Integrated Solutions: Capturing the Value of iEPCI™

Knut Boe, Senior Vice-President Subsea Projects
TechnipFMC

TechnipFMC

MCEDD
DEEPWATER DEVELOPMENT

TechnipFMC snapshot

1
Integrated solutions provider for the oil and gas industry

2
Stock exchange listings – NYSE and Euronext Paris

$10B
Total company market capitalization[1]

$13B
Total company revenue[2]

$15B
Total company backlog[3]

$6B
Total company cash balance[4]

[1] Public market quote from Bloomberg, LLP; TechnipFMC market capitalization as of February 21, 2019.
[2] Revenue as of December 31, 2018; Source: Form 8-K filed with the SEC on February 20, 2019.
[3] Backlog as of December 31, 2018; Source: individual company data as found in Form 8-K filed with the SEC on February 20, 2019.
[4] Cash and cash equivalents as of December 31, 2018; Source: Form 8-K filed with the SEC on February 20, 2019.

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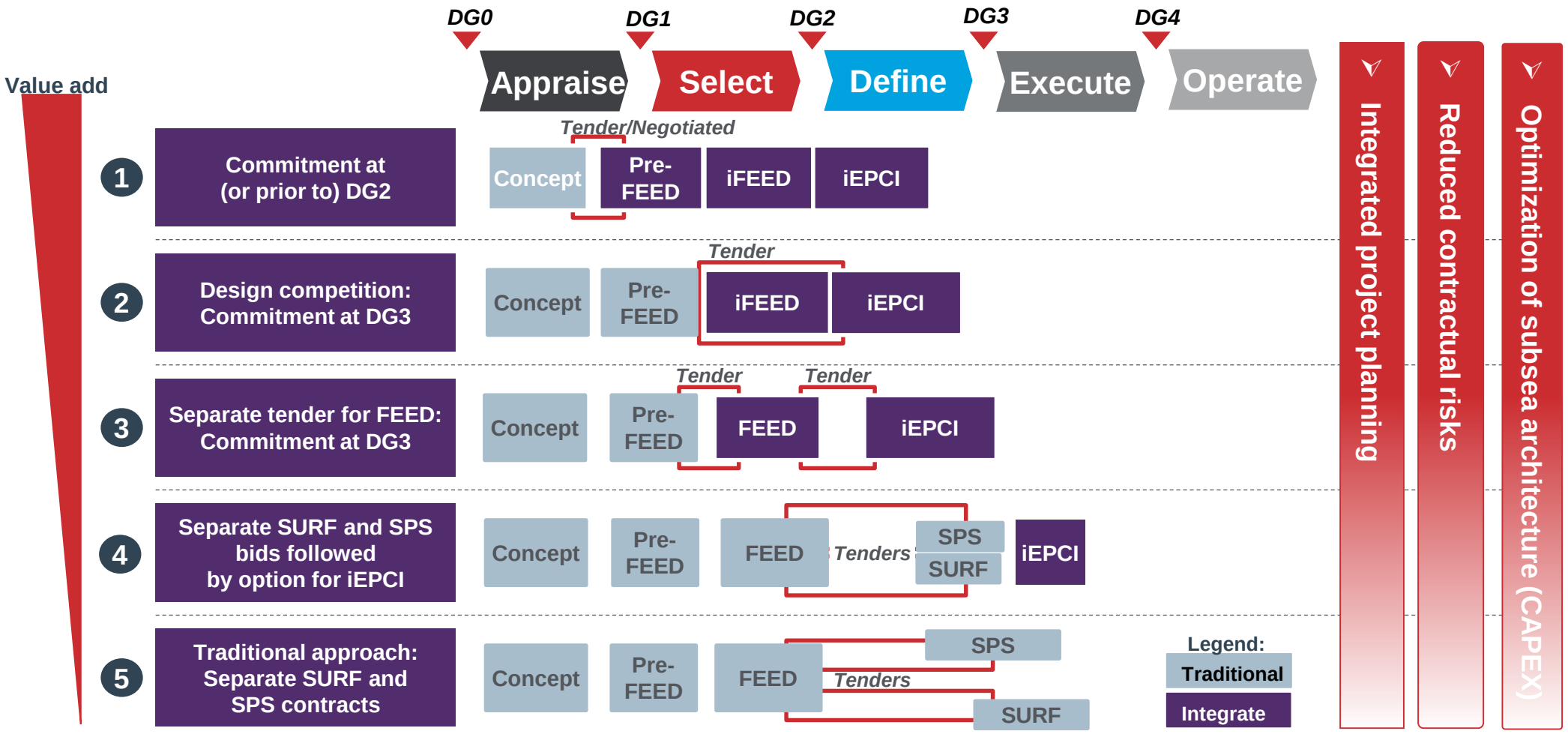
Five strategies where four lead to iEPCI™



Innovative iEPCI™ model uses one global contractor from concept to project delivery and beyond

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Summary of why iEPCI™

- Optimized architecture and life of field cost through early engagement
- Optimize iEPCI™ schedule through elimination of hand-overs and float between contracts
- Lean execution – one project, one team - avoiding duplication in position and competency
- Integrate system engineering and flow assurance
- Eliminate, mitigate and re-distribute risks
- Integrate products to save cost and increase installability

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Subsea iEPCI™ Market Acceptance

Growing market confidence in iEPCI business model

- 9 subsea iEPCI™ awards
- Growing and maturing iFEED pipeline
- Acceleration in iEPCI™ project awards
- iEPCI™ to grow in both value and inbound order mix

Largest iEPCI™ project award to date

Greenfield Development full field

End-to-end project management of the full scope

ENERGEAN OIL & GAS

Karish Field

Subsea Production System

SURF

FPSO

Onshore

TechnipFMC's **first** multiphase pump in Gulf of Mexico

Early engagement to meet field specific requirements

Mature field with declining reservoir pressure

Who Dat
multiphase pump

LLOG exploration

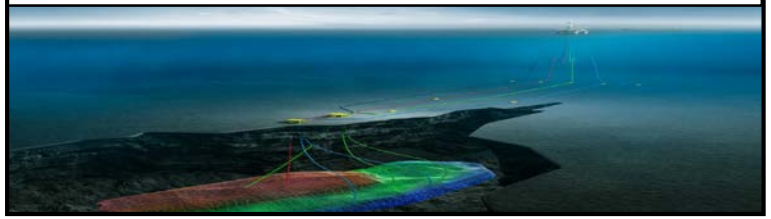
First major iEPCI™ project

Fenja project in Norwegian Sea (formerly Pil & Bue)

Technology Longest application of ETH flowline

NEPTUNE ENERGY

Fenja



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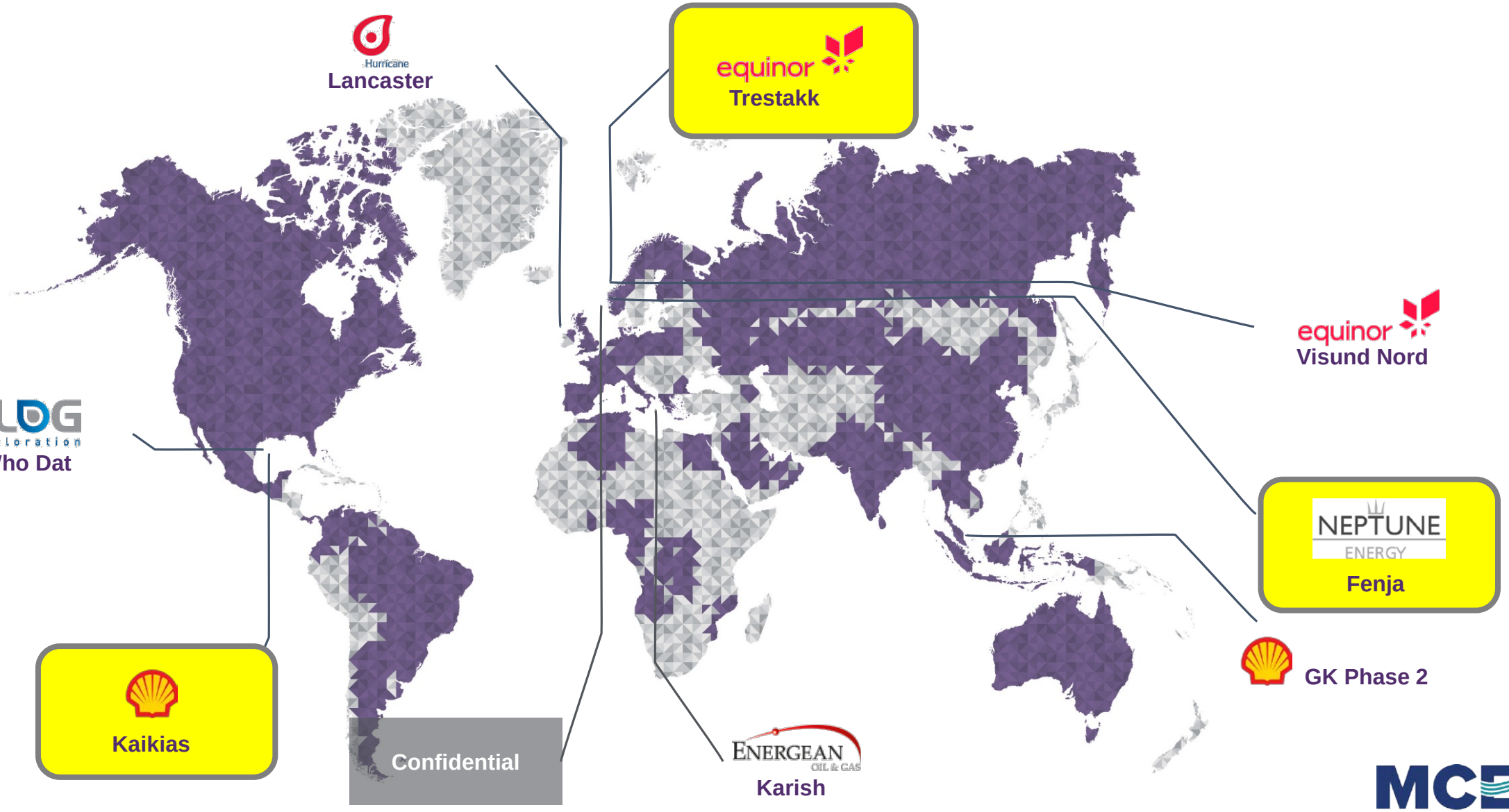
9 Subsea iEPCI™ Awards to Date



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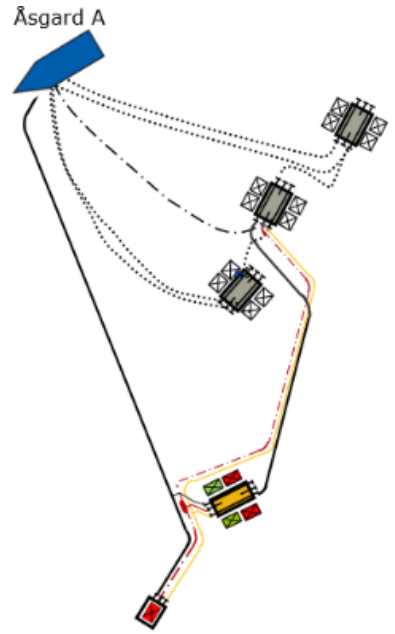
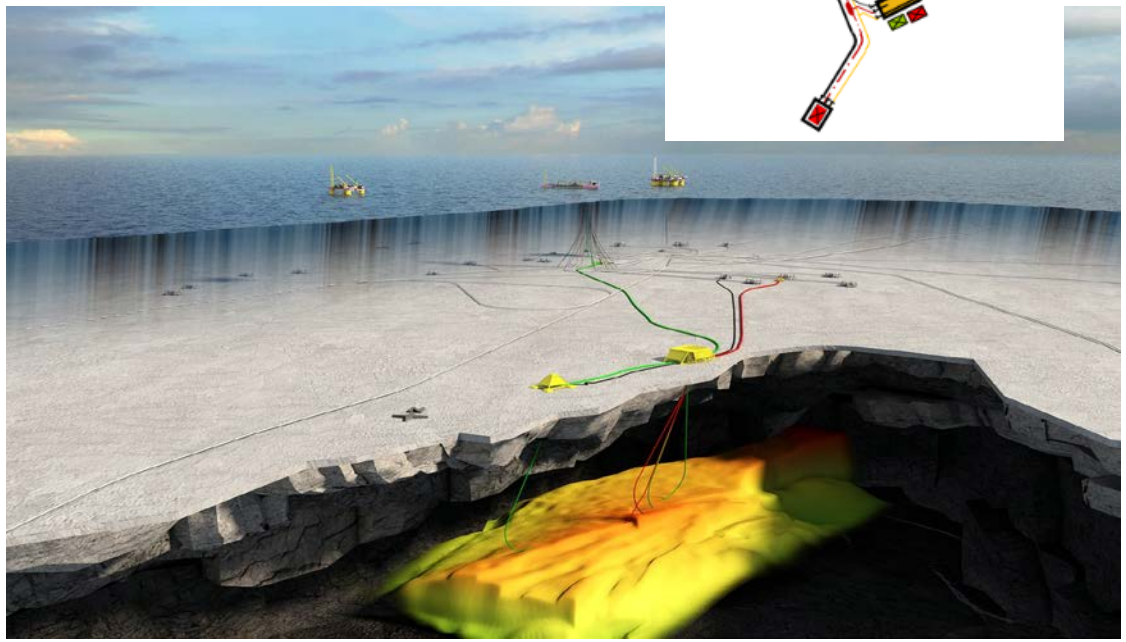
Trestakk iEPCI™ - Integration and achievements

Total System responsibility → Adjustments w/o commercial impact

- Risk for exposing carbon steel based service line to well fluid during well testing not specified
  - TFMC solved issue by re-arranging flexible jumper and re-design of pipe connection point
- During iFEED incorrect tie-in hub specified on existing infrastructure for gas injection
  - Issue solved by TFMC by mirroring manifold to avoid crossing of rigid pipelines
- Challenging tie-in operation towards free-standing satellite
  - Engineers working together, w/o contractual barriers, found solutions through a system approach (iConnector and increased hub capacity)





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KAIKAS Project Overview

TLP

PLEM Block & UCON-H Connectors
Rio de Janero, Brazil

SFL Fabrication
Houston, USA

SMIS & SURF

Compact PLEM & ILS
Omega, New Iberia, USA

TechnipFMC

SPCU Assembly
Austin, USA

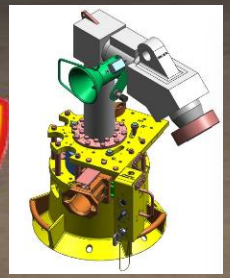
Controls & Automation

HDM Assembly
Houston, USA

UTAJ Assembly
Houston, USA

Flexible Pipe
Flexi France, LeTrait, FR

Goosenecks
Spitzer, Houston, USA



Deep Blue
Mobile, USA

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Client Benefits

Field Lay Out improvement: Flexible jumpers enabled wider spread of wells to reduce drilling risk

Cost Savings due to Reduced Project Personnel

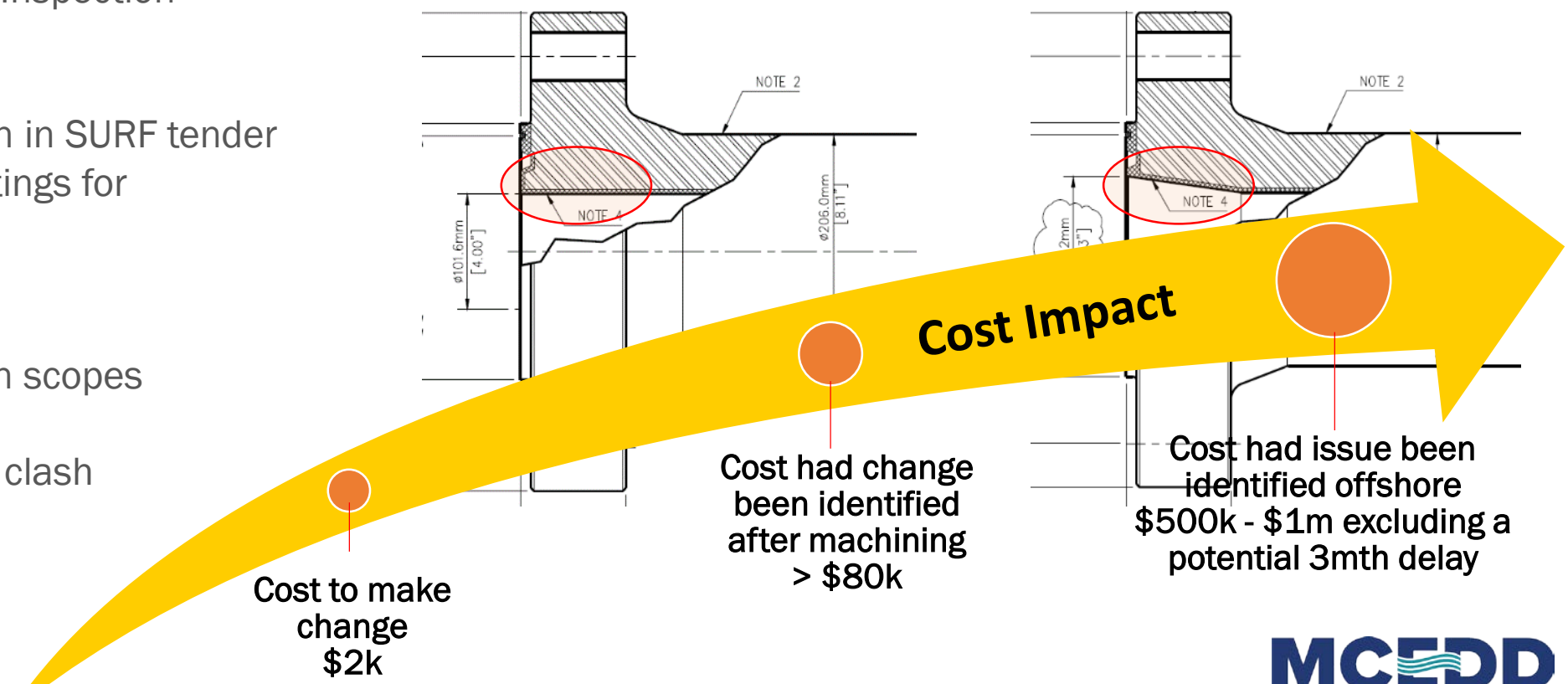
- Shell Project team encompassed a team of only 5-6 Subsea Engineers reduced from 10-12
- Savings due to Shared Inspection

Capture Interface Issues Early

- Insufficient information in SURF tender docs related to end fittings for UCON/Goosenecks

Internal SPS/SURF Interface

- Discrepancies between scopes absorbed
- Identification of BSLM clash with adjacent I-Tube
- Reduction of diving campaign



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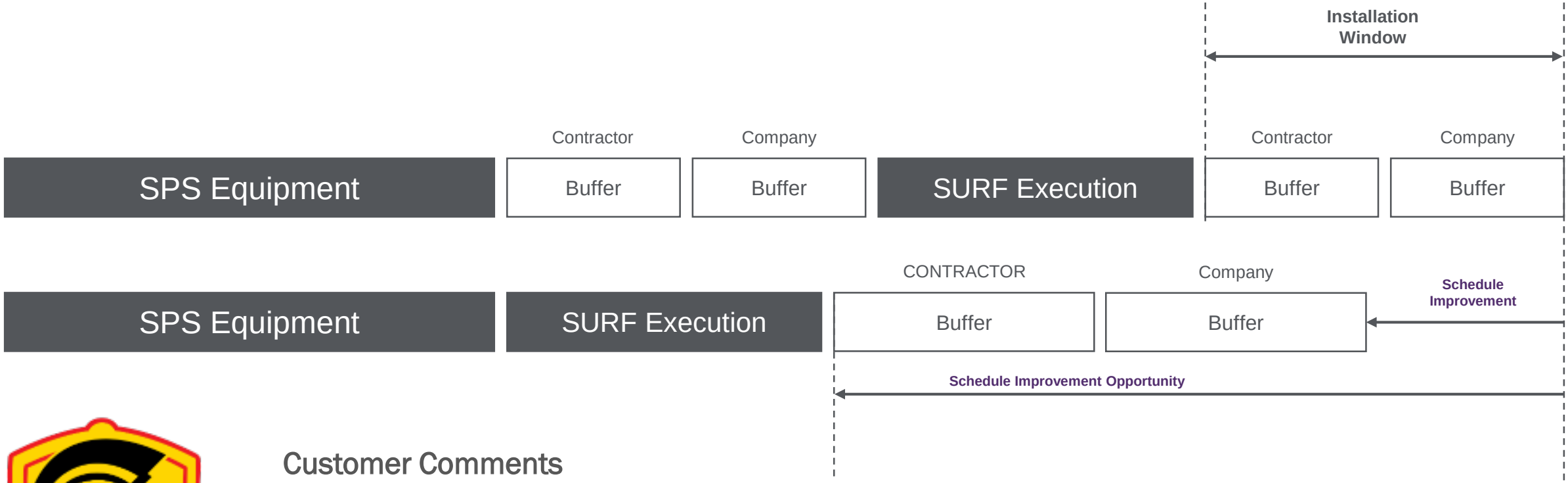
Kaikas - Overall schedule reduction through integration



Customer Comments

"...less risk of having one job hold up another."

"Interface management and its elimination...Huge advantage for us and any opportunity to eliminate or streamline it within our contracts is a win."

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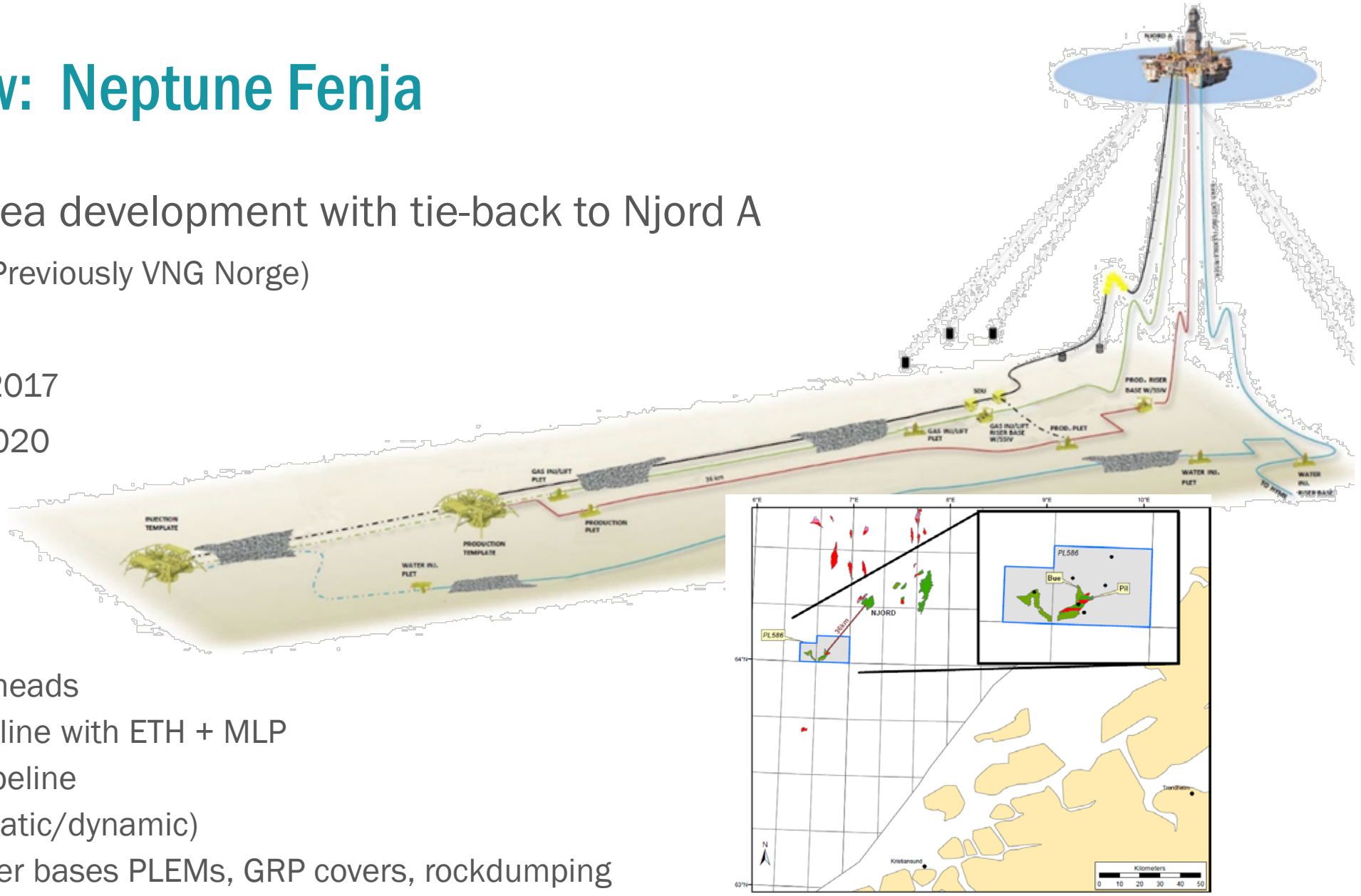
iEPCI™ overview: Neptune Fenja

Norwegian Sea subsea development with tie-back to Njord A

- Client: Neptune Energy (Previously VNG Norge)
- SURF and SPS iEPCI™
- Awarded 1st November 2017
- Completion December 2020
- Water depth 324m

- Scope of work:
  - 2 Manifolds / ITS
  - 6 XT systems + wellheads
  - 37 km PiP prod pipeline with ETH + MLP
  - 37+37 km WI+GI pipeline
  - 37 km umbilicals (static/dynamic)
  - Flexible jumpers, riser bases PLEMs, GRP covers, rockdumping



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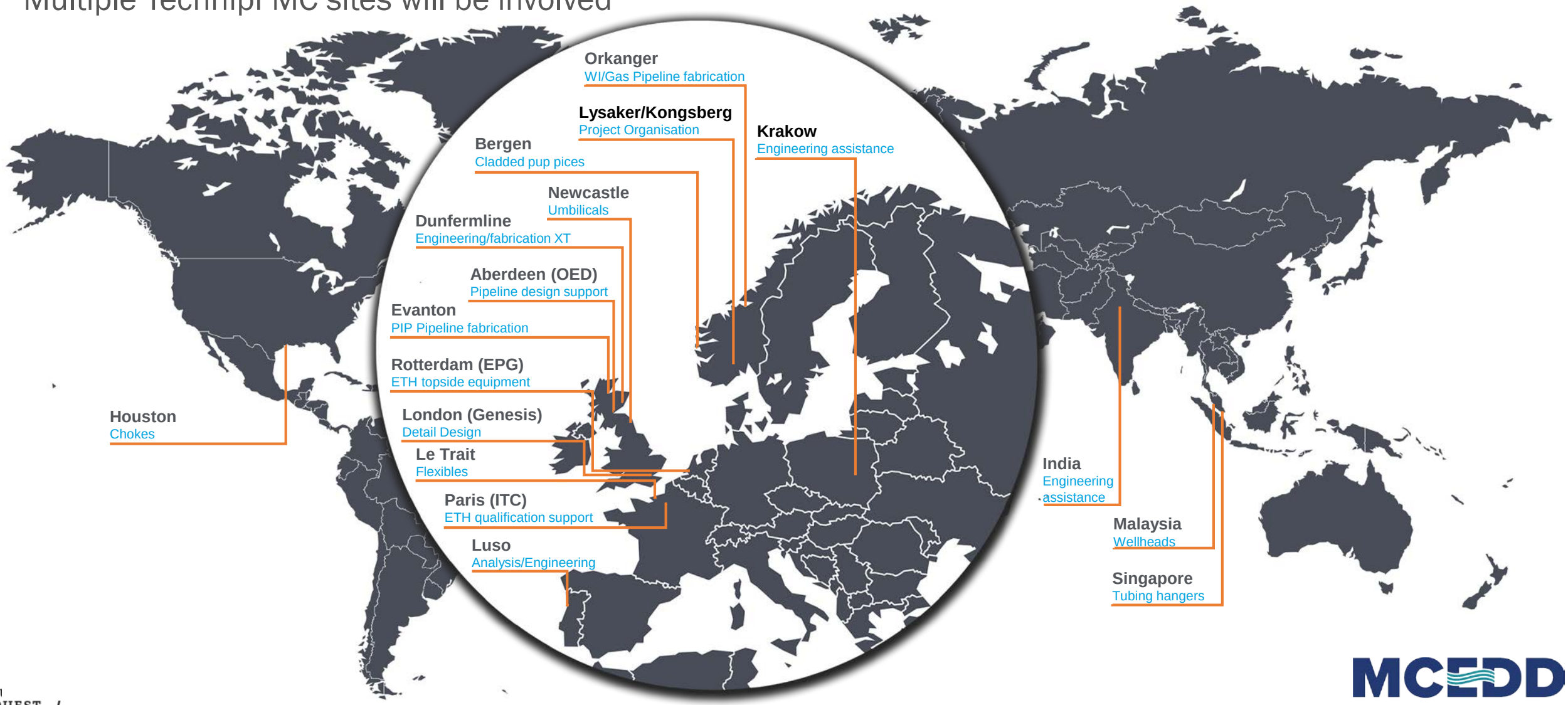
iEPCI™ overview: Neptune Fenja

Multiple TechnipFMC sites will be involved



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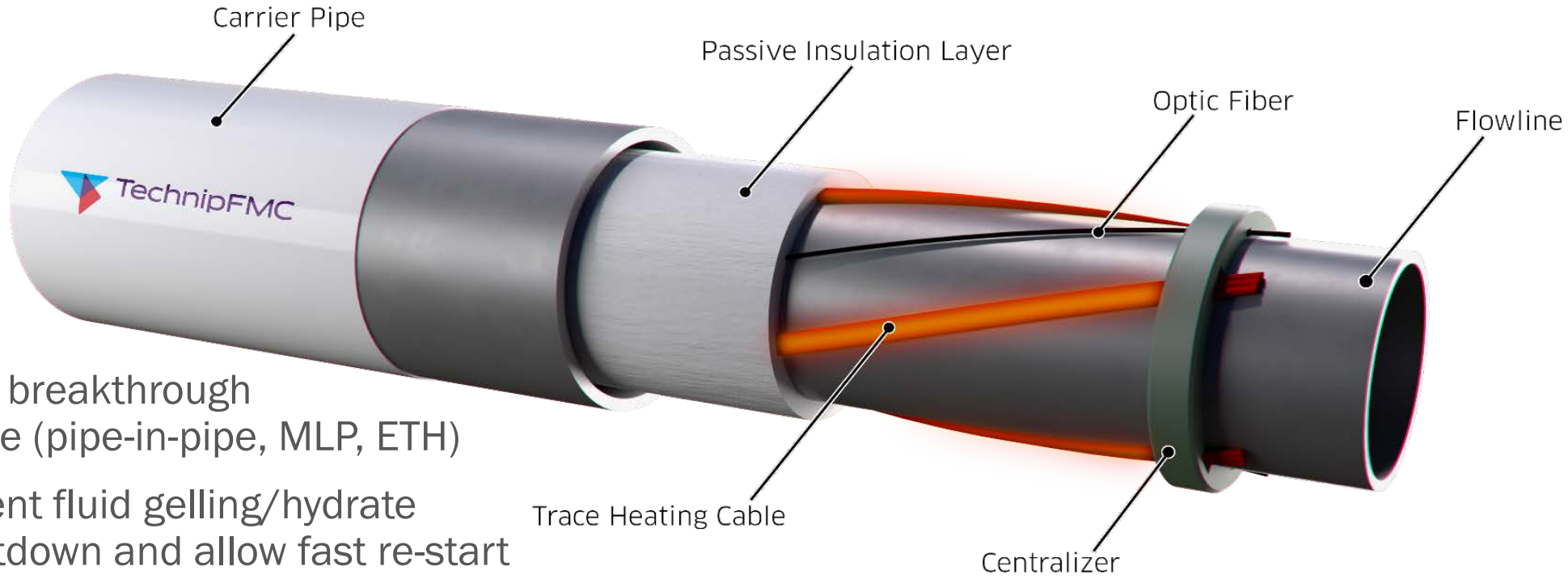
ETH Pipe-in-Pipe: Longest (37km) & largest (12”/18”) Electrically Trace Heated Pipe-in-Pipe in the world



- Advanced technology breakthrough for production pipeline (pipe-in-pipe, MLP, ETH)
- ETH required to prevent fluid gelling/hydrate formation during shutdown and allow fast re-start
- ETH load of 26 W/m for temperature maintain and 32 W/m for fast re-start (< 1.2 MW topsides)
- PiP Overall Heat Transfer Coefficient < 1 W/m^2K
- 4 heating cables : 2 out of 4 cables required for heating, temperature maintenance and warm-up

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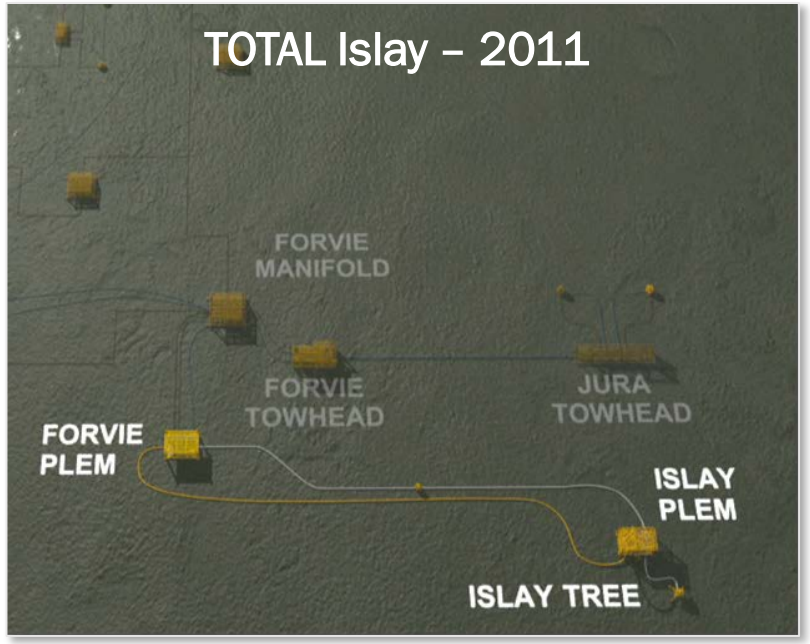
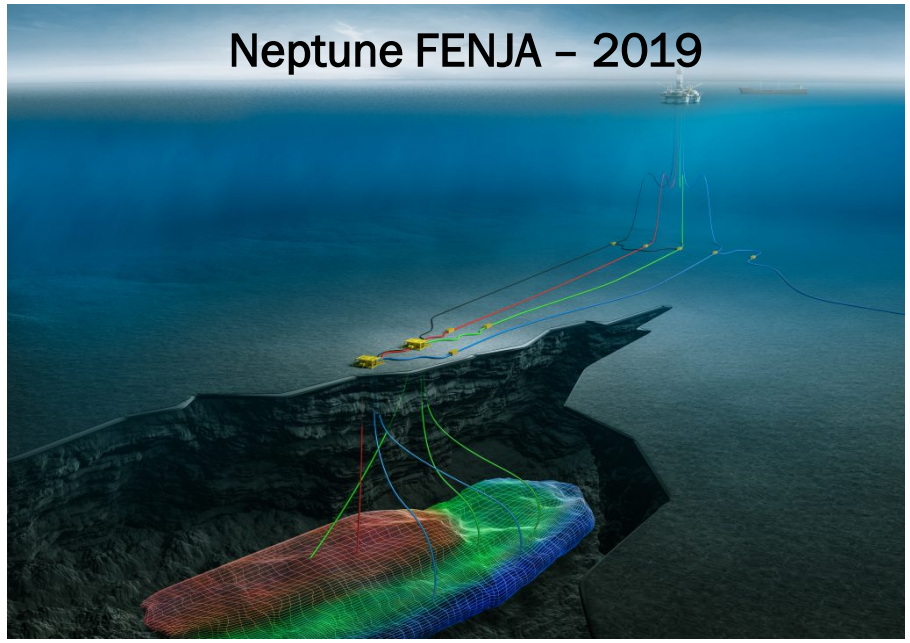
ETH-PIP From Islay to Fenja … A technological step





1st generation ETH-PiP – ETH cable 1.0kV/1.7kV:

- Up to **30W/m** per cable **over 12km**
- **120°C for 25 years**

6.625″/12.75″ ETH-PIP

122m water depth

6km long single well tie-back

U-value of 0.9W/(K.m2)

2nd Generation ETH-PiP – ETH cable 3.8kV/6.6kV:

- Up to 50W/m per cable over 25km (23W/m over 36km)
- 120°C for 25 years

12.75″/18.0″ ETH-PIP

324m water depth

37km long multi well tie-back

U-value of 0.9W/(K.m2)

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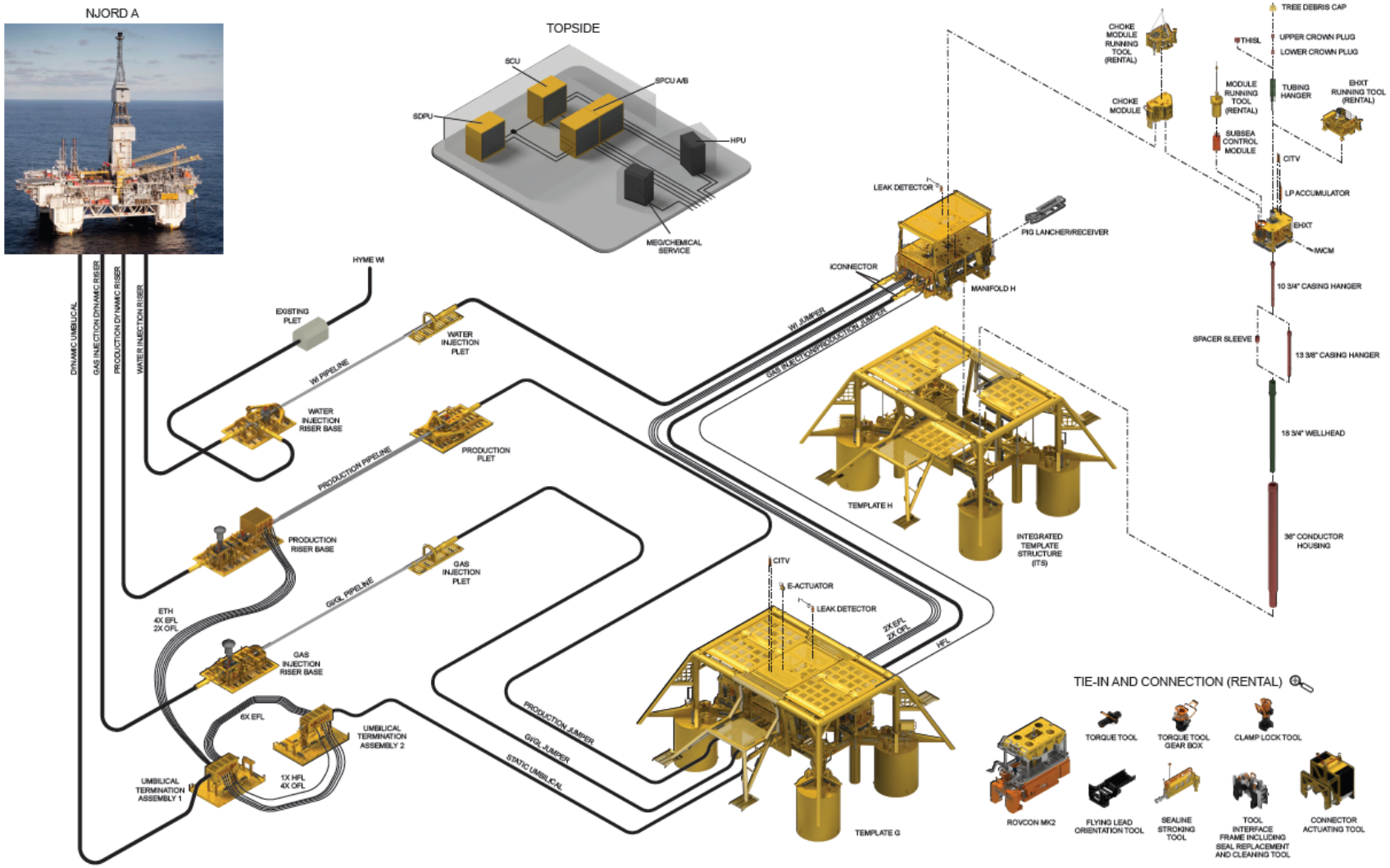
Fast Track SPS Equipment … delivered on 12 previous projects

- Standard “Fast Track” system Topside controls system
- 1 production template with 3 production XTs
- 1 injection template with 2 water injection XTs and 1 gas injection XT
- All installation tooling is rental through separate service contract



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Project Management

- Successful FEED competition resulting in a defined scope and an iEPCI™ contract
- FEED study means optimizing use of contractor resources with maximum value for client
- ETH components qualification commenced during FEED (TRL 4) & are being completed during project (TRL 4 and TRL 5)
- Objective to develop project team culture with Company, Contractor (including multiple internal sites) and Subcontractors working together with common goals
- Service Agreement in place to support drilling and Life of Field services

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Co-ordination

- Multiple execution centers coordinated by project management team
- Internal interfaces managed with same system / in-house developed software (Let's Agree©) as external interfaces
- Client meetings often arranged as 3 way video conferences with client, project management team and execution center
- TechnipFMC Execution centers treated as integrated part of project team.
- Building trust with client by transparency and direct involvement in execution centers

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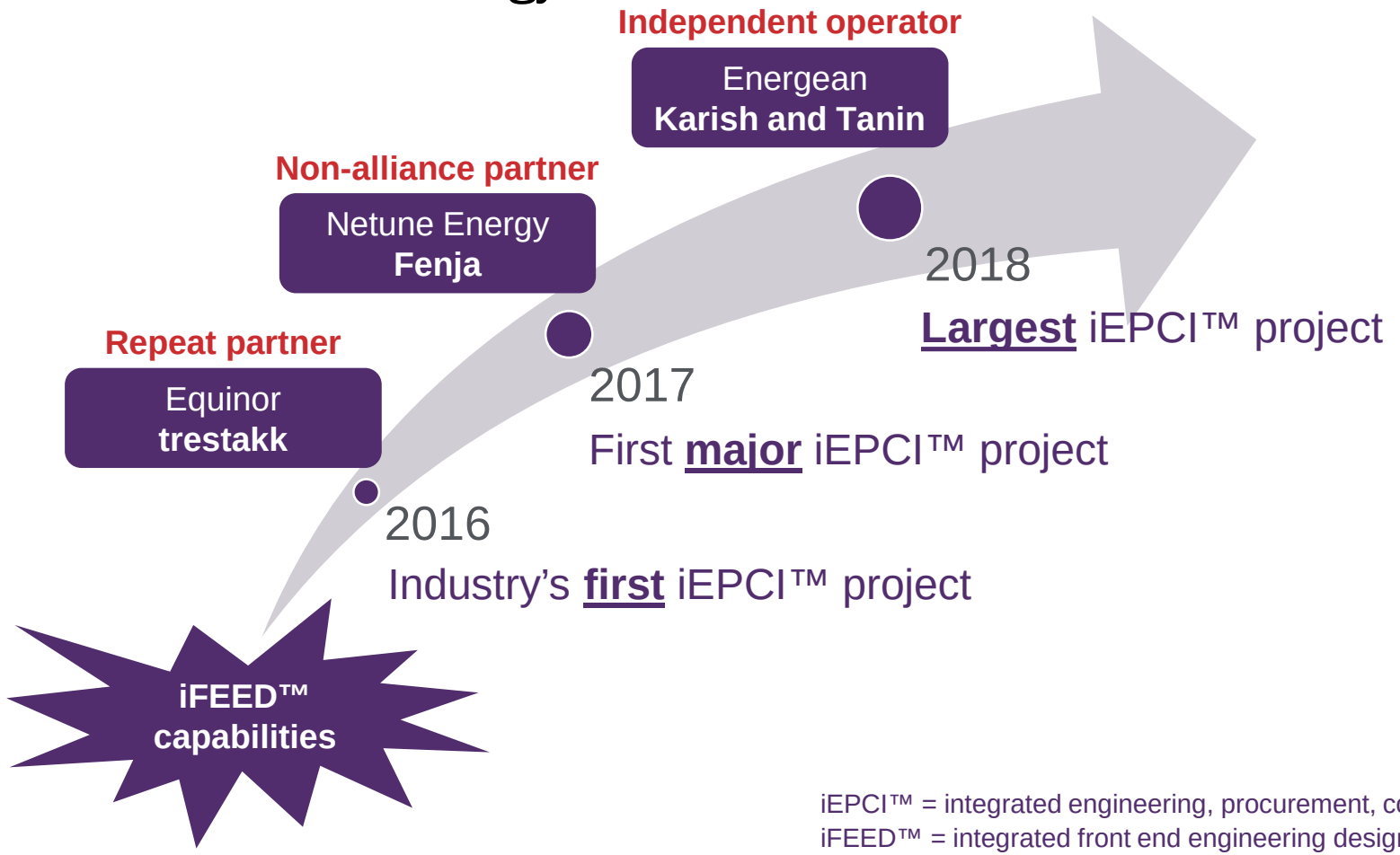
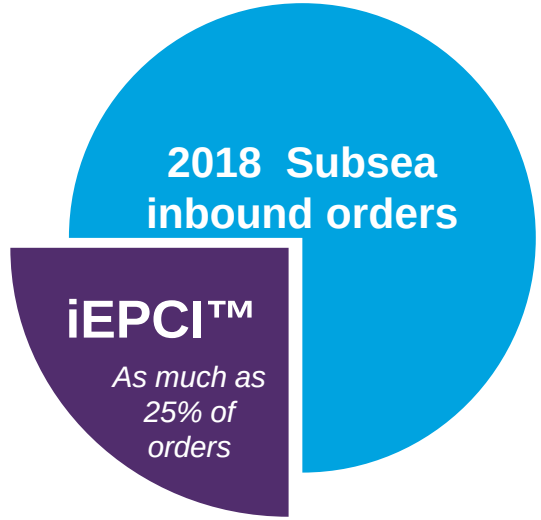
iEPCI™ overview: Neptune Fenja

Award is a proof of the success for the merged companies and the iEPCI™ contract strategy





iEPCI™ = integrated engineering, procurement, construction and installation
iFEED™ = integrated front end engineering design

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Driving the change the oil & gas industry needs

- There is a need for sustainable cost improvements in the ways hydrocarbons are produced, delivered and transformed. This requires fundamental changes to the way we design, manage and deliver projects

- TechnipFMC is well-positioned to lead the change. By bringing together complementary skills and innovative technologies we can boost efficiency, lower costs, reduce risks, and accelerate schedules.

TechnipFMC