



**TATA POWER-DDL**

**TATA POWER DELHI DISTRIBUTION LIMITED**

A Tata Power and Delhi Government Joint Venture

# Smart Grid, Smart Meter, Micro Grid

## *The Gaps and Challenges*

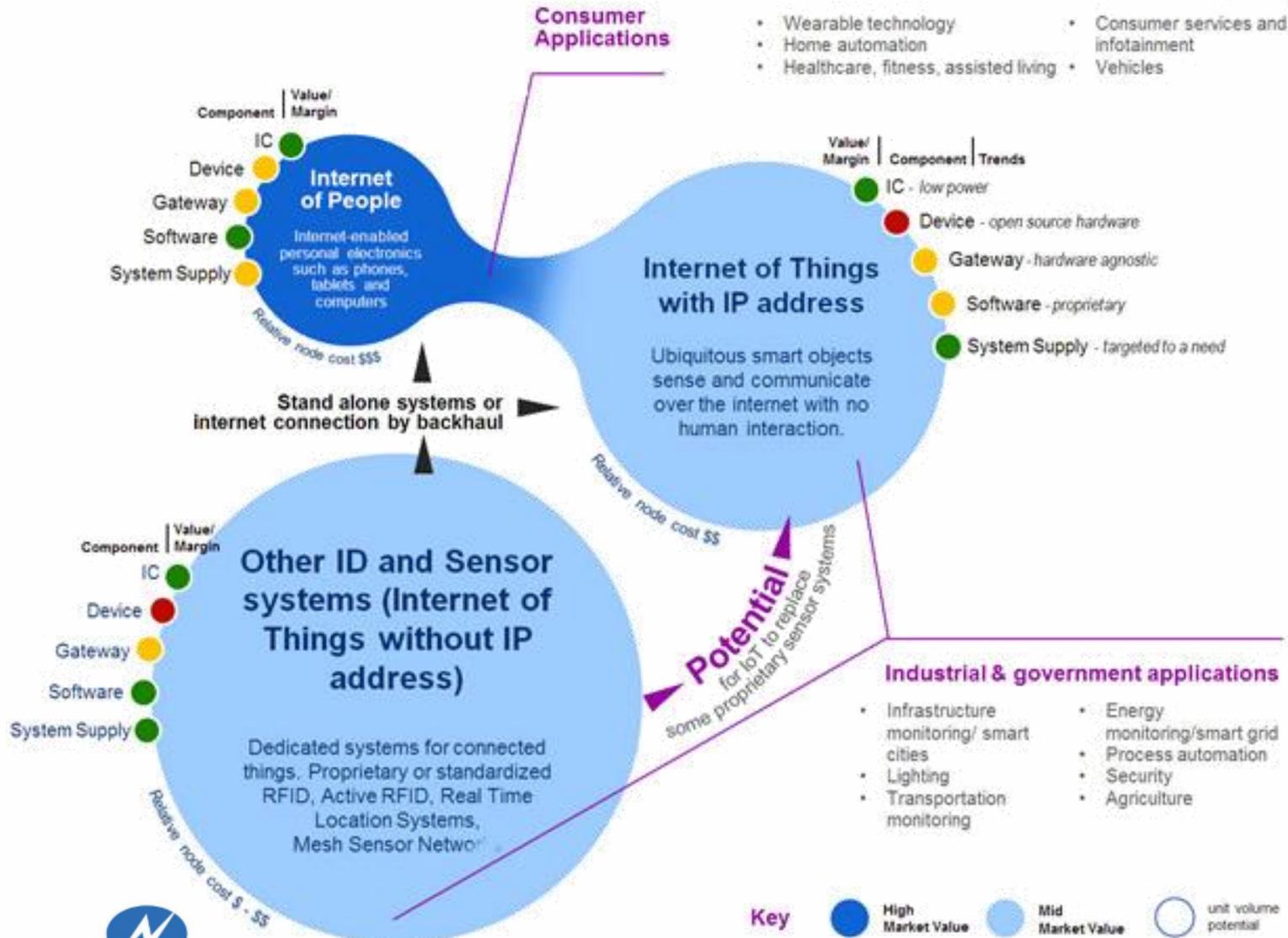
3rd Indo-European Conference on Standards and Emerging Technology

26<sup>th</sup> April 2018, The Lalit, New Delhi

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Head – Strategy, Business Excellence & Collaborations

# The Foundation for Everything

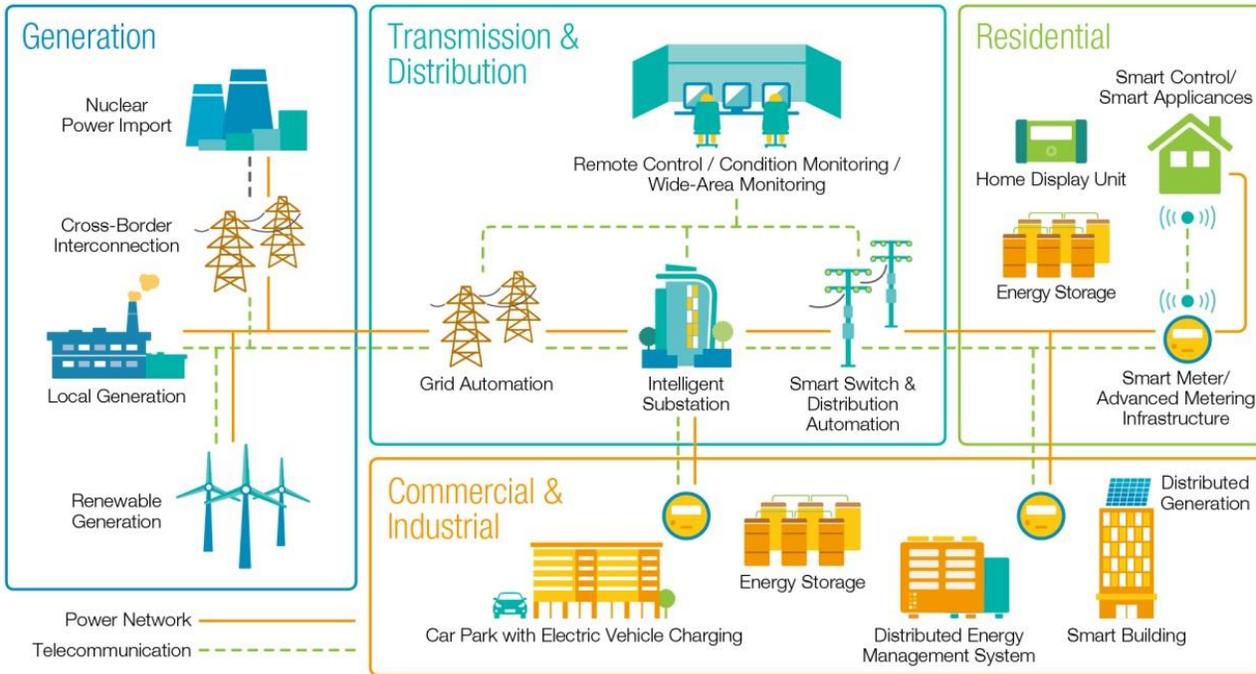


Standards will play a critical role in developing an integrated system which works seamlessly with horizontal and vertical integration

Opportunity to look towards decentralized systems operating in islands by leveraging data analytics and IoT

# Smart Grid

Smart Grid has been the buzz word for quite a few years, but  
*Have we realised its full potential?*



**The Grid of the Future**  
 (Source: CLP)

  
 The smart grid has been deployed in a silos, **how can we develop an interoperable platform across the functions?**

**01**

  
 Disruptive technologies have thrown up myriad of challenges, **can we integrate these technologies seamlessly into the network?**

**02**

  
 A smarter grid, will be vulnerable to cyber attacks which can cripple cities, **are the utilities setting up their defenses?**

**03**

# Smart Meter

**Progress** is driven by a need to optimize the grid and improve customer satisfaction rates.



2009 2012

The US saw an initial flurry of smart meter rollouts between 2009 and 2012 as a result of the recovery act that pumped **US\$3.4b** into smart grids.

We expect smart meter installations in the US to make steady progress over the next decade, reaching **91%** penetration by 2022.

As funding has dwindled, so have implementation efforts.



North America

**195m** meters will be installed by 2020 at a cost of **€35b** (US\$46b).



While initiated by early movers **Italy** and the **Nordic countries**, installation is being driven forward by massive regulatory targets in the UK and France.

The UK is on track to meet ambitious **2020 targets** with **53m electric and gas meters** set for installation by this deadline.

France is also making excellent **progress**, working toward an ambitious target of **90% smart meter penetration** (equating to 35m meters) through 2020.

Europe



**Brazil** leads the way with almost **38m smart electricity meters** to be installed by 2020.

In Brazil the need to **update outdated distribution systems** and improve reliability ahead of the 2014 FIFA World Cup were perhaps equal in importance to regulatory mandates.



South America

An aggressive smart policy in **China** will see that country dominate global smart meter deployment in the next 10 years.

**More than 435m devices are expected to be installed in China by 2020.**



Elsewhere in the region, **Japan**, while still at the beginning of its smart meter journey, could quickly become one of the world's smart leaders, with plans to roll out **78m by 2025**.

In **South Korea**, the Korea Electric Power Company (KEPCO) has awarded contracts worth **\$US1.3b** to install 10m smart meters by 2016 and aims to achieve **100%** smart meter coverage by 2020.

Asia-Pacific



Smart Meters Rollout would be a major initiative for the Indian Utilities in the coming years but, *Is it the nirvana for the utilities?*



Smart meter rollouts face resistance from various stakeholders, **can strategy be devised for the Indian Scenario?**

01



**Leveraging the data generated from smart meters** to provide consumers with VAS would be critical.

02



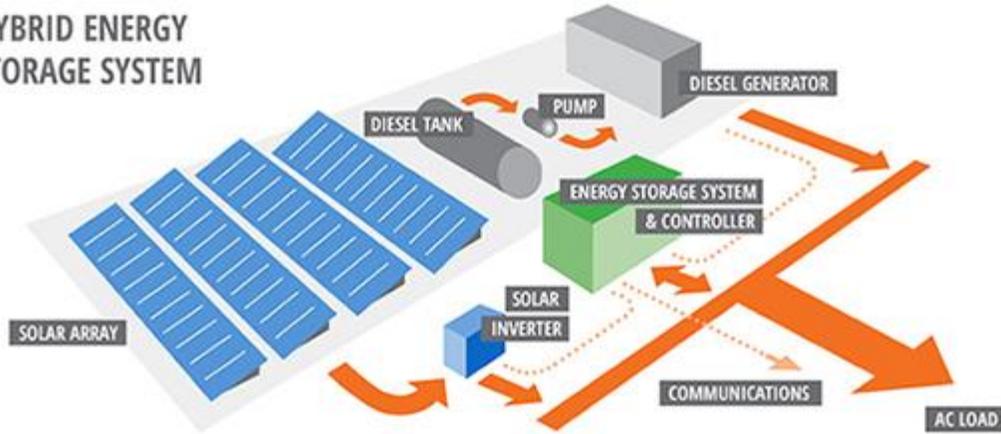
**What are the regulations and policies changes required to fulfil smart meter's potential?**

03

(Source: E&Y)

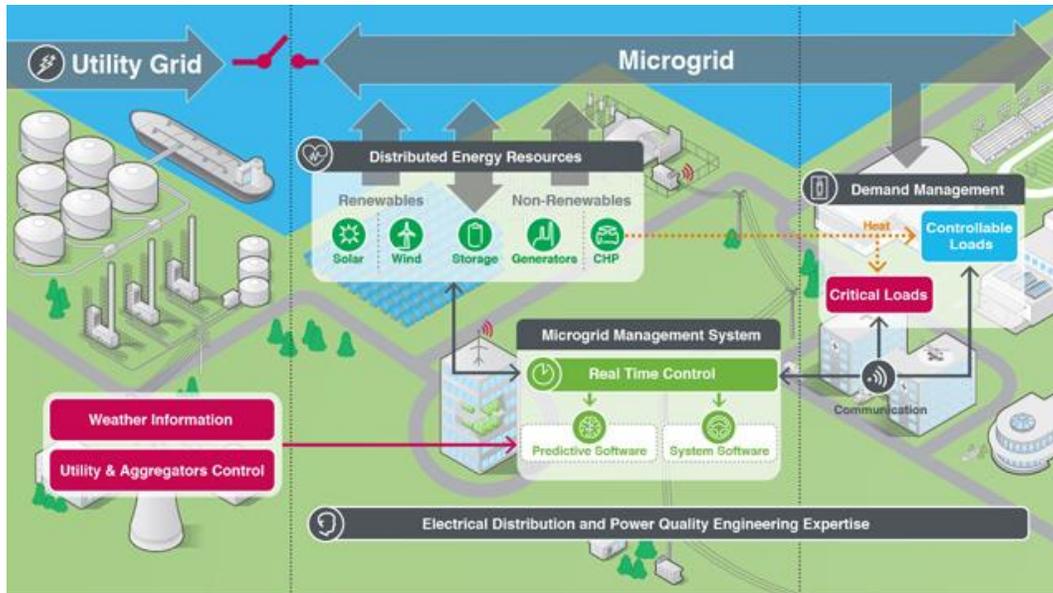
# Microgrid

## HYBRID ENERGY STORAGE SYSTEM



### Rural Microgrid

(Source: SA Energy Solutions)



### Urban Microgrid

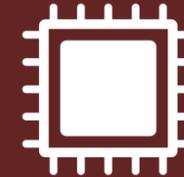
(Source: Schneider Electric)

More than 3.2 Crores Households still remain un-electrified, while electrified households face reliability and quality issues,  
*Microgrid may be the answer to all the problems!*



Business Models for off grid systems have been developed, but how do we develop a socio – economic model prioritizing consumers?

01



How do we leverage technology, to supply reliable and quality power at affordable cost?

02



Can islands of energy be created in urban centers leading to higher reliability and ease of operability?

03

Thank You



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with you *Non-Stop*