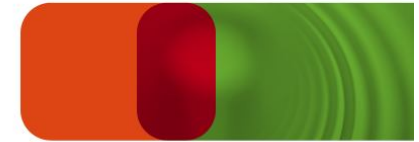


Implementing advanced substation automation



Bert Heerbaart
Program Manager Smart Grids
Liander



IntelliSub
October 2012
Frankfurt

October, 2012

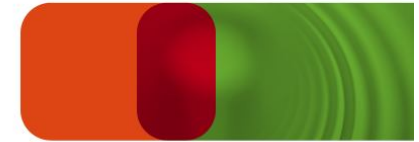
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Digitale netten



- Introduction Liander
- Smart Grid Agenda
- Substation Automation
- Video
- Roadmap
- Lessons learned

Introduction Liander – *key figures*



Network Liander



Liander's E-grid

- 3 mln E-customers
- 320 primary substations
- 40.000 secondary substations
- 2.500 km 50 kV cable
- 40.000 km 10 kV cable
- 40.000 km 0.4 kV cable
- > 6000 employees

Liander's major smart grid projects



1. Intelligence in Substation (project SA Liander)

- Distribution automation at all substations
- Measuring P,Q,I, localization, optimized operations
- Timeline: 2010 – 2017



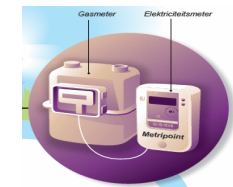
2. Implementing smart grid (project i-Net)

- Distribution automation at strategic sec. substations
- Reduce costs and improve operational efficiency
- Timeline: 2012 – 2022



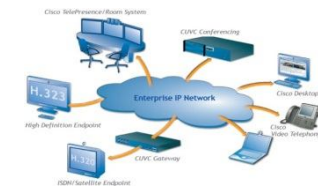
3. Intelligence in Households (project Infostroom)

- Roll-out of smart meter in all households
- Improve energy efficiency in the households
- Timeline: 2012 – 2018



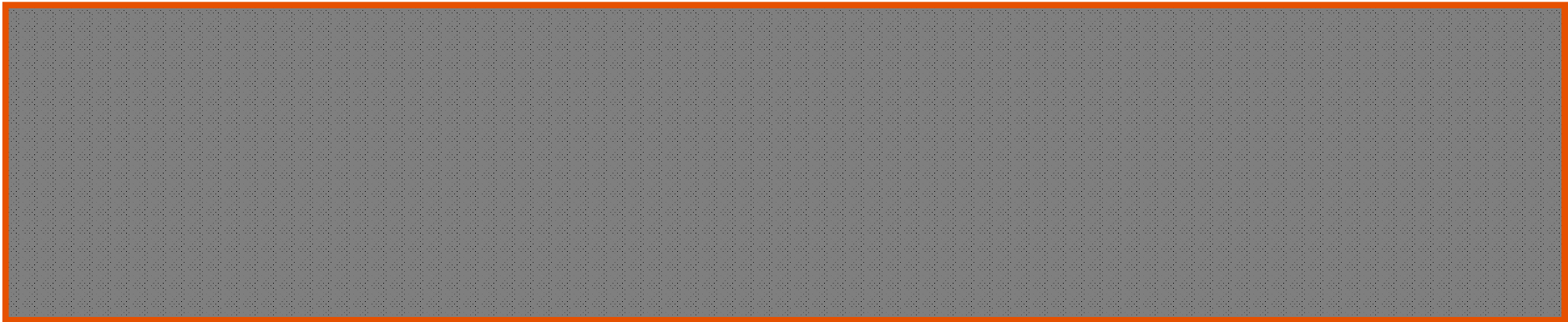
4. Telecom to the substations

- Fiber optic to all primary substations
- GPRS / CDMA to all strategic sec. substations
- Synchronized with roll out of substation automation



October, 2012

First step: Substation Automation



Main Functions:

- Measuring Voltage and Current
- Protection
- Remote switching
- Voltage regulation
- Power quality measurement
- Fault localisation

[video](#)

Substation Automation Roadmap



- 2000 - 2002 market consultation for available SA-technology
- 2002 - 2004 Alliander started development with technology partner Locamation → SASensor
- 2004 Start SASensor pre-pilot in 10 substations
- 2004 - 2008 Testing and optimizing SASensor in 10 pilot stations
- 2008 - 2009 Evaluation pre-pilot & preparing business case
- 2009 “Go” for roll out SASensor in 320 substations (full operational deployment)
- 2009 – 2011 Preparation of roll out
- 2011 - 2017 Roll out
- 2012 ytd SASensor installed and deployed in appr. 45 substations



Lessons learned

Proven benefits

- Substantial cost savings
- High reliability
- Reduced installation time for replacement old secondary installation
- Reduced maintenance and work on location

Difficulties

- Company wide commitment on software based protection
- Requirements for a change from analog devices to digital
 - Alignment of all disciplines
 - Standardization of Method of Working, protocols, signals, alarms, ...
 - Clean up of GIS databases
 - ITIL processes : config mngt, release mngt, change mngt etc.

Conclusion: the technology is available and the benefits are there; the challenge lies in all the organisational aspects and requirements



**Thank you for your
attention**