



LORA en reserve-onderdelen bij Thales Nederland

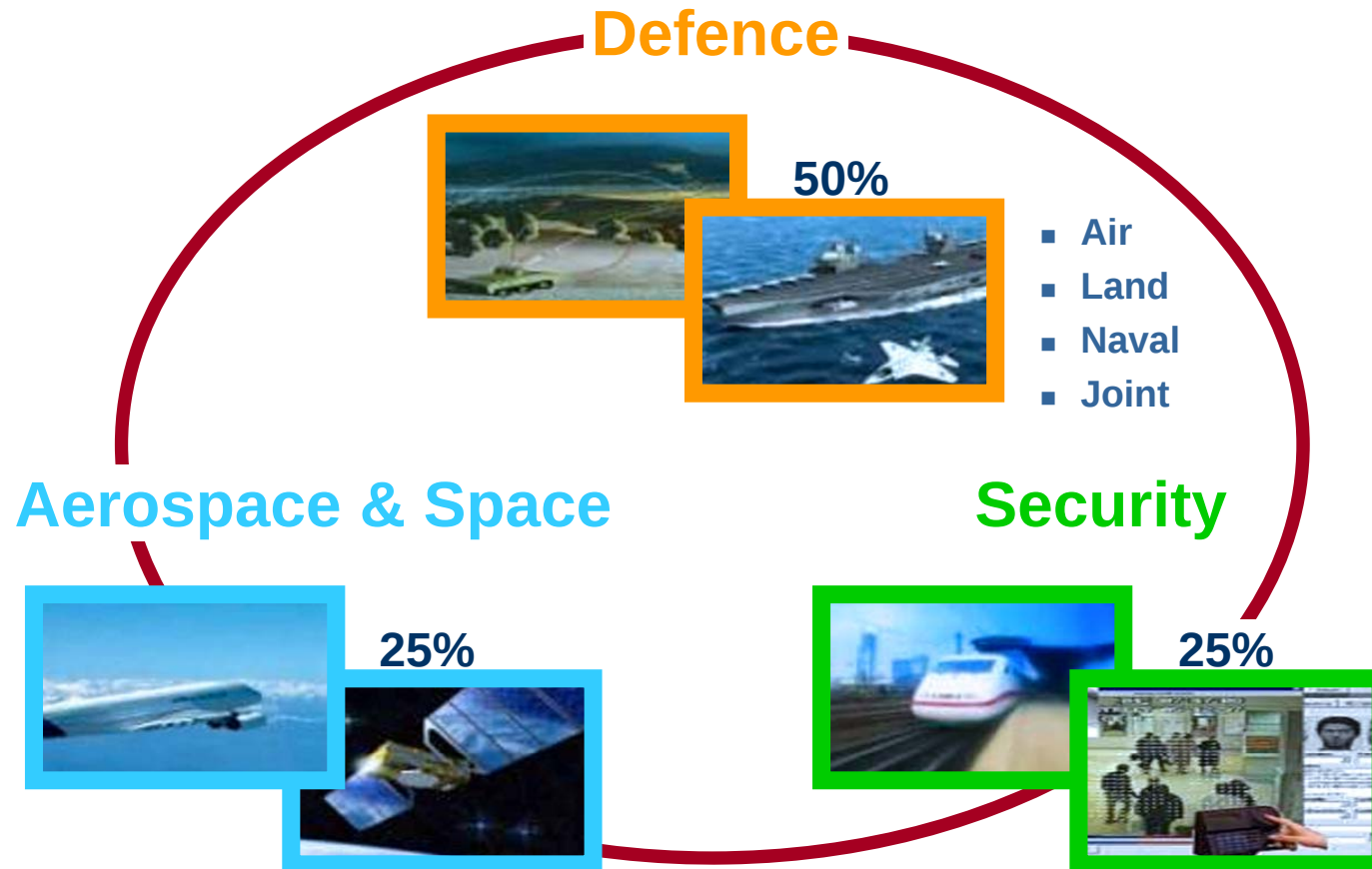
Rob Basten & Cees Doets

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Thales Group: 3 core businesses



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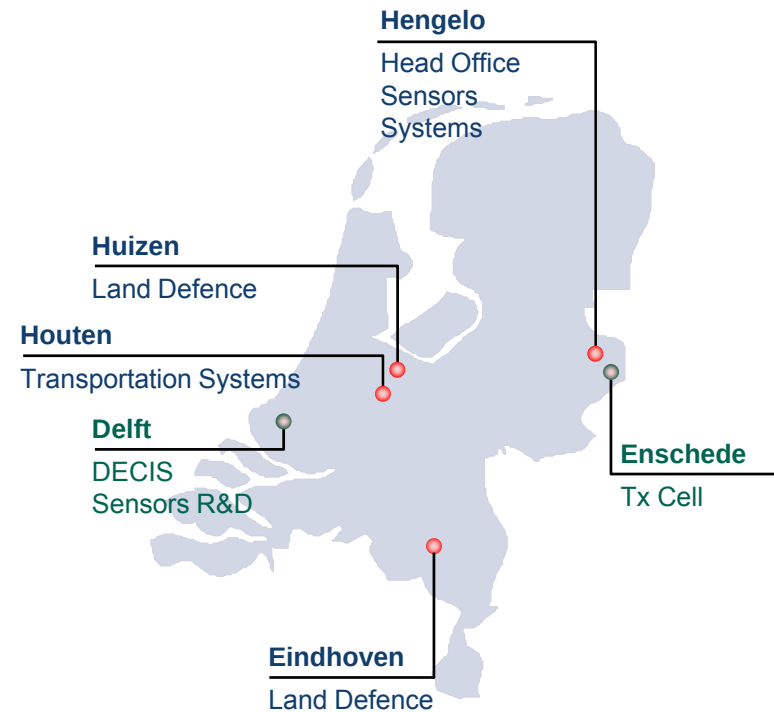


Presence in 50 countries
68,000 employees worldwide

€12.9 bn annual revenues

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- ~ 2.000 medewerkers over 6 vestigingen
- Sales Thales Nederland B.V.
~ € 600 million, waarvan > 75% export
- Order backlog € 1,2 billion
- Main centres of excellence:
 - Naval System Integration
 - Naval Sensors & C2
 - Vehicle Communication Systems
 - Transportation Systems



Naval applications



Command & Control



System integration



Surveillance



Fire control



Advanced Research

- Signal and data processing
- Antennas and electromagnetism
- Radar system concepts

Integrated Logistic Support



Multifunction radars

Product portfolio Naval Services



- Integrated Logistic Support (ILS)
- Local Support
- In Service Support (ISS)
- Capability Sustainment
- Long Term Service Agreements (LTSA)

Vaststelling Onderhoud en Ondersteuning concept:

- Bij ontwikkeling van het product
- Bij verkoop aan specifieke gebruiker/organisatie

Benodigde Tooling:

- LORA, Level Of Repair Analysis
 - Optimaal concept voor uitwisseling en reparatie van delen
- Spares Scaling
 - Reservedelen: voorraad optimalisatie per lokatie (hoogste beschikbaarheid tegen laagste kosten)

Echter

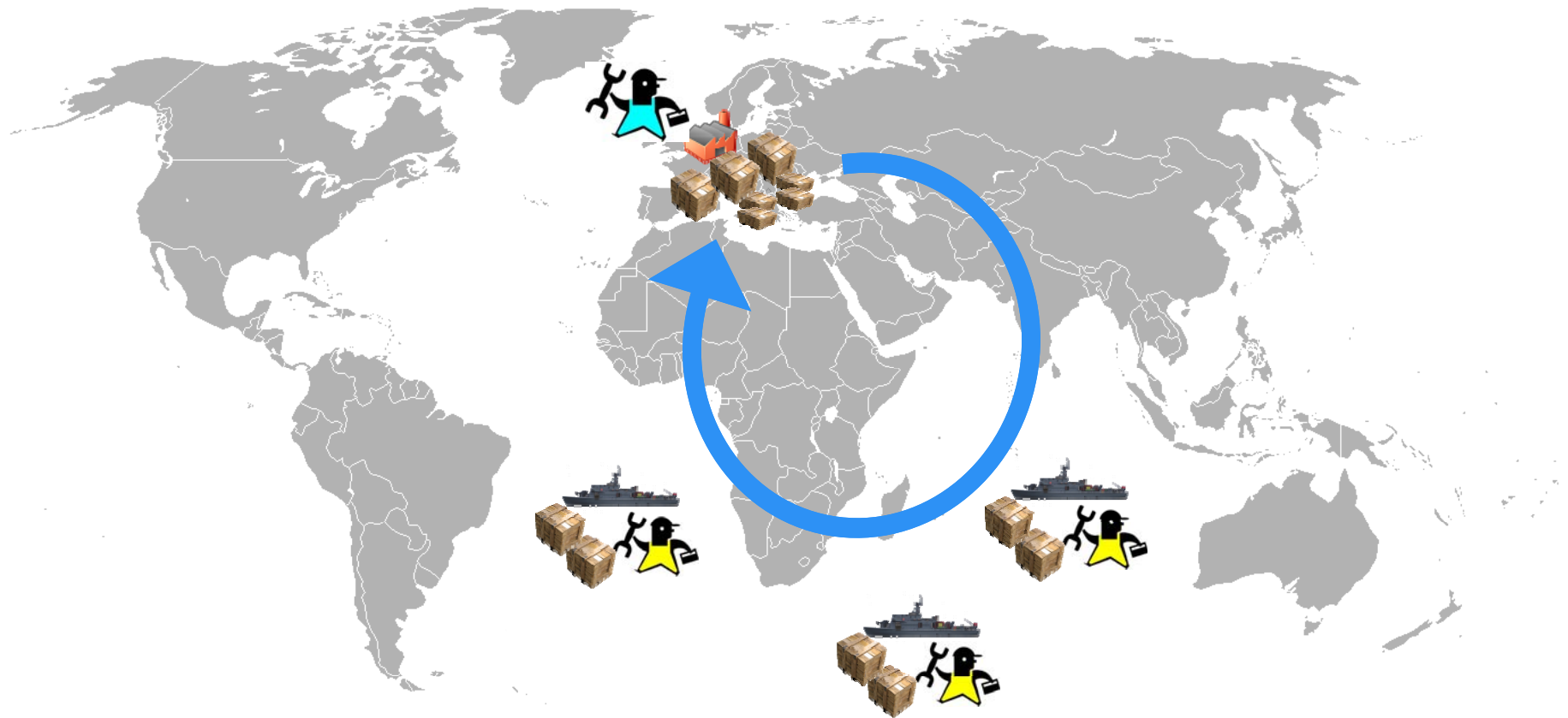
- Geen geschikt LORA tool
- Geen interactie tussen beide tools

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Voorbeeld LORA + Spare parts stocking



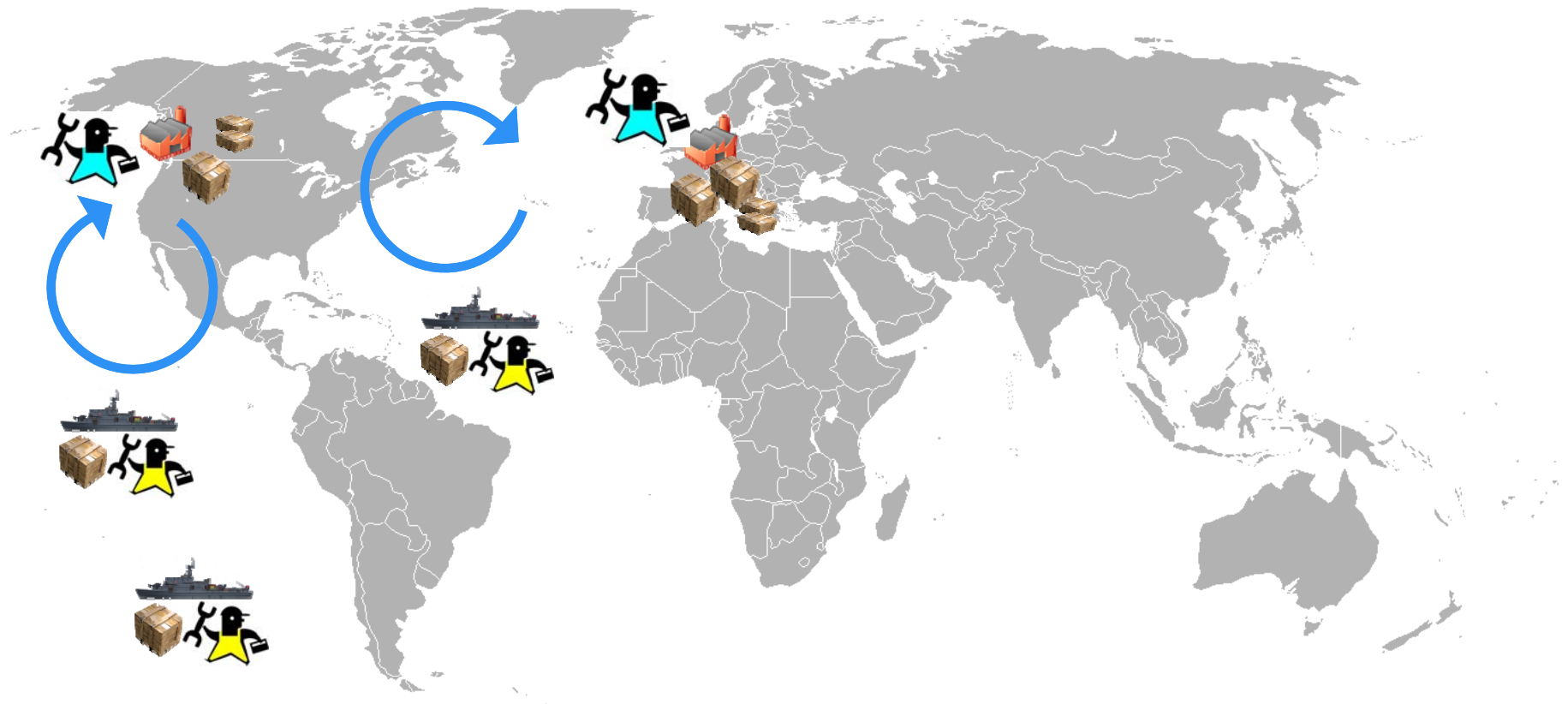
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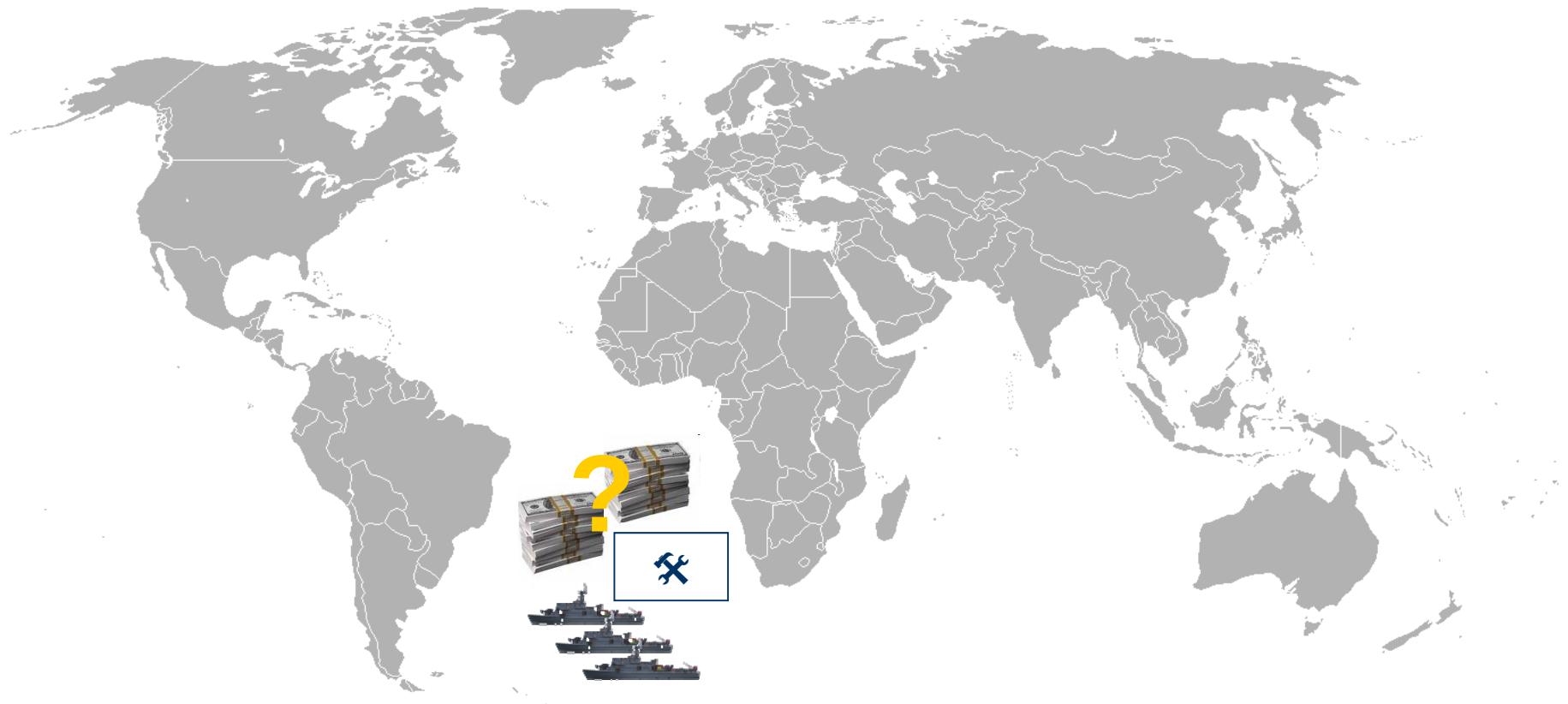


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Voorbeeld LORA + Spare parts stocking

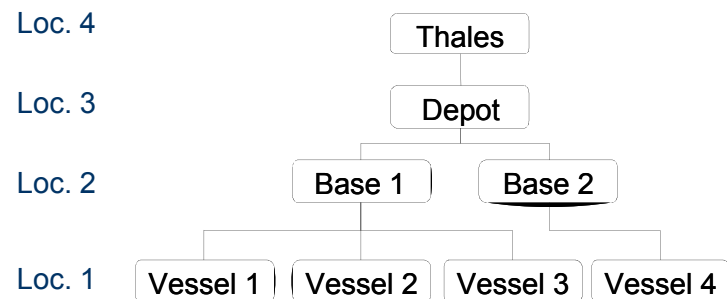


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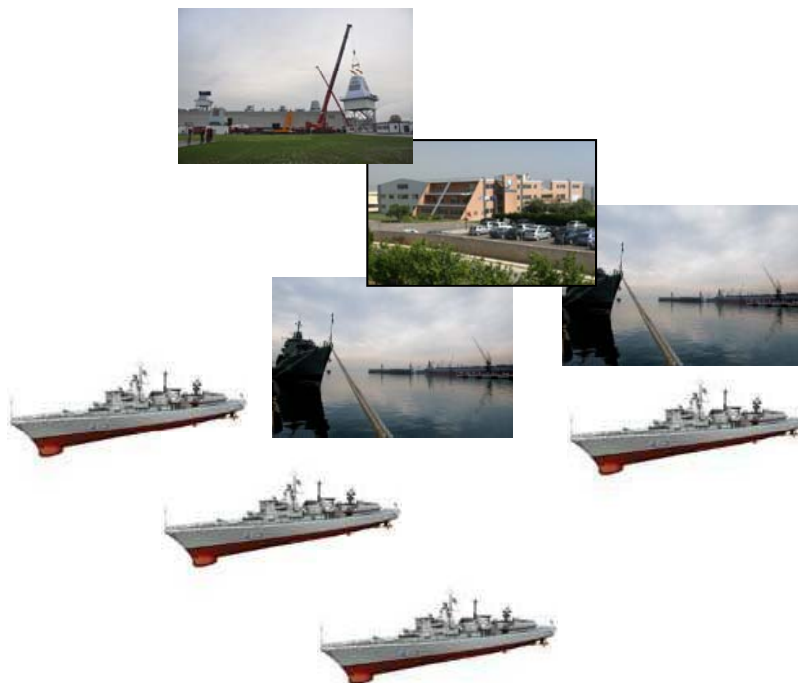


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Reparatienetwerk en productontwerp



Reparatienetwerk



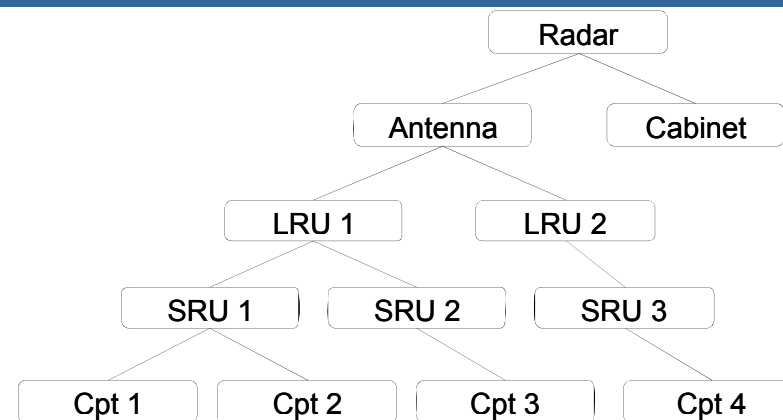
Ind. 0

Ind. 1

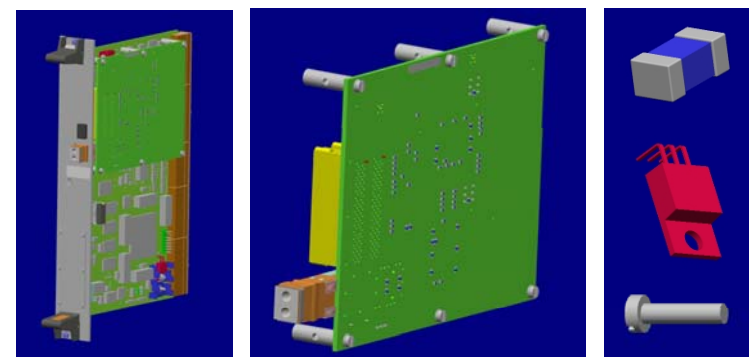
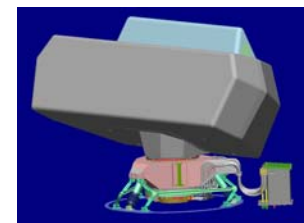
Ind. 2

Ind. 3

Ind. 4



Productontwerp



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Gegeven: reparatienetwerk & productontwerp

Bepaal:

- componenten repareren of afstoten
- waar dit te doen
- waar 'resources' te plaatsen

Doel: laagste kosten

Centraal repareren (i.p.v. op elk schip):

- lange afstand → hoge transportkosten
- op één locatie apparatuur → lage vaste kosten

Probleemdefinitie: Spare parts stocking



Gegeven: reparatienetwerk, productontwerp & LORA-beslissingen

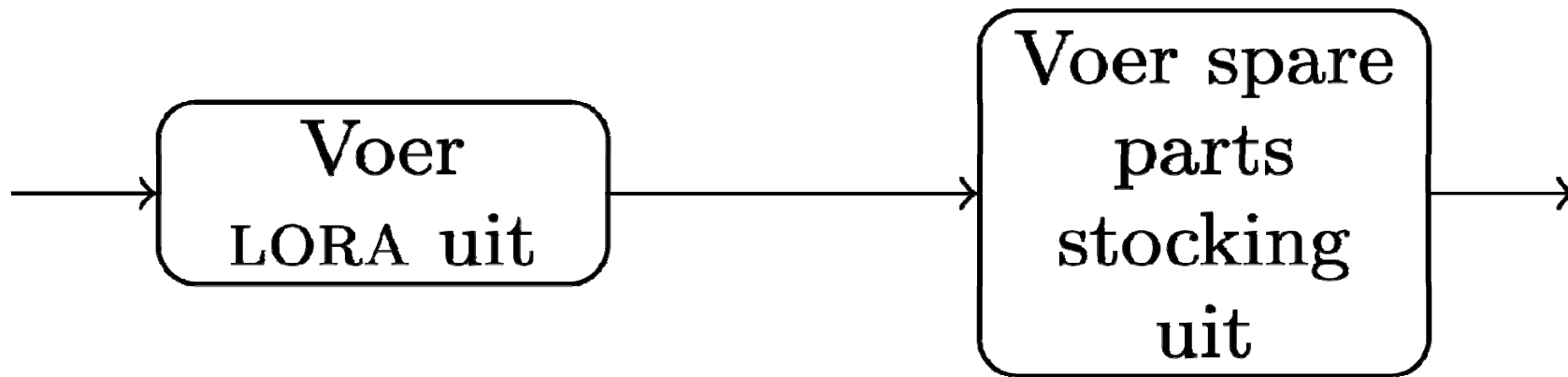
Bepaal:

- waar hoeveel reservedelen

Doel: laagste voorraadkosten,
bij een bepaalde beschikbaarheid

Centraal neerleggen (i.p.v. op elk schip):

- lange afstand → lange doorlooptijd → lange tijd systeem niet beschikbaar
- één reserve-onderdeel kan op meerdere locaties gebruikt worden → weinig reserve-onderdelen





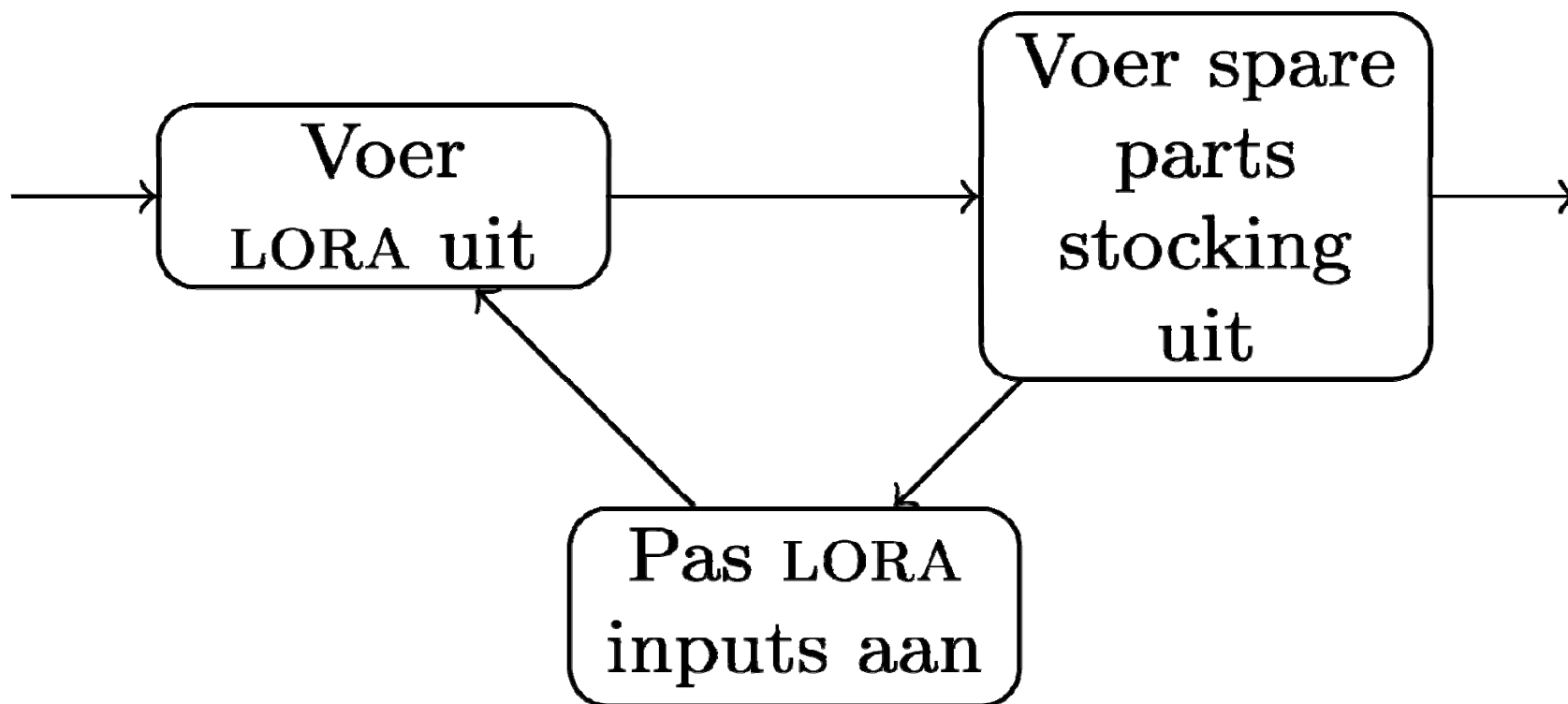
LORA-afweging:

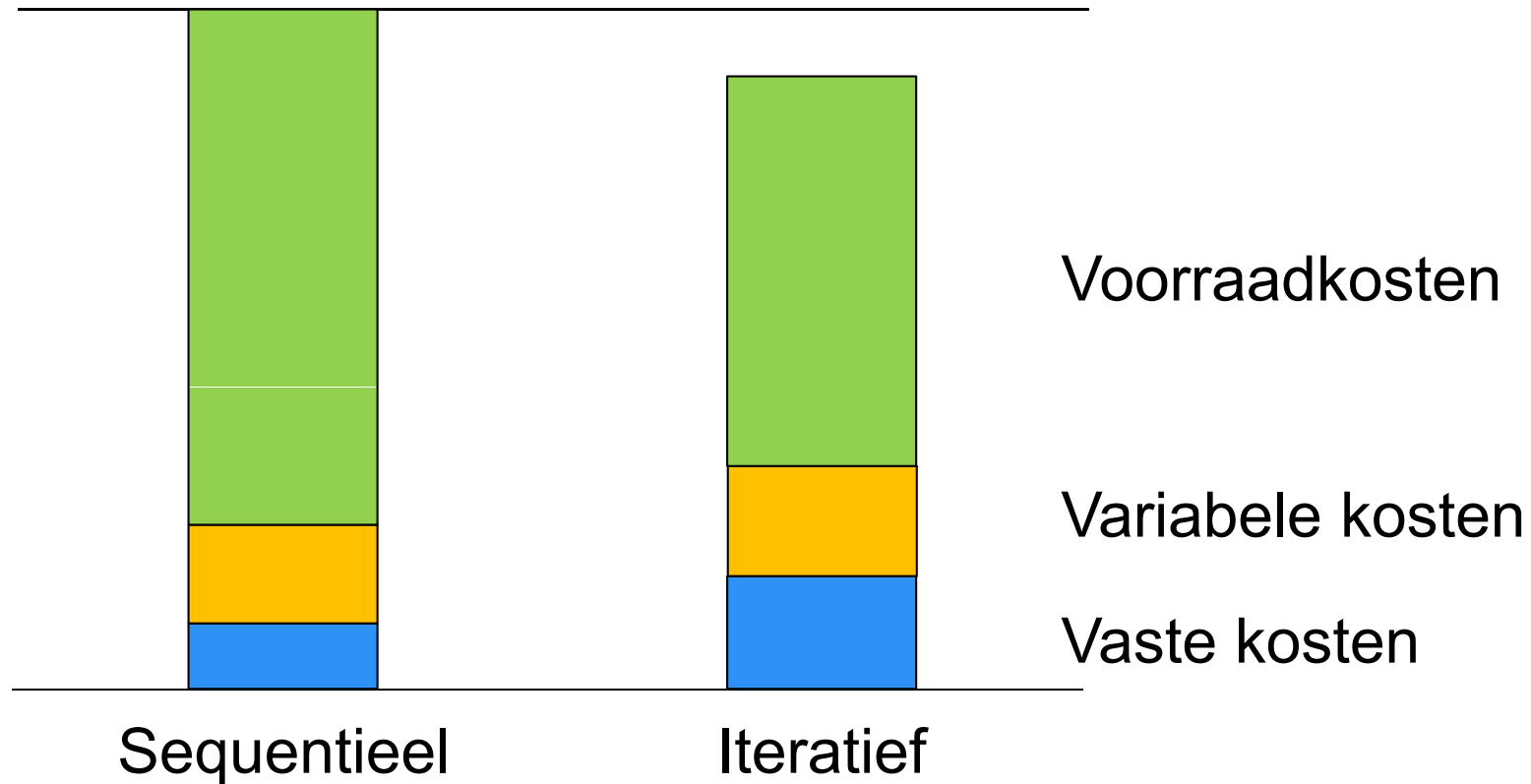
transportkosten ↔ kosten voor apparatuur

Resultaat: centraal repareren

Gevolg:

lange doorlooptijden → veel reserve-onderdelen





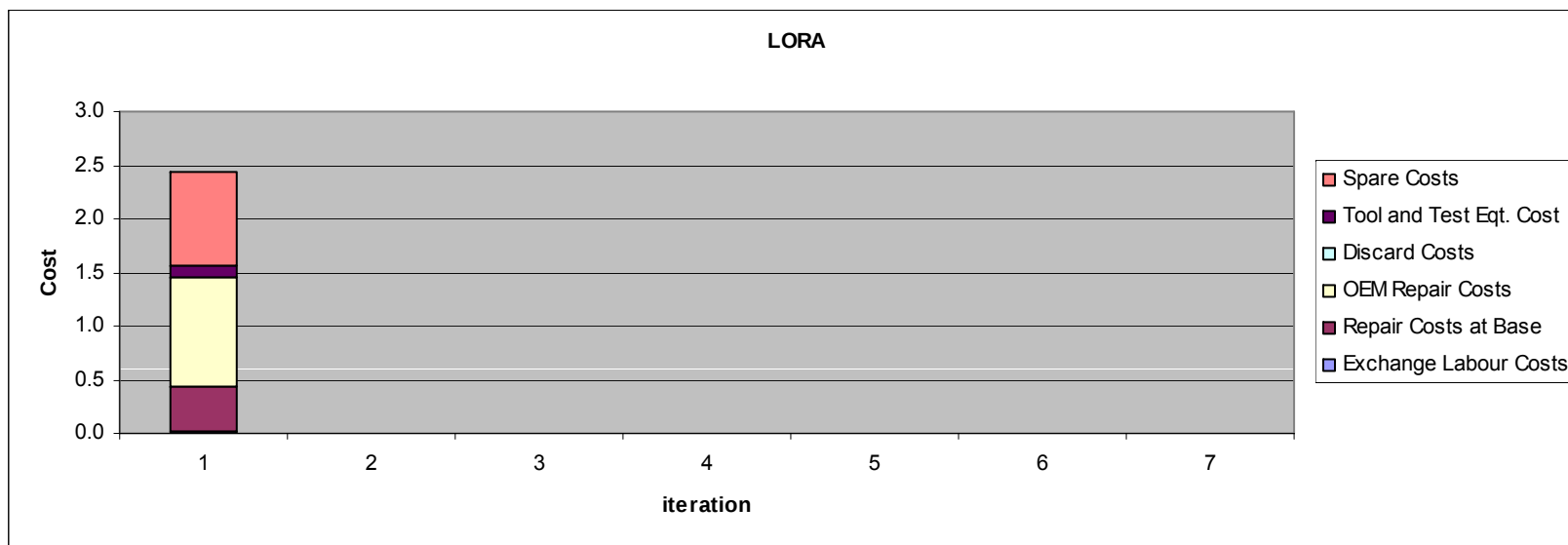
Kostenbesparing iteratief vergeleken met sequentieel:

- gemiddeld: 3.2%
- maximaal: 35%

Kostenbesparing 'optimaal' vergeleken met iteratief:

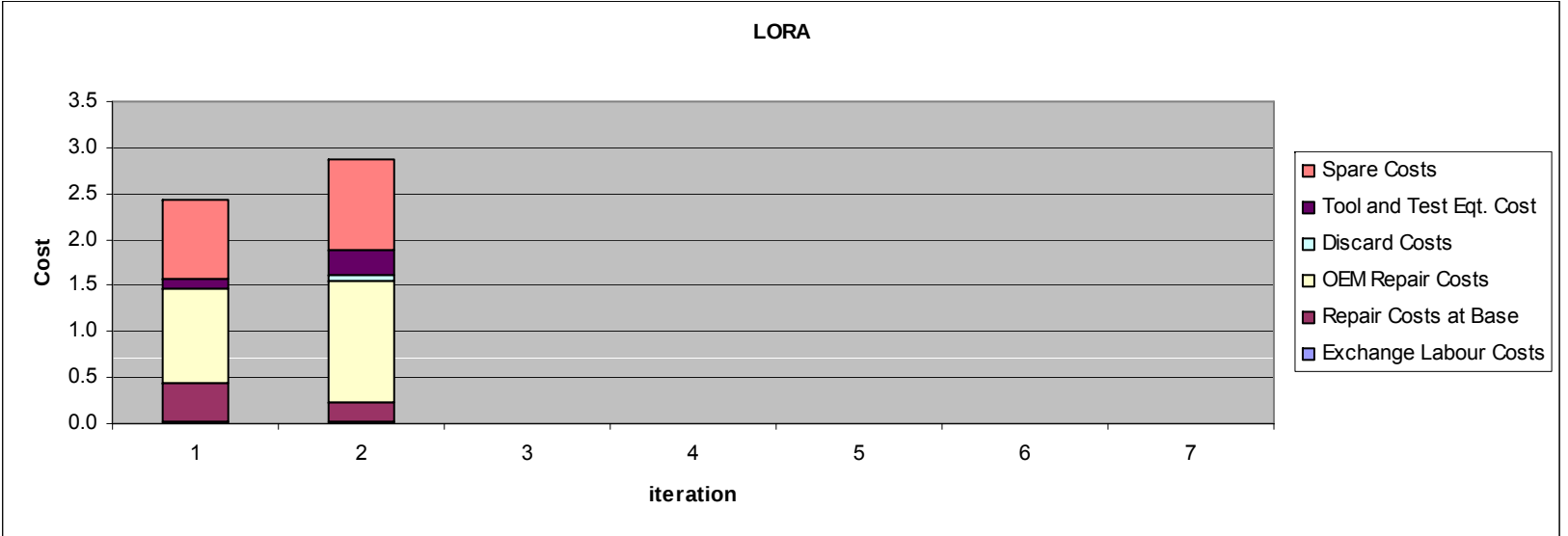
- gemiddeld: 0.26%
- maximaal: 5%

Voorbeeld: Iteratie 1



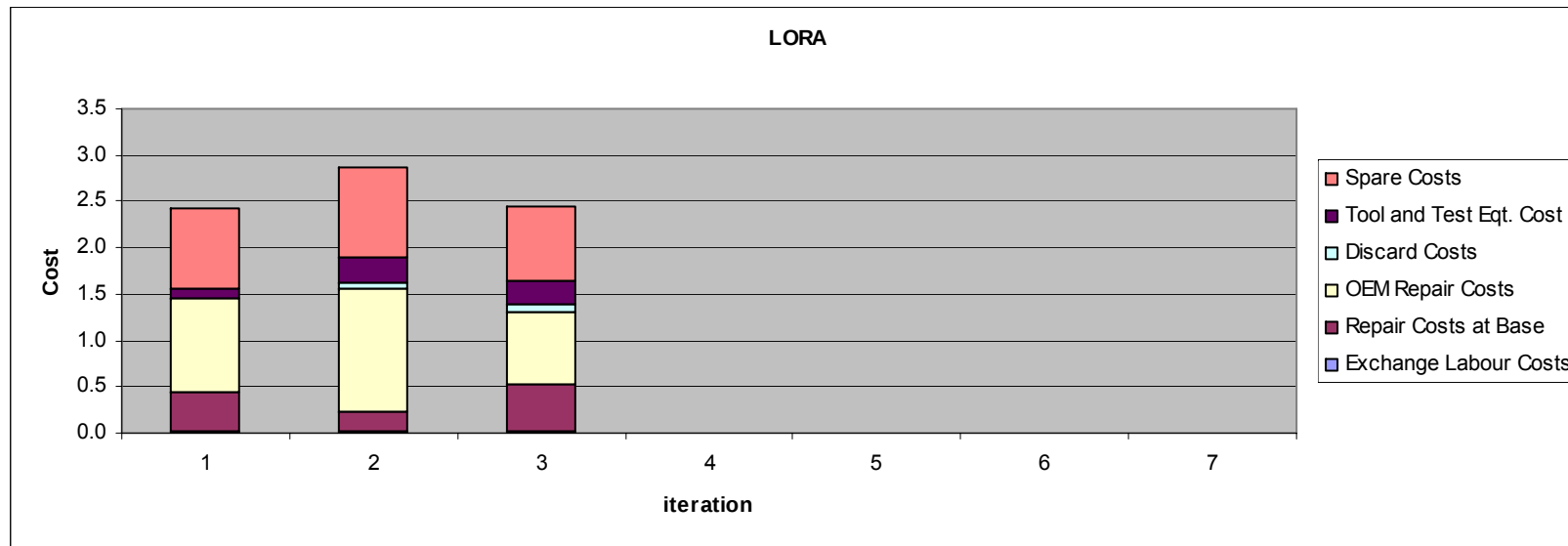
SOLUTION DETAILS	SMR	SMR	SMR	SMR	SMR	SMR	SMR
TIMLINK ENC	PAOLL						
TX-CAL DWN	PAOLL						
LO1 SYNTH	PAOLL						
RXTILE	PAODD						
RXINT	PADLL						
OCTOPACK HP	PAOLL						
Camera Pack	PAODD						
FEMCIM_BB1	PAOLL						
TX_SUP	PDZBZ						
RX_SUP	PDZBZ						
TTE ALLOCATION	RXTile Tester						
	Cam Alignment Tool						

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Camera Pack	PAODD	PAOLL					
FEMCIM_BB1	PAOLL	PAODD					
TX_SUP	PDZBZ	PADLL					
RX_SUP	PDZBZ	PADLL					
TTE ALLOCATION	RXTile Tester	TANGO Test Bench					
	Cam Alignment Tool	TxRack set					
		FEMCIM Testbench					

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TX-CAL DWN	PAOLL	PAODD	PAOZZ	PAOLL	PAOLL	PAOLL	PAOLL
LO1 SYNTH	PAOLL	PAOLL	PAOZZ	PAOLL	PAOLL	PAOLL	PAOLL
RXTILE	PAODD	PAOLL	PAODD	PAODD	PAODD	PAODD	PAODD
RXINT	PADLL	PDZBZ	PADLL	PADLL	PADLL	PADLL	PADLL
OCTOPACK HP	PAOLL	PAODD	PAOLL	PAOLL	PAOLL	PAOLL	PAOLL
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TX_SUP	PDZBZ	PADLL	PADLL	PADLL	PADLL	PADLL	PADLL
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TTE ALLOCATION	RXTile Tester	TANGO Test Bench	RXTile Tester	RXTile Tester	RXTile Tester	RXTile Tester	RXTile Tester
	Cam Alignment Tool	TxRack set	Cam Alignment Tool	Cam Alignment Tool	Cam Alignment Tool	Cam Alignment Tool	Cam Alignment Tool
		FEMCIM Testbench	FEMCIM Testbench	FEMCIM Testbench	FEMCIM Testbench	FEMCIM Testbench	FEMCIM Testbench

Klassiek

- 2-indenture (LRU-Part) en 2 mogelijke repair lokaties
 - Weinig keuze vrijheden LORA
 - Reparatie door eindgebruiker = strategisch ipv economisch

Modern

- Multi-indenture en 3 mogelijke repair lokaties
 - What-if en Optimalisatie mbv LORA&Spares
 - Iteratieve aanpak volstaat nog
- Multi-indenture en multi-echelon
 - Pooling van spares en repair lokaties over meerdere klanten
 - Doorontwikkeling Tool?



Vragen?

Discussie!

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