



Data to Information The Last Competitive Advantage !

Richard Harris & Geraldine Paull

February 2011

Disclaimer and important notice

This presentation contains forward looking statements that are subject to risk factors associated with oil and gas businesses. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

All references to dollars, cents or \$ in this presentation are to Australian currency, unless otherwise stated.

References to “Woodside” may be references to Woodside Petroleum Ltd. or its applicable subsidiaries.

Woodside Energy Ltd - Australia

Woodside is currently one of Australia's top ten companies by market capitalisation*, and the nation's largest publicly-traded oil and gas exploration and production company.

Based in Perth, Western Australia, Woodside has major operational assets and exploration and development interests in five continents including Australia and the United States.

In 50 years we have grown from a pioneer oil and gas explorer to Australia's largest independent producer of oil and gas and one of the world's largest producers of LNG.

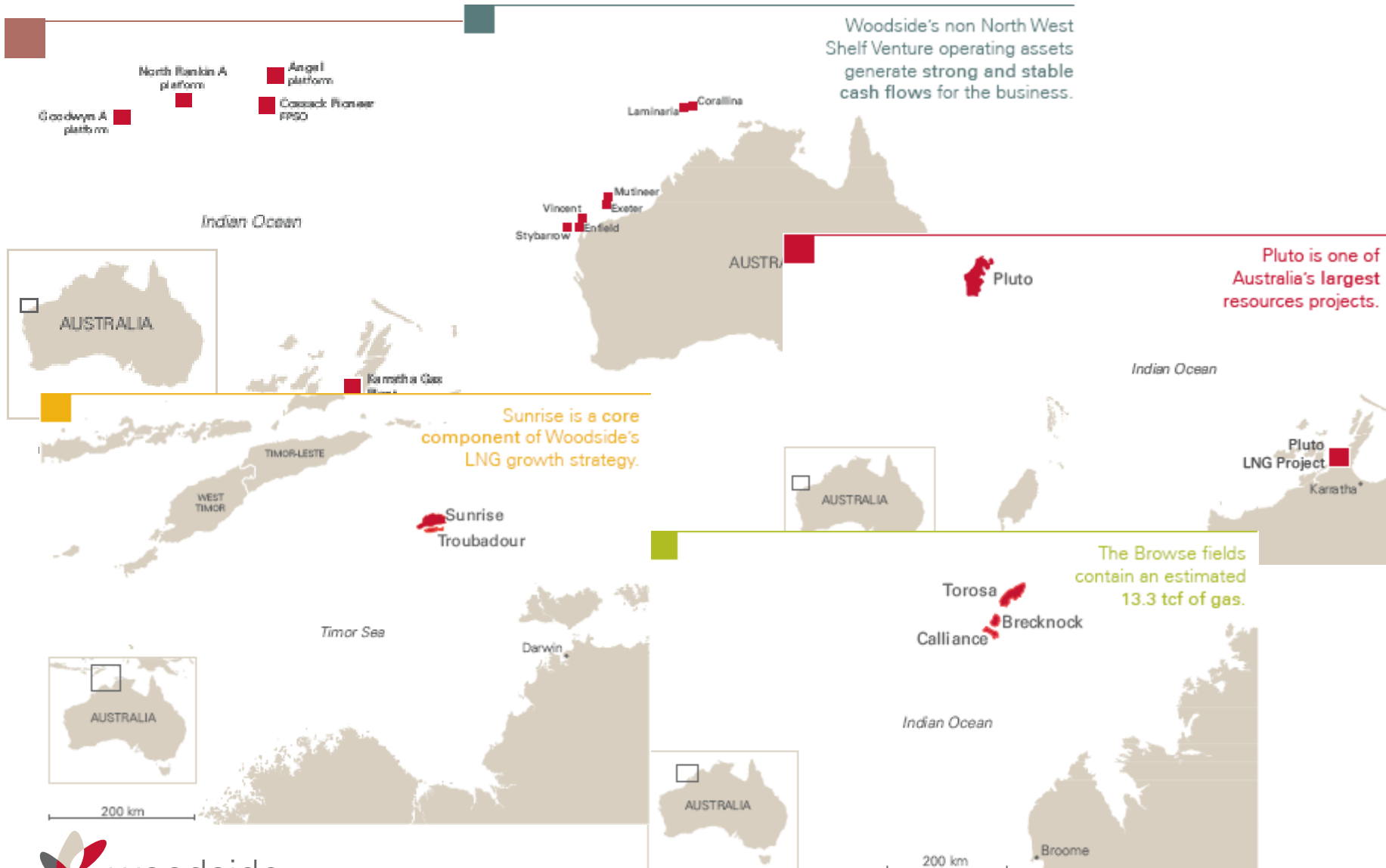
Woodside operates Australia's largest resources project, the North West Shelf Venture in Western Australia, which produces about 40 per cent of Australia's oil and gas.

Woodside also operates the Pluto LNG Project which is set to become the fastest developed LNG project discovery of the gas field in 2005 to first gas from the field in late 2010 and the first LNG in Q3 2011. Woodside is also seeking to progress its Sunrise LNG development in the Timor Sea and the Browse LNG development in northern Western Australia.

With a proved plus probable reserves to production ratio of 21 years * Woodside is poised to help meet growing global demand for clean energy.

*As at the 24th February 2010.

Our current and proposed facilities..



Information – the Missing Asset?

Reproduced with permission from Chevron



Information – the Missing Asset?



We spend a great amount of time and \$\$ to manage our financial, human and reputational assets.

Do we even know what our information asset is worth?

What we Own



Physical assets
The Balance Sheet
Financial Asset

What we can do



Talents, Relationships
Our “Human Energy”
The Human Asset

What we know



Data, Records,
Knowledge, Know-how
Information Asset

How we are seen



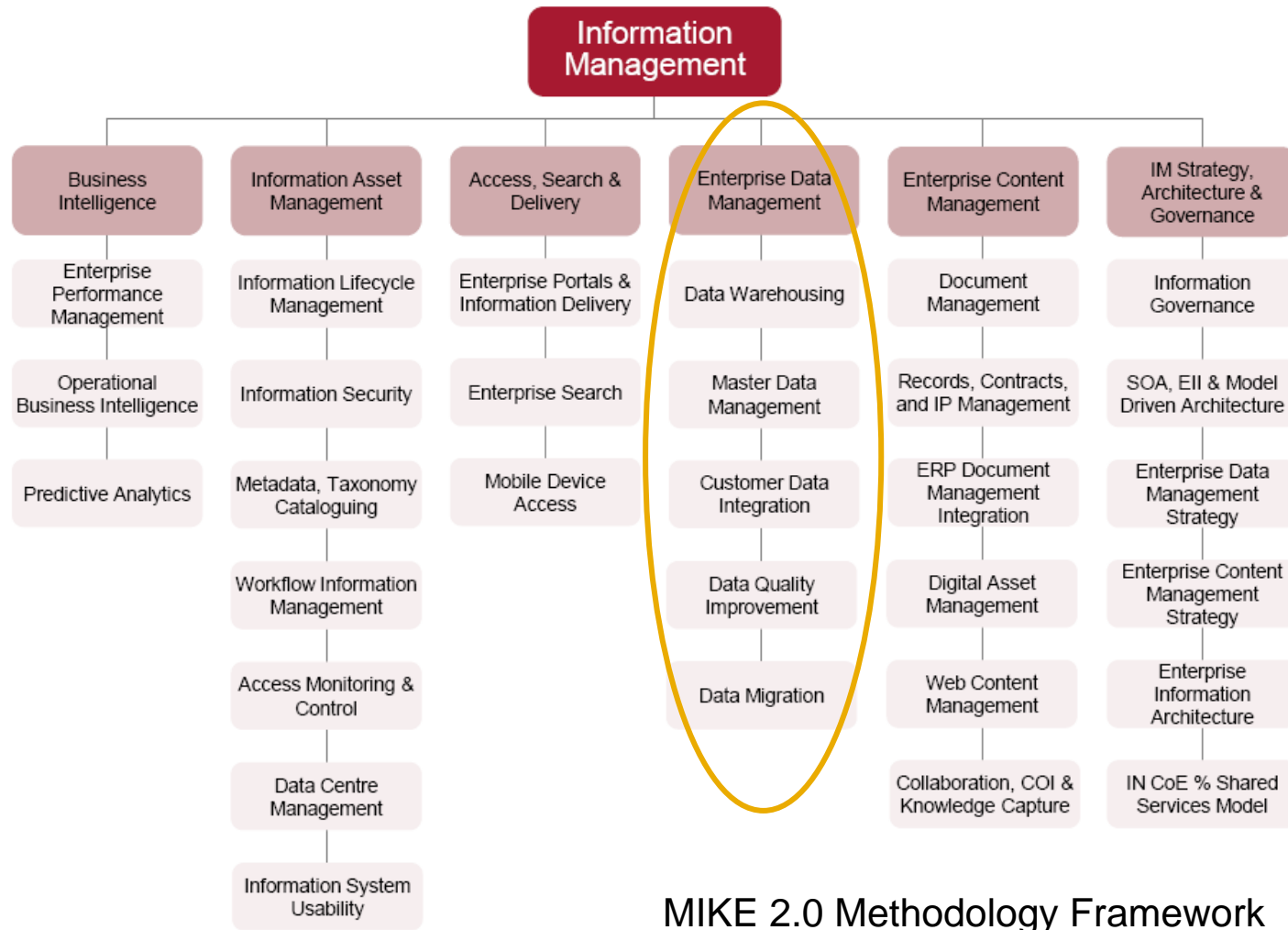
Partnerships,
Stakeholder Opinions
Customer views
Reputation Asset

© Chevron 2008



‘Putting the FOCUS on Data’, Jim Crompton, Chevron Global Upstream

Where does one start ? – Data Management



MIKE 2.0 Methodology Framework



Woodside's EDM journey

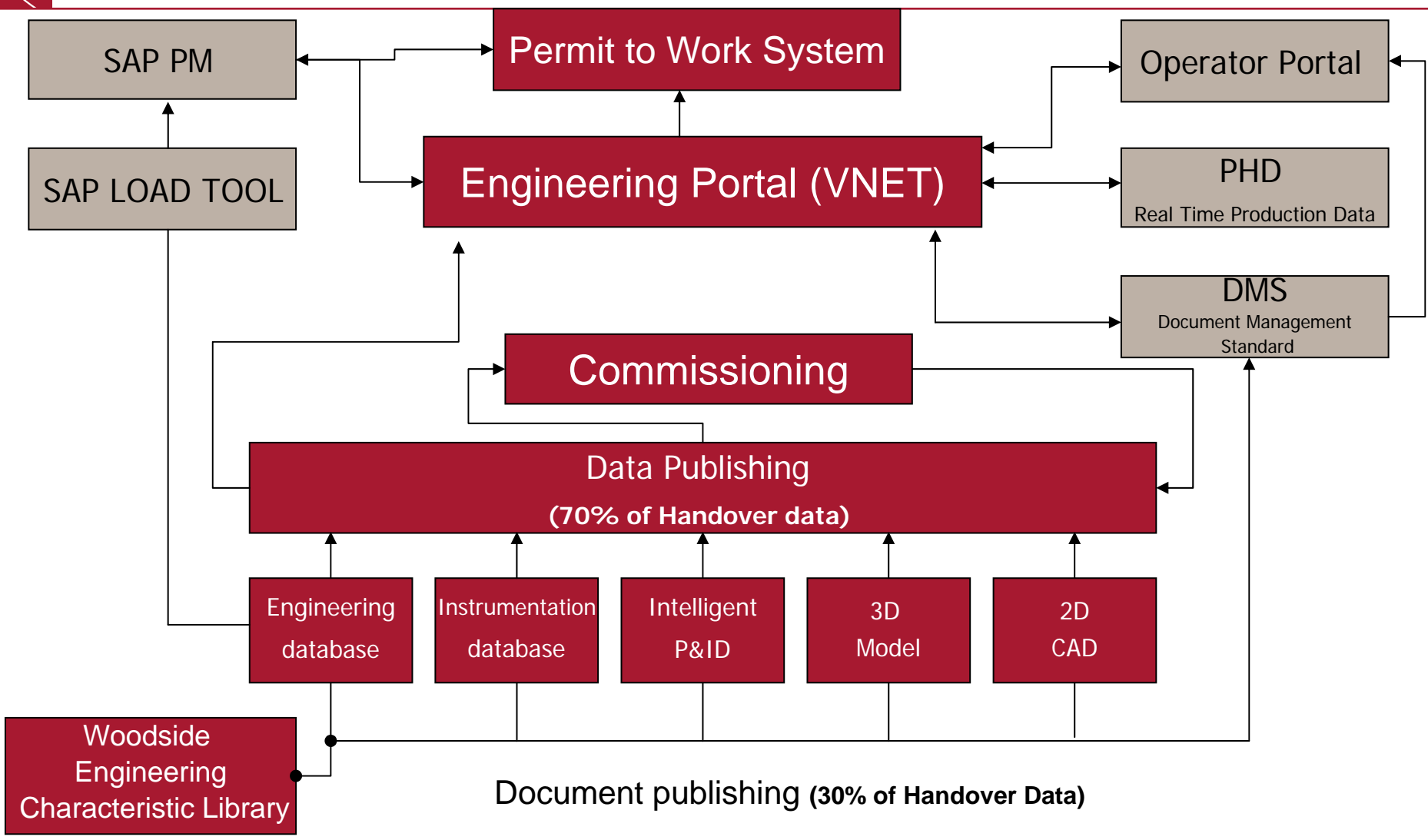
Our EDM journey commenced in 2005 with clearly defined objectives, originating in the Brownfield projects division and migrating to the Production division in 2007. Practical project completion December 2009.

EDM group established as a core corporate team delivering significant value in cost savings and improved data quality.

Key deliverables

- Select Software Systems, Configure & deploy
- Migrate company legacy data & systems into a digital plant environment
- Develop processes and standards to support a digital plant
- Improve data quality, access and linkage
- Enable efficient handover from Greenfield & Brownfield Projects
- Identification and rectification of data inconsistencies
- Identify value-adding opportunities Enterprise & Next Generation Software
- Early developer & adopter of International standards
- Measure, evaluate effectiveness & achieved cost savings against R.O.I.

EDM current landscape today



Enhancing Data quality & migration to a digital plant

Photogrammetry rejuvenation and capital projects

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 Viewer tabs: 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

Content Explorer

Overlay Photo Example: NRA-167r

Revisions:

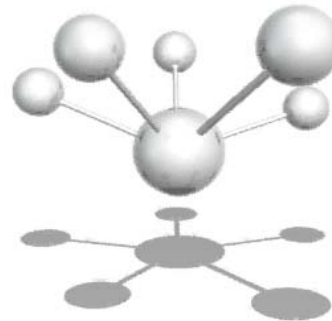
Revision	Notes	Properties
???		

Com30 17.00mm - NRA Module 7 Offshore M7 MP 16-1-08

Outdated hardcopy drawings or using photos...

Karratha Stabiliser 1 – from photos to digital plant in 29 days....

Offset



www.offsetservices.co.uk

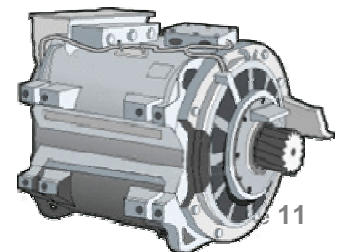
Karratha Gas Plant - Stabiliser 1 Unit

EDM is not enough, it is just the beginning of the journey

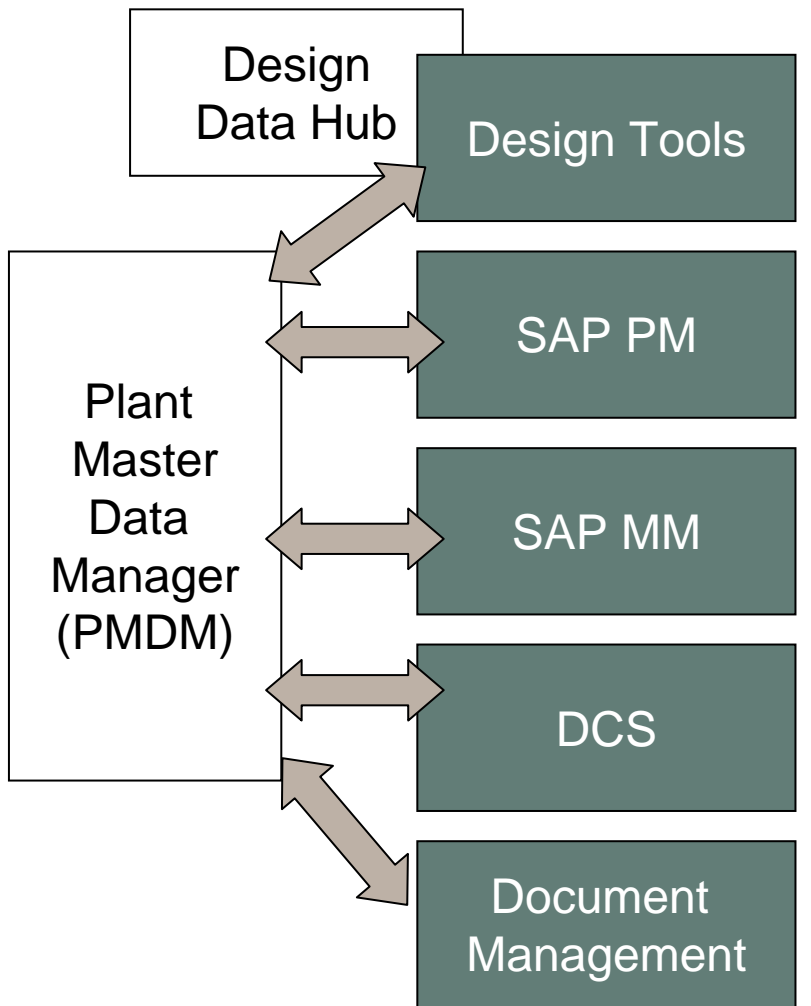
	Engineering	Maintenance	Materials Management	Operations
Focus:	Will this equipment fulfil it's Process requirements?	How do we maintain this equipment and make sure the costs of that maintenance are charged back appropriately?	How do we buy, stock and replace this equipment, either as a single unit or as a collection of spare parts (BOM)?	How can this equipment be monitored and controlled?
Typically interested in:	<ul style="list-style-type: none"> • Connectivity within the process • Design specifications 	<ul style="list-style-type: none"> • Design Specifications • How it has been Operated (actuals) • Maintenance History 	<ul style="list-style-type: none"> • Manufacturer Specifications • Elements defined and managed 	<ul style="list-style-type: none"> • Overlaying Process Model with Controls Model
Key elements defined and managed:	<ul style="list-style-type: none"> • P&IDs, • Mechanical model • Instrument model • Electrical model 	<ul style="list-style-type: none"> • Functional Locations • Work definition and execution • Cost allocation 	<ul style="list-style-type: none"> • Item No • Price • Lead Time to source • Usage Patterns (for Stocking / Reorder Options) 	<ul style="list-style-type: none"> • SCADA Tags • DCS Model • Measuring Points • Isolation Points (iSSoW)
Change Management:	Technical Change Management	SAP Master Data Change Notifications	Manual forms	Nothing official, for changes to the DCS, tools like Honeywell's Doc4000 are used, but not consistently.



In the end, it is all the SAME piece of equipment !!



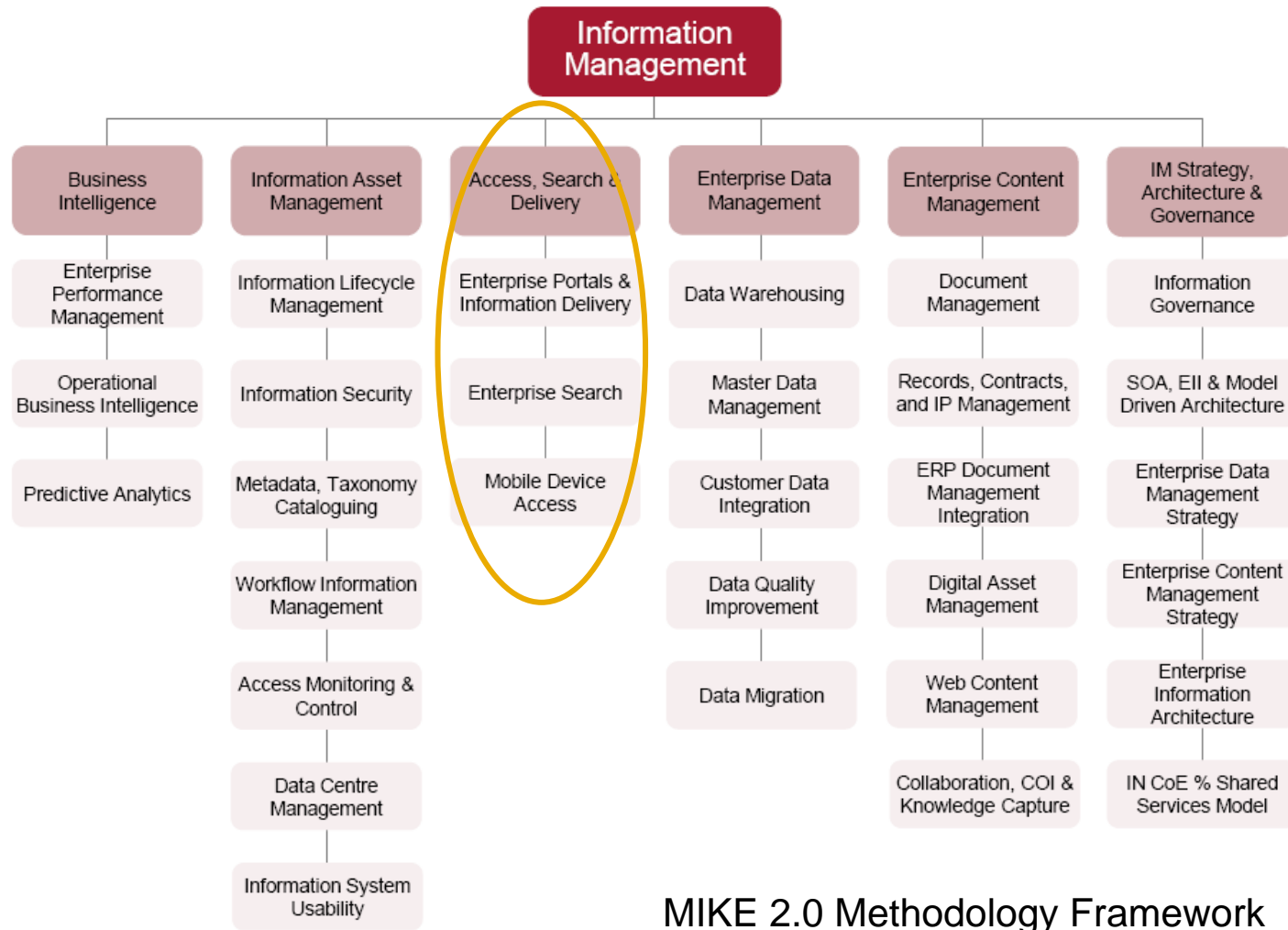
Plant Master Data Management (at a High Level)



Transactional Systems

- Plant Identification Data is mastered in one tool, the PMDM. It becomes the single registry of all Plant at Woodside.
- Because the PMDM is independent of Transactional Systems such as SAP PM, SPI, SPEL, VPE and PHD it can be configured with the right building blocks around classifications and templating, aligned with industry standards. This can be done with little or no impact on our current Transactional Systems
- Rather than point to point interfaces, PMDM will become the integrator between systems that consume Plant related information. With this model improving and changing out systems becomes more unplug and re-plug rather than re-engineer.

Data Visibility



MIKE 2.0 Methodology Framework



Strategic Data Management Portal

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

Classification: Restricted
 Last Updated: 09/06/2009

Daily Provisional Production Report
 For Wednesday 1st July

Facility	Product	Target	Actual	AL
MWS	LNG (tonnes)	42.05	44,109	2,651
	LPG (tonnes)	2.53	2,334	-291
	Domgas (Tn)	64	676	36
Combinate (00)				
		131.86	137,658	5,172
Cowcock	Oil (000)	42.01	44,252	
Northern Endeavour	Oil (000)	13.22	13,495	182
Ragburne	Oil (000)	31.63	33,584	2,551
Vincent	Oil (000)	29.07	27,368	-1,766
Owley	Domgas (Tn)	13	143	3
	LPG (tonnes)	3	267	3
Combinate (00)				
		1.8	2,121	837
Operated Total (000)		773.2	866,611	31,421
Mutneer Exeter	Oil (000)	10.04	11,470	-6,078
Stybarrow	Oil (000)	32.8	32,611	-622
GoM Shelf	Net (000)	12.48	12,385	-197
GoM Neptune	Net (000)	16.30	16,361	2,642
GoM Power Play	Net (000)	8.54	8,660	126
All Facility Total (000)		866.2	868,418	30,425

Production Commentary

- Owley Gas Day Production 140 TJs (8am - 8am 04 time). Unit combinations.
- KOP - LNG 1, 2 and 4 at max rates. LNG 5 rates increased to max rates following NRV re-tuning. LNG 3 shutdown progressing with expected start-up planned for All 0407. Stab 2 at reduced rates due to fouling. Domgas at 14.45hrs.
- operation due to Train 2 Domgas planned shutdown.
- ABV - Not Normally Manned status commenced at 14.45hrs.
- VIN - Production shortfall due to cycling Well VNH-42.

Production Status
 Production Status - May 2009
 Actual Production: 5.24 MBoe
 Forecast Production: 2.27 MBoe

Engineering and Technical Standards and Guidelines

Search: [People Name Only]

Connect Search

WOODSIDE Process Library

Virtual Bookshelves
 Facility: Angel

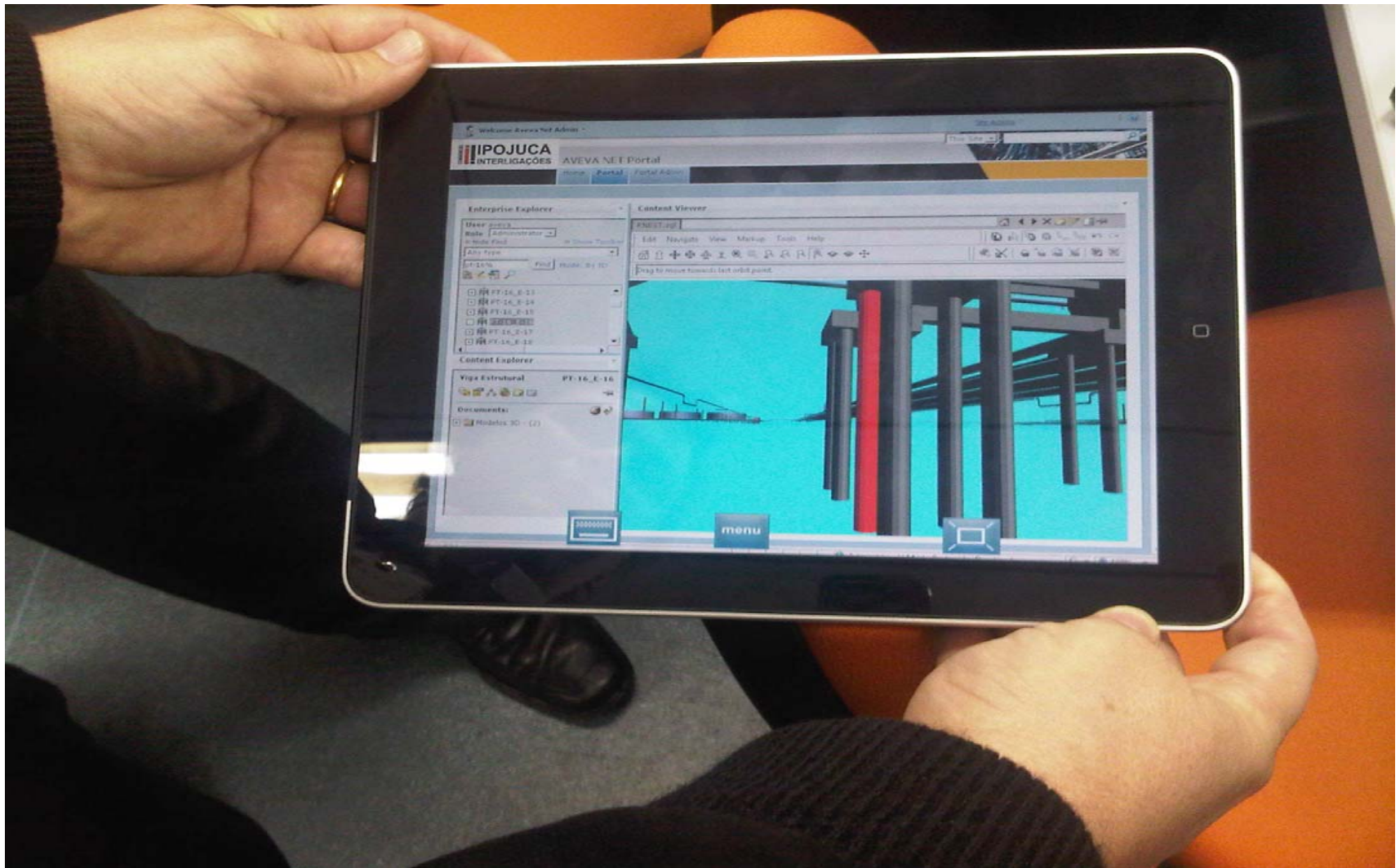
Information Change Request (ICR) Process

S.1.6 Manage Change to Production Information

Asset Lifecycle Information System

Production Status
 Production Status - May 2009
 Actual Production: 5.24 MBoe
 Forecast Production: 2.27 MBoe

Options for delivery – mobile



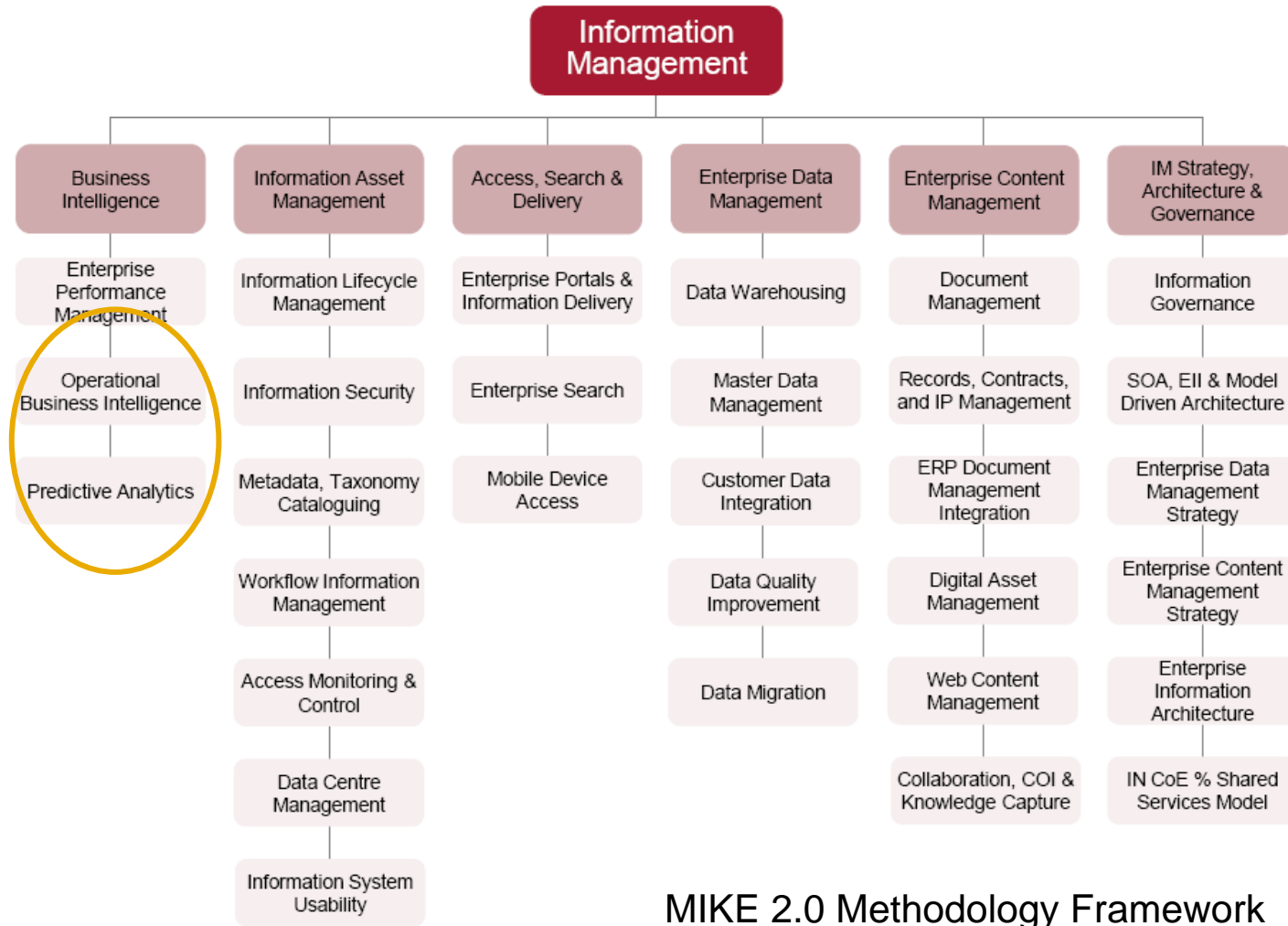
Options for delivery - kiosks



Industrial specifications:

- ✓ Solid steel construction
- ✓ Intrinsically safe
- ✓ Dust-proofed body prevents damage to the PC
- ✓ Onscreen Keyboard removes requirement for external keyboard
- ✓ Secured browser interface
- ✓ Optional Bar code reader
- ✓ IR Touch screen usable with gloves and dirt build-up

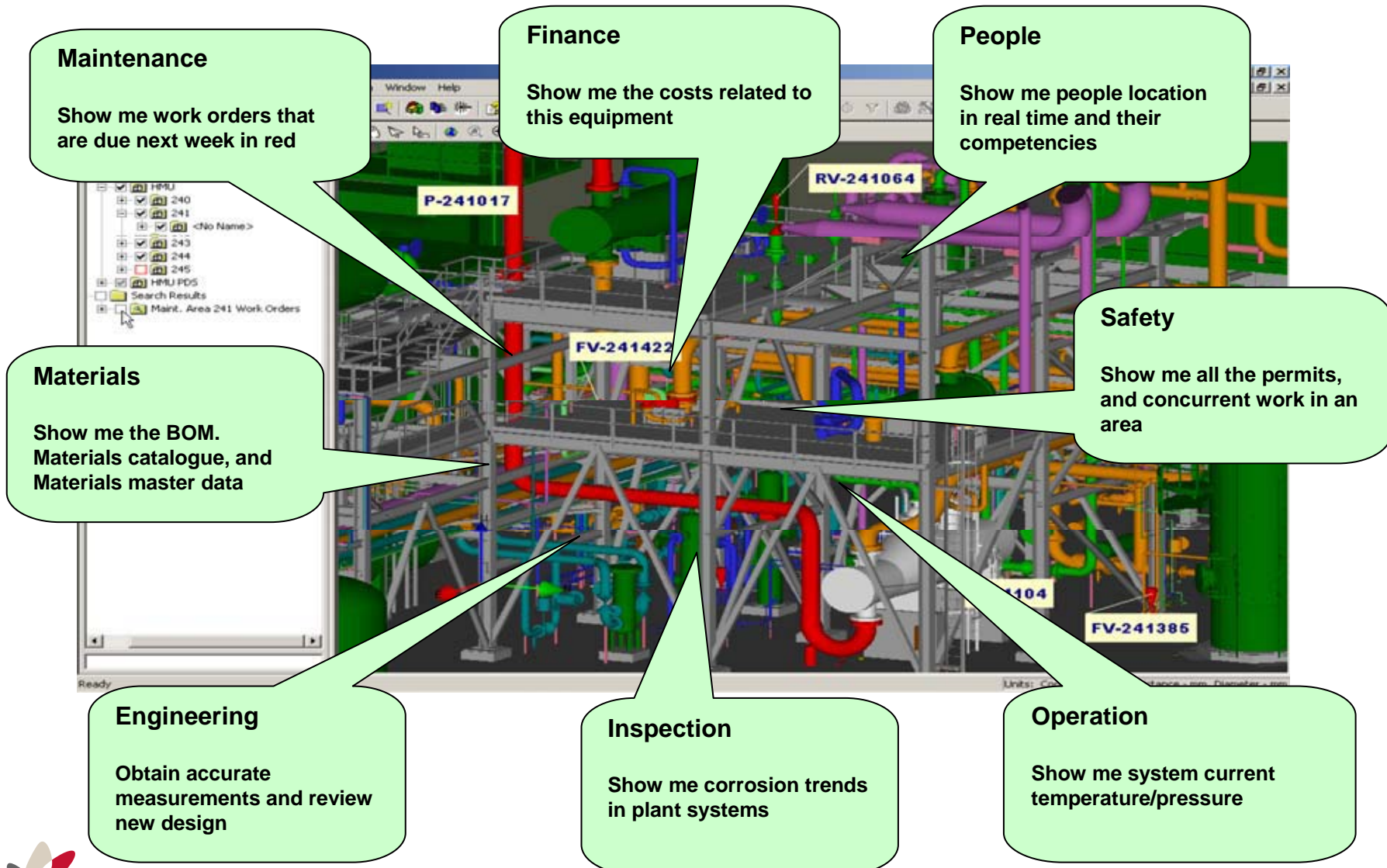
Smart Data



MIKE 2.0 Methodology Framework



Bringing the pieces together



Current Initiatives – Data Driven Model Based Predictive Analysis (a window on Real Time Analytics)



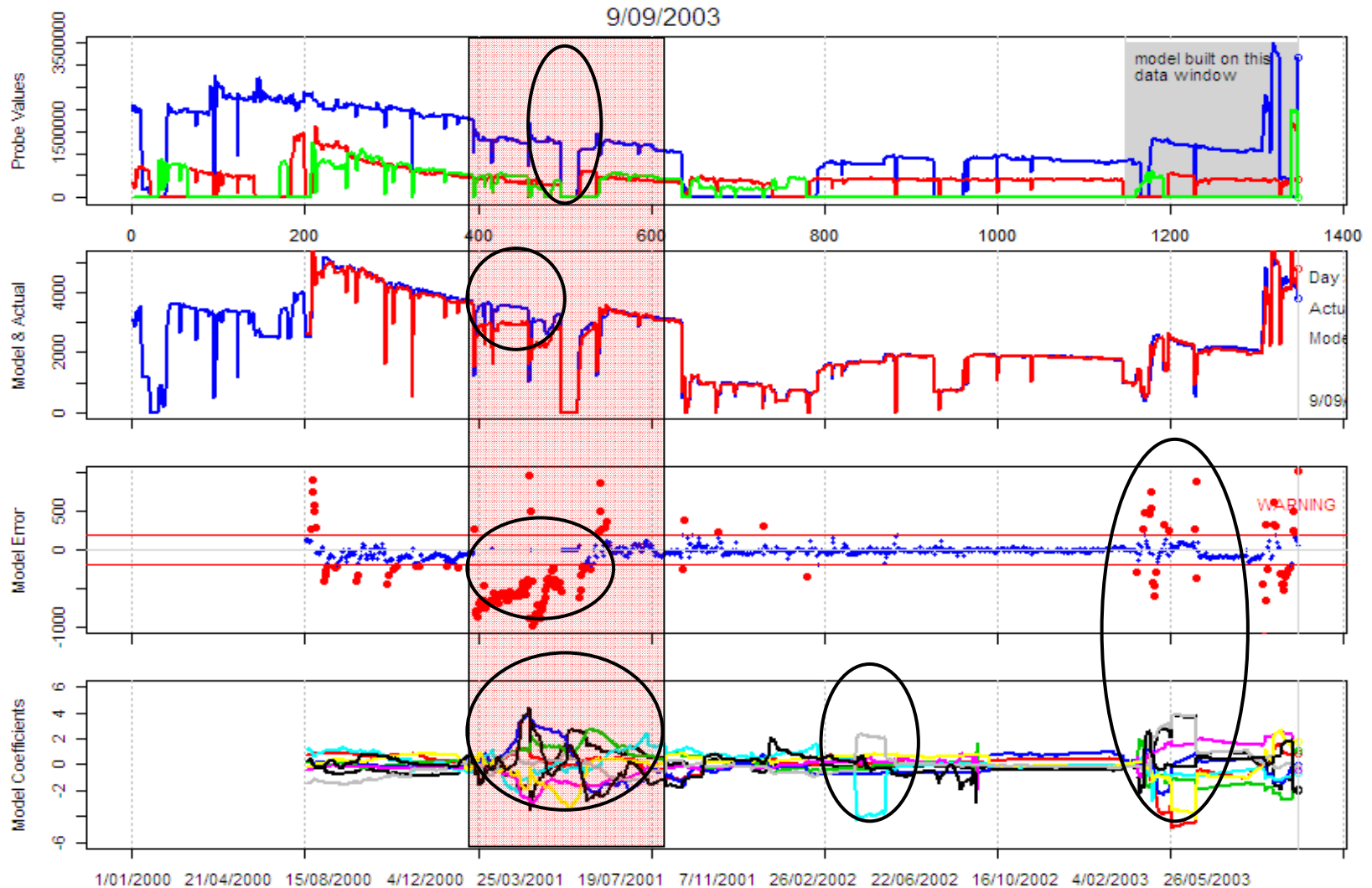
Integration of Real Time Data

DCS installations on every facility, and nearly every unit, hundreds of thousands of process data tags

Challenges we are facing:

- Volume is growing rapidly, engineers are drowning in data
- Our focus has to be on exceptions
- Smart surveillance and analytics need to be part of the new engineers toolkit
- Using history to predict the future, model driven analytics
- Upstream systems are demanding consistent and verified values
- Change management is paramount

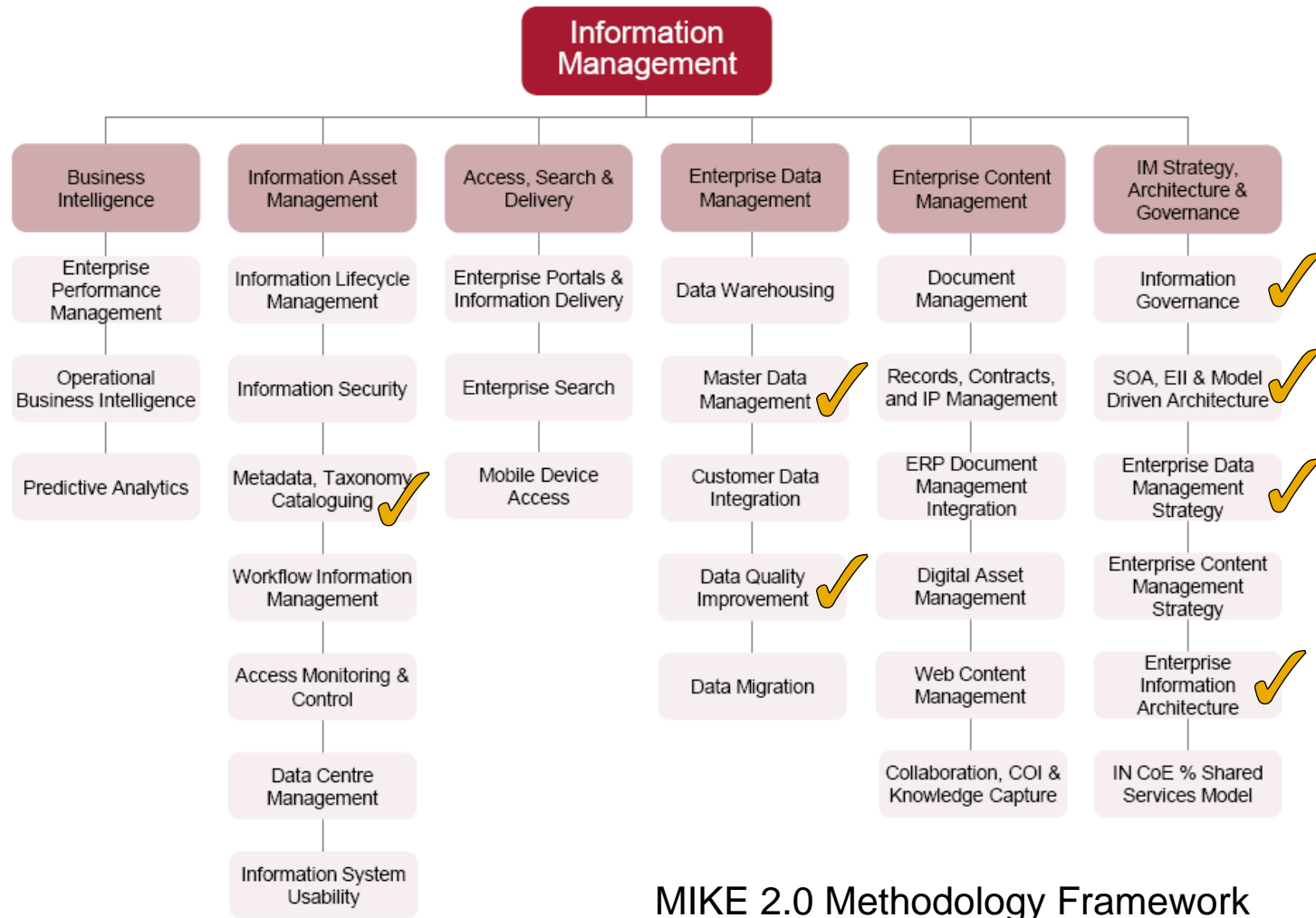
Current Initiatives – Data Driven Model Based Predictive Analysis (what it tells us)



Intelligent Operations



Where do Industry Standards come in ?



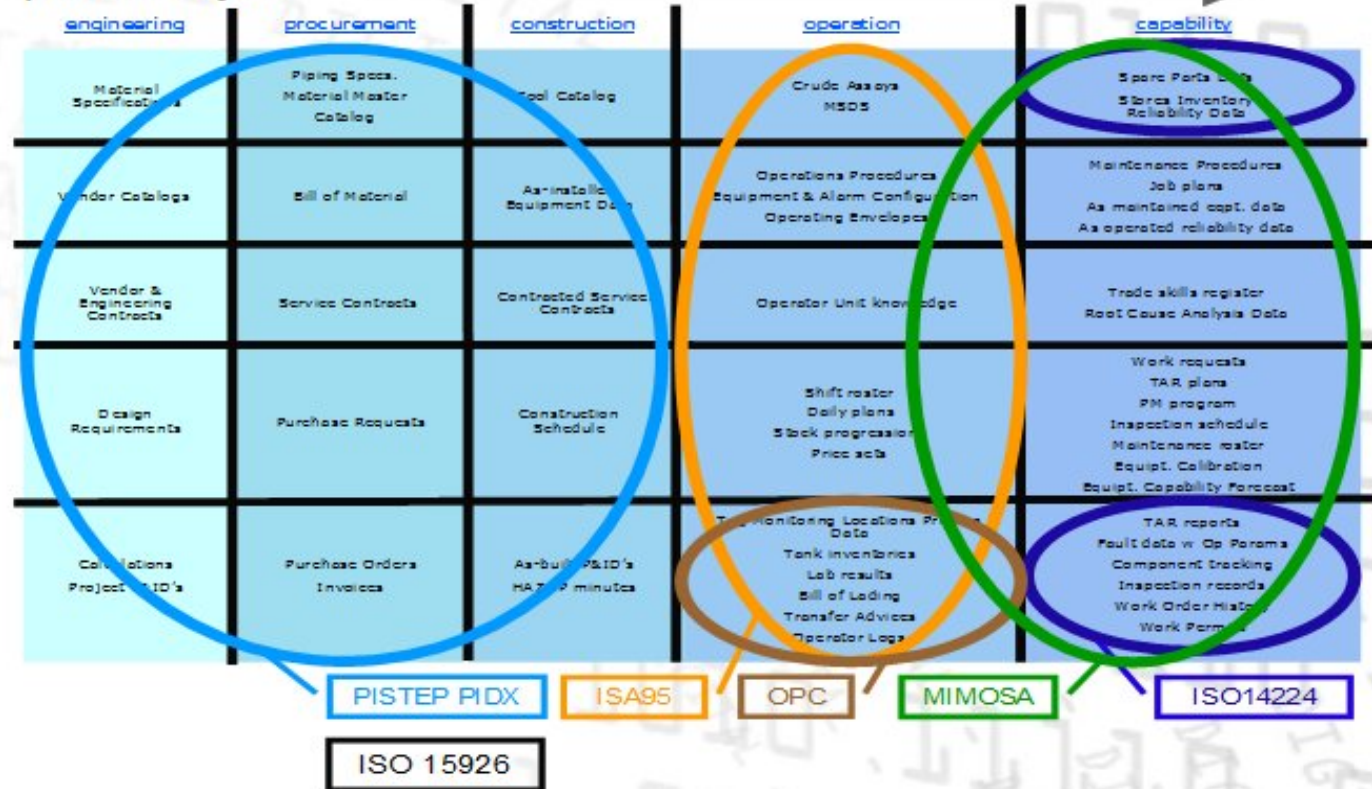
MIKE 2.0 Methodology Framework

What standards ? where?

Reproduced with permission from BP

bp data model map

plant lifecycle



ISO 15926 is a standard about interoperability in the process industry. An important part of it is the Reference Data library, which holds technical class descriptions of all the main equipment items, pipe, instruments, buildings, activities and anything else used in engineering, constructing, procuring, operating and maintaining process facilities

ISA 95 is the international standard for developing an automated interface between enterprise and control systems

OPC standards specify the communication of industrial process data, alarms and events, historical data and batch process data between sensors, instruments, controllers, software systems, and notification devices.

MIMOSA standardizes the interface between plant floor systems (including PDM) and EAM systems. The MIMOSA standard is complementary to OPC, which handles the real-time communication aspect of interfacing with plant devices.

ISO 14224 – sets the standards for collection and exchange of reliability and maintenance data for equipment

We are still working that out !

Questions!