

An aerial night view of a city skyline, likely Seattle, with the Space Needle visible in the background. The city is illuminated with warm yellow and white lights, contrasting with the dark blue night sky. A semi-transparent white text box is overlaid on the left side of the image.

ICT FOR SMART, SAFE AND
SUSTAINABLE CITIES

JT RAO
CMD - winAMR

The Smart City



Data

Smart Energy

Smart Technology

Smart Buildings

Smart Governance & Education

Smart Healthcare

Smart Citizen

Smart Infrastructure

ICT

Smart Mobility

The City





SMART GRID

An upgraded energy network to which two-way digital communication between the supplier and consumer, smart metering and monitoring and control system have been added

European Commission

SMART GRID

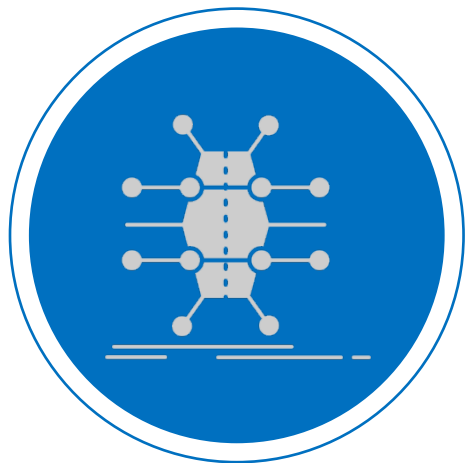
Superimposing information and communication technologies over an existing energy grid

Energy Grids with and without ICT



- **Unidirectional flow** from generation to transmission to distribution to consumers
- No automated analysis
- **Slow response** to quickly changing loads
- **Limited control and coordination** between generated and consumed energy

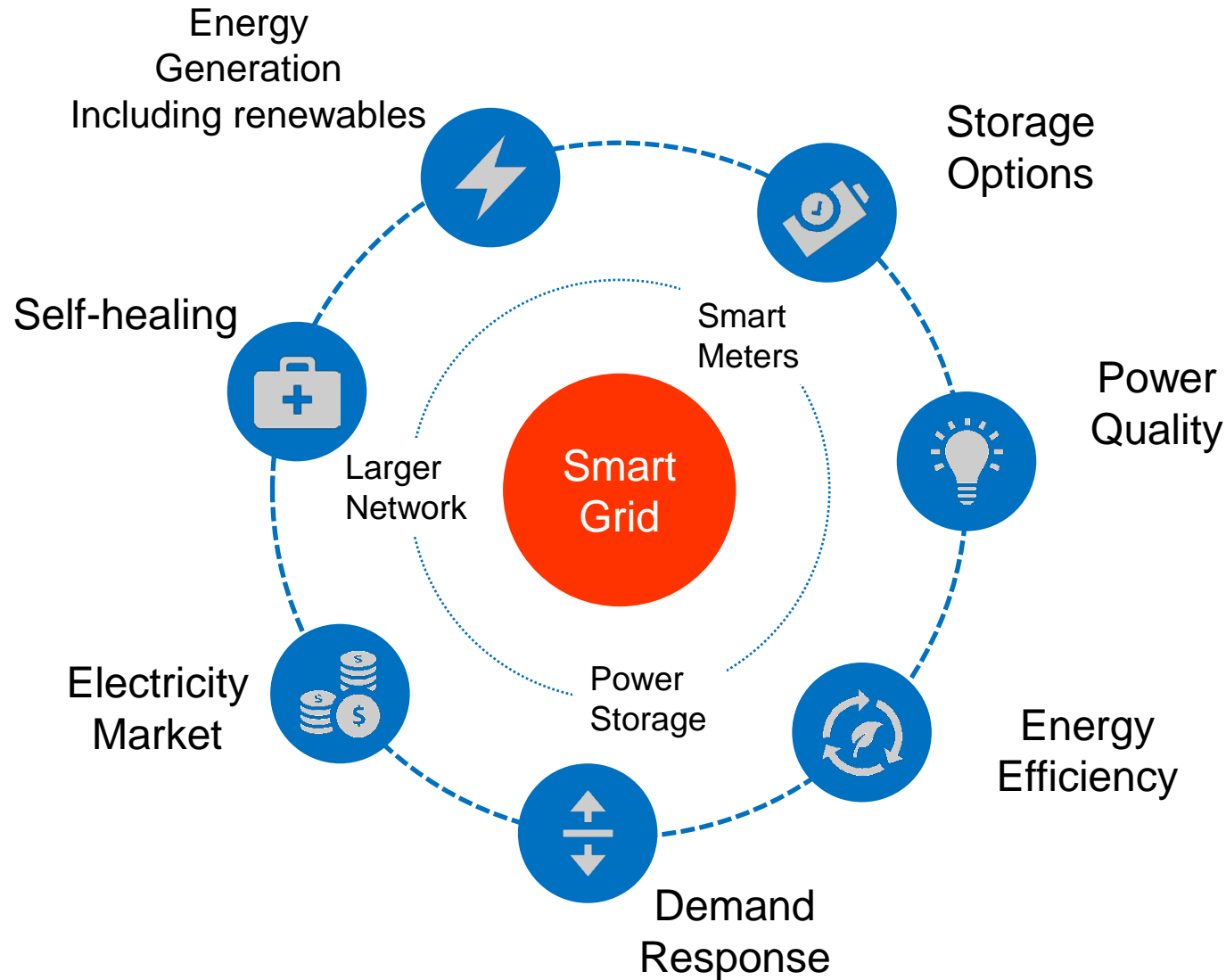
Energy Grids without ICT



- **Bi-Directional flow** from generation to transmission to distribution to consumers
- **Smart meters**, Computing and Digital technologies and analytics
- Reliable and **real time information flow** for real time response
- **Complete control and coordination** reducing losses, peak demand and energy costs
- **Self Healing**

Energy Grids with ICT

ICT enabled Smart Grid: The Backbone for Smart Cities



Smart meters – a first step to smart grid

Smart grid collects information

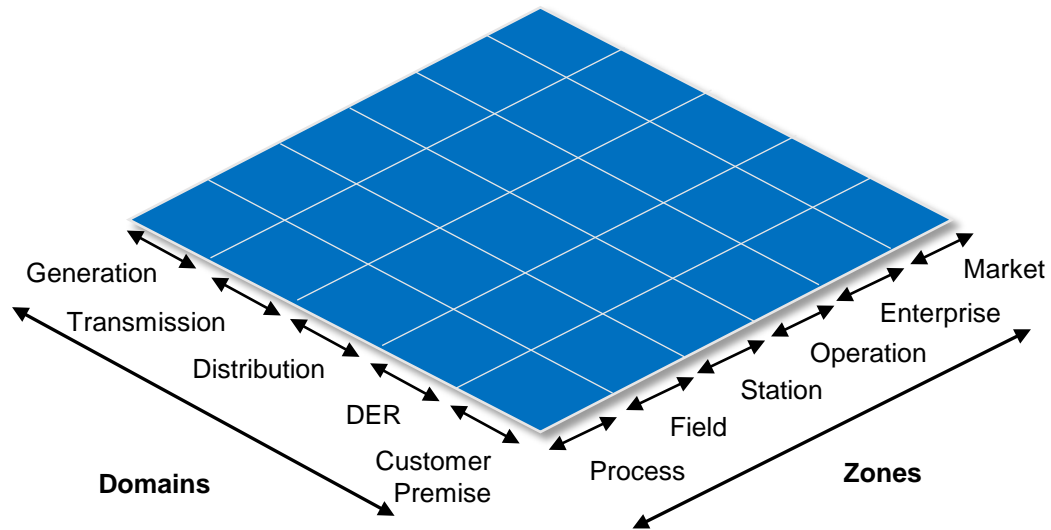
Information shared with Suppliers and Consumers

Efficient transmission and distribution of electricity

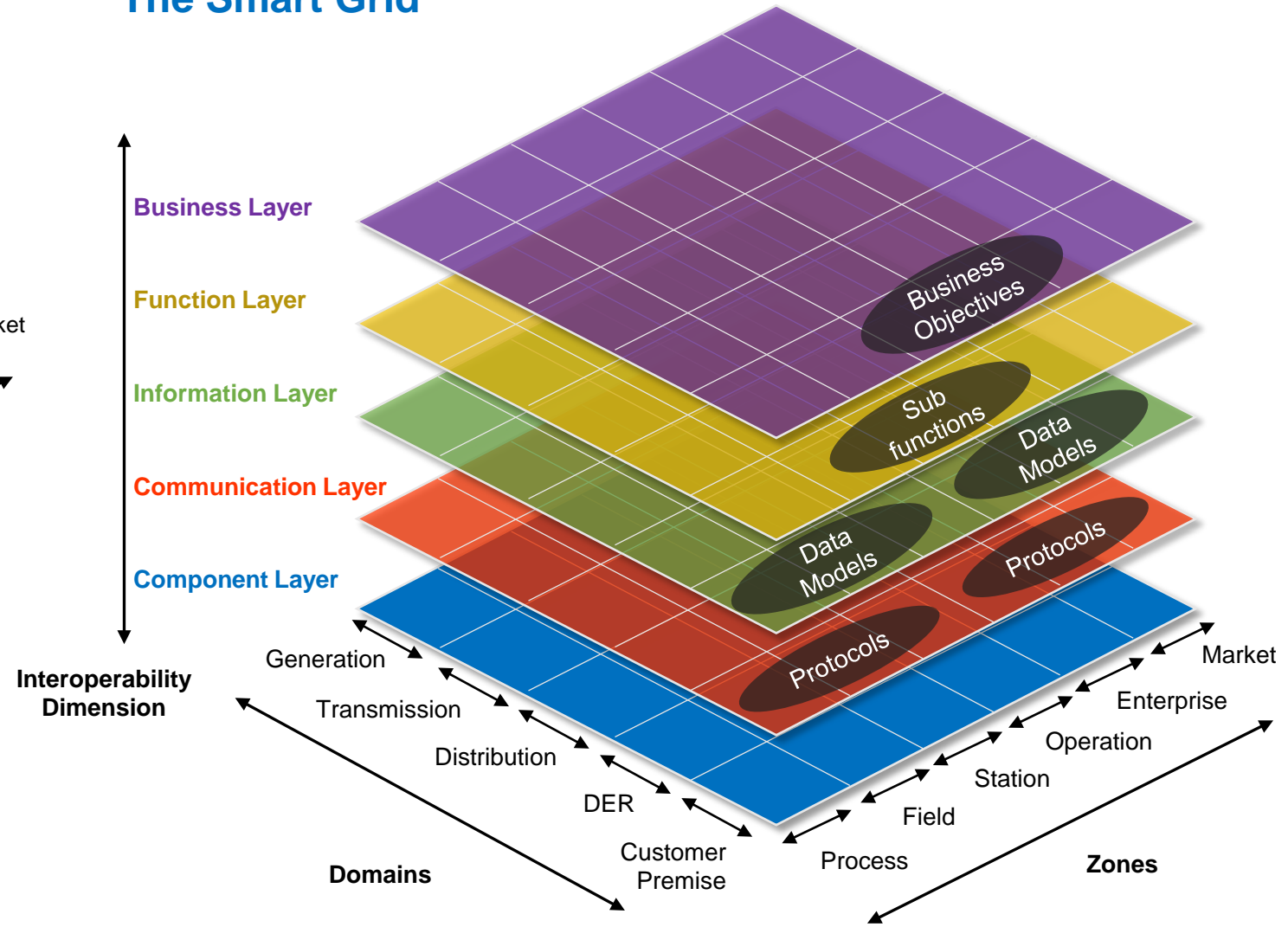
From demand driven generation to Supply Oriented Consumption

ICT : The Enabler of Smart Grid

The Energy Grid



The Smart Grid



Smart Metering Solution powered by ICT

SMART METERS



1Ø – WSM12DI
Single Phase
Smart Meter



3Ø – WSM34DI
Three Phase
Smart Meter



3Ø – WSM34TI
Three LTCT Phase
Smart Meter

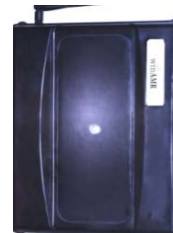


3Ø – WSM33HI
Three HT Phase
Smart Meter

COMMUNICATION DEVICES



Router/ Signal
Booster



Data Concentrator

MDAS



IRIS Head End Collection
Software

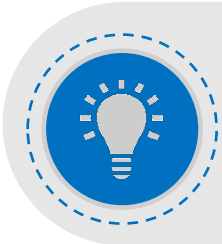
MDMS



Smart Metering Applications
Software

Smart and Sustainable Cities with Smart Meters

Powered by ICT



Smart Energy

Pre-paid Post-paid metering system
Energy audit
Renewable energy integration

Smart Measurements

Remote meter reading
Load profile based measurement (TOU/TOD)
Interval metering
Import-Export net measurement



Smart Management

Outage and Peak Load management
Demand side management including DR
Power quality management

Smart Operations

Remote connect / disconnect
Remote alerts (tamper) & notifications
Remote meter upgrades
Remote health check



Smart Meters: Benefits to Smart City Stakeholders



Increased Revenues

- Differential pricing
- Accurate bill generation
- Remote disconnection
- Pre-paid connection



Cost Savings

- Remote meter reading
- Demand prediction



Better Decision Making

- Load profiling
- Demand forecasting
- Real time business analytics



Greater Customer Satisfaction

- Accurate & timely billing
- Regular payment alerts
- Real time tracking
- Reduction in power bills

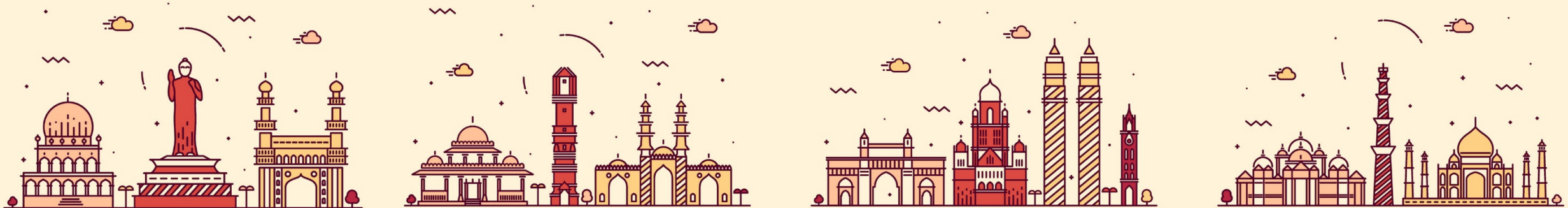
By Year 2050

843 Million

will be living in Indian cities

India needs to find **Smart and Reliable** Solutions

ICT acts as the back bone for enabling a Smart, Safe and Sustainable City





Smart Meters are the Building Blocks
for
Smart, Safe and Sustainable Cities