THE BENEFIT OF INDEPENDENT ENGINEERING IN PROJECT DEVELOPMENT

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Integration | Alliance

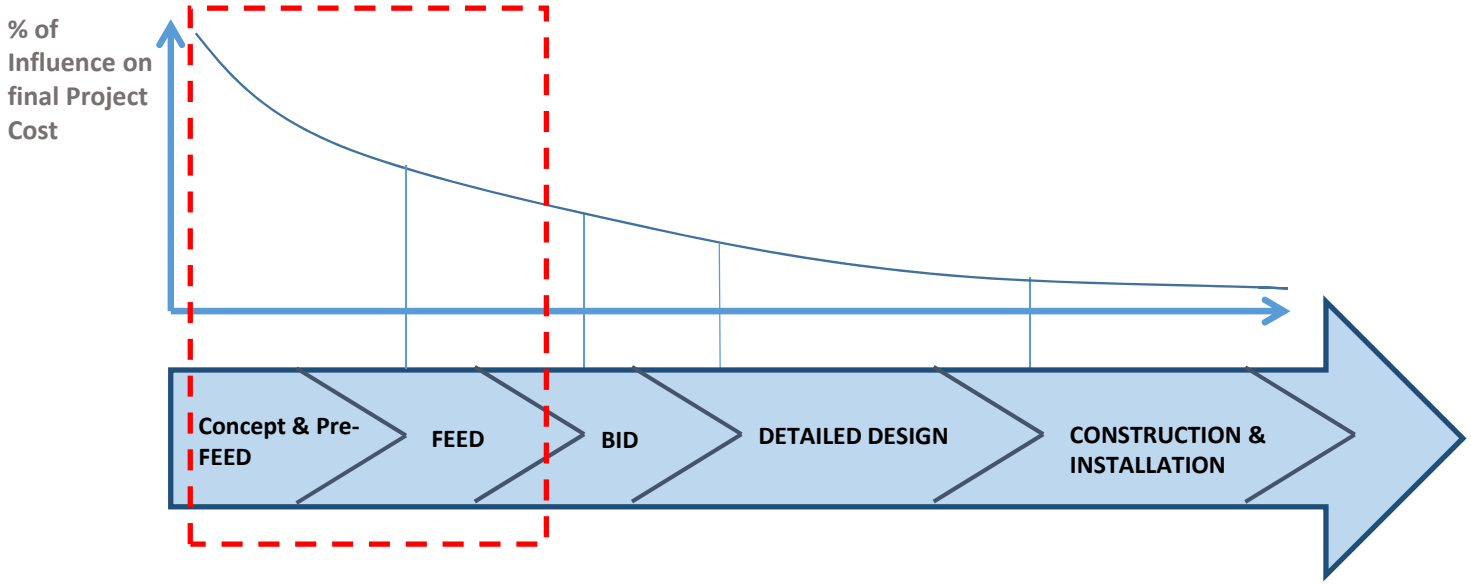
Main request from operators for current low oil prices

- Cost Reduction

One response of the market

- Integration of Contractors
- Alliance of Contractors

When to involve integrated ventures ?



Integrated ventures recommend to be involved from early stage of the project

- Significant influence on project cost related to technical choices

… but what about competition to lower costs ?

Oil & Gas project environment

Different Contexts

- Several types of clients : National Oil Companies, Independent Oil Companies, International Oil Companies
- Several types of contractual strategies : gate approach, design competition, integrated approach
- Several types of projects : brownfield, greenfield

There is no single answer

- Projects, countries, circumstances will affect what is the best contractual strategy
- Independent engineering companies still have an important role to play in many instances

Oil & Gas Clients

Every client involved in Oil & Gas projects deserves optimized work

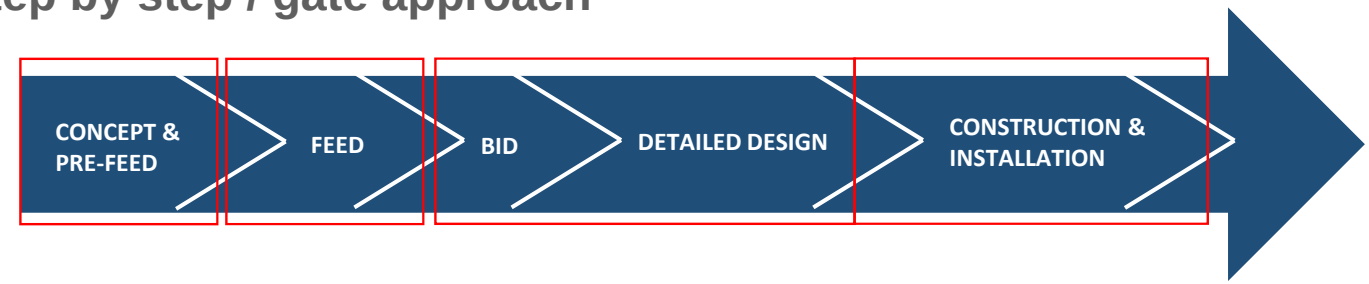
- Integrated venture or independent engineering company shall fulfil this expectation
- There is no client that should accept a design without assurance that it copes with project specificities.
- Clients will develop their preferred contractual scheme but it will not change the requirement to perform relevant engineering

Engineering work is therefore a key activity that will have to adapt to project specificities and to client methods

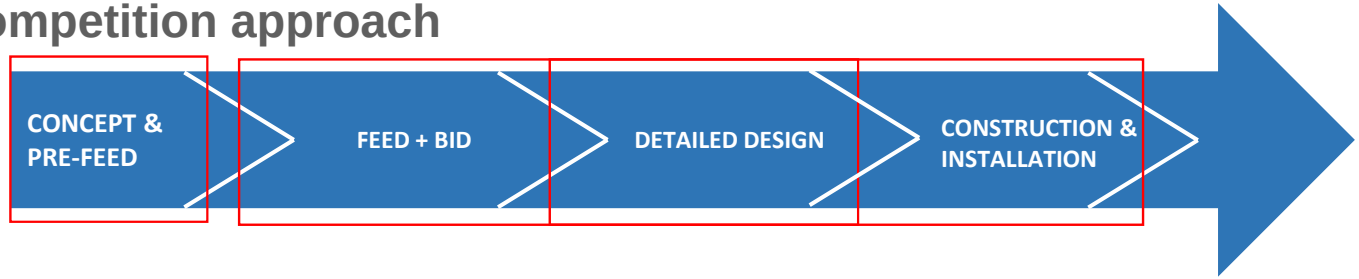
The independent engineering company is organized to address these versatility requirements

Contractual strategies ?

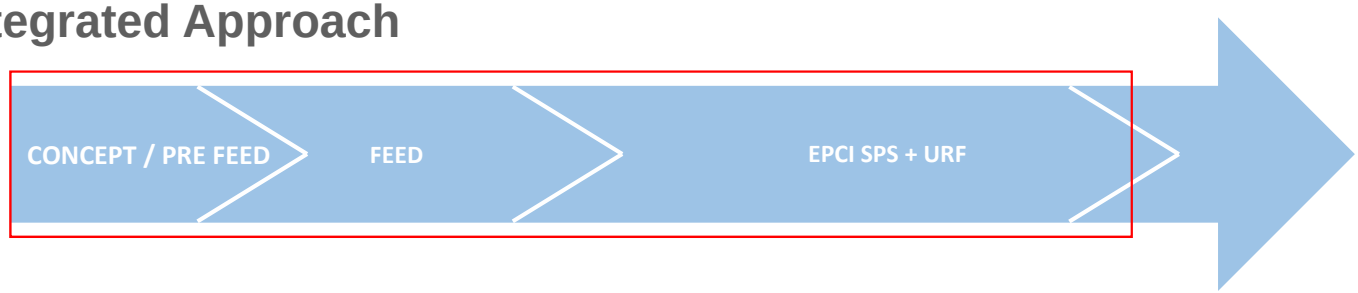
Step by step / gate approach



Competition approach



Integrated Approach



Every strategy shall fulfil client's best interest :

- Schedule optimization
- Technical optimization
- Cost optimization

The independent engineering company is organized to address these optimization exercises

When to involve independent Engineering ?

An independent engineering is not related to any Installation or Construction Contractor

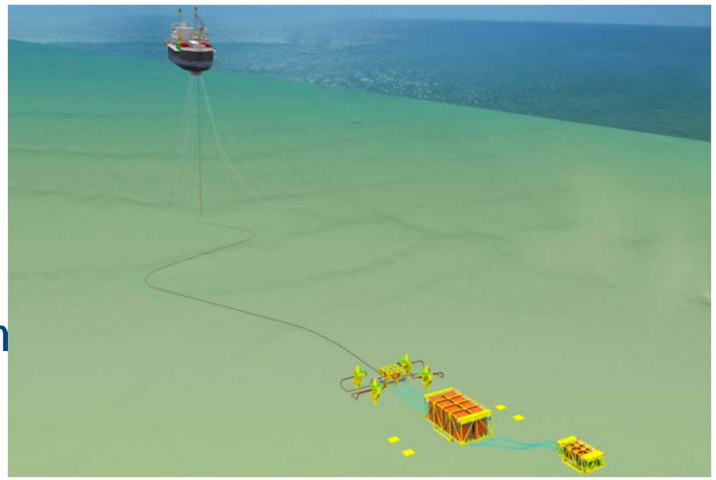
Reasons are developed through examples

- Brownfields and subsea Tie-backs
- Subsea Installation & Fabrication
- Subsea Projects – Technology

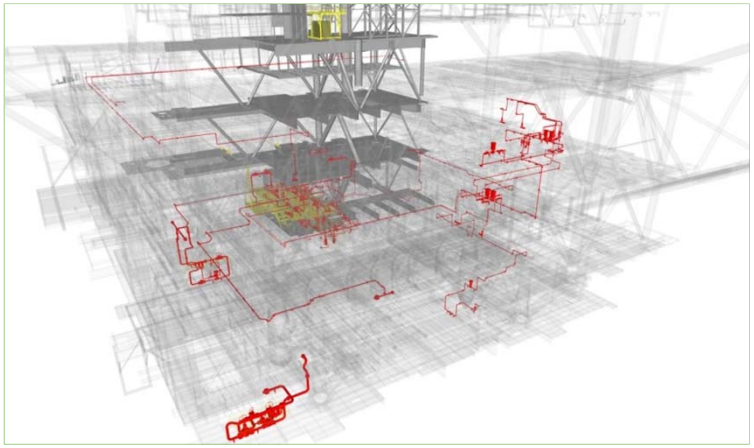
Brownfields and subsea Tie-backs

- Many deepwater fields located offshore have reached or are reaching production plateau
- Hence the need to develop subsea tie-back as a means to mitigate production decline and to maximize use of host platform
- High deepwater drilling and subsea system installation costs often mean such tie-backs fall into the “major capital project” category
- Yet, the cost of brownfield modifications (10 to 20% of the project) often impacts the Investment Decision

What are the most efficient actions to generate cost savings in brownfield projects with congested area ?



Brownfields and subsea Tie-backs

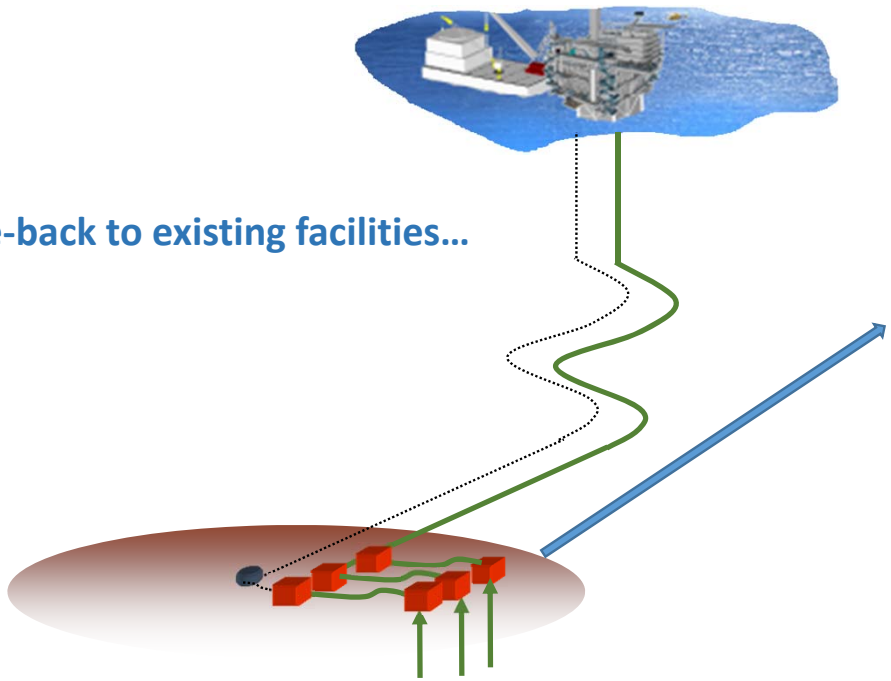


Minimize scope of new equipment is the key activity

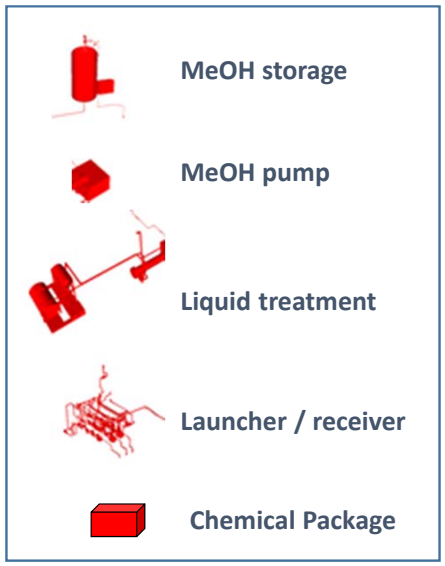
- Most of topsides equipment are defined by the subsea
- Comprehensive Topsides / Subsea iterative exercise to identify how existing equipment can be used for the tie-back
- Requires strong interfaces between process, flow assurance and field operations
- Exercise may require some time to ensure an exhaustive and detailed status of existing equipment

Brownfields and subsea Tie-backs

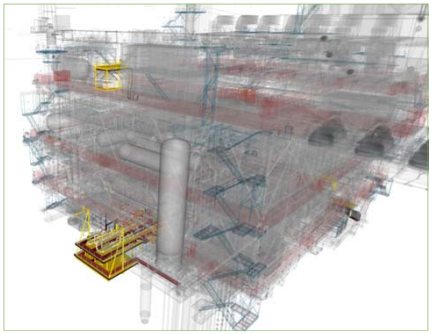
Tie-back to existing facilities…



Requires new equipment…



…to be included into existing facilities



The independent engineering company has the capability to carry out this global exercise with no incentive to focus on any particular scope or package

Subsea Projects – Installation & Fabrication

One efficient method to cut cost of subsea projects is to limit:

- Offshore works
- Size and function of installation vessels
- Comprehensive design iterative exercise to identify how project requirements can be achieved with alternative installation methods

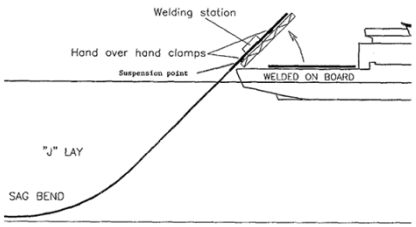
A major West Africa deepwater field development project used towing means (instead of laying means) because the design has been initially proposed by an independent engineering company with the only incentive to be cost competitive

Subsea Projects – Installation & Fabrication

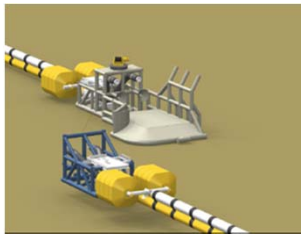
The independent engineering company has the capability to carry out this global exercise with no incentive to focus on a particular installation fleet capability or construction method :

It opens competition to varied installation contractors

Subsea spool Installation

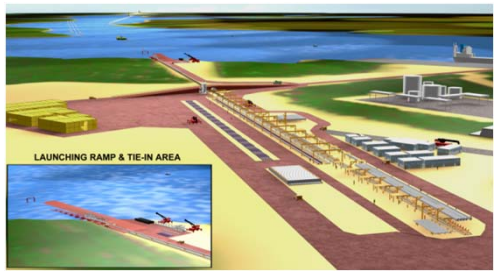


Offshore pipe assembly and Laying Installation



Towing Installation

Offshore Pipe Assembly

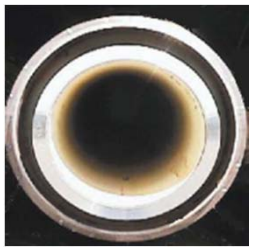


Onshore Pipe Assembly

Subsea Projects – Technology

One efficient method to cut cost of subsea projects is to revise the design when risks on cost escalation are identified:

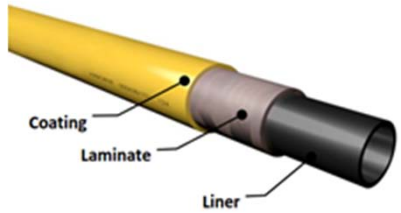
Flexible pipe



Pipe-in-Pipe

Single coated Pipe

Pipe Bundle



Thermoplastic Composite Pipe

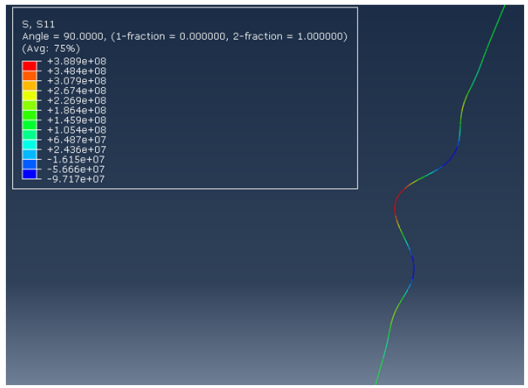
The independent engineering company has the capability to investigate several technologies with no incentive to prefer one in particular

It opens competition to varied suppliers / vendors

Subsea Projects – Technology

Typical Project : High Temperature wells produced in 30-km flowline in deepwater

- Pipe-in-Pipe anticipated technology based on typical FA strategy
- Impact on installation capacity available for this project
- Significant buckling issues predicted with risks on pipeline design



Discussions between Client and Engineering → Challenge on FA strategy combined to change of technology (single coated pipe) allowed to reduce risks on pipeline design

In some cases, optimizing a project and reducing costs can be achieved by challenging the Client on these initial choices and specifications. The independent engineering company is most likely to realize it because it has no technical preference.

Discussion

Through three typical examples of deepwater projects, we demonstrated that:

- Specificity of deepwater projects makes engineering work of very varied natures
- Such engineering work scope versatility is not always compatible with a lean engineering approach and iteration on design is required
- Independent engineering chooses the solution that best suits the customer's criteria
- Independent engineering is most likely to challenge Operator in any circumstances because it has no technical a priori
- Independent engineering has an organization that adapts to the client;

Discussion

The Independent Engineering's main strategy relies on serving customers' best interests by providing

- Integrated multi-discipline team
- Flexibility / reactivity / open to any technology
- Adaptability to Operator culture and standards
- Pro-activeness to propose fit-for-purpose solutions or optimizations
- Open design to keep competition for execution phase

Conclusion

This is not a crusade against Contractors

- Engineering companies work as much for Operators as for Contractors
- It is not about “Competence”
- It is not about “Engineering Cost – Unit Rates”

In todays market, Independent engineering company is beneficial at the early stage of a project

- It provides FIT-FOR-PURPOSE solutions that bring cost savings by being customer focused
- It keeps OPERATORS in the DRIVING SEAT

Thank You For Your Attention

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