



" اولین کنفرانس ملی تحول دیجیتال "

۱۰ اسفندماه ۱۴۰۱ - دانشگاه خاتم

Leadership in Industrial Digital Transformation

A Strategic Guide to Creating a Flourishing Industry 4.0 Ecosystem

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What is Industry 4.0?

The term Industry 4.0 encompasses a promise of a new industrial revolution, one that marries advanced manufacturing techniques with the Internet of Things to create manufacturing systems that are not only interconnected but communicate, analyze, and use information to drive further intelligent action back in the physical world (Deloitte).

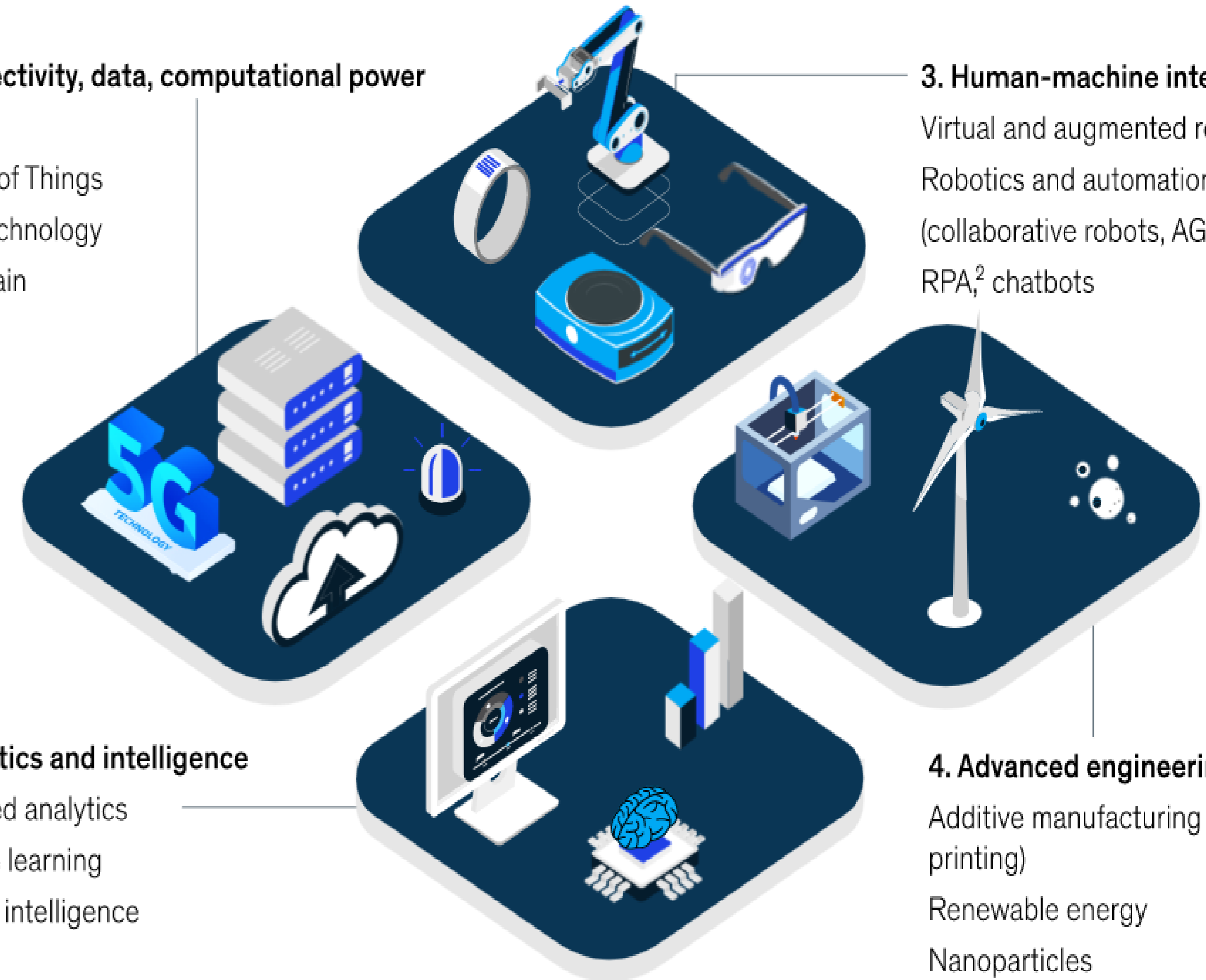
What is Digital Transformation?

Digital industrial transformation is a path for companies to harness the power of Industry 4.0, creating and monetizing IIoT solutions by embedding new digital technologies and capabilities in their legacy assets.(Deloitte)

Industry 4.0 is characterized by 4 foundational technologies applied along the value chain.

1. Connectivity, data, computational power

- Sensors
- Internet of Things
- Cloud technology
- Blockchain



3. Human-machine interaction

- Virtual and augmented reality
- Robotics and automation (collaborative robots, AGVs¹)
- RPA,² chatbots

2. Analytics and intelligence

- Advanced analytics
- Machine learning
- Artificial intelligence

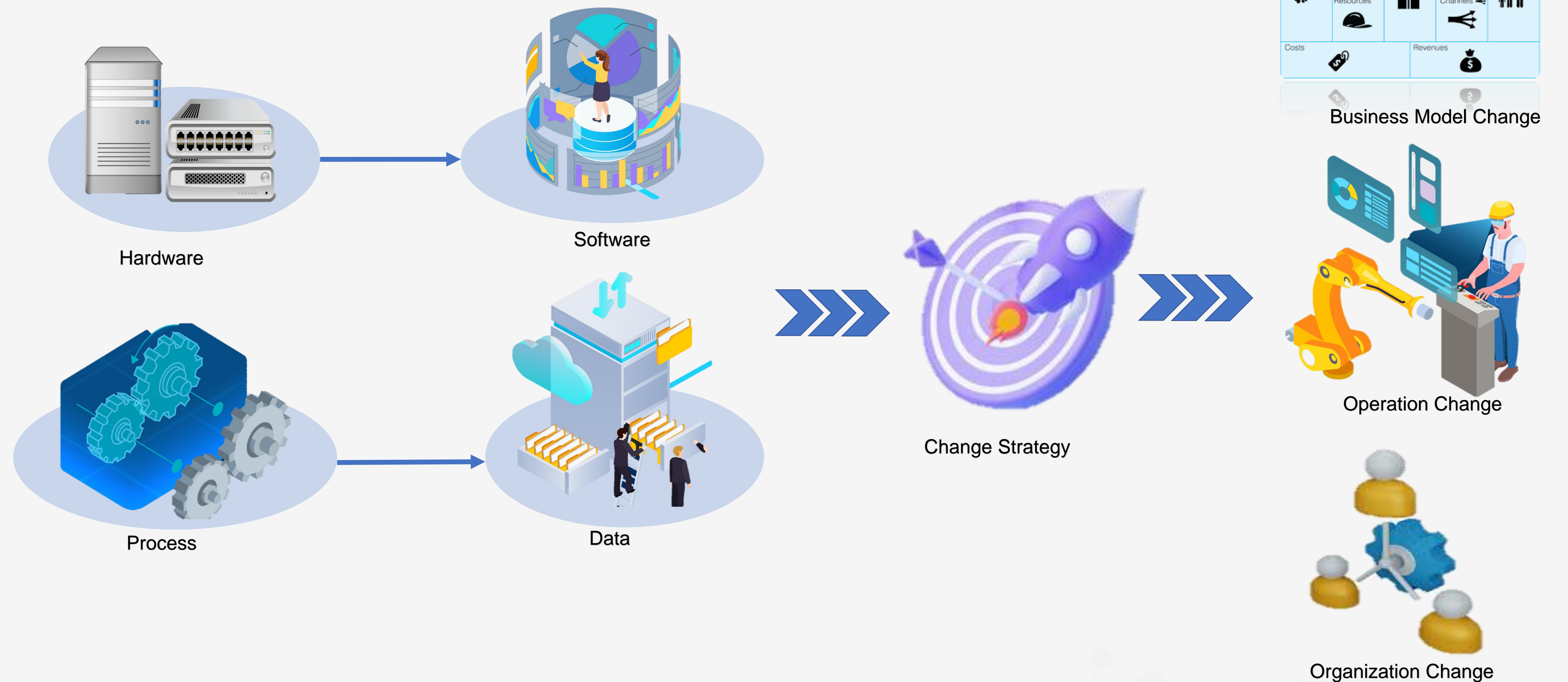
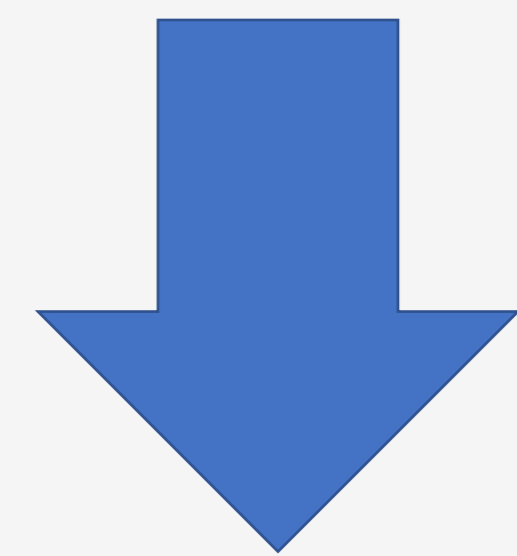
4. Advanced engineering

- Additive manufacturing (eg, 3D printing)
- Renewable energy
- Nanoparticles

McKinsey & Company

Industry 4.0 is transforming how organizations run by bringing real-time data and intelligence to operations.

Basic Industry 4.0, is frequently associated with the development and adoption of new technologies (Big data, IOTs and additive technologies) in industries



The main goals of this new digital industry lie in three core aspects:

1. improving operational efficiency,
2. optimizing design and governance of the value chain and
3. developing new business models,

Strategy, not Technology, Drives Digital Transformation

Is Cisco shifting its Core Business model?

Cisco is transforming from traditional/core hardware business to being software- and services-driven, and from onetime sales to a subscription/as-a-service model.

The screenshot shows the Cisco+ website landing page. At the top right, there are links for 'How to Buy', 'Partners', 'Log in', and 'EN US'. Below this is the Cisco logo and navigation links for 'Products and Services', 'Solutions', 'Support', and 'Learn'. On the right side, there are links for 'Explore Cisco' and a search icon. A dark banner across the top contains the text 'Discover Wi-Fi 6E, private 5G, and hybrid work innovations.' with a 'View now' button. The main content area features a breadcrumb 'Products & Services /', a graphic of three colored circles (blue, green, and a central one with a plus sign), and the heading 'Cisco+ Simplified IT, your way'. Below this is a 'Watch video (0:42)' button. A navigation bar at the bottom of the main section includes 'Benefits', 'Solutions', 'Strategy', 'Partner Quotes', and 'Resources', with 'Benefits' underlined. A 'Contact Cisco' button is on the right. The bottom section has the heading 'What is Cisco+?' and the text 'It's all the benefits of Cisco, now as-a-service. Boost speed, agility, and scale with on-demand solutions that intelligently adapt to your business needs.'

Industry 4.0 : A resilient, digitized future

It is not only 'smart factories' that are becoming increasingly connected. Across company and industry borders, a wide range of economic stakeholders are also becoming part of this trend: from medium-sized logistics companies to specialized technical service providers and creative start-ups. This revolution prefer new Business strategy, Process and Organization.

Producing in a more flexible, customized and efficient way

A large number of new production methods, business models and products will be developed and, it possible to dynamically adapt processing stations to a changing product mix. This means capacity can be used in the best way possible. In addition, the automated analysis processes that are used can reveal maintenance needs and production downtime risks.

Cooperation: working together to harness new opportunities

The digitalization of industry will not only transform value-creation processes but also give rise to new business models and new prospects for employees. Smart, digital production processes present great opportunities for businesses – particularly for SMEs.

Key social and political organizational tasks






However, as industry becomes more digitalized and connected, the number of interfaces and the amount of data that is exchanged will increase. Unified standards, IT security and data protection therefore play a crucial role. However, such transversal issues cannot be dealt with by one single company or industry. Only if all the relevant stakeholders from industry, academia, politics and society are heard and if they work together as partners from an early stage onwards can we make the fourth industrial revolution a success

Deloitte Framework

Digital Industrial Transformation begins with Strategy, which carried through to redesigning talent models, transformation Process, and retooling technology. Leaders screen each decision to confirm that it will contribute to agility, promote digital adaptation, and deliver value to customers



Mckinsey Framework

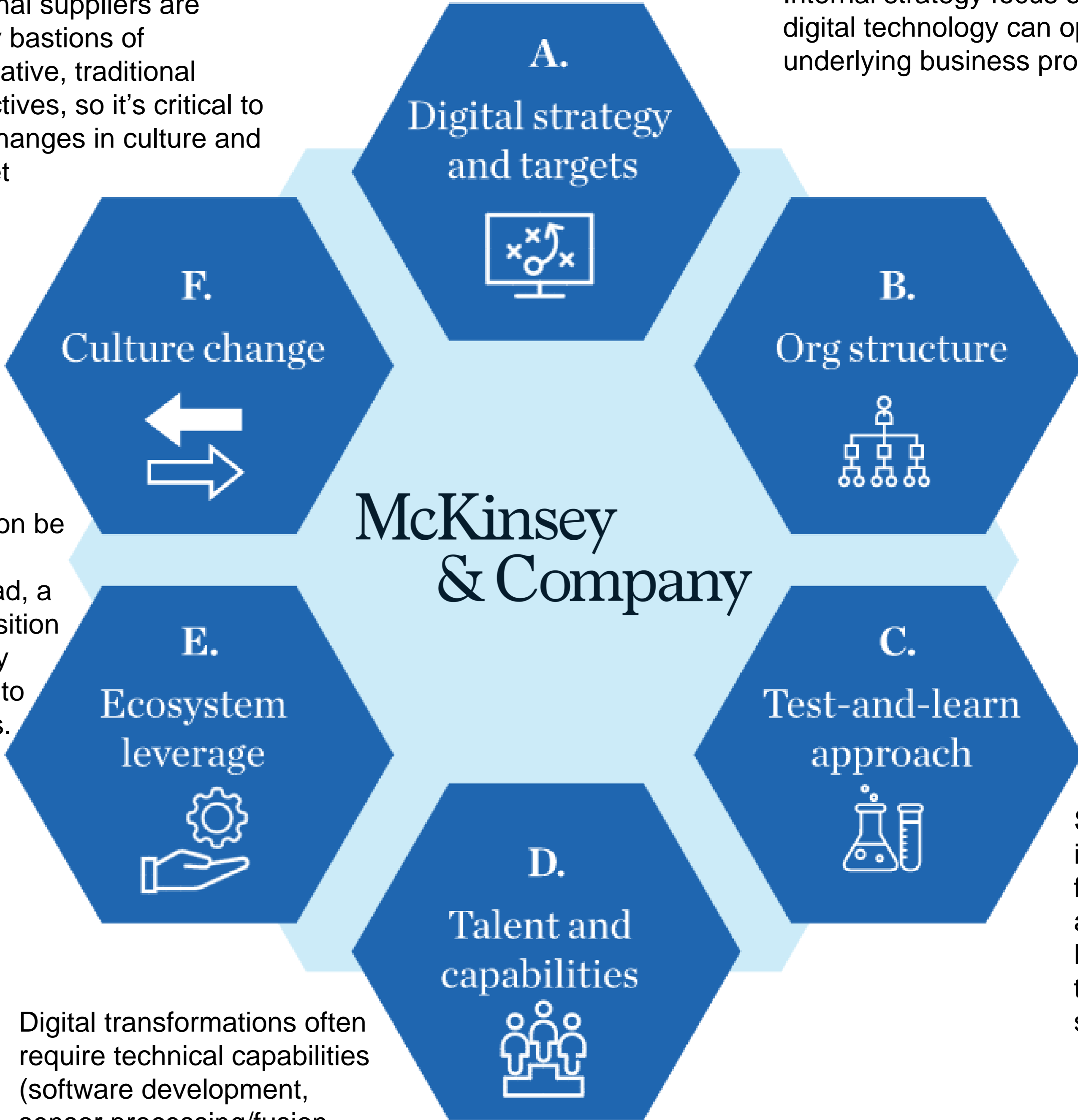
Archetype	Example
 Project collaboration	Provides start-ups with access to resources like space, tools, and media
 Joint projects	Start-ups pitch their digital solutions and prototypes to executives; winners work on a joint project
 Investments	Independent fund to invest in start-ups with focus on related sectors
 Joint venture	Develop own services to compete with competitors and tech giants
 Acquisition	Acquiring companies that fit the strategic roadmap to improve service offerings

Traditional suppliers are typically bastions of conservative, traditional perspectives, so it's critical to foster changes in culture and mind-set

external digital strategy is anchored on delivering a superior experience
Internal strategy focus on how digital technology can optimize underlying business processes

businesses are most successful in pushing through a digital transformation by organizing around one of three primary archetypes (Separate BU ,with in exciting BU ,Digital Center Of Competency)

No longer will competition be limited to a stand-alone technology stack; instead, a company's value proposition will become increasingly dependent on its ability to attract the right partners.

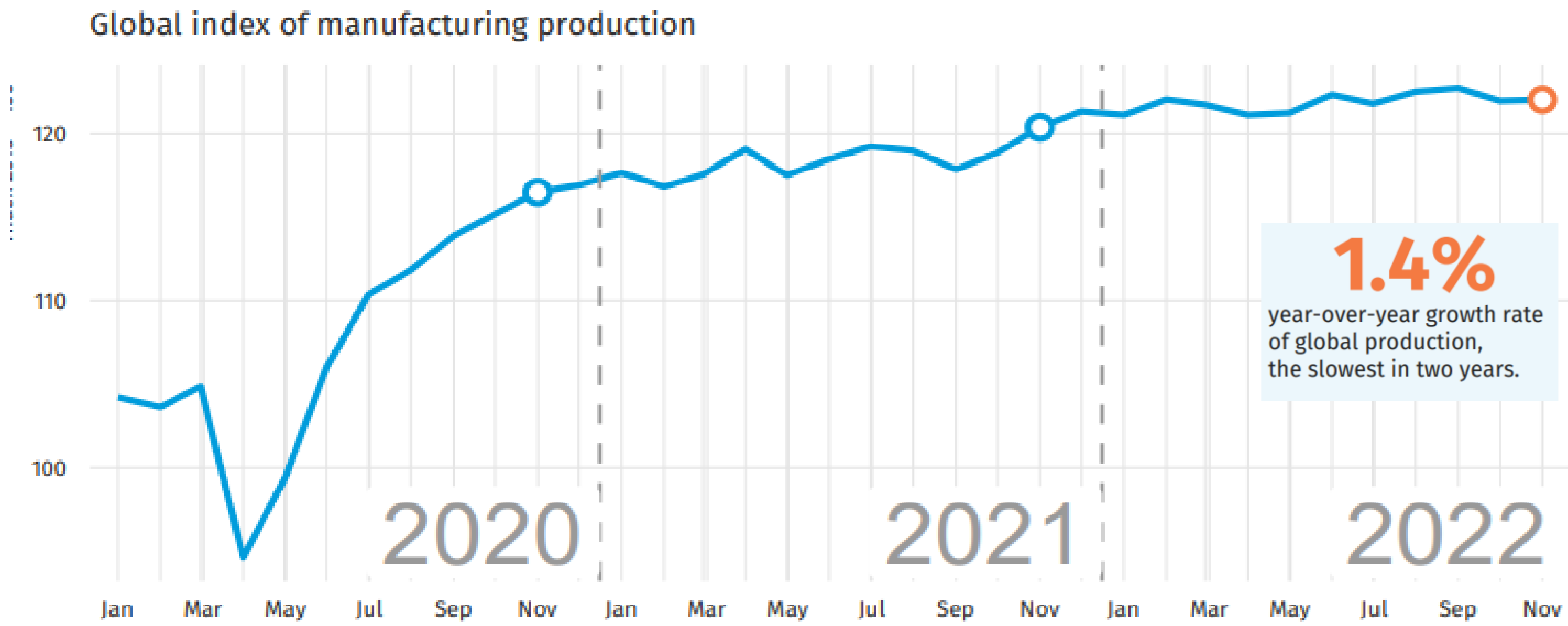


Digital transformations often require technical capabilities (software development, sensor processing/fusion, cybersecurity, artificial intelligence) that legacy organizations lack.

Start with a mix of process improvements and customer-facing initiatives. Undertaking an ongoing series of test-and-learn pilot projects is what gets the digital transformation started.

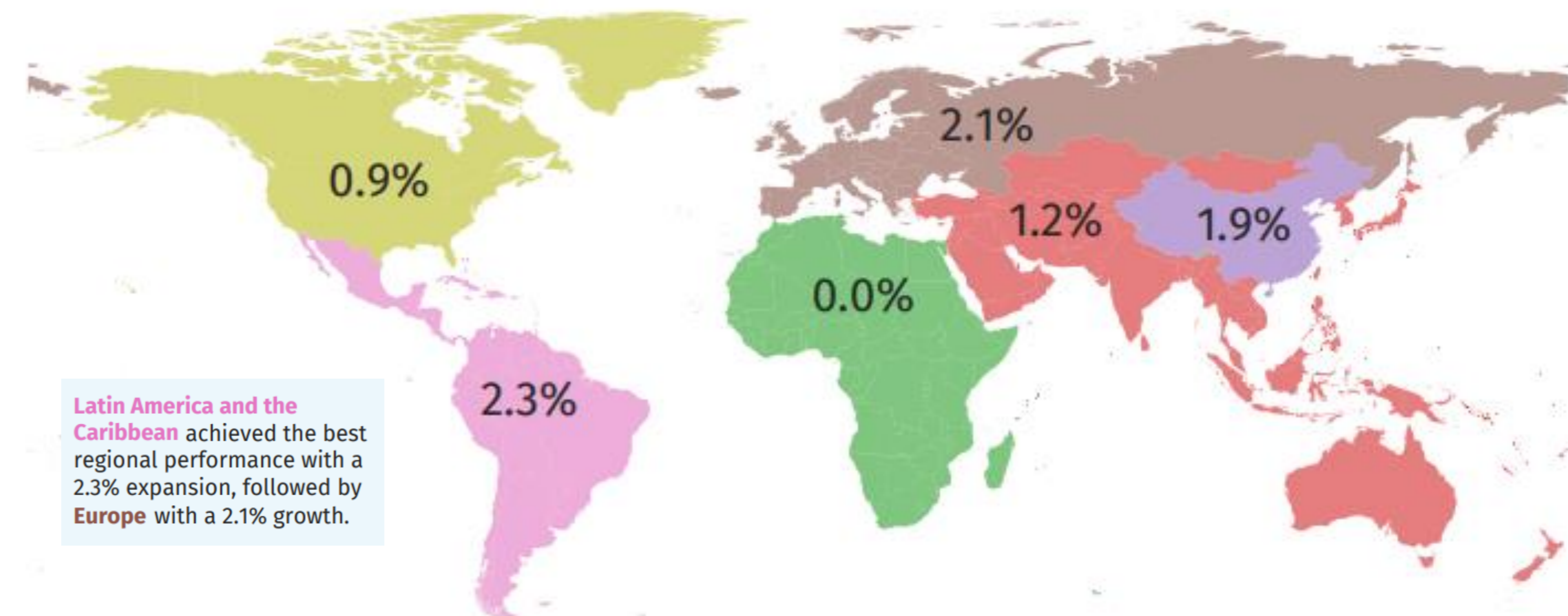
World Manufacturing Production

Global manufacturing

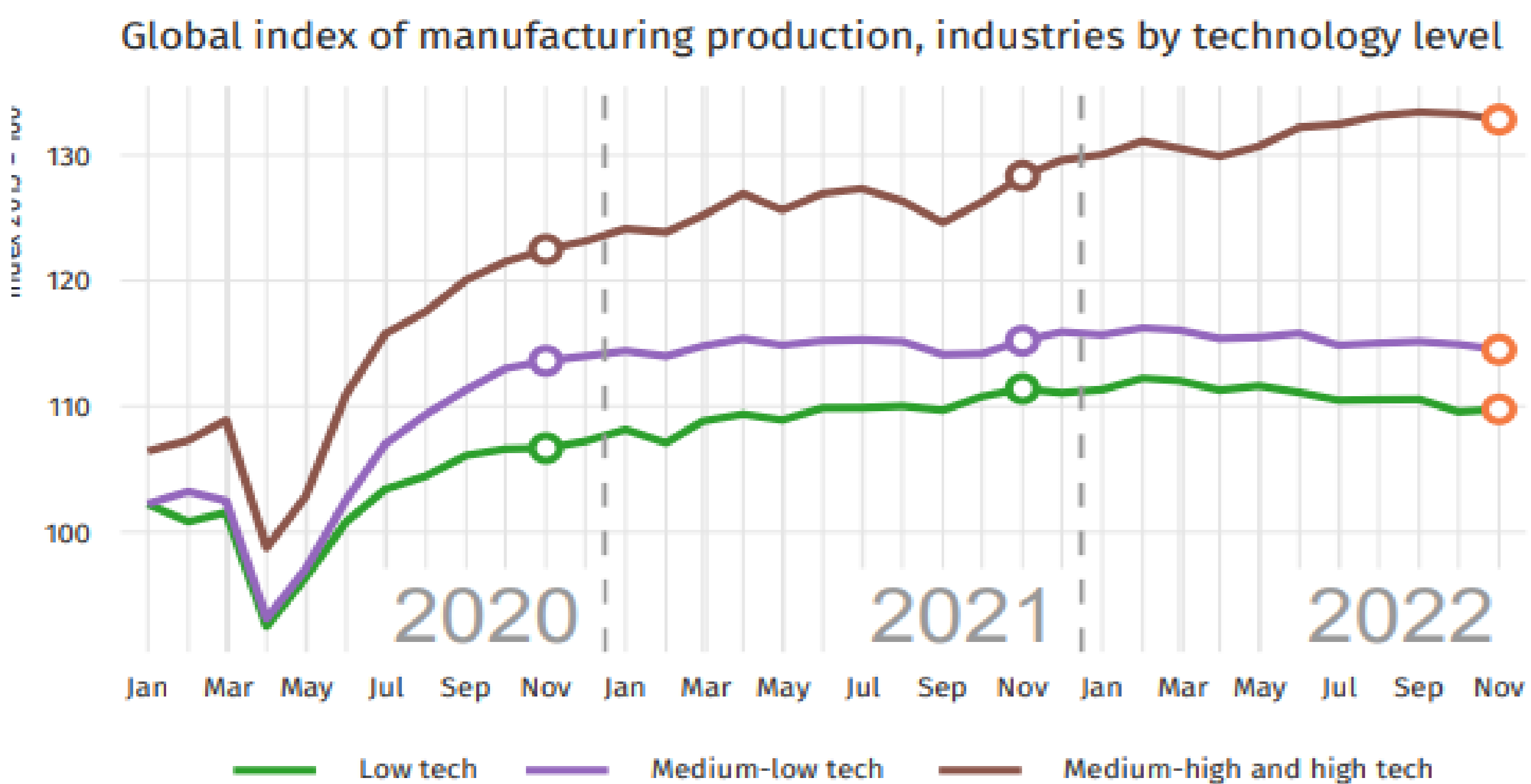


Regional performance

Year-over-year growth rate by region



Sectoral trends



Manufacturing industries with the best and the worst global performance

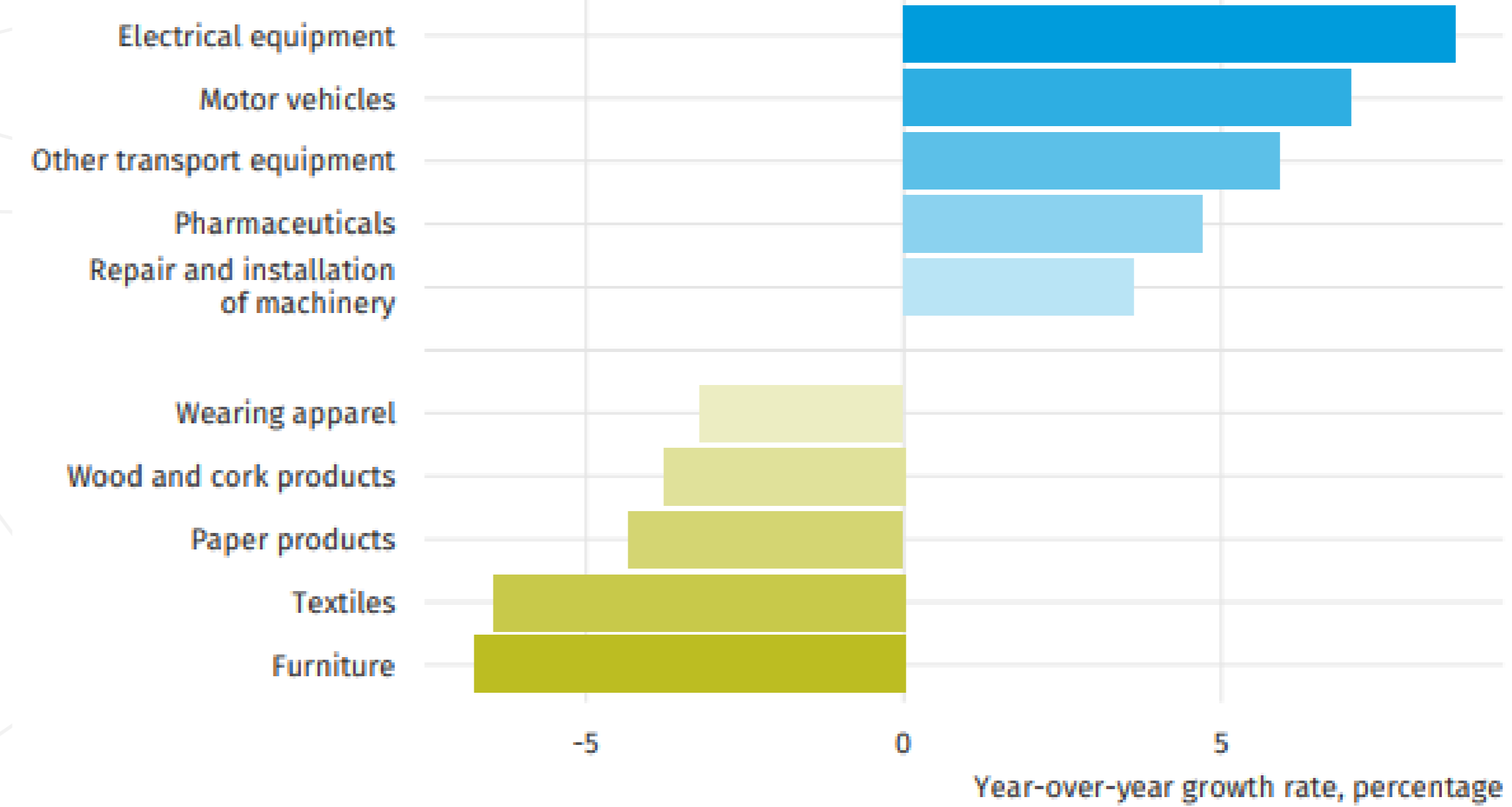
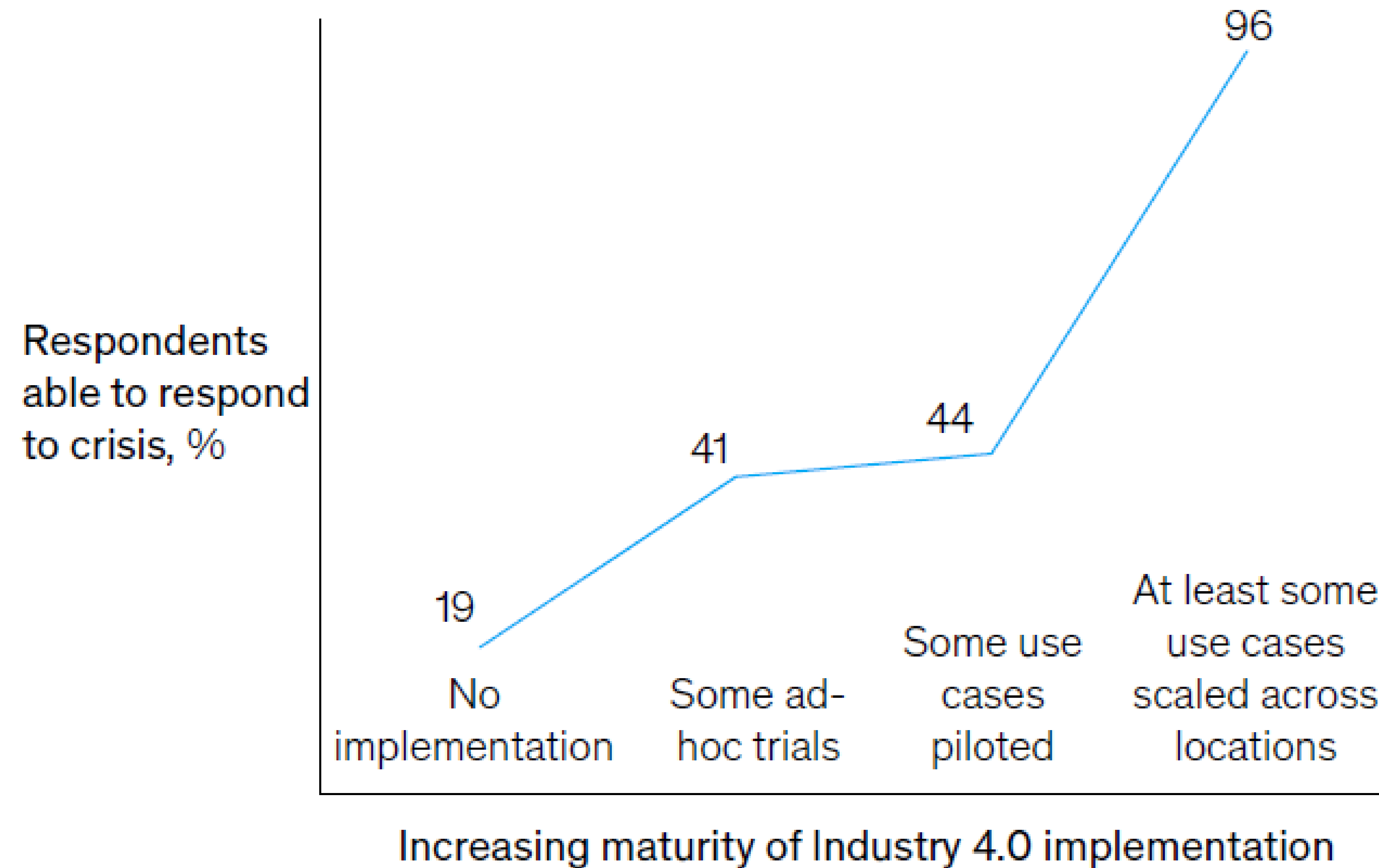


Exhibit 2

Companies whose Industry 4.0 implementation is more mature report stronger ability to respond to crisis.



How has your perception of Industry 4.0's value changed since the pandemic?

Respondents, %

Industry 4.0 is more valuable

65

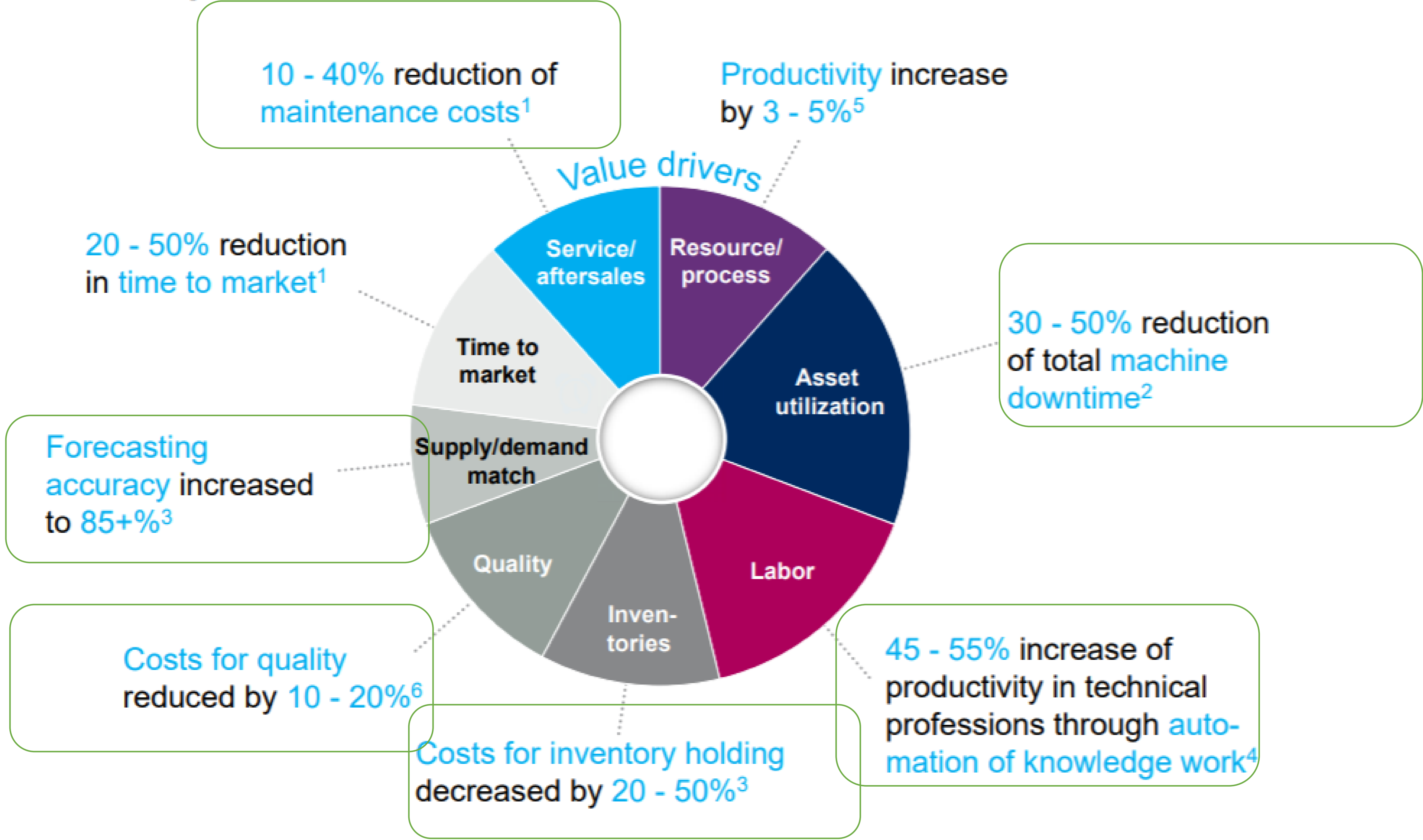
Industry 4.0's value is unchanged

23

Industry 4.0 is less valuable

12

Indicative quantification of value drivers



Germany

Germany is the birthplace of Industry 4.0. The government launched its High-Tech Strategy in 2006 to coordinate research and innovation actions aiming to preserve competitiveness and to drive forward technological innovation. In July 2010, the High-Tech Strategy 2020 was announced to facilitate Germany's position as a leading provider of technology, science and innovation.

The RAMI 4.0, Reference Architecture Model Industry 4.0 (Industry 4.0), was developed by the German Electrical and Electronic Manufacturers' Association (ZVEI) to support Industry 4.0 initiatives, which are gaining broad acceptance throughout the world.

Switzerland

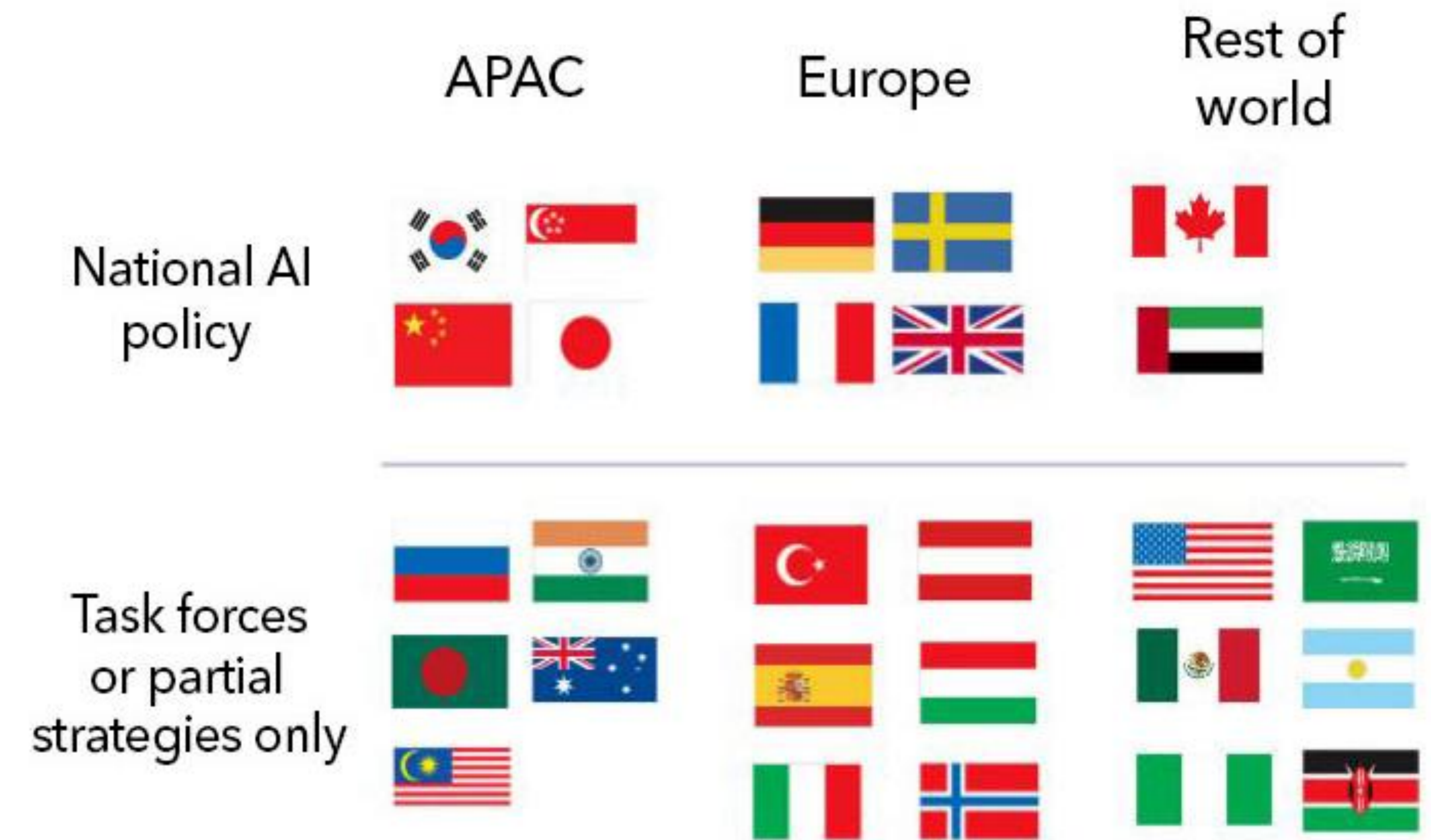
The government set up the Industry 2025 platform to implement emerging technologies and incorporate them into the industry. "Industry 2025" is a national initiative to promote digital transformation in Switzerland. It brings together all stakeholders and provides an introduction, support and anchoring of Industry 4.0 concepts in value networks and production companies through working groups and specific services. There are seven working groups: Digital strategy, Entry into Industry 4.0, Thinking in business models, Cyber-Physical System (CPS)-based automation, Smart data, Industry 4.0 security, Norms and standards Industry 4.0

USA

In 2011, President Obama launched the Advanced Manufacturing Partnership to bring together all the stakeholders from industry, universities and the government to invest in emerging technologies and prepare the path for Industry 4.0.

Later, the Revitalize American Manufacturing and Innovation Act of 2014 amended the National Institute of Standards and Technology Act to direct the Secretary of Commerce to establish a Network for Manufacturing Innovation Program

Some Country with I 4.0 Strategies



Source: BloombergNEF

Japan

Today, it is facing problems associated with ageing demography, labor shortages and weak nominal growth. While Germany's "Industry 4.0" framework focuses on manufacturing and smart factories, Japan's "Society 5.0" focuses on using the same tools and technologies for developing society.

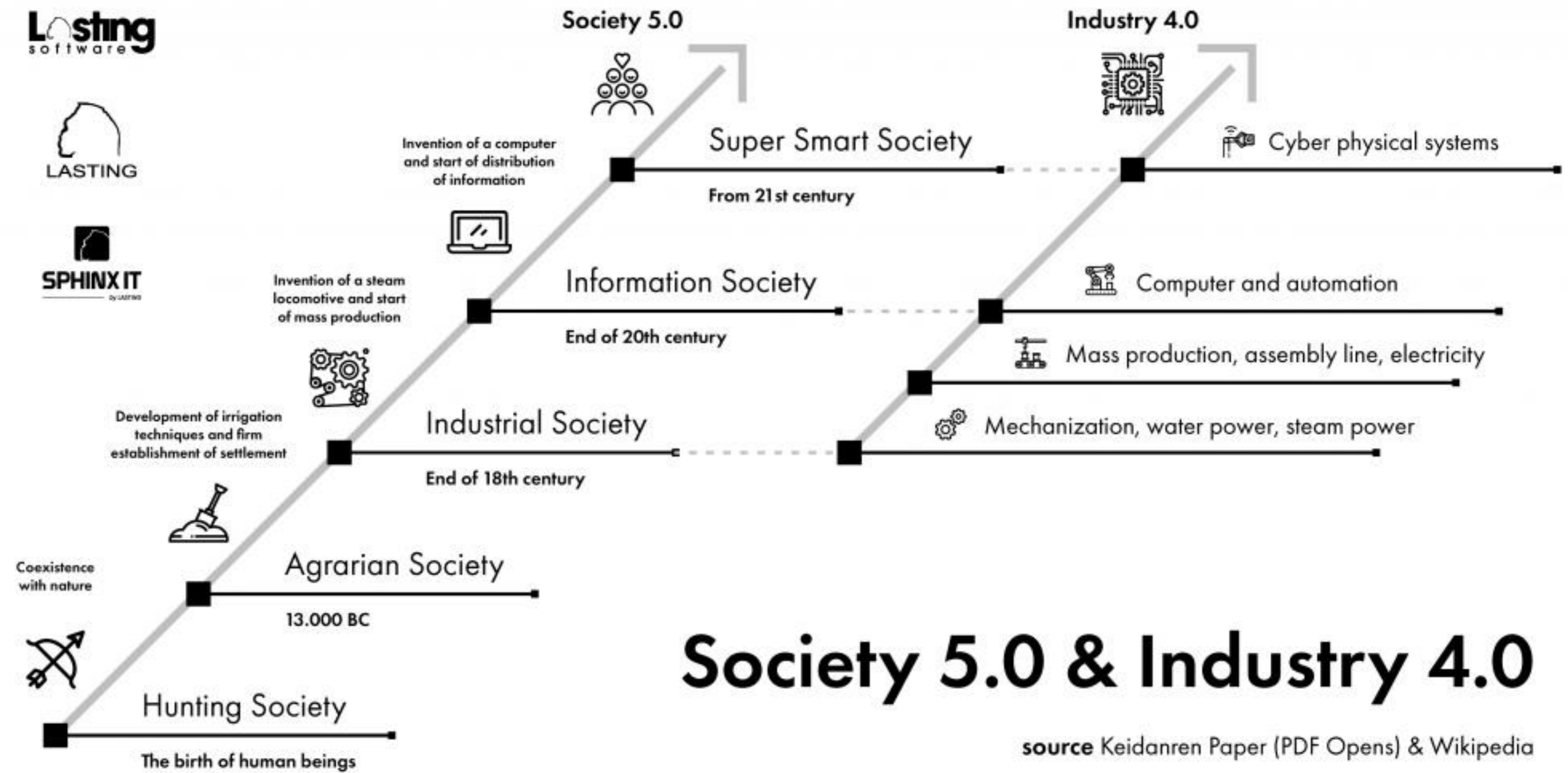
Society 5.0, according to the Comprehensive Strategy on Science, Technology and Innovation for 2017, is how far society can balance economic advancement with an inclusive society where all citizens can lead a life of high-quality, full of comfort and vitality.

The Science, Technology and Innovation (STI) Comprehensive Strategy 2013 was guided by three principles:

- 1-act smart;
- 2-implement a thinking system
- 3-think global.

At the 2017 CeBIT fair in Hannover, Germany, the Japanese Ministry for Economy, Trade and Industry (METI) introduced the concept of Connected Industries to realize its vision of Society 5.0. The idea of Connected Industries involves

- 1- realization of a new digital society in which humans and machines or systems work together
- 2-solving challenges through cooperation and collaboration
- 3-proactive development of human resources to address the advancement of digital technologies.



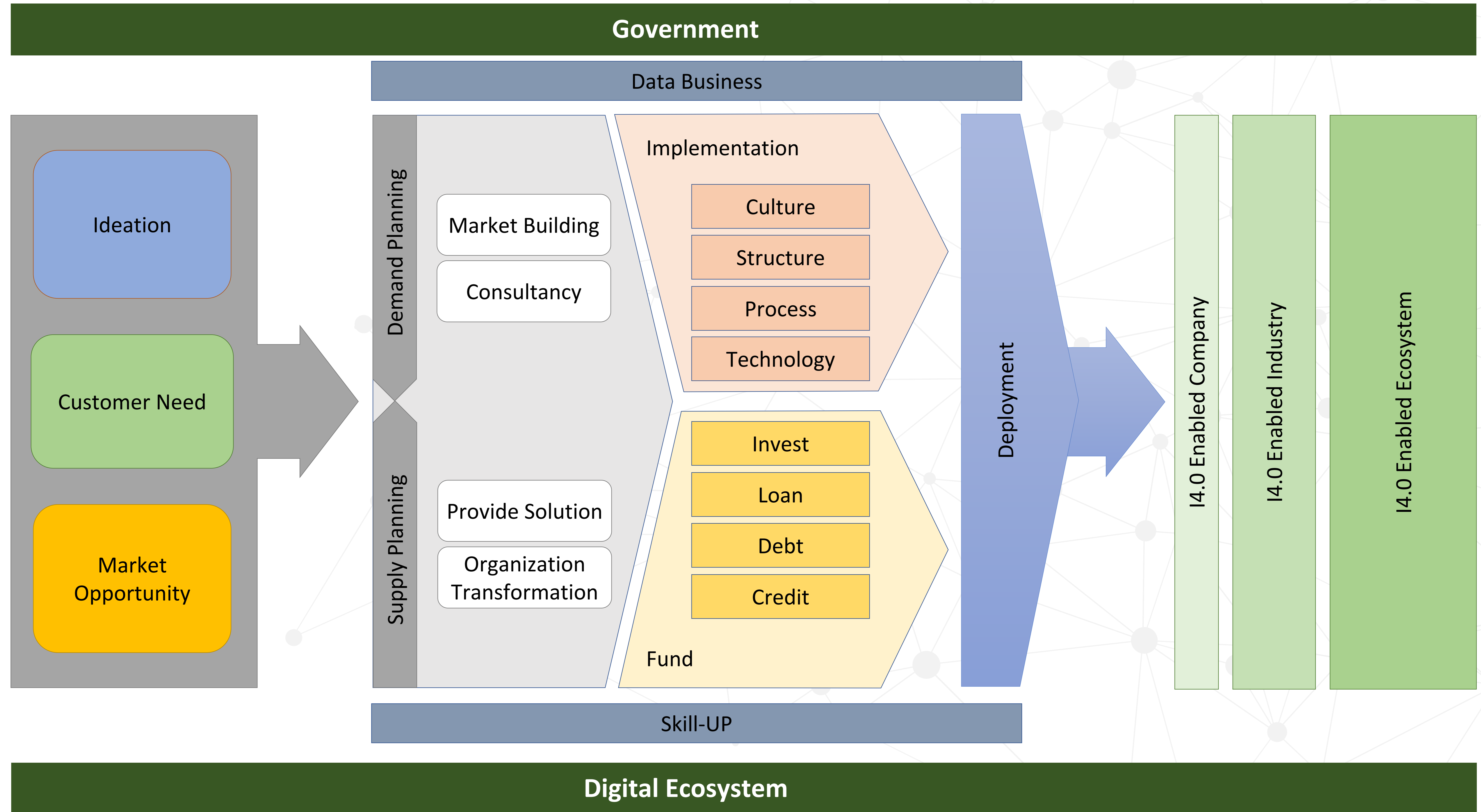
Society 5.0 & Industry 4.0

source Keidanren Paper (PDF Opens) & Wikipedia

FANAP Strategic Plan to Industry 4.0 Leadership



برنامه معاونت در یک نگاه



گام های پیش رو

Government & Regulatory

Digital Ecosystem

14.0

Implementation

Analysis & Diagnosis

Alternative Analysis

Funding Stage

Product Development

Marketing

Data Business

Skill-UP

Consultancy

Company Assessment

Change Planning

Funding Analysis

Implementation Analysis

Organization Transformation

Commitment Settlement

Market Building

Industry Assessment

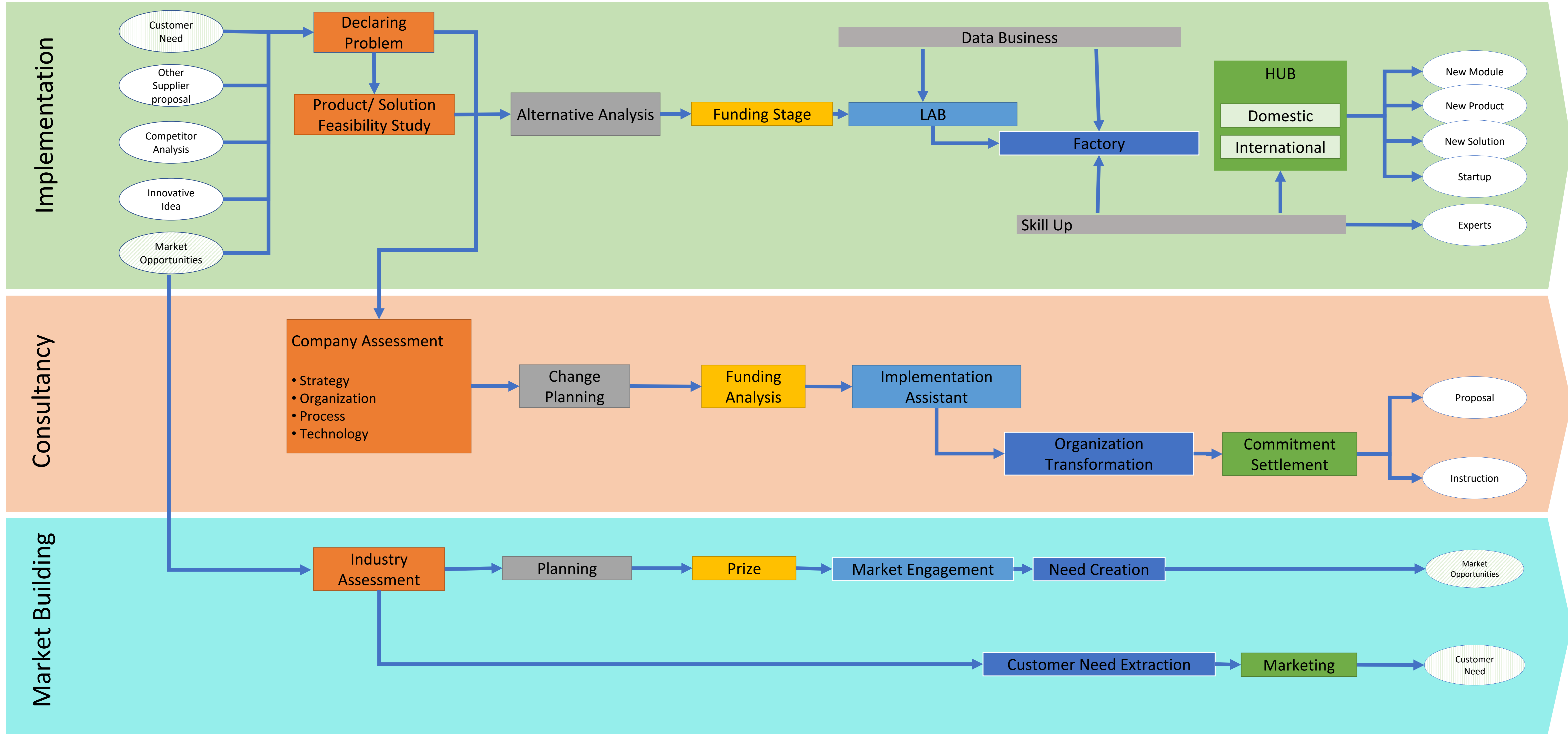
Event Planning

Prize

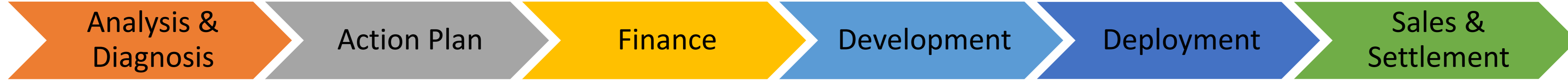
Market Engagement

Market & Customer Need Creation

Government



Input



Output

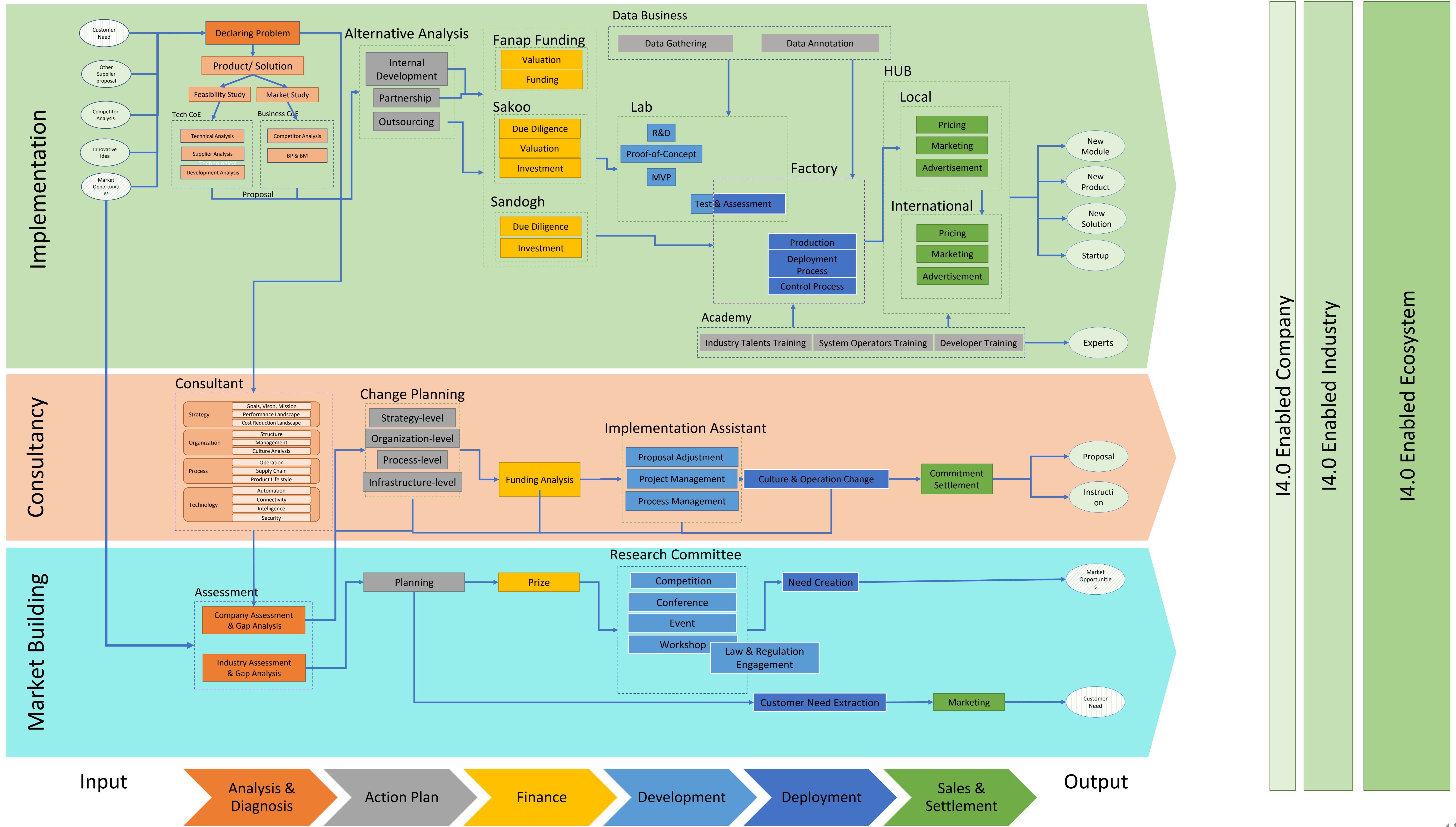
Digital Ecosystem

14.0 Enabled Company

14.0 Enabled Industry

14.0 Enabled Ecosystem

Government



Digital Ecosystem





The future is approaching faster than we think!

Any question?