

Consulting

E&P Operational Improvement

Next steps for Oil & Gas businesses in Africa

*PwC E&P Africa
E&P Conference.
Accra , Ghana*

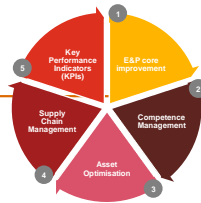
18 October 2013



pwc

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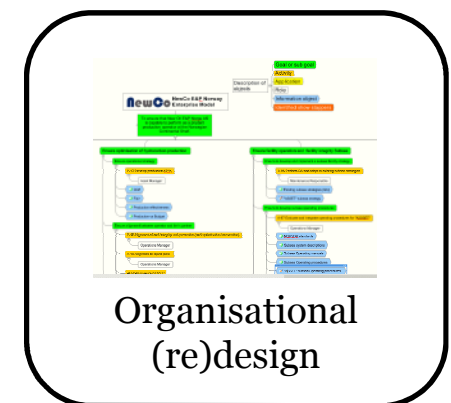
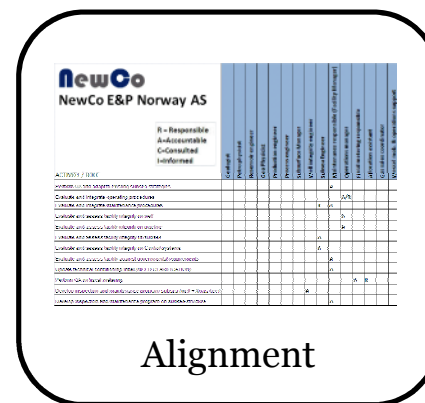
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PwC E&P Centre of Excellence support E&P companies to...

- Execute/anchor strategies and change
- Align activities, roles and responsibilities to changes - or HQ directions
- Prepare for new operational responsibilities and projects – small or large
- Improve Operations (Subsurface potential – Facility constraints)
- Establish a common, documented, view of “how we operate”

→ **BMS**



Change through a minimum-disturbance approach

Section 2

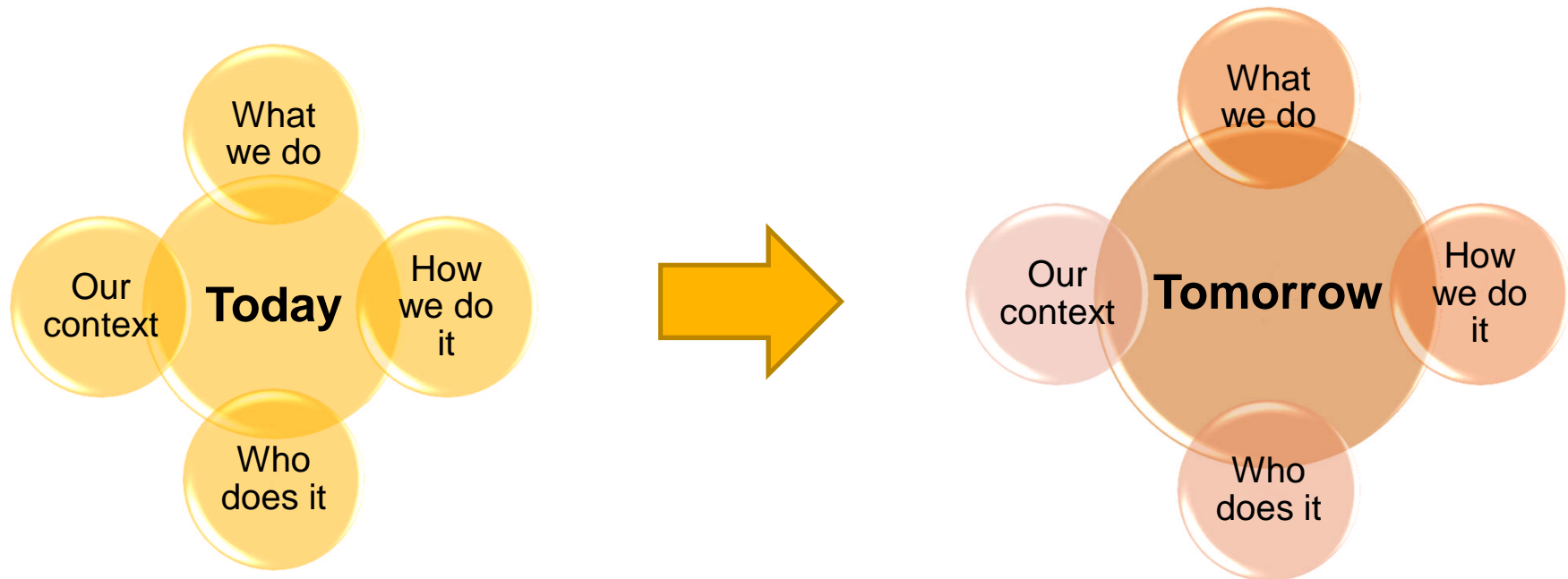
Operational challenges we face



The objective is to close the gap between ambitions and performance

- On average 95% of all employees are **unaware of, or do not understand its strategy** (*The office of strategy management – Robert S. Kaplan and David P. Norton*)
- North Sea private benchmark (2010) – **4 Billion USD could be gained** by participants – if all assets were producing on par with Top Quartile performers. (90% Production Efficiency)
- Leading IOC: Our daily battle to optimize production and eliminate reasons for shortfalls continuously give us **4-7% increased production**.
- In a study of 318 industrial **E&P megaprojects**, almost half (47%) of projects had significant operational problems (*Merrow, 2011*)
- Significant value destruction occurs during **transition from project development to operations**, as preparation for operation (readiness planning) has started too late...

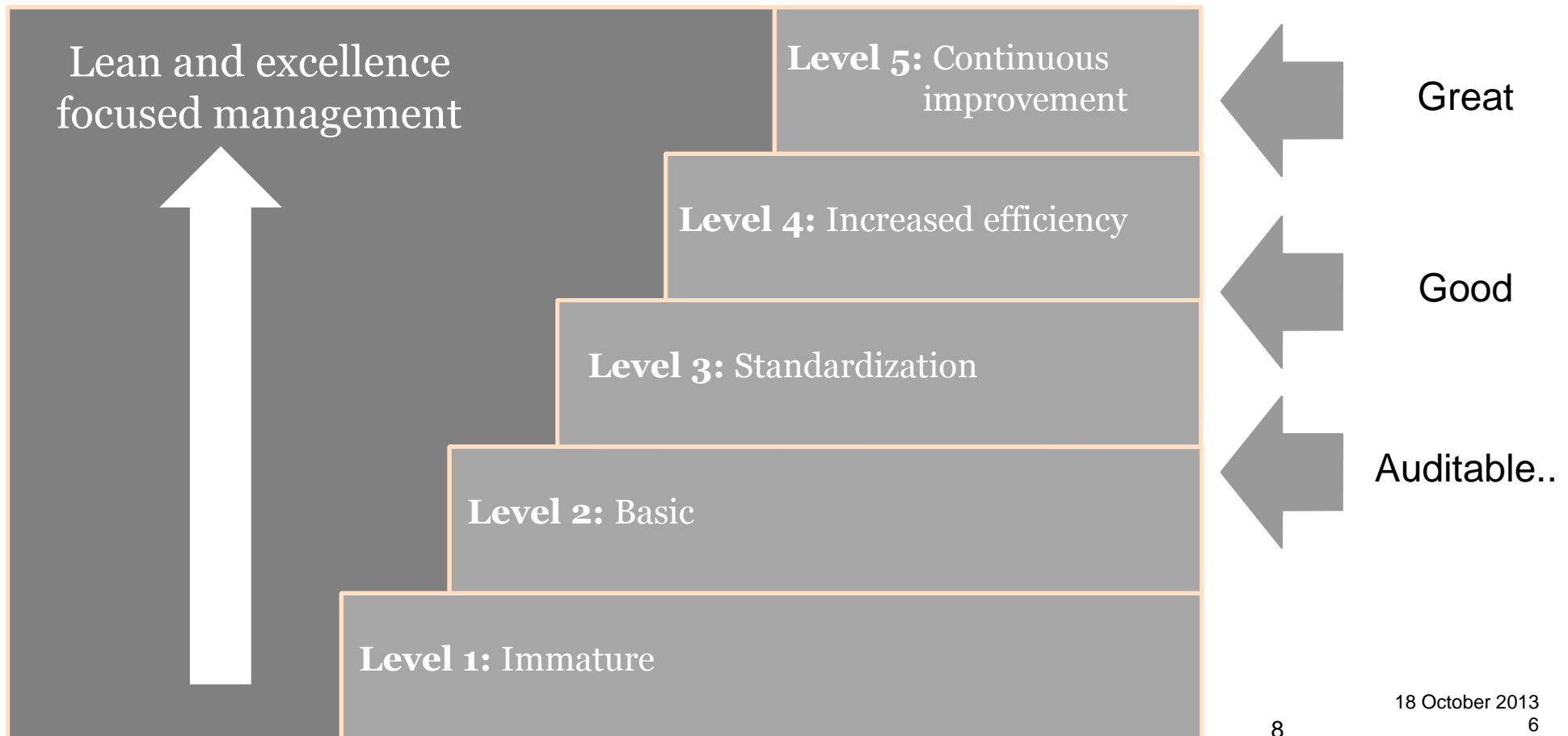
The situation we normally meet



We advocate a systematic approach

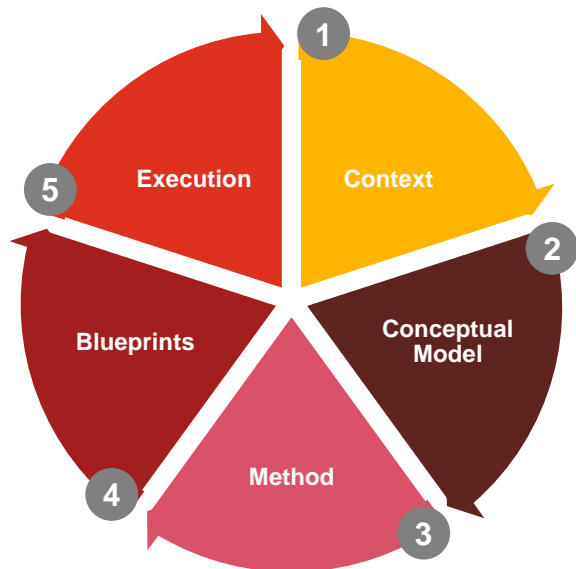
- ☐ Secure our license to operate (Compliance)
- ☐ Develop and document shared (best) practices
- ☐ Create a platform for continuous improvement
- ☐ Create a platform to support growth.

What is the ambition level?
What is the motivation?



Section 3

Operational Excellence Approach



Critical: Define and recognize the playing field

Sponsorship for
"Management drive"

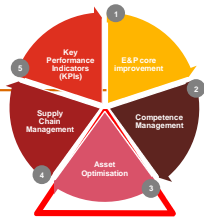
Team
(Client & PwC)
Competence & availability

"The Goals!"

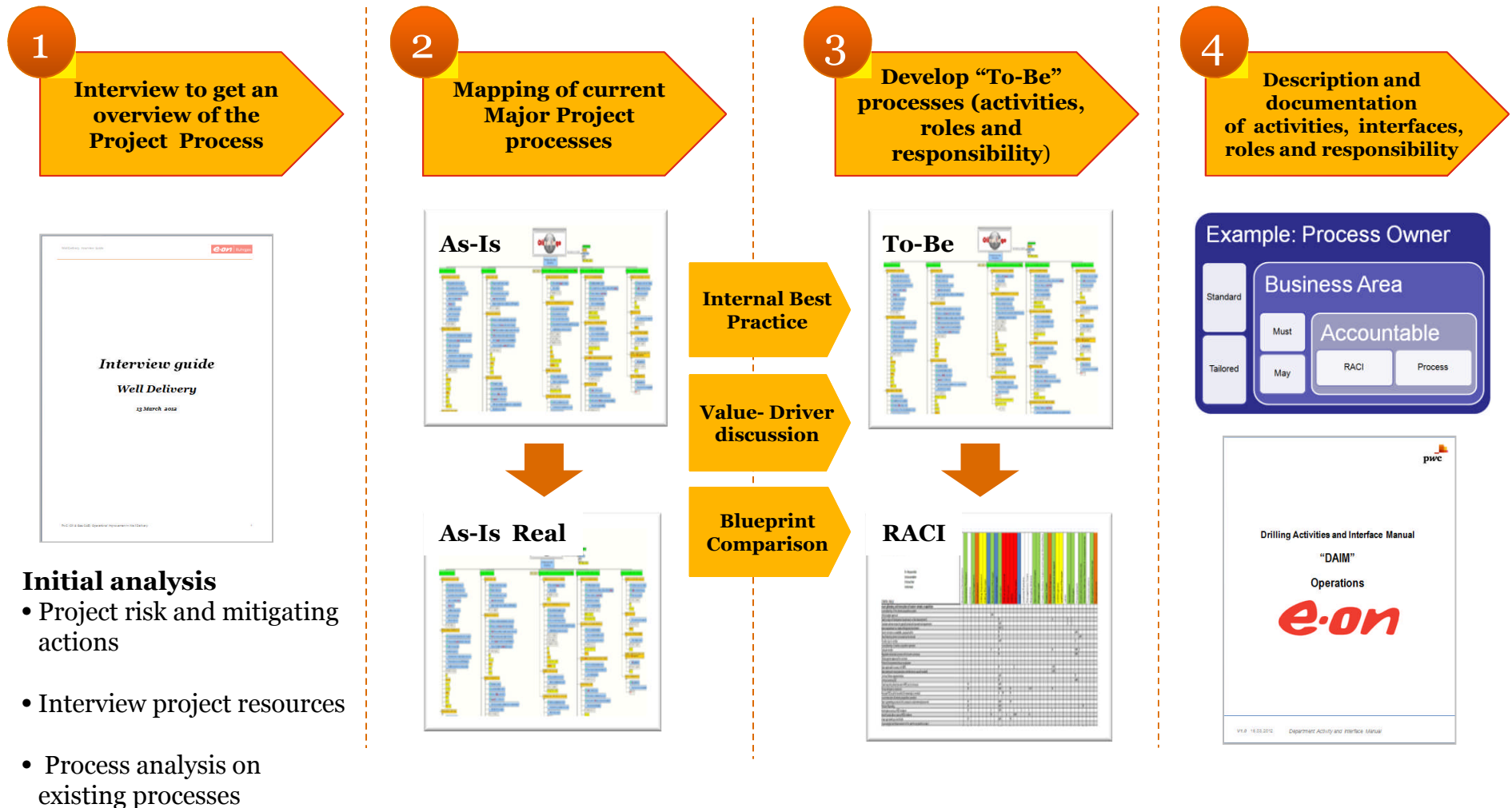
Clear direction!
Shared &
Agreed

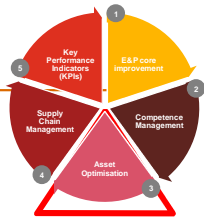
Constraints:
- Timeline
- Funding
- Systems

- The unified – **OUR** - way of working
- Driving execution of strategy
- To clarify roles and responsibilities - expectations
- To support growth
- To manage Risk
- To secure alignment to Capital Value Projects
- To support Continuous Improvement / Learning Organizations
- To support delegation of authorities
- To clarify functional and hierarchical interfaces (horizontal & vertical)



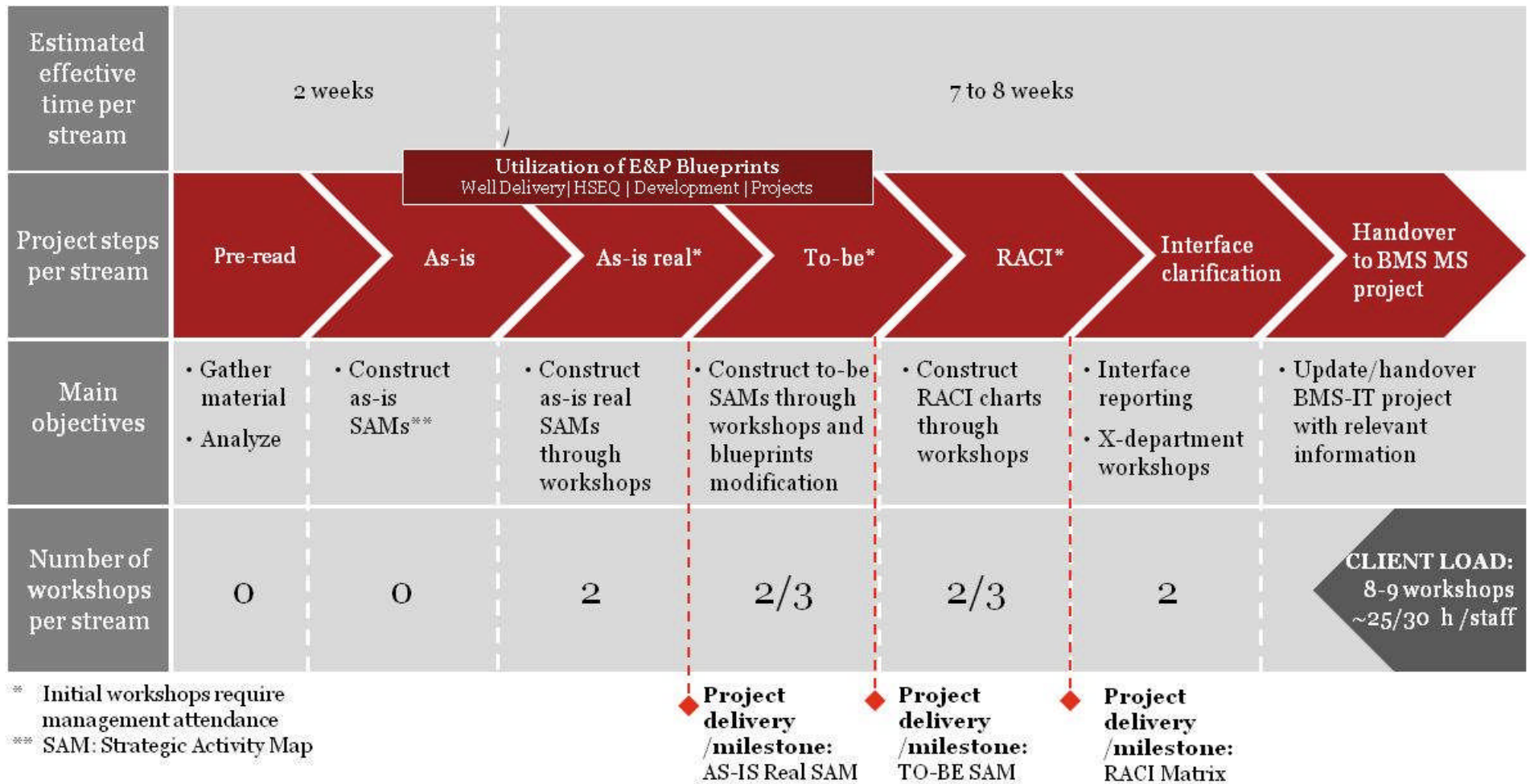
Our standard delivery method - illustrated

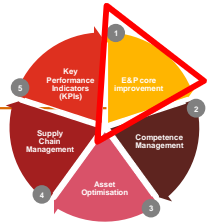




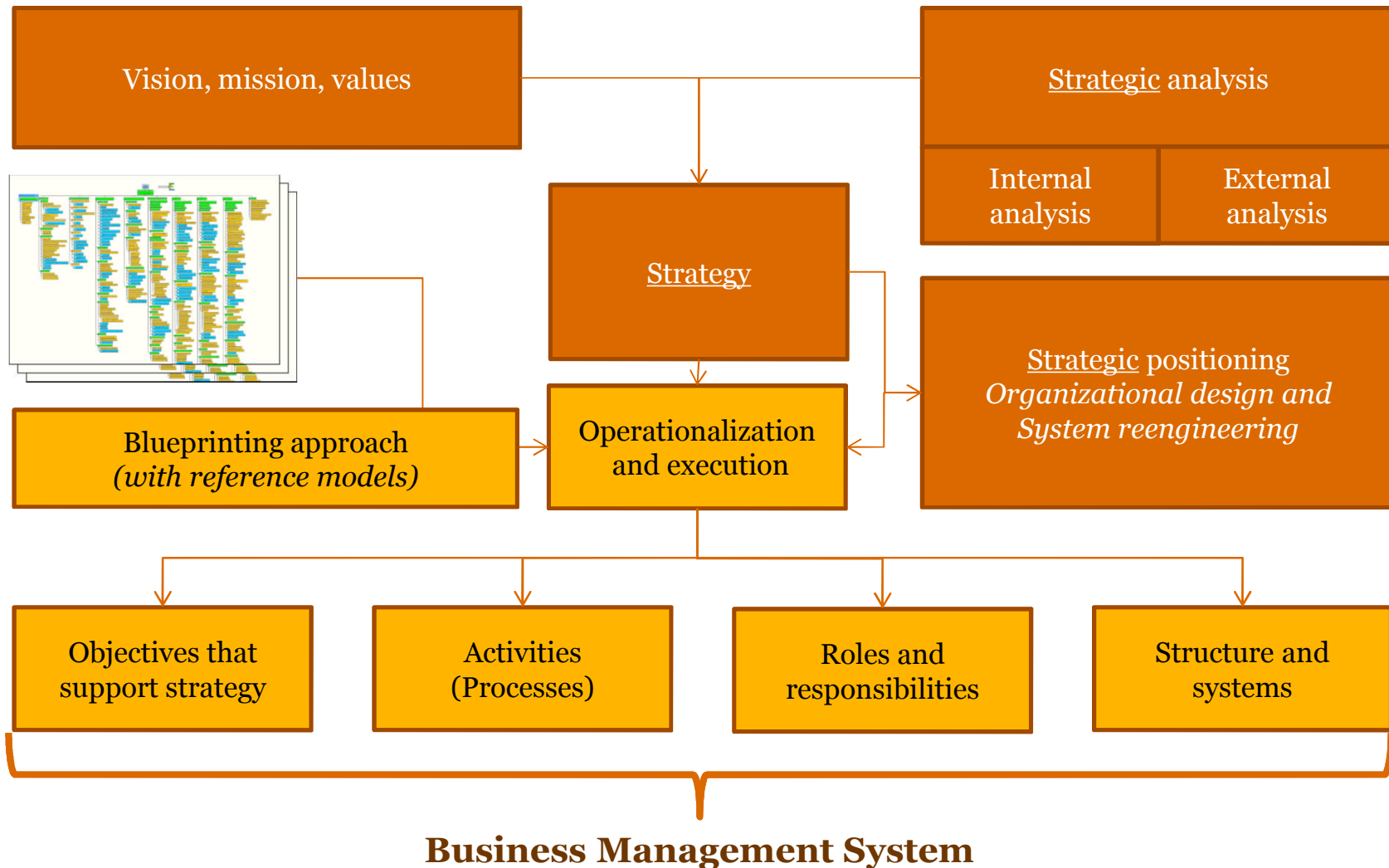
Accelerate the process

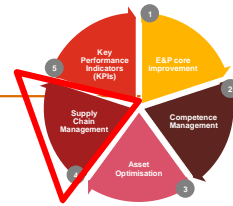
The participants have their "day jobs" – and progress must be visible





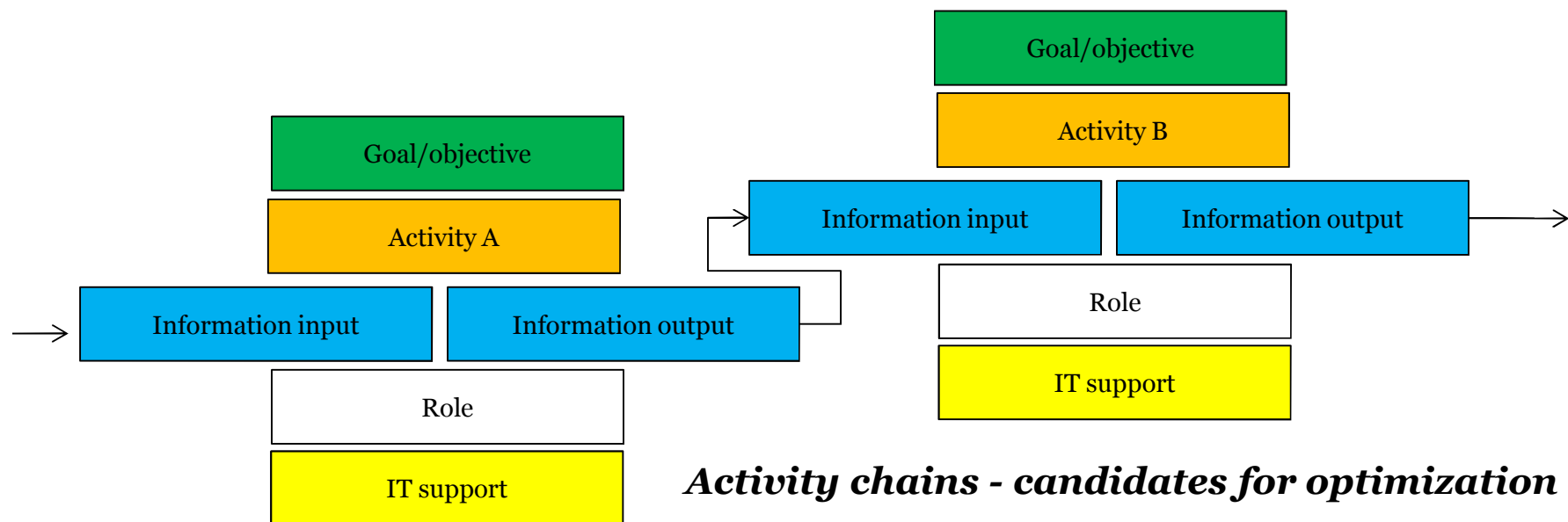
Secure context and link between strategy and execution

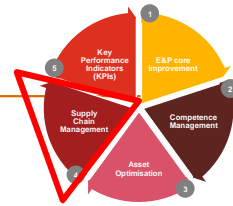




We use simple "building blocks" to link Activities to Goals – and identify interfaces, opportunities and pain-points

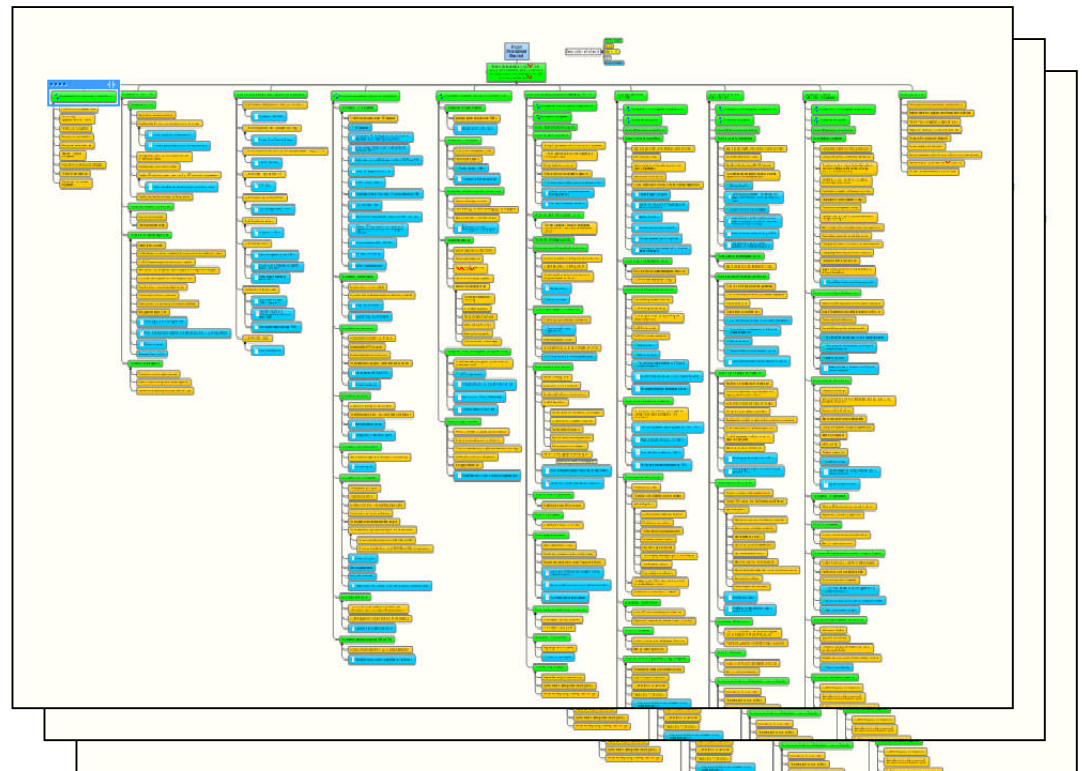
- We use the building blocks to facilitate workshops - focusing on goals, activities and roles
- The workshops must create process ownership and involve key stakeholders
- We can identify the information flow and necessary systems to support To-Be operations.

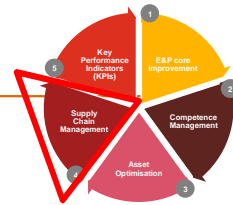




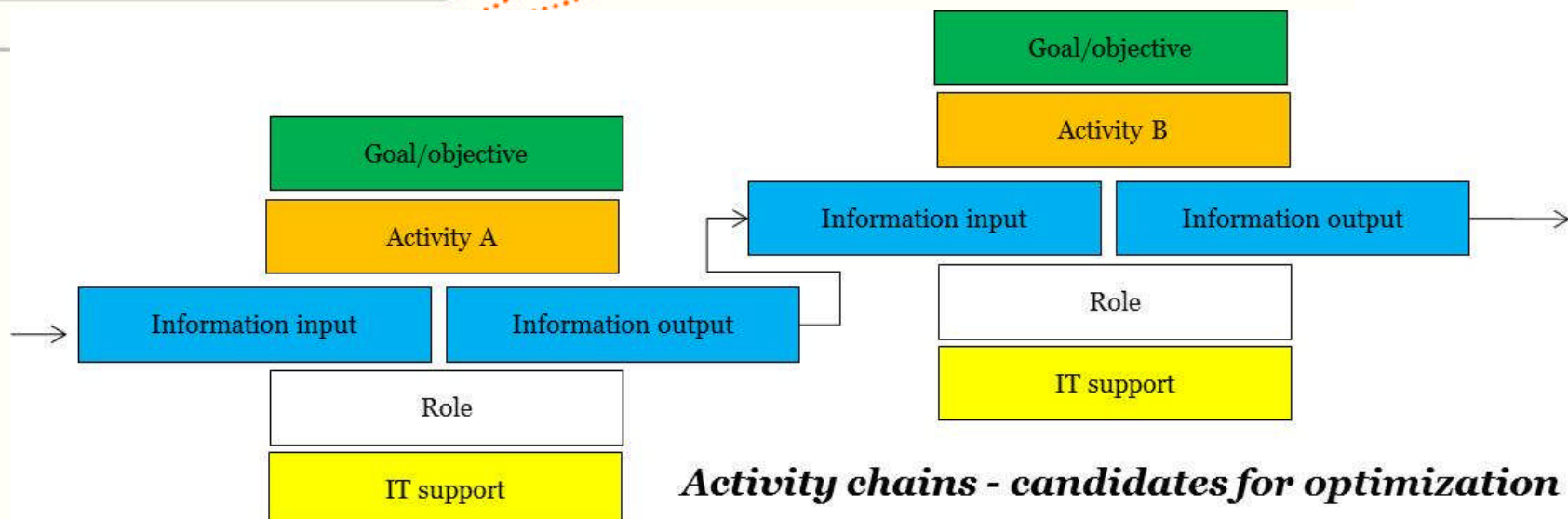
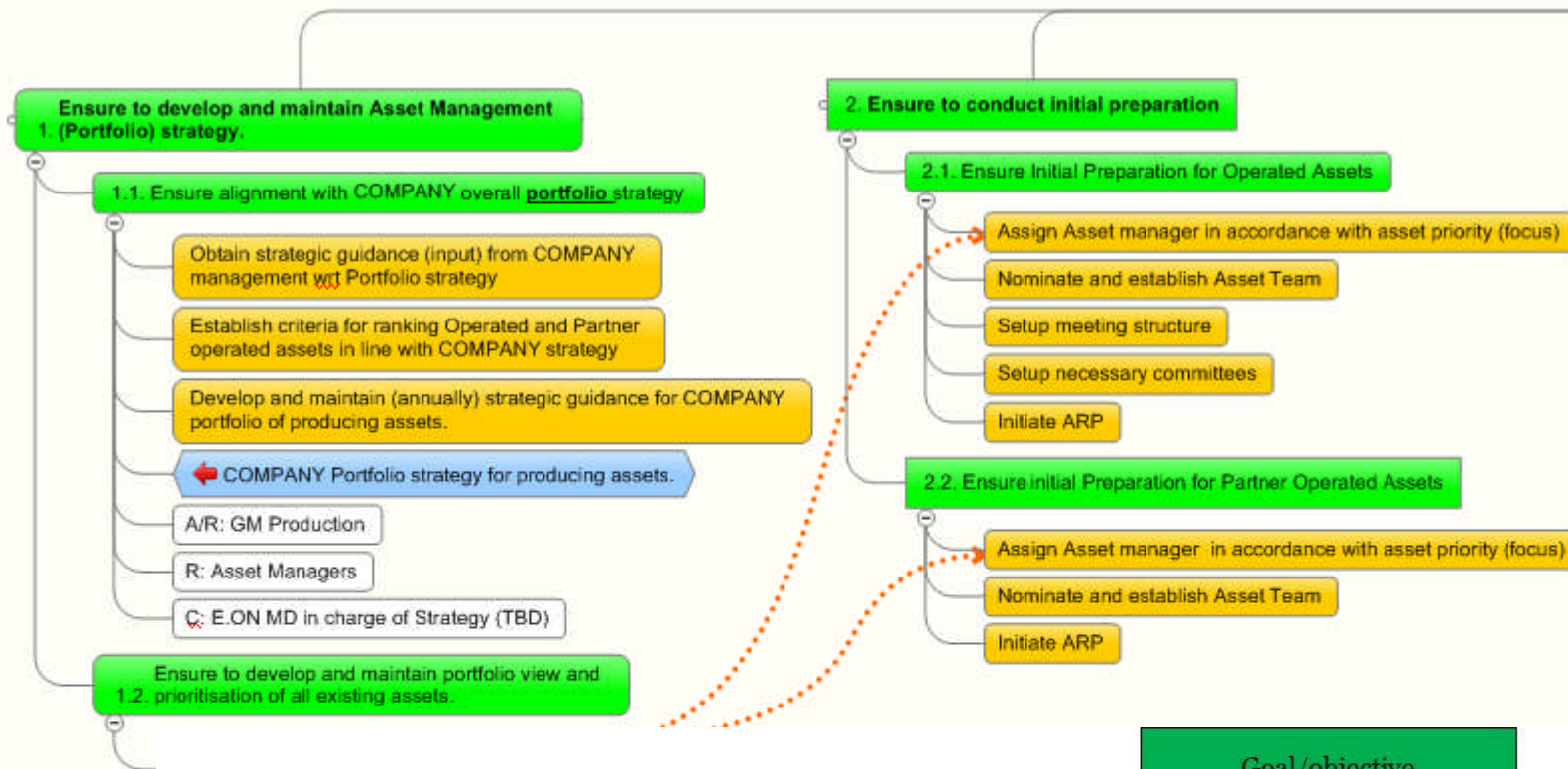
E&P blueprints are E&P "model processes" to support project execution – securing completeness and speed

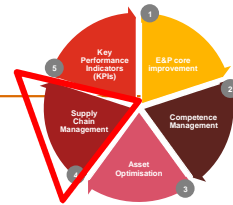
- PwC E&P blueprints are reference models describing how functional units fit together as a coherent system - to create economic value - and competitive advantage
- PwC E&P blueprint are used to accelerate, facilitate and quality assure strategic change projects
- The blueprints "imbed" continuous improvement and captures check-points across the value chain.





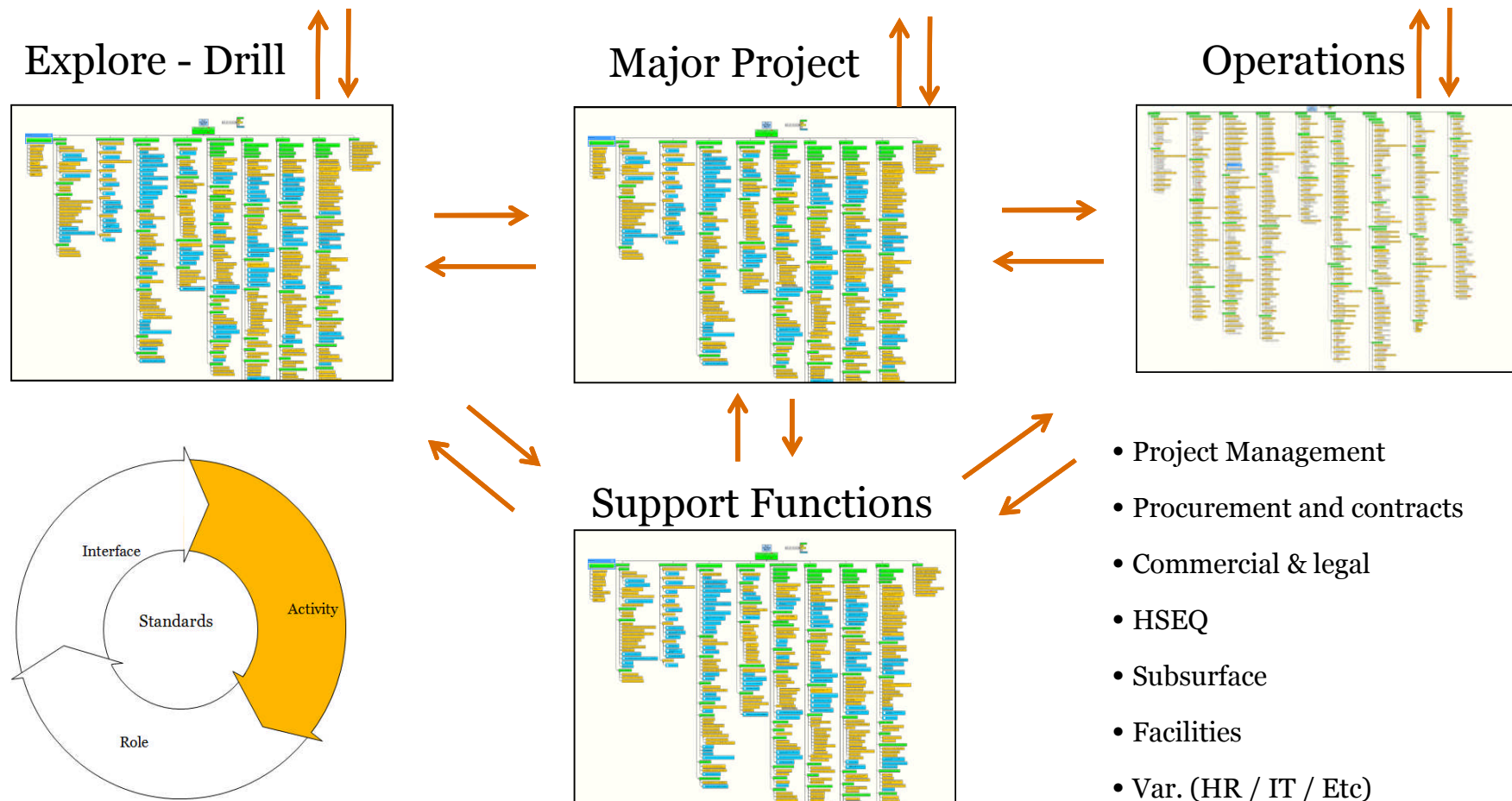
Example on a blueprint section...





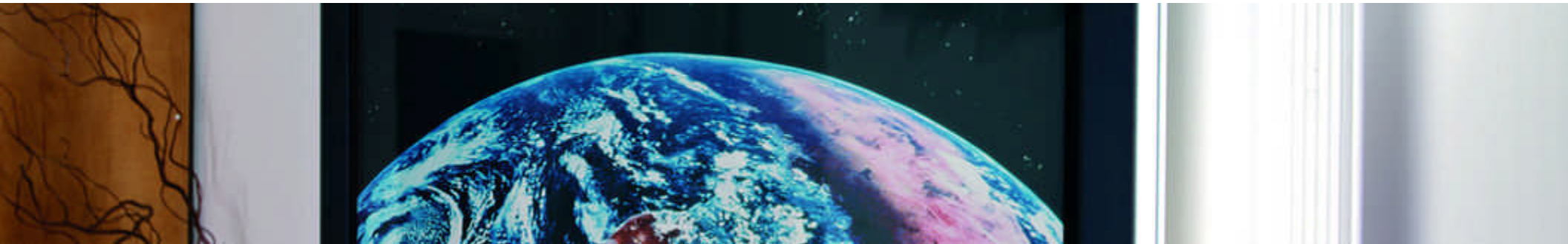
Secure a holistic view – and robust interfaces (Custodianship, interfaces and handover points)

Corporate Processes, Gates/Handover and Transitions



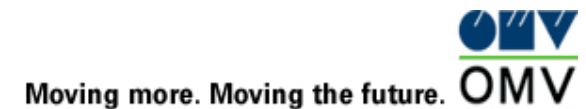
Section 4

Industry Relevant Examples



Recent Oil & Gas Operational Improvement projects

GDF SUEZ

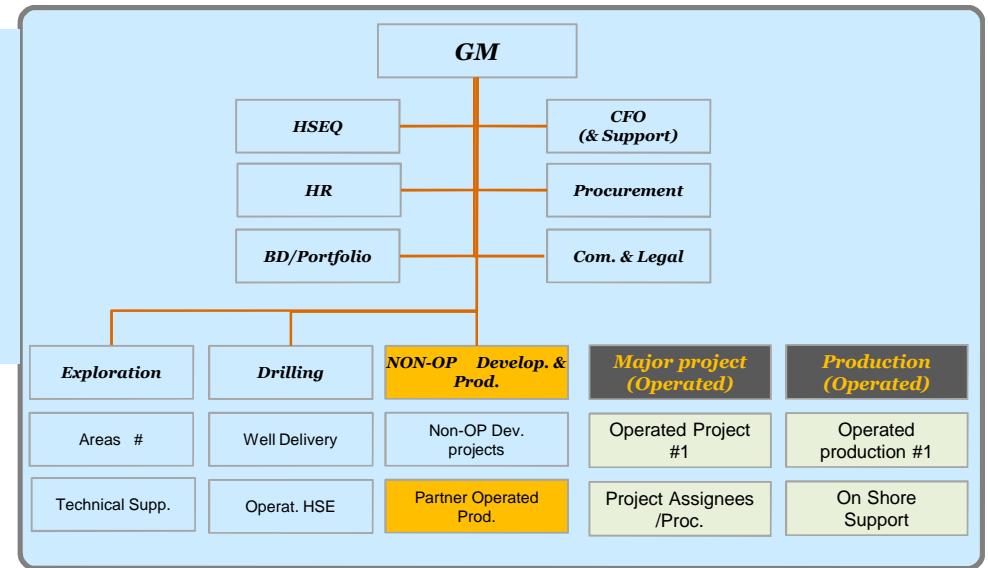


مؤسسة البترول الكويتية
Kuwait Petroleum Corporation

Typical growth paths - Organizational transition

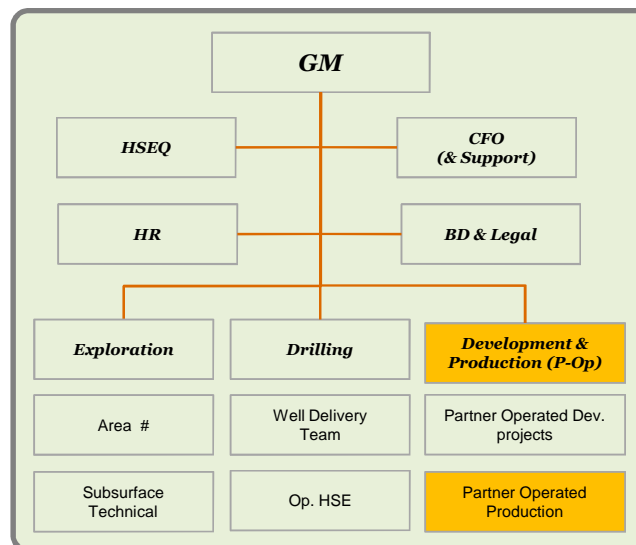
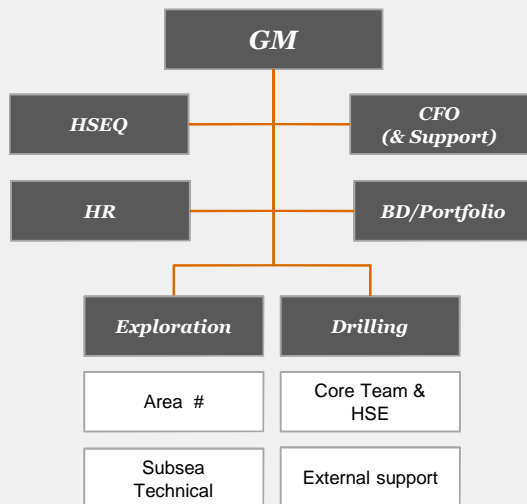
3. Major Development → 4 Production

- ▶ Exploration still value driver
- ▶ Development & Production Team build-up to handle major operated project)
- ▶ CFO - Finance & Controlling
- ▶ Commercial critical – to support Asset/Offset
- ▶ Support functions elaborated / separate



1. Exploration focused

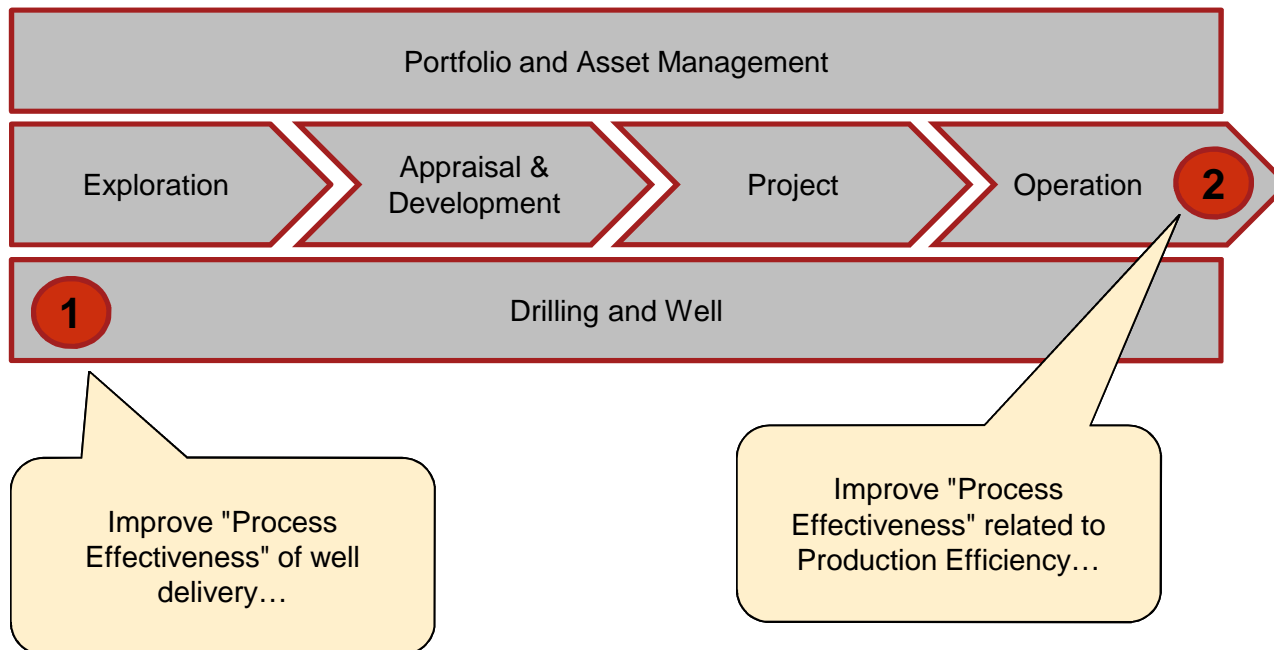
- ▶ Exploration Centric
- ▶ Well Delivery crucial/ext.
- ▶ Support under CFO



2. Exploration to production shift

- ▶ Exploration still dominant
- ▶ Well Delivery Capabilities
- ▶ Non-OP Dev. & Prod. Team
- ▶ Admin/IT under CFO
- ▶ Commercial / Legal becomes critical
- ▶ Support functions more vital

Industry examples



Section 4.1

Improve Well Delivery



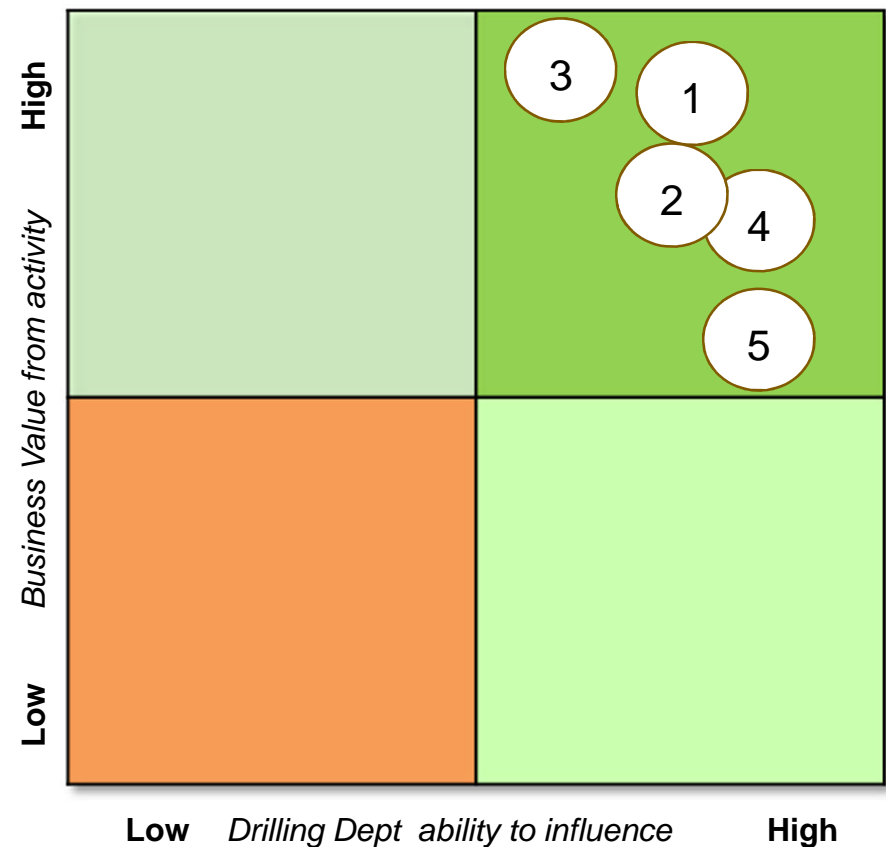
What are the Well Delivery "Value Drivers"

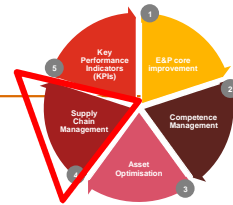
Primary drivers

1. Improve Well Delivery Timeline
2. Ensure lessons learned from drilling operations
3. Improve stability of plans
4. Ensure best use of internal/external resources
5. Ensure best use of drilling equipment

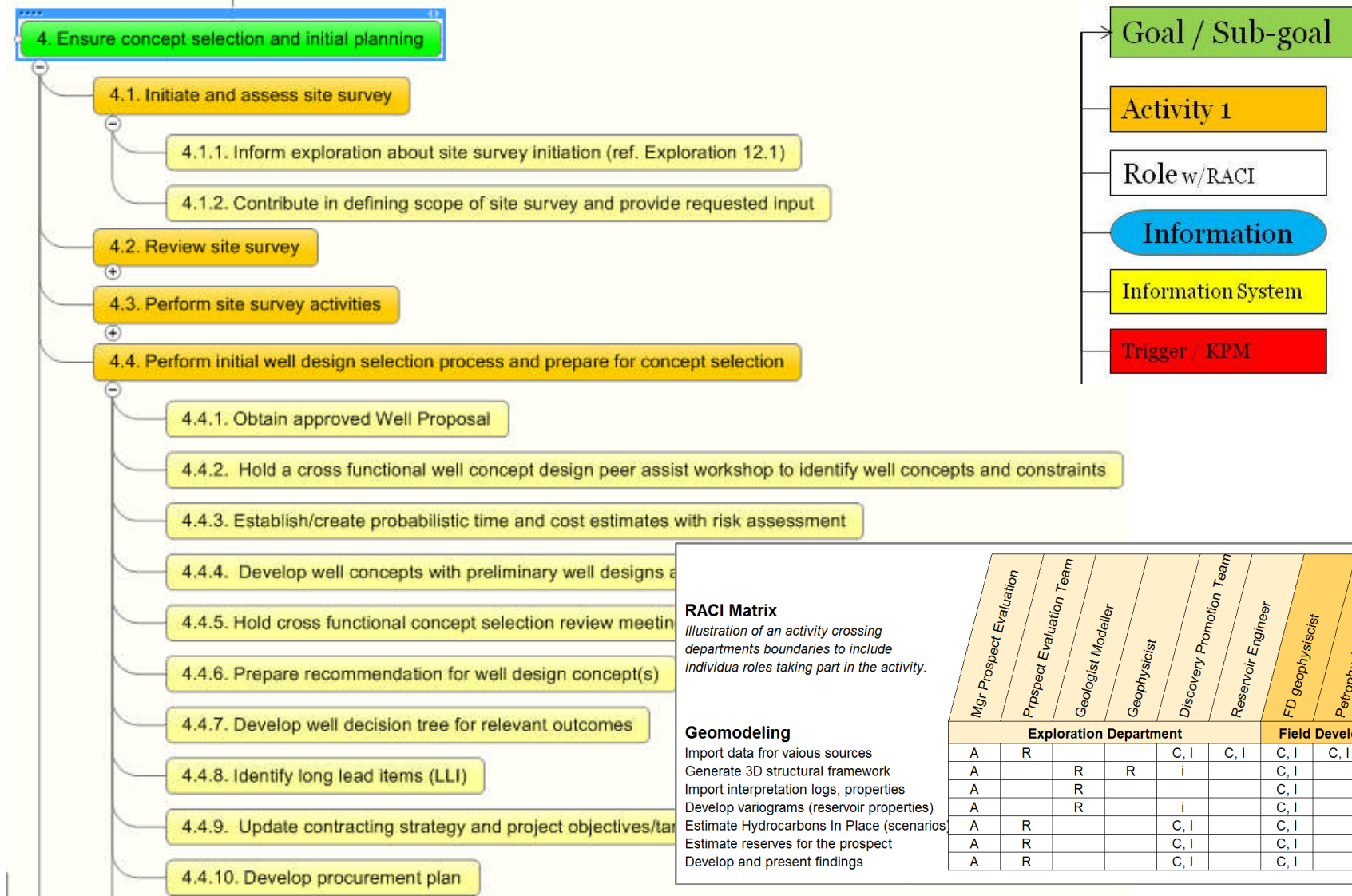
Critical success factors

- Understand & collaborate with internal client
- Drive understanding of consequences of changes



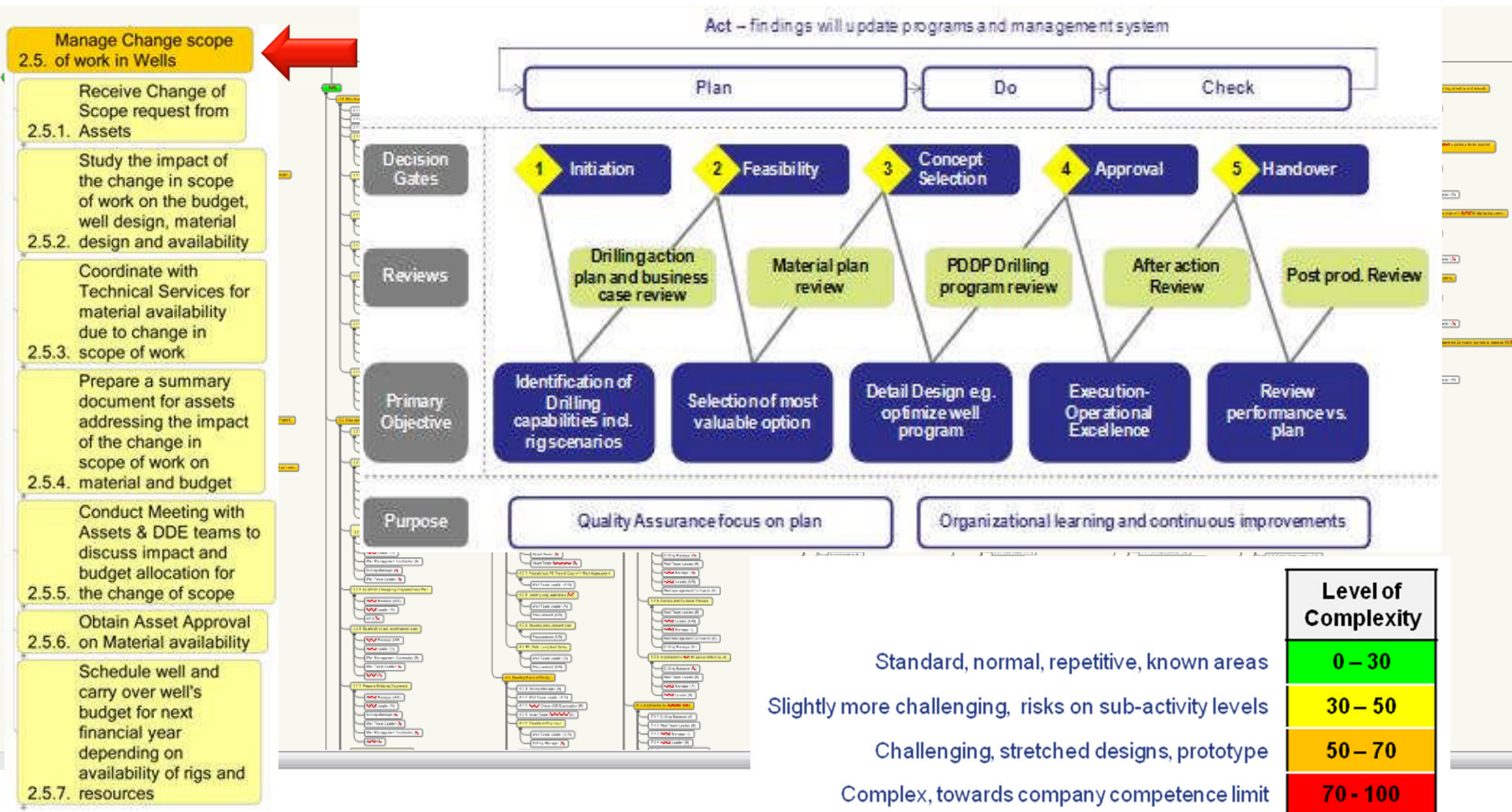


Example of Extract from a Well Delivery blueprint

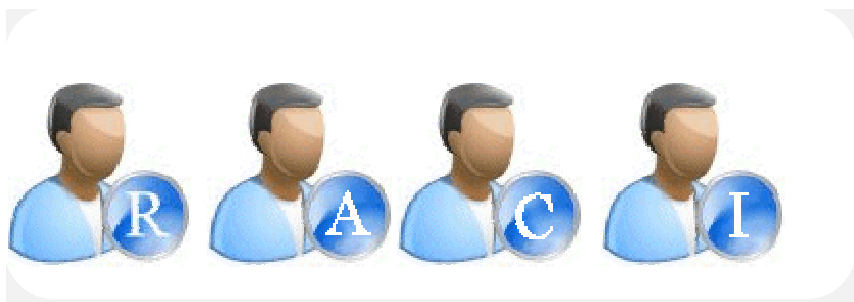


Engagement to improve Well Deliveries

(For many operators – the most costly / risky they do...)



Making processes "relevant for me"!

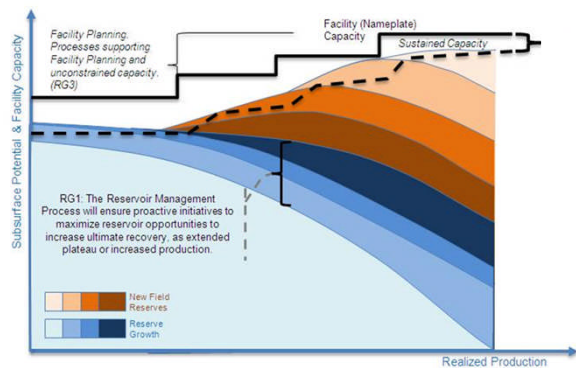


	Drilling Manager	Well Team Leader	Marine rep.	HSEQ Manager	HSEQ Leader	Drilling supervisor	Superintendent	Procurement	Logistics coordinator	Asset Owner/ GM Exploration	Asset Team/ Geoscience	Geologist in the license team	Consortium	HR Advisor	Finance	Accounting	CEO	Disciplines	Well Management Contractor	OFFB	Operations Geologist	Regional Drilling Manager	IT-department
Ensure Project initiation																							
Provide initial input from G&G and Asset to develop project and secure License approval for decision to drill.	I	C			I					A	R											I	
Prepare initial time/cost estimate	A	R									R				I								
Perform rig screening	A/R	C			C			C		C							C						
Gain Rig Intake board approval from E:On Ruhrgas HQ	R	C			I			R						R		A						C	
Define the project requirements	R	C			C			C		A/R													
Specify project demands, planning, execution and results of well project	A	R		I	R			R			R						I						
Propose staffing	A			R						R				R									
Develop stakeholder list	C	C		A	R																		
Review End of Well Reports previous wells	I	A/R									R												
Develop initial plan	C	A/R			R			R		C													

Section 4.2

Improve Production Efficiency

Summary of Benefits that can be achieved



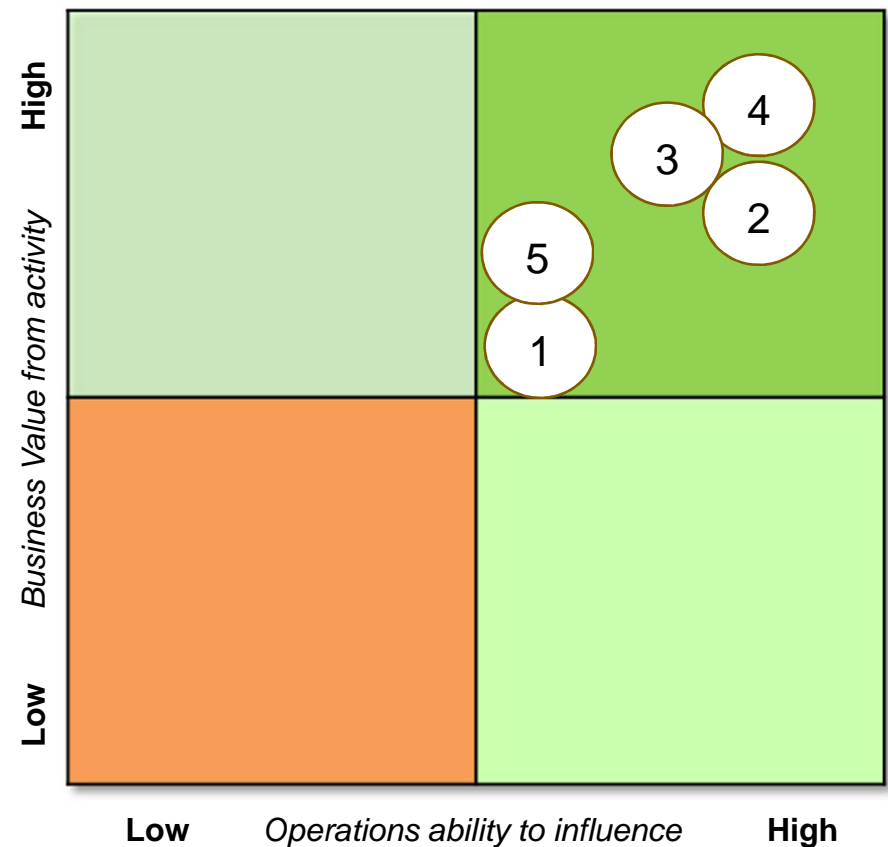
What are the Production Efficiency "Value Drivers"

Production and Operation

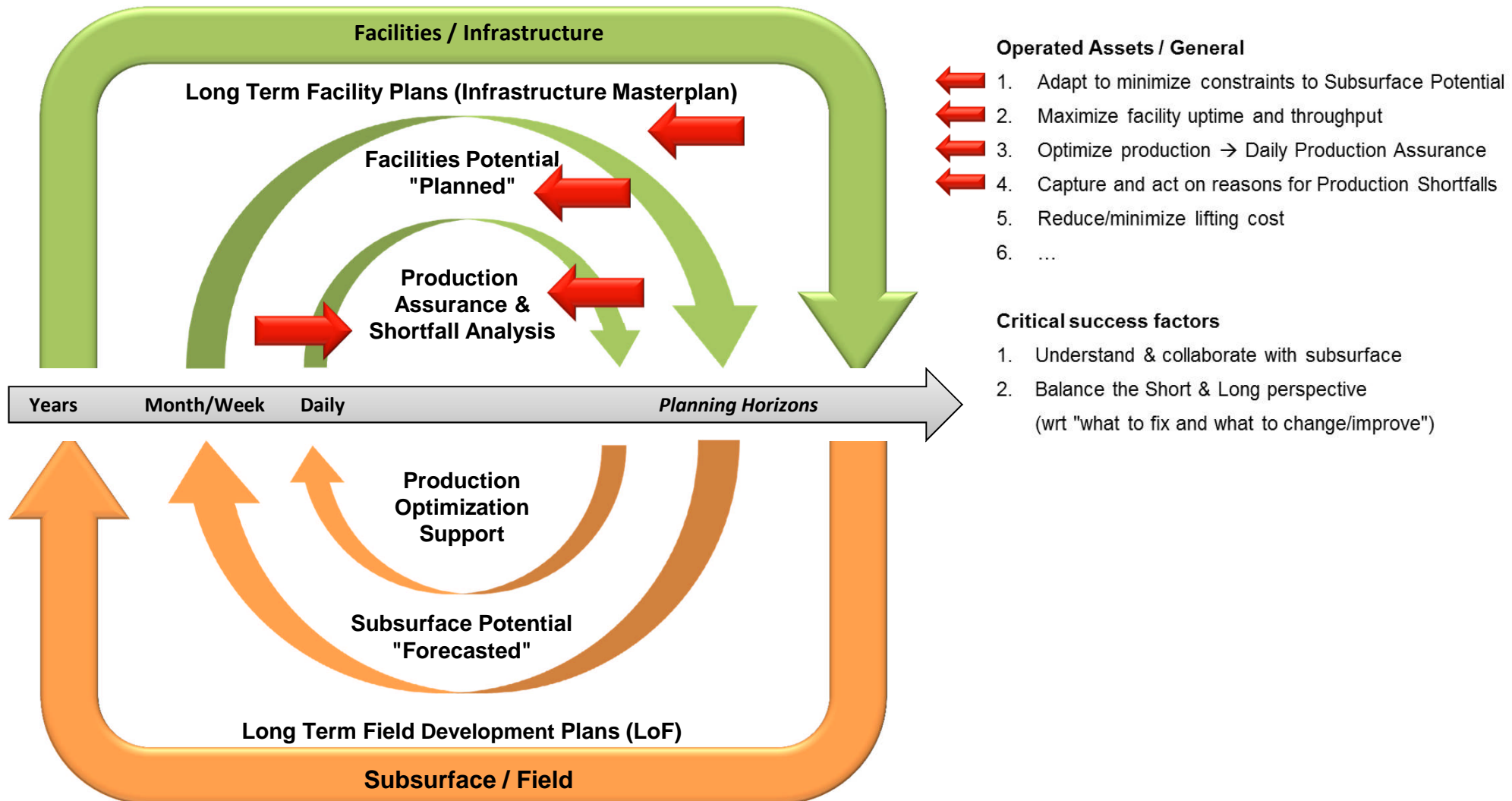
1. Maximize facility uptime and throughput
2. Minimize constraints to Subsurface Potential
3. Optimize production → Daily Production Assurance
4. Capture and act on reasons for Production Shortfalls
5. Reduce/minimize lifting cost
6. ...

Critical success factors

1. Understand & collaborate with subsurface
2. Balance the Short & Long perspective
(wrt "what to fix and what to change/improve")

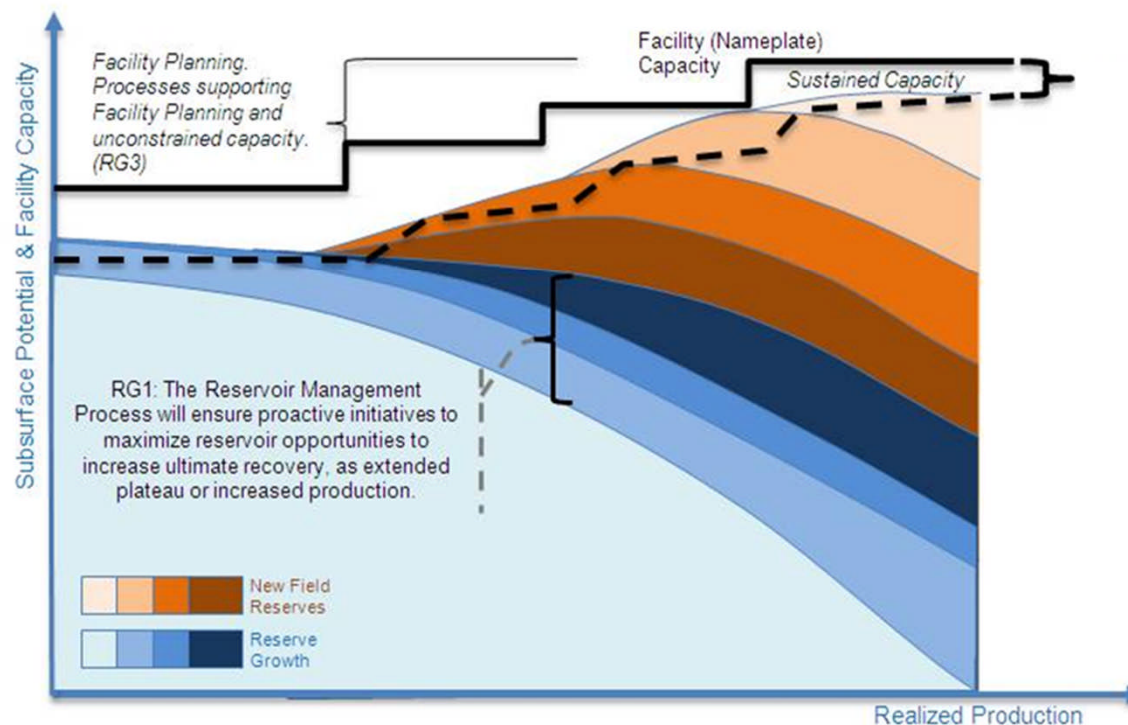


Initiatives to improve Production Efficiency *(While securing Reservoir Management – i.e.: Growth)*



Depends on collaboration with subsurface

Summary of Benefits that can be achieved



Operated Assets / General

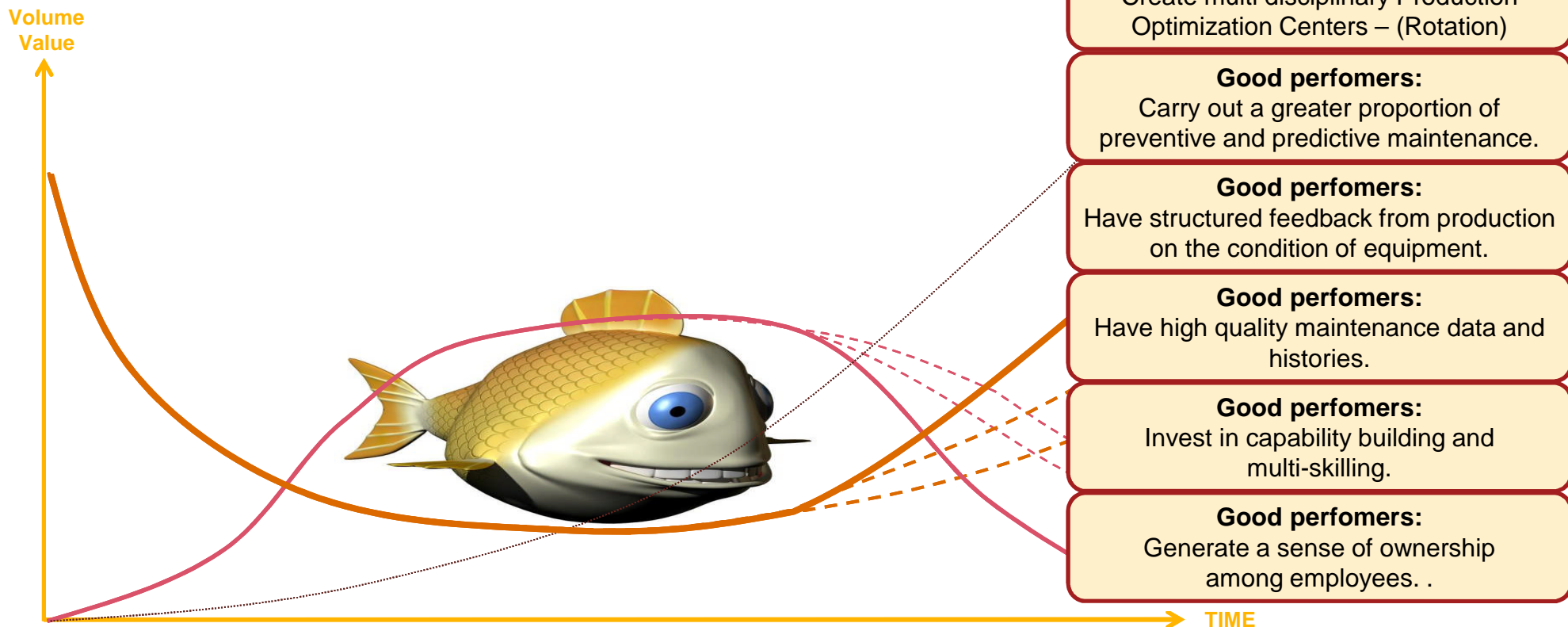
1. Adapt to minimize constraints to Subsurface Potential
2. Maximize facility uptime and throughput
3. Optimize production → Daily Production Assurance
4. Capture and act on reasons for Production Shortfalls
5. Reduce/minimize lifting cost
6. ...

Critical success factors

1. Understand & collaborate with subsurface
2. Balance the Short & Long perspective (wrt "what to fix and what to change/improve")

Maximizing value creation depends on two pillars

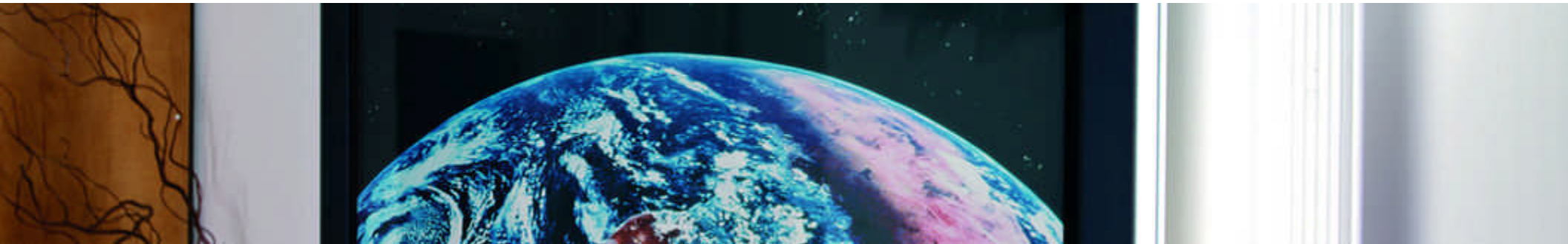
1. Engineering disciplines to influence the top-line (Production / IOR / EOR)
2. Operations and support services to reduce lifting cost.
Significant when engaging high-cost IOR and even more so EOR.



Reserves are “quantities of petroleum which are anticipated to be commercially recovered from known accumulations from a given date forward”. Reserves growth will have both a technical perspective as well as a commercial/cost aspect. **Any initiative that “grows the fish” will influence Ultimate recovery.**

Section 5

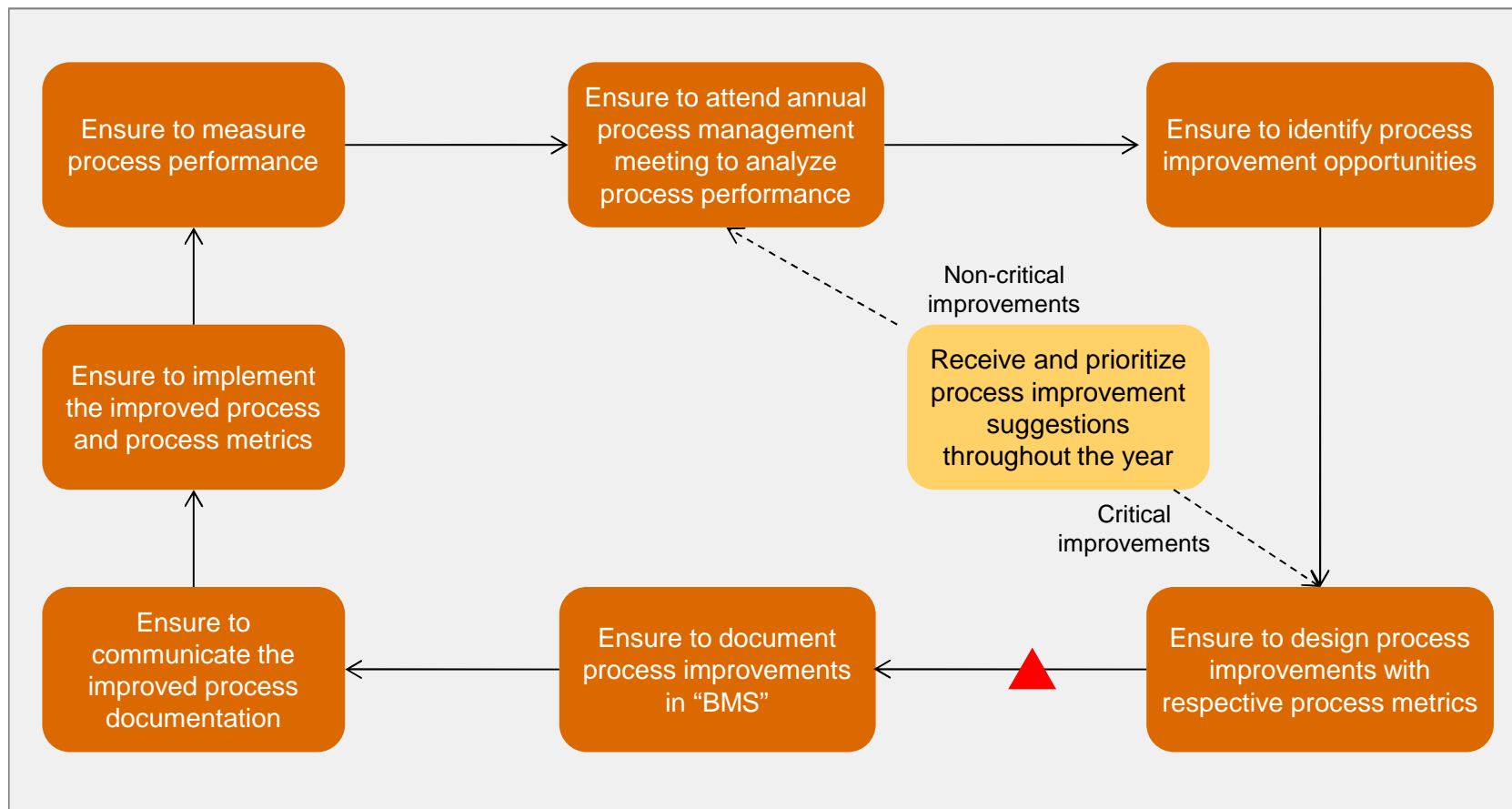
Ensuring Continued Improvement





Securing Continuous Improvement

(The concept of process ownership)



Thank you for the attention!



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Stavanger, Norway

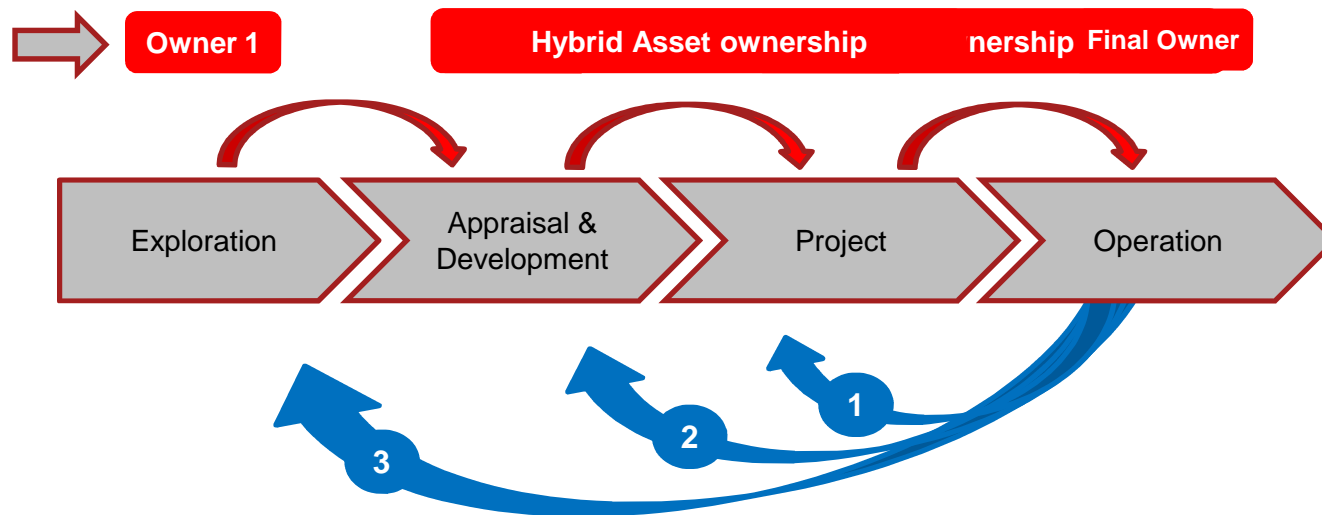
Appendix 1

Further Examples (Asset Mgm) and BMS



Q1: Will company structure promote "asset custodianship"

Or: Are we facing silos – pursuing functional objectives...



Scenarios:

- 4 Asset Owners ?
- Different "Owner focus"
- Multiple hand-overs
- Interface & Links dependent on project maturation process

Asset Manager Challenges:

1. Operational readiness?
The real proof of project success. Focus on Influence during project...
2. Influence in early phase of project.
3. Influence / participation during Exploration and Appraisal

Q2: What are the Asset Management "Value Drivers"

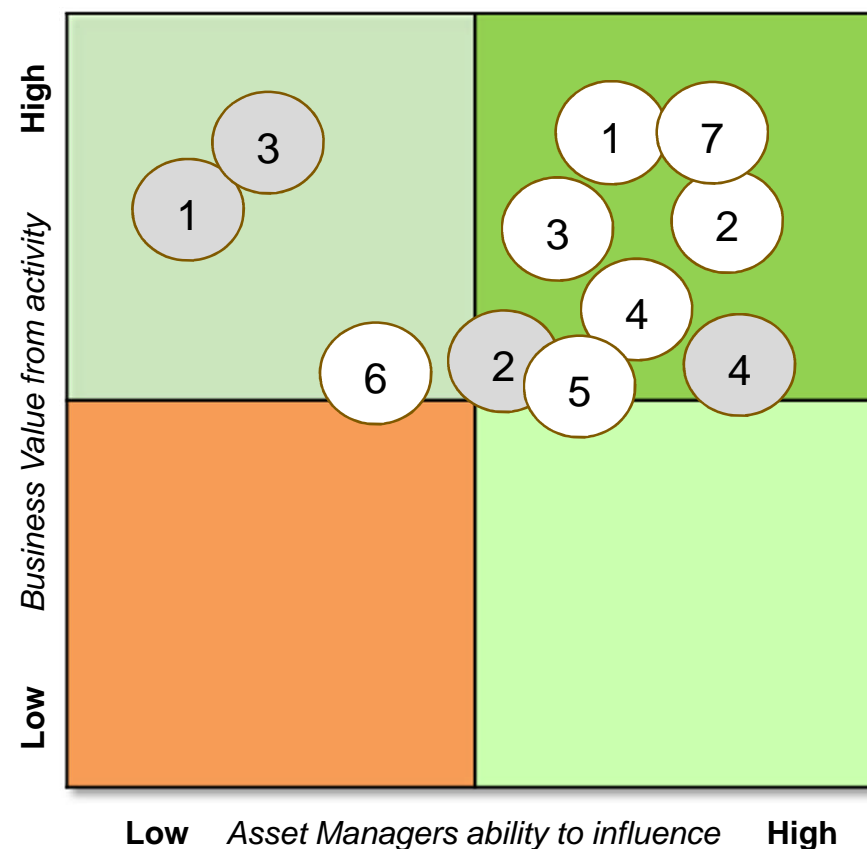
Operated Assets / General

1. Maximize facility potential
(Facility uptime and throughput)
2. Utilize subsurface potential
3. Utilize external opportunities.
E.g. "Asset tenants"
4. Review and reshape commercial contracts
5. Reduce/minimize lifting cost
6. Influence BD/portfolio
(Regional insight / awareness)
7. ...

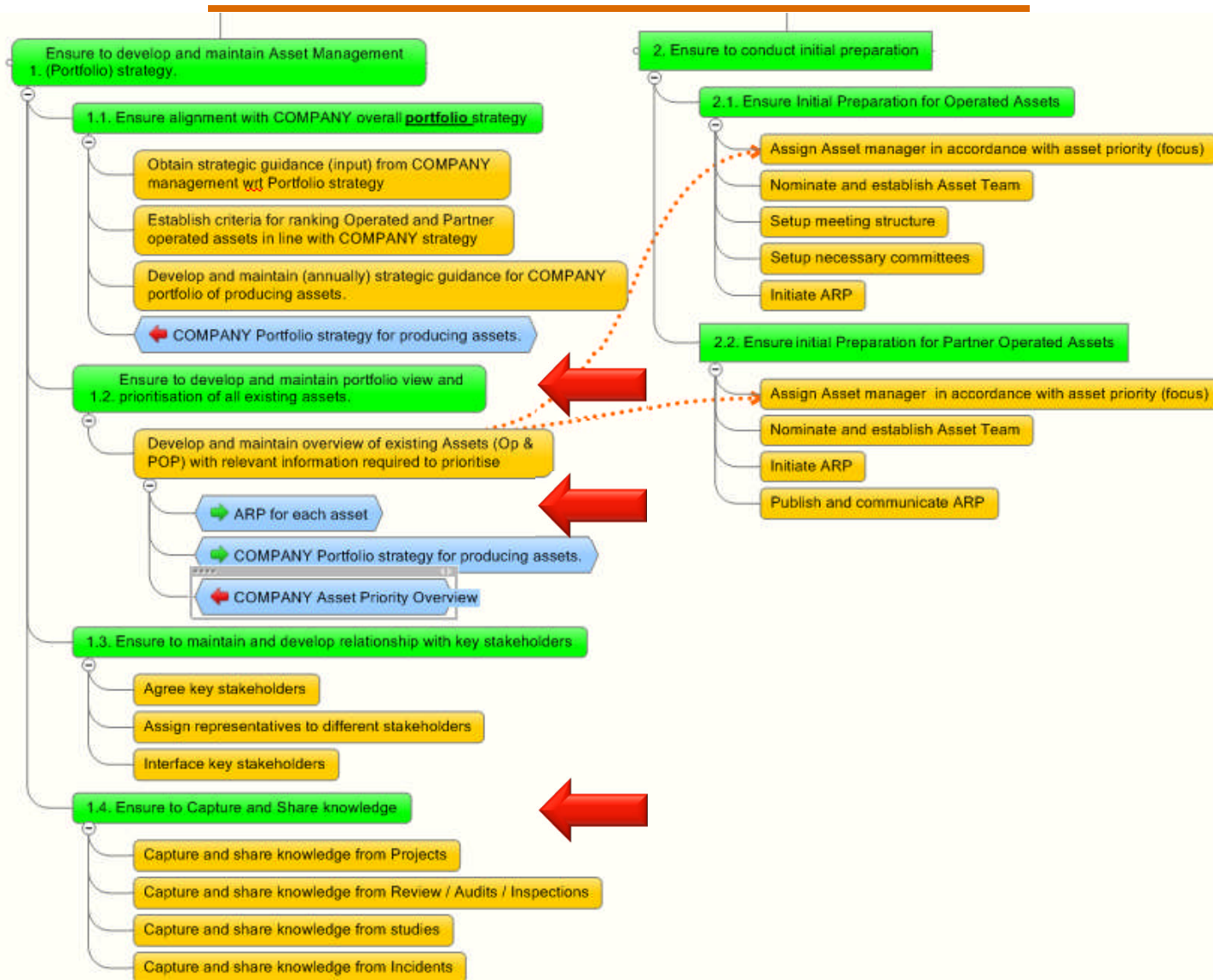
ARP (Asset Ref Plan)

Partner Operated Assets

1. Contribute to operational improvements
2. Capture and Share knowledge
3. Manage Operators
4. Review and reshape commercial contracts



Developing processes to address the value drivers (1/2)



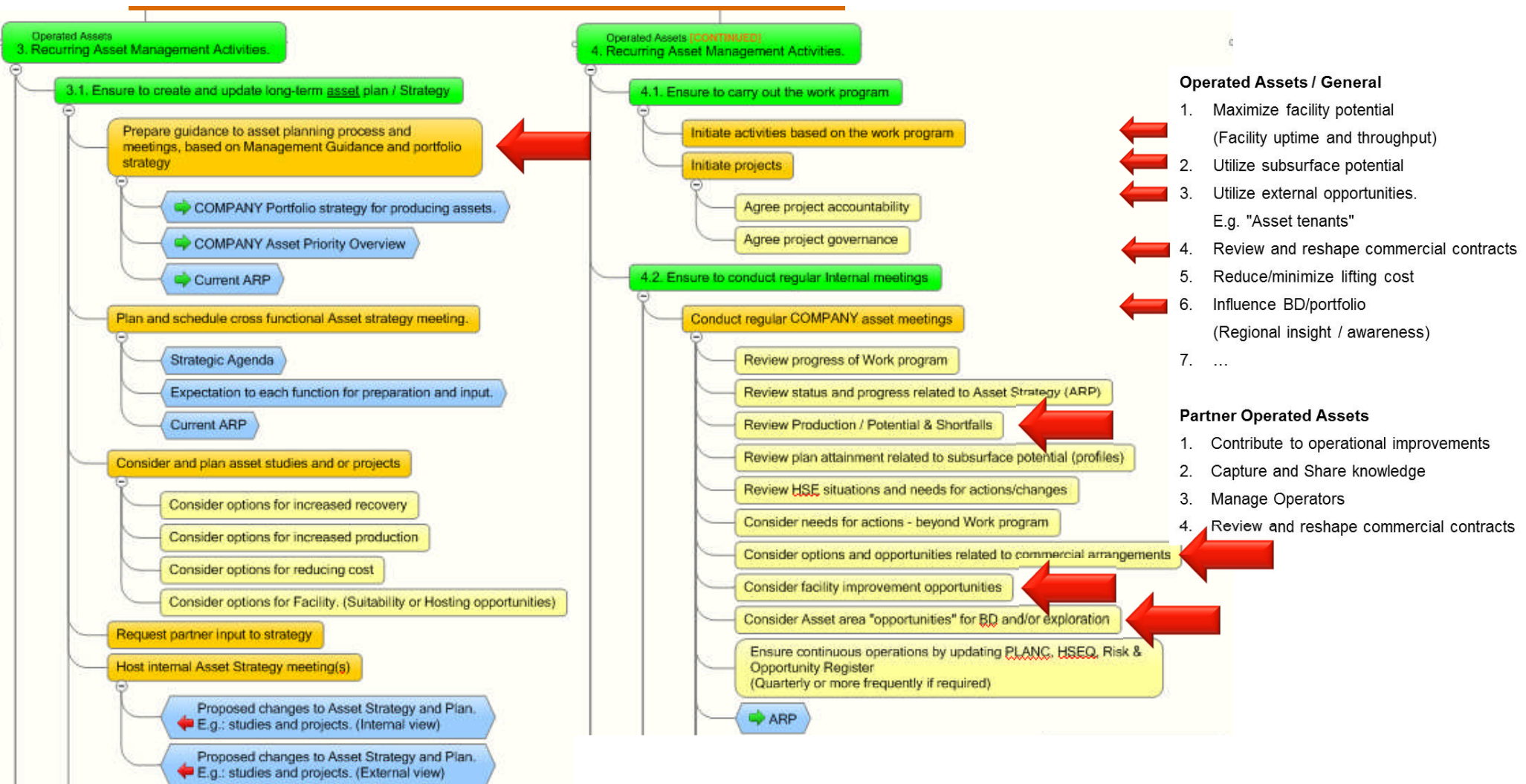
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Partner Operated Assets

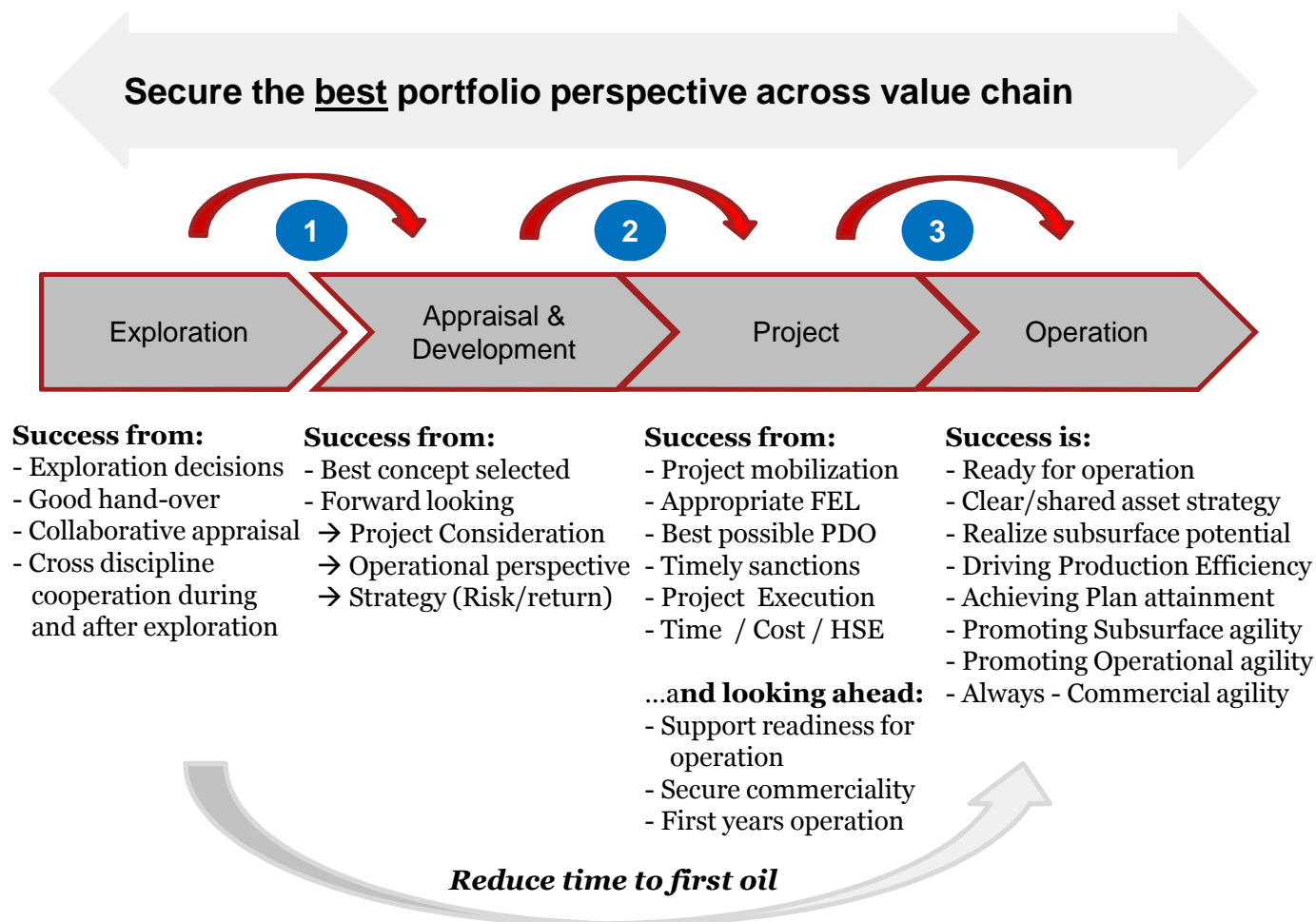
1. Contribute to operational improvements
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Developing processes to address the value drivers (1/2)



Considerations to Asset Custodian model

Addressing asset management challenges

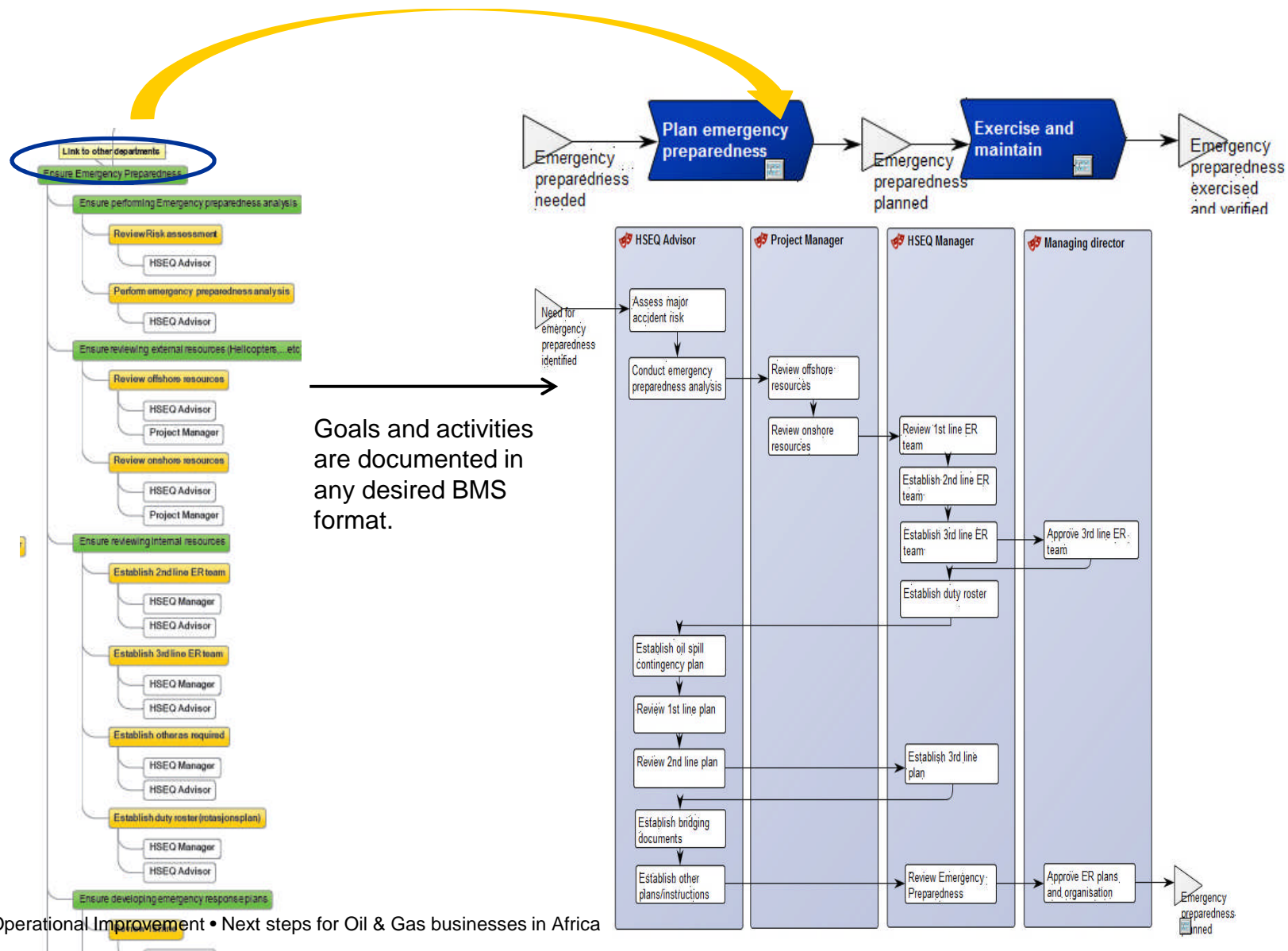


Interface Surprises

1. Over/Under appraised.
→ Marginalized business case
→ Options not explored
2. Too late project creation.
- or too fast (costly) spin-off
- Resources scarcity
- Insufficient Proj Mgm
- Concept ambiguity
3. Operations not prepared
- Missing processes
- People and capabilities
- Lacking systems
- Lacking documentation
- Lacking spares / logistics
- Lack of suppliers
- Lack of commercial arrangements for shipment, allocation

Influencable by Asset Manager?

After QA - bridging Blueprints to the Management System



Appendix 2

PwC Solution Areas

Solution Area: Core E&P Improvement “E&P Blueprinting”

Client issues by domain:

Exploration: Obtain access to acreage, and accelerate evaluation and development handover

Field Development: Fast tracking where possible by standardizing concepts – to reduce time to first oil.

Major Projects: Major Project approach and control

Prepare for Operation: Transition to Operation - achieve planned production

Operations: Production Efficiency – realizing subsurface potential

Reservoir Management: Maximizing economic resource exploitation

Asset Management Global/Local portfolio. Own & Partner Op.

Well Delivery: Efficiency, Capacity

HSEQ: In all we do – Being fit for purpose

PwC service offerings:

PwC have industry trained project leaders and practitioners to support clients in end-to-end or specific functional improvement.

We offer fixed or flexible project models to drive operational improvement, where we will create documented processes, with clear roles, responsibilities, interfaces and dependencies.

The project may include Information and technology requirements, and development/update of Business Management Systems.

Toolbox / Methodology:

We have developed a comprehensive but modular toolbox, with industry practices for all relevant domains, to guide and challenge improvement opportunities.

A methodology proven in IOC and NOC to accelerate Analysis, Design and Implementation – secure management control and key stakeholder involvement.

Our key Client credentials:



Process Improvement
Operational Models



Operational Improvement
Develop BMS



Operational Improvement
Operational Strategy



■ BASF Gruppe

Develop Operational
Processes, prepare for
operatorship.



Exploration cycle time,
Well Delivery, Production
Optimization and HSE



Exploration, drilling,
HSE and Asset Mgm.

Solution Area (Strategic Competence Management)

Client issue

Step change phases from Exploration, to Development and Production sets out a need for ***continuous upgrading and alignment of competence and skills***.

Increased focus on competence management from the Oil & Gas regulatory bodies, requiring improved competence planning, tracking and transparency.

The ***need for enhanced talent practices*** to effectively ***compete in the “war of talent”***.

Uncertainty in sourcing competence base to meet future business opportunities

Ensure the right skills to the tasks through ***efficient utilization and allocation of resources***

PwC service offerings:

Based on our extensive experience from several projects, PwC has developed a comprehensive framework covering the majority of issues our clients meet with regards to management of competence. When implemented, strategic competence management enables the client to manage their competence base in a way which supports their short and long term strategic goals.

Toolbox / Methodology:

The client issues are widely recognised across the group members in the xGeo initiative and through our work we have developed a common methodology supported by several accelerators applicable for most projects.

The area is strengthened by several SME's and a large international Talent management network of specialists.

Our key Client credentials:



■ BASF Gruppe

Competence management



Competency model



Talent management



КазМунайГаз

Competency model



Statoil

Competence management



KUFPEC

Competency modelling and role profiling

KNPC



HR Sourcing and capability development



DET NORSKE

Competence mapping



Solution Area: Supply Chain

Client issues:

Weak connection to internal customers: errors in PO and contractual agreements creating long lead time

Poor supplier performance and reliability:

Insufficient communications, inadequate performance management and absence of supplier performance improvement programmes

Strategic sourcing: functions are fragmented and the pre-qualification process is ineffective. Lack of strategic sourcing and category management capabilities

Supply planning: incomplete, or insufficiently robust demand plans, leading to service delays, over/under stocking of goods...

Excessive stock levels: misalignment of demand and supply due to poor supply planning

Technical capability: Procurement teams have insufficient depth of market knowledge and business understanding in the areas that really matter to the business

PwC service offerings:

We have developed a comprehensive but modular service offering addressing each of the 6 identified main issues through a dedicated module

Toolbox / Methodology:

The 6 issues, identified through the X-geo initiative (Norway, ME, Poland , Russia and UK) are widely common across regions. The X-geo initiative is currently developing specific methodologies for each of the modules.

The modular approach creates a pragmatic toolbox, avoiding the risks of “wide scoped supply chain transformation projects”.

Our key Client credentials:



World class proc
Process alignment



Strategic sourcing
Inventory optimization



Strategic
sourcing



Purchase to pay,
Material management
Procurement-Users integration



Supplier relationship mgmt
Strategic sourcing
Demand planning



Competency
Development

Asset optimization (Operational Excellence)

Client issue

For a long period of time many Refineries have been struggling with cost-cutting pressures, including shrinking margins and old equipment /plants with need to improve/invest.

Typical Pains:

- Maintenance execution too reactive and corrective
- Low time on tools; inefficient use of craftspeople
- Old/unchallenged cultural behaviours
- Too complex business processes, improvements stalls
- Insufficient operating budget control and cost management
- Poor cross functional cooperation
- Weak management decision support
- Contract terms not known to execution level
- Lack of strategic sourcing, pooling of demand. Best market prices not achieved

PwC service offerings:

To gain sustainable cost reductions, our three stage methodology addresses the limitations of traditional approaches by focusing on where the root causes are embedded across the business, taking into account key processes and the key process interfaces coupled by the strategy, organizational design and behaviours driving the business model.

1. Initial insight quantitative analysis (What are the potential savings?)
 2. On-site diagnostic – tailored tool for the task (Where are the potential savings?)
 3. Improvement plan (How do we realize the savings?)
- “We walk the talk with the client, and cash in the benefit!”

Toolbox / Methodology:

*A global Community of practitioners in Norway, Canada, UK and US
→A tested and well defined diagnostic tool tailored for the industry
(specific for downstream and upstream)*

Our key Client credentials:



Statoil

1. Mongstad refinery
2. Kalundborg refinery
3. Tjeldbergodden metahol plant



1. UK Shelf, Upstream
2. Chicago, Downstream
3. Trinidad, Upstream
4. Houston, Upstream
5. California, Downstream
6. Texas, Downstream

Opportunities:

- A. Gazprom (Russia)
- B. Lukoil (Russia)
- C. Rosneft (Russia)
- D. Zarubezhneft (Russia)
- E. Kuwait National Petroleum Company (KNPC)
- F. Abu Dhabi Oil Refining Company (TAKREER)
- G. Petro SA (South Africa) – Proposal
- H. Preem (Sweden) – Meeting held
- I. Neste Oil (Finland) – Meeting held
- J. ENI (Italy)

Solution Area: KPI

Client issues:

- Absence of a robust Performance Management mechanism to align organizational performance to corporate strategy, goals and objectives
- Poor performance visibility and insufficient data to support decision- making
- Targets set either lack ambition/ do not drive growth or are unrealistic and over ambitious
- Insufficient value analysis to link strategy with operational performance
- Lack of closed loop system for continuous performance improvement
- No single source of truth; multiple repositories for performance data
- Reliance on time consuming, inefficient processes for data consolidation and generation of KPI' and Management Dashboards

PwC service offerings:

Multiple offerings related to the development or improvement of Enterprise Performance Management

Toolbox / Methodology:

- PwC currently has a comprehensive Enterprise Performance Management (EPM) Blueprint, which covers “process, technology, people” across the entire EPM value chain (Strategy to Plan, Measure to Forecast, Recognise to Reward)
- The X-Geo KPI team is working to develop an O&G specific blueprint, by:
 - Identifying components of the value chain that are most critical/ unique to O&G
 - Incorporating O&G specific leading practices & common performance indicators within these components

Our key Client credentials:



Corporate Planning,
Budgeting and Performance
Management Model



Implementation of Integrated
Planning & Performance
Management Framework



Design of an
Enterprise Reporting
System



Performance
Management Reporting



Upstream KPI system
improvement

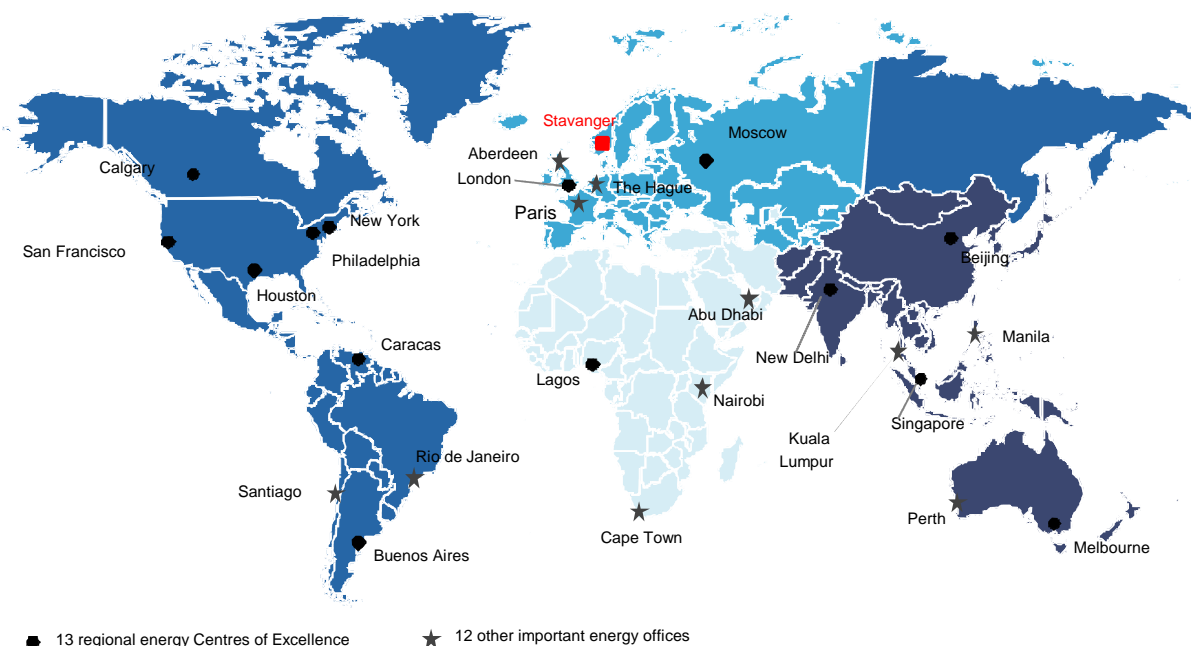


Design of Solomon
Reporting System

PwC Profile & Oil and Gas expertise

- PwC is a world leading advisor to the Energy industry, working with exploration, production, downstream and service companies to provide business solutions tailored to the Energy sector. For more than 100 years, we have helped energy companies succeed.
- We serve more clients in the FT Global 500 companies than any other professional services firm.
- We have over 2,500 energy and utilities clients around the world with more than 400 partners and
- We have 3,100 professionals solely dedicated to serving energy companies globally.

Energy Global Practice – 25 Centers of Excellence



Industry Thought Leadership

- “Oil & Gas Deals” – PwC’s O&G deal analyses
- The wealth of nations: How well do countries’ petroleum strategies align?
- Transport and Logistics 2030 – PwC Thought Leadership
- Oil & Gas Operational Improvement

