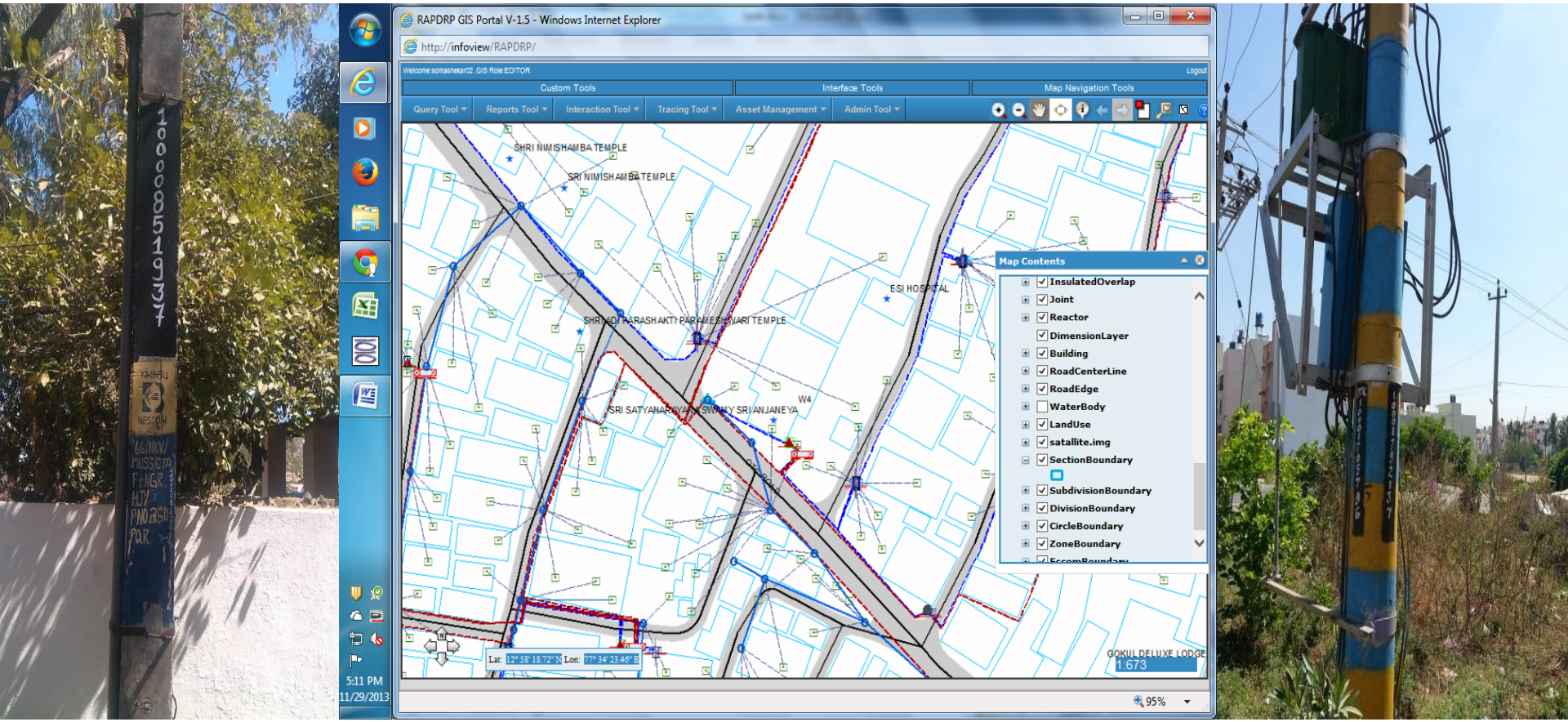
GIS implementation in BESCOM



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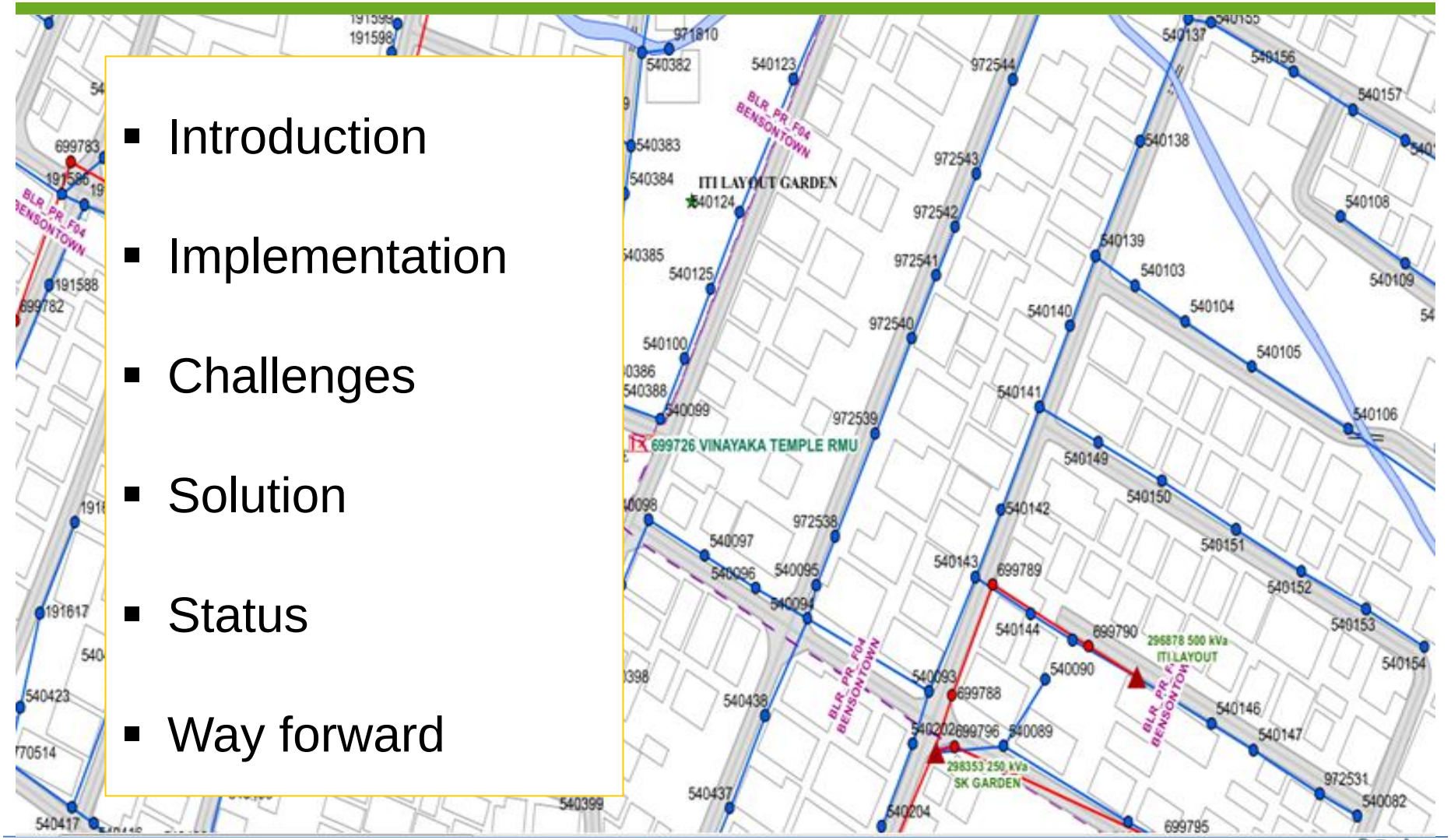


Introduction

- **GIS – Geographical Information System**

  5 Components
  - Software
  - Data
  - Hardware
  - Analysis and
  - People

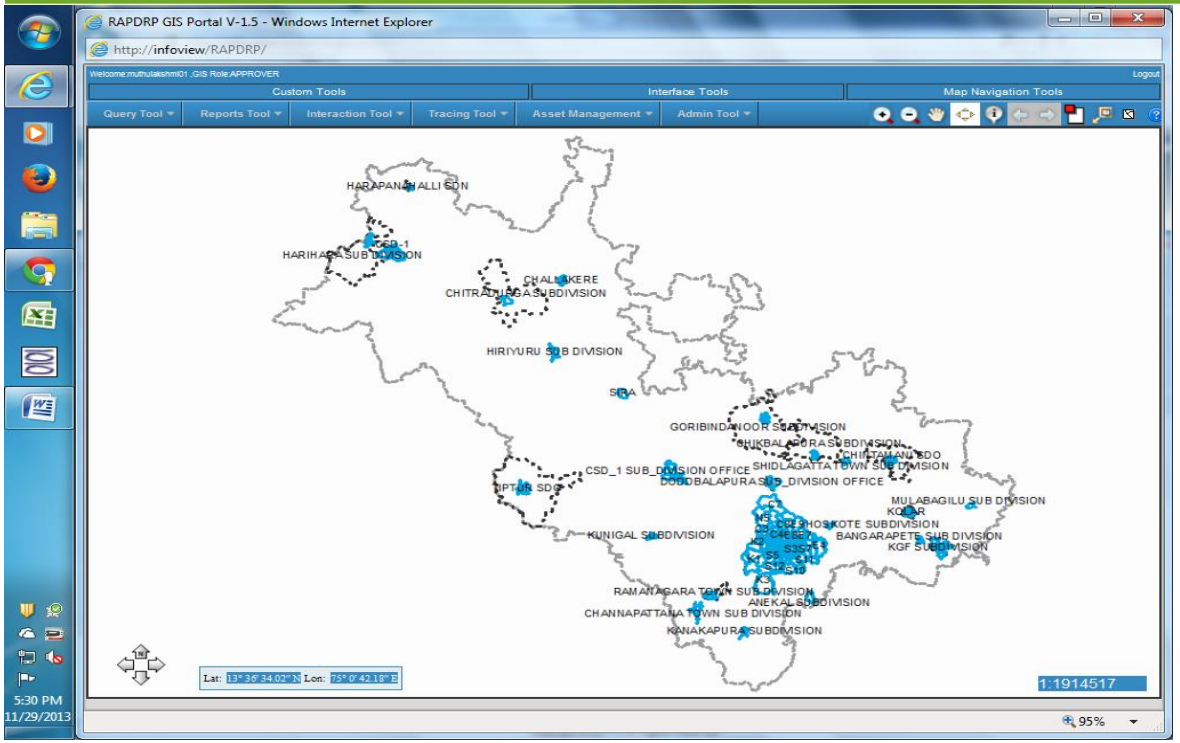
- **Enterprise GIS for Power Distribution utilities (DISCOMs)**
  - Strengthens operations and decision-making—from the field to the office
  - Efficiently, safely, and effectively manage physical networks
  - Improve reliability, increase customer satisfaction, reduce costs, and fulfill regulatory requirements
  - Identify, prioritize, assign, and execute field tasks

- **Initiation in BESCOM:**
  - Restructured Accelerated Power Development and Reforms Programme (R-APDRP) Part-A (IT) – Initiative by Ministry of Power, Govt. of India
  - GIS based asset mapping & consumer indexing is one of the key modules out of total 17 various modules in RAPDRP

Implementation

- Field survey:
  - HT/LT network Survey and mapping - 2010 to 2013
  - HT/LT Consumer survey and indexing - 2011 to 2013
- Live operations of GIS online web application in all towns since 2015
- Incremental data of network assets and consumers are being updated in the system from 2015
- After Go-live, field officers themselves update live data in GIS application
- Centralising updating activities by establishing GIS cell in 2017

Implementation



RAPDRP Coverage under GIS:
No. of towns: 25 Nos
Area of Interest: 2492 sq.km

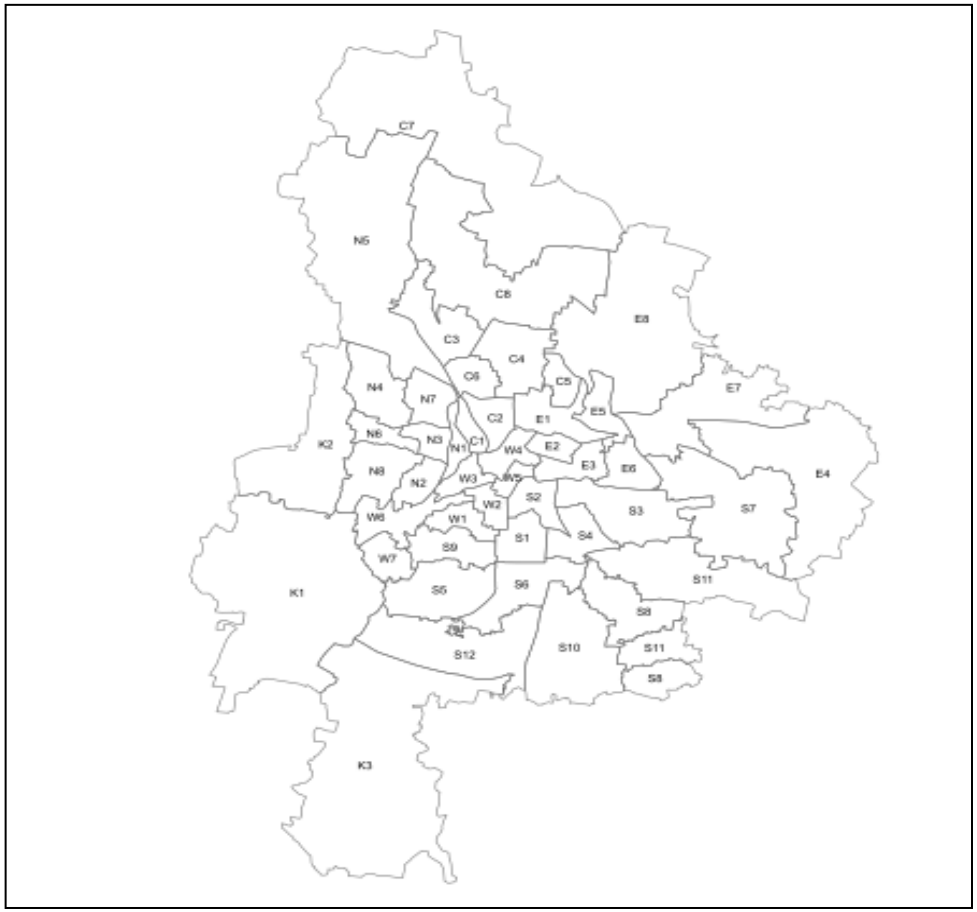
CONSUMER INDEXING:
Total: 58 Lakhs

ASSETS MAPPED:
66/11kV substations: 128 Nos
11kV feeders: 1422 Nos
Distribution transformers: 52748 Nos

No of Pole supports: 781879 Nos
HT network length: 9139 route km
LT network length: 15544 route km
Total Assets count: 18 Lakhs

Asset Mapping done using DGPS methodology with <1m accuracy

Implementation



Snapshot of GIS in Bangalore City:

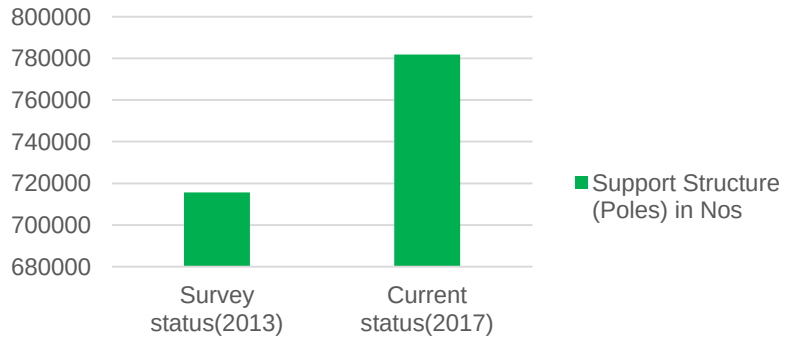
- Total Area covered: 1658 sq.km
- Total customers count: 49 Lakhs
- 66/11kV substations: 92 Nos
- 11kV feeders: 1253 Nos
- Distribution transformers: 39694 Nos
- No of Pole supports: 584563 Nos
- HT network length: 7798 route km
- LT network length: 10453 route km
- Total Assets count: 12 Lakhs

BANGALORE is credited as the FIRST large town in India under RAPDRP to complete the GIS based Consumer and Network Asset survey and validation to this magnitude

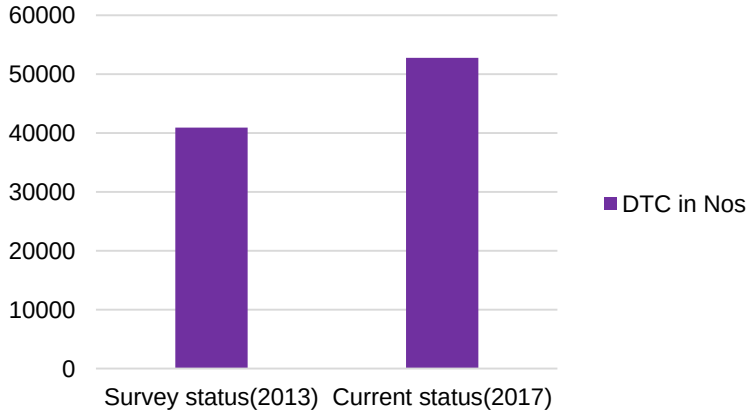
Implementation

GIS data growth – Survey Status(2013) V/s Current status (2017)

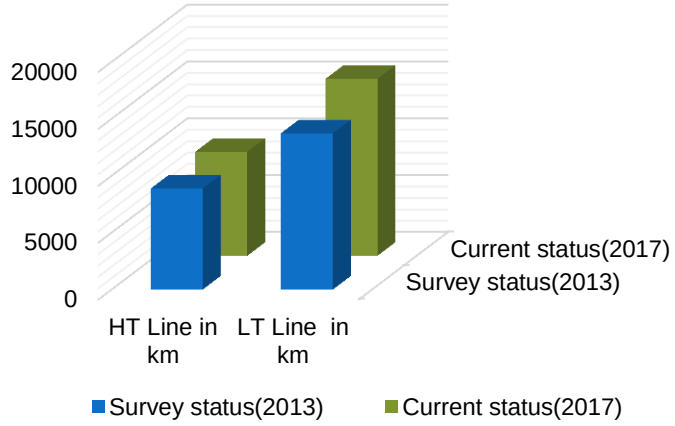
Support Structure (Poles) in Nos



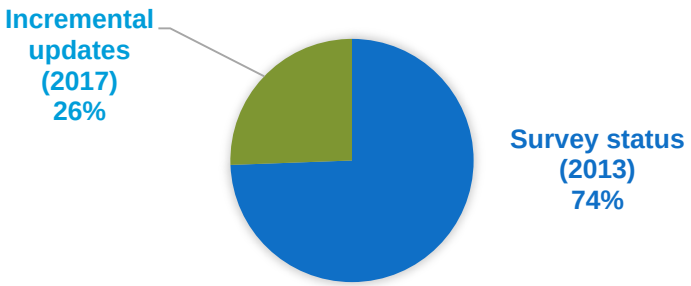
DTC in Nos



HT & LT Line Length (in km)



CONSUMER INDEXING



Challenges

Field Survey challenges

- Lack of skilled manpower resources/ surveyors & Poor knowledge of Electric network
- Concurrent implementation of GIS across all DISCOMs in India
- Large no. of attributes specified for Assets & Consumers
- DGPS time-consuming
- Validation of data by utility field staff
- Non-availability of high quality standard GIS map data
- Asset painting
- Meeting the completion timeline owing to all the above

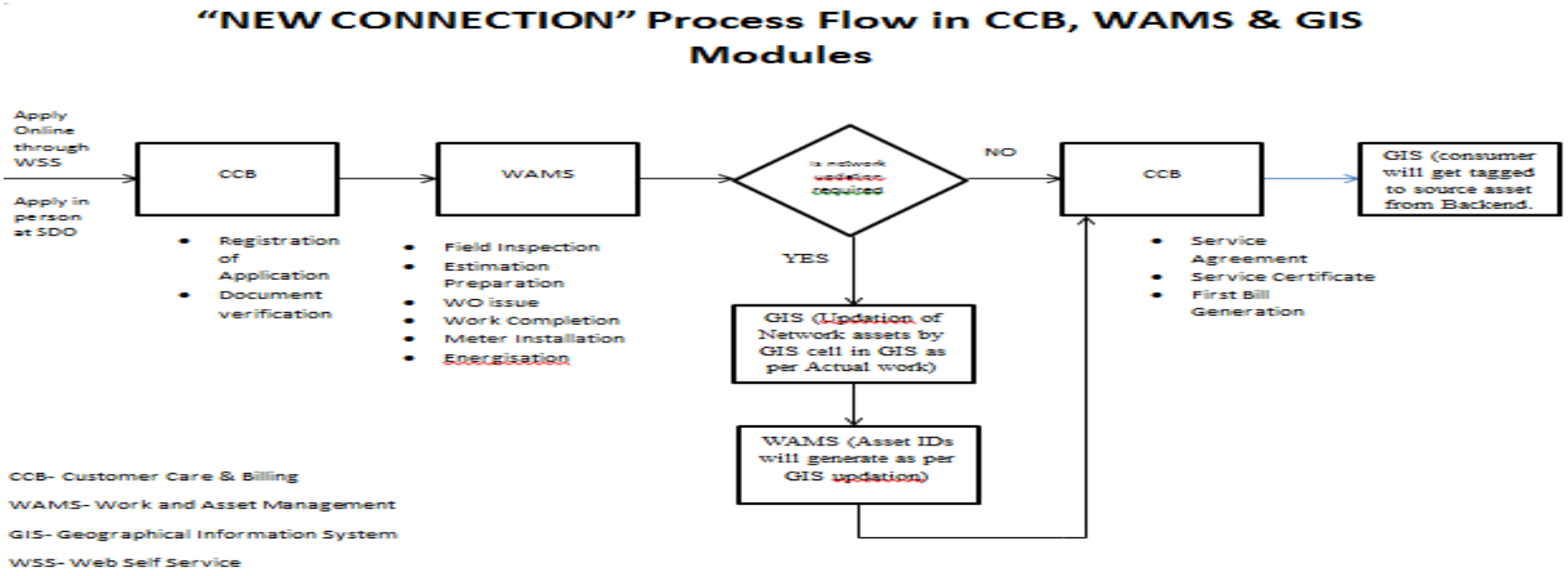
Other challenges

- Bridging the gap created in assets & consumers data between Survey <> Go-Live
- Performance of Online application
- Training/ Re-training to all utility field officers on using online GIS application
- Updating live data in application by field officers through business process

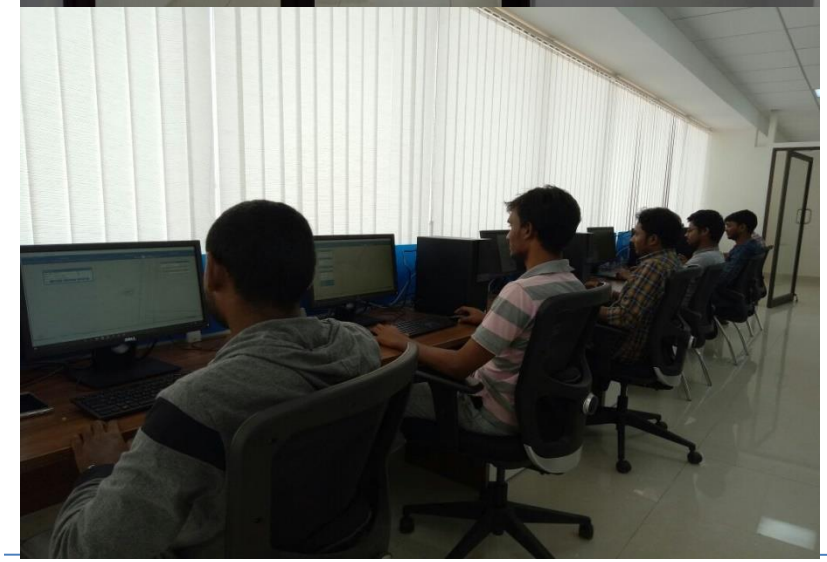
Solution

Karnataka is one of the few states in India deploying online editing application
Application is common for all 5 DISCOMs in Karnataka

- Online updating mechanism through integrated business processes
- New Connections not released unless updated in GIS



Solution



Centralising online GIS updating activity:

GIS cell of BESCOM is operational from June 2017 onwards and takes care of updating the assets & consumers in online GIS application

GIS Cell activities:

- Updating live data of assets & consumers
- 766 New connection cases with network changes have been successfully updated in GIS system by GIS cell since June-2017

The other activities undertaken by GIS centralized team:

- Creation of Substations & Feeder taps
- Tagging of incremental consumers
- Re-indexing of consumers to correct assets in case of incorrect indexing

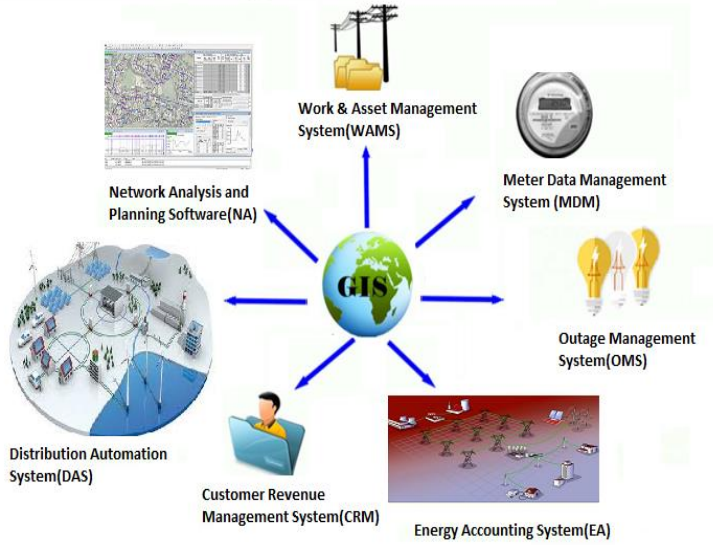
Status

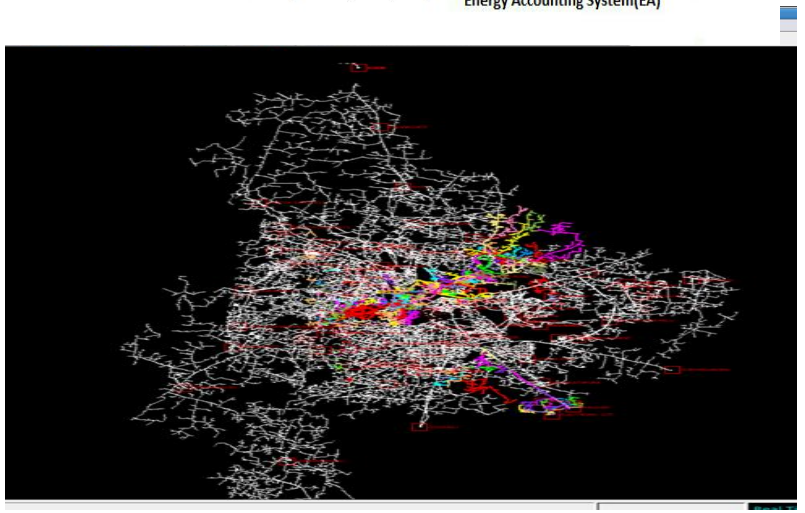
GIS is currently integrated with following:

- Work & Asset Management Systems (WAMS)
- Customer Revenue Management System (CRM)
- Network analysis and planning software (NA)
- Meter data management System (MDM)
- Energy Accounting System (EA)

and also integrated with

- Distribution Automation System (DAS)
- Outage Management System (OMS) of DAS





Way forward

- GIS to be extended to semi-urban towns selected under IPDS project and subsequently to rest of rural sections of BESCOM
- Design of Mobile app using GIS data in association with K-GIS
- Corrective measures on Consumer indexing and asset mapping for accuracy of Energy Audit results and Network analysis.
- Derive complete benefits of GIS implementation

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