WORKSHOP TITLE: DEVELOPMENT CONCEPT SELECTION

Workshop Duration: 2 days

Typically Used: In the Front-End Loading (FEL) stages of Project Development

Overview of the Workshop

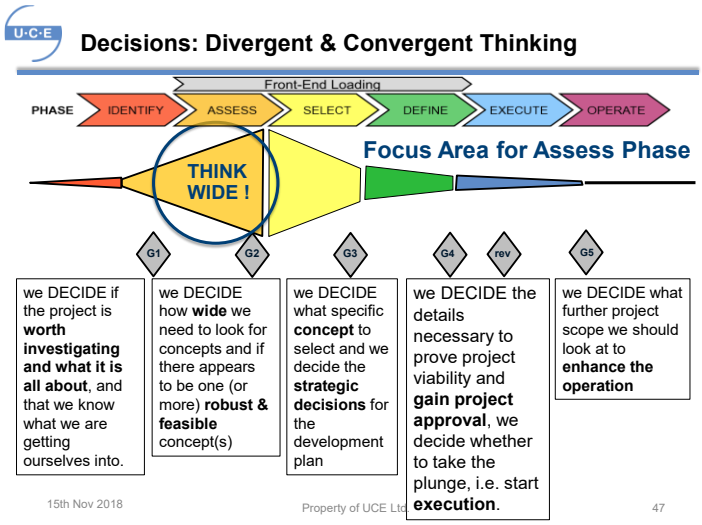
A Concept Selection Workshop is a Value Improving Practice that is applied by most major Oil & Gas Operators as part of a gated development process. The value of a Concept Selection Workshop in the early phases of a new development (or project) is that it demonstrates the decision logic behind the selection of the optimal Concept.

The structured format of the Concept Selection technique ensures that selection is based on logical and sound reasoning and this reasoning is documented and agreed by a multi-disciplinary team.

The Concept Selection process used follows from the methodology of the Concept Identification Workshop (see separate Workshop – *'Development Concept Identification'*). It also closely follows the techniques of *'Decision Quality Analysis'* that have been widely written about (e.g. by Ronald A. Howard, Dept. of Engineering-Economic Systems, Stanford University) and are taught by the *Strategic Decisions Group* (SDG) in their courses on Decision Analysis.

When to Use a Concept Identification Workshop

The Concept Selection Worksop is usually conducted toward the end of the Select Phase of a project (or Development).



There is an advantage to conducting the Workshop before the end of the Select Phase and before the final concept is considered to be 'selected'. This is because the Workshop will help in identifying if there are any flaws in the logic of the selections and if there is any further work to do to complete the Select Phase.

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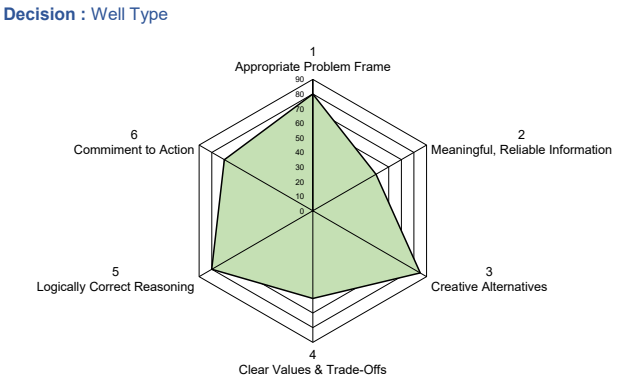
Background to Decision Quality

Many studies of the processes of making major decisions in large Companies have identified that there are usually scores of inherent biases that undermine good decision making. The original work of Ronald Howard, developed further by SDG and taken up in major Oil & Gas companies uses a decision framework of 6 elements :

1. Appropriate frame : Whether the right question is being addressed. Requires an clear purpose, perspective and scope
2. Meaningful, reliable, information : Judging the quality of available information and assessing the significance of what is missing before plunging into evaluation.
3. Creative alternatives : The quality of alternatives indicates whether value-creation potential has been fully explored. Are they doable, different, creative and comprehensive?
4. Clear Values & Trade-offs : Understanding the value drivers and their inter-relationships helps to see whether a multi-variable optimum can be reached. Clear value definitions and value ranking is required.
5. Logical, correct, reasoning : Solid reasoning and sound logic that includes considerations of uncertainty and insight at the appropriate level of complexity.
6. Commitment to action : Demonstration that there is motivation and commitment to action from the relevant groups and individual stakeholders.

An important feature of Concept Selection for oil & gas developments is that the ‘Concept Selection’ is not a single decision, it is a set of decisions; one for each of the key options, which may or may not be independent decisions. Rational Concept Selection is about examining each key decision using the Decision Quality Tool. Each decision can be examined and scored using the tool :



The Concept Selection method described here is vastly superior to one that uses an evaluation matrix that scores entire concepts against a long list of disparate value drivers. These have historically been used in a number of major Oil & Gas Companies and have been proven to produce results that often end up in recycling the project back to the start of the phase again.

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Example of a failed 'Ranking Matrix' approach to Concept Selection

		Score against Value Driver (1 to 5)							
		Meets Gas Demand	Maximise NPV	Minimise Capex	Subsurface Risk	Execution Risk	Security of Supply	Ease of HSE Management	
		Weighting							Weighted Score
Case		20	25	20	10	5	10	10	
Base Case	Score against Value Driver (1 to 5)	1	2	2	4	3	3	1	2.05
Case 1A		2	4	3	5	2	1	2	2.90
Case 1B		3	3	5	2	1	2	4	3.20
Case 1C		3	4	5	2	1	1	1	3.05
Case 2A		3	2	5	3	1	2	2	2.85
Case 2B		4	5	3	2	4	1	2	3.35
Case 3		2	4	1	5	3	4	2	2.85
Case 4A		2	3	1	4	1	2	1	2.10
Case 4B		3	4	2	3	1	2	1	2.65

Which is the best Concept from the above Options? This approach offers no insight into the logic of making the key Concept Decisions.

How the Workshop is conducted

Concept Selection workshops are conducted with an integrated, multi-disciplinary, group of staff, including the subsurface team, the wells team and the surface facilities team.

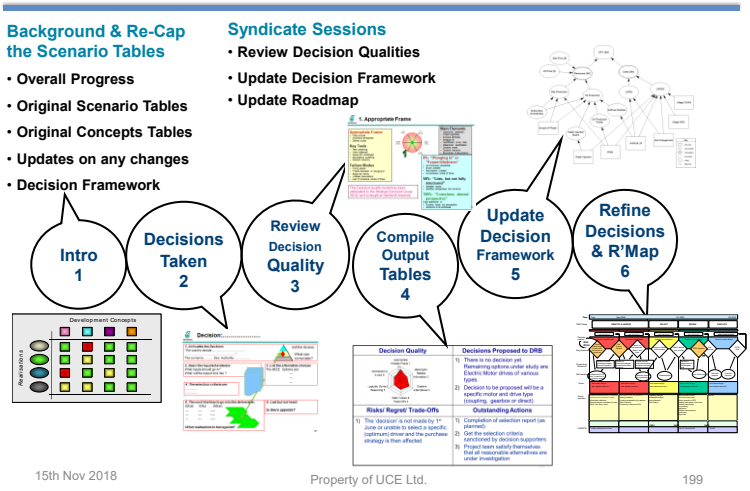
The workshop is facilitated by an experienced Workshop Facilitator, who guides the participants through the structured sequence of activities in concept identification.

The Facilitator will engage with the Workshop Sponsor(s) in good time before the workshop in order to plan the workshop and tailor it to the specific development and the sponsor's requirements.

The Elements of a Concept Identification Workshop

- Review of the Concept Tables, Subsurface Realisations and the Scenarios
- Review the Selection Criteria
- Update on the current status of the project
- Examination of each decision using the Decision Quality Tool
- Refinement of the workplan to the end of the Select Phase

A CS Workshop Overview



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The Facilitator guides the workshop team through the structure of the Workshop and helps the group deliver a clear set of conclusions and plans.

A typical Workshop agenda might be :

Day 1: Setting the Scene & Decision Quality

- Introductions & Overview of the Workshop agenda
- Review of the Concept Tables
- Review of the latest Subsurface Realisations
- Review the Scenarios (Concepts vs Realisations)
- Review the Selection Criteria and Criteria Ranking for the Concept Select Phase
- Introduction (or re-visit) to the Decision Quality tool
- Splitting into teams to examine each key Concept Select Decision
- Begin examination of each decision using the Decision Quality Tool

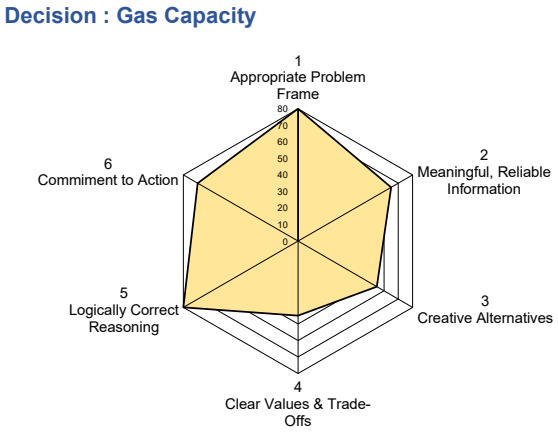
Day 2: Application of the Decision Quality Tool & Workshop Output

- Re-cap Day 1
- Continue examination of each decision using the Decision Quality Tool
- Preparation of Key Decision scoring tables
- Feedback and sharing of the results
- Agreement on outstanding work and plans
- Updating the Roadmap for the Phase
- Workshop wrap-up

The deliverables from a Concept Selection Workshop

The output from the Workshop includes a set evaluations of the key Concept Decisions

Example : Decision Quality Evaluation for one of the Concept Decisions



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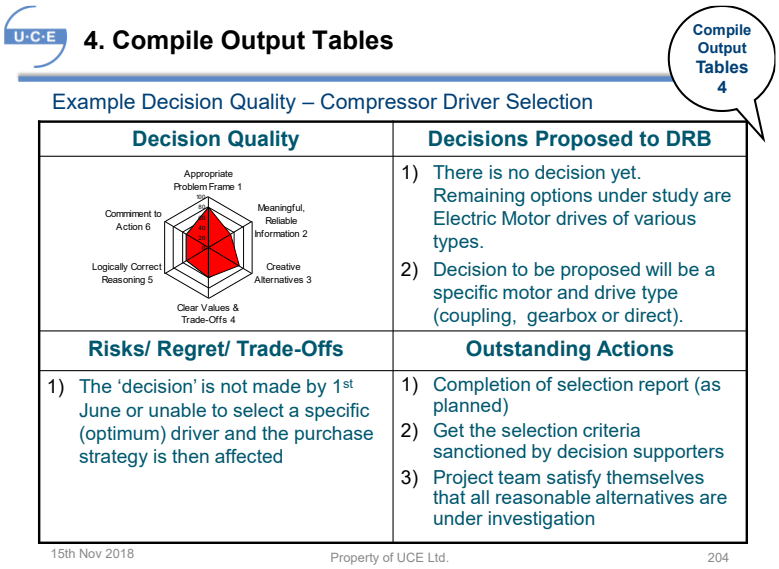
Example : Output Table for a Specific Decision



With all of the key Concept Decisions evaluated the workshop output includes an overview of the state of the project with respect to the Roadmap and the preparedness for the Decision gate at the end of the Concept Select Phase. Remaining work is documented in an update to the project Roadmap.

Facilitator

Phil Tudhope is currently Director of a consulting company, specialising in technical and project management training for graduates and more senior technical staff. He has a first class honours B.Sc. in Mechanical Engineering from Bristol University and is a Chartered Engineer, Fellow of the Institution of Mechanical Engineers and Associate Member of the Institution of Chemical Engineers.

Phil has over 40 years' experience in Project Management, Technical Development and Change Management in the oil & gas industry and proven technical and managerial capabilities to achieve results with a strong business focus and to effect significant positive change. He is a specialist in front-end (feasibility & concept selection) phases of upstream oil & gas developments with midstream (LNG) experience and project execution experience and has the ability to perform analysis and development work as well as lead and motivate teams.

Amongst other roles, he was Specialist Front End Advisor at Petronas Carigali, Chief Process Engineer at BG Group and Head of Upstream Engineering at Shell Technology India. He has experience worldwide in differing political, social and remote environments, having worked overseas for 28 years including the Far East, USA, Europe, the Middle East and India.

Phil is an experienced instructor and has designed and facilitated over 50 workshops including; Opportunity Framing, Concept Identification and Selection, Value Engineering, Risk Management, Contract Management and Produce-the-Limit.

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