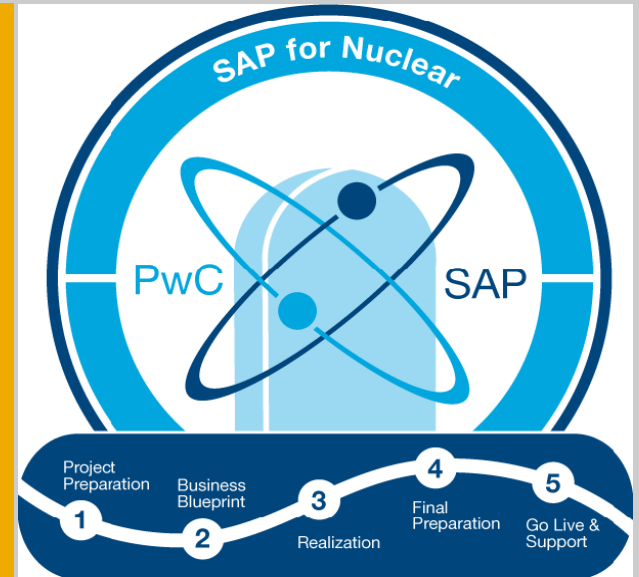


SAP for Nuclear Power Generation

The right fit for nuclear



Christopher Fynn / Brian Williams, PwC
Andre Sorge / Miquel Carbó, SAP
Europe, Middle East and Africa, April 2009.

Agenda



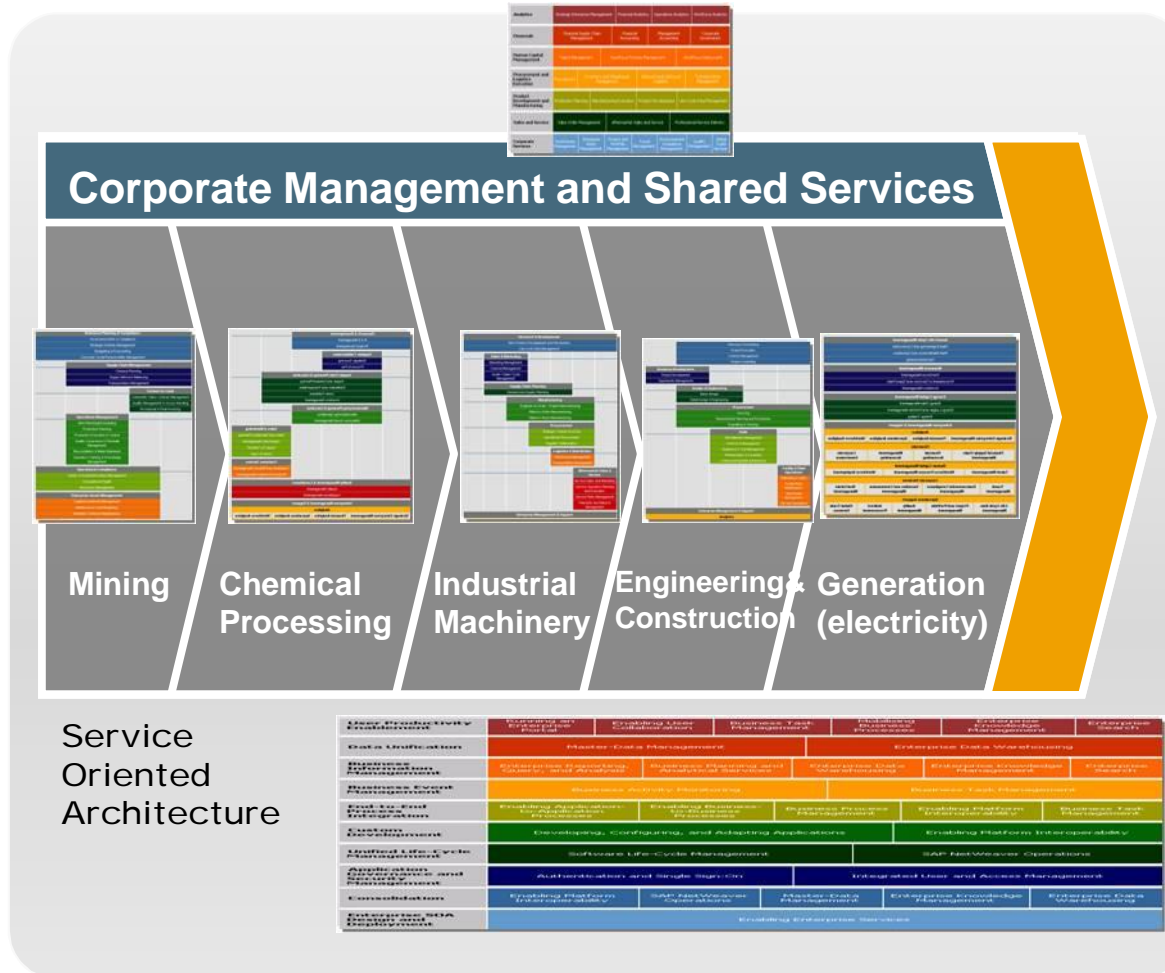
1. **SAP Positioning for the Nuclear industry**
2. Teaming with PWC
3. SAP for Nuclear Template
4. Value Proposal
5. References

The Nuclear Value Chain

How IT and integrated solutions like SAP can help (1)



Provide standard applications to complete end to end business processes for all the elements of the nuclear value chain



Requirements to S/W Vendors

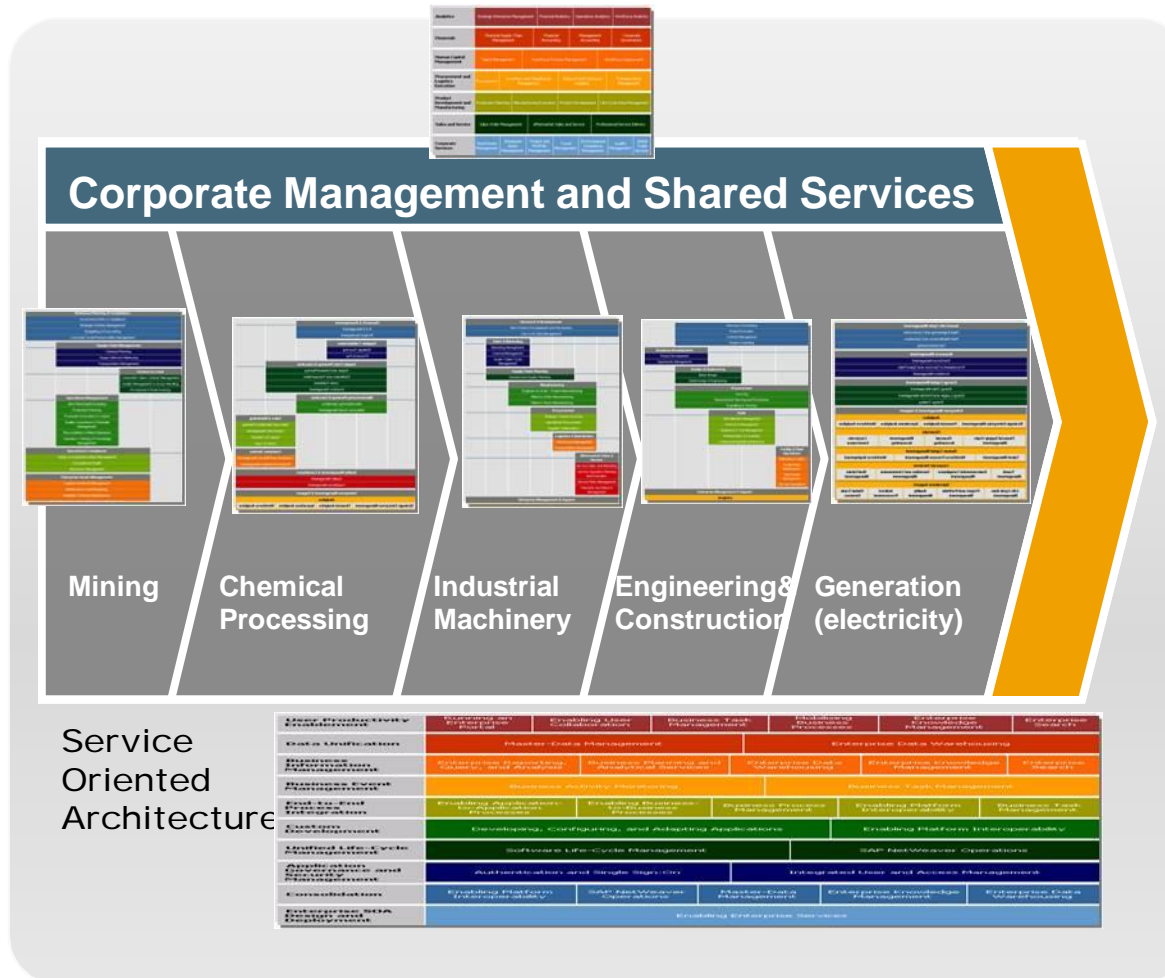
- Commitment to functional scope and Nuclear industry-depth
- Global reach
- Unsurpassed integration within and beyond other functions
- Performance, security, reliability, flexibility, adaptability
- True leverage of new technologies (e.g., role-based portal, business warehouse and analytics, content, ...)
- Experience with companies of all sizes all over the world

The Nuclear Value Chain

How IT and integrated solutions like SAP help (2)



Standard applications provided to complete end-to-end business processes across all elements of the nuclear value chain



Global leaders of Nuclear Industry – SAP Clients



Government

Gov.Agency	Country
Government	France
Customs and Border Protection	U.S.A.
Defence Forces (Bunderswehr)	Germany

Industries within Nuclear Value Chain

1

Mining & Chemical Processing

Company	Country
Areva NC (Cogema)	France
Urenco	U.K. Netherlands
Rio Tinto	Australia U.K.
BHP Billiton	Australia
Cameco	Canada

2

Engineering & Construction

Company	Country
Areva NP	France
Mitsubishi	Japan
Toshiba	Japan
Halliburton	U.S.A.

3

Industrial Machinery

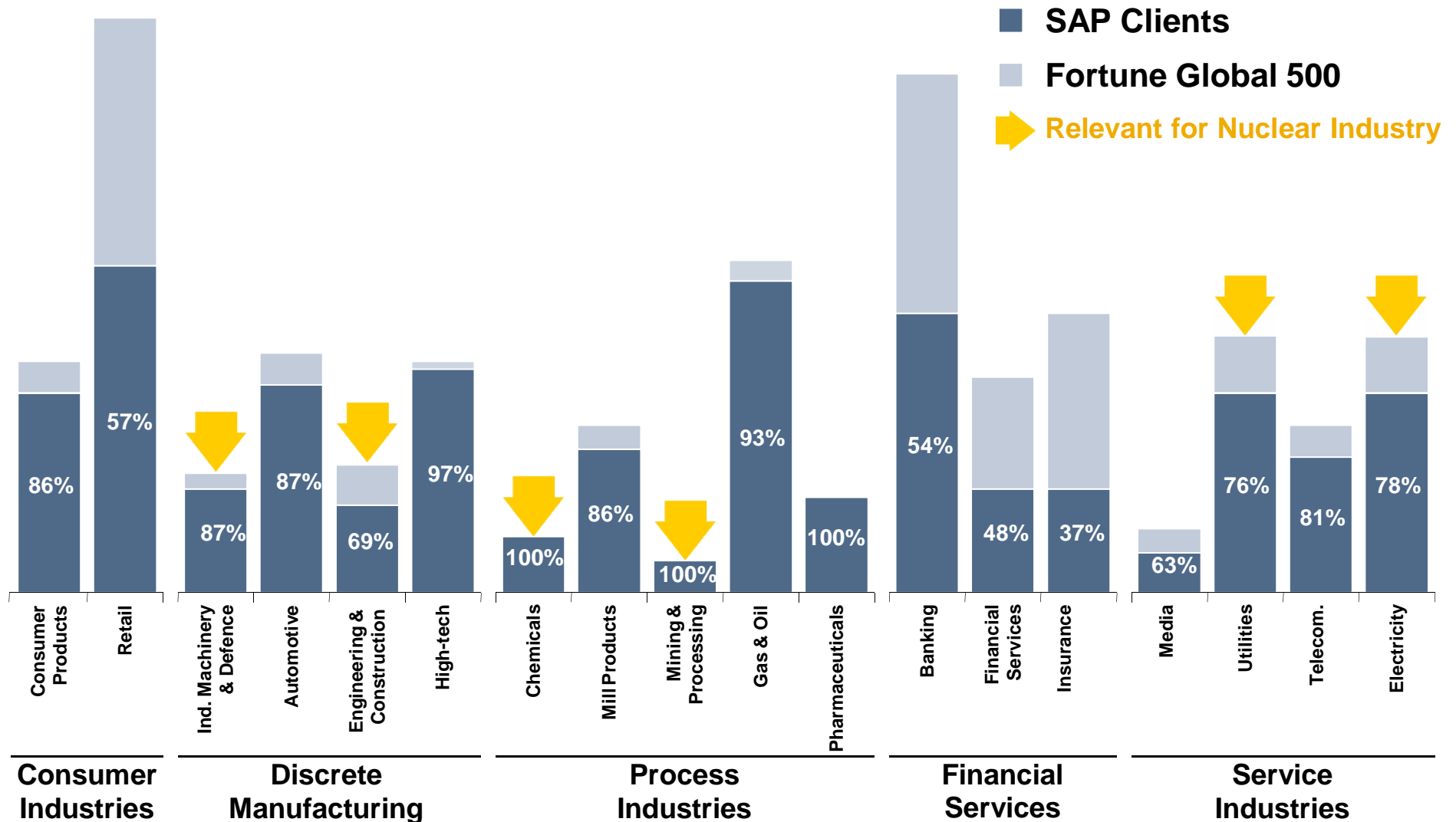
Company	Country
Areva NP	France
Siemens	Germany
Linde Engineering	Germany
Mitsubishi	Japan
Bilfinger Berger	Germany

4

Electricity Generation

Company	Country
Enel - SE	Italy
Suez – Elbl	France
Korea Hydro & Nuclear Power	Korea
RWE AG	Germany
Iberdrola	Spain
FirstEnergy	U.S.A.
E.ON	Germany

Undisputed leadership in all Nuclear-related Industries



Source: Fortune Magazine, Global 500 2005

SAP in the Nuclear Industry Summary



- 30 years of maturity (most mature industry at SAP)
- **60 Nuclear reactors** run SAP (construction, maintenance and other logistics) over 12 countries
- Worldwide customer base (EMEA, APJ, Americas)
- 15 000 installations constituting ~20% of total SAP installations:
 - 500 in Mining
 - 5000 in Machinery and Construction
 - 3000 in Power
 - 2500 in Public Services
 - 3500 in Chemicals
- The most complete and integrated business suite (Gartner, Utilipoint)
- SAP Research focusing on
 - SAP Global Nuclear Council and SAP “Focus Group” Power Generation
 - SAP Industry Value Network (IVN) for Power, Construction and Mining industries
 - SAP Nuclear competence Centre at SAP Labs
 - European Commission nuclear framework programme (FP7) Electricity “Smartgrids” and Nuclear “Euratom”



Agenda



1. SAP Positioning for the Nuclear industry
- 2. Teaming with PWC**
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5. References

Experience Highlights – Team PwC Nuclear Track Record



Project	Date	Role	Prime	Note
South Texas Project	2008- Date	Prime contractor for SAP-enabled business transformation project	PwC	STPNOC has engaged PwC as prime contractor for a major SAP-enabled business transformation covering EAM, SCM, Financials, HCM and nuclear processes such as Health Physics/Radiation monitoring, Chemistry and asset technical data bases.
PGE – Diablo Canyon Nuclear Power Plant	2004- 2008	SAP EAM, SCM project <ul style="list-style-type: none"> • PMO • Functional Consulting • Technical Consulting • OCM • Training 	PwC	PGE first engaged PwC to develop a prototype which was successful. This lead to a full SAP EAM-SCM project started in 2005. PwC has been main services vendor for EAM-SCM functional consulting, training and change management since 2006. Project successfully went live on 09/30/2008 in a smooth and efficient transition – senior management very satisfied.
SONGS	2008	Support for recent SAP implementation for EAM; review and improvement of training materials; process improvement recommendations	PwC	SONGS went live in early July 2008 after a two year project (part of the bigger SCE SAP project). Significant user adoption issues prompted SCE SONGS management to engage PwC for end-user support during outage in latter part of 2008 and early 2009 along with improving training materials and providing process improvement recommendations.
ENEL- Slovenske Elektrarne	2007- 2008	SAP EAM-SCM Project Template-Drive SAP Blueprint for SAP EAM-SCM Project	PwC (prime contractor) working through SAP	ENEL acquired a controlling interest in Slovenske Elektrarne which has two nuclear sites – eight reactors (four operational). ENEL has engaged PwC-PwC to develop a template-driven Blueprint using the SAP for Nuclear template to enable adoption of US nuclear best practice.
New Brunswick Power – Point Lepreau Nuclear Generating Station (PLGS)	2008	Initial roadmapping for EAM improvement at PLGS based on license renewal. CAP project now in process.	PwC-PwC	NB Power secured operating license renewal for PLGS for next ~40 yrs. This initiated a \$1 billion refurbishment program. PwC was engaged to review current system status and propose an initial high-level roadmap of improvement activities.

Experience Highlights – Team PwC Nuclear Track Record (continued)



Project	Date	Role	Prime	Note
STPNOC	2007-2008	SAP Evaluation and Planning	PwC working with SAP	Assistance provided to STPNOC to evaluate SAP and develop a roadmap for the SAP program.
SONGS	2006-2008	SAP ERP across SCE <ul style="list-style-type: none"> • Functional consulting • Training 	PwC (sub)	Senior PwC consultants have played key roles in the EAM projects at SCE – paving way for current PwC engagement.
Bruce Power	2003-2004	SAP EAM, SCM prototype and roadmap	PwC and SAP	PwC developed an SAP prototype for Bruce Power which was approved. Main project was then shelved due to changes in management and focus on refurbishment.
New Brunswick Power – Point Lepreau Nuclear Generating Station (PLGS)	2001-2002	EAM and SCM <ul style="list-style-type: none"> • PMO • Functional consulting • Technical consulting • Training 	PwC (prime contractor)	PwC implemented a core SAP EAM-SCM solution into PLGS in a rapid eight month project to replace an aging legacy platform. WCM and QM were implemented in later projects.
Nebraska Public Power District (NPPD) Cooper Nuclear Generating Station	1999 - 2001	PwC delivered EAM, SCM and HR aspects of this project. <ul style="list-style-type: none"> • Functional consulting • Training 	PwC teamed with partner	PwC and a partner took over this engagement from previous SI and delivered a full-suite ERP project. PwC performed EAM, SCM and HR.
PSEG	1998-2000	Full-suite implementation of SAP into PSEG across all business units including nuclear. EAM specialists responsible for Work and Asset Management functions <ul style="list-style-type: none"> • Functional consulting • Training 	PwC (prime contractor)	PwC implemented SAP into PSEG across the entire organization in a major four-to five-year program. This included Salem and Hope Creek Nuclear power plants. As part of this program PwC implemented EAM (work and asset management) across the utility including the nuclear plants.

PwC team strength focused on nuclear industry



PwC EAM and Reliability (RCM) practice

- PwC is strategically committed to the nuclear industry
- Significant and growing team of EAM and Reliability professionals focused on assisting nuclear plants to drive value from EAM and Reliability optimization
- Certified RCM practitioners
- Deep nuclear and utilities experience
- Experienced with major applications SAP, Ventyx (Indus) and Maximo
- Center of excellence in US – working globally with local teams

PwC Capital Projects group

- Specialized group focused on project management services in design-approve-build phase of new plant construction



PwC has assembled a world-class team and a unique approach to support nuclear power plants drive value from strategic EAM-focused transformation

■ **Strong track record**

- PwC has established a successful track record over the last decade working with major nuclear plants in US and globally (including STPNOC, ENEL-Slovenske Elektrarne, PG&E Diablo Canyon, PSEG, SCE-SONGS, NPPD and others)

■ **Working with Industry leaders**

- PwC has recently been engaged by South Texas Project Nuclear Operating Company (STPNOC – one of the leading US nuclear performers) to implement an SAP-enabled business transformation focused on EAM

■ **Leading industry practices defined in nuclear template – “PwC SAP for Nuclear”**

- Industry-proven and validated business processes and practices
- Best in class with advances and improvements shared by leading US operators
- User simplification (process-based user interface and role-based dashboards)



PwC has assembled a world-class team and a unique approach to support nuclear power plants to drive value from strategic EAM-focused transformation

- **Reliability optimization for new and existing assets**
 - Reliability-Centered Design (RCD) for new plant
 - Reliability-Centered Maintenance (RCM), Root Cause Analysis (RCA) processes and expertise to optimize maintenance programs and reliability of existing plant
- **Nuclear team and experience**
 - Deep PwC team with extensive Nuclear and EAM-ERP expertise
 - Leading Nuclear track record for EAM and ERP implementation projects
- **Effective Organization Change Management / Training**
 - Role and process-based training aligned to the end user
 - Proven Change Management success in Nuclear plant environment
- **Services across the enterprise**
 - PwC Advisory provides a full solution offering across the enterprise
 - Strategic partnerships with leading technology vendors

Agenda



1. SAP Positioning for the Nuclear industry
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5. References

PwC SAP EAM for Nuclear Template Built on Real-World Experiences

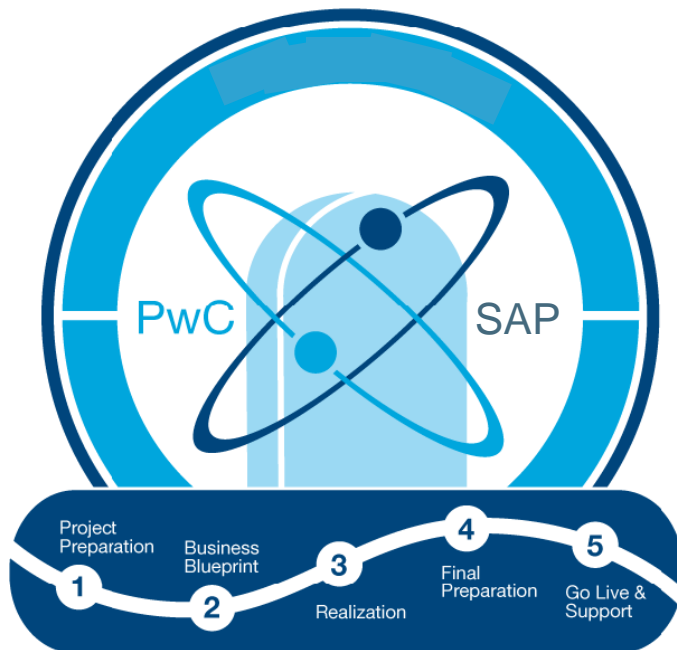


- In building the PwC Nuclear EAM Solution, PwC has utilized and integrated the combined knowledge and experience of our employees experienced in Nuclear EAM Projects at a number of US and Canadian nuclear facilities, including:
 - PSEG (Salem and Hope Creek)
 - NPPD (Cooper Nuclear)
 - New Brunswick Power (Point Lepreau Generating Station)
 - Pacific Gas & Electric (Diablo Canyon Nuclear Power Plant)
 - Southern California Edison (San Onofre Nuclear Generating Station – SONGS)
 - ENEL Slovenske Elektrarne
 - Experience of PwC team members at other major nuclear operators (e.g. Dominion, First Energy Nuclear Operating Company, FPL)

- These experiences have enabled PwC to build a templated solution for nuclear processes in EAM and SCM that both complies with the INPO requirements and guidelines for work management processes (e.g. AP 928 - Work Management, AP 913 - Asset Reliability), but also satisfies the daily hands-on requirements of both nuclear work management and operations requirements.

PwC's "SAP for Nuclear" Template

Scope: Enterprise Asset Management processes



- Reference process design documentation based on the use of proven practices in the Nuclear generation industry (inc. INPO AP guidelines)
- Comprehensive Business Process master list for major EAM and SCM processes for Nuclear power plants – now extending into Financials, HCM and other nuclear functions (e.g. Health Physics, Chemistry).
- Business Process Models – in Visio and ARIS – and Business Design Documents (BDDs) for these EAM and SCM processes
- Data Conversion Templates for SAP EAM and SCM data relevant to a Nuclear power plant (master data and transactional data)
- Preconfigured SAP ECC 6.0 system for EAM and SCM business processes as defined above for the Nuclear generation industry
- Security and Authorization Templates mapped to typical Nuclear roles
- End-user training curriculums
- Sample training classes based on process and role-based designs for the Nuclear generation industry

Template: Processes Currently Included



PwC has developed and owns EAM for Nuclear – a nuclear Work and Asset Management Template built upon the following processes:

- | | |
|---|--|
| <ul style="list-style-type: none">1. Corrective Action Program2. Preventive Maintenance Program3. Surveillance Program4. Repetitive Maintenance Program5. Work Clearance Management6. Work Efficiency Component implementation7. On Line Maintenance Program with work distinctions of corrective, elective, outage, other8. Outage Management Program9. 12 week T-Week scheduling process10. Design Engineering processes11. Support Functions planning and scheduling12. Rotable Equipment refurbishment process | <ul style="list-style-type: none">13. Repair and Return Process14. Instrument Calibration process15. M&TE process16. Asset Hierarchy and Database classification, configuration and management process17. Work Management BI, reporting and analysis18. Supply Chain Integration for Ordering Materials and Services19. Inventory Management and Materials Requirements Planning20. Procurement Engineering Concept21. Quality Management on Goods Receipt22. Financials Integration23. Human Capital Management Integration |
|---|--|

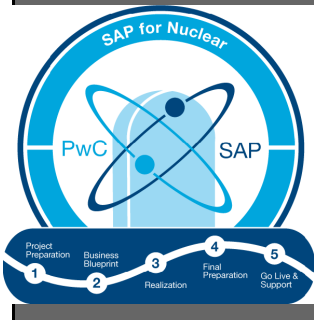
Business process flows are documented in Visio and Aris business process modeling toolset

PwC methodology for nuclear

Based on SAP's Methodology, ASAP




Methodology Component	Content Item
Standard ASAP	Five-phase methodology
	Standard project plans
	Templates
	Accelerators
	Solution Manager integration and alignment
	Common model and terminology across industry
Team PwC Enhancements and Extensions	Improved OCM approaches and project plans
	Organization design
	Robust system development methodology for enhancements/custom application development
	Security and GRC methodology and templates
	BPM techniques
	KPI development and CPM methodology and designs
SAP for Nuclear	Benefits realization
	BPML for EAM and SCM for Nuclear (example in Appendix D)
	EAM and SCM Process flows for Nuclear
	Business design document templates
	Data conversion templates for SAP data objects
	Configured SAP Solution (ECC 6.0) for EAM and SCM – Available to support Prototyping and accelerated Blueprinting
	Security and authorization model for Nuclear (system access)
	Control panels (user-friendly front-ends for Nuclear (see later slides))
	End-user training curriculum for typical Nuclear users
	Training documentation templates




Deliverable content

Role-based user interface examples ...



Diablo Canyon Power Plant 

Supply Chain Performance Panel Reports My Panel



User Defaults

Work Center I&C Maintenance
Maint. Planner
System No.

Unit

☒ Unit 1
☐ Unit 2
☐ Unit 0

Notif Types

☐ DA ☐ DN
☐ DC ☐ DO
☐ DD ☐ DP
☐ DF ☐ DQ
☐ DM ☐ DS

Order Types

☐ DC80 ☒ DM80
☐ DD60 ☐ DP80
☐ DD70 ☐ DR80
☐ DD80 ☐ DS80
☐ D680 ☐ DX80

Departments

Operations
Maintenance
Planning
Design Engineering
System Engineering
Outage Management
Additional Depts.

Processes

Corrective Actions
M.&T.E.

Find Work

Orders
Order Operations
Notifications
Notification Tasks
Notification Items
Outstanding Items

Tasks

Created by RXFU
Assigned to RXFU

Miscellaneous

Floc List
Floc Summary
Floc History
PG&E SAP Help
DCPP SAP Help
DCPP Home Page
PIMS

SAP Transactions

☐ Equipment ☐ FLocs ☒ Notifications ☐ Orders

Identify

Confirmation

Deliverable content

Nuclear Control Panel - Operations



Diablo Canyon Operations Department

Diablo Canyon Operations Department

Supply Chain Main Control Panel Reports My Panel Defaults

Control Room Staff

Notifications

New in Last 7 days
SFM Review
Operability Review

Orders

Order List

Today's Work

OPS Surveillances
Maintenance Surv.
Maintenance PM's
OPS Support

Miscellaneous

Deficiency Trckng
OPS Workarounds
OPS Watch Station
Cntrl Board Noff

Operations Support

Corrective Action

Open Orders

Clearances

Review/Approve
REQ-Basic Start Dt
REQ-Functional Loc
In Effect by Nbr
In Effect by FLOC

PMT/OVT

By Order #
OVT-Basic Start Dt
OVT-Functional Loc

Miscellaneous

OPS Restraints

Outage/Revision Selection

☒ Outage Code ☐ Revision

T-Week

☐ T-0
☐ T-1
☐ T-2 [Schedule Freeze](#)
☐ T-3
☐ T-4 [Walkdowns Complete](#)
☐ T-5 [Clearances Written](#)
☐ T-6 [Scope Freeze](#)
☐ T-7
☐ T-8
☐ T-9 [Planning Freeze](#)
☐ T-10
☐ T-11
☐ T-12 [Modification Freeze](#)
☐ T-13 Thru T-26
☐ T-27 Thru T-52
☒ T-All

Deliverable content

Nuclear Control Panel - Maintenance



Diablo Canyon Maintenance Department

SAP

Diablo Canyon Maintenance Department

Supply Chain Main Control Panel Reports My Panel Defaults

Orders

All

Corrective

Elective

Other

Parts Search

Part Number

Model Number

Manufacturer

Description

Web Links

Maint Home Page

Training Quals

Schedule

INPO O.E. Tool

Outage/Revision Selection

☒ Outage Code ☐ Revision

T-Week

☐ T-0

☐ T-1

☐ T-2 [Schedule Freeze](#)

☐ T-3

☐ T-4 [Walkdowns Complete](#)

☐ T-5 [Clearances Written](#)

☐ T-6 [Scope Freeze](#)

☐ T-7

☐ T-8

☐ T-9 [Planning Freeze](#)

☐ T-10

☐ T-11

☐ T-12 [Modification Freeze](#)

☐ T-13 Thru T-26

☐ T-27 Thru T-52

☒ T-All

Deliverable content

Nuclear Control Panel - Planning



Diablo Canyon Planning Department



Diablo Canyon Planning Department

Supply Chain Main Control Panel Reports My Panel Defaults

Task Lists	Orders	Planner Group <input type="text"/> Status <input type="text"/>		Outage/Revision Selection
<div>Groups</div> <div>Create GTL</div> <div>Update GTL</div> <div>Create FTL</div> <div>Update FTL</div> <div>TL User Data</div> <div>FLOC User Data</div> <div>Find</div>	<div>All</div> <div>With Restraints</div> <div>Corrective</div> <div>Elective</div> <div>Other</div> <div>Assign Planner</div> <div>Planning Hours</div>	<div>Notifications</div> <div>New Last 7 Days</div>	<div>Restraints</div> <div>By Type</div> <div>By Individual</div> <div>Cleared</div>	<div>Outage Code <input checked="" type="radio"/> Revision <input type="radio"/></div> <div><input type="text"/></div>
<div>Parts Search</div> <div>Part Number</div> <div>Manufacturer</div> <div>Description</div>	<div>History</div> <div>Floc</div> <div>Work</div> <div>Clearance</div> <div>RWP</div> <div>Scaffold</div> <div>Closure Comments</div> <div>Equipment</div>	<div>T-Week</div> <div><input type="radio"/> T-0</div> <div><input type="radio"/> T-1</div> <div><input type="radio"/> T-2 Schedule Freeze</div> <div><input type="radio"/> T-3</div> <div><input type="radio"/> T-4 Walkdowns Complete</div> <div><input type="radio"/> T-5 Clearances Written</div> <div><input type="radio"/> T-6 Scope Freeze</div> <div><input type="radio"/> T-7</div> <div><input type="radio"/> T-8</div> <div><input type="radio"/> T-9 Planning Freeze</div> <div><input type="radio"/> T-10</div> <div><input type="radio"/> T-11</div> <div><input type="radio"/> T-12 Modification Freeze</div> <div><input type="radio"/> T-13 Thru T-26</div> <div><input type="radio"/> T-27 Thru T-52</div> <div><input checked="" type="radio"/> T-All</div>		

Deliverable content

Example of UI designed to fit nuclear processes




Diablo Canyon Power Plant

SAP

Diablo Canyon Power Plant

Supply Chain Performance Panel Reports My Panel



User Defaults

Work Center MI I&C Maintenance

Maint. Planner

System No. 04 TURBINE STEAM SUPPLY

Unit

☒ Unit 1

☐ Unit 2

☐ Unit 0

Notif Types

☐ DA ☐ DN

☐ DC ☐ DO

☐ DD ☐ DP

☐ DF ☐ DQ

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PIMS

SAP Transactions

☐ Equipment

☐ FLocs

☒ Notifications

☐ Orders

Display

Create

Edit

List Edit

Identify

Report Problem

Review/Approve

Confirmation

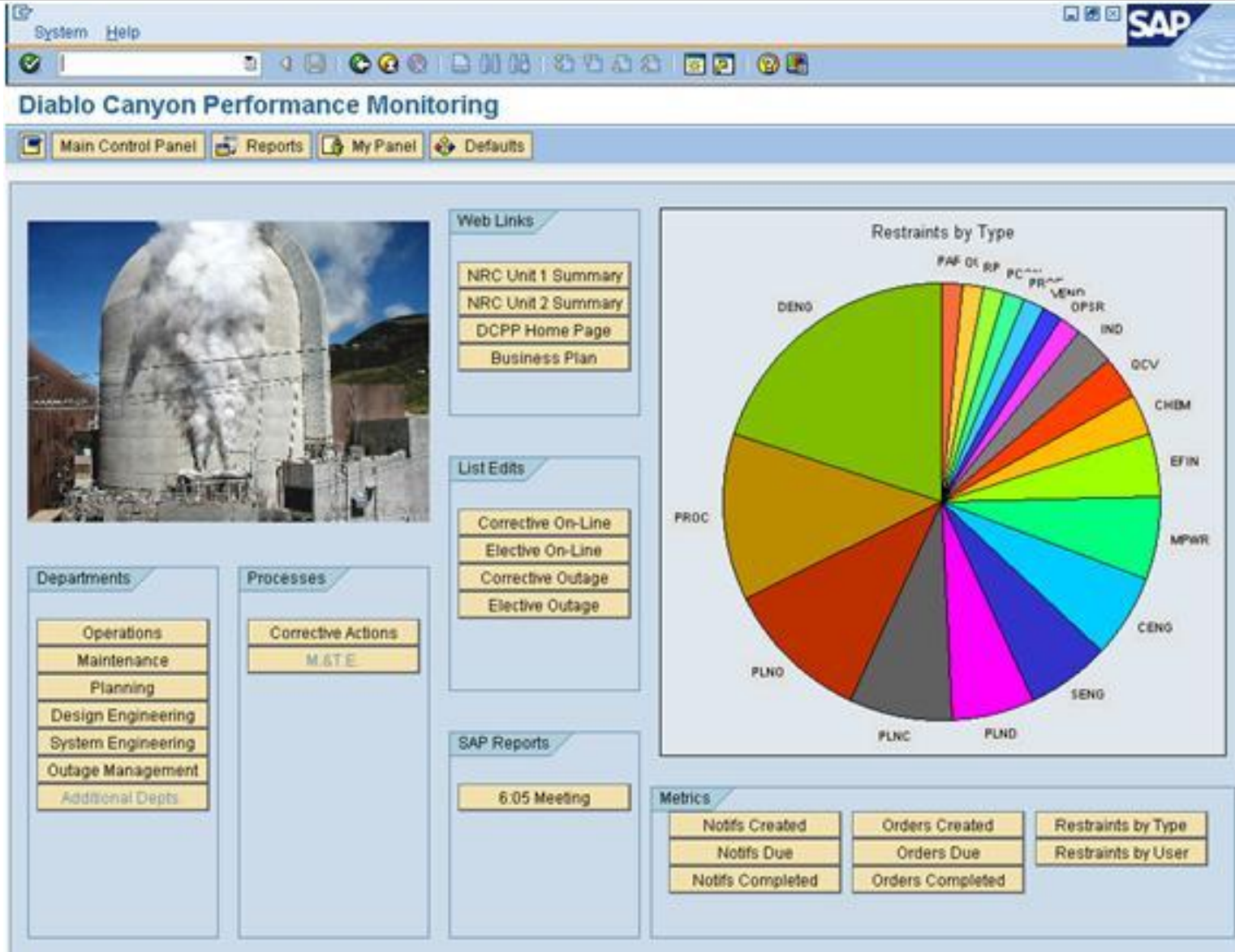
Orders

Tasks

Created by RXFU

Assigned to RXFU

Deliverable content and nuclear management information



Template Driven Approach Overview and Rationale



An overview of the template-driven approach is shown below.

ASAP Phase	Phase 1 – Pre-planning and project preparation	Phase 2 – Utilize PwC SAP for Nuclear template for <u>rapid development</u> of comprehensive Blueprint and prototype SAP solution	Phase 3 – Realization	Phase 4 Final Preparation	Phase 5 Go-Live and Support
Duration	1-2 months	4-7 months	8-15 months	2-3 months	1-3 month
Key Activity	<ul style="list-style-type: none"> Understand and define business requirements Develop scope definition using PwC SAP for Nuclear Template Business Process Master list in Solution Manager Project planning and organization Develop project charter Validate preparation against Critical Success factors and Lessons Learned Establish SAP sandbox Train client core team using PwC Template 	<ul style="list-style-type: none"> Use PwC SAP for Nuclear template to Develop and Complete Blueprint Utilize SAP Solution Manager and Aris to support Blueprint process Develop RICEFW functional requirement specs (FRS) in Business Design Documents (BDD) Configure prototype SAP solution Develop KPIs and metrics aligned with program goals and strategy Utilize PwC template for user interface approach and specs Complete planning for Realization Initiate OCM process Store all final documentation in Solution Manager Generate Blueprint document from Sol Man and sign off 	<ul style="list-style-type: none"> Configure-develop 100 % solution Build RICEFW Objects Develop Business Process Procedures Utilize PwC template to support development of process and role-based End-User Training material Unit and Integration Testing Build cut-over plan 	<ul style="list-style-type: none"> Stress testing Process and role-based End-User Training Cutover Finalize support arrangements 	<ul style="list-style-type: none"> Support, Issue Mngmnt Help Desk Project report

Agenda



1. SAP Positioning for the Nuclear industry
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5. References

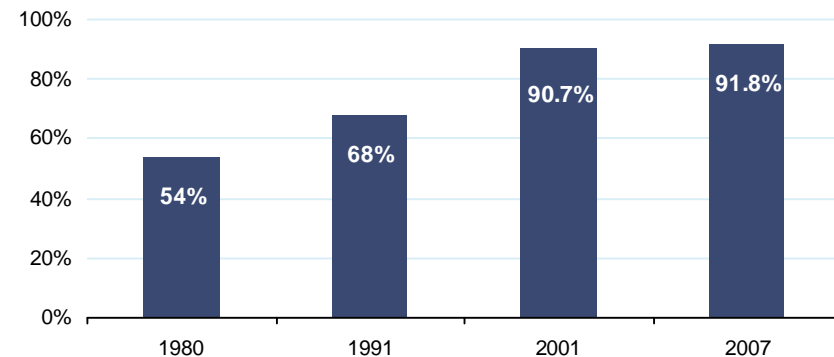
Impact of improved EAM on US plant performance

Source: Case Study using PwC SAP for Nuclear



A significant achievement of the US nuclear power industry over the last twenty years has been the significant increase in capacity factor (output proportion of nominal full-power capacity) due to improved EAM.

Average for all US reactors is shown below:



- A major component of this is the reduced length of refueling outage, which in 1990 averaged 107 days but dropped to 40 days by 2000. The record is now 15 days.
- All this is reflected in increased output even since 1990, from 577 billion kilowatt hours to 807 billion kWh, a 40% improvement despite little increase in installed capacity, and equivalent to 29 new 1000 MWe reactors.
- In addition, average thermal efficiency rose from 32.49% in 1980 to 33.40% in 1990 and 33.85% in 1999.

Value achieved by EAM projects - orders of magnitude

Source: Case Study using PwC SAP for Nuclear



TYPICAL EAM IMPROVEMENT VALUE POSSIBILITIES

RISK

SAFETY	
--------	--

ENV COMPLIANCE	
----------------	--

PRODUCT QUALITY	
-----------------	--

CONSERVATIVE	
POSSIBLE	
ONE OFF	

OUTPUT

INCREASE IN OUTPUT	2.00%
	5.00%

REDUCED CAP EX	-2.00%
	5.00%

INPUTS

LABOR COSTS	-5.00%
	-10.00%

MRO MATERIALS COSTS	-5.00%
	-10.00%

REDUCTION IN SPARES INVENTORY	-10.00%
	-20.00%

REDUCTION IN SPARES HOLDING COST	-10.00%
	-20.00%

Improvements – relevant and high impact

Source: Case Study using PwC SAP for Nuclear



EAM Improvement = significant €

- 1 % improvement in EAF on 1,000 mw power station = ~€4-5 million/year (assuming output is sold at ~6c/kwh)
- 1 % reduction in maintenance cost = ~ €1 million/year
- Over course of plant life-cycle (30-50 yrs) this signifies that Reliability and EAM improvement programs provide strong ROI

Potential value of EAM Improvement over 30 years

- Avoidance of major failure – incalculable value
- 5 % in EAF improvement = ~€600-750 million additional revenue
- Increased output => reduced capital investment in new facilities
- 5 % reduction in unit cost = ~€150 million in cost reduction

Agenda



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Customer Example

STPNOC: Working with the best in the industry



One of top
performing
nuclear plants
in US

2 x 1,400 mw
PWR reactors

World-record –
4 cycles –no
forced outages

License
application to
build 2 X 1,400
mw ABWR Units
3 and 4

PRICewaterhouseCOOPERS

News Release

Contact: Suzanne Dawson
Linden Alschuler & Kaplan
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Kathryn Oliver
PricewaterhouseCoopers
kathryn.oliver@us.pwc.com
(860) 241-7333

South Texas Project Selects PricewaterhouseCoopers for SAP-enabled Business Transformation Project

Project will leverage PwC's proprietary nuclear generation template to help accelerate the project and enable focus on performance improvement

NEW YORK and HOUSTON, April 9, 2009 — PricewaterhouseCoopers LLP (PwC) has been awarded the initial planning and design phase of a major SAP enabled business transformation project by the STP Nuclear Operating Company. PwC Advisory professionals will assist STP to plan and blueprint the replacement of more than 60 mission-critical, enterprise-wide legacy applications with the SAP ECC 6.0 platform and applications while improving and sustaining business performance. The scope of work includes replacement of virtually all of STP's current business applications including Financials, Human Resource Management, Enterprise Asset Management (EAM) and Supply Chain Management (SCM), along with a number of specialized nuclear plant applications.

To help achieve this business and IT transformation, PwC will leverage their proprietary nuclear generation template and accelerators, based on over 11 years of experience implementing SAP in the nuclear industry. PwC's consulting professionals in the utilities industry have a proven track record of successful SAP implementations into nuclear plants and helping to accelerate the realization of performance improvement benefits at nuclear facilities across North America.

"Replacing the legacy systems of STP with a process-driven SAP-based solution will help STP achieve a transformation in business process and performance that will support the company and provide a scalable platform for planned future units," said David Ethendge, PricewaterhouseCoopers partner and U.S. Industry Leader - Utilities and Power Generation. "Our PwC consulting professionals are excited to team with STP and we look forward to working together to help plan and blueprint the transformation."

The STP Nuclear Operating Company manages the South Texas Project nuclear power plant, a facility that has earned more honors than any other U.S. nuclear power plant. STP is a two-unit nuclear power plant that federal and industry officials have commended as a state-of-the-art and model facility. Its two reactors produce 2,500 megawatts of electricity, enough for more than one million homes and businesses in south central Texas.

"We selected PricewaterhouseCoopers to help us plan this important business transformation because they were uniquely qualified to deliver a team with experience in the nuclear power industry, equipped with a proven nuclear template for SAP and backed by PwC's depth in risk management, change management and IT implementation and design," said Mike Meier, STP Vice President, Shared Services. "We are confident that PwC will team with us to put quality and excellence at the forefront of this project."

Enterprise-wide
transformation –
EAM centric

PwC template as
baseline for
EAM, SCM
design

Scope includes
EAM, SCM,
Financials, HCM,
Risk Manag.
Health Physics

Focus on
sustaining and
improving
performance

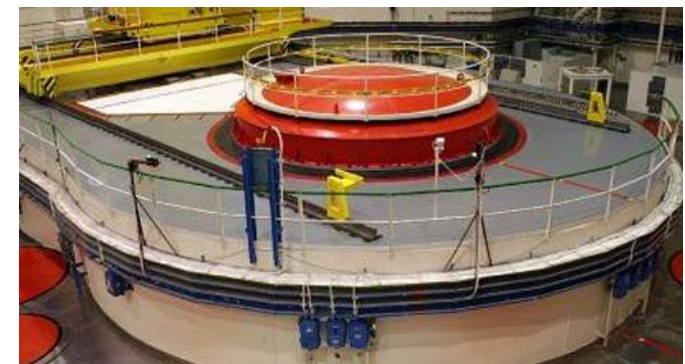
Customer Examples

ENEL Slovenske Elektrarne (Template-Driven)



ENEL Slovenske Elektrarne

- Two nuclear stations (4 operational reactors)
- Blueprint Start 07/2008; Planned Completion 01/2009
- Template Driven Approach – PwC SAP for Nuclear
- Full nuclear EAM/Work Management and SCM processes
- Corrective Action Program
- SAP Technical Specs (FRICE, workflow, etc)



Slovenské Elektrárne Nuclear Units

Bohunice 3&4



Mochovce 1&2



Mochovce 3&4



Bohunice 3&4 (V2)

Gross Power: 2 X 440 MWe
Production: 6 TWh / yr – Op. life: 2014/2015 (2024/2025)

Mochovce 1&2

Gross Power: 2 X 440 MWe
Production: 6 TWh / yr – Op. life: 2028/2030 (2038/2040)

Mochovce 3&4

Rated power: 2 x 440 MWe
Feasibility Study for Plant completion



Progress Report: Asset & Work Management in Nuclear Power Plants

Speaker
Owe Petersson
Vattenfalls Ringhals Group,
Sweden

owe.petersson@ringhals.se



Ringhals 

Customer Examples

Public Service Enterprise Group



Nuclear Maintenance Improvements through EAM

Stephen Roche PE

Business Leader - Enterprise Work Management, PSEG

International Utilities Conference, Feb 2007

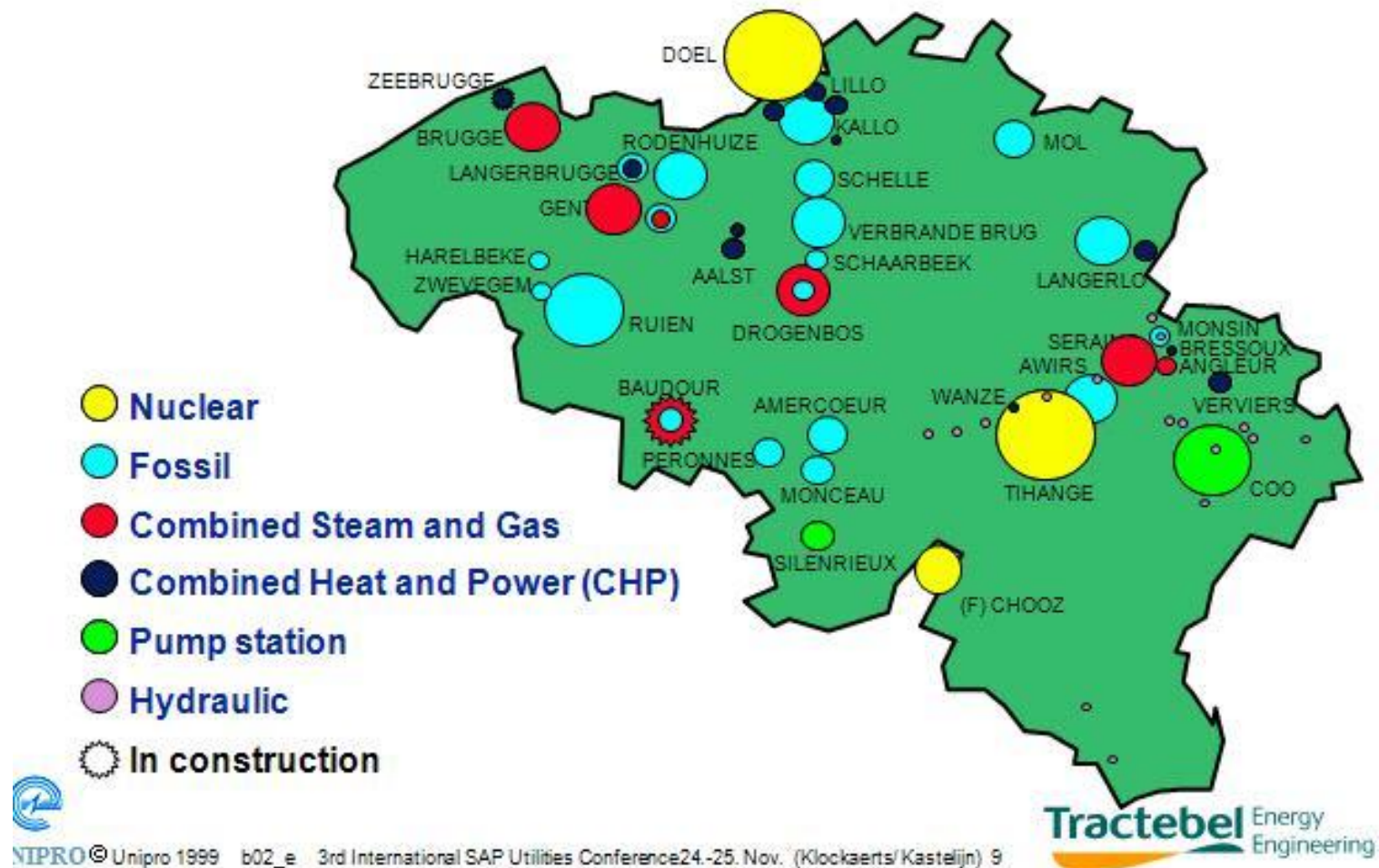


Customer Examples

Electrabel (Suez Group)



Electrabel Generation (2)



Customer Examples

AXPO – NOK

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Die Nordostschweizerische Kraftwerke AG (NOK) ist ein führendes Schweizer Unternehmen in der Stromproduktion.

Die NOK verfügen über eigene Netzanlagen für die Energieproduktion und -verteilung. Sie sind ein Unternehmen der Axpo.

News

- 11.07.2008 **Betriebsunterbrechung im Block 1 des Kernkraftwerks Beznau**
Die Unterbrechung ist notwendig, um im nichtnuklearen Dampfturbinenteil des KKB, Block 1, an zwei Regelventilen des Speisewasserkreislaufes Dichtungen zu ersetzen.
- 03.07.2008 **Beznau-1 in die neue Betriebsperiode gestartet**
Block 1 des Kernkraftwerks Beznau (KKB) hat die Stromerzeugung nach rund vierwöchiger Abstellung für Jahresrevision und Brennelementwechsel wieder aufgenommen.
- 20.06.2008 **Elettricità Industriale SA feiert ihren 50. Geburtstag mit Festanlass**
In festlichem Rahmen feierte die Elettricità Industriale SA am 20. Juni ihr 50-jähriges Bestehen. Das Jubiläum wurde im Beisein von Vertretern der kantonalen, regionalen und lokalen





Current situation

Plants	Users	Orders/ year	WCD/ year	Tags/ year
1 Nuclear	322	38.000	6.000	33.000
7 Thermal 10 Combined Cycles 36 Hydro	717	102.000	26.000	145.000
	1.039	140.000	32.000	178.000

Aug/05

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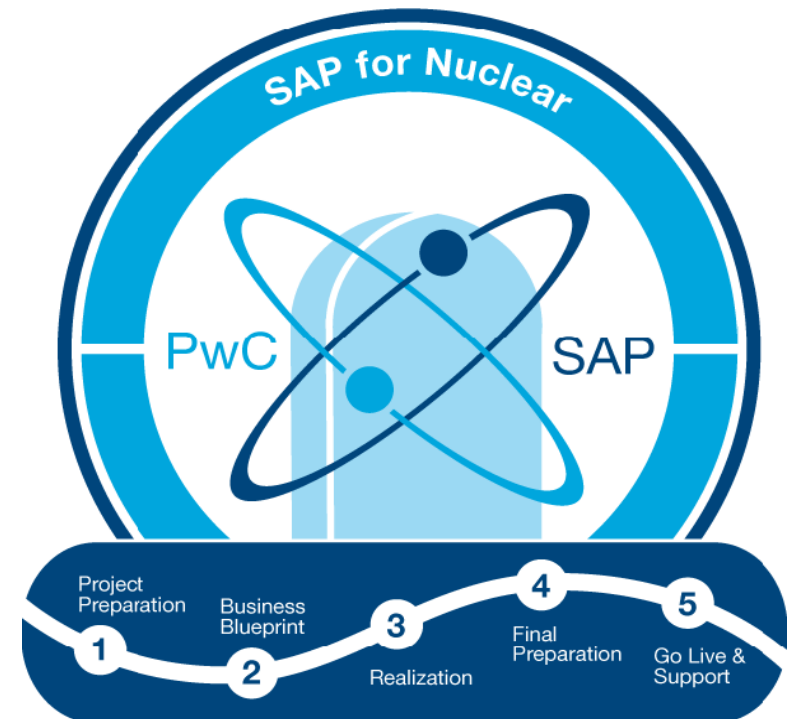
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