

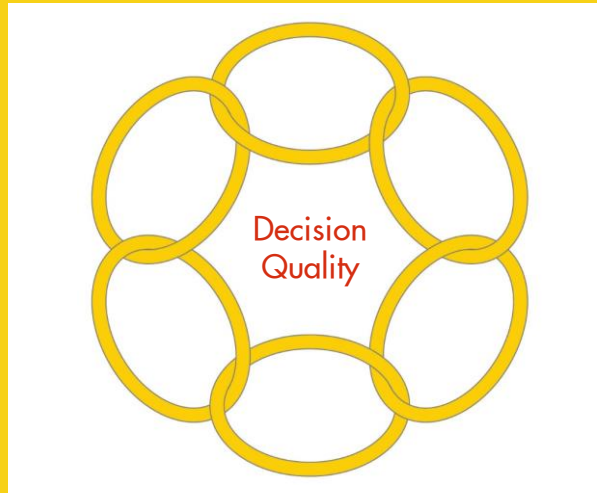


## MAKING QUALITY DECISIONS

What will it take to increase the use of Decision Analysis/  
Decision Quality?

Presentation to the SPE London Section  
30 May 2017

**Pete Naylor**  
Senior Decision Quality Consultant  
Opportunity Value Assurance



## Setting the scene

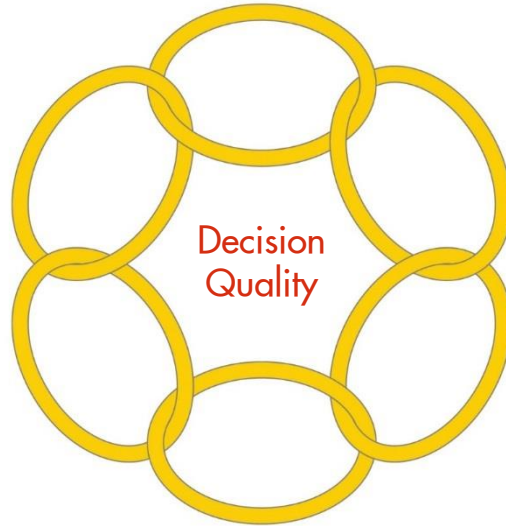
- Reminder about Decision Analysis/Decision Quality (DA/DQ)
- Who knows what?

## Presentations

- Making decisions can be hard & what happens when the stakes are high?
- Event-based risk management: An aid to decision-making in oil & gas developments

## Discussion

- Some potential barriers
- How can we increase use of DA/DQ?
- What information is available?



## Decision Quality (DQ)

- A **dashboard** to test whether you have undertaken sufficient analysis to justify making a decision



# DQ DASHBOARD WITH DA WORKFLOW

## Decision Analysis (DA)

- A **process** to help stakeholder optimise decisions in the face of risks & uncertainties



# MAKING QUALITY DECISIONS: WHY?

## Benefits

- Takes work out of the system by doing enough DA to have satisfactory DQ, but no more
- Enables teams to move at a fast pace through project decision gates
- Decisions are only made when the level of DQ is sufficient

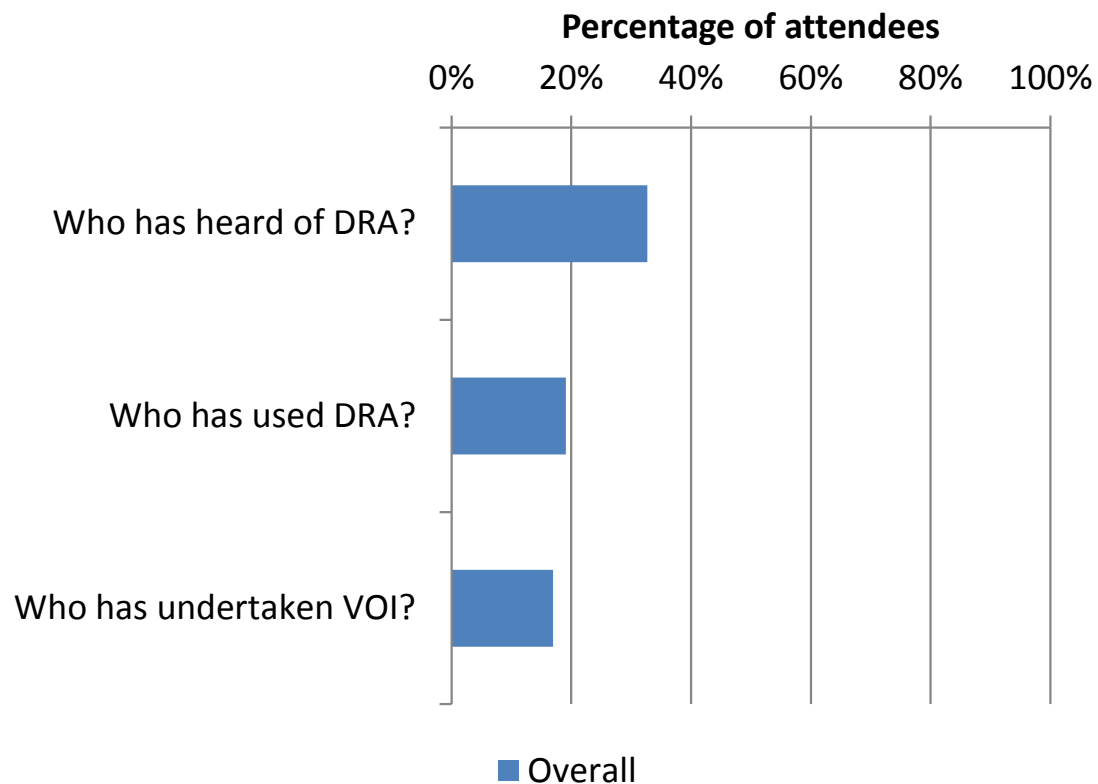
DA/DQ is about making optimised decisions not just satisfactory ones

# WHO KNOWS WHAT?

## Straw poll statistics

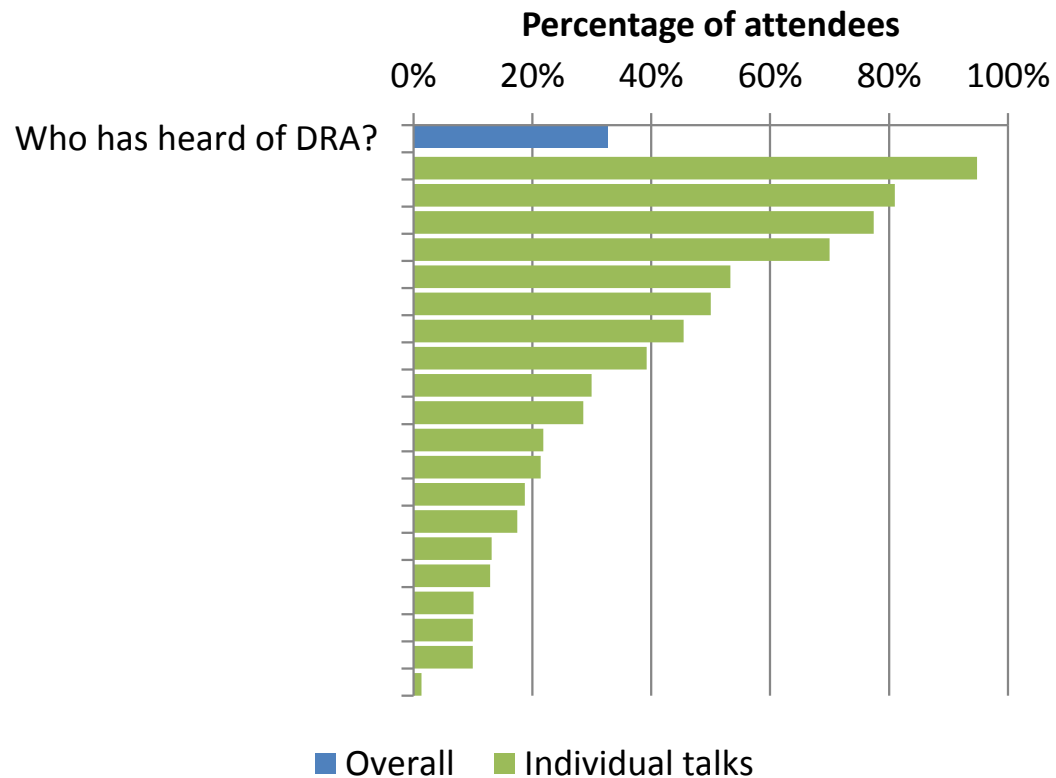
- 1,051 attendees
  - Maximum attendance 149
  - Minimum attendance 15
- 20 presentations
- 16 countries
- 1 straw poll
- 3 questions

# OVERALL RESPONSES

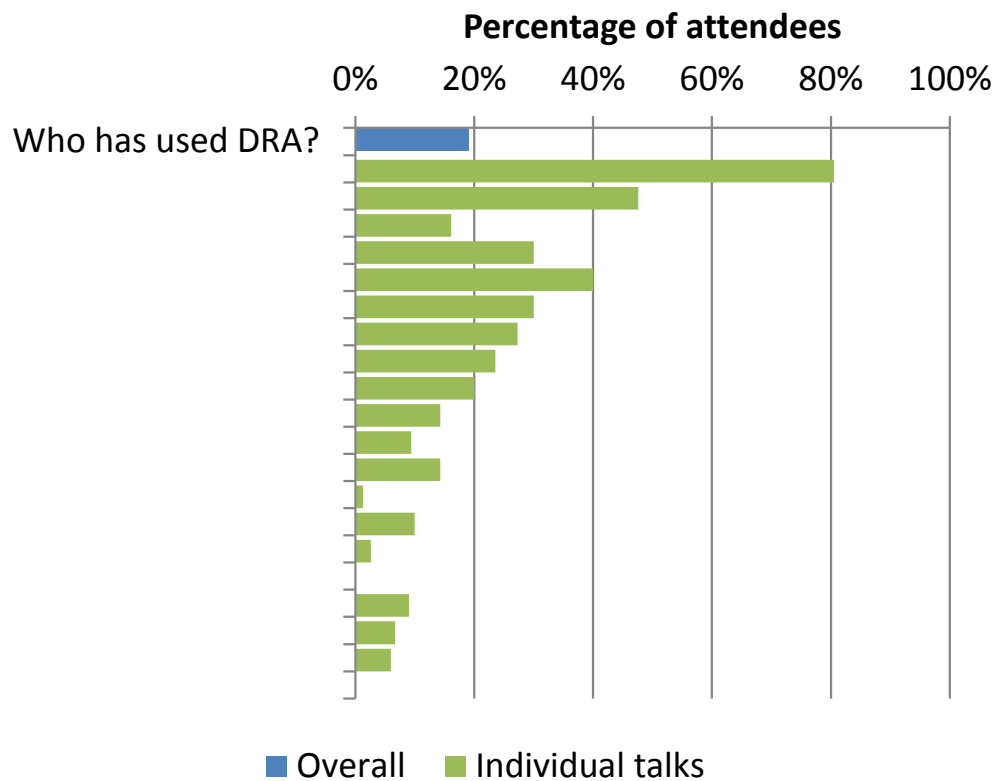




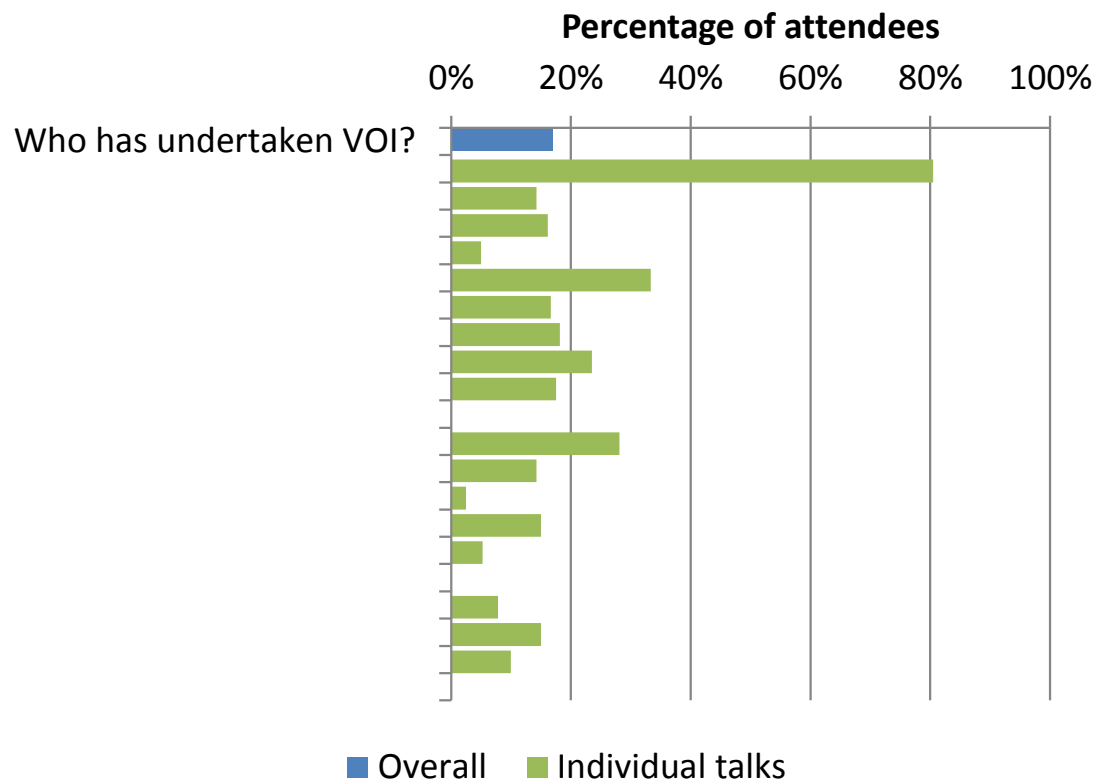
# WHO HAS HEARD OF DRA?



# WHO HAS USED DRA?



# WHO HAS UNDERTAKEN VOI?



# DETAILED RESPONSES

Location	% of attendees			Comments
	Who has heard of DRA?	Who has used DRA?	Who has undertaken VOI?	
<b>Overall</b>	<b>33%</b>	<b>19%</b>	<b>17%</b>	
London, UK	95%	81%	81%	
Farmington, USA	81%	48%	14%	
Rio de Janeiro, Brazil	77%	16%	16%	
Lima, Peru (am)	70%	30%	5%	
Dublin, Ireland	53%	40%	33%	
Madrid, Spain	50%	30%	17%	
Mexico City, Mexico	45%	27%	18%	
Aberdeen, UK	39%	24%	24%	
Stavanger, Norway	30%	20%	18%	
Macaé, Brazil	29%	14%	0%	
Miri, Sarawak	22%	9%	28%	
Campania, Romania	21%	14%	14%	
Lima, Peru (pm)	19%	1%	3%	
Budapest, Hungary	18%	10%	15%	
Duliajan, India	13%	3%	5%	
Manila, Philippines	13%	0%	0%	~80% were students
Hammamet, Tunisia	10%	9%	8%	Oil & Gas Summit
Seria, Brunei	10%	7%	15%	
Dhaka, Bangladesh	10%	6%	10%	
Edinburgh, UK	1%	0%	0%	Actuary Conference

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# An introduction to decision quality

Andrew Tweedie, Nexen



*A New Energy*



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# **Sharing Experience High Stakes decision making & How DQ helps getting commitment to action**

**Peter Wood – Learning Advisor  
Shell Project Academy**

# A Country First + Shell technology demonstrator

## Cost-effective platform designed & scoped for field size

Development concept (>\$2.5bln)

- Tension Leg Platform
- 27k tonnes
- Production 60Kbl/d
- 24 slots – 11 Prod + 6 Water Injection + 7 Flexible (11P/6WI/7F)

### Reservoir(s)

- Discovered in 2006
- 2 x Stacked Sand Units (Complex)
- 500m water depth ; 100km offshore
- ~50kms to host oil hub for processing



3D print model generated at home

### Operator

- 35% Working Interest
- Sanctioned 2012

### Innovation & Technology

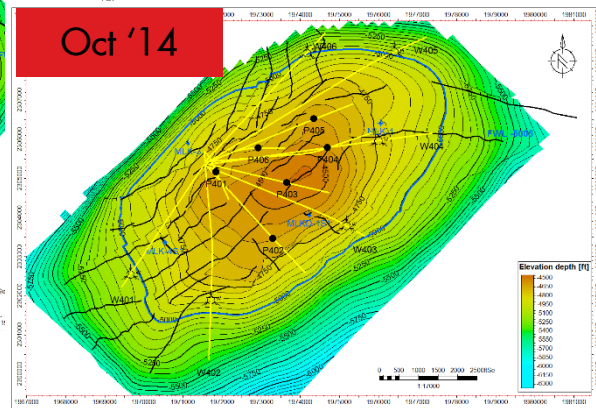
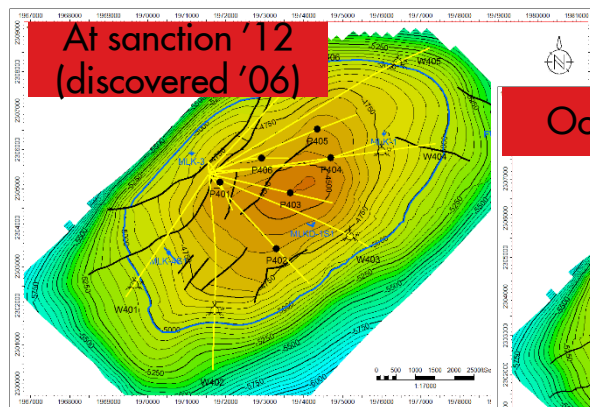
- (1<sup>st</sup>) Tender assisted drilling
- (1<sup>st</sup>) Top Hole Drilling Vessel
- (1<sup>st</sup>) Multi use risers
- (1<sup>st</sup>) Designed and Fabricated in country
- Re-cycle Tendon Support Bouy design
- Record breaking Superlift
- 3D Wide Azimuth (WAZ) Seismic



# Expect the unexpected

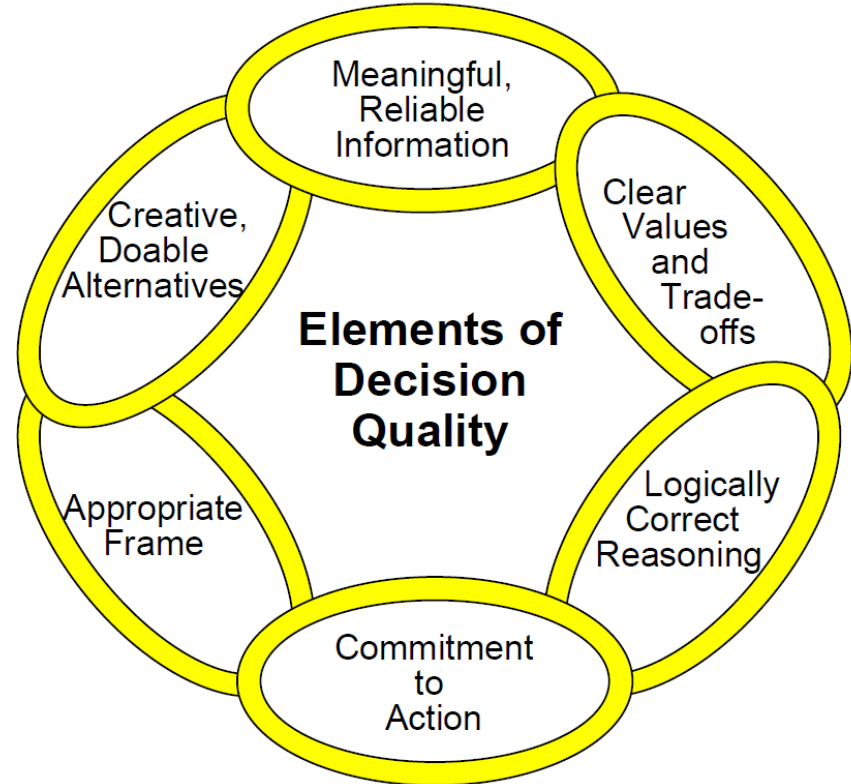
## Oct'14 - New seismic dramatically improves the subsurface insight

- At about the 40% construction milestone  
~ 2yrs to first oil
- More faulting = Significant impact :
  - More production wells required
  - Water injection requirements under question.
- Could the Decision Quality approach enabled alignment on options and way forward ?

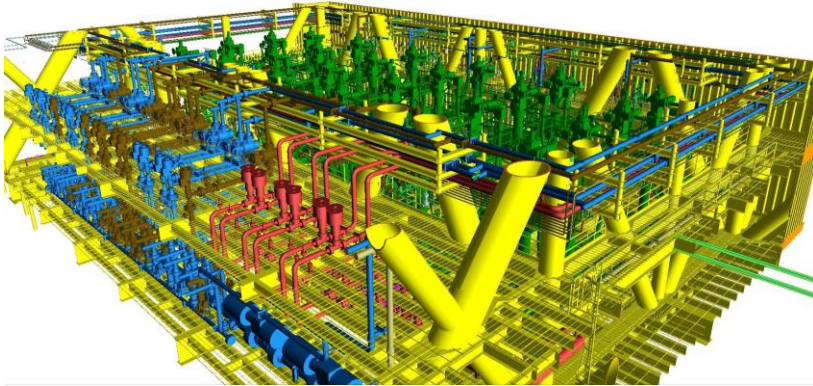


## To help get commitment to action – we applied DQ

- Helped us react quickly when the new information became available.
- Helped us dialogue internally and externally on the way forward.



# The high stakes decisions – Our Alternatives



## Some Facts

1. TLP has 24 Slots: 11P/6WI/7F
  - a. 11 Producers (11P)
  - b. 6 Water Injectors (6WI)
  - c. 7 Flexible (7F) - Piping layout designed as Producers or Water injection. No piping installed. All Flexible slots require piping to be installed offshore.
2. Phase 1 Drilling : 11P + 6WI

# The high stakes decisions – Our Alternatives

1

First Oil Date in  
2yrs time -> 2016

Hold or Slip  
?

2

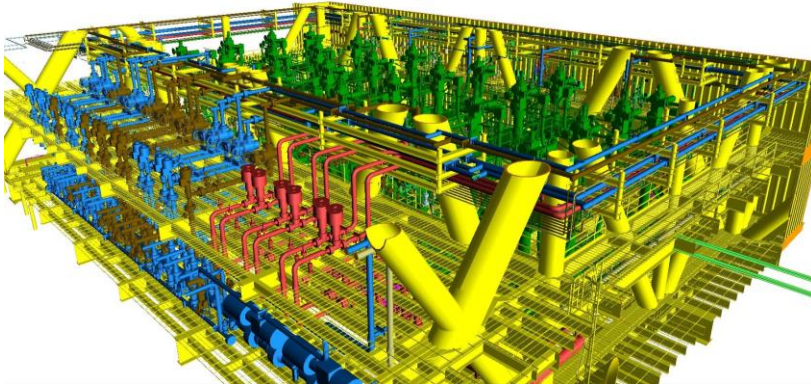
More production  
wells required.

How many ?  
0 to 13

3

Water injection  
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How many  
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6 to 0



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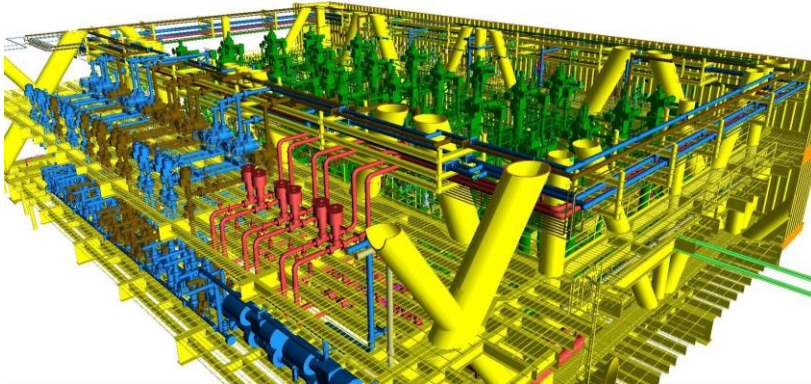
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= On time + On budget

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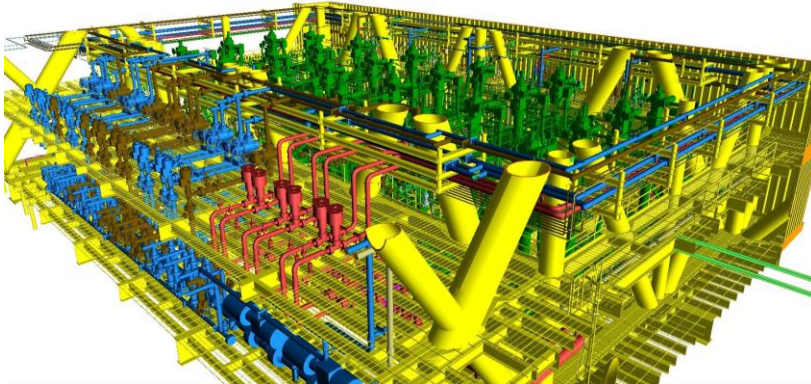
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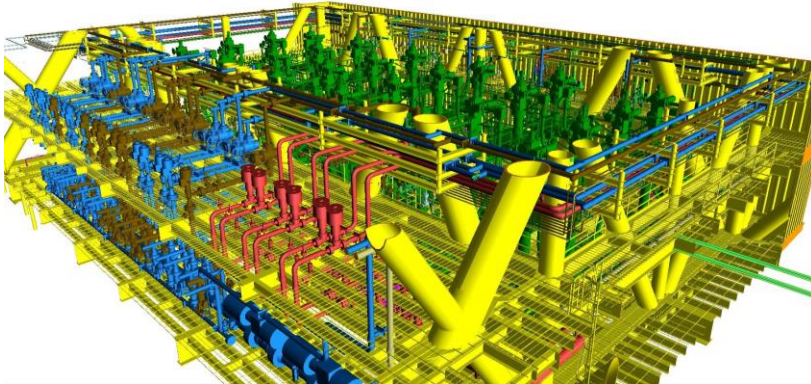
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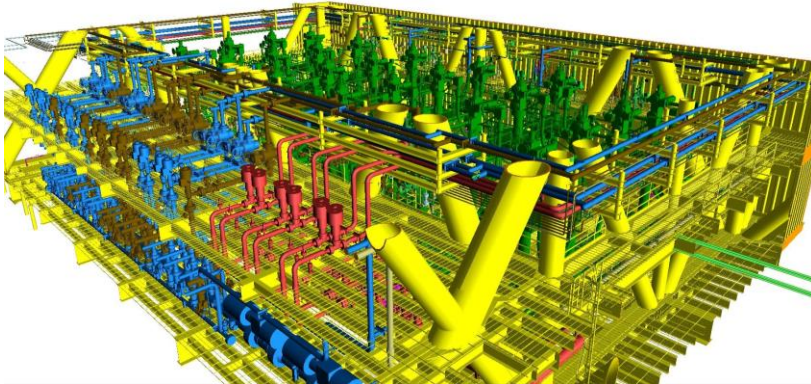
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3 more  
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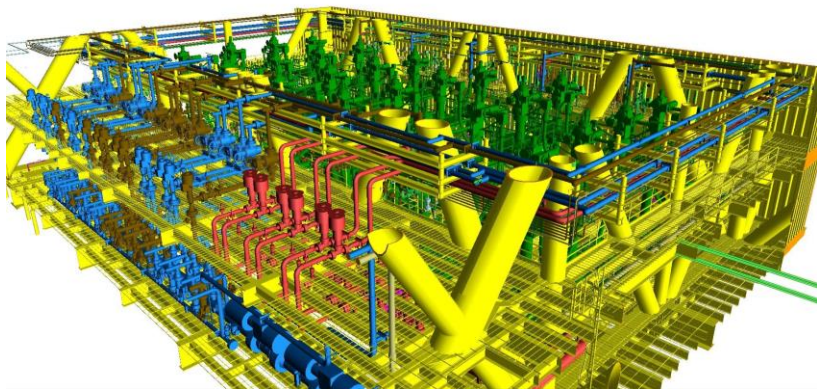
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question.

Re-assess  
after start  
up



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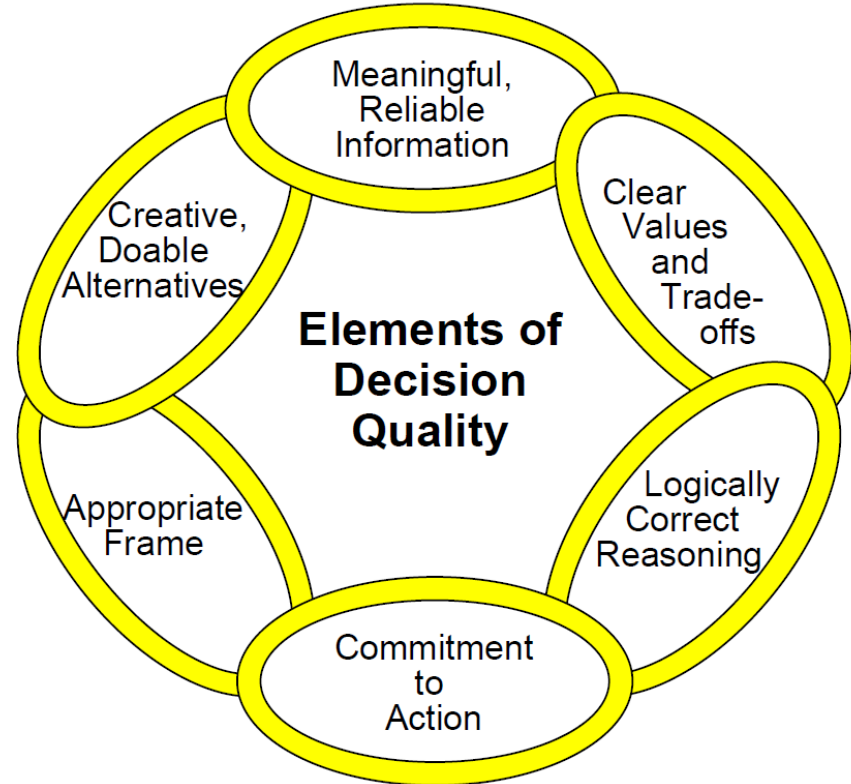
## Afterwards.....

- First oil delivered in 2016
  - Safe
    - 15mln hrs Lost time incident free
    - 600 Goal zero days
  - Under budget
  
- Continuous drilling for 9 months to achieve 60Kbl/d capacity



## DQ helped us get commitment to action

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- Helped us react quickly when new information becomes available.





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# STRAW POLL UPDATE

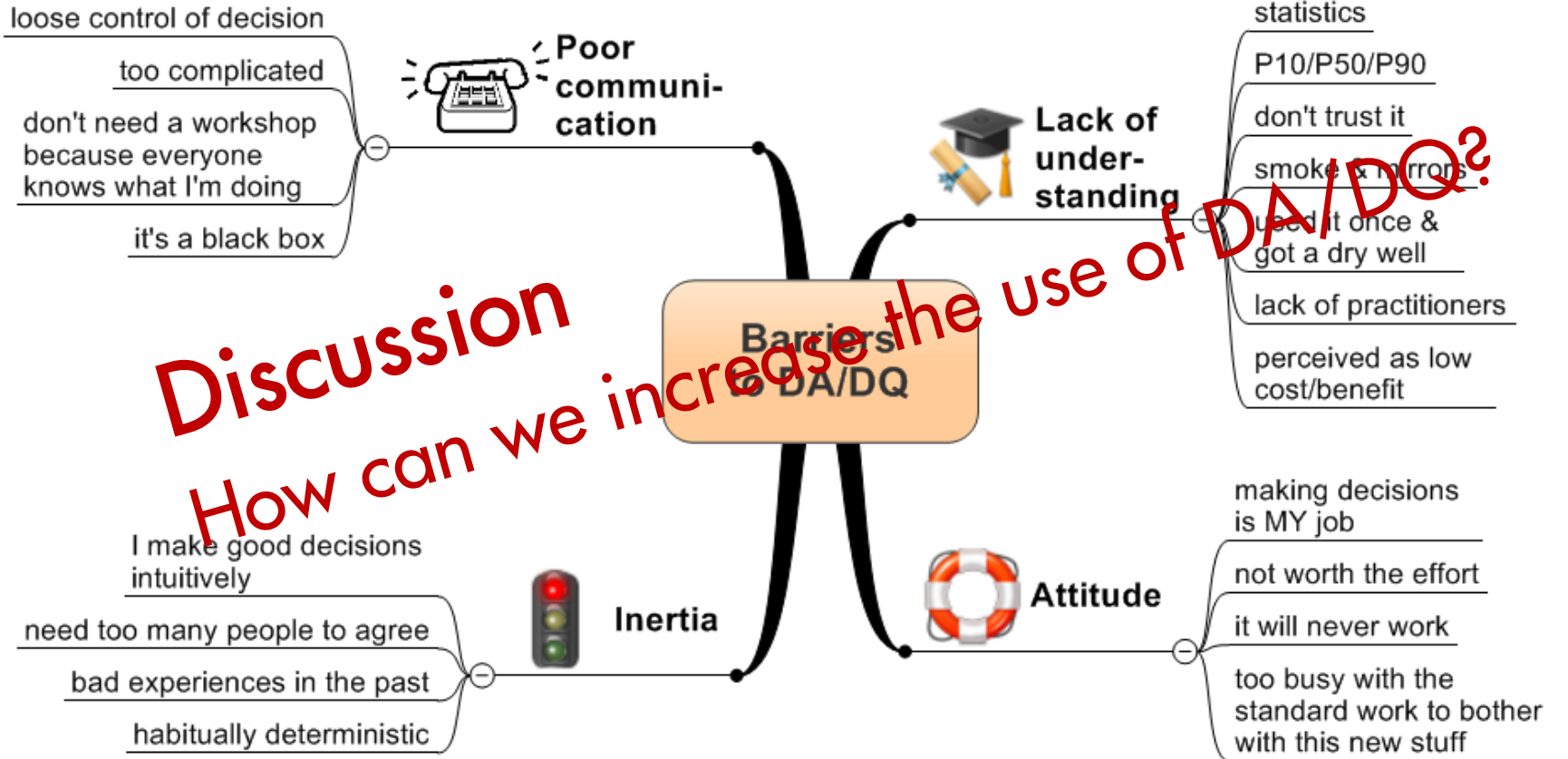
## Who is in the room?

- Academia (students & staff)
- Consultants/Service companies
- Oil & gas companies
- Others

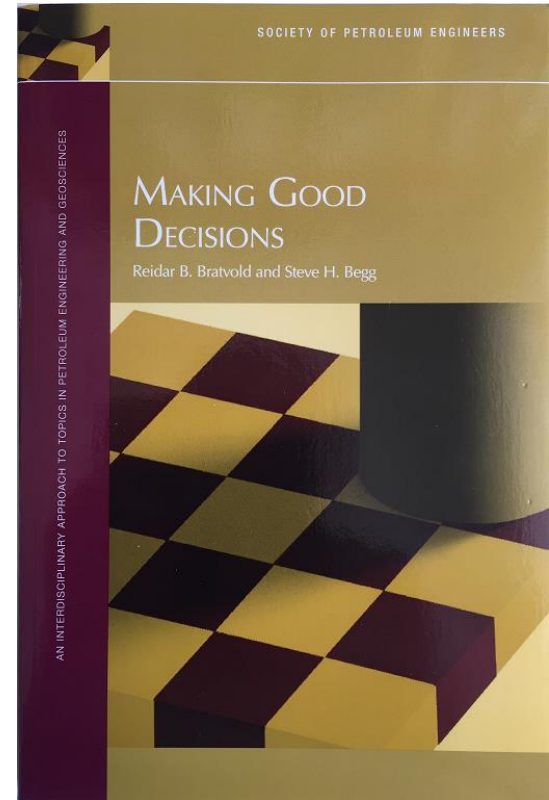
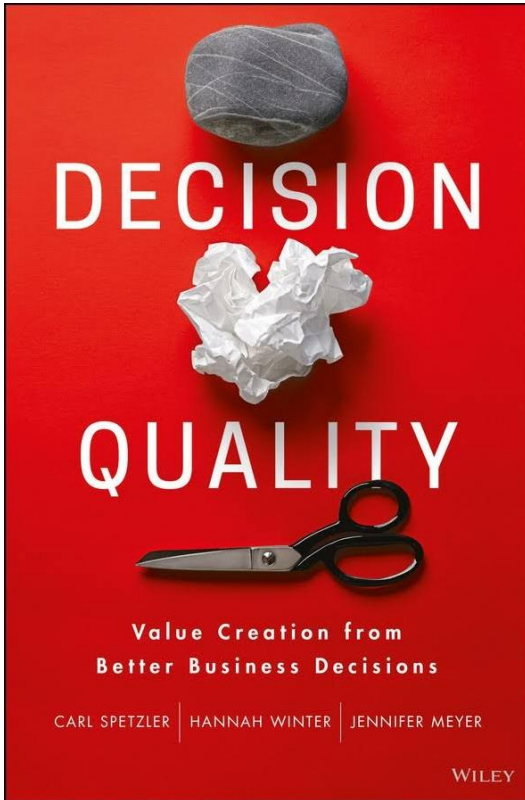
## Straw poll update

- Who personally uses DA/DQ on a regular basis?
- Who thinks DA/DQ should be used more widely?

# BARRIERS TO USING DA/DQ



FOR FURTHER INFORMATION...





SPE-181246



**SPE Technical Report**



**Guidance for Decision Quality for  
Multicompany Upstream Projects**

**Final Report**

**24 February 2016**

