

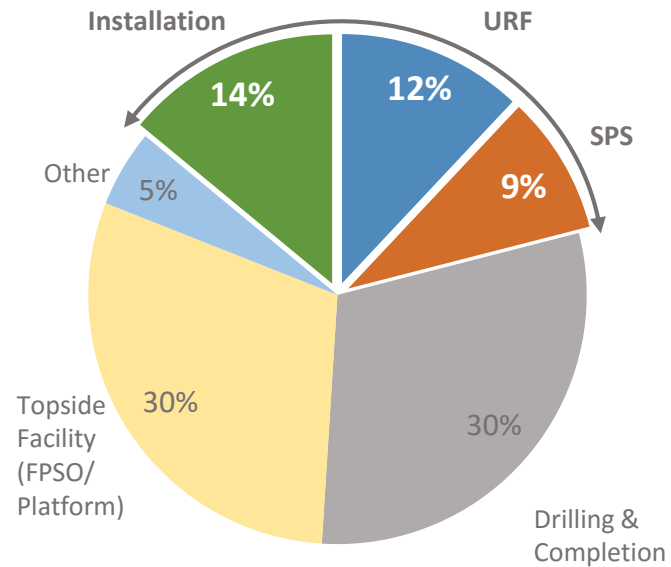
The use of an integrated contract model (iEPCI) for Subsea developments

Tim Crome

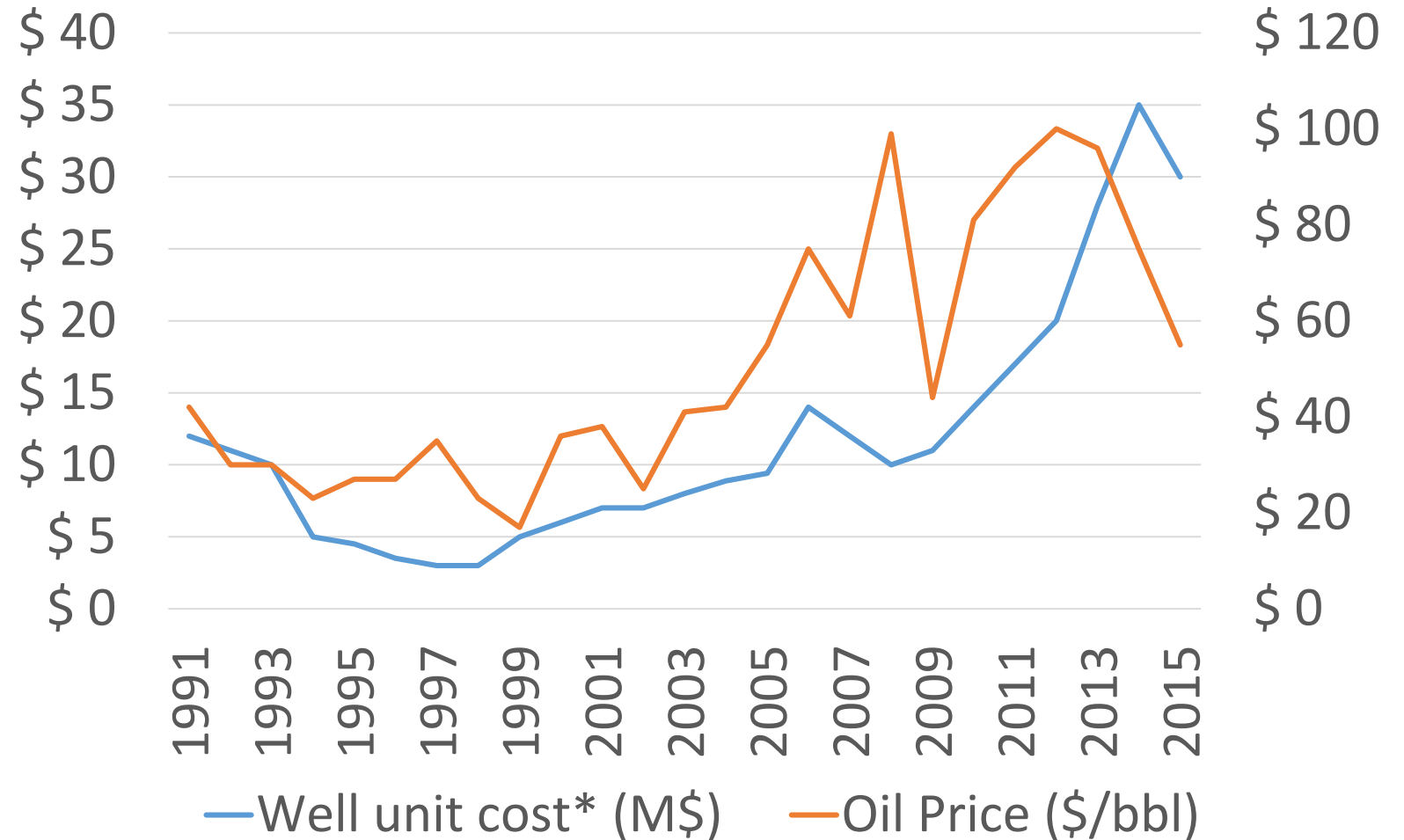


Costs

- Non-sustainable cost trends over the last decade



Cost Distribution
Offshore Development (Typical Greenfield)



* Subsea Production System cost only

Source: internal FMC Technologies estimates



TechnipFMC range of services

Subsea



Onshore/Offshore



Surface

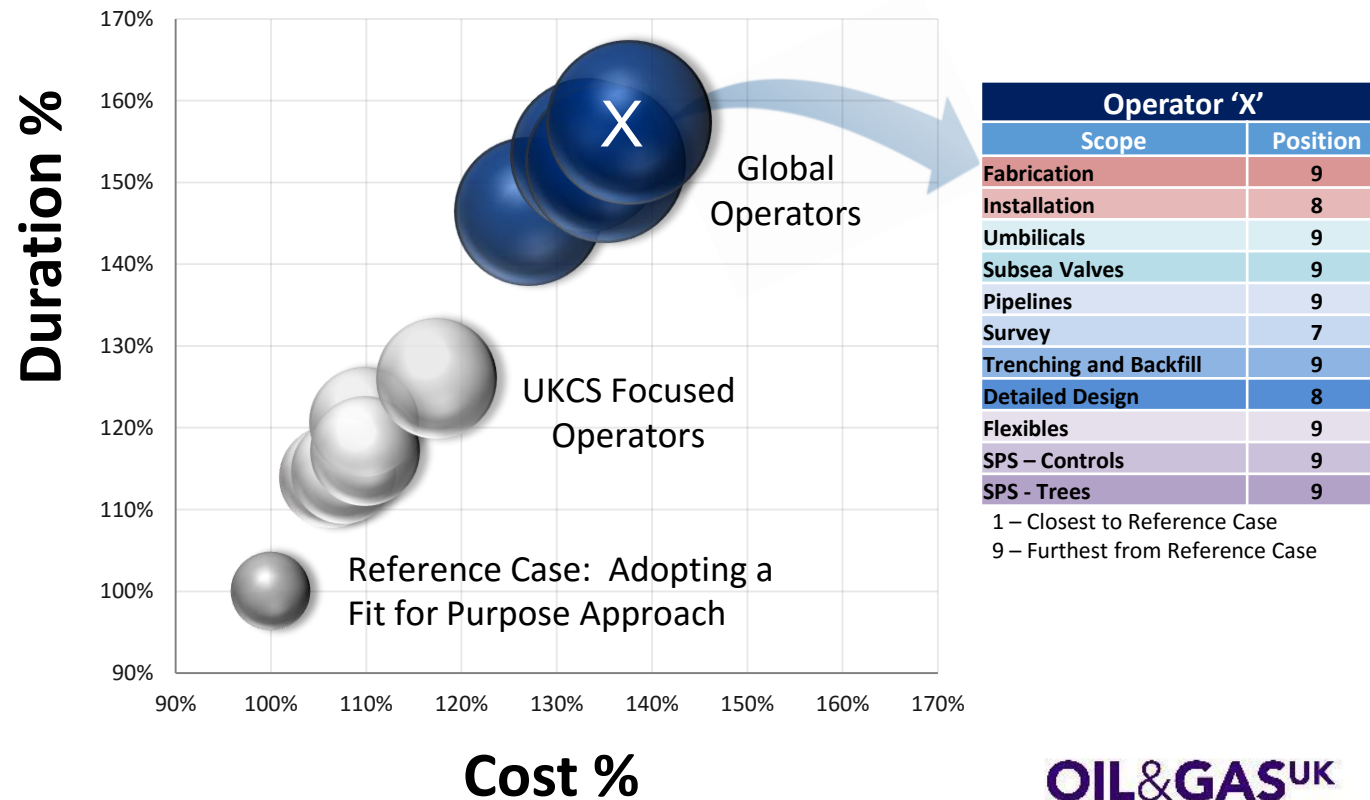


Standardisation

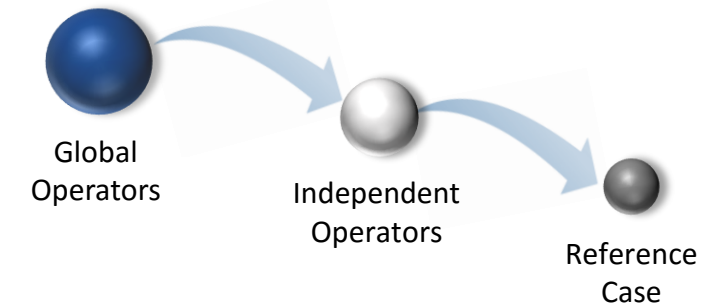


Applying some theory to Subsea prospects

The theoretical exercise demonstrated the impact of applying preferential requirements.



There is a journey necessary to achieve viability for subsea developments.



Now where?



Integrated Subsea EPCI - One vision & one purpose.

Vision

To enhance the performance of the world's energy industry

Purpose

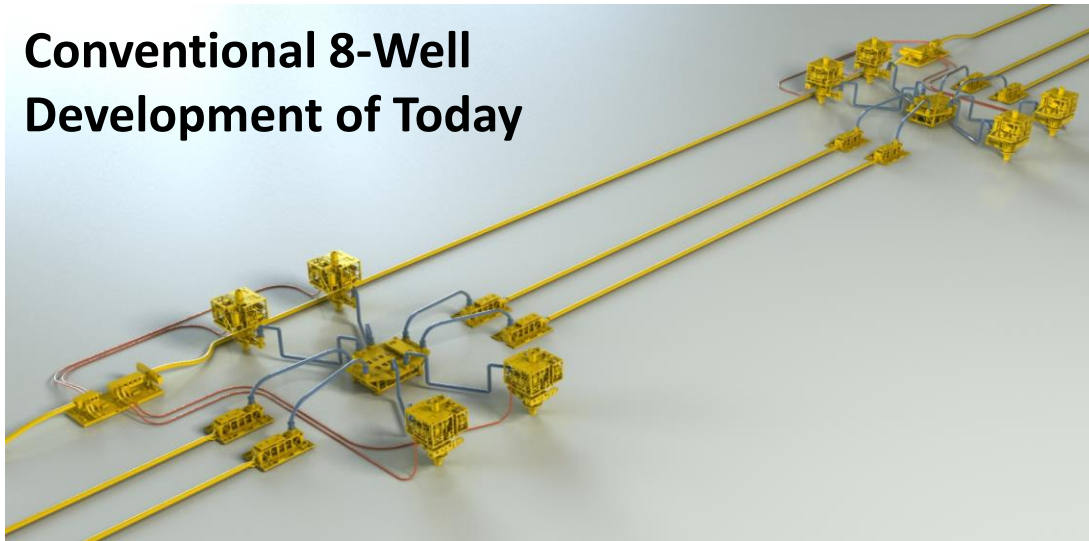
Bringing together the scope, know-how and determination to transform the clients' project economics

- Achieved by integrating the SPS and SURF part of a Subsea Projects.

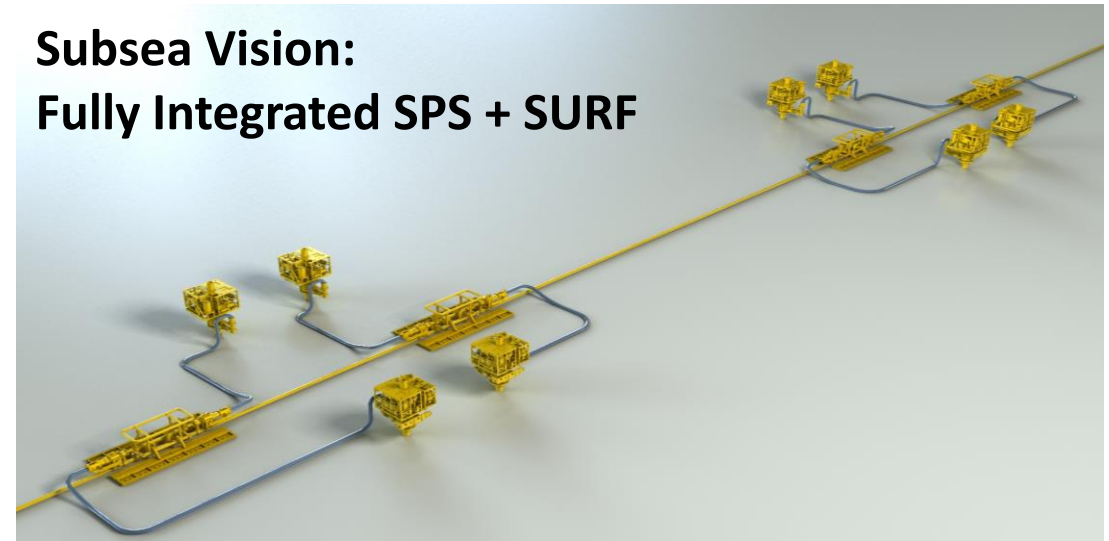


Integrated Subsea Design

**Conventional 8-Well
Development of Today**



**Subsea Vision:
Fully Integrated SPS + SURF**



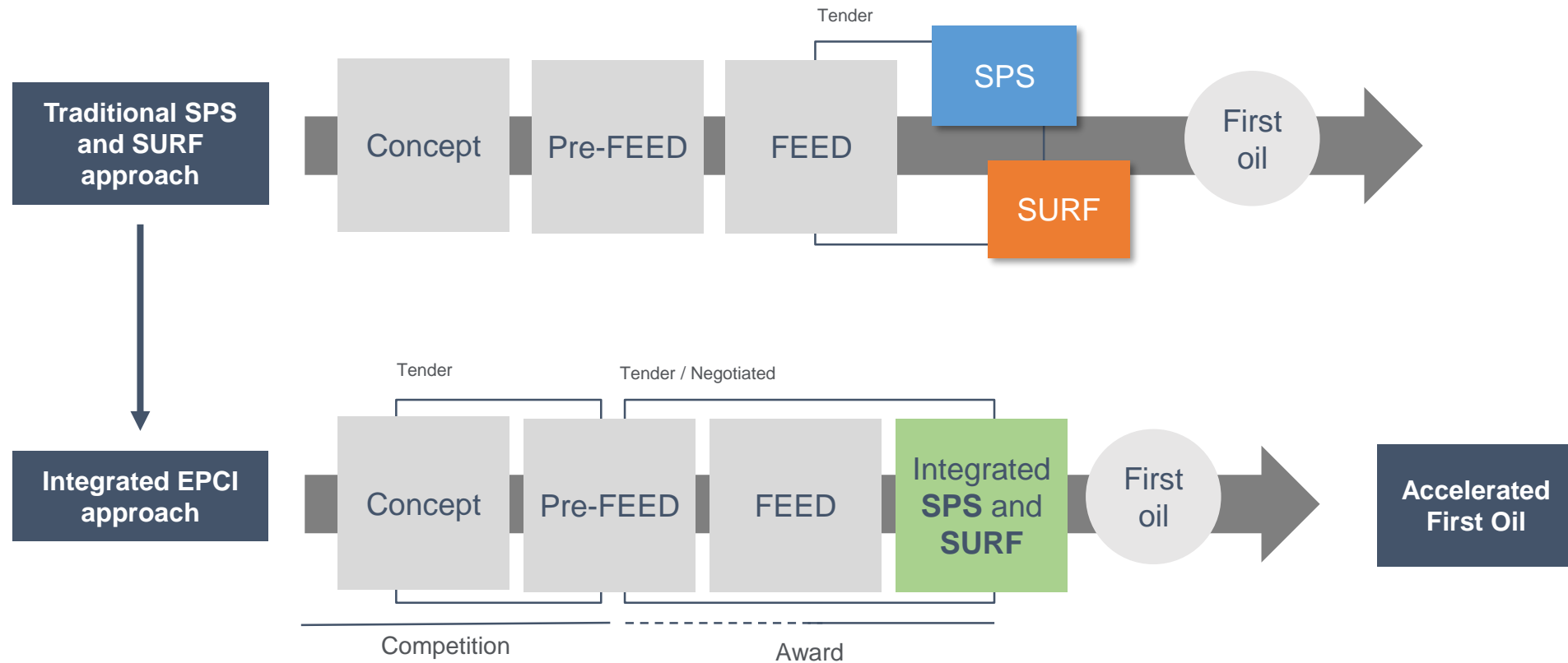
Deliver subsea fields at **lower cost** and in **less time** with:

- optimized **flow assurance**
- improved **certainty of schedule**
- significantly **reduced interfaces & client teams**

**Transforming Project
Economics → Up to
30% sustainable
CAPEX reduction**

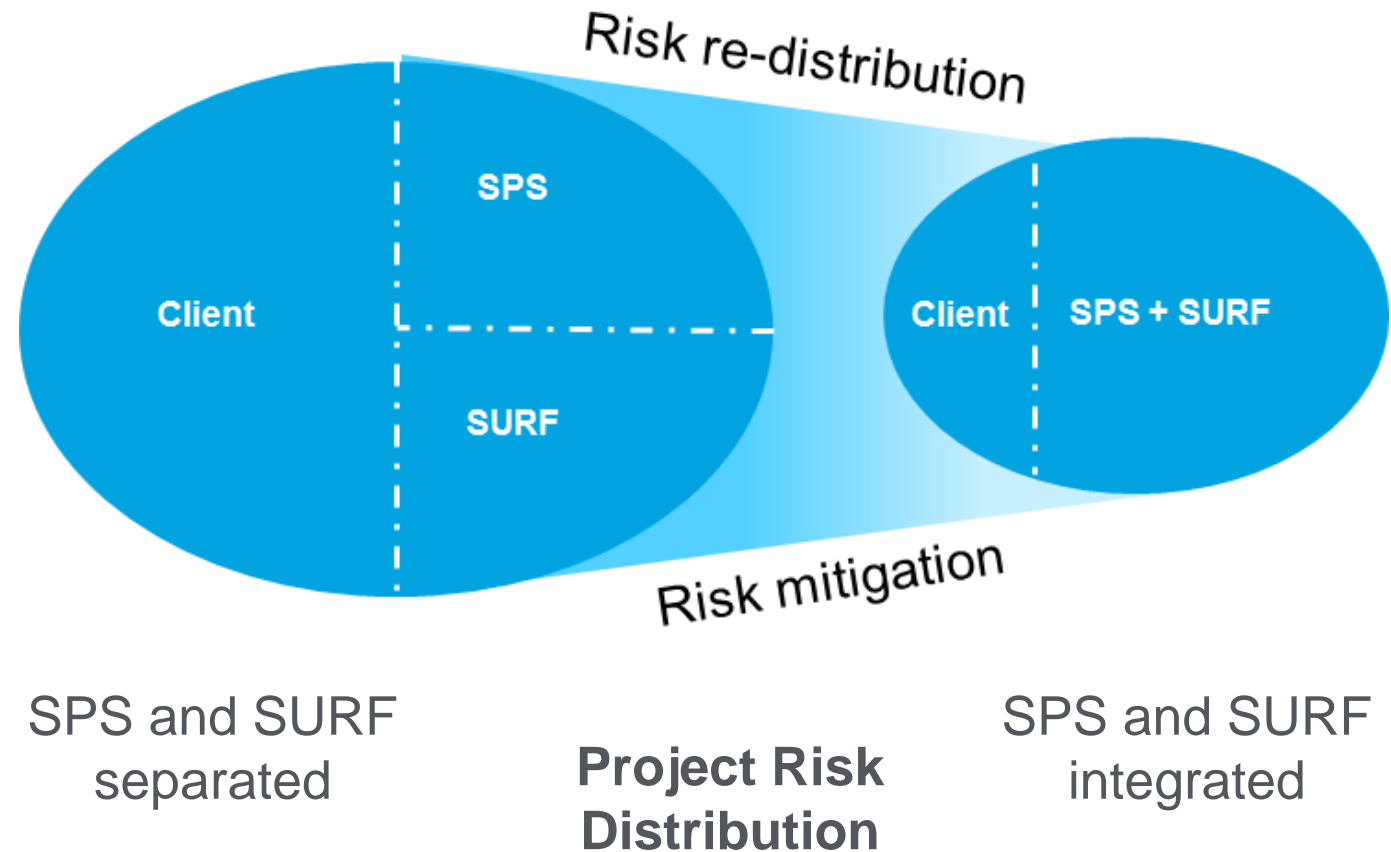
Advantage of the integrated contract model

- Capturing the iEPCI value



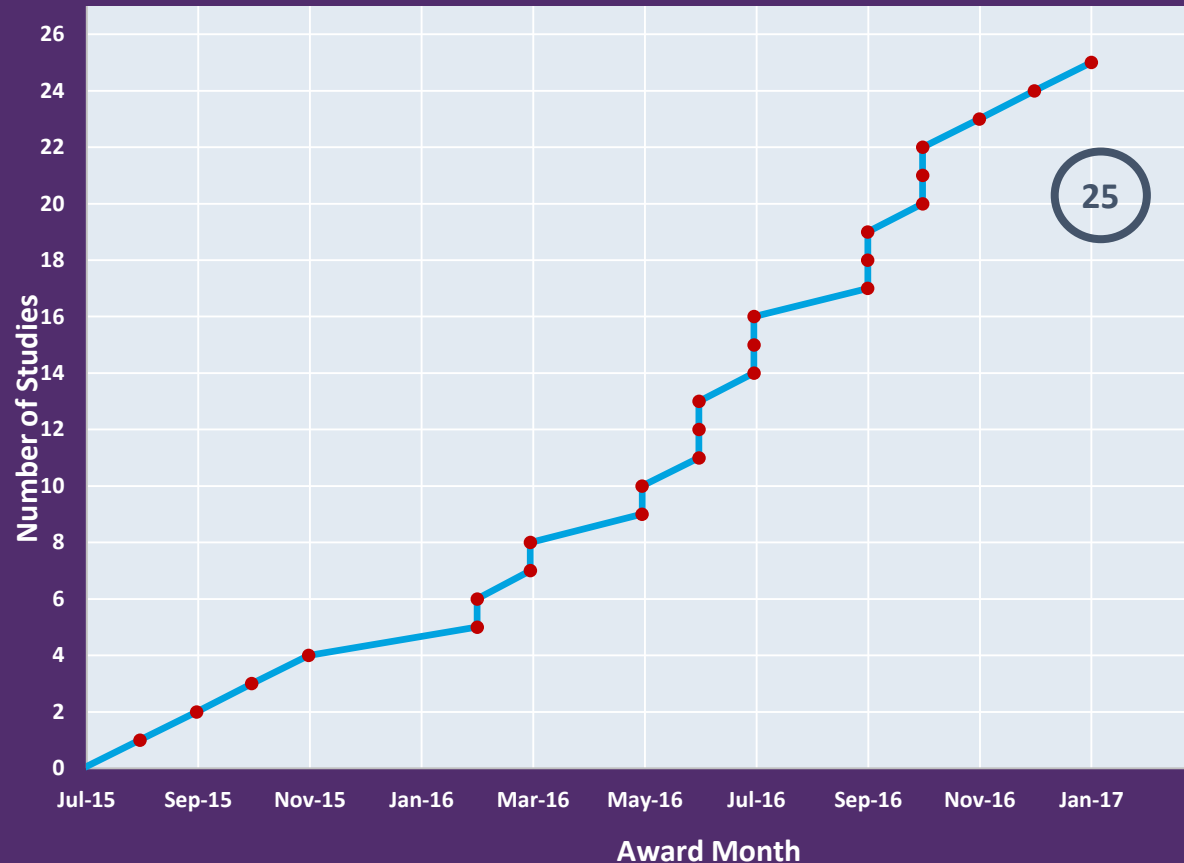
The basic principle of iEPCI Risk Management

- Mitigation and re-allocation of commercial risks
 - ▶ Mitigation of project risk
 - ▶ Early involvement of iEPCI team to address criticality of interfaces and planning of offshore activities
 - ▶ Alignment of commercial incentives on contractor side
➔ reduced risks to Client
 - ▶ Knock-on effect of delay in scope assumed by iEPCI contractor
 - ▶ Redistribution of remaining project risks between Client and iEPCI contractor

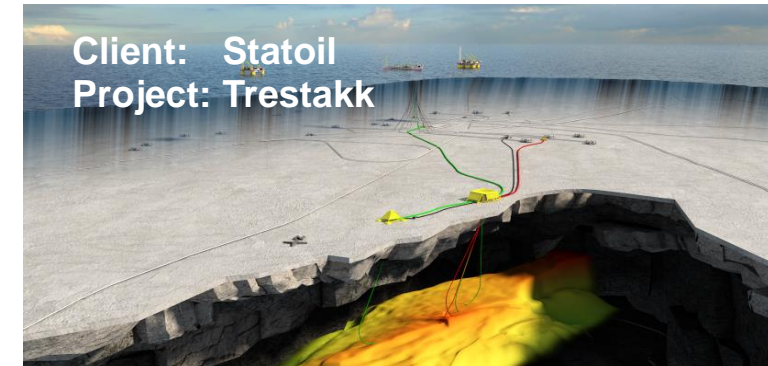


Integration supported by recent achievements

Integrated Front End Studies from start of Alliance



First integrated project award



- ▶ Integrated EPCI (engineering, procurement, construction, and installation) contract
- ▶ Full suite of products and services including subsea trees, manifold, umbilicals, and installation
- ▶ Early and broader involvement with operator
- ▶ Significant reduction in total project costs

Responding from Concept to Delivery and Beyond

Reducing cost through optimizing subsea architecture and integrated execution

6 Synergy buckets

Definition

I SPS Hardware (HW)	<ul style="list-style-type: none"> • Savings generated on supplied items / hardware (e.g. XT) • Not generated from reduced use of hours
II URF Hardware (HW)	<ul style="list-style-type: none"> • Savings generated on supplied items / hardware (e.g. flexible pipe) • Not generated from reduced use of hours
III SPS / URF Vessel Days (VD)	<ul style="list-style-type: none"> • Savings generated from reduced vessel schedule
IV SPS / URF Other	<ul style="list-style-type: none"> • Savings that are not HW, Hours or Vessel Days • Examples include contingency, insurance, bank guarantee etc.
V Hours (Hrs)	<ul style="list-style-type: none"> • Savings generated from improved execution (e.g. fewer PM&E hours) • Typically due to leaner organization, less interfaces, better planning etc.
VI Additional CPY savings	<ul style="list-style-type: none"> • Savings that client get by going with alliance due to for example reduced risk • Does not impact the price offered to client

~30%



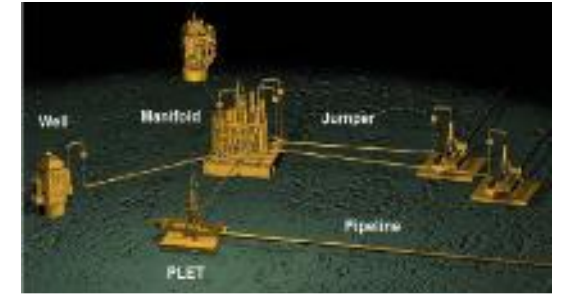
Complementary technologies



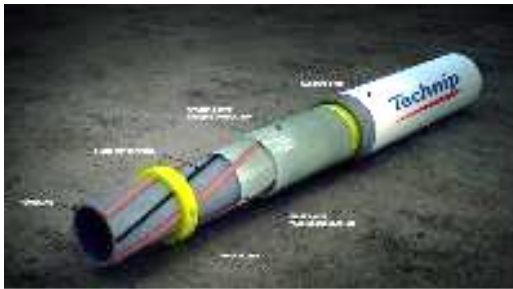
Subsea Processing



Connector



Manifold



ETH PiP⁽¹⁾



Flexible pipe



Direct Tie-In

Increased efficiency

Optimized connectivity

Simplified architecture

Complexity of Subsea Hardware - Subsea Tree



Optimization of hardware

- **Hydraulic Connector**
- Traditional evolved design



- Completely new design
- Same functionality
- Only 7% of parts!



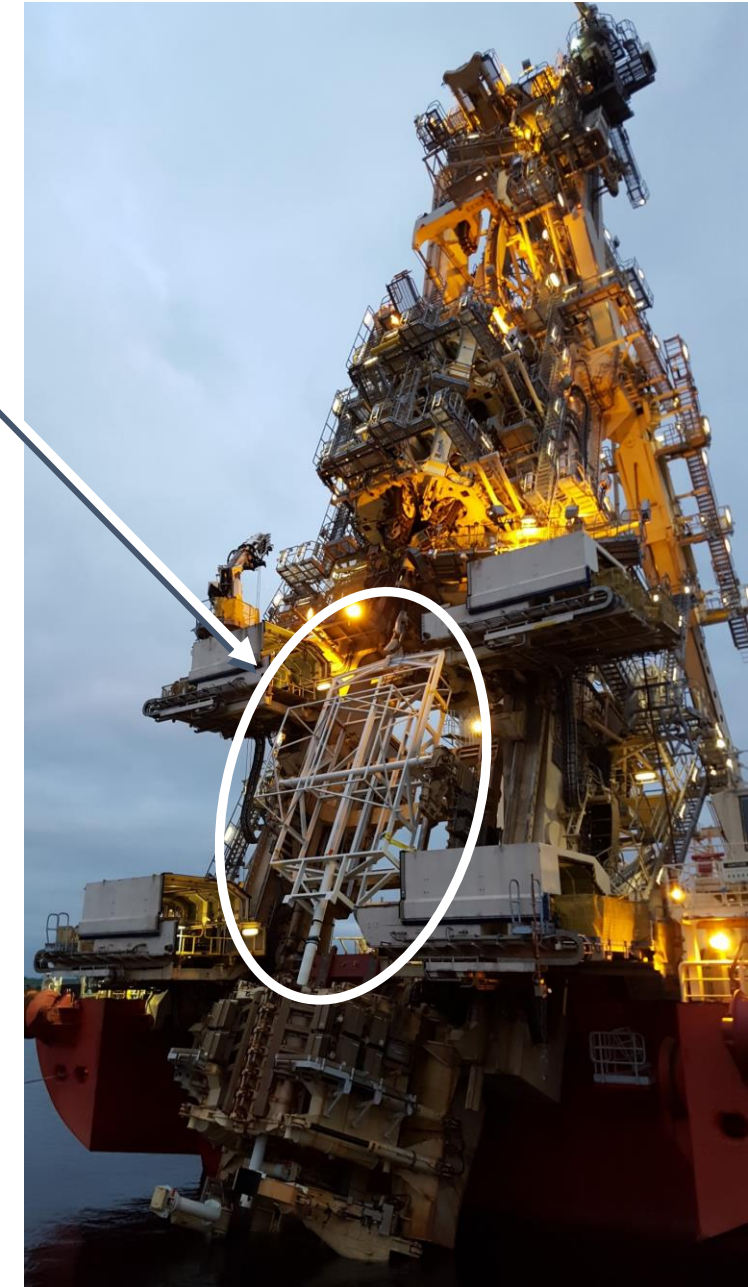
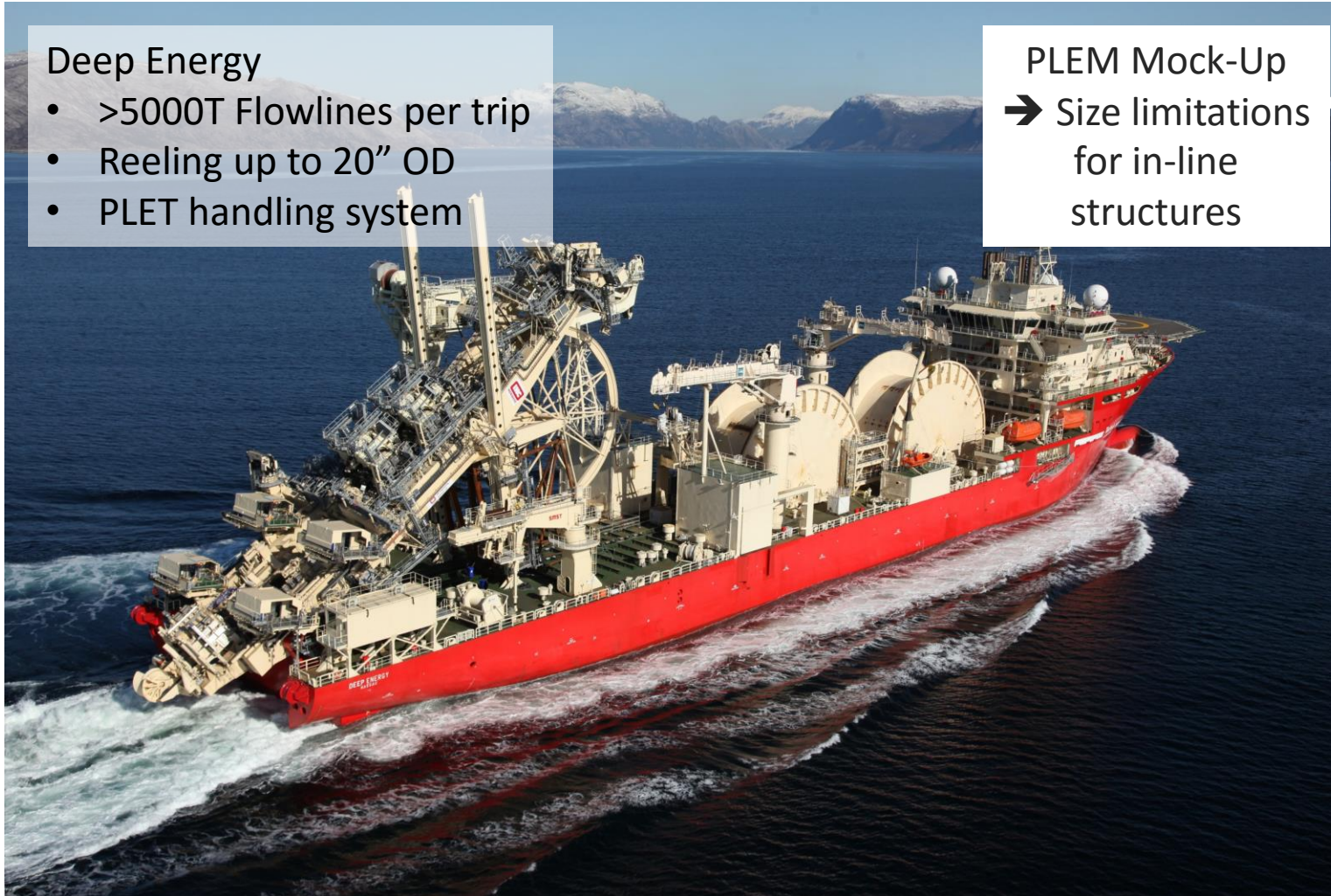
Design for installation - pipe-lay

Deep Energy

- >5000T Flowlines per trip
- Reeling up to 20" OD
- PLET handling system

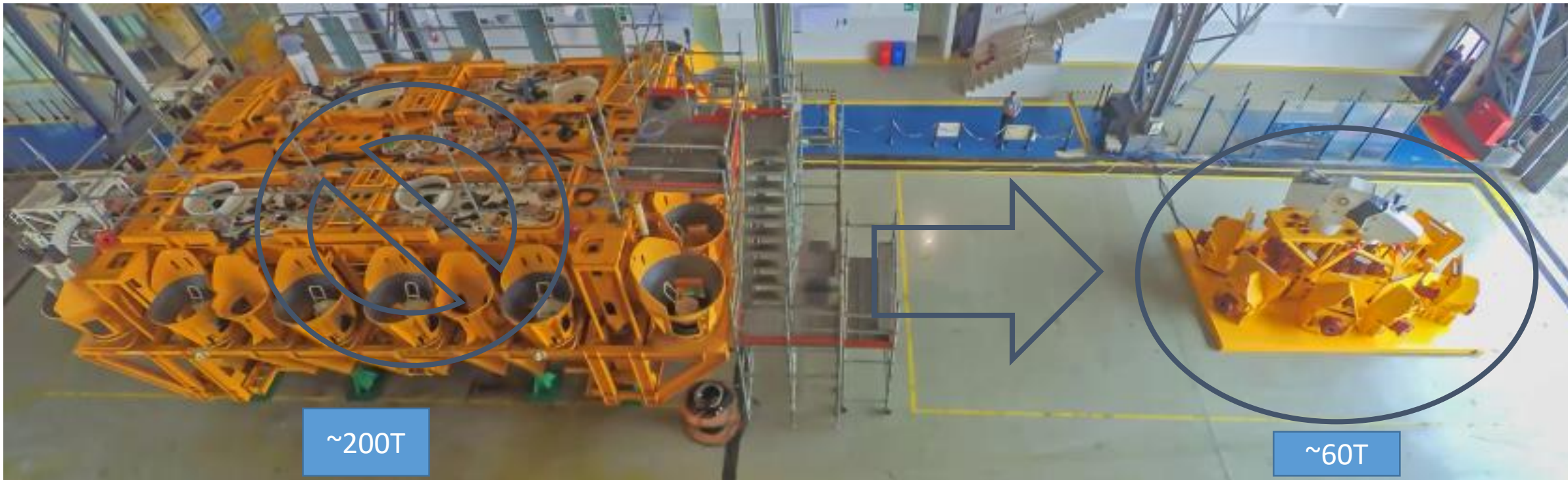
PLEM Mock-Up

- ➔ Size limitations for in-line structures



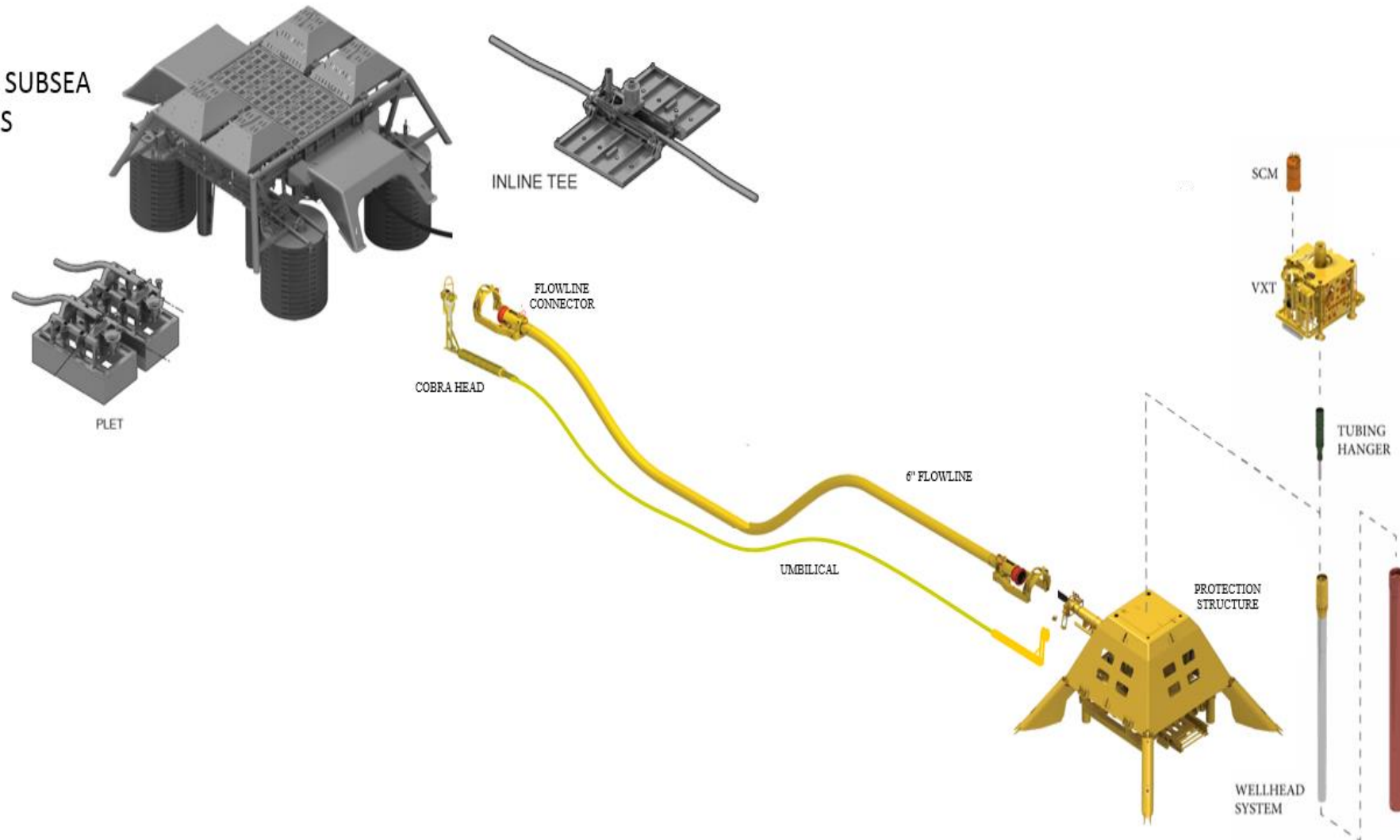
Optimization of hardware

- **Compact Manifold**
- Same functionality but fraction of weight and size → allows installation by smaller vessels, or with pipeline



Integrated offering – Satellite Production System

TYPICAL EXISTING SUBSEA INFRASTRUCTURES



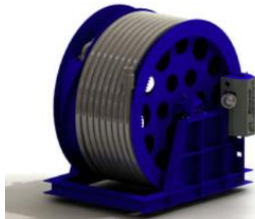
Satellite Production System

Integrated installation and pre-commissioning

TIWO – XT Installation
Well Opening



Flowline & Umbilical
Installation



Trenching



Protection Structure
Installation



Tie-In



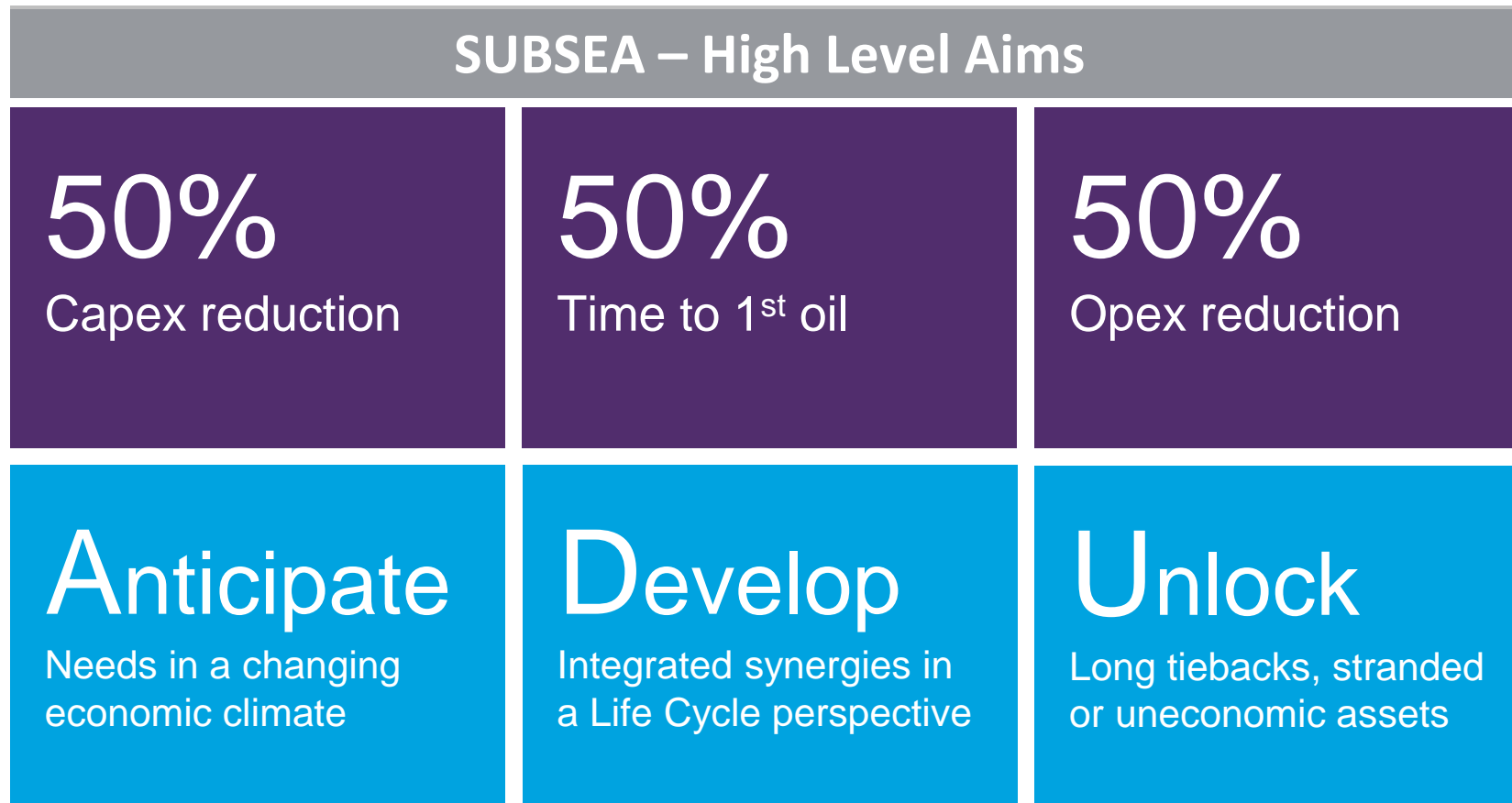
- SPS and URF installation and well start-up
- Integrated tooling and personnel
- Combined umbilical and flowline installation
- Optimized logistics and mobilization
- Typical campaign duration 35-45days
- Accelerated first oil

Conclusion

- Cost level - bold actions still required, a call for change:
 - True standardisation
 - Integrated solutions
 - Innovation
 - Efficiency
- Need to work closely with operators to achieve the full cost reduction potential



To succeed we must deliver substantial sustainable value to our Clients



➤ Ensure economic viability in a 30\$/bbl context



**Tim Crome**

Technical Manager | Global Front End | Subsea Projects

P +47 6758 8705 | M +47 4808 8705

tim.crome@technipfmc.com

TechnipFMC.com

