Turning **insight** into **action**.

OSIsoft. USERS CONFERENCE 2011

PI System for AMI

Presented by **Michelle Kuiee**, Product Manager, OSIsoft

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In the beginning…

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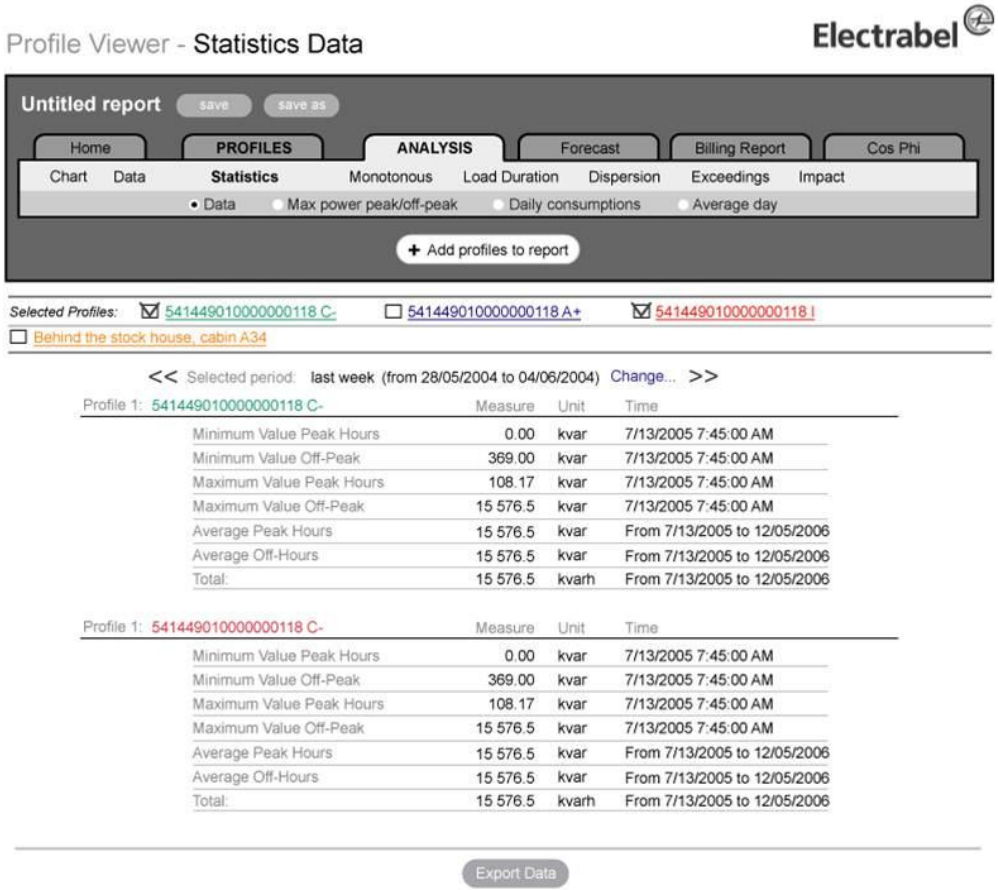

Early Adoption

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

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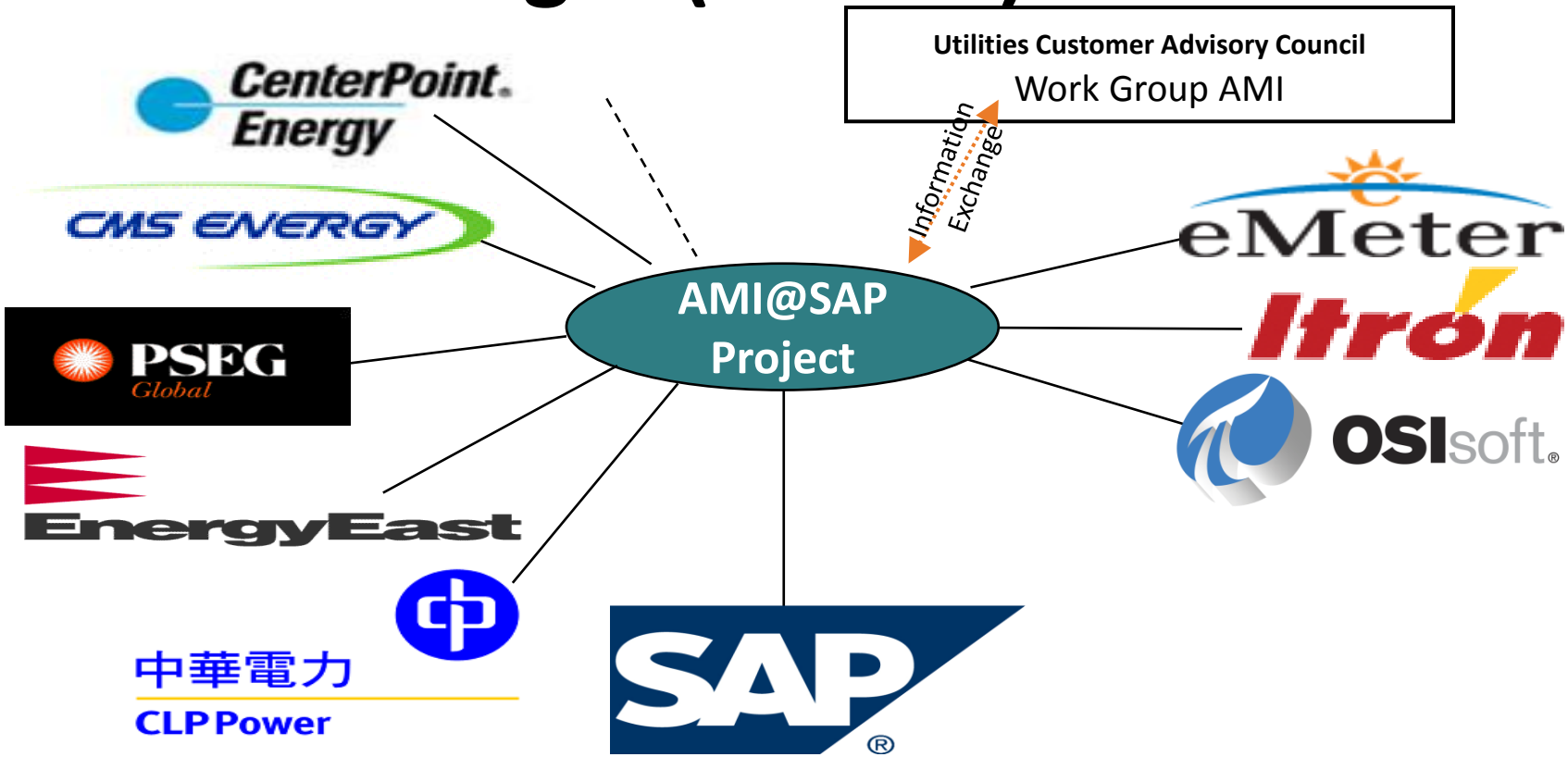
Let there be light (houses)!



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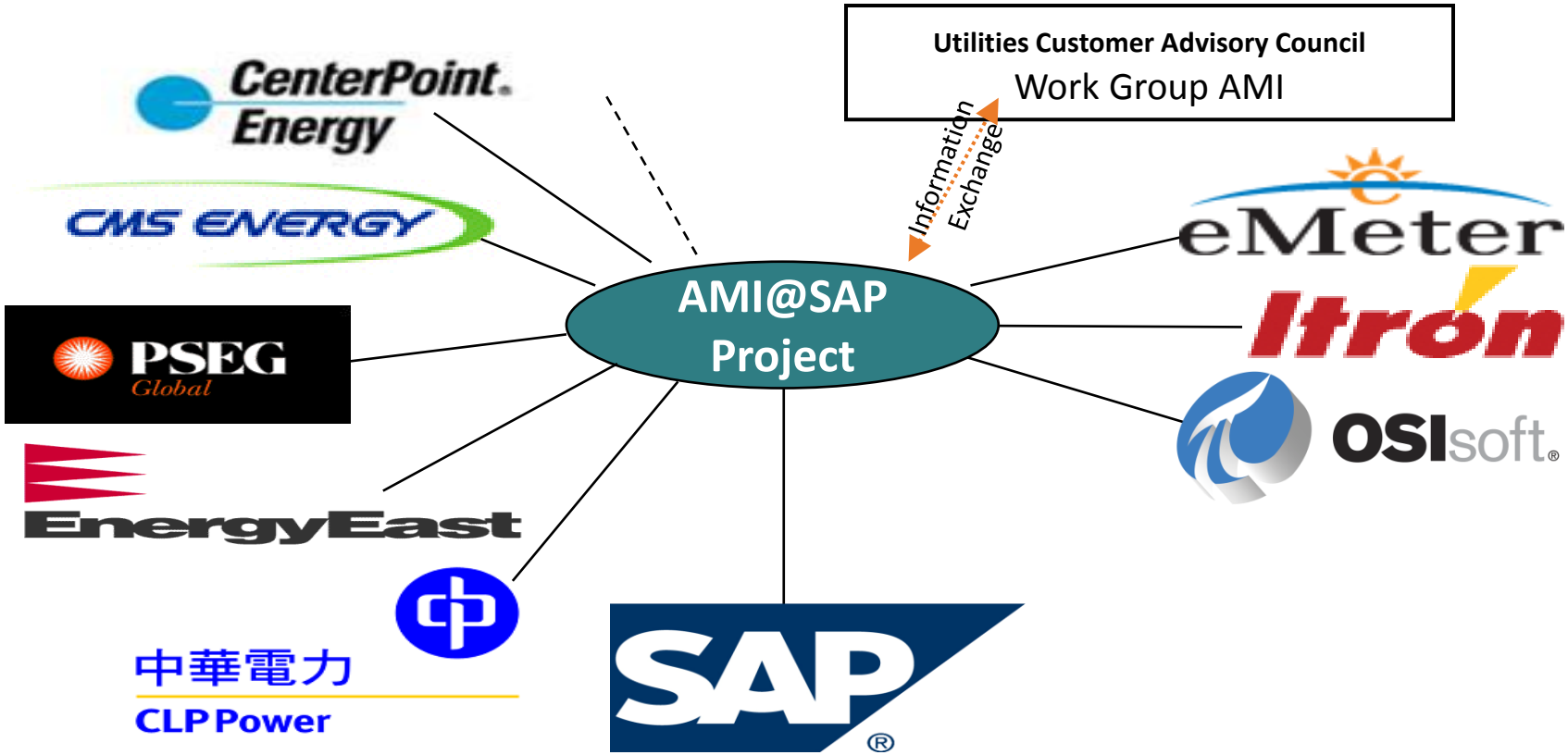
SAP AMI Light Council (circa 2008)



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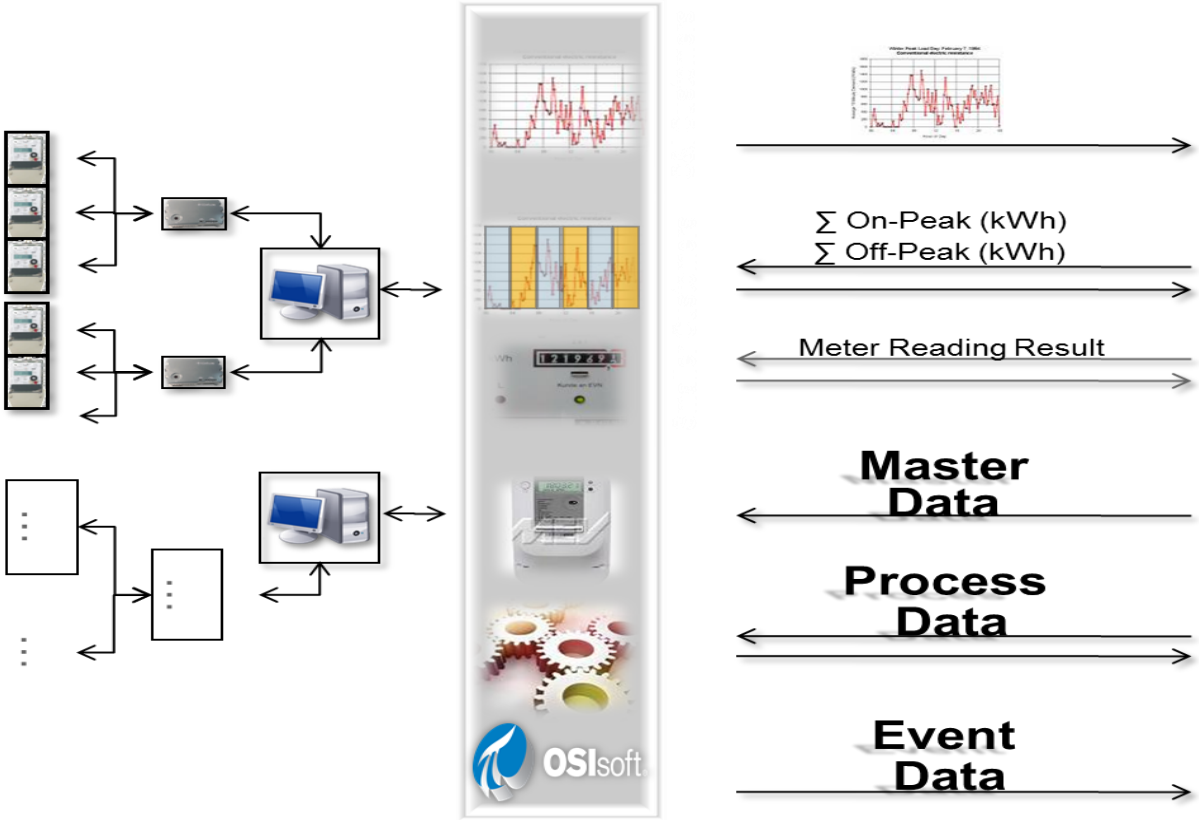
Meter Data Unification & Synchronization (MDUS)



- 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

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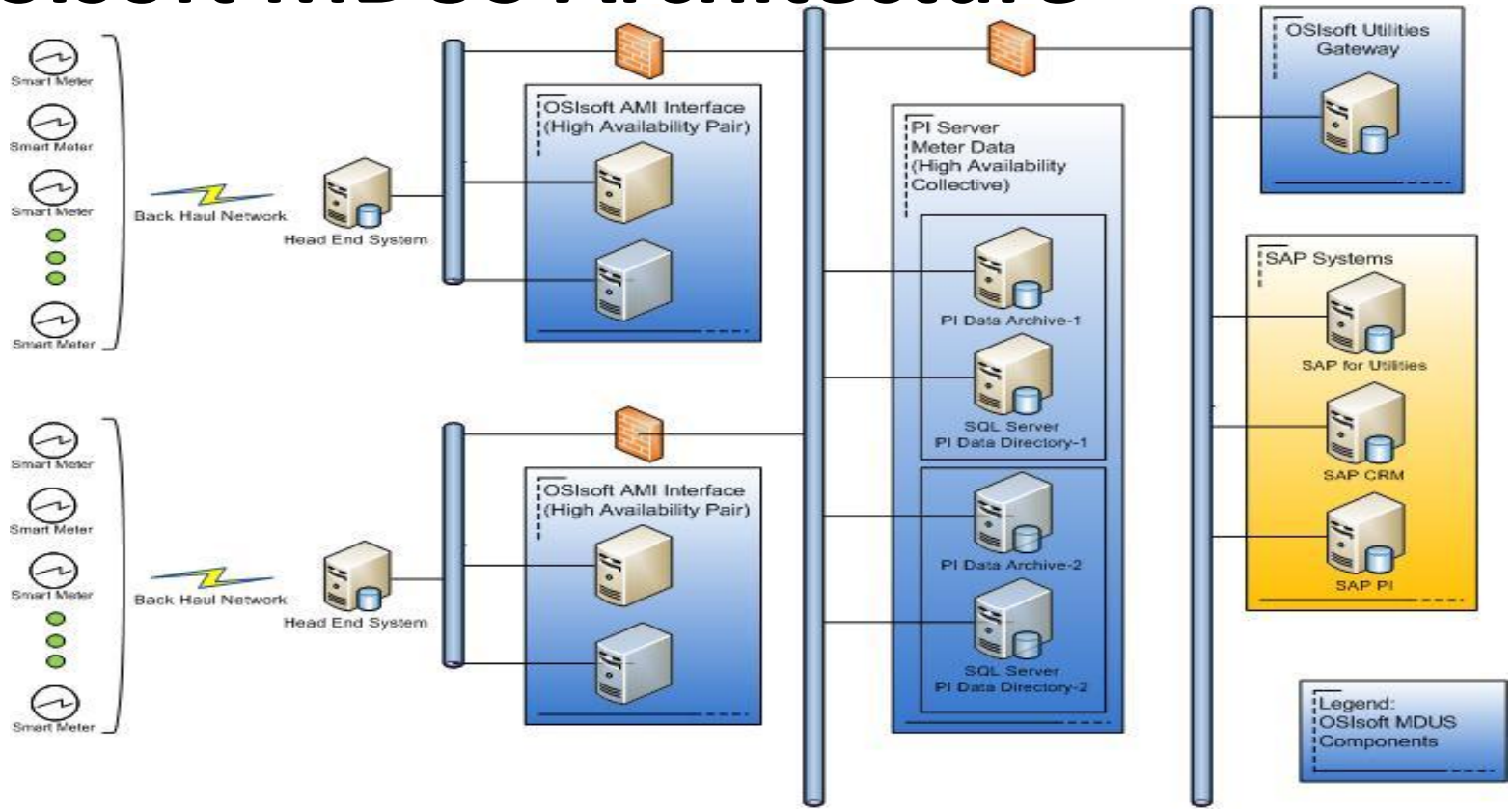
OSIsoft MDUS Architecture



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OSIsoft views on AMI

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

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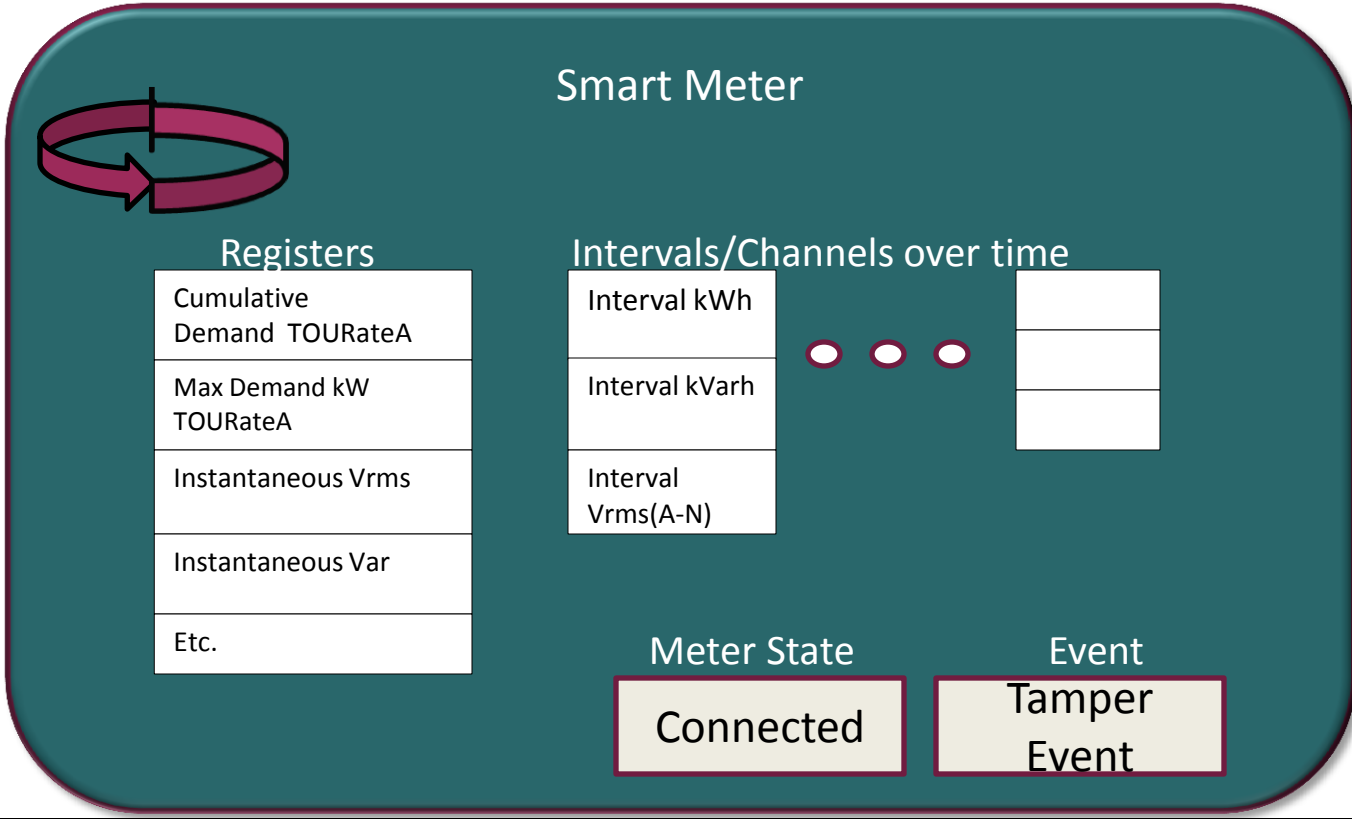
PI AMI Interfaces

INPUT
ELECTRICITY



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Question:

What data do you throw away?

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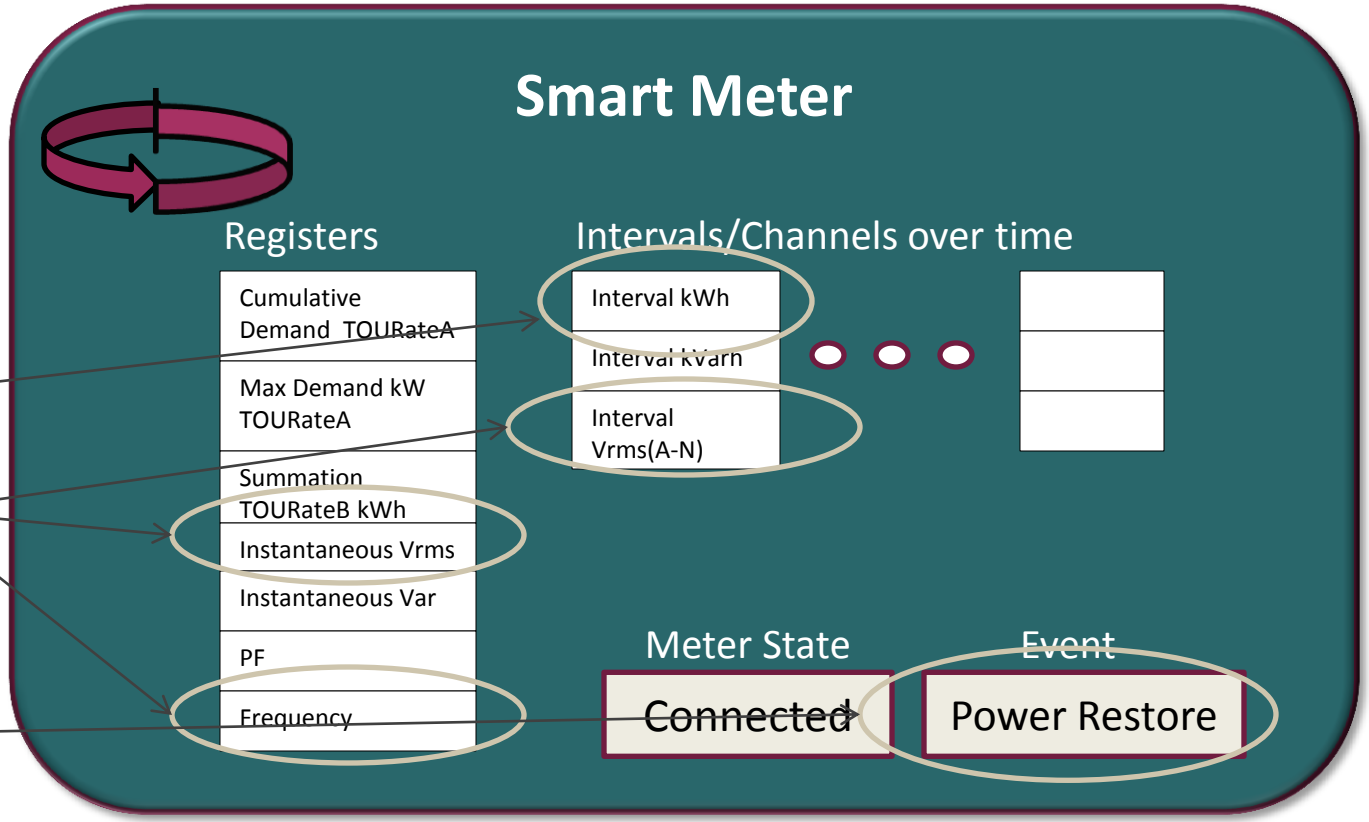
INPUT
ELECTRICITY



Billing says this is what we need

Engineering says this is what we need

Outage Management says this is what we need

Answer?

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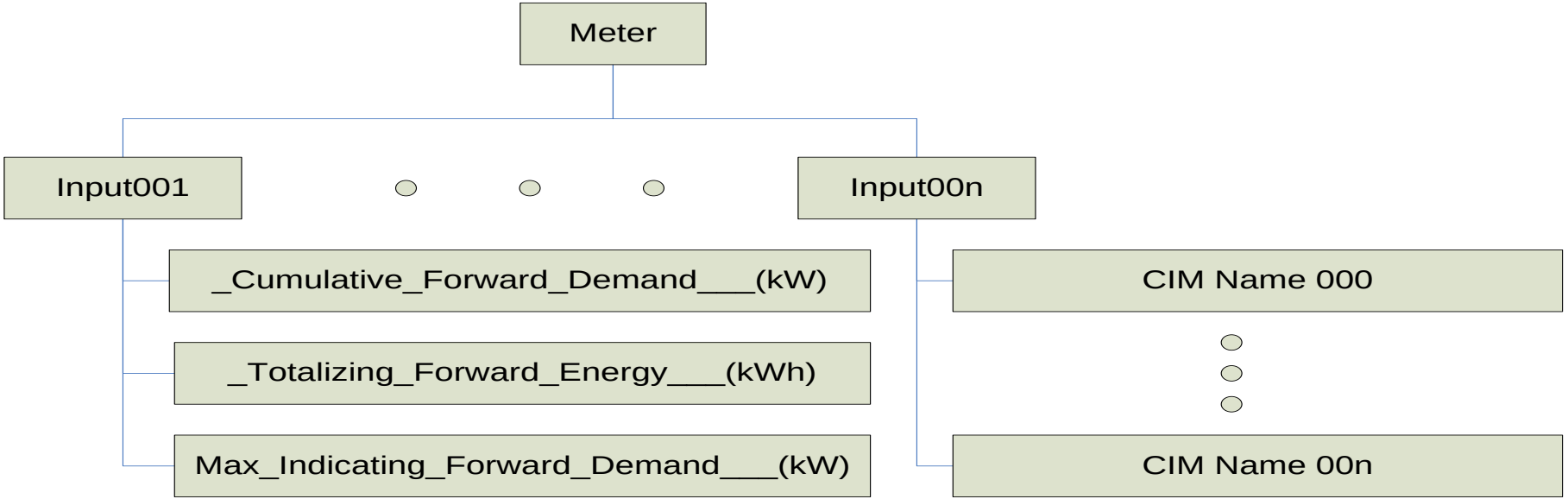
Asset Parent Child Relationship



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Design principle on AMI Interfaces

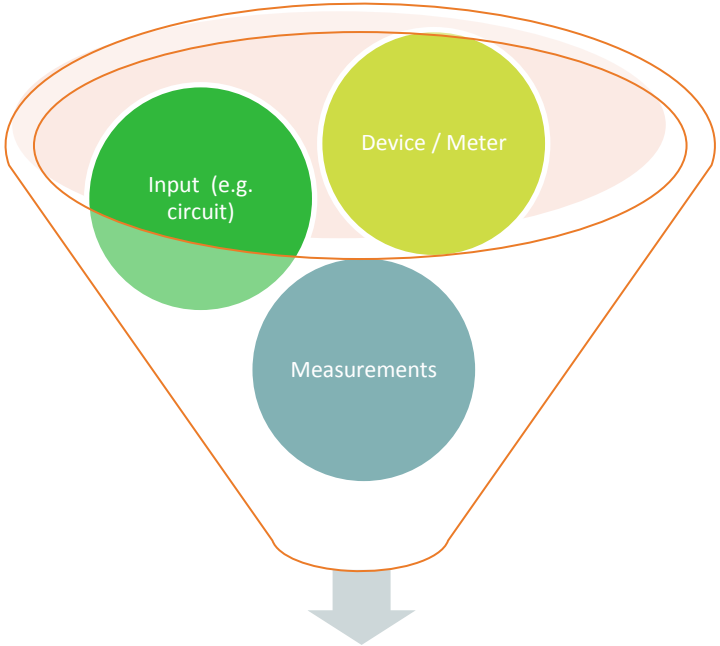
Bi-directional

Command/Control

Secure

Asset based

And above all…



Self Configuring/Maintaining

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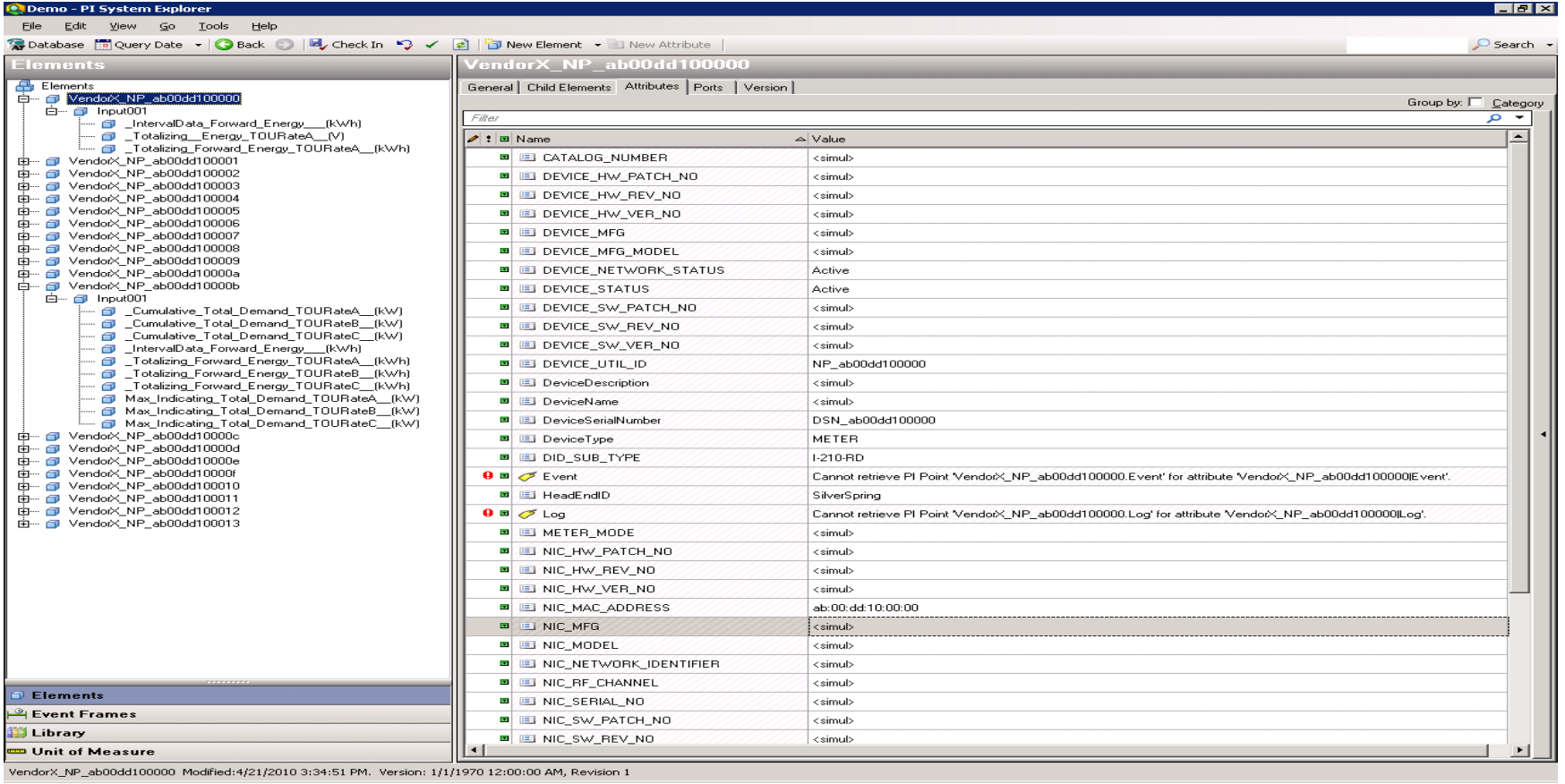
And the end result is…



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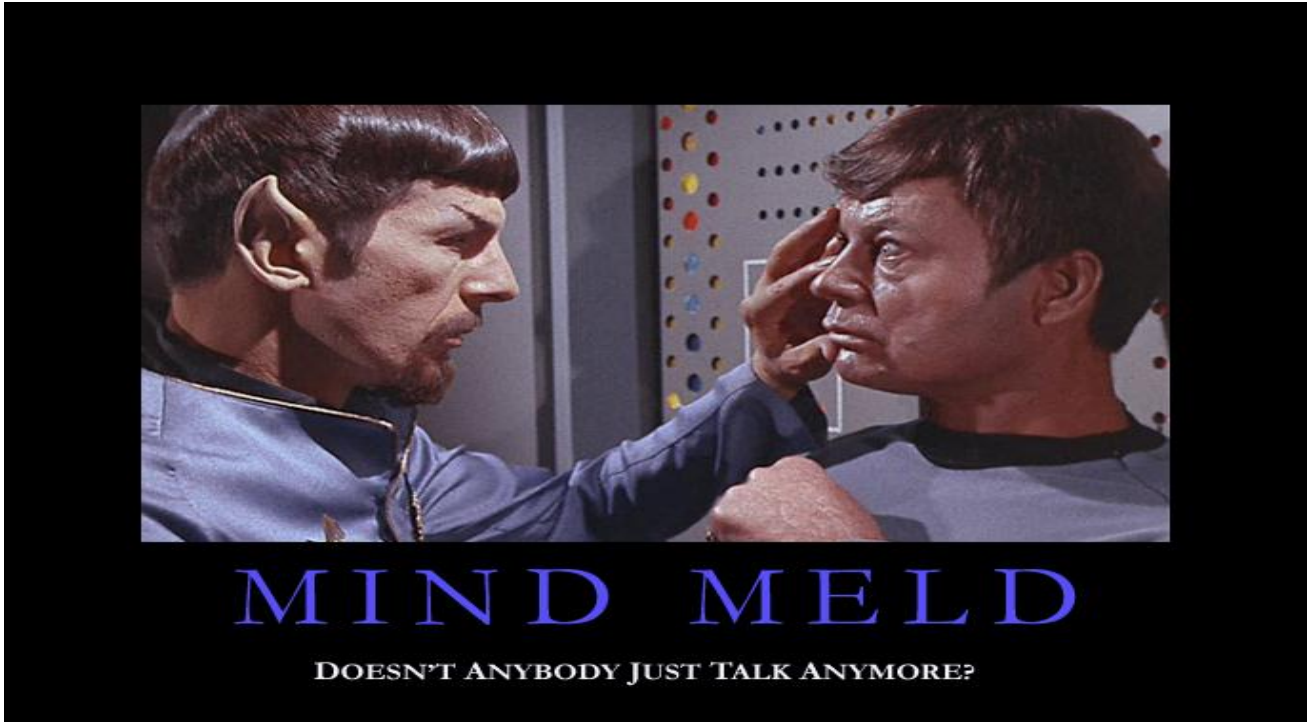
OSIsoft Interfaces (Next Generation)

They're like a



http://echosphere.net/star_trek_insp/star_trek_insp.html

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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)				

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OSIsoft views on AMI (redux)

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

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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

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Wind Farm/Renewables

PI Data Collection Nodes

DMZ PI Server
PI-to-PI Interface

Com Ops PI Server
PI-to-PI Interface

EMS PI Server
PI-to-PI Interface

EMS

Corporate

Primary PI

Secondary PI

IT Monitoring

Advanced Computing Engine

Test Environment PI Server

PI Server Collective

Operations data
Non-Operations Data
Waveform Data

Substation 1

PI Server
PI to PI Interface

3rd Party Analytics Application

SEL OPC Server
PI OPC Interface

Substation 2

PI Server
PI to PI Interface

3rd Party Analytics Application

SEL OPC Server
PI OPC Interface

Substation 3

PI Server
PI to PI Interface

3rd party Analytics Application

SEL 3351
SEL OPC Server
PI OPC Interface
PI DNP3 Interface

Substation n

PI Server
PI to PI Interface

3rd Party Analytics Application

SEL OPC Server
PI OPC Interface

SEL DNP3 Slave
PI DNP3 Interface

AMI Head End System(s)

C&I Head End System(s)

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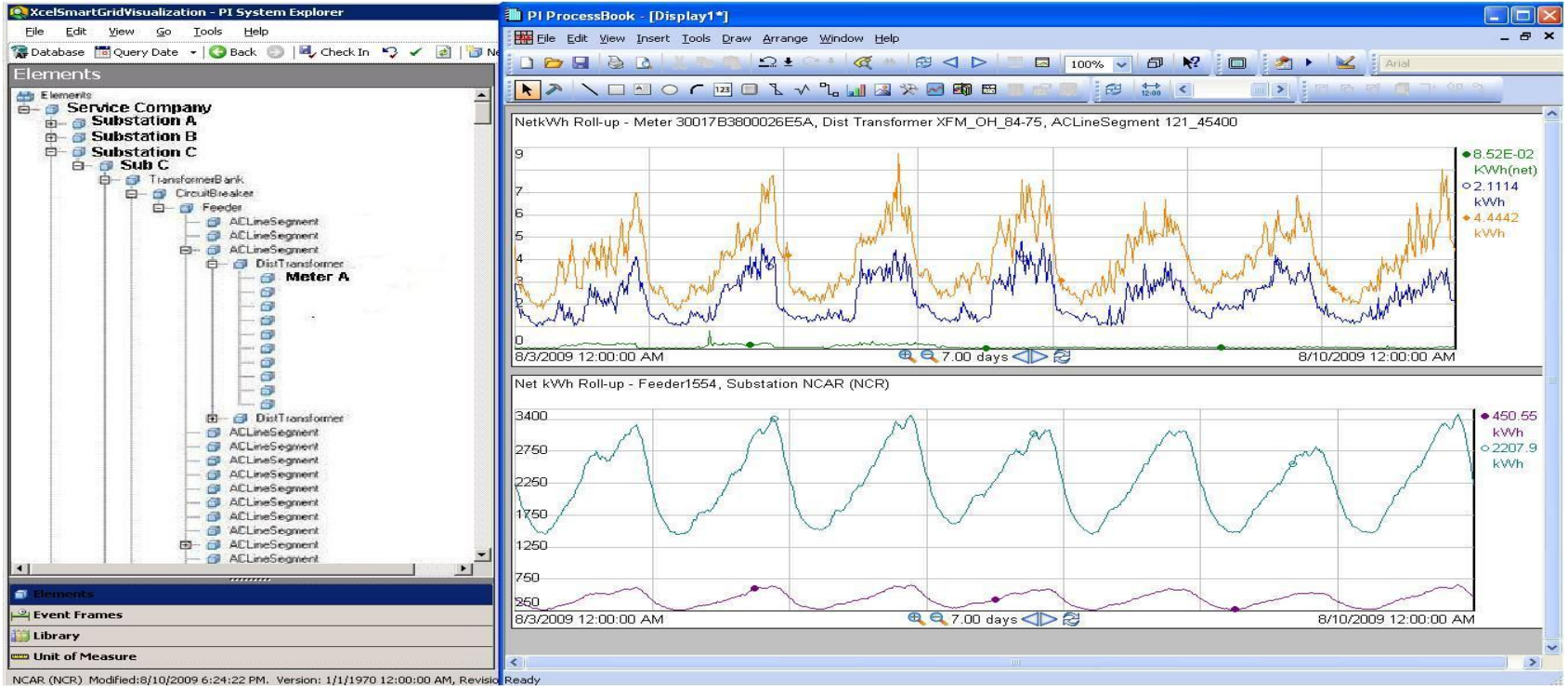
Getting to Value: Understanding the “Roll-up” Mechanism: Net KWh Roll-Up



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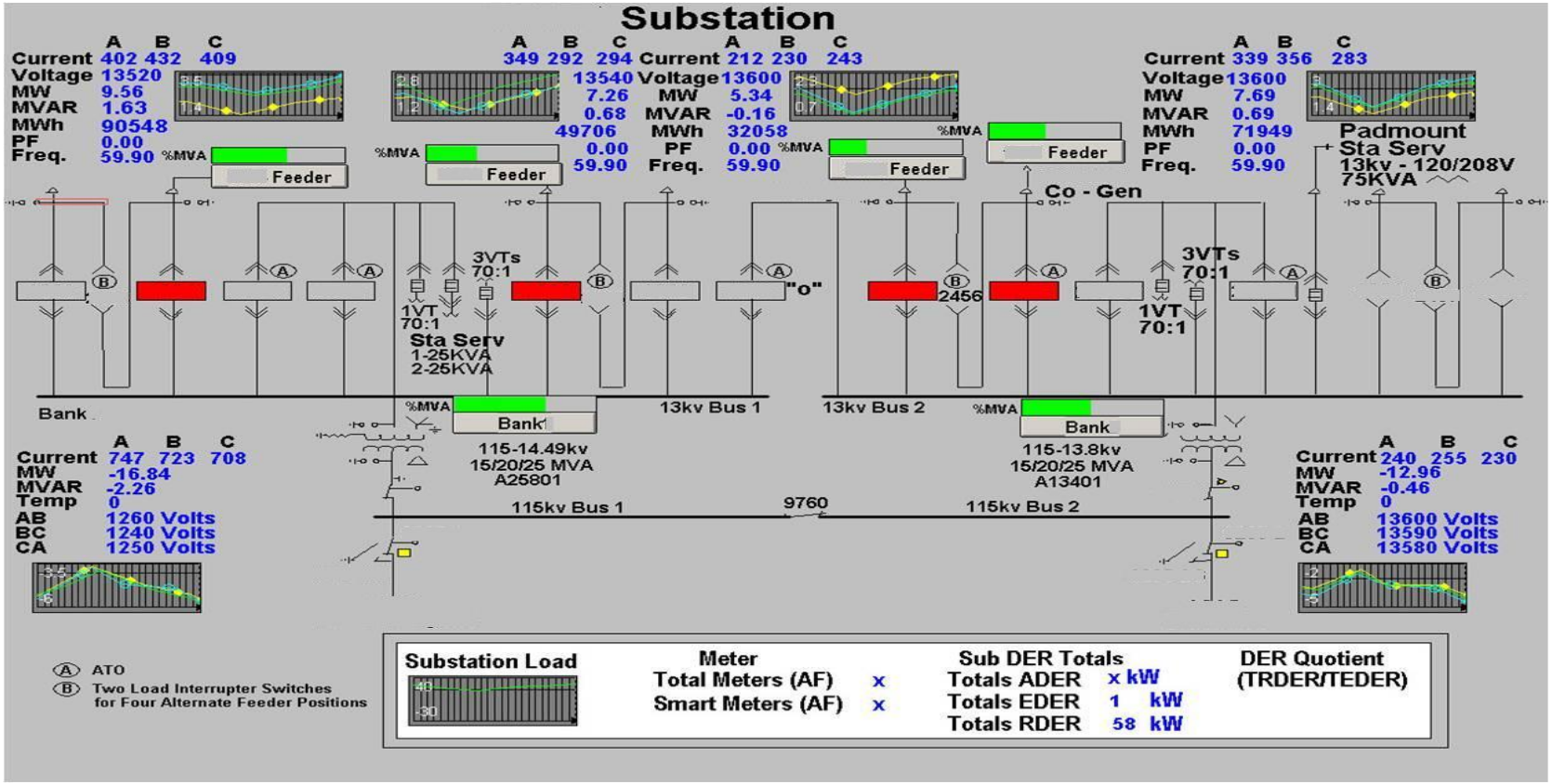
Substation One Line: The “Roll Up” Report Card



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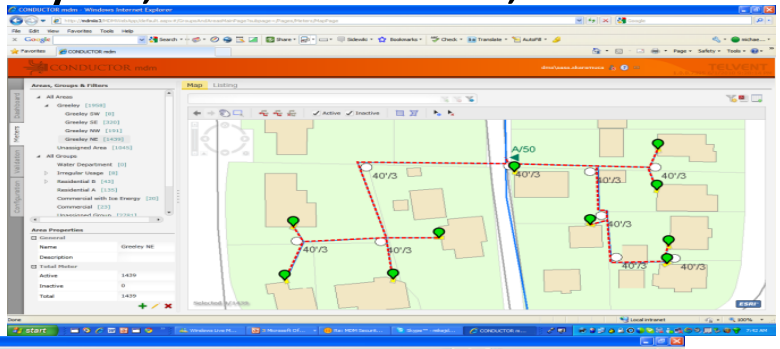
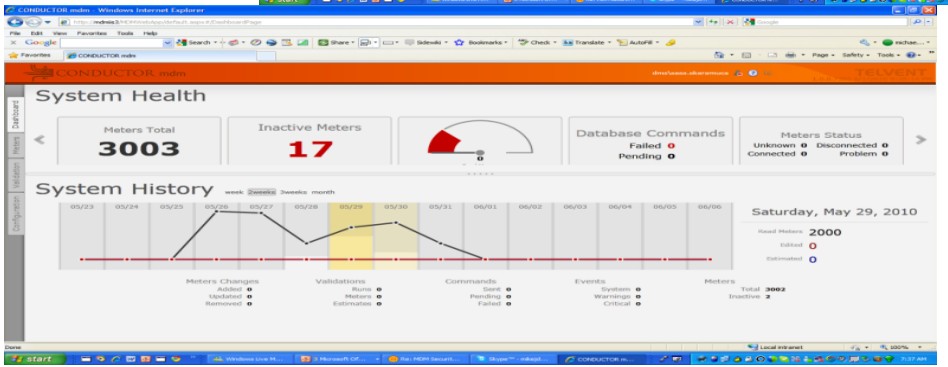
Conductor MDM Overview

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





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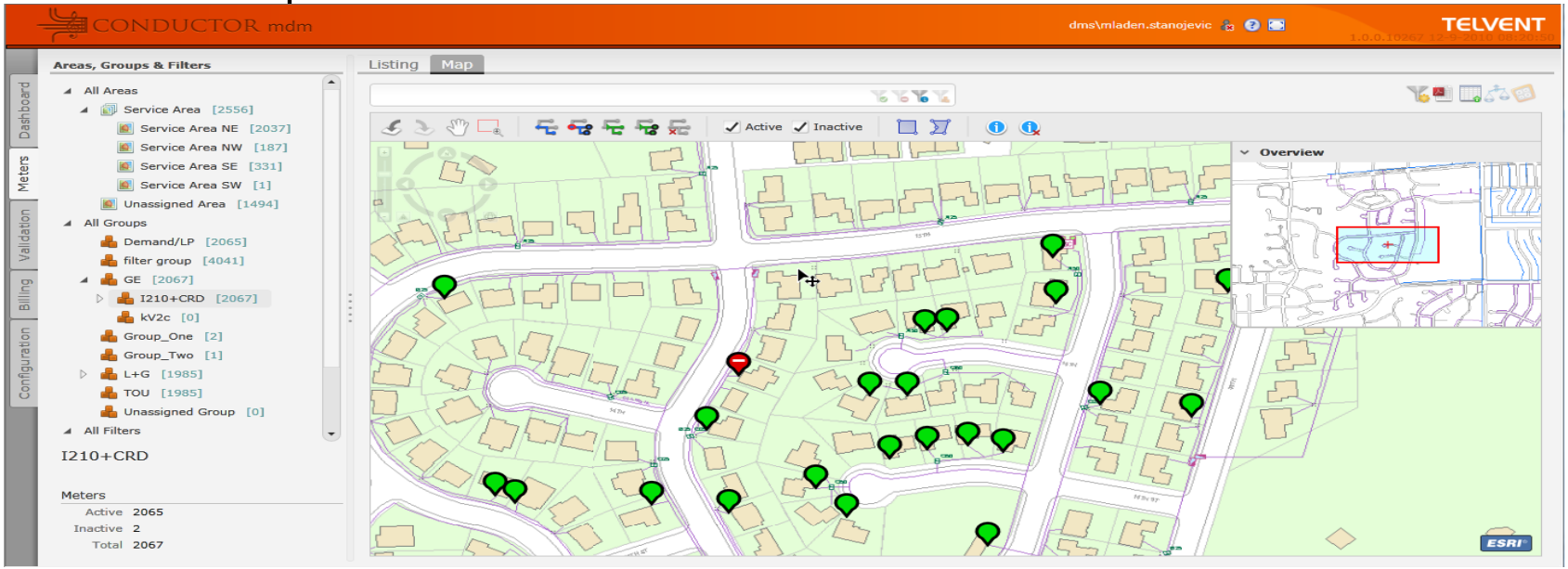
Conductor MDM UI – Map View

- 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...



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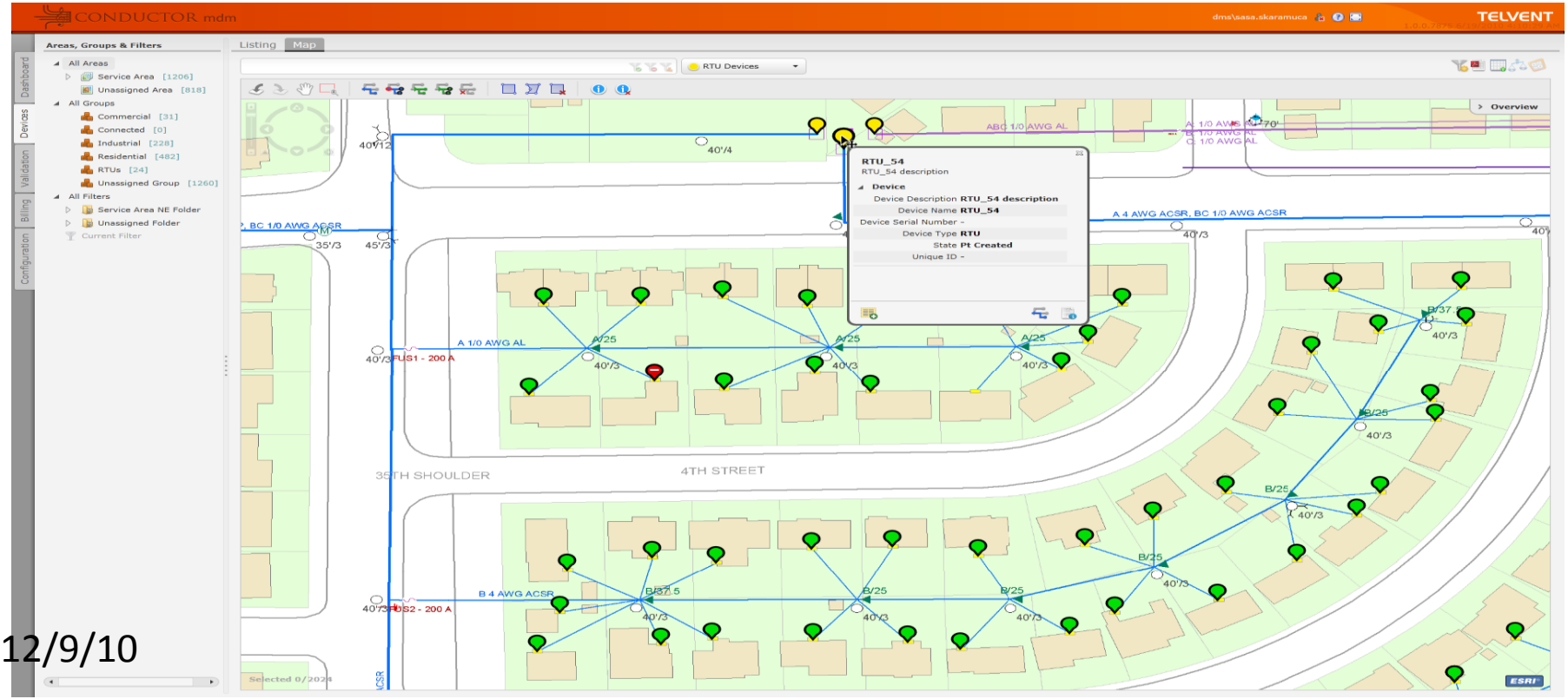
Visualize and Manage RTU's + Meters



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Say again?

- 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

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Thank you

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Turning **insight** into **action**.

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