



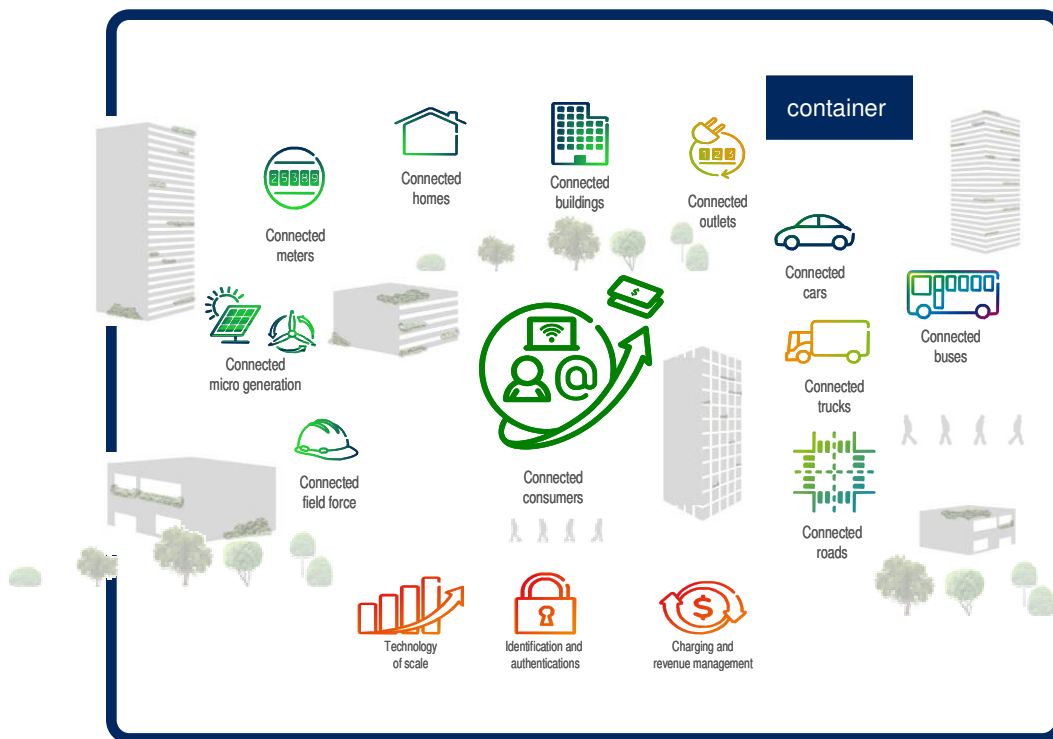
# MACHINE-TO-MACHINE COMMUNICATION NETWORKS FOR SMART GRID APPLICATIONS

Željko Popović

# ERICSSON VISION



## NETWORKED SOCIETY



## 50 BILLION CONNECTED DEVICES 2020



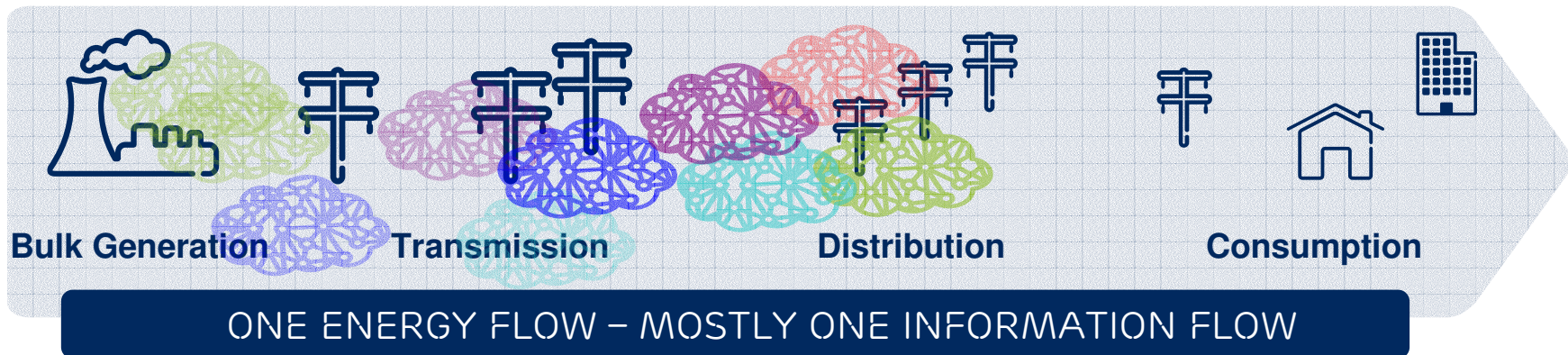
INDUSTRY VERTICAL IS A VITAL PART OF ERICSSON'S VISION



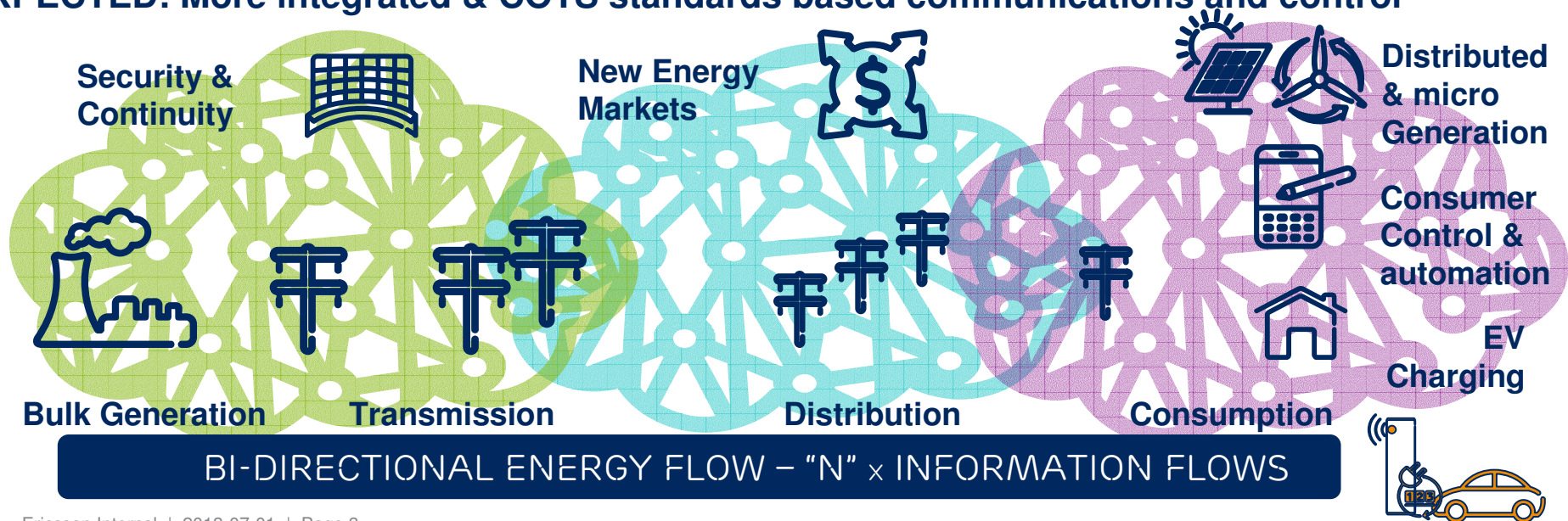
# GRID COMMUNICATIONS EVOLUTION ... TO MEET THE NEEDS OF TOMORROW



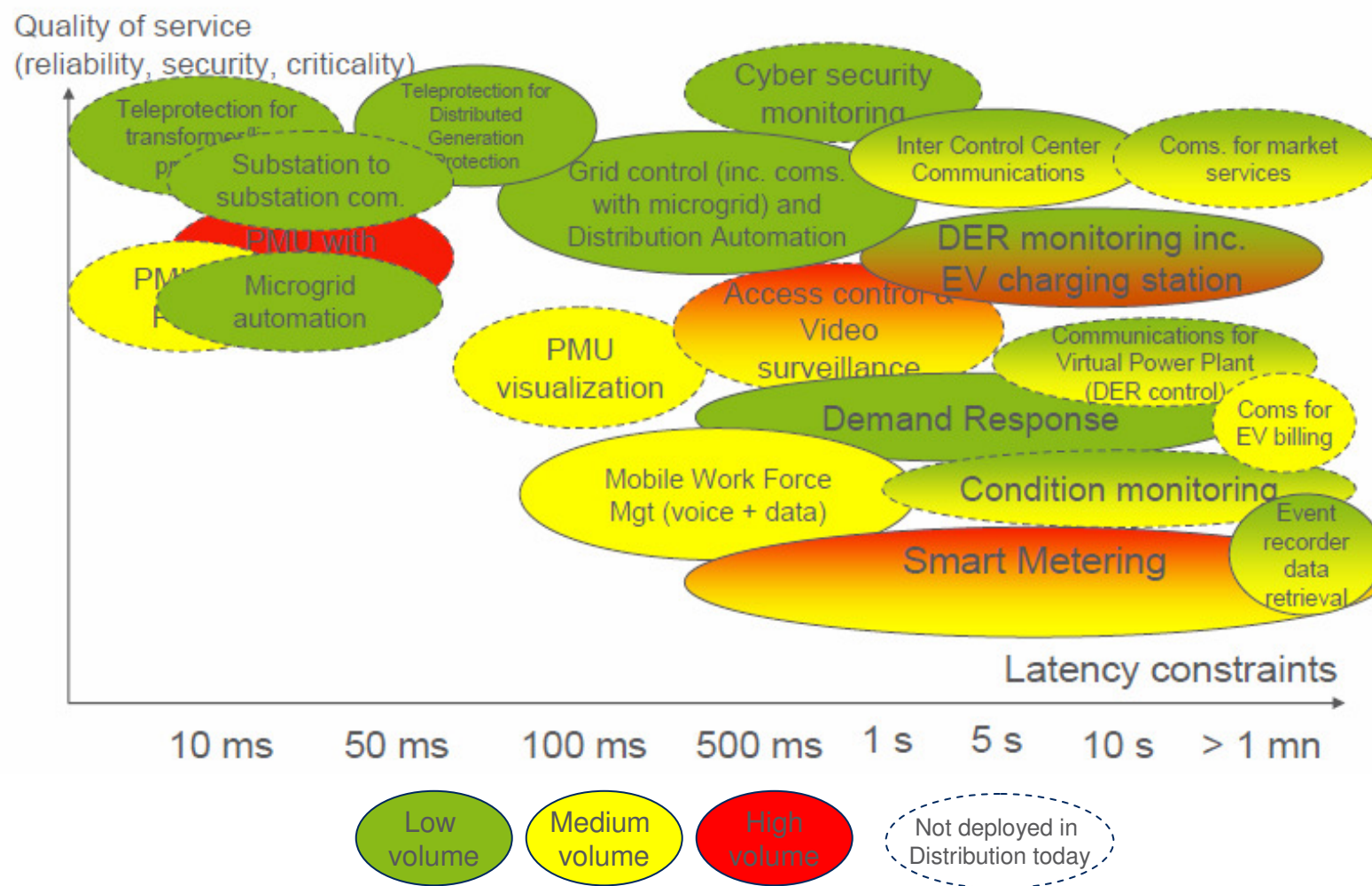
**TODAY: Many stand alone and proprietry IT and Communications Solutions**



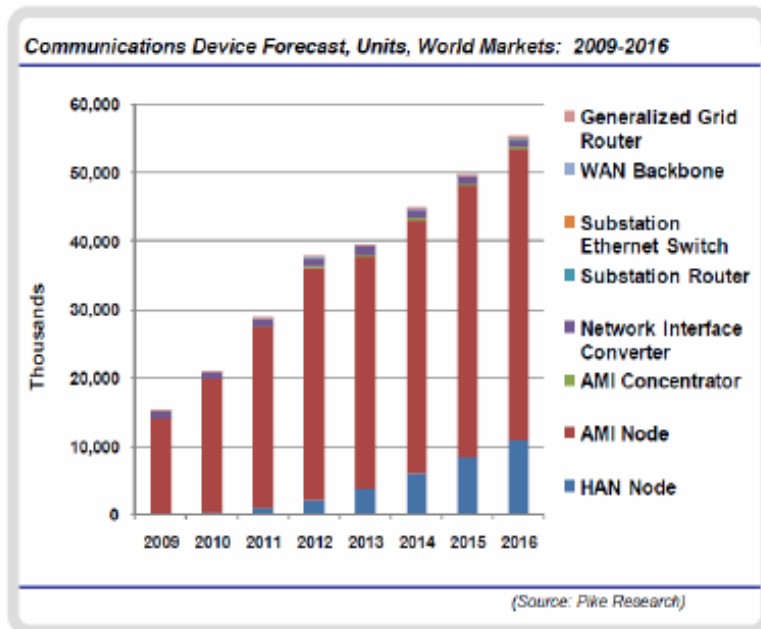
**EXPECTED: More integrated & COTS standards based communications and control**



# SMART GRID COMMUNICATIONS REQUIREMENTS

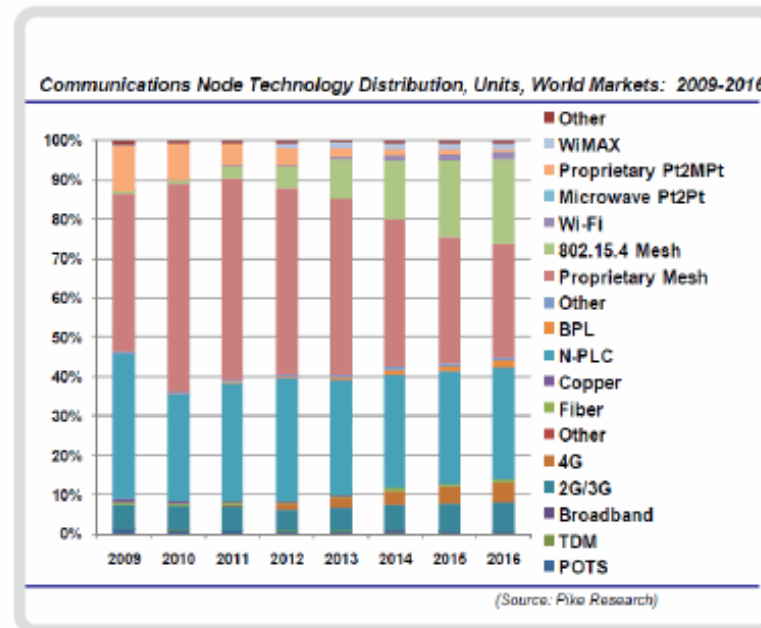


# WHICH COMMUNICATIONS SOLUTIONS TO DEPLOY?



Communications devices to double in next five years

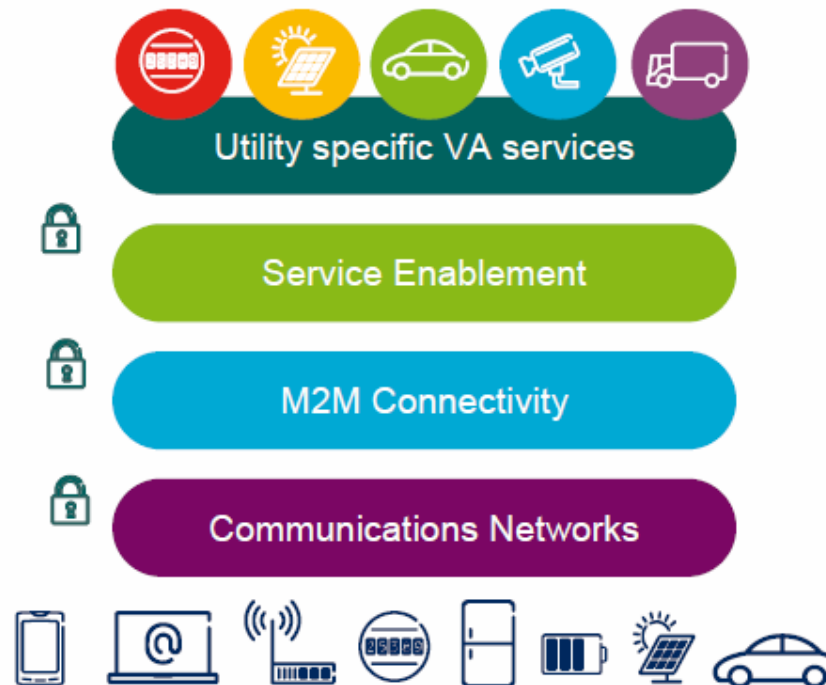
And number of technologies is mind-boggling



# INNOVATION IN ICT ARCHITECTURE

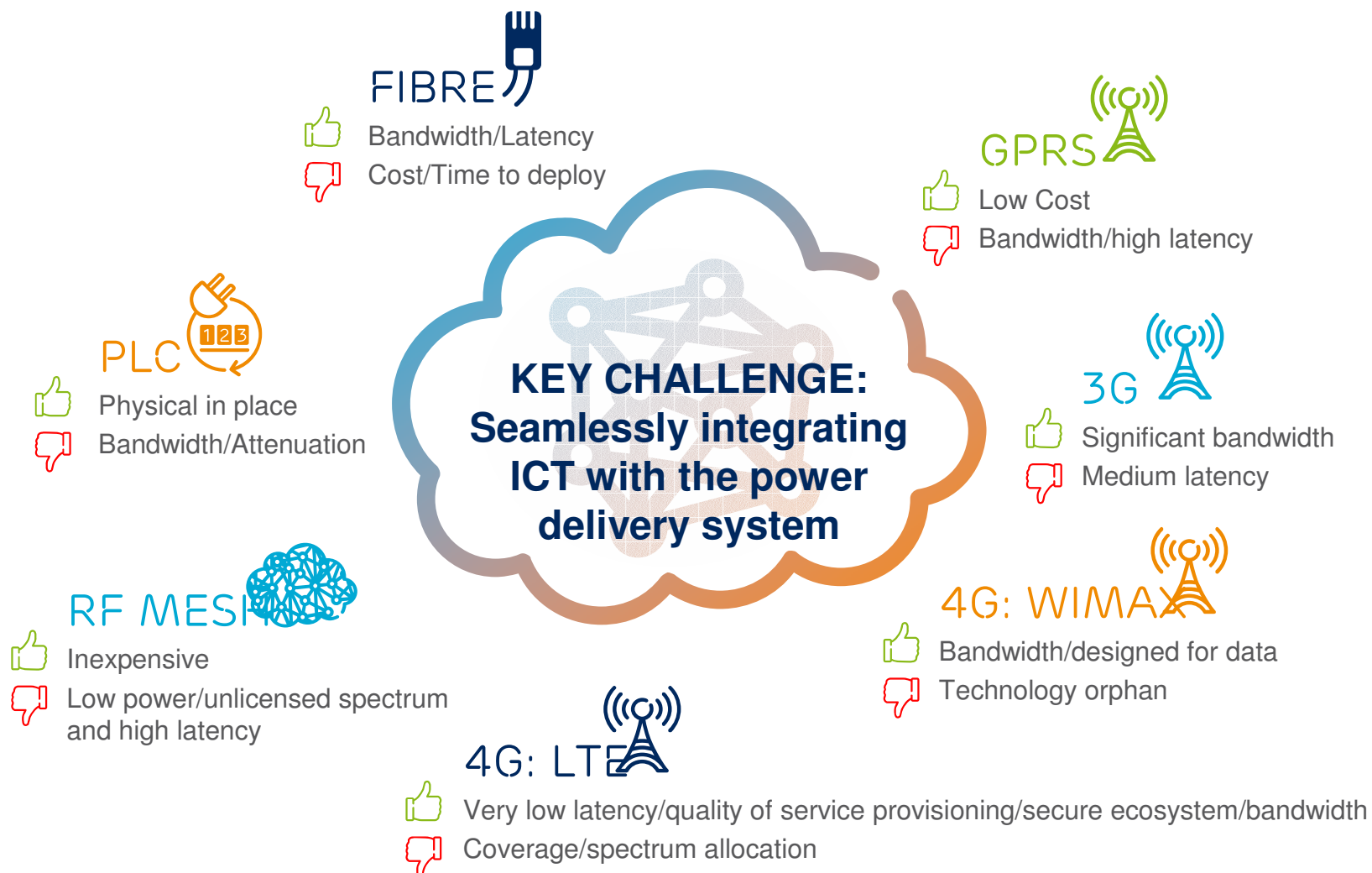
## Objective of each layer

- › Manage complex and distributed applications
- › Hide underlying complexity
- › Provide flexible and cost efficient connectivity



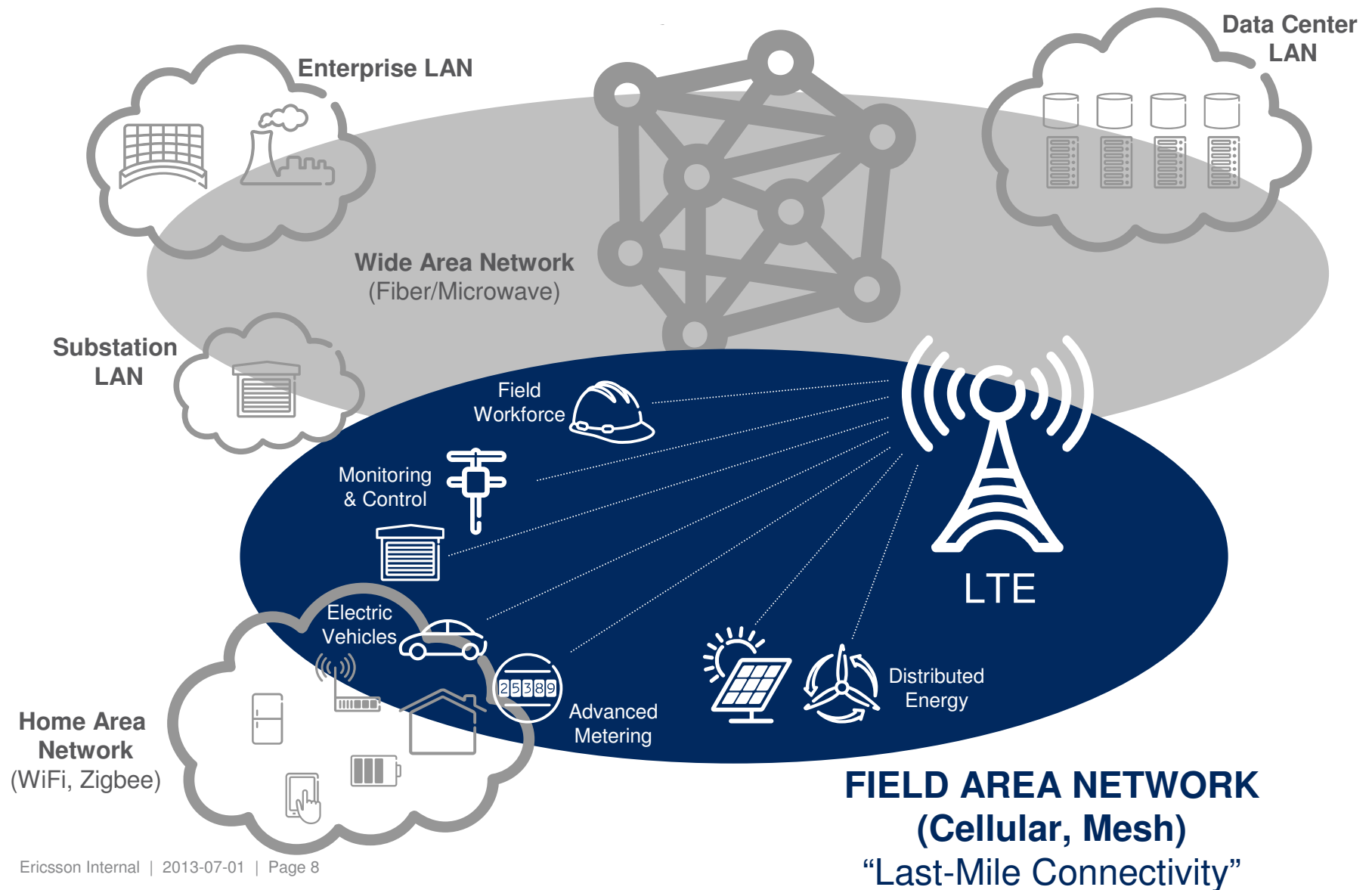
**MACHINE-TO-MACHINE PLATFORM FOR SMART GRID:  
HORIZONTAL APPROACH AND END-TO-END SECURITY**

# INVESTING IN THE RIGHT COMMUNICATIONS TECHNOLOGY



CAN LTE MEET INDUSTRY REQUIREMENTS?

# SMART GRID COMMS ARCHITECTURE



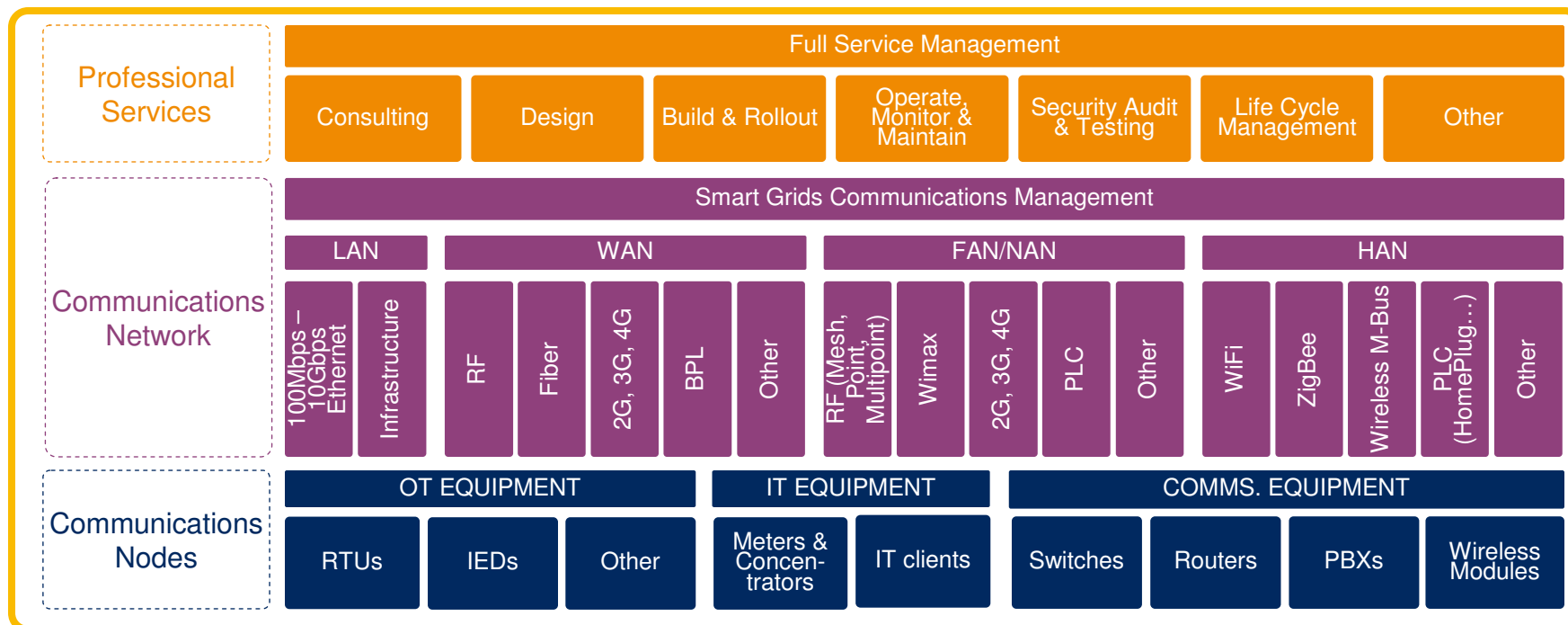


# COMMUNICATIONS TECHNOLOGY

## ERICSSON BUILDING BLOCKS VIEW



SYSTEMS

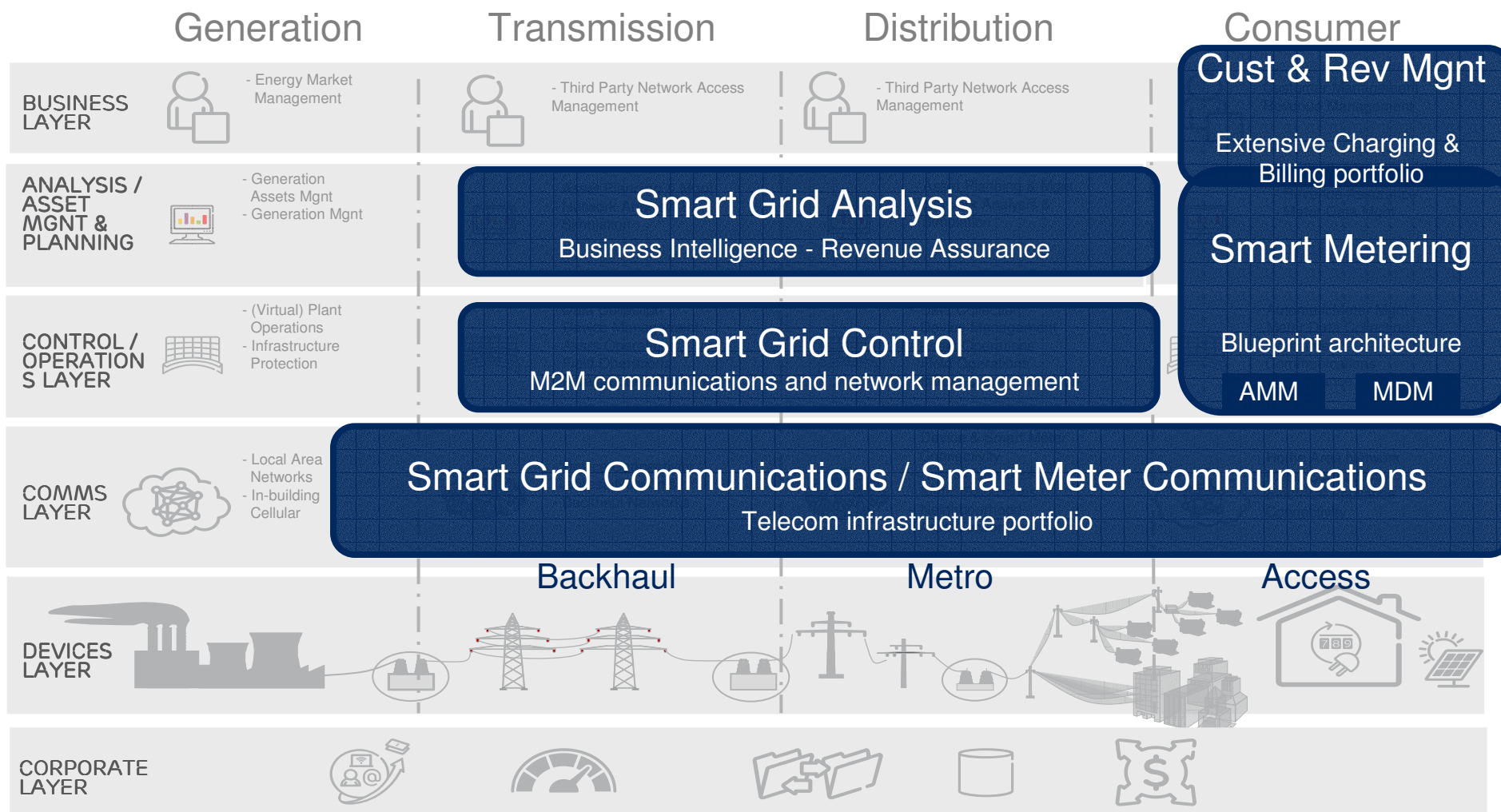


DEVICES



Leverage on investment, facilitate IT/OT convergence, maintain maximum flexibility

# OUR CONTRIBUTION TO THE SMART GRID



# SELECTED UTILITY REFERENCES

## ERICSSON



## SMART METERING

### > Acea, Italy

- Smart Metering / AMM
- 1.6 Million smart electricity meters
- 10 years managed service contract



### > Hydro Quebec, Canada

- Smart Metering / MDM
- Designed for 4 Million Smart Meters
- Prime Integrator role



### > Estonia

- 630.000 meters
- Turn-key supplier of e2e solution
- Operation of AMR in first year



### > Federutility, Italy

- Smart Metering / AMM
- 140.000 smart el. meters
- 5 years hosted service contract, 8 DSOS



## SMART GRID COMMUNICATION

### > Energy Australia

- Design & deployment of private 4G network for Smart Grid & Field Force Communications
- Smart Village Project



### > Endesa, Spain

- Managed nationwide telecom infrastructure
- Smart Grid / Smart City Malaga: Substation connectivity



### > Stockholm Royal Seaport

- Smart Grid / Smart City Pilot
- Part of R&D Consortia, comms infrastructure, Electric Vehicle Charging
- Partnership with Fortum, ABB



### > ESB, Ireland

- Process and Technology Consulting
- Implementation of best practice strategic network master planning framework and plan



## R&D PROJECTS

- Demand Side Management
- integration of renewable, distributed energy generation
- Large R&D consortias
- Leading comms infrastructure workgroups



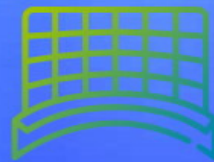
# ERICSSON IN INDUSTRY STANDARDS BODIES



- › **European Union Joint Working Group CEN/CENELEC/ETSI / Smart Grid Coordination Group**
  - Mandate M441 Smart Meters: involved in smart metering standards roadmap
  - Mandate M490 Smart Grid – active in groups First Set of Standards, Use Cases and SG Architecture
- › **ESMIG (European Smart Meter Industry Group)**
  - Promotion of Radio Access technologies & convergent APIs
- › **ETSI M2M**
  - Leading on M2M APIs & capabilities; objective is to reuse applicable M2M work for Smart Grid (in relationships with European mandates M441, M490 and M468 Electric Vehicle)
- › **NIST**
  - Ericsson very active in PAP01 (architecture) and in PAP 02 (reuse of radio technology in particular Short Range Radio within the Home and applicability on 4G/5G radio technology for Smart Grid)
- › **IEEE**
  - Involved in IEEE P2030 (Smart Grid Interoperability), IEEE P1547 (Electric Power Systems Interconnect), IEEE P1377, IEEE P1703 (metering communications protocol – WiFi, Zigbee, BLP), IEEE PC37.238 (power profile)
- › **Other groups involved in smart grid in which Ericsson participates**
  - Utilities Telecom Council (UTC) US and Europe, GSMA (Why Mobile for utilities report), GridWise Architecture Council (GWAC), CCSA TC10 IoT (China), IEC, IETF, TIA 51 on Smart Utilities Network, ATIS, as well as various national smart grid platforms and initiatives



# HOW DO YOU THINK A TOTALLY NEW THOUGHT?





**ERICSSON**