SAP Custom Development for Utilities

Harald Knust, SAP Custom Development
Frank Rudolf, SAP Custom Development
Aarau, 9. April 2013
Agenda

Wer ist SAP Custom Development
Lösungsüberblick im Bereich Utilities
Multiresource Scheduling - Anwendungsfälle
Agenda

Wer ist SAP Custom Development

Lösungsumsicht im Bereich Utilities

Multiresource Scheduling - Anwendungsfälle
About SAP Custom Development

SAP Custom Development offers a comprehensive range of flexible development, support and project management services to:

- Extend and enhance SAP solutions
- Build new innovative business solutions
- Migrate legacy solutions to SAP
- Protect custom solutions with support options

…and package some custom solutions for resale.
Cost efficient Projects with SAP Custom Development

1 Cost Efficiency

Cost Control & Transparency by Development Methodology

- Define
- Plan
- Build
- Validate
- Retrospect

SAP Development Standards

Optimized Rates Mixture
Risk Mitigation with SAP Custom Development

1. **Cost Efficiency**

2. **Risk Mitigation**

   - **SAP Active Global Support**
   - **SAP Roadmap Alignment**
     - Solution today
     - Planned Innovation
     - Future Direction
   - **Documentation & SAP Quality Standard**

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Solution Expertise provided by SAP Custom Development

1. Cost Efficiency

2. Risk Mitigation

3. Expertise & Resources

> 1000 CD Developers

People & Expertise Resources
- Standard Development
- Utilities Industry Solutions
- LoB Solutions
- Consulting

Access to specialized partners

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Innovative Solutions offered by SAP Custom Development

1. Cost Efficiency
2. Risk Mitigation
3. Expertise & Resources
4. Innovative Solutions

HANA
Analyze massive amounts of data
3600x faster*

Mobile Solutions

Business Solutions

<table>
<thead>
<tr>
<th>Enterprise Asset Management</th>
<th>Customer Relationship &amp; Billing</th>
<th>Energy Capital Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant lifecycle management</td>
<td>Selling of energy &amp; services</td>
<td>Meter operations</td>
</tr>
<tr>
<td>Network lifecycle management</td>
<td>Customer service</td>
<td>Energy data management</td>
</tr>
<tr>
<td>Resource &amp; supplier management</td>
<td>Billing of energy &amp; services</td>
<td>AMI / Smart grid integration</td>
</tr>
<tr>
<td></td>
<td>Customer financials management</td>
<td>Energy portfolio management</td>
</tr>
<tr>
<td></td>
<td>Intercompany data exchange</td>
<td>Reconciliation &amp; settlement</td>
</tr>
</tbody>
</table>

Business Intelligence & Analytics

<table>
<thead>
<tr>
<th>Enterprise Management &amp; Business Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance management</td>
</tr>
</tbody>
</table>

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SAP Custom Development Offering
From Unique Innovation to Standard Solutions

**Custom Solutions**
100% solution fit with customer-specific solutions to address your unique and competitive business needs.

**Focused Business Solutions**
Out of the box standard solutions that address highly specialized business priorities of targeted customer segments.

**Repeatable Custom Solutions**
Fast time-to-value with previously developed and proven solutions that can be used as a starting point in addressing unique business requirements.

**Support**
Protect your long-term solution investment with support options.
Agenda

Wer ist SAP Custom Development

Lösungsüberblick im Bereich Utilities

Multiresource Scheduling - Anwendungsfälle
SAP Custom Development for Utilities – Solution Map

Core Industry Process

Support Process

HANA

Mobile

Generation

Transmission & Distribution

Metering

Retail & Services

Procurement & Trading

Intercompany Data Exchange – country specific extensions (1, 2)

Energy Calculation for Gas Consumption (2)

Pre-payment (1,2)

SAP Pricing & Costing for Utilities (2)

SAP Energy Portfolio Management (2)

Customer Online Services (1)

SAP Business Process Tracking (2)

SAP Multiresource Scheduling (2)

SAP Asset Retirement Obligation and SAP Asset Lifecycle Accounting (2)

SAP Application Interface Framework (2)

Work Efficiency Component (2)

SAP Energy Portfolio Management (2)

(1) Focus Topic (CDPs)

(2) Product Offering (ACS, FBS, RCS)
IDE-X solutions for deregulated markets

Business Challenges
- Unbundling of Energy markets
- Retaining and growing the customer base in a liberalized market environment
- Control the cost-to-serve per customer (cost of compliance)
- Keeping track with regulatory changes – and associated costs low

Solution Overview
- Message handling and monitoring between market partners
- Handling of defined processes such as Change of Supplier, End of Supply, Move-in, New Connection etc.
- Process monitoring and exception handling

Business Benefits
- Automation of process reduces process cost
- Flexible implementation to adapt to specific customer’s needs
- Fully integrated into SAP for Utilities
- Leveraging UCC experience from a dozen IDEX projects reduces project risk
SAP Pricing and Costing for Utilities

Business Requirements
- Customer Retention and attraction of new customers under increasing competition and volatile energy markets
- Efficient energy quotation process
- Improved operational processes to lower process cost

Our Approach
- Comprehensive solution for calculation of quotation prices during the quotation process:
  - Handling of variants and different calculation schemes
  - Bundled PoDs (for C&I customers)
  - Contribution margin calculation
  - Calculation of procurement prices based on HPFC- or monthly (Integration to EPM 2.0)

Value To Customer
- Efficient quotation process (End-2-End) reduces sales costs
- Quick turnaround of quotations to customers increases sales success
- High automation level and central data management reduce operating cost
C&I Sales Process spans several components

### SAP CRM
- Create master data
- Upload forecast profile
- Create quotation

### SAP IS-U
- Procurement costs
- Grid usage charges
- Risk surcharges
- Fees, taxes etc.
- Fix margin
- Calculate prices

### SAP ERP
- Store forecast profile

### SAP EDM
- Energy Costs (HPFC)

### SAP EPM
- Release demand
- Procure Energy
- Start Supplier switch
- Create contract

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Detailed View of Calculation – Screen Example

Detailed view of calculation schema

<table>
<thead>
<tr>
<th>Item Name</th>
<th>Description</th>
<th>Amount</th>
<th>Unit</th>
<th>Price U.</th>
<th>Condition Unit</th>
<th>2nd Cond. Basis</th>
<th>Unit</th>
<th>Condition Value</th>
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</thead>
<tbody>
<tr>
<td>000</td>
<td>Purchasing</td>
<td>7,486</td>
<td>EUR</td>
<td>1</td>
<td>MAH</td>
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<td>MAH</td>
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<td>001</td>
<td>Grid Usage Charge</td>
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<td>MAH</td>
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<td>MAH</td>
<td>33,954</td>
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<tr>
<td>002</td>
<td>Combined Heat and Power-Law</td>
<td>2,378.65</td>
<td>EUR</td>
<td>0</td>
<td>MAH</td>
<td>2,857,5160</td>
<td>MAH</td>
<td>1,20</td>
</tr>
<tr>
<td>003</td>
<td>Franchise Fee</td>
<td>5,897.43</td>
<td>EUR</td>
<td>0</td>
<td>MAH</td>
<td>2,857,5160</td>
<td>MAH</td>
<td>2,15</td>
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<tr>
<td>004</td>
<td>RO</td>
<td>6,201.05</td>
<td>EUR</td>
<td>0</td>
<td>MAH</td>
<td>2,857,5160</td>
<td>MAH</td>
<td>4,25</td>
</tr>
</tbody>
</table>

Display of individual condition types
Business Value
SAP Pricing & Costing for Utilities

Reduced cost-to-serve
- Make your quotation process more efficient
- Get your quotations differentiated and system-supported
- Speed up your turnaround of quotations to customers

Low operating costs
- Automate calculation and creation of quotations
- Maintain quotations and master data centrally
- Work in an integrated system landscape

Enhanced transparency & flexibility
- Handling of variants
- Multiple pricing procedures
- Bundle calculation
SAP Energy Portfolio Management

Solution Description

SAP Energy Portfolio Management is the solution for structured and optimized energy procurement. It offers municipal utility companies, national energy providers, purchasing communities, energy brokers and manufacturing plants with high energy consumption different options to meet their energy demand – by purchasing products on the future or spot markets, using schedules or OTC transactions.

Main Capabilities

- Create energy portfolios (multi commodity) that are split into sales planning portfolios, sales portfolios, and procurement portfolios
- Calculate open positions and split it into tradable standard products
- Calculate and manage price curves and use them for valuations
- Map schedule and OTC transactions
- Automatically check deal confirmations from trade partners
- Accurately apportion of procurement costs to the sales side
- Nomination, invoicing and planning
Core Process of Energy Portfolio Management

Quotation Contract Close
Define Portfolios
Determine Procurement Strategy
Manage Deals
Verify invoices

Hierarchy of Portfolios

Customer Contracts
Forecasts
Market Expectations
Retail

C&I*
Long-term
Day ahead

Residential
Long-term
Day ahead

Sales
Procurement
Position Handling
short- to long-term

Deal
Confirmation

Short- and Long-term Contracts

With
- power plants
- energy exchanges
- energy brokers
- gas storage locations
- upstream gas shippers
- etc.

Market Expectations

Wholesale

* C&I = Commercial & Industrial

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Energy Markets to be used for procurement

- **Future Market** (long term)
- **Spot Market** (short term)
- **Regulation Energy** (during consumption)

**Future: Obligation to sell/buy a certain MW power to be delivered at a certain point of time in the future for a price established today.**

**Prognosis Values as of 1.2.2012**

- **Peak Load**
- **Base Load**

**Prognosis values as of 31.1.2013**

- **Peak Load**

**Actual data**

- **Peak Load**

Depending on delivery time: Intraday or day ahead contracts (today for tomorrow).

Depending on delivery duration: hour or block contracts.

Energy which differs from the nominated values will be delivered from the distribution net operator.

**Accuracy of prognosis / price per MWh**
SAP Energy Portfolio Management
Interface between Sales and Procurement

- **SAP PCU**: *Integrated into SAP CRM 7.0*  
  - Flexible Calculation of Quotations  
  - Integrated into SAP EPM for Procurement

- **SAP CRM 7.0**:  
  - Master Data  
  - Quotation Management  
  - Contract Management

- **SAP EPM**:  
  - Integrated into SAP for Utilities  
  - Flexible Procurement  
  - Risk Controlling in Procurement

- **SAP for Utilities**:  
  - Billing  
  - Master Data Replication (from CRM)  
  - Market Communikation (IDEX)

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* PCU = „Pricing & Costing for Utilities“ /  
** EPM = „Energy Portfolio Management“
## Business Value
SAP Energy Portfolio Management

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully integrated solution</td>
<td>Full Integration of Sales to Procurement processes</td>
</tr>
<tr>
<td>Proven accounting solution</td>
<td>Energy accounting for actual and future energy data</td>
</tr>
<tr>
<td>Risk evaluation and mitigation</td>
<td>Automatic calculation of key figures and limit evaluation</td>
</tr>
<tr>
<td>Reduction of procurement costs</td>
<td>Development, value estimation and adjustment of cost- and risk-optimal procurement strategies</td>
</tr>
<tr>
<td>Reduced process costs</td>
<td>Reduction of operating costs due to the usage of a maintained, upgrade- &amp; release-secure standard product</td>
</tr>
</tbody>
</table>

“The SAP solution has enabled us to standardize our business transactions and posting processes in energy procurement and sales.”
Dr. Sascha Kreiskott, Project Lead EPM Implementation, E.ON Vertrieb Deutschland GmbH
Prepayment - Business Perspective

Does your company...

- Offer smart metering services
- Face revenue challenges due to a large number of consumers with bad debts
- Aim to further leverage “SAP for Utilities AMI Integration“ investment
- Currently offer or plan to provide prepay options to consumers for buying electricity or gas
- Require an automated, information enriched and market compliant solution with the ability to provide near real-time prepay account information to consumers
High Level Process Overview

Account Mr. Smith

True ups
Aug 1 € 60
Sept 1 € 110
July 25 € 50
Aug 12 € 100
Aug 30 € 70

Balance € 50

Payment by
Credit card/Cash

Mr. Smith

Disconnect
Daily reads

Daily IS-U Billing Simulation

Pre-Pay Balance calculation

As of

Sept 1 € 50 19 days
Sept 2 € 45 18 days
Sept 3 € 37 16 days
....
Sept 15 € 14 3 days
Sept 18 € -3 0 days

Email, SMS, Fax, Call to inform customer

Balance € 50

Smart Meter

Disconnection
System Architecture

Prepayment Document on WebDynpro

SAP Prepay
- Simulation Tool
- Account Balance
- Monitoring
  - Usage & Balance Summary

Reports

Triggering of Actions

User Interface

IS-U : Industry Solutions - Utilities
UI: User Interface
CIC: Customer Interaction Centre
SAP Business Process Tracking

Business Challenges
- Inhomogeneous and isolated business process monitoring
- Work overload of the IT-department for inquiries from your agents due to lacking access to a global view on processes and data

Solution Overview
- Focus on the business and not the IT department
- Visualization and monitoring of the business process progress from end-to-end, across business division and across systems
- Monitoring of deadlines for market processes
- No replacement of local monitoring functionalities, but a reasonable enhancement

Business Benefits
- Monitoring of business processes by the business and not the IT
- A complete view on the market processes
- Increase process efficiency and effectiveness
SAP Business Process Tracking

Business Process Overview

Search Criteria

Process Type: Distributor Meter-to-Cash
Start From: 01.08.2011 00:00:00
Start To: 19.08.2011 23:59:59
Options: Errors only, Warnings only, Errors or Warnings, All process instances

Instance Aggregated View

Process Instance List
Instance Single View

Motor Reading
- Error: 0
- Warning: 0
- Success: 14

Motor Reading Reversal
- Error: 0
- Warning: 0
- Success: 0

Invoicing
- Error: 0
- Warning: 0
- Success: 0

Invoice Reversal
- Error: 0
- Warning: 0
- Success: 4

Payment Advice
- Error: 0
- Warning: 0
- Success: 0

Complaint Notification
- Error: 0
- Warning: 0
- Success: 0

Send Bulk Bill
- Error: 0
- Warning: 0
- Success: 3

Billing
- Error: 4
- Warning: 4
- Success: 5

Billing Reversal
- Error: 0
- Warning: 0
- Success: 6

Index BillLocalizedMessage
- Error: 0
- Warning: 0
- Success: 4

Ready
## Business Value
### SAP Business Process Tracking

<table>
<thead>
<tr>
<th>Optimization</th>
<th>The mass analysis of a business process enables you to determine weak points with a single view: Where and how often did the traffic light turn red?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness</td>
<td>The business process can be monitored across departments and system boundaries.</td>
</tr>
<tr>
<td>Time saving</td>
<td>Quick detection of the error situation. Direct link into the error analysis and error correction.</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Adjustments are made through configuration. The underlying framework allows flexibility without modifications.</td>
</tr>
<tr>
<td>Integration</td>
<td>Can be integrated with any error analysis or error correction tool. For example in-house developed solutions can be re-used.</td>
</tr>
</tbody>
</table>
SAP CD Utilities Competence at a Glance

Industry Focus

- Global Business Program Utilities
- Utilities Experts globally
- Global Focus Area Utilities in Development
- Development Centers in Shanghai, Gurgaon, Walldorf and St. Ingbert
- Strong collaboration with IBU Utilities

Solution Portfolio

<table>
<thead>
<tr>
<th>Delivery Type</th>
<th>Projects and Solutions</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer-Specific Development Projects</td>
<td>• Customer Online Services • IDEX projects • others</td>
<td></td>
</tr>
<tr>
<td>Repeatable Custom Solutions</td>
<td>• IDEX for German Gas • Energy Calc. for Gas consumption (G685) • Process and data-exchange framework for utilities • Pre Payment</td>
<td></td>
</tr>
<tr>
<td>Focused Business Solutions (Standard Solutions)</td>
<td>• SAP Energy Portfolio Management for Electricity and Gas • SAP Pricing and Costing for Utilities • SAP Business Process Tracking • SAP Multi Resource Scheduling • SAP Asset Retirement Obligation Management • SAP Asset Lifecycle Accounting • IDEX for German Metering • IDEX for German Electricity</td>
<td></td>
</tr>
</tbody>
</table>

Go Live

Solution Definition ➔ Development and Test ➔ Customer Acceptance & Delivery ➔ Implementation * ➔ Support *

Project, Quality and Risk Management

Close and Continuous Customer Collaboration
Agenda

Wer ist SAP Custom Development

Lösungsüberblick im Bereich Utilities

Multiresource Scheduling - Anwendungsfälle
Relevanter Prozessausschnitt für SM-Rollout
Ein effizienter und effektiver Rollout-Prozess setzt einen ganzheitlichen Planungsansatz sowie eine effiziente Integration in die Um-Systeme voraus.

<table>
<thead>
<tr>
<th>Bedarf</th>
<th>Kunde</th>
<th>Bedarfs-prognose</th>
<th>Kundenkontakt-mgmt</th>
<th>Terminfenster-vereinbarung</th>
<th>Termin-vereinbarung</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Planung</th>
<th>Grobplanung</th>
<th>Feinplanung</th>
<th>Einbau/Betrieb</th>
<th>Störungsbehebung</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ressourcen</th>
<th>Installateure</th>
<th>Kapazitätsplanung</th>
<th>Ressourcen-allokieren</th>
<th>Routenplanung</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ressourcen</th>
<th>Geräte</th>
<th>Einkauf</th>
<th>Lagerung</th>
<th>Auslieferung</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Transportmittel</th>
<th>Fahrzeuge beschaffen</th>
<th>Fahrzeuge reservieren</th>
<th></th>
<th></th>
</tr>
</thead>
</table>

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Relevanter Prozessausschnitt für SM-Rollout

Ein effizienter und effektiver Rollout-Prozess setzt einen ganzheitlichen Planungsansatz sowie eine effiziente Integration in die Um-Systeme voraus.
MRS als zentraler Planungskomponente
MRS ist der zentrale Baustein in einer Gesamt IT-Architektur für die Planung der Kapazitäten und Bedarfe.
SAP MRS is a powerful solution for service-, plant maintenance and project businesses providing

- Resource Management
- Time Management
- Know How Management
- Manual, Automated and Optimized Planning
- Integration with Geographical Information Systems
- Integration with Mobile Devices

**SAP MRS runs fully integrated in the SAP System and SAP Processes**

- SAP HR Integration
- SAP PM/CS Integration
- SAP PS Integration
- SAP cProjects Integration
- SAP CRM Service Integration
Resource Management with SAP MRS
One solution for different needs at one customer
SAP Multiresource Scheduling for Plant Maintenance Planning and Dispatching Functionality

Scheduler Workplace
- SAP GUI and web-style User Interface
- Intuitive Planning Board with drag & drop
- Work Center scheduling
- Visualization of Clocking Data
- Alert Monitor

Resources
- Human resources, Equipment and Tools

Solution Highlights
- Material Availability Data
- Mass-Shifting and Dispatching Functionality
- Strong Integration to other components in order to reduce planning efforts
- Capacitive Planning
- Schedule Compliance Monitoring
- Ad-hoc Reporting by SAP Analytics

Mobility
- Integration with SAP Syclo
SAP Multiresource Scheduling
Field Services

Appointment Booking
- CRM Service Order and PM/CS
- Search strategies
- Service Areas (definition of capacities with GIS)

Material Availability
- MATP Checks
- Van Stock, Individual resource stock

Scenario
- Service Level Agreements
- Integration with SAP Syclo

Optimization
- Geographical Information System
- Location, travel time, date rules, weather
SAP Multiresource Scheduling
Project Scheduling and Staffing

Project Management
- SAP PPM and/or SAP ERP PS Integration

Staffing scenarios
- Capacity Planning
- Planning and Scheduling Functionality available
- Staffing Functionality available

Collaboration
- Workflow, Adobe offline forms

Analytics and Mobility
- BusinessObjects dashboards
- Mobile Solution Offering (Concept App available)
Mobility with Syclo
SMART Application Suite

- **Asset Management**
  - Work Orders
  - CATS - Time & Attendance
  - Notifications on-the-spot
  - Measurement Documents

- **Field Service**
  - Service Orders
  - Customer data
  - Territory data
  - Entitlements
  - Vehicle Inventory

- **Utilities EAM & CRM**
  - Work Orders
  - Inspections
  - Surveys
  - Crew reporting
  - Meter operations
  - Operator rounds

- **Material Management**
  - Cycle Counts
  - Goods Issues
  - Stock Transfers
  - Goods Receipt

- **Account Management**
  - Activity Management
  - Opportunity Management
  - Lead Management
  - Contact Management

- **Condition Monitoring**
  - Fast Rounds & Readings
  - Measurement Docs
  - Integration to Data Historian
  - Safety Warnings

- **Approval Management**
  - Expenses & Invoices
  - Leave, Travel, and Vacation
  - Purchase & Service Orders
  - Timesheets

- **Examples**
  - Sales & Distribution
  - Proof of Delivery
  - Consignment Inventory
  - Inspections
  - Sample Tracking
  - Track and Trace

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Thank you

Harald Knust
Solution Architect Utilities
SAP Custom Development
SAP AG
Dietmar-Hopp-Allee 16
69190 Walldorf
T +49 6227 7-47685
M +49 160 8896589
F +49 6227 78-00131
mailto:harald.knust@sap.com

Frank Rudolf
Solution Architect Oil&Gas; Utilities
SAP Custom Development
SAP AG
Dietmar-Hopp-Allee 16
69190 Walldorf
T +49 6227 7-64651
M +49 160 90432504
F +49 6227 78-45926
mailto:frank.rudolf@sap.com