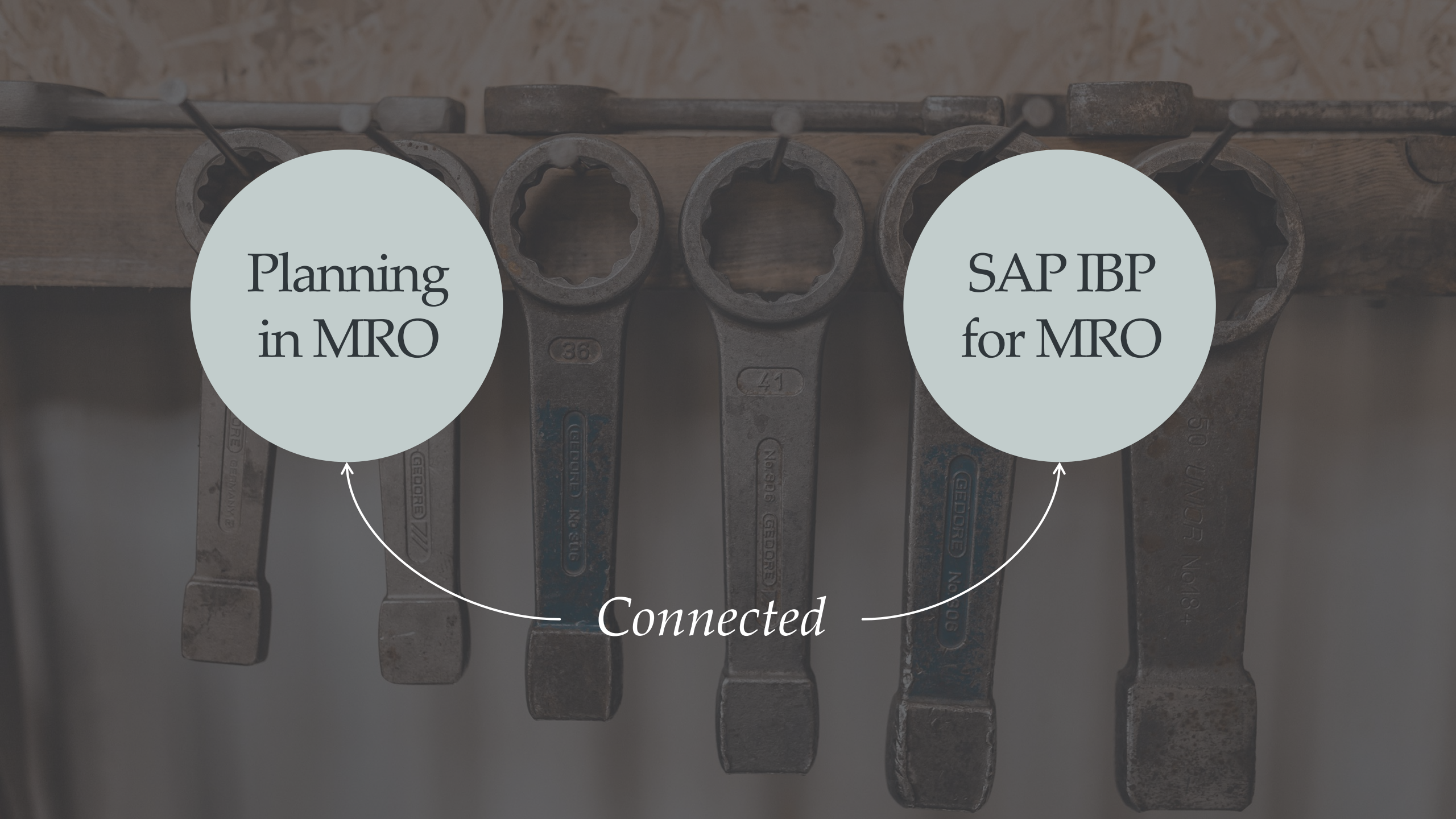




Balancing asset availability, reliability and net working capital *with SAP IBP for MRO*

Oslo – October, 2025

Mathias Mikalsen, Implement Consulting Group

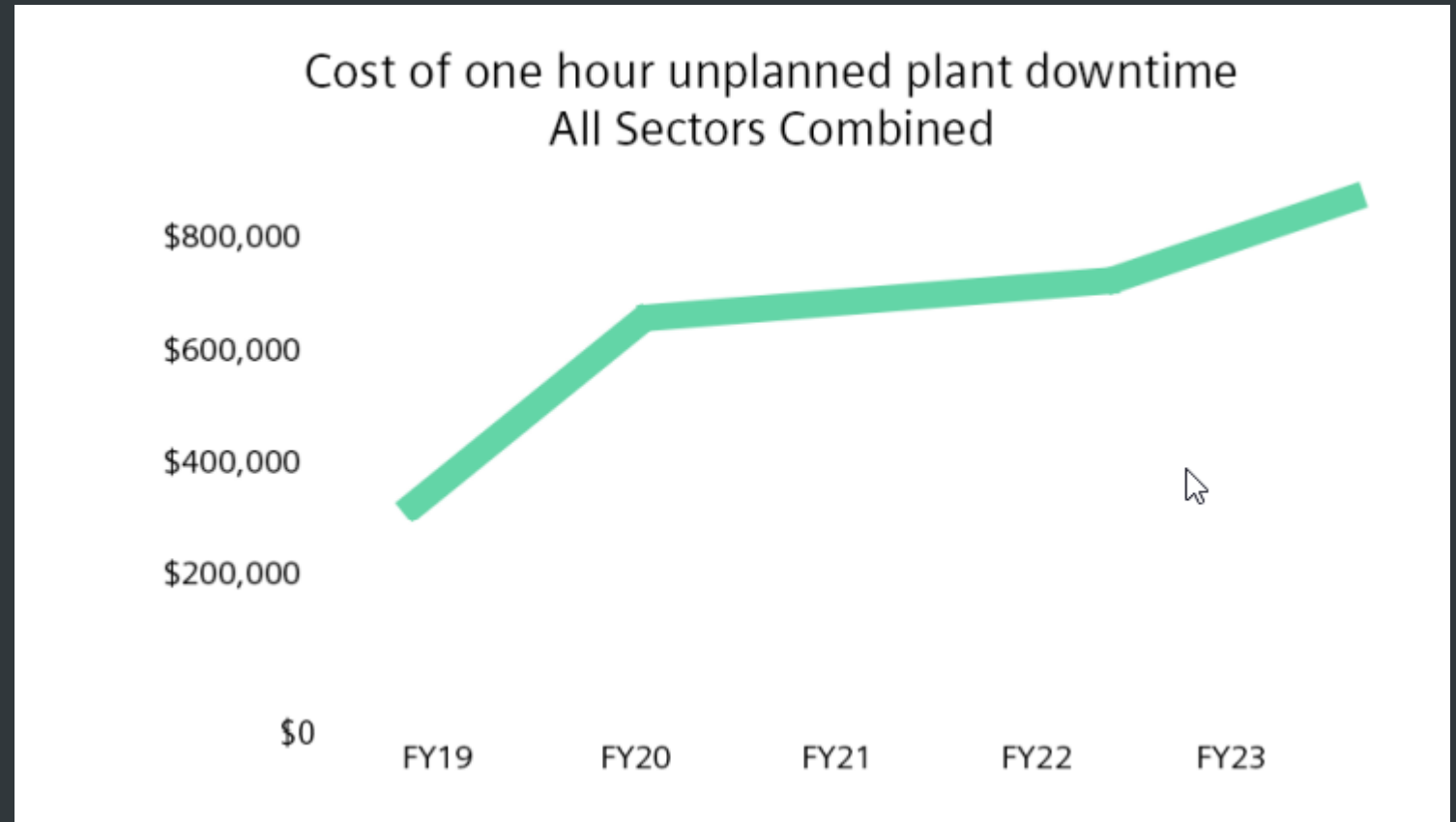


Planning
in MRO

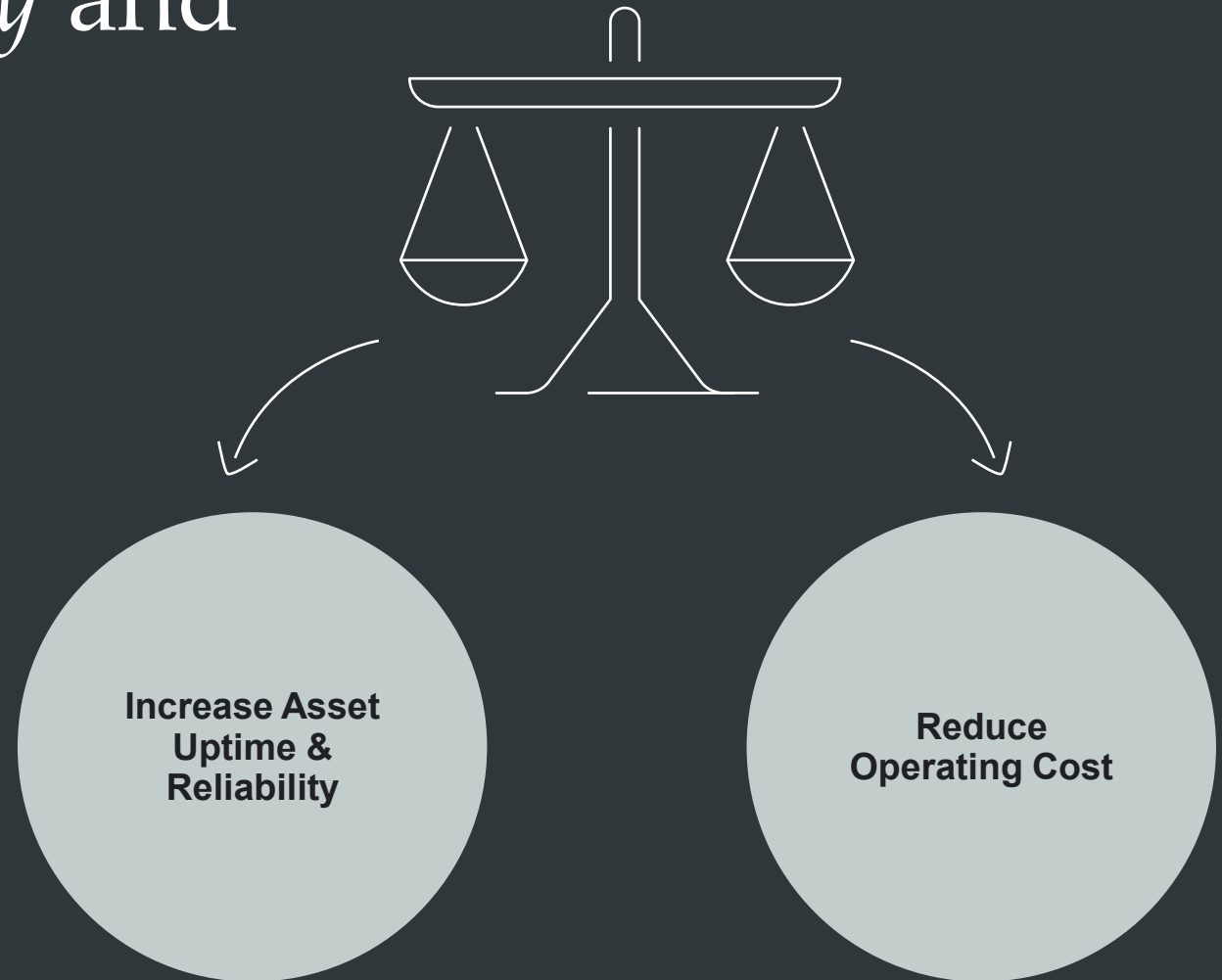
SAP IBP
for MRO

Connected

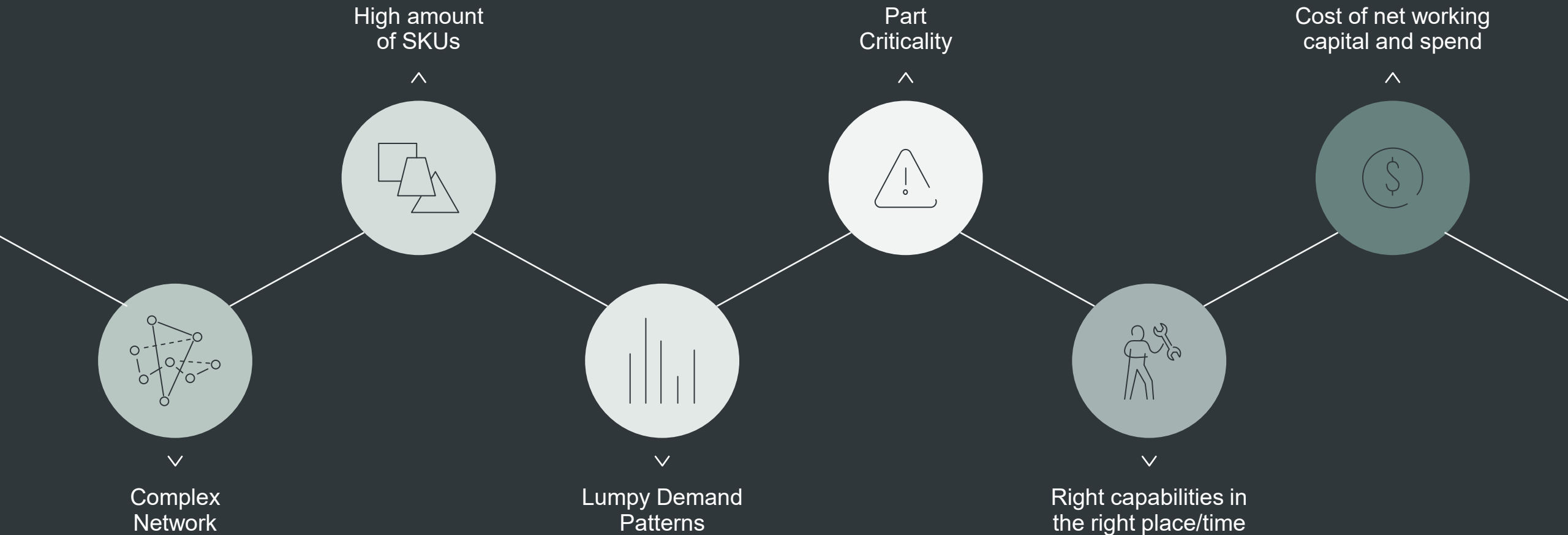
“When we combine all the figures across sectors, they suggest that the cost of an hour’s downtime has doubled over five years...”



The key objective of MRO planning is finding the right balance between *asset availability, reliability* and *Operating costs*



Key challenges of Maintenance, Repair and Operation



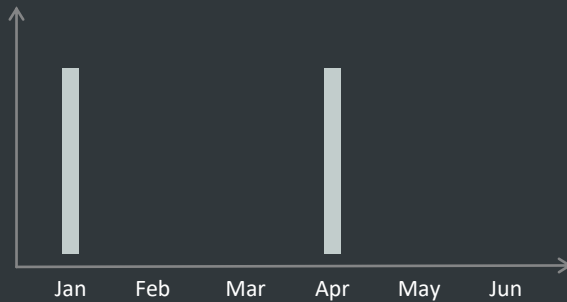
We need to consolidate demand from both *corrective* and *preventive* maintenance activities

TACTICAL PLANNING | SAP IBP Focus



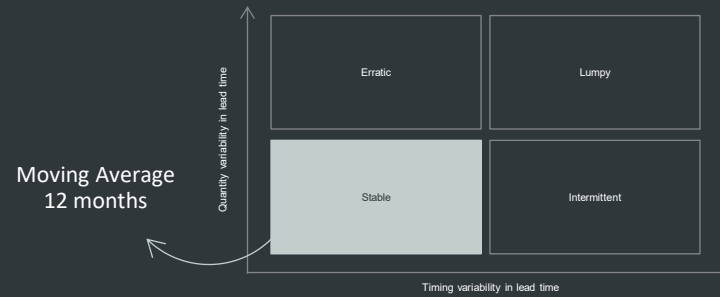
Preventive Maintenance

- Preventive maintenance schedules are maintained in SAP PM or Project Systems



Corrective Maintenance

- Requires structured segmentation, stocking and replenishment policies



MAINTENANCE EXECUTION



Predictive Maintenance

- A data-based technique enabling companies to foresee equipment breakdown in time



Long-Term Planning

2-5 years



Strategic Stocking & Service Footprint



Asset Lifecycle Management

Tactical MRO Planning

2-18 months



What, Where & How Much to Stock



Tactical Plan for Service, Tools & Manning



Preventive & Corrective Demand Outlook



Overview of Constraints



Balancing Across Time & Bottlenecks



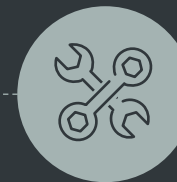
Supplier Collaboration

Maintenance Execution

0-6 weeks

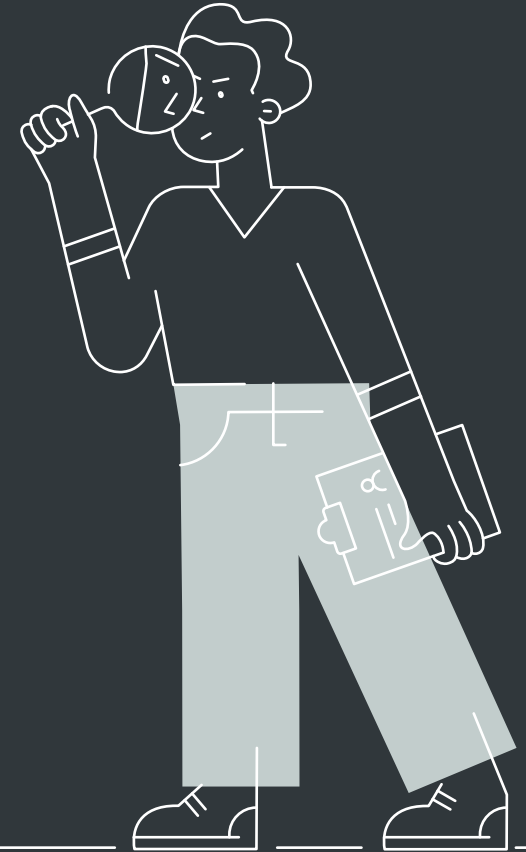


Predictive Maintenance



Execution of Work Orders

Okay, so what does
this look like in
more detail?



A coherent Tactical MRP process answers the four questions:
what, where, how to plan, and how much to stock



*What to
stock*



*Where to
stock*



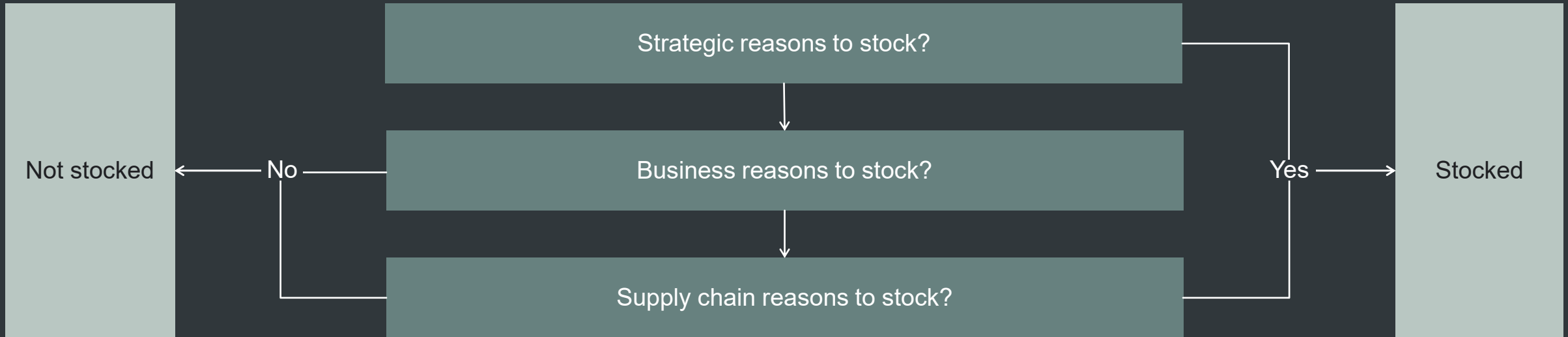
*How to plan
the stock*



*How much to
stock*



What to stock



Examples of *strategic* reasons to stock

- Criticality of products (e.g. high-impact spare parts)
- Contractual agreements on stock
- Required for safety reasons (lifesaving products)



Examples of *business* reasons to stock

- Profitability / Impact
- Is the lead time of the product shorter than the customer accepted lead time?
- Hedging (expectation of price increase/inflation)

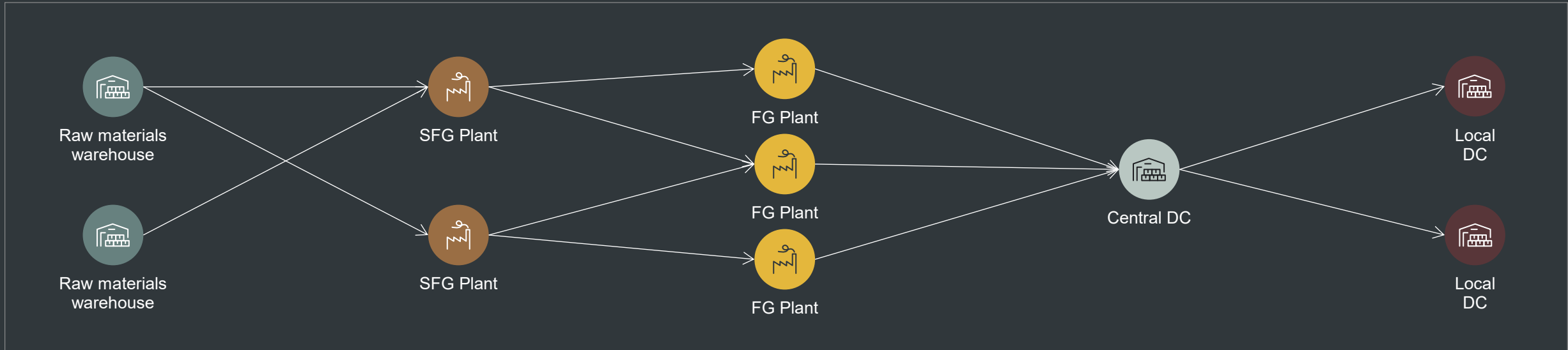


Examples of *supply chain* reasons to stock or not stock

- Production related / bi-product
- Does the product have a high impact on own production? (machine stops etc.)
- Low demand variability which enables levelling and production stability



Where to stock

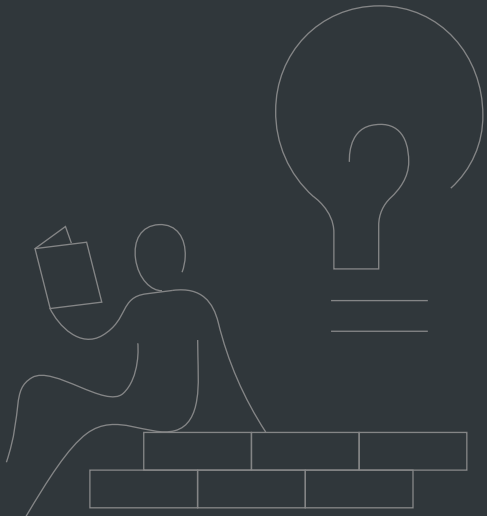


	Production	Finished goods Central DC	Finished goods Regional DC
Strategic Reasons	- Contractual agreements - Critical part & Safety reasons	- Contractual agreements - Critical part & Safety reasons	- Contractual agreements - Critical part & Safety reasons
Business Reasons	- Dependencies - Procurement timings	- Lead time responsiveness - Cost efficiency by centralisation.	- Lead time responsiveness - Cost of regional warehouse
Supply Chain Reasons	- Production Bi-products - Batch Size, Change over times	- Transportation times - Transportation constraints	- Transportation times - Transportation constraints



How to plan the stock

Planning principles



Forecast based

Forecast driven MRP

Low forecast error

- Forecast with safety stock or safety time
- The MRP logic creates upstream-dependent demand

Plan based (Cyclic planning)

Stabilize plan and reduce variance

- Shift the variance from the production plan to the stock level by having a fixed production plan/purchase plan every week
- The fixed volume should be based on the forecast

Consumption based

Reorder point (ROP)

Medium to high forecast error:

- Reorder point with safety stock
- Reorder point logic creates dependent demand within lead time

Demand driven MRP (DDMRP)

Medium to high forecast error:

- Pull-based supply generation based on actual consumption
- Define stocking levels in a dynamic way driven by actual customer orders buffering against volatility of forecasts

Make/Purchase to order

Customers can accept delivery time:

- Purchase to order, Assembly to order, make to order etc.
- Planning BOM can be used to create dependent demand



How much to stock

A certain number of data inputs is required to calculate either safety stock or safety time

Input that can impact the service level and net working capital balance

- Demand variability
- Forecast accuracy
- Spike order procedure
- Order sizes and cost price
- Transportation frequency
- Supply variability
- Number of variants
- Storage cost
- Criticality
- Lead time

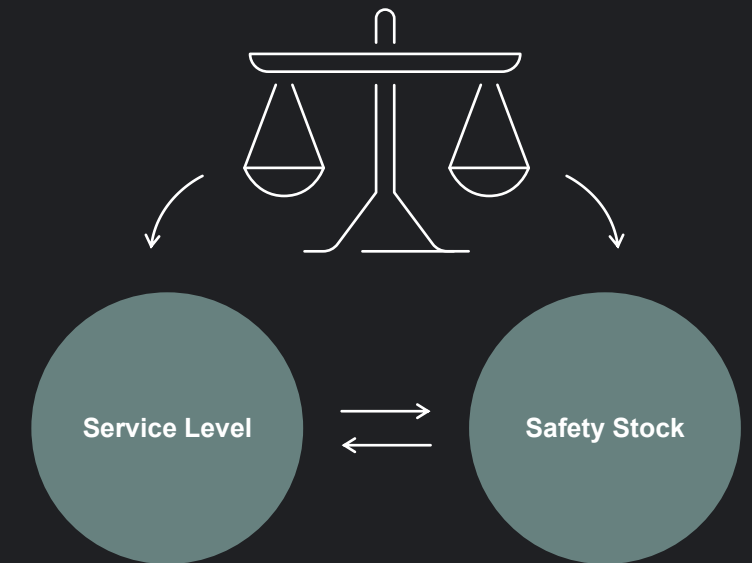
Increase service level

Decrease inventory

Model using a multi-echelon approach to optimize across the network



The goal is to balance service level and inventory with an optimal business impact



A coherent *Tactical MRO process* answers the four questions: **what, where, how to plan, and how much to stock**



What to stock

Determining **what** to stock is driven by:

- Strategic/criticality reasons
- Business reasons
- Supply chain reasons

Location ID	Product ID	Periods Between Requirement	Subnetwork ID	Internal Service Level	Internal Service Level	Minimum Safety Days	Reorder Point
1	0113300003	BP-100-R					
2	0113300003	BP-100-R					
3	0113300003	BP-100-R					
4	0113300003	BP-100-R					
5	0113300003	BP-100-R					
6	0113300003	BP-100-R					
7	0113300003	BP-100-R					
8	0113300003	BP-100-R					
9	0113300003	BP-100-R					
10	0113300003	BP-100-R					
11	0113300003	BP-100-R					
12	0113300003	BP-100-R					
13	0113300003	BP-100-R					
14	0113300003	BP-100-R					
15	0113300003	BP-100-R					
16	0113300003	BP-100-R					
17	0113300003	BP-100-R					

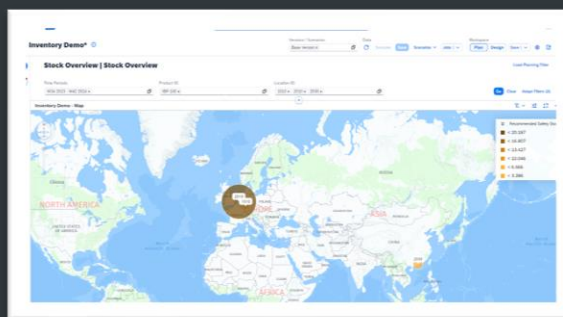
SAP IBP master data management



Where to stock

Determining **where** to stock is driven by:

- Centralisation to reduce costs
- Decentralisation to increase lead time responsiveness



SAP IBP Supply Chain Network



How to plan the stock

How to plan the replenishment is driven by a segmentation approach:

1. Plan-based planning
2. Consumption-based planning

Product Family	DC Seattle	DC Rotterdam	DC Hong Kong
FAMILY 100-HEADPHONES	0.40	0.40	0.40
FAMILY 200-HOME THEATER	0.40	0.40	0.40
FAMILY 300-MUSIC DOCKS	0.40	0.40	0.40
FAMILY 400-SMARTPHONES	0.10	0.10	0.10

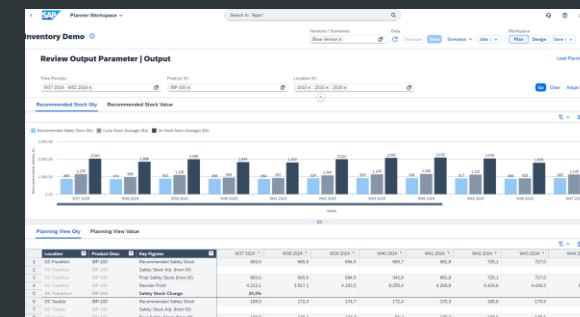
SAP IBP Segment Models



How much to stock

Determining **what** to stock is driven by:

- Uncertainty in quantity
- Uncertainty in time



SAP IBP MRO Algorithms

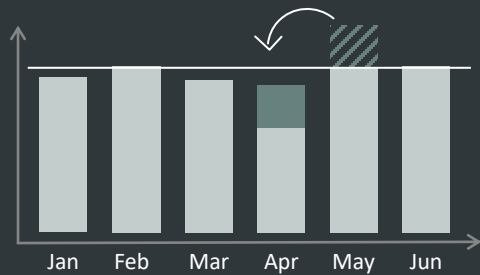
Tactical MRO creates visibility of projected capacity usage, distribution and expected inventory levels



Capacity Usage

Determining the expected capacity consumption and resulting utilization of:

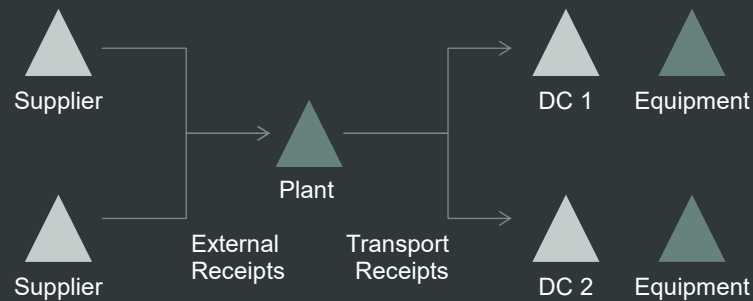
- Warehouse / storage resources
- Operators
- Suppliers / vendors



Parts Requirements

Creating a supply plan for downstream and upstream parts requirement:

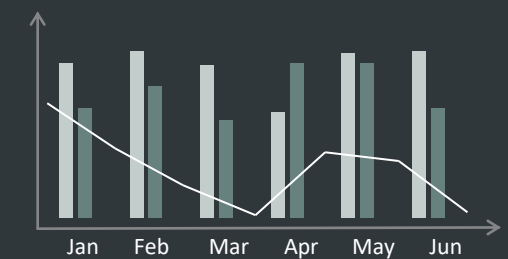
- Distribution Requirements
- Purchasing Requirements
- Supplier forecasting & collaboration



Projected Inventory

Projecting future inventory levels based on total part demand and incoming supply:

- Projected inventory in volume
- Projected inventory in value





How can we
support this with
SAP IBP ?

SAP S/4HANA / ECC

SAP EAM Plant Maintenance: PM

- Plant
- Maintenance Plans, Items
- Task List
- Workforce (Resources)
- Equipment, Functional Location

SAP Project System: PS

- Work Breakdown Structures
- Network Activities
- Materials Requirements
- Workforce (Resources)
- Equipment, Functional Location

SAP IBP – Tactical MRO

Demand Planning

- Service Parts Usage History
- Preventive Maintenance Inputs

Inventory Planning

- Safety Stock & Inventory Levels for Spare Parts

Supply Planning

- Service Parts Supply Plan
- Rough-cut Capacity Planning

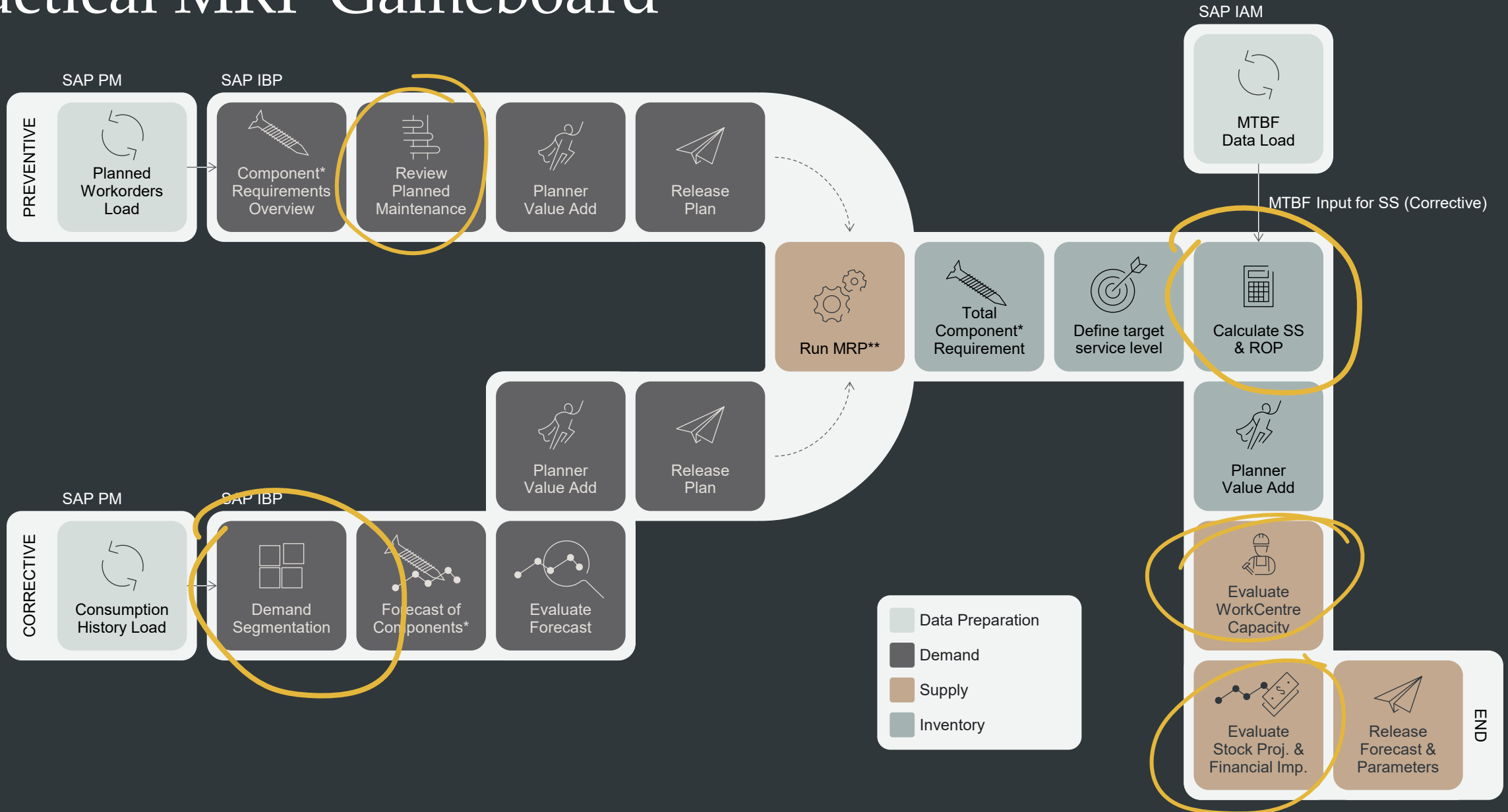
IBP Config & Master Data Modeling

Separate Planning Area:

- Asset as Customer
- Service Part as Product
- Labor for Maintenance as Resource

- Demand Variability
- Supply Uncertainty
- Replenishment frequency
- Lot sizes

Tactical MRP Gameboard



Can you recognize
these common
challenges in
maintenance, repair &
operations planning ?

Do you...



Experience too often that **spare parts are missing when needed?**



Face it difficult to **managing a diverse and extensive list of SKUs** large product portfolios for spare parts, with no good segmentation model to help?



Experience **high costs of keeping sufficient inventory** when dealing with a large number of SKUs and high service levels?



Find it **increasingly difficult to have the right human resources and capabilities available at the right place and time?**



Are you struggling to maintain a **large and complex distribution network** with both global and local hubs to quickly respond to demand?



Struggle with accurately forecasting due to highly erratic and lumpy demand patterns?



Thank you.
Implement Consulting Group

Contact

Mathias Mikalsen, Partner

Phone: +45 5138 7408

Email: mmm@implement.dk