Senior Executive Insights for Infusing Intelligence into Your Supply Chain

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Group CIO and Head of IT
Merck Group

Marco Odoardi

Global Head of Integrated Operations Planning
Merck Group

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„INFUSING INTELLIGENCE INTO YOUR SUPPLY CHAIN“
OUR JOURNEY, LEARNINGS AND NEXT STEPS

- MERCK KGAA -

ALESSANDRO DE LUCA

GROUP CIO

MARCO ODOARDI

IOP GLOBAL HEAD

INFUSING INTELLIGENCE INTO YOUR SUPPLY CHAIN

TODAY AGENDA

1. VISION AND JOURNEY
2. NEXT STEPS ON IOP
3. CLOSING REMARKS

Science & Technology company

About MERCK KGaA

€70 bn
market capitalization

>€2.5 bn
invested in R&D

~ 63,000
employees

68
countries

1668
founded

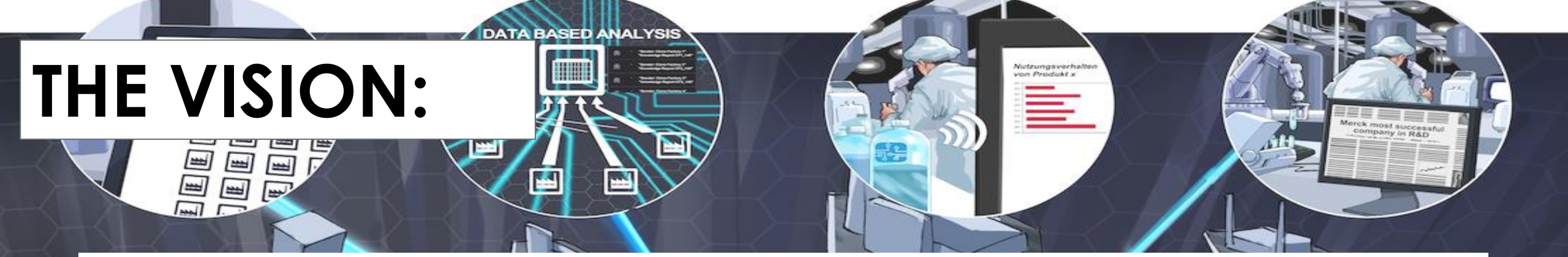
publicly listed & majority family-owned

SOME YEARS AGO, IN THE FMCG WORLD…

We need to work from the real demand,
so that we produce what is actually selling,
not what is forecast to sell

Keith Harrison, former P&G Product Supply Officer

THE VISION:



DEMAND
automatically predicted

No human intervention

- ***Machine Learnings Forecasting*** *(Advanced Analytics) fueled by a combination of..*
- ***Internal & external data*** *based on «real» demand signal and «broad network» info.*

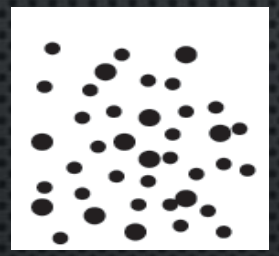
SUPPLY
proactively prescribed

E2E/N2N supply management

- *Control Tower driving* ***real-time synchronization*** *of the Merck E2E supply network combined with..*
- ***AI based BI*** *across the N2N supply ecosystem*

THE JOURNEY:

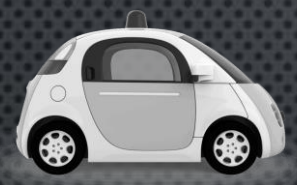
As-is: Siloed



Retrospective

- Silos of raw data
- Limited visibility
- Inaccurate

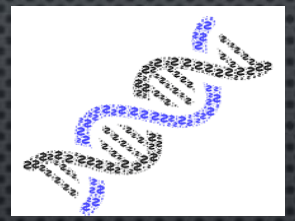
Step 1
Advanced Planning
"Self Driving SC"



Descriptive Planning

- Advanced Analytics Forecast
- Machine Learning
- Demand Sensing

Step 2
From S&OP to IBP
"One Number"



Predictive & Prescriptive

- ONE Number Concept
- ONE source of Truth
- ONE integrated Plan

Step 3
From IBP To IOP
"Truly E2E"

E2E Supply Chain

- E2E synchronised data driven decision making
- Real time predictive modelling

Step 4
Moving beyond our walls
"N2N"

N2N Supply Network

- Realtime info and BI across the Network2Network ecosystem
- AI based automation for prescriptive capabilities

THE JOURNEY:

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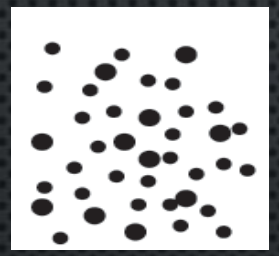

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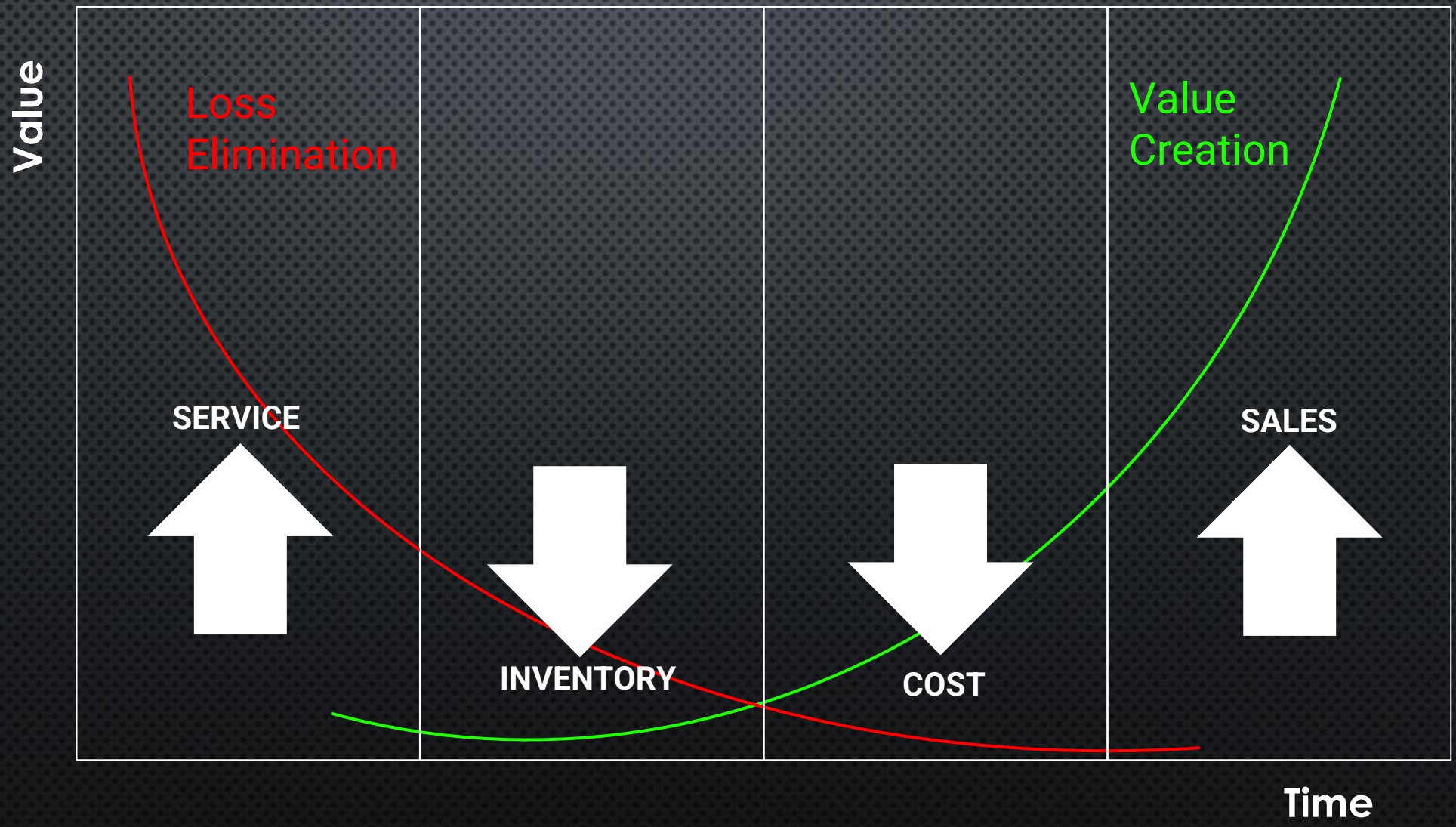
THE IMPACT:

Step 1
Advanced
Planning
"Self Driving SC"

Step 2
From S&OP
to IBP
"One Number"

Step 3
From IBP
To IOP
"Truly E2E"

Step 4
Moving
beyond our walls
"N2N"



INFUSING INTELLIGENCE INTO YOUR SUPPLY CHAIN

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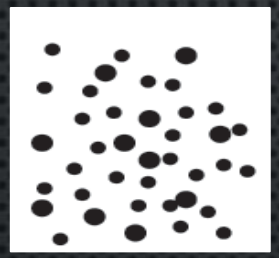
2. NEXT STEPS ON IOP
3. CLOSING REMARKS

IOP (Integrated Operation Planning)

As-is: Siloed



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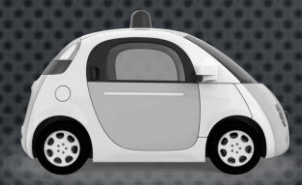

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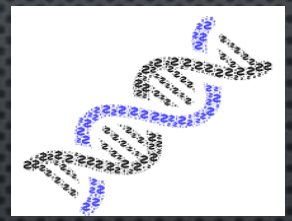

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- Real time

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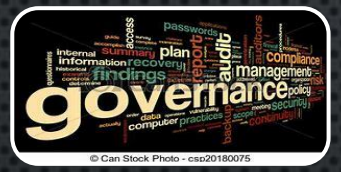
The industry

- 79% of supply chain organizations plan to achieve **real time "data driven" decision making**



- 50% of big companies will **revise their SC "decision making" governance**, to be more data-driven

- 50% of global companies will have **15% of new "AI-augmented" employees**, (e,g, Augmented-connected workforce)

- the companies better using **AI will produce 3 times more value** (from AI) than the others

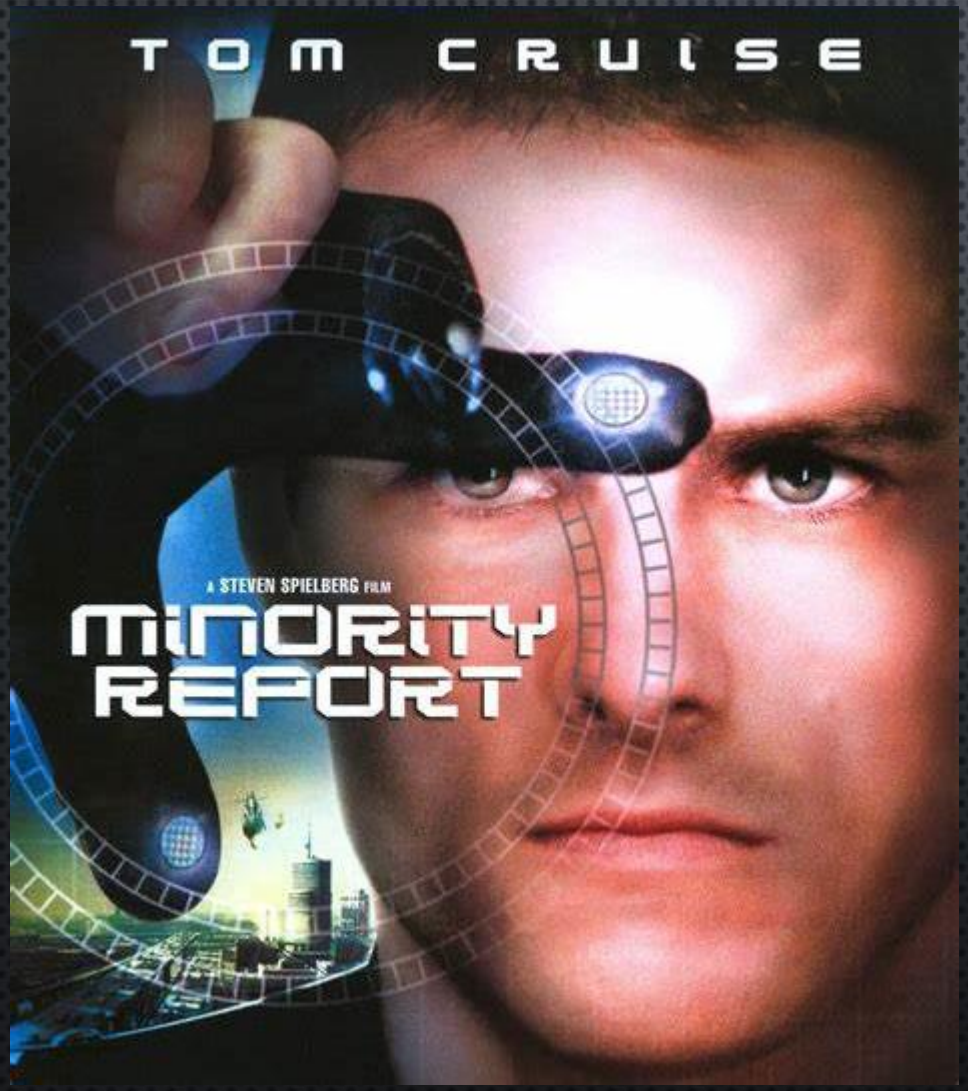
With IOP we achieve….

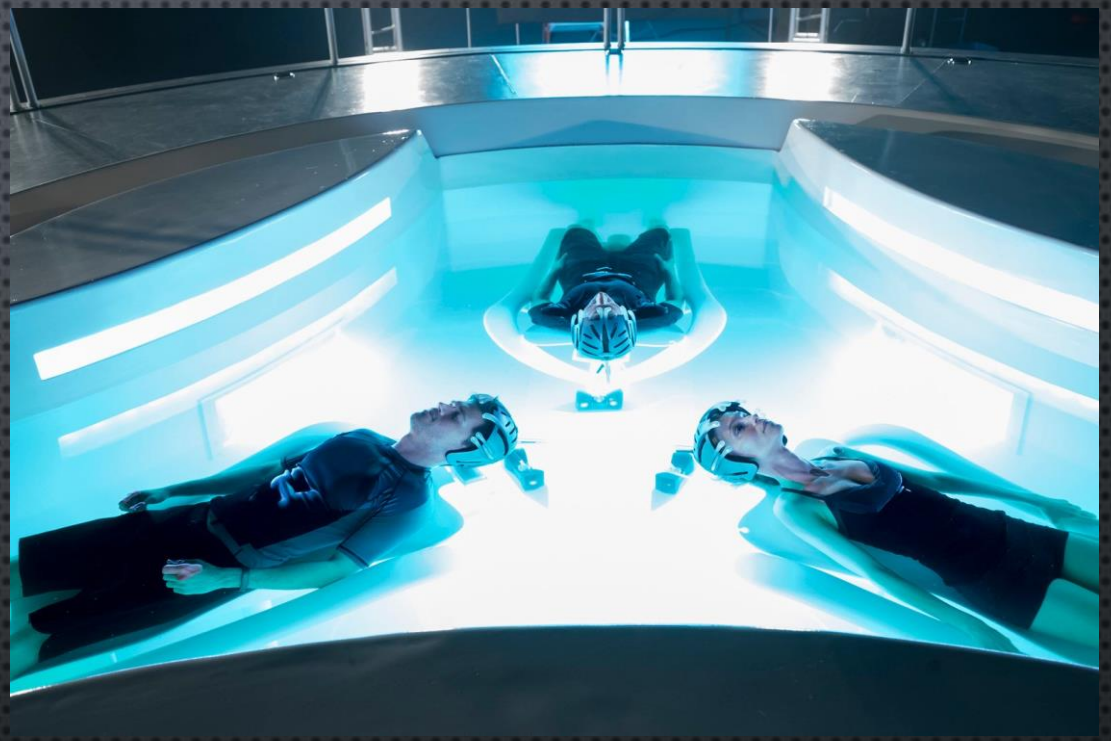
Synchronized
Data-Driven
Real time
Forward-looking
X-functional

Decision Making

…..for operations-associated decisions

It sounds like science fiction….





Service
Cost
Inventory

Quality
Sustainability
Assets Utilization

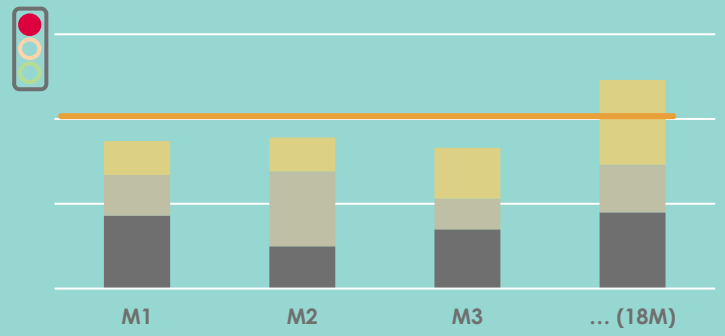
Mock-Up

"Landing page" for simulations

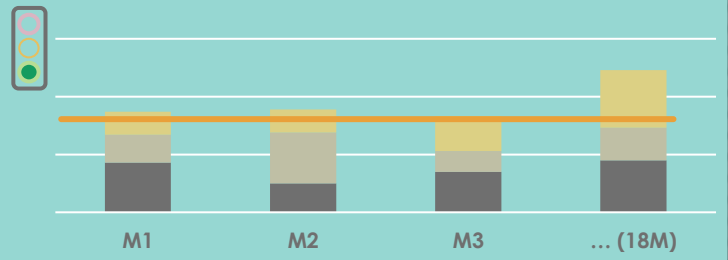
Simulations/Use cases by .....

1) **Capacity adjustment (FTE, Shifts, OEE)**
2) **Quality vs Manufacturing synchronization**
3) **Cost absorption (e.g. Dollarization)**
4) **.....**
5) **.....**

Service	KPI	Data segmentation
	LSO (value / qty)	Site / Region / Franchise

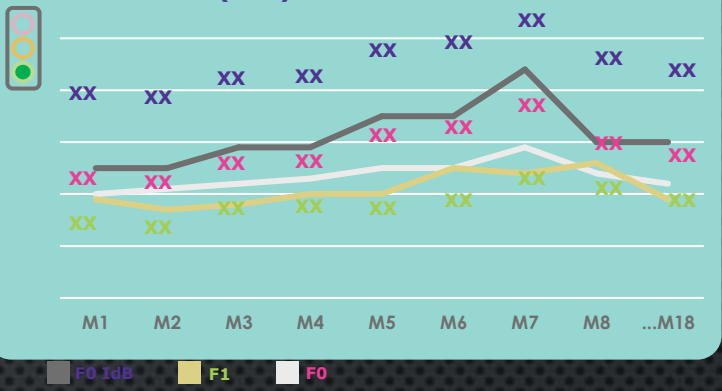


Cost	KPI	Data segmentation
	Absorption	Site / Franchise

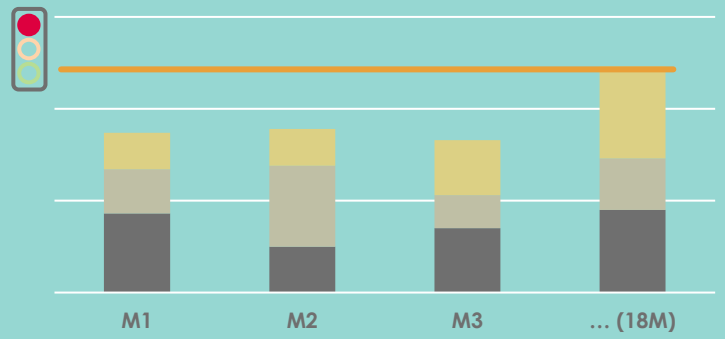


Freight cost	XX M€	XX M€	XX M€	XX M€

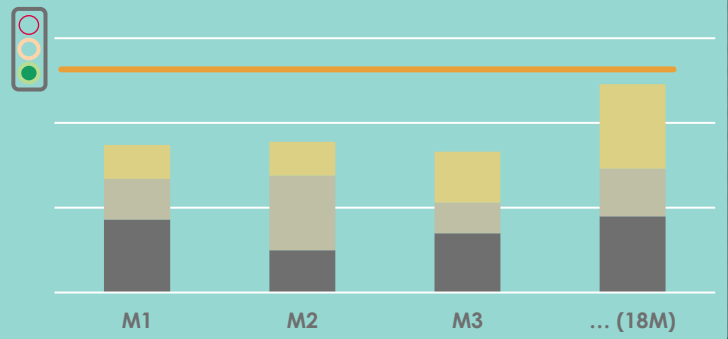
Cash	KPI	Data segmentation
	Inventory (DSI)	Country / Franchise



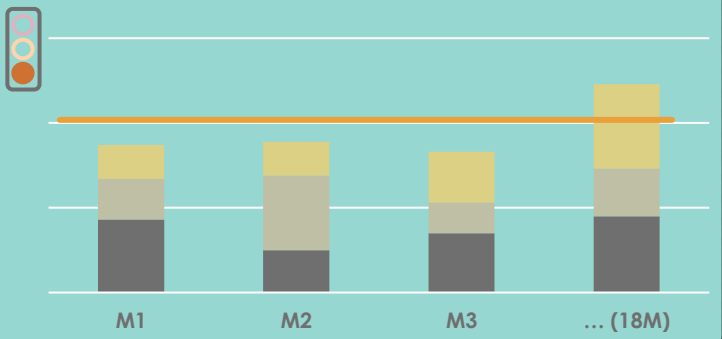
Quality (QA+QC)	KPI	Data segmentation
	Quality D/C Ratio	Site / Franchise



Sustainability	KPI	Data segmentation
	CO2 Emission per distance / weight	Site



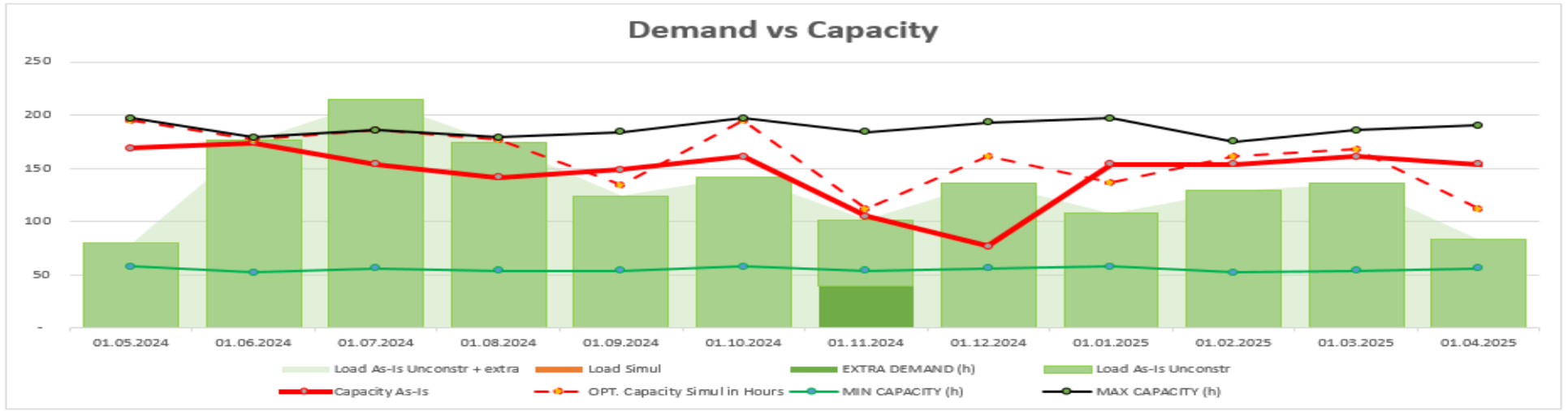
Mfg. Demand/ Capacity	KPI	Data segmentation
	D/C Ratio	Site / Franchise



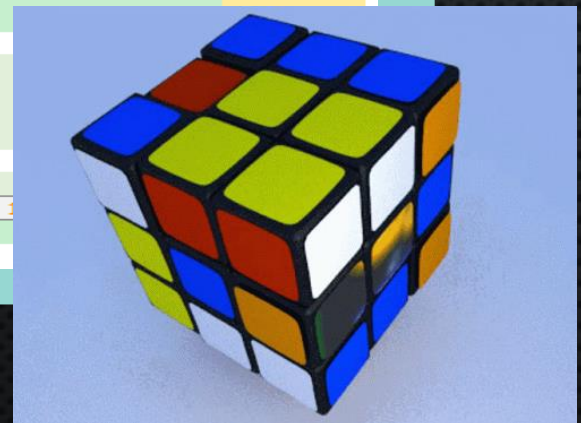
Benchmark / Target
Site / Franchise / Region A
Site / Franchise / Region B
Site / Franchise / Region ...

Mock-Up

“Landing page” for simulations



	01.05.2024	01.06.2024	01.07.2024	01.08.2024	01.09.2024	01.10.2024	01.11.2024	01.12.2024	01.01.2025	01.02.2025	01.03.2025	01.04.2025
LOAD UNCONSTR (h)	80	176	214	174	124	142	62	137	108	129	136	83
EXTRA DEMAND (h)							40					
LOAD UNCONSTR + EXTRA (h)	80	176	214	174	124	142	62	137	108	129	136	83
CURRENT CAPACITY (h)	169	174	154	142	148	161	105	77	154	154	161	154
UNCONSTR D/C ratio (%)	47%	101%	140%	123%	84%	88%	59%	178%	70%			
	0	0	0	0	0	0	0	0	0			
MIN CAPACITY (h)	58	52	56	54	54	58	54	56	58			
MAX CAPACITY (h)	197	179	186	179	184	197	184	193	197			
HOURS PER SHIFT (h)	8	8	8	8	8	8	8	8	8			
OEE (%)	28%	28%	28%	28%	28%	28%	28%	28%	28%			
	0	0	0	0	0	0	0	0	0			
OPT. Capacity Simul in Shifts	**87**	**79**	**83**	**79**	**60**	**87**	**50**	**72**	**61**			
OPT. CAPACITY (h)	194,88	176,96	185,92	176,96	134	194,88	112	161,28	136,64			
Simul OPT. UNCONSTR D/C ratio (%)	41%	100%	115%	98%	92%	73%	91%	85%	79%			
added/removed capacity	26	3	32	35	- 14	34	7	84	- 17			



"Landing page" for simulations

Simulations/Use cases by .....

1) **Capacity adjustment (FTE, Shifts, OEE)**
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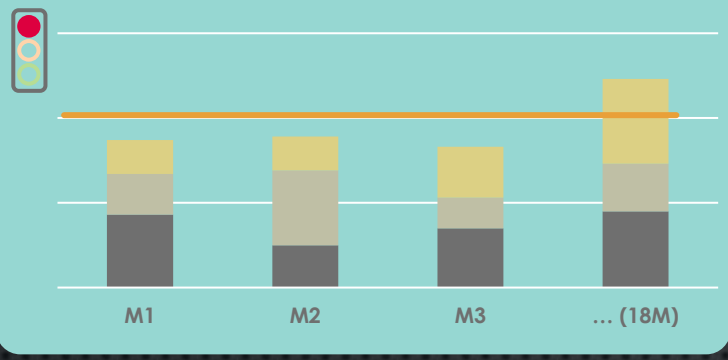
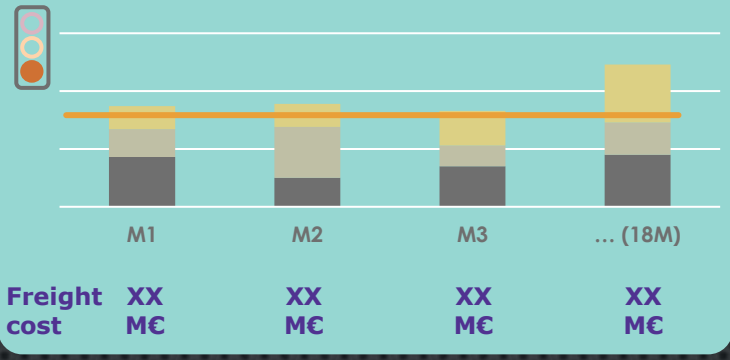
4) **.....**
5) **.....**

Apply parameters

Service	KPI	Data segmentation
	LSO (value / qty)	Site / Region / Franchise

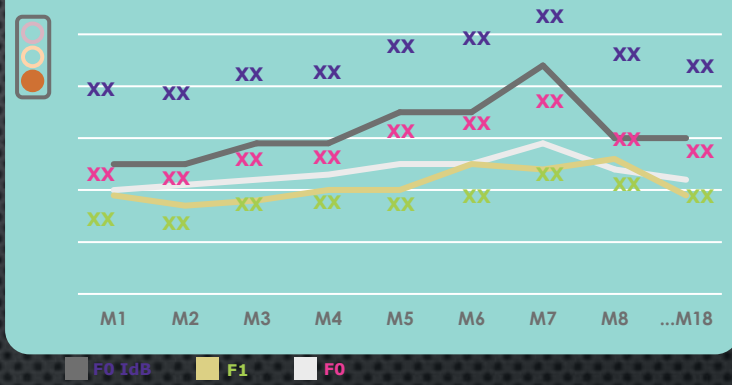


Cost	KPI	Data segmentation
	Absorption	Site / Franchise

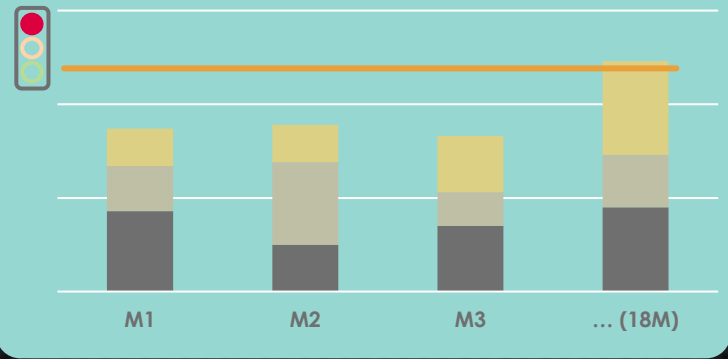


	M1	M2	M3	... (18M)
Freight cost	XX M€	XX M€	XX M€	XX M€

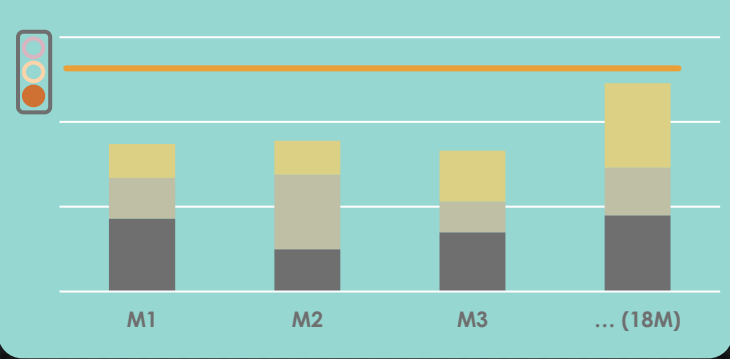
Cash	KPI	Data segmentation
	Inventory (DSI)	Country / Franchise



Quality (QA+QC)	KPI	Data segmentation
	Quality D/C Ratio	Site / Franchise



Sustainability	KPI	Data segmentation
	CO2 Emission per distance / weight	Site



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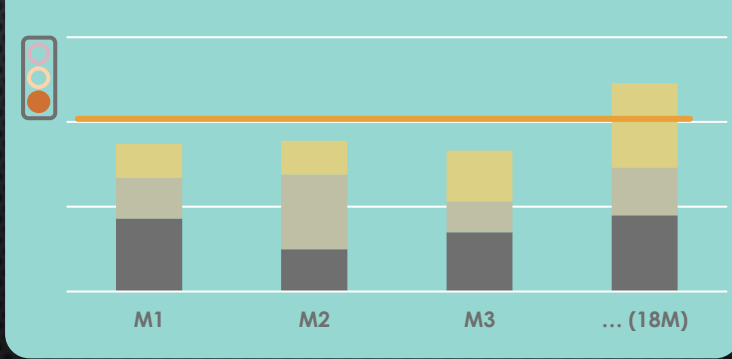

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New baseline

Service	KPI	Data segmentation
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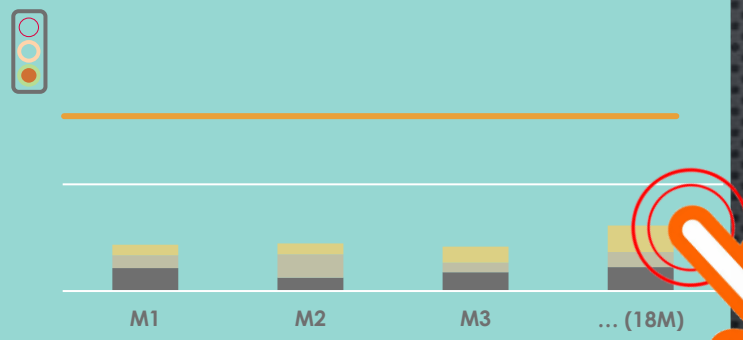
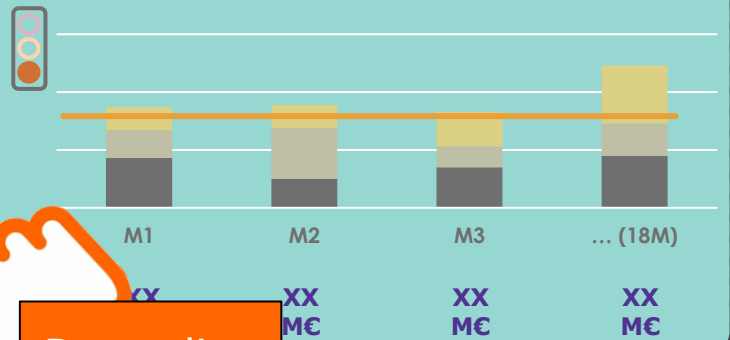


Deep dive

Cost	KPI	Data segmentation
	Absorption	Site / Franchise



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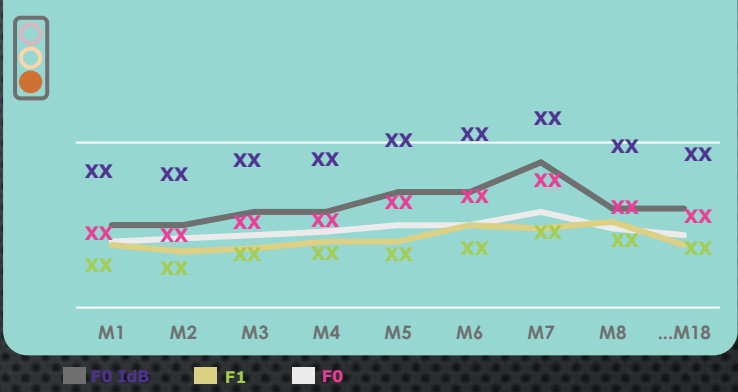

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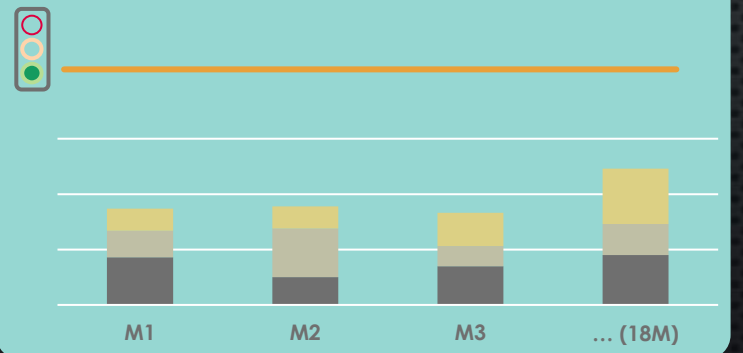

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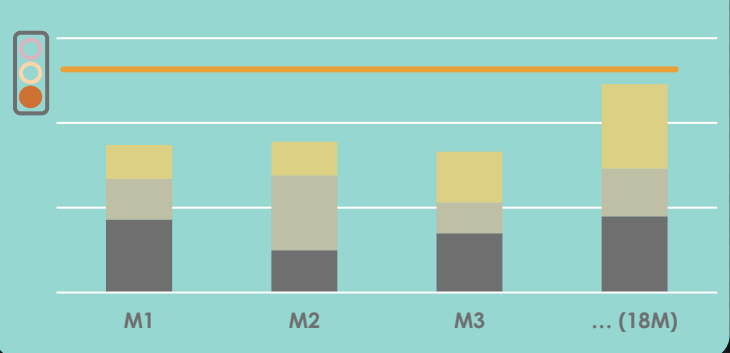

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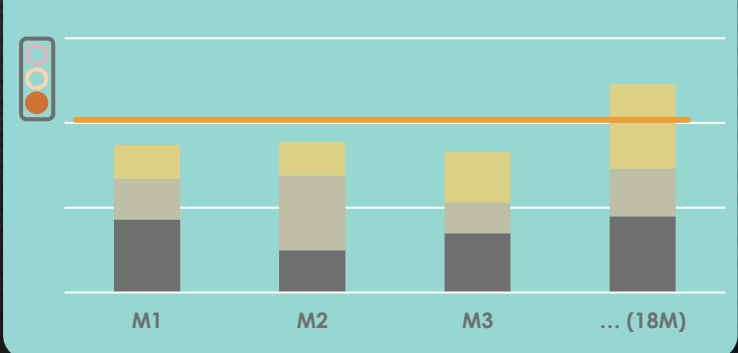

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Site / Franchise / Region ...

Business Impact

- Higher assets utilization
- Better Supplier OTIF
- Working inventory reduction
- Obsolete inventory reduction
- Transportation cost reduction
- Warehouse cost reduction
- Forecast accuracy increase
- Planning improvement
- Quicker decision making
- Higher sales

We tend to overestimate effect of technology in the short run and underestimate the effect in the long run..

Roy Amara

INFUSING INTELLIGENCE INTO YOUR SUPPLY CHAIN

TODAY AGENDA

1. VISION AND JOURNEY
2. NEXT STEPS ON IOP
3. CLOSING REMARKS

Closing Remarks

1

Don‘t look for the “silver bullet“ tool. It doesn‘t exist.
Focus on **CHANGE Mgt** and **PEOPLE**.

2

DIGITAL is an **enabler** to drive business value (accelerator) through more efficient and effective processes.
However, NO „clean“ DATA, NO „real‘ VALUE.

3

No company is a silos any more. Supply networks are complexifyng and volatility is increasing upstream and downstream..
Network collaboration N2N will become the true source of COMPETITIVE ADVANTAGE.

MERCK