

# Reaping the digital dividend

## Supply chain digital readiness: A survey of 179 European manufacturers

Jan Godsell

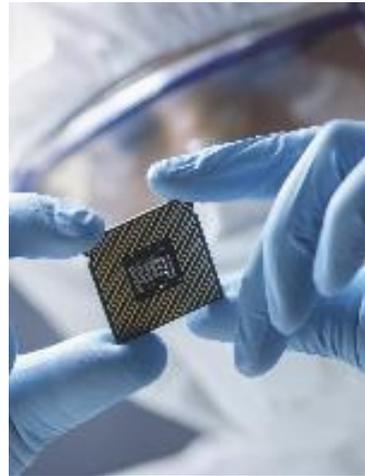
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# Digital industry at WMG



**Intelligent  
Devices & Machines**



**Effective & Efficient  
Manufacturing**



**Dynamic  
Supply Chains**



**Connected  
Products & Services**



**Innovative  
Business Models**

## Our competencies

-  Manufacturing performance
-  Protecting intellectual property
-  Systems security
-  Data analytics
-  Modelling and simulation
-  Design
-  Visualisation
-  Automation
-  Autonomous systems
-  Process workflow
-  Manufacturing processes
-  System integration
-  Product verification

## Sustainable results

-  Leadership
-  Education and skills
-  Industrial impact

# Join the discussion...

#SCinPractice

@WMGSupplyChain

@wmgwarwick

@JanGodsell

@JDASoftware



Connect to wifi network - Warwick Guest



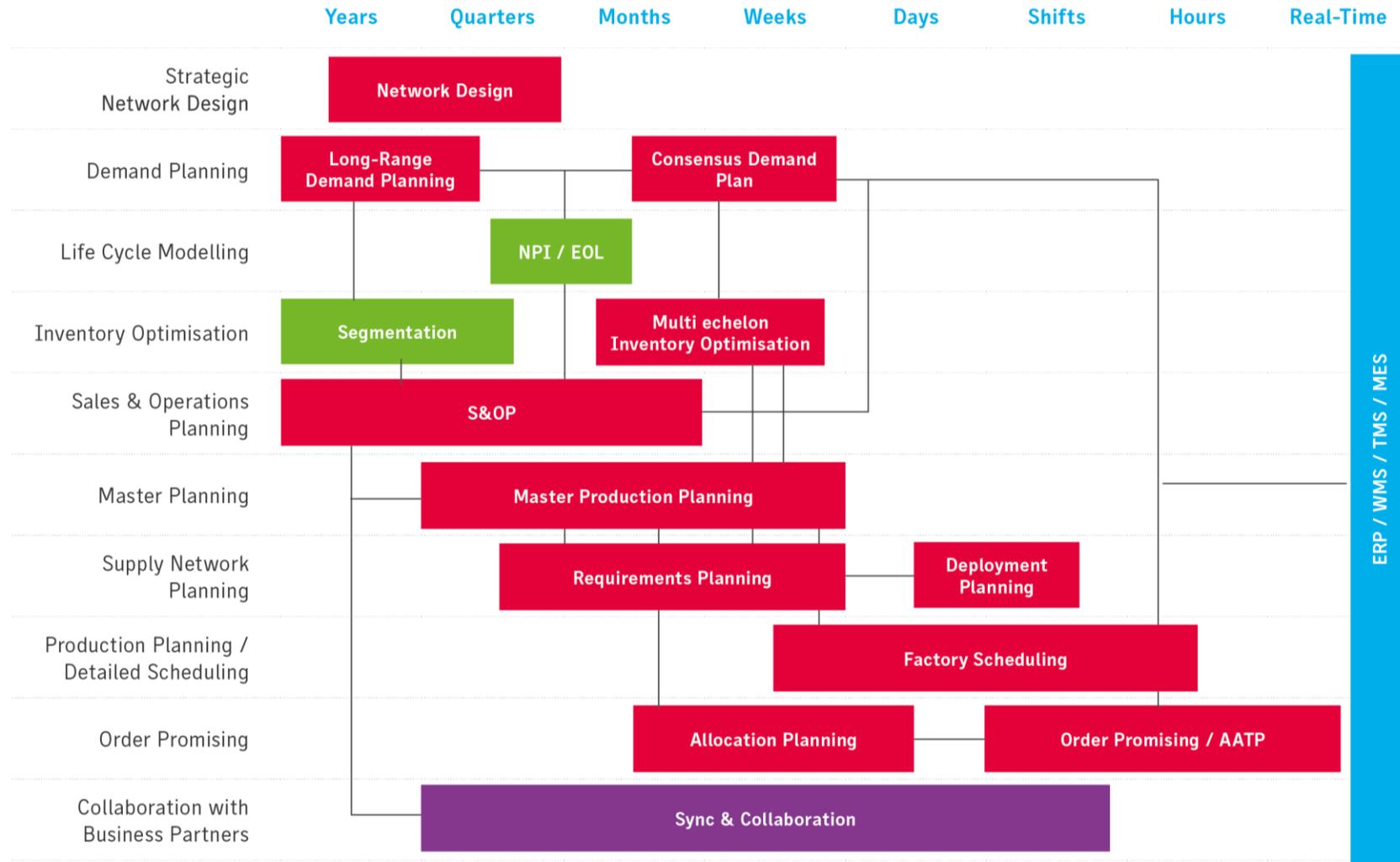


What is the **digital** supply chain?

# Considered 11 core supply chain processes...



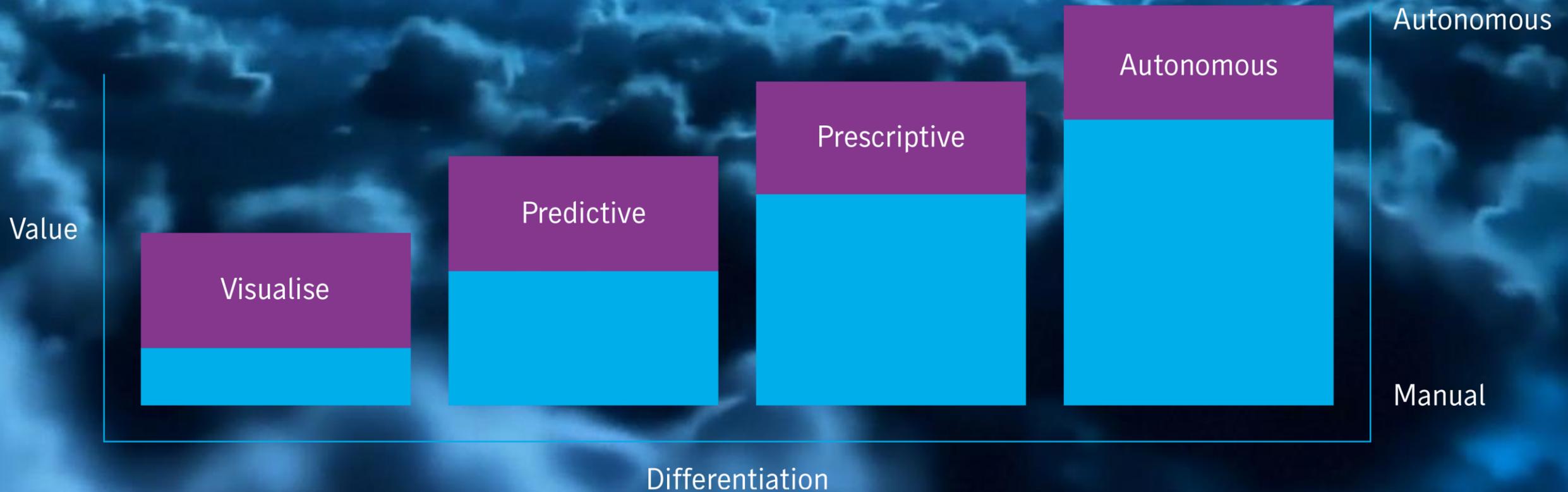
Visibility,  
Control &  
Orchestration



Core Supply Chain Process

# Across 4 maturity levels...

## The journey to the autonomous supply chain

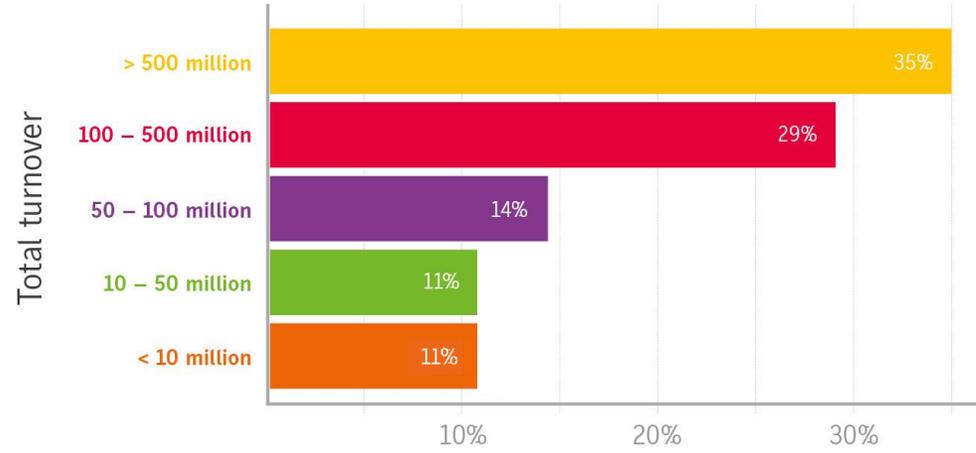
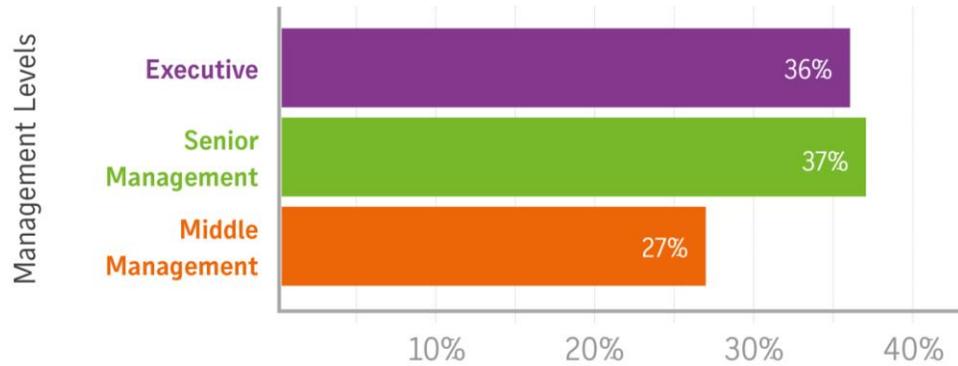


# And 4 sub-dimensions...

	Level 1	Level 2	Level 3	Level 4
	Visibility	Predictive	Prescriptive	Self-learning Autonomous
Planning frequency	Ad-hoc	Regular with some unplanned changes appropriate to planning cycle	Regular and appropriate planning cycle, with alerts if business conditions change	Continuous planning with real-time response to a change in business conditions
Strategic objective	E2E Visibility Departmental Reporting	Efficiency Functional optimisation	Dynamic end-to-end supply chain business optimisation	Pro-active end-to-end business optimisation with total ecosystem visibility
Digital technology adoption	Processes supported by basic ERP systems Manual S&OP and processes supported by general purpose tools	Specialist tools and professional techniques Some process automation with segmented policy profiling	Incorporates some machine learning and AI connected to Digital Control Tower Mature IBP and connected professional SC tools	Fully digital process Extensive use of AI and ML Autonomous where appropriate
Digitally enabled reporting & analysis	Limited analytics Supported by spreadsheets as required	Analytics tools used for reporting on key metrics, to support cost optimisation	Advanced analytics Migration from deterministic to probabilistic analytics Real-time alerts and recommendations that enable dynamic responses	Autonomous adjustment within defined parameters, with real-time escalation where required

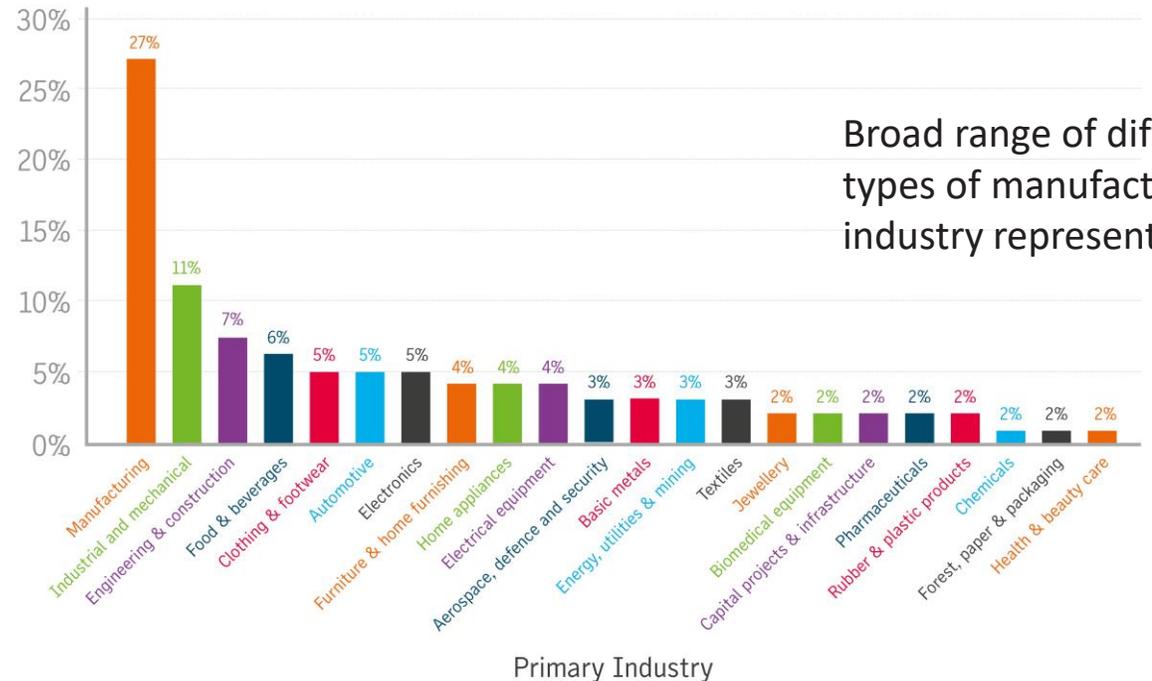
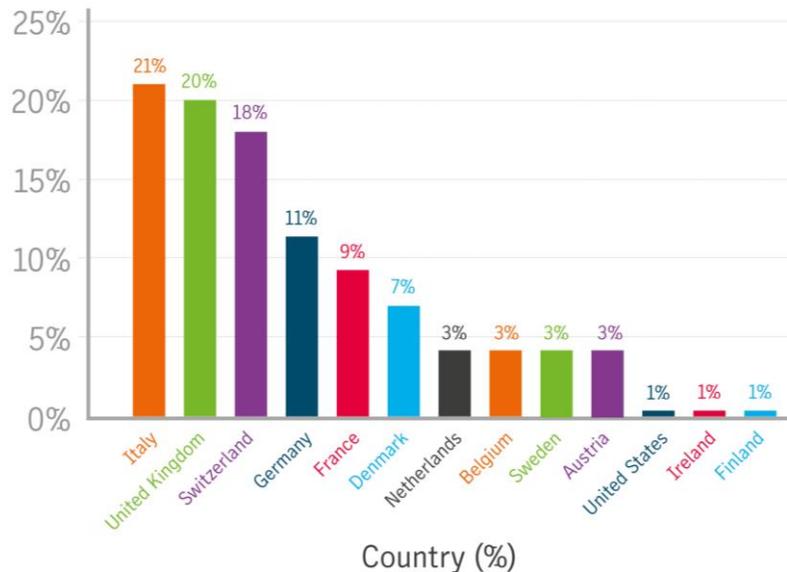
# Representative sample of 179 manufacturers

73% respondents were senior management or executives



64% companies had a turnover > £100m  
35% > £500m

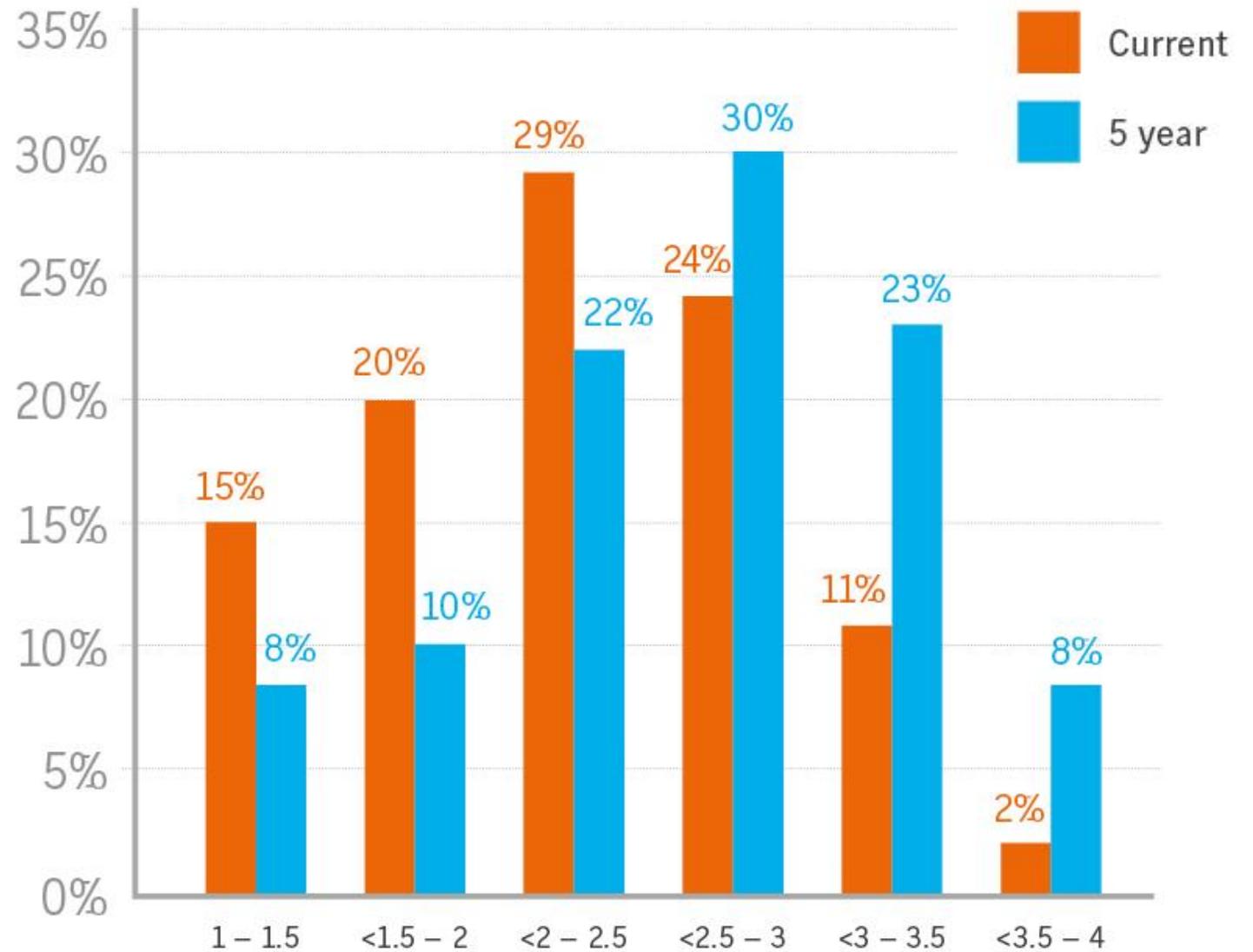
Broad geographical spread



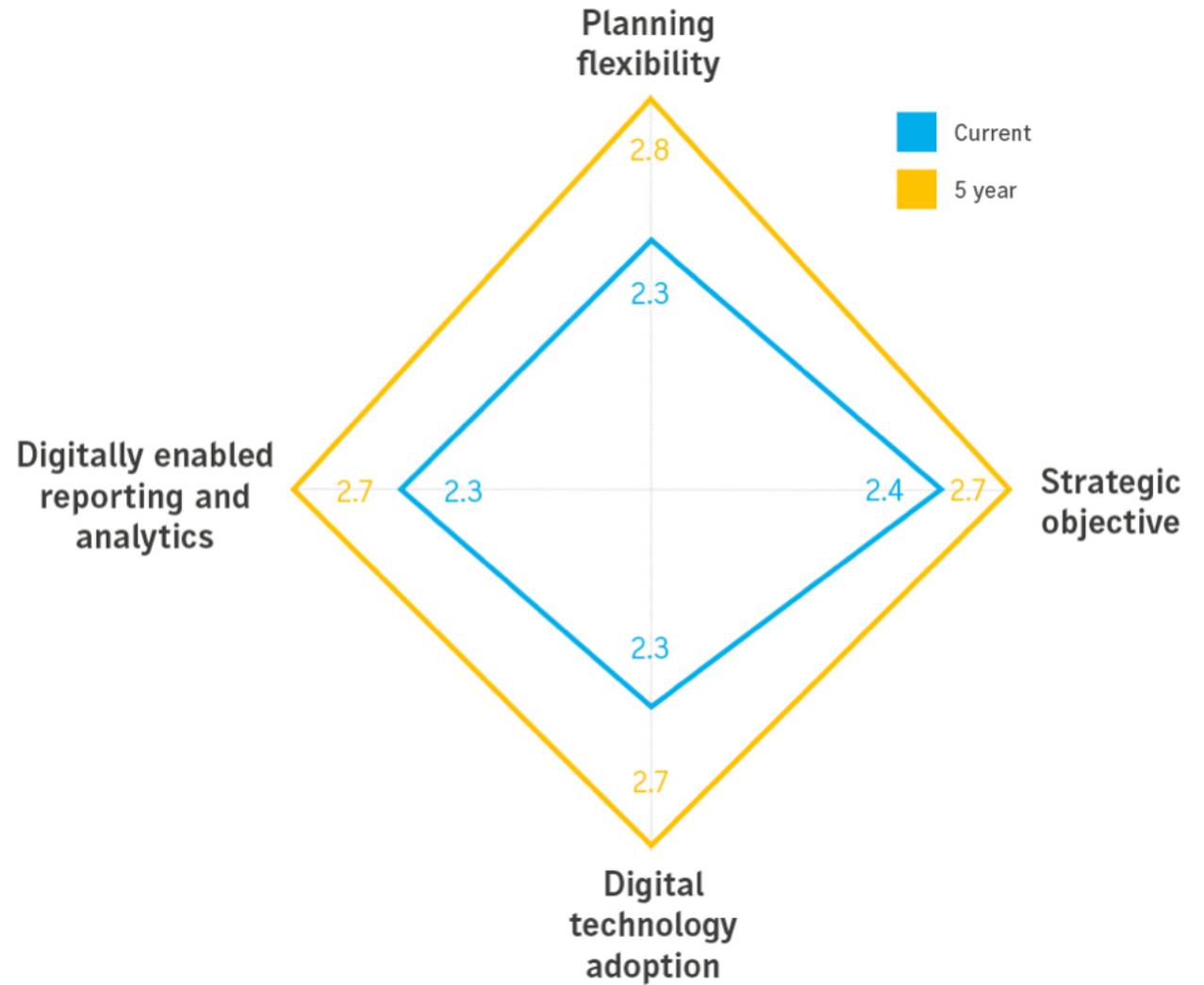
Broad range of different types of manufacturing industry represented

# Only 13% companies currently at level 3 readiness

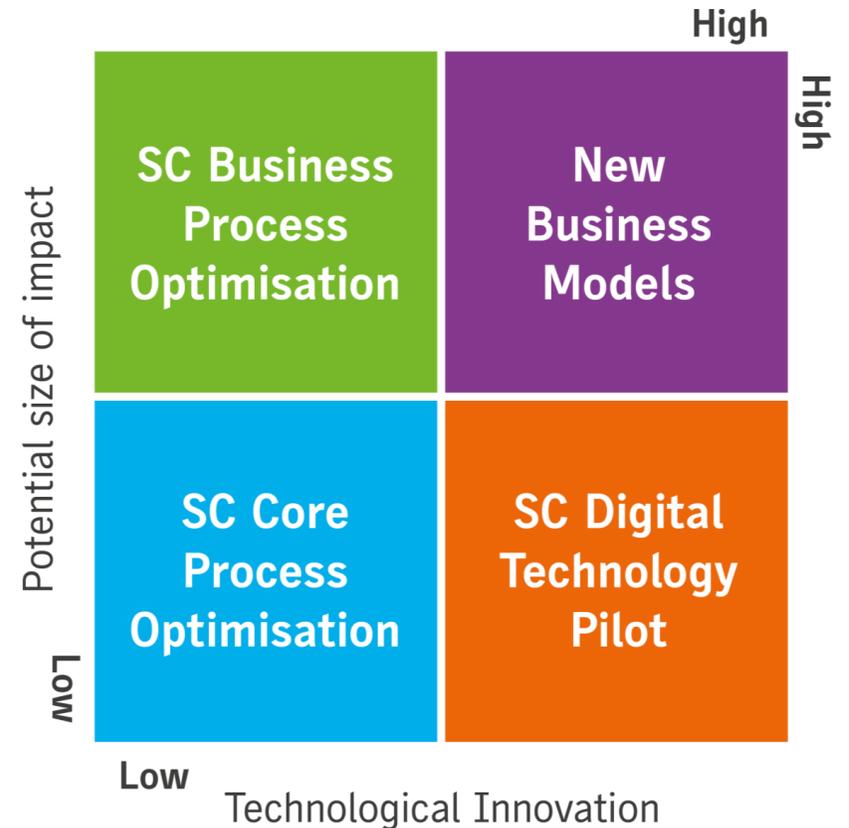
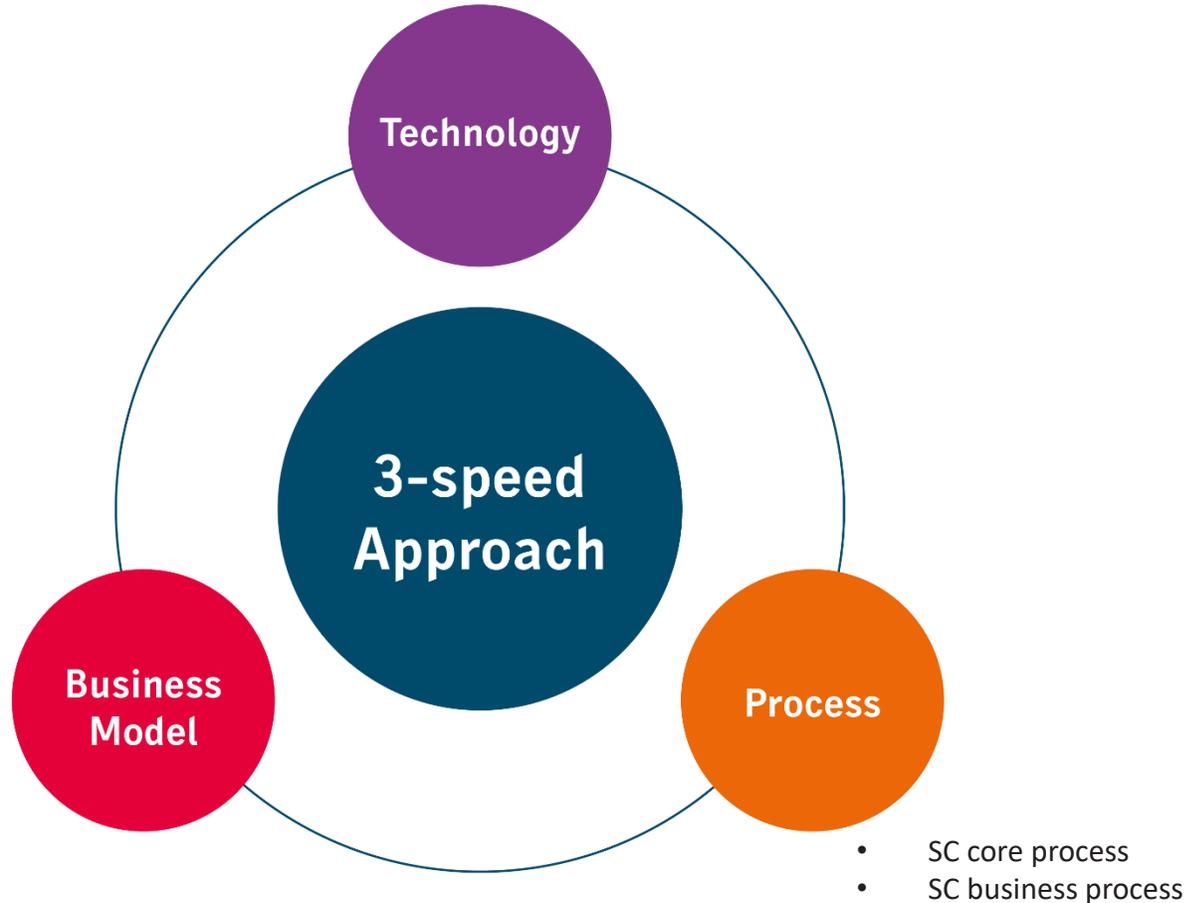
> Level 3 digital readiness predicted to more than double to 31% by 2023



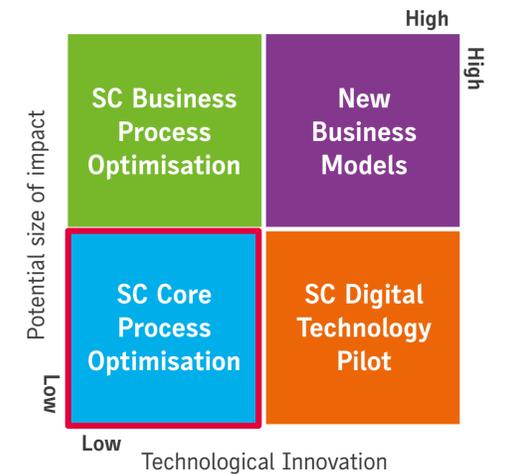
# Digital technology adoption and planning frequency have greatest 5 year ambition...



# 3-speed approach to digitise supply chain...



# 1. SC core process optimisation



# Competing through process excellence...

## YOUNGER FAMILIES



**WOOLWORTHS**

- > Explosive growth
- > Very largest brand 80.7bn

## STRIVING FAMILIES



Littlewoods Ireland

- > Heritage propositions
- > Limited growth online

## MATURE 50+



- > Huge market potential
- > Double digit growth

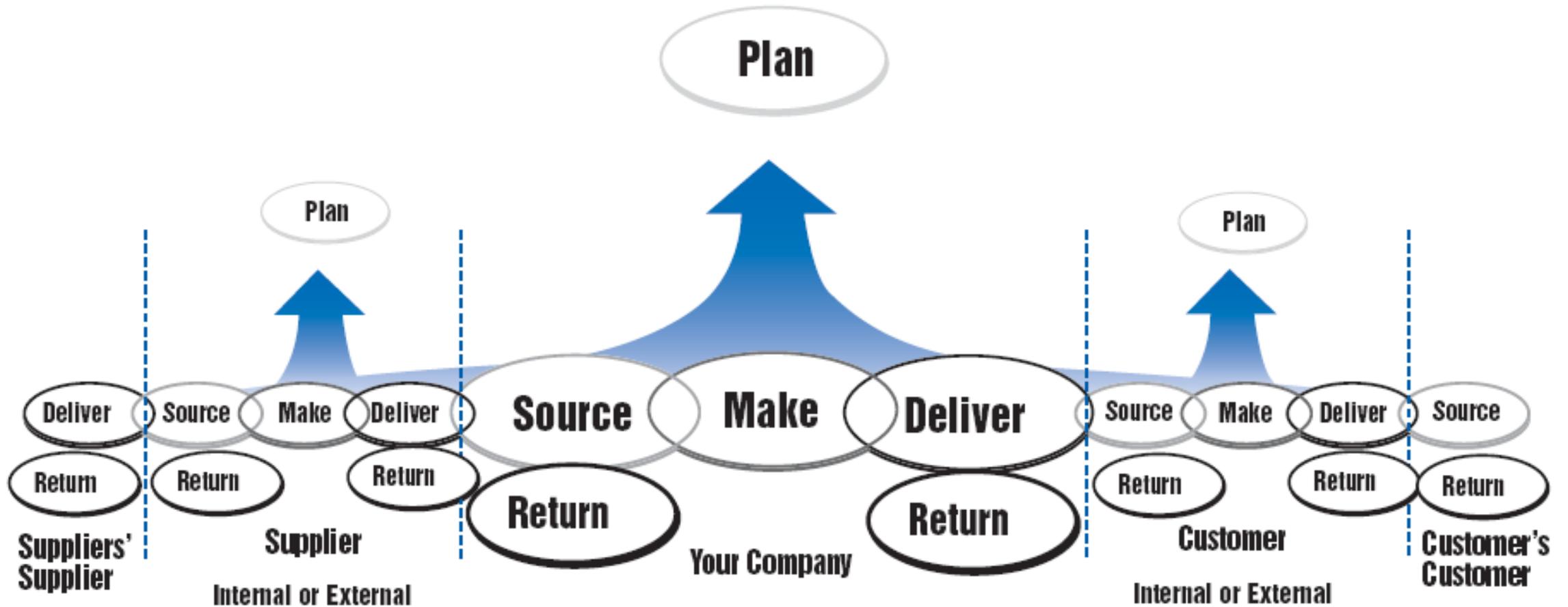
Shop Direct to stop Littlewoods catalogue after 80 years  
Littlewoods to stop printing catalogue and focus on websites due to internet shopping revolution

Catalogue circulation  
Peak: 25 million  
2010: 5 million  
2015: 300,000

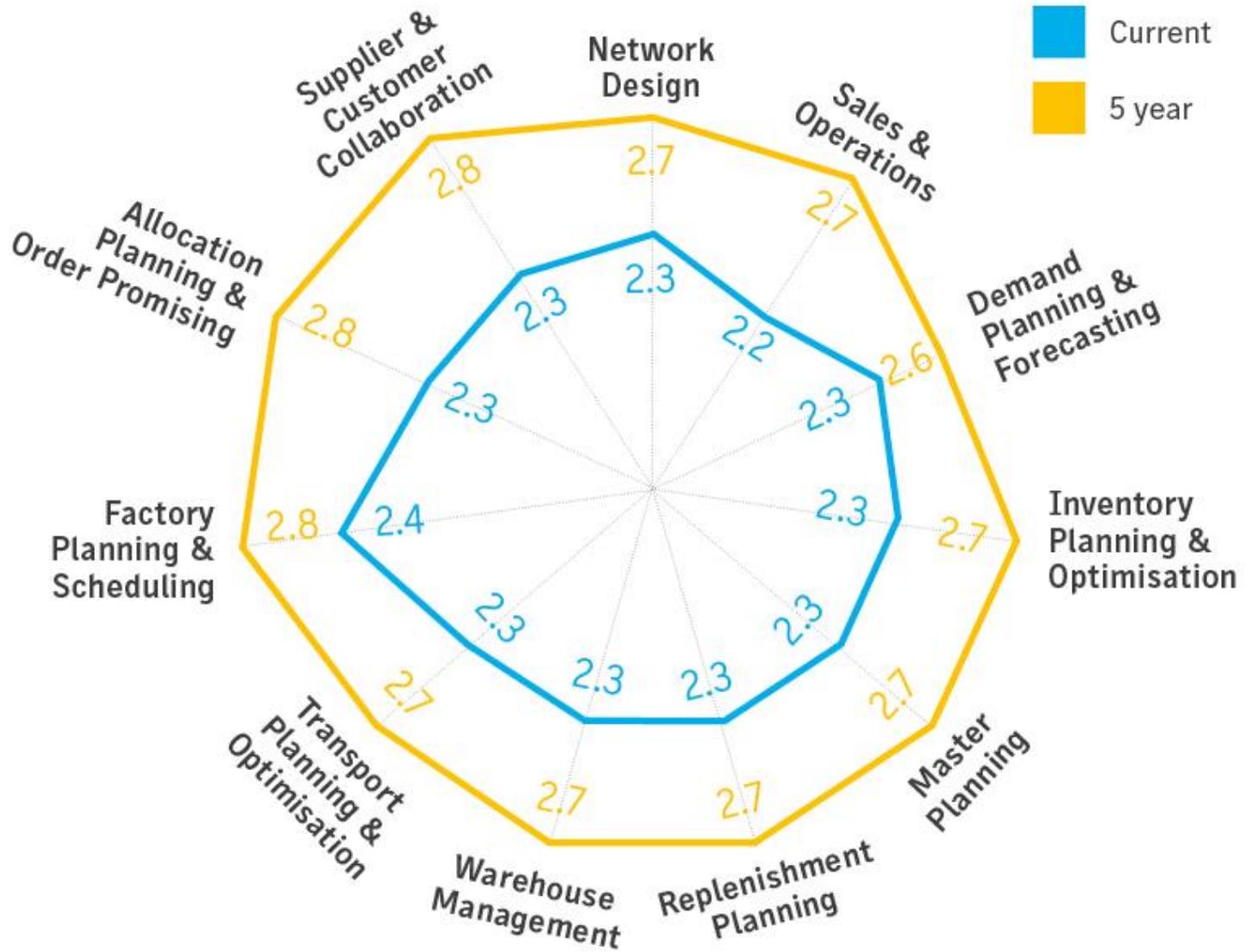
*“This is a big step in Shop Direct’s transformation and, importantly, it’s one that’s been led by our customers. They’ve embraced online at a phenomenal pace – this is where they’re browsing and where they’re buying”*

**Alex Baldock, CE, Shop Direct (May 2015)**

# Supply chain comprises of 5 core processes...

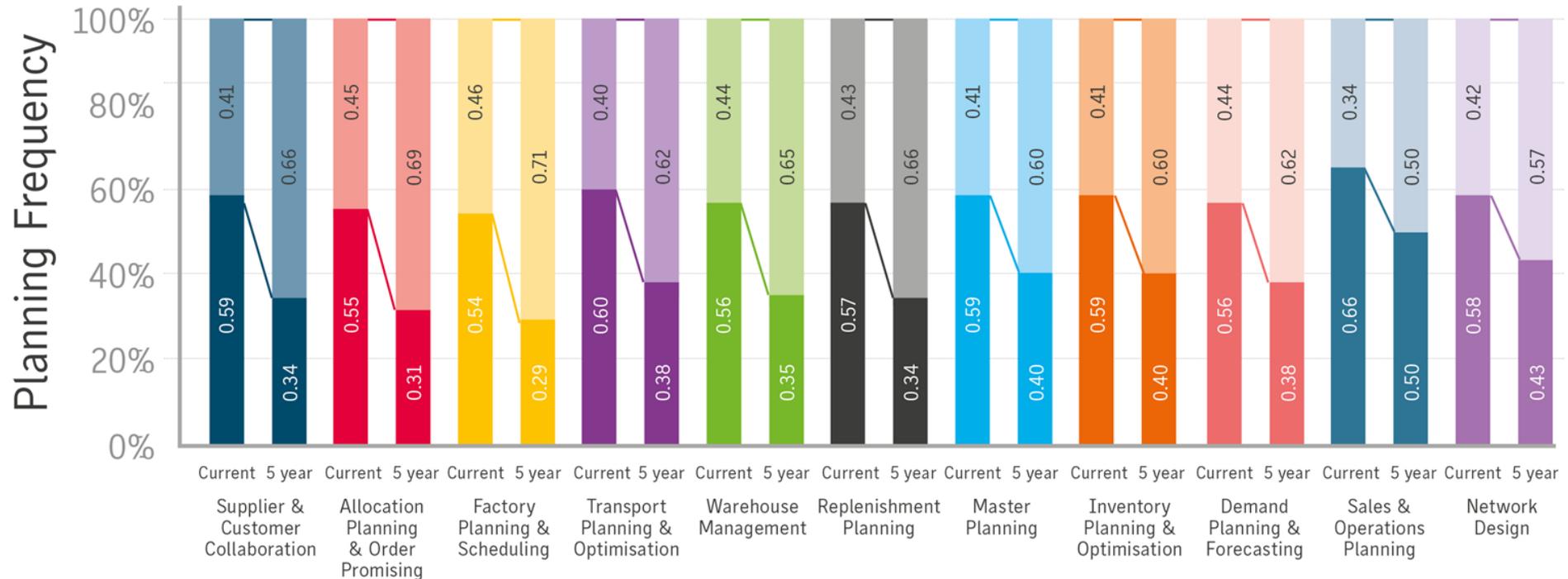


# Translate into a series of operational processes...





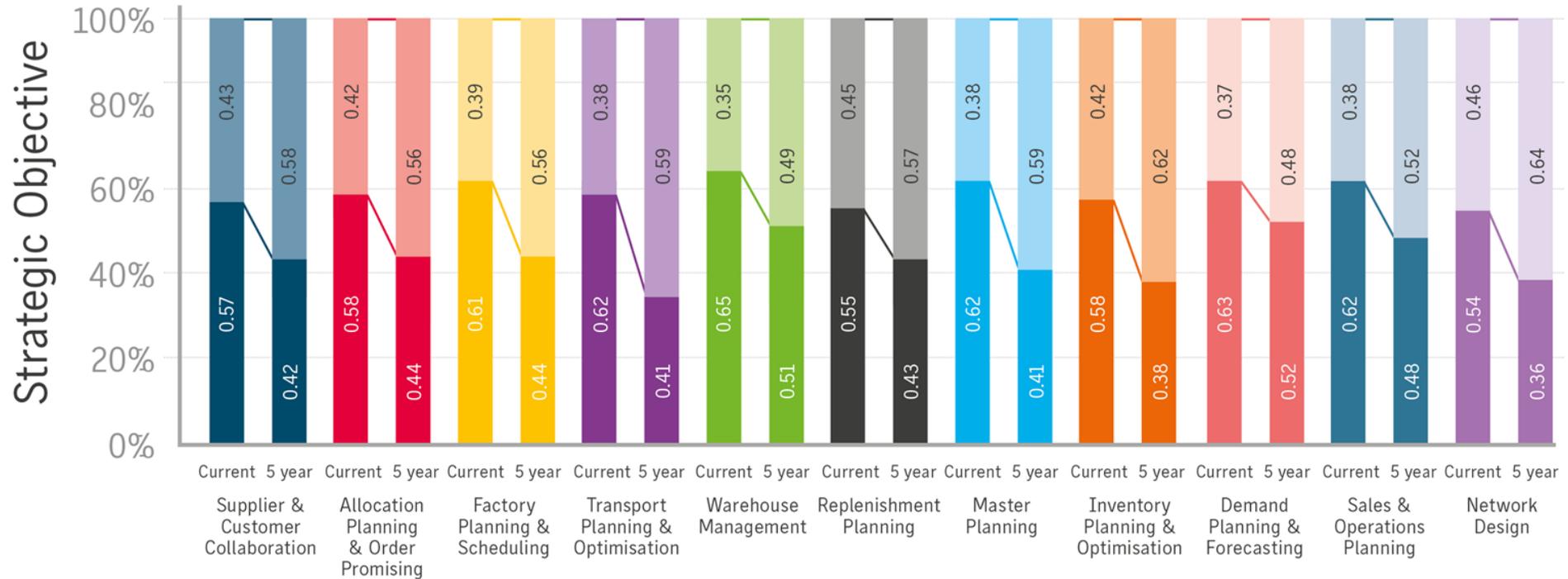
	Level 1	Level 2	Level 3	Level 4
Planning frequency	Ad-hoc	Regular with some unplanned changes appropriate to planning cycle	Regular and appropriate planning cycle, with alerts if business conditions change	Continuous planning with real-time response to a change in business conditions



- > **Factory Planning and Scheduling** was the process with the highest current level 3 / level 4 of planning frequency (45%), increasing to 67% within 5 years
- > By 2023, 20% of businesses believe that their **Factory Planning and Scheduling** will be able to respond in real-time to a change in business conditions

- > **Sales & Operations Planning** was the process with the lowest current level 3 / level 4 of planning frequency (31%), increasing to 48% within 5 years

	Level 1	Level 2	Level 3	Level 4
Strategic objective	E2E Visibility Departmental Reporting	Efficiency Functional optimisation	Dynamic end-to-end supply chain business optimisation	Pro-active end-to-end business optimisation with total ecosystem visibility



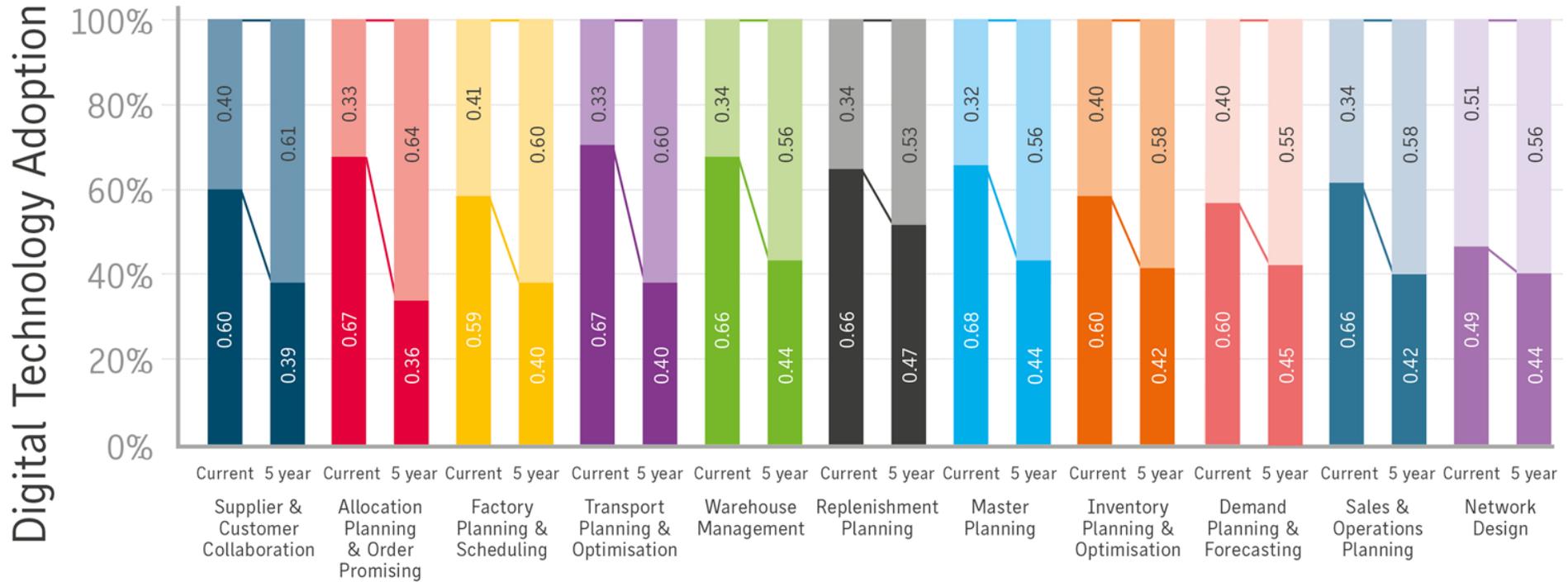
> **Network Design** was the process whose strategic objective had the highest incidence of current level 3 / level 4 (43%), increasing to 61% within 5 years

> By 2023, over 20% of businesses believe that their network design capability will be able to enable end-to-end business optimisation

> **Sales & Operations Planning** was the process whose strategic objective had the lowest incidence of current level 3 / level 4 (36%), increasing to 50% within 5 years

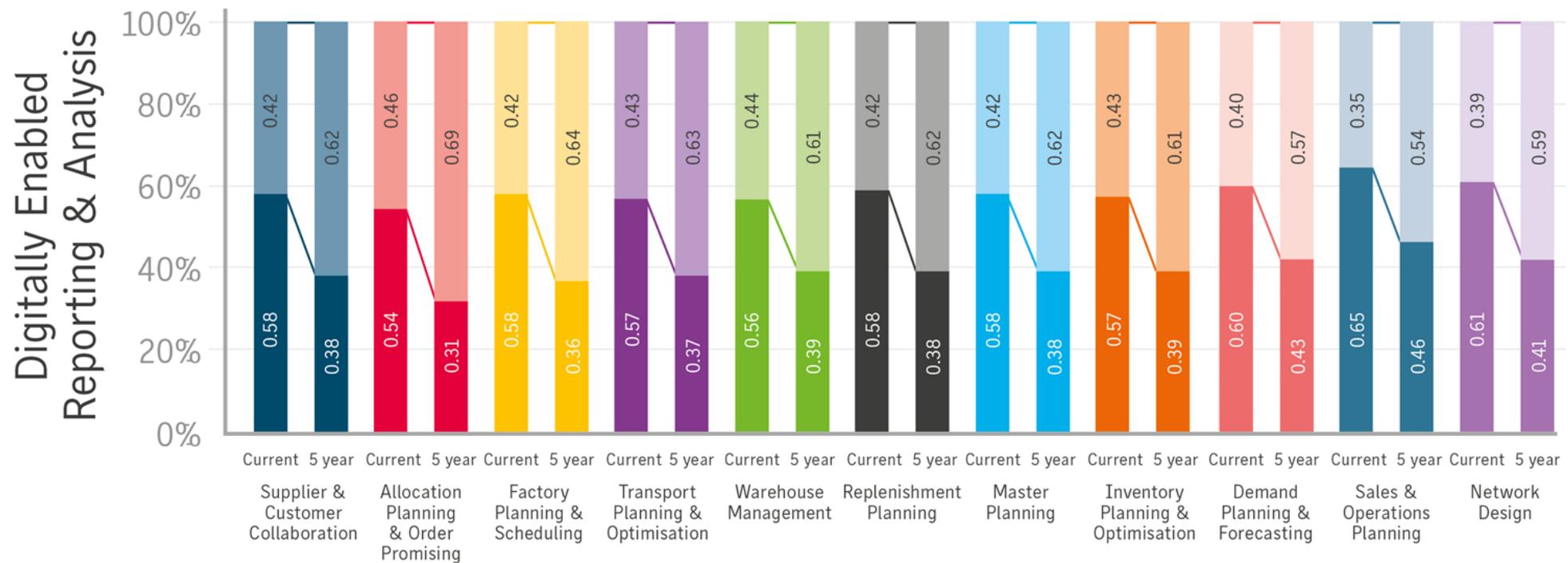
> **Demand Planning & Forecasting** was the process whose strategic objective with the lowest ambition to reach level 3 / level 4 (44%) within 5 years

	Level 1	Level 2	Level 3	Level 4
Digital technology adoption	Processes supported by basic ERP systems  Manual S&OP and processes supported by general purpose tools	Specialist tools and professional techniques  Some process automation with segmented policy profiling	Incorporates some machine learning and AI connected to Digital Control Tower  Mature IBP and connected professional SC tools	Fully digital process  Extensive use of AI and ML Autonomous where appropriate



> **Allocation planning & order promising** was the process with the highest ambition to adopt digital technology, doubling over the next 5 years from 30% to 61%, a shift from the lowest level 3 / level 4 adoption to highest

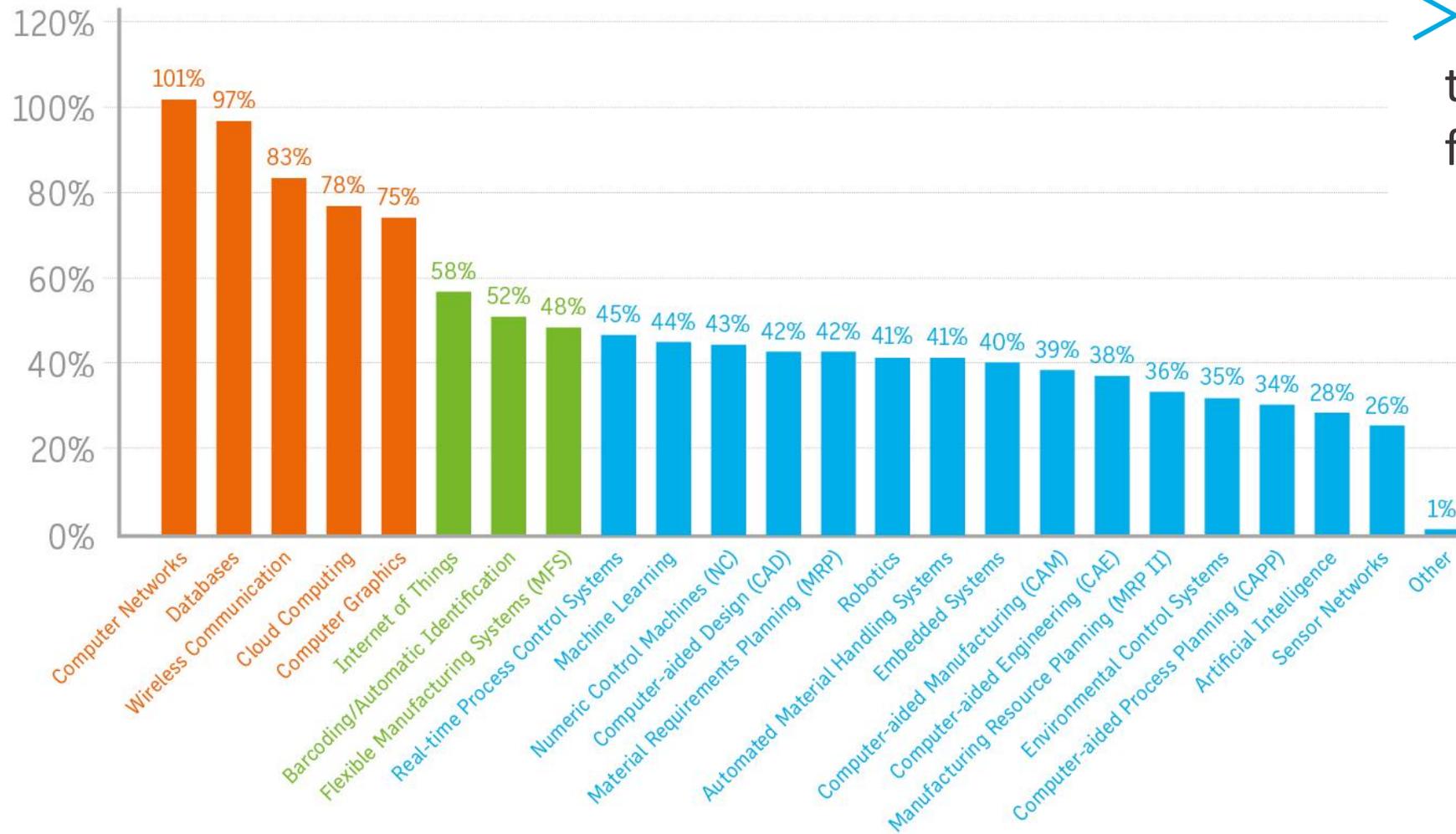
	Level 1	Level 2	Level 3	Level 4
Digitally enabled reporting & analysis	Limited analytics Supported by spreadsheets as required	Analytics tools used for reporting on key metrics, to support cost optimisation	Advanced analytics Migration from deterministic to probabilistic analytics Real-time alerts and recommendations that enable dynamic responses	Autonomous adjustment within defined parameters, with real-time escalation where required



> **Allocation Planning & Order Promising** was the process with the highest current adoption and ambition to adopt level 3 / level 4 digitally enabled reporting and analytics, almost doubling with an increase from 34% to 66% by 2023

> **Sales & Operations Planning** was the process with the lowest current adoption and ambition to adopt level 3 / level 4 digitally enabled reporting analytics, increasing from 34% to 52%

# Most companies are currently only leveraging their data infrastructure...



➤ Starting to embark on the collection of data from new sources

■ Data infrastructure  
■ New data sources

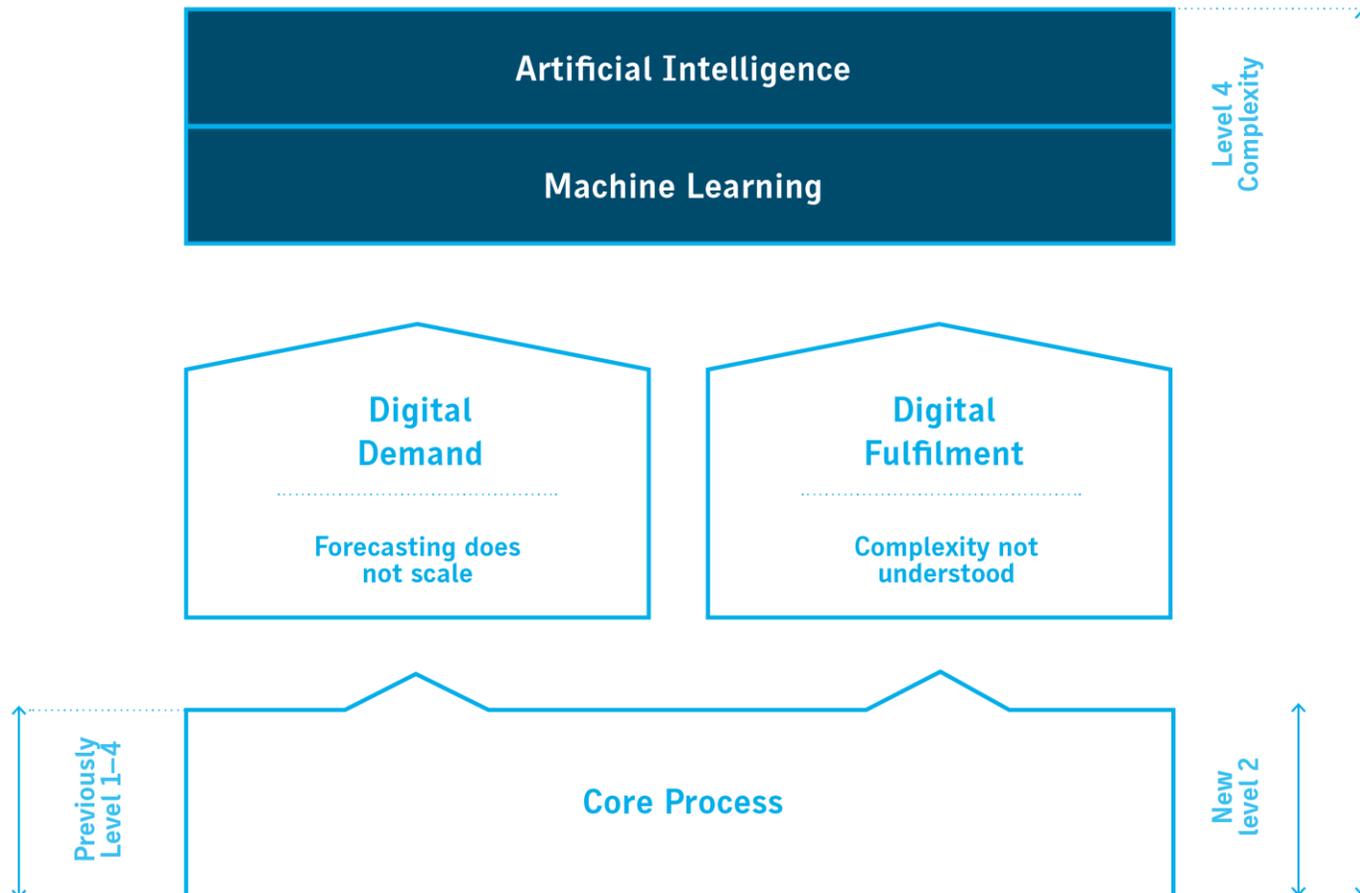
# 5 steps to SC core process optimisation...



# Core process optimization is a critical bedrock...

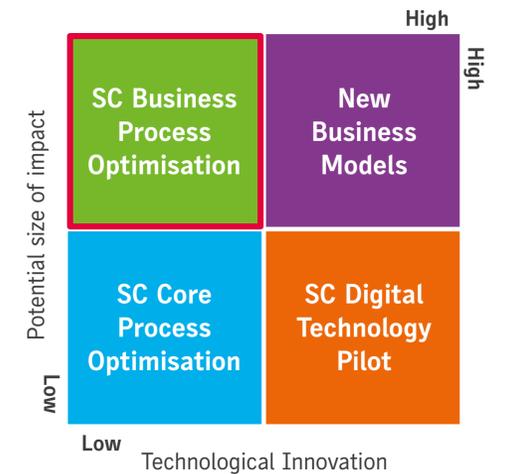


Control Tower



> But is about functional optimisation and won't move your company beyond level 2 SC digital readiness

## 2. SC business process optimisation

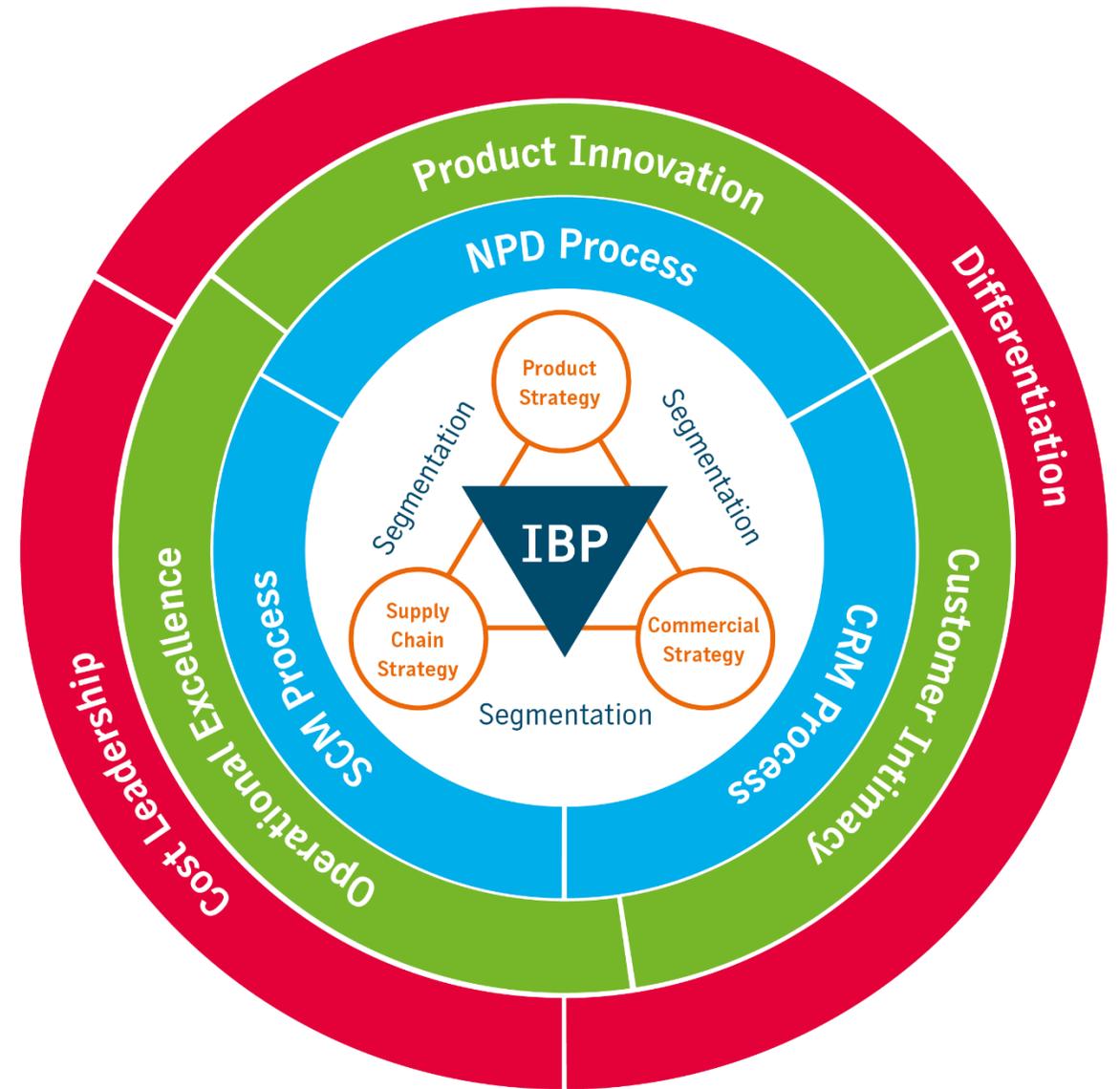


# 5 characteristics of business processes

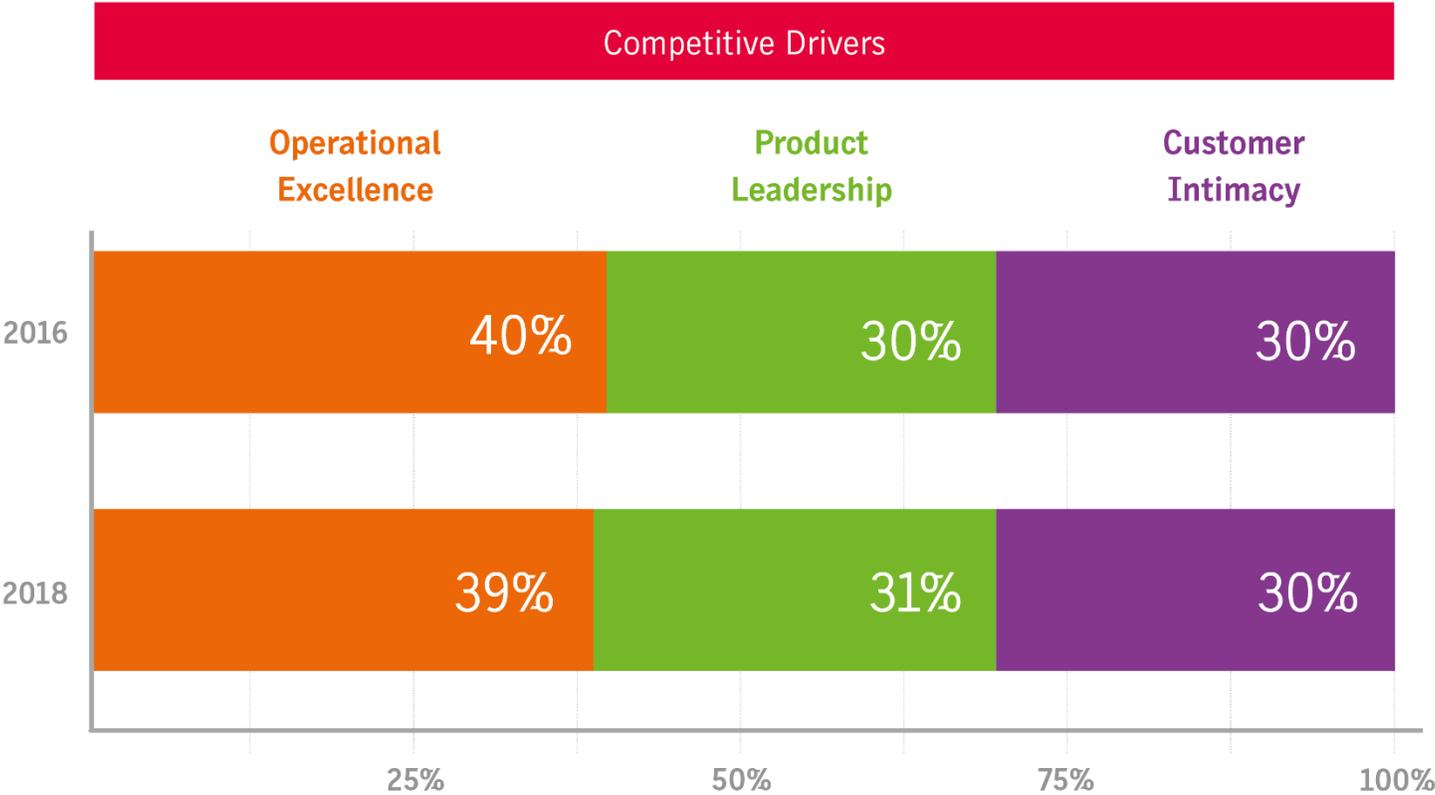
1. Have customers for whom they create value
2. Typically cross functional boundaries
3. Draw upon functional resources
4. Are team-based
5. Have strategic goals



A business process orientation is fundamental to maintaining strategic alignment...



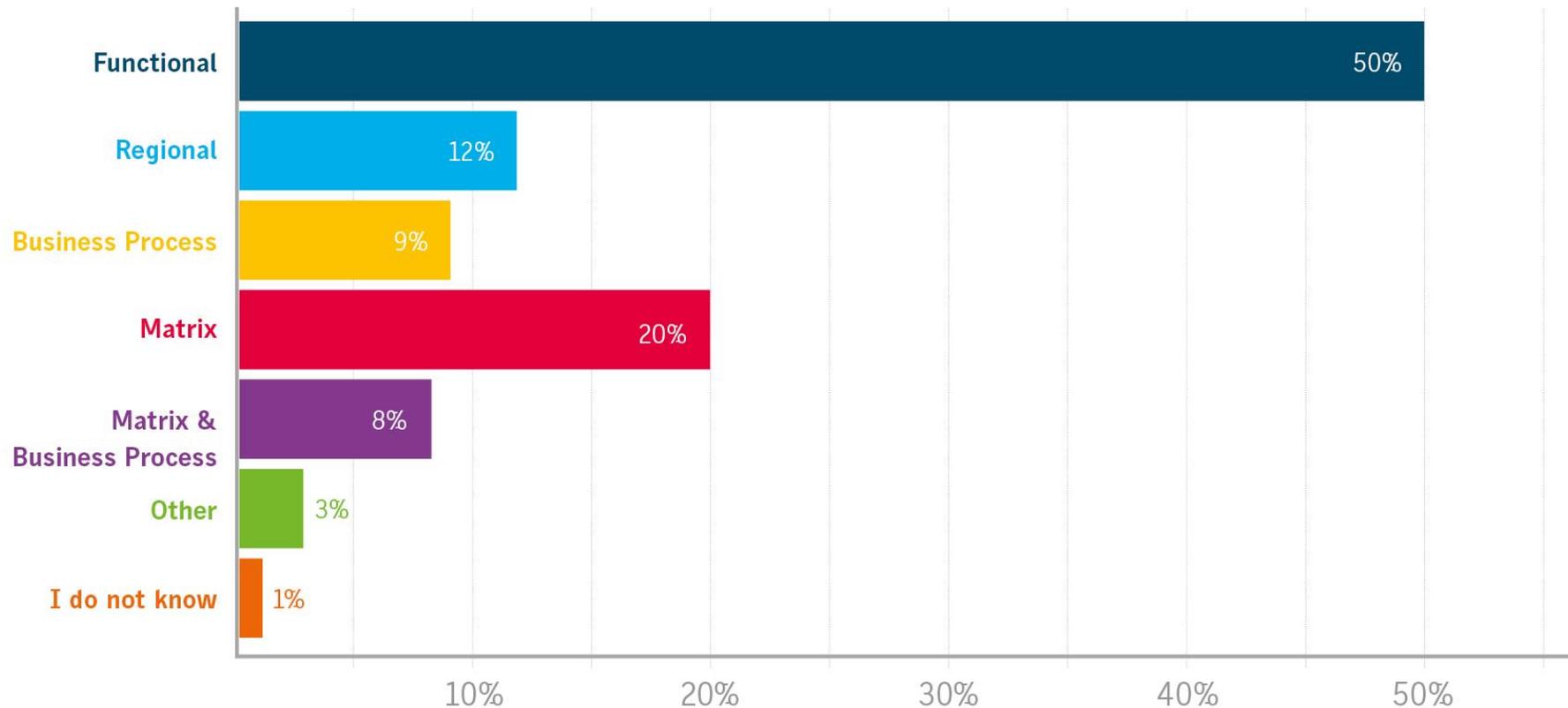
# Leveraging bedrock of operational excellence



Balance of competitive drivers is unchanged as the digital world gathers pace

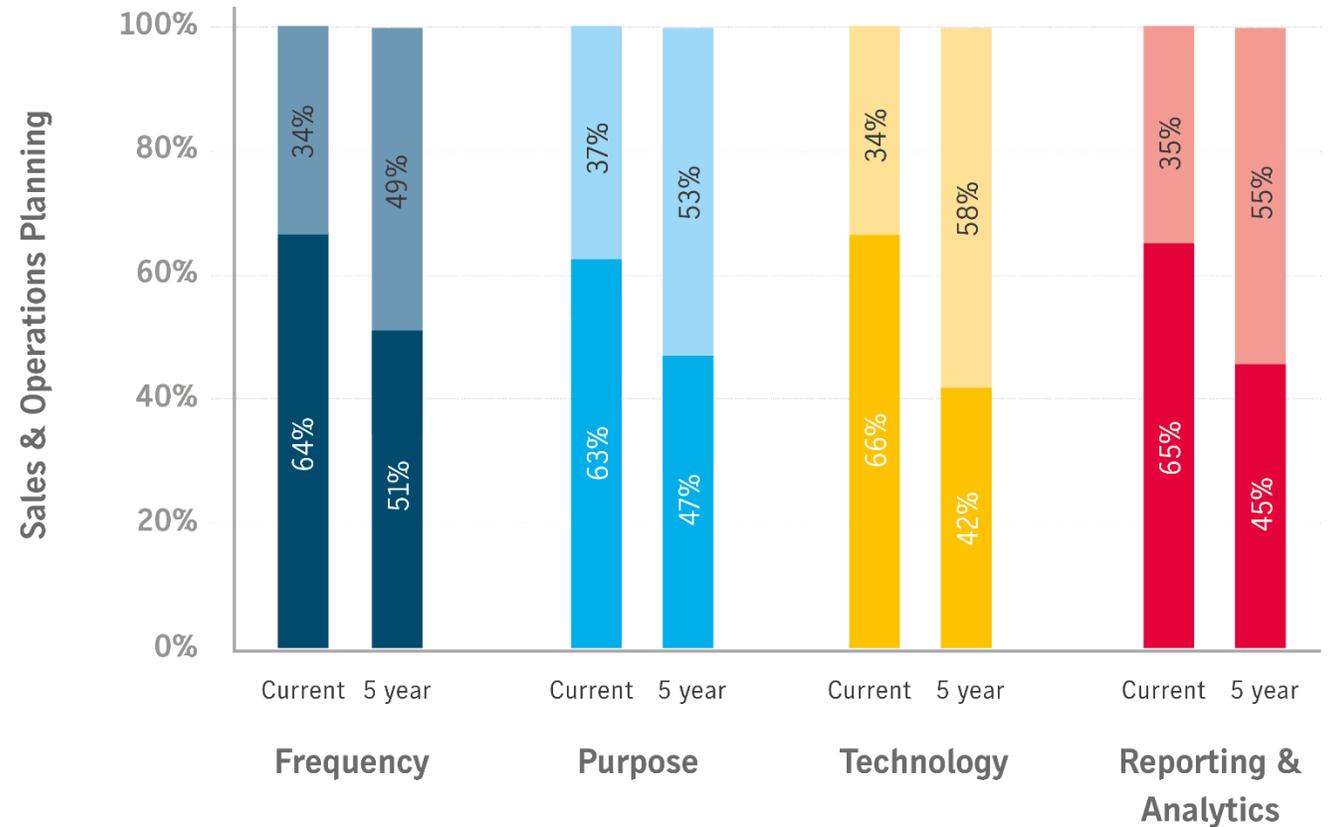
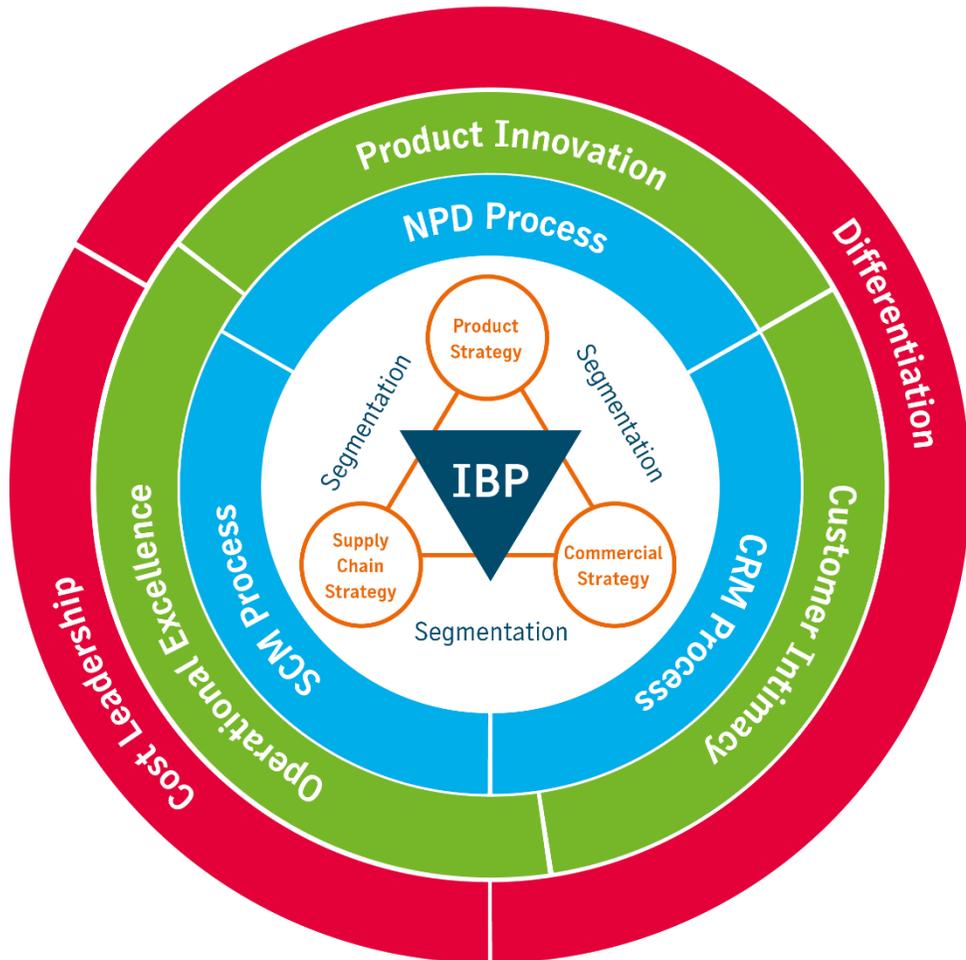


# Functional and regional organisational structures inhibit end to end SC thinking...



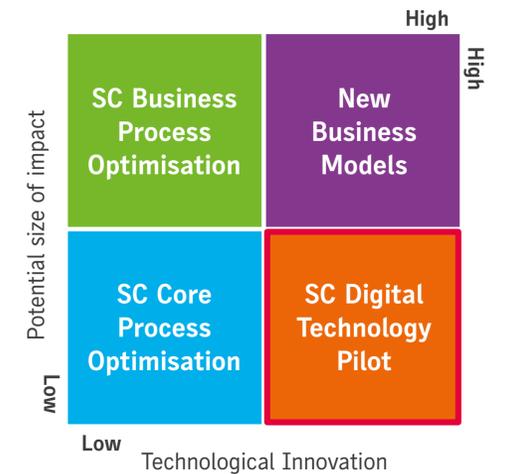
> Only 17% respondents had a business process orientation as part of their organisational design

# IBP is the single most important governance mechanism to close the gap to strategy



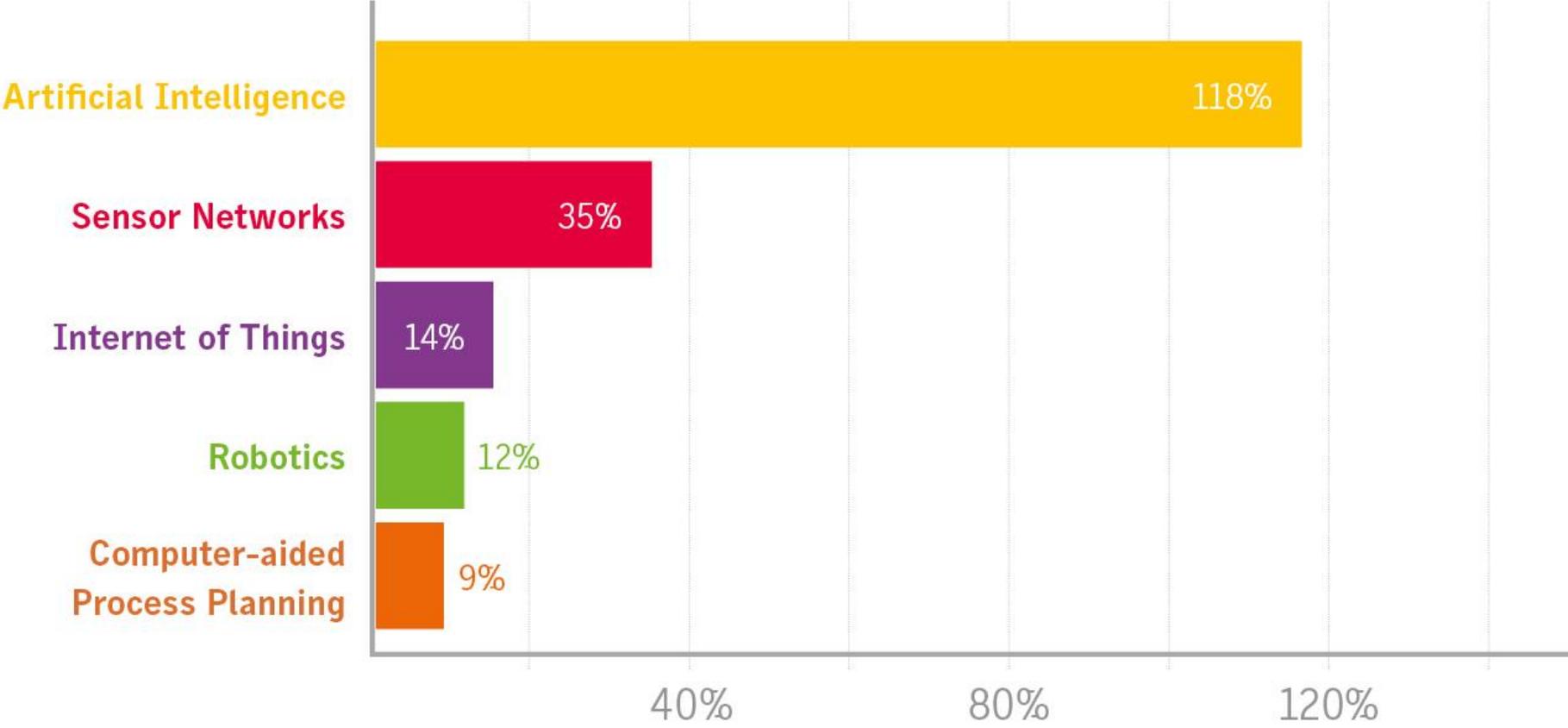
> S&OP lowest performing current dimension

# 3. SC digital technology pilot





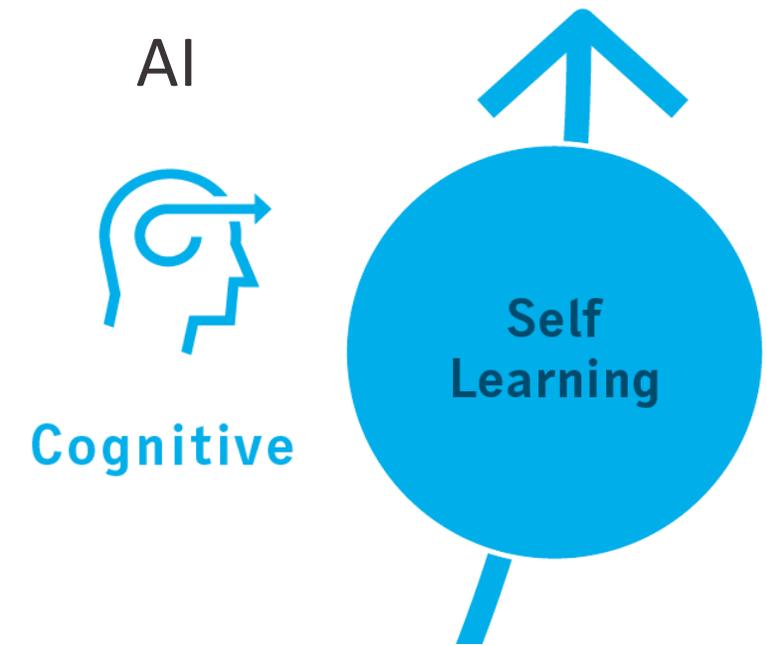
# Rate of AI adoption set to double in next 5 years...



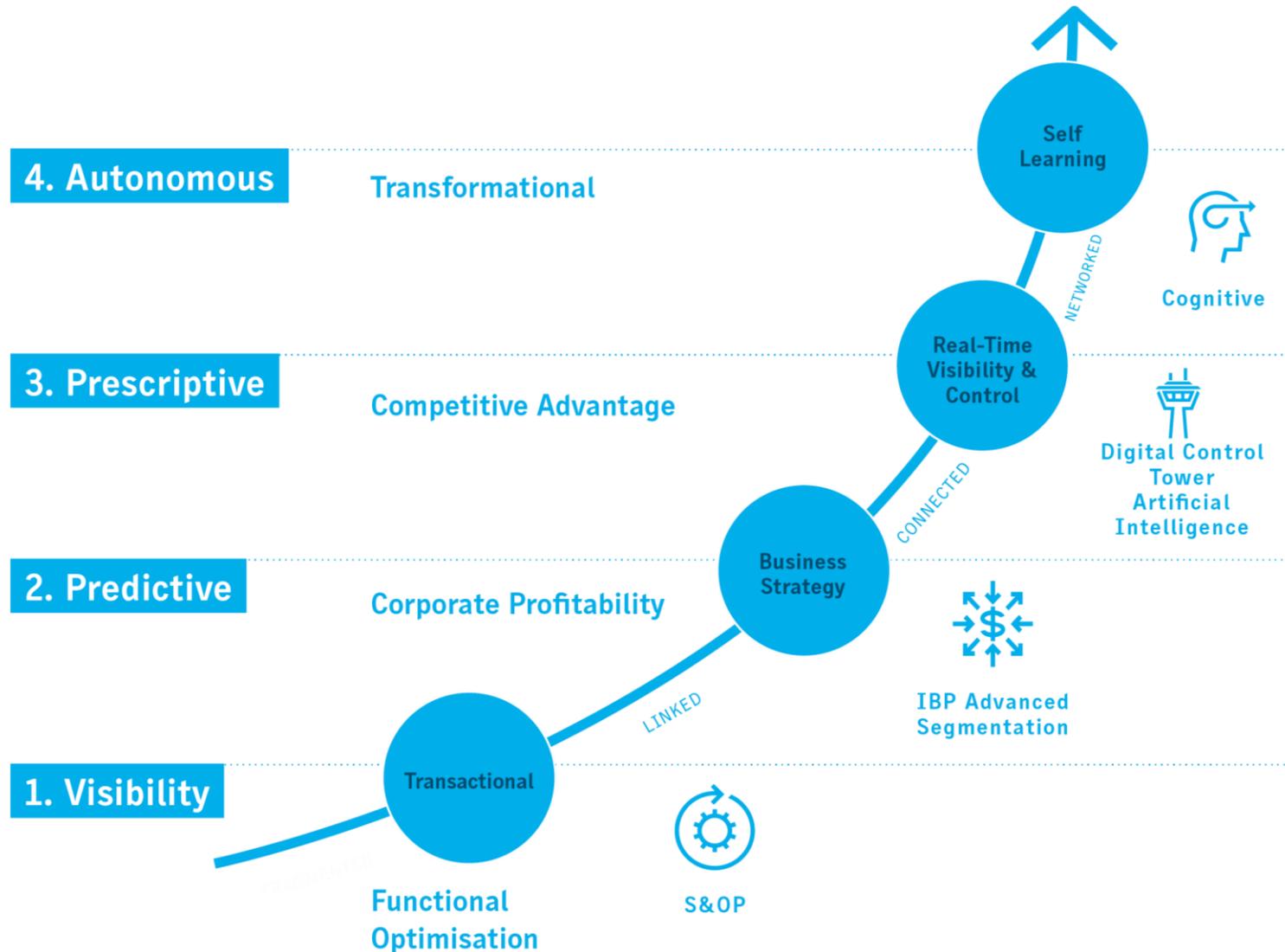
# Lack of understanding of ML and AI

- > Definition in business context matters
- > Transition from ML to AI
- > Outcome (AI), but to double AI likely need to double ML first
- > AI requires to review valid use case(s)

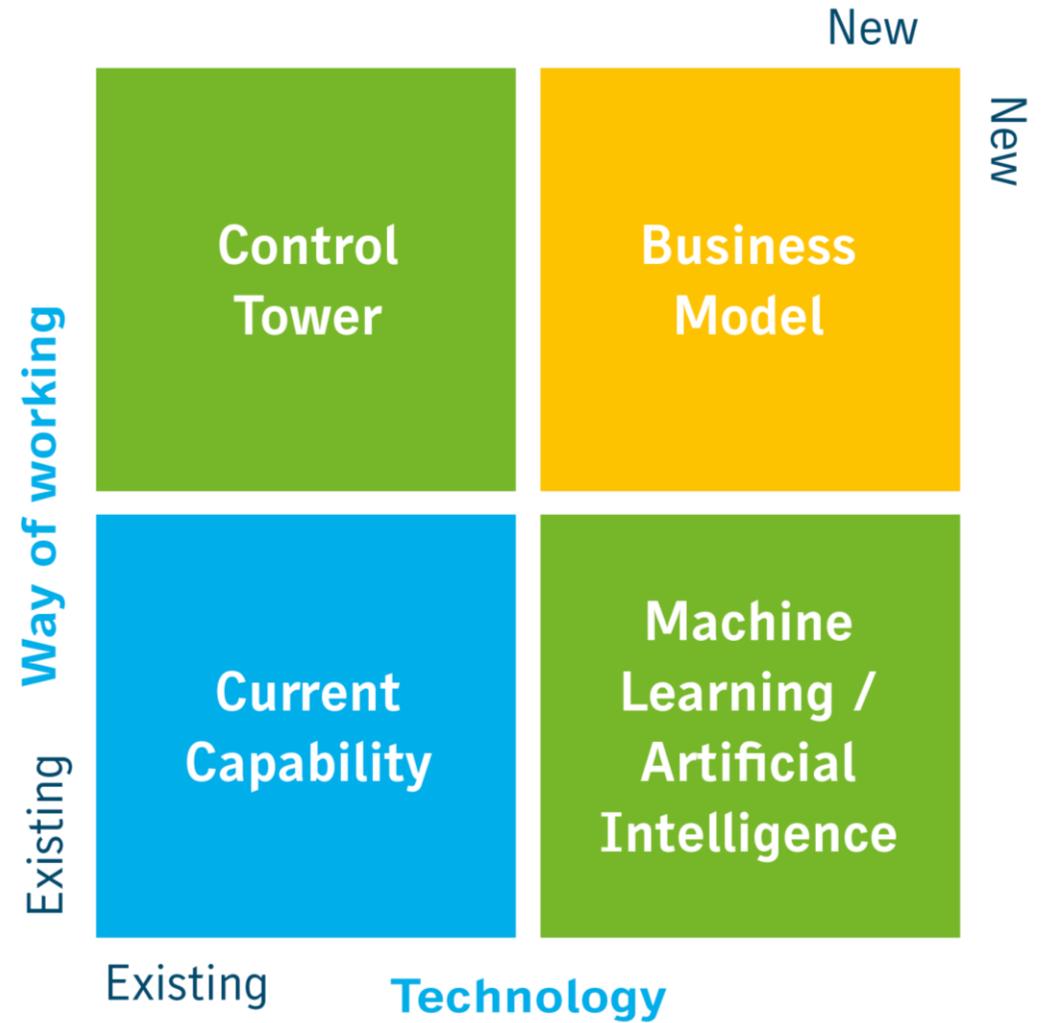
**“Machine learning is the science of giving computers the ability to learn and find insights without exactly programming the machines on what to do”**



# Technology is an enabler to SC digital transformation...



# New technology adoption can be de-risked...



# Digital Control Tower @ Mercedes-Benz

Vision: *Self-Correct Before the KPIs Tell You "Fire-Fight"*

## Scope & Objective(s)

- > Become the benchmark in region for service level and brand loyalty
- > NAFTA Region Aftermarket
- > 90% of SKUs are sourced from Germany (GLC)
- > ~350K active SKUs
- > ~600 dealers (customers)
- > Multi-echelon inventory management

## Challenges

- > Stretched supply chain with lead times 30 to 60 days
- > Highly volatile market across 3 countries, high service level expectations
- > Lack of inbound visibility, e.g. which container on which vessel contains critical parts
- > ETA predictions dependant on many factors



In Top Quartile of EmployeeONE Metrix

#1 Ranking

Carlisle&Co

Achieve service level of **97%**



**100%** Certified LEAN Company

## Sense

- > Sales & service level projections
- > Inventory level projections
- > Telematics & diagnostics signals
- > New, labor strikes
- > Weather, port congestion, customs
- > Events & route disruptions

## Respond

- > Use alternative inventory sources
- > Revise orders & allocation tactics
- > Revise financial guidelines
- > Promote, return and scrap
- > Find alternative carriers or routes
- > Revise inventory policy strategy
- > Update demand plans

# Supply Control Tower @ Michelin

“If we were able to anticipate problems we could provide a better service to our customer...”

## Scope & Objective(s)

- > Profitably grow the aftermarket business through better service levels
- > European Aftermarket
- > Predict and prevent service disruptions
- > Get beyond the “forecasting dip”
- > Understand the supply risk

## Challenges

- > Many different brands and sizes combinations across a complex factory and distribution network
- > Predict what can't be forecasted with traditional methods, e.g. statistical forecasting
- > Can machine learning detect patterns humans can't see?
- > Can we make sense out of a big data lake?
- > What is the commercial impact?

Data is too voluminous to be processed by a human



34 countries



15 DC



15 plants



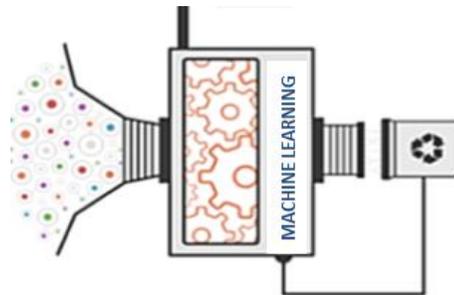
34 countries



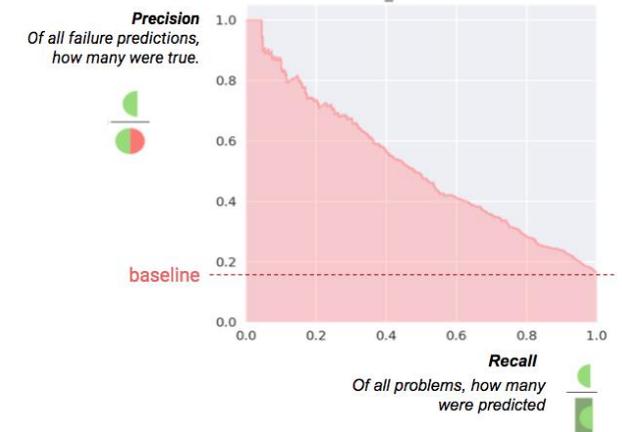
45,000 ship to



120 days

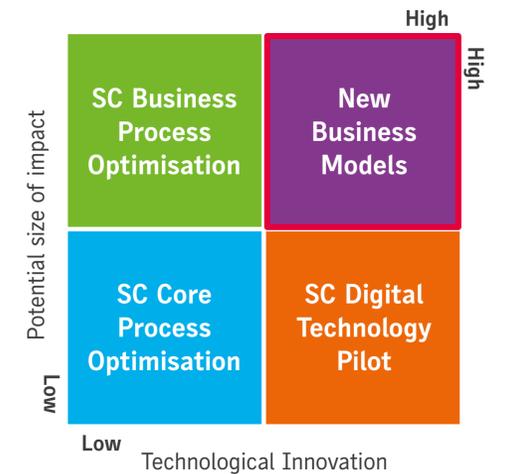


1. Train the ML
2. Leverage discovered pattern to predict service level failures 2 weeks out, based on actual operational data

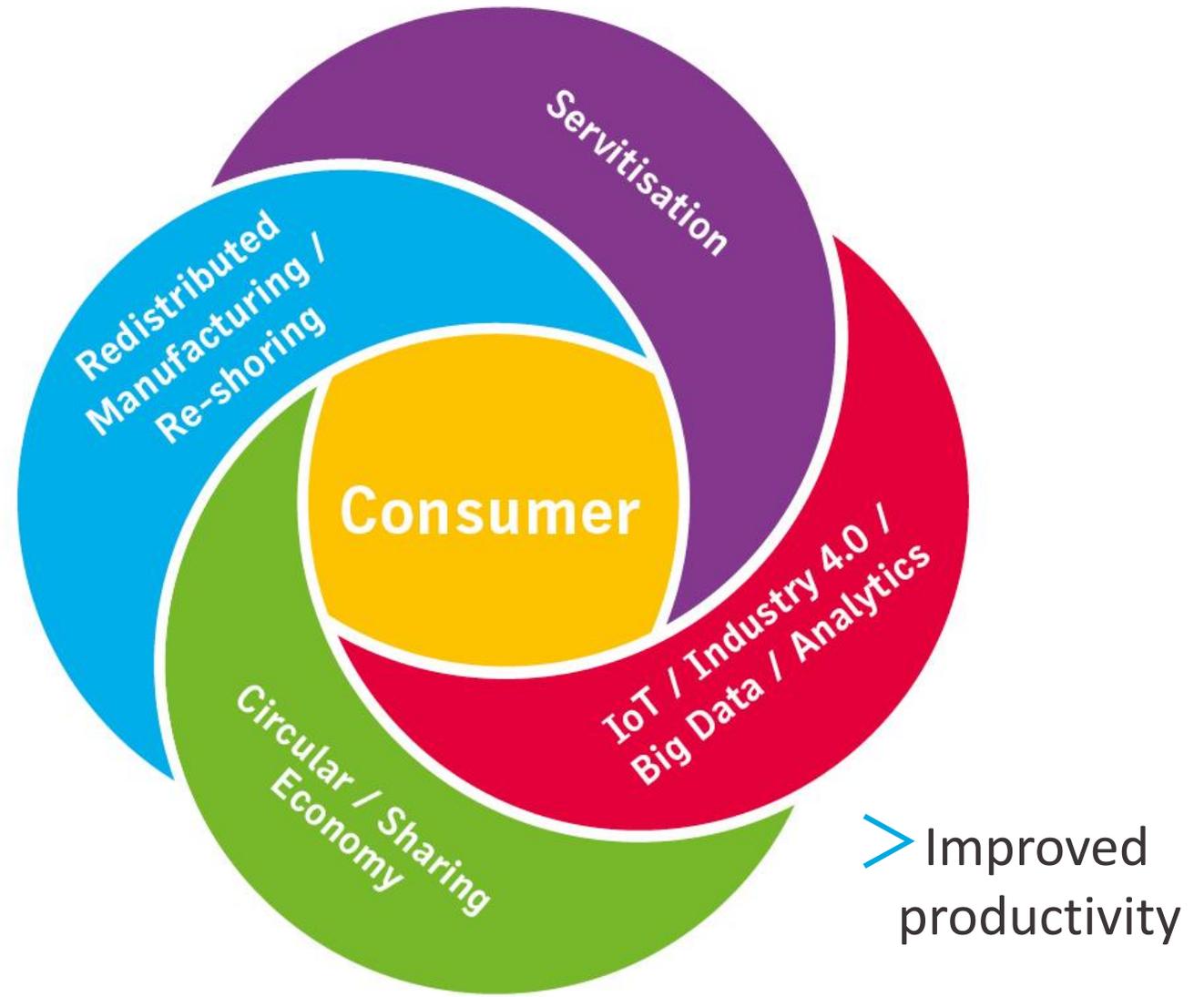


1. Explain the what and how to users
2. Take corrective actions to prevent service level failures with higher probability

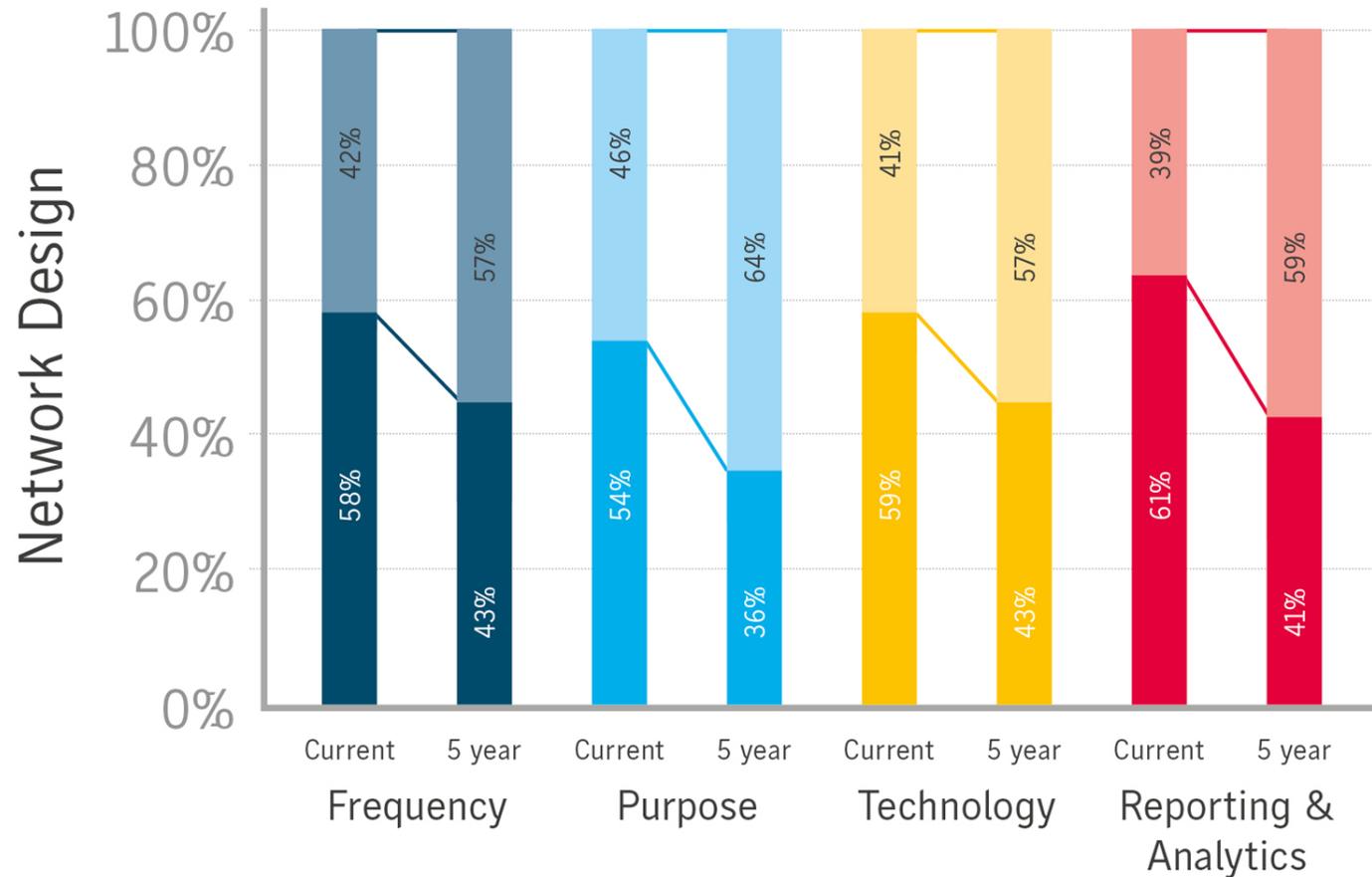
# 4. New business models



**Underpinned by  
more substantial  
and inter-connected  
trends...**



# Changing nature of manufacturing footprint reflected in network design result...



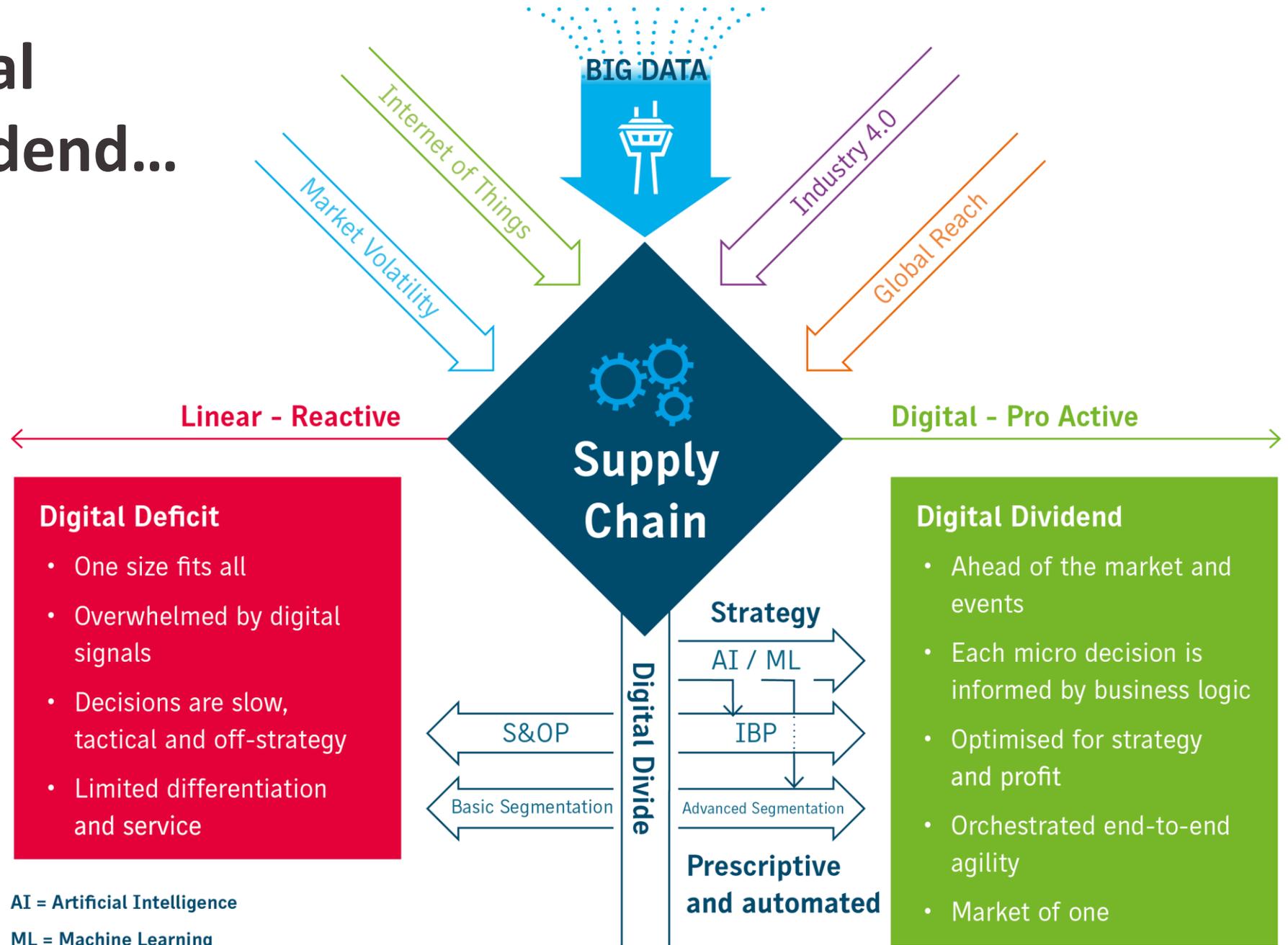
> Dimension where the highest % of respondents (61%) wished to achieve a level 3-4 strategic outcome





# Concluding thoughts

# From SC digital deficit to dividend...



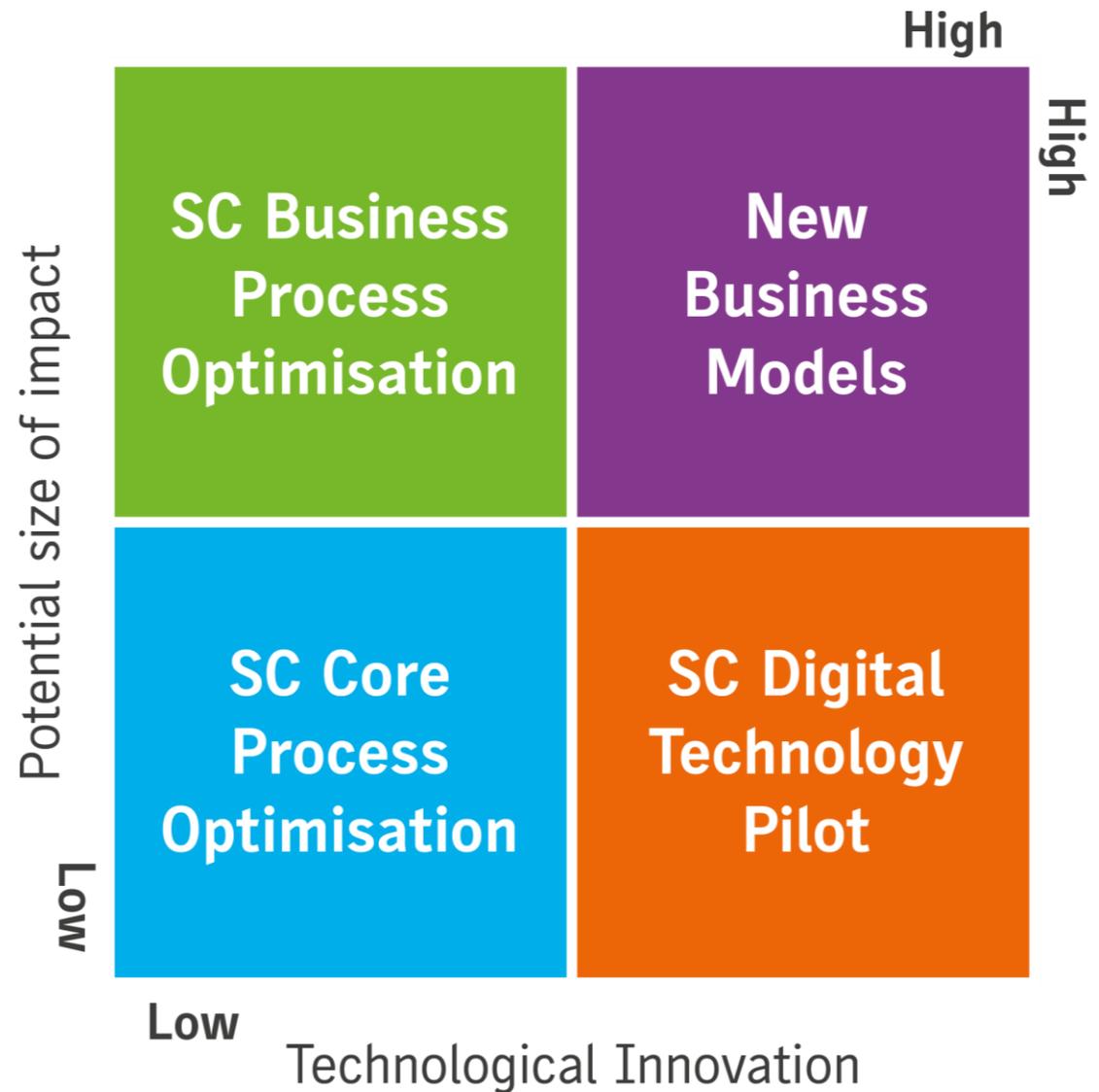
# JDA 3 key insights

1. Report confirms that achieving digital maturity is the primary supply chain goal across many sub-verticals.
2. Ambition to improve in maturity level in next 5 years seems moderate, but...
  - > Practitioners will seek pragmatic approach towards higher level of ambition coming from their top management
  - > Digital roadmap could be still unclear, what can things like AI really mean for my business?
  - > New technologies such as ML and AI are completely new approaches, moving away from the deterministic world (comfort zone)
3. 3 speed process combined with pilot approach can mitigate risk and help climbing up the learning curve for organization to make it relevant to their business.



# WMG 3 key insights...

1. Leverage digital technologies to support core SC process excellence
2. Organise for end-to-end supply chain optimisation
3. Design for end-to-end business optimisation



Thank you

