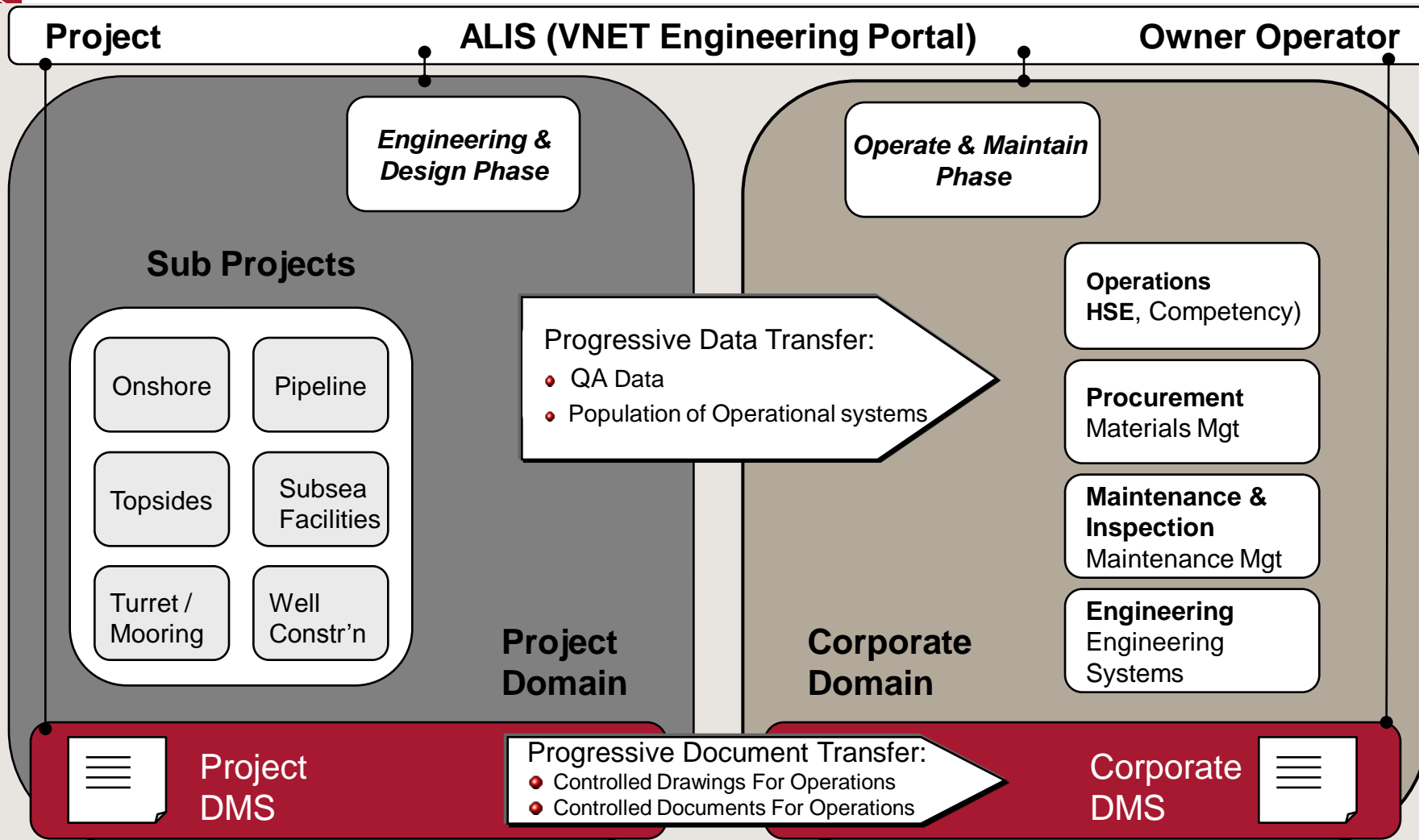




# **“A Guide” to Engineering Data Management for Owner Operators**

Richard Harris  
Production Division

# Strategy for Greenfield Projects



ears

ears

# Evolution of data management



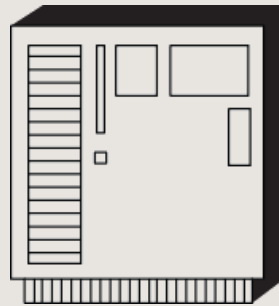
Cave Paintings



Stone Tablets



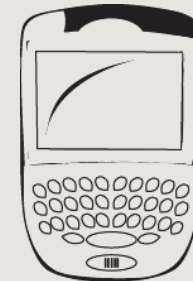
Scrolls & Books



Main Frames

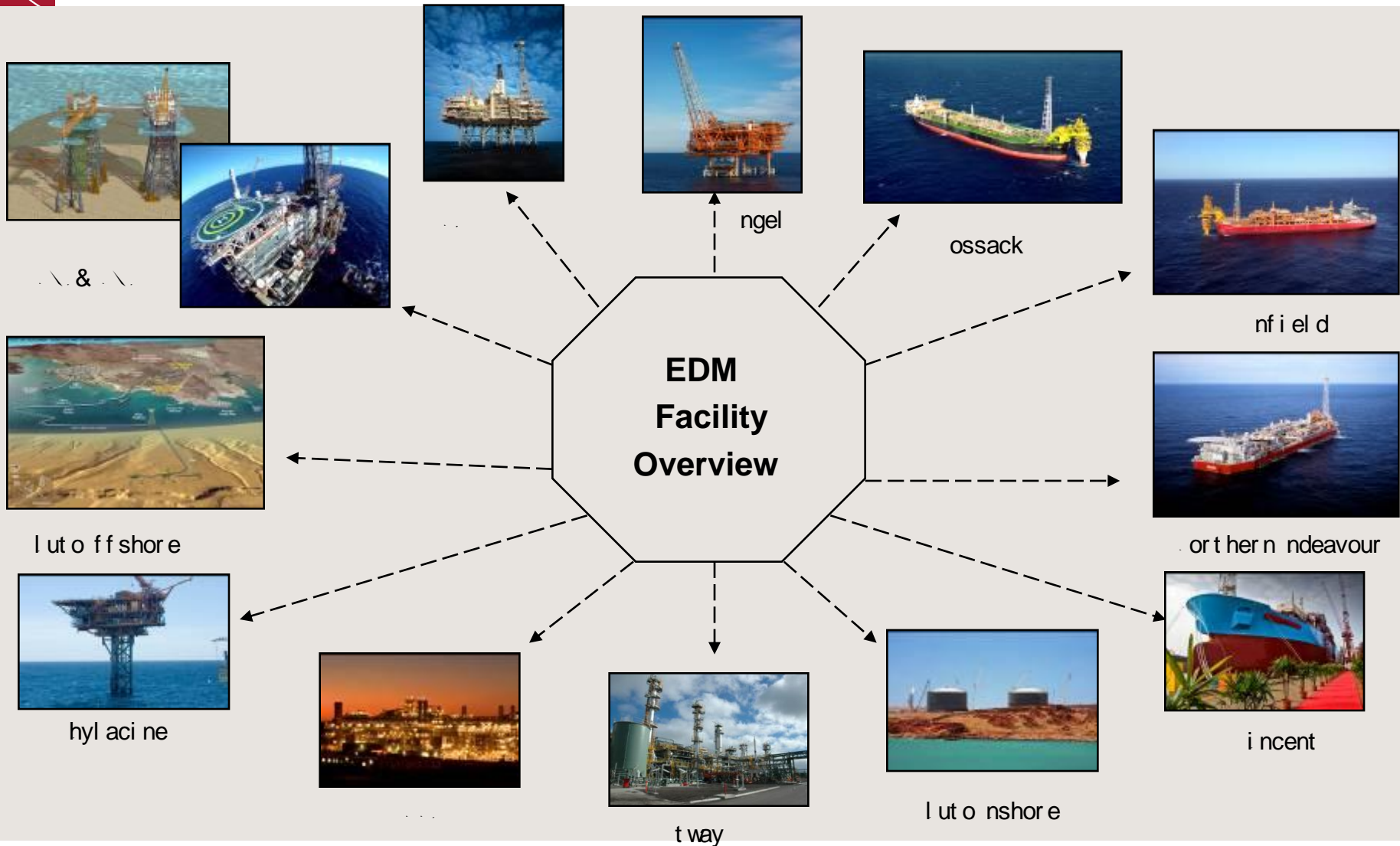


Desk & Laptops



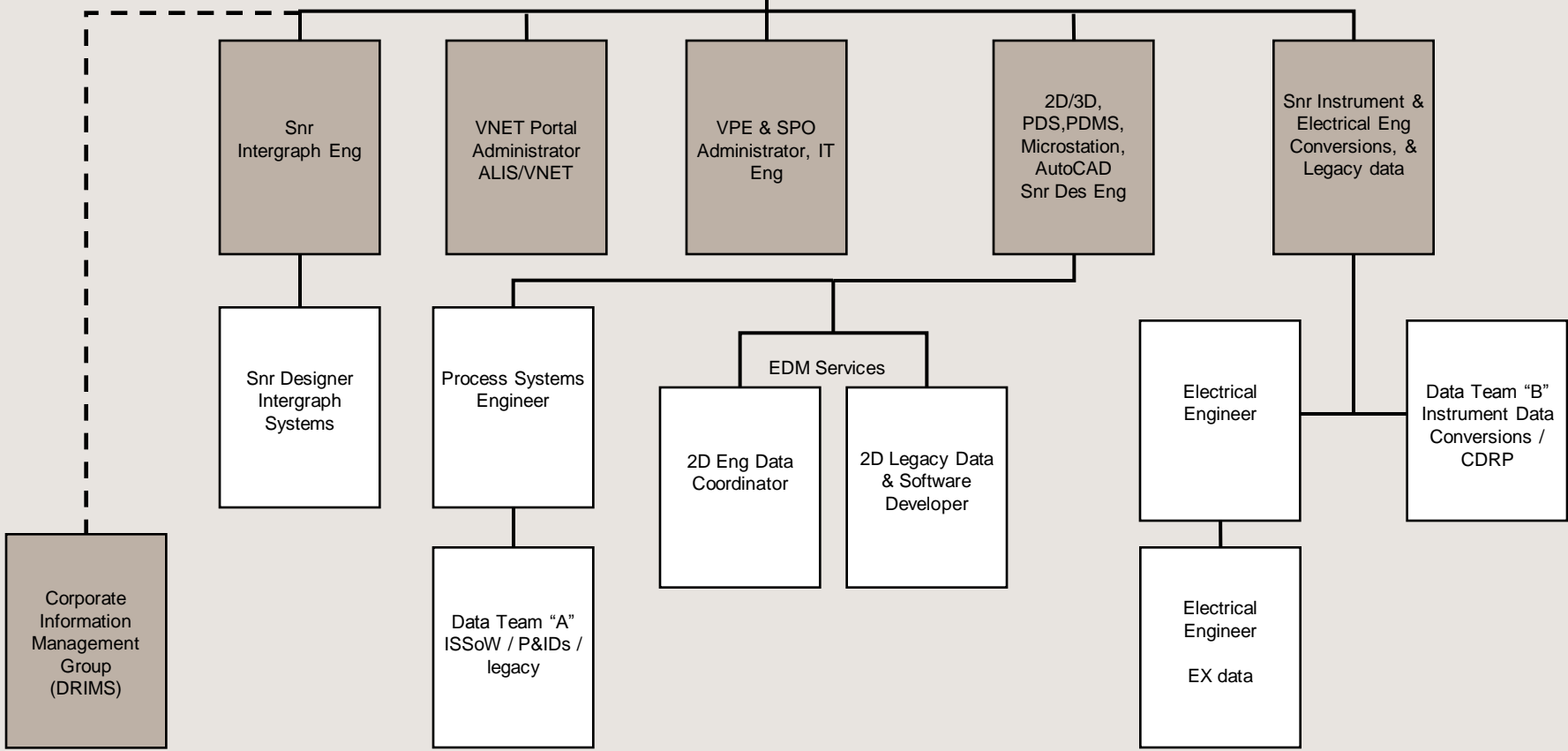
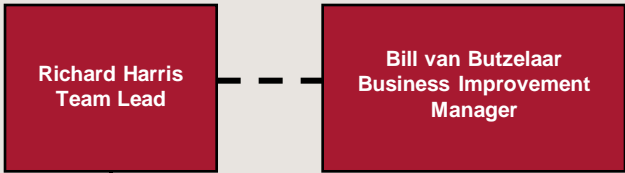
Hand Held PC's

# EDM – Engineering support



# EDM Team 2009

- Management
- Core Team
- Contract Support



# Strategic Requirements for managing Woodside EDM

- Provide ready access to engineering information
- Establish links to all related engineering data and information
- Rationalise engineering applications and data sets
- Improve the engineering data Management processes
- Enable efficient handover of project information to Operations from EPC's
- Bring WEL standards and procedures up-to-date with Best Practice EDM processes
- Enable identification and rectification of data and information inconsistencies
- Improve data integrity
- Improve access to legacy (20 years+) non-electronic information

# The Challenge - Diversity of end users

## Operations

- Onshore & offshore facilities operating since 1983
- Legacy data non electric format of 320,000 drawings
- Multiple styles & ways of collecting data (EPC dictated)
- Legacy satellite systems
- No single source master repositories

## Brownfield Projects

- Multiple joint venture partners & systems
  - Variety of engineering deliverables
  - Move to electronic handover from 1998
  - Diverse set of engineering design tools
- Legacy data not linked to physical areas, units or equipment

## Greenfield Projects

- Multiple EPC's
- Variety of electronic engineering tools
- Electronic handover specified as standard
- Use of multiple engineering warehouses and libraries
- Variety of Standards

# EDM Roadmap - Operations

1. Define key engineering deliverables, and develop process maps
2. Revise engineering standards & guidelines to reflect today's requirements
3. Develop a single metadata profile
4. Deploy a fully integrated suite of engineering design tools, and engineering software system & libraries ( VNET, VPE, VP P&ID, SPI, SPE, PDS, PDMS)
5. Implement common software platforms
6. Develop gateways to our key systems (SAP, document management system, commissioning system, sharepoint.)
7. Develop an intelligent set of corporate datasheet
8. Replace legacy systems & migrate to new tools
9. Link data to engineering portal
10. Measure, evaluate effectiveness & achieved cost savings



# EDM Roadmap – Brownfield and Greenfield Projects

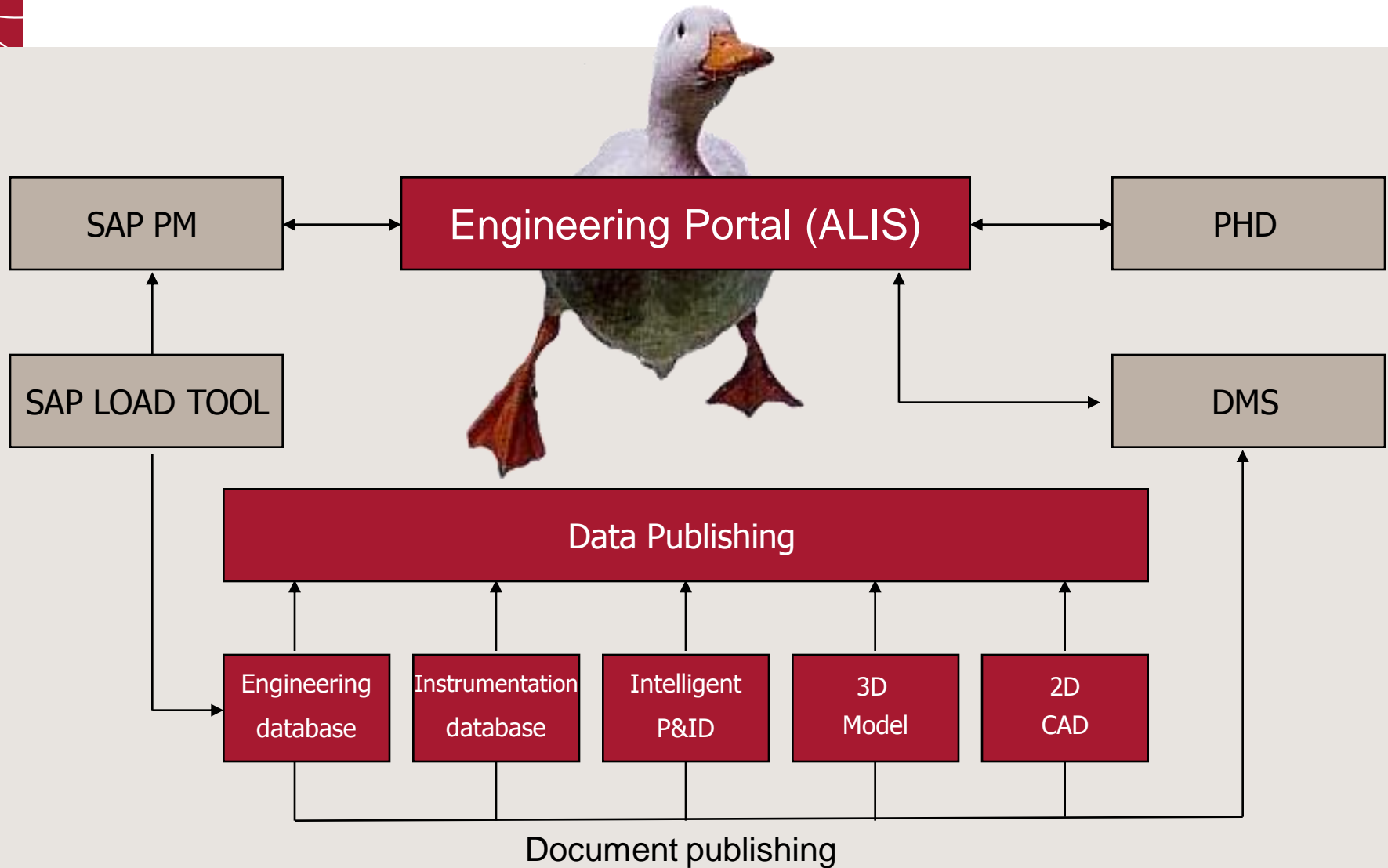
## Brownfield Projects

- Deploy software systems & standards
- Provide project access to Portal & design tools
- Train & develop internal resources
- Support projects, review implementation, fine tune

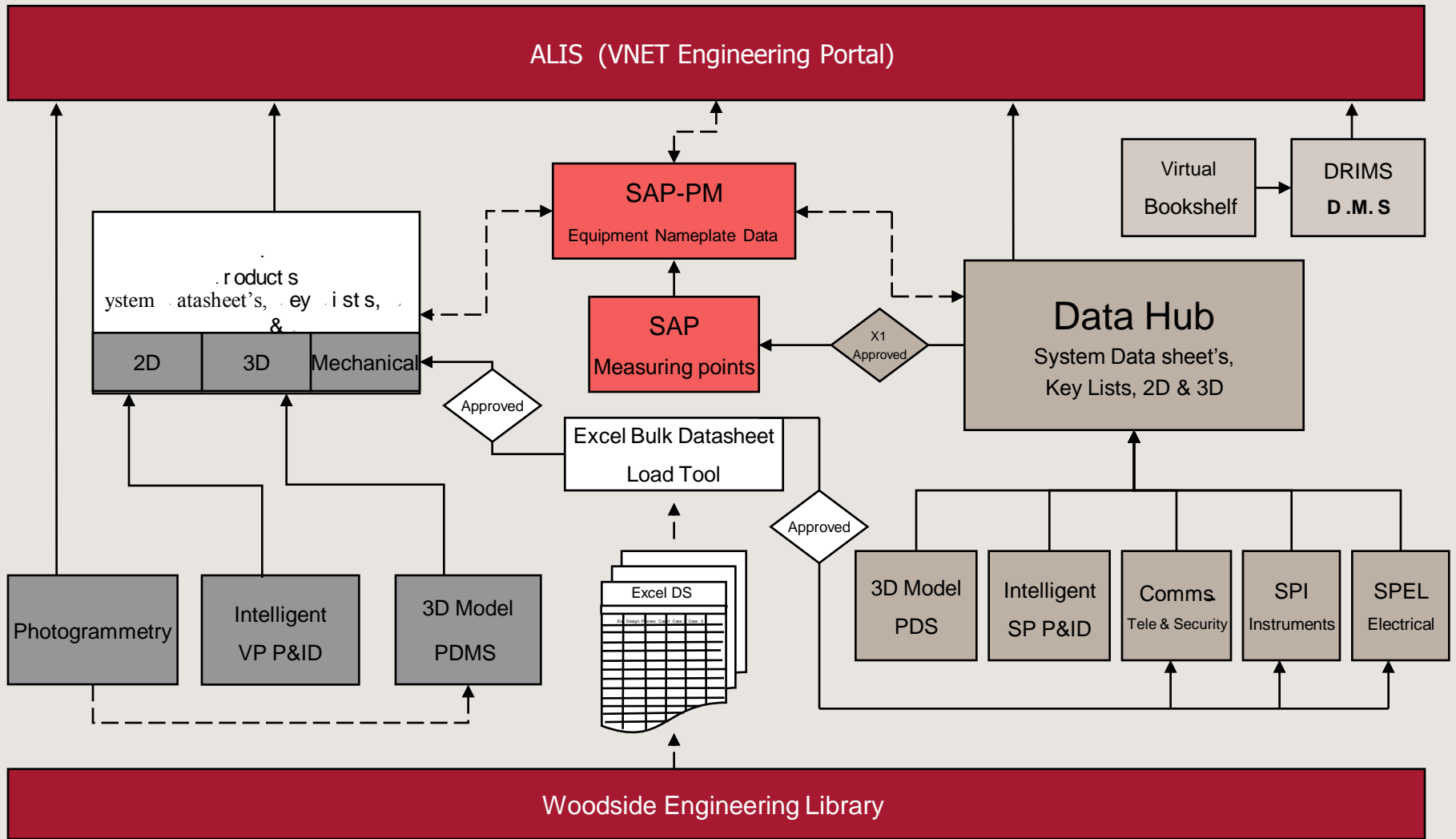
## Greenfield Projects

- Promote WEL software systems
- Enforce standards
- Provide up-front information engineering support
- Ensure engineering libraries are adopted (VPE, SPF, E-Warehouse)
- Issue seed files (VPE, VP P&ID, SPI, SPE) to EPC's

# Engineering Portal relationship to EDM applications



# Engineering data interfaces



# Woodside Engineering Data Library

*Defines the characteristics used in Design & Maintenance tools.*

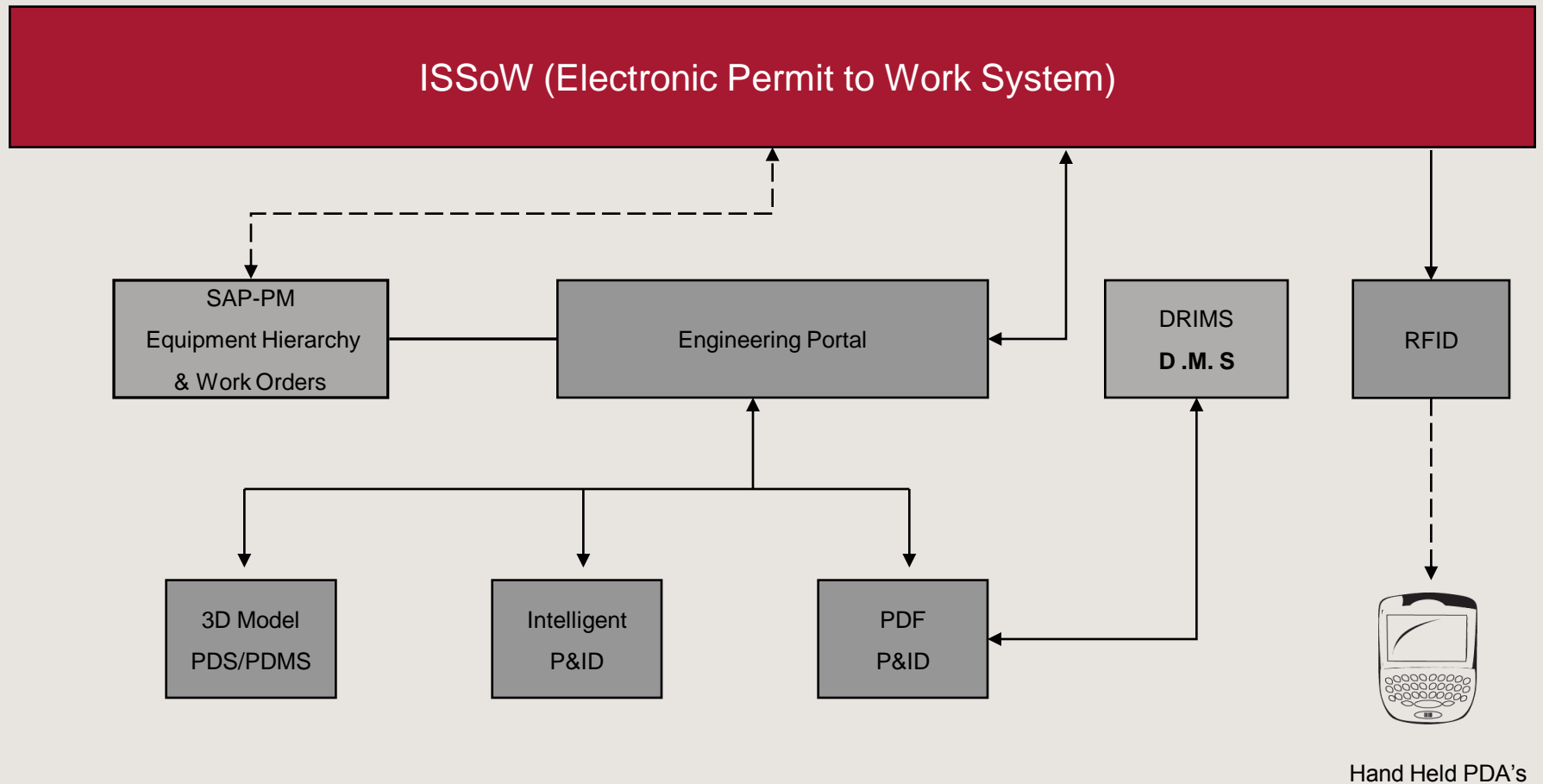
*Attributes include:*

- *Short text description*
- *Alpha or Numeric Value*
- *Plus or Minus Values*
- *Number of Decimal places*
- *Design or Process Value*
- *Criticality of Characteristic*
- *Assigns a unique code to each characteristic*
- *Defines where the attribute is used*

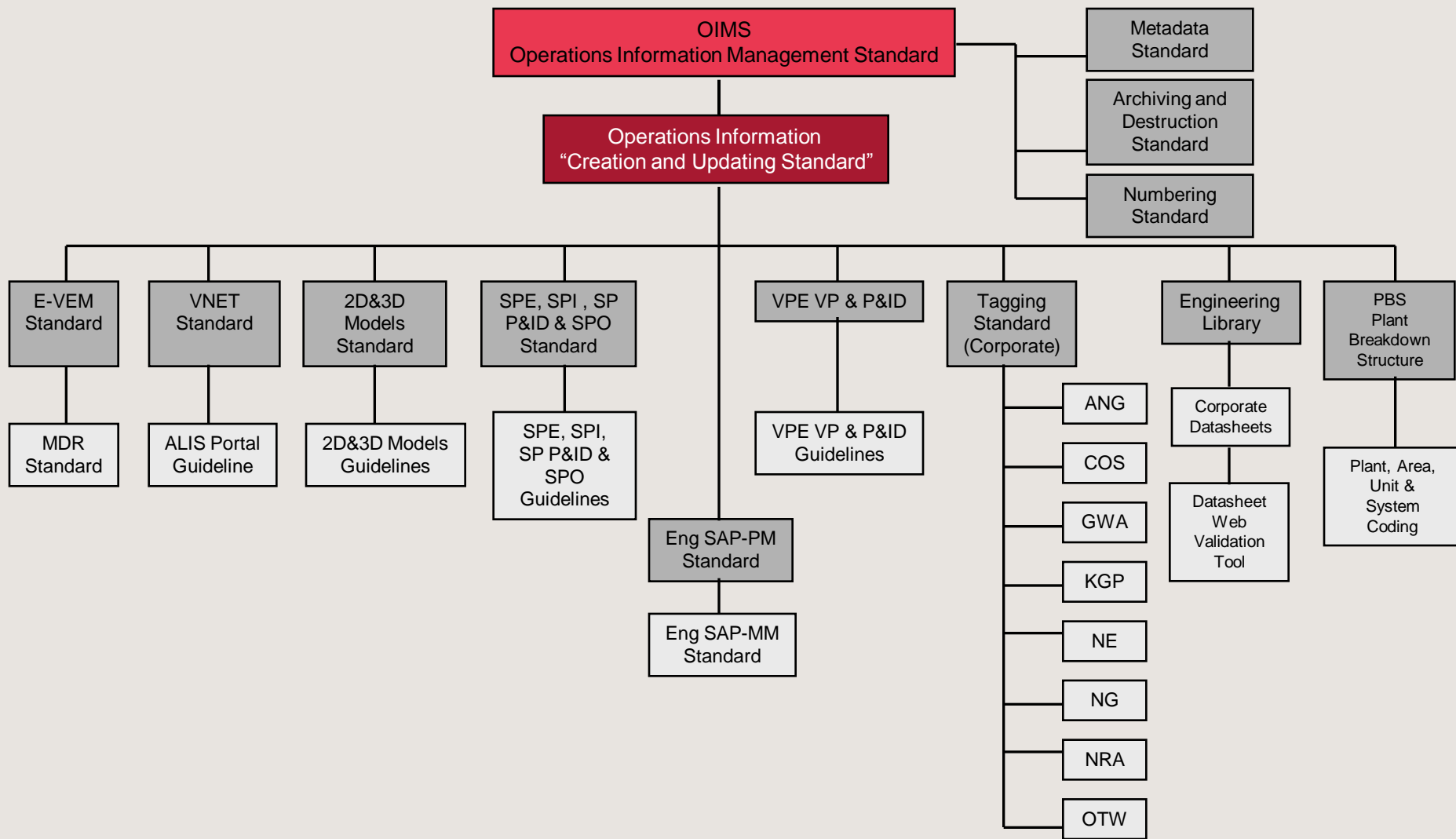
*Systems currently populated with library characteristics include:*

*SAP-PM, VPE, VP P&ID, SPI, SPEL, SP P&ID, SPO, Corporate Data sheets, Key List Register,  
& Bulk Data loading tools.*

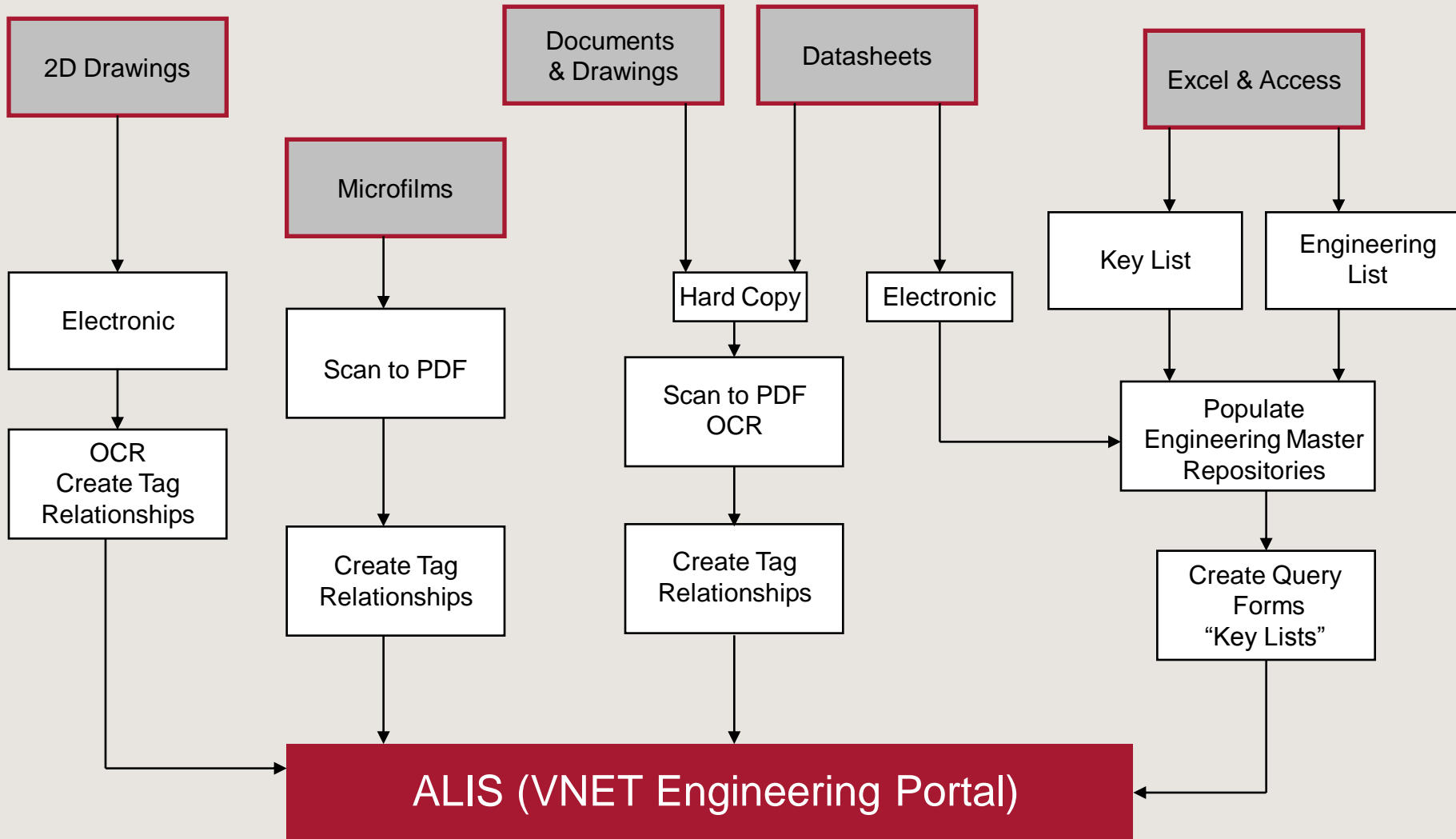
# Electronic Permit System



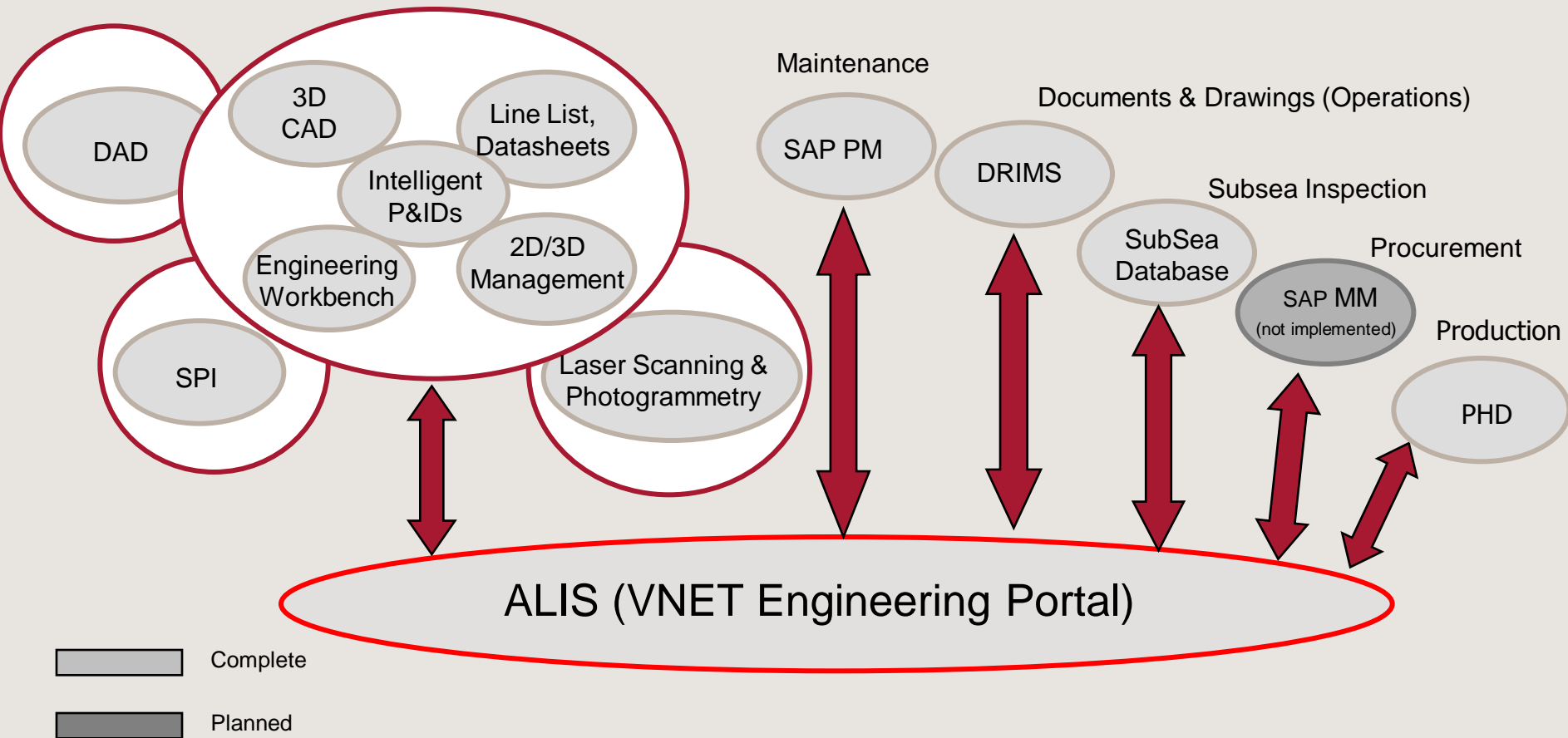
# Operations Information Management Standard (OIMS)



# Legacy Data Migration



# EDM Project: January 2005 to October 2009





# Strategic Management

Production Division - Microsoft Internet Explorer provided by Woodside Energy Ltd.

Address: http://connect.woodside.com.au/ProductionDivision/Pages/default.aspx

Corporate | Woodside Management System | Organisation | Applications | My Department

Production Division

Content Custodian: Santostefano, Vince V.  
Content Manager: Oaler, Helen H.  
Site Feedback: Please complete form

Classification: Restricted  
Last Updated: 9/06/2009

Message Box

**Technical Integrity Awareness**

I am pleased to inform that a self-learning and assessment tool has been developed to enhance awareness on Technical Integrity amongst our staff in the Production Division. In addition to what, why & how of the Technical Integrity, this learning module cover what role you play in the management of TI.

This on-line training will be made available very soon with instructions from your manager. I encourage you to take up the training & assessment at an earliest opportunity.

Virtual Bookshelves

Facility: Argei

- Engineering and Technical Standards and Guidelines
- Reporting and Monitoring
- Production Processes
- ALIS Engineering Data
- See (BabelFish) - Process Monitoring
- Health and Safety Homepage
- iSSW (Surpass)
- Budget & Business Planning Timeline
- Strategic Technology Plan

Production Status

Production Status - May 2009  
Actual Production: 5.84 MMbbl  
Forecast Production: 7.27 MMbbl

Facility	Product	Target	Actual	%
NWS	LNG (tonnes)	42,058	44,109	2,051
	LPG (tonnes)	2,535	2,334	-201
	Dongas (t/s)	640	678	38
Condensate (bb)		131,886	137,658	5,173
	Cockscack	42,018	44,252	2,235
Northern Endeavour	Oi (bb)	13,223	13,405	182
	Oi (bb)	31,033	33,584	2,551
Ngarrurra	Oi (bb)	29,071	27,306	-1,766
	Dongas (t/s)	139	143	3
Owlay	LPG (tonnes)	204	207	3
	Condensate (bb)	1,549	2,121	872
<b>Operated Total (boe)</b>		<b>773,417</b>	<b>868,011</b>	<b>32,424</b>
Mutineer Exeter	Oi (bb)	18,048	11,470	-6,578
	Stybarrow	32,069	32,611	522
Gold Shelf	Net (boe)	12,492	12,385	-107
	Gold Neptune	16,309	16,361	2,062
Gold Power Play	Net (boe)	8,541	8,660	120
	<b>All Facility Total (boe)</b>		<b>860,726</b>	<b>888,116</b>

Note: Golf is latest full day data available, Owlay is the VIC calendar day.

Home | Documents and Lists | Create | Site Settings | Help

ALIS Asset Lifecycle Information System

Enterprise Explorer

User: [Name] | Role: [Role]

Content Viewer

Quick Reference & User Guides: ALIS Quick Reference Guide, Operations User Guide, Key Links & Signposts, Query Forms, Document Searching

Email the IT HelpDesk if you are having problems using ALIS. Or call the IT Helpdesk on 88444. Email the ALIS Information Catalysts if you have any ALIS information content questions or issues.

WOODSIDE Process Library

Information Change Request (ICR) Process

5.1.6 Manage Change to Production Information

Woodside

Engineering and Technical Standards and Guidelines

Production Division

Standard	Category	Version	Status
ALIS - Engineering Data	Guidelines	1.0	Approved
ALIS - Reporting and Monitoring	Guidelines	1.0	Approved
ALIS - Production Processes	Guidelines	1.0	Approved
ALIS - Health and Safety	Guidelines	1.0	Approved
ALIS - Budget & Business Planning	Guidelines	1.0	Approved
ALIS - Strategic Technology Plan	Guidelines	1.0	Approved

Questions about standards should be addressed to the [Contact Information]. For access to approved standards, use [Access Information]. External requests for assistance and more information requests can be processed via the [Request Information].

# Engineering Standards

Woodside Connect Intranet > Organisation > Production Division

Engineering and Technical Standards and Guidelines

Content Custodian: Hamblin, Michael M.G.  
Content Manager: Howard, Godfrey G.R.C.  
Provide Feedback on the Engineering & Tech Standards and Guidelines page

Classification: Restricted  
Last Updated: 19/08/2009

Filter By: Discipline: **Electrical** Area: **Offshore** Filter

<b>Civil</b>	<b>Commissioning</b>	<b>Communications</b>	<b>Controls</b>
Standards Guidelines	(TA - Cordia Johnson) Standards Guidelines	(TA - Henry Chan) Standards Guidelines	(TA - Martin Wypych) Standards Guidelines
<b>Electrical</b>	<b>Engineering Data Management</b>	<b>Environment</b>	<b>Lifting</b>
(TA - Satish Kelkar) Standards Guidelines	(TA - Richard Harris) Standards Guidelines	(TA - Jarrod Pittson) Corp. Environmental Standards	(TA - Hassan Zaghloul) Standards Guidelines
<b>Instruments</b>	<b>Maintenance</b>	<b>Marine</b>	<b>Materials Insp. and Corrosion</b>
(TA - Graham Ison) Standards Guidelines	(Custodian - Phil Johnson) Standards Guidelines	(TA - Willie Henry) Standards Guidelines	(TA - Mike Brameld, Alan Wornock) Standards Guidelines
<b>Mechanical</b>	<b>Pipelines</b>	<b>Process</b>	<b>Risk and Safety</b>
(TA - Godfrey Howard) Standards Guidelines	(TA - Roland Fricke) Standards Guidelines	(TA - Utpal Mehta) Standards Guidelines	(TA - Richard Pocock) Standards Guidelines Corp Health/Safety/Integrity Standards
<b>Rotating Equip</b>	<b>Structural</b>	<b>Subsea</b>	<b>Wells</b>
(TA - Rick Macente, Stuart Pharoah) Standards	(TA - Hassan Zaghloul) Standards Guidelines	(TA - David Thain) Standards Guidelines Subsea Standards Matrix and Action Plan	(TA - Dan Gibson)
<b>External</b>			
Ext. S&S & Shell DEPs via WEL Library			

Questions about standards should be addressed to the relevant Technical Authority. For access to superseded standards, use [QDD](#) or contact [Corporate Document Control](#).

Title	Status	Last Modified Date
Electrical Equipment in Hazardous Area (EEHA) Competency Requirements	APPROVED	30/07/2009
Engineering Standard : Electrical Design	APPROVED	24/06/2009
STANDARD - LOW VOLTAGE SWITCHGEAR	APPROVED	24/02/2009
STANDARD - CABLES AND GLANDS	APPROVED	25/02/2009
STANDARD : HIGH VOLTAGE SWITCHGEAR	APPROVED	24/02/2009
STANDARD : STATIC AC UNINTERRUPTIBLE POWER SUPPLY UNIT	APPROVED	23/02/2009
STANDARD DEFINING WEL APPROVED ELECTRICAL MANUFACTURERS AND EQUIPMENT	APPROVED	23/02/2009
STANDARD ELECTRICAL INSTALLATION	APPROVED	23/02/2009
STANDARD ELECTRICAL INSTALLATION	APPROVED	23/02/2009
STANDARD: ELECTRICAL HEAT TRACING	APPROVED	23/02/2009
STANDARD: ELECTRICAL PROCESS HEATERS	APPROVED	23/02/2009
STANDARD: EMERGENCY GENERATORS	APPROVED	23/02/2009
STANDARD: H.V. AND L.V. ELECTRIC MACHINES CAGE INDUCTION TYPE	APPROVED	23/02/2009
STANDARD: NAVIGATIONAL AIDS FOR OFFSHORE FIXED & MOBILE FACILITIES	APPROVED	24/02/2009
STANDARD: POWER TRANSFORMERS	APPROVED	23/02/2009
STANDARD: SELECTION, INSTALLATION AND MAINTENANCE OF EX CERTIFIED ELECTRICAL EQUIPMENT GUIDELINE	APPROVED	15/01/2009
STANDARD: STATIC DC UNINTERRUPTIBLE POWER SUPPLY UNIT	APPROVED	23/02/2009
STANDARD: SYNCHRONOUS AC MOTORS AND GENERATORS	APPROVED	23/02/2009
STANDARD: VARIABLE SPEED DRIVE SYSTEMS	APPROVED	23/02/2009
W1000SE028 CODE OF PRACTICE FOR HAZARDOUS AREA VERIFICATION DOSSIER	APPROVED	09/01/2006
W1000SE164287 ELECTRICAL SAFETY STANDARD	APPROVED	18/05/2006
W1000SE2599455 STANDARD : COMPETENCY REQUIREMENTS FOR AUTHORISED ELECTRICAL PERSONS	APPROVED	17/11/2006

# Process Mapping

Woodside Connect Intranet

Production Division

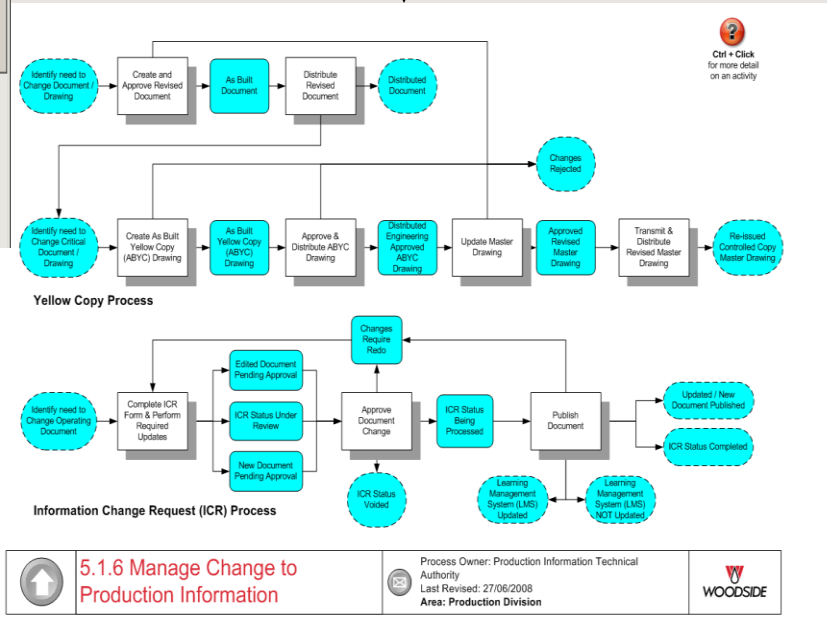
**Production Processes**

**Core Production Processes**

1.0 Plan Production	2.0 Deliver Production	3.0 Hydrocarbon Accounting	4.0 Maintenance and Inspection	5.0 Technical Control
1.1 Business Planning	2.1 Operate Plant and Facility	3.1 Metering and Measurement	4.1 Set Maintenance Direction	5.1 Technical Change Management
1.2 Product Planning	2.2 Integrated Safe System of Work	3.2 Process Data	4.2 Work Prep, Schedule & Ene. Maint. Work	5.2 Technical Integrity Management (TIM)
1.3 Integrated Activity Planning	2.3 Custody Transfer	3.3 Allocate Product	4.3 Measure, Analyse and Improve	
		3.4 Product Reporting	4.4 Inspection	

**Supporting Production Processes**

Production Health and Safety	Operations Readiness and Assurance	Marine	Human Resources	Production Risk Management
Production Environment	Commissioning Start Up	Supply Chain Management	Prod. Emergency Response & Security	Production Assurance



# Engineering Portal Configuration


Karratha Gas Plant > ALIS Portal > Portal

**Enterprise Explorer**  
 User: worph5  
 Role: VNET User  
 Hide Find | Show Toolbar  
 Any type  
 4V1421 Find Mode: By ID


**Content Explorer**  
 Vessel, Pressure 4V1421  
 VESSEL\_HP MR SEPARATOR

**Documents:**  
 3D Models - (3)  
 LNG4 - (3)  
 1400 - Liquefaction  
 LNG4 - Equipment Only  
 LNG4 Process Train - Equipment  
 DRIMS Documents - (83)  
 Intelligent P&IDs - (19)  
 Photographs - (10)  
 4V1421 VPE Eng Data  
 AU01.4V1421 SAP Link

**Content Viewer**  
 Home Page | Unit: 1400.zgl | L1404DP115.0001.svg | L1404DP228.0001 | L1404DP228.0001.svg | 4V1421 VPE Eng Data Rendition



Got a problem or issue with ALIS? Contact the [IT Help Desk](#) for assistance: x84444.  
 Need help using ALIS, or want to find out what ALIS can do? See the [ALIS Help Page](#) for videos, how-to's and quick reference guides.  
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 See the [Production Division Homepage](#) for more information about Woodside's facilities & other information systems.

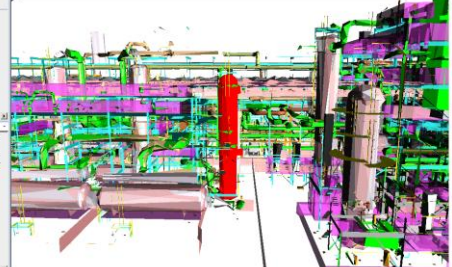


**Enterprise Explorer**  
 User: worph5  
 Role: VNET User  
 Hide Find | Show Toolbar  
 Any type  
 4V1421 Find Mode: By ID

**Content Explorer**  
 Vessel, Pressure 4V1421  
 VESSEL\_HP MR SEPARATOR

**Documents:**  
 3D Models - (3)  
 LNG4 - (3)  
 1400 - Liquefaction  
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**Content Viewer**  
 Home Page | Unit: 1400.zgl | L1404DP115.0001.svg | L1404DP228.0001 | L1404DP228.0001.svg | 4V1421 VPE Eng Data Rendition

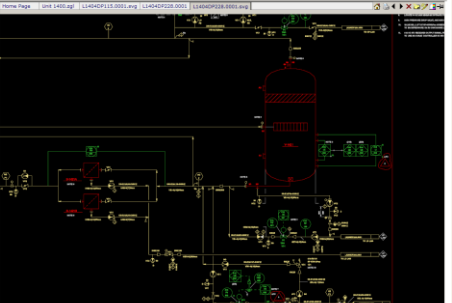


**Enterprise Explorer**  
 User: worph5  
 Role: VNET User  
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 Any type  
 4V1421 Find Mode: By ID

**Content Explorer**  
 Vessel, Pressure 4V1421  
 VESSEL\_HP MR SEPARATOR

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 LNG4 - (3)  
 1400 - Liquefaction  
 LNG4 - Equipment Only  
 LNG4 Process Train - Equipment  
 DRIMS Documents - (83)  
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 Photographs - (10)  
 4V1421 VPE Eng Data  
 AU01.4V1421 SAP Link

**Content Viewer**  
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**Enterprise Explorer**  
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 Photographs - (10)  
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 AU01.4V1421 SAP Link

**Content Viewer**  
 Home Page | Unit: 1400.zgl | L1404DP115.0001.svg | L1404DP228.0001 | L1404DP228.0001.svg | 4V1421 VPE Eng Data Rendition

4V1421 - VPE Engineering Data	
ITEM TYPE	VESSEL, PRESSURE
PAID DESCRIPTION	VESSEL_HP MR SEPARATOR
MANUFACTURER	LARSEN AND TOUBRO
MODEL NO.	3P17007
OPERATING HEIGHT	15000
PERFORMANCE TAGCARD	PPS
EDC CODE	IS 62 34 KSP 106 11
GENERAL CODE	WAS17003
GENERAL CODE OF REGISTRATION NO	LNG4-0947
ORIGINAL PURCHASE ORDER NO	ADSTN-CLASS 04
DESIGN CODE	MR
HANDLED LEVELS	106 000 011 106
WALL THICK SHELL LINER MM	0 00 mm min
CONSTRUCTION ALLOWANCE MM	0 00 mm min
SAP TAG	AL01 4V1421
SAP CLASS	VES
PARENT TAG	AL01 4V1424
MODEL REV NO	1
SERIAL NO	1
CONSTRUCTION TYPE	ANV0000000
MATERIAL LINE	AZ00 306 4420 0016 AND 0036
MATERIAL	ASTM A103 B99
MATERIAL SIZE	204 50
MATERIAL EXT. THICK	ASTM A103 B99
MATERIAL REF. PARTS	204 50
MATERIAL HEAD	AZ00 3041
MATERIAL REFERENTIALS	AZ00 3040
MATERIAL SHELL	AZ00 3040
DESIGN PRESSURE	0.4 MPa
TEST PRESSURE	0.502 MPa

# EDM Photogrammetry

ALIS Home > North Rankin 'A'

## North Rankin 'A'

North Rankin 'A' > ALIS Portal > Portal

### Enterprise Explorer

User: admsyj  
Role: VNET User

Hide Find | Show Toolbar

Any type

Find Mode: By ID

- Module 04
- Module 05
- Module 06
- Module 07
  - As-built 3D Models
  - Index Pages
  - Navigational Photos
  - Photopairs
- Module 08
- Module 09
- Module 10
- Module 11
- Module 12
- Module 13
- Module 14
- Module 15
- Module 16
- Module 17
- Module 18
- Module 19
- Module 20
- Module 21
- Module 22
- Module 39
- Overlay Photo Examples
  - NRA-001r
  - NRA-002r
  - NRA-003r
  - NRA-158r
  - NRA-167r
  - NRA-405r
  - NRA-658r
  - NRA-715r
  - NRA-753r

### Content Viewer

Content List: NRA-M7-118L.svg | AB-07-1008 Index.mht | NRA-M7-125L.svg | NRA-M7-211L.svg | NRA-M7-236L.svg | AB-07-1009 Index.mht | NRA-M7-085L.svg | NRA-753r.jpg | NRA-757r.jpg | NRA-715r.jpg

Com 30 17.00mm - NRA Module 7 Offshore M7 MP 16-1-08

### Content Explorer

Overlay Photo Example: NRA-167r

Revisions:

Revision	Notes	Properties
???		

# Engineering Portal Media Gallery

Karratha Gas Plant > ALIS Portal > Portal

**Enterprise Explorer**

User: woprh5  
Role: VNET User

Hide Find | Show Toolbar

Any type

2KT1420 Find Mode: By ID

Search Results

- 2KT1420
- Battery - (1)
- Bottle - (1)
- Burner - (1)
- Exchanger - (3)
- Fan - (2)
- Filter - (6)

**Media Gallery**

Home Page

**Content Explorer**

Turbine, Gas 2KT1420


TURBINE, DRIVER FOR 2KT1420


Documents:

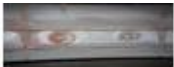
- DRIMS Documents - (533)
- Datasheets - (3)
- Drawings - (422)
- Lists & Registers - (9)
- Manuals & Guidelines - (40)
- Reports, Reviews, Studies, File No
- Vendor Documents, Manuals - (1)
- Vendor Drawings - (57)
- Intelligent P&IDs - (4)
- Train 2 - (4)
- 2KT1420 VPE Eng Data
- Turbine - (1)
- Turbine, Gas - (1)
- AU01.2KT1420 SAP Link


**Tag: 2KT1420**


2009 Major Shutdown


  
HP Rotor Overview


  
Stage 1-4 HP Blades


  
Guide Van Pins


  
HP Rotor - N D E


  
Stage 5-11 HP Blades

  
LP Blade Section


  
LP Stator Blades


  
LP Rotor Section


  
LP Rotor in Situ


  
LP Rotor Shaft & Brg


2009 Major Shutdown


  
Active Thrust Pad Brg


  
Thrust Pad T/C's 4Brg


  
Thrust Ring Assy


  
Thrust Pad Hot Spot1


  
Thrust Pad Hot Spot2

  
Thrust Pad Normal v1


  
Thrust Pad Normal v2


  
Half Moon Thrust Pad


  
Thrust Pad Carrier


  
Thrust Pad Shoes


2009 Major Shutdown


  
HP Tilting Pad Brg 4U


  
HP Tilting Pad Brg 4L


  
HP Tilting Pad Brg 4L


  
Tilting Pad Assy Brg 4


  
Scaffolding Arrangement


  
Lifting Beam Install





  
Scaffolding Arrangement


  
Enclosure Scaffolding

  
Enclosure Scaffolding

  
HP Stators Topside



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-  Need help using ALIS, or want to find out what ALIS can do? See the [ALIS Help Page](#) for videos, how-to's and quick reference guides.
-  Something wrong with the info in ALIS, or can't find info that should be in ALIS? Contact the [ALIS Information Custodian](#) to report it.
-  See the [Production Division Homepage](#) for more information about Woodside's facilities & other information systems.



Engineering Information Management | August 2009 | DRIMS #5090360

Slide 22

# Return On Investment

## Quantified Benefits:

1. 10% more efficient Information Searching
2. 86% more streamlined Data Handover
3. 93% reduction in Supported Applications
4. 93% reduction in Training costs

## Unquantified Benefits

- Handover of engineering data for sold assets
- Reuse of engineering data and designs
- Improved IM quality resulting in safer workplace and reduced unplanned shutdowns
- Strategic sourcing opportunities of EPC's

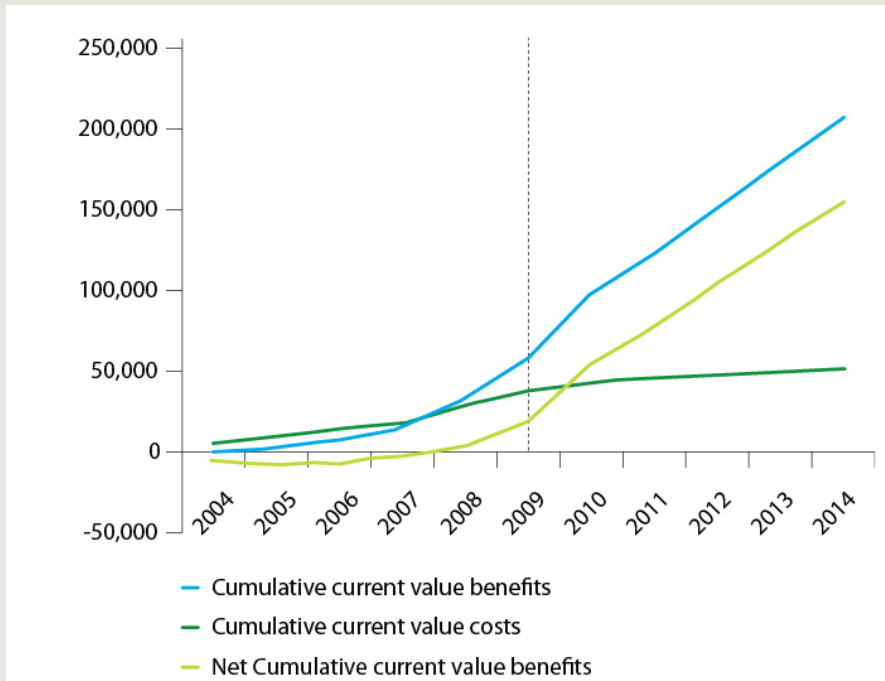
Hyperlink to published ROI study:

[http://www.deloitte.com/view/en\\_AU/au/services/consulting/article/4ba0f25acb2a3210VgnVCM100000ba42f00aRCRD.htm](http://www.deloitte.com/view/en_AU/au/services/consulting/article/4ba0f25acb2a3210VgnVCM100000ba42f00aRCRD.htm)

Courtesy of Deloitte Australia

# ROI Payback Period

## Net cumulative current value benefits



## Payback period

Woodside's "EDM" project achieved full payback in 3.4 years or by mid 2007. The following graph describes the cumulative current value costs versus the cumulative current value benefits.

The point of intersection represents the project's breakeven point.

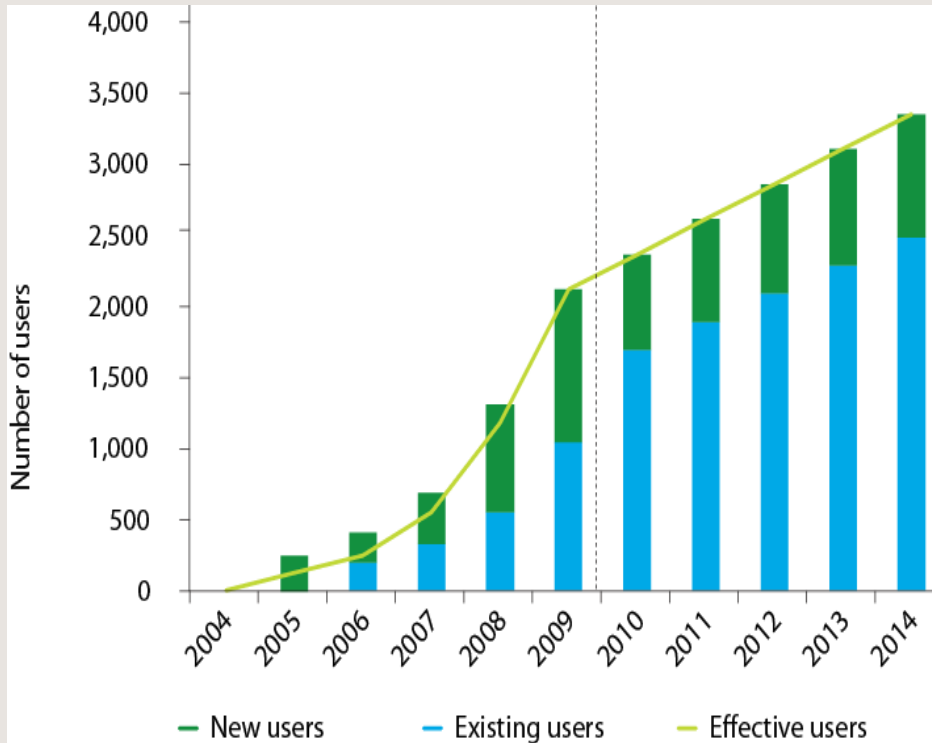
From 2009, project costs began to stabilise as the implementation reached its final stage.

Benefits increase dramatically from 2007 due to realising the benefits from the Angel LNG handover and as user adoption increases.



# Keys to success

Total and effective users including contractors



Describes the number of existing and new Woodside Portal users per annum; including contractors. In the initial years of the implementation it is assumed that due to user inexperience and the amount of data in the system at the time, the full benefit of the system may not have been realised.

To account for this, the number of users have been multiplied by an 'effectiveness' rate. This rate was assumed at 50%, 60%, 80%, 90%, in years 2005, 06, 07, 08, respectively. Full user effectiveness (100%) was assumed from 2009 on. The 'Effective Users' have been used for calculations when total users are required.

New users are people who are new to using the system in a given year. This was determined by the additional users added each year, plus the replacement of existing users due to attrition.

# ROI Cost Reduction

## Reduction in training costs

		Source
Total training required before on previous corporate tools	20hrs	WEL EDM Team
Training required for AVEVA NET	1.5hrs	WEL EDM Team
Saving in training per new user	18.5hrs	
Benefit per new user	\$1,351.60	

## Reduction in support applications

		Source
Applications prior to AVEVA NET	253	WEL EDM Team
Applications after AVEVA NET installation	18	WEL EDM Team
Applications no longer used	235	
Cost saved per applicationpa	\$1,000	WEL IT dept.
Annual saving from applications pa	\$235,000.00	

# Award Winning Performance !

## Angel “Overall” winner WA Engineering Excellence Award 2009

Integration and innovative use of computer automation, intelligence, modelling systems or multi-media techniques . Angel was the first project to deliver a fully integrated set of information to the company for use **prior to start-up.**

The “electronic” information asset was delivered within an integrated “VNET” Angel Project Portal ( branded in Woodside as ALIS – Asset Lifecycle Information System).

The portal allowed access to all engineering, maintenance and operations information and allowed for two views, a project view and an operations view.

The project view allowed project personnel to use the portal for project execution while the operations view allowed for the integration of information assisting the development of maintenance and operations information well in advance of facility start-up.

ALIS was established on an extranet (new Woodside infrastructure) which was accessible by third parties involved in the design, fabrication and installation processes.

# Angel Platform - “Engineering Excellence Award 2009”

Integration of information was primarily via a tag paradigm & included access to & from the following:

*f* . Intelligent P&IDs

*f* . 3D models

*f* . Computerised Maintenance Management System

*f* . All engineering data

*f* . Documents and drawings

*f* . Subsea Inspection System

*f* . Geographical Information System (GIS).

*f* . Photographs

*f* . Equipment manuals & certification & traceability dossiers

Many of these engineering applications were new. All information was progressively passed into the Woodside systems after quality checks were done.

It was a benchmark, with 100% of all project information established within the Woodside systems at the ready for start-up phase, including all hazardous area inspection and pressure safety valve certification.

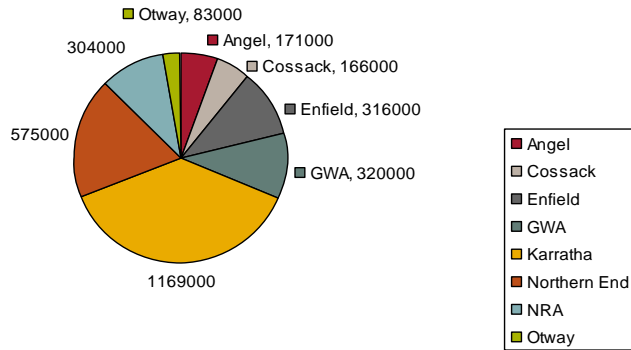
The project integrated the asset information, which traditionally has been restricted to topsides plant, with all the substructure (jacket) and Subsea infrastructure.

The project 3D models were the prime mechanism to navigate this information, using associations with relevant information and systems. For Subsea, this included integration with the Subsea inspection system (COABIS) and the GIS. All 3D models were as-built and fully tagged with x-refs, an innovation for the industry.

Hyperlink : <http://www.engineersaustralia.org.au/ieaust/index.cfm?4B274629-D2B5-F3D1-EC4C-DA5201D2A5E5>

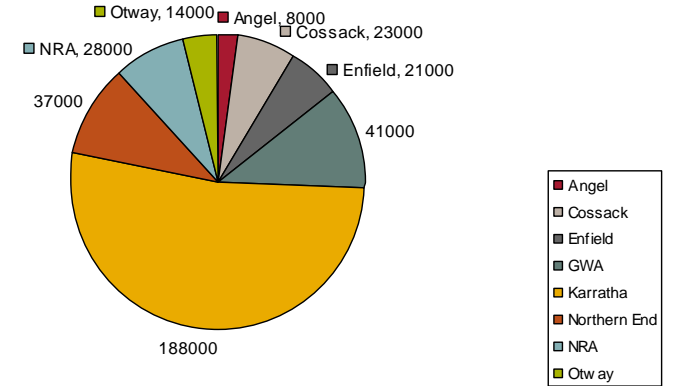
# EDM Statistics

## Tag Association References



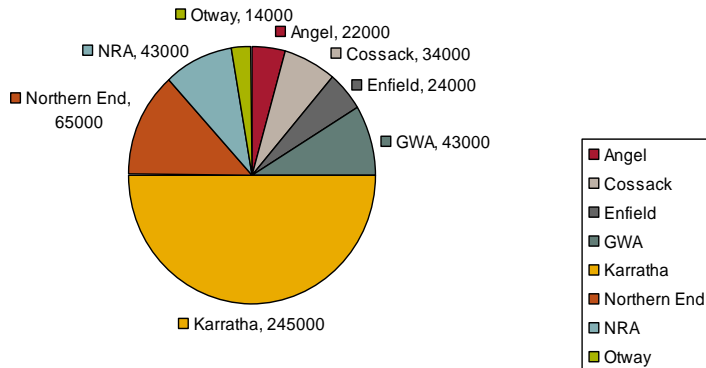
Total – 3,104,000

## Physical tags in ALIS



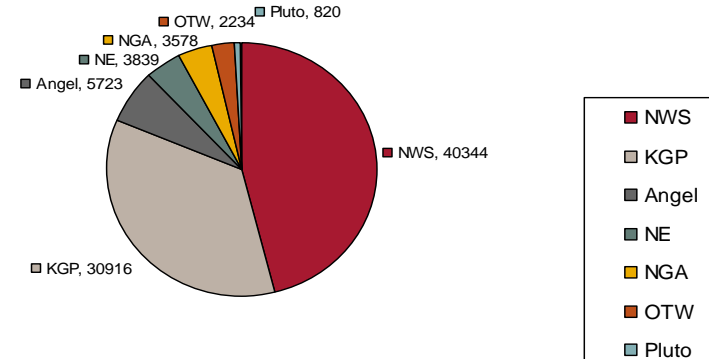
Total – 360,000

## Documents in ALIS



Total – 490,000

## ALIS - Daily Page Requests



Total – 87,454

# Current Opportunities and Activities

1. Integration with electronic permit to work system
2. Integration with handheld devices
3. Use of Radio Frequency Identification (RFID)
4. Photogrammetry and Media Galleries
5. SAP Integration Portal
6. Integration of Sub sea GIS / GPS Technologies
7. People / location management
8. Contribute to ISO 15926

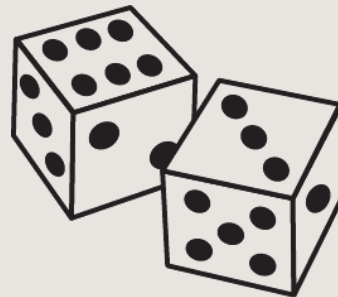
# Success factors

1. Understand Human Behaviour – “what’s in it for me” duck management
2. Drive Intuitive solutions – “Internet banking approach = less training”
3. Drive System (software) Integration – “configuration not customisation”
4. Embrace Operations and Maintenance processes
5. Demonstrate financial returns
6. Standardise Metadata – “Google type wildcard search”
7. Standardise standards and deviation process – “one size fits all”
8. Draw the line – “Address legacy data separately”
9. Use “internet” portal technology
10. Drive process through “Engineering” & not “IT”

# EDM summary & Digital Plant Philosophy



**“Allows you to”  
Slice  
Information**



**“The Digital Plant”  
Dice’s  
Information**



**“The Digital Plant”  
Even Comes with a  
Set of Steak Knives**

“Limited Offer first 5 customers

See details for terms & Conditions of Supply”

Offer ends 29.02.2009



Thankyou