Business values and drivers for a SAP-GIS integration in EAM

ESRI Electric and Gas User Group Conference - 2009
Investigation at Customers’ SAP/GIS Integration:

## Results

### Customer Interaction

<table>
<thead>
<tr>
<th>Count</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>Customers who supposedly did a SAP/GIS integration</td>
</tr>
<tr>
<td>21</td>
<td>Worked <em>only</em> with BW</td>
</tr>
<tr>
<td>50</td>
<td>Interviewed or materials viewed</td>
</tr>
<tr>
<td>4 (7)</td>
<td>Contextual interviews conducted</td>
</tr>
</tbody>
</table>

### Customer Breakdown

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>Utilities</td>
</tr>
<tr>
<td>15%</td>
<td>Public Sector</td>
</tr>
<tr>
<td>8%</td>
<td>Oil &amp; Gas</td>
</tr>
<tr>
<td>Rest</td>
<td>Others</td>
</tr>
</tbody>
</table>

### Integrations

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>80%</td>
<td>Did an integration around Enterprise Asset Management</td>
</tr>
<tr>
<td>95%</td>
<td>Small, homegrown integrations</td>
</tr>
<tr>
<td>100%</td>
<td>Experienced benefits, want to expand it</td>
</tr>
<tr>
<td>100%</td>
<td>Want standard SAP packages, not homegrown software</td>
</tr>
</tbody>
</table>

*Source: Project Sagres, SAP*
Aquarion Water, CT
CenterPoint Energy
City of Phoenix
City of Richmond
City of San Antonio
City of San Diego
City of Tacoma
Energen/Alagasco
Gwinnett County, GA
Hartford MDC
Imperial Irrigation District
Morris Communications
Marin Municipal Water District
Newport News Water Works, VA
Omaha Municipal Utility District
Oklahoma Gas & Electric
PA Turnpike
PEPCO
PSE&G, New Jersey
Schindler Elevator
Aena, Spain
AES Sul - Brazil
Alinta Gas
British Petroleum
British Waterways
German Waterways
Canal, Spain
Conaprole, Chile
Cape Town
Denmark Oil & Gas Network
Energen
GeoNIS
German Defense Forces
Hellenic Military
Interconexion Electrica,
   Colombia
Israel Government
KEPCO
Metrogas, Chile
Ministry of Environment, Spain
Denmark Oil & Gas [DONG]
Shell Oil
Siemens Medical
Sky Harbor Airport, Phoenix
Water One, KS
NESA
New Zealand Defense Forces
City of Ottawa, Canada
PDO, Oman
Pidpa, Belgium
Hanson, Australia
Port of Montreal
Portugal Highways
Spanish Ministry of Environment
Saudi Aramco
Hamburg Waste Management
Wales and West Utilities
Waterways Authority of NSW
Welsh Water
And many more ...
EAM is covering the entire Asset Life Cycle

Enterprise Asset Management

Collaborate
Design & Specify
Procure & Build
Operate & Maintain
Decommission & Dispose
Optimize
Analyze

Asset Maintenance
MRO Procurement & Inventory
Human Resources
Inspection & Calibration
Asset Health Monitoring
RFID and Mobile Devices
Project Management
Materials Requirements Planning
Core Financials
Financial Optimization & Reliability Reporting
Utility Business Processes Supported by GIS
Limits between the two systems

• What’s in SAP:
  – Financials
  – Master data (equipment, professionals, trucks, etc.)
  – Costs (equipment, cables, workforce, etc.)
  – Equipment life cycle information
  – Crews’ and professionals’ profiles – HR
  – Customer info – CCS
  – Service orders
  – Notifications

• What’s in GIS:
  – Location (functional location, equipment, work order, notification, etc.)
  – Geographic data (network, streets, coordinates, images, roads, trees, etc.)
  – Dispatch, routing, tracking vehicles
  – Engineers’ and technicians’ workspaces
    • That is, projects: network expansion requires a GIS to simulation and feasibility analysis
    • Project tool video
  – Weather
GIS Integration Scenarios with SAP EAM

- Call Center Management
- Planning/Design & Construction
- Maintenance and Work Order Management
- Work Coordination and Scheduling
- Mobile Workforce Management and Vehicle Tracking
- Analytics and Executive Dashboard
- Compliance and Permitting

Enterprise Asset Management

- SAP CRM
- SAP Plant Maintenance
- SAP Project System
- IS U
- Mobile Infrastructure

Data Sync

SAP

GIS
Different Types of Users – Same Platform

SAP User

Composite User

GIS User

SAP Functionalities and Connections

Composite Business Processes and Services

GIS Functionalities and Connections

Data Synchronization
SAP – ESRI Integration

• Extend SAP with Geographical Intelligence

• Extend ESRI with Core Business Intelligence
Benefits of Integration

• Benefits customers have realized
  – Increase Productivity – work in a single workspace
    • Two clicks to data
    • Find right asset more quickly
    • Initiate transactions more accurately
    • Thematic display of assets based on SAP attributes
    • Work planning - View asset location with respect to field teams
  – Improve Data Quality and Consistency
    • Single source of spatial master data
    • Assets on books matching assets installed
    • Reduced data entry and errors
  – Support Decision Making (Enable Spatial Queries and Optimization)
    • GIS geometry and topologic functions enable spatial queries
    • GIS network, location/allocation, and other functions optimize routes, supply locations, etc.
    • Better logistics, resource management
  – Improved Collaboration
    • Common operating picture
    • Faster and better decision making
    • Internal and external stakeholders
Benefits of Integration

• Benefits customers have realized
  – Save Time
    • Creation of equipment, notifications, work orders
  – Give More People Access to SAP Data and Functions
    • Increase SAP utilization
    • Leverage SAP and GIS Investments
  – Automate Workflows
    • Graphical selection and assignment of assets and tasks
    • Calculations in GIS update SAP
    • Mass change object data in SAP
    • Automatically relate new SAP objects to GIS features
  – Reduce Costs/Save Money
    • Assign the right amount of work to the right crew
    • Avoid installation of signs in poles
    • Attend regulatory demands (prove investment in the network)
    • Avoid penalties by regulatory agencies
Benefits of Integration

• Overall 12% - 18% cost reduction
  • Improved Visibility
  • Improved Work Planning and Scheduling
    • Planned/Preventive Maintenance
    • Identify Problems and Weak Points
    • Breakdown/Emergency Maintenance
    • Work Selection and Assignment
  • Improved Coordination of Resources
    • Resource/Location Conflicts
      • Human
      • Material
      • Equipment
    • Optimize Tasks and Partners
    • Inform and coordinate with Partners

• Training: 10% - 15% reduction

• Data Access/Navigation: 10% - 50% time reduction
IMAGEM Software International LLC

- A Software Company Committed Exclusively to SAP and ESRI
- Provider of Packaged Integration Application: GISConneX
- Focus on the Utilities Market (Electric, Gas, Water, Oil & Gas)
- Global Company, Based in Redlands (CA)
  - Business Office: Spain
  - Development Center: São Paulo
  - Subsidiary of Imagem (Brazilian ESRI and M&M Distributor)
- SAP Software Solution Partner
- ESRI Business Partner
Reference case: AES

- AES-Sul: Electric Distributor in Brazil
  - 1.8 million customers

- Impact Awards 2007 Brazil:
  Best SAP project of the year

- Project:
  “GIS and SAP: two different worlds integrated with SAP NetWeaver”

- Board of Judges:
  São Paulo University, Gartner Group, SAP Brazil, and ASUG

Photo: Sandra, AES Sul project manager, receives the prize from SAP Brazil president.
AES Sul Challenges

- Difficult in locating the assets in the field
- No information about asset geographic position
- Asset data not adequate (accounting and network operation)
- Data is redundant and inconsistent (GIS and SAP)
- Need to address new regulatory requirements
- Lengthy process with several steps done by different people
- Business processes include manual interfaces with high error rates

GOALS

- Better support for field services
- Better management in the information flow of assets from and to the field
AES Sul Solution

- Increment and integrate current GIS and SAP
  - Processes revision and improvement
  - Desktop application to keep records integrated (PM-GIS)
  - Mobile system for inventory maintenance (PM-MI-GIS)
  - Project tool implementation (PS-GIS)

Assets Data Field Collection

Accounting X Physical (GIS) Reconciliation

Executive Reporting for Regulator

Regulatory Agency Compliance Audit

Technology and Process
Solution Architecture

Geographic data and maps

Data from PM

Data and business rules integration

Data distribution with mobile intelligence

SMC application offline

GPS

SyncBO

Web Service

RFC

SyncBO

SAP Mobile

SAP XI
Network master data maintenance (as it was)
Network master data maintenance (new)
AES Sul Benefits

• Benefits after GISConneX Mobile
  – 100% of network assets geo-referenced
  – Redundant data minimized/eliminated
  – SAP & GIS integrated and combined in one user interface
  – Business rules enforced across processes
  – Leaner, faster (75%), reliable network master data updating
  – Minimize errors, less re-work, increased integrity
  – Higher-quality data
  – Uniform procedures among different teams and regional offices
  – Significant costs avoided:
    • Network asset tagging in field: $8 million savings
  – Assurance that all assets are in physical and accounting databases
  – Compliance with regulatory standards, mitigating governance consequences, and supporting rate cases to the PUC
GISConneX in the EAM Process

SAP IS-U
Industry Solution for Utilities

SAP PS
Project System

SAP PM
Plant Maintenance

Call Center & Emergency Management
Planning Design Construction
Maintenance & Work Order Mgmt
Work Coordination & Scheduling
Mobile Workforce Mgmt/Crew Routing & Vehicle Tracking
Analytics and Executive Dashboard
Compliance & Permitting

Customer Management (SAP CCS)
Project Design (SAP PS)
Work Management (SAP PM)
Mobile

Asset Data Management (SAP PM)
Asset and Work Management Optimization

Increased Profitability

- Mobile Work Management
  - Faster and efficient interaction with asset information
  - Process automation

- Work Management (WM)
  - Integrates asset maintenance information
  - Provides capabilities for better asset-related work analysis
  - Maintenance Planner acts proactively

- Asset Data Management (ADM)
  - Information integrity between ESRI GIS and SAP objects
  - Single management environment to manage data
  - Two way access to critical business information

Information and User Interface Integration
Asset Data Management (ADM)

✓ Functionalities

• Create functional location
• Remove functional location
• Find functional location
• Display functional location attributes
• Create service point
• Mass attribute update
• User posts to SAP

• Install equipment
• Creates equipment
• Replace equipment
• Uninstall equipment
• Find equipment
• Display equipment attributes
Work Management (WM)

✓ Key Features and Benefits

• Extend SAP asset and work management functionality through geographic intelligence
• Provides map interfaces within the SAP GUI and on the Web through a composite application:
  • Web >>> Work Browser
  • SAP GUI >>> Maintenance Planner Workbench
• Improves the efficiency in creating, changing, and displaying notifications and work orders using the GIS interface
• Enables managers to make better maintenance related decisions based on location
• Helps to generate more assertive preventive plans
Work Browser
SAP-ESRI Composite Application

✓ Functionalities

• Create notifications based on GIS maps.
• Browse work orders and notifications, allowing searches with GIS filters.
• Browse work orders and notifications, allowing searches with any SAP filters.
• Browse the network functional locations and equipment.
• Access maintenance history for technical objects.
• Find address.
• Run network traces.
GISConneX EAM Mobile

✓ Key features and functionalities

• Map enabled mobile application
• Integrate SAP with GIS in the field using the Syclo platform.
• Visualize equipment, notifications, and work orders in the field (handhelds)
• Create notification based on maps in the field and post to SAP and ESRI (off/online)
• Update work orders based on maps in the field and post to SAP and ESRI (off/online)
GISConneX - Benefits

• Accelerates integration project
  – Packaged integration – ready to deploy

• Ensures integration of Best Practices
  – Expertise in GIS-ESRI and SAP technologies
  – Expertise in integration projects

• Decreases risks
  – Proven solution with ongoing support

• Saves money
  – Doesn’t waste time and resources to test and develop a custom solution
GISConneX - Benefits

• Ensures integration solution continuity
  – Product maintenance for different versions (SAP and GIS) and updating of technology

• Ensures data integrity
  – Data synchronized, improved data quality, reduced latency

• Ensures adaptation to customer’s requirements
  – Provides configuration options
  – Provides scalable architecture

• Ensures technology market standards
  – Integration platform, Web services
  – Data integrity and security
What Is Possible
Contact

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Enjoy Atlanta!