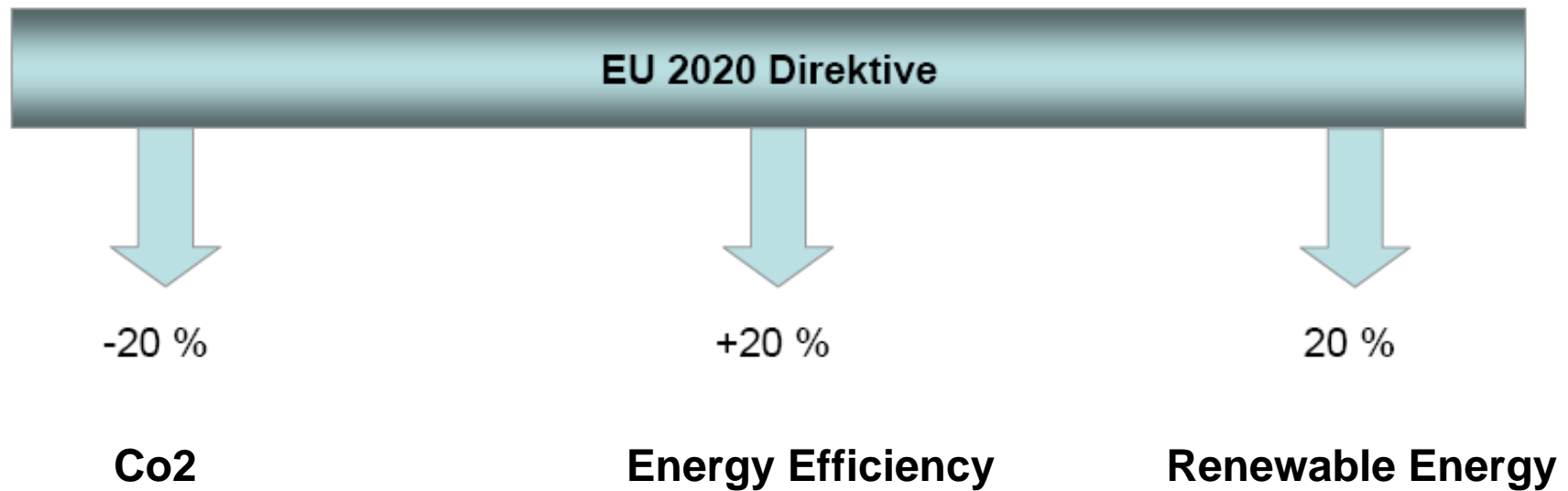


Binh Lam 林平, BU Network Management/ SMART GRID - TAIWAN, 2009-04-08

ABB Smart Grid for Demand Response

Smart Metering – Legal Regulation / Drivers



We make climate protection possible - Using energy efficiently

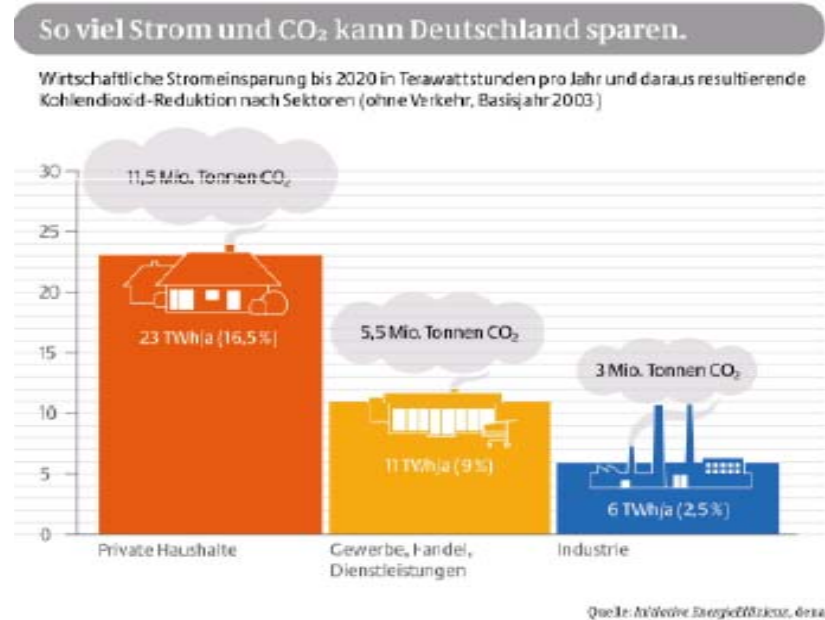
Smart Metering and Intelligent Meter Technology

- makes household energy use transparent
- with real-time customer visualization, environmental and cost awareness, ensures the consumer can and will save energy

Additionally, through appropriate measures in building automation, energy efficiency can be significantly increased and energy use reduced.

Smart Metering – Market Place

- **Installed Meter in Germany: 44,8 Million**
- **Legal Regulation → new Market Place**
- **Sensitivity of Customer → Energy Efficiency**
- **Smart Meter / Gateways are only at the beginning (distributed renewable energy, the distributed generation and the consumer..)**



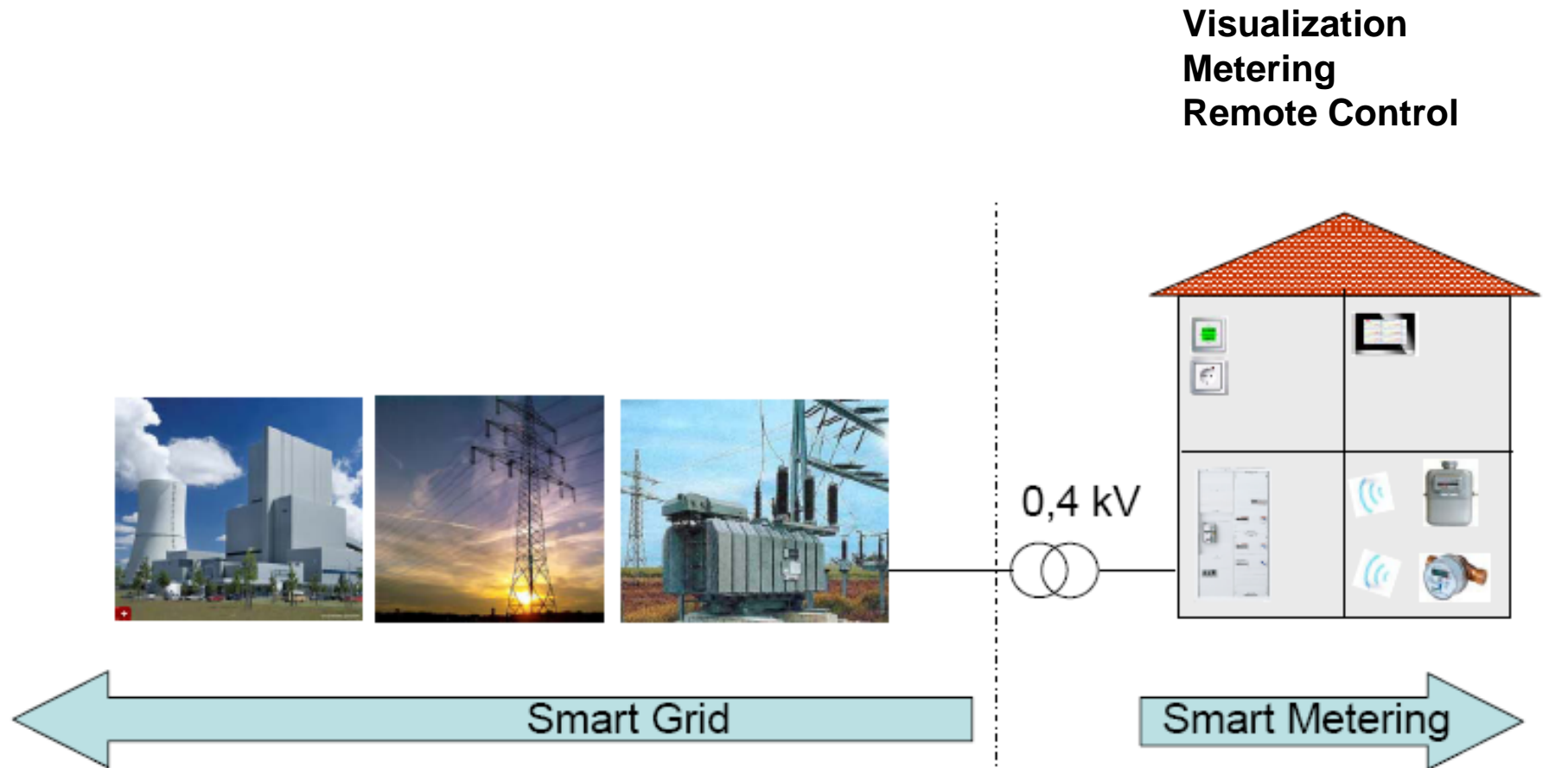
Smart Metering – Market Place

Based on the Legal Regulation – New Installation and Renovation for the Smart Meter / Data Gateways:

- Potential New Installation per year: 160.000
- Potential Renovation: 340.000

Potential per year: ***500.000 Household***

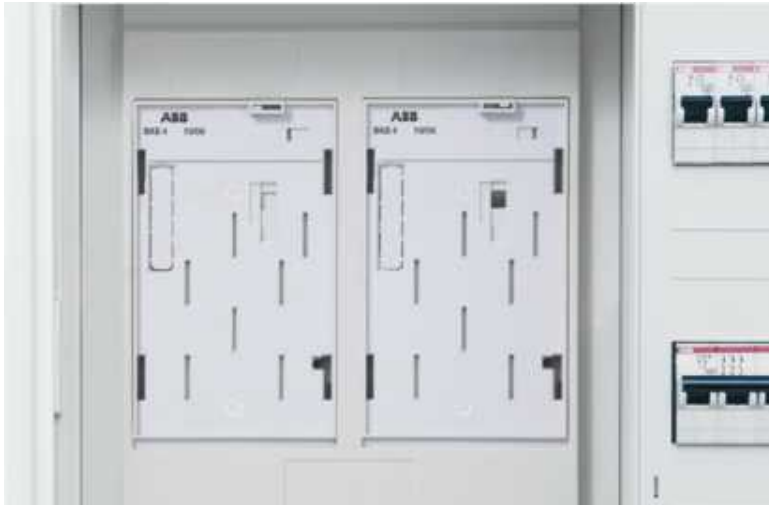
Smart Metering – Participation: Installation



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Smart Metering - The new EDSM panel

BKE-I: Fixing and Contacting Mechanism - Integrated



- Rated current 63 A
- Degree of Protection (according technical specifications of VDN*) at least IP3X
- No interruption of supply is guaranteed during meter replacement
- Delivered with contacts open in position P
- Before fitting the electronic meter, the contacts are put in position M (BKE-I bridged)
- Opening provided for data interface according technical specification of VDN 1.02

EDSM = Electric Supply Domestic Meter

*) **VDN** = Association of German Network Operators

The intelligent EDSM

Metering of Electricity – fulfilling all measuring tasks for domestic applications

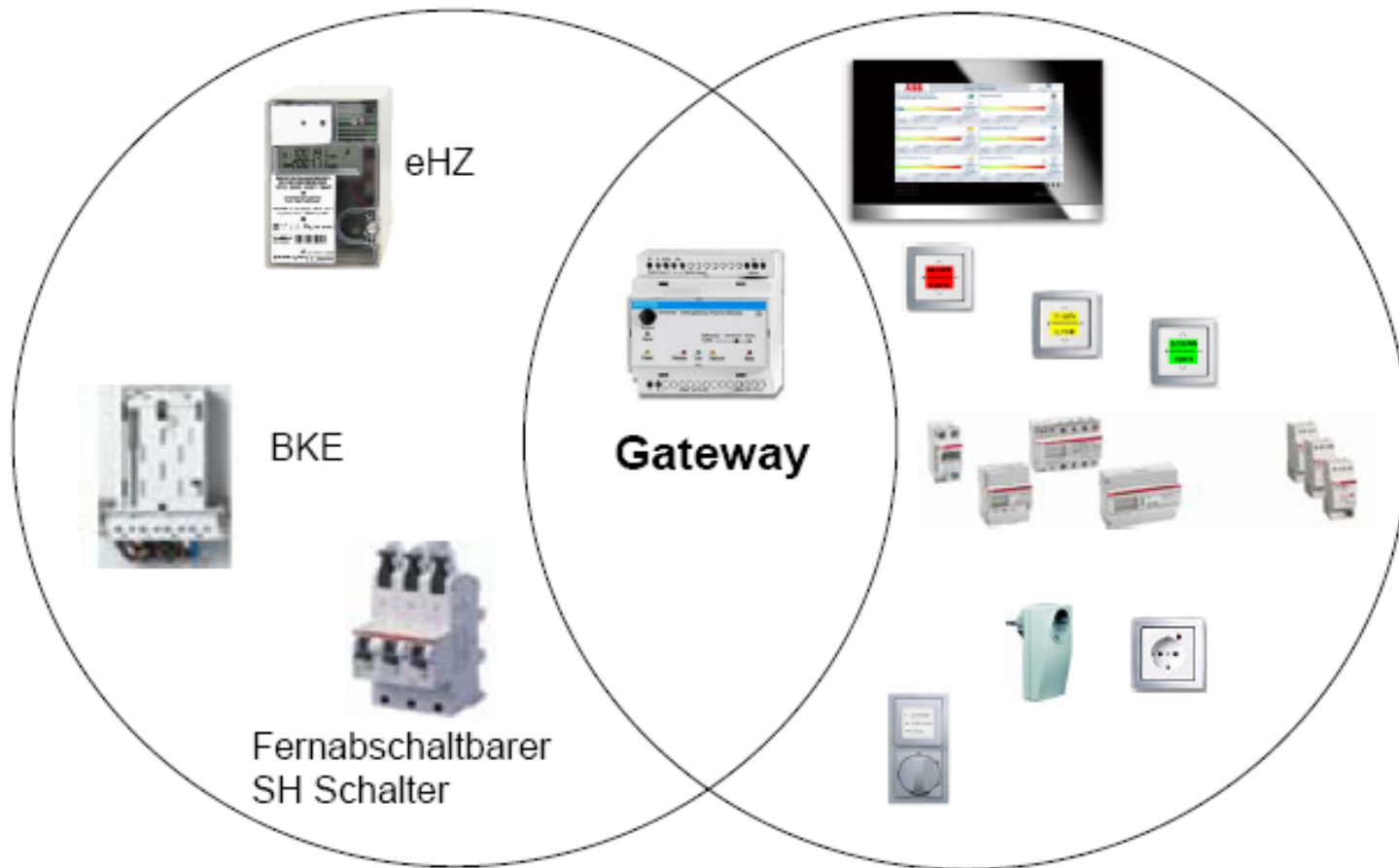


EDSM according to the VDN specifications,
Edition 1.02

- Rear data interface
- Three-phase or single-phase meter application
- AC current
- Multi-Tariff use
- EDSM with integrated Tariff control
- EDSM for external Tariff control
- Photovoltaic applications

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Smart Metering – Participation: Data Gateway



Smart Metering – Participation: Data Gateway



Data – Gateway

- Independent of Meter
- Master for all Meter
- Hard wire and wireless communication
- Time Synchronization – Time Tagged
- IP communication with control centre
- Switching commands with safety routines
- Interruption of data communication and meter errors are automatically reported
- Webserver for the End-User

Smart Metering - with integrated communication module



The meter panel meets all relevant standards -

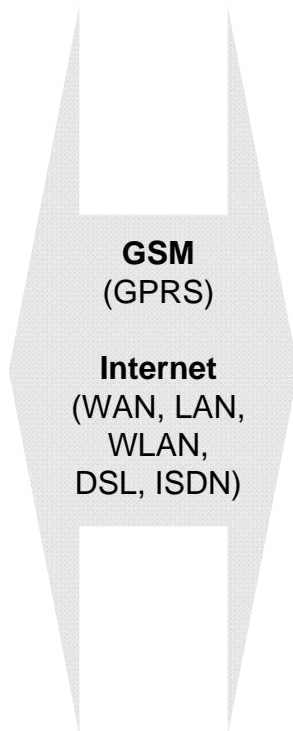
- **The integrated communication module allows data transmission for:**
 - Remote reading
 - Remote switching
 - Visualization of energy consumption
 - Energy Management

Smart Metering - with integrated communication module

Visualization possibilities...

Smart Metering - with integrated communication module

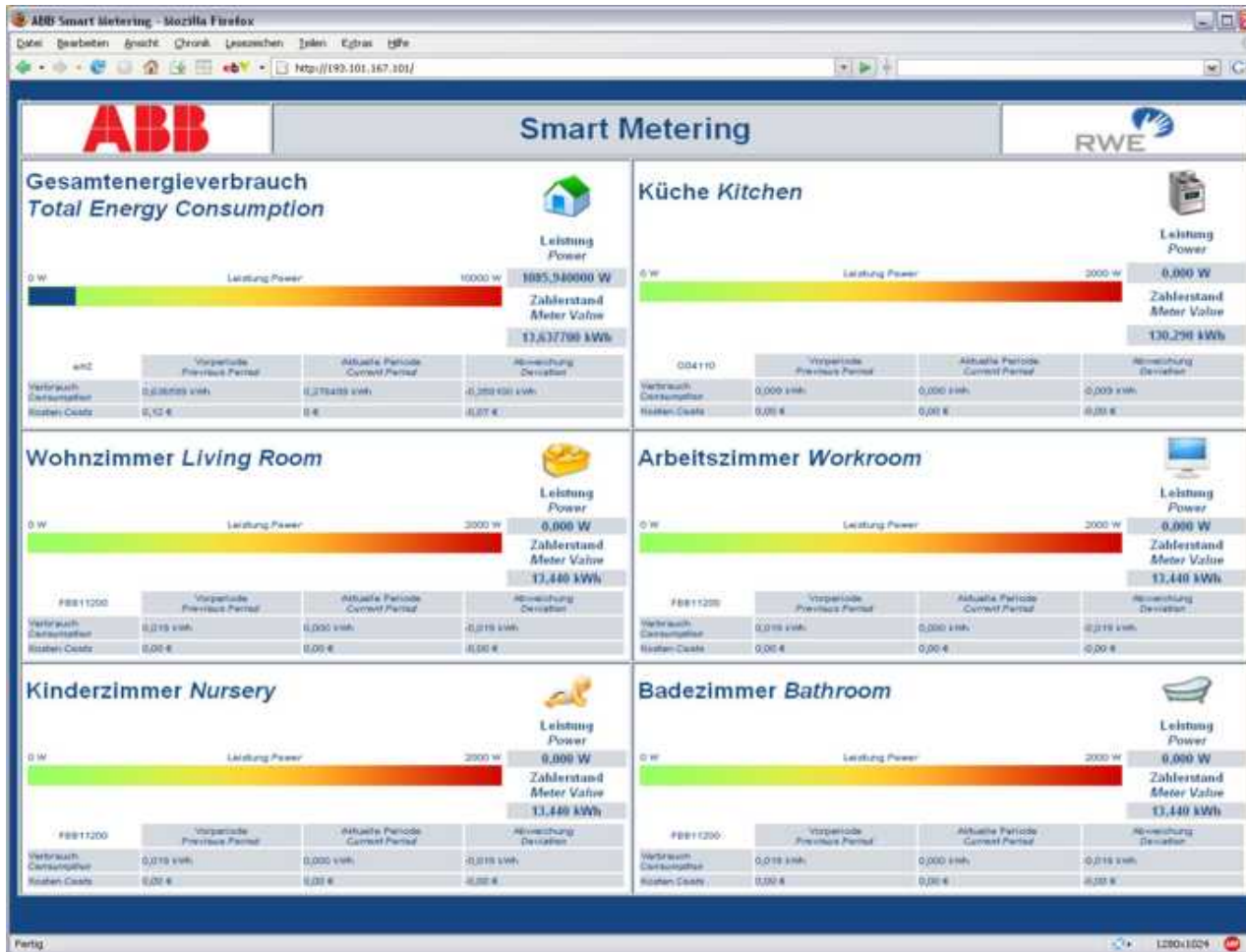
Consumer can utilise a wide range of visualisation possibilities



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Smart Metering – Visualization

Visualization



Consumer...

... sees the current power use

... sees the accumulated consumption

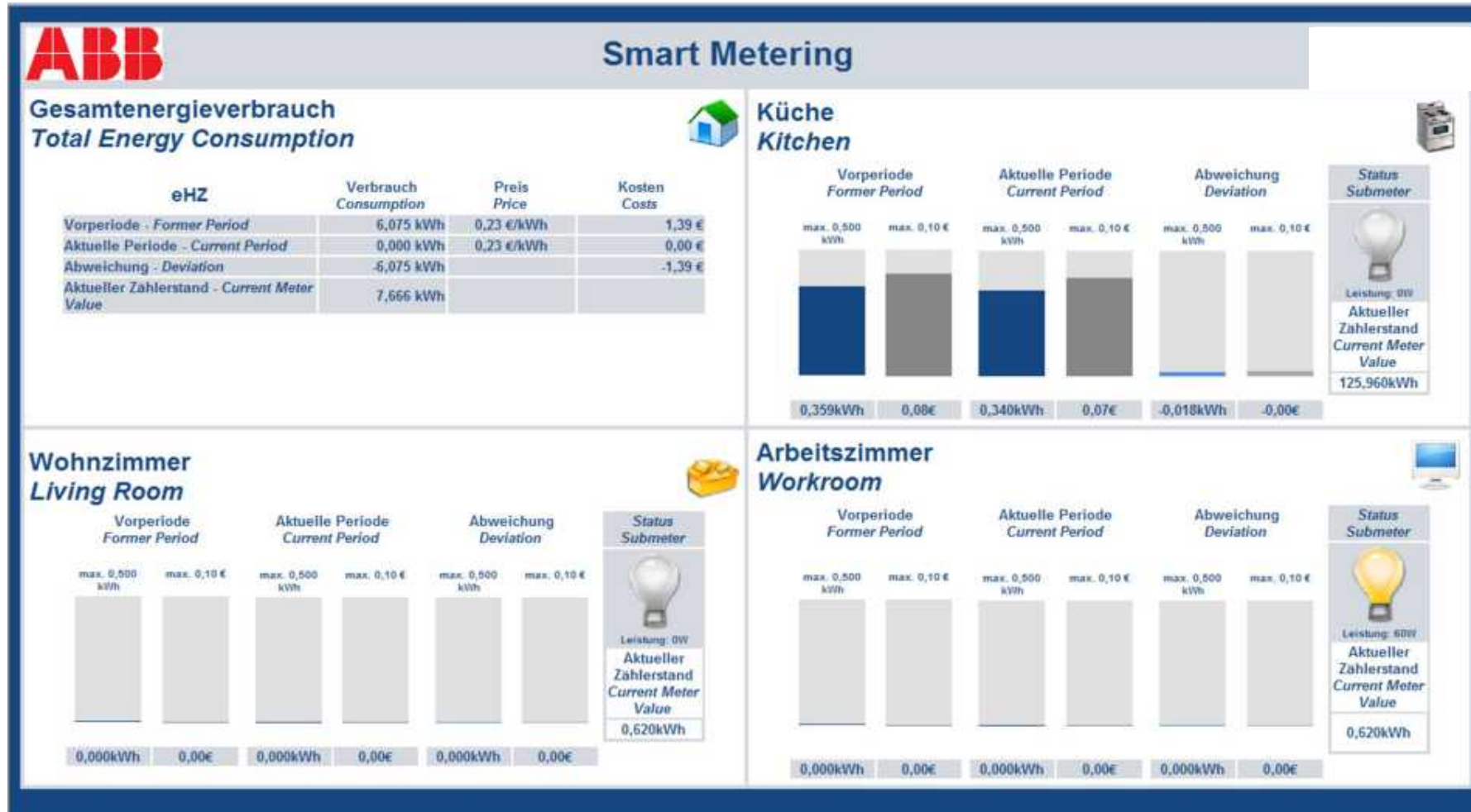
... can enter Tariff and time period

That is the only configuration required !

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Smart Metering – Visualization

Visualization



Smart Metering – Visualization



Display of Energy Consumption

- Color in Background
- Energy Cost

Green = Energy Consumption is less than pre-period
Yellow = Energy Consumption is equal pre-period
Red = Energy Consumption is higher than pre-period

Smart Metering – Measuring



Current Detection Socket

Switching by defined time period (like Standby for TV, DVD...)



Current Measuring Socket

Measure the Consumption and provide the data to Data Gateway



Mobil Current Measuring Socket

Measure the Consumption and provide the data to Data Gateway by Radio

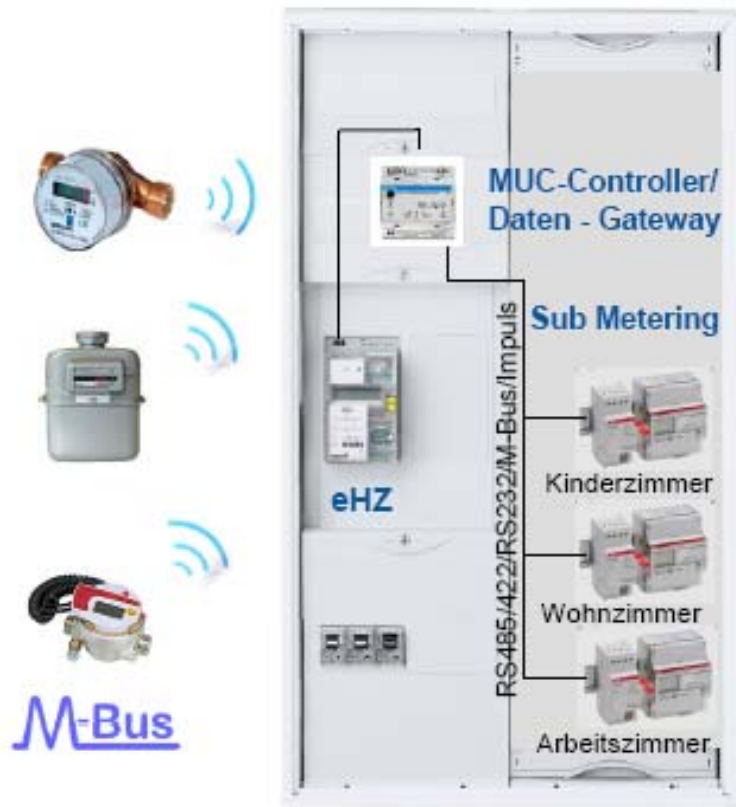
Smart Metering – Solution for Utilities



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Smart Metering – Solution for End-User



Measuring



Visualization



Switching



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