

Session 2



DEMYSTIFYING & RIDING THE TIDE OF INDUSTRIAL REVOLUTION 4.0

CONTENT

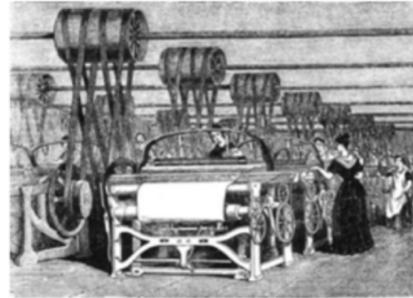
- **4th Industrial Revolution**
 - **Global & Malaysian perspective**
- **Demystifying 4th Industrial Revolution**
- **IR 4.0 Opportunities Beyond Smart Manufacturing**
 - **Hospitality Sector**
 - **Construction Sector**
- **Impact of IR 4.0 On Business & Workplace**
- **IR 4.0 Implementation Approach**

4TH INDUSTRIAL REVOLUTION

THE INDUSTRIAL REVOLUTIONS

1st Industrial Revolution (~1760-1850)

- started in **Great Britain** and later in EU and USA
- **key enabling technologies**: shift in **power sources** (steam engine powered by **coal** replaced bio-fuels and wood)
- **organization**: from hand production to **machines**
- **industry**: textile
- **workers**: **specialization** emergence



OUTCOMES:

- costs↓, market size↑
- new employment opportunities
- income and living standards of the population↑
- rapid change of society: not only changes in industrial techniques and production, but profound social effects (strong urbanization)

1st-IR took **about 120 years to spread outside Europe**

2nd Industrial Revolution (~1870-1945)

- started in **Great Britain** and **Germany**, later in USA and Japan
- **key enabling technologies**: shift in power sources (**electrical power**), transportation (railroads); advances in iron and steel production; invention of light bulb;
- **organization**: division of labor (**assembly line**) ⇒ **mass** production/consumption
- **industry**: automotive, mechanical
- **workers**: very simple skills and knowledge, high **specialization**



OUTCOMES:

- manufacturing time↓, costs↓
- rapid industrial development: manufacturing as a central driver of economic growth
- indoor plumbing, automobiles, airplanes, home appliances, public sanitation
- astonished growth of living standards

2nd-IR **not yet experienced by ~1.3G people** (~ 17%) without access to electricity

3rd Industrial Revolution (~1970-2000)

- started in **Western world** and later become globally
- **key enabling technologies**: **digital power** (beginning of the information age): digital logic circuits, microcontrollers, computers, CAD, CAM, ..., industrial robotics
- **organization**: production automation, optimization by inefficiencies removal (lean management)
- **workers**: **flexible**, higher education

OUTCOMES:

- global industrial development
- very high living standards
- pollution, climate and sustainability issues

internet took about 10 years to spread throughout the globe

3rd-IR **not yet experienced by ~3.5G people** (~ 50%) without access to internet



4TH INDUSTRIAL REVOLUTION

4th Industrial Revolution (present)



MEGATRENDS (changing demographics, globalization, shortage of resources, climate change, ICT evolution, ...) are driving next manufacturing paradigm

referred to as **Factory of the future** or **Industry 4.0** in EU, **Smart/Advanced Manufacturing** in USA

the entire **service sector** (and public administration) and the whole **society** are strongly involved

DISTINCTIVE FEATURES:

- **evolution rate** is exponential due to deep interconnections
- **servitization**: product – service boundary is becoming fuzzy since effective services are added to products
- **systemic impact**: it is transforming entire systems across and within companies, industries, countries and society as a whole

4th Industrial Revolution (present)

• **KEY ENABLING TECHNOLOGIES:**

convergence and integration of classical and emerging technologies that amplify each other and providing **cognitive** power, resulting in a fusion of **physical, digital and biological worlds**

• **ORGANIZATION:**

interconnection of all steps of the value creation chain over the entire **life cycle** of products (from the idea, to development and production, to distribution, to recycling) - including all related services - **optimizing** them using huge amount of available information

from ICT to **communication environments** (focus on the crucial role of **relationships**)



4th Industrial Revolution (present)

WORKERS are an **essential pillar** of smart factory

- **generalists** rather than specialists
- **adaptation** to new technologies and organizational changes
- performing in **almost sterile environments** in clean, safety, reliable, efficient ways
- both **“cold”** and **“hot”** skills first determinants of success
 - **“cold”**: technical, functional, multitasking, complex problem solving
 - **“hot”**: values, passions, participation, relational, proactivity, creativity, responsibility, adaptation

economic and social **relations** are **de-structured**: independent workers perform specific tasks (the **“human cloud”**)



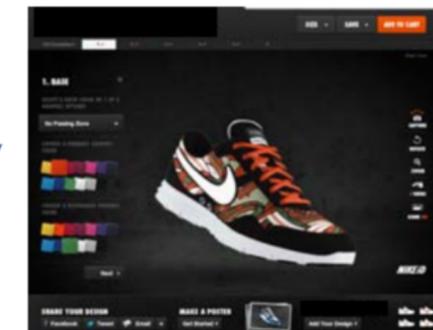
4th Industrial Revolution (present)

EXPECTED OUTCOMES:

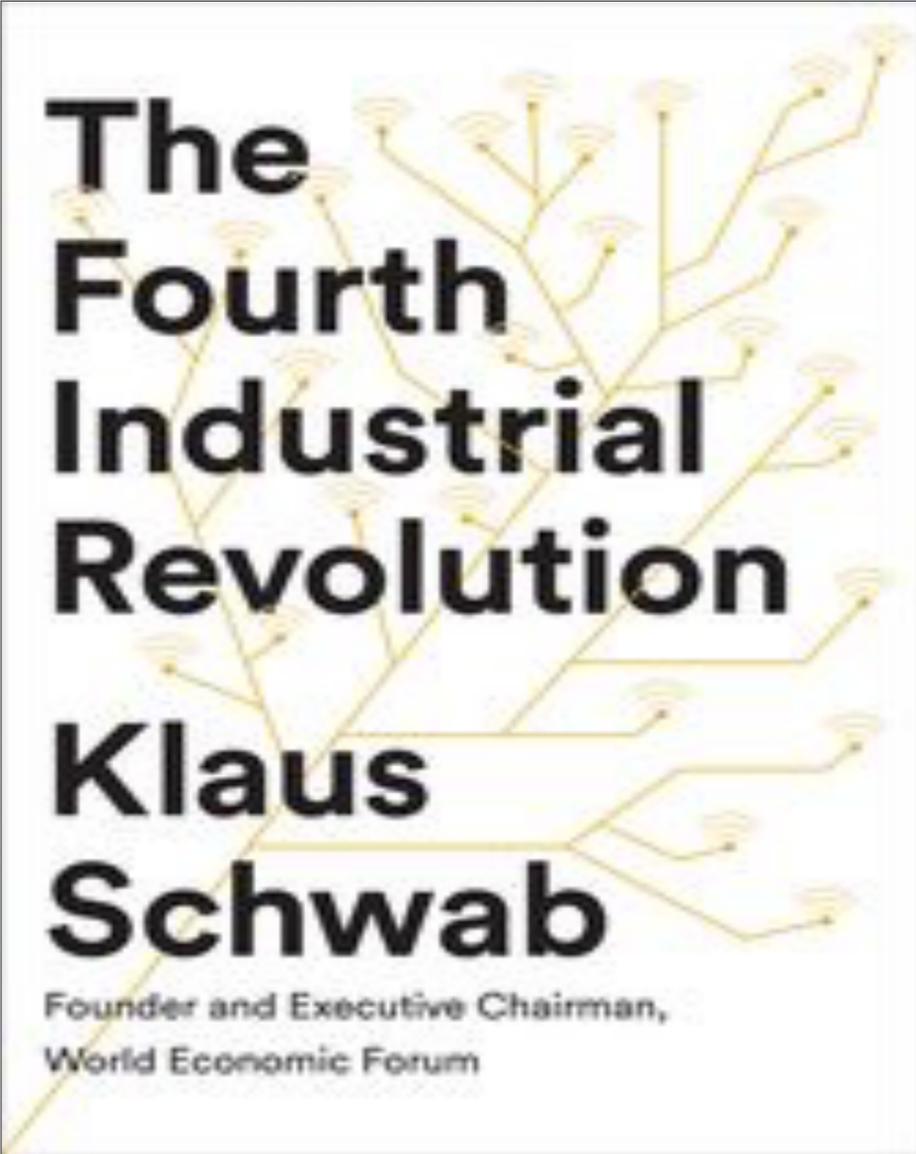
- change the competitiveness of companies and regions
- strengthening the potential of offering new business models
- **mass customization**: switch from **“pull from the market”** to **“pull from the customer”**, i.e. individualized solutions to satisfy specific customers' needs
- a reversal of the trend to relocate production to low-wage countries, promoting domestic production (**reshoring**)

RISKS:

- exacerbate **inequality**: concentration of wealth
- fundamental **societal changes**: reshape of government, work, relations



4TH INDUSTRIAL REVOLUTION



The Fourth Industrial Revolution

Klaus Schwab

Founder and Executive Chairman,
World Economic Forum

“The fourth industrial revolution, however, **is not only about smart and connected machines and systems**. Its scope is much wider. Occurring simultaneously are **waves of further breakthroughs** in areas ranging from gene sequencing to nanotechnology, from renewables to quantum computing. It is the **fusion of these technologies and their interaction across the physical, digital and biological domains** that make the fourth industrial revolution fundamentally different from previous revolutions. “ – Klaus Schwab

GLOBAL IR 4.0 “GROWTH” INITIATIVES



GLOBAL BUZZ IR 4.0

International rollout: Initiatives launched per country

JAPAN

Revitalization/robotics strategy:
Increase the productivity of service industries, significantly raise the deployment of robotics by 2020

SOUTH KOREA

Manufacturing Innovation 3.0:
Create a manufacturing ecosystem based on new technologies/encourage smart factory development

FRANCE

Industry of the future:
Support the development of specific products (efficient car, electric airplane, etc.)

2015

BELGIUM

Intelligent factories clusters:
Support the development of "Factories of the future"

2014

CHINA

Made in China 2025:
Turn China into a strong manufacturing nation with priority on digitization and modernization of 10 sectors

What is Industrie 4.0? It symbolizes the advent of the fourth global industrial revolution, which makes use of three technological innovations – automation, the Internet of Things and artificial intelligence – to create groundbreaking industrial and economic models. What might have been perceived as a marketing initiative by industrial equipment suppliers became, in the space of just a few years, a global concern shared by the industrialized world.

2012

ITALY

Intelligent factories clusters:
Structure Italian manufacturing community to develop and leverage research, with 4 projects

2011

UNITED STATES

Advanced Manufacturing Partnership 2.0:
Create high quality manufacturing jobs and enhance US global competitiveness

UNITED KINGDOM

Catapult centers:
Double manufacturing contribution to GDP

2010

GERMANY

Industrie 4.0 platform:
Common approach BITKOM, VDMA & ZVEI

AN OVERVIEW OF DIFFERENT RATIONALES

The motivation to implement initiatives in favor of the industry sector and the measures applied depend on the challenges that are most urgent

WHAT?

Added value and competitiveness

HOW?

Aim for lower labor sensitivity, improve competitiveness, create entry barriers

WHO?

Germany
Japan
United States
China

Footprint and new business models

Produce personalized products at mass production cost

France
Japan
United States

Global leadership in 4.0 solutions

Develop technologies and standards, create export solutions

Germany
China
South Korea

Internationalization and risk management

Build flexible production lines to balance demand volatility, decrease capital cost of geographical expansion

Germany
Japan
China
South Korea

Digital start-ups and ecosystems

Create platform to enable ecosystems, accelerate innovation via incubators and clusters

France
China
United States

Employee satisfaction at work

Reduce convenience at work, make work more meaningful for life

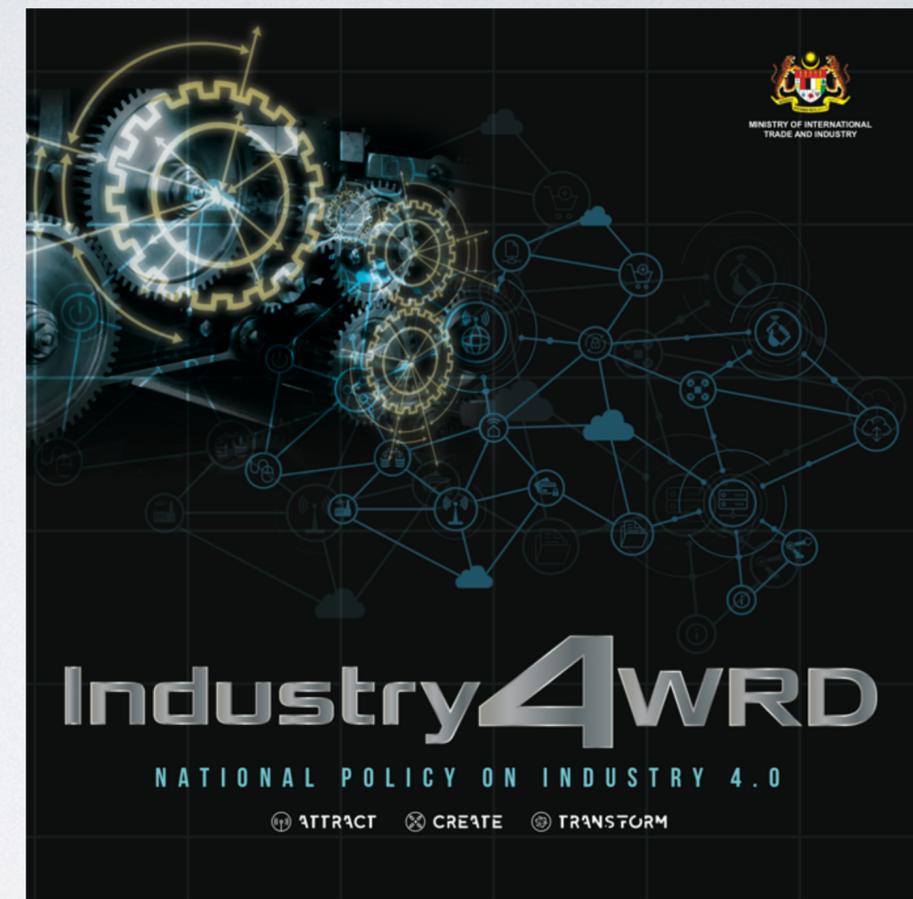
France
Germany
Japan

Sustainability and image

Reduce use of natural resources, improve image of industry

France
Japan

PILLARS OF THE 4TH INDUSTRIAL REVOLUTIONS



The launching of the national policy is expected to leap frog the IR 4.0 adoption and transformation of the industry, especially the SMEs.

ENHANCED IR 4.0 PILLAR

Additive Manufacturing

3D printers, used predominantly to make spare parts and prototypes

- Decentralized 3D printing facilities, which reduce transport distances and inventory

Artificial Intelligence (AI)

Increasingly big data techniques are being applied in manufacturing industry to improve customer experience and product quality, realise energy efficiency and conduct predictive maintenance.

Big Data Analytics

The comprehensive evaluation of available data (from CRM, ERP, and SCM systems, for example, as well as from an MES and machines) Support for optimized real-time decision making

Advanced Materials

New materials and nano-structures are being developed, allowing for beneficial material properties, e.g. shape retention and thermoelectric efficiency. Together with additive manufacturing technologies, it will allow for massive customisation and development of products that were not possible until now.

Cybersecurity

The management of heightened security risks due to a high level of networking among intelligent machines, products, and systems

ENHANCED IR 4.0 PILLAR

Simulation

Network simulation and optimization, which use real-time data from intelligent systems

Cloud Computing

The management of huge volumes of data in open systems

Augmented Reality

- Digital enhancement, which facilitates maintenance, logistics, and SOPs
- Display devices, such as glasses

Internet of Things (IOT)

A network of machines and products
Multidirectional communication among networked objects

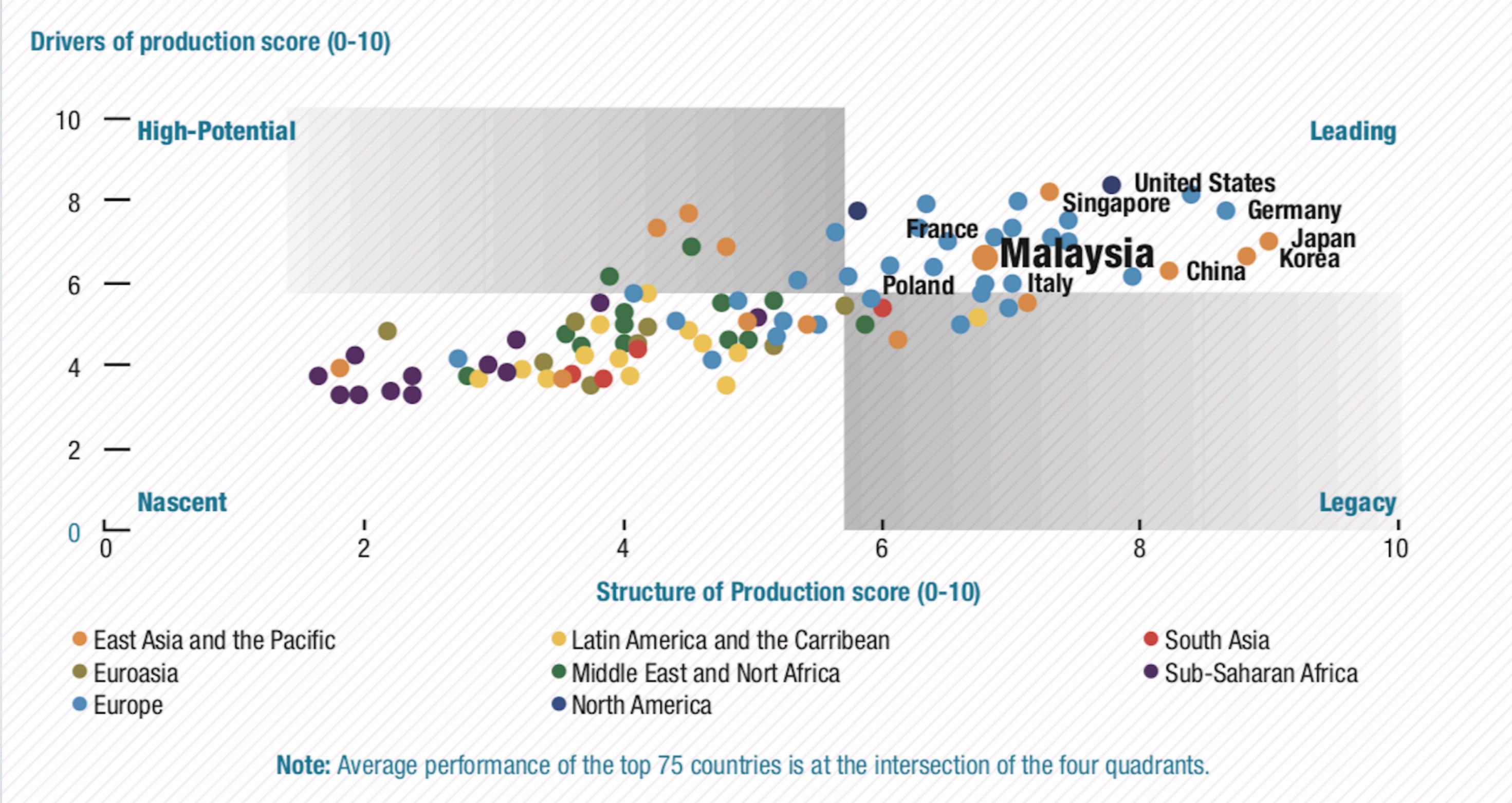
Autonomous Robots

Autonomous, cooperating industrial robots, with integrated sensors and standardized interfaces

System Integration

Data integration within and across company using a standard data transfer protocol
A fully integrated value chain (from supplier to customer) and organization structure (from management to shop floor)

MALAYSIA'S READINESS FOR IR.40



DEMYSTIFYING 4TH INDUSTRIAL REVOLUTION

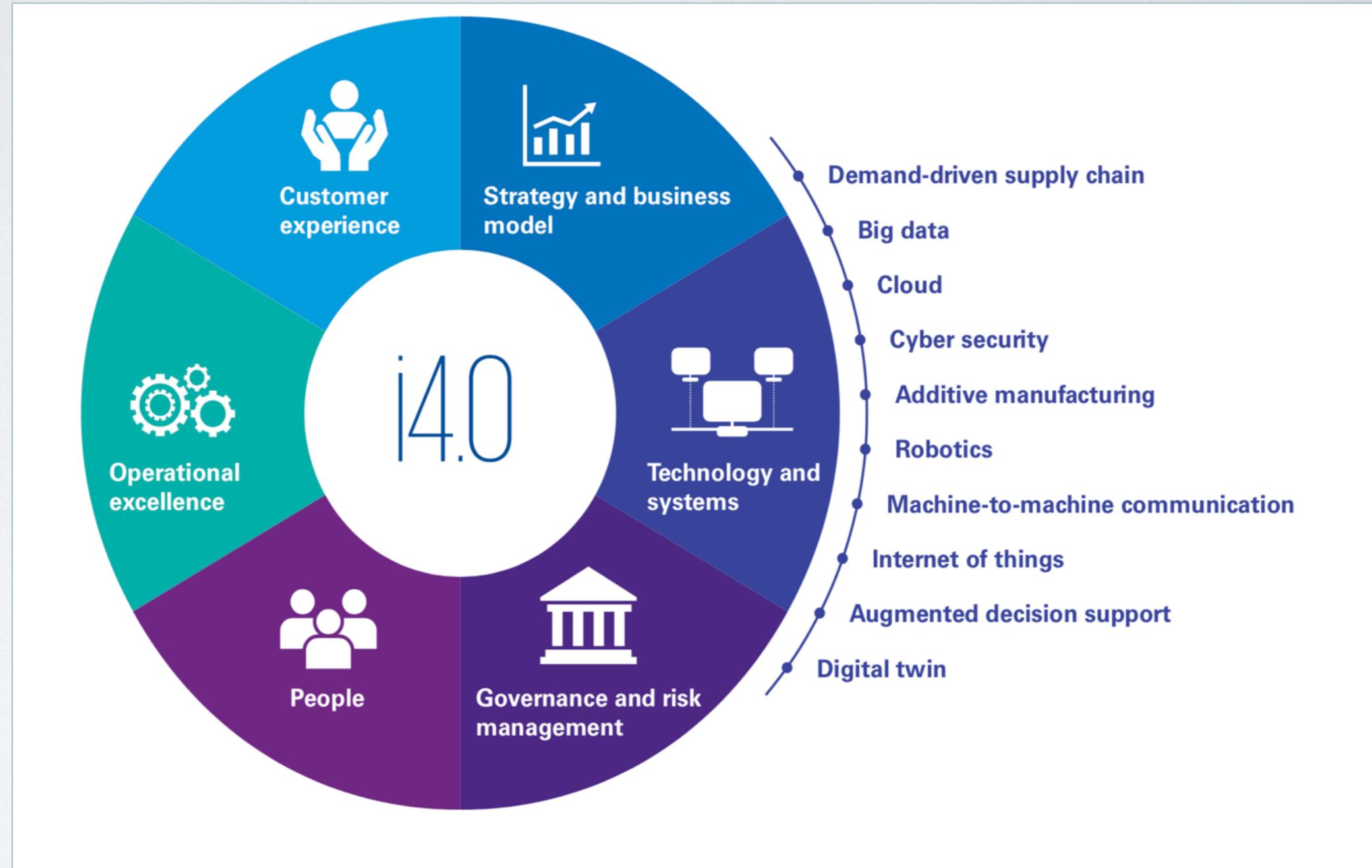
DEMISTIFYING IR 4.0: BEYOND THE HYPE

*“.....a growing gap between executive ambition and transformative action
How exactly can companies prepare for these waves and face the digital
transformation head-on to achieve the best possible results and avoid losing
out? How can they implement a proper strategy within their organization and
across companies to defend their competitive edge? ”*

-KPMG

6 DIMENSIONS OF IR 4.0 PRINCIPLES

- Strategy & Business Model
- Technology & Systems
- Operational Excellence
- People
- Customer Experience
- Governance & Risk Management



4 LEVERS OF DIGITALISATION

Big Data

Generated by connected machines and mobile devices as well as by customer interfaces, digital data ensures new areas of application like optimizations on the shop floor.

Connectivity

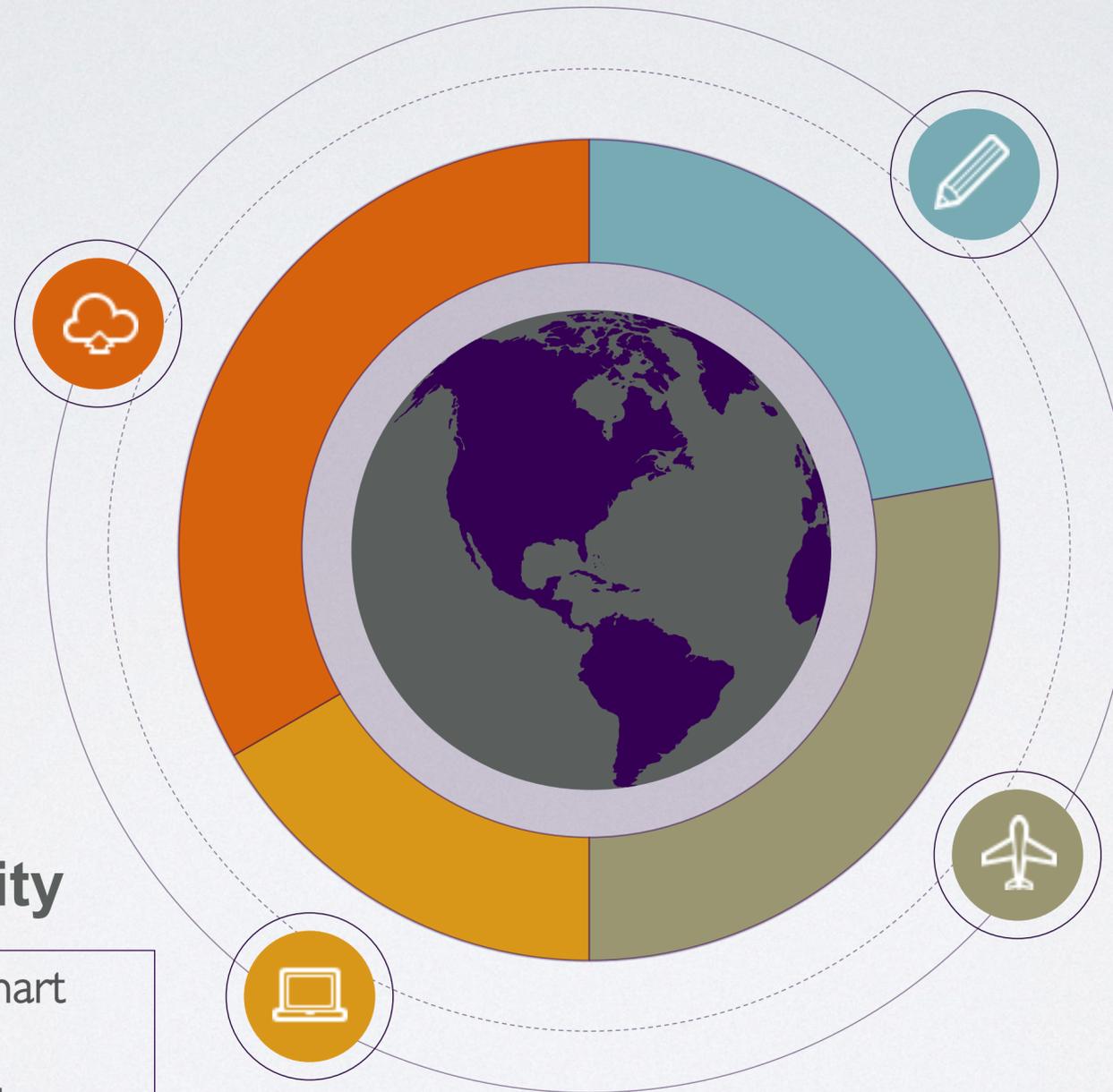
A networked economy powered by smart devices allows for an improved synchronization of processes and real-time reaction as well as acceleration of innovation.

Automation

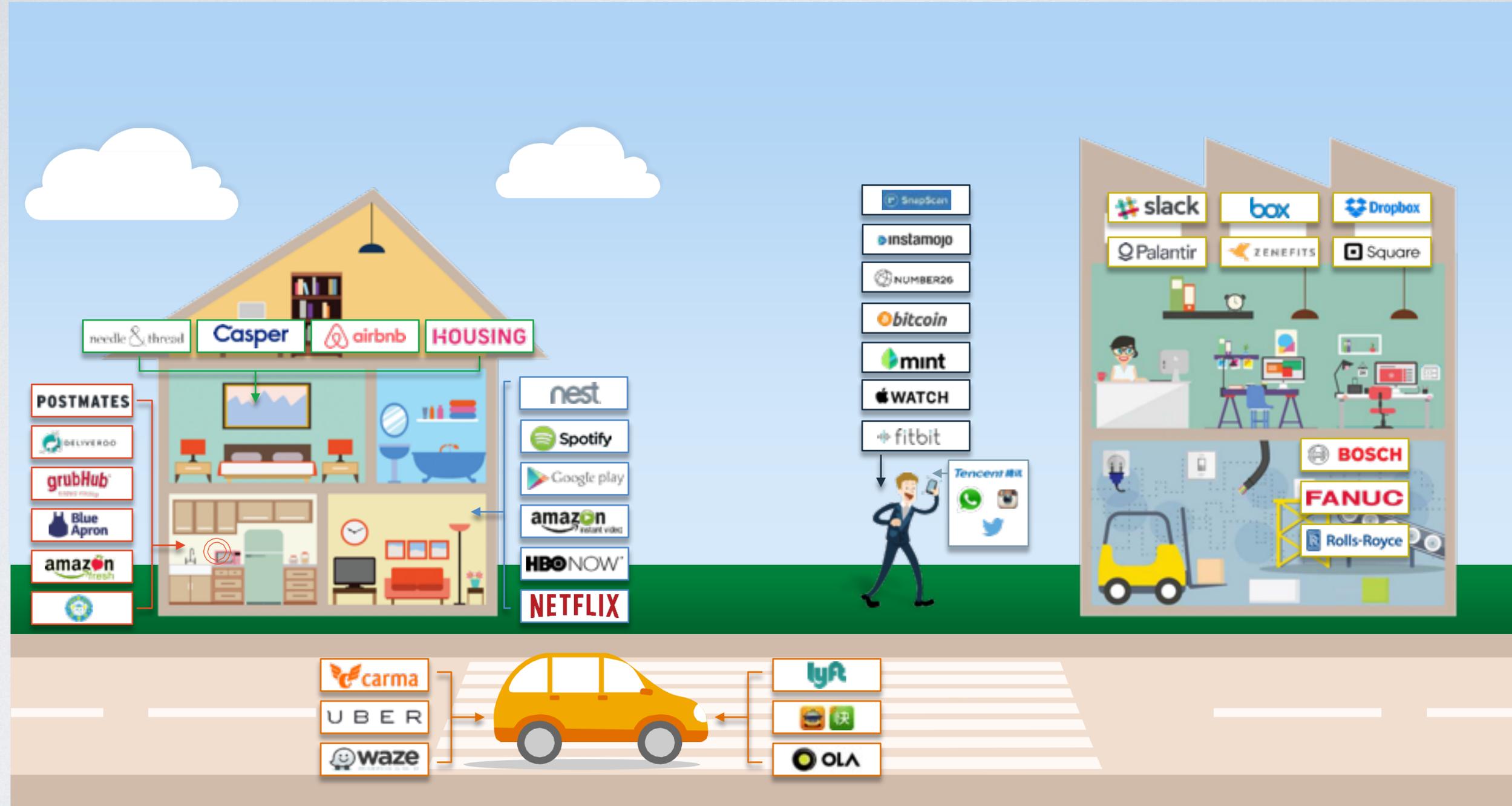
Artificial intelligence is on the rise; robots and machines work hand in hand with human beings in more and more areas, especially those requesting the intelligent processing of information.

Digital Customer Access

New intermediaries and data gatherers know customers almost better than they know themselves enabling them to offer full transparency and new kinds of services.



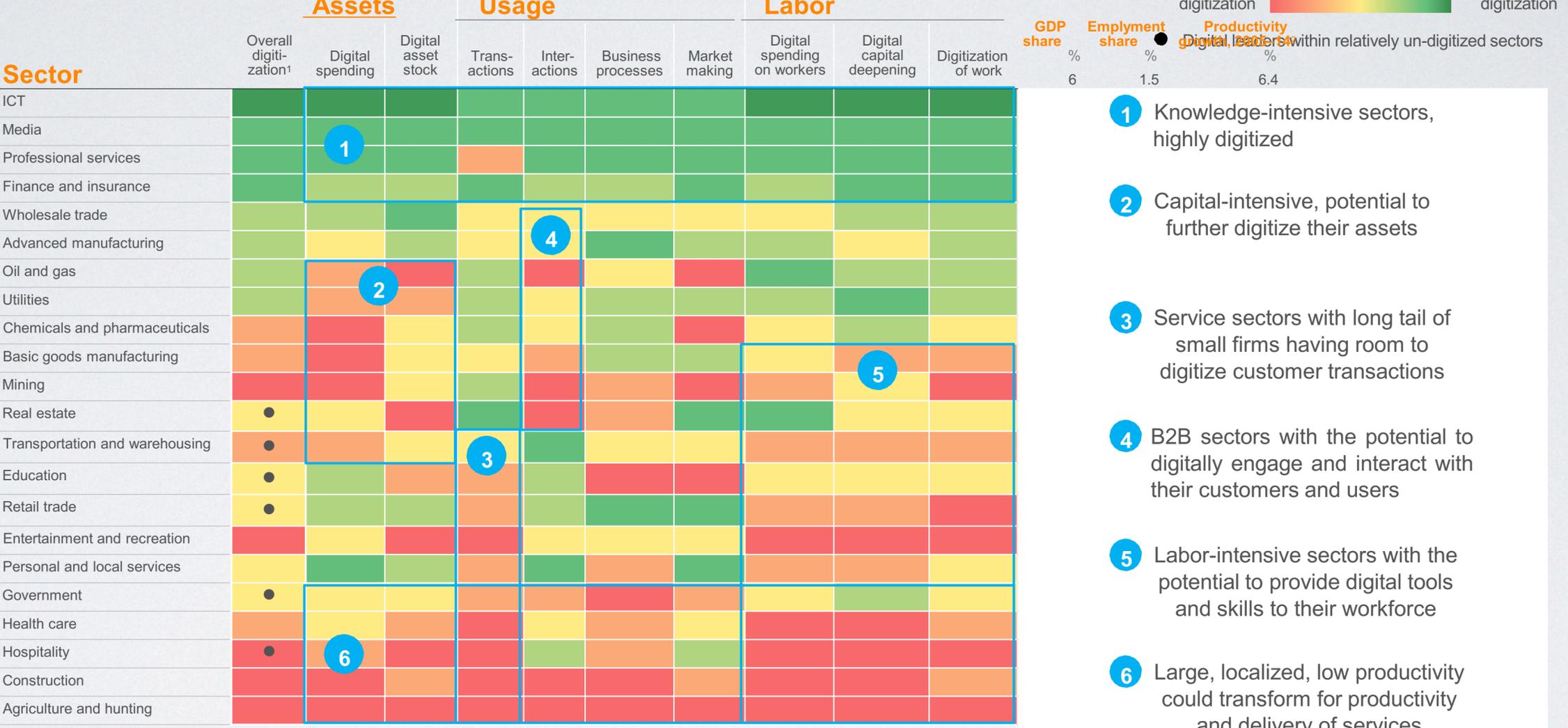
DIGITISATION OF EVERYTHING



Source: McKinsey & Company: McKinsey Global Research Institute

DEGREE OF DIGITISATION BY SECTOR

MGI Sector Digitization Index
2015 or latest available US data



SOURCE: BEA; BLS; US Census; IDC; Gartner; McKinsey social technology survey; McKinsey Payments Map; LiveChat customer satisfaction report; Appbrain; US contact center decision-makers guide; eMarketer; Bluewolf; Computer Economics; industry expert interviews; McKinsey Global Institute analysis

IR 4.0 ADOPTION BY INDUSTRY

Now	Industry	In 5 years
45%	Electronics	77%
32%	Aerospace & Defense	76%
35%	Industrial Manufacturing	76%
32%	Chemicals	75%
38%	Forest Products, Paper, Pkg	72%
28%	Transportation & Logistics	71%
30%	Engineering & Construction	69%
41%	Automotive	65%
31%	Metals	62%

Source: Industry 4.0: Building The Digital Enterprise, PWC

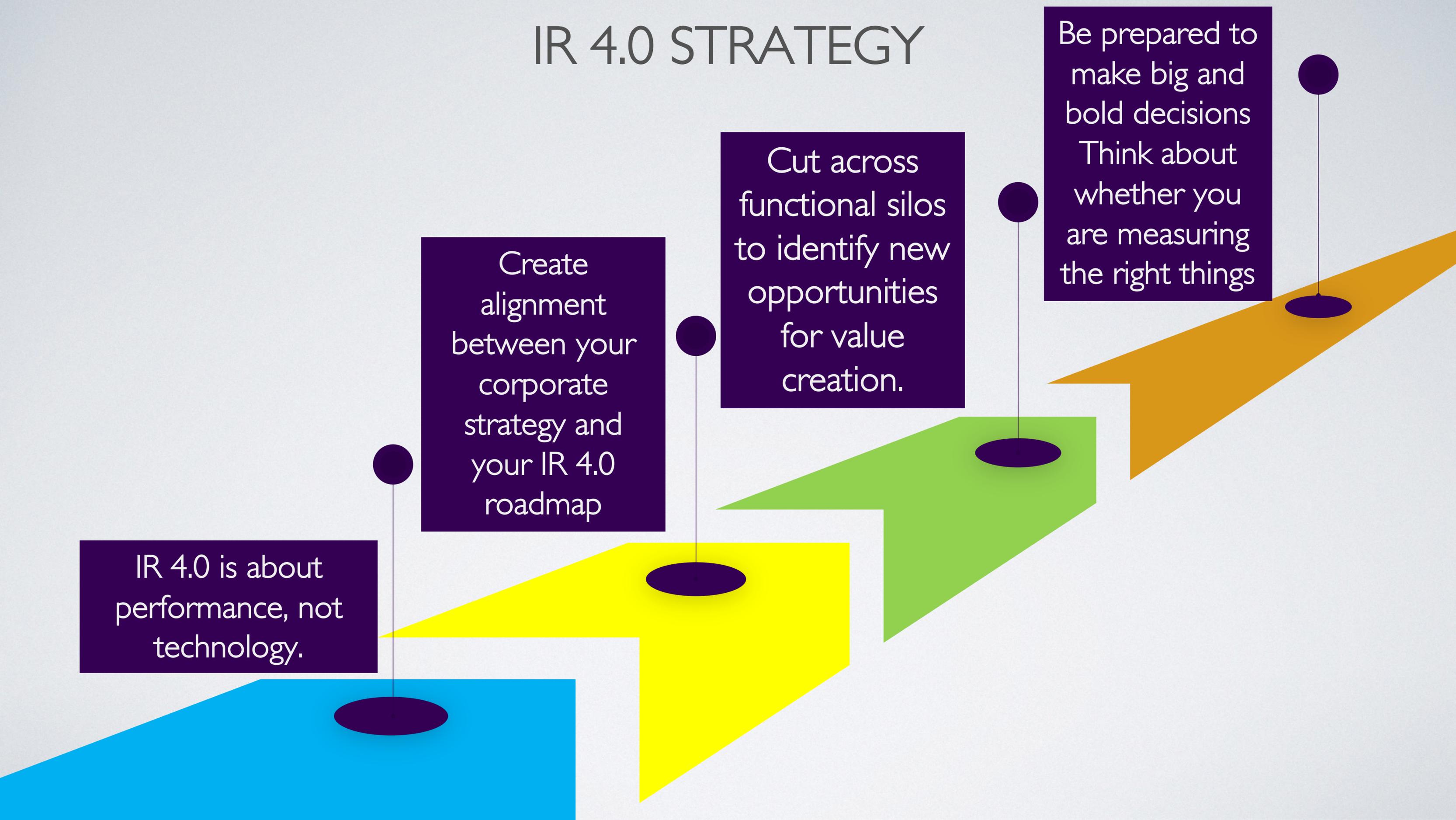
IR 4.0 STRATEGY

IR 4.0 is about performance, not technology.

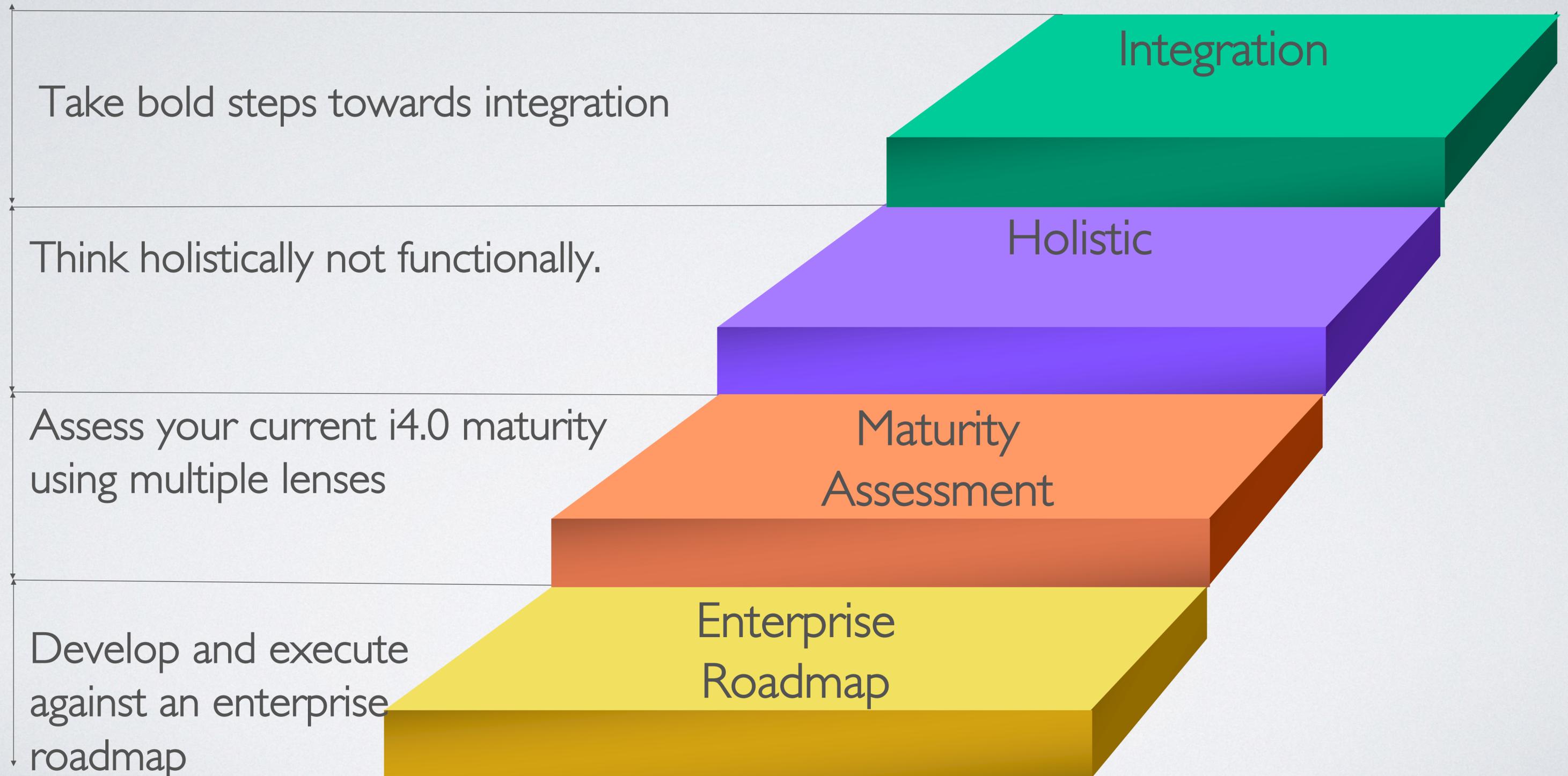
Create alignment between your corporate strategy and your IR 4.0 roadmap

Cut across functional silos to identify new opportunities for value creation.

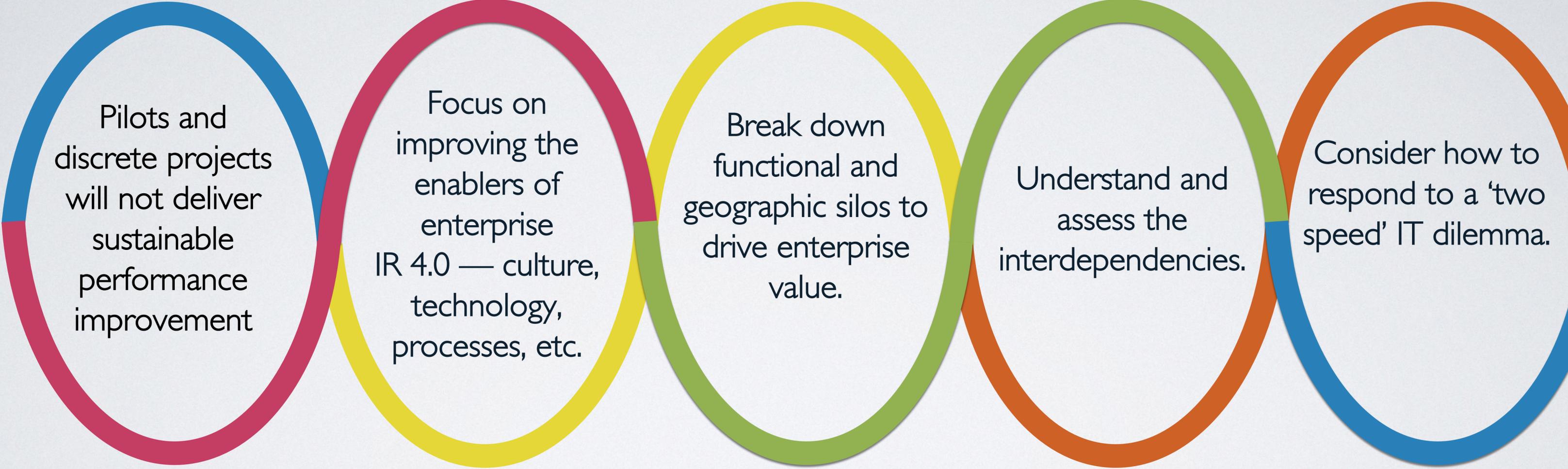
Be prepared to make big and bold decisions
Think about whether you are measuring the right things



STEPS IN ADOPTING IR 4.0



VALUE SCALING UP IR 4.0



Pilots and discrete projects will not deliver sustainable performance improvement

Focus on improving the enablers of enterprise IR 4.0 — culture, technology, processes, etc.

Break down functional and geographic silos to drive enterprise value.

Understand and assess the interdependencies.

Consider how to respond to a 'two speed' IT dilemma.

CHANGE: MANAGING THE IMPACTS OF IR 4.0

Focus on creating the right culture and securing the right capabilities for future i4.0 success.

Seek out opportunities to improve employee value not just cost reduction.

Support adoption with a robust change management program.

Integrate future talent and capability requirements into your i4.0 strategic roadmap.

Be creative in order to win the war for talent.

PRODUCTS: SMART PRODUCTS & PROCESSES



Integrate your product lifecycle into your IR 4.0 strategy.

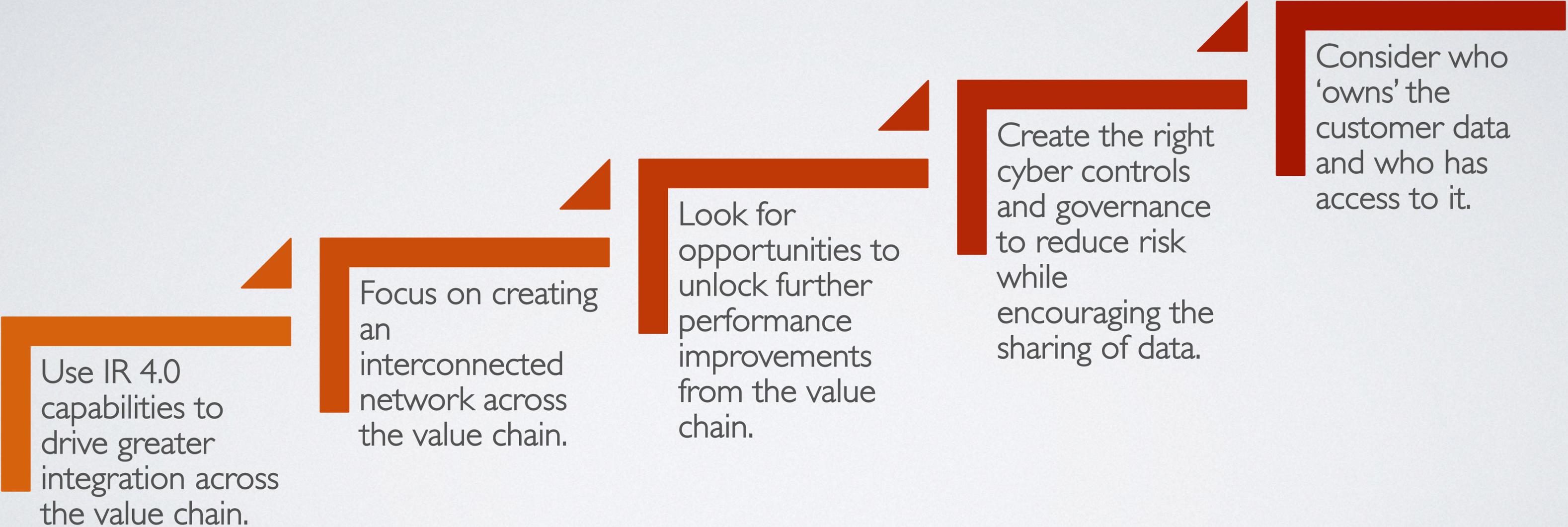
Understand how customer data creates value across the enterprise.

Improve the flow of customer data across the extended enterprise.

Understand the potential for disintermediation as a result of smarter products.

Look for ways to improve coordination with customers.

SUPPLY CHAIN: ENHANCING IR 4.0 VALUE



Use IR 4.0 capabilities to drive greater integration across the value chain.

Focus on creating an interconnected network across the value chain.

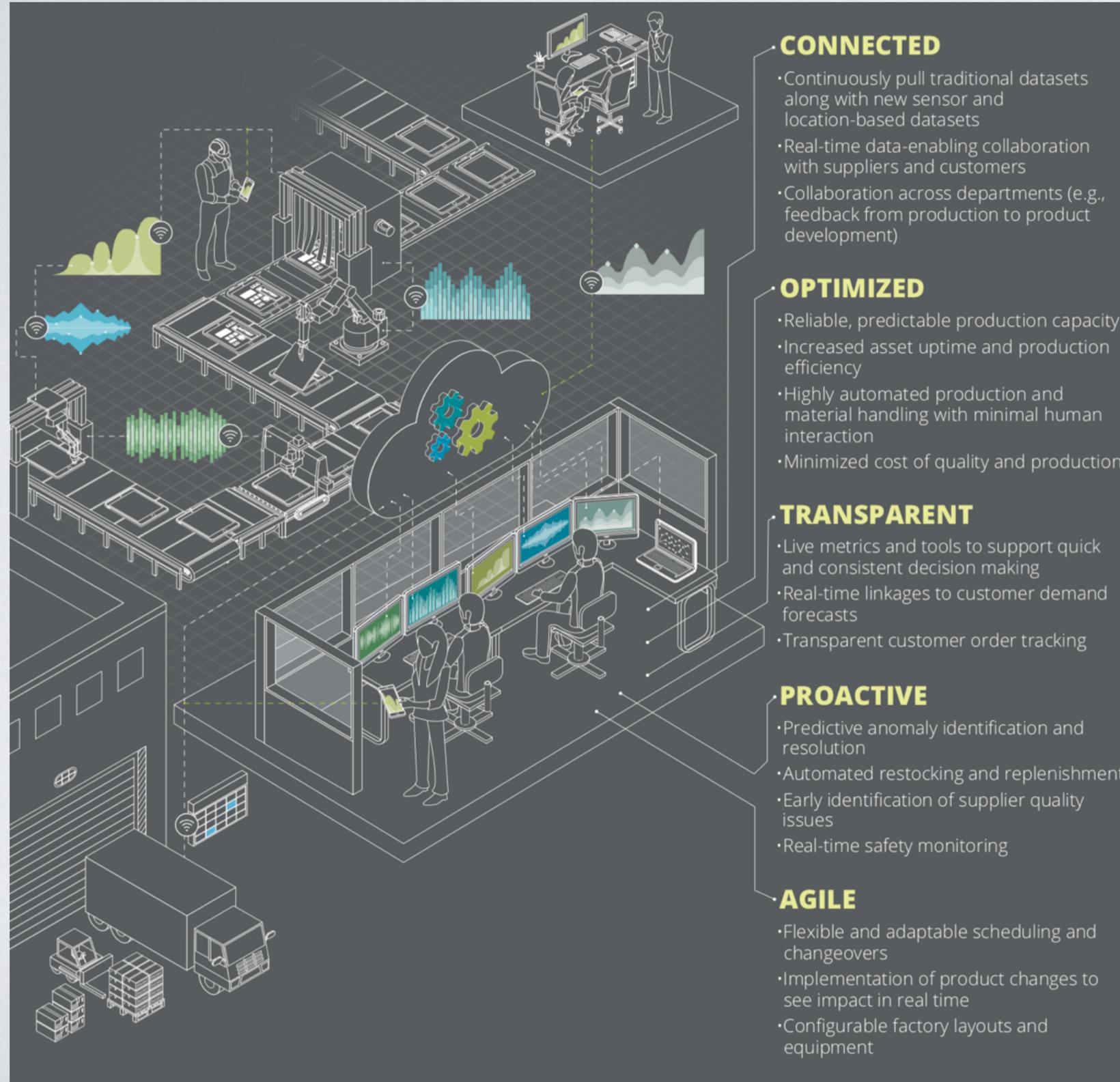
Look for opportunities to unlock further performance improvements from the value chain.

Create the right cyber controls and governance to reduce risk while encouraging the sharing of data.

Consider who 'owns' the customer data and who has access to it.

EXPLORING IR 4.0 OPPORTUNITIES IN SECTORS BEYOND MANUFACTURING

IR 4.0 IN MANUFACTURING



Key Characteristics of a A Smart Factory

Source: Deloitte Analysis

IR 4.0 IN HOSPITALITY SECTOR : A DIGITAL TRANSFORMATION

HOSPITALITY INDUSTRY OUTLOOK



The industry contributed US\$7.6 trillion to the global economy (10.2% of global GDP) and generated 292 million jobs (1 in 10 jobs on the planet) in 2016. International arrivals followed suit, reaching 1.2 billion in 2016, 46 million more than in 2015.2

- WEF 2017 Travel & Tourist Competitiveness Report

WEF TRAVEL & TOURISM COMPETITIVENESS INDEX - 2017

Country/Economy	Global rank	Enabling environment				
		Business environment	Safety and security	Health and hygiene	Human resource and labour market	ICT readiness
SOUTH-EAST ASIA						
Singapore	13	6.1	6.5	5.5	5.6	6.1
Malaysia	26	5.4	5.8	5.2	5.2	5.2
Thailand	34	4.7	4.0	4.9	4.9	4.8
Indonesia	42	4.5	5.1	4.3	4.6	3.8
Sri Lanka	64	4.7	5.5	5.3	4.5	3.7
Vietnam	67	4.4	5.6	5.0	4.9	4.2
Philippines	79	4.3	3.6	4.8	4.8	4.0
Lao PDR	94	4.7	5.4	4.3	4.6	3.1
Cambodia	101	3.7	5.1	4.0	4.1	3.6
South-East Asia Average		4.7	5.2	4.8	4.8	4.3

Private and public infrastructure investments—airport development, accommodation room stock, road and rail, and communication technologies—have lagged behind, leading to significant bottlenecks.

SHARING ECONOMY IN HOSPITALITY

How far we have embraced the platform economy?

Can hotels replaced by VR?

The infographic is organized into four columns, each representing a different sharing economy activity. Each column features a circular icon with text and a list of logos for companies in that space.

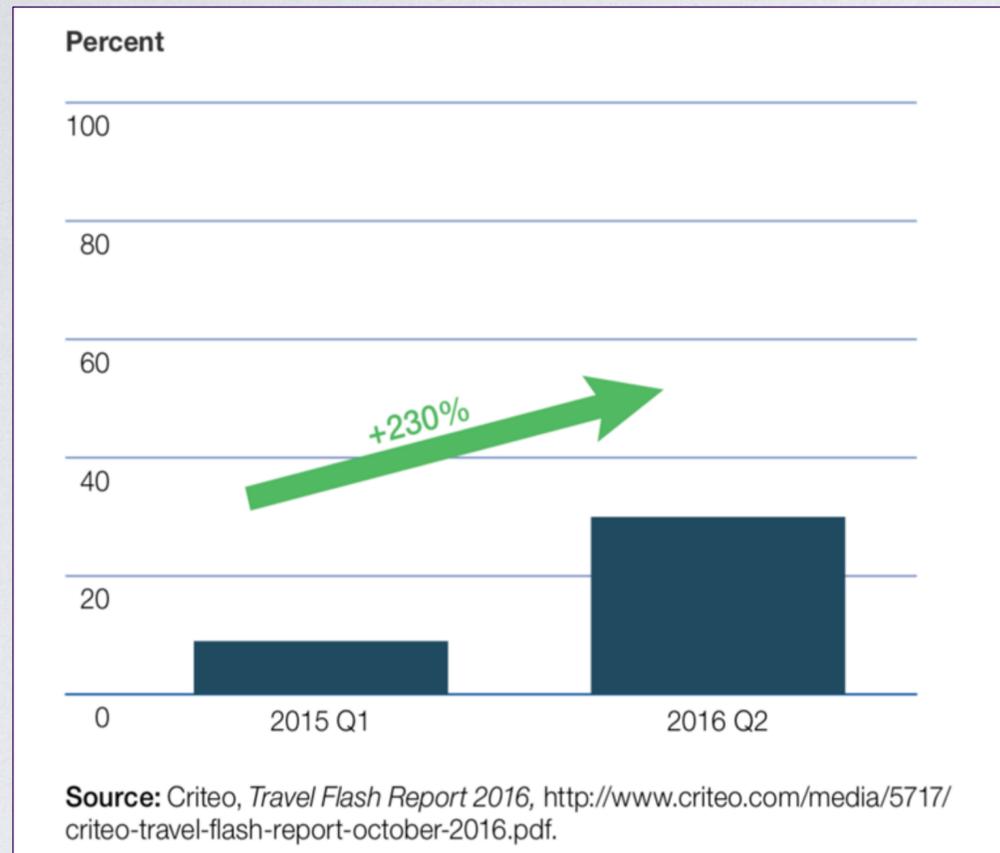
- Share rides:** Icon shows a car with three passengers. Logos include BlaBlaCar, UBER, CAR 2GO, Sidecar, and GETAROUND.
- Stay overnight in someone's home:** Icon shows a bed. Logos include couchsurfing, airbnb, 9flats.com, and WIMDU.
- Share a meal with someone:** Icon shows a fork and knife. Logos include OpenTable™ and EatWith.
- Meet someone:** Icon shows two hands shaking. Logos include VoomaGo (The Way You Want to Travel), tours by locals.com, Withlocals, ADVLO (ADVENTURE LOCAL), Vayable, and tinder.

ANALYTICAL FRAMEWORK OF A CUSTOMER'S JOURNEY

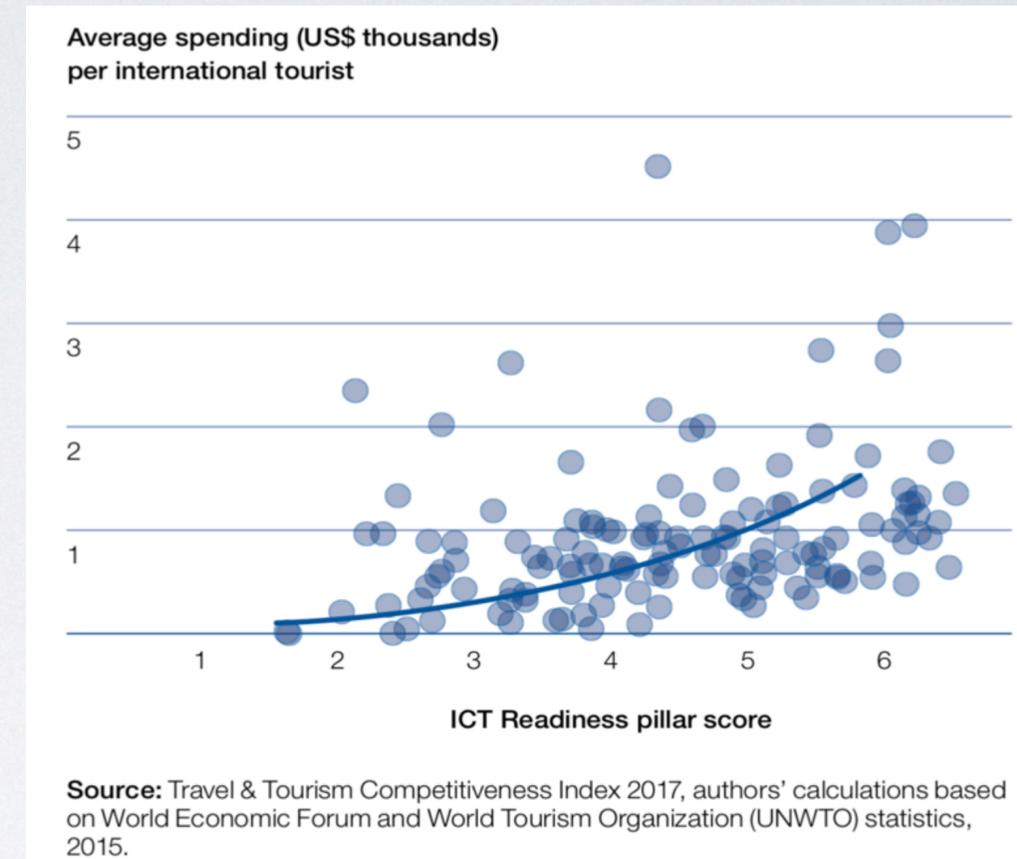


Where can the disruptions be deployed through technological advancement & adoption?

DISRUPTIONS

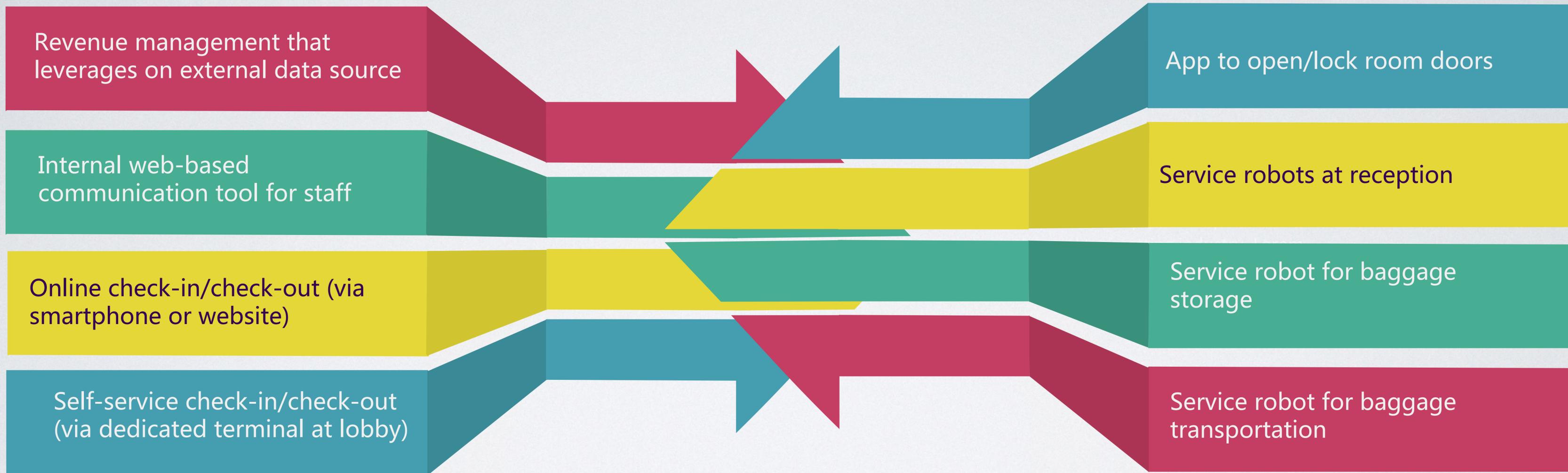


Mobile Travel Services bookings as percentage of Online Bookings



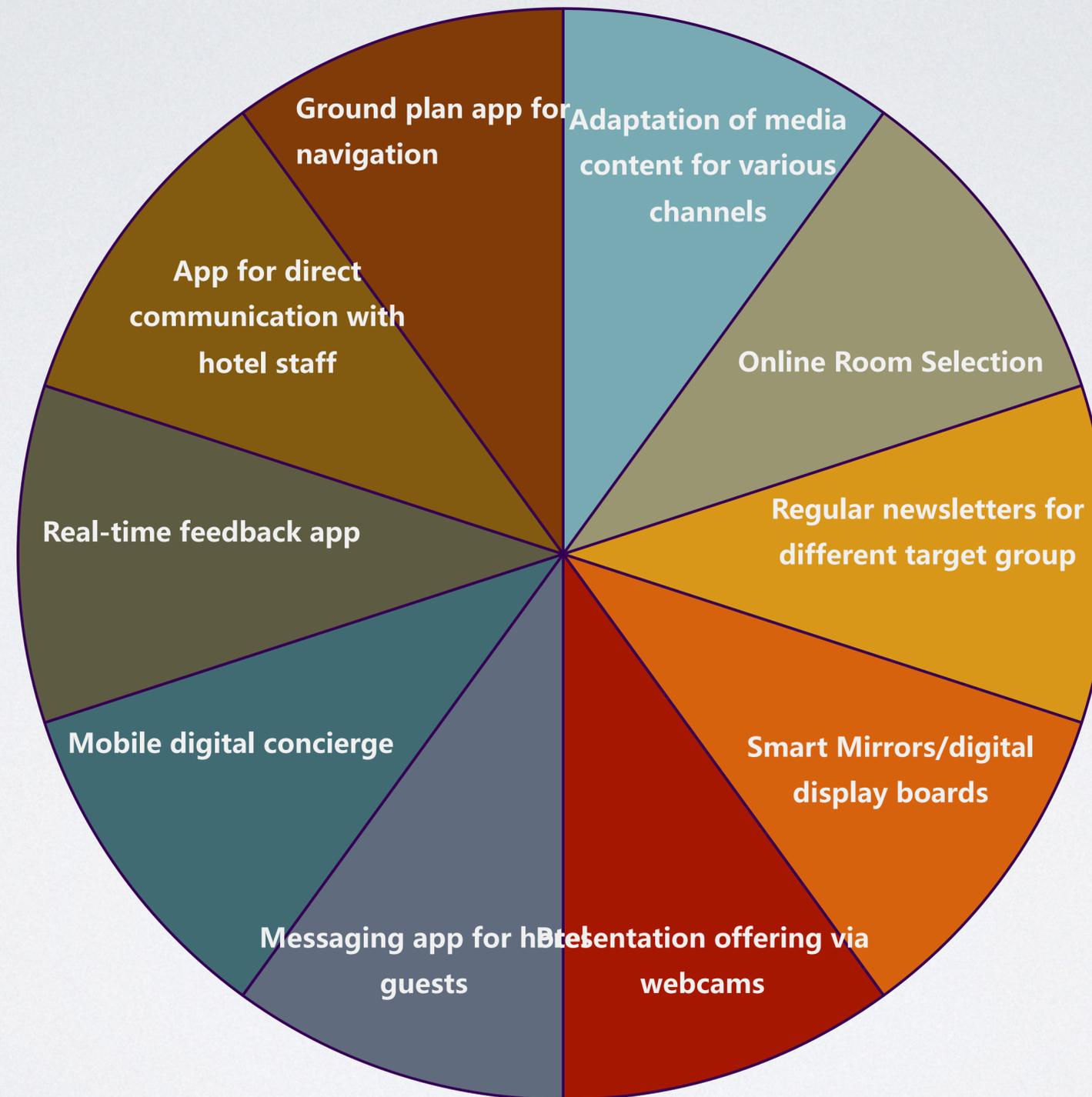
Correlation between ICT Readiness & Average Tourist Spending

IR 4.0 TRANSFORMATION : OPERATIONS



IR 4.0 TRANSFORMATION : GUESS MANAGEMENT

Column1



GETTING HOSPITALITY SHAPE FOR IR 4.0 IN THE DIGITAL AGE

STANDARD OFFERINGS



SELL EXPERIENCES,
NOT SERVICES

37



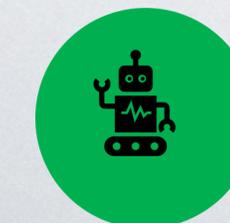
OPTIMISING DIGITAL
MARKETING



PERFECTING DIGITAL
INFRASTRUCTURE



PARTNERSHIP FORMATION

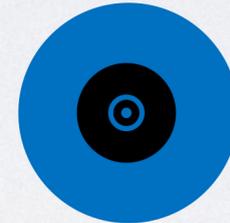


BECOMING DIGITAL SAVVY

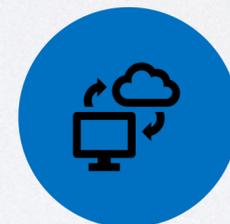
POTENTIAL



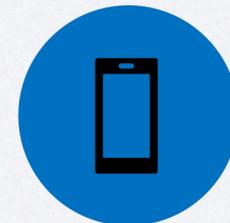
ADDRESS GUESTS
INDIVIDUALLY



OPTIMISED USAGE OF
GUESTS' DATA



MANAGING ONLINE
TRAVEL AGENTS (OTA)



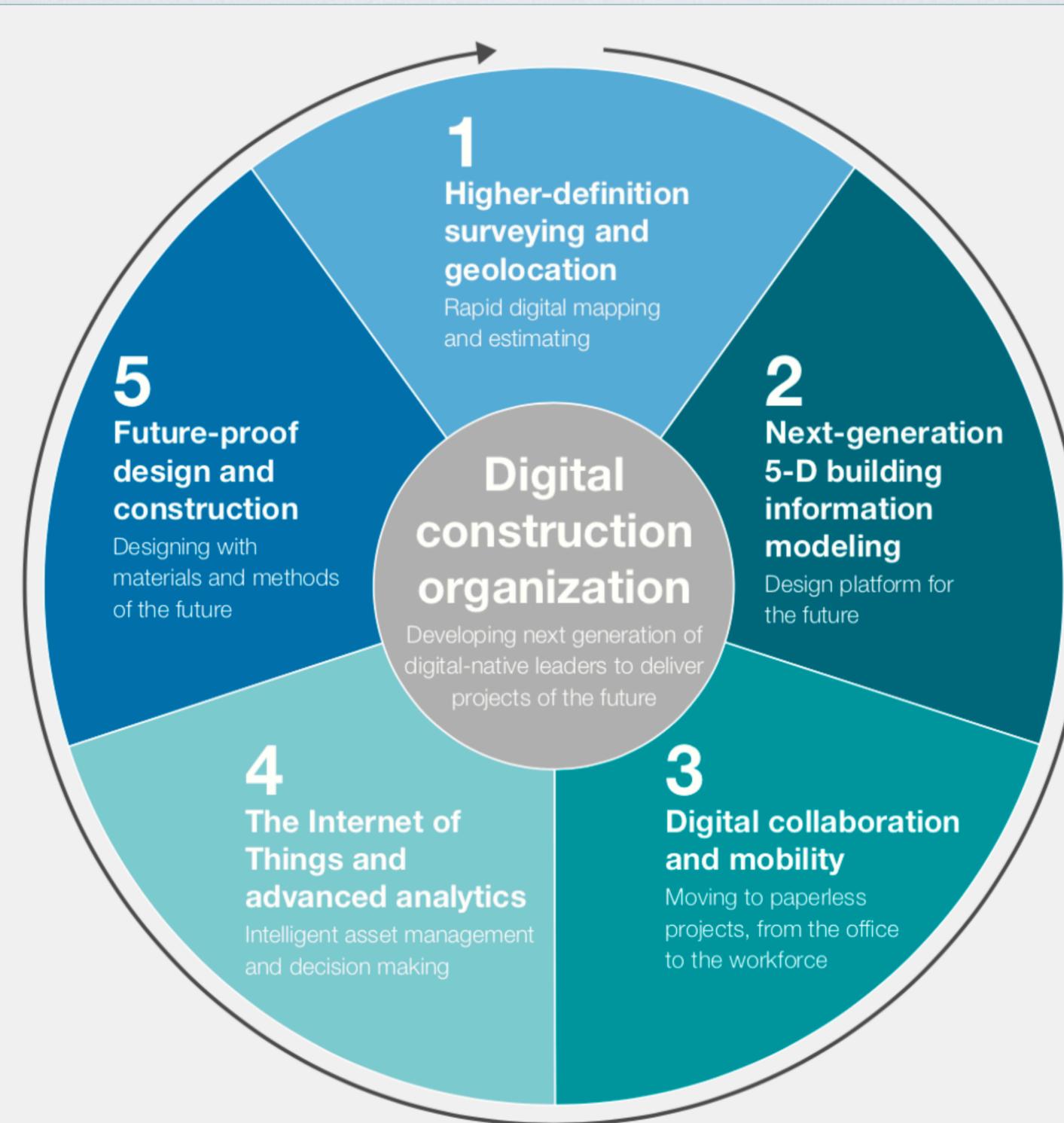
LAUNCHING OF DIGITAL
APPLICATIONS

IR 4.0 IN CONSTRUCTION SECTOR : A DIGITAL TRANSFORMATION

TOP GLOBAL CONSTRUCTION COMPANIES

Position	Country	Number Companies
1	China	26
2	USA	16
3	Japan	11
4	South Korea	10
5	Spain	7
6	France	4
7	Italy	4
8	Australia	3
9	Germany	3
10	Austria	2
11	Turkey	2
12	Brazil	2
13	Canada	2

5 TRENDS THAT WILL SHAPE CONSTRUCTION INDUSTRY

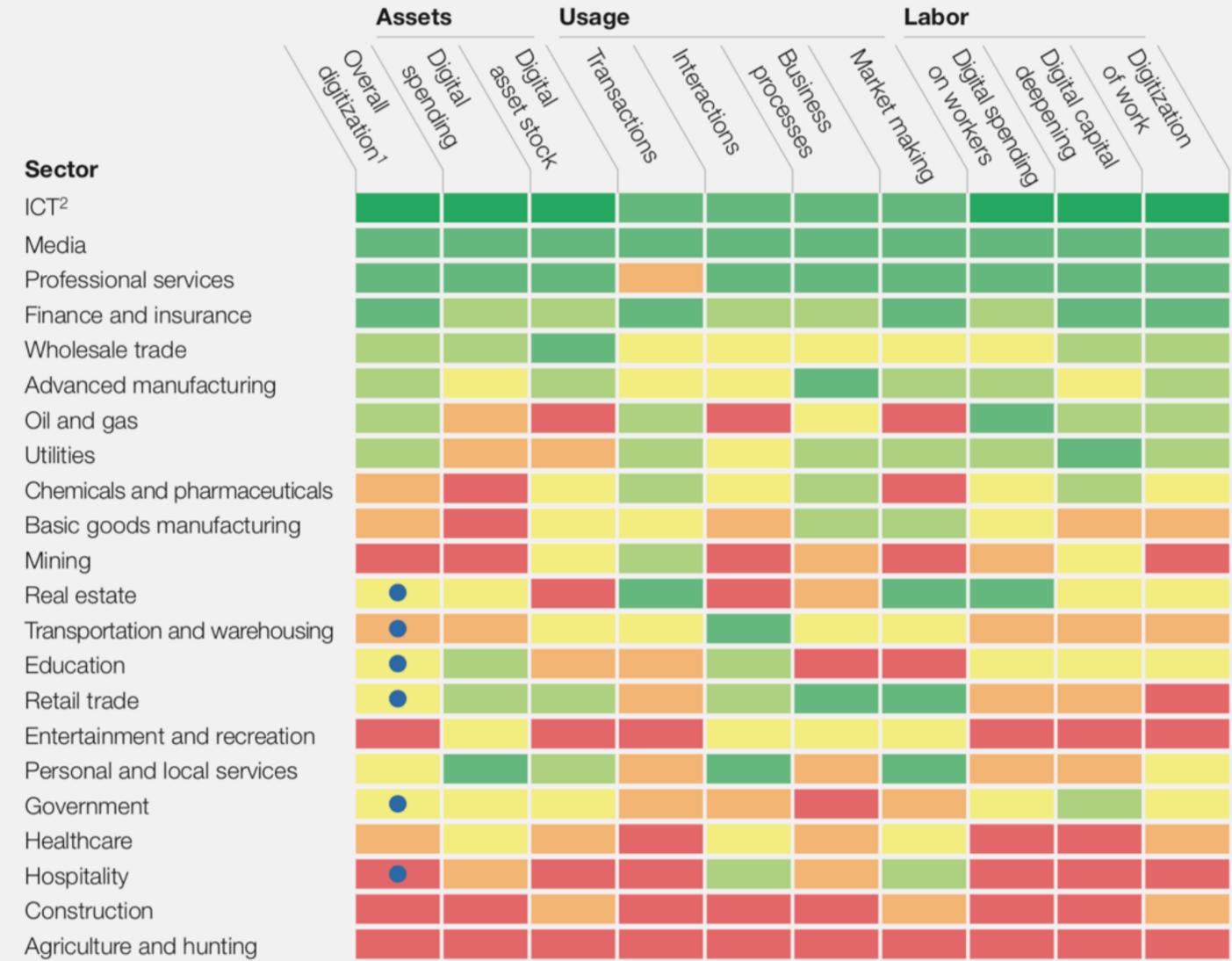


Source: McKinsey analysis

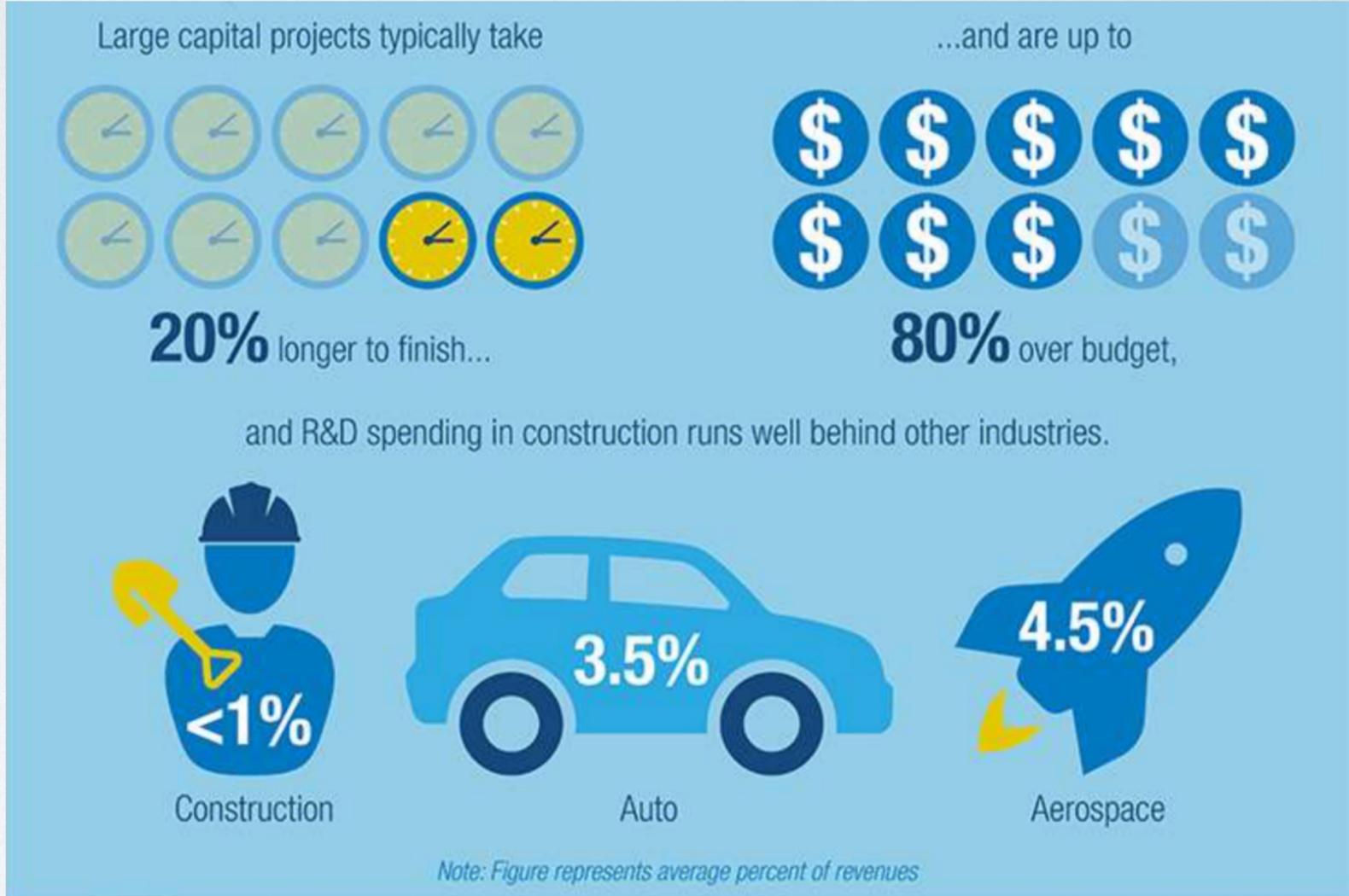
CONSTRUCTION INDUSTRY DIGITISATION

McKinsey Global Institute industry digitization index; 2015 or latest available data

Relatively low digitization Relatively high digitization
 ● Digital leaders within relatively undigitized sectors



¹Based on a set of metrics to assess digitization of assets (8 metrics), usage (11 metrics), and labor (8 metrics).
²Information and communications technology.
 Source: AppBrain; Bluewolf; Computer Economics; eMarketer; Gartner; IDC Research; LiveChat; US Bureau of Economic Analysis; US Bureau of Labor Statistics; US Census Bureau; McKinsey Global Institute analysis



4 LEVERS OF DIGITALISATION

Big Data

Generated by connected machines and mobile devices as well as by customer interfaces, digital data ensures new areas of application like optimizations on the shop floor.

Connectivity

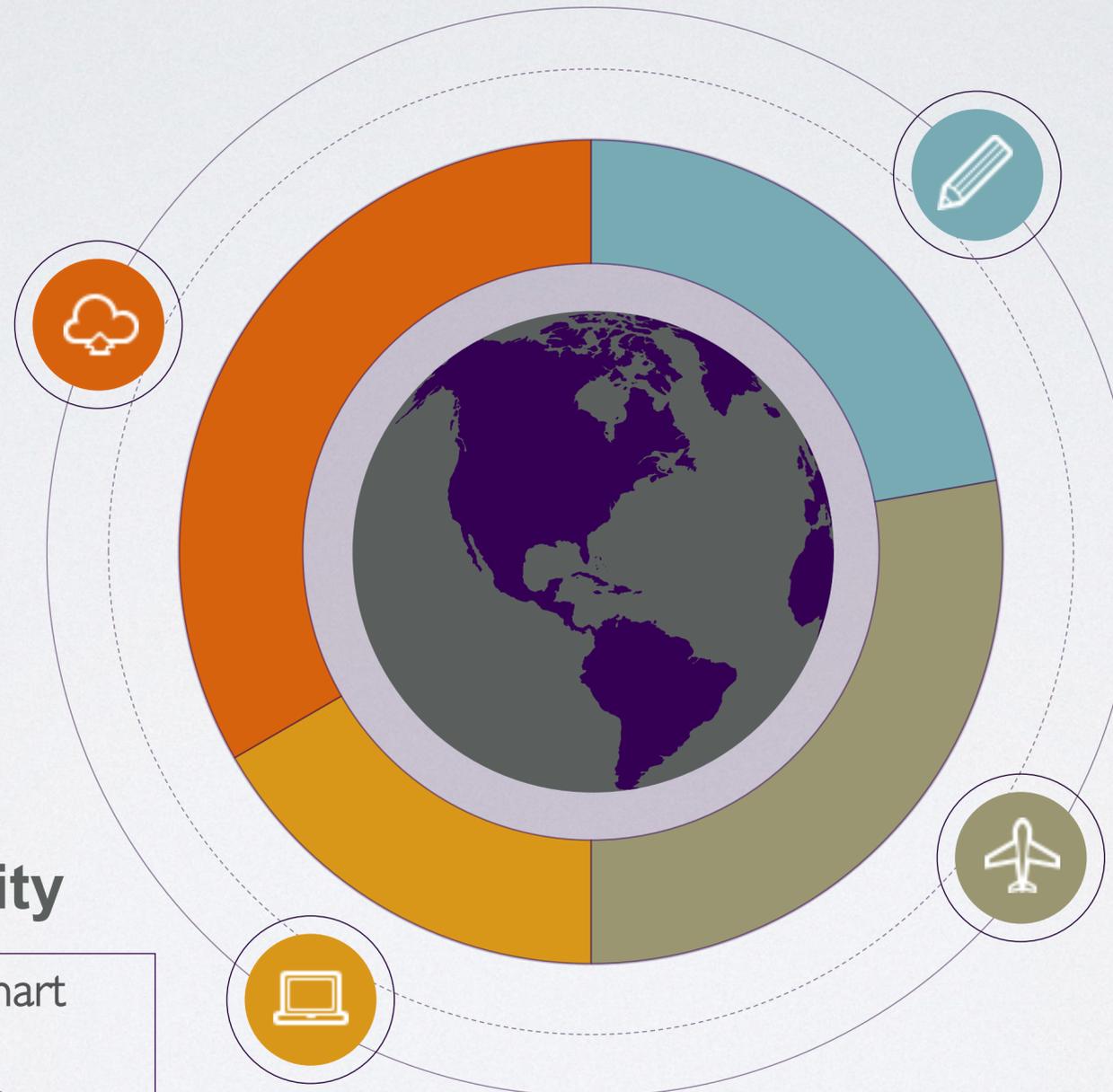
A networked economy powered by smart devices allows for an improved synchronization of processes and real-time reaction as well as acceleration of innovation.

Automation

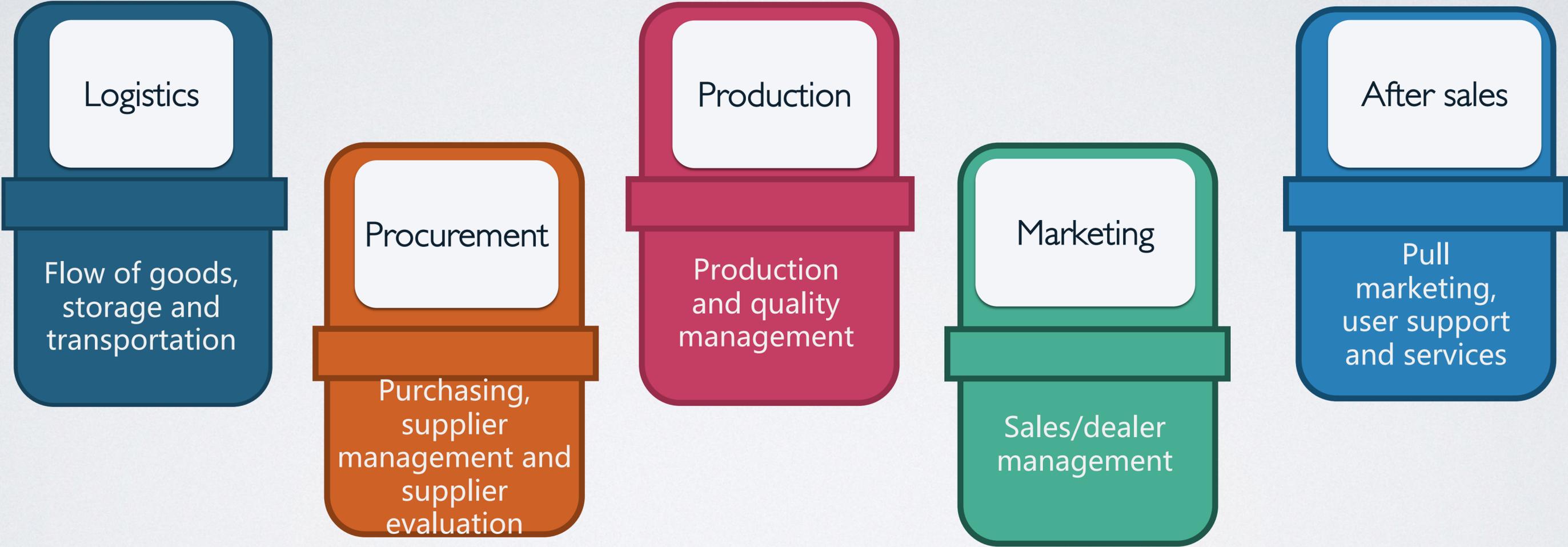
Artificial intelligence is on the rise; robots and machines work hand in hand with human beings in more and more areas, especially those requesting the intelligent processing of information.

Digital Customer Access

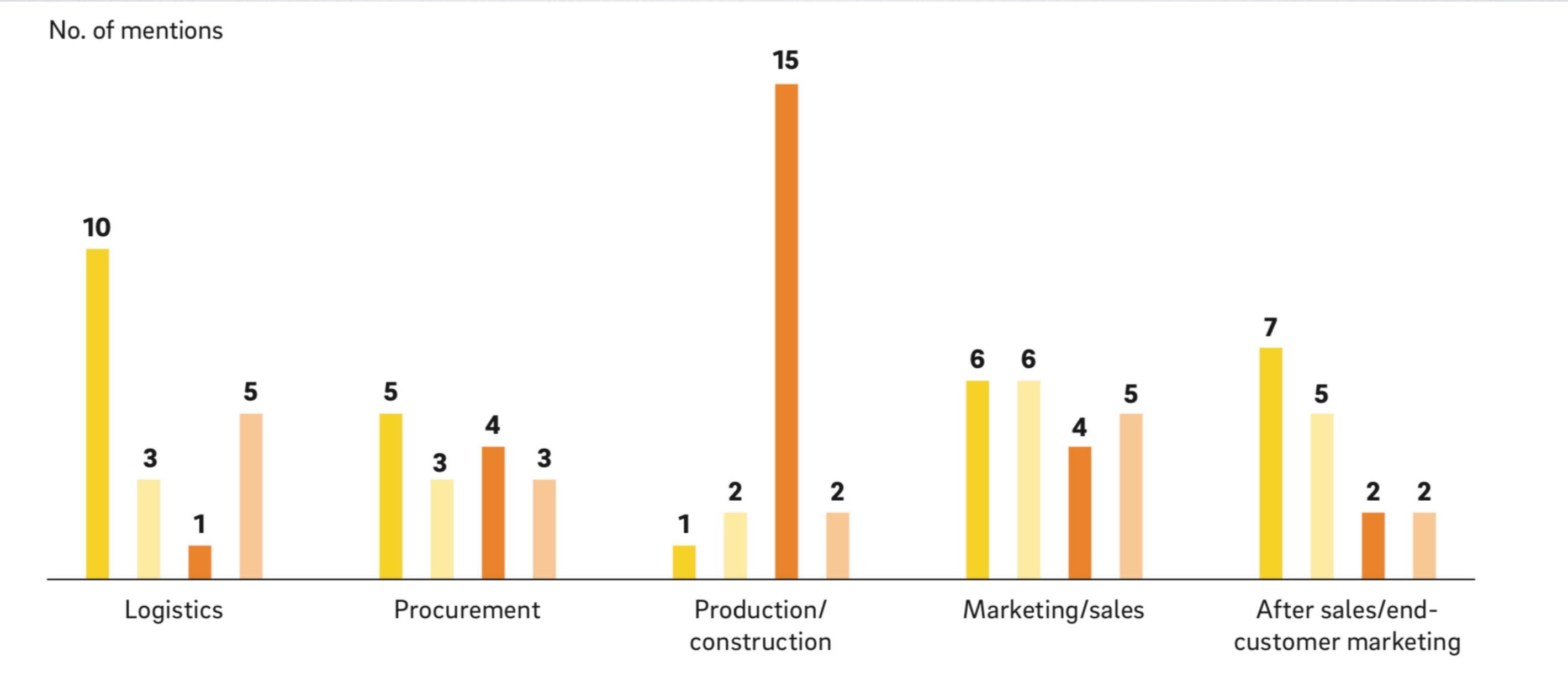
New intermediaries and data gatherers know customers almost better than they know themselves enabling them to offer full transparency and new kinds of services.



CONSTRUCTION INDUSTRY IR 4.0 VALUE CHAIN

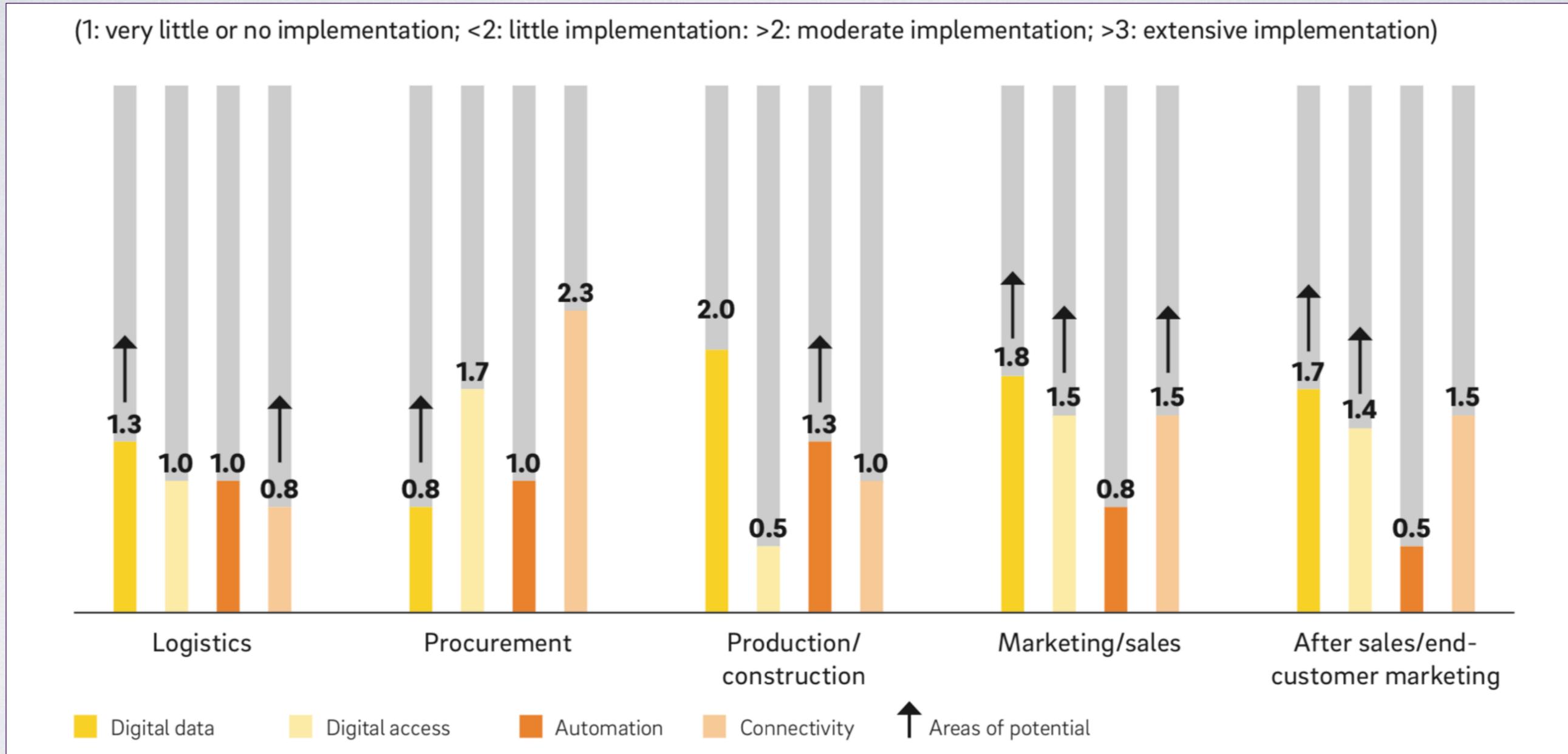


HIGHEST POTENTIAL BENEFICIARY AREA



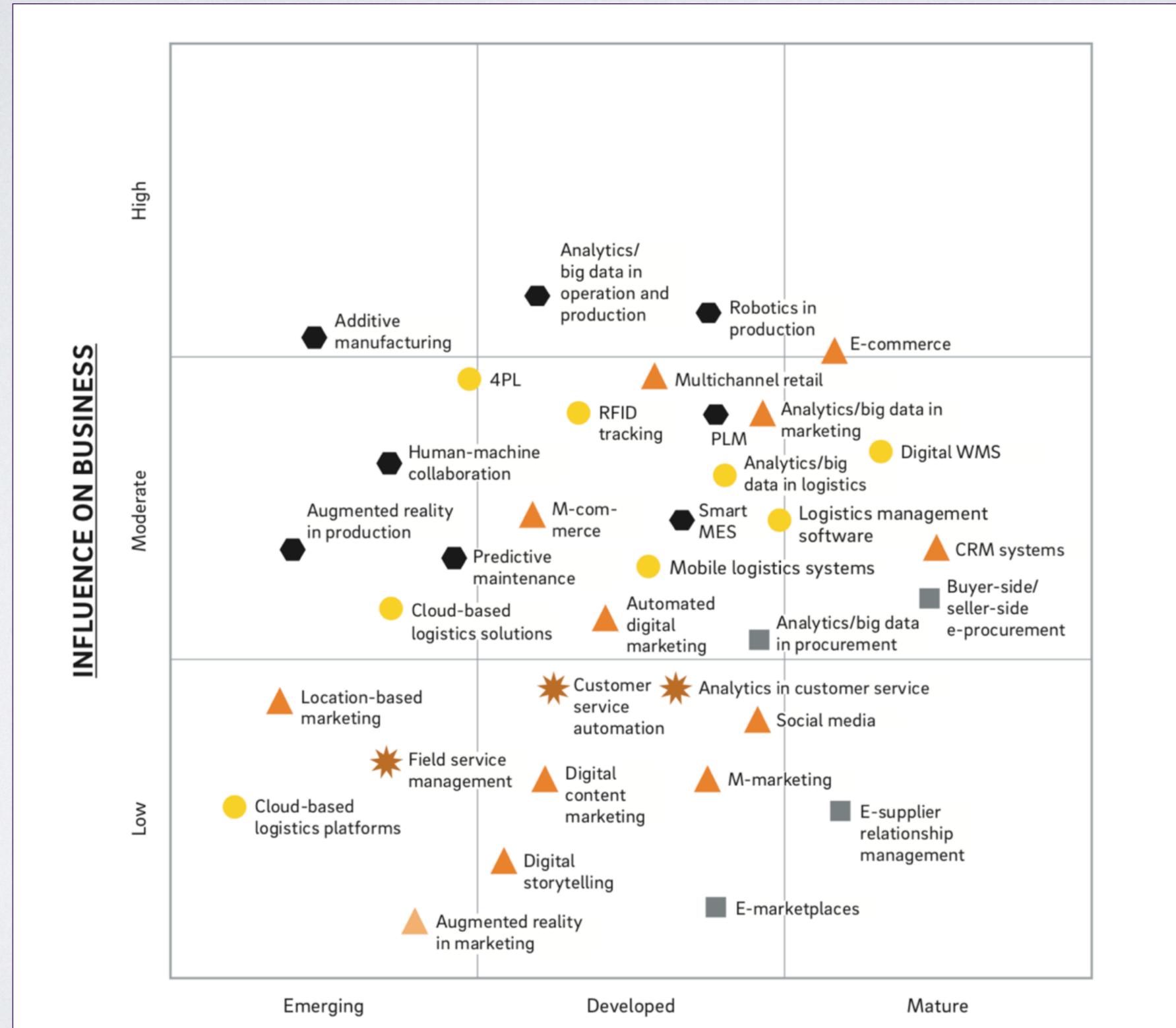
Source: Roland Berger

AREA WHERE DIGITALIZATION HAS BEEN IMPLEMENTED



Source: Roland Berger

DEGREE OF IR4.0 IMPLEMENTATION



IR 4.0 SOLUTIONS FOR CONSTRUCTION INDUSTRY

Design Management

- Visualize drawings and 3-D models on-site, using mobile platforms
- Update blueprints in the field with markups, annotations, and hyperlinks

Scheduling

- Create, assign, and prioritize tasks in real time
- Track progress online
- Immediately push work plan and schedule to all workers
- Issue mobile notifications to all subcontractors

Material Management

- Identify, track, and locate materials, spools, and equipment across the entire supply chain, stores, and work front

Staff Tracking

- Provide real-time status updates on total crew deployed across work fronts, number of active working hours, entry into unauthorized areas, and so on

Quality Control

- Offer remote site inspection using pictures and tags shared through app
- Update and track live punch lists across projects to expedite project closure

Contract Management

- Update and track contract-compliance checklists
- Maintain standardized communication checklists
- Provide updated record of all client and contractor communications

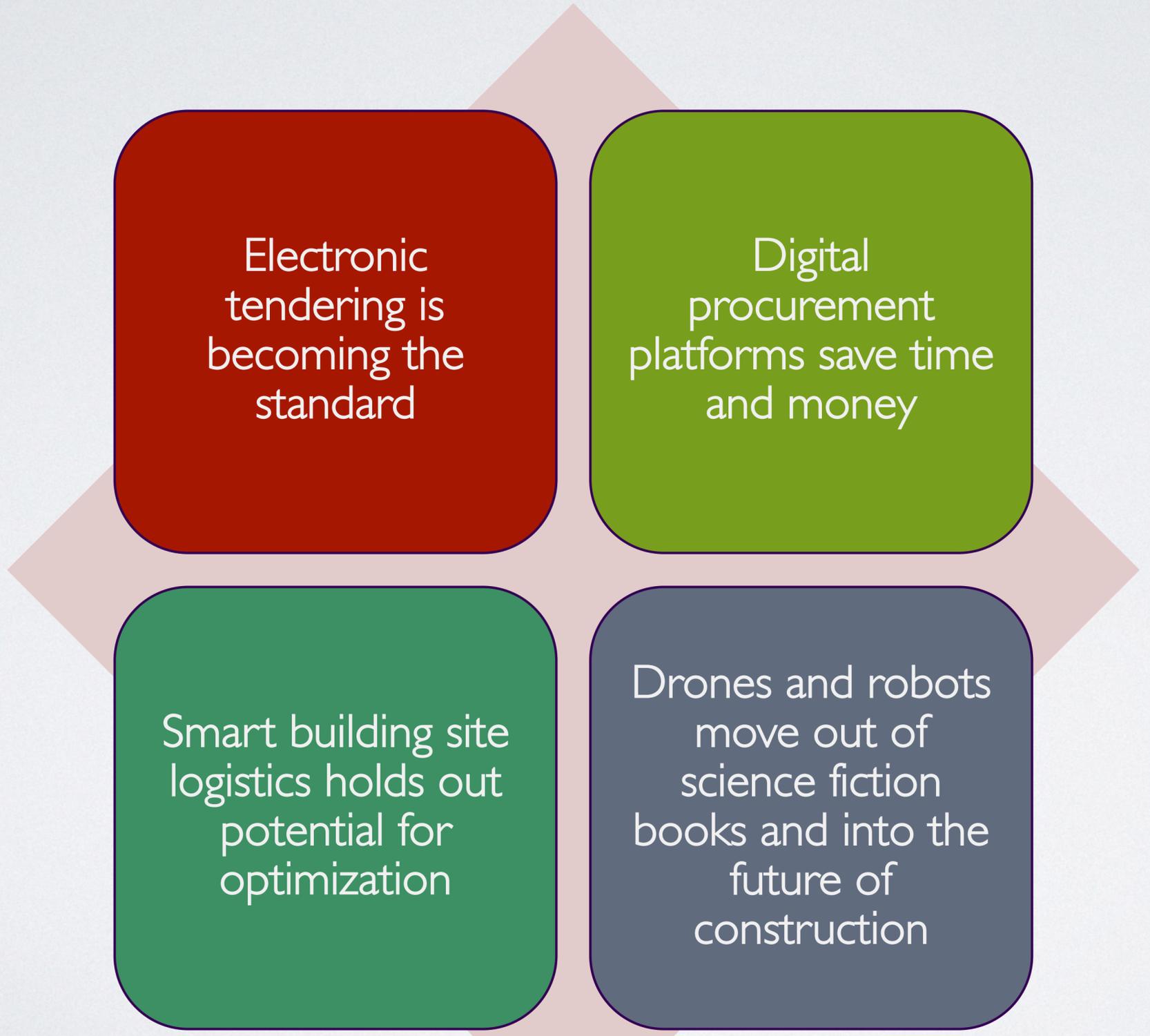
Performance Management

- Monitor progress and performance across teams and work areas
- Provide automated dashboards created from field data
- Offer staffing updates and past reports generated on handheld devices

Document Management

Upload and distribute documents for reviewing, editing, and recording all decisions
Allow universal project search across any phase

OTHER POTENTIAL SOLUTIONS IMPLEMENTATION



Electronic tendering is becoming the standard

Digital procurement platforms save time and money

Smart building site logistics holds out potential for optimization

Drones and robots move out of science fiction books and into the future of construction

FULL STACK IR 4.0 FOR CONSTRUCTION INDUSTRY



IR 4.0 TRANSFORMATION SUCCESS FACTORS

People:

Having the right skills in the organization

Action:

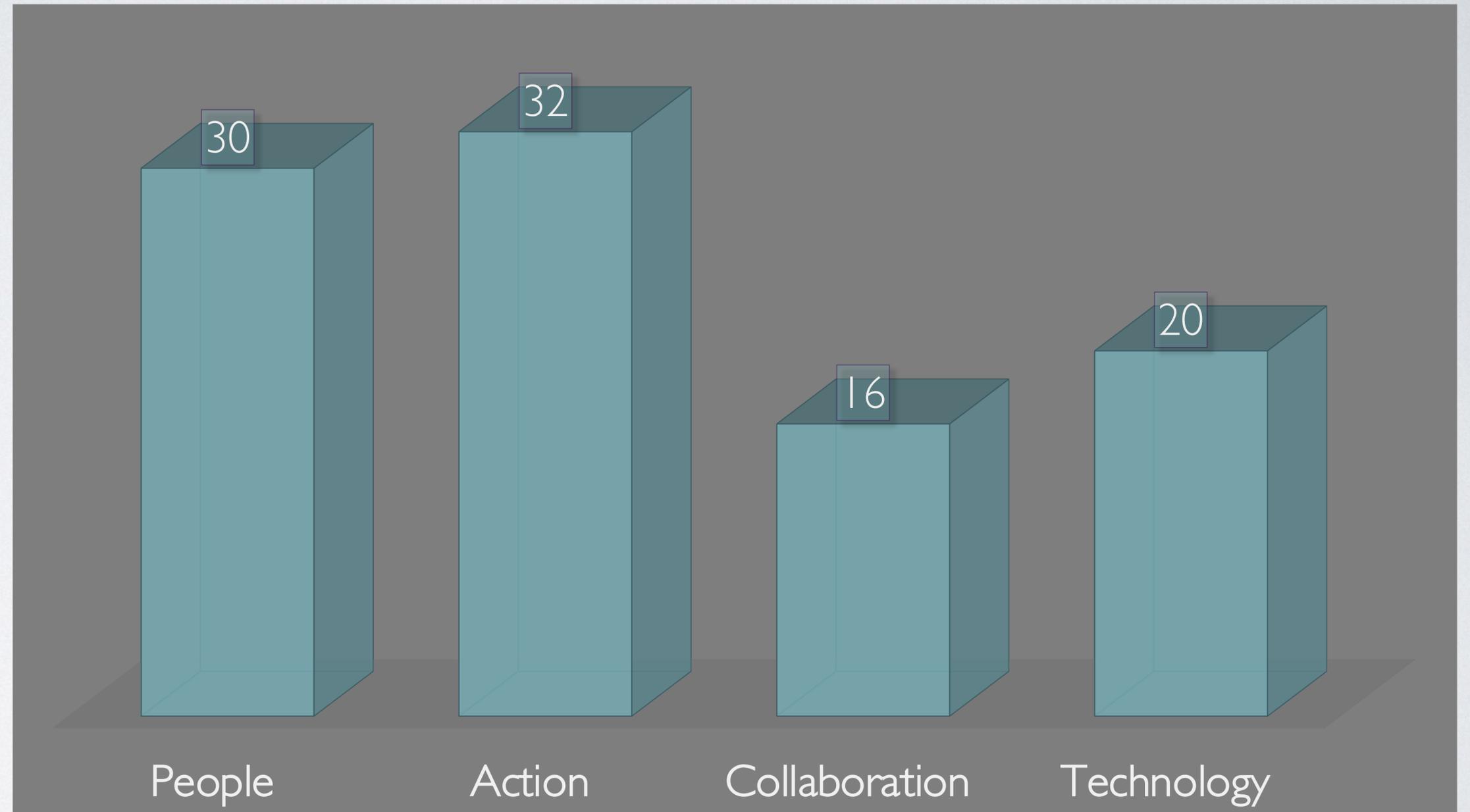
Having the right processes, attitudes and behaviours

Collaboration:

Working openly with partners to innovate

Technology:

Having the right Technology

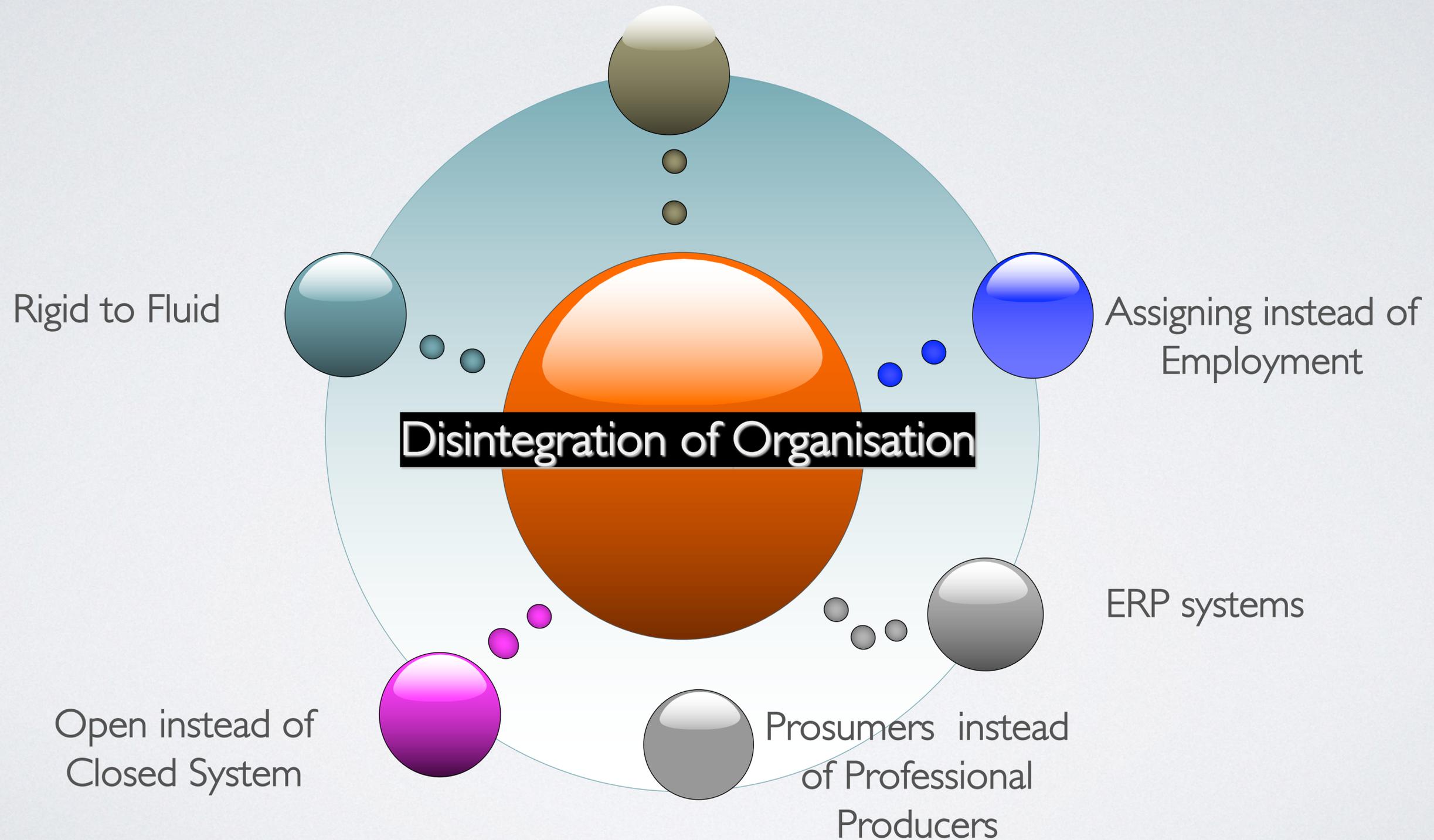


Source: Cap Gemini

IMPACT OF 4TH INDUSTRIAL REVOLUTION ON BUSINESSES

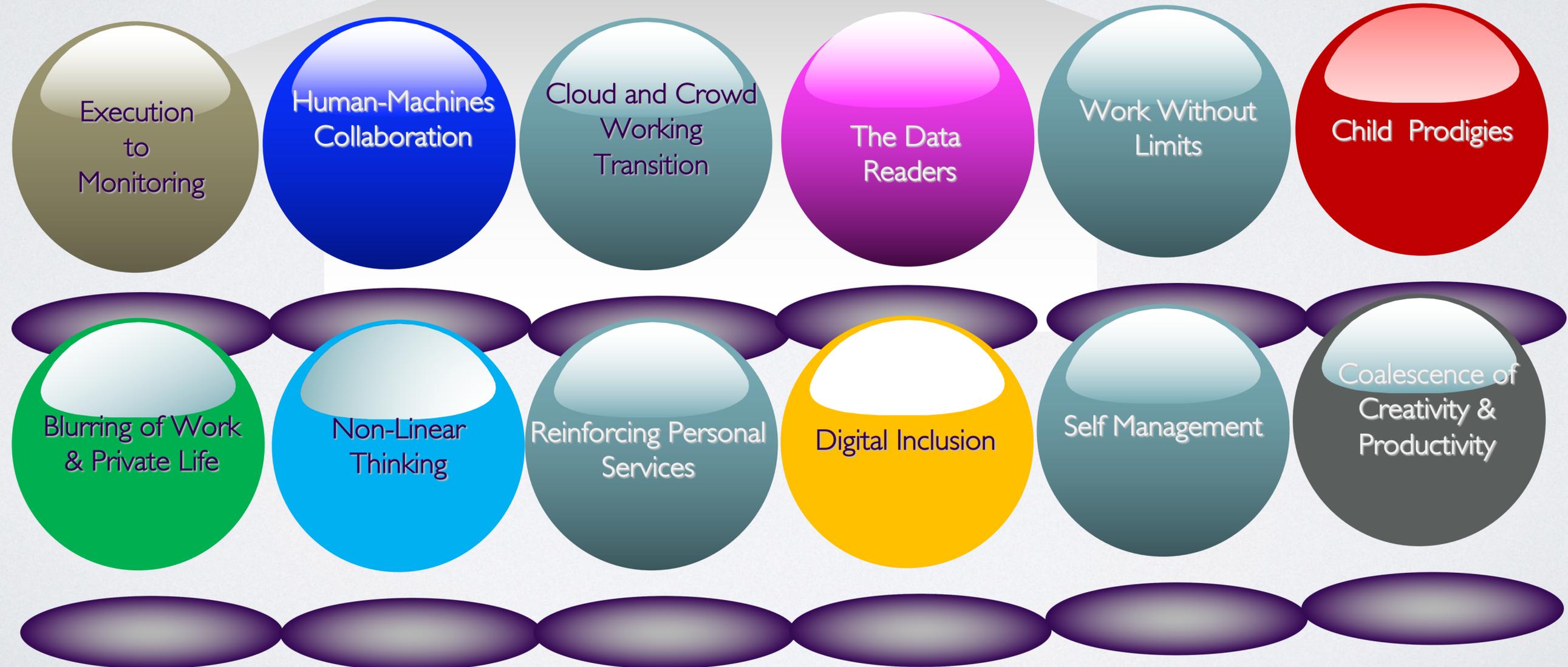
IMPACT OF IR 4.0 AT WORKPLACE

Peer-to-Peer
instead of Hierarchy



IMPACT AT WORKPLACE

Digital Work Infusion



IMPACT OF IR 4.0 ON JOBS

Pessimistic Scenarios	Optimistic Scenarios
<p>Frey/Osborne Forecast – around 47% of jobs in the US at risk</p>	<p>Boston Consulting Group –IR4.0 will promote job growth but the stakeholders must help the workforce to adapt</p>
<p>World Economic Forum – current estimates of global job losses due to digitalisation range from 2 million to as high as 2 billion by 2030. There is great uncertainty about the overall impact of digital transformation on jobs, which concerns also about impact on wages and working conditions.</p>	<p>VDMA (Germany) – Replacement of workers can't be observed –even there is 3rd highest density of robots in Germany – but new kinds of working organization with new and higher challenges of man-robot-collaboration come up – with increasing number of jobs – but in new forms of qualification</p>

DIGITAL TRANSFORMATION AND ITS IMPACT ON SKILLS

Impact on Different Levels	“Platform Economy/Internet of Data and Applications”	“Industry 4.0/Internet of Things”
Size of network	Small Technology companies, large network effect. Disruption of traditional services	Large/small companies partly becoming technology companies, network effect after transformation
Workforce	Few employees, highly trained and highly paid	Considerable workforce in production, middle-of-the-road income
Nature of skills	Universal application of skills (tendency to freelancing)	Specialised application of skills (tendency to employment)
Digital skills training/Lifelong Learning Trajectory	University, MOOCs, “street education”. Global and intangible asset-based training.	University, vocational training, re-skilling and up-skilling. Local tangible and intangible asset-based and industry specific education

NEW TYPE OF SKILLS: FUSION SKILLS

Human & Machine Hybrid Activities					
Human compliment machines			AI gives human superpowers		
TRAIN	EXPLAIN	SUSTAIN	AMPLIFY	INTERACT	EMBODY
Re-humanising time			Intelligent interrogation		
Responsible normalizing			Bot-based empowerment		
Judgement integration			Holistic melding		
Reciprocal apprenticing					
Relentless reimagining					

Source: *Human + Machine, Reimagining Work in the Age of AI*, Paul R. Daugherty, H.James Wilson

FUSION SKILLS DEFINED

Re-humanising Time	The ability to increase the time available for distinctly human tasks like interpersonal interactions, creativity, and decision making in a reimagined business process
Responsible normalising	The art of responsibly shaping the purpose and perception of human-machine interactions as it relates to individuals, businesses and society
Judgment Integration	The judgment-based ability to decide a course of action when a machine is uncertain about what to do
Intelligent Interrogation	Knowing how best to ask questions of AI across levels of abstraction, to get the insights you need
Bot-based empowerment	Working well with AI agents to extend your capabilities , and create superpowers in business processes and professional careers
Holistic Melding	The ability to develop robust mental models of AI agents to improve process outcomes
Reciprocal Apprenticing	Performing tasks that alongside AI agents so. They can learn new skills; on the job training for people so they can work well within AI-enhanced processes
Relentless Reimagining	The rigorous discipline of creating new processes and business models from scratch, rather than simply automating old processes

IR 4.0 IMPLEMENTATION APPROACH

INDUSTRY 4.0 READINESS ASSESSMENT

- Are you ready to embark on the IR 4.0 Journey?
- What are the considerations?
- Do you have the resources and capabilities for this journey

- <https://i4-0-self-assessment.pwc.nl/i40/landing/>
- <https://www.industrie40-readiness.de/?lang=en>

SAMPLE ASSESSMENT


 Automotive


 Energy


 Financial Service


 Healthcare & Pharma


 Industrial Products


 Private Equity


 ?


 ?


 ?


 ?

Please select the scope for your assessment

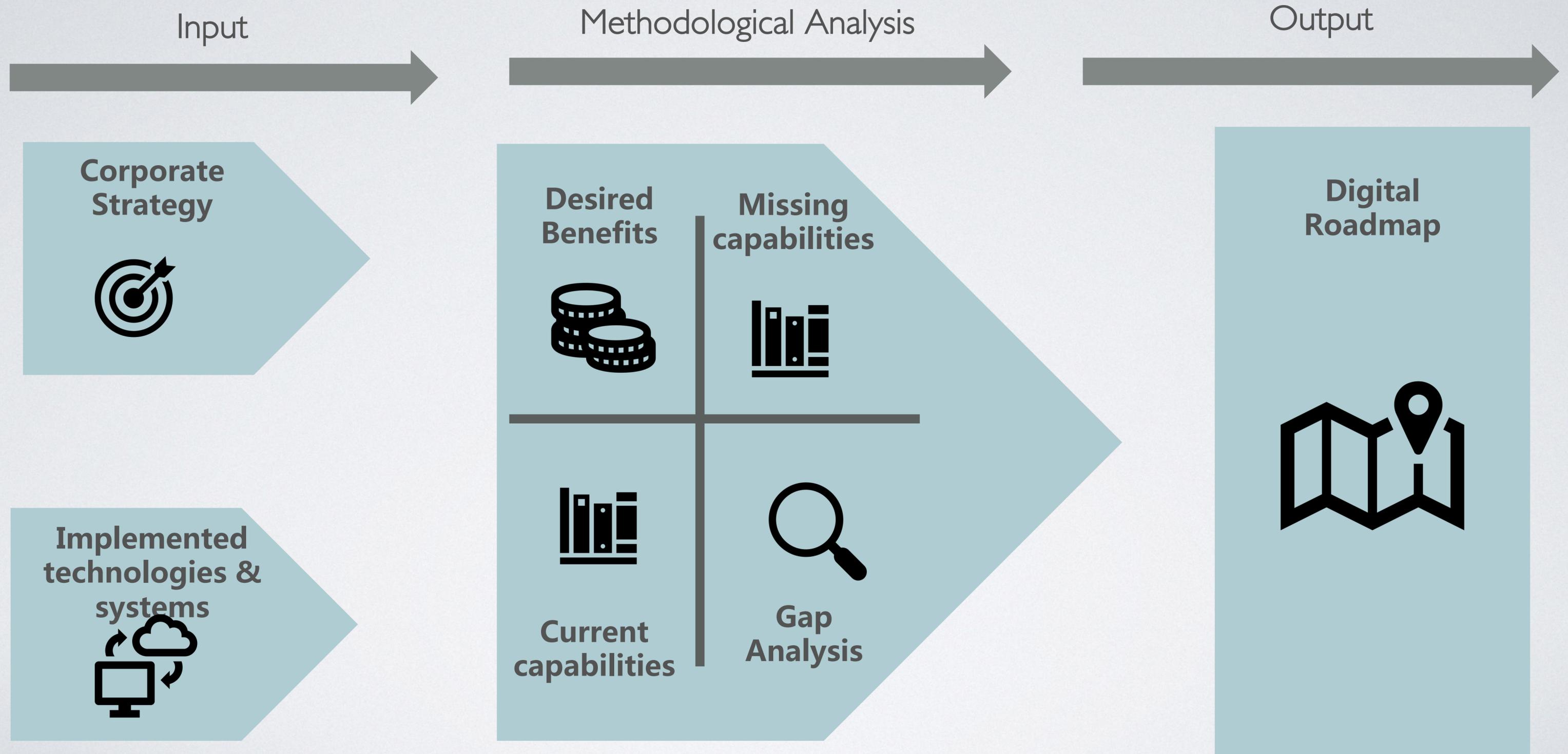
Please define the scope for your Self Assessment here. The first three categories (Business Models, Product & Service Portfolio, Market & Customer Access and Value Chains & Processes) are essential for Industry 4.0 / Digital Operations and the Self Assessment and are therefore mandatory. To get an even more detailed view of your maturity you can optionally choose the other three categories (IT Architecture, Compliance, Legal, Risk, Security & Tax and Organization & Culture) individually. Of course you get the most comprehensive result if you go for the complete assessment.

The **Vertical Integrator** already added digital features to his products and/or digital products and services to his portfolio. He uses data to create value and already achieved some integration of his internal vertical value chain from the enterprise resource planning over the shop floor to the manufacturing machines or even products.

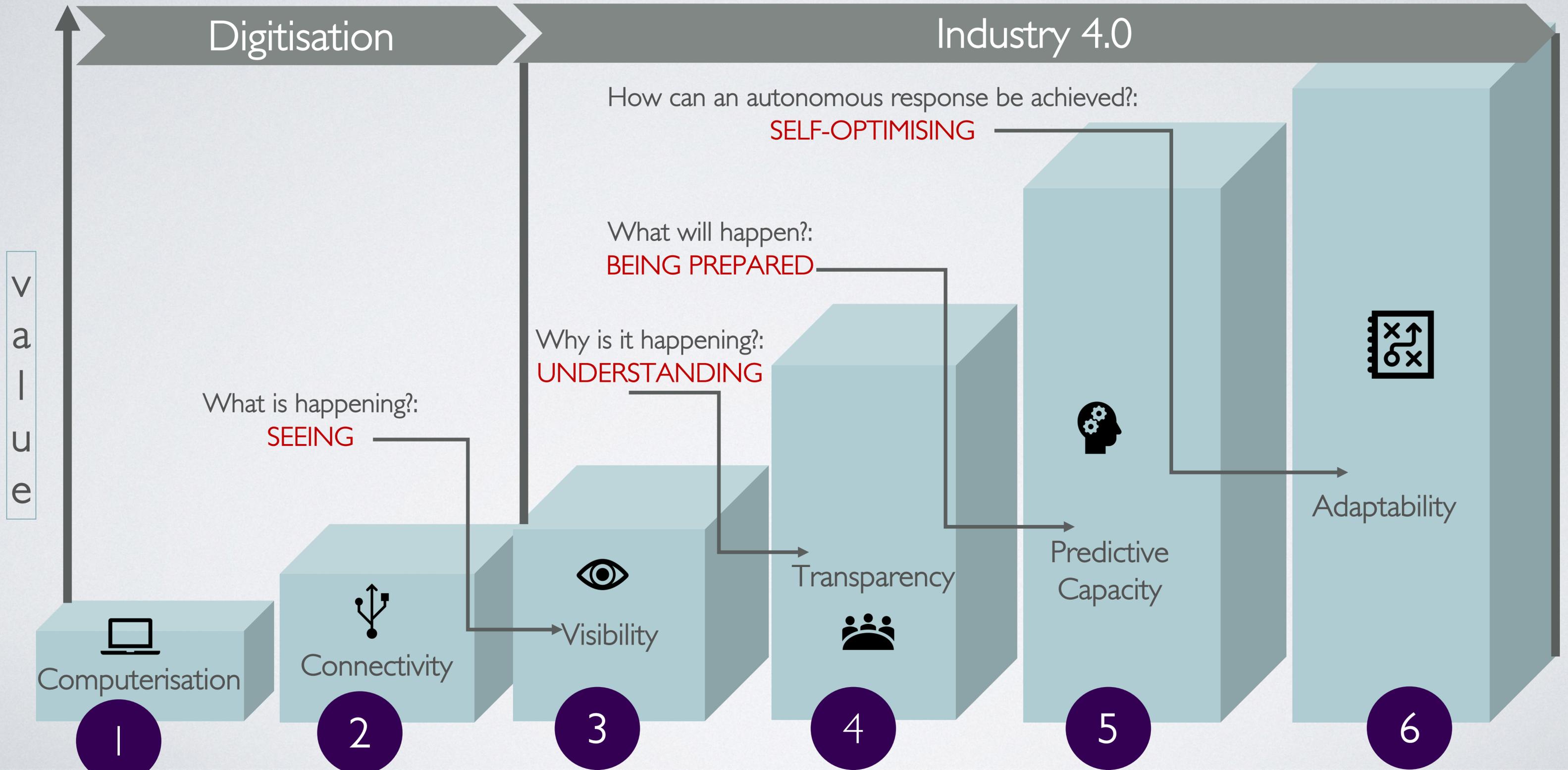
II

	I	II Vertical Integrator	III	IV
Business Models, Product & Service Portfolio		Digital product and service portfolio with software, network (M2M) and data as key differentiator		
Market & Customer Access		Multi channel distribution with integrated use of online and offline channels ; Data analytics deployed, e. g. for personalization		
Value Chains & Processes		Vertical digitization and integration of process and data flows within the company		
IT Architecture		Homogeneous IT architecture inhouse		
Compliance, Legal, Risk, Security & Tax		Digital challenges recognized but not comprehensively addressed		
Organization & Culture		Cross functional collaboration but not structured and consistently performed		
	Digital Novice		Horizontal Collaborator	Digital Champion

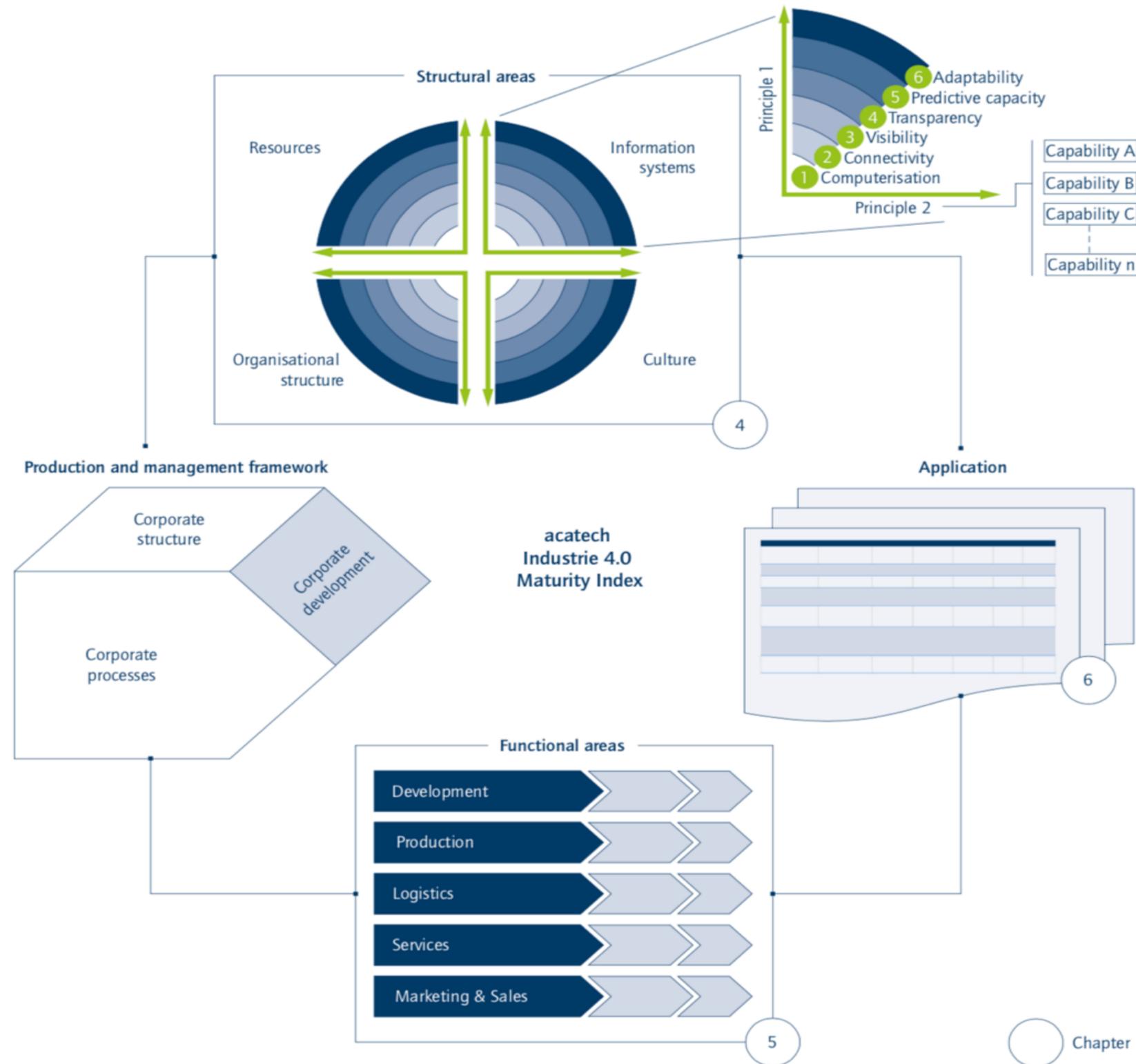
IR 4.0 IMPLEMENTATION ROADMAP



IR 4.0 DESIGN STAGES



INDUSTRY 4.0 MATURITY INDEX



5 KEY TAKEAWAYS



-  The IR 4.0 leaders are closing the gap between their IR 4.0 ambition and action
-  Driving enterprise value from IR 4.0 require scale and Integration across function and product /services lifecycle
-  Profound value is available from IR 4.0 driven performance improvement
-  You cant buy excellence in IR 4.0, it takes work and smart strategic roadmap
-  Understand where you stand versus your competitors

WAY FORWARD-5 QUESTIONS TO ASK FOR SMARTER IR 4.0

1. **Why** are you pursuing change? Knowing why is the starting point on the IR 4.0 journey. Have a precise understanding your IR 4.0 playing field — from operational changes to enterprise-wide transformation.
2. **What** kind of performance and value do you need to deliver as a business? Knowing what will differentiate you from competitors will help you decide how to prioritize new IR 4.0 technology choices *in the present and the future*.
3. **When** will IR 4.0 initiatives unfold within a smart sequence of ongoing change over time? Deciding what to do first, second, third and beyond will optimize your new capabilities and maximize return on investment.
4. **How** will you implement, govern the process and track change strategically to maximize performance and value capture? An informed *governance structure, approach* and *value-tracking* methodology will be critical to success.
5. **Who** do you need to include in your IR 4.0 future to deliver the highly specialized, cross-functional skills that maximize performance? The talent challenge is no longer an HR issue but an overarching business challenge for the C-suite.

THANK YOU