



Regional Seminar Series

Warsaw, Poland































OSIsoft MDUS EBS Overview

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Customer Support Engineer

Value now. Value over time.
















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- Introduction
- Partnerships
- The Goals of an Advanced Metering Infrastructure
- The OSIsoft MDUS
- The SAP Roadmap and Offering (SAP's AMI for IS-U)
- Question and Answer

Company	Generation	Transmission	Distribution	Metering	Energy Trading
					
					
					
					
					
					
					
					













OSIsoft Customers (con't)



Company	Generation	Transmission	Distribution	Metering	Energy Trading
					
					
					
					
					
					
					

OSIsoft Customers (con't)



Company	Generation	Transmission	Distribution	Metering	Energy Trading
 UNION FENOSA					
 Scottish and Southern Energy					
					
 AES					
 RED ELÉCTRICA DE ESPAÑA					
MARK-E					

Strategic Alliances - Overview



Real-Time Data
Infrastructure

Microsoft®

Productivity &
Infrastructure



Line of Business
Connectivity

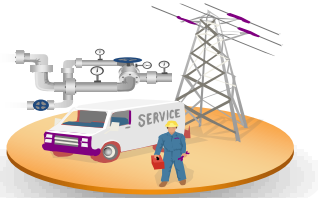


SAP® Certified
Integration via Enterprise Services

OSIsoft Partner Since 1996:

- SAP Production Planning-Process Industries (SAP PP-PI) module
- SAP Plant Maintenance (SAP-PM) module
- SAP Quality Management (SAP-QM) module
- The OSIsoft Business Package for SAP Portal
- Member of ES Community
- Member of Value Network for Chemicals, Mining, and Utilities
- Enterprise Services for SAP Enterprise Service Repository
- AMI MDUS Solution and participant in SAP Lighthouse Council since 2007
- *SAP Certified ESOA - AMI Integration*
- *Endorsed Business Solution (EBS) OSIsoft MDUS*

Smart Grid and Advanced Metering Infrastructure Faces Many Challenges



Outdated Grid Management VP Operations

Inefficient maintenance processes

- High maintenance costs
- Large amount of tied up capital

Increasing Demands on Aging infrastructure

- Rising maintenance costs
- Decreasing reliability
- High failure costs
- Need to meet increasing demand with existing resources
- Need to operate as integrated assets

Lack of Visibility

- No access to up-to-date information
- Bad data quality and high error rates
- Need to make decisions across the grid



Transition to Smart Meters VP Customer Care

Volume of Data and Need to collect in Real time

- Need to integrate heterogeneous AMI systems with existing IT landscape
- Necessity to adapt existing business processes

Meters and technology will continue to change

- Limited information on consumed and provided energy
- Incorrect, imprecise and non-timely information

Inefficient Process Handling

- High manual effort for operational processes



IT Asset Management CIO

Manage mixed vendor landscape

- Integration cost
- Costs to learn and operate systems

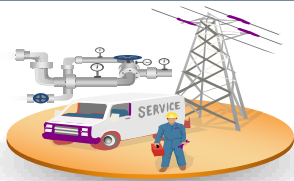
Complexity of Interfaces

- Head-end Systems outside of scope of IT
- Metering, telecommunications, standards are evolving

Technology and Skills Maintenance

- High costs for change management
- Short timeframe for implementation

OSIsoft is an Integrated Solution for Real-time Smart Grid and AMI Infrastructure



Optimized Asset Operations and Maintenance

Integrated enterprise asset management

- Enables enterprise wide access to all asset related data performance data
- Early alert to problems
- Focus of maintenance expenditure on critical equipment
- Historical data guides maintenance programs

Maintenance strategies based on failure effects and reliability

- Gives guidance for asset operation
- Increases reliability
- Lower overall maintenance costs

Visibility across the entire grid

- Access across the grid with same technology
- Provides access to up-to-date information
- Integrates field and back office to ensure low error rates and high data quality



Smart Meter Data Integration

End-to-end coverage of technical and commercial systems

- Interfaces to multiple head-end systems provides flexibility in meter technology
- High volume and real time data collection assures timely, accurate and availability of data on-line

On-time information

- Collects data in real-time and makes available to the enterprise
- On demand request directly to the meter

Streamlined AMI processes

- Self configuring interfaces requires little intervention
- automatic processing of energy data from smart meters
- Automated disconnection and reconnection processing



IT Asset Management

One technology for real-time data collection

- Minimize technologies across company smart grid reduces support, training, maintenance and overall TCO
- Minimize footprint because of technology for data capture and storage

Supportable architecture

- Single source of support SAP Solution Manager
- Availability of on-line systems monitoring
- Minimum data redundancy avoids errors
- OSIsoft handles complexity of Head-end and metering systems

SAP Certification

- Service deployment to SAP PI certified reduce cost of installation and support and allows fast deployment

- **Meter data from meter to cash**
 - Increase accuracy
 - Less estimated bills
 - Reduce time usage and billing
 - Reduce Bill Complaints
 - Better Detection of Fraud
 - Simplified Meter Disconnection
- **New Enterprise functions**
 - Asset management
 - Load Profile & Forecasting
 - CRM (variable pricing)
- **Utility Company Reasons for MDM**
 - Mergers and Acquisitions unifying layer for multiple metering systems
 - Implement Demand Response
 - Overall Smart Grid Initiatives
 - Competitive Service
 - Unifying Platform for Market Participants

Real-time data from OSIsoft enables Retailer



Energy Portfolio Management

- Accurate and Timely Energy Demand and Supply Data
- Short-term scheduling based on actual supply and demand

Demand Planning
& Procurement

Wholesale
& Trade

OSIsoft MDUS

Deregulation Compliance

- Fulfillment of country-specific requirements
- Automated data exchange

Back Office

Retailer

Financial
Department

Call Center

Integrated Sales Management

- Direct link to the meter from the call center solution
- Full history of customer usage on-line

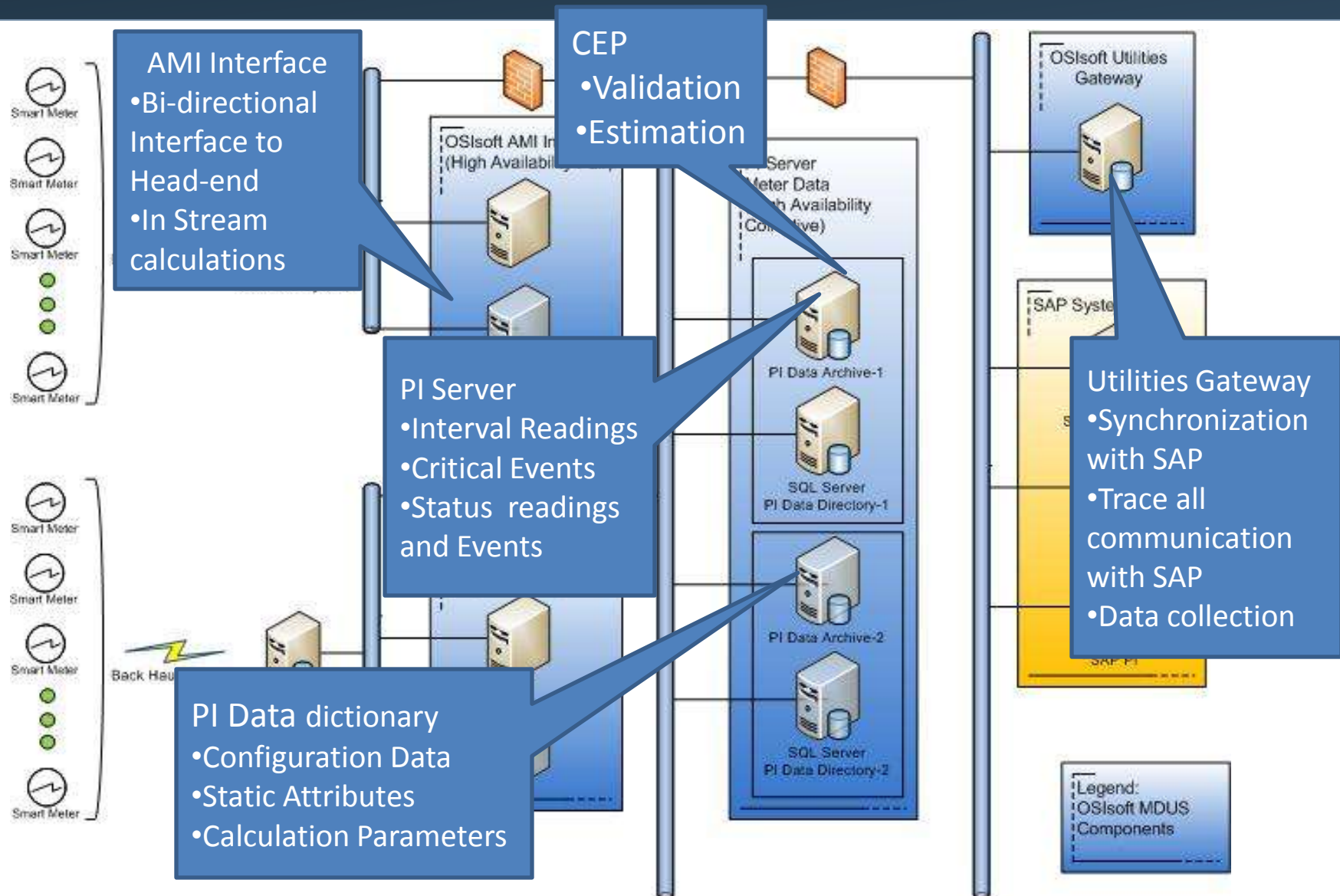
Bill to Cash

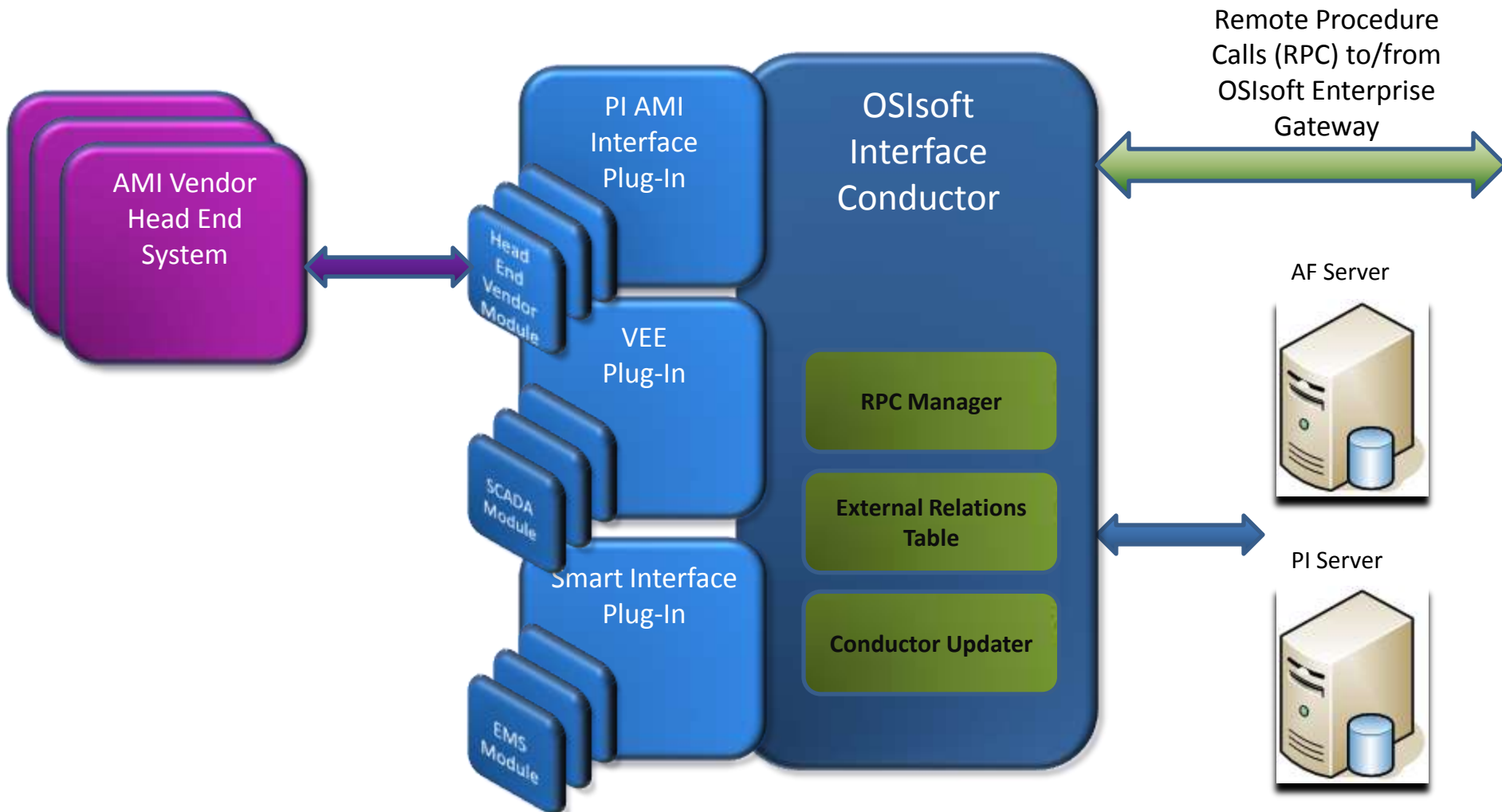
- Accurate and timely information for billing

Distribution
Company

Customers

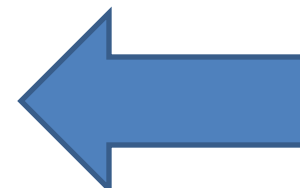
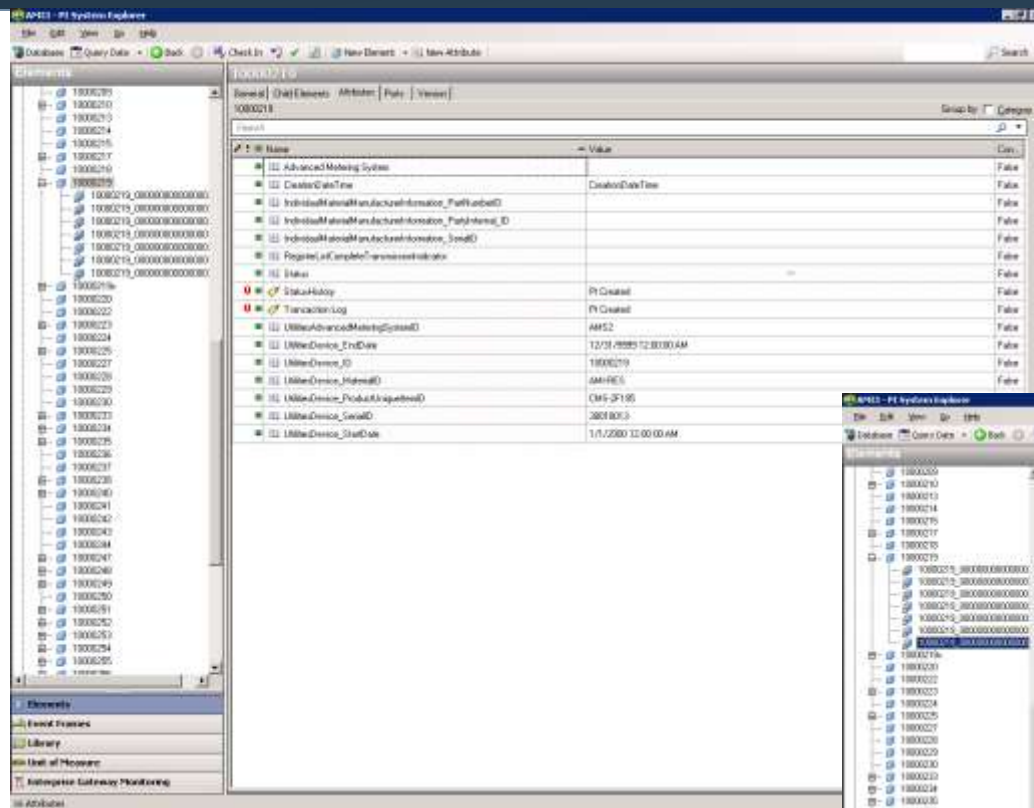
OSIsoft MDUS - SAP Endorsed Business Solution



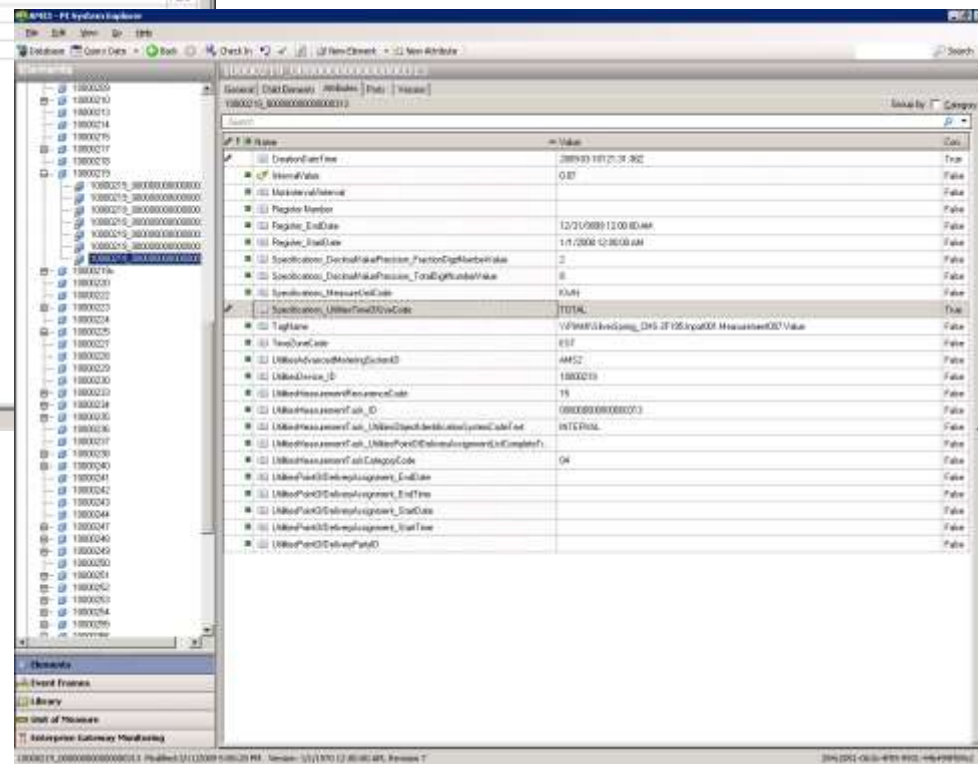


- Interface Plug-in
 - Bi-directional Communication (WSDL/SOAP)
 - Interval Meter Reading
 - On Demand Reads
 - Remote Connect/Disconnect
 - Demand Management / Load Limiting
 - Meter Events, Alarms and Reports
 - Asset hierarchy
 - Meter
 - Channel1
 - Channel n
 - Register1
 - Register n
- Interface Conductor
 - New PI Subsystem
 - VEE Interprocess communication <future>

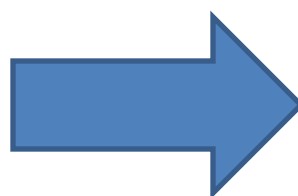
AF Model Build and Linked Automatically



SAP sends Device Creation and Measurement documents request



Device and Measurement data is Synchronized with AMI Interface database and SAP automatically.



AMI Meter Template



File Edit View Go Tools Help

Database Query Date Back Check In New Template New Attribute Template

Library

- SSN 2Q09
 - Categories
 - Templates
 - Element Templates
 - BaseInput
 - BaseMeter
 - ElsterMeter
 - GridNetMeter
 - Measurement
 - MeasurementWithStatus
 - SilverSpringMeter
 - VendorXMeter
 - Model Templates
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables

BaseMeter

General Attribute Templates Ports

Group by: Category

File Edit View Go Tools Help

Database Query Date Back Check In New Template New Attribute Template

Library

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 - Tables

GridNetMeter

General Attribute Templates Ports

Search

Name	Description	Default Value
ActiveBank	Active Bank	0
AmiCustomerSize	AMI Customer Size	
AmiCustomerSizeId	AMI Customer Size Id	
AmiCustomerType	AMI Customer Type	
AmiCustomerTypeId	AMI Customer Type Id	
AmiDistributor	AMI Distributor	
AmiDistributorId	AMI Distributor Id	
AmiRetailer	AMI Retailer	
AmiRetailerId	AMI Retailer Id	
BillingCycleName	Billing Cycle	
CopsConnectionMode	Cops Connection Mode	
DeviceType	Device Type	
HardwareVersion	Hardware Version	
IPAddress	IP Address	
IsBroadBandEnabled	Is BroadBand enabled	
LastReboot	Last Reboot	
MeterCapability	Meter Capability	
MeterMode	Meter Modes	
MeterType	Meter Type	
Mfg	Manufacturer	
Model	Model	
Mod	Mod	
SignalStrength	Signal strength	0
SoftwareVersion	Software Version	
WimaxConnectivity	Wimax Connectivity	

Elements

Event Frames

Library

Unit of Measure

MyPI

Elements

Event Frames

Library

Unit of Measure

MyPI

AMI Meter Elements (inherited from templates)



AMI SSN - PI System Explorer

File Edit View Go Help

Database Query Date Back Check In New Element New Attribute Search

Elements

- SilverSpring_CMS-23415
- SilverSpring_CMS-2F056
- SilverSpring_CMS-2F0E4
- SilverSpring_CMS-2F0E5
- SilverSpring_CMS-2F0E6
- SilverSpring_CMS-2F0E7
- SilverSpring_CMS-2F11D
 - Input001
 - Cumulative_Forward_Dema
 - Cumulative_Total_Demand
 - IntervalData_Forward_Ene
 - Max_Indicating_Demand_
 - Max_Indicating_Demand_
 - Totalizing_Forward_Energy
 - Totalizing_Total_Energy_T
- SilverSpring_CMS-2F11E
- SilverSpring_CMS-2F192
- SilverSpring_CMS-2F193
- SilverSpring_CMS-2F194
- SilverSpring_CMS-2F195
- SilverSpring_CMS-2F1D3
- SilverSpring_CMS-47E1D
- SilverSpring_CMS-47E1E
- SilverSpring_CON-1407-EO
- SilverSpring_CON-1B5A-EO
- SilverSpring_CON-2218-EO
- SilverSpring_CON-226D-EO
- SilverSpring_CON-2276-EO
- SilverSpring_CON-2293-EO
- SilverSpring_CON-22F9-EO
- SilverSpring_CON-234C-EO
- SilverSpring_CON-2494-EO
- SilverSpring_CON-249F-EO
- SilverSpring_CON-2858-EO
- SilverSpring_CON-297F-EO
- SilverSpring_CON-298F-EO

Event Frames

Library

Unit of Measure

SilverSpring_CMS-2F11D

General Child Elements Attributes Ports Version

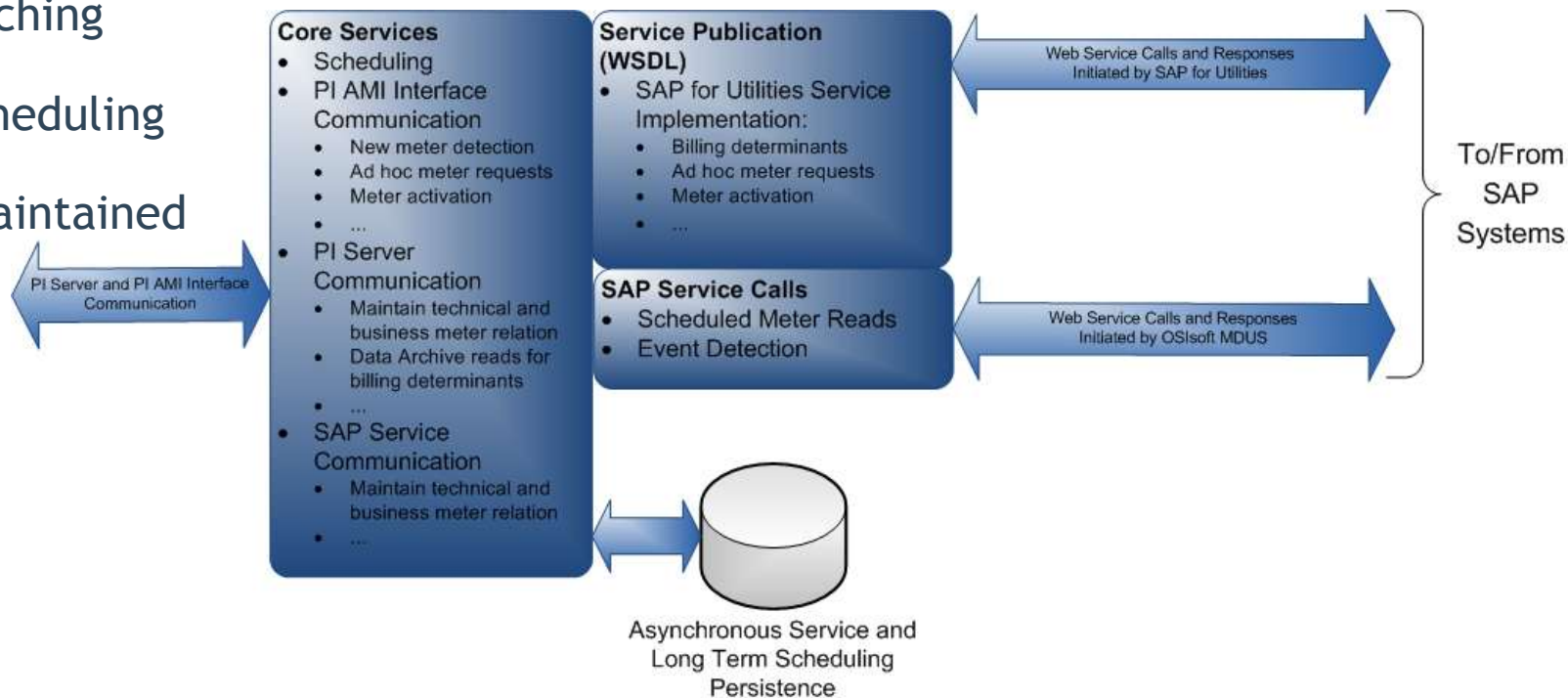
SilverSpring_CMS-2F11D

Search

Group by: Category

Name	Value
DEVICE	
DEVICE_HW_REV_NO	
DEVICE_HW_VER_NO	
DEVICE_STATUS	
DEVICE_NETWORK_STATUS	
DEVICE_MFG_MODEL	
DEVICE_SW_REV_NO	
DEVICE_SW_PATCH_NO	
DEVICE_HW_PATCH_NO	
DEVICE_SW_VER_NO	
DEVICE_MFG	
DEVICE_UTIL_ID	
DeviceDescription	CMS-I210CRD-2F11D
DeviceName	CMS-2F11D
DeviceSerialNumber	38018014
DeviceType	METER
DID_SUB_TYPE	I-210+C-RD
HeadEndID	SilverSpring
Log	RPC, DEMAND_READ, SUCCEEDED
METER_MODE	
NIC	
Ping	1104
PROGRAM_CONTROL_CODE	Res-64
PROGRAM_ID	1
State	Active
Status	C1219_READ_ACCESS
StatusCritical	NIC POWER RESTORE LOG ENTRY
UniqueID	CMS-2F11D

- Direct communication between SAP Utilities EhP 4 (EhP 5) and the head end systems
- Highly scalable
 - 64 bit
 - Caching
 - Scheduling
- Self maintained



AMI Differentiators for OSIsoft MDUS

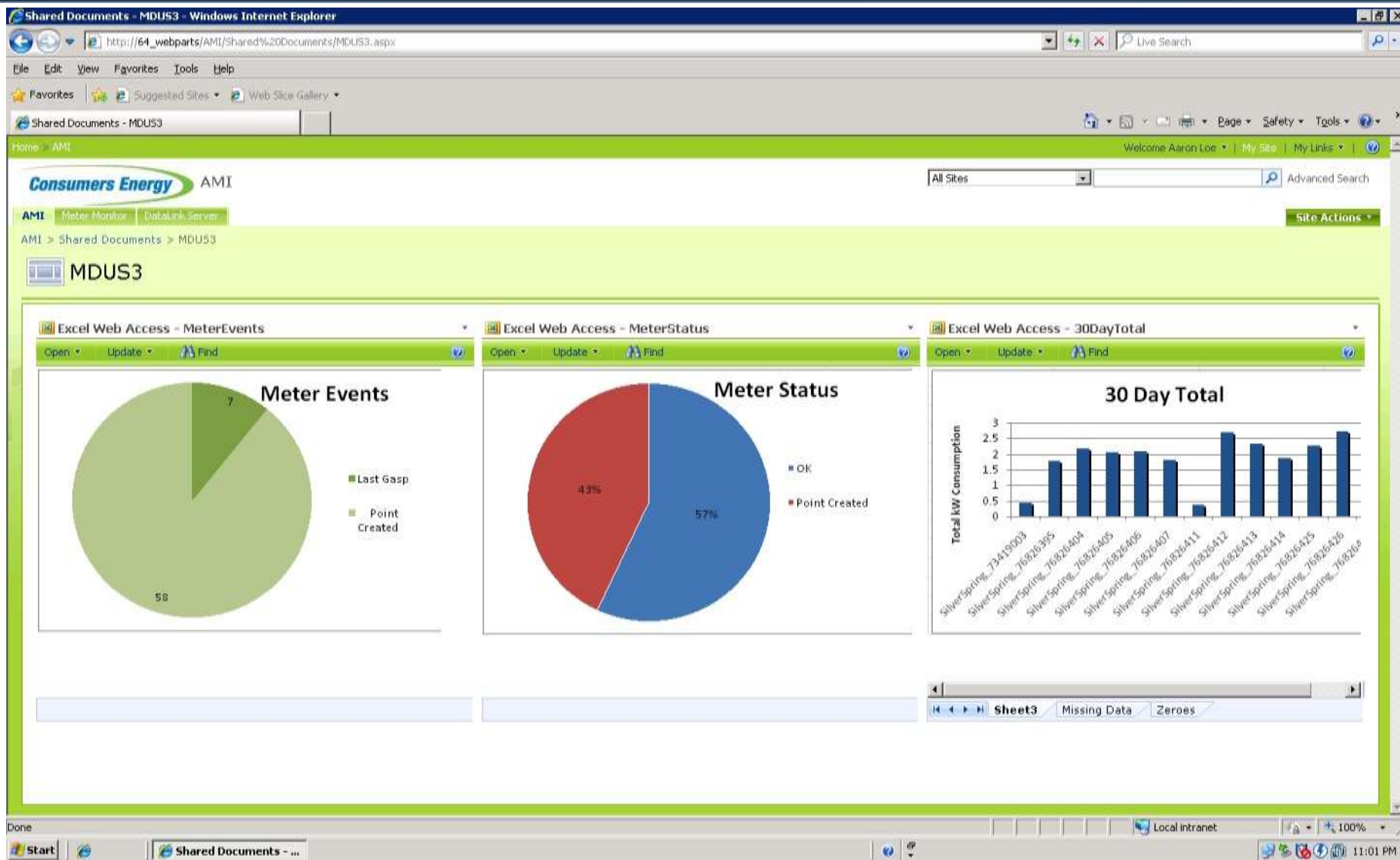


- Ability to make data available and useful as soon as the head end system provides the data
 - MDMs are designed to process data daily
- Feature Highlights
 - SAP Certified Content
 - PI Server performance
 - CEP analytics
 - Self configuring interfaces
- No overlap with SAP functionality
- Meter and Network neutral - support of multi-vendor environment
- OSIsoft has huge presence in utilities across the smart grid
 - Generation
 - Renewable generation
 - Transmission
 - Distribution
- End to end visibility of the data

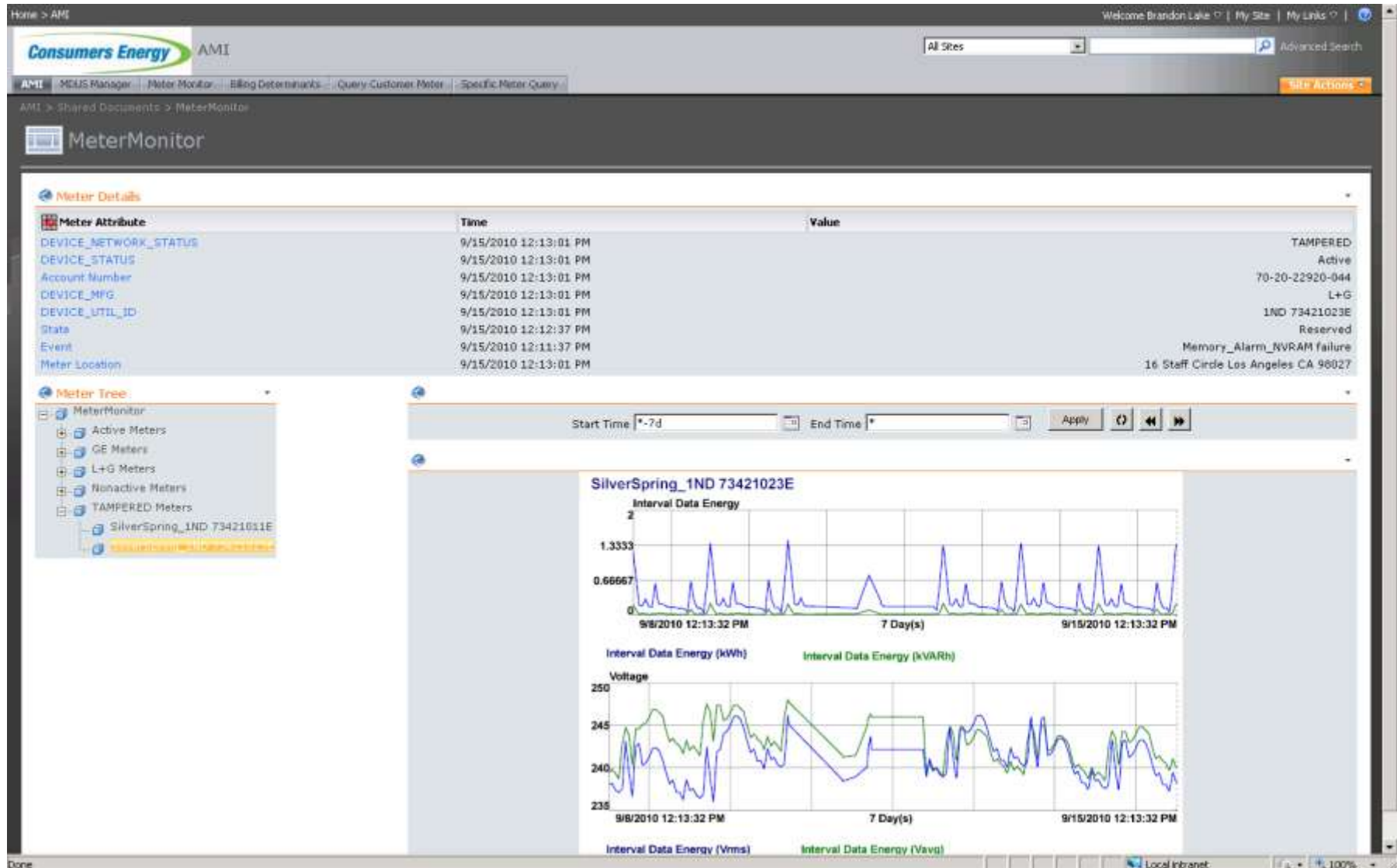
MDUS Dashboard



MDUS Events Drilldown



MDUS Dynamic/Element Relative Views



Co-Development benefits the end customer



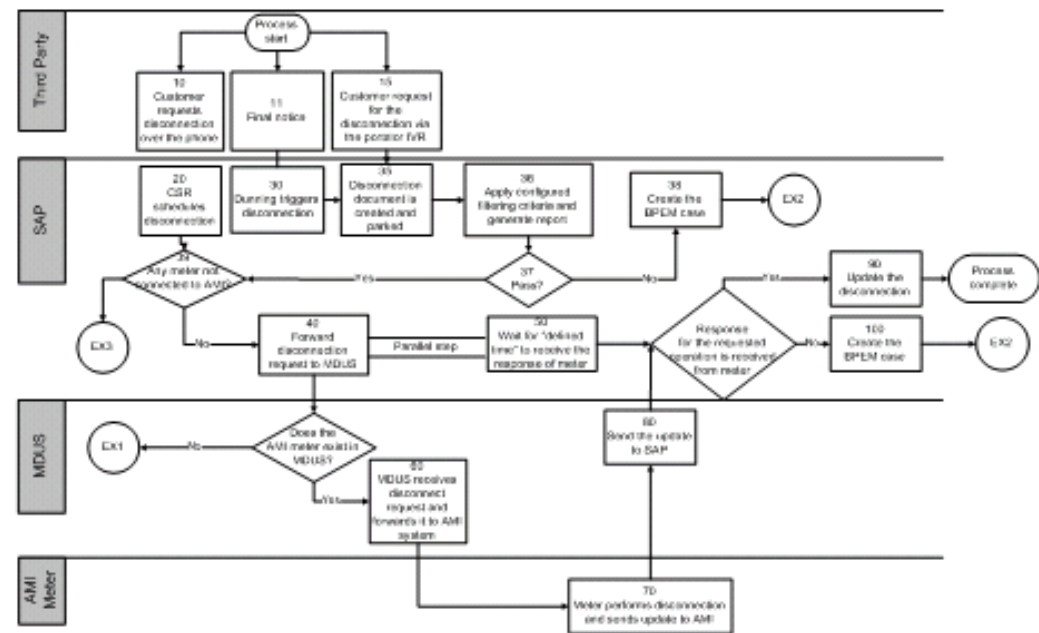
Process Flow Visio Diagram [example]

Stags in the architecture:

- **Third Party:** customer, other market participant, supplier, etc and the channel he is using like Internet, Call Center, IVR, Market Flow, etc
- **SAP :** SAP for Utilities and in particular the new *SAP AMI Enabling for Utilities* component
- **MDUS:** the Meter Data Unification and Synchronization System
- **AMI-Head End:** only if it is important to differentiate the AMI Head End function from the MDUS function
- **AMI ("Smart") Meter**
- **Home Automation Network (HAN):** only if it is important for the description of the use case to explain activities at appliances (controlled through a HAN) connected to the smart meter via a gateway.

Diagram: Utility disconnects or load-limits customer

Billing & Customer Service	Customer Interface	Delivery	Energy Procurement	Field Services & System Recovery	Installation & Maintenance
B1 Multiple clients read demand and energy data	C1 Customer reduces demand in response to pricing and/or grid event	D1 Distribution operator curtails/limits customer load for grid management	E1 Real-time operations curtails/limits load for economic dispatch	S1 AMI system recovers after power outage, communications or equipment failure	I1 Utility installs, provisions and configures AMI system
B2 Utility remotely limits or disconnects customer	C2 Customer has access to and reads recent energy usage and cost at his or her site	D2 Distribution operators optimize network based on data collected by the AMI system	E2 Utility procures energy and settles wholesale transactions using AMI system data		I2 Utility manages end-to-end life-cycle of the meter system
B3 Utility detects tampering or theft at customer site	C3 Customer uses prepayment services	D3 Customer provides distributed generation			I3 Utility upgrades AMI system to address future requirements
B4 Contract meter reading for other utilities	C4 External clients use the AMI system to interact with customer devices	D4 Distribution operator locates outage using AMI data and restores service			

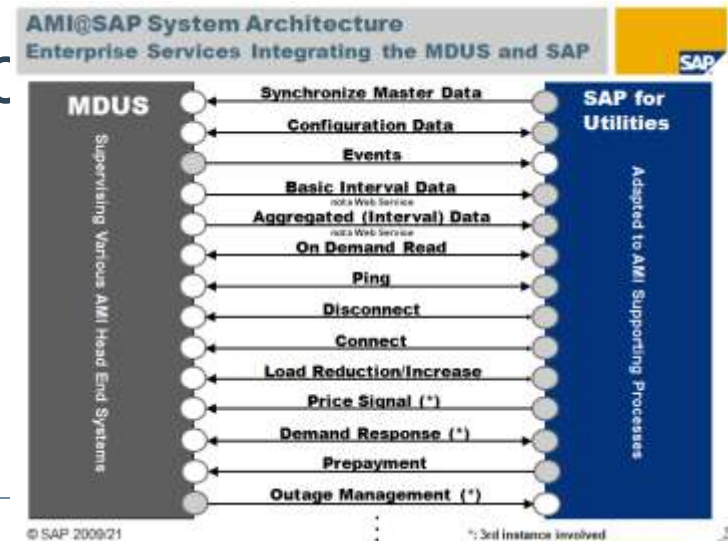


© SAP 2009/19

End to End Connectivity



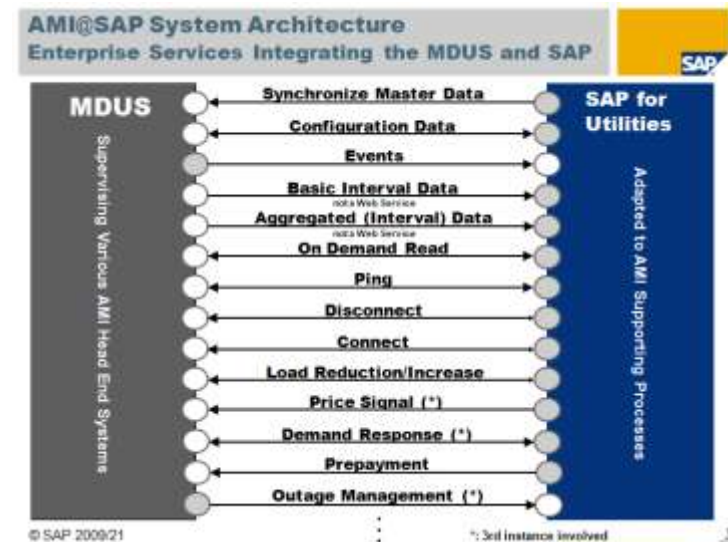
- AMI@SAP EhP4 (combined of 31 web services)
 - Synchronization of Master Data (14 web services to support business process)
 - Device and Registers (Measurement Tasks)
 - Basic Interval Data (3 services)
 - Scheduled Time series Data
 - Meter Reading/Meter Reading C
 - On demand and requested reads



End to End Connectivity



- AML@SAP EhP5 and beyond
 - Configuration Data (9 web services to support business process)
 - Synchronization of Master Data (4 services)
 - Aggregated Interval Data (4 services)
 - Disconnection/Reconnection (2 services)
 - Events (2 services)
 - Text Notification (1 service)
 - Ping (2 services)
 - Basic Interval Data (1 service)
 - Load limitation (4 services)





SAP® Certified
Integration via Enterprise Services

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- *Endorsed Business Solution (EBS) OSIsoft MDUS*

SAP Certification of OSIsoft MDUS



CERTIFICATE
SAP INTEGRATION CERTIFICATION

SAP Certified
Integration via Enterprise Services

SAP AG
hereby confirms that the interface software **Enterprise Gateway AM Service Connector 1.0.0** for the product **OSIsoft Meter Data Unification System 1.0.0** of the company **OSIsoft, LLC** has been certified for integration with **SAP Utility 6.0** via **SAP PI 7.1** with the SAP integration scenario **ESOA-BUNDLE 1.0 – Utility -Advanced Meter Infrastructure**.

This certificate confirms the existence of product features in accordance with SAP certification procedures. It does not guarantee that the product is error-free.

The certification test is documented in report no. 9023360 and expires on November 17, 2012.

Vendor Hardware: **EBSBASE32**
Vendor Operating System: **Windows 2003**
SAP Test System: **SAP Utility 6.0**
SAP PI 7.1

This configuration meets the requirements for connecting **Enterprise Gateway AM Service Connector 1.0.0** to SAP applications.

Certified Functions:
Use Case 1: Device Initialization Process
Use Case 2: Change Technical Master Data
Use Case 3: Reading a Group of Meters: Discrete Meter Reading Process
Use Case 4: Reading One Customer's Meter: On Demand Read

SAP Partner
SAP Certified
Integration via Enterprise Services

ion Manager Ready

infrastructure for the Smart

Endorsed Business Solutions (EBS)

Trusted solutions relevant for your industry



Endorsed Business Solutions



Application level integration with **solution qualification to ensure end-to-end business process**



Complementary solutions **selected by SAP** Product and Industry groups



Product roadmap guided by **SAP** based on **Cooperative Development Agreement**



Endorsed by SAP and sold by partners





Thank you

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