



Advanced Engineering Design
and Analysis Consultancy

DECOM NORTH SEA LUNCH AND LEARN

Decision Making Tools & Supporting Analysis

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3 Global locations

Established in **2000**

7 Market sectors

350+ Years experience

40+ Engineers



AEROSPACE



NUCLEAR



OIL & GAS



DEFENCE



WATER



TRANSPORT



RENEWABLE
ENERGY

DECISION MAKING

- Subjective or objective?
- Driven by emotion?
- Prone to change?
- Traceable?
- Rational?



GRID ANALYSIS

- Traditional decision

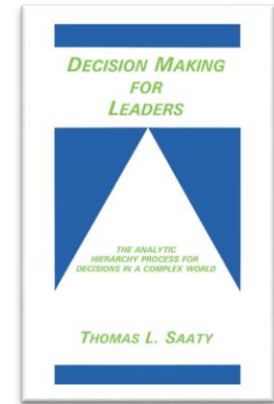
Options	Criteria			Score
	Safety	Environmental risk	Cost	
Piece Small	1	1	5	7
Reverse Installation	4	2	4	10
Single Lift	5	3	1	9

dominated.

- Option to weight criteria.

ANALYTIC HIERARCHY PROCESS

- Developed by Thomas L. Saaty in the 1970s.
- Isolates the people in the room from the outcome.
- Provides 'quality of decision' metrics.
- Subjective but within a framework.
- Traceable.



AHP: Choosing a Leader



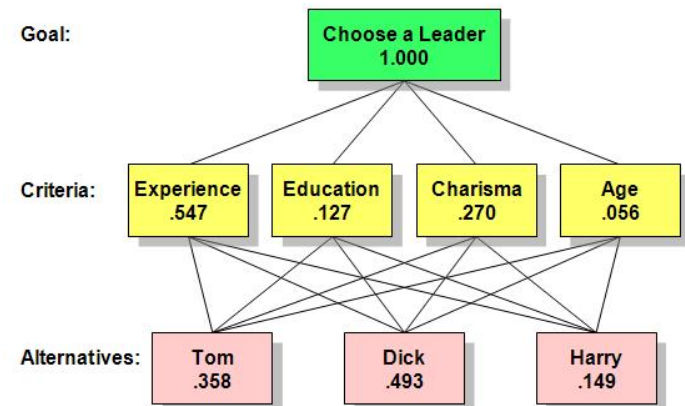
Tom



Dick



Harry



ANALYTIC HIERARCHY PROCESS

- Decompose the decision.
- Set the priorities for the criteria of interest.
- Define the alternatives.
- Compare the alternatives for each criteria.
- Do the maths!
- Check the quality of the output.

Entire decision or sub-sets of the decision e.g. Topside removal method versus accommodation block before or after compressor module?

A clear, concise description of the

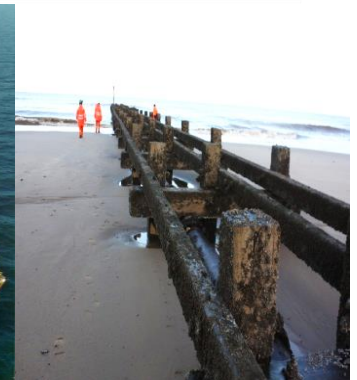
ii) Priorities; Undertake a pairwise comparison of each criteria.

The numerical operation will define the priority or each alternative i.e. it's ability to achieve the goal.

looks for contradictions i.e. $A > B > C > A$ is bad...

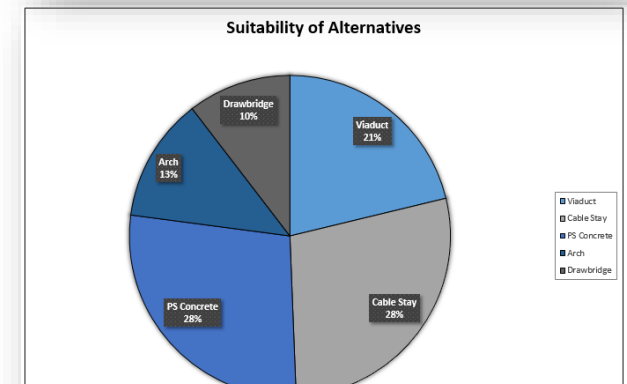
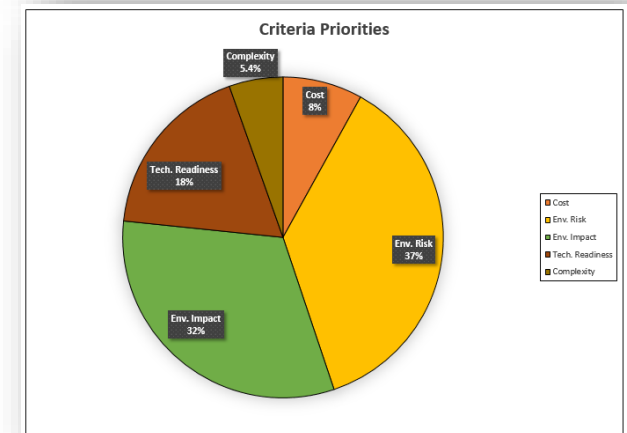
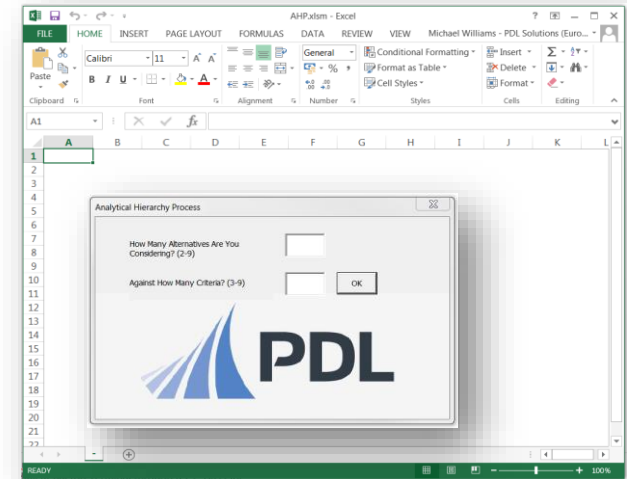
ANALYTIC HIERARCHY PROCESS

- Civil Nuclear: Magnox AGR removal of sludge.
- Shell Brent Delta: fluidisation and post-operative clean out of gravity based structure.
- Perenco Thames: 24" pipeline landfall and AP Platform topside & jacket.



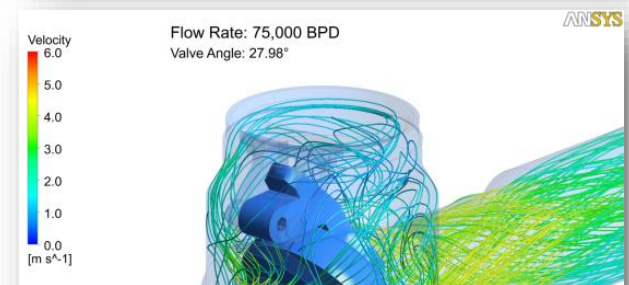
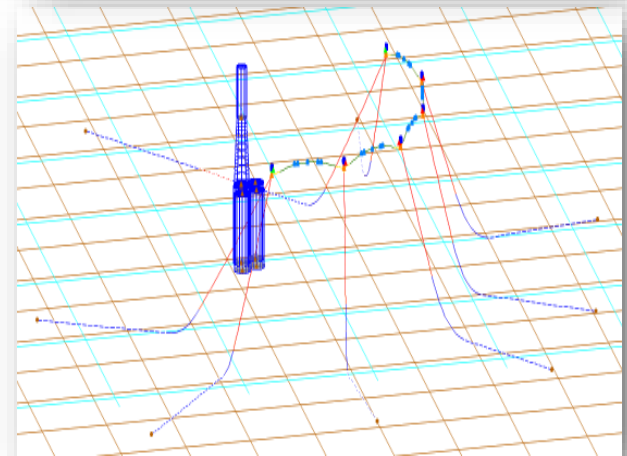
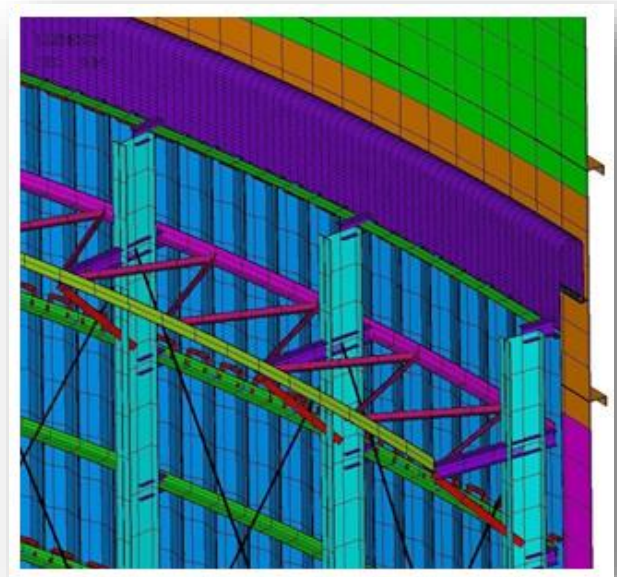
ANALYTIC HIERARCHY PROCESS

- How PDL run AHP.
- Software as a service.
- Integrated within project teams.
- Bespoke application developed.



ENGINEERING ANALYSIS

- Finite Element Analysis
- Global Dynamic Analysis
- Computational Fluid Dynamics
- Pipe Stress Analysis



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AHP built a

AHP makes it difficult to

influence

Documented and justified

The AHP output becomes a

can stay

AHP decisions start a process underpinned through analysis.





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