

Digital & Data Journey for Project Controls of Brownfield Projects

North Oil Company, Qatar

Nikhil Srivastav

Lead, Methods & Estimation
Project Controls & Services



AGENDA

Brownfield Projects

- Context & Trend

North Oil Company

- Project Control & Services

Need for Digitalization

- Challenges

Digital Landscape

- Our Journey

Lessons Learnt

- Take Aways



Brownfield Projects

Context & Trend



BROWNFIELD PROJECTS – OIL & GAS

- Existing Field Modifications
- Drivers
 - Maximizing Production Capacity
 - Resolving Integrity Issues
 - Compliance
 - Changes in process or manage obsolescence
- Challenges
 - Completeness of data
 - Complexity of works & interfaces with ongoing works
 - Resource constraints & uncertainties
 - Contracting & Execution strategies
 - Accommodation (**Offshore only*)

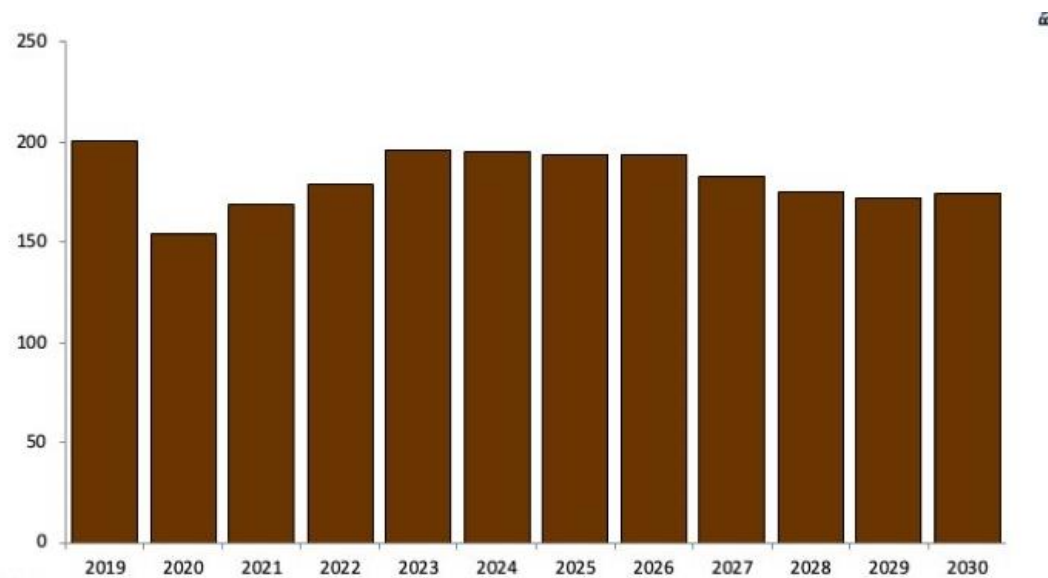


“Difficult and complicated for project controlling & monitoring”

Brownfield Projects – Global View

Global Conventional Brownfield Investment Trend

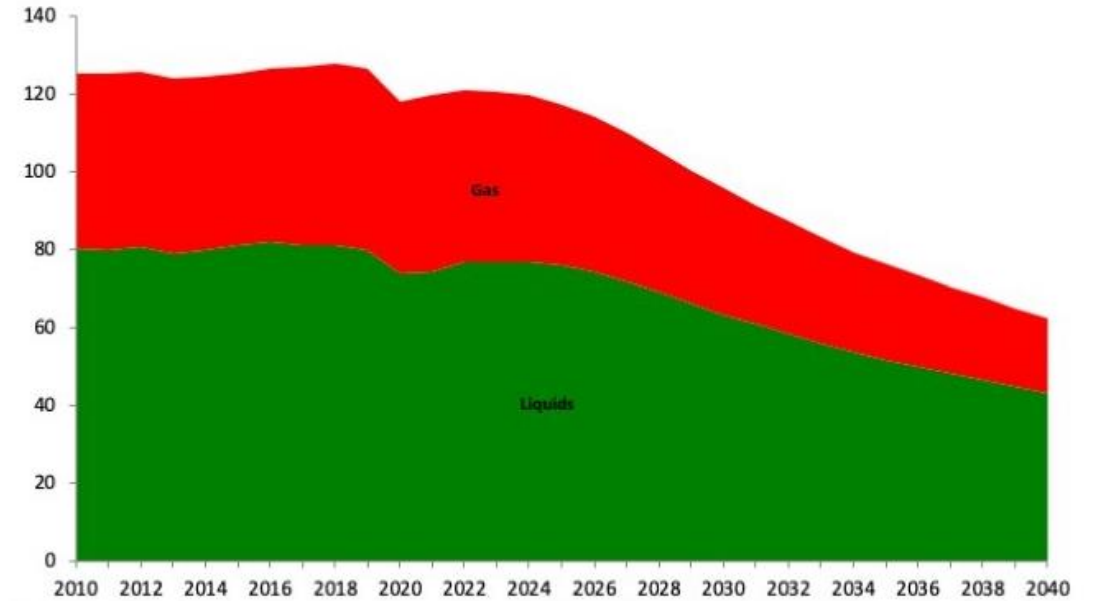
(Billion USD)



*Source: Rystad Energy UCube

Global Production Outlook for Conventional Fields

(Million Barrels of Oil Equivalent Per Day)

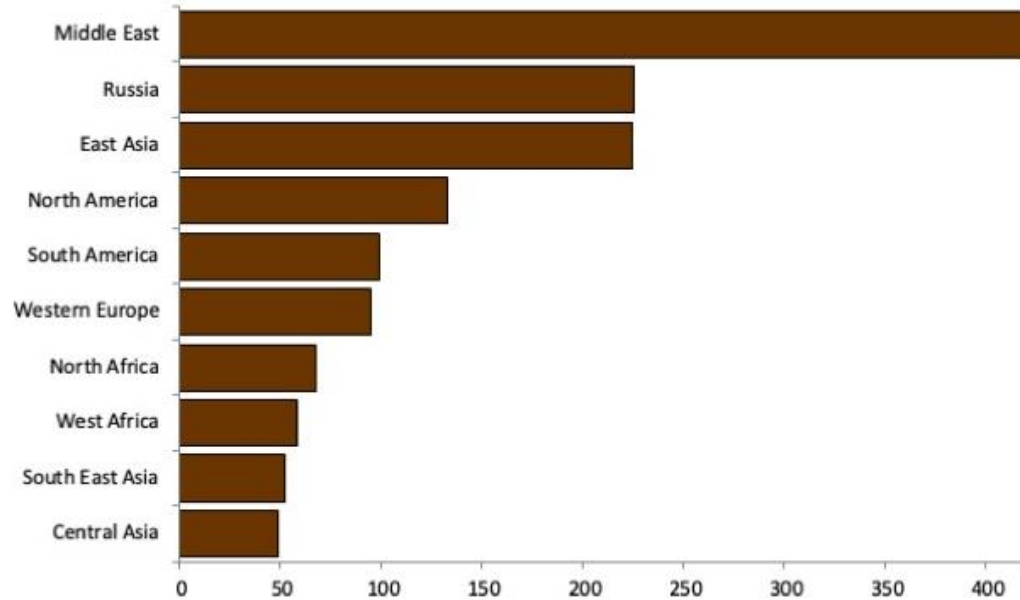


*Source: Rystad Energy UCube

Brownfield Projects – Global View

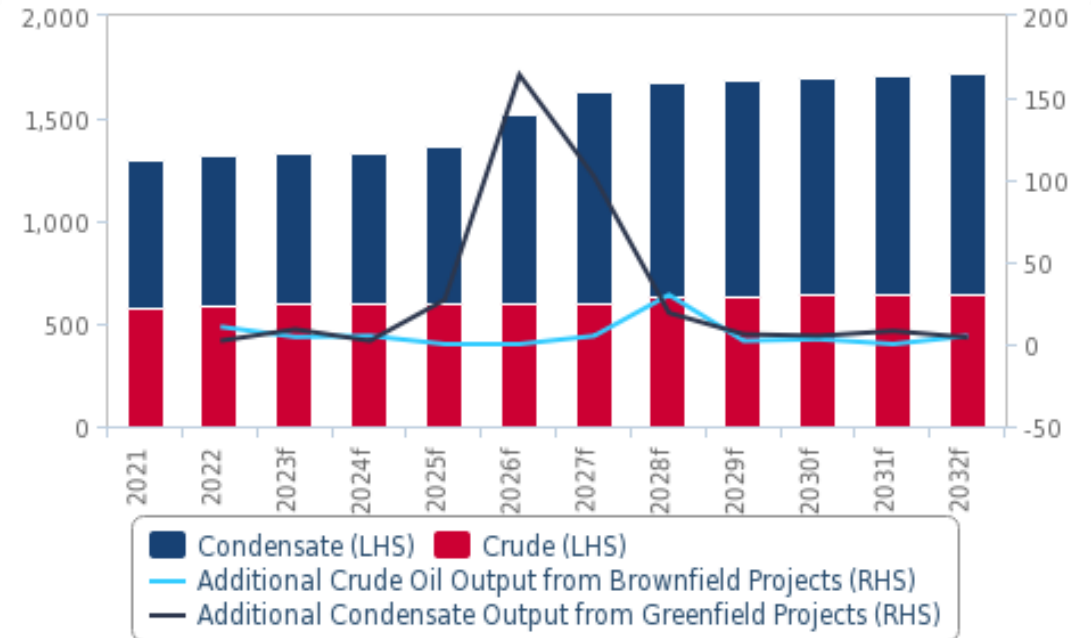
Top Regions with Global Brownfield Investments (2023-2030)

(Billion USD)



*Source: Rystad Energy UCube

Qatar - Crude Oil & Condensate Production, Kb/d (2021-2032)



*Source: Fitch Ratings, BMI

Qatar Outlook:

- Major share of potential production from brownfield projects
- Two largest oil fields Al-Shaheen and Dukhan; both declining and ageing.

“Fields are Getting Matured & Declining”

North Oil Company

Project Control & Services



NORTH OIL COMPANY - INTRODUCTION

Oldest & largest
“offshore” producer
of oil in Qatar

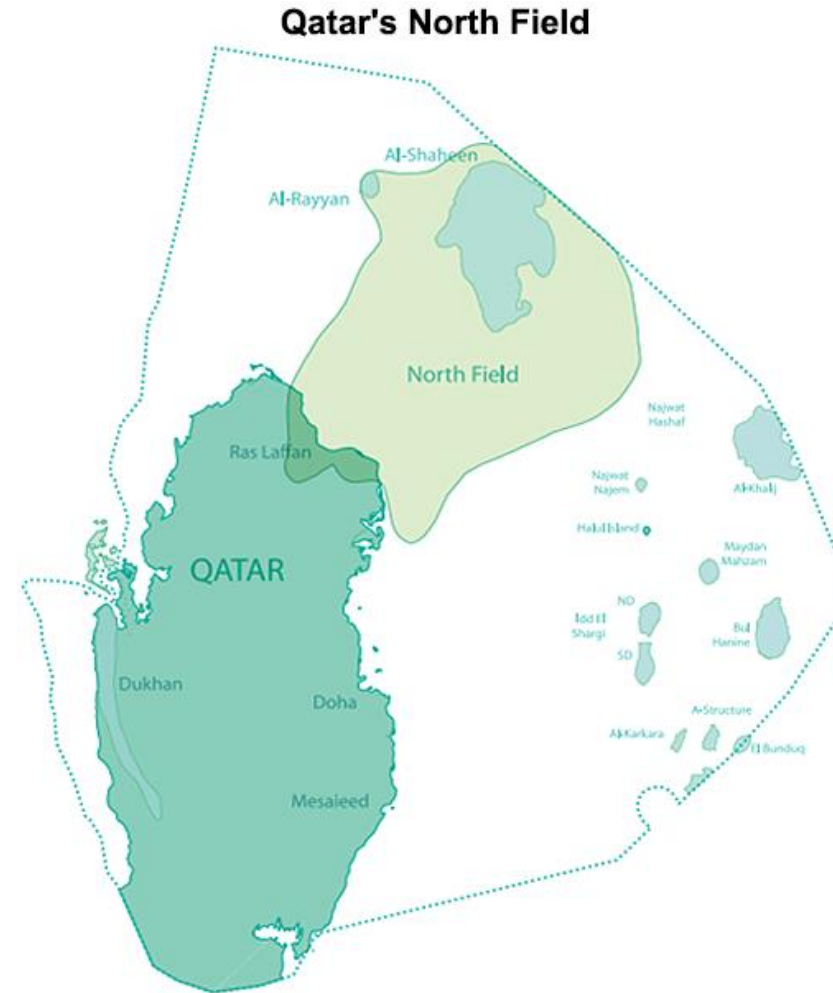
Located 80 Kms
north-east of the Ras
Laffan coast

Highly complex and
extended reach wells

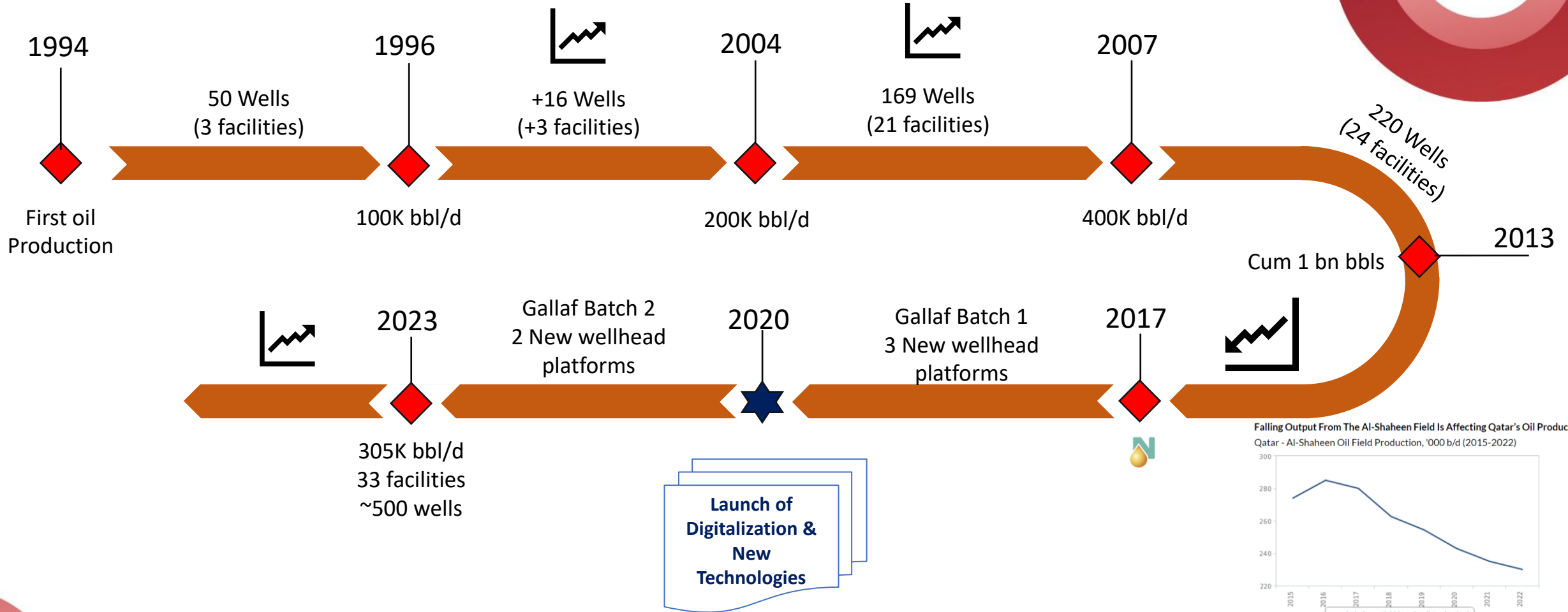
Relatively shallow but
tight spacing need
precise engineering
control and conduct

5 Jack Up Barges with
30+ platforms

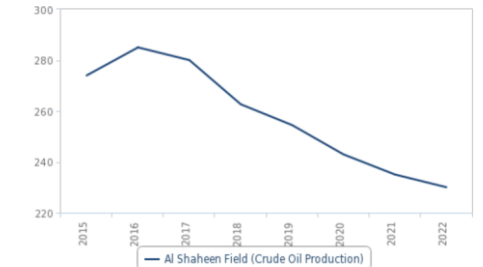
300 kbbl/day
production



AL SHAHEEN FIELD - JOURNEY



Falling Output From The Al-Shaheen Field Is Affecting Qatar's Oil Production
Qatar - Al-Shaheen Oil Field Production, '000 b/d (2015-2022)



Source: QatarEnergy Annual Reviews, BMI

NORTH OIL COMPANY - ORGANIZATION

NOC

Operations

Digital
Business
Solutions

Reservoir &
Geoscience

Major
Projects
(Green
field)

Corporate
Planning

Health,
Safety,
Envrt &
Quality

Admin &
Personnel

Finance
&
Business
Services

Drilling &
Wells

Field
Operations

Engineering & Construction (Brownfield Projects)

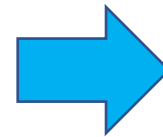
Project
Management

Engineering &
Commissioning

Construction

Quality

Project
Controls &
Services



Project Controls & Services

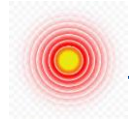
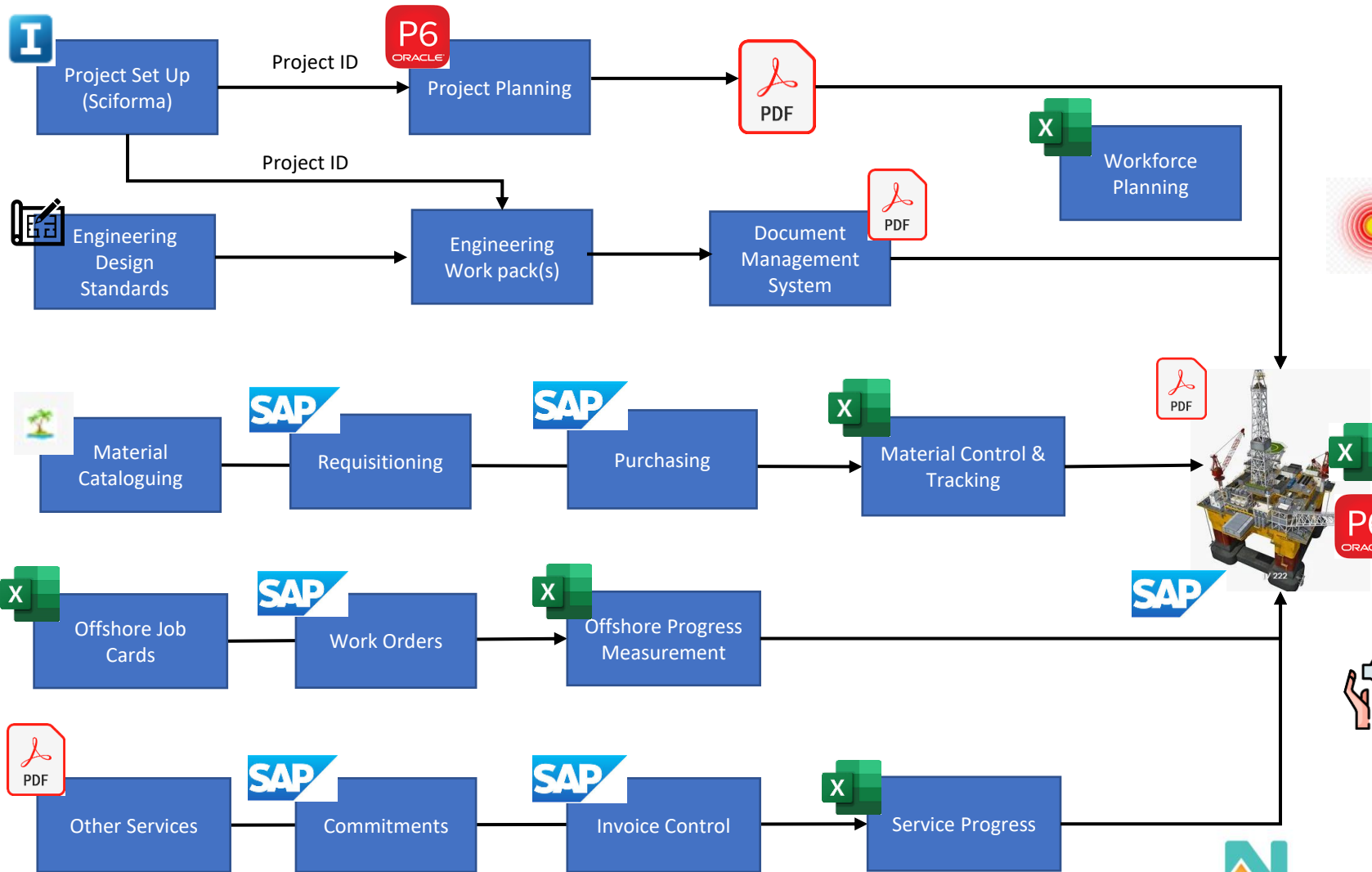
- Average 250 request for modifications per year
- Each modification could range from 6 months to 2 Years
- Monitor & Control Brownfield Projects
 - Planning
 - Cost Control
 - Material Control
 - Project Close-Out

Need for Digitalization

Challenges



WHY THE NEED FOR DIGITALIZATION?



PAIN POINTS

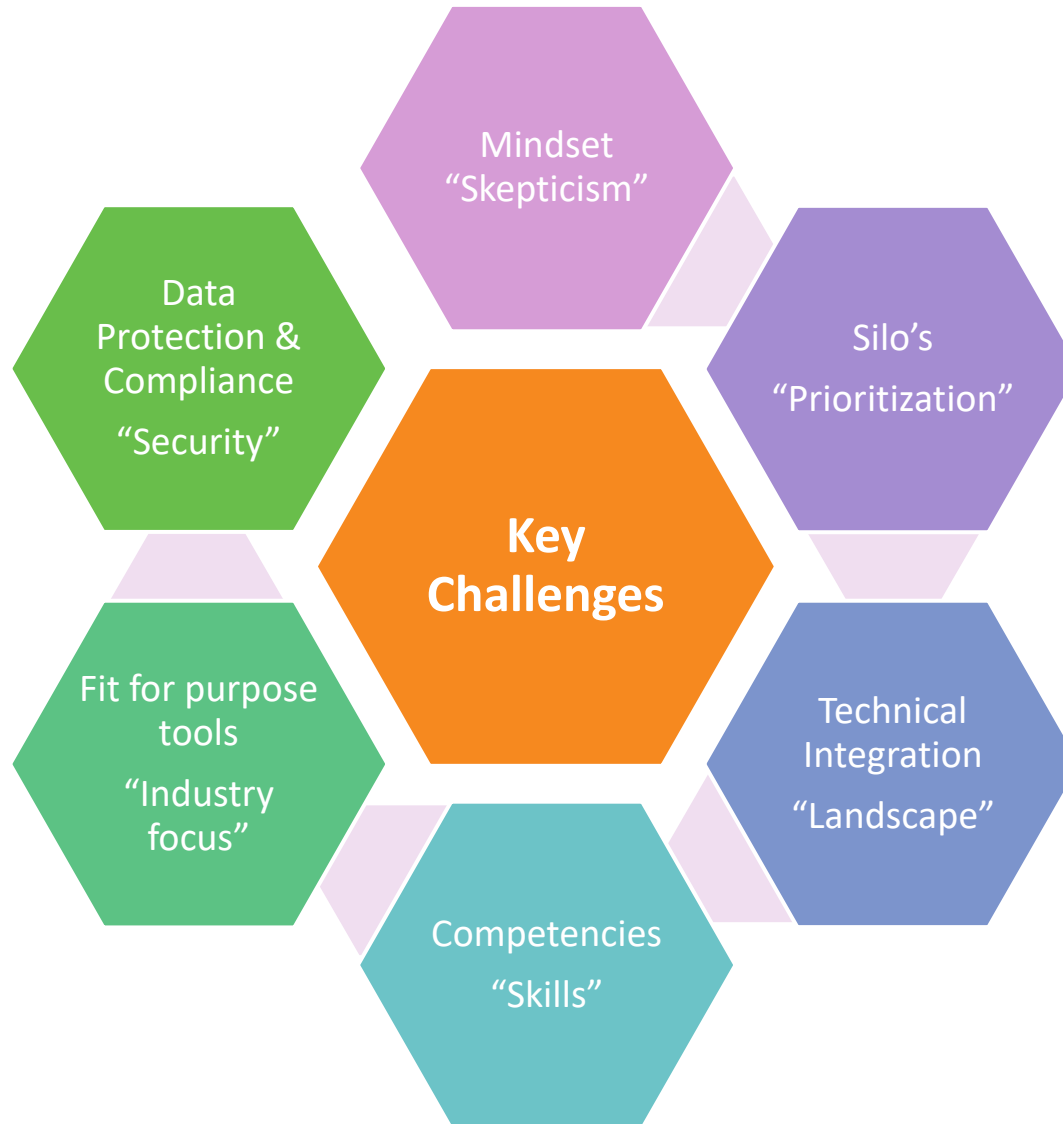
1. Complex architecture
2. Mis-aligned data
3. Excel based/Manual collection
4. Dis-jointed & Siloed
5. Cumbersome to collect data



CONSEQUENCES

1. Delayed decisions
2. Delays in delivery
3. Stress

CHALLENGES IN DIGITALIZATION

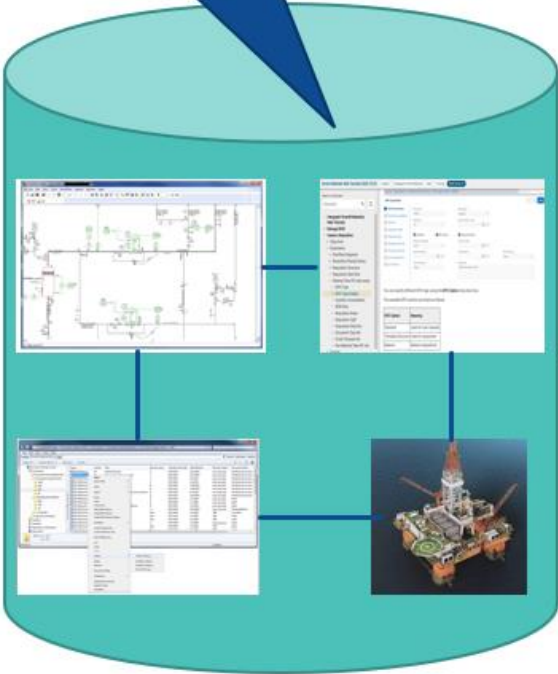


Digital Landscape



DATA CENTRIC APPROACH

Lists and datasheets are all aligned with process model, 3D model and schematics, ensuring quality and validation of deliverables



Vendor information, requisitioning and expediting and site material control are centrally controlled in ERP systems linked to the engineering data.



Construction planning integrated with both engineering and procurement. Enabling highly efficient construction execution

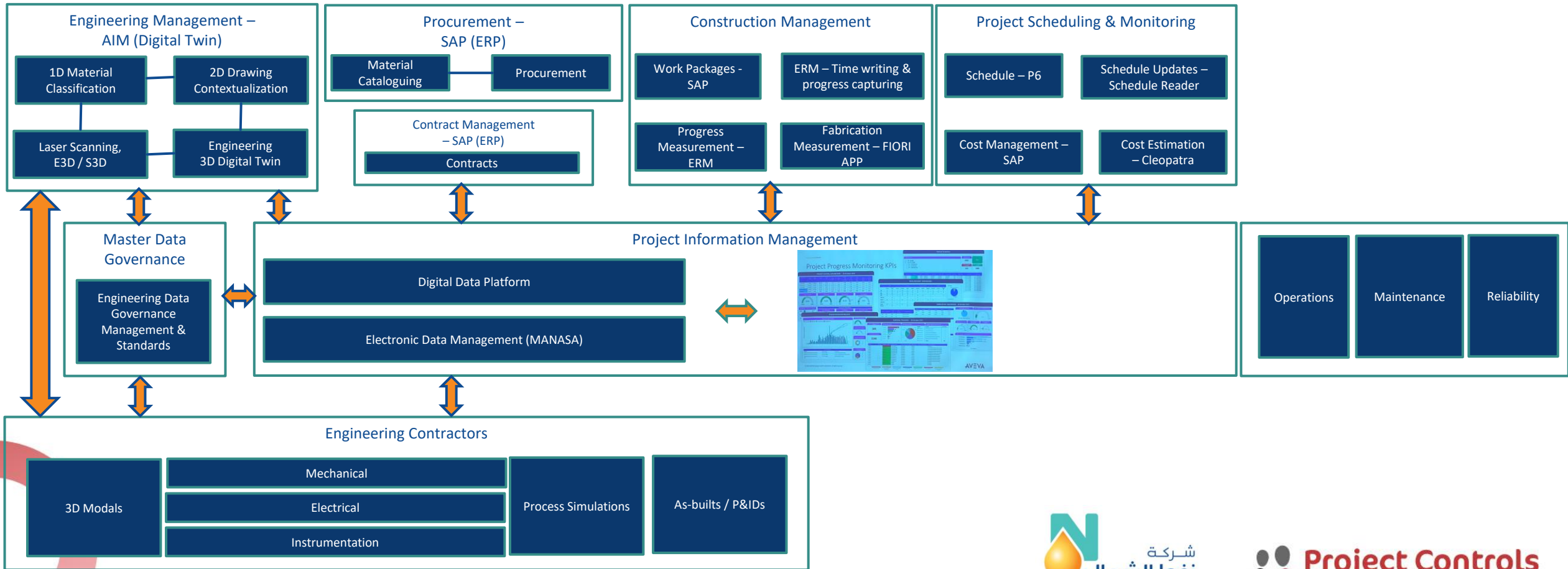


NOC PROJECT CONTROLS – INTEGRATED DIGITAL & DATA WORLD

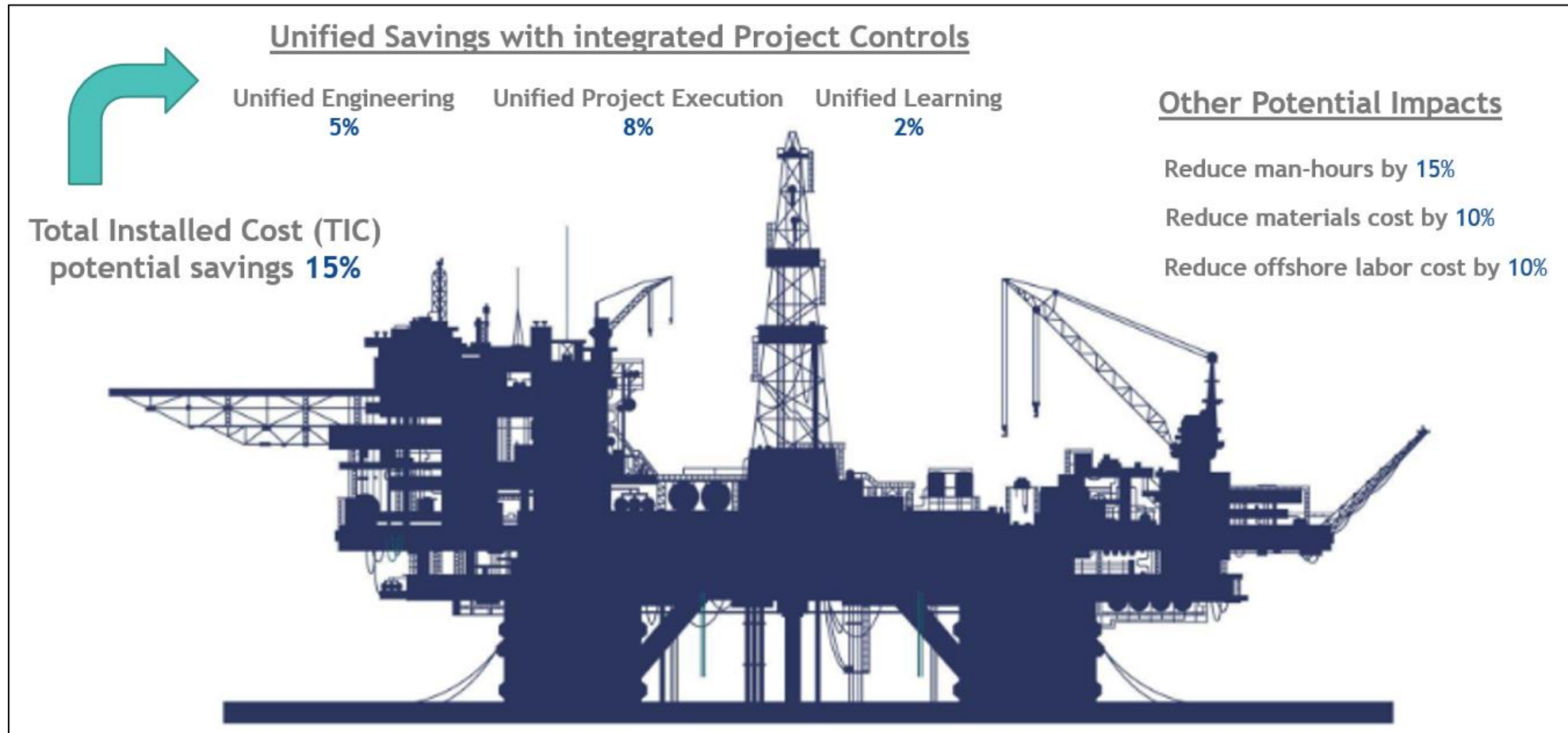
Start-Up & Commissioning

Operations

Engineering, Procurement & Construction



VISION OF INTEGRATED PROJECT CONTROLS



Lessons Learnt



LESSONS LEARNT



Clear Objectives

- Strong business case
- Crisp requirements
- Process mapping before tool/system selection

Be Agile

- Involve users early
- Continuous feedback
- Faster “look & feel”
- Thorough & early test to build trust

Stakeholder Management

- Explain “what’s in it for them”
- Regular “relevant” communication
- Keep communication short

Document Learnings

- Each phase needs to be captured
- Implement learnings
- Share learnings internally
- Share learnings externally



THANK YOU