Linky Smart Metering system is Smart Grid Ready

Pierre Marlard Feb 2nd 2011, New-Delhi
Agenda

Atos Origin

Atos WorldGrid

Linky Smart Metering system for ERDF

Linky is “Smart Grid Ready”

Q/A
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Atos Origin
Comparative profile of Atos and SIS

**Atos Origin**

- 2 companies in the same IT Services business
  - Consulting
  - Systems integration
  - Outsourcing solutions

- Annual revenues of € 5.1 billion
- 48,500 employees
- In 31 countries worldwide
- Strong merger & acquisitions culture

**Siemens IT Solutions and Services**

- Annual revenues of € 3.7 billion (transaction scope)
- 30,000 employees*
- In 38 countries worldwide

Examples of specific capabilities

- High-tech transactional services (e.g., cloud computing)
- Continuous process improvement with Lean Management
- Offshore scale (e.g., in India)
- Strong Application Maintenance business

* Based on 28000 FTE, includes eUtilie, Romania, Argentina, excludes D-countries

Examples of specific capabilities

- Large contract management (e.g., BBC, Siemens)
- Eastern European offshore presence
- Specialized solutions (e.g., SAP finance, SAP manufacturing, SAP/MES/PLM integration capabilities, Security and Utilities solutions.)
A significant step to create the #1 European IT services player and #7 in the world

2009 Europe revenues (€ bn)
1. IBM 13.3
2. HP-EDS 9.0
Atos + SIS 8.2
3. Capgemini 6.6
4. Accenture 6.6
5. Fujitsu 5.1
6. T-Systems 5.0
7. Atos 4.7
8. BT GS 4.2
9. Logica 4.0
10. SIS 3.5

2009 Worldwide revenues (€ bn)
1. IBM 39.6
2. HP-EDS 24.9
3. Fujitsu 16.8
4. Accenture 15.1
5. CSC 11.5
6. Lockheed Martin 9.9
Atos + SIS 9.2
7. Capgemini 8.4
8. NTT Data 8.0
9. NEC 7.9
10. SAIC* 7.7
17. Atos 5.1
27. SIS 4.1

* Science Application International Corporation
Source: Gartner, figures for Professional services only. Exchange rate used: 1USD= 0.72 in 2009
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Atos WorldGrid
Atos WorldGrid – a snapshot

» Independent company within the Atos Origin Group since July 2010
» Over 1,000 Energy and Utility specialists
» 150 M€ Turn Over (T/O)
» 90% of T/O from Turn-Key Fixed Price contracts
» From production to retail
» End-to-end intelligence from real-time data – from “the meter to the manager”
» Bridging the gap between industrial control and business systems
» 20 years service maintenance contracts
» Global reach - centres of excellence in Europe, China, India and Latin America
» Building on 30+ years’ specialized industry expertise

Clients Include:
BP, HPCL, EDF, GDFSuez, CPFL Energia, Endesa, Iberdrola, EPZ, Fortia, Gasterra, Gasunie, Nuon, Repsol, Total, Veolia, …
All along the value chain

Real-time intelligence for Energy and Utilities
A unique positioning

Bridging the gap between industrial control and business systems
Real-time intelligence for Power industry

- Trading Platform
- Advanced Billing Loyalty Programs
- Mobile Workforce Management
- CRM
- EAM
- GIS
- Predictive Maintenance
- Demand Management
- Instrumentation and Control
- Smart Grid
- Distributed Generation and Storage
- Self Healing Network
- EV
- Green IT solutions
- Transformation solutions
- End-to-end Security
- Global Optimization
- Green IT solutions

Generation  Transmission  Storage  Distribution  Sales
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Linky Smart Metering system for ERDF
What is the ERDF Linky Smart Metering System?

- Smart Meters
- LAN = PLC
- Empty Smart Concentrators + Local AMM IS
- WAN = mainly GPRS or PSTN
- Central AMM IS
- Smart Meters
- Isolated Meters
- Residential + C&I
- S-SFK 2400bps
- Secondary Substations MV/LV
- Network Operation Center

Atos WorldGrid = System Integrator
Global Architecture of the ERDF Linky system

Customer Care  Smart Grid  Finance  Retailers

site 1

Process  DRM  EAM  MDM

Process  DRM  EAM  MDM

VPN

M2M : WAN Management
NOC

DRM : Demand/Response Management
EAM : Enterprise Asset Management
MDM : Meter Data Management
ESB / Enterprise Service Bus

Java Software

GPRS

PSTN

Isolated meters

Meters
1st Role for the Pilot:
» Full responsibility (exc. Installation only) for the entire solution for the pilot including:
  » Prime Contractor ship / global project management
  » Hardware and System full interoperability (world’s first!)
  » Design of public PLC protocol with an important contribution of L+G and Trialog
  » Design of open Smart Meters and open Smart Concentrators specifications
  » Operation of the Interoperability Certification Lab
  » Delivery of the final scalable Information System (IS) - Central + local downloaded in the open Smart Concentrators
  » Delivery of 5 000 Smart Concentrators (Landis+Gyr, Itron), 270 000 Smart Meters (Landis+Gyr, Itron and Iskraemeco), and WAN/M2M communication (Atos Worldline)
  » M2M Operation (WAN Management: independent from/above 3 different Telcos)
  » System Integration: build, test and deliver
  » End to End Security
  » End to End SLA

2nd Role for the Final System:
» Full responsibility of Information System for the final 35 000 000 Smart Meters and 700 000 Smart Concentrators
» Operation of the Interoperability Certification Lab
» End to End SLA and long-term maintenance (10 years)
The ERDF Linky Smart Metering Pilot in a Nutshell

Installations per engineer

15 x
or
10 x

Installations per day

March
April
May

Status as of Jan, 28th 2011

Converted: 5 000
Installed: 4 639
Recognition: immediate

Installed: 226 725
Recognition: a few seconds to a few minutes – PLC performance: good

Costs

On budget
• 36 mns per meter installation

Deadlines

Globally met
• Adaptation of the installation rate
• Preliminary experiment 100 meters/day
• Now 1500 to 2000 meters/day
• Now 20 concentrators / day

Operations

Satisfactory
• 0.1% of faulty meters
• 3% of distribution boards altered
• 2.5% contractual discrepancies
• Final software fine tuned
• 99.4%, Satisfied customers

Figures on installations, costs, deadlines and operations as of 23rd of September 2010
Linky Pilot: A Scheme based on 3 Principles

1. Immediately mature
2. Immediate communications
3. 100% interoperable

- High demands in the short term during Pilot Phase

+ Optimized preparation of widespread deployment
  - Reduced final TCO (CAPEX + OPEX)
### Smart Data Concentrators

<table>
<thead>
<tr>
<th>Installed</th>
<th>Discovered</th>
<th>Commissioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,639 DCs</td>
<td>4,618</td>
<td>4,617</td>
</tr>
<tr>
<td>In %</td>
<td>99.5%</td>
<td>99.5%</td>
</tr>
</tbody>
</table>

Data as of 2011/01 roll-out in progress

- No major issue on commissioning and discovery, right after DC installation
  Commissioning time: a few minutes in optimal conditions

- Main issue was stability after commissioning. After some time, some DC stopped communicating with the IS.
  **Solution:** software and firmware remote upgrade or sometimes DC replacement
  - for 4000 DC, figures were 98% and 96% in September 2010
**Smart Meters**

<table>
<thead>
<tr>
<th>Installed</th>
<th>Discovered</th>
<th>Commissioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>223,000 meters</td>
<td>207,000</td>
<td>205,000</td>
</tr>
<tr>
<td>In %</td>
<td>92%</td>
<td>91%</td>
</tr>
<tr>
<td>&lt; 20 meters/DC</td>
<td>95%</td>
<td>94%</td>
</tr>
<tr>
<td>&gt; 250 meters/DC</td>
<td>88%</td>
<td>87%</td>
</tr>
</tbody>
</table>

Data as of 2011/01 roll-out in progress

- **Discovery has improved** for meters connected to a DC with more than 250 meters

**Solutions:** Firmware/software, PLC collection scheme fine tuning (tuning for discovery and for commissioning)

- for 135,000 meters, figures were 72% and 67% in September 2010
Data Collection from Meters

**Linky collection process every night:**

1. At 0:00 each meter snapshots its data, DC begins local data collection
2. From 0:00 to 6 a.m. IS data collection on the entire pool

**Current collection rate at 9 a.m.:**

<table>
<thead>
<tr>
<th></th>
<th>Commissioned meters collected on day 0</th>
<th>Commissioned meters collected on day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire pool</td>
<td>79%</td>
<td>85%</td>
</tr>
<tr>
<td>223,000 meters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample pool</td>
<td>86%</td>
<td>93%</td>
</tr>
<tr>
<td>10,000 com. Meters</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Work in progress:** firmware and software upgrades on DCs, PLC collection scheme fine tuning. Collection rate is significantly improving with firmware and software upgrades in sample pool

**NB:** because of PLC daisy chain, sometimes meters have to wait before communicating. Some meters are not installed at the right place and have no DC. Figures on the entire pool were 53% and 63% in September 2010.

Data as of 2011/01 roll-out in progress
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Linky is “Smart Grid Ready”
We design AMM systems as fully interoperable, whatever the hardware manufacturers (Meters and Concentrators): this is completely open and future proof. This is a world premiere!

We design Smart Concentrators as empty boxes, only with LAN and WAN modems, so as local software to be downloaded and fully controlled by the DSO: this is completely open and future proof

Smart Metering connectivity infrastructure will be reused by Smart Grid

We design a decentralized IT system with intelligence split between central computers and local Smart Concentrators, to be able to add any new function as a Java Machine: this is “Smart Grid Ready”

Smart Concentrators are computers located in Secondary Substations to be able to get data from local sensors and be used as the local level of intelligence on the LV network: this is “Smart Grid Ready”
» Smart Metering Management System / AMM System can be designed so as to reduce TCO (CAPEX and OPEX, thanks to interoperability) and must be designed to be «Future Proof»

» Smart Metering Management System should not be seen only from the “metering” point of view, but also as the first building block towards Smart Grid, and must therefore be designed as «Smart Grid Ready»

Smart Utilities will then be able to reach full ROI.

» Cost of IT system is small compared to the global AMI, but leverage effect is very important on TCO. Criterion of choice should not be: cheapest cost of IT system, but «Best IT system for improved ROI / lowest TCO»
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Q/A
You are welcome …

» Open dialogue is the place to start
» You are welcome to visit our booths “7 and 8” and our Energy and Utility centers of excellence
» We can bring our road-show to you
» Gain an inside view of industry best-practice.

Take a “hands-on” approach to innovation with Smart Metering and Smart Grid!
THANK YOU