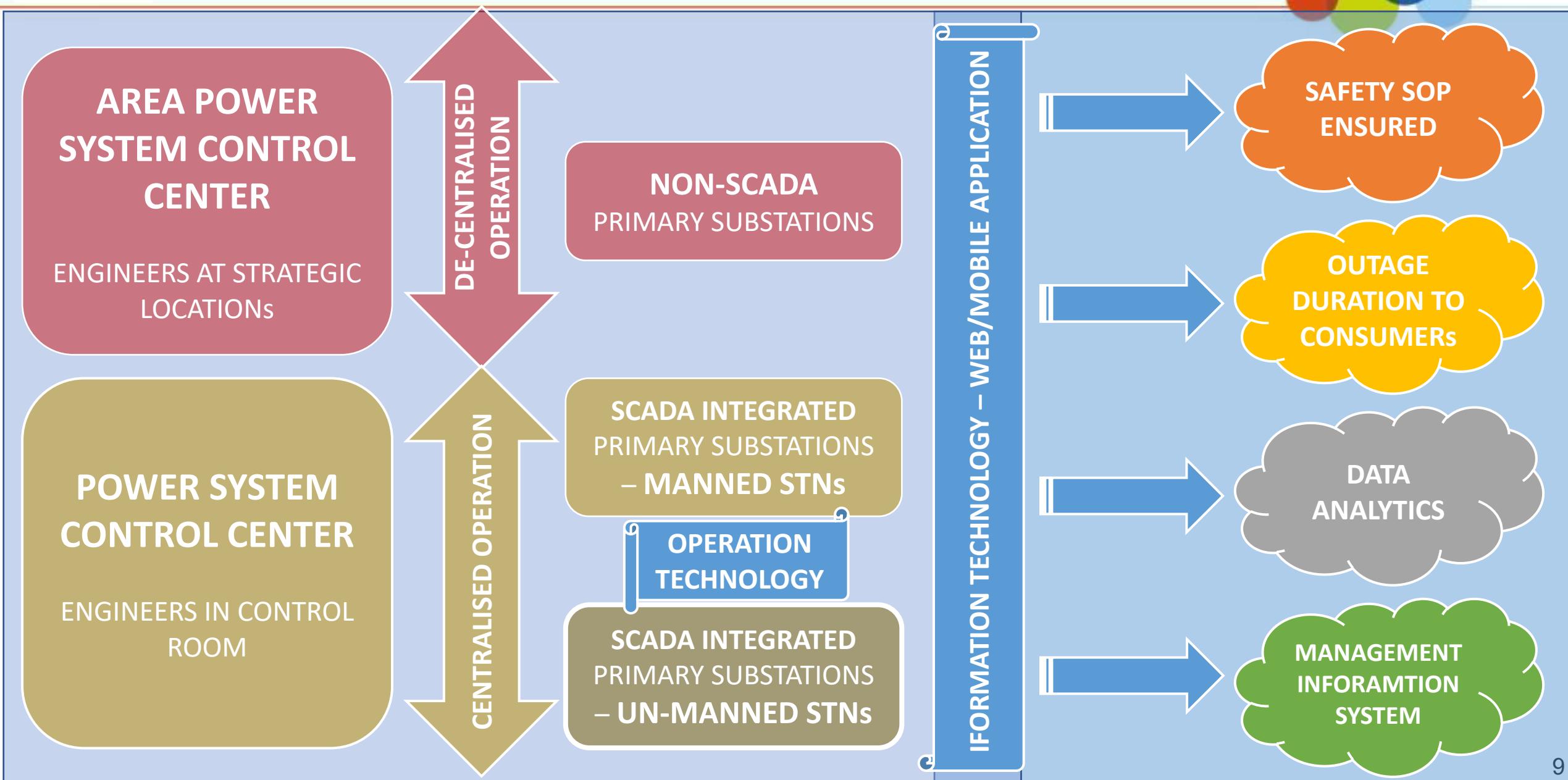
FOCUS ON OT IMPLEMENTATION

CENTRALIZED APPROACH

IT INTERVENTION –DIGITIZATION & DIGITALIZATION



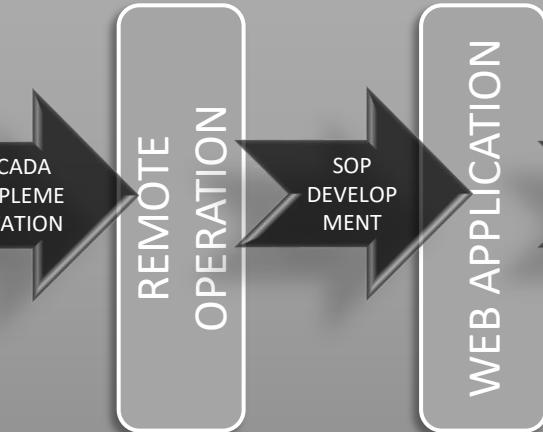
PROCESS OVERVIEW



EVOLUTION OF DISCOM OPERATIONS MODEL

MANUAL OPERATED PRIMARY SUBSTATIONS

POWER SYSTEM CONTROL



LOCALIZED CONTROL



POWER SYSTEM CONTROL CENTER

CENTRALIZED OPRs

PTW COMPLIANT
UNMANNED
STNs

PTW COMPLIANT
MANNED STNs

DE-CENTRALIZED
OPRs

APSCC
PTW
COMPLIANT
NON-SCADA
MANNED STNS

SURAKSHA KAVACH 2.0 - WEB/ MOBILE APPLICATION

Safety
Protocol
Adherence

SOOCHNA for
Customer Call
Center

Reliability
Indices Report

Outage
Management
System

Interruption
Record &
Analytics

Compliance
Management

CONSUMER
SATISFACTION

UNIFORM SAFETY

DISSEMINATION
ACROSS ODISHA

CENTRALIZED
DATA ANALYSIS

UNIQUENESS SCALABILITY & REPLICABILITY



Key Takeaways/ Recommendations



- TPCODL has been able to develop and implement a model Distribution Network Operations methodology for a composite automated-non automated, urban-rural network ensuring & enhancing **Safety** manifold, ensuring **Operational Excellence** and improving **Reliability**.
- *This methodology has laid the foundation stone in terms of operating any Discom with a vast geography, consumers and network efficiently and can be adopted for replication across*

Thank You

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

www.isuw.in

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