

## **CESC Limited** ***Power Distribution for the Future***

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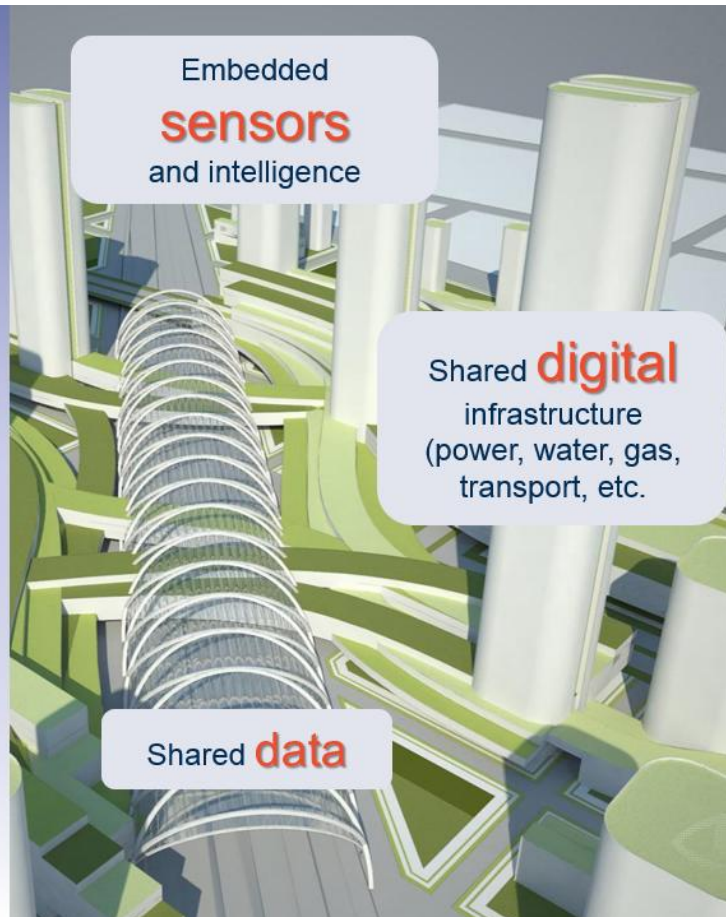


***In the coming years, Utilities would need to:***

- **Expand the network to meet growing demand – within available space**
- **Ensure reliable and quality power**
- **Enhance Customer Delight**
- **Adopt Renewables, Microgrids, E-Vehicles, Storage**
- **Make the Grid Smarter**
- **Integrate with Smart City services**

Smart Cities  
are the  
**path**  
forward

The Smart Grid  
is an essential  
**early step**



## SMART GOVERNANCE

## SMART ENERGY

Smart Grid  
Energy Storage  
Smart Meters

## SMART ENVIRONMENT

Renewable Energy  
Water & Waste Management  
Sanitation

## SMART TRANSPORTATION

Green Transport  
Railways

## SMART IT & COMMUNICATIONS

ICT  
Security & Surveillance  
Disaster Management

## SMART BUILDINGS





## RIO control centre integrates 30 Departments







A Modern Command & Control Centre



Conversion of Outdoor EHV  
SS to Indoor GIS SS



Integrated SS at New  
Cossipore with 220, 132 & 33  
kV GIS



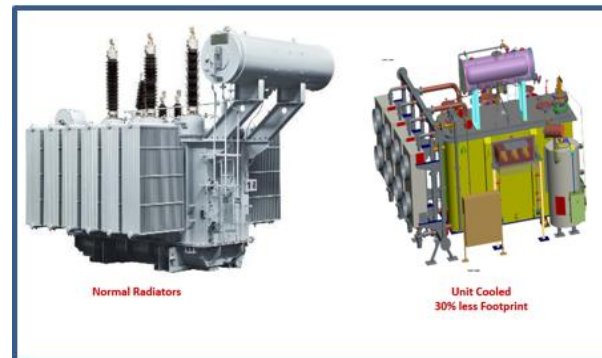
India's tallest Power  
Transmission Towers across  
Hoogly River (236m tall)



Underground 132 kV SS at  
'Quest Mall'



Underground GIS at 'Quest  
Mall'



Compact Unit Cooled Power  
Transformers being procured

**Space is scarce in Kolkata which has only 6% Road Surface Area**



## 1. **PREVENTION** Initiatives

### SCADA



### Condition Based Monitoring & Mtc



### Modified PBs



**Network Reinforcement**

**Planning Tools**

**Proactive Maintenance**

**Enhanced Specifications**

## 2. Rapid **RESTORATION** Initiatives

### RMU Automation



### Auto LT Changeover



### Power on Wheels



**Shift Operations**

**Vehicle Tracking**

**Field Force Automation**

**Result:** HT faults down by 60% & LT faults down by 50% in last 5 years



- Prediction of location
- Prioritizing restoration efforts
- Crew management
- Providing information on extent of outages
- Estimation of restoration times.



## LT Fusing Alerts



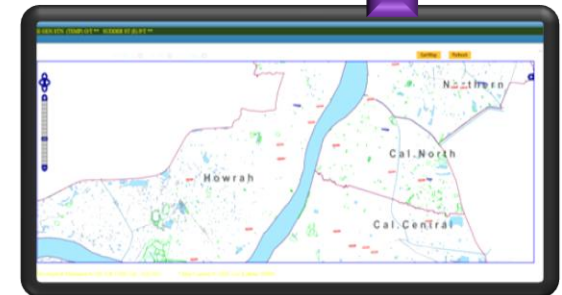
over SMS

## Oversees Regional Reporting Centres



Call Centre with LT Outage Details

GIS based LT Outage



GPS integrated GIS map

## LT Pillar Box with MFMs



over OFC

## Consumer end Power Fail Indicator



over SMS

- **GIS-centric** LT Control Room
- Field Force equipped with Tabs

Outage  
Monitoring  
& Tracking

Supply  
Quality  
Monitoring

Energy Audit  
Operations

Loss Control  
Measures

Vehicle  
Tracking

Crew  
Management

## Web & Mobile Apps



## Payment Options

## Social Media Connect

## Virtual Office

## Tablet based Meter Reading

- ✓ **Business Intelligence & Analytics**
- ✓ **Customer Engagement - OPower**

## SMS Service



## Web Service



## 24x7 Hour Call Center



## Real Time Displays



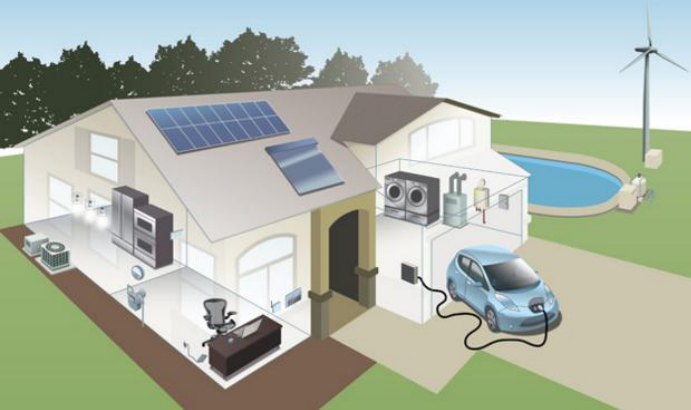
## Online Chat with MD







Smart Home with Smart Meter, **HAN**, RES

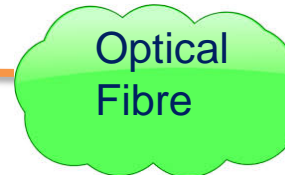


**AMI = Advanced Metering Infrastructure**

Private **HAN/NAN**



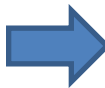
Private **WAN**



MDMS



To  
Control  
Centre



*Smart Meters– BIS 16444*

- 2-way communication
- Remote Connect/  
Disconnect
- Last Gasp
- HAN



**Big Data**



**Analytics**

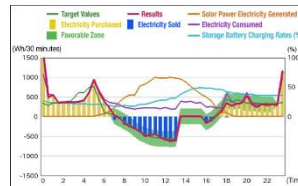




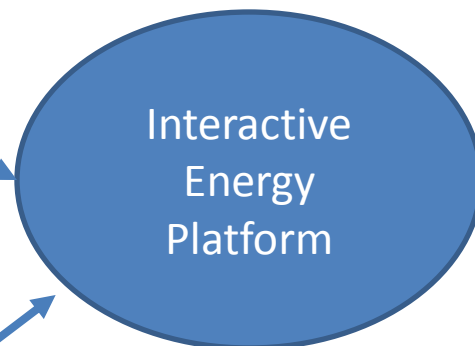


## Consumer Premises

## Consumer Portal



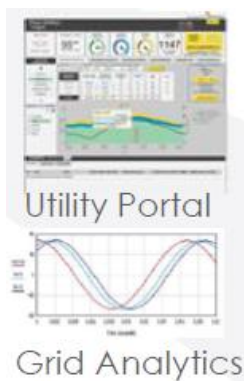
Energy Agent



DER Agent



At Utility

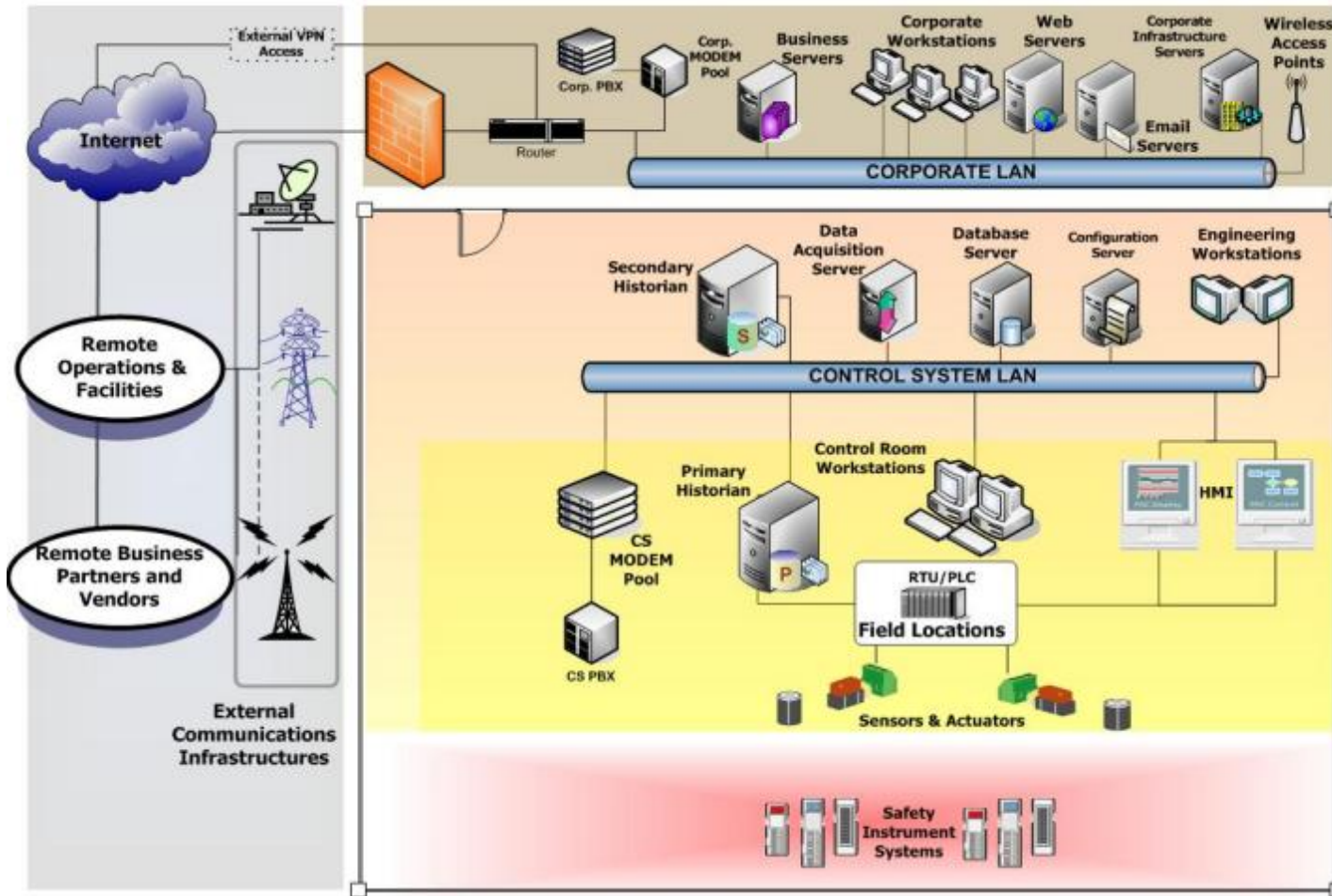


1.5 MW Pilot Project going on.



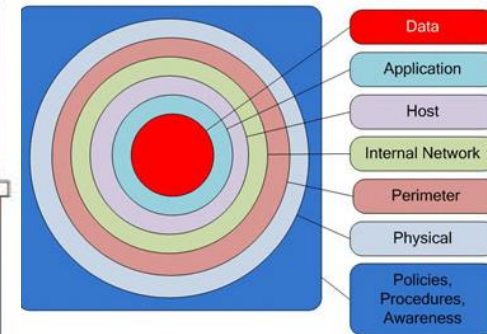
INNOVARI

***Skewed Load Duration Curve – DR can help !***



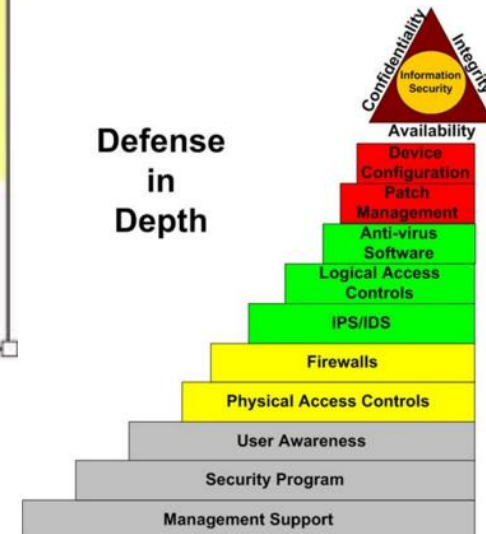
**Control Systems Security Program**  
**National Cyber Security Division**

Defense in Depth Layers



A simple VPN + Firewall Solution is not enough.

Defense in Depth





**DTS**



**OMS**



**EMS**



**ADMS**



**GIS**



**CIS**



**AM**

ASSET  
MANAGEMENT

**IT Apps**



**IT**

**Enterprise Service Bus**

**Master Unified Control Centre**

**Backup Control Centre**



**Distributed Generation**

**Regional  
Control  
Centres**



**Storage**



**OT**

**MDMS**



**WAN**

Optical Fibre  
(Gigabit Ethernet,  
SDH, MPLS) ,  
Microwave, Leased  
Line etc

**FAN**

RF, RF Mesh, PLC, 3G,  
4G, WiFi, Zigbee etc



**RTUs - SS**

**RTUs - DS**



**FRTUs - RMUs**

**Smart Meters/  
Homes**



**EVs**



**Demand Response**





THE JOURNEY GOES ON ...

