

# ASUG Year-Round Community



## Enterprise Asset Management Symposium

October 19-20, 2006 • Baltimore, MD

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# We Need Standardization: A Call for a Recommended Practice for SAP PM

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## Standards Referenced

- ISO 14224, “Petroleum and natural gas industries — Collection and exchange of reliability and maintenance data for equipment”
- ISO 15926-2, “Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities”
- ANSI/API Standard 610/ISO 13709, Centrifugal pumps for petroleum, petrochemical and natural gas industries

# The High Cost of Inadequate Interoperability

## Lack of Interoperability is a Big Issue

- Per 2004 NIST study, \$15.8 billion is the annual cost of inadequate interoperability in the US capital facilities industry (1-2 percent of annual revenue for those industries)
  - **“Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry”**
- NIST defines interoperability as:  
“the ability to manage and communicate electronic product and project data between collaborating firms and within individual companies’ design, construction, maintenance, and business process systems”

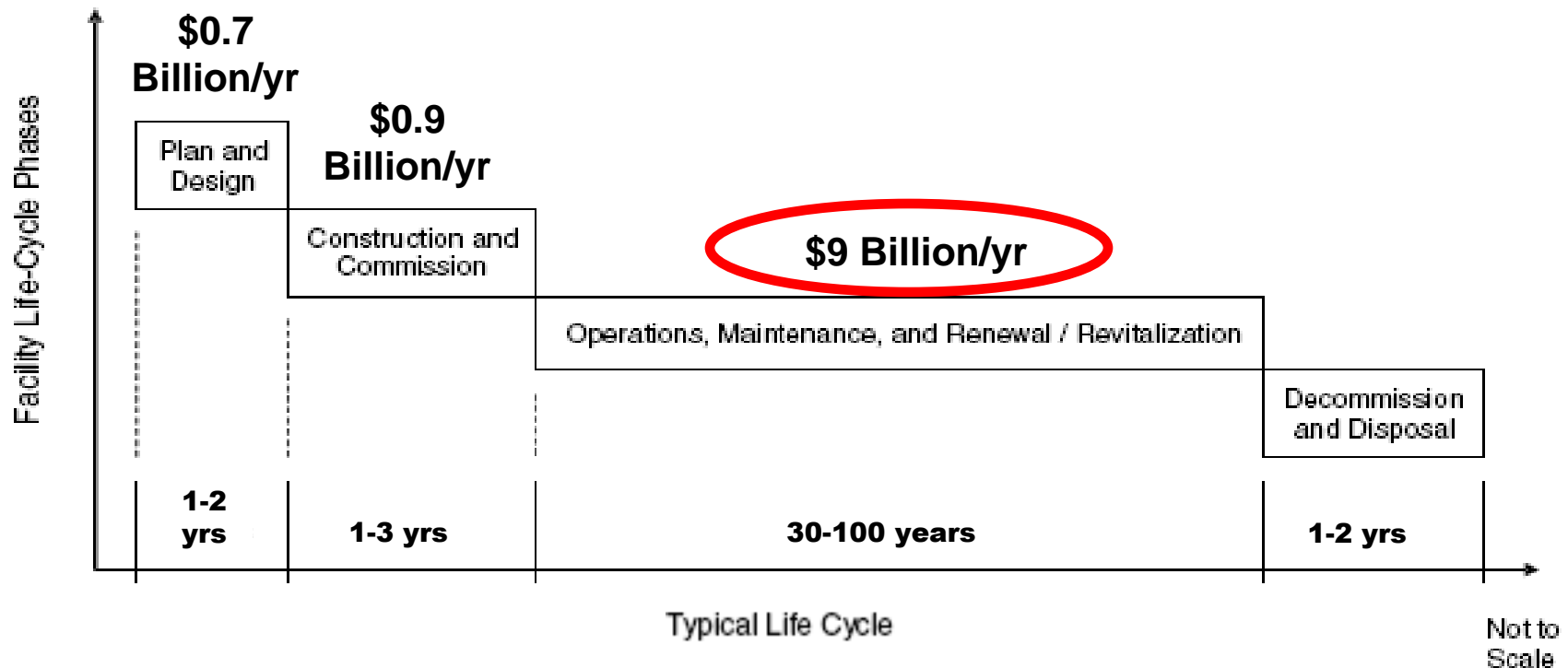
## Annual Costs of Inadequate Interoperability in the Capital Projects Industries (\$Billions)

Stakeholder Group	Planning, Design, and Engineering, Phase	Construction Phase	Operations and Maintenance Phase	Total
Architects and Engineers	\$ 1.01	\$ 0.15	\$ 0.02	\$ 1.17
General Contractors	\$ 0.49	\$ 1.27	\$ 0.05	\$ 1.80
Specialty Fabricators and Suppliers	\$ 0.44	\$ 1.76	\$ -	\$ 2.20
Owners and Operators	\$ 0.72	\$ 0.90	\$ 9.03	\$ 10.65
<b>Total</b>	\$ 2.66	\$ 4.07	\$ 9.09	\$ 15.82

Source: RTI estimates. Sums may not add to totals due to independent rounding.

# Facility Lifecycle Phases

## Annual Costs of Inadequate Interoperability to Owner-Operators



# Business Processes Affected by Inadequate Interoperability

Business Processes	Architects and Engineers	General Contractors	Specialty Fabricators and Suppliers	Owners and Operators
Accounting	✓	✓	✓	✓
Cost Estimation	✓	✓	✓	✓
Document Management	✓	✓	✓	✓
Enterprise Resource Planning	✓	✓	✓	✓
Facility Planning and Scheduling	✓	✓	✓	✓
Facility Simulation	✓	✓	✓	✓
Information Request Processing	✓	✓	✓	✓
Inspection and Certification		✓	✓	✓
Maintenance Planning and Management		✓	✓	✓
Materials Management	✓	✓	✓	✓
Procurement	✓	✓	✓	✓
Product Data Management		✓	✓	✓
Project Management	✓	✓	✓	✓
Start-up and Commissioning		✓	✓	✓

## NIST Counterfactual Scenario

- Electronic data exchange, management, and access are fluid and seamless
- Information need only be entered into electronic systems once
- Available to all stakeholders instantaneously through information technology networks on an as-needed basis

## Counterfactual Scenario: Unachievable Panacea or Achievable Goal?

- The counterfactual scenario can be made a reality
- SAP is a tool with the power to make this happen
- The tool alone is insufficient; we need to get the “power to the ground”
- Standardization is the key to making this happen
- ASUG is the logical organization for creating PM standards

# Issues with PM Implementation and Usage

## Deployment Issues

- Significant disparities between SAP capabilities and what is actually delivered to customers
- Implementation partners leave critical design and configuration decisions to people inexperienced with SAP and do not provide sufficient guidance
- Implementation partners in many cases are not fully conversant with EAM requirements and related industry standards
- Bottom line: configurations do not meet customer requirements for EAM

## Specific Configuration Issues

- Technical objects and object structures
  - Little consistency in design
  - The difference between functional and materialized objects is not well understood and not properly captured
  - Class and characteristics functionality not used or poorly designed
- Transactional document functionality
  - Qualitative failure code sets non-standard and incomplete
  - No use of PM-QM integration and therefore limited ability to capture quantitative data
- Document management system (DMS) functionality not enabled

## Problems Resulting from Configuration Issues

- Inability to:
  - Capture equipment class-specific master data
  - Encode qualitative transactional data
  - Capture quantitative transactional data
  - Centrally manage documents
- Disparate data repositories become the only way to capture master and transactional data
- Inefficiencies in data analyses
  - Data mining required for any data-driven decision making
  - Many decisions made without data

## Training/Roll-out Issues: Blind Leading the Blind

- New functionality is introduced en-masse by company personnel only recently introduced to SAP and its capabilities
- Hands-on coaching responsibilities given to “Super Users,” who are themselves inexperienced SAP users with minimal additional training
- Little or no review of work product to ensure that new users understand and properly use the new system

## Problems Resulting from Training Issues

- Critical processes not executed
  - E.g. service entries not done properly and vendors not paid
- Misallocation of costs
  - E.g. \$6 million in equipment repair costs charged to a repair facility
- Widespread use of blanket orders
  - Loss of equipment history and cost allocation

## Some Other Pet Peeves of Mine

- Work approval steps not utilized
- Lack of understanding of work prioritization
- Use of illegitimate fields to capture data
  - E.g. use of the Size/Dimension field to capture P&ID tag numbers for equipment
- Pick lists contain irrelevant selections
- Uncontrolled fields used for important master data

## Consequences to Customers

- Master and transactional data maintained in disparate data repositories
- Lack of quality information and consequently poor asset management
- Lack of interoperability
  - Non-comparable system configurations and data within companies and between companies
  - Inability to collaborate/exchange data
- User loss of confidence in SAP
  - Users perceive that SAP is complex, user unfriendly, and an impediment to productivity

## Consequences to Customers

- Other software products purchased to address perceived SAP inadequacies
- Inefficiencies introduced by the need to reconcile data between disparate data repositories
- Costly consulting fees in attempts to rectify issues
- Substantially delayed or no ROI – very little improvement over legacy systems!

## Revisit - NIST Counterfactual Scenario How are we doing?

- Electronic data exchange, management, and access are fluid and seamless
- Information need only be entered into electronic systems once
- Available to all stakeholders instantaneously through information technology networks on an as-needed basis

# Use Standardization to Fully Exploit SAP PM Capabilities

## Create SAP Standards

- Establish standard methods for configuration and usage of PM
- Reference and leverage from other industry standards
- Specify minimum deliverables for PM deployment
- Include roll-out requirements and associated consistency checking processes
- Be made universally applicable where possible
- Be made available to all SAP customers

## Projected Benefits of Using Standards

- Improve interoperability
  - Via consistency in configuration within and between companies
- Enable SAP to be the central source/front-end
  - Information need only be entered into electronic systems once
  - Data centrally available instantaneously on an as-needed basis
- Streamline and reduce costs associated with PM deployment

## Projected Benefits of Using Standards

- Get it right the first time
  - Foster user confidence in SAP
  - Remove the misperception that SAP is complex, user unfriendly, and an impediment to productivity
  - Eliminate costly post-deployment save-the-day consulting costs
- Get an ROI

# How ASUG can Standardize via the Use of Precedents

## No Need to Reinvent the Wheel: Use industrial Precedents - ASME and API

- Standardization is not a new concept for industry
- ASME and API have successfully developed standards for industrial application per ANSI's Essential Requirements and are recognized as ANSI accredited standards developing organizations
- ASUG is a body analogous to ASME and API
- ASUG PM standards would be similar to API recommended practices, which are not mandates, but rather are consensus best practices

# ASME Boiler and Pressure Vessel Code

- In 1911 ASME undertook the creation and maintenance of the Boiler Code through a volunteer structure involving materially-affected parties
- The result was the first comprehensive standard for boilers and pressure vessels (1915), greatly influencing public safety
- The BPVC affects such industries as public utilities, construction, materials engineering, chemical and food production, nuclear power generation, petroleum processing, and industrial manufacturing

## American Petroleum Institute (API)

- API is the U.S. petroleum industry's primary trade association
  - Maintains some 500 standards, many of them international, covering all segments of the oil and gas industry
- Subcommittees and task groups made up of industry experts develop API standards
  - Open to representatives of groups that are materially affected by the standards
  - These include oil and gas companies, manufacturers and suppliers, contractors and consultants, and representatives of government agencies and academia
- An important part of the API process is developing consensus
  - Consensus does not mean unanimous approval, but it requires that the directly and materially affected parties have reached substantial agreement

## API/ISO Joint Standards Processes

API Standards Process	API Staff	CRE	API Sub Comm	API Task Force
Subcommittee submits project justification to the CRE secretary.			X	
CRE approves project.		X		
Task force chairperson appointed.			X	
Task force appointed.			X	
Subgroups prepare first drafts.				X
Subsequent task force meeting(s) and reviews.				X
Final task force draft to API for subcommittee ballot.	X			X
Subcommittee letter ballot results from API	X			
Task force review of letter ballots and suggestions for revision and submission of the final subcommittee draft to API.	X			X
Editing and committee review (as required).				X
Preparation of galley proofs, page proofs, camera-ready copy, blueline proof	X			
Publish API Standard	X			

## API/ISO Joint Standards Processes

ISO Standards Process	ISO	ISO Rep on TF	ISO Work Group
0 Preliminary stage Preliminary work item		X	
1 Proposal stage New Work Item proposal		X	X
• Convenor nominated		X	X
• P- members organized		X	
2 Preparatory stage Working Draft(s)			X
3 Committee stage Committee Draft(s)	X		
4 Enquiry stage Draft International Standard	X		
• Letter ballot results from ISO.	X		
• Work group review of letter ballots and suggestions for revision and submission of the Final Draft International Standard to ISO.			X
• Editing and committee review (as required).			X
5 Approval stage Final Draft International Standard. Worldwide voting but no changes made to FDIS based on voting comments.	X		
6 Publication stage International Standard	X		

# ASUG Standards Development

- Subcommittees and task groups made up of industry experts would develop ASUG standards
  - Would be open to representatives of groups that are materially affected by the standards
  - Representatives would include SAP customers, SAP partners, SAP and...??
- An important part of the ASUG process would be developing consensus
- ASUG would seek recognition as an ANSI-accredited Standards Developing Organization

## Proposed New ASUG Strategic Direction

- Establish standard practices for configuration and use of PM that facilitate interoperability within and between companies
  - Ensure that the capabilities of PM are fully exploited by SAP customers
- Use ASUG as a special interest group to:
  - Integrate PM standards with other industry standards and establish feedback conduits with those standards
  - Influence other stakeholders for improved interoperability

## Next Steps...

- ASUG Board of Directors endorses development of PM standards as a strategic direction for ASUG
  - Commissions a standards committee
- ASUG Standards Committee
  - Develops standards processes
  - Identifies and prioritizes critical standards development needs
  - Commissions task forces and subcommittees for standards development



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# How ASUG Can Influence Industry

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## Closing the Loop – ASUG Feedback Conduits to Industry Standards

- ASUG needs to collaborate with standards organizations
  - SAP PM customers need a mechanism to give feedback, get clarity, and propose changes to industry standards.
  - Industry equipment datasheets should be in relational data format with differentiation/grouping for functional versus materialized physical objects
- ASUG should have representation on EAM-related industry standards committees

## Issues with Existing Industry Standards

- Inconsistencies between ISO 15926 and other industry standards
- Standards are text documents – characteristics must be manually extracted
- Interpretations and extracts are outdated whenever the standards are updated
- SAP users are limited in their ability to suggest improvements/changes - no ASUG conduit
- Any changes individual users make on their own to a standard result in divergence from that standard

## Can SAP Users Influence Industry?

- SAP has 12 million users within 100,600 installations
- SAP users as a special interest group could have great power in influencing others in industry for better interoperability:
  - Suppliers of goods
  - Industry standards, codes, and recommended practices

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