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imic

VDM^XL

Discover the Hidden Value of Maintenance & Asset Management

Bilbao, June 13th 2021

Mark Haarman, Managing Partner

Please To Meet You

- **Mark Haarman**, 54 years
- Founder and CEO of **Mainnovation**
- **30+ years** experience in maintenance & asset management
- **Master Mechanical Engineering**, Delft University of Technology (NL), specialisation Maintenance Management
- **Master Business Administration**, Rotterdam School of Management/Erasmus University (NL)
- Consultant and **book author**:
  - VDM, New Faith in Maintenance (2003)
  - VDM^{XL}, Competing With Aging Assets (2015)

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Top Management Just Does Not Understand

theguardian

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Environment › BP oil spill

BP cost-cutting blamed for 'avoidable' Deepwater Horizon oil spill

- Disaster could have been prevented – White House
- Complacency 'could lead to another catastrophe'

Suzanne Goldenberg

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The Guardian, Thursday 6 January 2011

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Fire crews battle the blazing remnants of the Deepwater Horizon oil rig, Gulf of Mexico, in April last year. Photograph: Gerald Herbert/AP

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Europe

ITALY

Inquiry into Genoa bridge collapse highlights poor maintenance, design flaws

Issued on: 26/12/2020 - 11:52

The collapsed Morandi Bridge in the Italian port city of Genoa, Italy, 14 August 2018. REUTERS/Stefano Rellandini

Text by: Sabina Castelfranco

More than two years after the collapse of Genoa's Ponte Morandi bridge, on 14 August 2018, an independent report commissioned by a judge has pointed the finger at the bridge operator, finding poor maintenance and flaws in the construction were likely behind the deadly accident.

REUTERS

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June 6, 2022
6:08 PM GMT+2
Last Updated 5 days ago

Europe

German railway had been planning repairs on deadly crash route - Welt

Reuters

1 minute read

BERLIN, June 6 (Reuters) - State-owned rail company Deutsche Bahn (DBN.UL) had been planning rail repairs on the track section in southern Germany where a train derailed last week, killing five and injuring 44, newspaper Die Welt reported on Monday. **read more**

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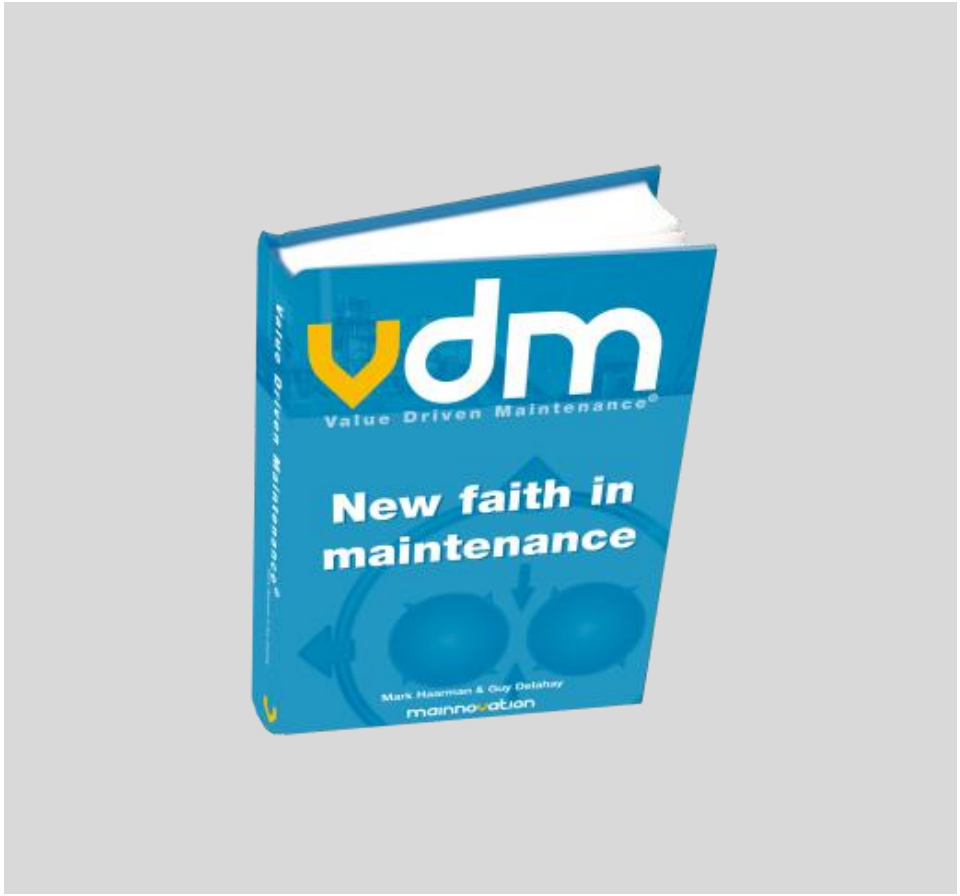
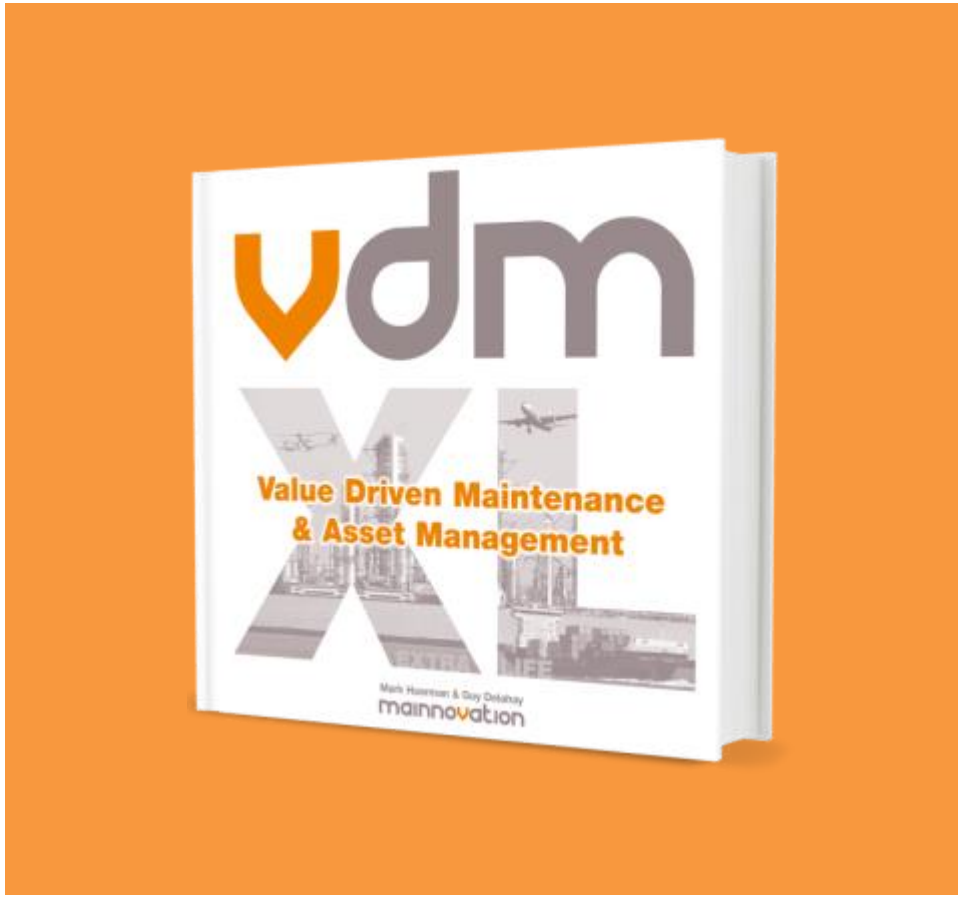
“How Can We Show And Improve The Economic Added Value Of Maintenance & AM?”





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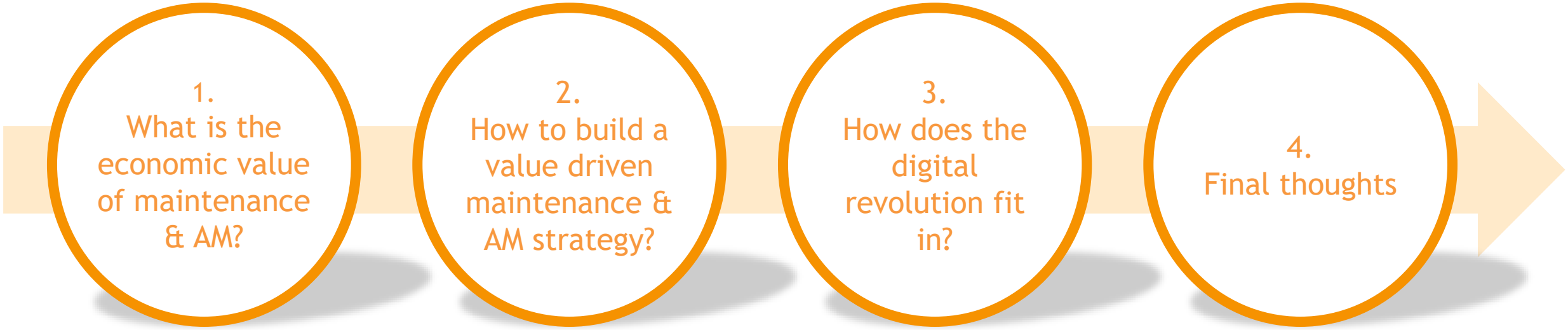
Agenda



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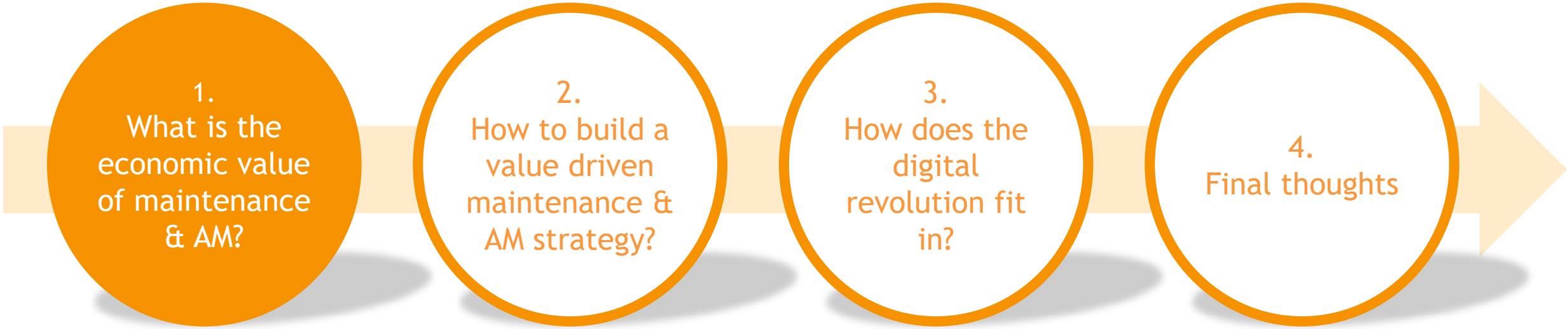

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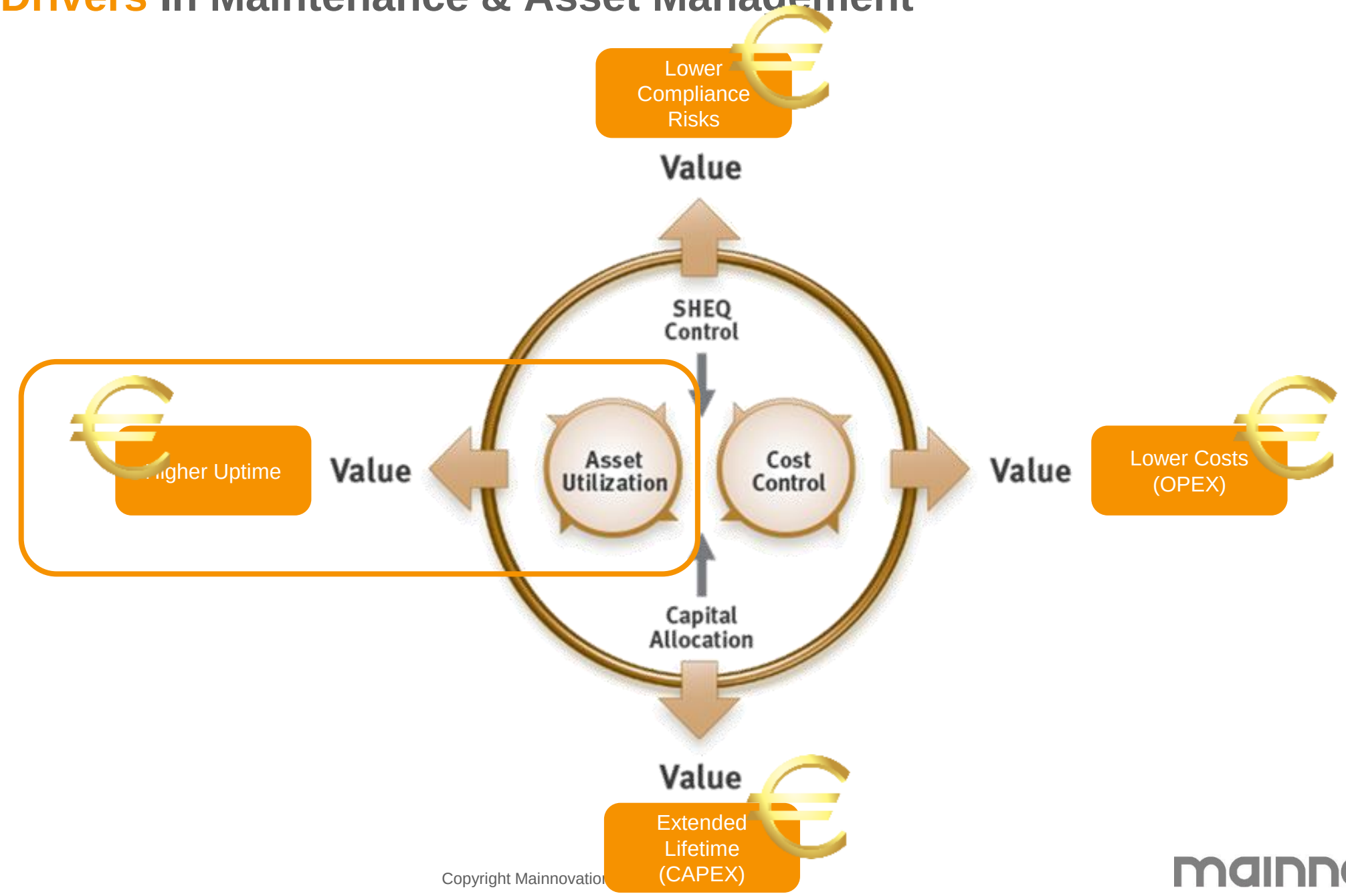
Value Drivers In Maintenance & Asset Management



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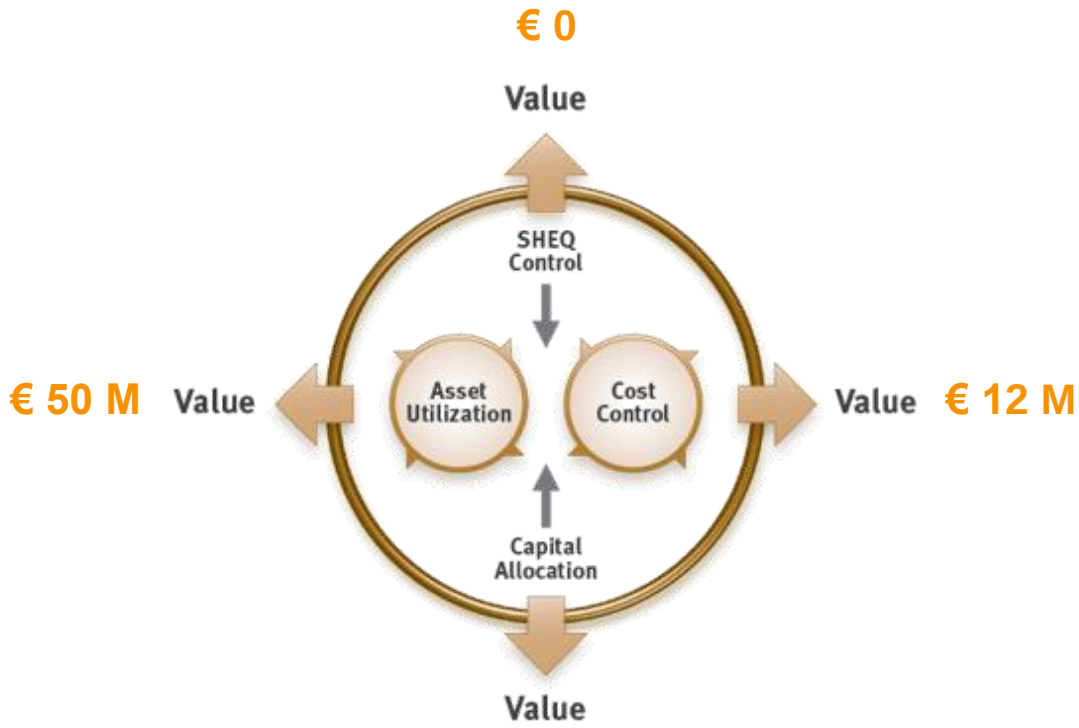
Case IFF

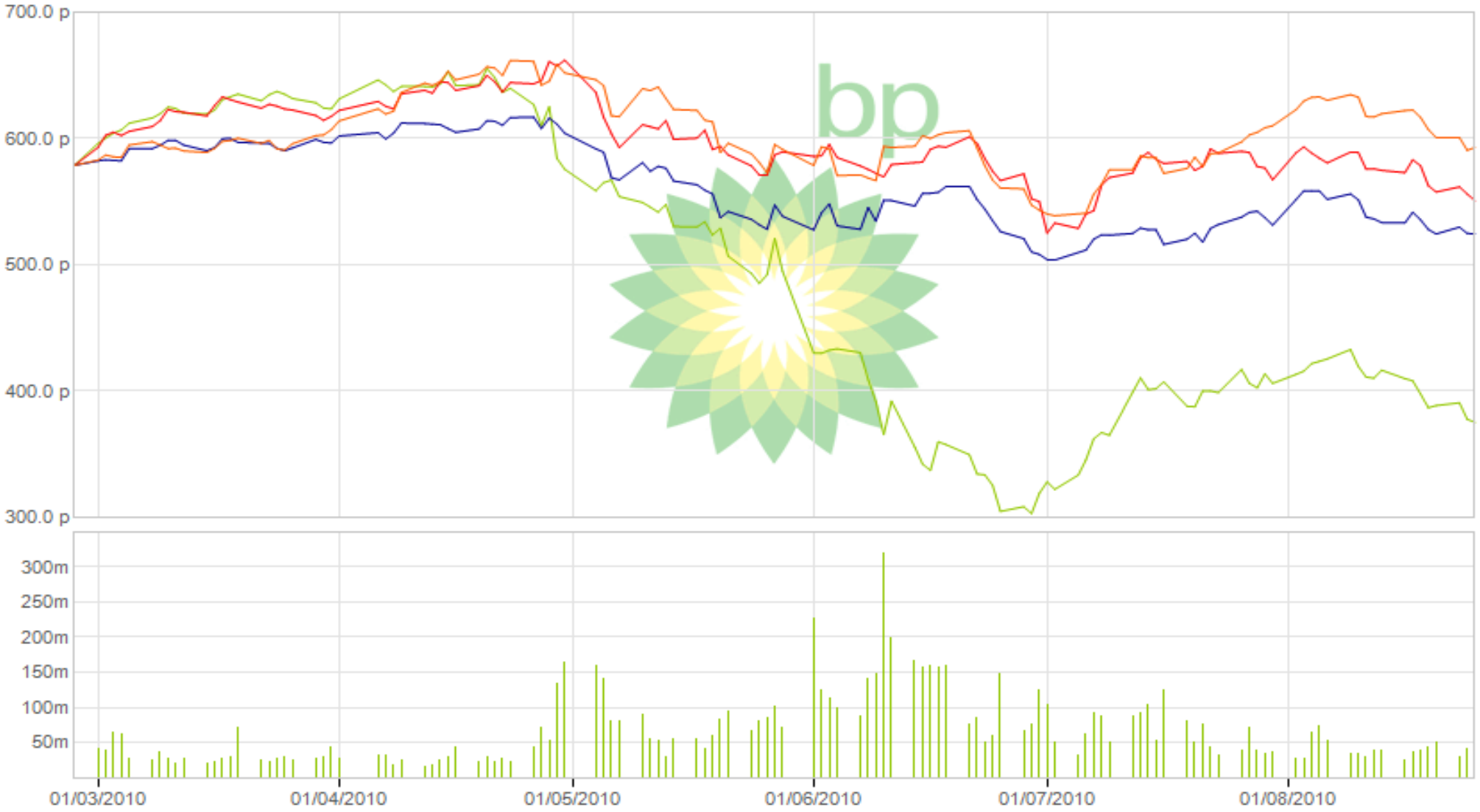
Company characteristics

- Leading company in flavors and fragrances
- European production centre in the Netherlands
- Company data:
  - Replacement asset value = € 105 M
  - Technical availability = 87%
  - EBITDA = € 40 M
  - Maintenance costs = € 2.8 M
  - SHEQ Performance = 100%
  - Spare Parts Inventory = € 1.1 M

Potential value



Case BP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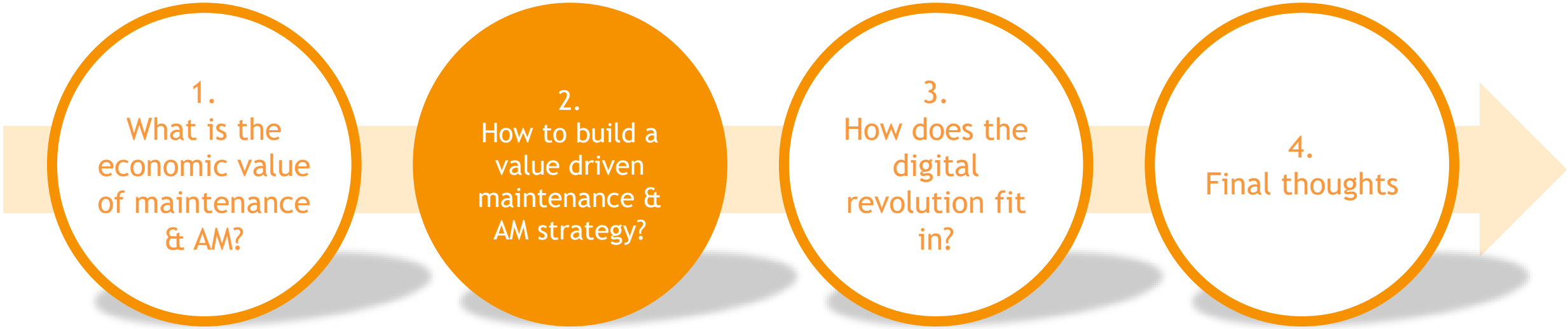
Agenda



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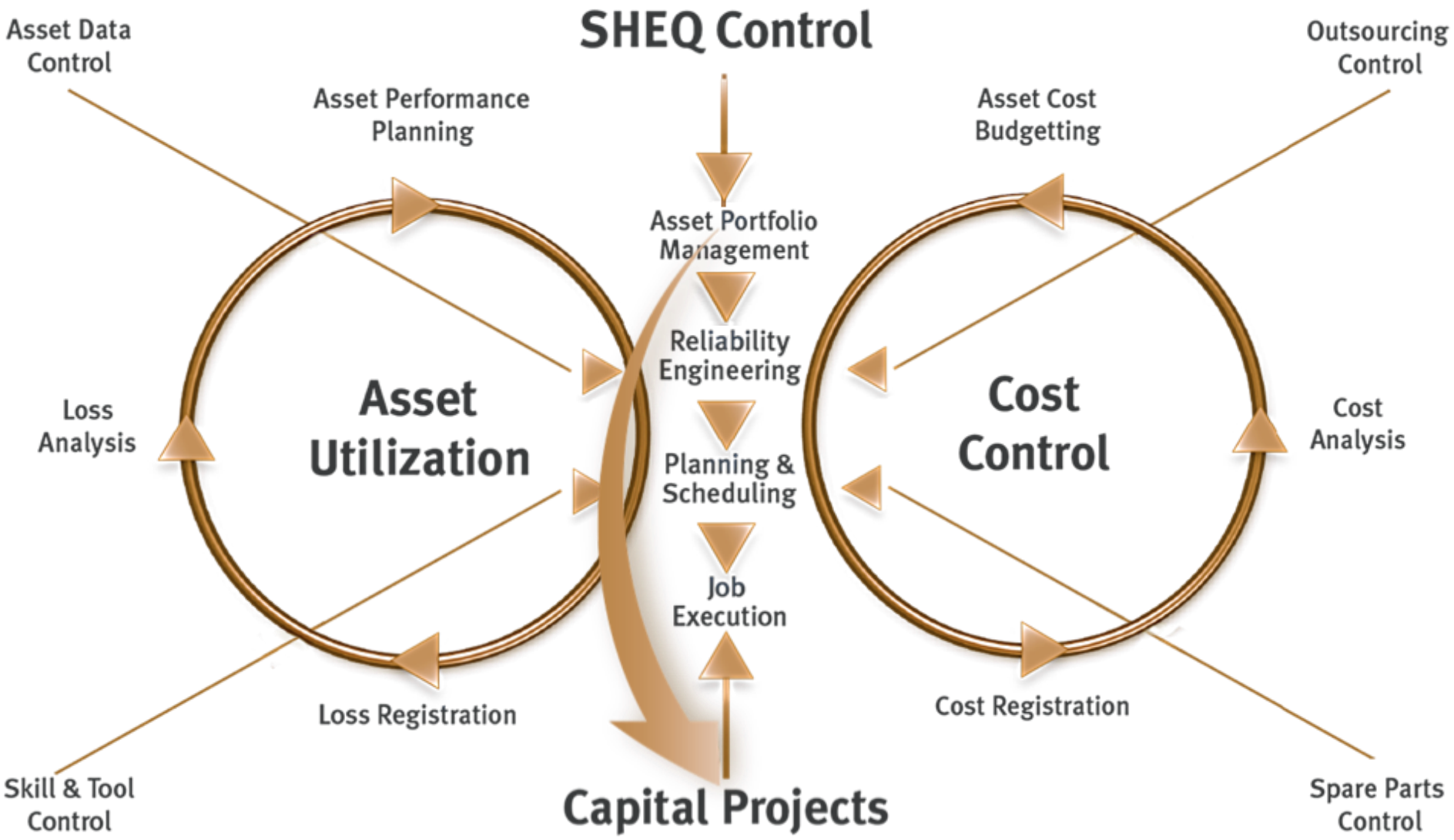
Maintenance & Asset Management Competences



Measure Your Performance

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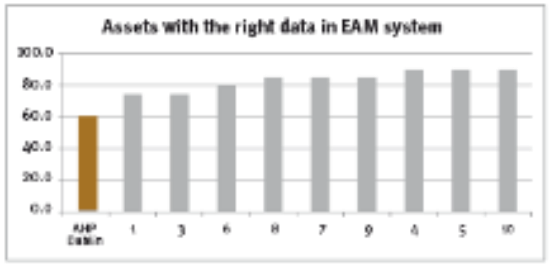
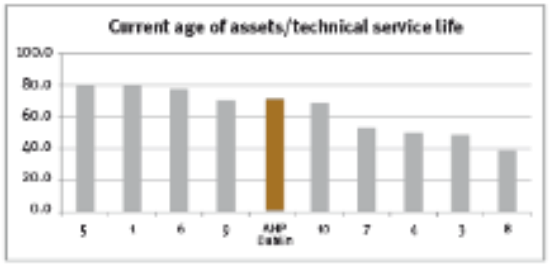
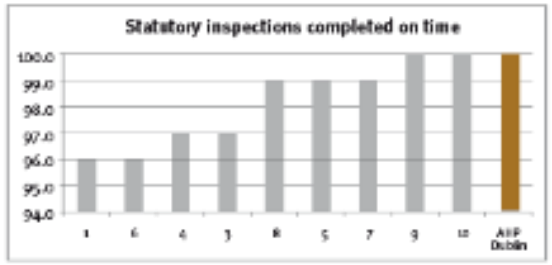
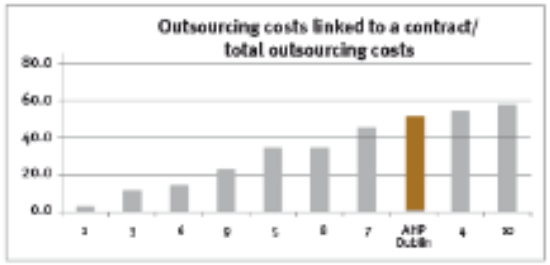
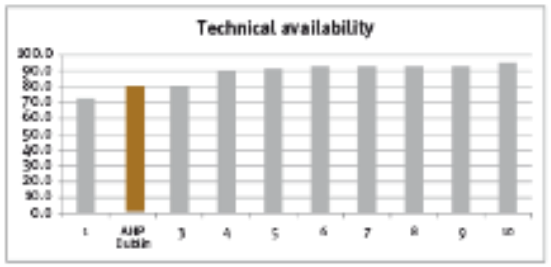
Benchmarking – Learn From Your Peers

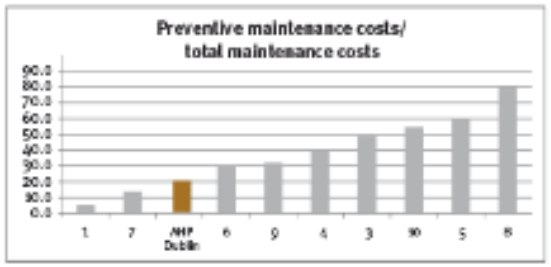


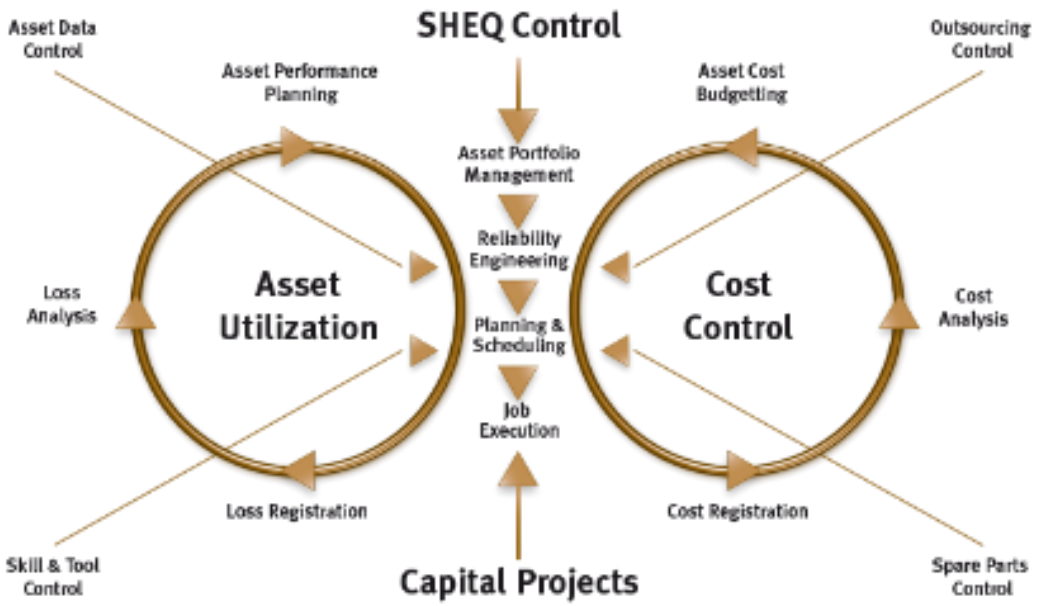


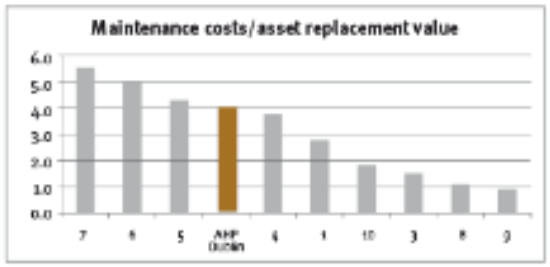


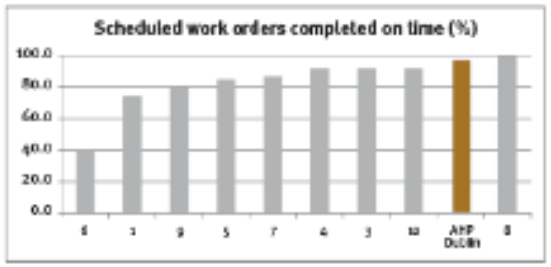


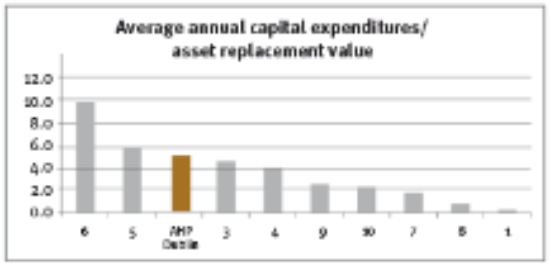


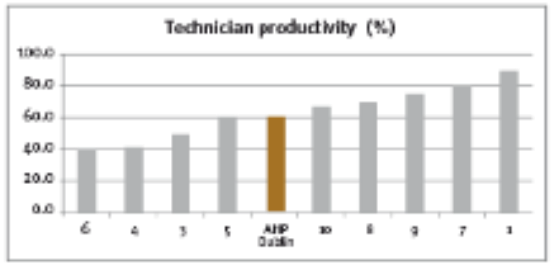


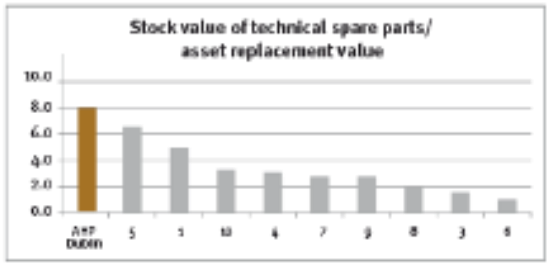












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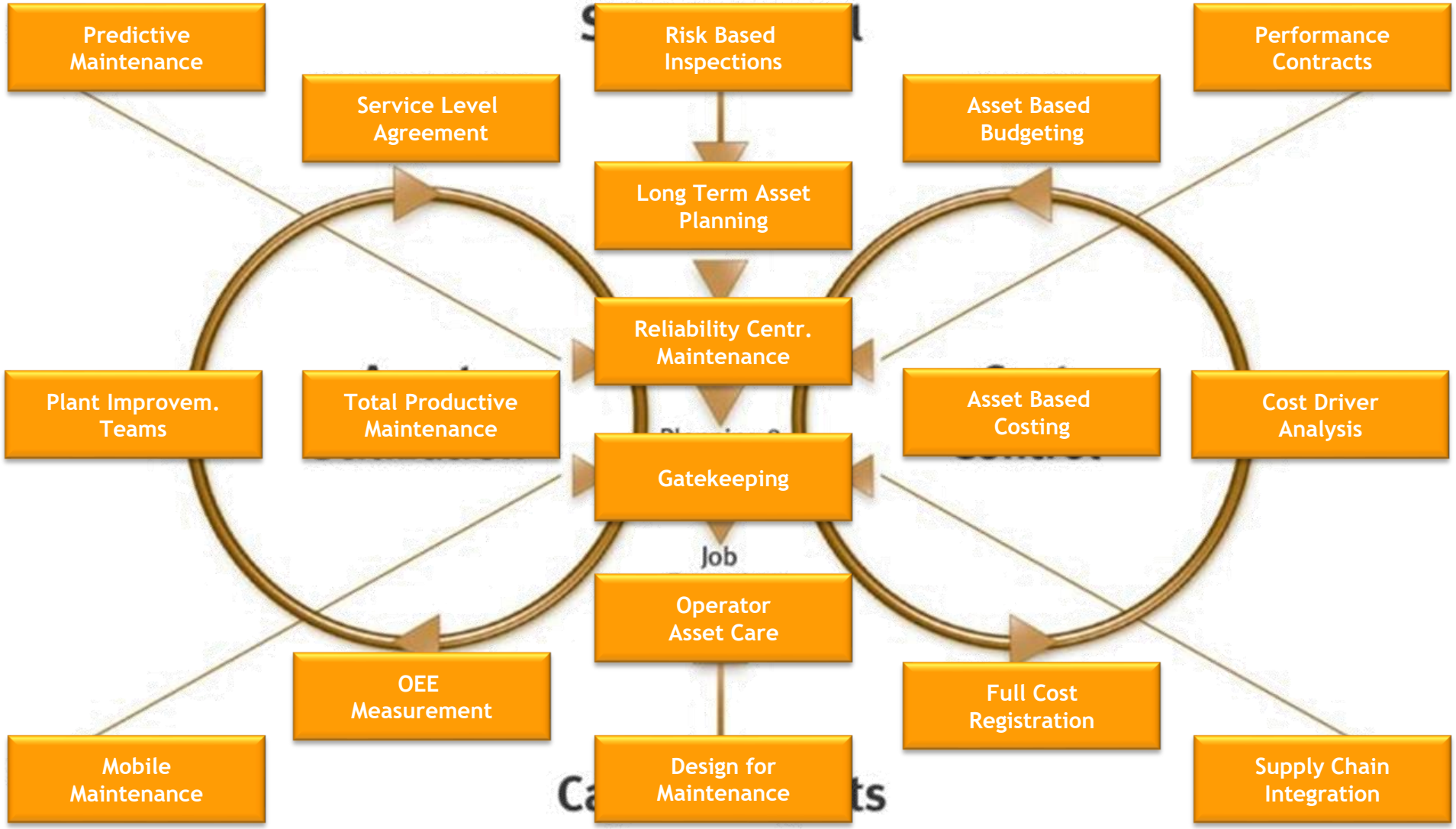
Improve With Best Practices



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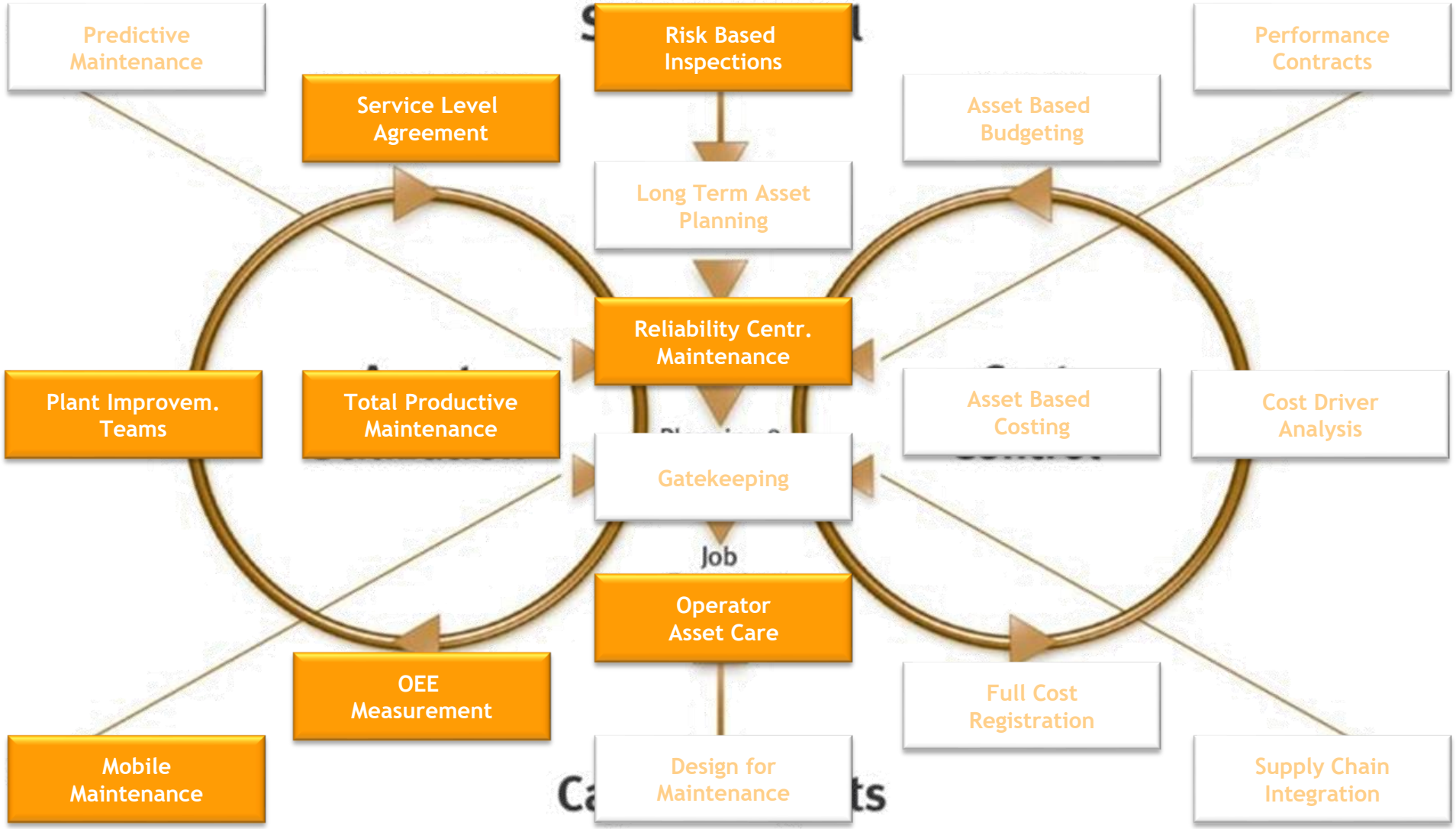
Focus On Your Core Competences



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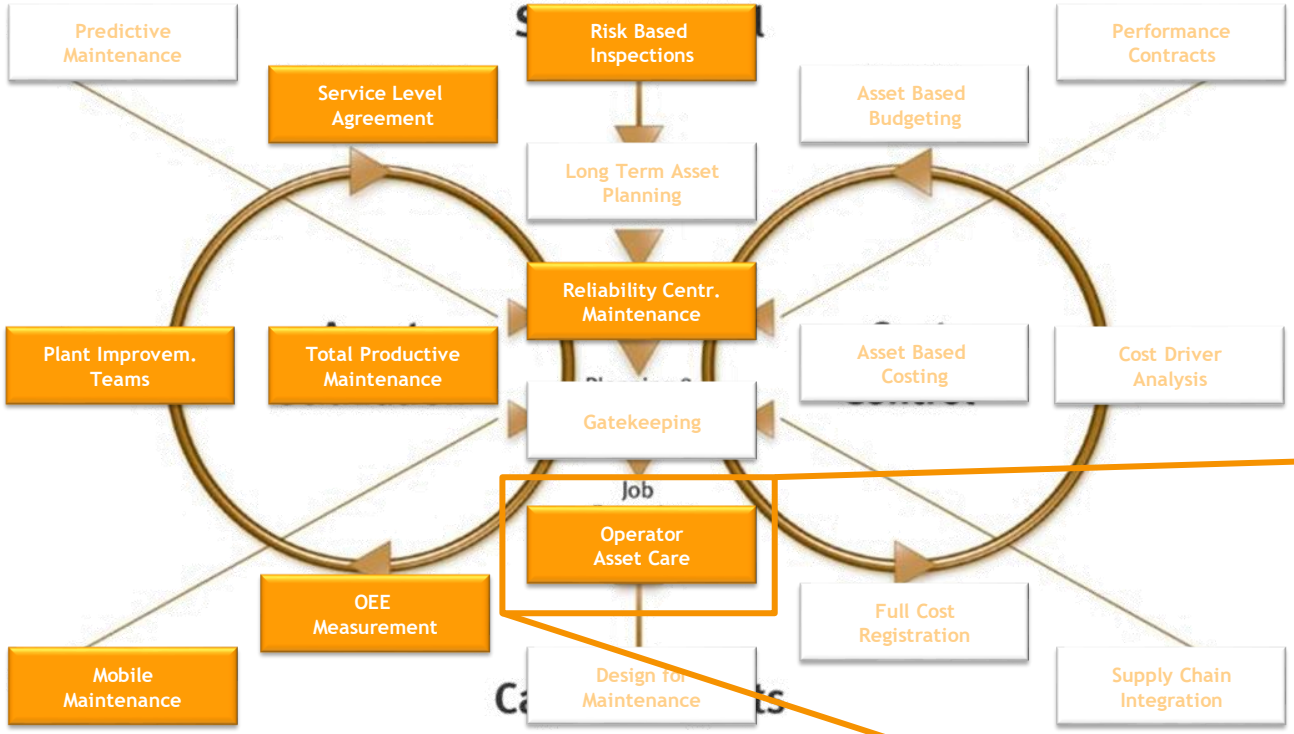
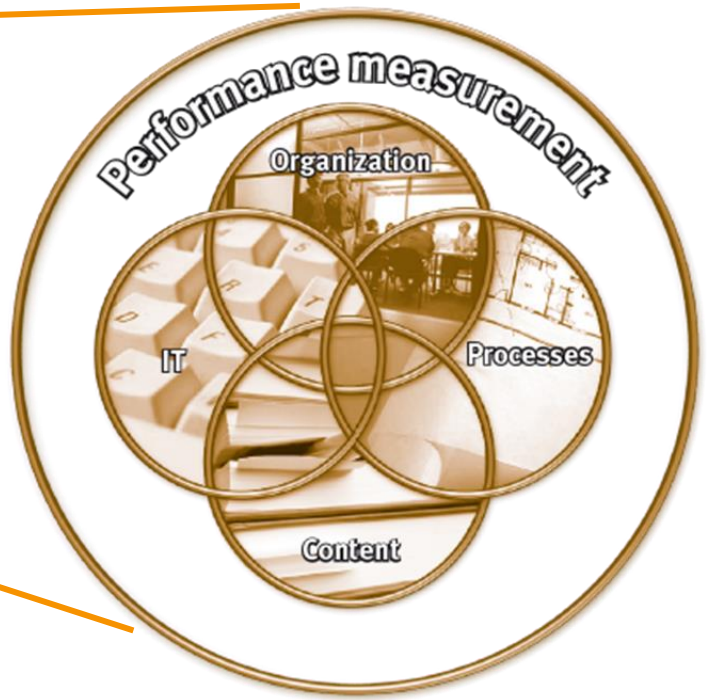
Implement Winning Strategy In 5 Dimensions





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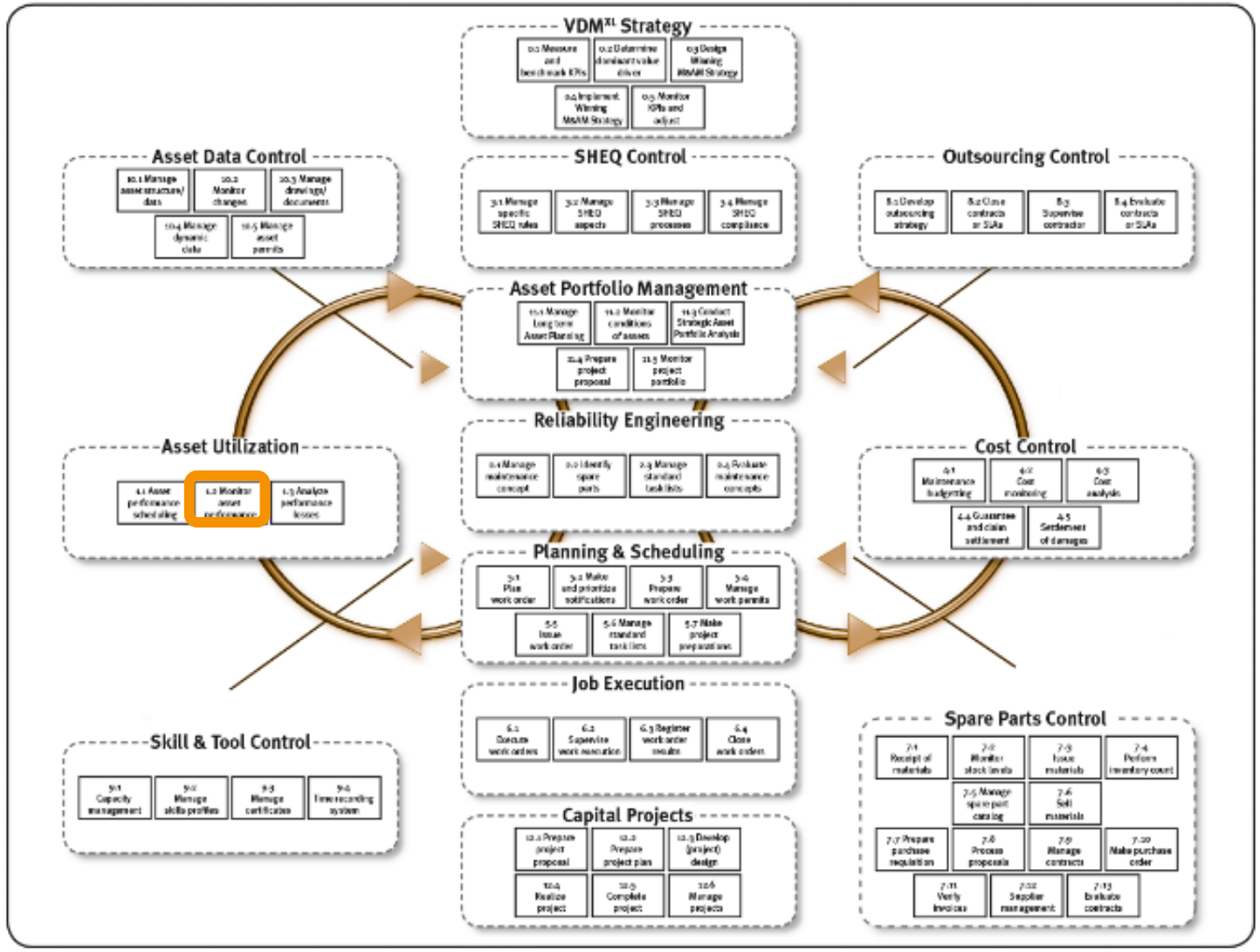
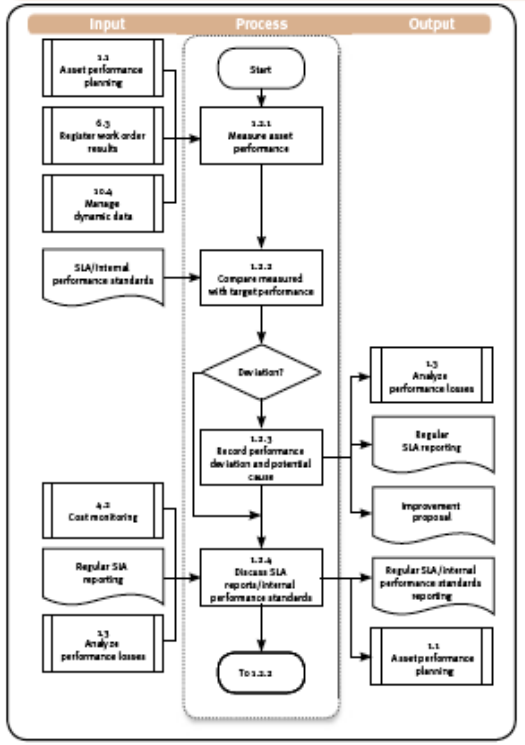
Start With Processes

VDM^{XL} Process Map



Process 1.2: Monitor asset performance

Date: 21-8-2015 Revision: 1.0



Process description per step

1.2.1 Measure asset performance
To monitor the SLA or the internal standards, the performance of every asset is established and measured. Depending on the performance criteria, this concerns the asset's availability, capacity, costs, reliability, quality, appearance, accessibility, safety and environmental friendliness, as well as the response time of the Repair Service. The actual performance is often measured on the basis of inspections or failure reports. In some cases performance is measured using real-time condition monitoring systems. Technical availability is dependent on various factors, including the degree of utilization and/or the technical or operational limitations. The SLA concluded between the asset manager and the customer/ owner/user describes who is responsible for which measurements and identifies the information system used to record this information.

1.2.2 Compare measured with target performance
Whenever asset performance is measured, the measured value is compared with the target value specified in the SLA or as an internal performance standard, over a pre-specified period of time. Trends in the performance curve serve as input into the evaluation of the asset lifecycle of the asset or group of assets (LTAP evaluation in Process 11.5).

1.2.3 Record performance deviation and cause
If the measured performance deviates from the desired performance, this is recorded as a deviation. Attention should then be focused on deviation trends or major incidents. The cause of every deviation in performance must be determined and recorded. The cause of a deviation is not always technical, and could also be the result of incorrect use, for example. These types of performance deviations must be reported separately.

1.2.4 Discuss SLA or internal performance standards reporting
The asset manager prepares an SLA report and regularly discusses the measured asset performance with the customer/owner/user of the asset or group of assets. The budget status forms part of the SLA reporting. Improvement actions are initiated in case of (expected) deviations in relation to the SLA. Reporting should cover all elements written down in the SLA.

In system

Technical availability calculated from downtime reported in the EAM system

OEE calculation

Top 10 performance killers as measured in the EAM system

Use of Failure, Cause, Action and Remedy notification codes

Root Cause Analysis support and registration of findings

Process step		Role																	
		Maintenance & Asset Manager	Asset Portfolio Manager	Maintenance Supervisor	Reliability Engineer	Maintenance Engineer	Work Planner	Maintenance Planner	Maintenance Technician	Maintenance Scheduler	Project Portfolio Manager	Project Manager	Project Engineer	Contract Manager	Production Manager	SHEQ Coordinator	Technical Buyer	Warehouse Manager	Catalog Manager
1.2	Monitor asset performance	A	I		R	C									I				
1.2.1	Measure asset performance	A	I		R	C									I				
1.2.2	Compare measured with target performance	A	I		R	C									I				
1.2.3	Register performance loss and potential cause	A	I		R	C									I	I			
1.2.4	Discuss SLA/Internal performance standards reports	R	I		C	C									I				

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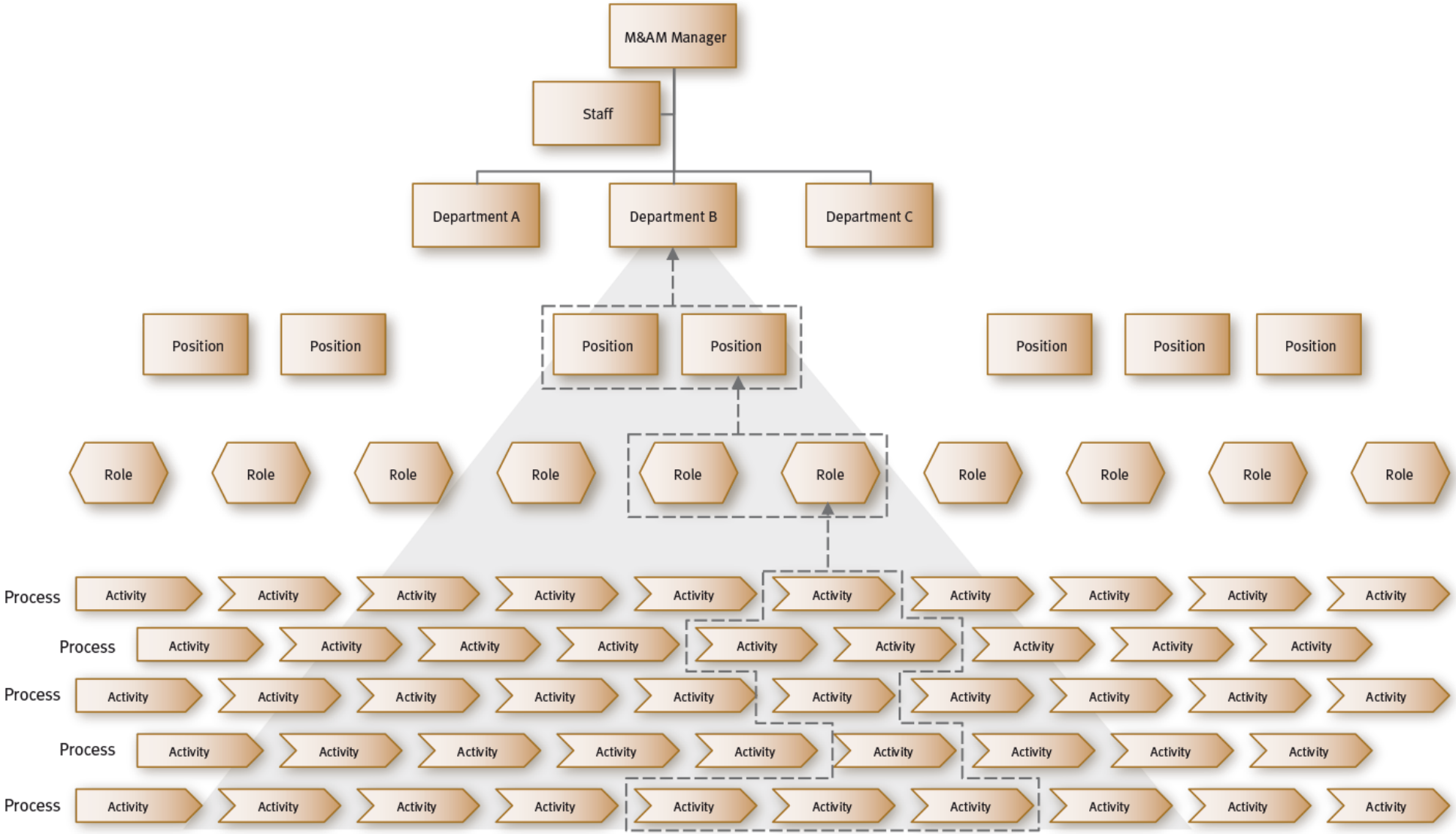
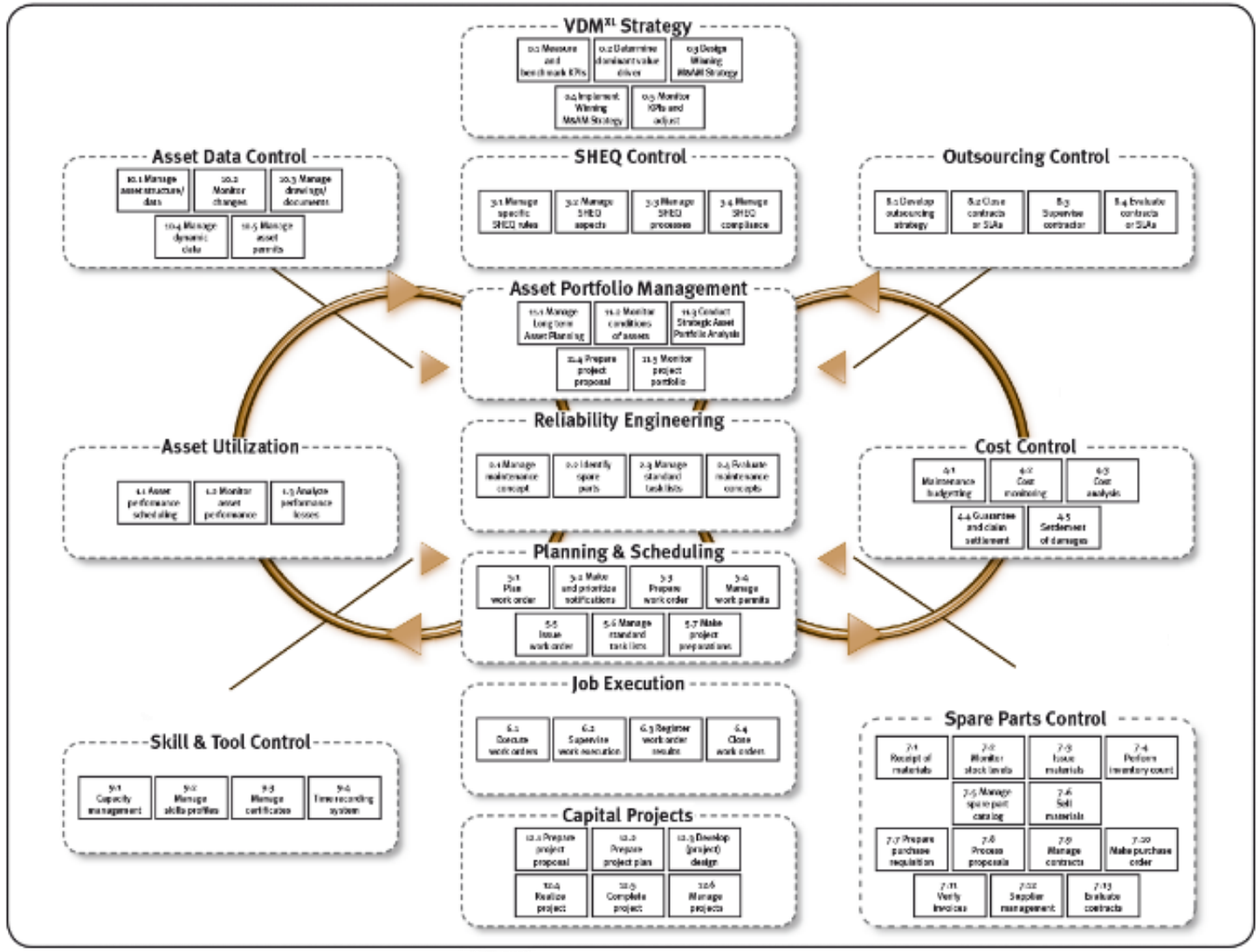
Build & Fill Organization Structure



Support Processes By EAM System

VDM^{XL} Process Map



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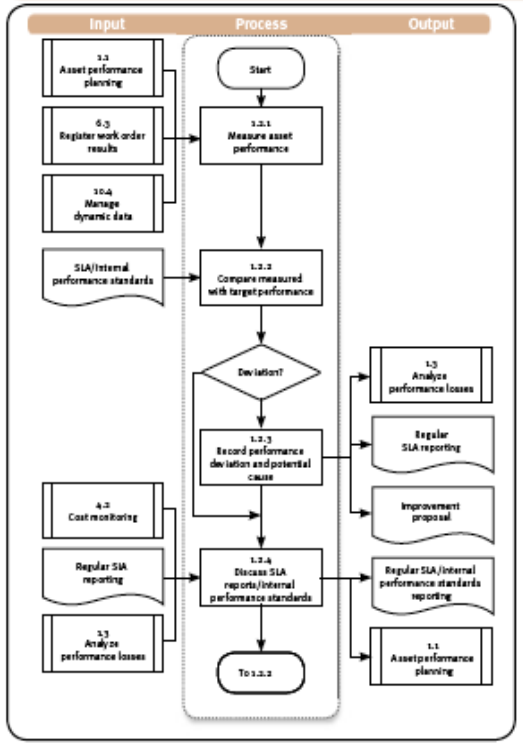

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1.2.3	Register performance loss and potential cause	A	I		R	C									I	I			
1.2.4	Discuss SLA/Internal performance standards reports	R	I		C	C									I				

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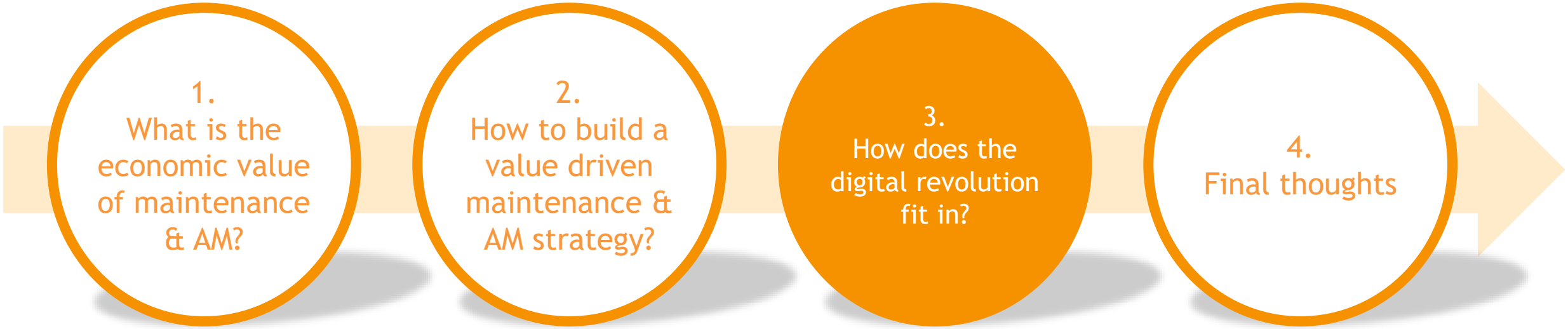
Case Volvo

Insights

- Volvo Cars **manufactures cars** in different plants in Sweden, China and Belgium
- The company is well known because of its innovative maintenance approach and **TPM** awards
- 2005: After years of focus on Asset Utilization Volvo Cars wanted a maintenance model that has **more balance**
- Multi-site implementation of **VDM^{XL}** processes and KPI's supporting use of Maximo
- 2009: **50% reduction** of maintenance costs per produced car
- **Without impact** on safety and uptime

Volvo Cars

Agenda



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What About The Digital Revolution?

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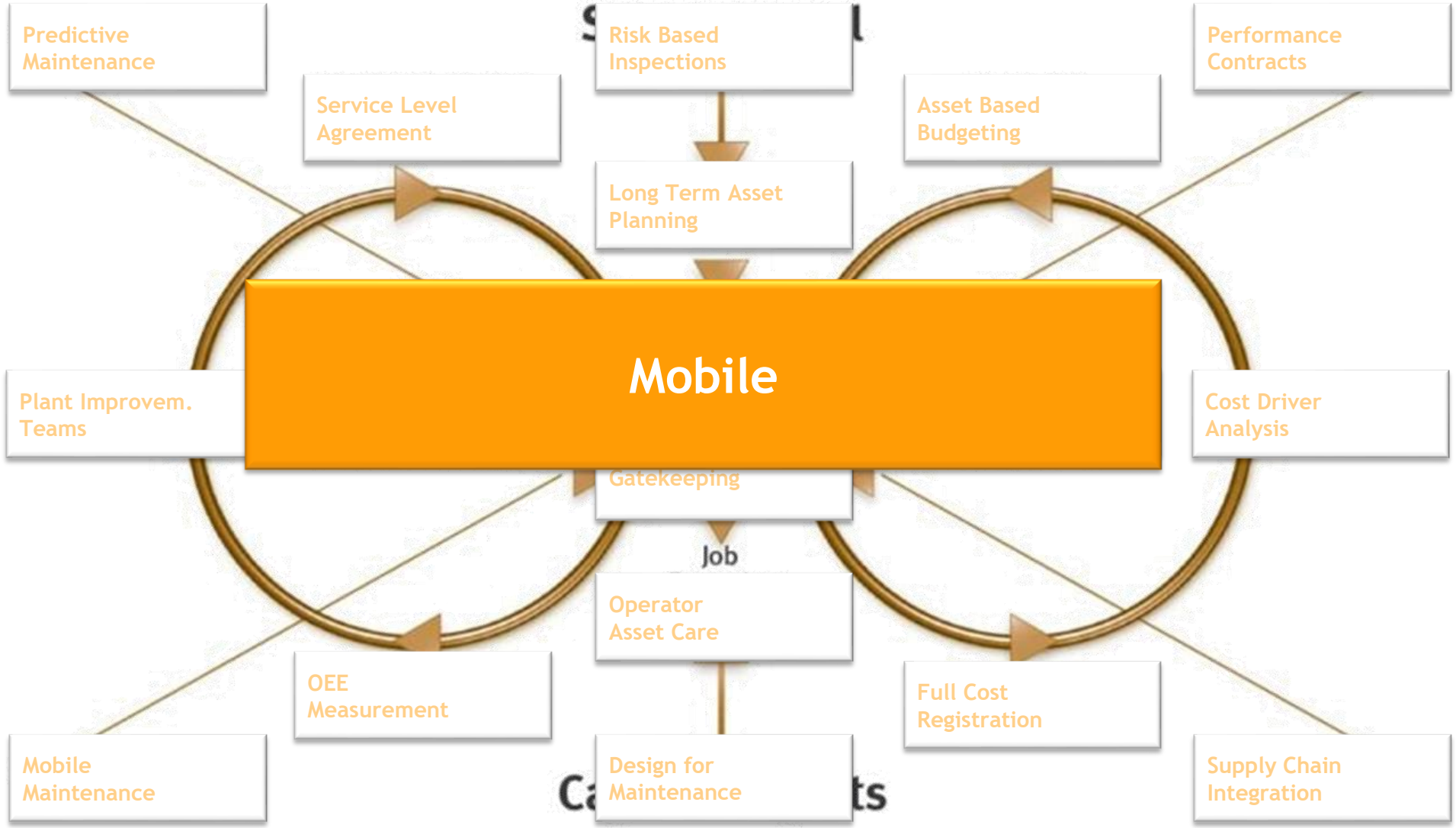
New Best Practices From The Digital Revolution



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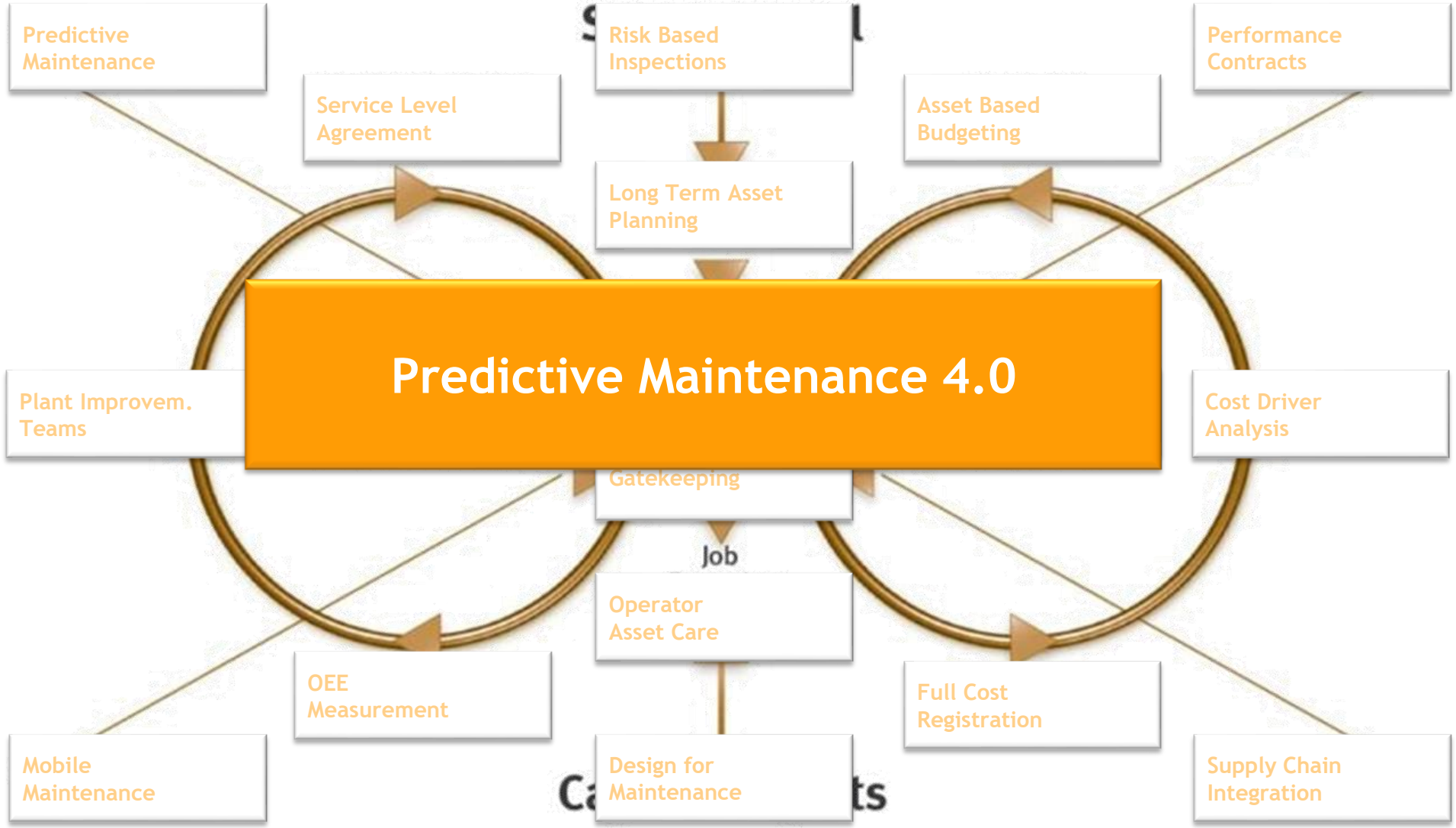
Case – Dutch Railways

New Best Practices From The Digital Revolution



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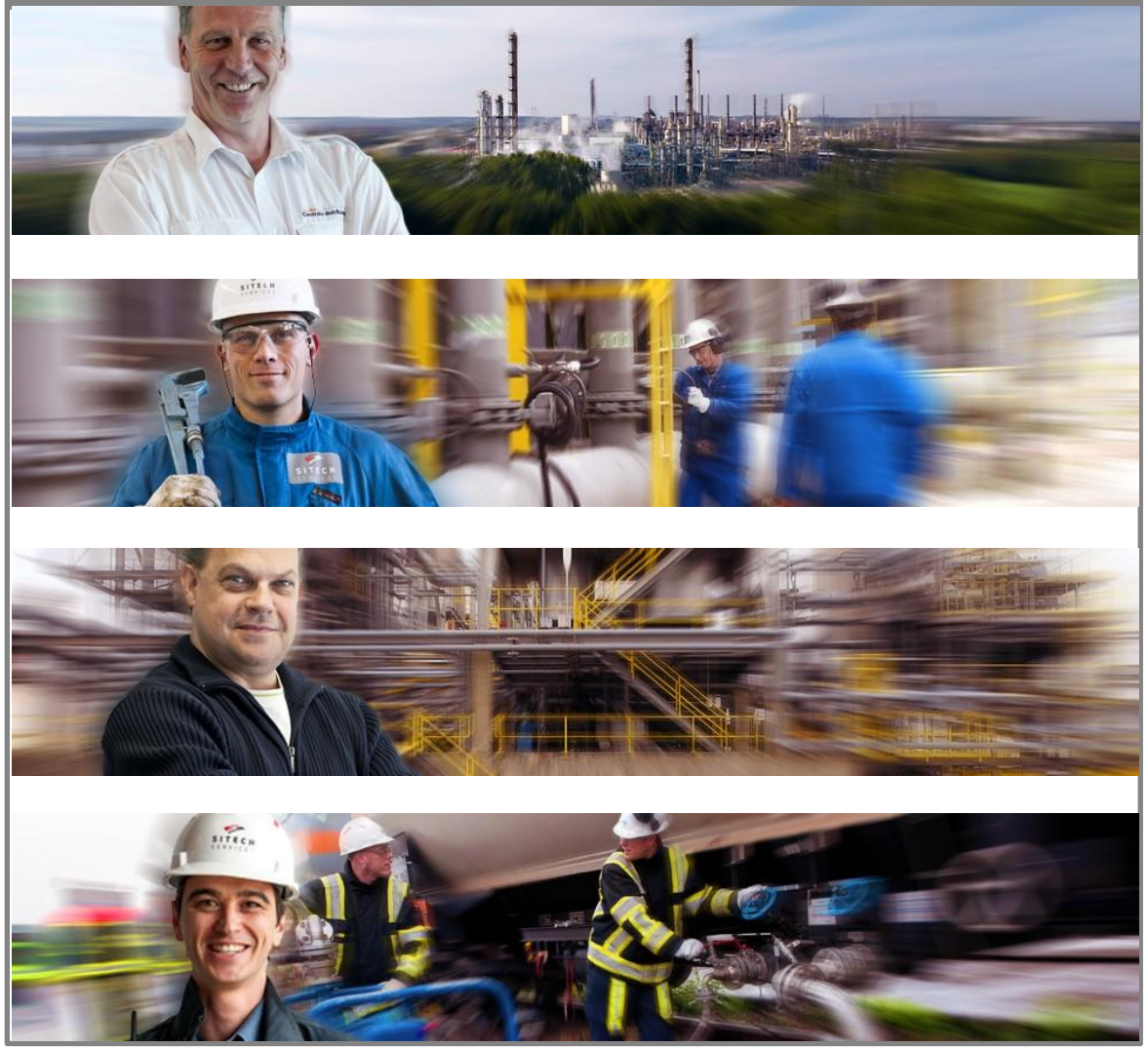
Case Sitech

Impressive results

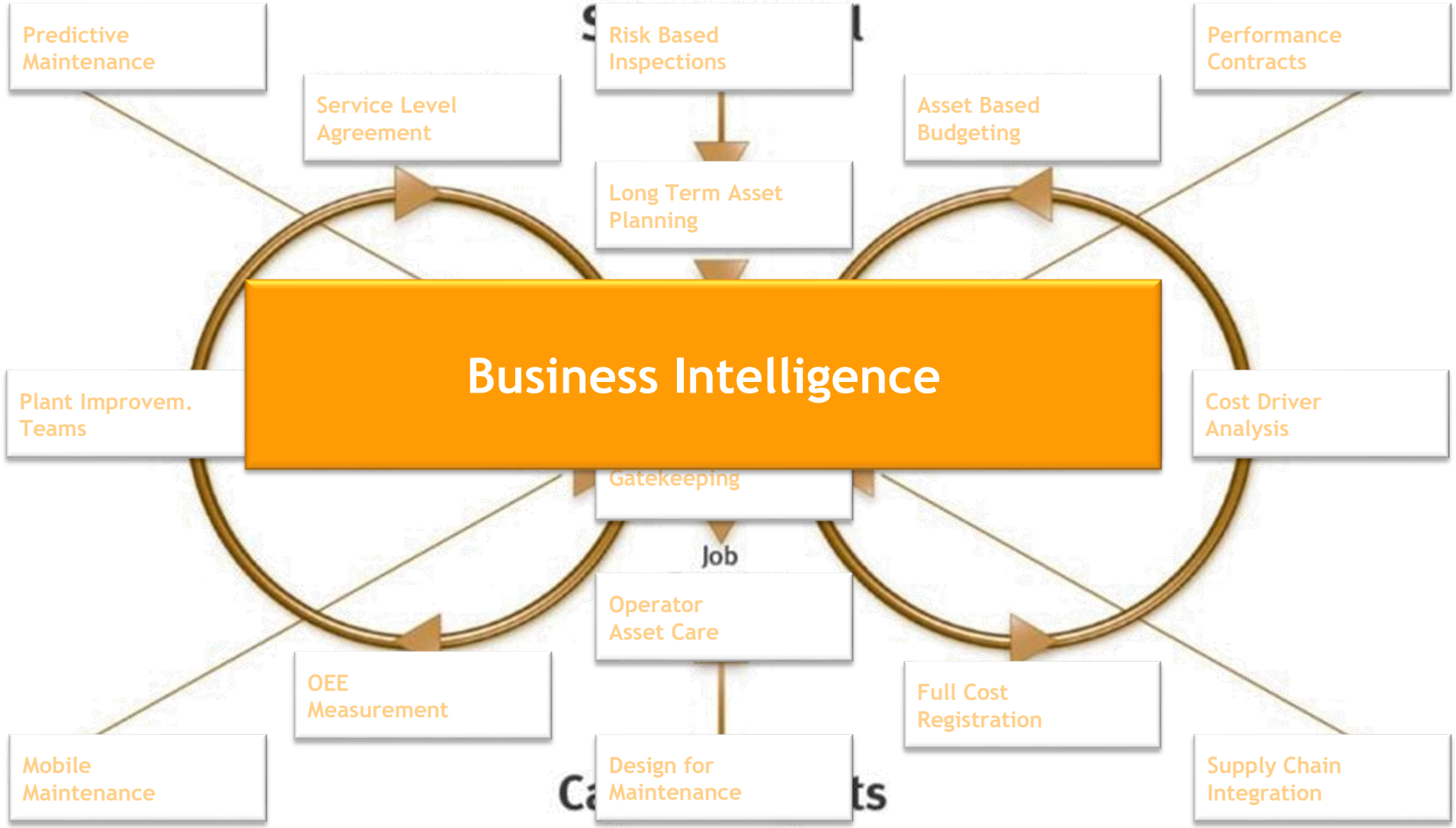
- Sitech is the central **maintenance & asset management organization** of Chemelot
- Chemelot is one of the largest **chemical sites** in Europe with plants of DSM, Borealis, OCI Nitrogen, Lanxess, Ineos and ChemicalInvest
- In 2011: **Maintenance Vision 2020** (based on VDM^{XL}) with a focus on Predictive Maintenance
- 2015-now: development and roll out of **Sitech Asset Health Center (SAHC)**
  - Condition monitoring of critical assets
  - Failure prediction using AI and Machine Learning
- Results: millions of Euros on **downtime savings** and **energy reduction**

Sustainable improvements



Case Sitech

New Best Practices From The Digital Revolution



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VDM Control Panel
Value Drivers
Competence Model
Asset Utilization
Cost Control
Capital Projects
Sheq Control
Asset Portfolio Management
Reliability Engineering
Planning & Scheduling
Job Execution
Asset Data Control
Outsourcing Control
Skill & Tool Control
Go back

VDM Control Panel

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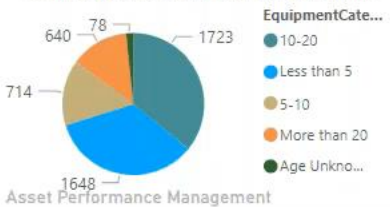
12/04/2019 30/12/2030

Open jobs without equipment

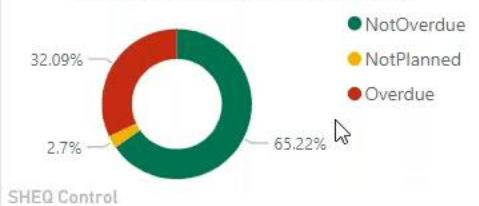
Asset Data Control

Count equipment per manufactured age



Asset Performance Management

% Safety critical jobs executed on time

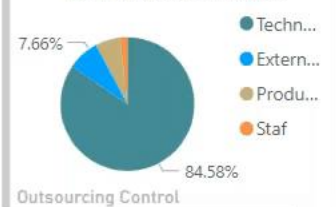


SHEQ Control

% Preventive maintenance costs

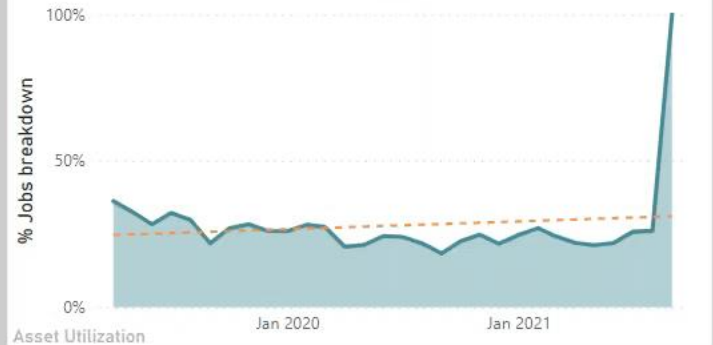
Reliability Engineering

% Internal/external jobs



Outsourcing Control

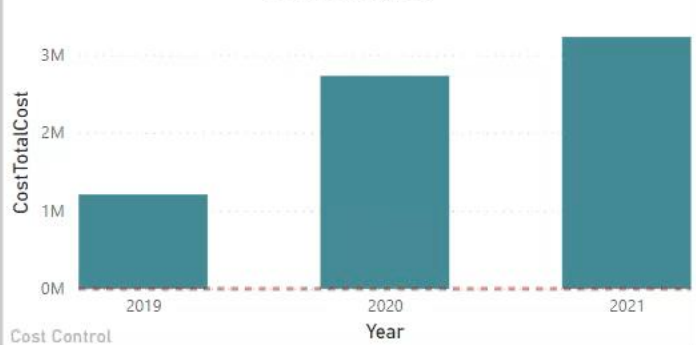
% Breakdowns



Asset Utilization

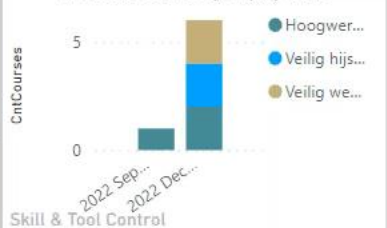
SHEQ Control

OPEX Cost by Year



Cost Control

Certifications by expiry date

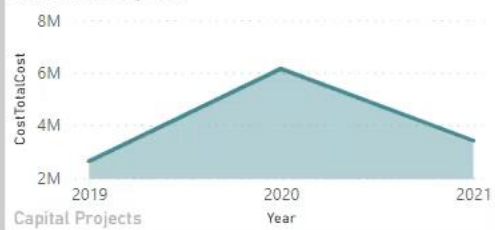


Skill & Tool Control

% Jobs with respect of weekplan in the last 15 weeks

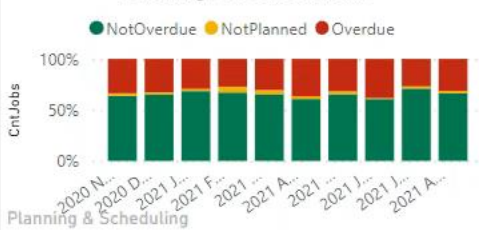
Job Execution

CAPEX Cost by Year



Capital Projects

Percentage executed on time



Planning & Scheduling

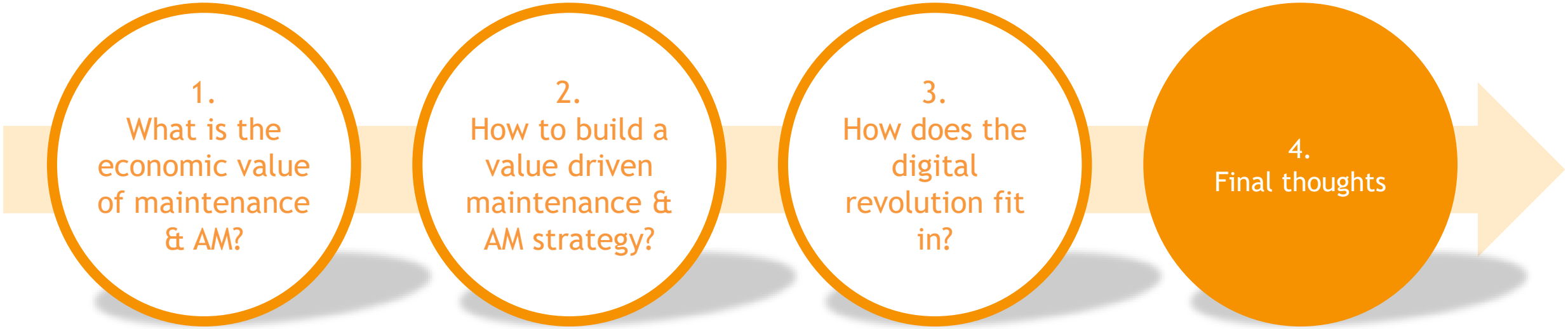
Unique Spareparts

9823

Spare Parts Control

Filters

Agenda



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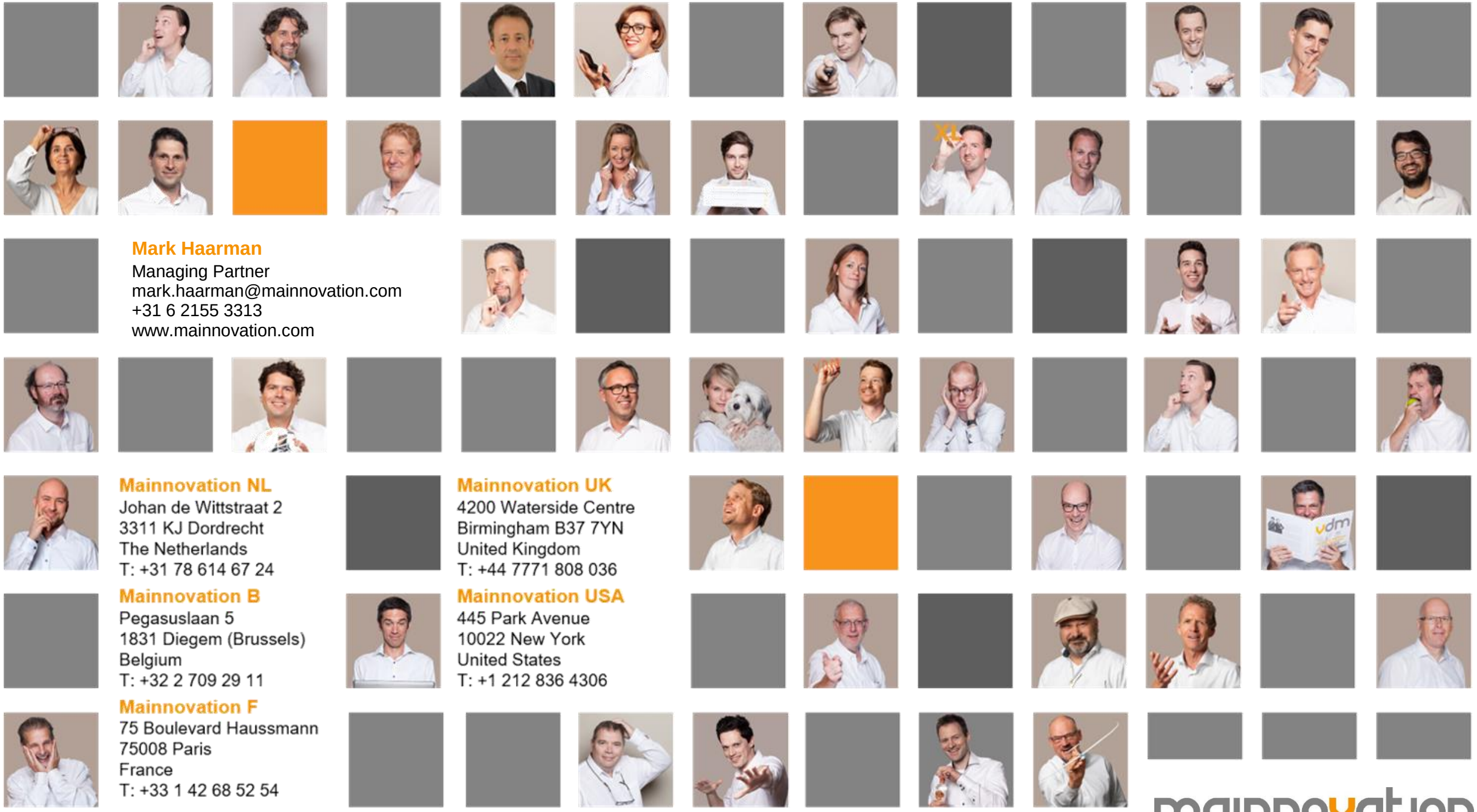

Mark Haarman
Managing Partner
mark.haarman@mainnovation.com
+31 6 2155 3313
www.mainnovation.com

Mainnovation NL
Johan de Wittstraat 2
3311 KJ Dordrecht
The Netherlands
T: +31 78 614 67 24

Mainnovation B
Pegasuslaan 5
1831 Diegem (Brussels)
Belgium
T: +32 2 709 29 11

Mainnovation F
75 Boulevard Haussmann
75008 Paris
France
T: +33 1 42 68 52 54

Mainnovation UK
4200 Waterside Centre
Birmingham B37 7YN
United Kingdom
T: +44 7771 808 036

Mainnovation USA
445 Park Avenue
10022 New York
United States
T: +1 212 836 4306

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