

SmartGrids Week Salzburg 2010

SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

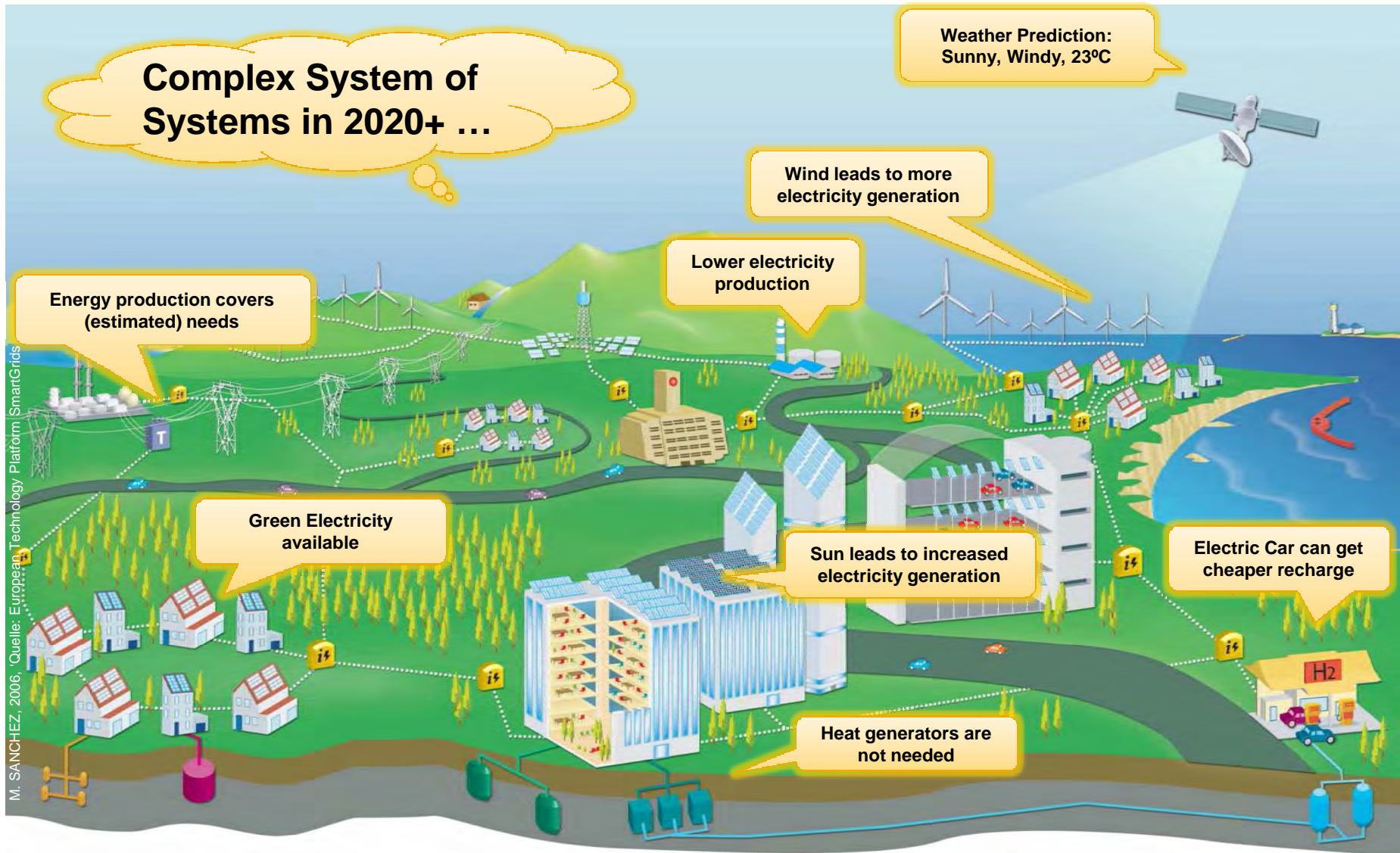


Enterprise Integration for the SmartGrid Era: Challenges and Directions

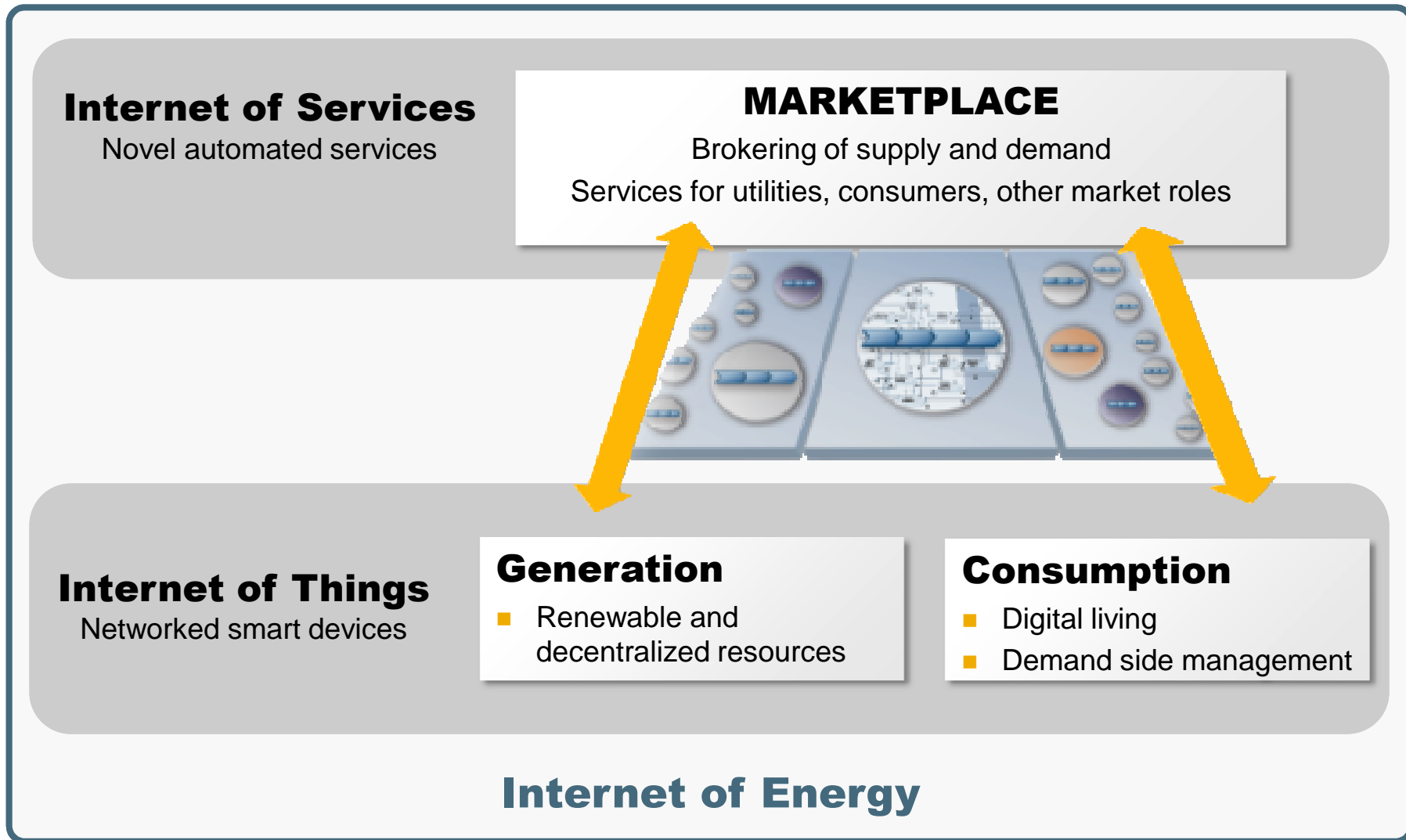
23-25 June 2010, Salzburg, Austria

Stamatis Karnouskos
SAP Research

Motivation: The SmartGrid Era



Towards an Internet of Energy

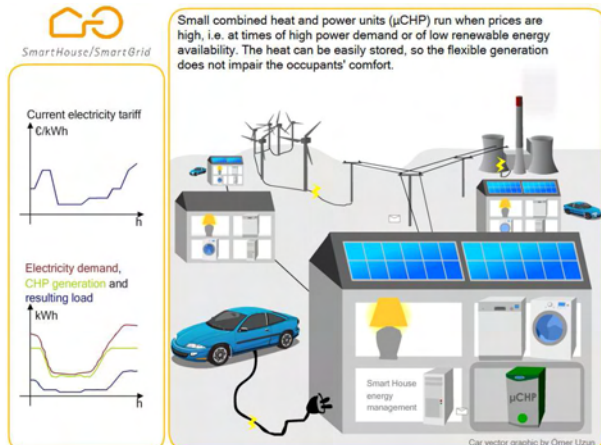
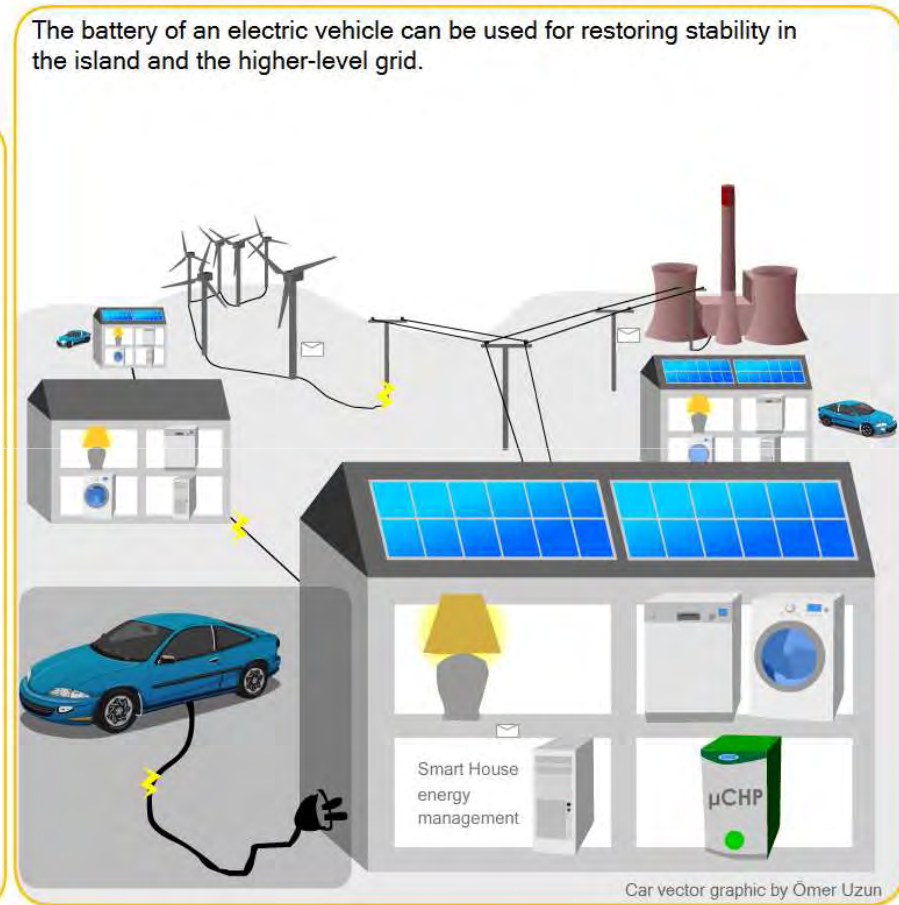
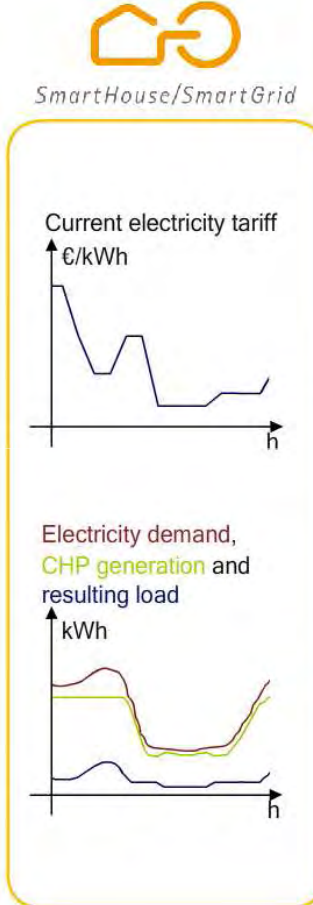
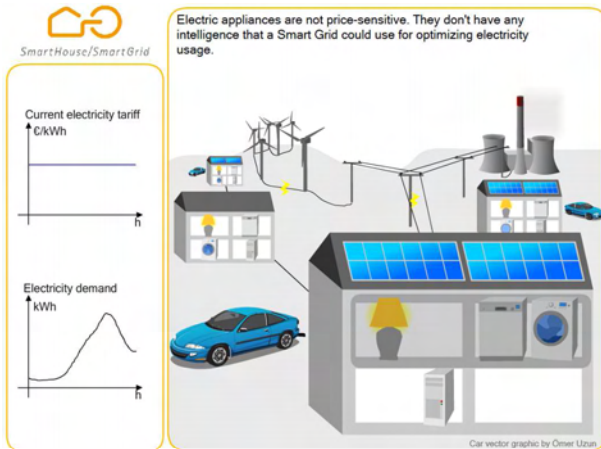


SAP Research – Smart Grid & Energy Efficiency Projects



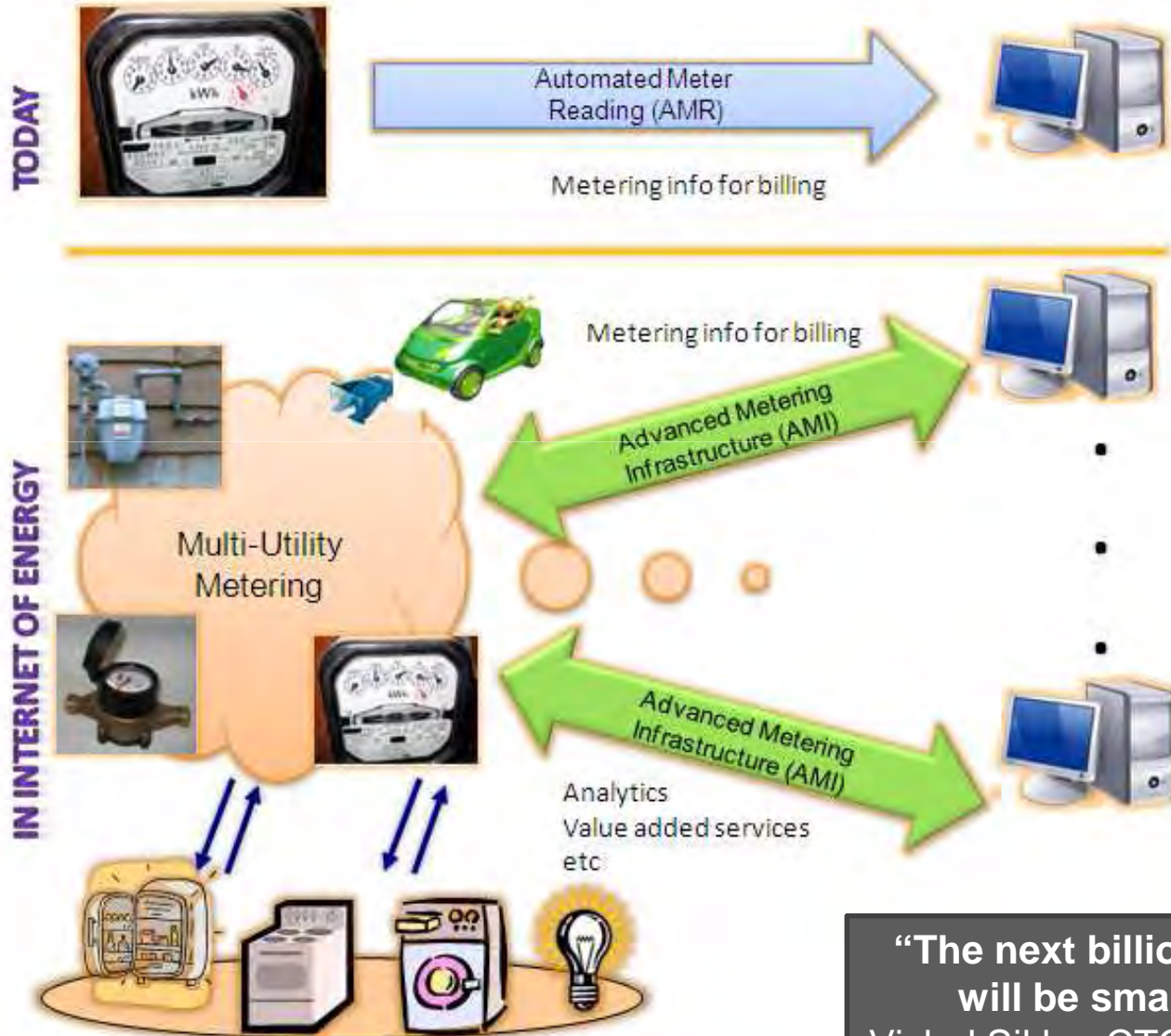
Project	Project Scope	Partners
MeRegio	Development of an E-Energy marketplace as a coordination tool in decentralized (distribution) networks. Certification of energy efficient regions.	
SmartHouse/ SmartGrid	SmartHouses' intelligent participation in a dynamic market-driven SmartGrid enhances energy efficiency. Adaptive home appliances and distributed energy sources coordinate operation via ICT.	
e-mobility	Billing & Vehicle-to-Grid Functionality. Implement real-world trial in Berlin based on SAP solutions. Test and extend SAP portfolio for electric mobility at scale. Invent vehicle-to-grid services as part of the smart grid.	
Green Fleet	Setting up an electrical car fleet infrastructure at SAP's premises. Minimize environmental impact of mobility. Maximize efficiency through optimized asset management and fleet operations. Create a solution for management of electric car fleets.	
MeRegio Mobil	Services for Electric Mobility. Integrate electric vehicles with MEREGIO market place and service platform. Provide secure and privacy-preserving services and applications. Field test for extended integration with smart grids including power re-injection.	
NOBEL	Neighborhood Oriented Brokerage Electricity and monitoring system (NOBEL) will build an energy brokerage system with which individual energy consumers can communicate their energy needs directly with both large-scale and small-scale energy producers, thereby making energy use more efficient.	
ELVIRE	Electric Vehicle Communication to Infrastructure, Road Services and Electricity Supply – ELVIRE.	<p>Continental, Renault, Better Place, Volkswagen, CEA List, SAP, Motorola, ERPC GmbH, Lindholmen Science Park, ATB, ENDESA, Erasmus University College</p>
MIRACLE	Micro-Request-Based Aggregation, Forecasting and Scheduling of Energy Demand, Supply and Distribution (MIRACLE).	<p>SAP, TU Dresden, University of Aalborg, TNO, INEA, Josef Stefan Institut, Centre for Renewable Energy Sources, EnBW</p>

SmartHouses in a SmartGrid



http://www.smarthouse-smartgrid.eu/fileadmin/templateSHSG/docs/SHSG_Animation.swf

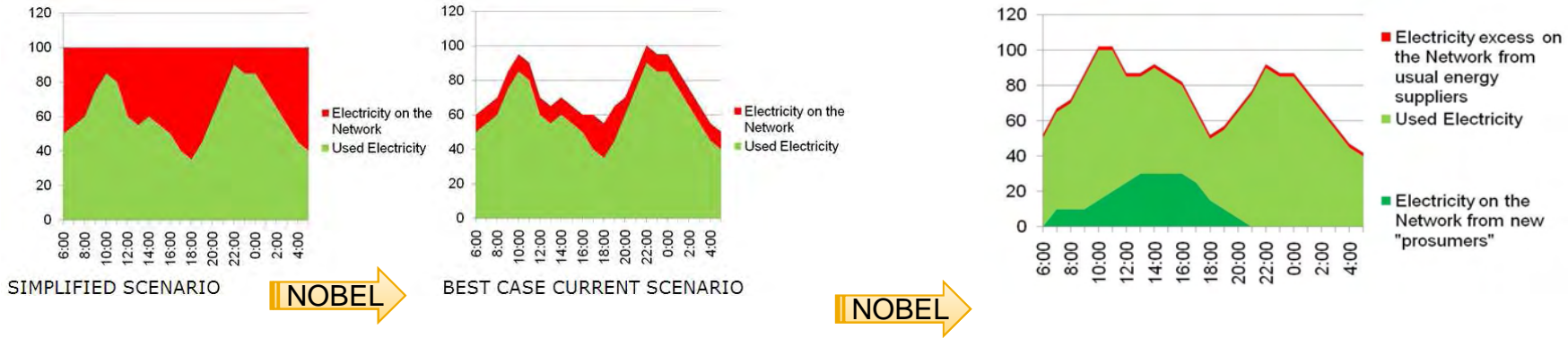
Beyond metering → towards value added services



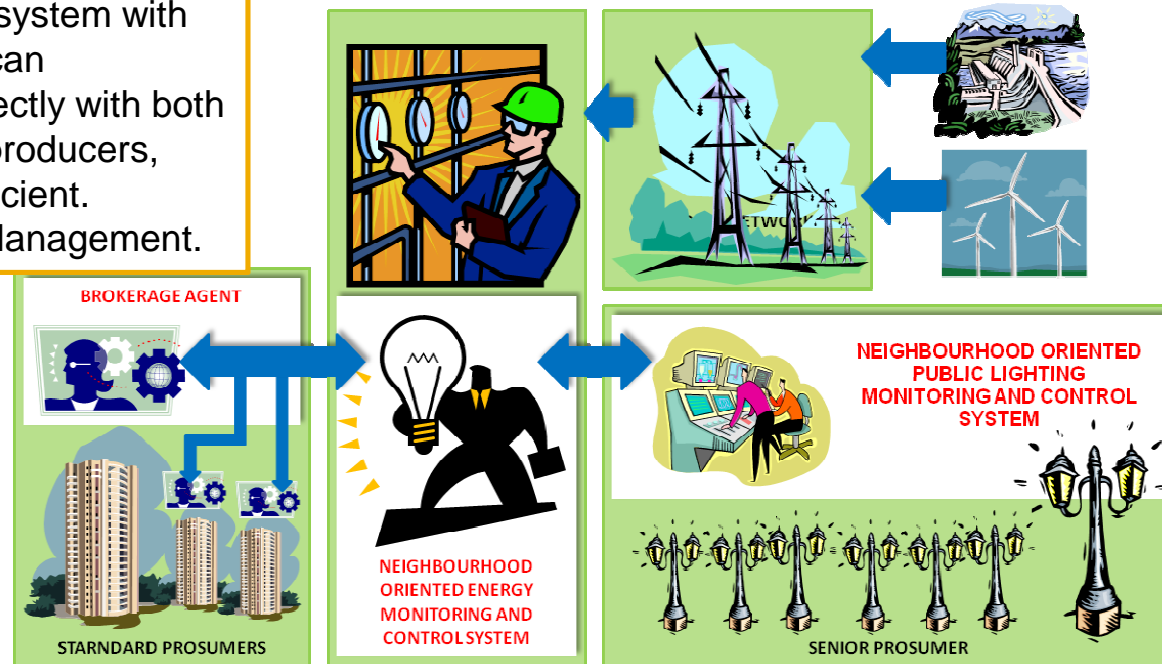
“The next billion SAP users will be smart meters”
Vishal Sikka, CTO of SAP (2009)

NOBEL

Neighbourhood Oriented Brokerage Electricity and monitoring system

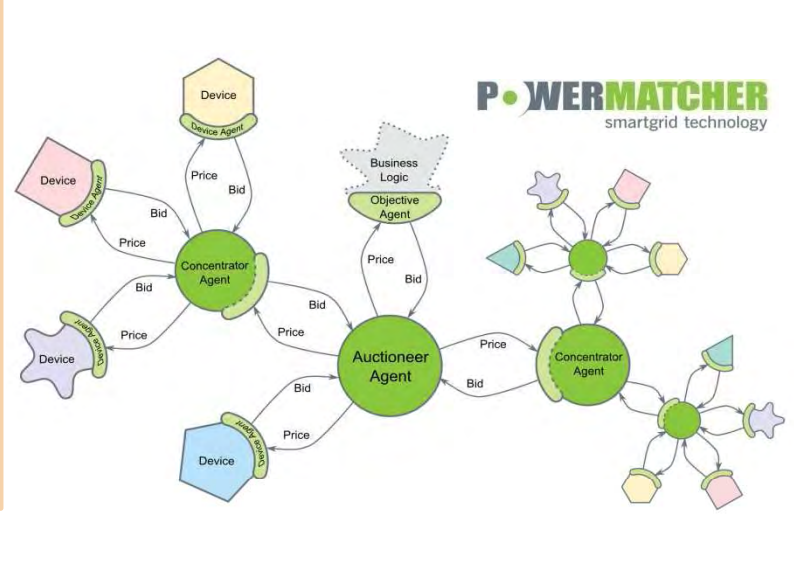
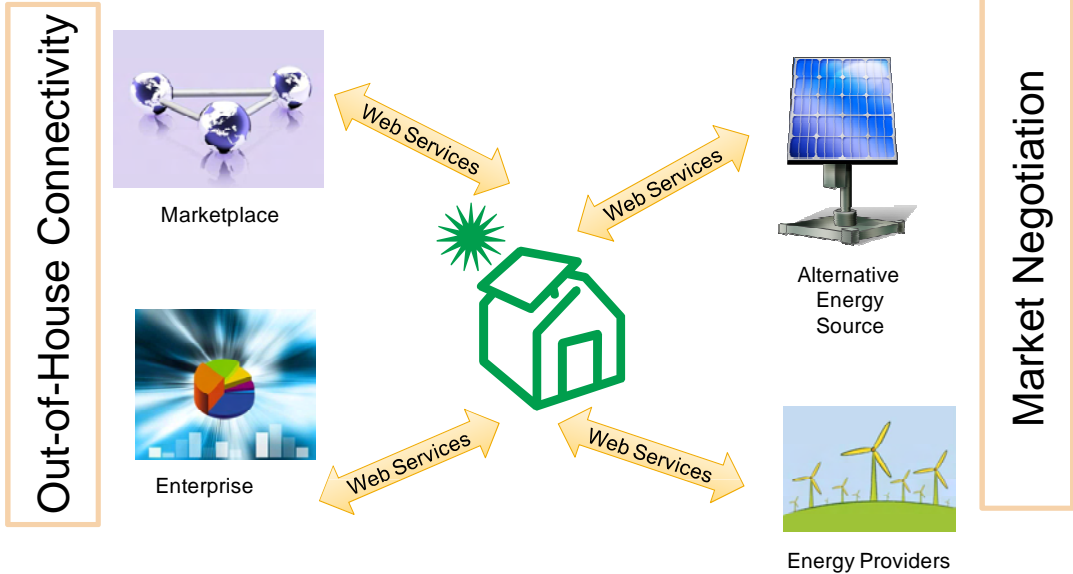


NOBEL builds an energy brokerage system with which individual energy consumers can communicate their energy needs directly with both large-scale and small-scale energy producers, thereby making energy use more efficient. Neighborhood empowered Energy Management.



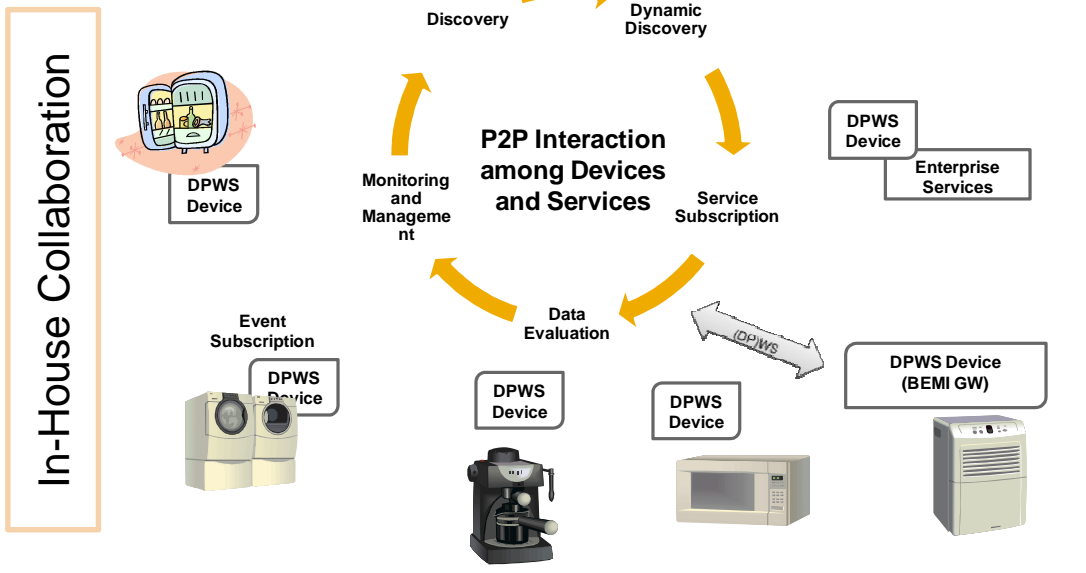
www.ict-nobel.eu

In-House and Out-of-House Integration

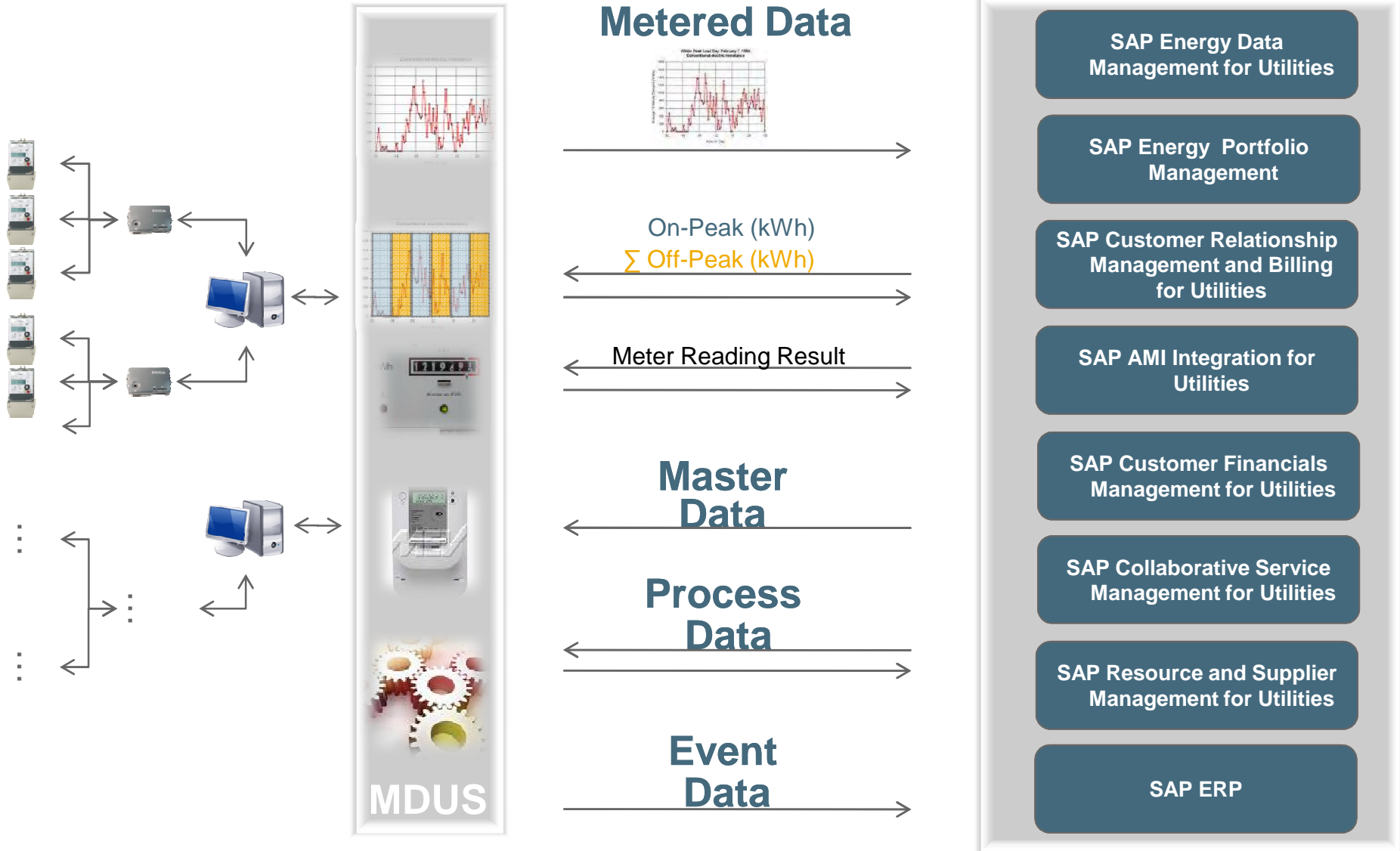


SmartHouse/SmartGrid

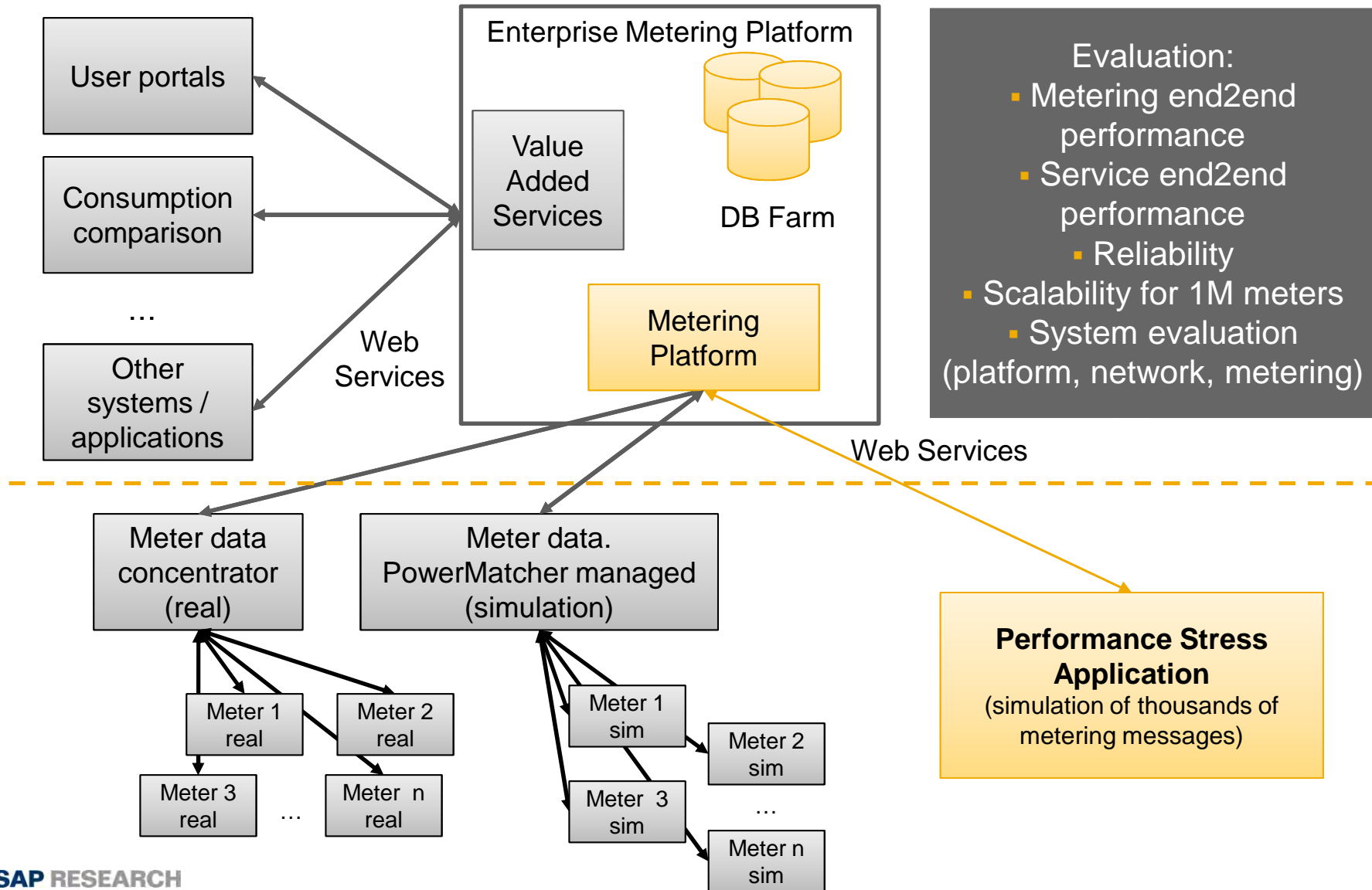
Enterprise Integration
Market Communication
Collaboration
Realistic Approaches



Example: SAP AMI System Architecture



Example: Evaluation of a smart metering



- ❑ Timely acquisition, processing and decision making based on “real-time” info
- ❑ Bidirectional collaborative energy management (consumer/producer etc)
- ❑ Intelligent management/optimization & storage at local & global level
- ❑ (Mobile) Asset (meters, devices, cars) management
- ❑ Security, Privacy, and Trust -- flexible policy Data management
- ❑ Open Cross-layer Integration of complex system of systems
- ❑ Select the right business model(s)
- ❑ Identification/support of core business processes & business applications
- ❑ Market-based interactions for all actors

Challenges & Directions



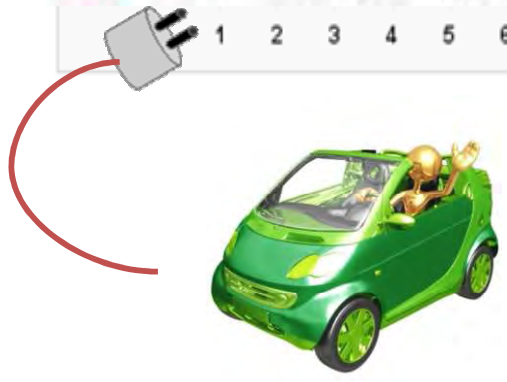
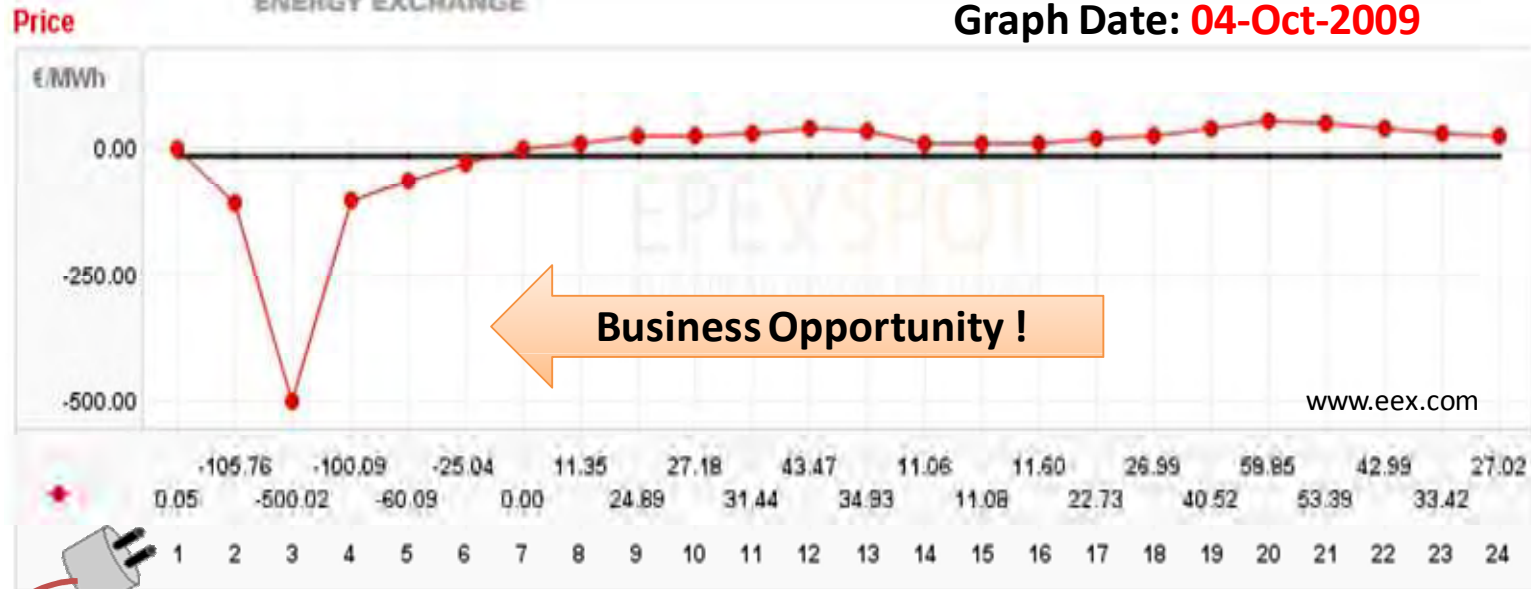
- ❑ Interoperability – focus on open cross-layer collaborative approaches
- ❑ Reliability and scalability
- ❑ Support for and development of qualified open standards
- ❑ User Friendliness: ease of use (“plug & monitor/trade”)
- ❑ Life Cycle Management
- ❑ Quality of Service and Information
- ❑ Large-scale Simulation, Modelling, Risk Analysis Tools
- ❑ Business Analytics (prediction, KPIs, visualization etc)
- ❑ Real-World trials and experiences

Motivation: Market-Driven Management

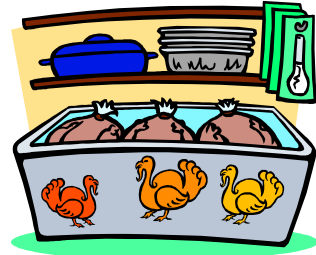


Timing is Everything!

Graph Date: 04-Oct-2009



Electric Car Fleet



Freezer Farms



Energy Storage





www.ict-nobel.eu



www.smarthouse-smartgrid.eu

Thank you for your attention!

QUESTIONS – SUGGESTIONS – DISCUSSION



[Source: Jan Perry/Cincinnati Post from Autobloggreen]
Electric Car - Cincinnati 1912

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