

# GNSS Handhelds & Mobile App – A Case Study of Tata Power Delhi Distribution Limited (TPDDL) in its journey to the world of Industrial IOT based Smart Grid Implementation in Delhi

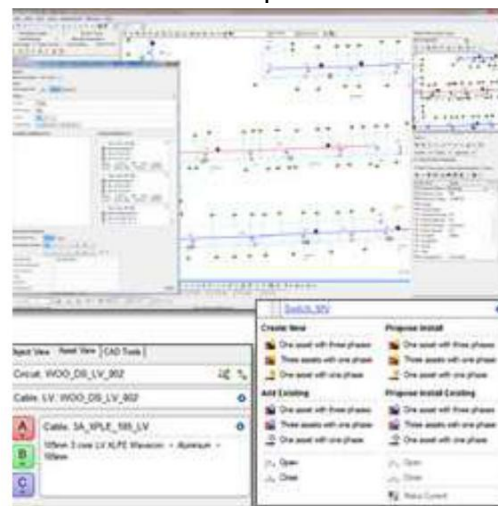
## About The Client:

Tata Power Delhi Distribution Limited [TPDDL] is a joint venture between Tata Power and the Government of NCT of Delhi with the majority stake being held by Tata Power (51%). TPDDL distributes electricity in North & North West parts of Delhi and serves a populace of 6 million. The company started operations on July 1, 2002 post the unbundling of the erstwhile Delhi Vidyut Board (DVB). With a registered consumer base of 1.44 million and a peak load of around 1704 MW, the company's operations span across an area of 510 sqkms.

TPDDL has to its credit several firsts in Delhi: SCADA controlled Grid Stations, Automatic Meter Reading, GSM based Street Lighting system, SMS based Fault Management System, etc. **TPDDL has also embarked on its Smart Grid Journey and has become the first utility to initiate Automated Metering Infrastructure based Auto Demand Response program in the country which will help in managing peak demand & Grid stress.**

**Background:** The electricity distribution company with more than few millions of consumers has the vision of build, Operate and Maintain an efficient Power Distribution System, and is one of the first company to implement an Outage Management System using GPS based handheld devices for issue resolutions efficiently and with complete authenticity. The company has decided that they want:

- Dependable mobile based solution comprising of mobile software & server–end software
- Complete mobile based application for complaint management
- Complete Server end solution for billing, tracking, monitoring and authenticating operations and maintenance
- Rugged GPS-based devices that enables the maintenance workers in the field to receive the data from the Server and send back the information to it
- Solution should be based on open standards and must be SOA compliant



**Problem:** TPDDL now wants all its field force to access and update the same central GIS database for all operations performed in the field like

- A. Power Outage Management
- B. Metering & Billing
- C. Maintenance Operations
- D. Asset Monitoring

To achieve this the company is looking for **devices** and **mobile based apps** which should have mandatorily the following features

- A. Accurate Geo-Positioning (within 1-3 metres) in a dense urban conglomeration with multi GNSS (Global Navigational Satellite System) capabilities– To sync the position automatically to the central GIS database which has same accuracy
- B. Should have mobile apps which should be capable to handle a spatial database on an offline(without Internet)mode - Capability to
- C. Should be rugged (water-dust-shockproof) devices for field use and need to have fast processing and communication modes with industrial build. Should have very efficient power management to last for a full day with continuous usage of radio connections and data entry.

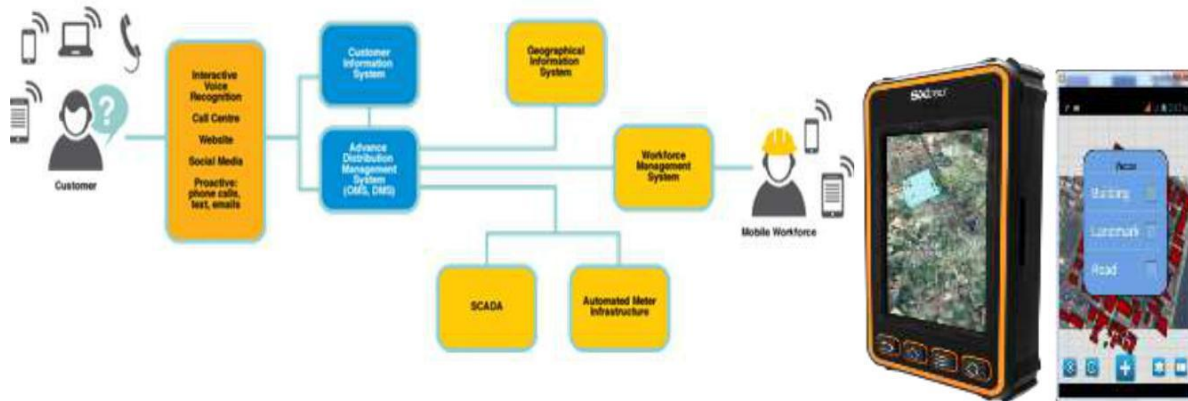
**Challenge** – Existing Mobile devices and Mobile Apps available off the shelf failed to meet the specifications because


- A. The geo positioning technology used in a mobile architecture is for consumer usage with accuracy varying wildly and above 10 metres in most cases without consistency
- B. There are rarely any Mobile Apps which are capable to handle spatial database on mobile platform, ie the user cannot view the central GIS, nor can they run queries to take actions in field.
- C. The mobile devices are not rugged enough to withstand the continuous usage in field conditions

## **Vara's Sxtreo GNSS Devices and SxgeoV App perfectly matches the customer requirements**


TPDDL conducted extensive review of the solutions available from European and USA based Smart Grid Solutions players, along with Vara's Sxtreo GNSS devices & SxgeoV App for integrating with its

# Outage Management System



The customer chose Sxtreo Rugged GNS Handheld devices  to offer to its field force to connect to the central GIS database for Outage Management Team as Phase 1 of the project in a circle for

- A. Reliable and accurate geo-positioning in the field through advanced multi GNSS capabilities
- B. Rugged and Industrial build with efficient power management to last for 15 hours of continuous operation.
- C. 40% cheaper than products available from Europe and USA of the same grade

The customer chose SxGeoV Mobile App  to offer to its field force to connect to the central GIS database for Outage Management Team as Phase 1 of the project in a circle for

- A. Ability to handle spatial database on mobile platform for vector as well as raster datasets
- B. Update outage handling reports directly to central GIS repository
- C. Access all spatial data directly on field through the Proprietary App for quick analysis

The customer also chose the Sxgeo Server side application interact with its enterprise GIS system

## Benefits – To TPDDL

- A. The Central Operations Team is now completely in sync with the field team through a common geospatial database, cutting down response time on events or emergencies
- B. The Planning and Analysis Team has continuous updated data visualized exactly the way it exists on earth surface with access to engineering calculations, cutting down numerous costs associated with “I Never knew There was Something in Between”

- C. Huge Cost savings in maintenance and management of huge asset base with facility to visualize the entire network on a queryable database, and understand interferences resulting from other features as, roads, buildings, telecom, water and others

### **Benefits to the End User- Electricity Consumer**

- A. Quickest Response Time to Repair and Maintenance as the utility is equipped with a field team which can accurately update the position of the problem, and the central team can analyze all interferences and interconnections related with the problem and prepare the restoration plan in a very fast manner.

### **Extended Business Scope:**

On successful completion of Phase –I, customer will extend the scope of the Project to

- A. Outage Management System for all circles,
- B. Automated Metering Management,
- C. Spot Billing,
- D. Preventive Maintenance and
- E. Asset Integrity Management Teams

The potential size of the business over a period of time is in huge multiples of the initial offer and will extend to all Power Distribution Franchisee’s operated by Tata Power.

### **Similar Implementations in India with Sxtreo & SxGeo for Smart Networks**

- Gujarat Energy Transmission Corporation Ltd. (GETCO)
- Gujarat Gas Corporation Ltd.
- BSES Rajdhani Power Ltd
- Mangalore Electricity Supply Company (MESCOM)
- Power and Electricity Department of State of Mizoram
- Oil & Natural Gas Corporation
- Oil India Limited
- Rural Electrification Corporation (REC)
- TATA POWER
- Nagaland Power Dept.
- Madhya Gujarat Vij Company Limited (MGVCL)
- Indian Oil Corporation Ltd (IOCL)
- Reliance Infrastructure Limited