

Grid Connected

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**If you can't measure it  
you can't optimize it**

**DENA Jahreskongress**





# Energy Management and Metering in transition

## New challenges for building operators

### Consequences of energy transition



#### Increased focus on

Efficiency measures to reduce energy consumption and CO<sub>2</sub> emissions



Generation of fossil and nuclear energy replaced by renewable energy



### Impact

Reduction of the overall energy consumption



Increased demand for electricity energy and mgmt



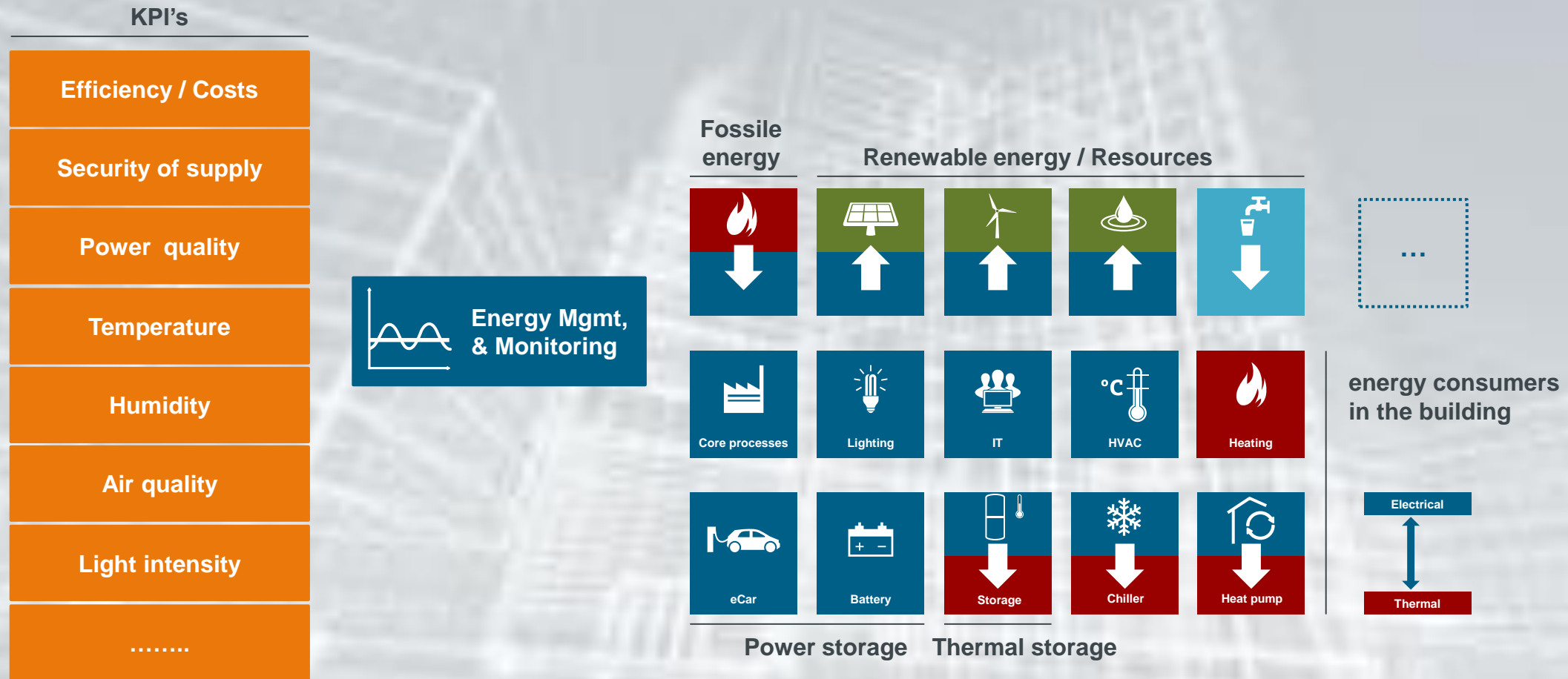
### New challenges

- Increasingly complex energy landscape
- Stability and quality of energy supply
- Interaction between building new sensors submeters & grid
- Building as energy generator, storage system and flexible consumer

**holistic metering will play a central role in energy management in the future!**



# Integrated sensor and metering segments in the context of a multimodal energy concept





# Integrated Energy Management based on metering and sensors

## From transparency to monetization

KPI's

Efficiency / Costs
Security of supply
Power quality
Temperature
Humidity
Air quality
Light intensity
.....

**Awareness  
Transparency**

**Optimization  
Efficiency**

**Monetization  
Autarchy**



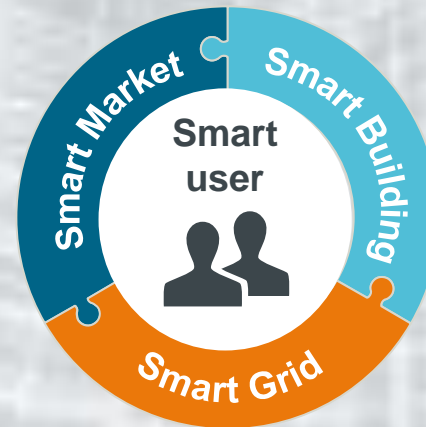
# Smart Building – Smart Grid – Smart Market

## it always starts with metering



### Smart Markets

- Production increasingly dependent on weather
- Demand for improved production and load forecasts
- Demand for short term energy pricing according to present production volume
- Platform for flexibility trading



### Smart Buildings

- Own energy production
- Heat pumps + thermal storage
- Batteries
- Future
  - Flexible energy tariffs
  - Flexibility offerings
  - Self optimizing buildings with an interface to market partners



### Smart Grid as facilitator for smart energy system

Provisioning of

- Power quality and grid availability under fast changing requirements
- Improved load and generation forecasts
- Flexibility management and grid protection
- Additional services for market partners