Automatic Meter Reading
and Intelligent Grid control
June 16, 2006
Content of the presentation

• What is InfoStroom
• Functionallity
• Planning
• The basic’s
• The future of smart metering
What is Infostroom?

InfoStroom is an investment program of Continuon for the implementation of an Automatic Meter Reading system for all the end users in the residential market.

The core of the system is a smart electricity meter – the Metripoint – that communicates via the powerline (PLC). With this system we can read metering data, connect or disconnect and monitor the power quality. The Metripoint will also act as a hub for gasmeters, watermeters and heatmeters.
AMR system visualized

Central server

DataConcentrator

Nuon offices

GPRS

Traforuimte

PLC

Central Telecom

Customer

Electroni meters

Metripoint

Gas

Optional Connections with other meters

Water etc…

Warmte

12345678

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Limited roll-out in 2006

Functioning AMR for

- 25,000 Metripoints in the province of Friesland
- 10,000 Metripoints plus 10,000 gasmeters in Arnhem
- 15,000 Metripoint and 15,000 gasmeters in Wester Netherlands (Alphen ad Rijn)

- Experience with large scale / high speed installation and logistics
- Implementing AMR organisation (customer care, billing, operations)

Preparing large scale roll-out for 2007-2010

- Defining final architecture and technology
- Project plan roll-out / European tender
- Improving business case with the lessons learned

Development and innovation

- Serving other utilities (water, district heating)
- Intelligent Gridcontrol
In the first roll-out only basic functions will be available, especially to serve the energy supply market:

- Remote meter reading needed for:
  - Annual billing (final invoice)
  - Switches, moving
  - Meterswitches (maintenance)
  - Gas meterdata
  - Tariff changes
  - Theft control
  - Profiling
- GPRS meters can be operated by the system from September
Current situation:
InfoStroom: the basics

1) Smart meter (Metripoint) is part a system
2) PLC for communication
3) Functions exposed on a central server
1) Functionality of the meter

Digital storage of meter reads
4 tiers (up to 8 periods per day) ma./tm so. en special days
Variable billing cycle (day, week, month
Internal clock
Switch
  • remote
  • threshold
  • Prepaid
  • Fraud
Pre-paid register
Datapath for other meters
Load profile storage
Outage detection
Voltage measurement
Phase detection
Power factor
2) Use of PLC for communication

- **PLC is cheaper as GPRS**
  - PLC modem € 5-10, GPRS modem € 30-60
  - PLC per meter € 4/jaar opex, GPRS € 20-€40/jaar opex

- **PLC technology is self-controlled (RGO)**
  - In case of GPRS dependency of price level and deployment of mobile operators (GPRS toll 20013)

- **PLC supports more functionality**
  - Code rood, alarm monitoring, IEOL, fase detection

- **PLC causes no extra RF ‘radiation’**

- **PLC is not to slow**
'from meter to billing 2'

System architecture
AMR
Multi Vendor

Interoperability level

Central

Telecom

Customer

SAP  GIS  DMS

integrity with legacy corporate systems
datacollection and configuration management module

GSM / UMTS

PLC(MV)

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3) Functions available on a central server

Non discriminator access for all parties via GO

- ‘Virtual’ meter concept (water VPN)
- Innovations based on meter data / functions (service providers) rather than Meter hardware
- Synergy: one data path for E / G / W / H
- No competition between GO; solves multi-GO situations
- Functions for GO becomes available

Reduction of complexity

- Data path handling of all data for Electricity, Gas, Water and Heat
- GO operates meter and communication network

Secured access

- Billing reads
- Revalue pre-paid
- Switch off
**InfoStroom position**

**Energy supplier**

- Access also for water utilities and authorised third parties
- Products
  - Meet data register

**InfoStroom system**

- Data collection
  - AMR functies meterstand
  - Krijgen schakelen
- Grid operator functions
- Data path
  - Grid operator functions
- Standardisation by NEN: Protocol for exchange of data/execute functions
- Standardisation by NEN: Minimal functionality customer

**RGO**

- Authorised access for market parties
- Add. services
  - Authorised access for market parties
  - Access also for water utilities and authorised third parties
  - Meterregister
- Home unit

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The Future of smart metering

• Smart meters as an sensor in the grid
  • Grid and meters operated by the same organisation
• Smart meters fully integrated in monitor and control layer
• Use of PLC as communication layer also for other grid coupled devices
  • Solar
  • Wind
• Use of standardized access to physical grid and control layer

➢ Self controlled and stable decentralised grid
Test facilities
End of the presentation

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