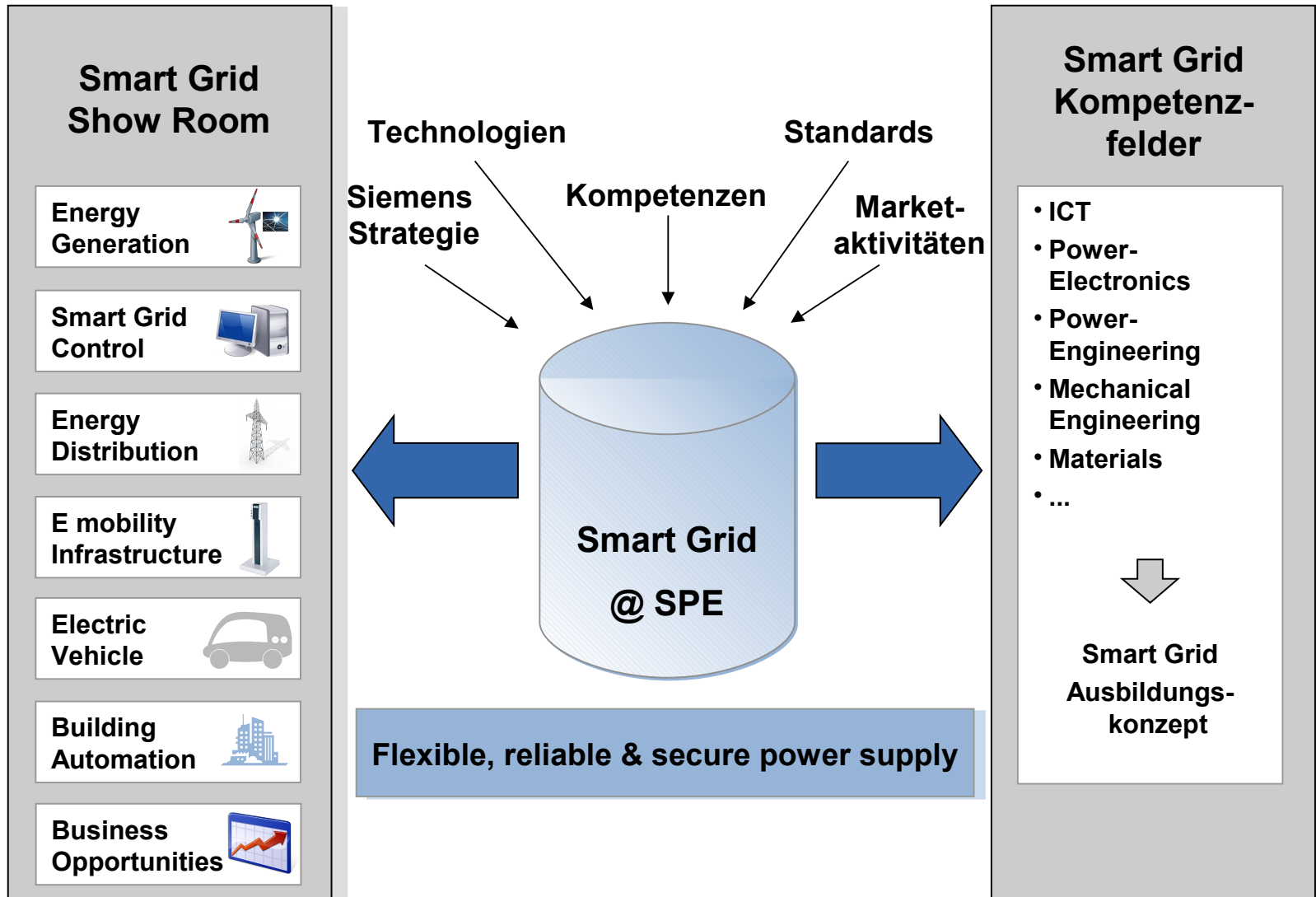


Systemorientiertes Qualifizierungskonzept für die Elektromobilität

29. Juni 2011

Das Projekt "Smart Grid @ SPE" hat zum Ziel ein ganzheitliches Ausbildungskonzept zu entwickeln



Energy generation

Smart Grid Show Room

Energy Generation



Smart Grid Control



Energy Distribution



E mobility Infrastructure



Electric Vehicle



Building Automation



Business Opportunities



- Integration of renewable energy sources
- Smart generation
- Decentralized generation
- Efficient and scalable energy storage
- Virtual Power Plant



Smart Grid Control

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Business Opportunities



- Forecast for Demand & Generation
- Power grid security
- Data management and protection
- Interoperability of technologies & standards
- **Cloud Computing Applications for Smart Grid**



Energy Distribution

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Electric Vehicle



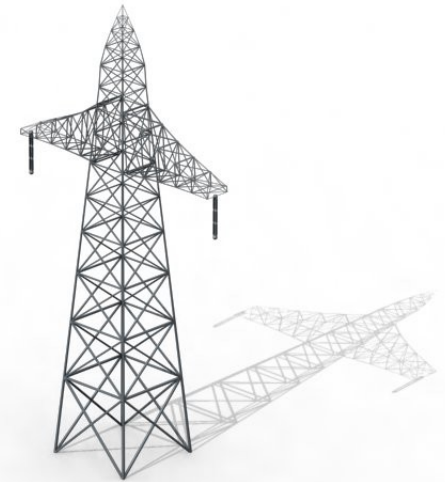
Building Automation



Business Opportunities



- Smart, bi-directional distribution
- Micro grids
- **Integrated Energy automation**
- Demand Response Management
- Secondary Substation Automation



E-mobility infrastructure

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Business Opportunities



- **Charging infrastructure for public & home**
- Operation Center (EMob) & Customer Portal (Cupo)
- **Vehicle to Grid communication**
- **Charging control**
- Technologies & Standards



Electric Vehicle

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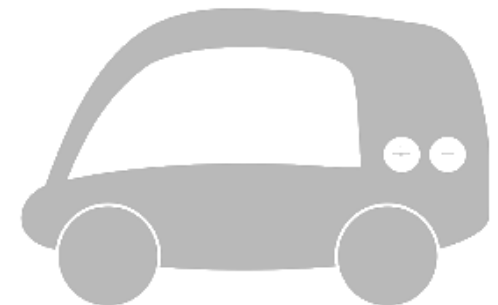
Building Automation



Business Opportunities



- **E-car power train & power electronics**
- **Battery Management**
- System architecture for e-car
- Autonomous driving
- Technologies & Standards



Building automation

Smart Grid Show Room

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Building Automation



Business Opportunities



- Smart Metering
- Energy & Load Management
- Smart Consumption & Cost Optimization
- **Building Control Systems**
- Green Building Concepts



Business Models

Smart Grid Show Room

Energy Generation



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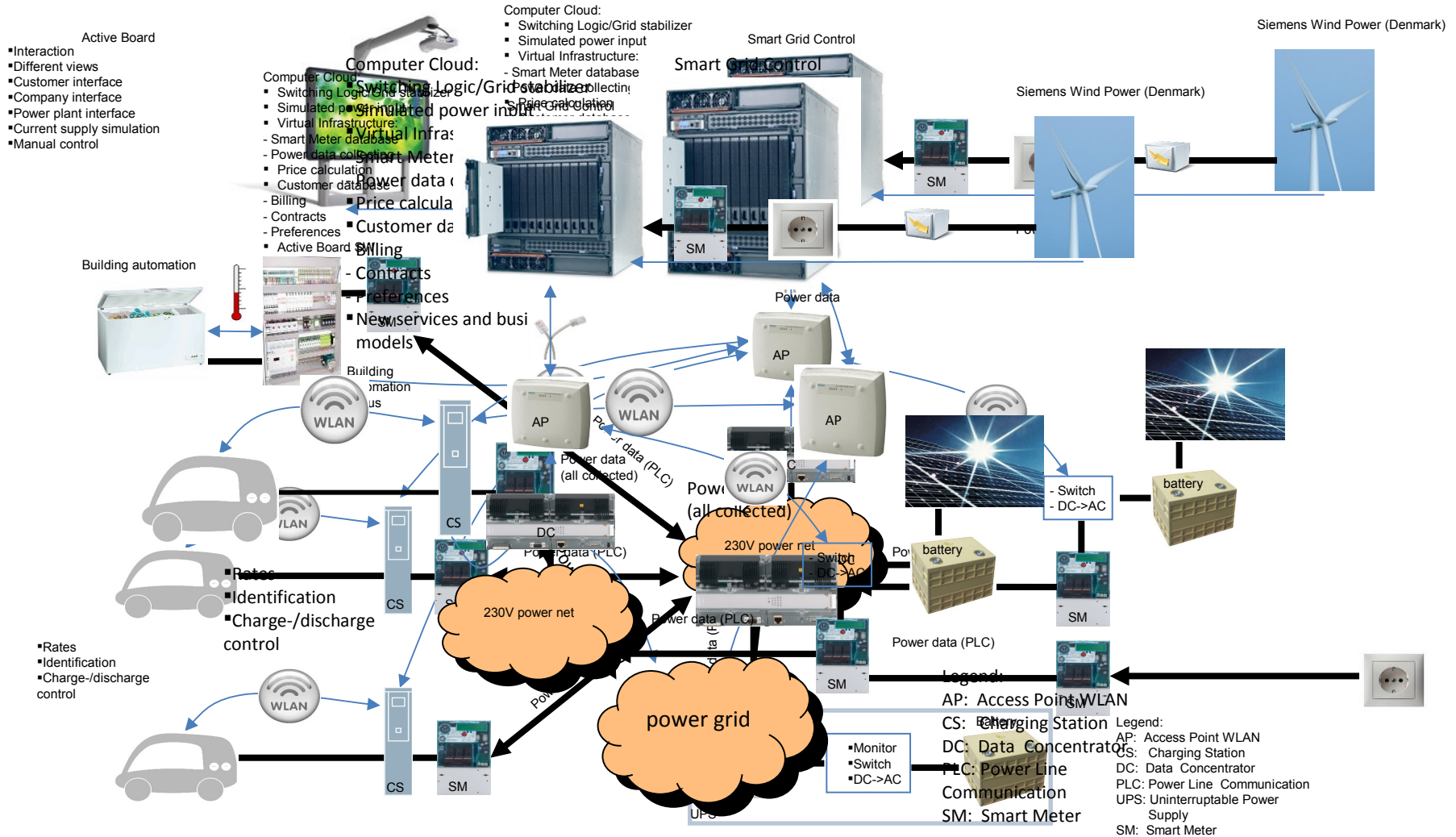
Business Opportunities



- Future Scenarios for Smart Grid
- Mobility Concepts
- Totally Integrated Electro Mobility (TIEM)
- Techno-Socio Economics for Smart Grid
- **Business Opportunities for MicroGrids**



Show Room Smart Grid: Energy Storage and Charging Infrastructure



Erste Vorführungen wurden bereits im Smart Grid Show Room durchgeführt

SIEMENS



Besuch von Herrn Dr. Hausmann
Smart Grid Company Project
Januar 2011



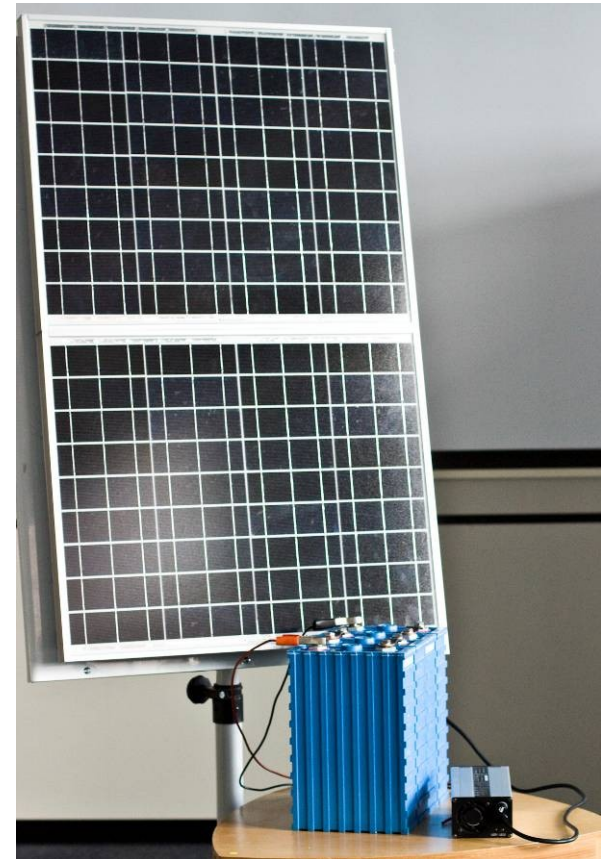
Besuch von Herrn Dehen
Vorstand Sector Energy
Februar 2011

Modern E-Vehicle Instrument Panel Portable Concept

SIEMENS



Vehicle Management and Visualization by tablet PC



Solar and Smart Storage

Vehicle to Grid



Smart Grid Control Center



Anzeige vom Strompreis am Tablet PC



Anzeige Smart Meter beim Ladevorgang

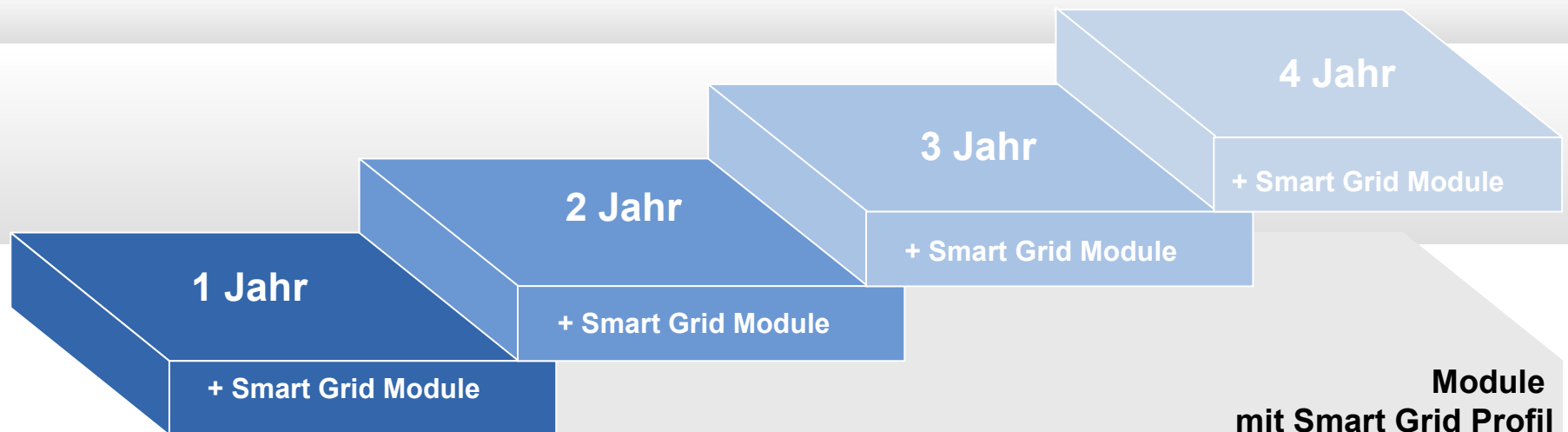
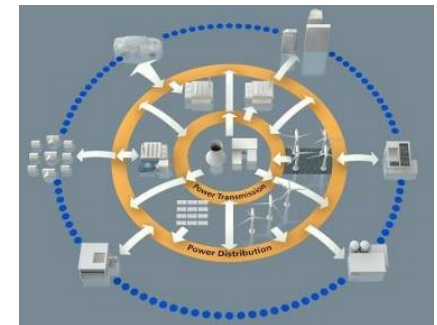


Smart Meter – Einspeisung ins Netz

Umsetzung bei Siemens

Bestehende Berufe erweitern mit Smart Grid Profil:

- ▶ **Siemens Sektoren als Partner**
- ▶ **In Zusammenarbeit mit den Berufeteams der SPE werden Ausbildungsmodule entwickelt**
- ▶ **Kontinuierliche Weiterentwicklung der Ausbildungsinhalte in Zusammenarbeit mit den Smart Grid Experten der Siemens AG**



Weiteres Vorgehen

- Relevante Szenarien mit Hilfe des Demonstrators (Micro Grid) zeigen, wie z.B. grid-zustandsabhängiges Laden, Einspeisen über Ladestation, energieeffiziente Gebäudeautomatisierung etc.
- Workshops am Demonstrator für die Siemens Berufeteams zur Identifikation von relevanten Technologiefeldern
- Expertise von Siemens Fachabteilungen einholen, gesteuert durch das Demonstrator-Entwicklungsteam
- Berufeteam-spezifische Ausbildungsmodule entwickeln / anpassen
- Kontinuierliche Weiterentwicklung des Demonstrators durch engen Austausch mit den Siemens Fachabteilungen

Vielen Dank für Ihre Aufmerksamkeit!

Wilfrid Lammers – Head
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