



# Subsea 2.0™ for North Sea

Simpler, Leaner, Smarter



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# Subsea project economics must improve

## Operating costs are high due to:

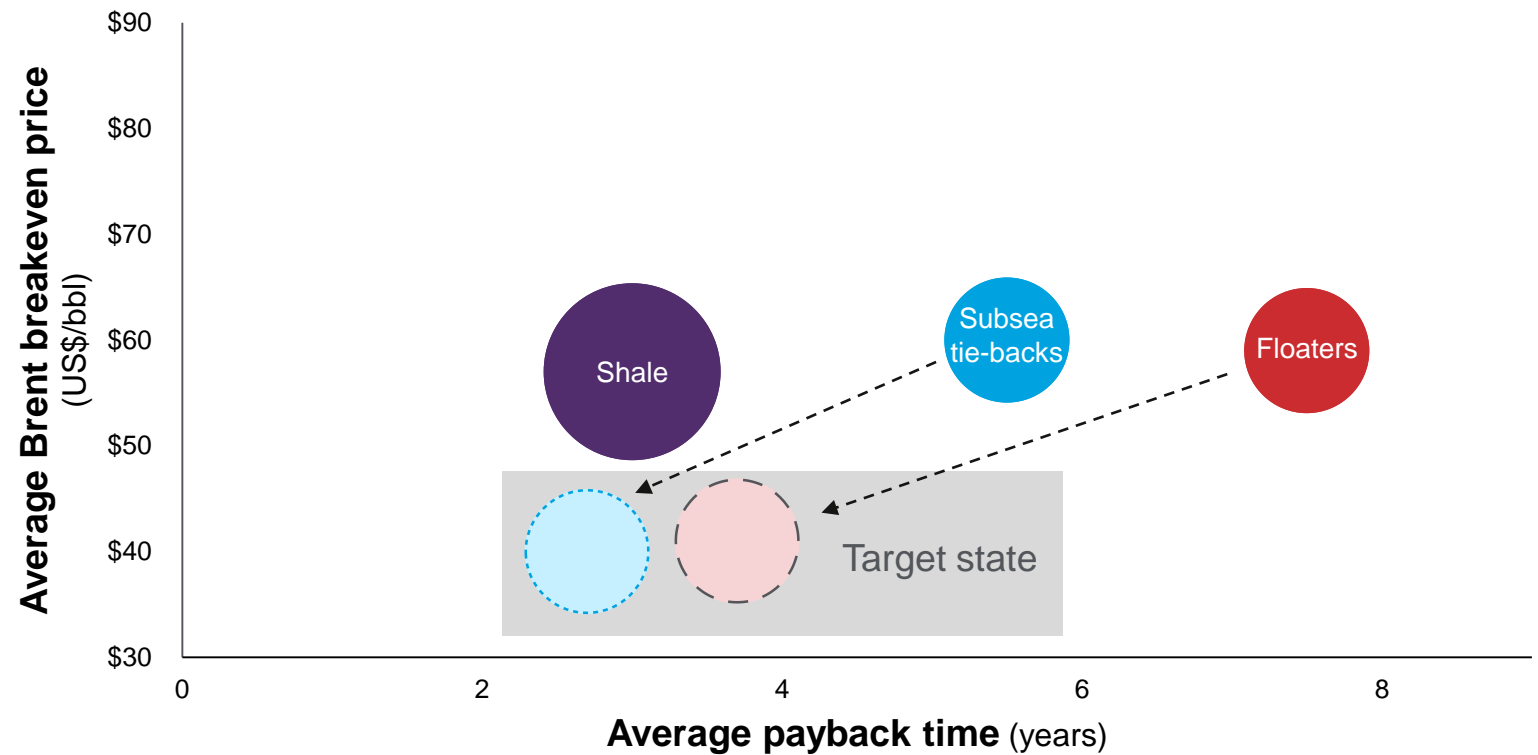
- ▶ Exploration risks
- ▶ Expensive infrastructure
- ▶ Customization needs
- ▶ Longer timelines

## These challenges are compounded by:

- ▶ Low oil prices
- ▶ More competitive shale alternatives

## Projects by Supply Segment

Circle size corresponds to expected 2017-2021 CAPEX



Source: "Market Perspectives" Rystad Energy, February 2018

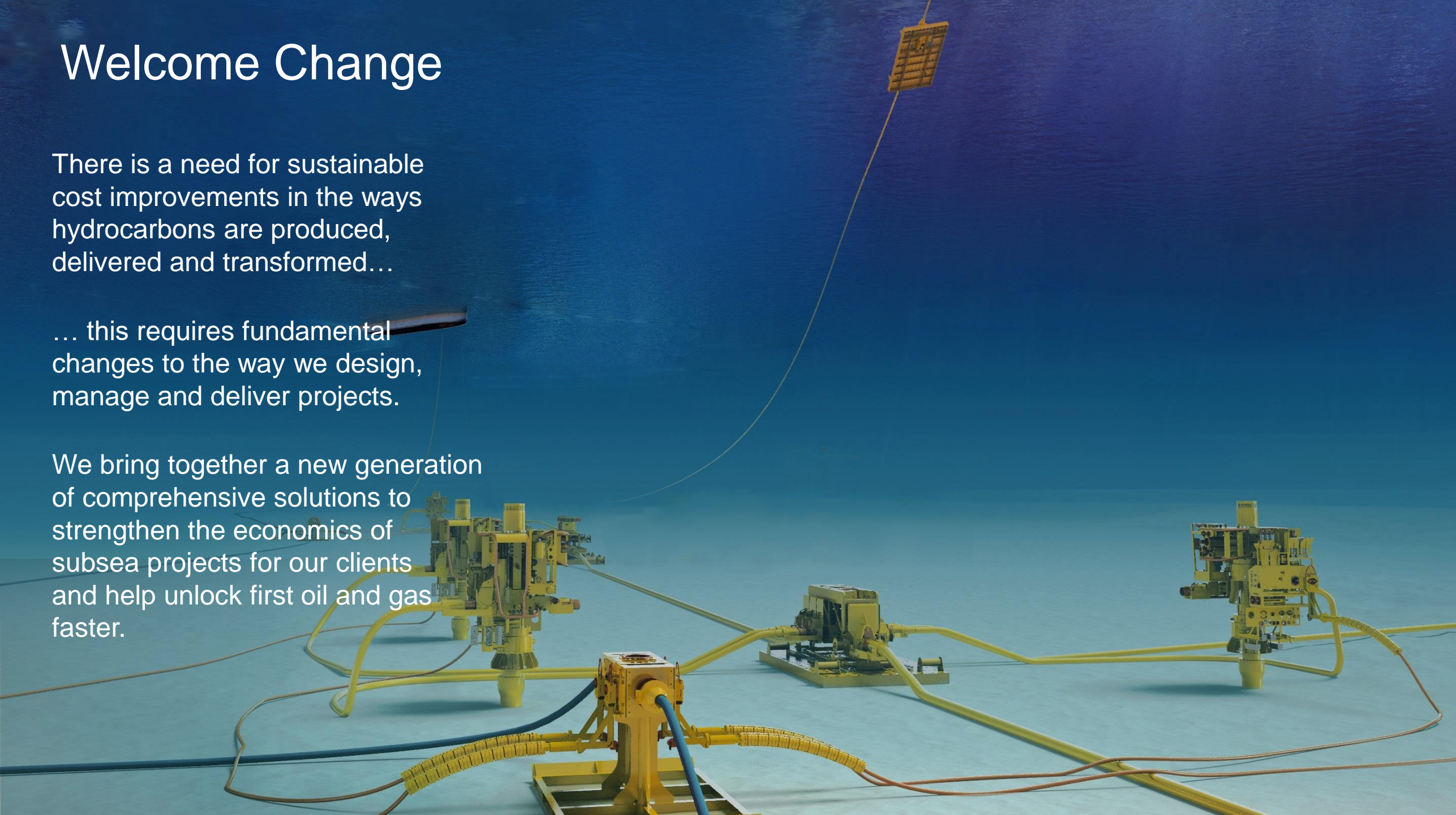
# Turning challenges into opportunities

# Welcome Change

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.

We bring together a new generation of comprehensive solutions to strengthen the economics of subsea projects for our clients and help unlock first oil and gas faster.





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# Subsea 2.0™ in action



## Compact Tree

Average 50% reduction in size and weight with equal functionality as before

## Compact Manifold

Average 50% reduction in size and weight, saving up to 50% in delivery time

## Flexible Jumpers

Improved material flexibility enabling more installation methods

## Distribution

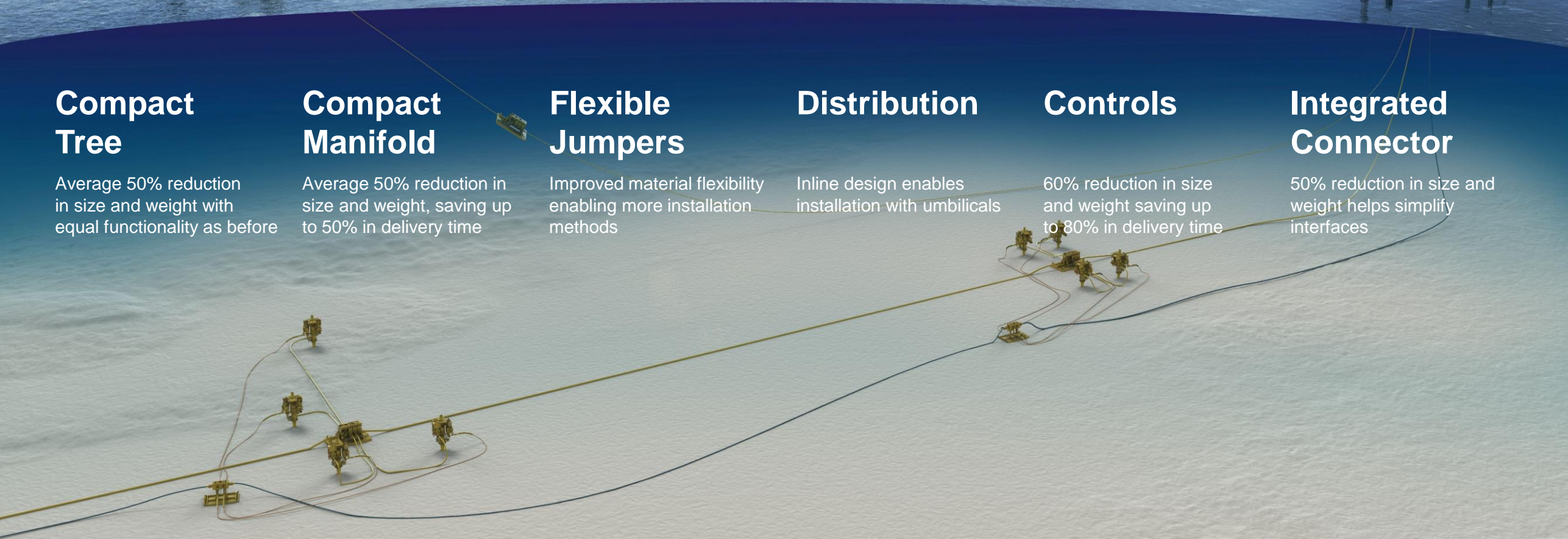
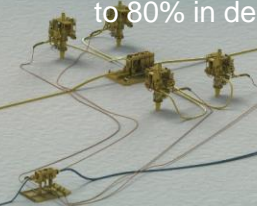
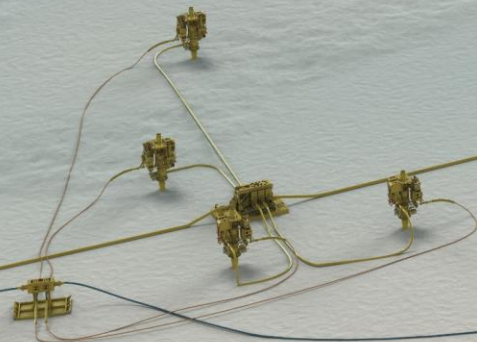
Inline design enables installation with umbilicals

## Controls

60% reduction in size and weight saving up to 80% in delivery time

## Integrated Connector

50% reduction in size and weight helps simplify interfaces



# Transforming subsea with iEPCI and Subsea 2.0

**Combining Subsea 2.0™ and iEPCI™** maximizes the impact that simpler, leaner and smarter make – improving subsea economics and helping unlock first oil and gas faster, while maintaining the same or better functionality.



*Subsea 2.0™ components compared to prior generation of equipment*



*Subsea 2.0™ configured and installed in the field*



Now we are going further...

.....introducing the Subsea 2.0™ for North Sea

# Vision NCS 2.0

- Combining the best from Subsea 2.0 , NCS 2017+ and others

## 2015 – 2017 development program

## 2018 – 2020 development program

NCS 2017+



NCS & Canada



Overtrawlable

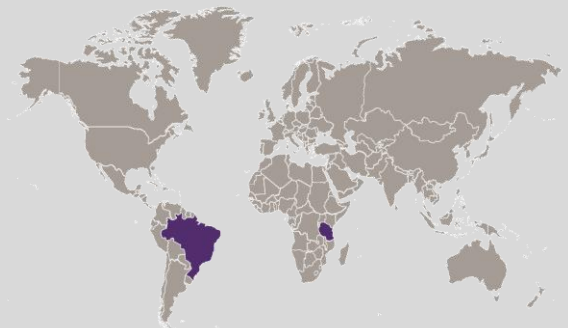


Templates



Meeting  
NCS clusters  
expectations

Subsea 2.0



Brazil & UDW



Lighter



Smaller



Fewer parts



Installation friendly



No pipe welding

NCS 2.0



Lower Total Cost of Ownership



Drive supplier led solution



Installation friendly (Rig and  
Vessel)



Increase pre-engineered parts,  
configured to order



Simpler engineering and  
fabrication



Over trawlable



Digitalisation



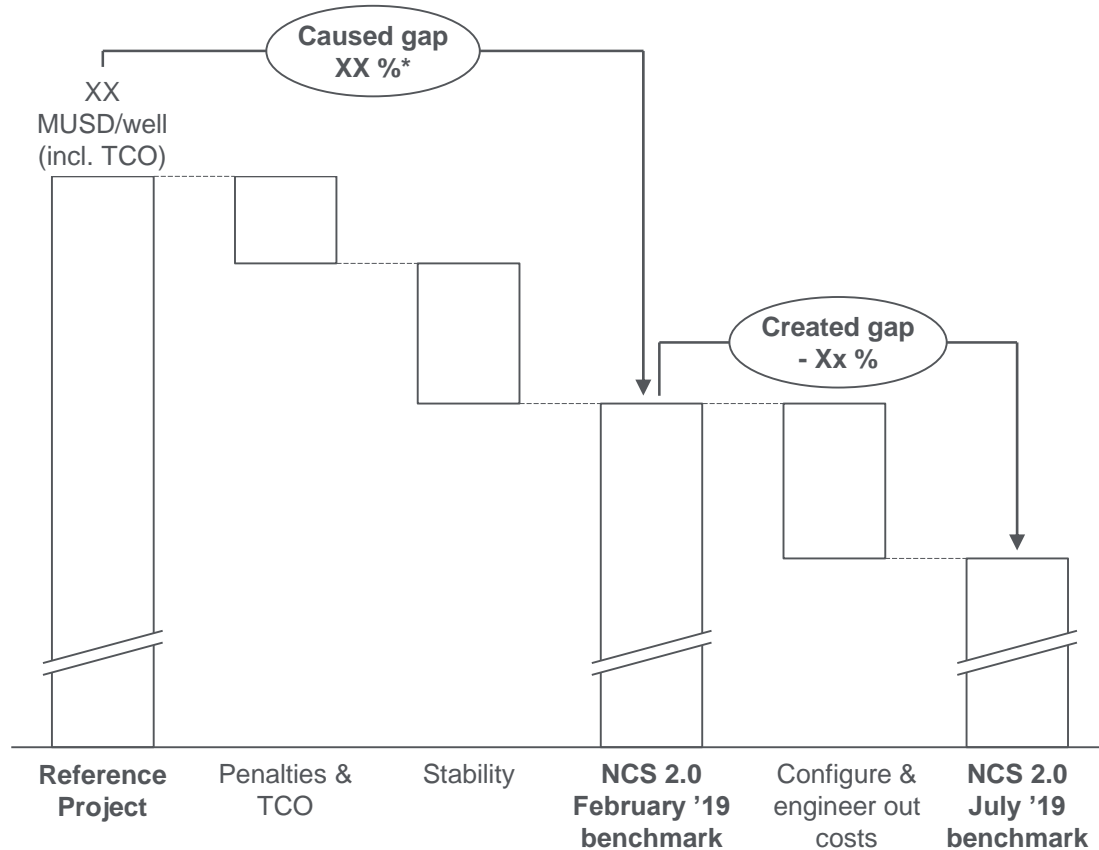
NCS

*Develop next generation configurable products for the NCS market  
Challenge existing solutions and find new ways to reduce cost and lead time*

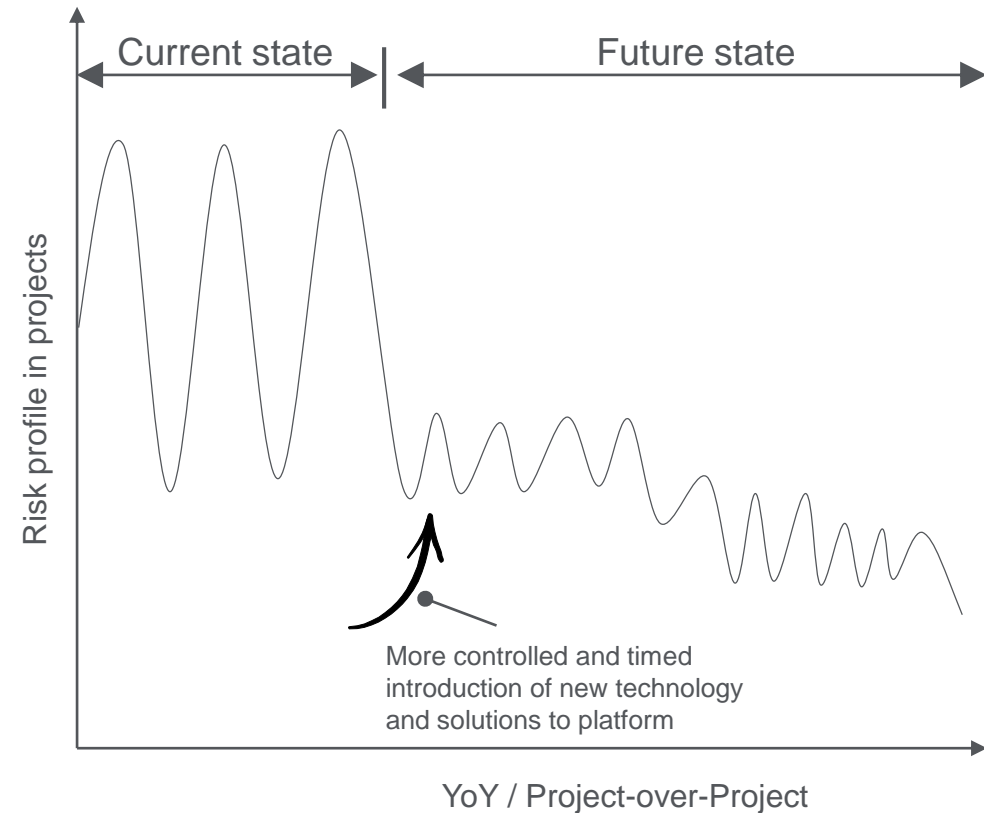
# Stepwise approach and priorities short, medium and long term

-Firstly focus on pain points and stability, then carve out additional cost & lead time

## Estimation improvement potential



## Disciplined management of change combined with a steady drumbeat on innovation



# NCS 2.0 TCO Targets

## Reduce HW Cost



NCS 2.0

- Reduce engineering hours
- Increase pre-engineered parts
- DFx
- Optimize test philosophy
- Assess innovative materials
- Apply system thinking
- Library of components and modules

## Reduce Vessel hours



NCS 2.0

- Reduce number of runs
- Design products for efficient installation
- Evaluate simultaneous operations
- Establish efficient Tie-In and Connection methods

## Reduce Rig hours



NCS 2.0

- Optimize tooling for Rig Operations
- Simplify Rig operations

## Reduce Service Cost



NCS 2.0

- Align rental business with system tenders
- Digitalization of User Documentation

## Reduce Time to first Oil



NCS 2.0

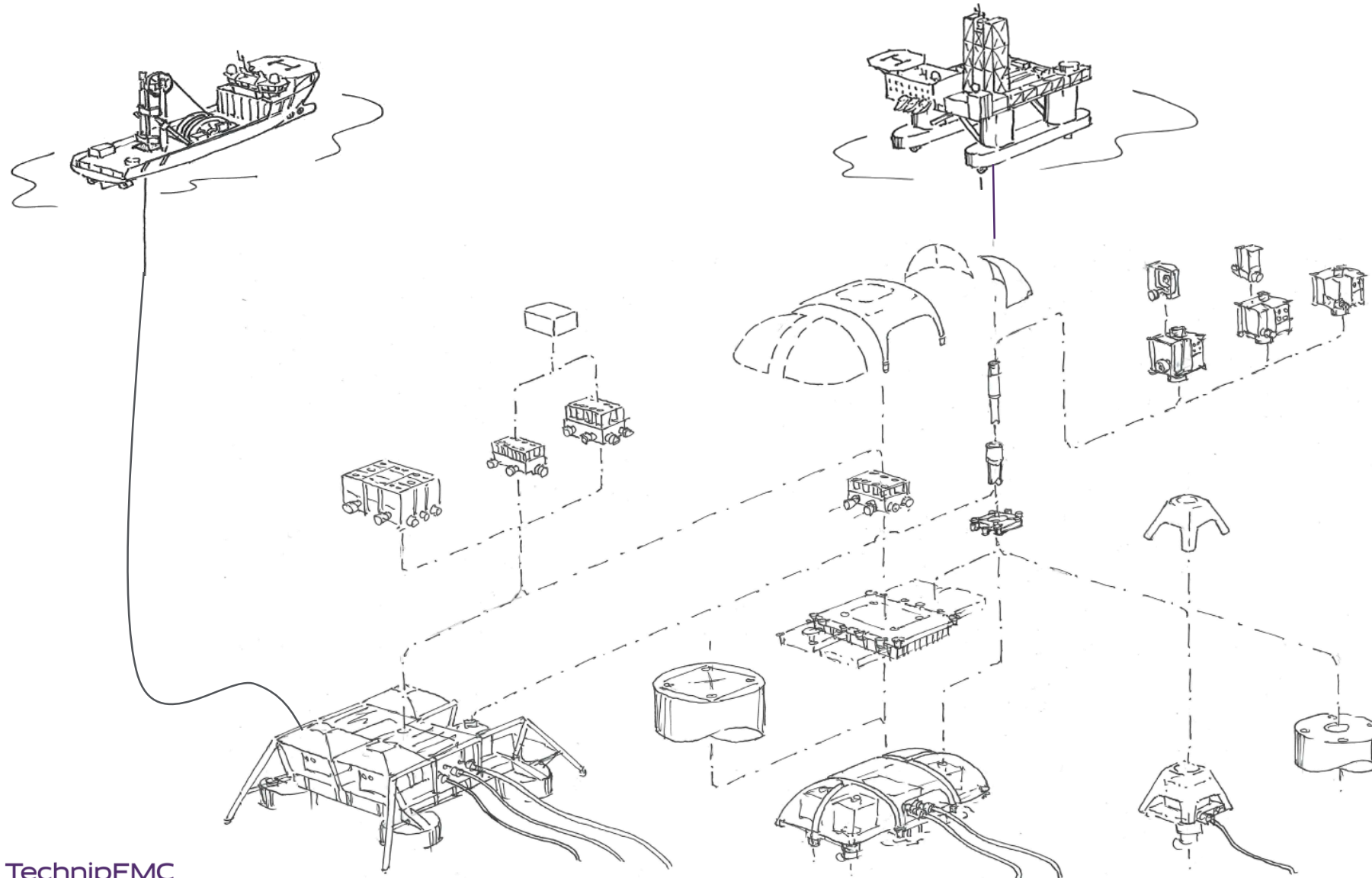
- Define stocking program for raw-materials and components
- Optimize design for efficient assembly, manufacturing and test

# NCS 2.0

- Drive supplier led solution
  - Simplification
  - Reduce TCO

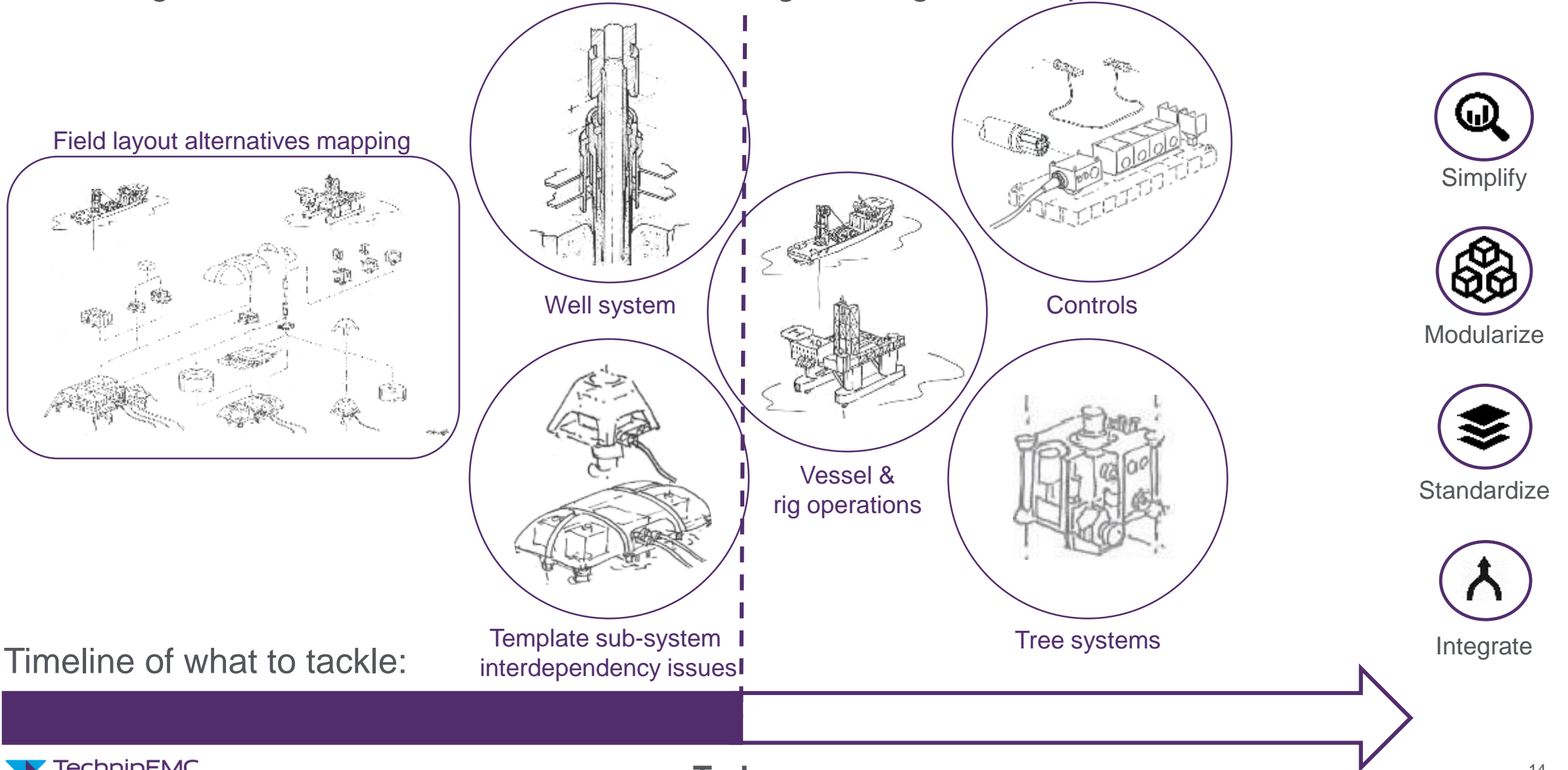
# NCS 2.0: Rethinking our products designs

- *How do we evolve to reduce TCO?*



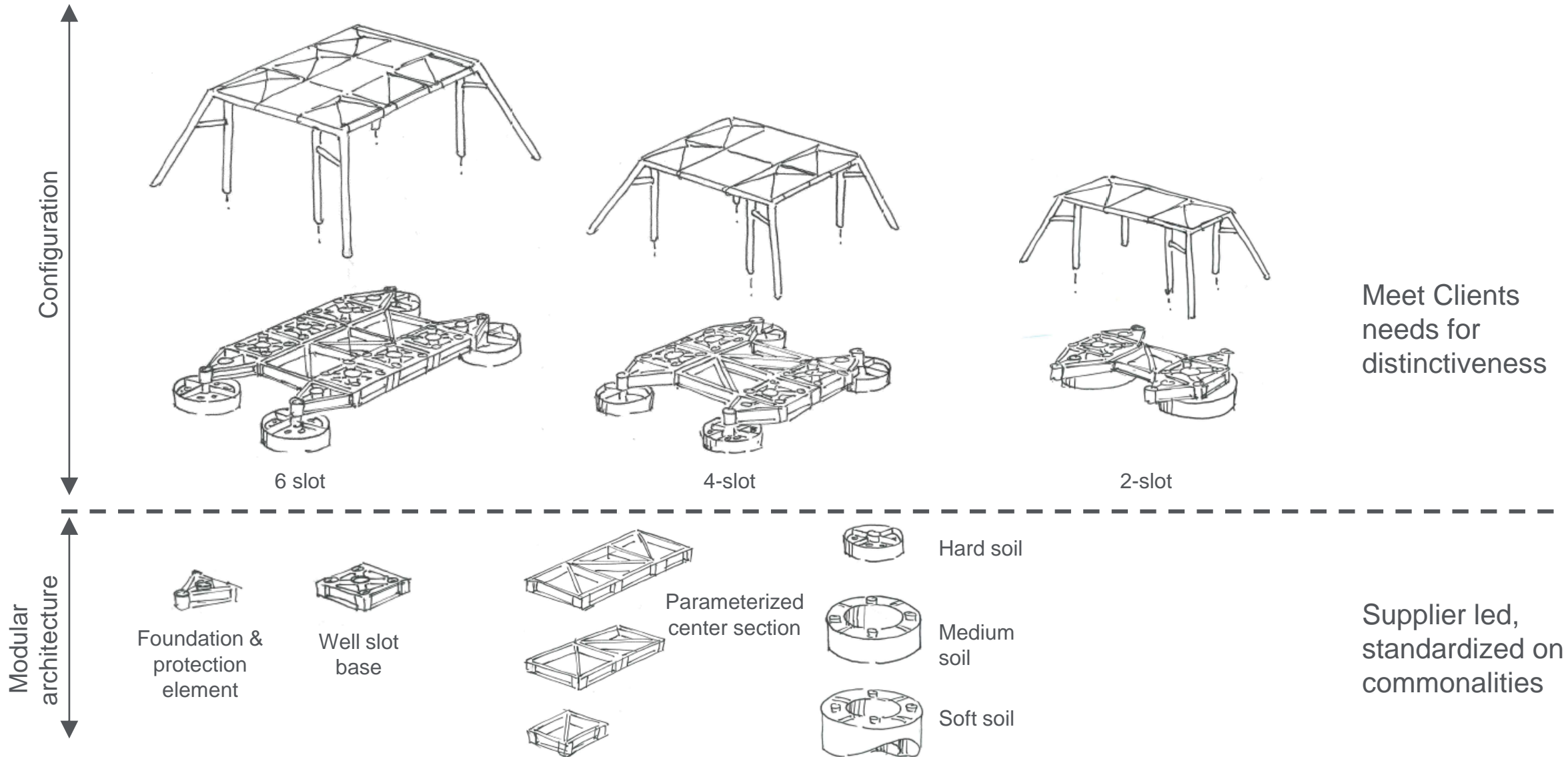
# Current focus areas

*First things first; -decide on the foundation with highest degree of dependencies*



# Product architecture

- *What it could look like*



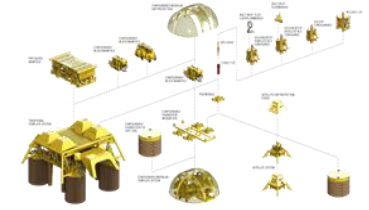
# NCS 2.0 Roadmap

3.0

2020-

2019

2018



## Short term targets

- Solve caused gap (pain points)
- Identify stabilisators for template and satellite solutions
- NGA Industrialization (800 CS)
- New umbilical cross section
- Identify TCO reduction ideas

## Medium term targets

- Increase pre-engineered parts.
- Reduce time for installation (rig and vessel)
- New Umbilical TH & BOBs
- Reduce delivery time
- Increased robustness
- Reduce ITS and manifold weight
- Definition of building blocks aligned with SPS, SURF and Operation/iLOF

## Long term targets

- All electric
- Digitalization
- Product catalog optimized for configurability
- Minimized engineering after contract award
- Use of lighter and more efficient installation vessels
- True integration with Subsea Studio™
- Rig independent systems
- Optimize ROV ops

Drive Cost Down

**DIGITALISATION**