

IOEC

Value focused asset management



Agenda

- Introduction
- Asset Management and models
- Asset Integrity Management and models
- Asset optimization
- Best practices
- Reliability
- conclusion

SINA FARSHINEH, PhD Cranfield University, UK Asset Management



Duration: July 2018-Sep 2018

Amey Infrastructures

Position: Strategic Asset Manager

Responsibilities:

Uncertainty management with respect to portfolio of assets

Value optimisation from mature assets

Risk, efficiency and reliability reports

Asset acquisition

Duration: January 2018-June 2018

Institute of Asset Management (Giving new life to mature assets project)

Position: Project Manager

Responsibilities:

Cost management

Investment appraisal

Project progress report

Duration: January 2018-June 2018

IKEA UK (Next Generation of Asset Centre)

Position: Business Asset Optimisation Specialist

Responsibilities:

Asset efficiency and optimisation planning and budgeting (cost efficiency)

Business portfolio analysis

Data analysis and forecasting

Trainings:

Strategic management (Coursera online course)

Renewable energy business development

Business analytics

Duration: Aug.2015-30 Dec2017

Centrica Energy

Position: Asset Integrity Engineer (Offshore Wind)

Responsibilities:

Risk based asset integrity of offshore wind towers

Project planning and resource allocation management

Asset performance and cost forecasting

Duration: 2010-2011

McKinsey & Company

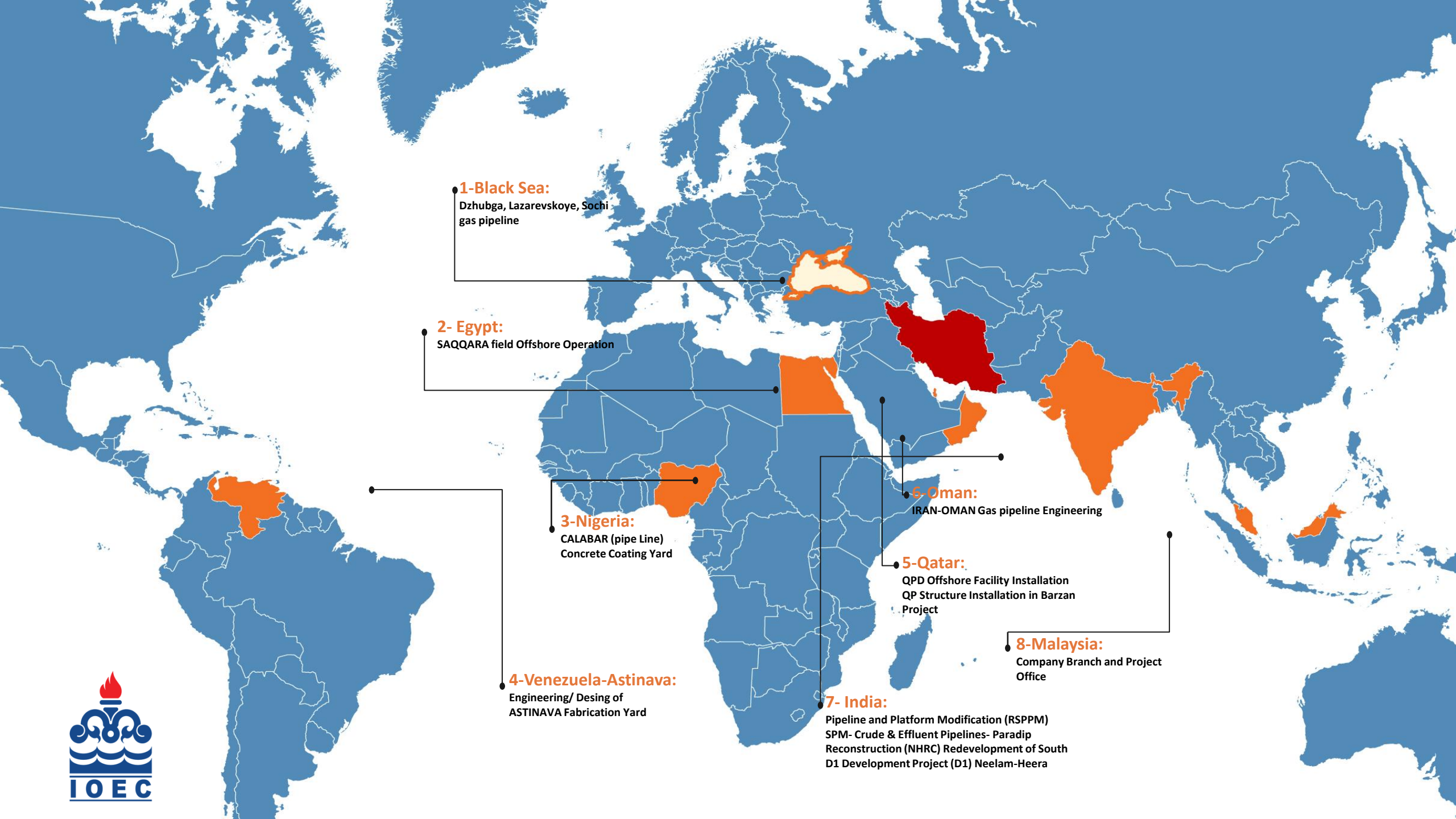
Position: Project Management Internship

Responsibilities:

Project planning and risk management for mega construction projects

Contract management

Stakeholder power mapping and communication planning (Government projects)



1-Black Sea:

Dzhubga, Lazarevskoye, Sochi
gas pipeline

2- Egypt:

SAQQARA field Offshore Operation

3-Nigeria:

CALABAR (pipe Line)
Concrete Coating Yard

4-Venezuela-Astinava:

Engineering/ Desing of
ASTINAVA Fabrication Yard

7- India:

Pipeline and Platform Modification (RSPPM)
SPM- Crude & Effluent Pipelines- Paradip
Reconstruction (NHRC) Redevelopment of South
D1 Development Project (D1) Neelam-Heera

6-Oman:

IRAN-OMAN Gas pipeline Engineering

5-Qatar:

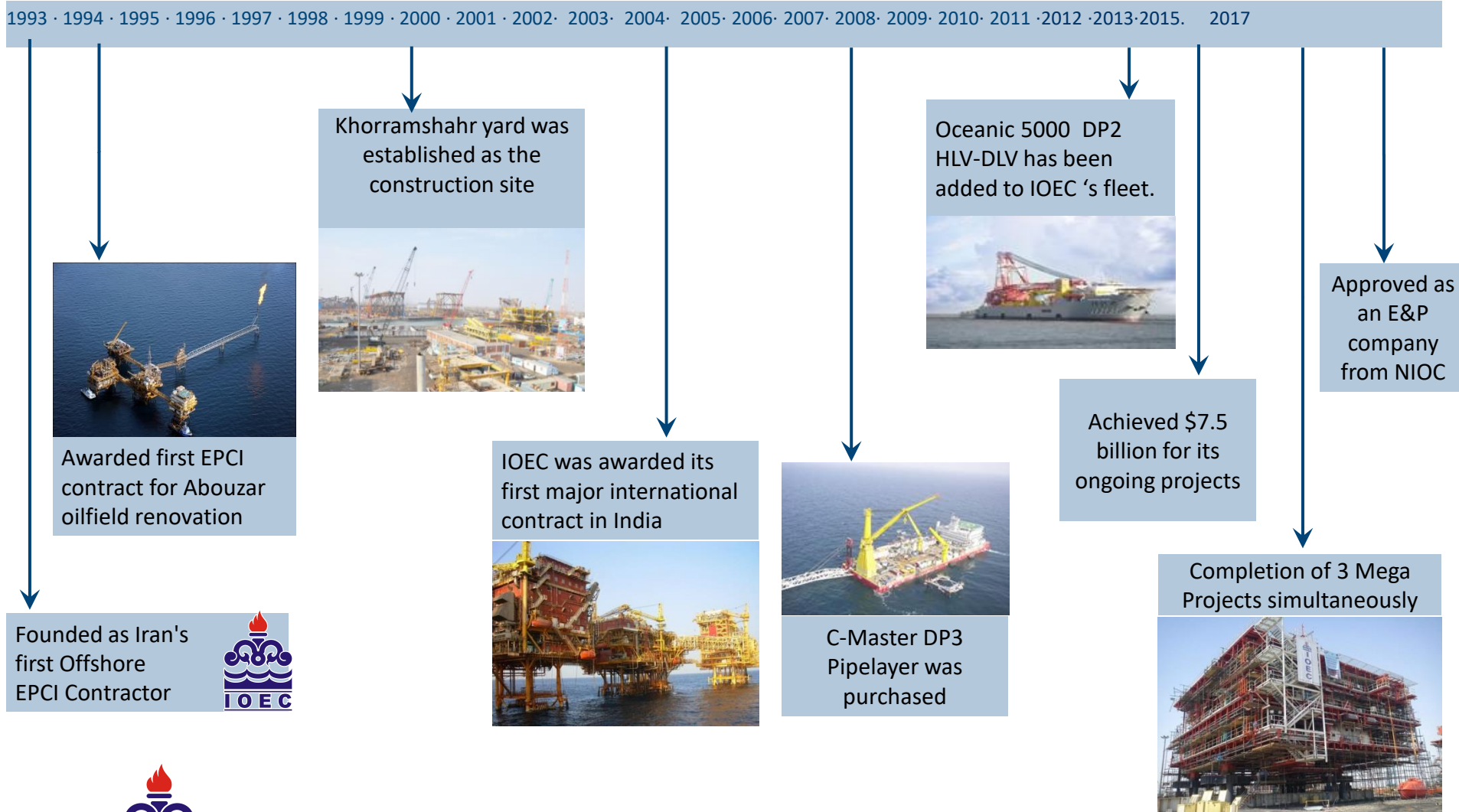
QPD Offshore Facility Installation
QP Structure Installation in Barzan
Project

8-Malaysia:

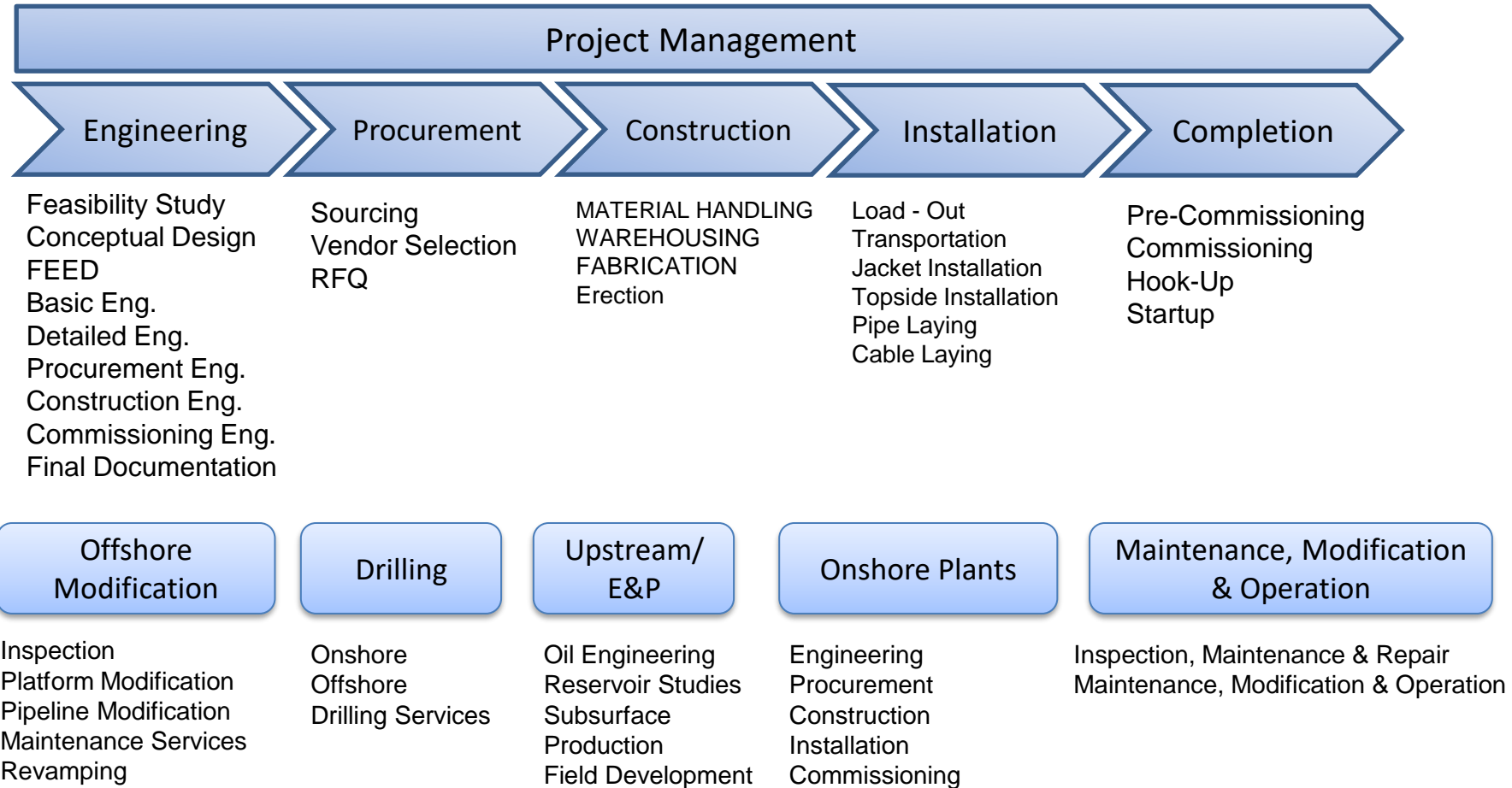
Company Branch and Project
Office



History and Development Trends



IOEC Major Fields of Activity

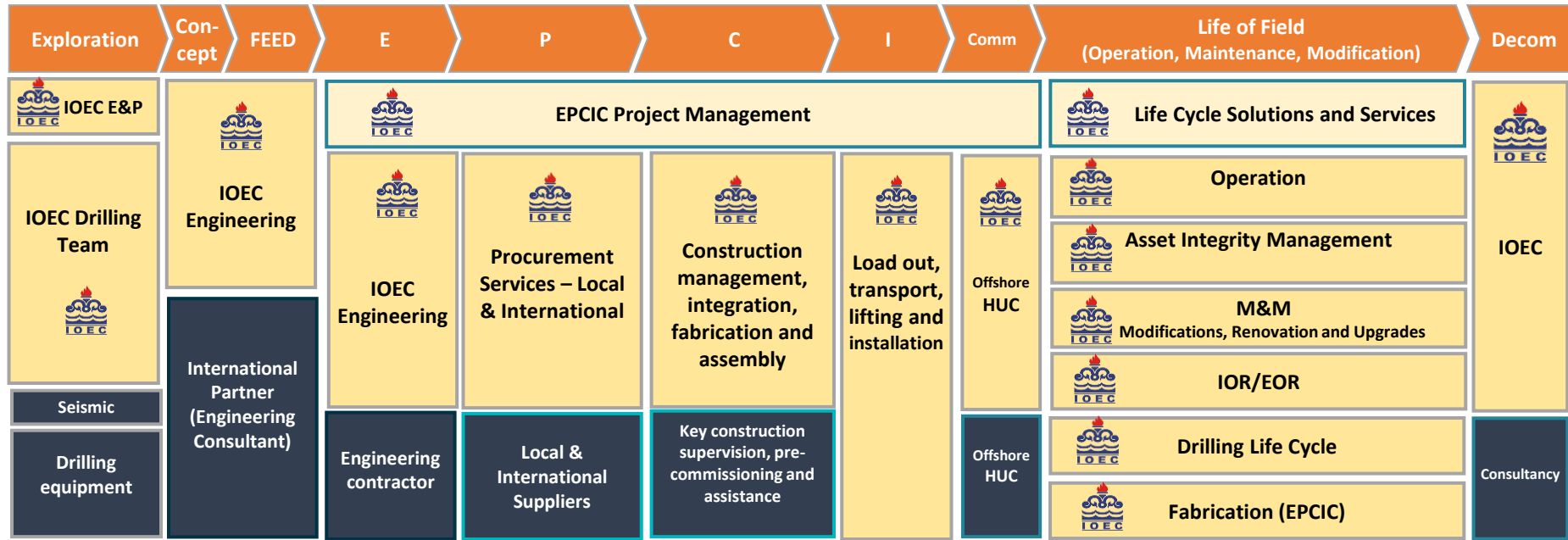


IOEC will represent a “one-stop-shop” for serving NIOC



Examples of possible IOEC Services (in collaboration with International Partners)

IOEC scope
 Partner scope



International
Potential
Partners

EPC Assistance, Systems & Tools; Subsea production systems and equipment, AIM & EPR systems & services;

Know-how, Equipment and Services

Upstream Activities, Reservoir Studies, Exploration & Production, Field Development

Engineering & Production Services (PEPS), Asset Management, Operations & Maintenance



IOEC will represent a “one-stop-shop” for serving POGC



Examples of possible IOEC Services (in collaboration with International Partners)

IOEC scope
Partner scope



International Potential Partners

AKER KVERNER AkerSolutions ROSETTI MARINO	EPC Assistance, Systems & Tools; Subsea production systems and equipment, AIM & EPR systems & services;
mhworth FIRSTGEO	Know-how, Equipment and Services
Petrofac	Engineering & Production Services (PEPS), Asset Management, Operations & Maintenance
Network of Other Potential International Partners	BV, DNV, SAIPEM, IKM, DCN, TDW, INTECSEA, Doris, Technip, ...



Asset Management

- It is more than doing things to assets- it is about how to use assets to deliver value and achieve organizational objectives
- Each organization must define value
- If properly applied can improve reputation and lead to:
 - Safe operations
 - Meeting regulatory and statutory obligations
 - Evaluate future business strategies to deliver objectives
 - Significantly reduce LCC of assets

AM fundamentals

- Value
- Alignment
- Leadership
- Assurance

What differentiates it from other management systems:

1. Focus across whole asset life cycle
2. Approach to decision making

Value

- Value stream: operational, focuses on customer satisfaction
- Value chain: strategic concept focuses on competitive advantage

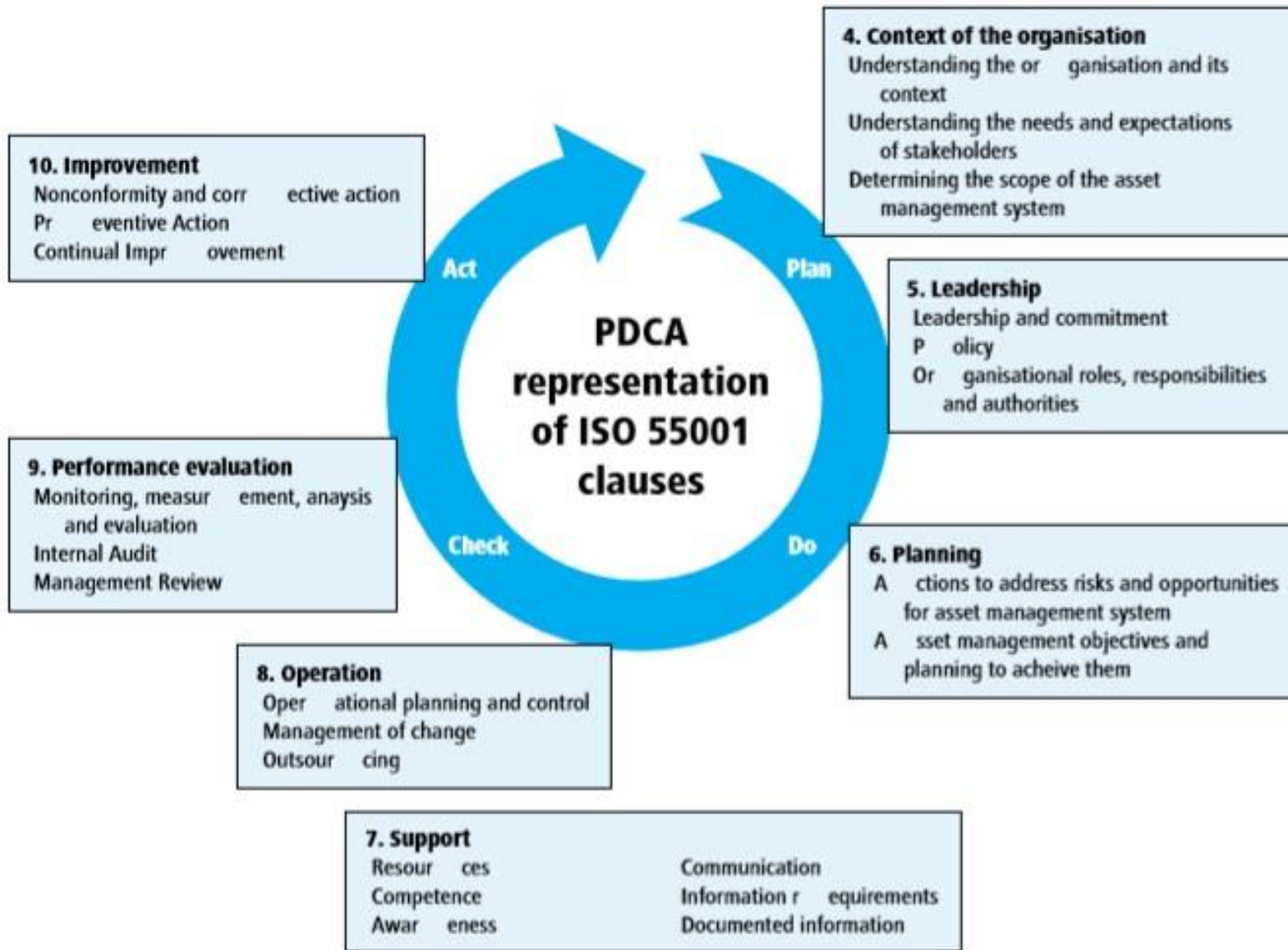
The diagram consists of three stacked, rounded rectangular boxes. The top box is grey and contains the text 'Value Proposition'. The middle box is blue and contains the text 'Assets are aligned through value chain to support the customer value proposition'. The bottom box is green and contains the text 'Having right assets in right place at right time (working together) supports the organization's value chain and is critical to success'.

Value Proposition

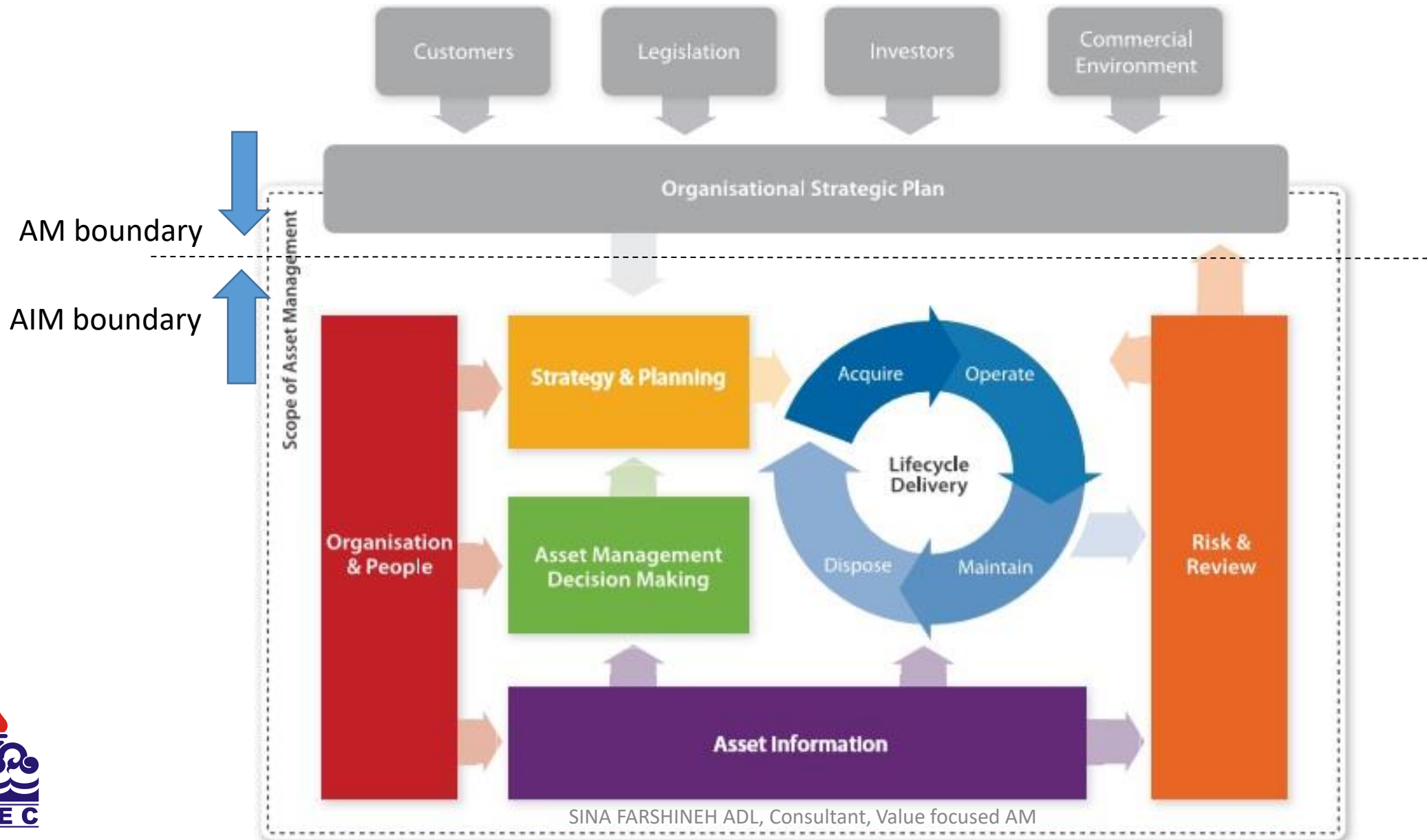
Assets are aligned through value chain to support the customer value proposition

Having right assets in right place at right time (working together) supports the organization's value chain and is critical to success

ISO management model for AM



Conceptual AM model IAM ISO 55000



Subject Groups IAM ISO 5000

Group 1 - Strategy & Planning

1. Asset Management Policy
2. Asset Management Strategy & Objectives
3. Demand Analysis
4. Strategic Planning
5. Asset Management Planning

Group 2 - Asset Management Decision-Making

6. Capital Investment Decision-Making
7. Operations & Maintenance Decision-Making
8. Lifecycle Value Realisation
9. Resourcing Strategy
10. Shutdowns & Outage Strategy

Group 3 - Life Cycle Delivery

11. Technical Standards & Legislation
12. Asset Creation & Acquisition
13. Systems Engineering
14. Configuration Management
15. Maintenance Delivery
16. Reliability Engineering
17. Asset Operations
18. Resource Management
19. Shutdown & Outage Management
20. Fault & Incident Response
21. Asset Decommissioning & Disposal

Group 4 - Asset Information

22. Asset Information Strategy
23. Asset Information Standards
24. Asset Information Systems
25. Data & Information Management

Group 5 - Organisation & People

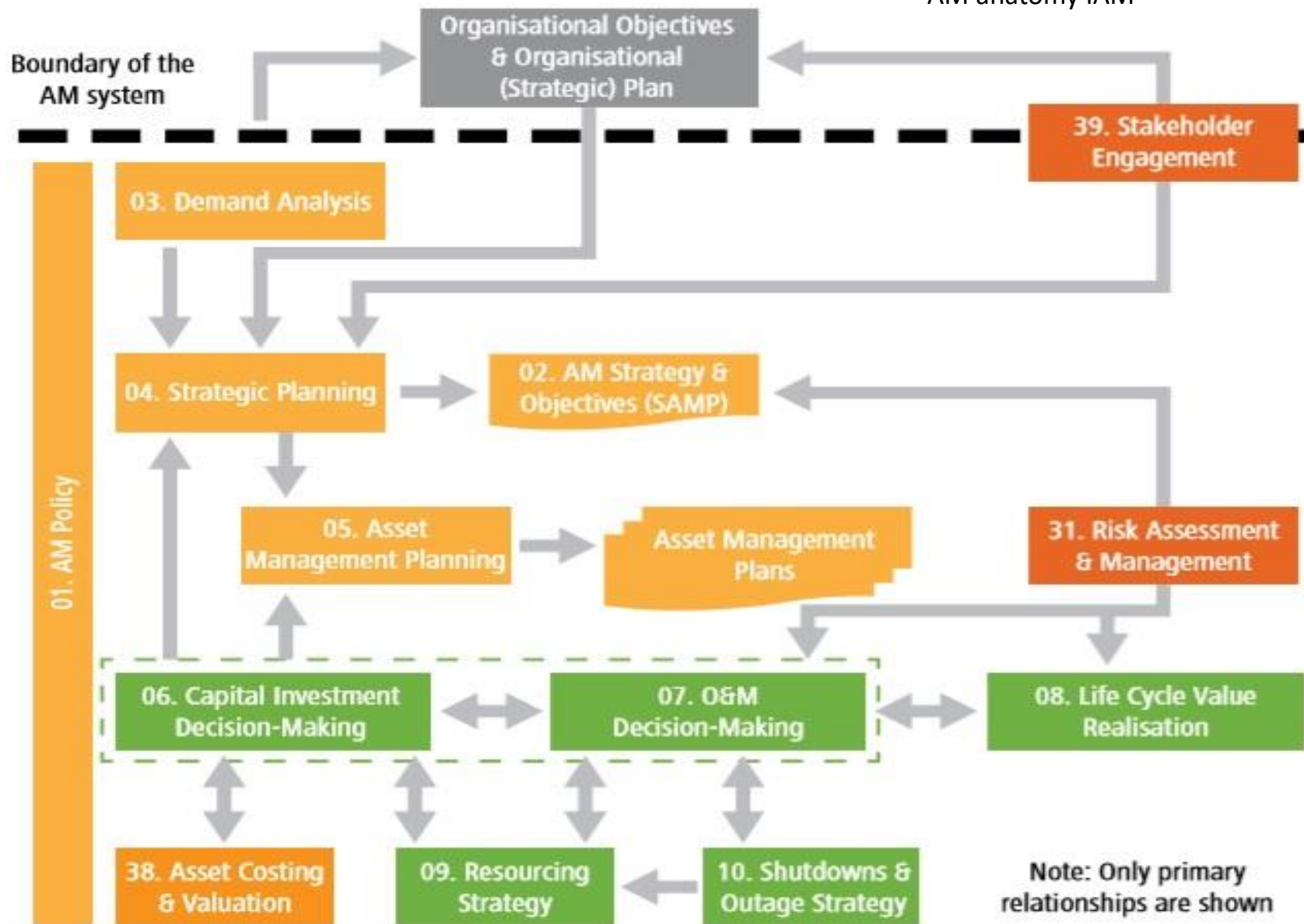
26. Procurement & Supply Chain Management
27. Asset Management Leadership
28. Organisational Structure
29. Organisational Culture
30. Competence Management

Group 6 - Risk & Review

31. Risk Assessment & Management
32. Contingency Planning & Resilience Analysis
33. Sustainable Development
34. Management of Change
35. Asset Performance & Health Monitoring
36. Asset Management System Monitoring
37. Management Review, Audit & Assurance
38. Asset Costing & Valuation
39. Stakeholder Engagement

Integration among subject groups

AM anatomy IAM



Strategic planning

- Current condition, performance and utilization and how this is likely to change with time
- The organizational objectives
- The constraints
- Capability and capacity of an organization
- The need to acquire new assets or enhance existing assets
- New opportunities due to technology
- The business case for any investment



Provides basis
for AMP

AM vs. AIM(Twofold approach)

KPMG Asset Management decision making model

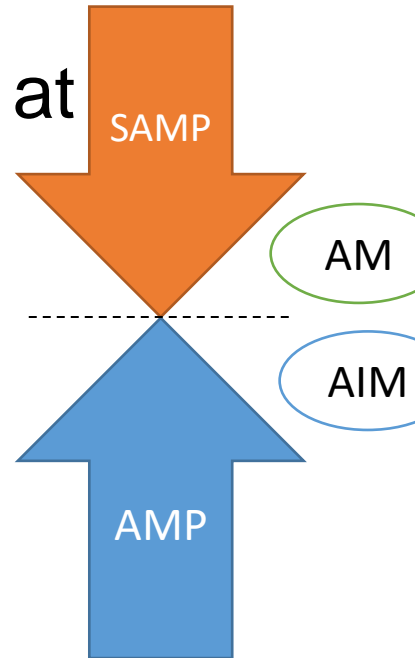
- In bottom up approach qualitative analysis are conducted at operational maintenance level:

- RBI
- RCM

Determine how and where assets are maintained

- Top down approach is based on SAM principles and are quantitative.

- In this regard, account is taken of how assets behave over their life time considering total cost of ownership



**The requirement of resources in bottom up approach is higher
Everyone on the team must focus on final score**

Asset Integrity Management

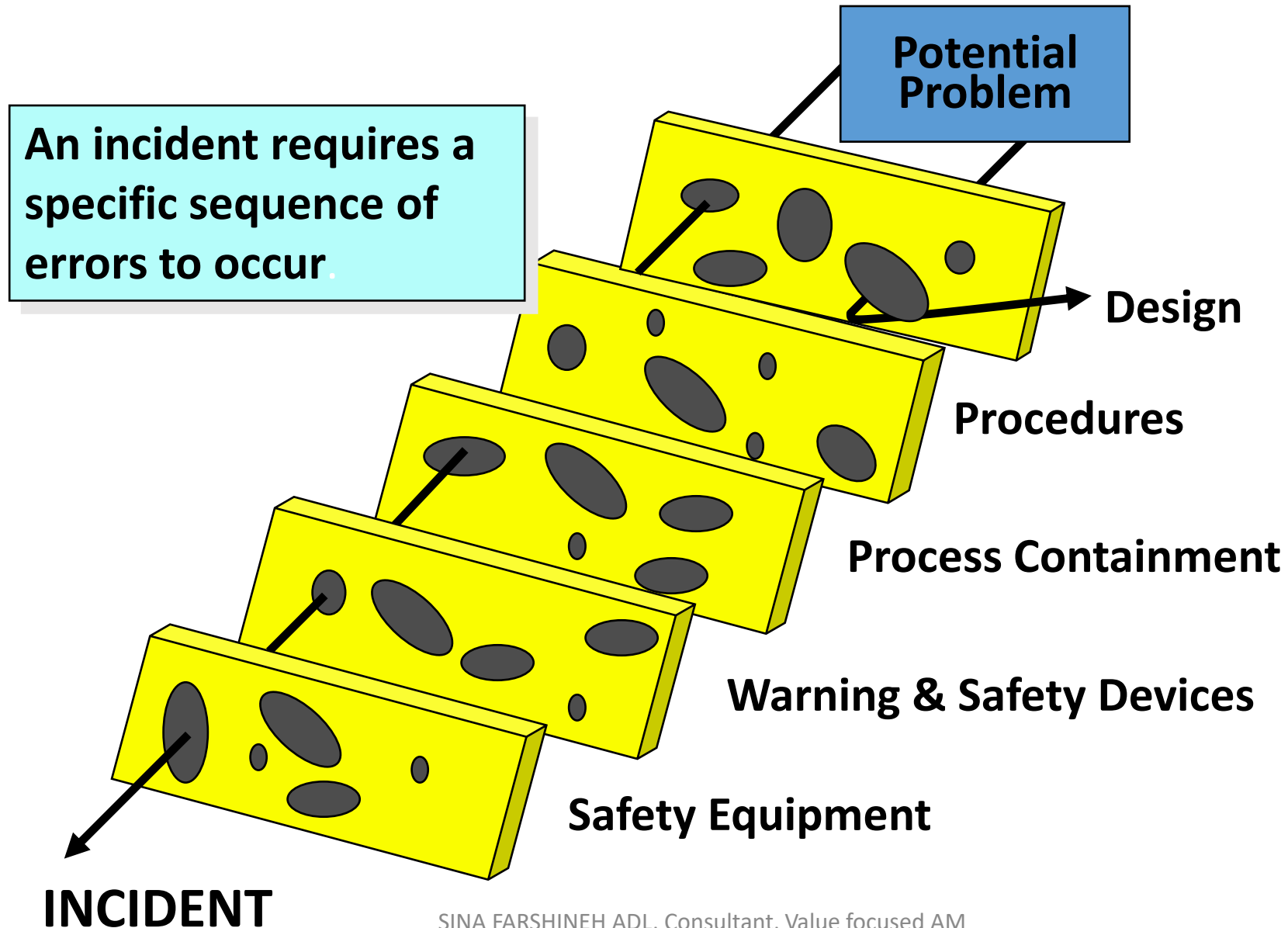
Asset Integrity:

- The ability of an asset to perform its required function effectively and efficiently while protecting health, safety, environment and asset

Asset Integrity Management:

- Systematic implementation of activities such as inspection, tests and maintenance tasks to ensure that critical assets will be suitable for its intended application throughout service life
- Focuses on areas with higher consequence and applies layered rigorous governance and control measures

Barrier system

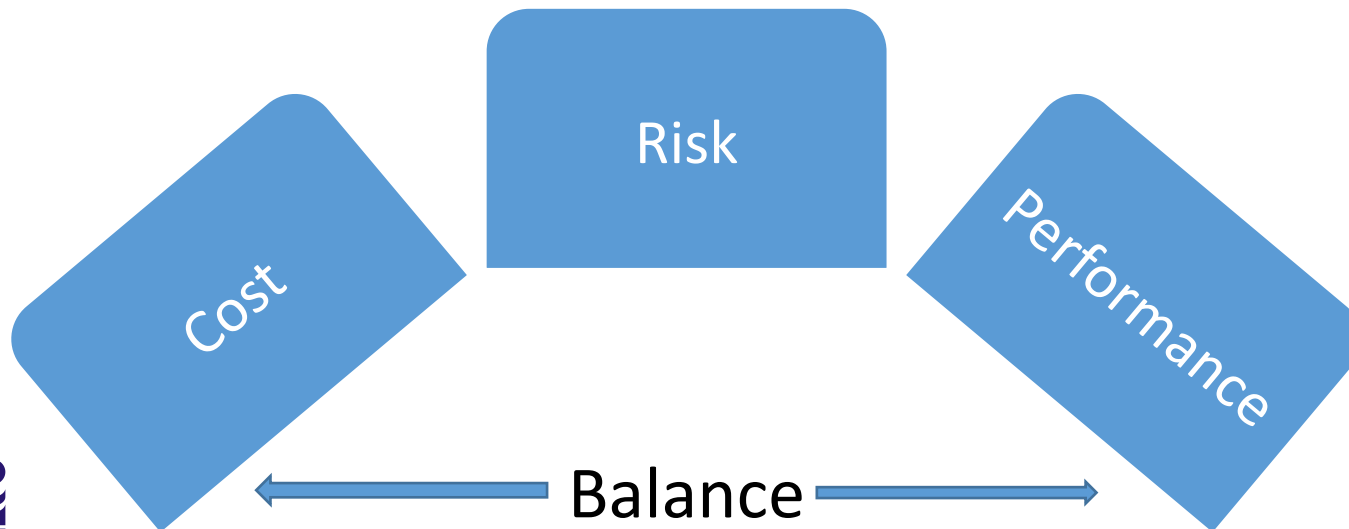


Focused approach on higher consequences

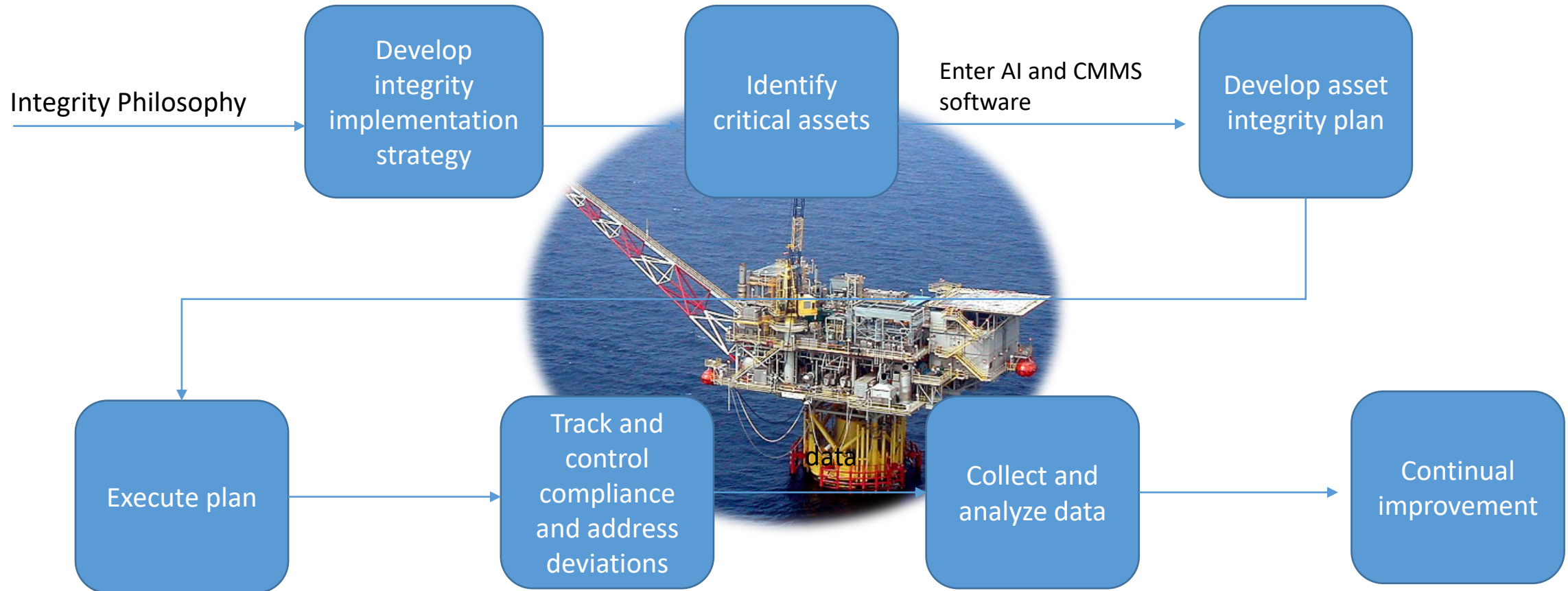
1	Likely	<div>Decreasing Likelihood</div>	6	5	4	3	2	1	
2	Occasional		7	6	5	4	3	2	
3	Seldom		8	Managed by Inspection, Reliability, and Maintenance Programs				Managed by Asset Integrity Management	
4	Unlikely		9						
5	Remote		10	9	8	7	6	5	
6	Rare		10	10	9	8	7	6	
Consequence Indices			<div>Decreasing Consequence/Impact</div>						
			6	5	4	3	2	1	
			Incidental	Minor	Moderate	Major	Severe	Catastrophic	

Asset Integrity Management Process

1. Identification of important assets
2. Planning for inspection, test and maintenance
3. Execution of plan
4. Monitoring and managing deviations



AIM implementation



AIM program

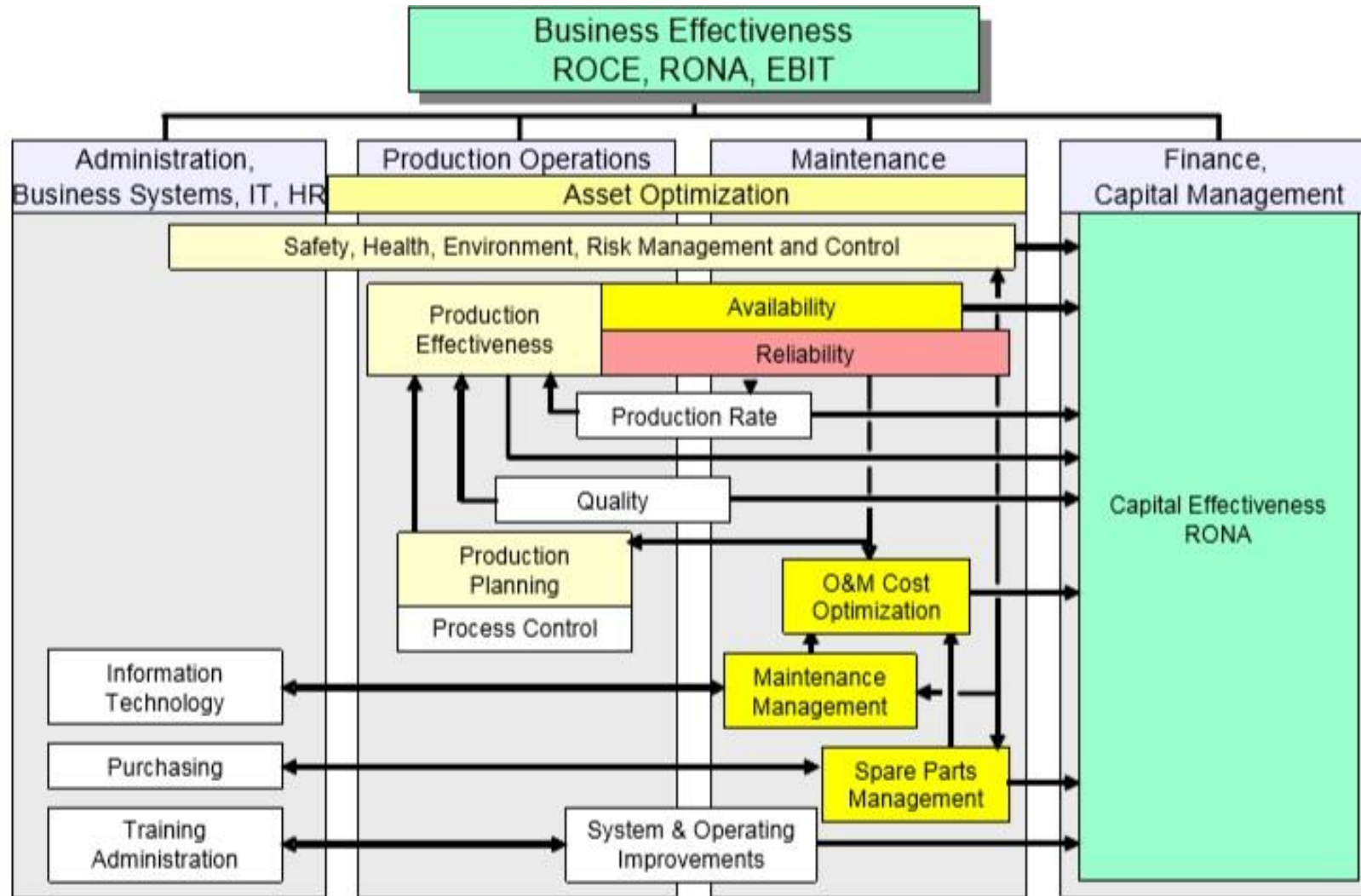
DNV GL IM model

- Gap analysis and benchmarking
- Development of management system and KPIs
- Design verification
- Data collection and data bank
- System and processes evaluation
- Identification of safety critical equipment
- Inspection, testing and maintenance planning
- Risk management, deficiency resolution and QA/QC
- Integration of tools

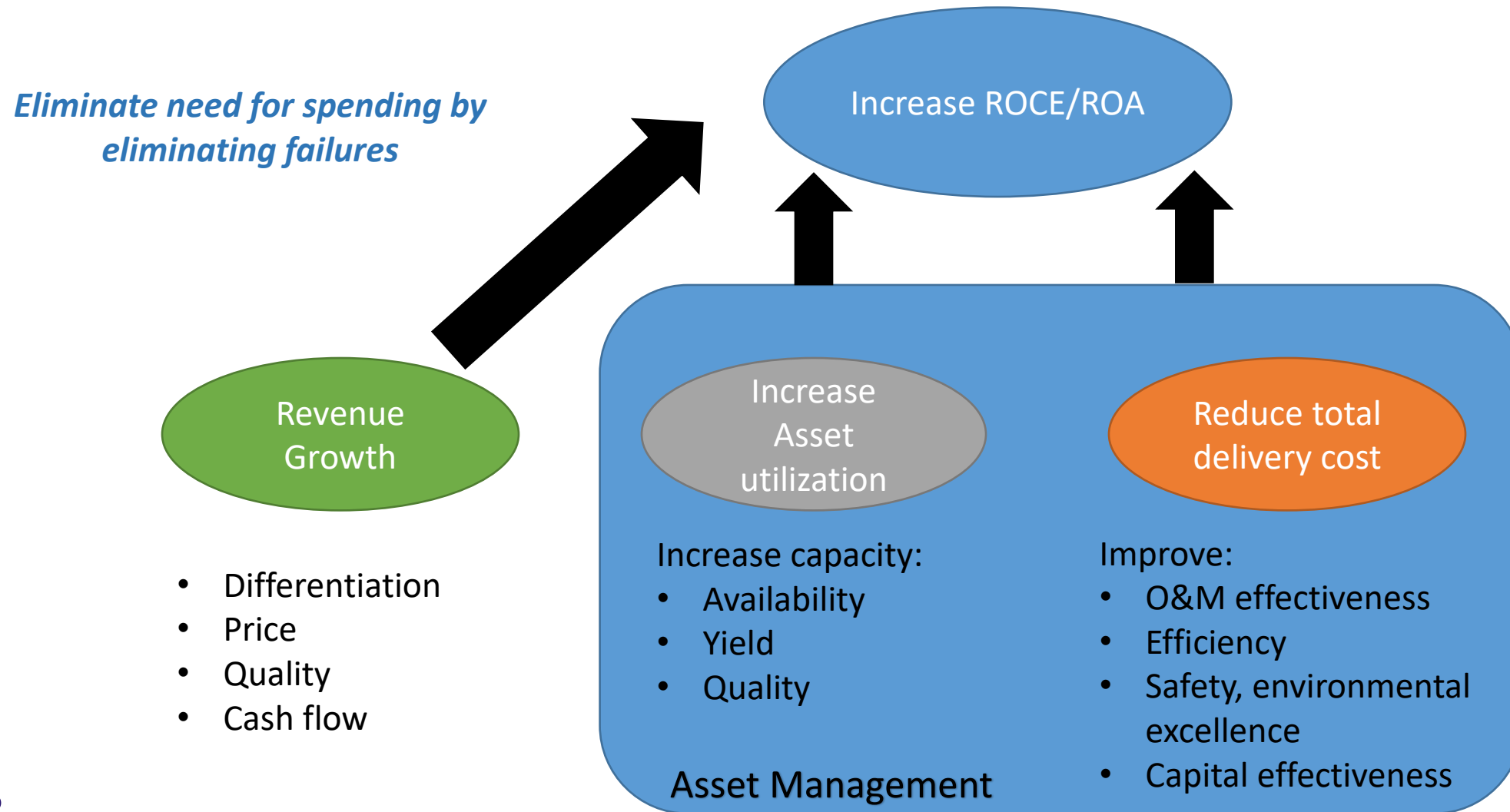
Asset Optimization

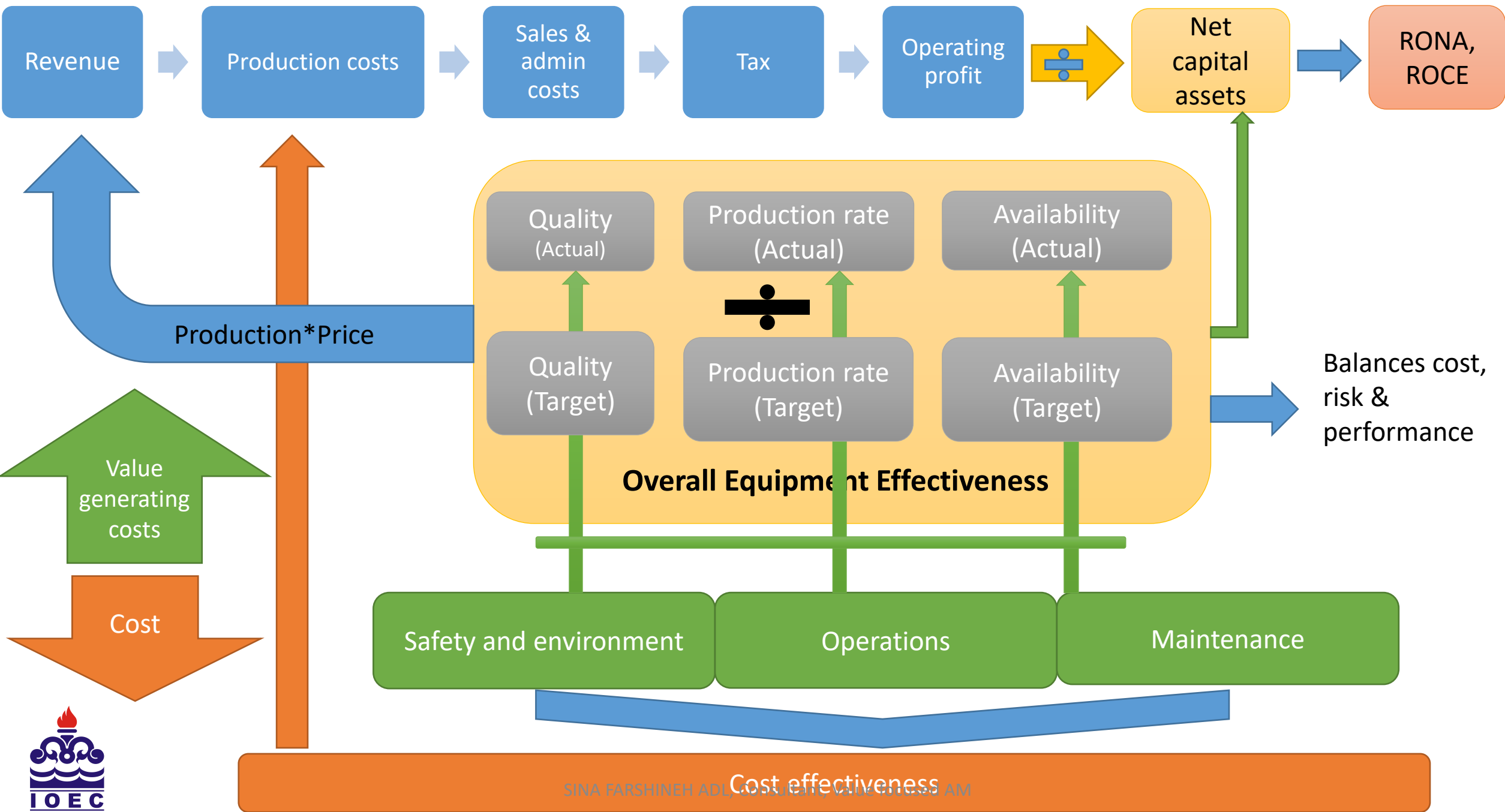
- A comprehensive and strategically integrated framework directed to fully gain greatest life time value from assets
- Directs the attention to reliability improvement and work elimination in addition to process effectiveness
- Accomplished by:
 - Deploying and institutionalizing a strategic array of comprehensive transformational improvements to:
 - Org. values
 - Behavior and culture
 - Functions
 - Practices
 - Processes

Creates value across entire organization

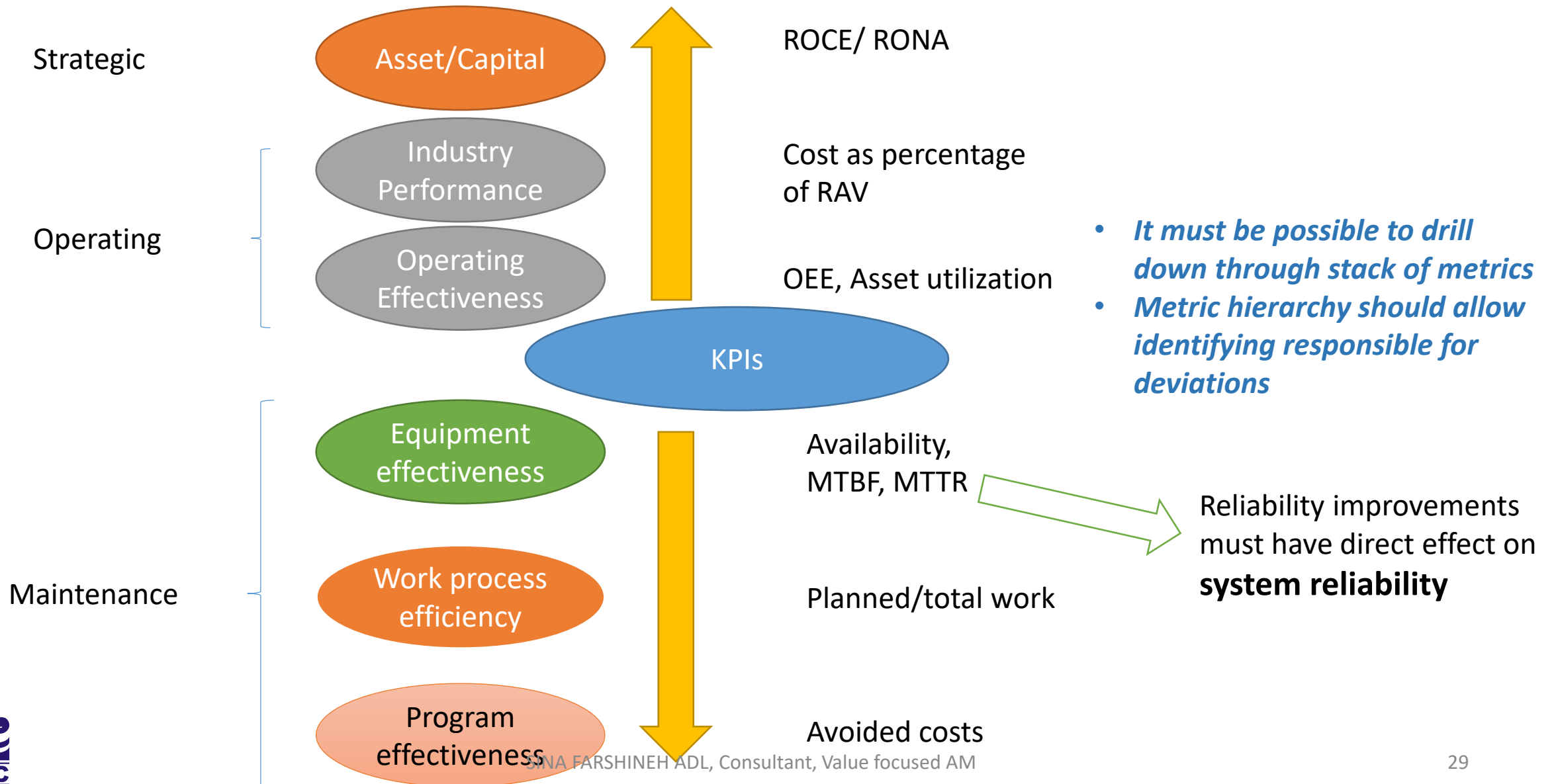


Focuses on results





KPIs



Cost to opportunity evolution



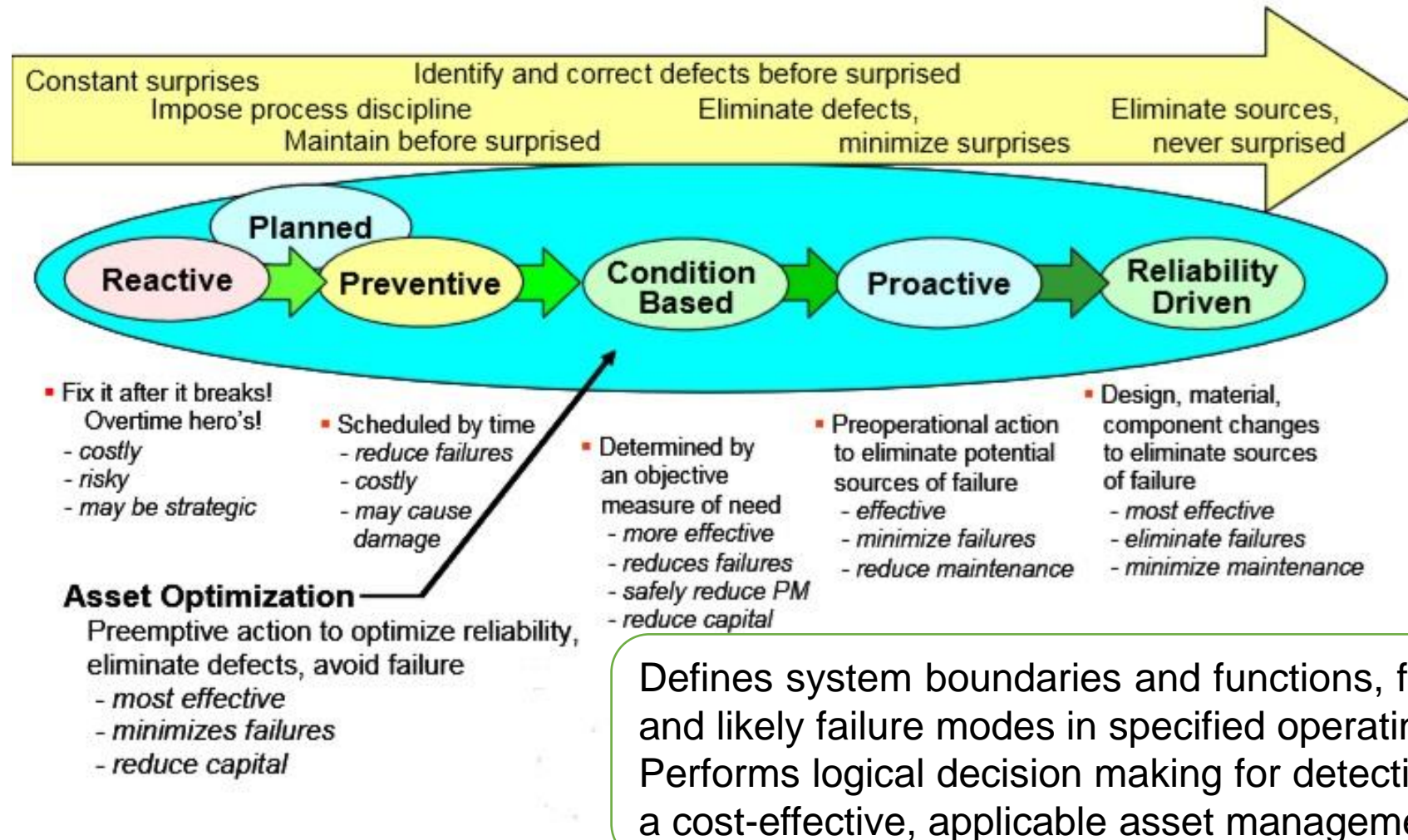
- Reactive maintenance
- Good operating margins
- Cost center

- Reduced resources
- Less spare capacity
- More aggressive objectives
- benchmarking

- Maximum ROCE, RONA
- Value driven
- Safety and environmental concern
- Total cost of ownership
- Maximum effectiveness
- Optimum reliability

- Any improvement in reliability must be traceable to bottom line
- **Reliability improvement program should reduce O&M**
- An effective financial model for optimization must enable organization to prioritize application of resources by financial return where opportunities far exceed resources

Evolution of best practice



RCM principles

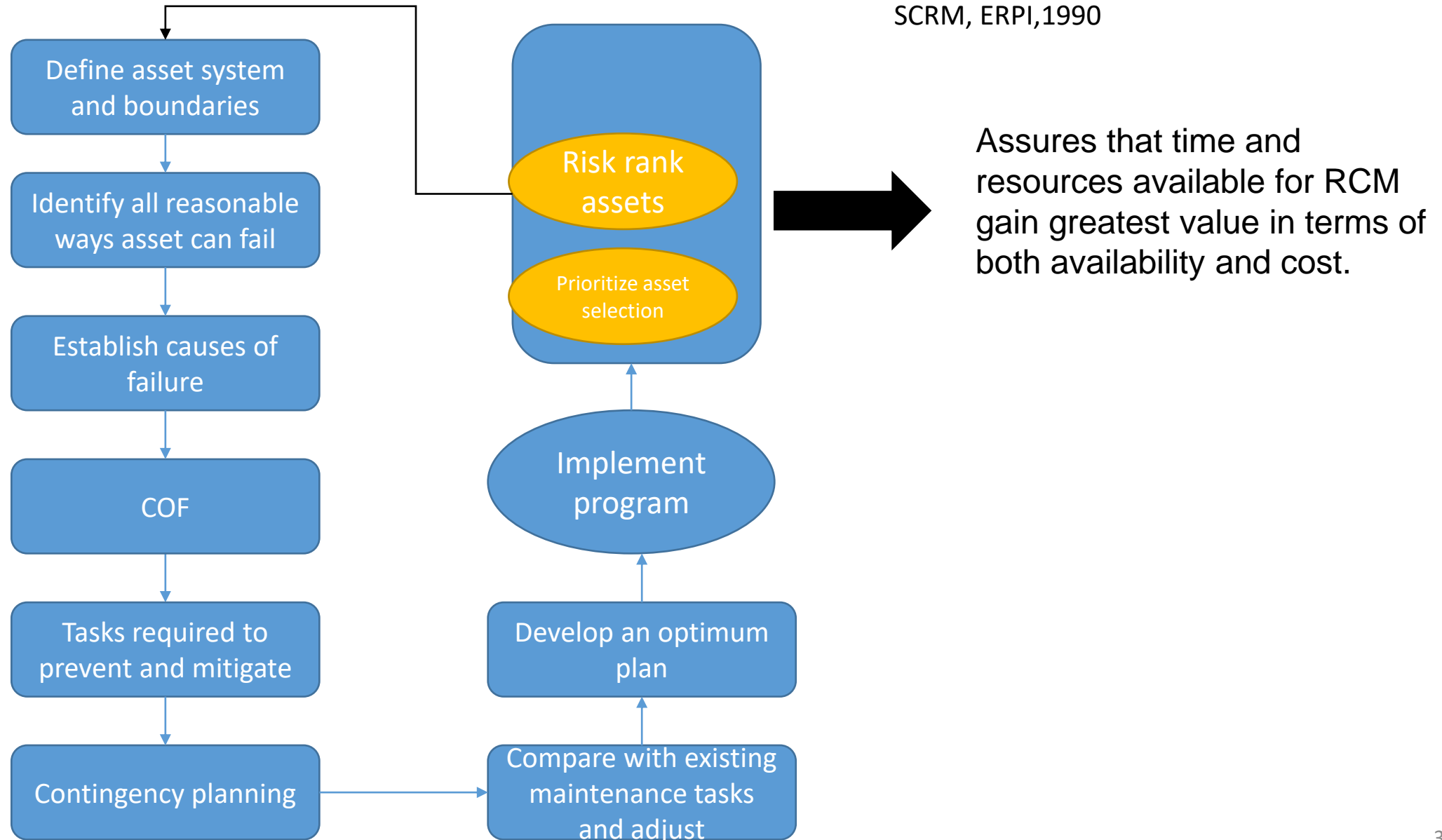
- RCM's rules are based on realistic analysis of the failure mode
- The effects of a failure are not always important enough to justify preventive action
- When the effects of a failure are important enough to justify preventive efforts, the challenge is to predict with accuracy to support scheduling
- Evaluates equipment and resources to best mate the two and results in high degree of reliability and cost effectiveness

RCM decision criteria

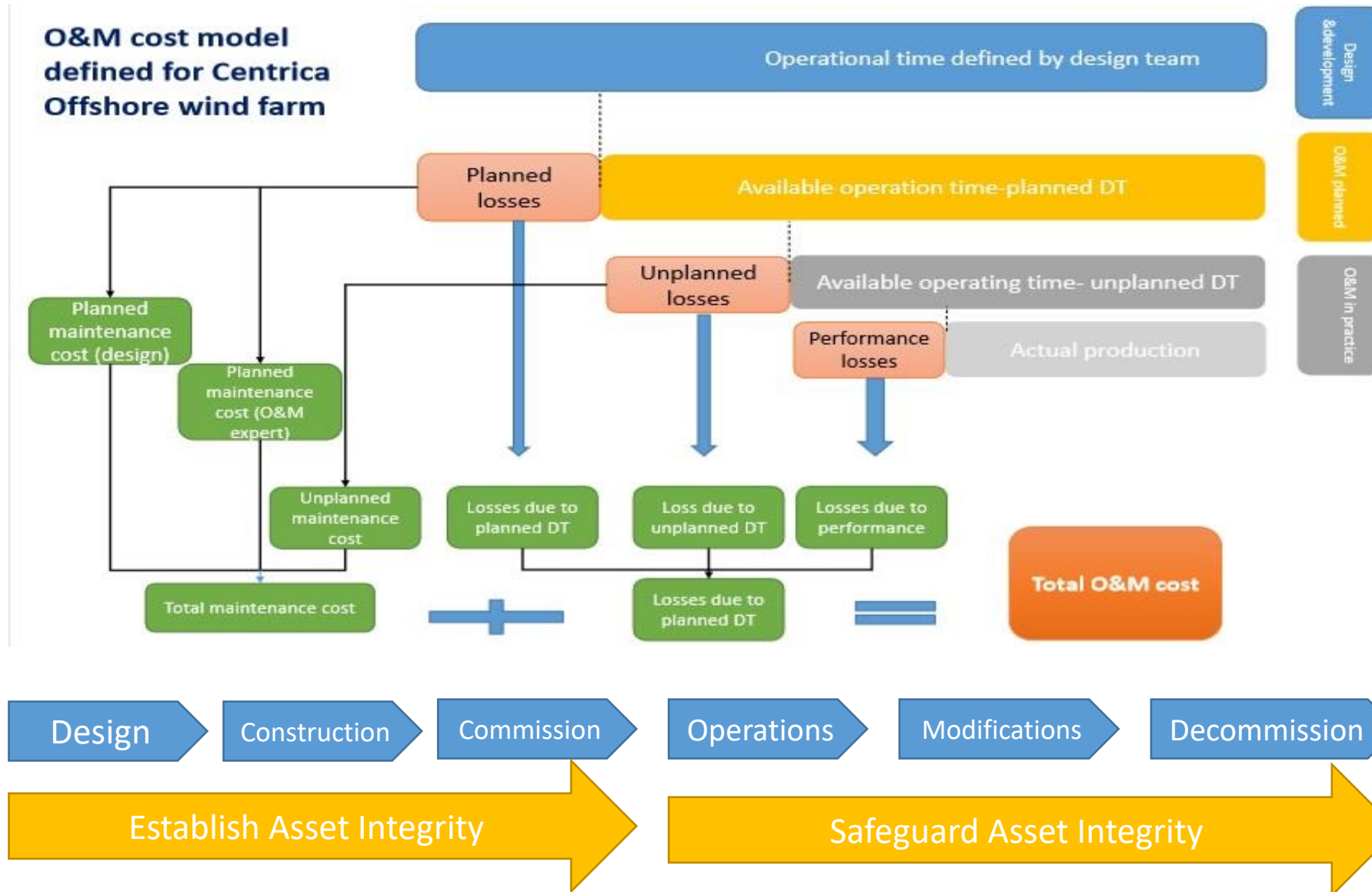
- Dominant failure mode
 - Are specific and likely to occur
 - Ask people operating the equipment
 - Failure waiting to happen
- Applicability
 - Technically feasible
 - Enable detection, mitigation or prevention
- Effectiveness (based on COF)
 - For critical failures : reduce to tolerable level
 - For all other failures: task must be cost effective
 - If mission or economics involved: investment must be less than repair cost

Streamlined RCM

SCRM, ERPI, 1990



Improvements start at design



Conclusion

- Asset management is a top down approach dealing with strategic directions
- Asset integrity management is a bottom up approach feeding in to management with operational data
- Asset management is multidisciplinary system
- Effective integration among functions determine the success of AM