PI System for AMI

Presented by

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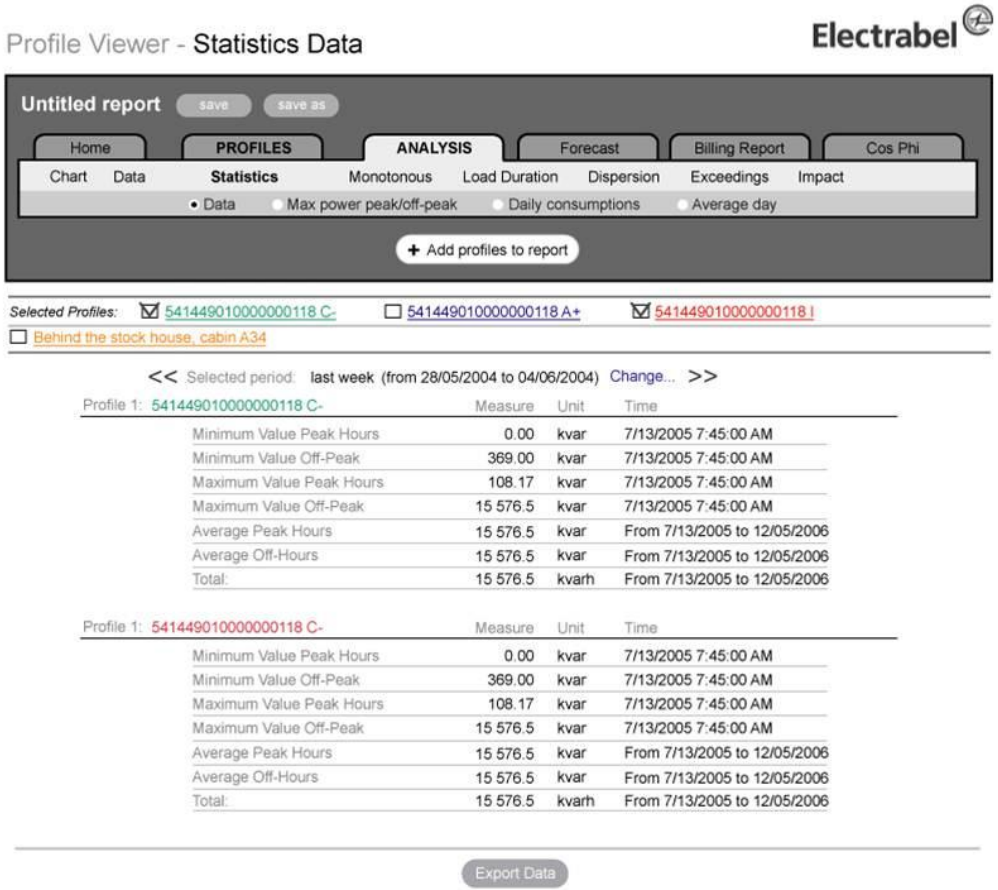
OSIsoft

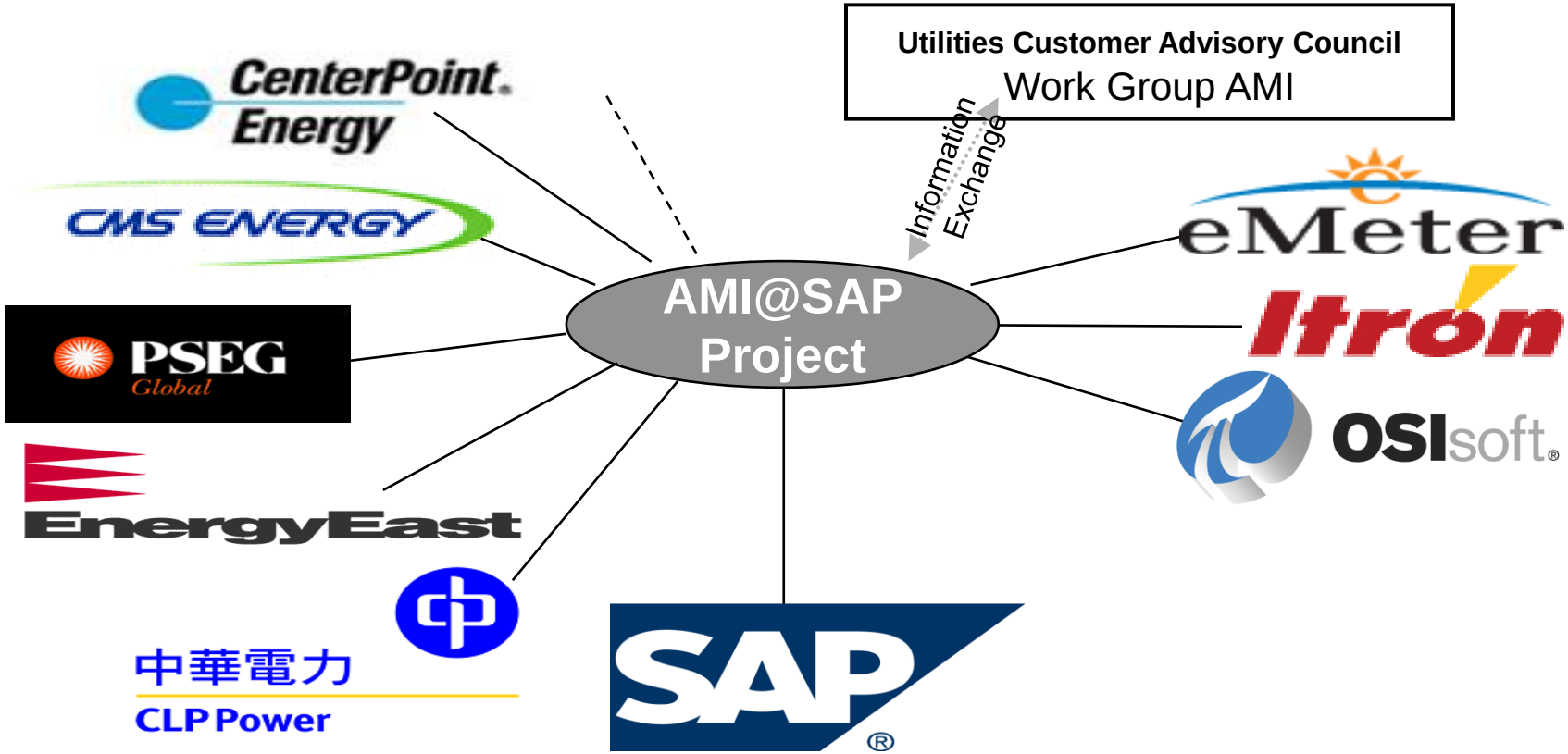
In the beginning…

Early Adoption

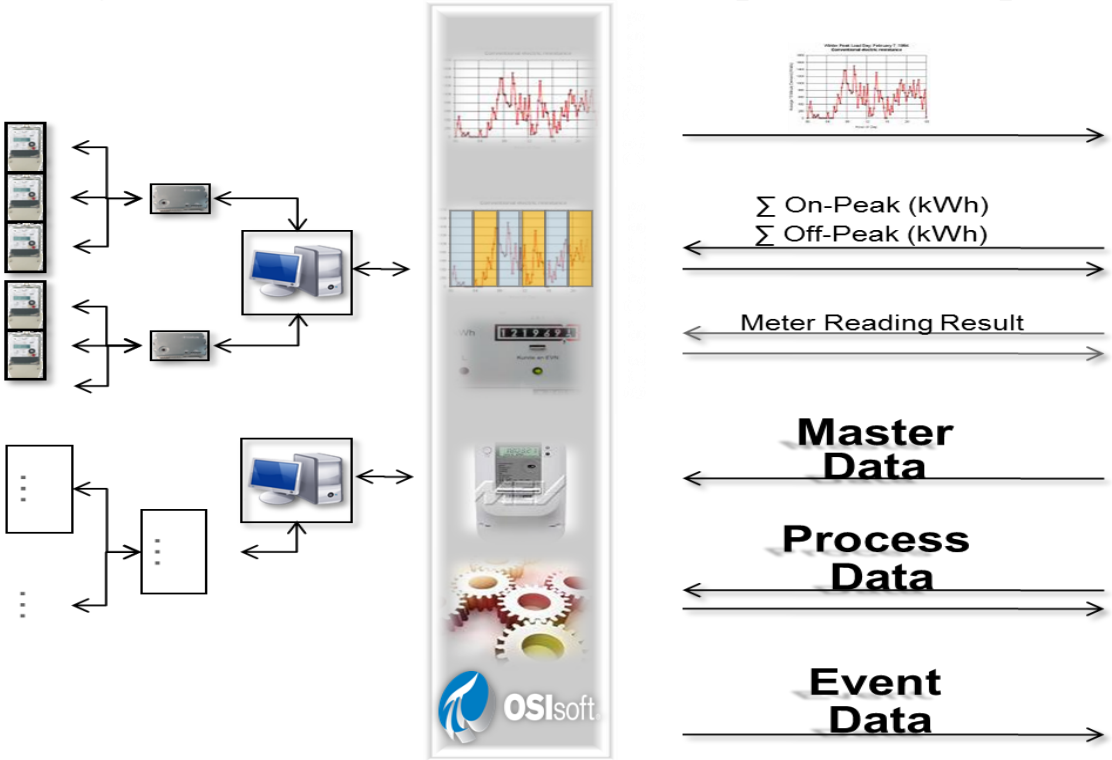
- UFL Interface
- Custom Applications
  - ETL
  - Aggregation
  - Business Processes
  - Visualization



SAP AMI Lighthouse Council (circa 2008)



Meter Data Unification & Synchronization (MDUS)



SAP Energy Data Management for Utilities

SAP Customer Relationship Management and Billing for Utilities

SAP AMI Integration for Utilities

SAP Customer Financials Management for Utilities

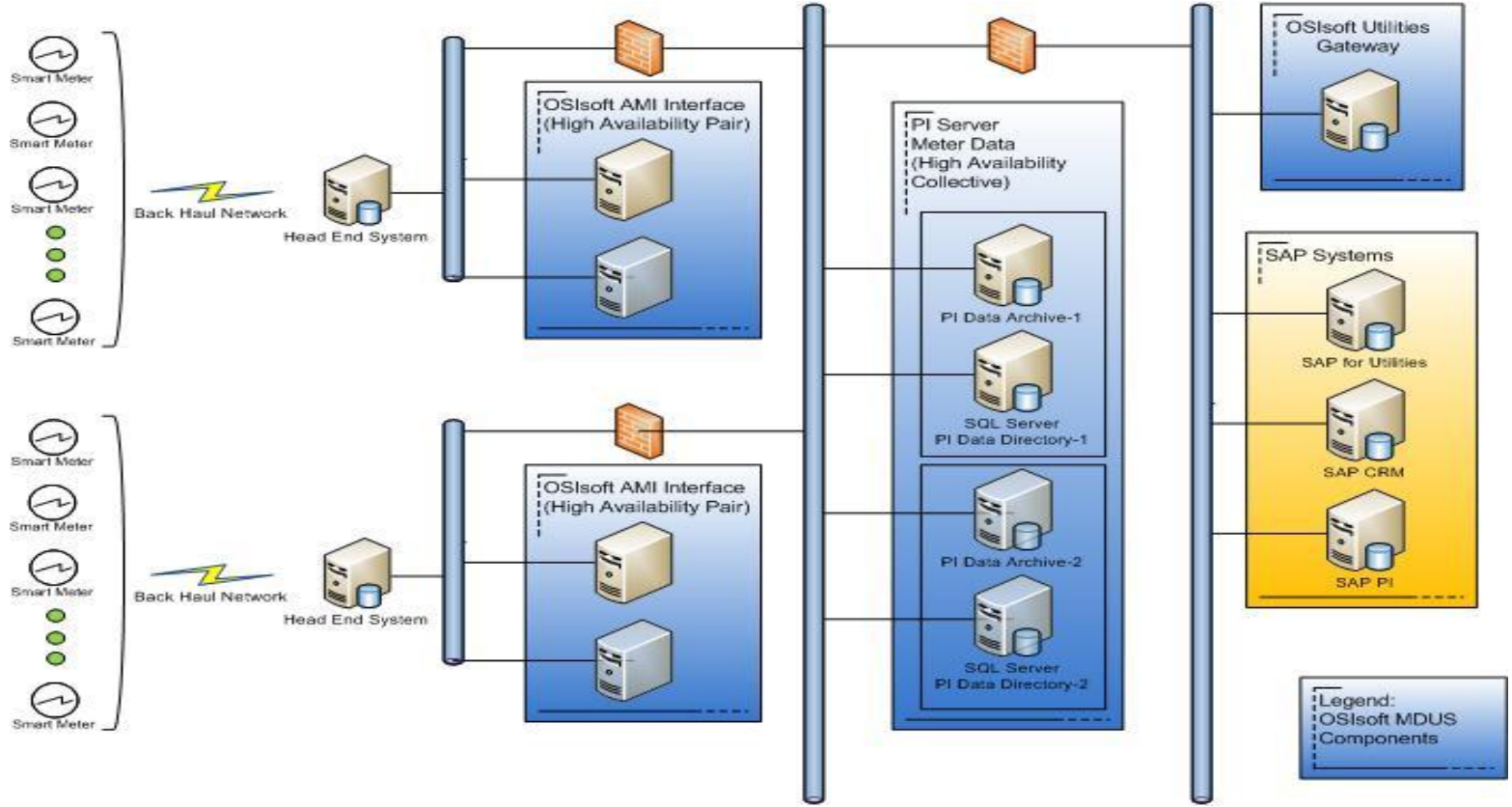
SAP Collaborative Service Management for Utilities

SAP Resource and Supplier Management for Utilities

SAP ERP

SAP for Utilities

OSIsoft MDUS Architecture

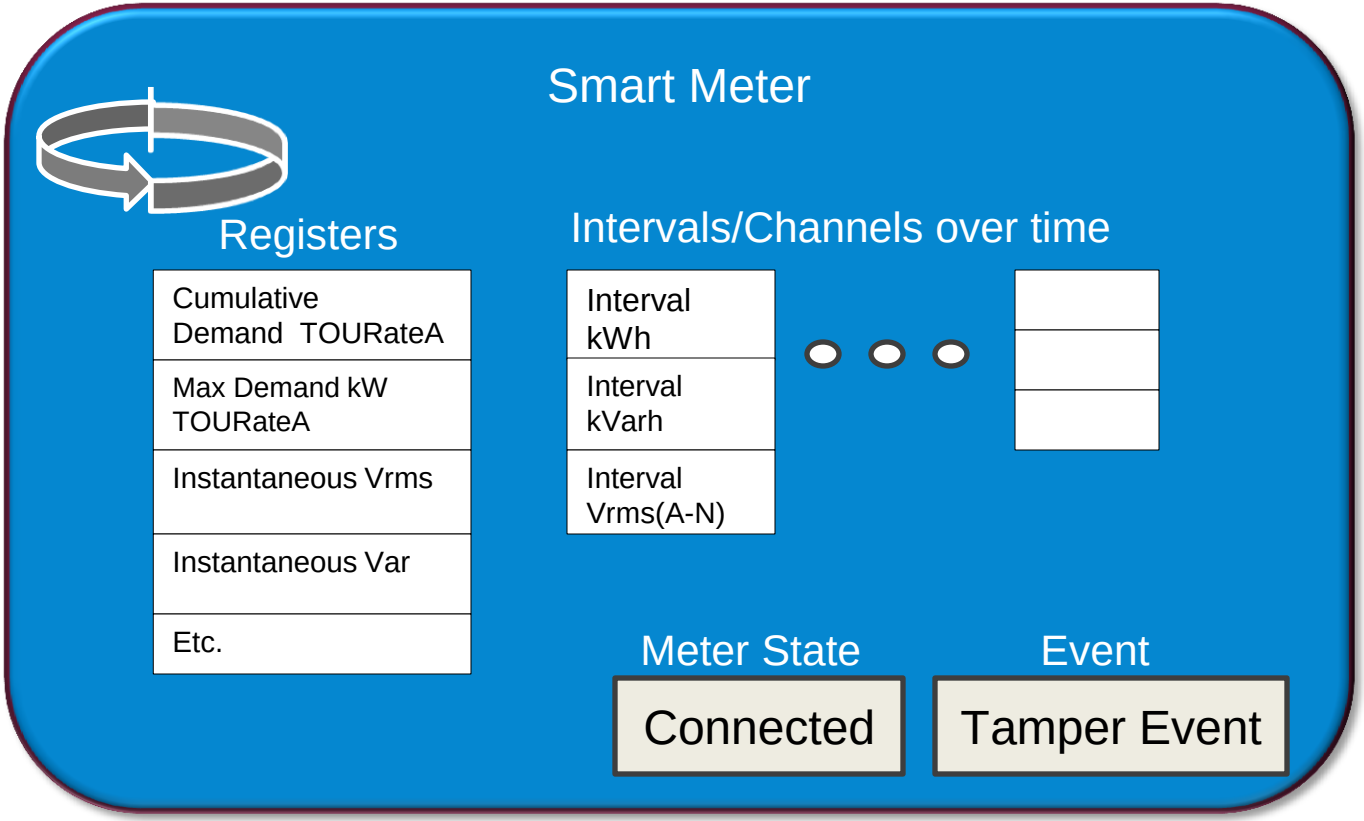


OSIsoft views on AMI

- Real-time challenge
- Keep everything
- Make data available to the experts

PI AMI Interfaces

INPUT
ELECTRICITY



Question:

What data do you throw away?

INPUT
ELECTRICITY

Billing says this is what we need

Engineering says this is what we need

Outage Management says this is what we need

Smart Meter

Registers

- Cumulative Demand TOURateA
- Max Demand kW TOURateA
- Summation TOURateB kWh
- Instantaneous
- Instantaneous Var
- PF
- Frequency

Intervals/Channels over time

- Interval kWh
- Interval kVarh
- Interval Vrms(A-N)

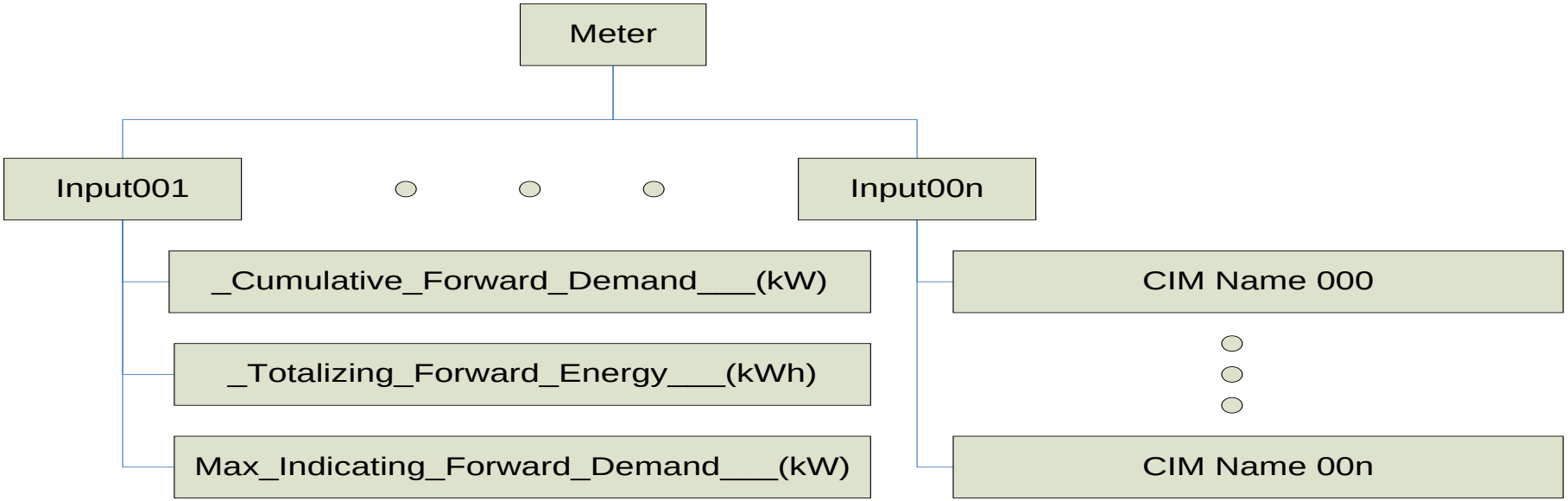
Meter State

Connected

Event

Power Restore

Asset Parent Child Relationship



Design principle on AMI Interfaces

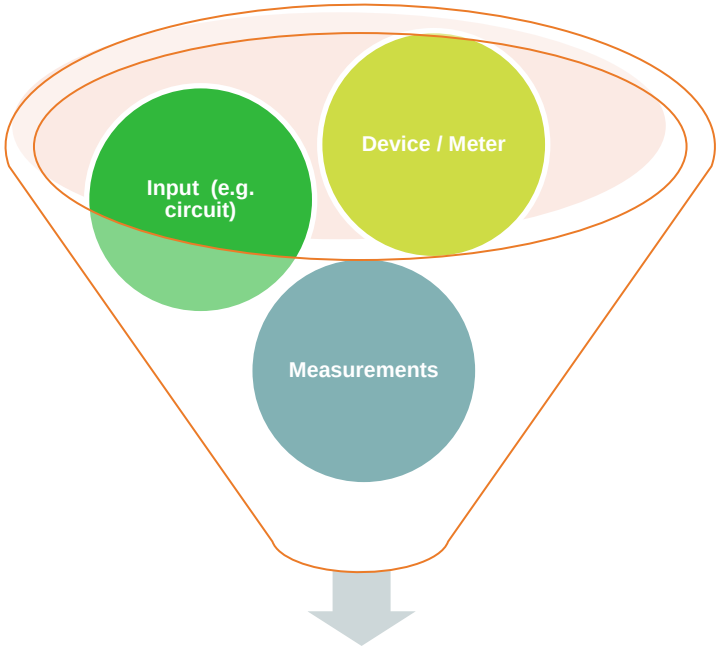
Bi-directional

Command/Control

Secure

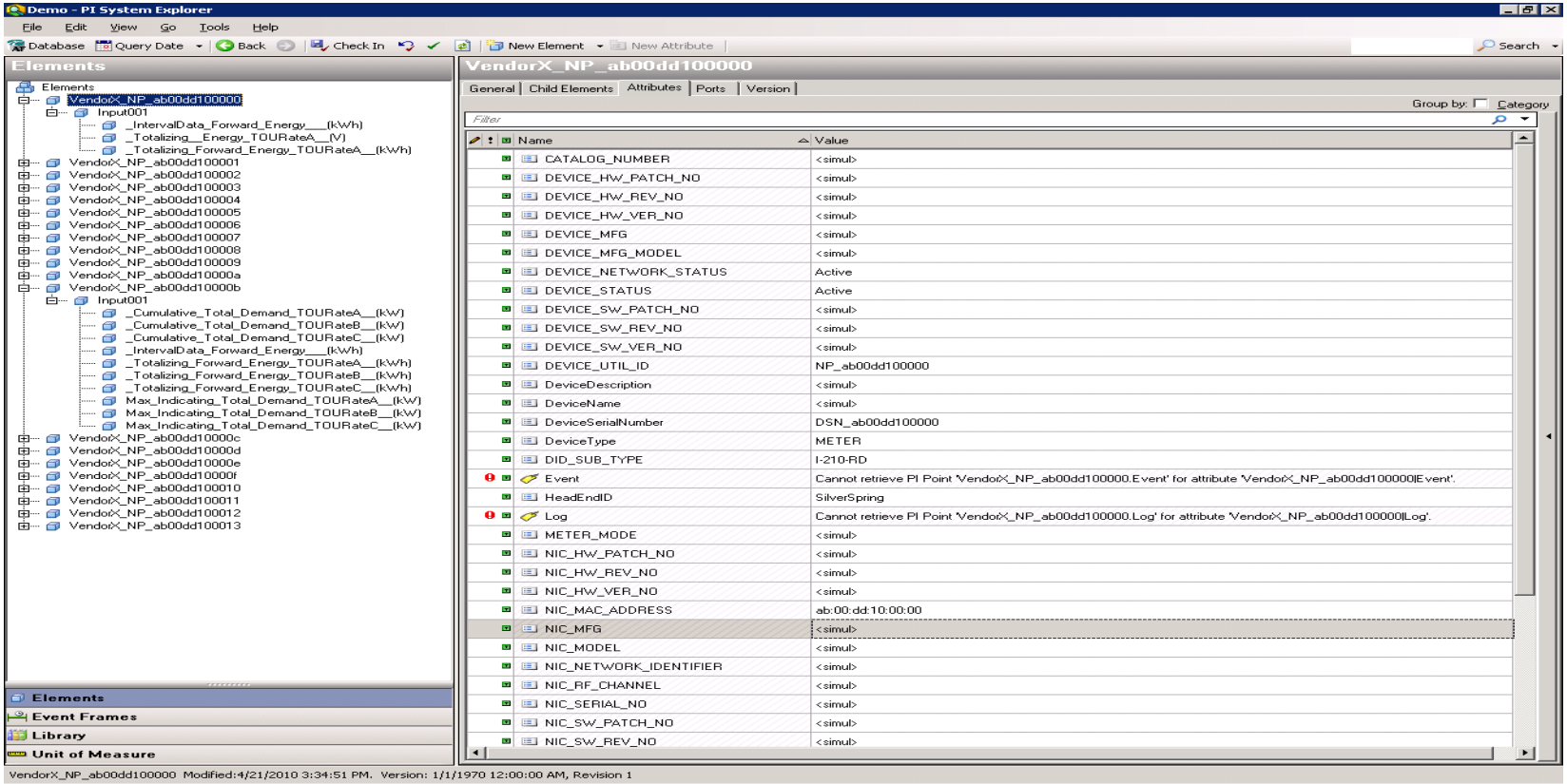
Asset based

And above all…



Self Configuring/Maintaining

And the end result is…



Capability of PI AMI Interfaces in Production

Feature	Silver Spring	Grid Net	Trilliant	Elster	MultiSpeak	NEM (AEMO)	Echelon NES	L+G CC
Synchronize Meter Asset	✓	✓	✓	✓	✓	✓	(s)	(s)
Interval Reads	✓	✓	✓	✓	✓	✓	(s)	(s)
Register Reads	✓	✓	✓	✓	✓	✓	(s)	(s)
Event Data	✓	✓	TBD	✓	✓	✓	(s)	(s)
Remote Ping	✓			✓	✓		TBD	TBD
Remote Connect/Disconnect	✓	✓	✓	✓	✓		(s)	(s)
On-Demand Read	✓	✓	✓	✓	✓		(s)	(s)
Outage Notification	✓	✓	(s)	✓	✓		(s)	(s)
Meter Health	✓	✓	TBD	✓	✓		(s)	(s)
Demand Response	TBD	TBD		TBD	TBD			
HAN (Home Area Network)	(s)	TBD	TBD	(s)	TBD		TBD	TBD
Text Message				(s)				

(s) = scheduled **TBD – To be Defined**

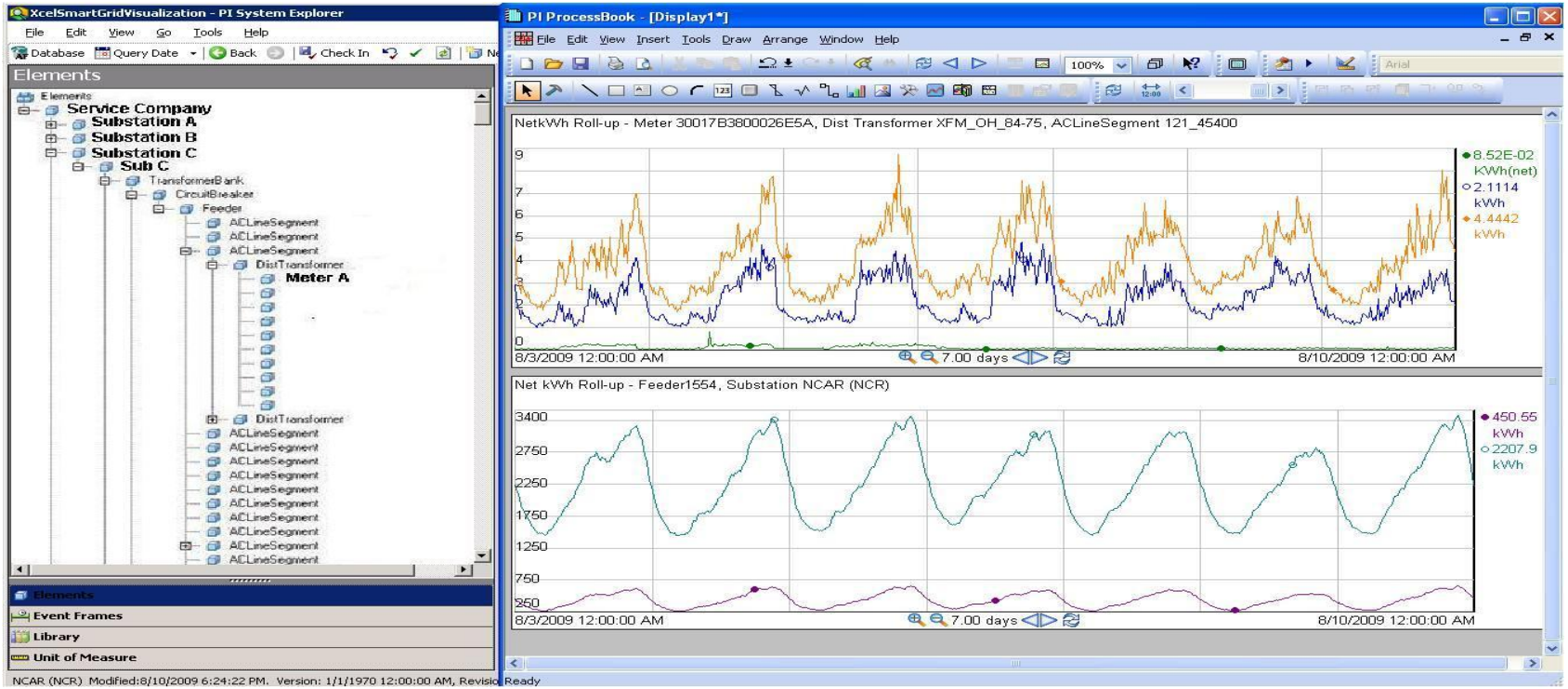
OSIsoft views on AMI (redux)

- Real-time challenge
- Keep everything
- Make data available to the experts

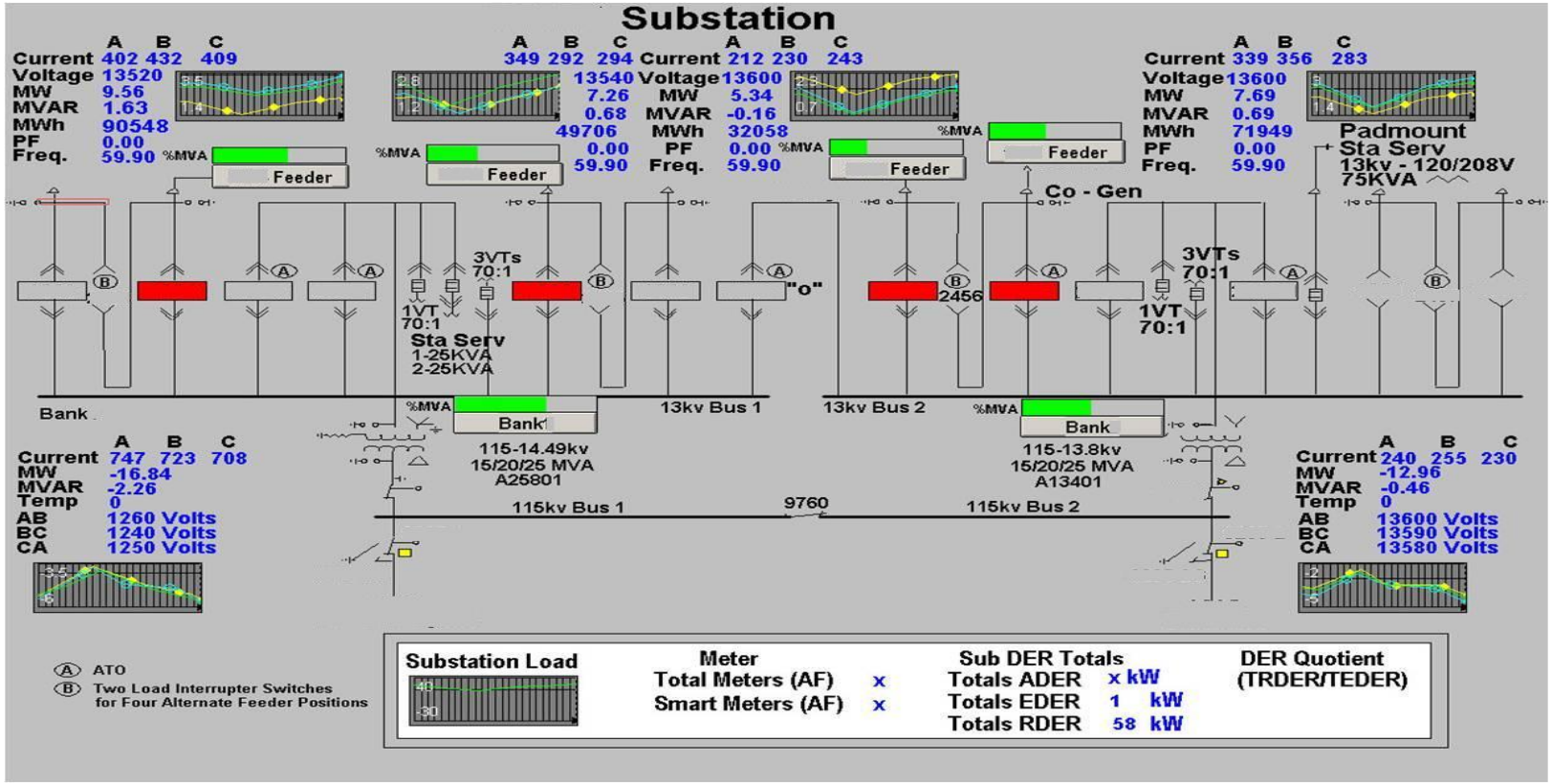
Operational Data Management System (ODMS)

- Extremely large volumes of data
- Disparate data sources
- Multiple data frequencies and latency
- Timely reconciliation of
  - SCADA
  - Distribution Automation Systems
  - Metering

Getting to Value: Understanding the “Roll-up” Mechanism: Net KWh Roll-Up

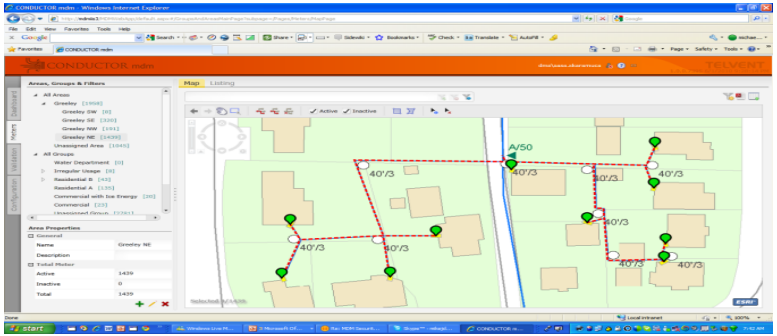


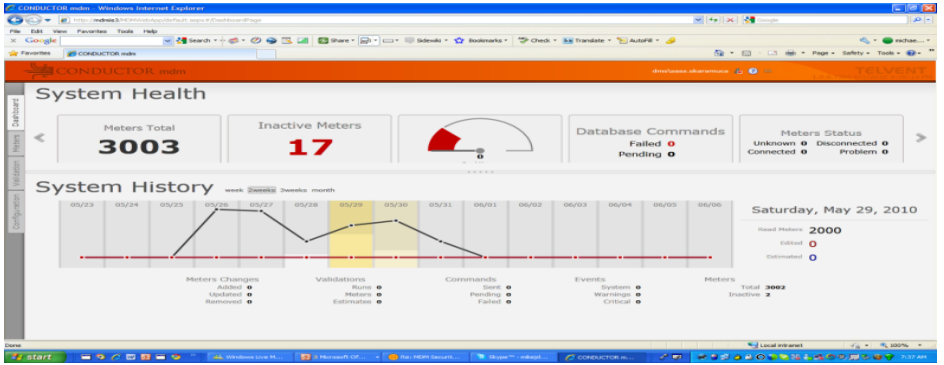
Substation One Line: The “Roll Up” Report Card



Conductor MDM Overview

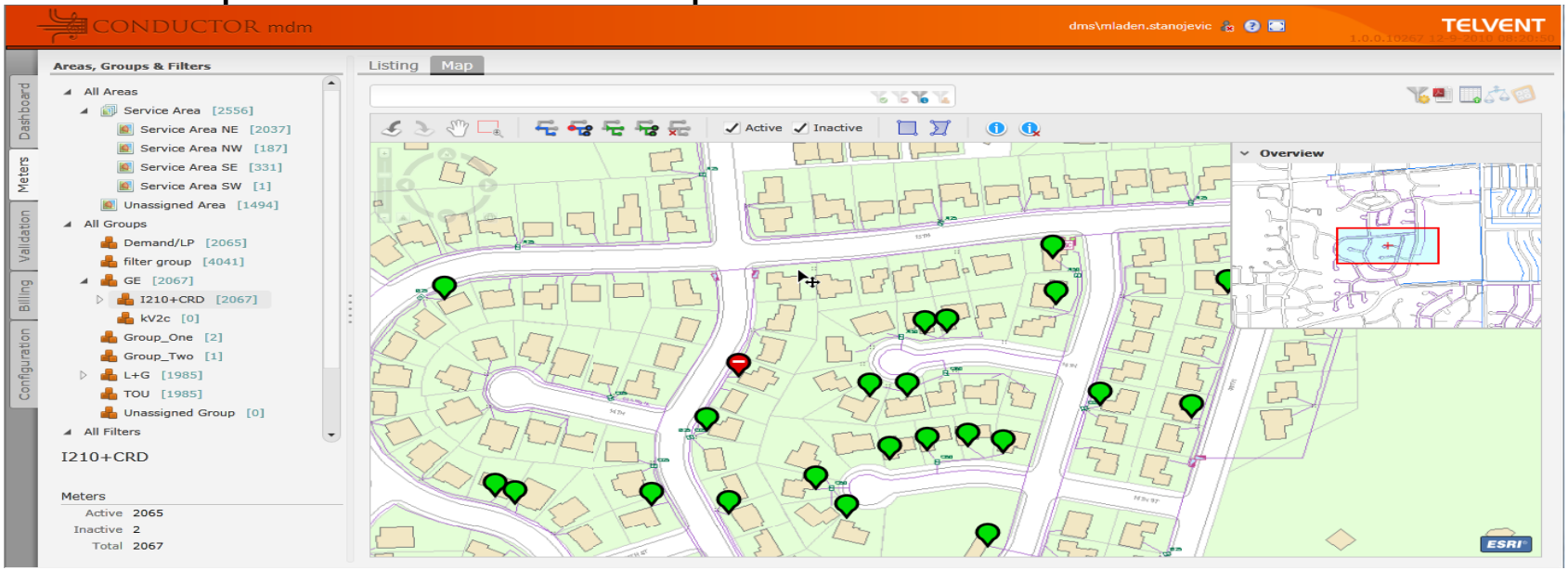
- Validation, estimation, query, analysis, visualization, and reporting
  - Integration:
  - GIS
  - CIS and CRM
  - DMS and OMS
  - SCADA
  - AMI
  - Analytics engine



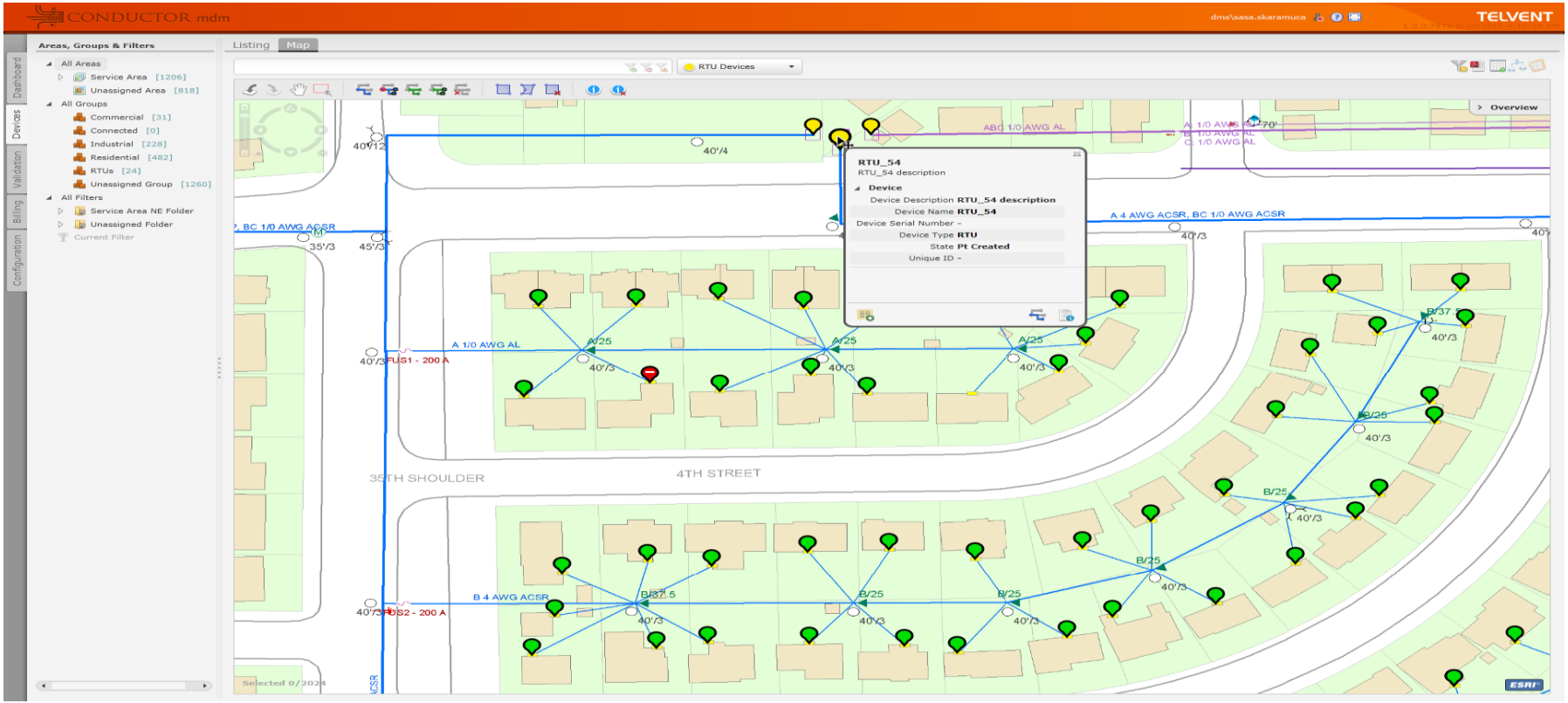


Conductor MDM UI – Map View

- Integration with GIS. Provides info about location of a meter together with its electric connectivity. Way to analyze and compare consumption in a real-time is provided...

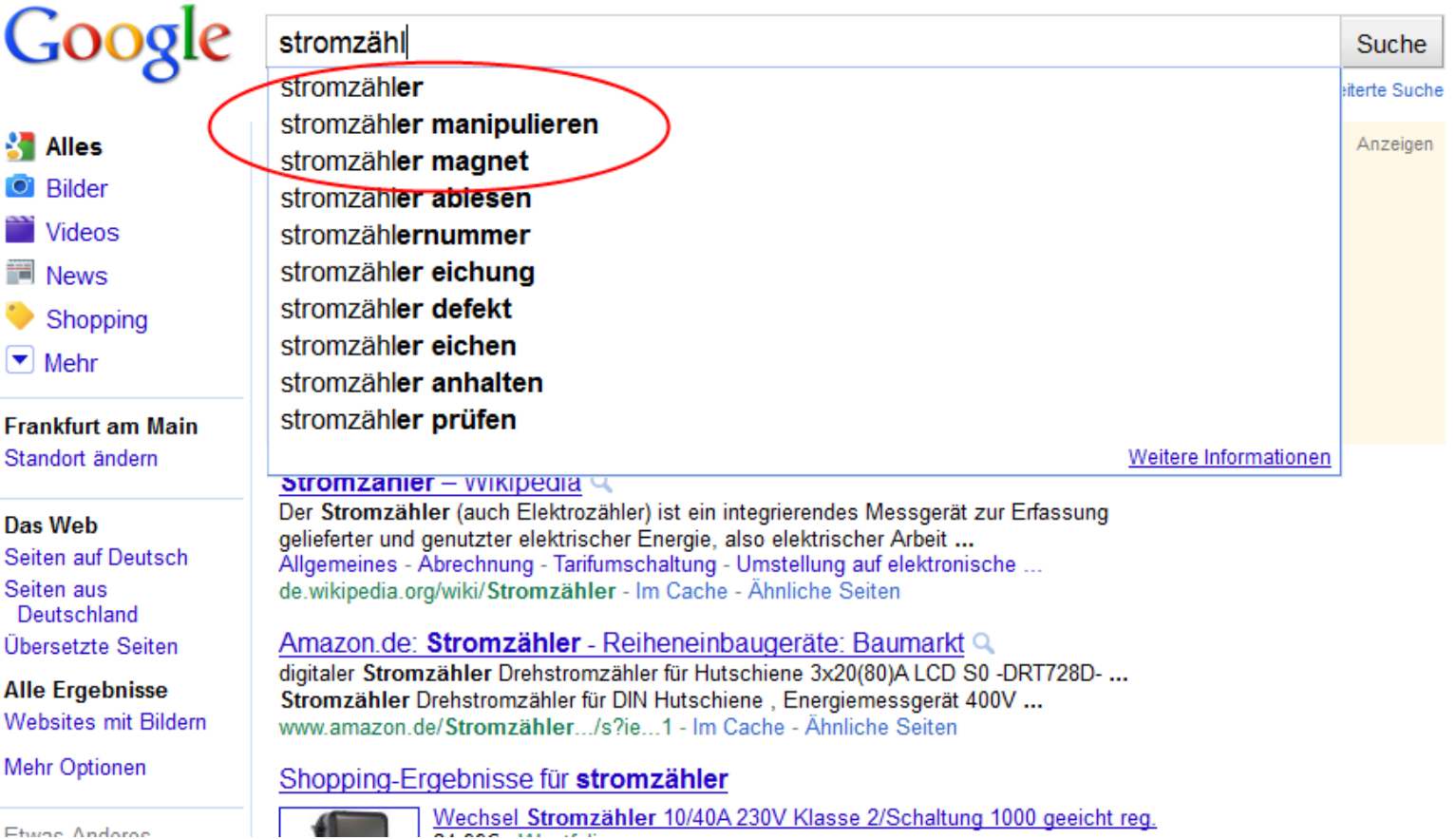


Visualize and Manage RTU's + Meters



Summary

- Metering has gone beyond a single consumption value provided infrequently
- Very large, flexible MDUS systems installed with “automagic” capability
- AMI meter data used to extend value outside of billing and customer care
  - Traditional methods
  - New seamless/transparent methods becoming available



More Information

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Thank you