
POWEL
Enterprise Software Solutions

Quality assurance and use of metered data

Klaus Livik
Business Development Manager
Powel

klaus.livik@powel.no

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Metered data – a key for commercial products

▪ Meter read once a year by utility	-	good old days
▪ Meter read by customer quarterly	-	reality in Norway
▪ Meter read by customer quarterly	-	mainly a vision
▪ Meter read by customer monthly	-	a vision
▪ Remote read monthly	-	discussed in Sweden
▪ Remote read daily	-	Vattenfall!
▪ Remote read hourly	-	increasing

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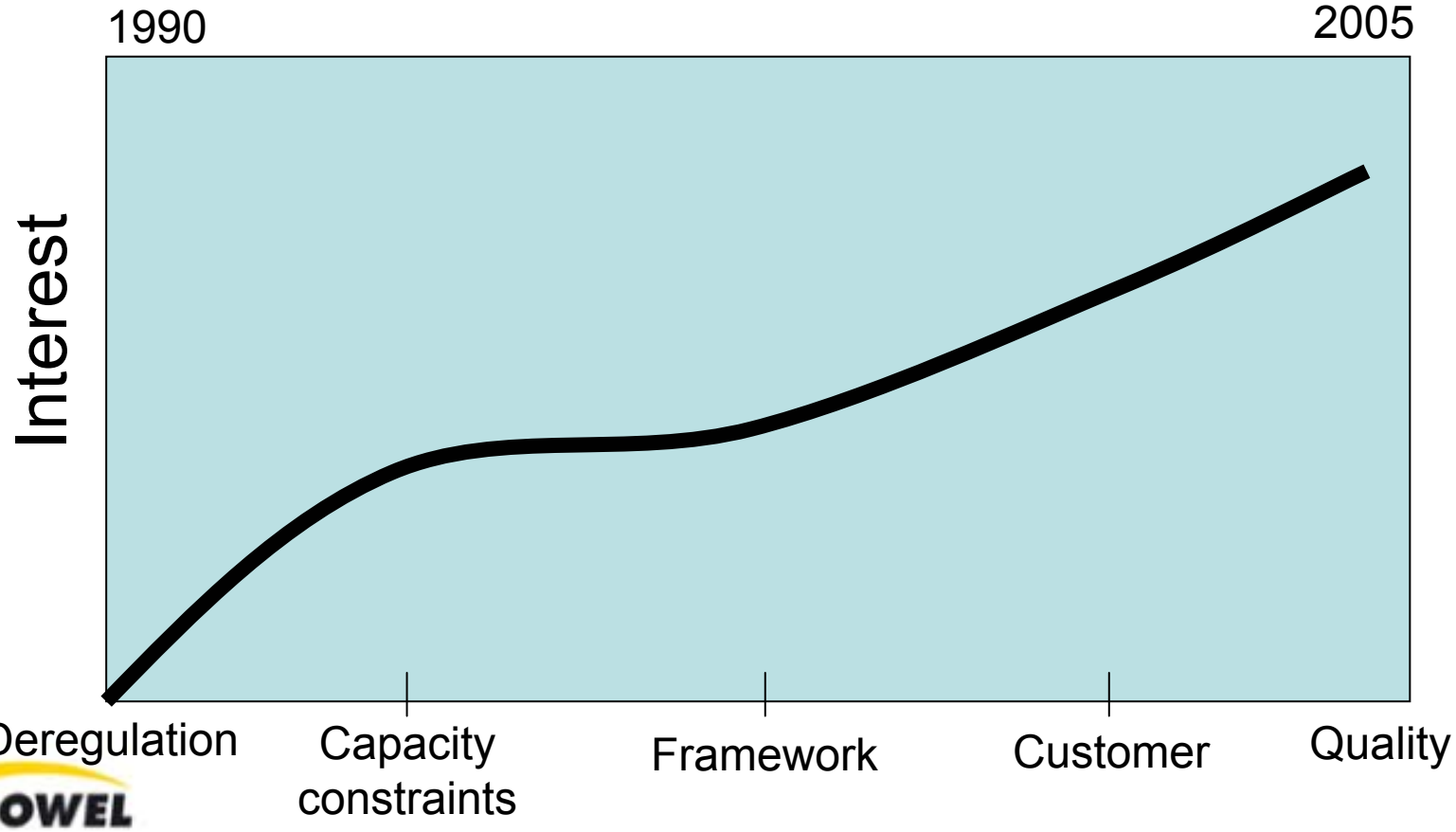
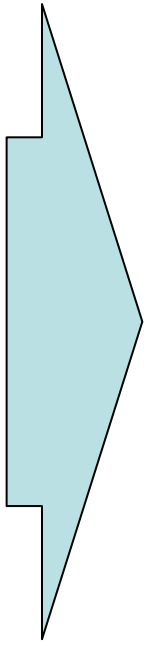
New products – driving forces
- utilities perspective



Metered data a prerequisite

- Billing
- Settlement
- Load profiling
- Bidding
- Balance accounting



Efficient retail wheeling

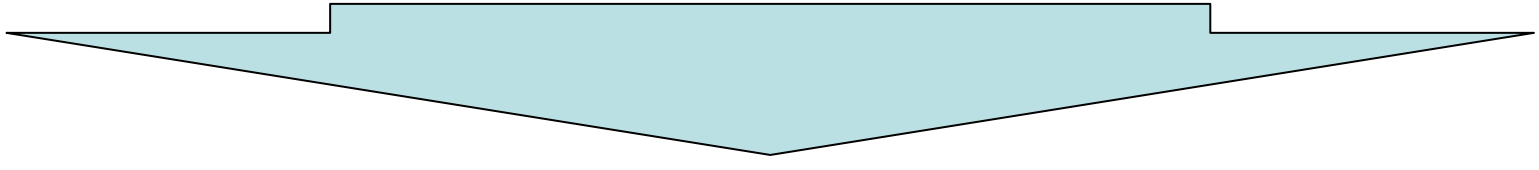
Powel MDMS
- one solution - several software products

Examples

a) Powel MDMS - metering
b) Trade Organizer – management of trade and settlement
c) Powel Demand – short term demand forecast
d) Powel Device Manager – logistics and work order
e) Time series calculator – the generic toolbox for time series

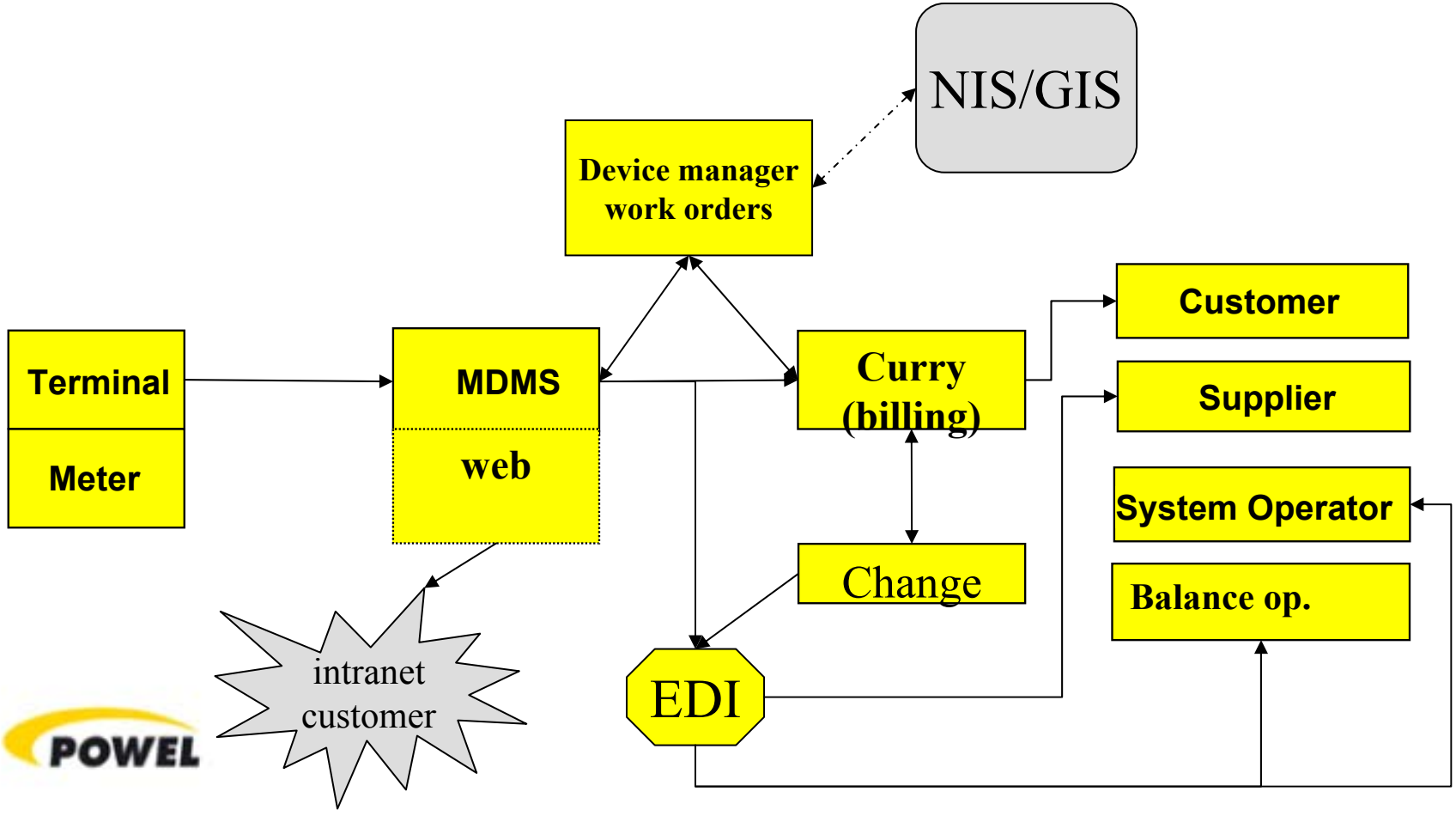
a) Powel MDMS for metering businesses

- Collect metered data from ”all” type of FrontEnd.
- Management of ”all” kind of metered data (multi utility…).
- Sophisticated routines for control and correction.
- Reports for quality and logging of events.
- Web-reports
- Calculations and management of data
- Interfaces with billing engines and third parties
- Exchange of EDI-messages



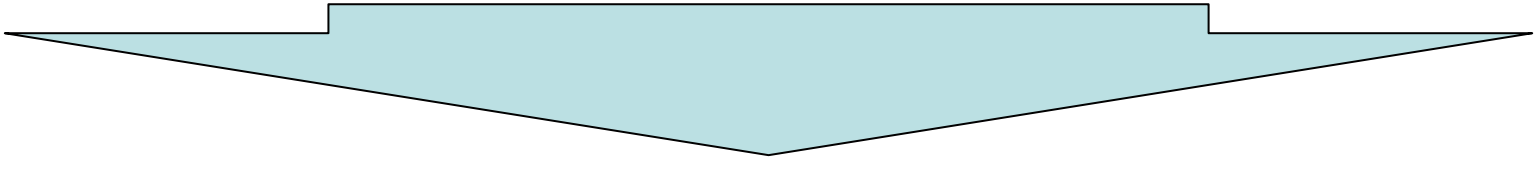
Main market target is distribution companies

Case: Vattenfall



b) Powel Trade Organiser- background and benefit

- Main challenge in power market: Keep track of all information
- Routines and content of information depends of market movements and company role.
- Product code – balance responsibility – metering – supply obligations
- Most routines operated manually – in conflict with company strategy.



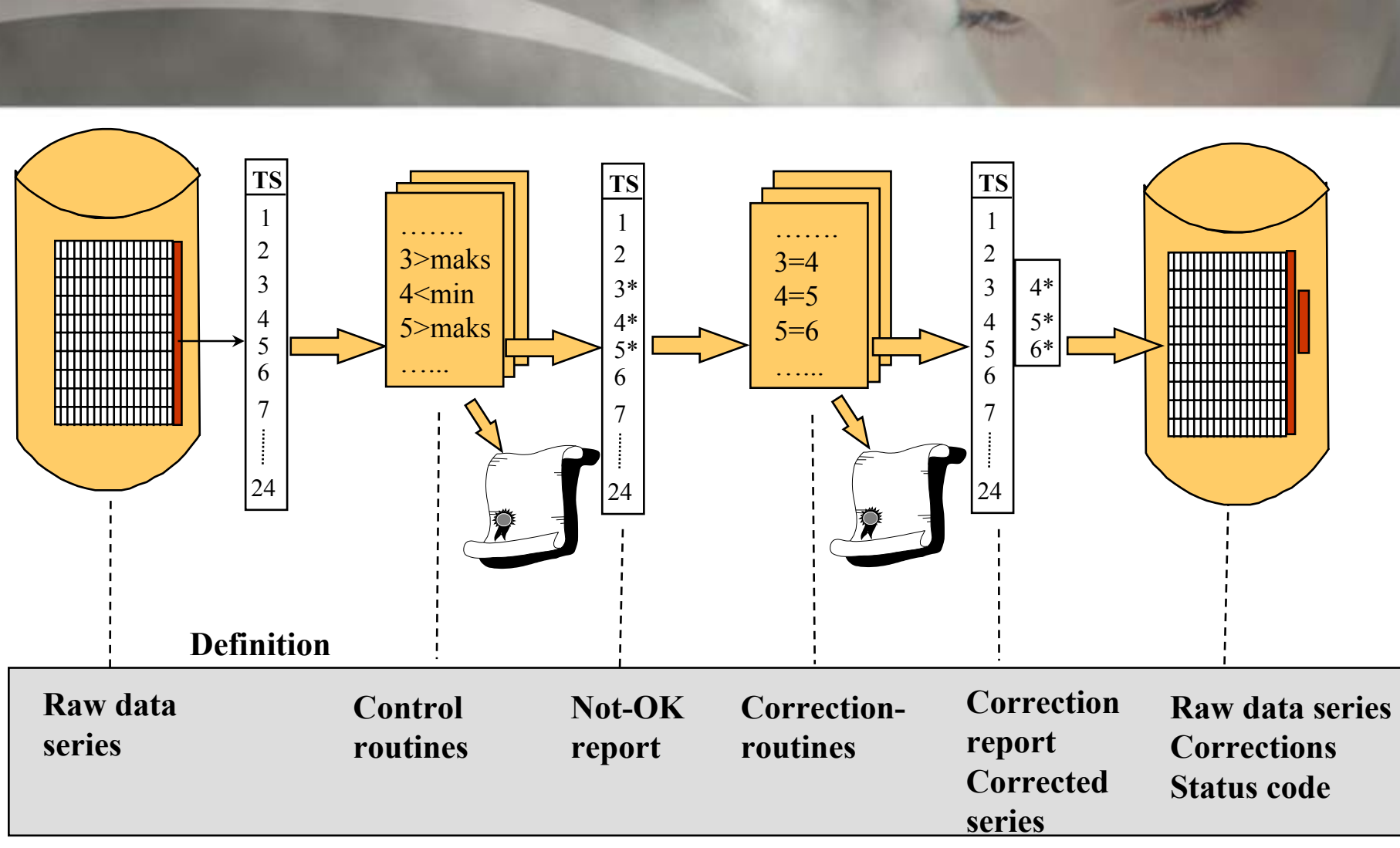
Prevents chaos!

Validation of metered values

– Some methods applied by MDMS

- Methods for control:
  - Test on specific values
  - Test on changes from last value
  - Test on number of repeated values
  - Test on consumption during i.e. last week
  - Test based on comparison with time series from back-up meter
  - Test based on value from manual read meter

- Methods for correcting values with error code as status:
  - Value replaced of constant value
  - Value replaced with last correct metered value
  - Value based on interpolation
  - Value based on extrapolation
  - Value based on mean values from other time series
  - Value estimated based on deviation from manual read meter



Validation without overwriting original values – traceability of all changes!

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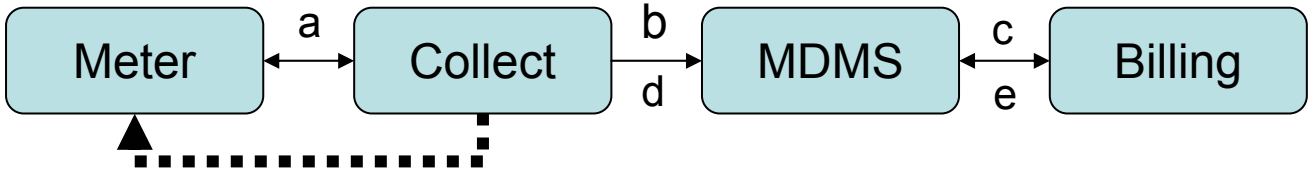
Correction of correction – a challenge!



a) metered data collected – value missing
b) missing value “corrected”
c) validated data for billing
d) re-read meter values – no value missing
e) difference between corrected and re-read value for billing

Observed challenges

- Logistics and work orders
  - Change of meters, audits, terminating….
- Reduce rate of errors in communication
  - No contact, no data, wrong value…
- Efficient management of large amount of metered values
  - Import, export, store, validation, analysis…
- System integration
  - Read, collect, management, billing, services, web….

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Quality of metered values – what is the situation?
- Some results from 115 distribution companies in Norway in 2001….

- Errors caused by installation of meters
  - **Manual read meters: 0,84% with observed error**
  - **Remote read meters: 1,9% with observed error**

Remote read meters:
Wrong parameters, lack of communication, wrong installation are the most common reasons for errors

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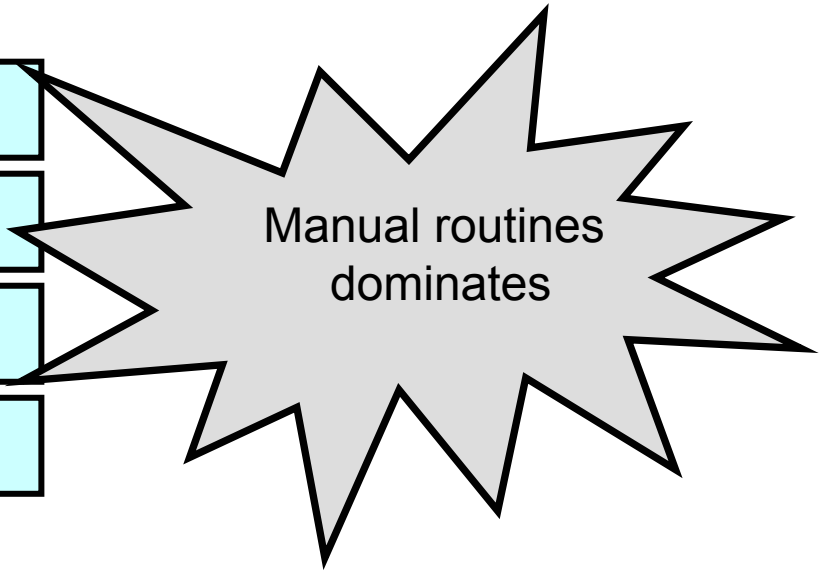
How do you correct errors?

Estimates value	20%
Value from last week	55%
Value from terminal	25%
Value from meter registry	50%



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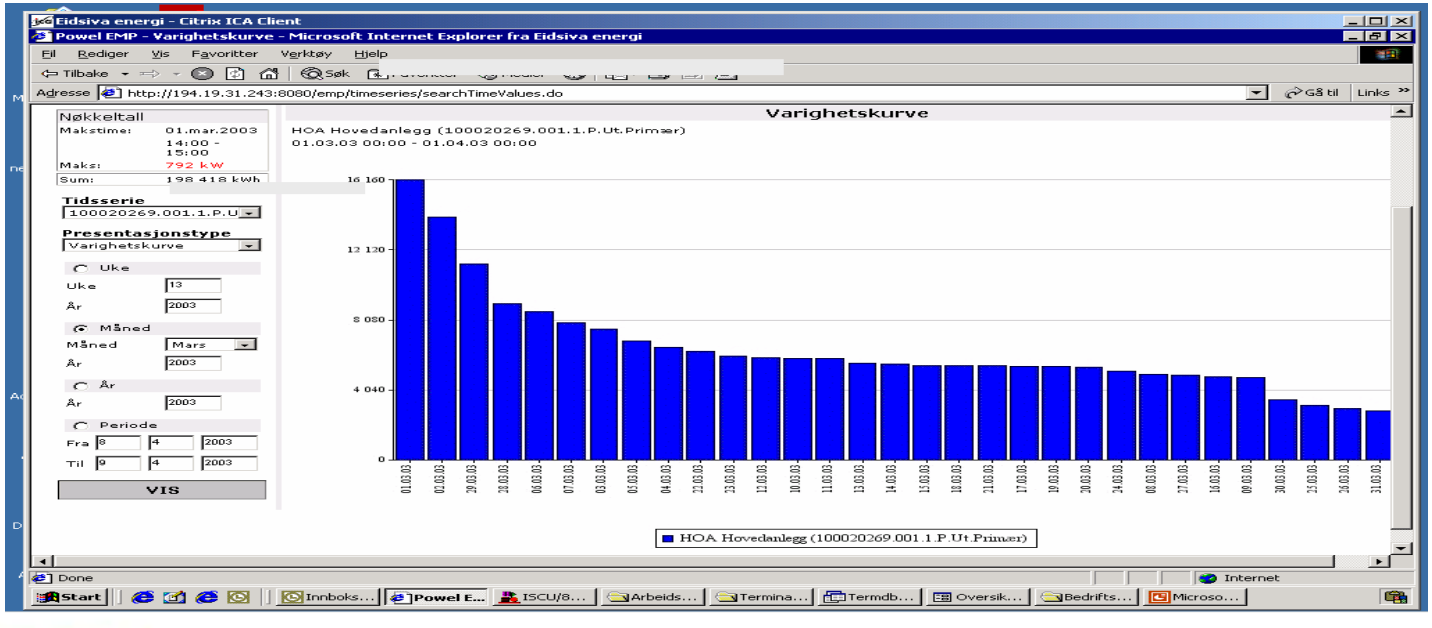
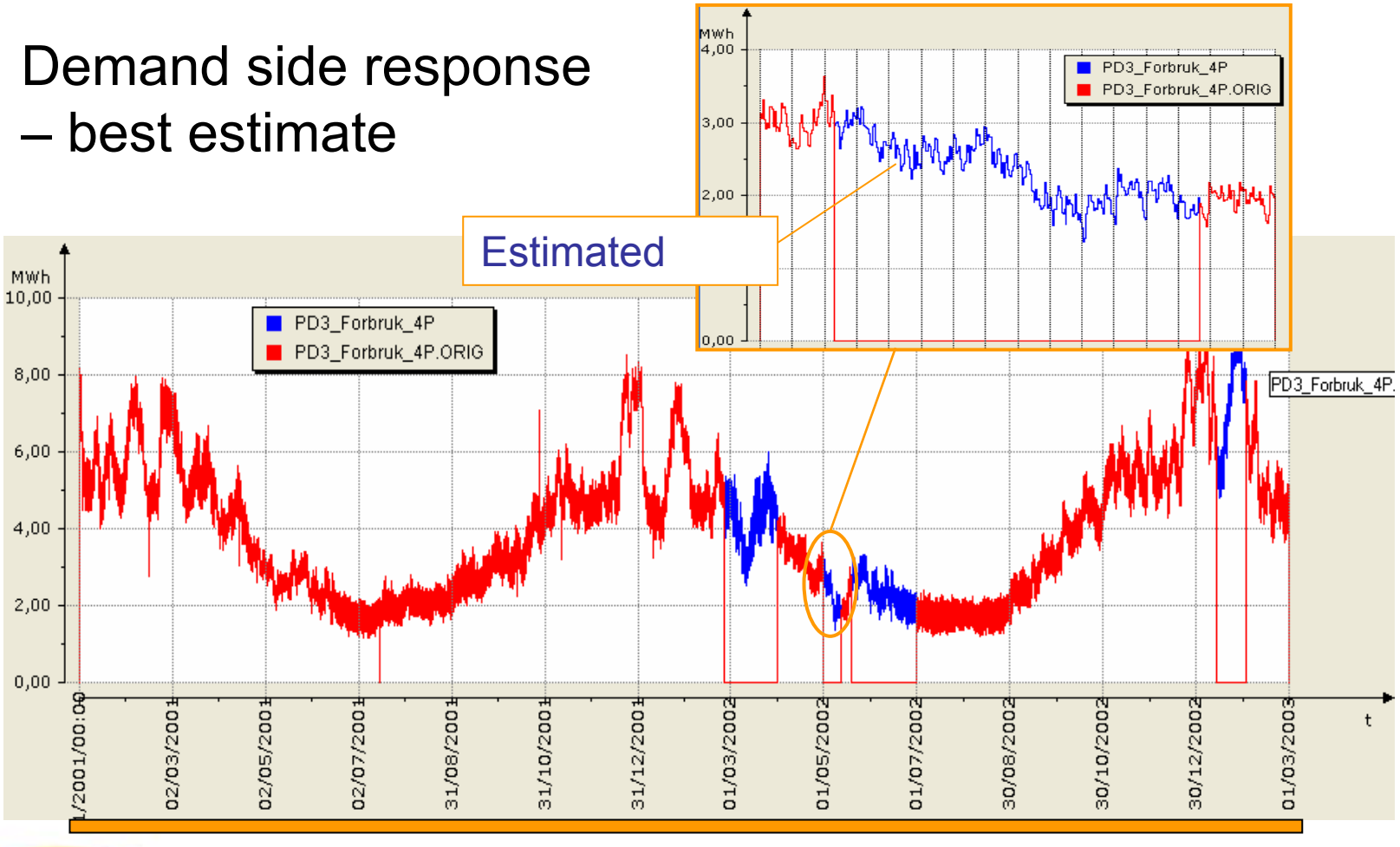
Load Duration curve

Display from highest consumption



Demand side response – best estimate



Time

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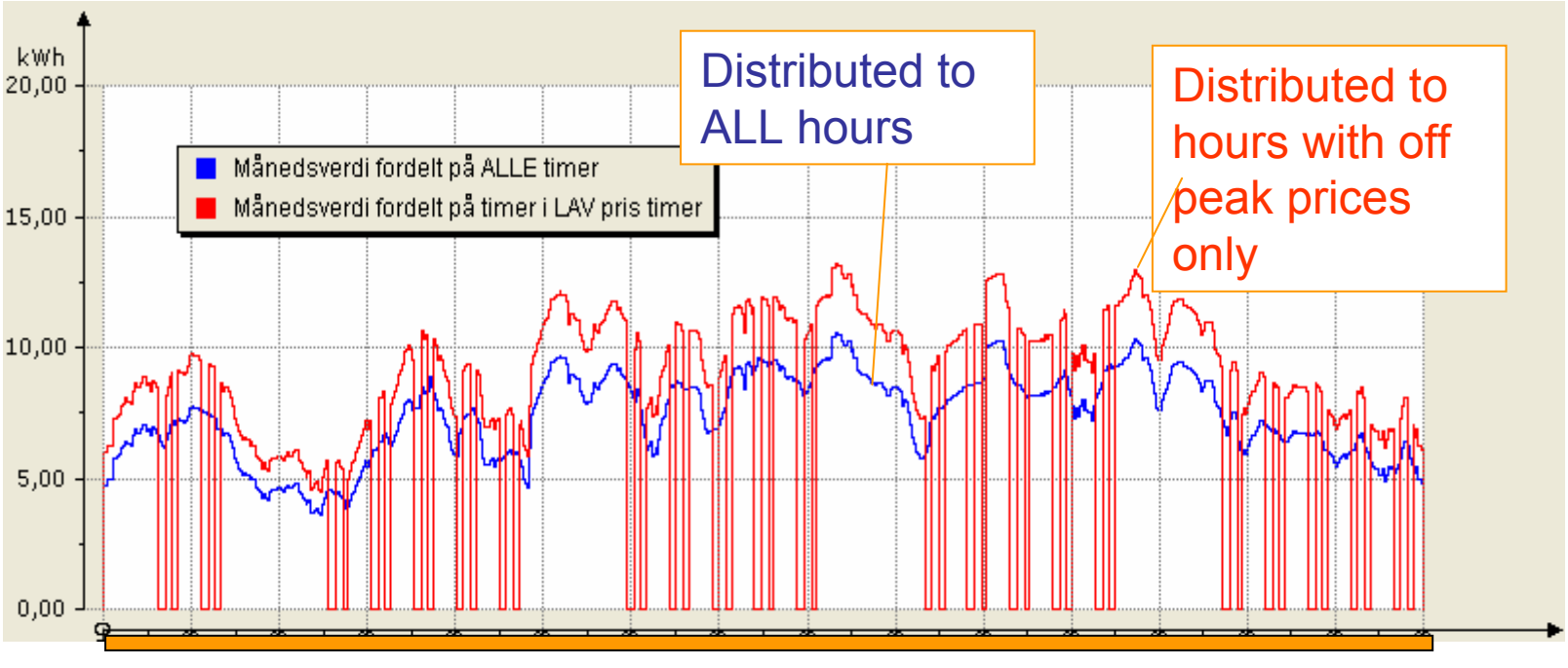
Distribution of monthly read consumption to predefined profiles



January 2003, consumption of 5500 kWh

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Summary

- Validated metered data – the starting point for demand side products!
- Utility industry in a process to digitalize from meter and cash.
- Powel MDMS – a system well fit for demand side response products.
- Products regarding demand side response and quality – moving closer each other.
- Web reports with “fresh” data – increasing interest.
- The metering process – driven by market or regulatory framework???