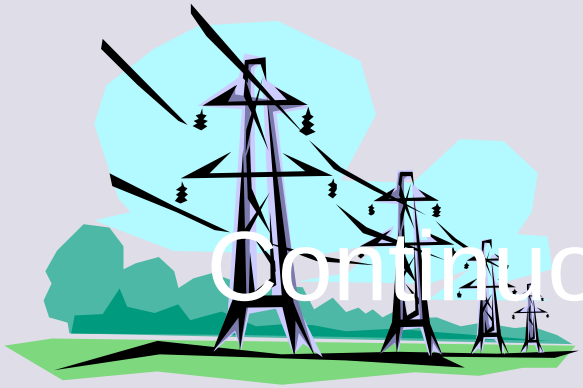

Automatic Meter Reading
and Intelligent Grid control

June 16, 2006

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Content of the presentation

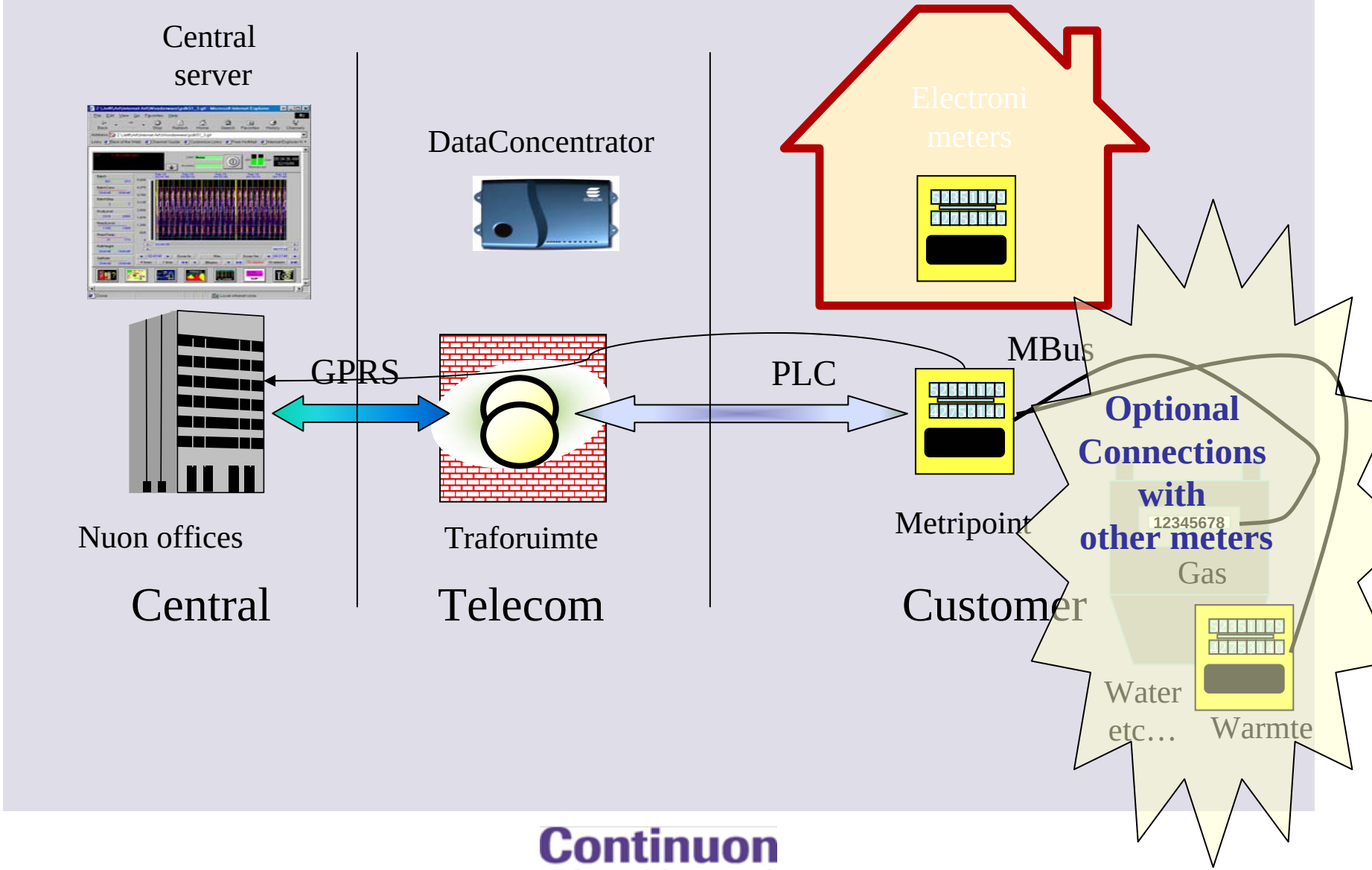
- What is InfoStroom
- Functionallity
- Planning
- The basic’s
- The future of smart metering

What is Infostroom?

InfoStroom is a investment program of Continuon for the implementation of a 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



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Scope of the program

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 lareg scale roll-out for 2007-2010

- Defining final architecture and technoloy
- Projectplan roll-out/ European tender
- Improving business case with the lessons learned

Development and innovation

- Serving other utilities (water, district heating)
- Intelligent Gridcontrol

Functionallity 2006

In the first roll-out only basic functions will be availabele, especially to serve the energy supply market:

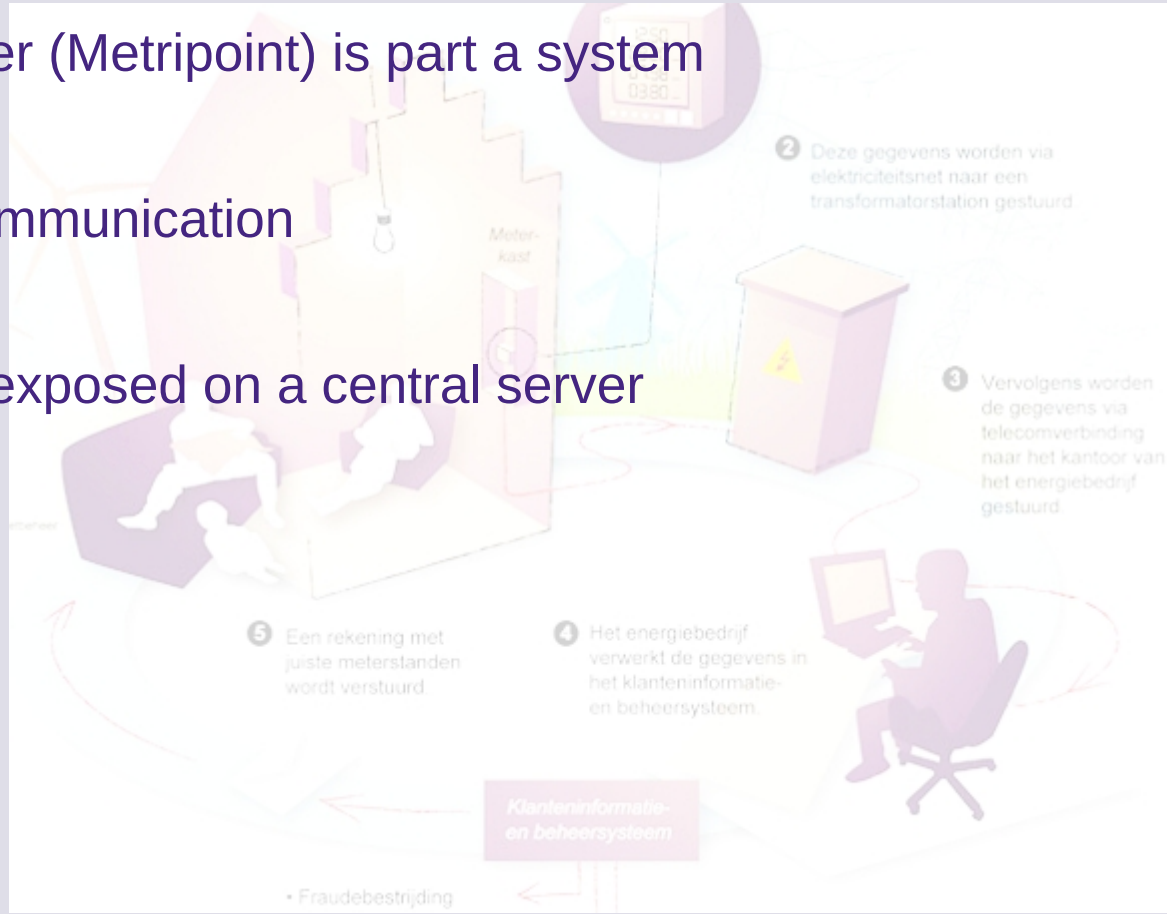
- Remote meter reading needed for:
  - Annual billing (final invoice)
  - Switches, moving
  - Meterswitches (maintenance)
  - Gas meterdata
  - Tariff changes
  - Theft control
  - Profiling
- GPRS meters can be operated by the system from september

Current situation: InfoStroom: the basics

1) Smart meter (Metripoint) is part a system

2) PLC for communication

3) Functions exposed on a central server



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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

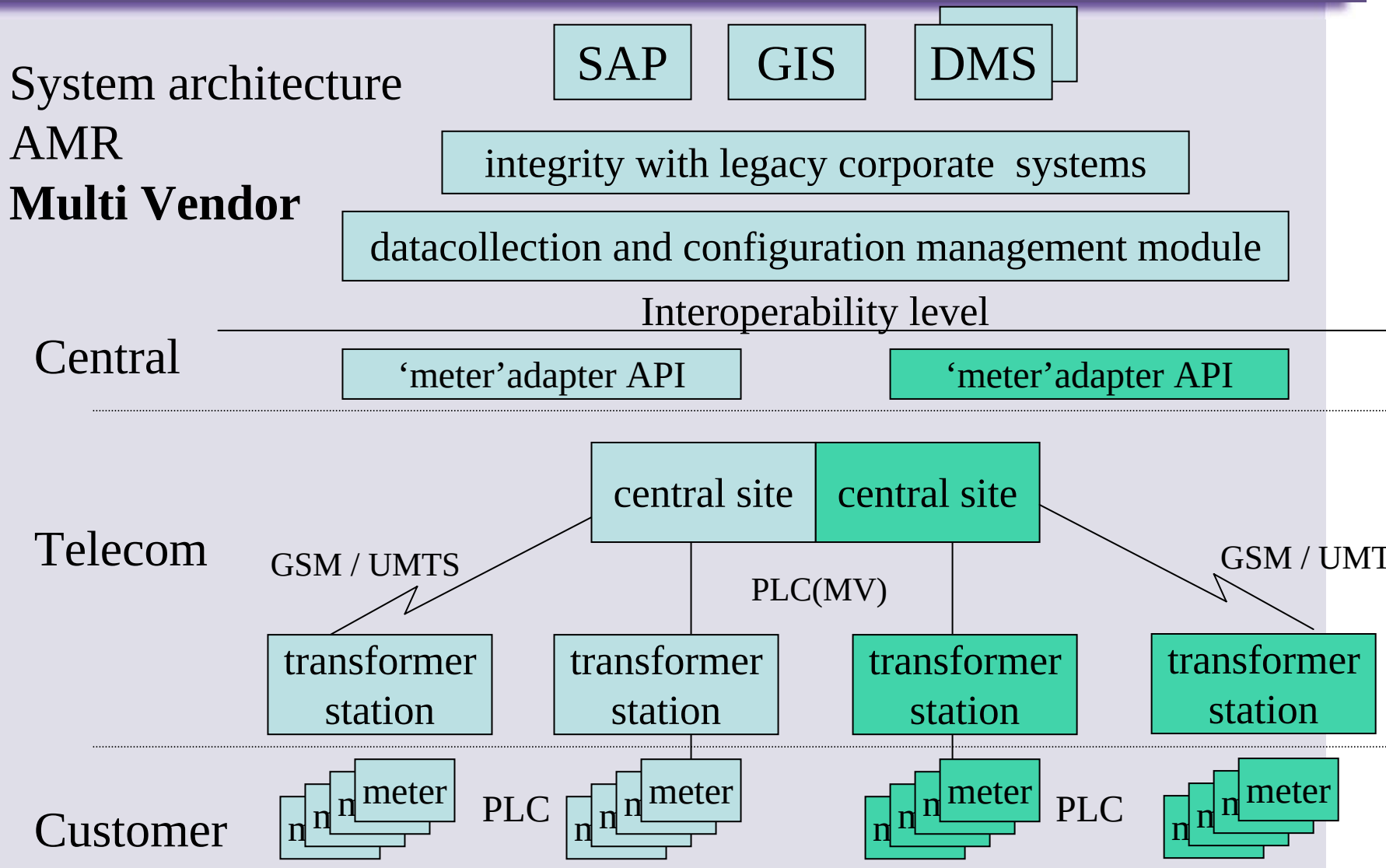
- remote
- threshold
- Prepaid
- Fraud

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’



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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) rathers 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

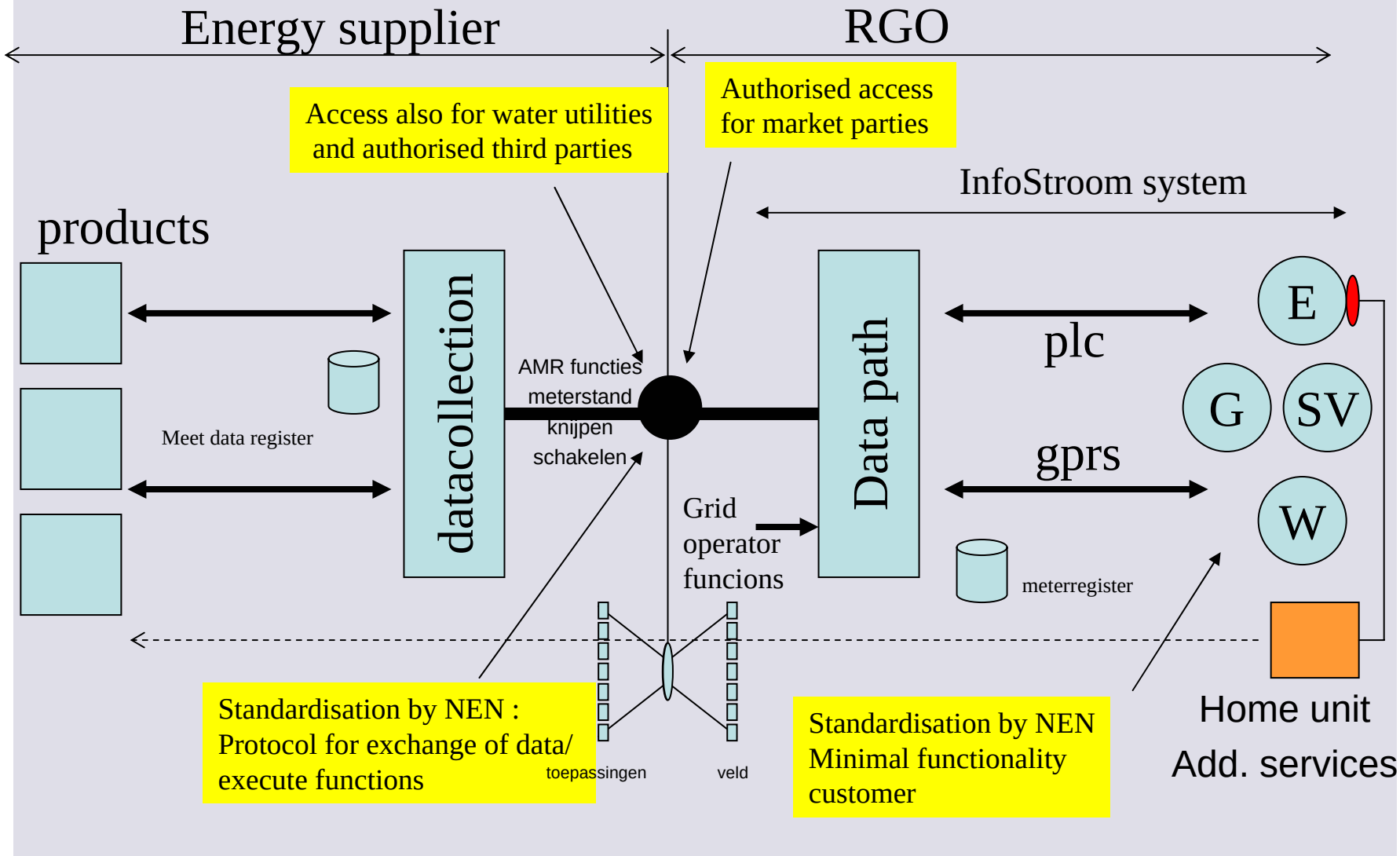
Reduction of complexity

- 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



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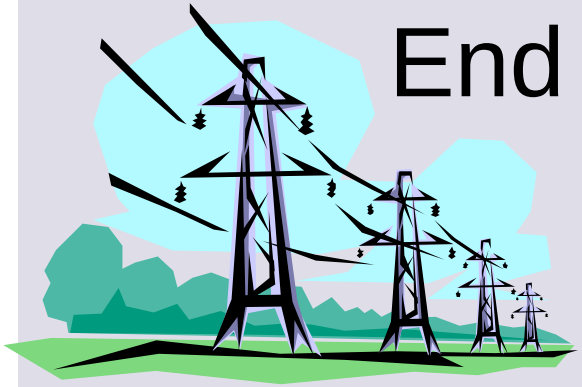
The Future of smart metering

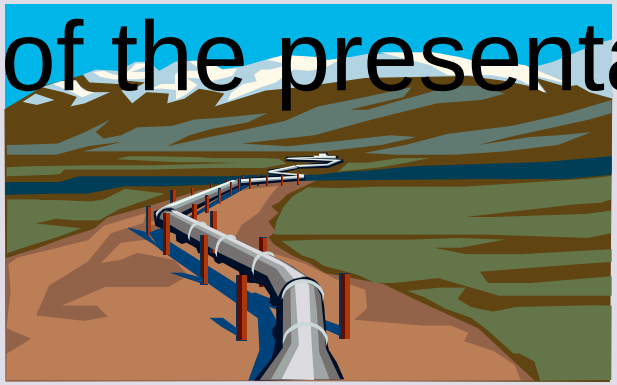
- Smart meters as an sensor in the grid
  - Grid and meters operated by the same organisation
- Smart meters fully integrated in monitor and control layer
- Use of PLC as communication layer also for other grid coupled devices
  - Solar
  - Wind
- Use of standardized access to physical grid and control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

➢ Self controlled and stable decentralised grid

Test facilities

End of the presentation





Continuon Netbeheer:

Frans Campfens