



World Class Standards

ETSI GREEN AGENDA

26 November 2009

Smart Grids, Smart Meters, Electrical Cars
A challenge to ICT Standardization



ETSI Board "Smart Grids" Champions
Bernard Dugerdil (Freescale)



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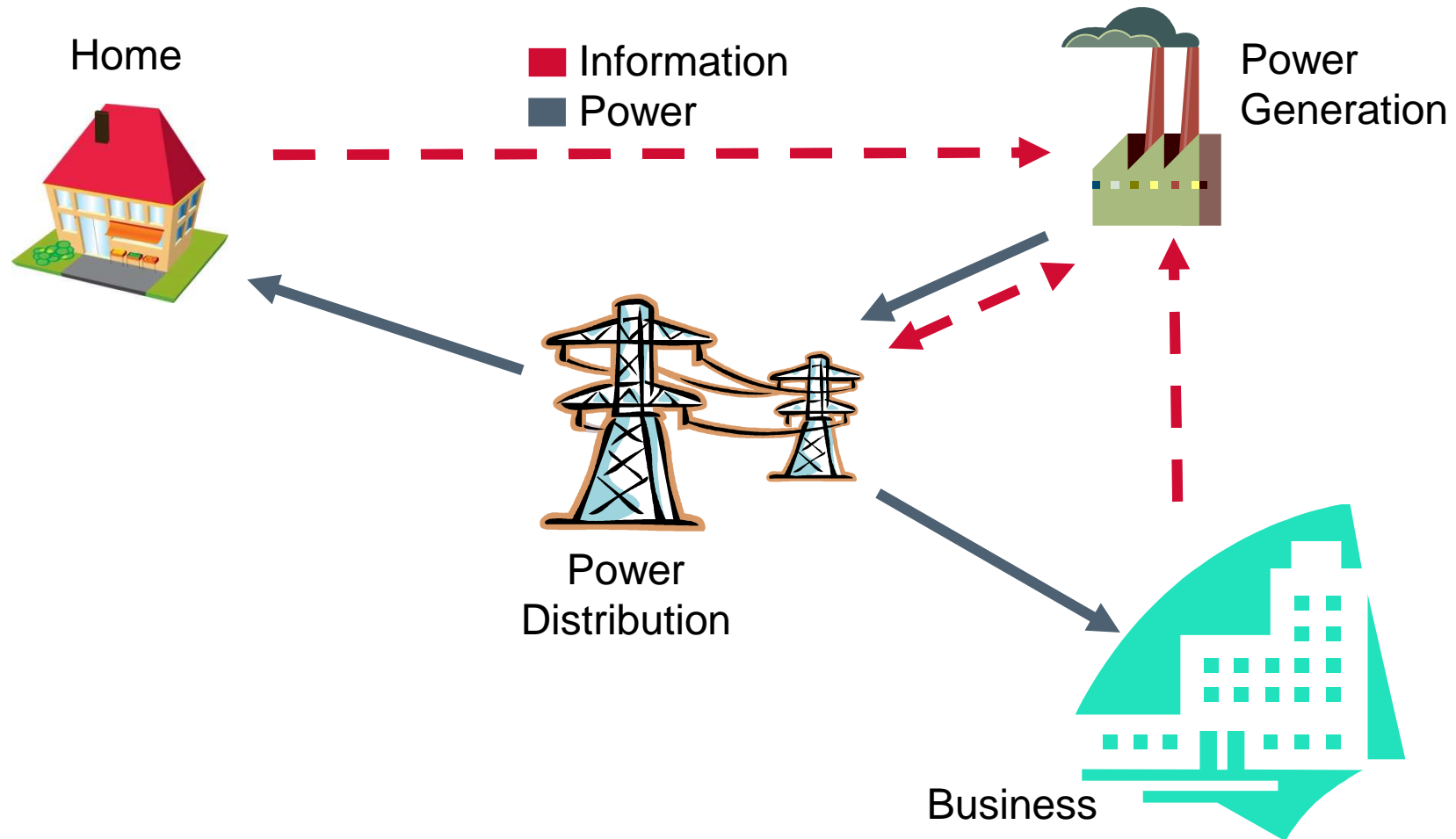
World Class Standards

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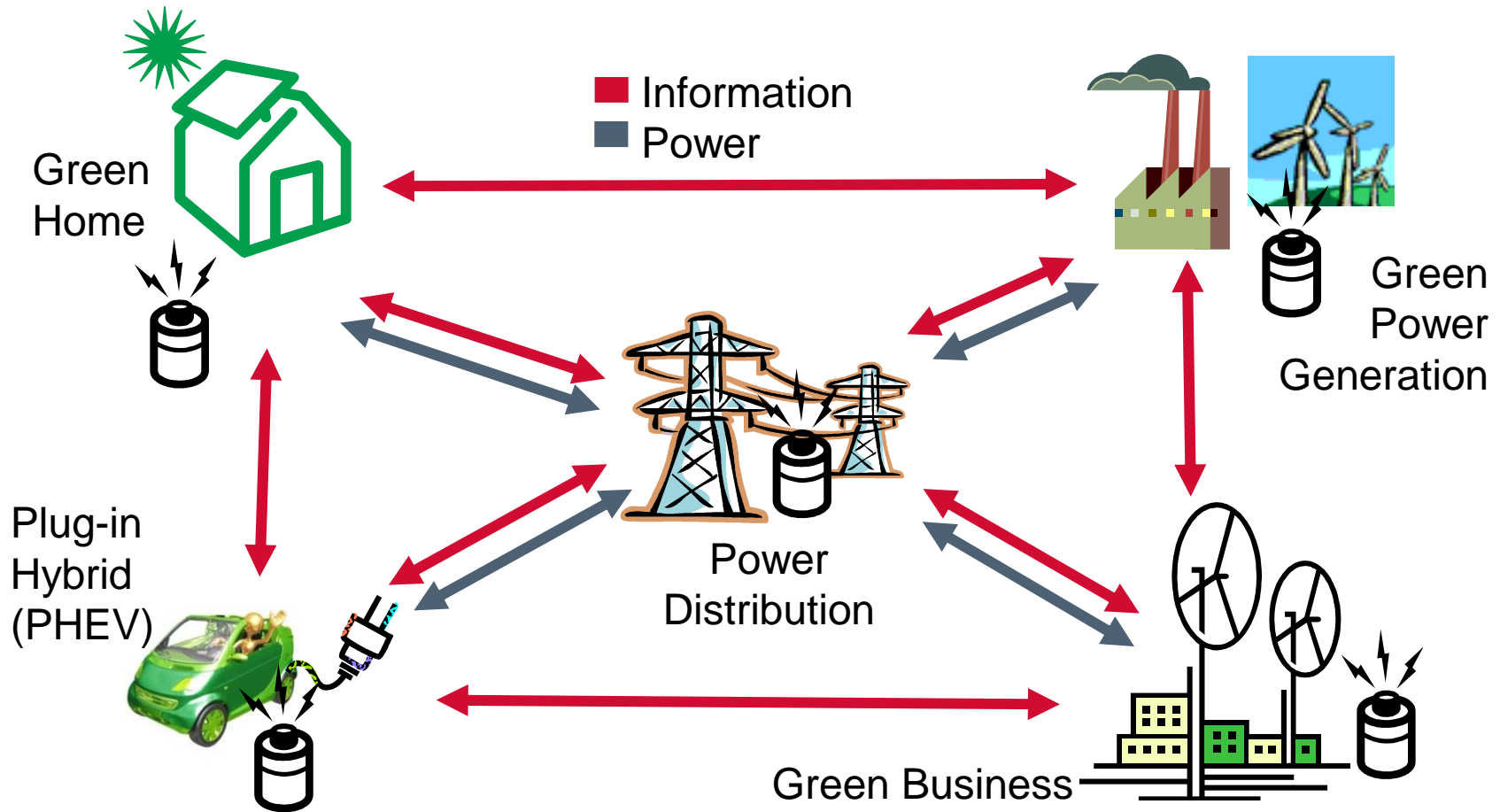
Smart Grids

ETSI Green Agenda Seminar – Smart Grids

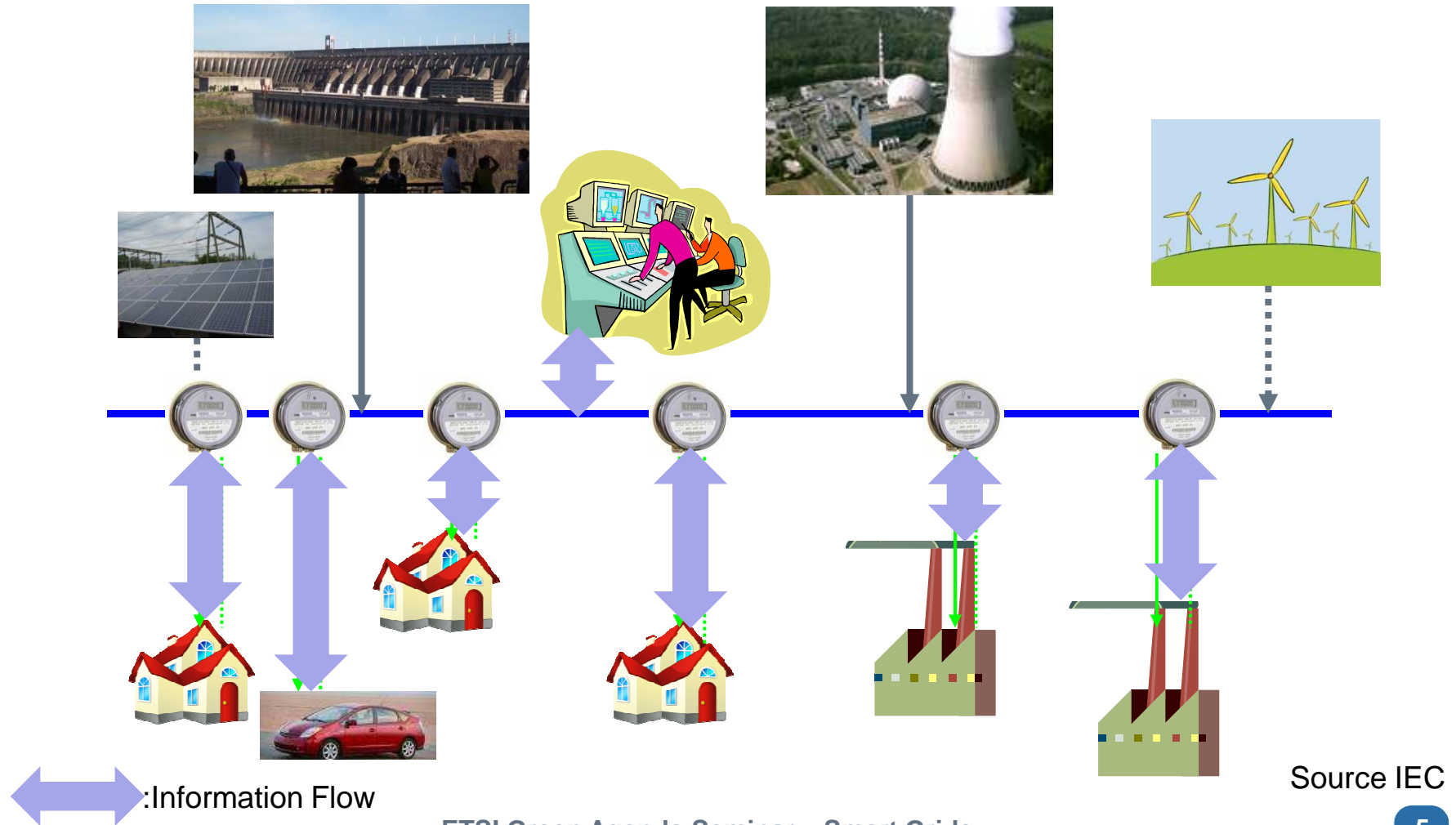
A Simplified View of “Smart Grid” : Today One-way Flow of Power and Information



The Simplified “Smart Grid” : Tomorrow Full Bi-directional Flow of Energy & Information



Power distribution, Smart Meters, Smart Grids



Source IEC



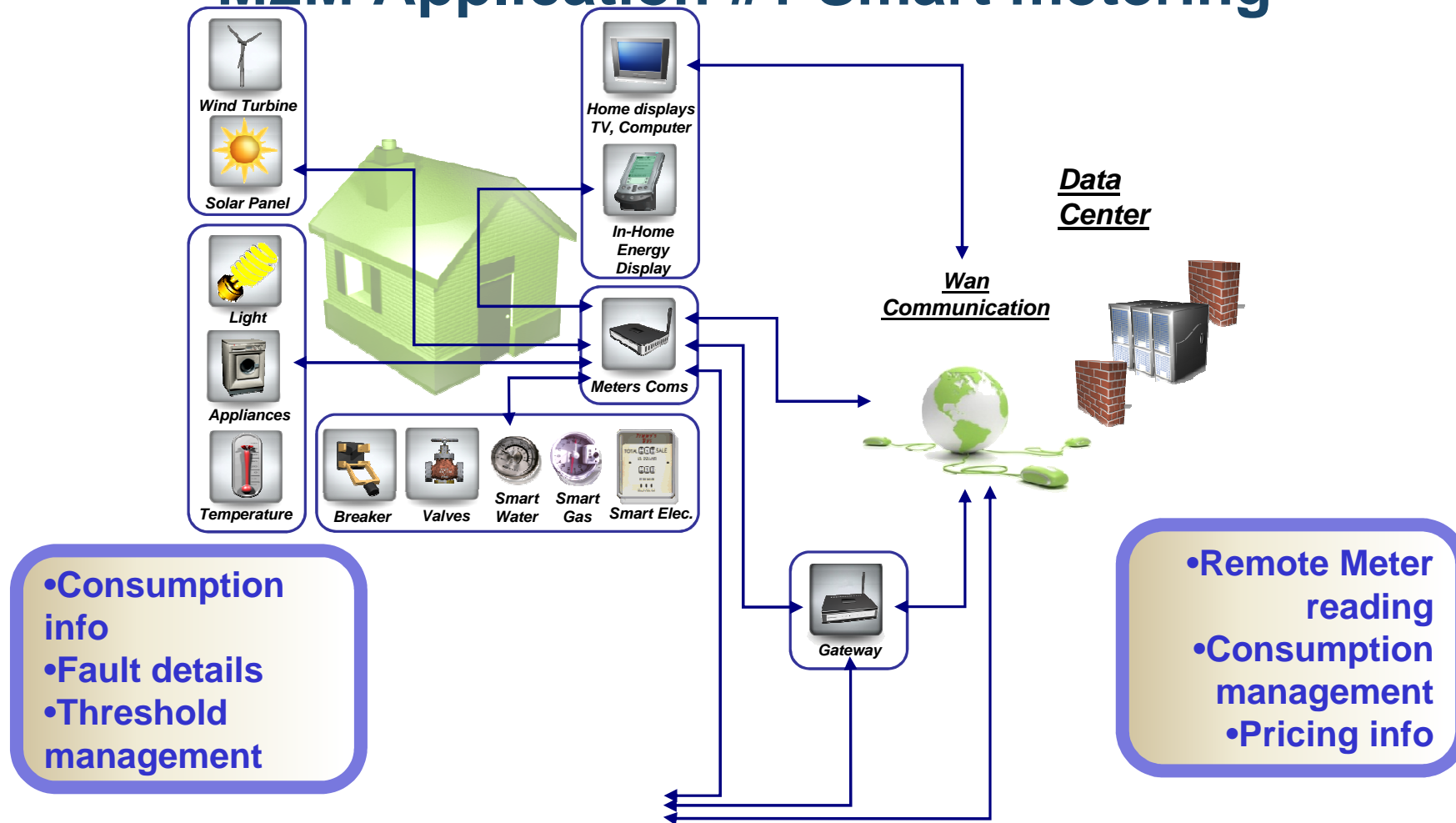
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Smart Metering

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M2M Application #1 Smart metering



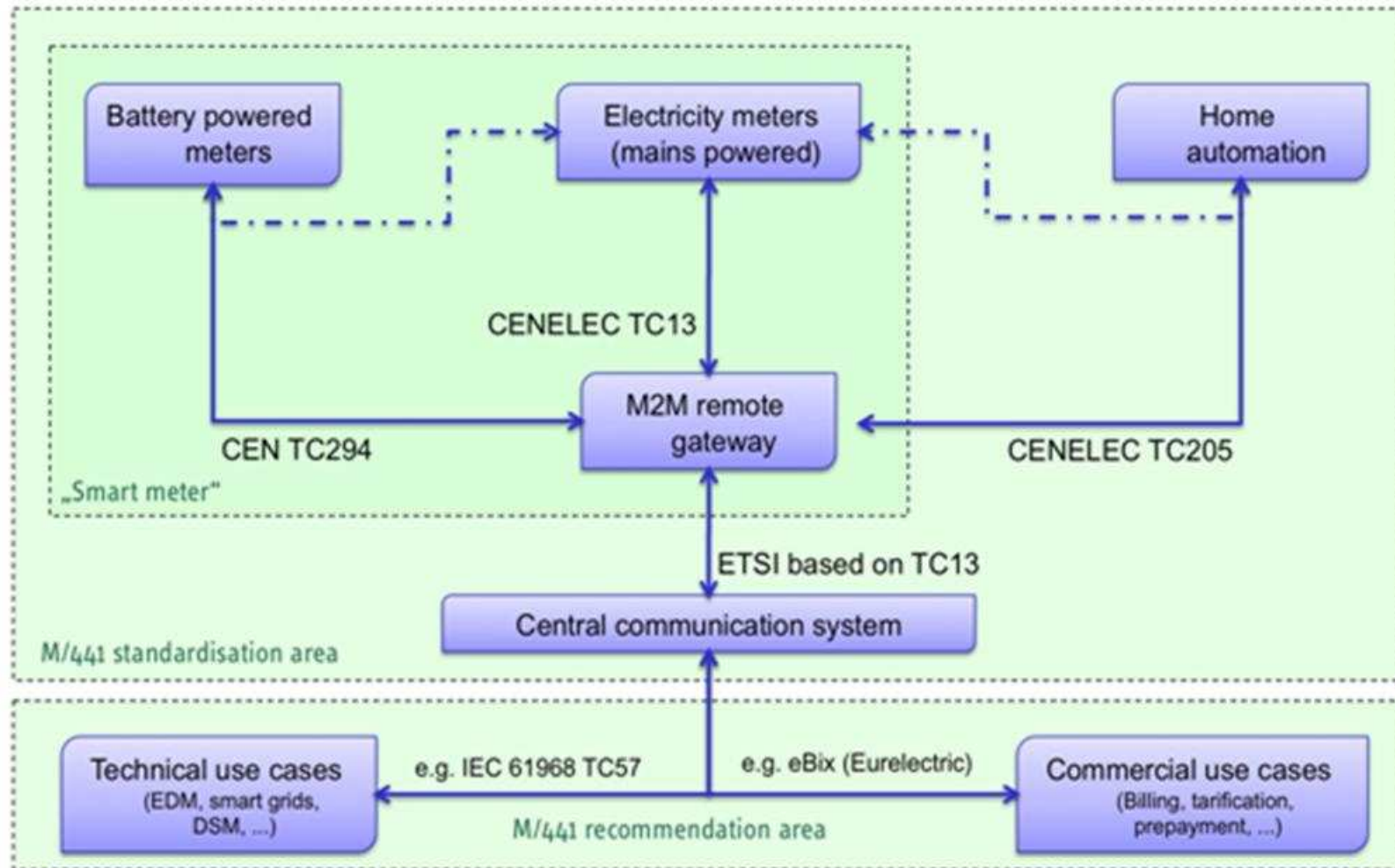
- Consumption info
- Fault details
- Threshold management

- Remote Meter reading
- Consumption management
- Pricing info

Smart Meter Mandate M/411

- European Commission has issued a mandate for the standardization of Smart Metering functionalities and communication for usage in Europe for electricity, gas, heat and water applications
- The three ESOs (CEN, CENELEC and ETSI) are responding to the EC mandate
- The standardization will ensure interoperability of technologies and applications within a harmonised European Energy Market.
- Phase I will last 9 months,1 and Phase II 30 months
- Coordination is going well !

Smart Meters (EC Mandate 441)





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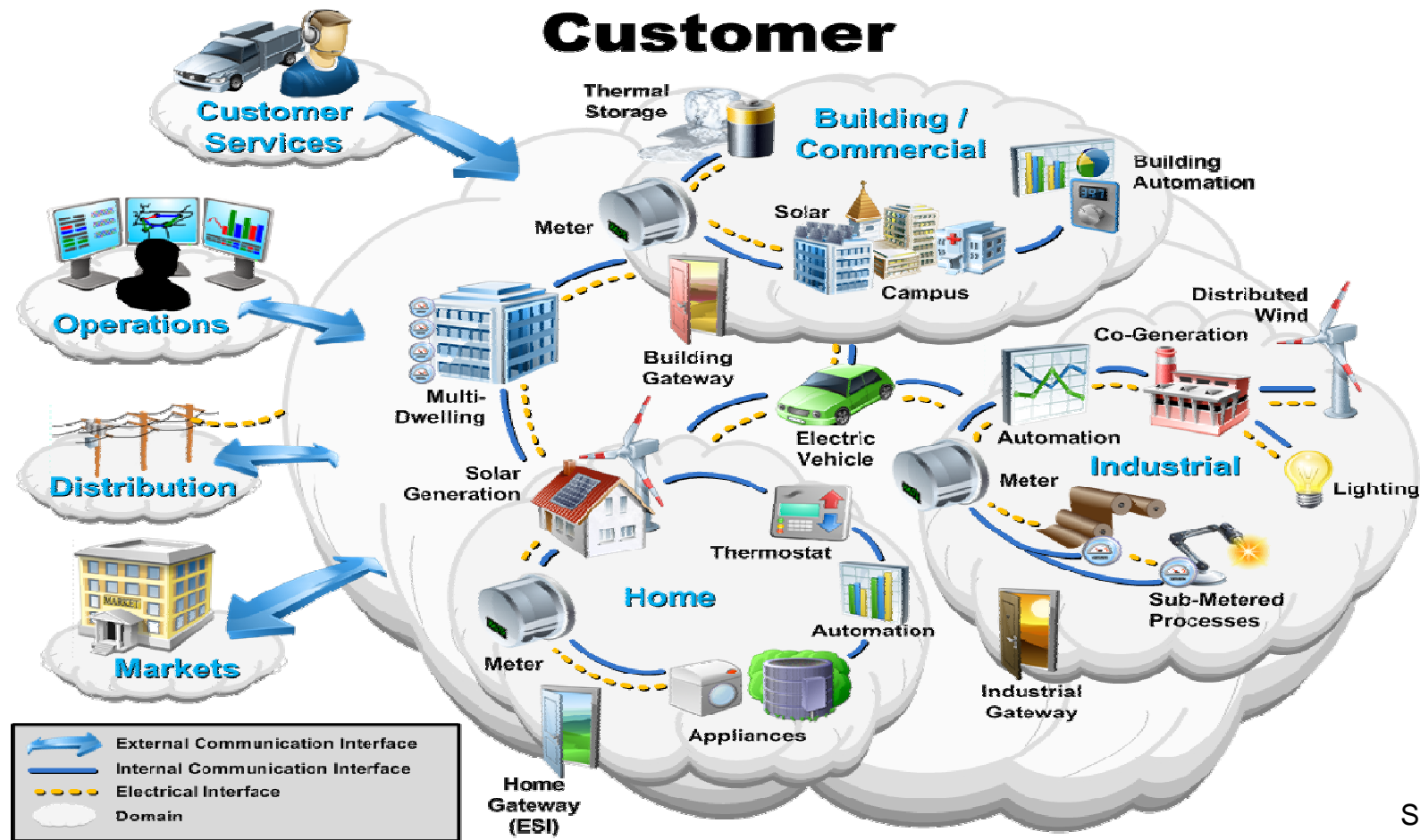
A dark blue world map is centered in the background of the slide, showing the outlines of continents.

Electrical Vehicles

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The Electrical Vehicle Challenge

Grow EV footprint in a complex environment



Source : XXX

Major charging issues

❑ Technology limitations

- Limited distance for one charge battery
 - Between 100 km to 150 km
- Battery charging time
 - 7 hours with normal house power outlet
 - 1 hours with “high power electricity” at “Charging station”

❑ Eco-system limitations

- Limited number of “Charging Stations”

❑ EV “Smart charging” will be mandatory as charging is impacting different sectors of the electricity chain:

- Generation
- Transmission
- Distribution

EV Charging Scenarios

❑ Random Charging

- **Guarantee charging time or Best effort ?**
- **Current peak?**
- **Saturation of the network distribution**
- **Negative Impact to Electricity production planning**

❑ Smart Charging

- **SLA (Service Level Agreement) with electricity provider**
 - **Adapted price**
- **Guaranteed charging time**
- **Better use of electricity infrastructure and electricity production**

ICT Standards Needed for “Smart Charging”

- ❑ **Parameters impacting battery charging**
 - Capacity & type of battery
 - Standardize battery versus proprietary solution
 - Battery reserve
 - SLA with a Charging Station supplier
 - Maximum time allocated to charge the battery
- ❑ **ICT standards must provide for**
 - **Distance & time to the nearest Charging Station considering:**
 - Battery reserve
 - EV weight & power
 - Security margin
 - **List of Charging Station including:**
 - Price versus charging time
 - Your SLA membership with the best offer versus your requirements
 - **Public transport or share transport from the selected Charging Station to end destination.**



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Conclusion

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- ❑ **Smart Grids are the next big challenge**
 - **Strong cooperation of ICT networks and Electricity networks is key**
- ❑ **Smart Metering, a big step in blending ICT & Electricity networks**
 - **And the first big application of Machine-to-Machine !**
- ❑ **Global Electrical Vehicles deployment will require ICT solutions**
 - **Huge infrastructure investment & engineering work**
 - **Smart charging battery scenarios must be elaborated.**
 - **To smooth peak current and to minimize additional CO2 emissions**
 - **These scenarios must be adapted to**
 - **Different EV characteristics and**
 - **Different consumers needs with SLA (System Level Agreement)**
- ❑ **For all these subjects, ETSI has a strong role**
 - **For worldwide & regional ICT Standardization**
 - **For coordination between ICT and Electrical Standardization bodies**



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Thank you for your attention