

TATA COMMUNICATIONS



CITY GAS DISTRIBUTION UTILITIES INTEGRATION

SMART GAS METERING

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TATA COMMUNICATIONS : WHO WE ARE

TATA COMMUNICATIONS



OUR CUSTOMERS CAN REACH
99.7% OF THE GLOBAL GDP USING
OUR NETWORK AND SERVICES



AMONG THE **FASTEST**
GROWING GLOBAL TIER-1 ISPS

#1

FOR ENTERPRISE
DATA IN INDIA 



#1
INTERNATIONAL
WHOLESALE
VOICE PROVIDER



WE CONNECT
4 OUT OF 5
GLOBAL MOBILE
SUBSCRIBERS



OVER

25%

OF THE WORLD'S INTERNET
ROUTES USE OUR NETWORK



#1

ON-NET MOBILE
SIGNALLING



WE'VE INVESTED **\$1.5 BN** BUILDING
THE ONLY WHOLLY-OWNED SUBSEA
CABLE NETWORK THAT CIRCLES THE GLOBE



WE'RE THE WORLD'S
5TH LARGEST
WHOLESALE INTERNET PROVIDER



#1

SUBMARINE
CABLE OWNER

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INDUSTRY RECOGNITION



Gartner Magic Quadrant

Tata Communications has been positioned as a “Leader” for the 7th consecutive year!



Leader in CDN Vendor Scorecard



THE MVNOs AWARDS

Best eSIM Provisioning Provider



Frost & Sullivan Best Practices

Winner in 8 categories

- Enterprise SIP Trunking service Provider of the Year
- Managed Multi Cloud Service Provider of the Year 2019
- Managed Security Services Provider of the Year (Telco)
- SDWAN Service Provider of the year
- Asia-Pacific Managed SDWAN Service Provider of the Year
- Cloud Interconnect Service Provider of the Year
- Unified Communication Service Provider of the Year
- Managed Video Services company of the Year



Customer Experience Leader of the Year 2019

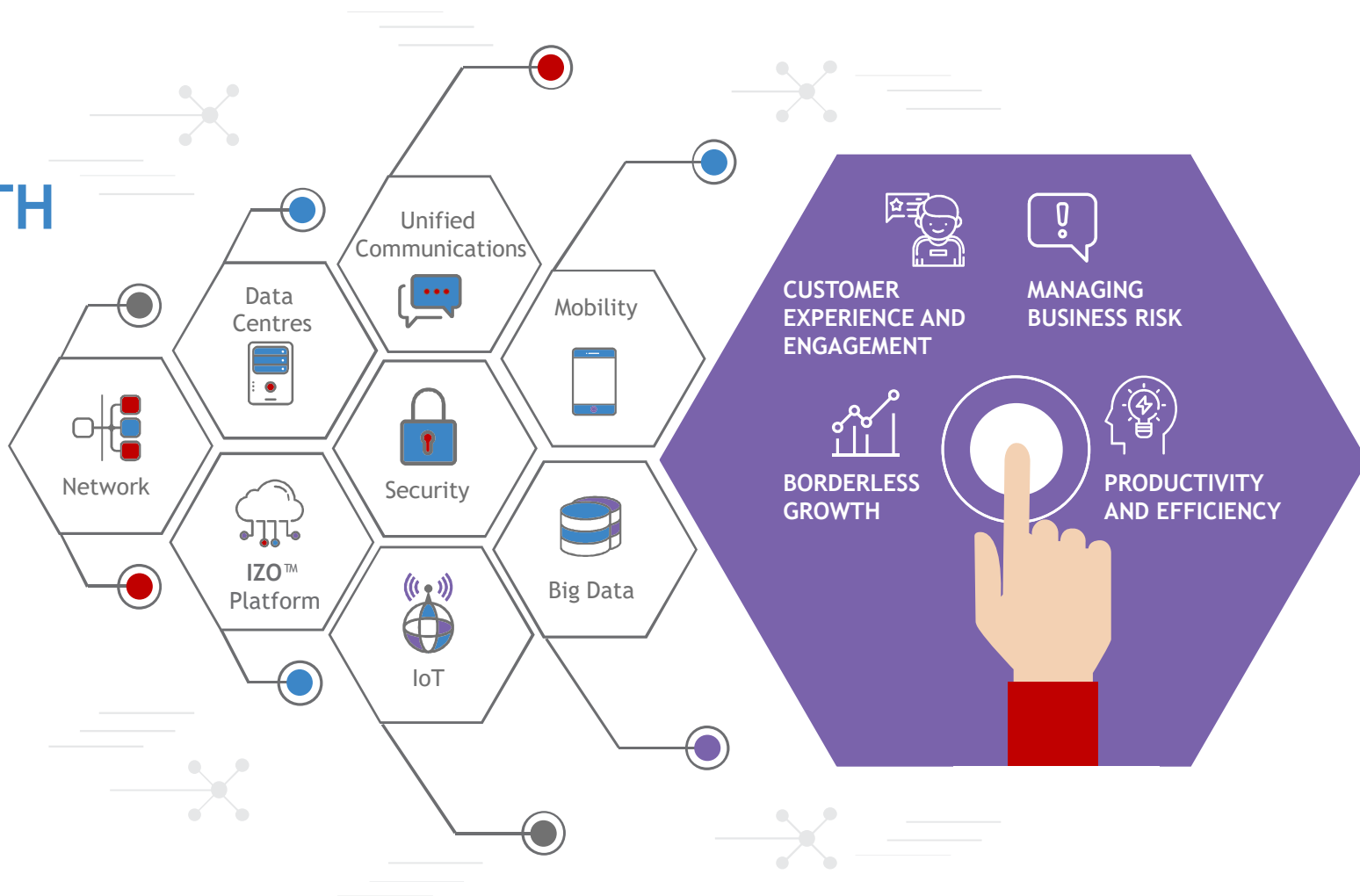


MEF Awards

SD-WAN Provider Of The Year - APAC

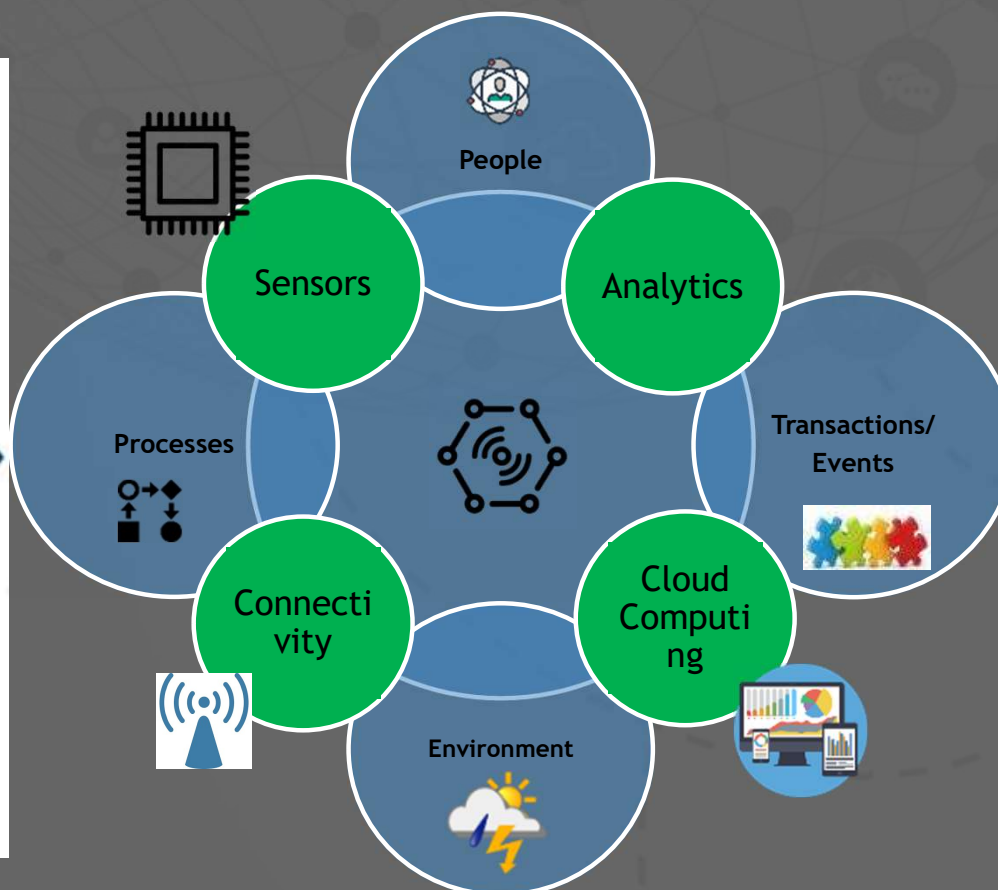
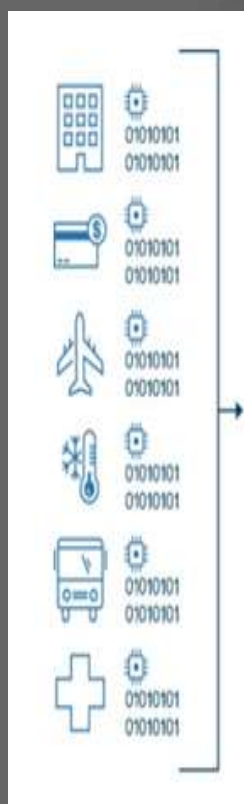
DO MORE WITH DIGITAL

Tata communications is your perfect strategic partner and is well poised to be an end-to-end orchestrator in the IoT revolution



IoT Ecosystem

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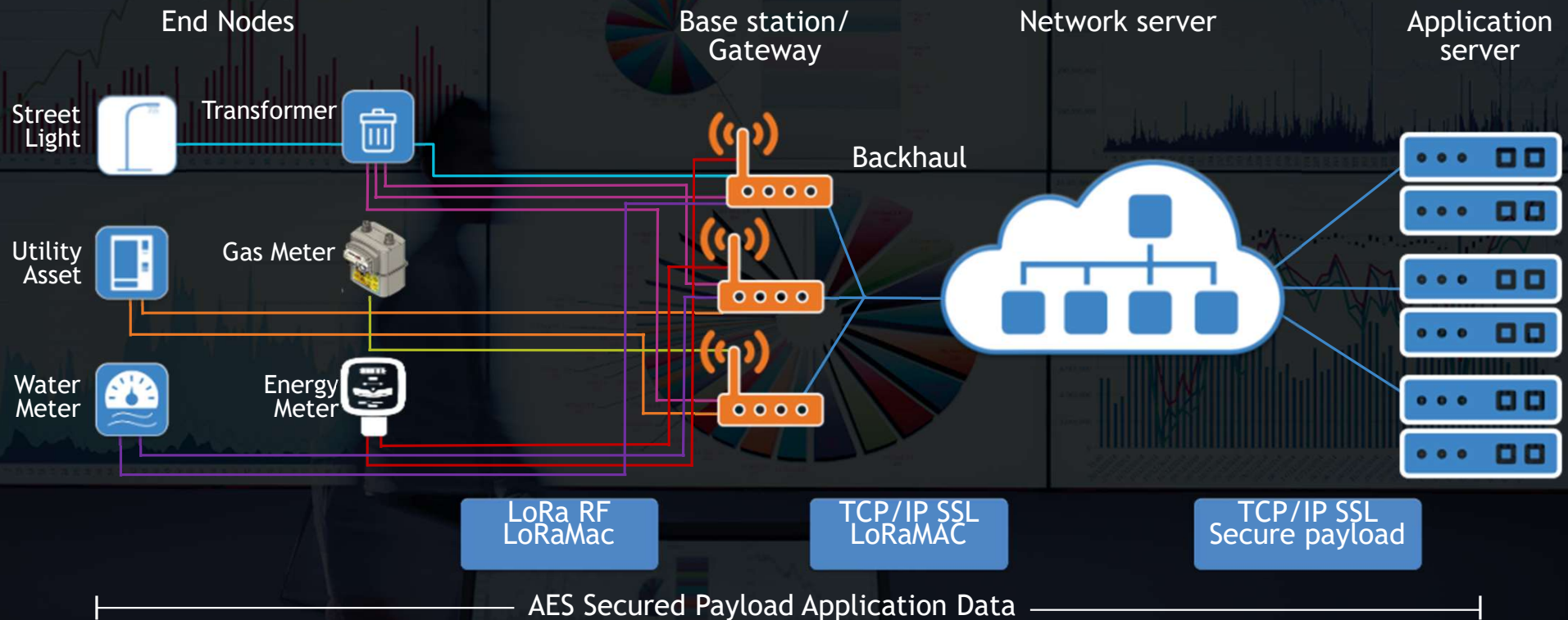
Machine Learning

Artificial Intelligence

- *360° view to analyze impact:*
 - *DETECT, PREDICT, PREVENT, PRESCRIBE & PRO-ACTION*
- *Empower physical objects to share DATA via applicable SENSORS*
- *Reliable & Secure CONNECTIVITY*
- *ISOLATED systems to INTEGRATED Utility*

HIGH LEVEL ARCHITECTURE

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LoRaWAN network is designed for low power consumption and high availability

**Mobile phone****IoT****Communication requirement**

Person to person

Machine to machine

Environment

Conducive

Extreme (heat, cold, dust, pressure)

Range requirement

Short Range (to nearest cell tower)

Long range (to rural / industrial area as well)

Device power requirement

Very High

Very Low

Device throughput

High

Low

IoT devices are fundamentally different

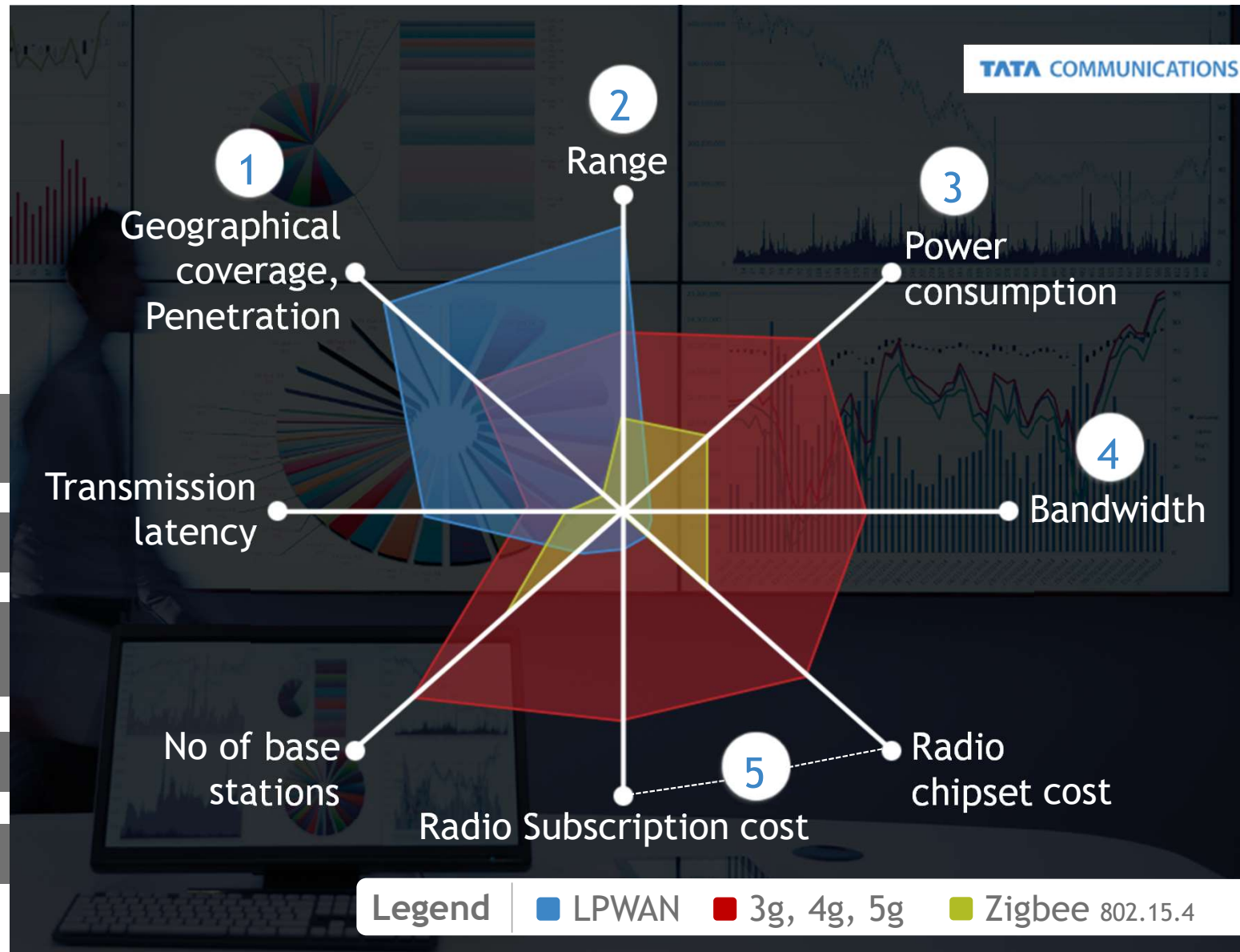
IoT Devices

70% Battery operated

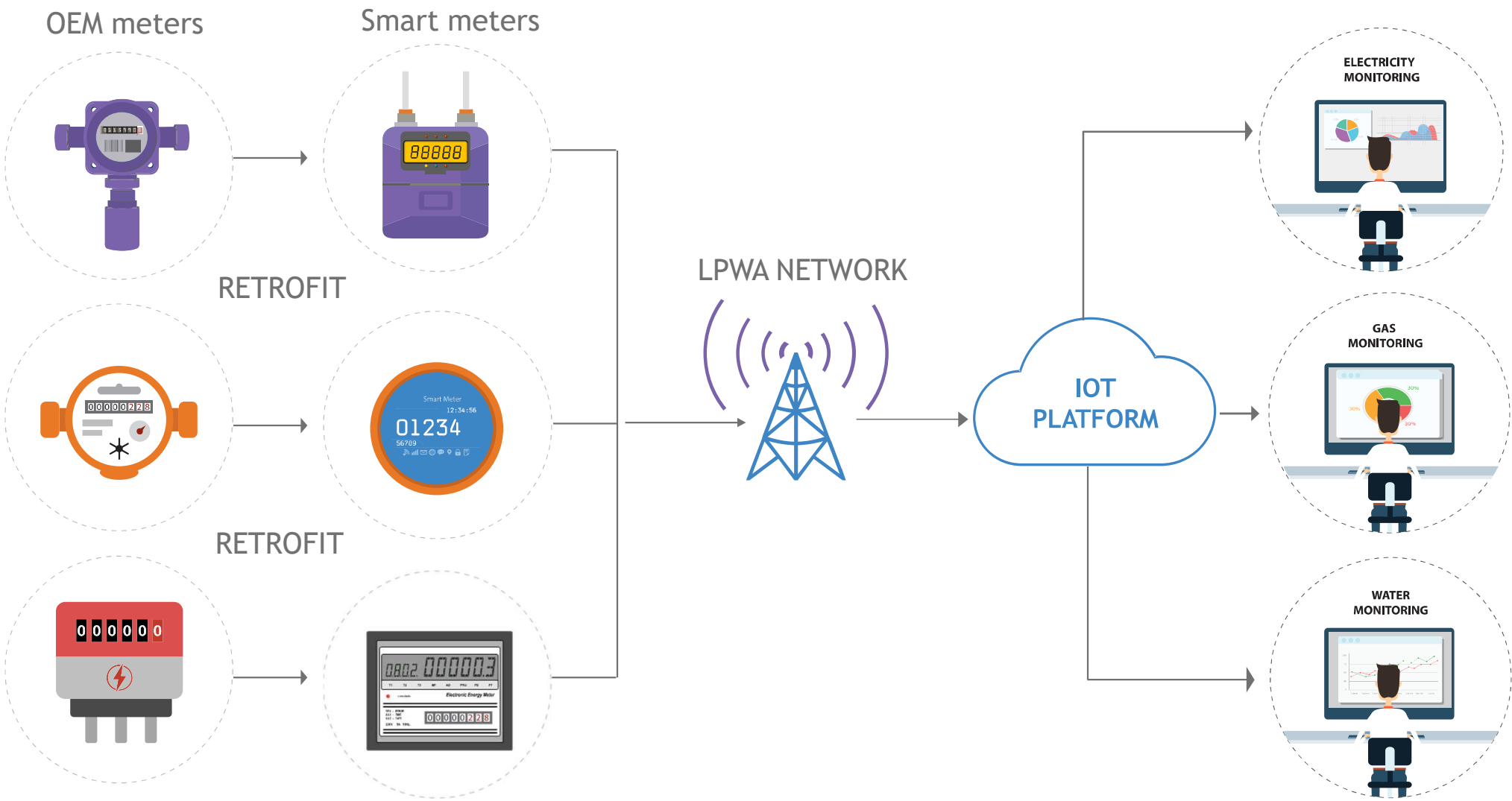
90% Low throughput

5 Reasons why LoRaWAN makes IoT a reality

- 1 Geographic coverage & Penetration
- 2 Highest Range
- 3 Lowest power consumption
- 4 Optimal bandwidth
- 5 Lowest cost

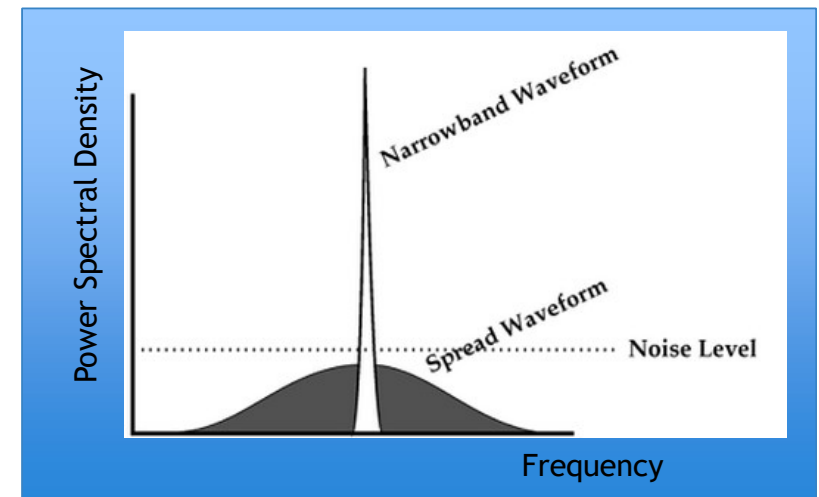


SOLUTION ARCHITECTURE

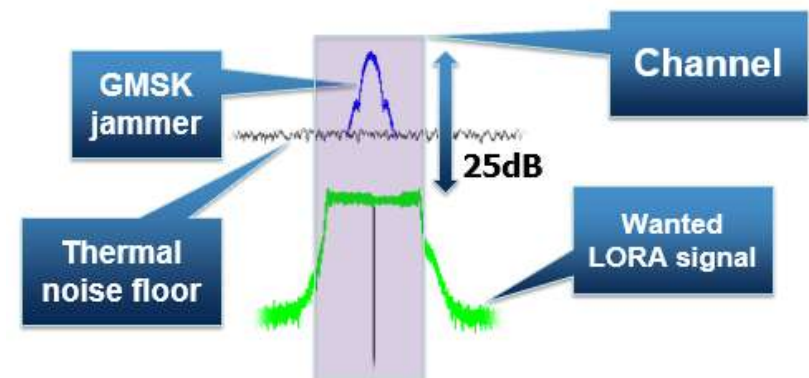


LORAWAN FEATURES & KEY DIFFERENTIATOR

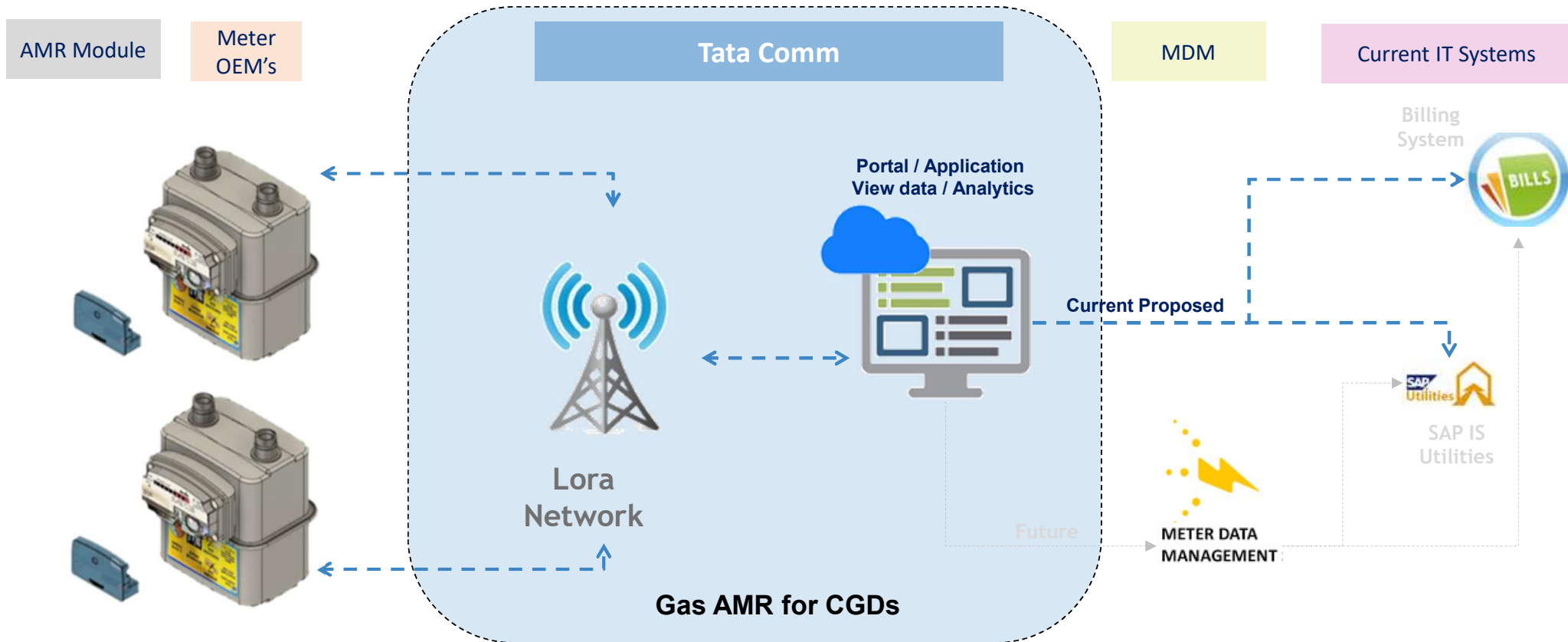
Class	Application
A “All”	Bi-directional communications whereby each end-device’s uplink transmission is followed by two short downlink receive windows. Downlink communications from the server at any other time will have to wait until the next scheduled uplink. Most energy efficient class.
B “Beacon”	Class B devices open extra receive windows at scheduled times. In order to keep synchronization and schedule receive windows, devices receive a time synchronized Beacon from the gateway (every 128s).
C “Continuous”	Class C nodes have nearly continuously open receive windows, only closed when transmitting



SF	SNR	Data rate	TOA for 10Bytes payload	Relative power consumption
SF12	-20 dB	293 bps	1480 ms	24,7
SF11	-17,5 dB	537 bps	740 ms	12,3
SF10	-15 dB	977 bps	370 ms	6,2
SF9	-12,5 dB	1758 bps	200 ms	3,3
SF8	-10 dB	3125 bps	100 ms	1,7
SF7	-7,5 dB	5469 bps	60 ms	1



GAS METERING SOLUTION



CHALLENGES WITH EXISTING SOLUTIONS



Walk By/drive through:

- Only services basic automation.
- Poor frequency of data
- No value added solutions like proactive maintenance



Door to Door:

- Not scalable
- Huge manpower requirement
- Customer unavailability leading to multiple visits
- Invasion of privacy/security concern to resident/personnel



Zigbee/Proprietary RF:

- Maintenance of multiple small network environments
- Data concentrator unit requirements:
 - Cost of DCU, Electricity, real estate rentals
- Challenges in scale deployments



GSM:

- Gas meters are non-powered while GSM based solutions drain power
- SIM Management challenges

BENEFITS OF TATA COMMUNICATIONS AMR SOLUTIONS

Rapid, scaled deployments across India using pan-India N/W

Insights through interactive dashboard

Low maintenance – smart unit battery lasts for years

Monitor tampering and theft through alerts

Avoid labour-intensive manual metering and inaccuracies

Reduce customer complaint calls

Reduce meter reading intrusion for Customer

Better reconciliation between distribution points/loss tracking

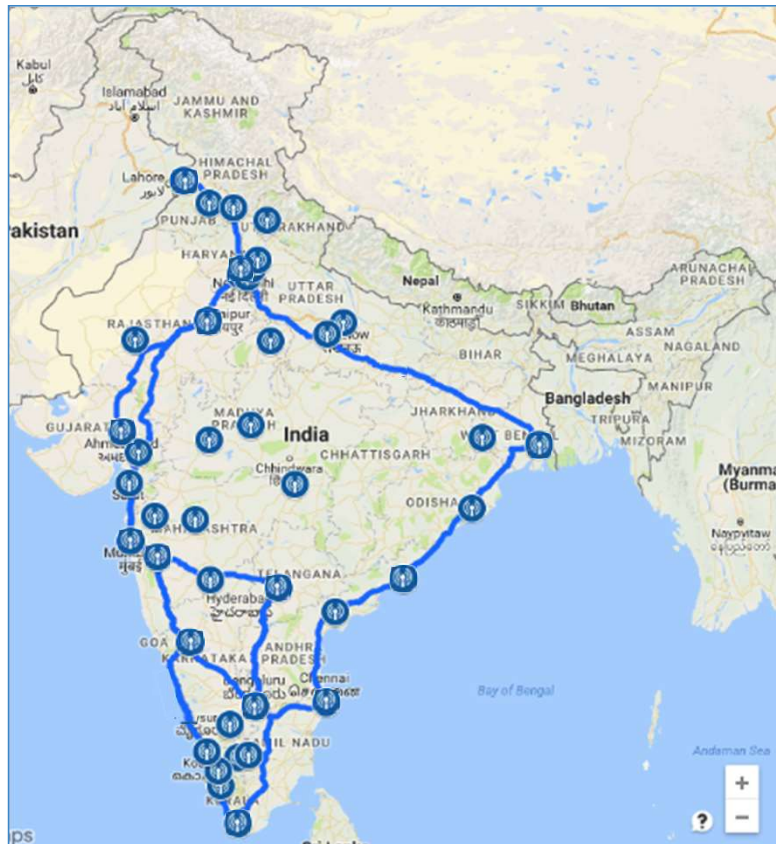
Promote energy conservation by providing consumption details to customers

End-to-end data security



Reduced Operational Costs & Increased Customer Satisfaction





List of cities

- | | |
|---|--------------------|
| 1 Mumbai | 20 Dehradun |
| 2 Bengaluru | 21 Jodhpur |
| 3 NCR (New Delhi, Gurgaon, Noida, Faridabad, Ghaziabad) | 22 Kanpur |
| 4 Pune | 23 Amritsar |
| 5 Bhubaneshwar | 24 Ludhiana |
| 6 Ahmedabad | 25 Chandigarh |
| 7 Bhopal | 26 Kolkata |
| 8 Indore | 27 Hubli - Dharwad |
| 9 Gwalior | 28 Mysore |
| 10 Aurangabad | 29 Vijayawada |
| 11 Nagpur | 30 Hyderabad |
| 12 Solapur | 31 Vishakhapatnam |
| 13 Nasik | 32 Chennai |
| 14 Surat | 33 Coimbatore |
| 15 Baroda | 34 Tiruppur |
| 16 Jaipur | 35 Kochi |
| 17 Jamshedpur | 36 Thrissur |
| 18 Lucknow | 37 Calicut |
| 19 Meerut | 38 Trivandrum |

Highways

- Delhi - Jaipur - Ahmedabad - Mumbai
- Amritsar - Delhi - Varanasi - Kolkata
- Mumbai - Hyderabad
- Mumbai - Pune - Bangalore
- Kolkata - Visakhapatnam - Chennai
- Bangalore - Chennai
- Bangalore - Hyderabad
- Mumbai - Trivandrum (Via Bangalore & Via Hubli, Mangalore)



THANK YOU