Siemens Smart Grid – Energy IT to create value for our customers

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Utilities’ business framework is changing – customer-specific solutions

System requirements

<table>
<thead>
<tr>
<th>Affordability</th>
<th>Large and flexible generation</th>
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<tbody>
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<td>Climate protection</td>
<td>ICT</td>
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<td>Efficiency</td>
<td>New grid technologies</td>
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<tr>
<td>Reliability</td>
<td>Storage, new consumer intelligent buildings</td>
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Technology trends

Smart Grid is an integral part of the solution set
The Siemens Smart Grid Suite represents the breadth and depth of our portfolio to master the challenges
Grid control and grid application platform are strategic cornerstones

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<tr>
<th>Grid-specific enterprise IT</th>
<th>Big Data Analytics, IT integration, etc.</th>
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<tbody>
<tr>
<td>Operational IT</td>
<td>Grid control platform</td>
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<td>Grid application platform</td>
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<td>Grid planning &amp; simulation</td>
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- Convergence of operational and enterprise IT is needed to fully leverage business value
- We will drive convergence based on strong energy domain know-how
- Increasing amounts of data enables new value drivers
  - Volume
  - Velocity
  - Variety
Siemens will bring seamlessly combined grid control and grid application platforms into the IT partnering ecosystem.
Successfully implemented – today.
China Light and Power –
Online condition monitoring for Switchgear Tender

Key features
- Partial discharge and switchgear monitoring
- 140 transmission substations with voltage levels ranging from 400 kV, 132 kV to 11 kV
- Based on a SICAM 230 as backbone system including IEC 61850

Customer benefits
- Early fault detection to ensure reliable power distribution
- Reduction of asset failure
- Cost reduction of maintenance through remote monitoring
- System flexibility allows the integration further assets
MSEDCL India – Establishing a modern DMS for 8 cities
Major step forward in the Indians’ push toward a Smart Grid

Key features
- 8 control centers (SCADA-DMS) for 8 cities
  - interfaces with GIS, billing center, customer care
- 274 SYNERGY RTUs & local data monitoring
- 4264 new Indian EA PRO Feeder RTUs

Customer benefits
- Reduction of aggregated technical & commercial losses up to 15 percent
- Optimization of power supply quality
- Reduction of field stuff
- Reduction of non-technical losses
Innovative concept to integrate renewable generation
Reference: Grand Unified Scheme

Northern Power Grid

Key features
- The Grand Unified Scheme brings together battery storage, enhanced voltage control, demand response and real-time thermal rating
- Siemens offered a multi-level hierarchical solution incorporating PowerCC with a data warehouse and a autonomous substation controller using an wide area communications system

Customer benefits
- Finding the optimum solution to resolve network constraints driven by the transition to a low-carbon economy for the future
- Focusing on network technology and evaluations to the extent to which the network can be more flexible, and the cost of this flexibility
Wabash Valley Power Authority

Key features

- New software platform allowing WVPA to utilize their newly deployed AMI network with an MDMS system to create a bidirectional communication and validation solution
- Siemens DRMS is able to provide WVPA with the ability to shed load through the legacy system, verify load shed, calculate baselines, and automate customer billing and settlement

Customer benefits

- Automate several cumbersome processes
- Automate customer billing and settlement via the utility billing system
Stadtwerke München (SWM) – Start up Virtual Power Plant

**Key features**
- Integration of 6 unit-type cogeneration modules, 5 hydropower plants and 1 wind farm to form a virtual power plant
- Scope is the distributed energy management system DEMS
- Automated deployment and trading schedule based on exact usage and generation forecasts

**Customer benefits**
- Opens up further marketing alternatives for distributed energy sources
- Minimization of generation and operational costs
Smart Metering: CPFL Energia – the first meter data management (MDM) solution for Brazilian Market

**CPFL Energia**

**Key features**
- Integration of EnergyIP with 2 AMI systems to support planned 7M metering points mass toll out
- Implementation of MultiOrg Capabilities to support CPFLs 8 generation companies
- Localization of EnergyIP to Brazilian Portuguese

**Customer benefits**
- Operational cost reduction
- Reduction of field staff
- Improved energy quality
- Reduction of non-technical losses