



# Flare Solutions Limited

## Rule-based Information Management

**Finding Petroleum**  
**Digital Oilfield Event, London**  
**1<sup>st</sup> December 2011**

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**Glenn Mansfield**  
**December 2011**



**Introduction**

**What are the rules?**

**What do we mean by the rules?**

**Who defines them?**

**Case Studies**

**Benefits, Lessons and Questions**

**How do we encourage adherence to the rules?**



- Flare Solutions Limited provides consulting and information management solutions to the international oil and gas industry
- Flare was formed in 1998, by E&P technical professionals with a broad range of industry experience

## Consulting

- Information Management Consulting
- Strategy, Document conventions and Standards, Process capture and best practise development
- IM project support
- Implementation, Project and change management

## Solutions

- Web-based IM application suite
- Search tools – E&P Catalog™
- Process tracking tools – EPCat-Tracker
- Operational reporting tools



## Queen's Award for Enterprise Innovation, 2009

This is the highest award that can be given to a UK based company.  
This award was for Flare's innovative information management solutions for the oil and gas industry.



## British Computer Society (BCS) European Awards, 2006

Knowledge Management Project Award – Winner (with Shell)  
Intranet Project Award – Highly commended (with Shell)  
Content Management Project Award – Highly commended (with Shell)



## National Green Apple Environment Best Practise Awards, 2009

Silver medal.

This award was for the environmentally friendly operating practices of Flare, the staff and for deploying systems that help our clients become more efficient



- A recent article in E&P Magazine covered the open general session at this year's SPE Annual Technical Conference and Exhibition
- The topic was “Enhancing Standards and Best Practise in the Oil and Gas Industry”.
- Excerpts
  - Matthias Bischel, Shell:
    - has pushed on two fronts: “improved well design and standardized corporate training”
  - Jose Formigli, Petrobras:
    - culture “begins with the top management”, need to “learn from experience”
  - William McArthur, Director of safety and mission assurance, NASA
    - “Our safety process grew out of a lot of very, very painful and public experiences...”

# NASA: Why people make mistakes

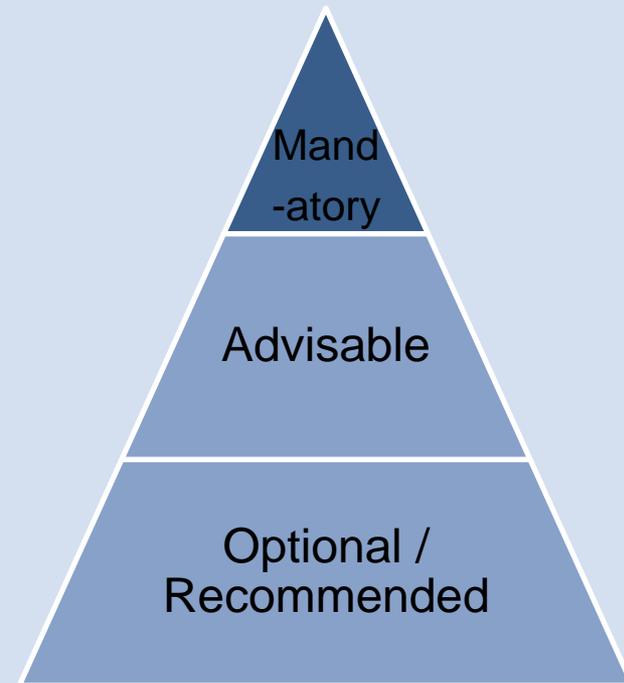


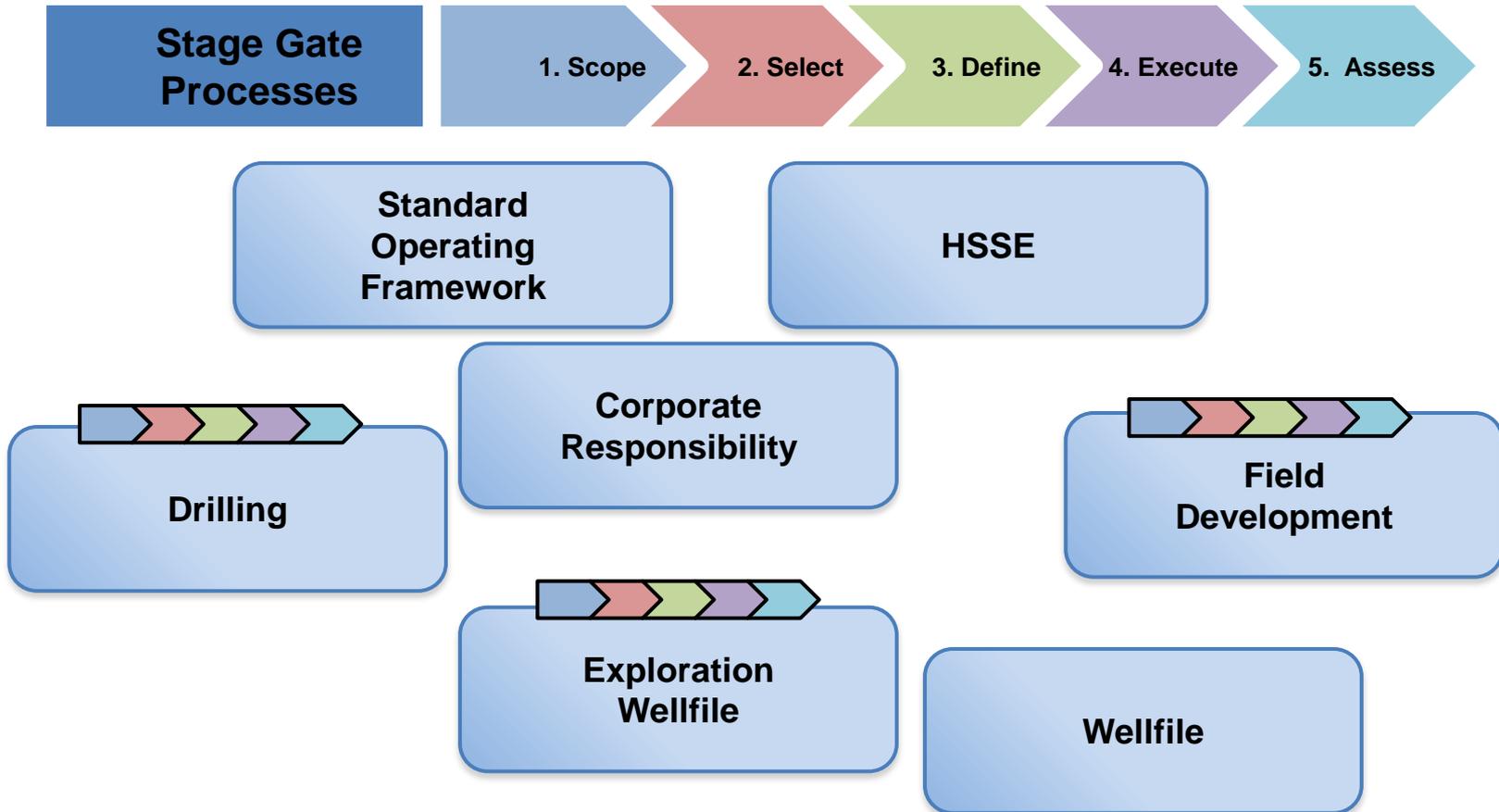
- William McArthur, NASA, On why people make mistakes
  - Overconfidence
  - Schedule pressures
  - Budget pressures
  - Highly complex systems
  - Normalization of deviance
    - standards are incrementally subverted over time without consequence, or with reward
- Define – Monitor – Maintain
- The article goes on to ask
  - “But what is best practise in the industry? What standards should be employed?”
- These are the rules!
  - We achieve this through management systems

# What do we mean by the rules?



## Management Systems

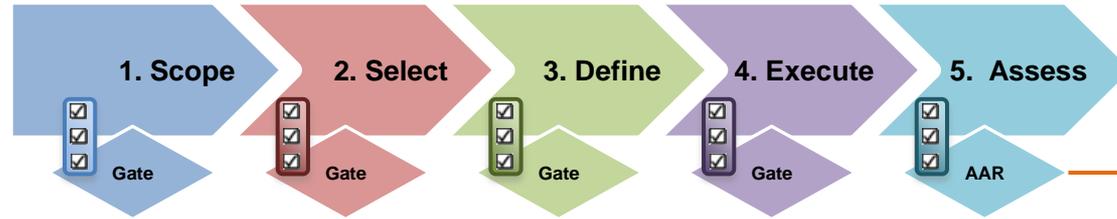






## Audit Trail

### Stage Gate Processes



Policies

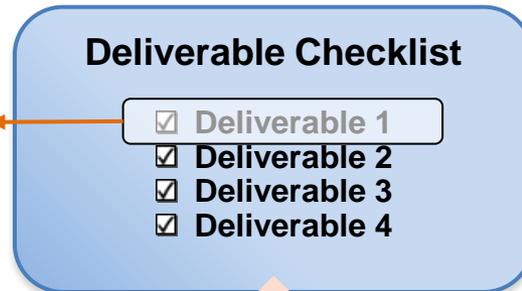
Procedures

Templates

Examples

External Standards

Ownership

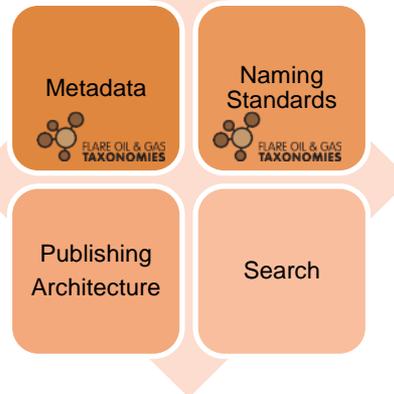


Lessons Learned

Incidents

MoC /  
Dispensations

Actions



### Stakeholders

Best practise authors (designers of the rules)  
Management (governance, metrics)  
IM support staff (publishing, custodianship)  
Records management (legal retention, security)

Technical professionals of disparate disciplines and business areas (publishing, finding content)

### The whole system is made up of rules

Stage gate rules  
Ownership and accountability rules  
Deliverables required and when  
Policy, Procedures, External guidance  
Naming standards and metadata  
Applications



- Moving from paper based solutions to electronic
- A complex environment
  - The management systems we are discussing are more than a set of documentation
  - They are collaborative, project-based activities supporting different publishers, users and usage
- Must define key deliverables for ‘typical’ project
- Must link with the various rules
- Must provide a supportive publishing environment
  - well-defined approval and publishing process
  - use a common meta-model (pick-lists)
  - stored deliverables in secure and accessible corporate stores (respecting security).
- The solution needs to help people do their jobs



**We identified five types of interface**

**Define**

**Best practise environment**

**Visualise**

**Management System Diagrams**

**Monitor**

**Process Tracking environment**

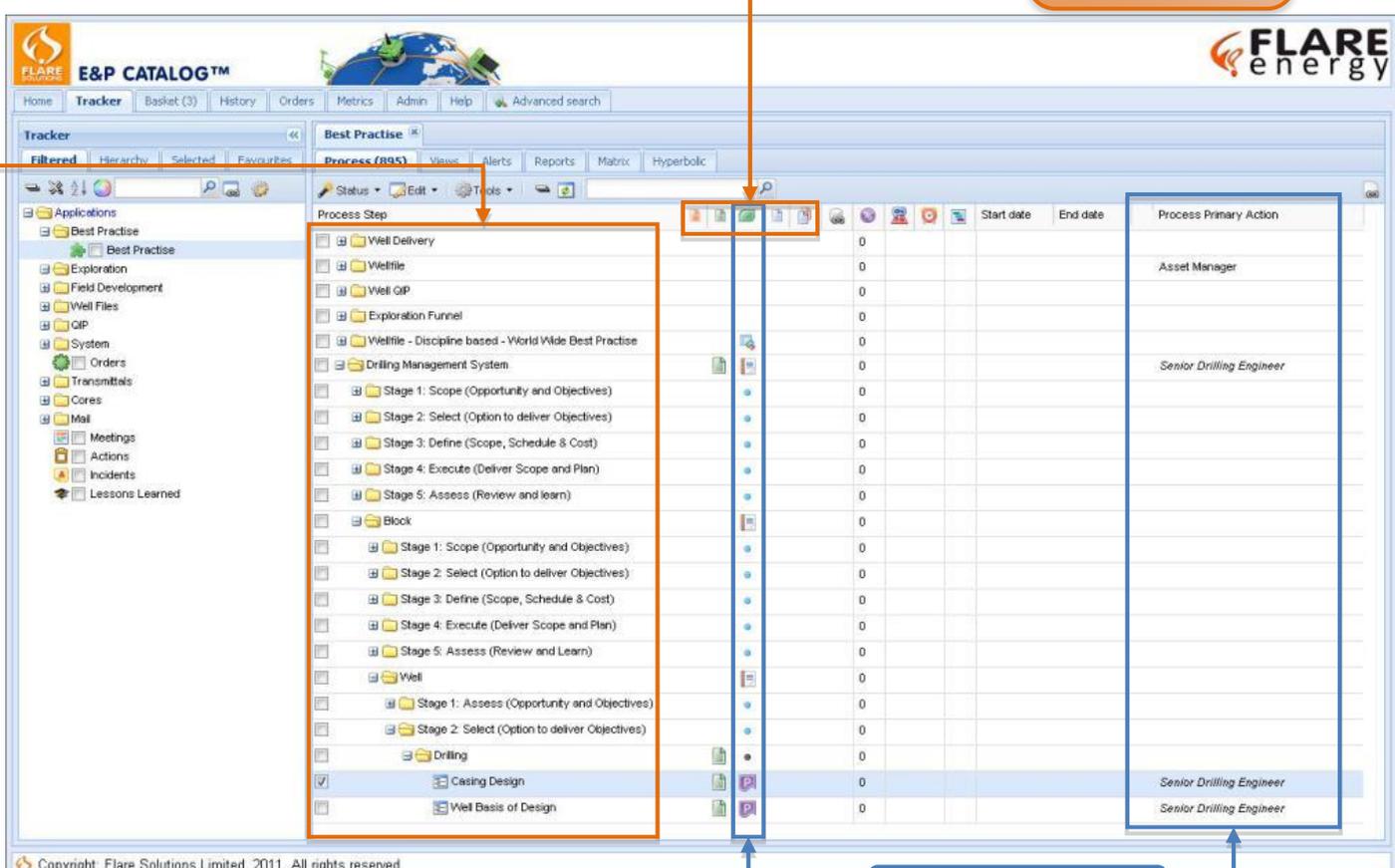
**Maintain**

**Adding new versions, feedback loops and learning**

**Search**

**Search and discovery environment**

# Define Best practise author environment

**Hierarchical Structure**

**Links to Inputs, Procedures and Outputs (deliverables)**

**Different types of step: Project headers, Activities, Deliverables etc**

**Accountability**

**FLARE energy**

**E&P CATALOG™**

Home Tracker Basket (3) History Orders Metrics Admin Help Advanced search

Tracker Filtered Hierarchy Selected Favourites

Best Practise Process (R95) Views Alerts Reports Matrix Hyperbolic

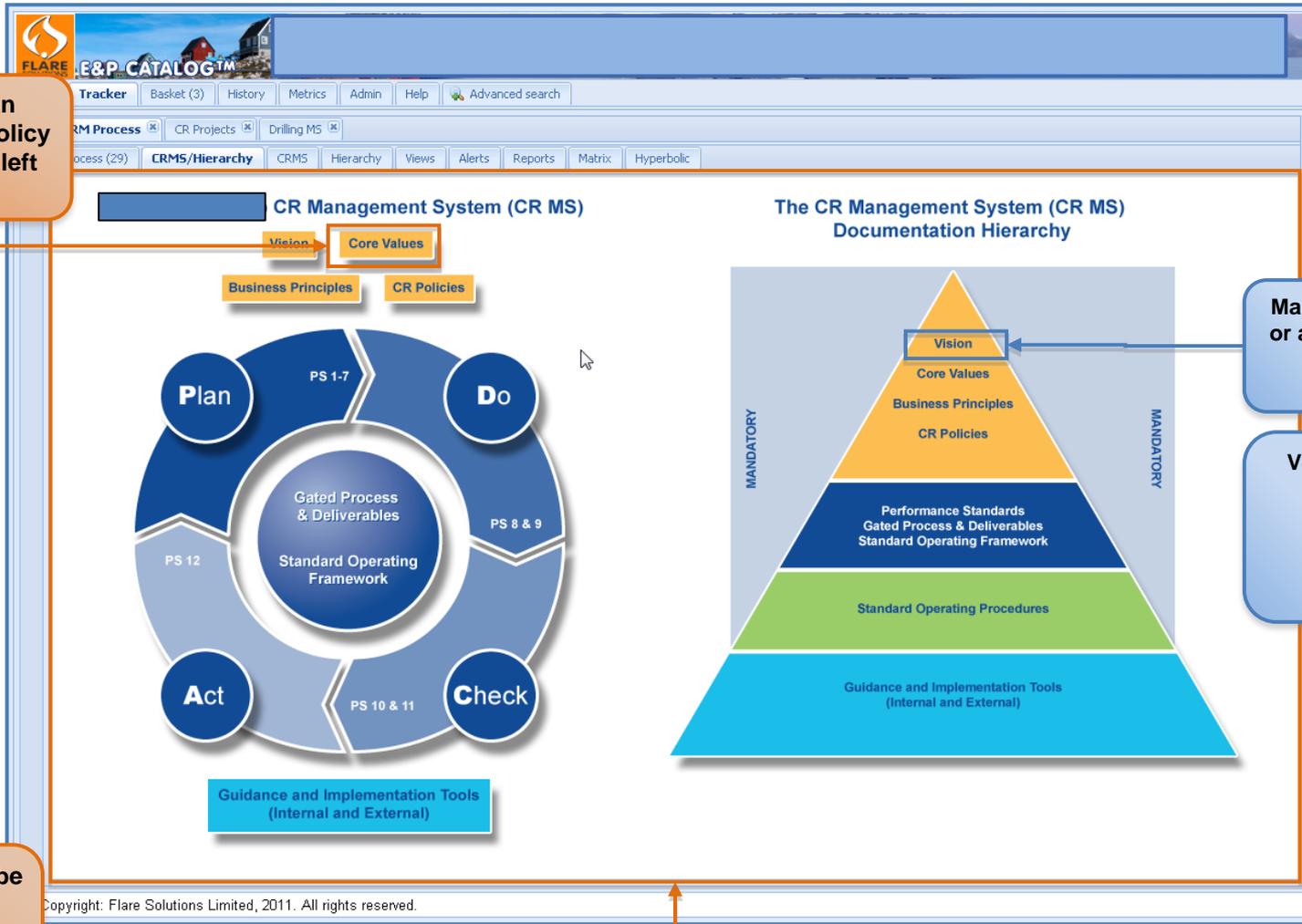
Status Edit Tools

Process Step

Process Step	Start date	End date	Process Primary Action
Well Delivery	0		Asset Manager
Wellfile	0		
Well QIP	0		
Exploration Funnel	0		
Wellfile - Discipline based - World Wide Best Practise	0		
Drilling Management System	0		Senior Drilling Engineer
Stage 1: Scope (Opportunity and Objectives)	0		
Stage 2: Select (Option to deliver Objectives)	0		
Stage 3: Define (Scope, Schedule & Cost)	0		
Stage 4: Execute (Deliver Scope and Plan)	0		
Stage 5: Assess (Review and learn)	0		
Block	0		
Stage 1: Scope (Opportunity and Objectives)	0		
Stage 2: Select (Option to deliver Objectives)	0		
Stage 3: Define (Scope, Schedule & Cost)	0		
Stage 4: Execute (Deliver Scope and Plan)	0		
Stage 5: Assess (Review and Learn)	0		
Well	0		
Stage 1: Assess (Opportunity and Objectives)	0		
Stage 2: Select (Option to deliver Objectives)	0		
Drilling	0		
Casing Design	0		Senior Drilling Engineer
Well Basis of Design	0		Senior Drilling Engineer

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# Visualise Corporate Responsibility MS

**CR Management System (CR MS)**

**The CR Management System (CR MS) Documentation Hierarchy**

**Management System or author can access and update a document.**

**Version control is maintained.**

**Links within processes are checked**

**Reader can access the policy with simple left click**

**This panel can be embedded in other applications, e.g. Intranet portal**

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Reader can access the policy with simple left click

Management System or author can access and update a document.

Version control is maintained.

Links within processes are checked

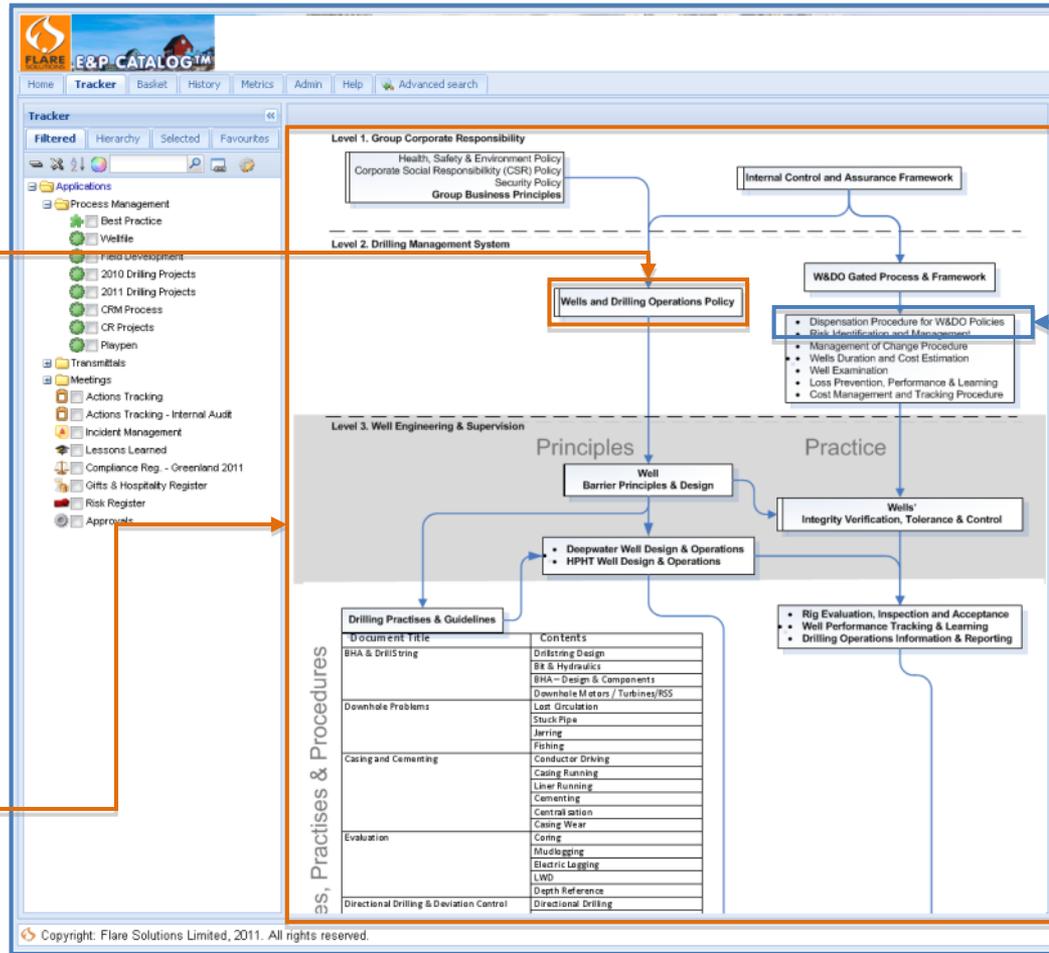
This panel can be embedded in other applications, e.g. Intranet portal

# Visualise Drilling Management System



Reader can access the policy with simple left click

This panel can be embedded in other applications, e.g. Intranet portal

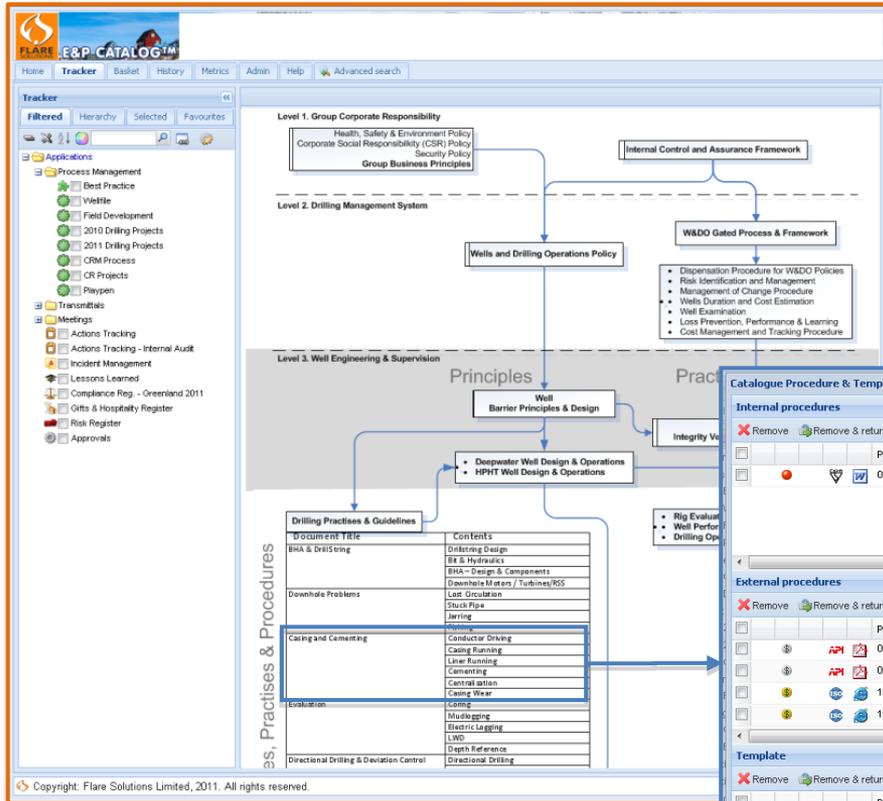


Management System or author can access and update a document.

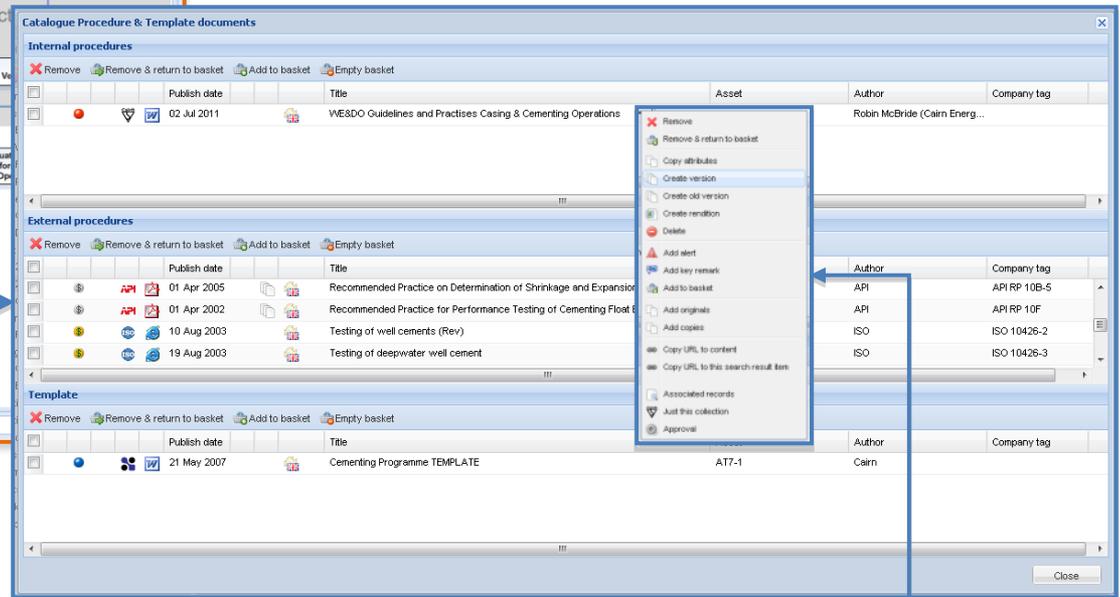
Version control is maintained.

Links within processes are checked

# Maintain Add new versions

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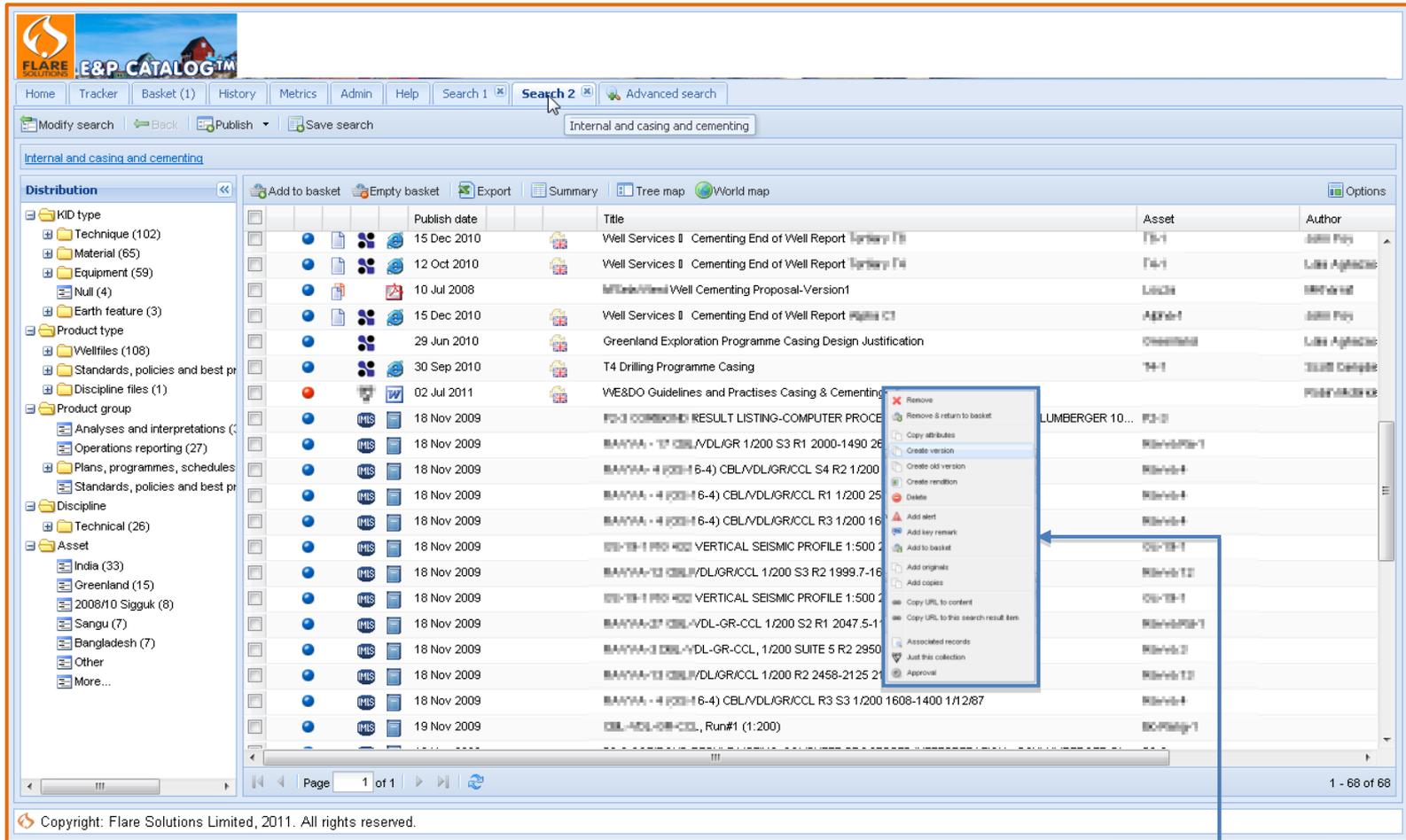


Remove	Remove & return to basket	Add to basket	Empty basket	Asset	Author	Company tag
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	02 Jul 2011	WE&DO Guidelines and Practises Casing & Cementing Operations	Robin McBride (Cairn Energ...
<b>External procedures</b>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	01 Apr 2005	Recommended Practice on Determination of Shrinkage and Expansion	API API RP 10B-5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	01 Apr 2002	Recommended Practice for Performance Testing of Cementing Float	API API RP 10F
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10 Aug 2003	Testing of well cements (Rev)	ISO ISO 10426-2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19 Aug 2003	Testing of deepwater well cement	ISO ISO 10426-3
<b>Template</b>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21 May 2007	Cementing Programme TEMPLATE	A17-1 Cairn

Access to internal and external procedures and guidelines.

Links to templates

Version control and authoring from here

The screenshot displays the FLARE E&P CATALOG™ search interface. The search results are filtered for 'Internal and casing and cementing'. A context menu is open over a result, showing various actions such as 'Remove', 'Copy attributes', 'Create version', 'Add alert', and 'Approval'. The interface includes a navigation bar with 'Home', 'Tracker', 'Basket (1)', 'History', 'Metrics', 'Admin', 'Help', 'Search 1', 'Search 2', and 'Advanced search'. A left sidebar shows a 'Distribution' tree with categories like 'KID type', 'Material', 'Equipment', 'Product type', 'Product group', 'Discipline', and 'Asset'. The main table lists search results with columns for 'Publish date', 'Title', 'Asset', and 'Author'. The bottom of the interface shows 'Page 1 of 1' and '1 - 68 of 68'.

Same version control and authoring capabilities available from general search results

# Monitor Process / Stage gate tracking view



**2011 Drilling Projects**

Process (373) Views Alerts Reports Matrix

My processes By step type Transmittals Filtered

**A.N.Other Country – Drilling Management System**

Time Costs Estimates	Class 5 Well Time & Cost Estimates	Class 4 Well Time & Cost Estimates	Class 3 Well Time & Cost Estimates	Class 2 Well Time & Cost Est...	Class 1 Well Time & Cost Varianc...
Project Management/Progression	SGD Inventory Screening Opportu...	PEP Project Execution Plan	PEP Project Execution Plan	PEP Project Execution Plan	PEP Project Execution Plan
Risk Management	PRR Project Risk Register	PRR Project Risk Register	PRR Project Risk Register	PRR Project Risk Register	PRR Project Risk Register
Drilling	PRR Project Risk Register	PRR Project Risk Register	PRR Project Risk Register	PRR Project Risk Register	PRR Project Risk Register
HSSE	TCR Traffic Survey and Collision IBA Impact Benefit Agreement PRR Personal Protective Equipme...	HSP HSSE Plan HSP Environmental Studies Plan HSP Environmental Management ... HSP Environmental Monitoring an... PAP Project Audit Plan ERP Emergency Response Plan WMP Waste Management Plan PCS Public Consultation and Diact... OSR Oil Spill Response Plan	LOG Logistics Operations Plan MEM Material Equipment Manifest...	LOG Logistics Operations Plan MEM Material Equipment Manifest...	LOG Logistics Operations Plan MEM Material Equipment Manifest...
Logistics	LOG Logistics Operations Plan	LOG Logistics Operations Plan	LOG Logistics Operations Plan	LOG Logistics Operations Plan	LOG Logistics Operations Plan
Examination and Compliance	INCR HSE Compliance Register	NRM Regulatory Notice of Rig Mo...			
<b>Block 1</b>					
HSSE	SSA Social Impact Assessment	EIA Environmental Risk and Impac...	OSR Oil Spill Response Plan	DEP Demob Plan	
<b>Well 1</b>					
Drilling	DCR Document Control Register	CDD Casing Design BOO Basis of Design	SSA Site Survey Assessment RAL Well Location Risk Assessm... RWVP Relief Well Plan DPP Drilling Fluids Program DSP Directional Drilling & Survey ... CEM Cement Program WCB Well Control Bridging Docu... RMP Procedure for Rig Move WDP Well Drilling Programme DST Programme	EDW End Of Well Drilling Report LLS Well Summary & Lessons Su...	
Geology	WLP Well Proposal	PDD Well Pre-drill data Package PPP Pore Pressure Prognoses FTP Formation Temperature Prog...	GPR Geological Programme SSR Site Survey Report DLR Drilling Location Request GMM Geologic Montage	MLR Mud logging End Of Well Re... CWR Cuttings End Of Well Report LWR LWD End Of Well Report GRR Coring End Of Well Report WLR Wireline End Of Well Report BSR Biostratigraphy End Of Well ... GCR Geochemical End Of Well R... PWR Petrophysics End Of Well R...	
Events	SGD Gate 1 - Decision	DCP Design Challenge & Planning ... SGD Gate 2 - Decision	WPR Well Examination and Peer ... DWP Drill Well on Paper SGD Gate 3 - Decision	AAR Well After Action Review a...	
Examination and Compliance		ADP Application for Chemical Per... CPT Chemical Permit	WCS Well Construction Sheets DCC Well Design and Constructi...		

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Hover over to expand the Rosette indicator

**Inputs:**  
What information was used to create the output?

**LINKS**  
Internal, Policies, procedures, standards, guidelines and templates.

**Outputs:**  
What was created?

**Alerts**

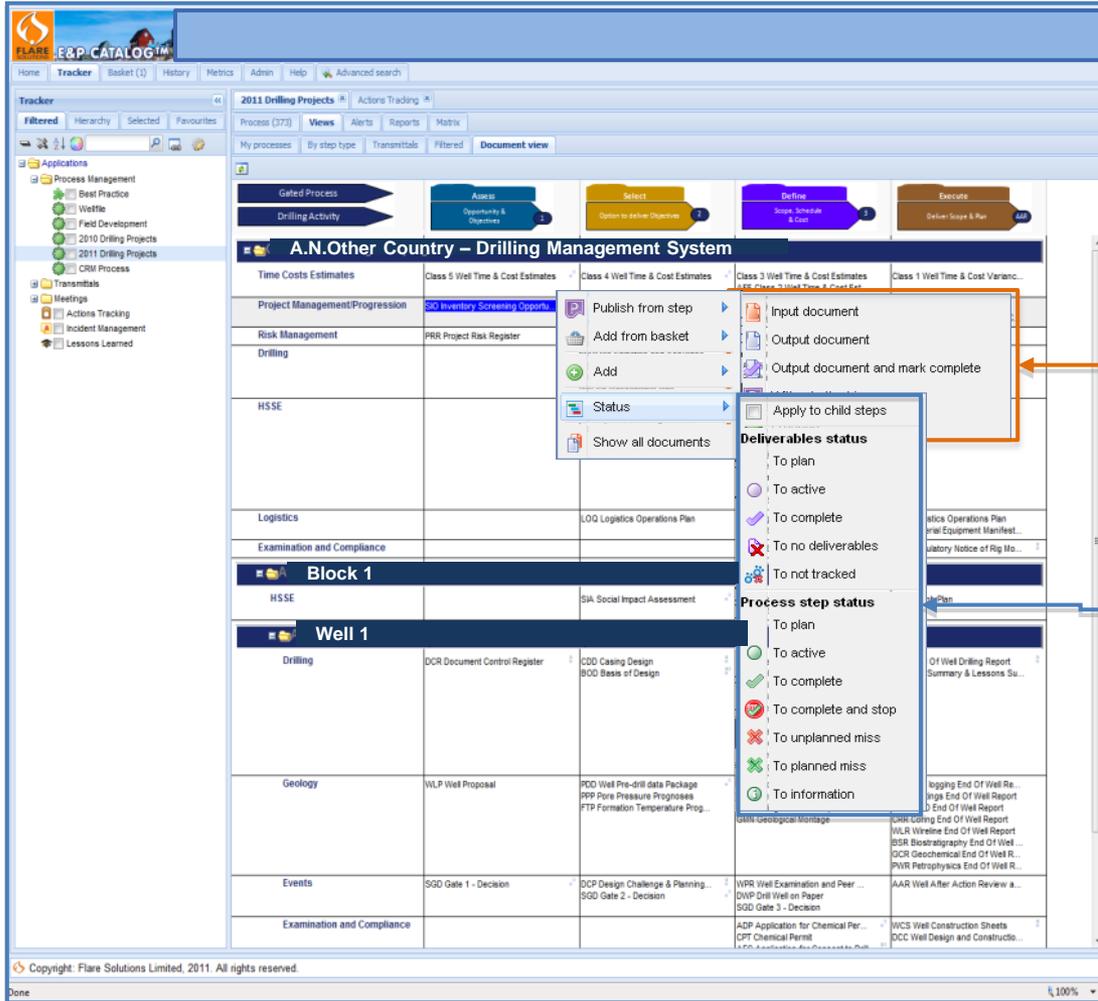
**Key Remark**

**Lessons Learned:**  
Create  
Track  
Link, Attach  
Auto-attribution

**Incidents**  
Create  
Track  
Link, Attach  
Auto-attribution

**Actions**  
Create  
Track  
Link  
Email handling

# Monitor Publishing environment

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Publish content with inheritance of Keywords/Metadata

This inheritance is critical to the success of the overall system.

Sets: Asset, Project phases, Context, Records management etc.



Supports serendipitous searching

Track process steps, in terms of the process and the information



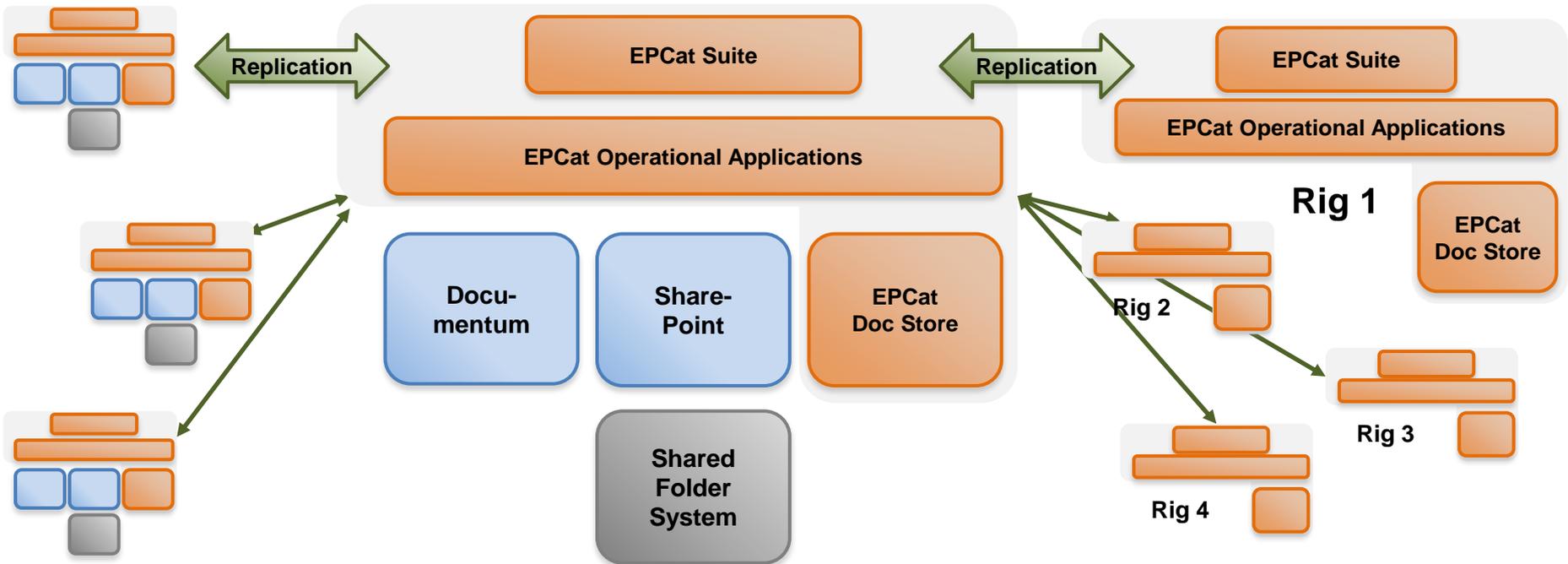


- Multi browser based application suite
- No client install required

## Other Centres

## Corporate Centre

## Rigsite



- Local access to Search metadata
- Global pointers to content

- EPCat Index points to content in repositories
- Copy/move/migrate content
- Flare Taxonomies and EPCat Search capabilities

- Rigsite access to Procedures, Guidelines and Operational Tools
- Local Publishing Environment
- Local performance!



- Management can define and maintain rules
- Rules can be deployed quickly
- Users can follow the rules
- Management can monitor adherence to the rules
- Feedback loops allow users to interact and improve systems:
  - Management System
  - Lessons Learned
  - MoC/Dispensations
- Feedback helps to encourage ownership and responsibility and avoid complacency
- Publishing
  - The information (deliverables) are added to the 'corporate memory' with full, standard metadata
- Searching
  - General language search
  - Minimise overload
  - Serendipitous
- Visualisation
  - Easy to navigate/relate to systems
  - Different visualisations required
    - By user communities
    - By management system type - Drilling Management, Corporate Responsibility Management, Exploration Wellfile Management

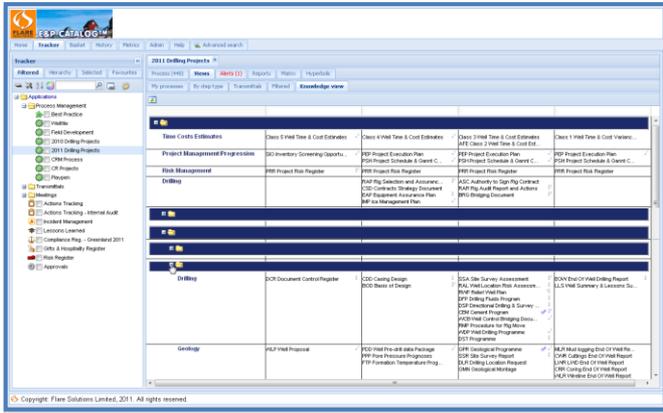


# Drilling Management System

Same information – different view to retrieve

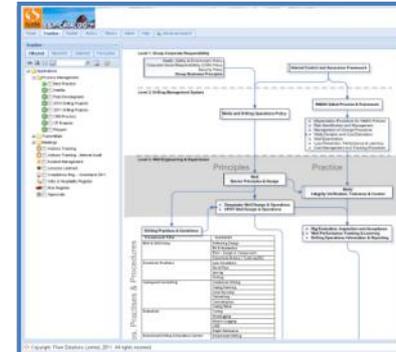


## The Drilling team



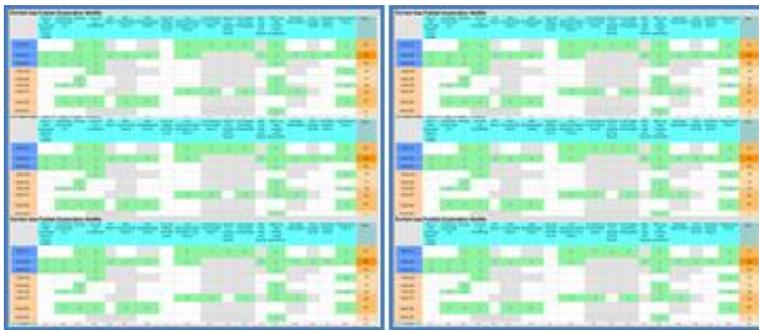
Single Web ‘Dashboard’ for all drilling engineering team members. Staff one click away from the view/information

## Drilling Management/Best practice Management System overview



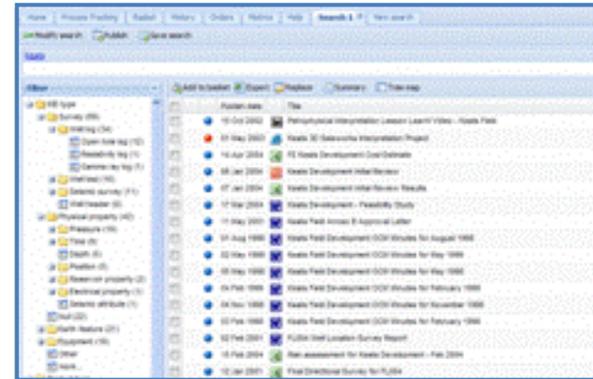
‘Dashboard’ oversight for all relevant information Linked to both simple maps and GIS systems. Make Faster decisions

## Information Management Staff



‘Dashboard’ across projects to manage ‘drilling’ portfolio Spot process busts early on – same time and money

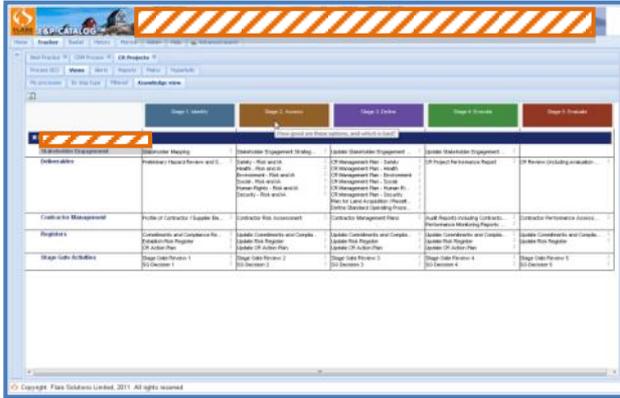
## Everyone: Integrated ‘Google’ like search



Type terms, see results like ‘Google’. Left hand menu also shows the contents of your search by Document Type, Well, Project etc



## The HSSE Team



	Stage 1: Health	Stage 2: Safety	Stage 3: Environment	Stage 4: Social	
<b>Operational Management</b>	Operational Health Procedures / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Operational Engagement Strategy Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Operational Engagement Strategy Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Operational Engagement Strategy Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Operational Engagement Strategy Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H
<b>Contractor Management</b>	Procedures / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Procedures / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Procedures / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Procedures / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Procedures / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H
<b>Regulatory</b>	Compliance and Conformance to Regulation / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Compliance and Conformance to Regulation / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Compliance and Conformance to Regulation / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Compliance and Conformance to Regulation / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H	Compliance and Conformance to Regulation / Hazard Review and O2 Safety - Risk and H Health - Risk and H Environment - Risk and H Social - Risk and H Security - Risk and H
<b>Stage Gate Activities</b>	Stage Gate Review 1 (30 December)	Stage Gate Review 2 (30 December)	Stage Gate Review 3 (30 December)	Stage Gate Review 4 (30 December)	

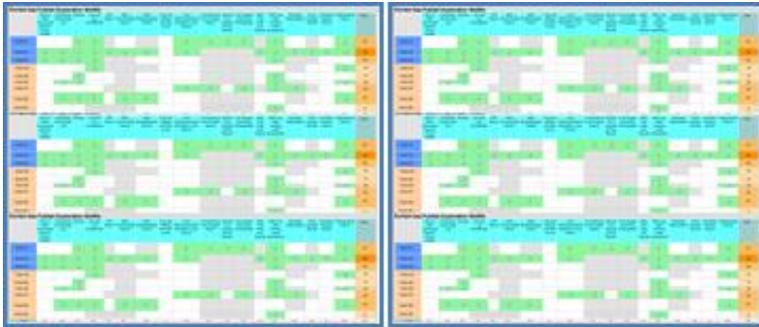
Single Web 'Dashboard' for all drilling engineering team members.  
Staff one click away from the view/information

## Best practice / Authoring Management System overview



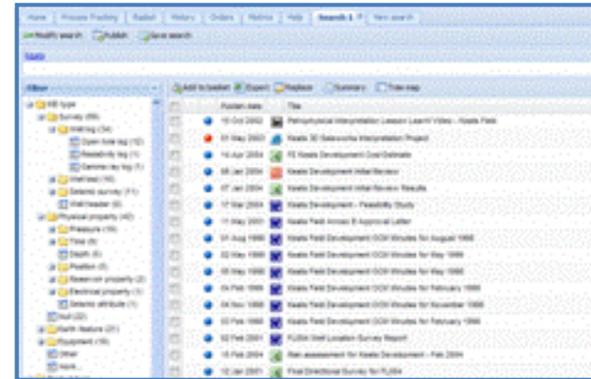
'Dashboard' oversight for all relevant information  
Linked to both simple maps and GIS systems. Make  
Faster decisions

## Information Management Staff



'Dashboard' across projects to manage 'drilling' portfolio  
Spot process busts early on – same time and money

## Everyone: Integrated 'Google' like search



Type terms, see results like 'Google'. Left hand menu also shows the  
contents of your search by Document Type, Well, Project etc





- Ensure that the project or system has 100% management support
  - Start with projects that get management attention
  - Solve management problems
- Think about how to influence behaviour
  - Behavioural science
  - Carrot vs. stick
- Make sure that your IM initiatives connect with the business
  - Connecting within IM is one thing
  - Making the business understand why it helps them is another
  - **WIIFM?**
- You need effective consultation with the business
  - Helps later with buy-in
  - Ensures solutions are as required
- People are not good at extrapolation
  - Prioritise stakeholders
  - Provide discipline and/or focused examples
- Rules have different purpose and uptake
  - Some rules are implemented automatically
  - Others are not rules, more guidelines
- Include appropriate feedback mechanisms
  - Best practise, Lessons, Incidents
  - Management of change, Dispensation
- Make things as simple as possible, but no simpler
  - Re-use components
  - Provide simple visual aids
  - Keep the rules as simple as possible
- Developing rules
  - Make the rules as simple as possible
  - ensure they are communicated
  - ensure they are up to date and managed
  - ensure they are accessible when needed
  - in a format that is recognisable



### What are the rules?

- Checklists
- Procedures
- Legislations
- Guidelines
- Templates
- Policies

### Who defines them?

- Principal engineers
- Best practise authors
- The company
- Industry bodies
- Governments

### How do we encourage adherence to the rules?

- Embed the rules as part of the day to day operations
- Make it as easy as possible to follow the rules
- Embed beneficial functionality
- Provide feedback mechanisms
- Provide visualisations that assist users to navigate
- Ensure that users are aware that managers are watching
- Make sure managers monitor and respond to deviations



Thank you for listening

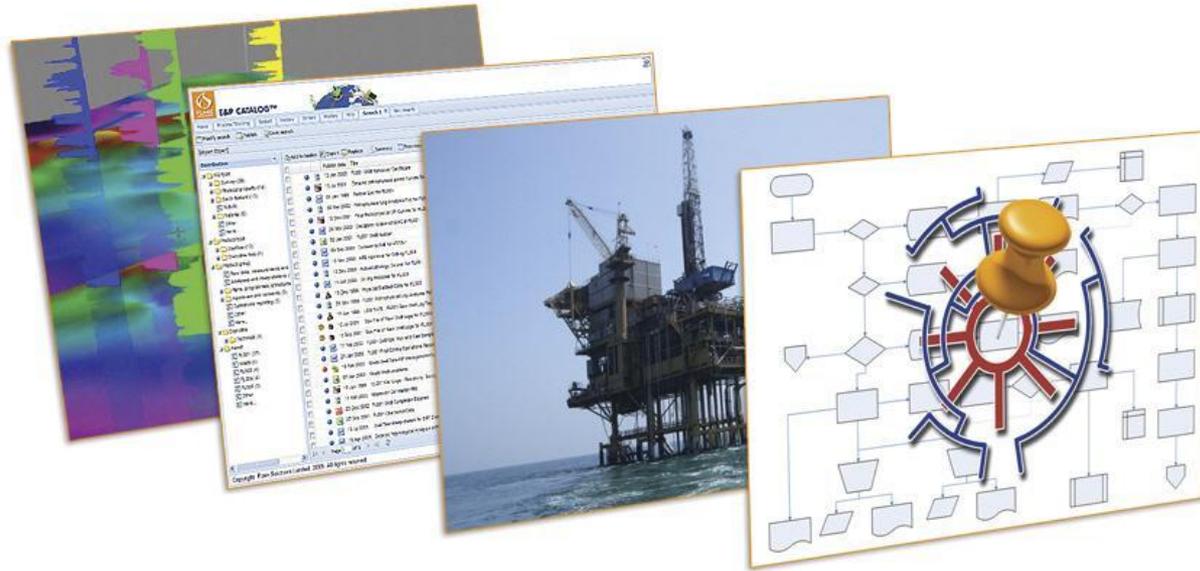


Any Questions?



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***Using intelligence to pinpoint your oil and gas information***

# Me and my favourite gadget!



# Flare's Taxonomies can improve your search results by up to 75% without the need for new technology



**If you are an oil and gas professional working with:**

- Microsoft FAST, Google Search Appliance, HP Autonomy or Lucene
- SharePoint, Livelink, TRIM, Documentum or FileNet
- Physical Library Systems e.g. e-Search, ESRI ArcGIS 10 (Layer Indexing)
- Wellfiles, Legacy content clean-up or Retention and regulatory management systems
- Lessons Learned, Communities of Practise, Offsite Catalogues or external content

**then Flare can help.**