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SMARt COmmunities Skills Development in Europe

Digital Transformation

Unit 1 - Fundamentals

NCI | Lárionad Néal-Inniúlachta Cloud Competency Centre

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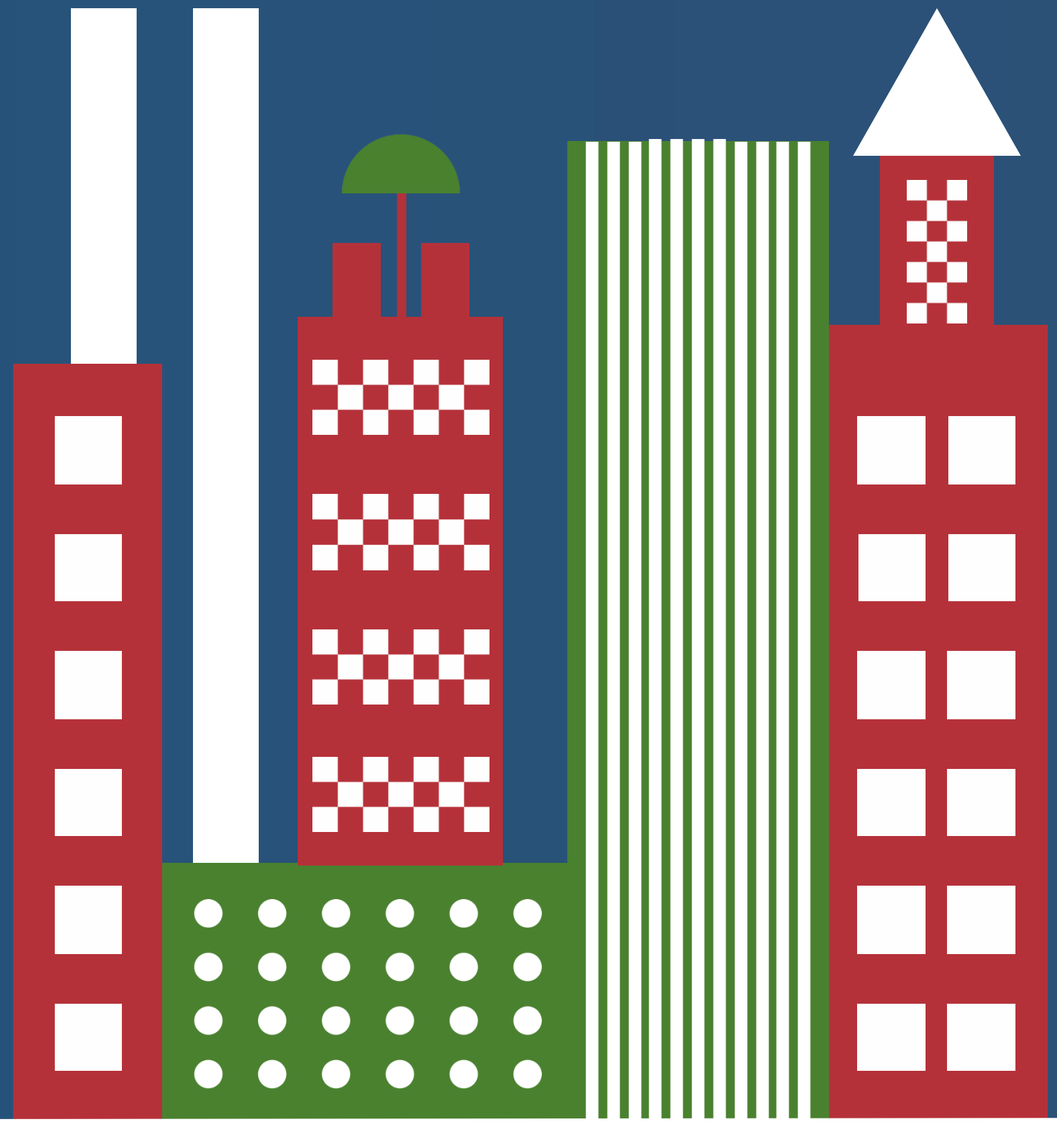

Unit 1 - Digital Transformation Fundamentals

- Introduction
- SDGs framework and Digital Transformation
- Technologies and Innovations

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What is Digital Transformation?

Digital transformation is the strategic integration of digital technologies into business processes, fundamentally changing how organizations operate and deliver value. It encompasses a holistic approach that includes setting clear goals, investing in talent, prioritizing resources, applying agile methods, and empowering employees to drive improved business outcomes and adapt to the digital economy (Bughin, Deakin, O'Beirne, 2019).

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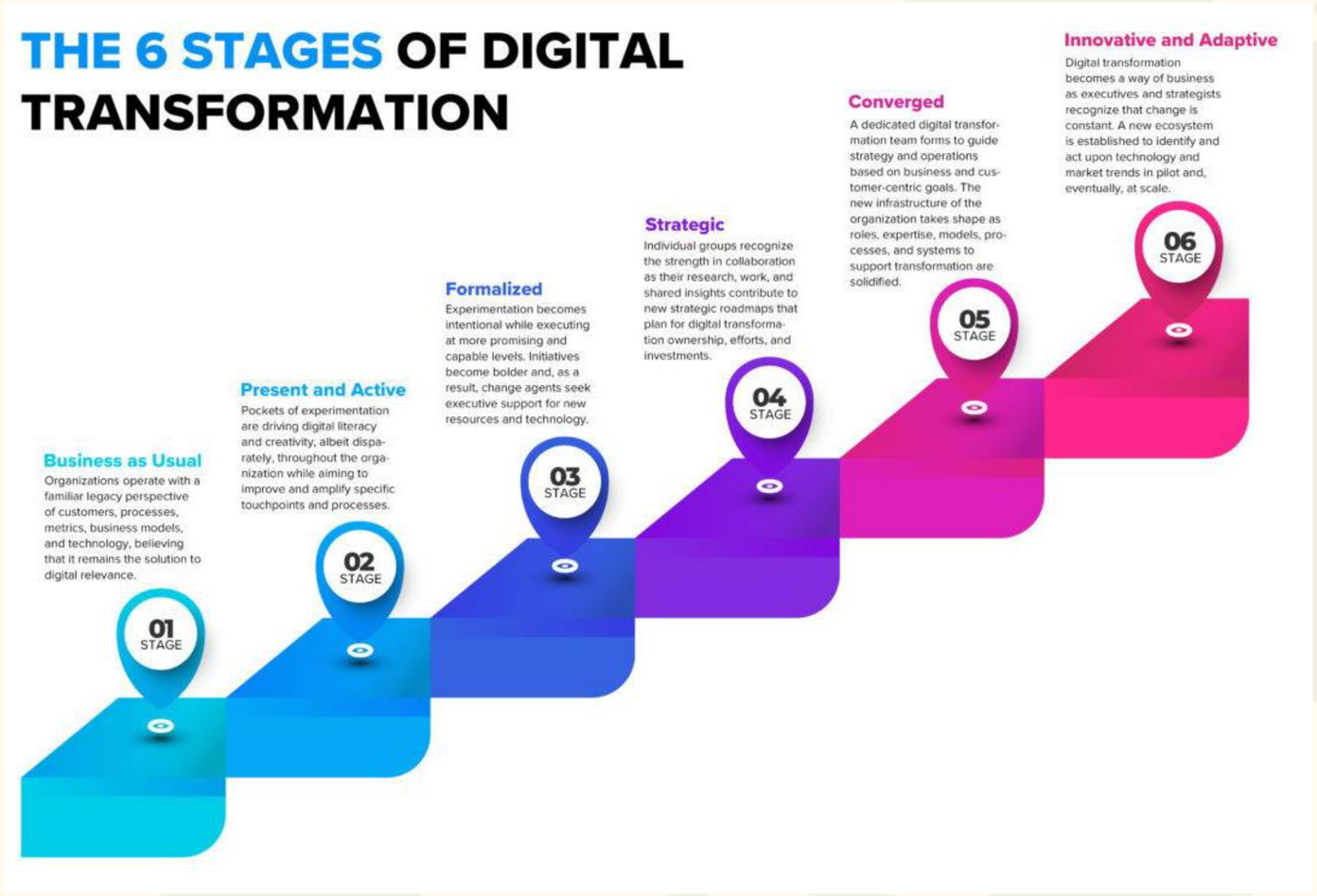
Evolution Stages of Digital Transformation



"The Race Against Digital Darwinism: Six Stages of Digital Transformation," published by Altimeter @Prophet, authors Brian Solis with Jaimy Szymanski, a maturity framework to advance technology roadmaps, business models, and processes to compete in the digital economy.

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Economic and Social Impacts

- Operational efficiency
- Innovation
- Access to global markets
- Job creation
- Digital divide
- Security and privacy
- Cultural and organizational changes

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Ethical Issues in Digital Transformation

Pros

- Access to information: Digital transformation can improve access to information and education, breaking down geographical and language barriers and enabling a greater number of people to access educational and cultural resources.
- Ethical innovation: Digital technologies can be used to develop innovative solutions to address ethical issues such as poverty, access to healthcare, and environmental sustainability.
- Transparency and accountability: Digitalization can increase the transparency and accountability of organizations by allowing for greater traceability of business actions and processes.
- Democratic participation: Digital platforms can facilitate citizen engagement in political life and democratic participation, allowing them to share opinions, information, and ideas.

Cons

- Data privacy and security: Digital transformation raises concerns about the privacy and security of personal data. Massive data collection and processing can pose risks to individuals' privacy and increase the likelihood of data breaches.
- Technological unemployment: While digital transformation can create new job opportunities, it can also lead to technological unemployment, with some tasks automated and replaced by digital solutions.
- Digital divide: Digitalization can widen the digital divide between those who have access to digital technologies and those who do not, creating disparities in access to opportunities and digital inclusion.
- Manipulation and misinformation: Digital technologies can be used to manipulate public opinion and spread misinformation and harmful content, undermining trust in the truth and integrity of information.

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Platform Economy

The Platform Economy is an economic and social system facilitated by platforms—digital frameworks that connect people, organizations, and resources in an interactive ecosystem. These platforms enable exchanges and interactions at a scale that was not possible before, profoundly transforming traditional business models and market structures. Platforms harness network effects by creating value as more participants join, thereby increasing the utility and attractiveness of the platform. This economy is characterized by its emphasis on collaboration, leveraging of digital technology, and the generation of value primarily through data and user participation, rather than through the production of goods or traditional service delivery (Parker, Van Alstyne & Choudary, 2016).

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Digital Paradigms and Platform Society

- Central to the platform economy is the collection and management of user data (Renz & Hilbig, 2020; Zuboff, 2015).
- This data is processed through algorithms to generate monetizable information.

Economic and Regulatory Response

- Growing concerns over the widespread process of datafication and consumer control.

Examples of supranational political responses include key legislative measures by the European Parliament:

- Digital Services Act (DSA)
- Aims to address risks associated with digital innovations.
- Focuses on misinformation, freedom of expression constraints, and data vulnerability.
- Digital Markets Act (DMA)
- Enhances transparency in algorithmic content recommendations.
- Regulates targeted advertising practices.

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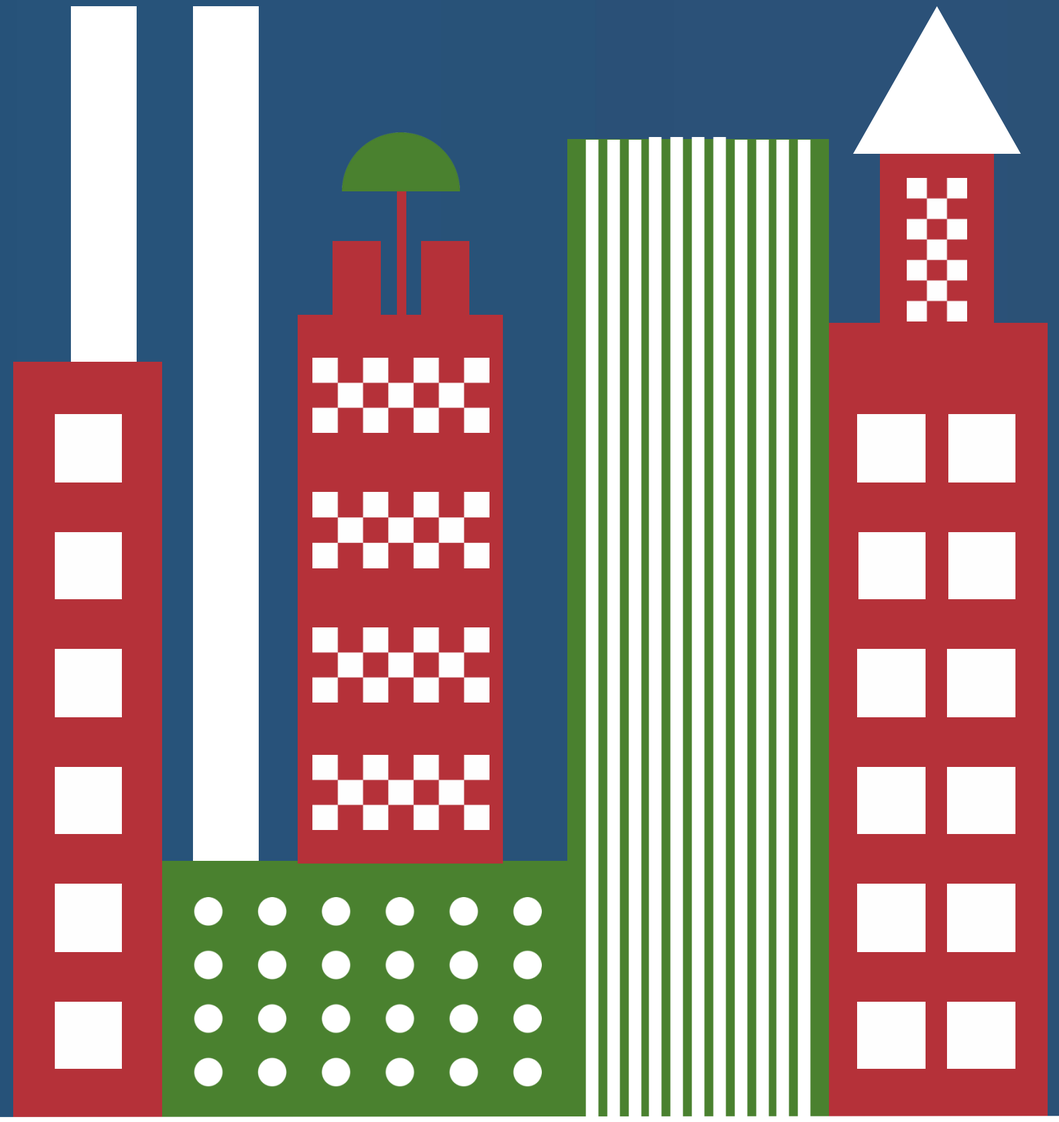

SDGs framework and Digital Transformation

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The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

The 17 SDGs are integrated—they recognize that action in one area will affect outcomes in others, and that. development must balance social, economic and environmental sustainability.

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Sustainable Development Goals (SDGs)

Source: https://www.un.org/sustainabledevelopment/sustainable-development-goals/

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Industry, Innovation and Infrastructure

"Inclusive and sustainable industrialization, together with innovation and infrastructure, can unleash dynamic and competitive economic forces that generate. employment and income. They play a key role in introducing and promoting new technologies, facilitating international trade and enabling the efficient use of resources. However, the world still has a long way to go to fully tap this potential. Least developed countries, in particular, need to accelerate the development of their manufacturing sector if they are to meet the 2030 target, and scale up investment in scientific research and. innovation".

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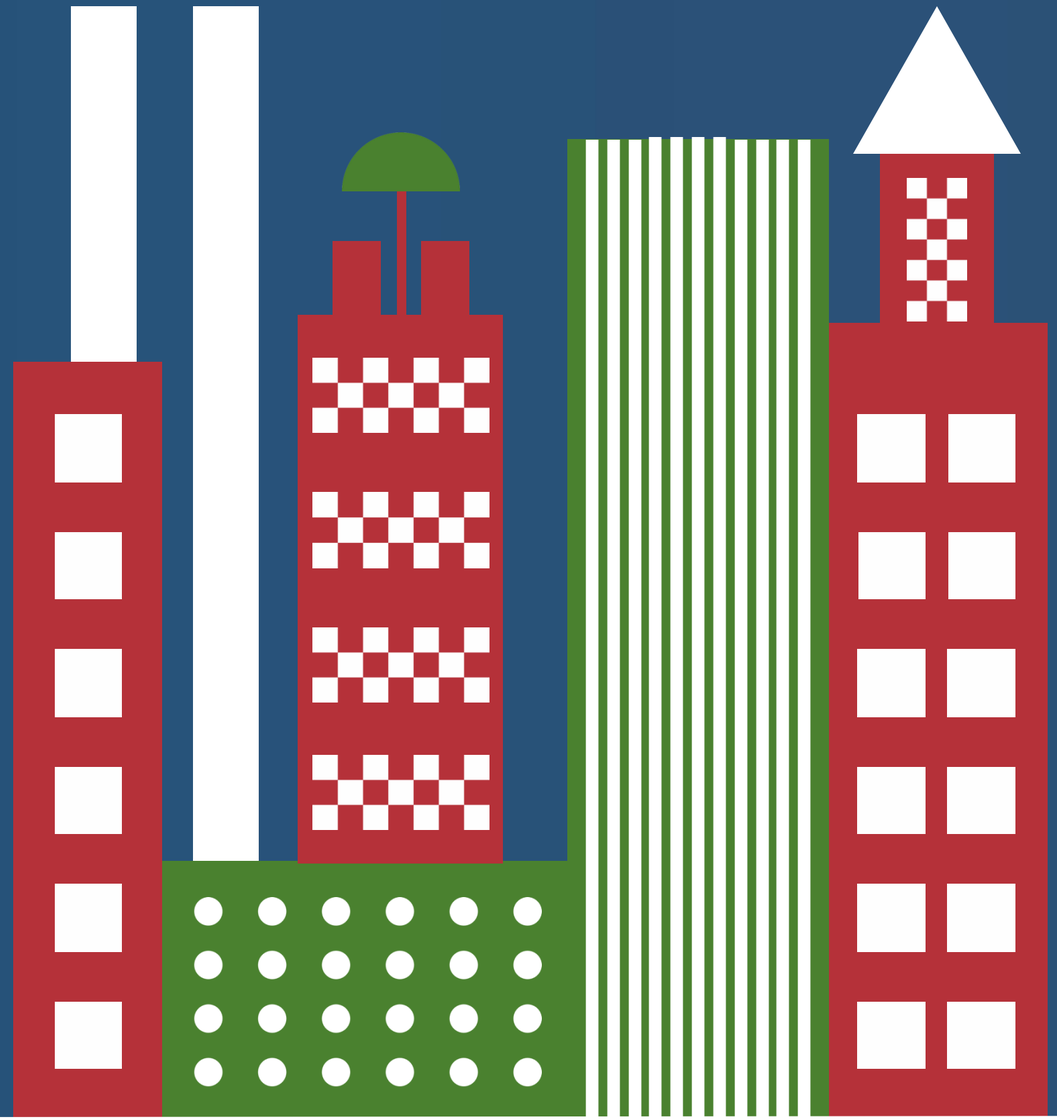

Technologies and Innovations

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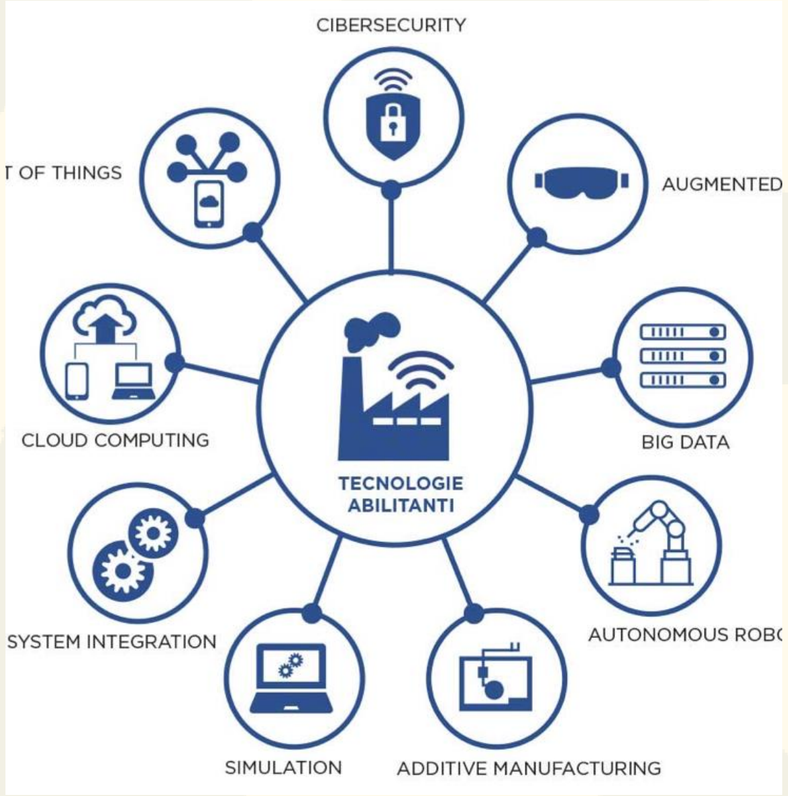
Research and innovation in industrial key enabling technologies ® is essential to create wellbeing, prosperity and jobs across Europe within the means of our planet. That requires new policy action to create value from research and. innovation and accelerate the green and digital transformation of industry, strengthening its resilience and its base in Europe.



Source: https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/key-enabling-technologies_en

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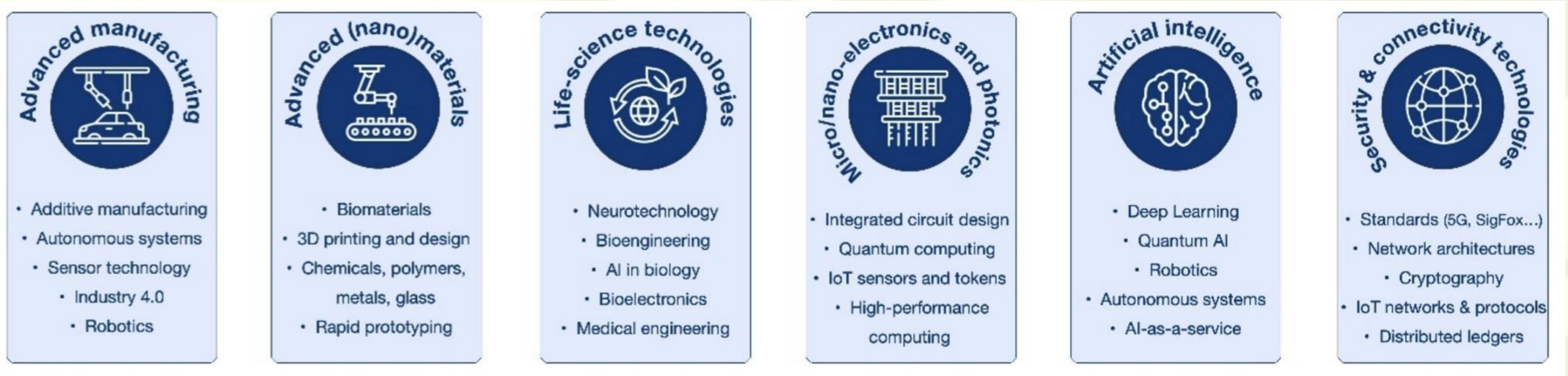
Key enabling technologies (KETs)



Source: https://www.europarl.europa.eu/RegData/etudes/STUD/2021/697184/EPRS_STU%282021%29697184_EN.pdf

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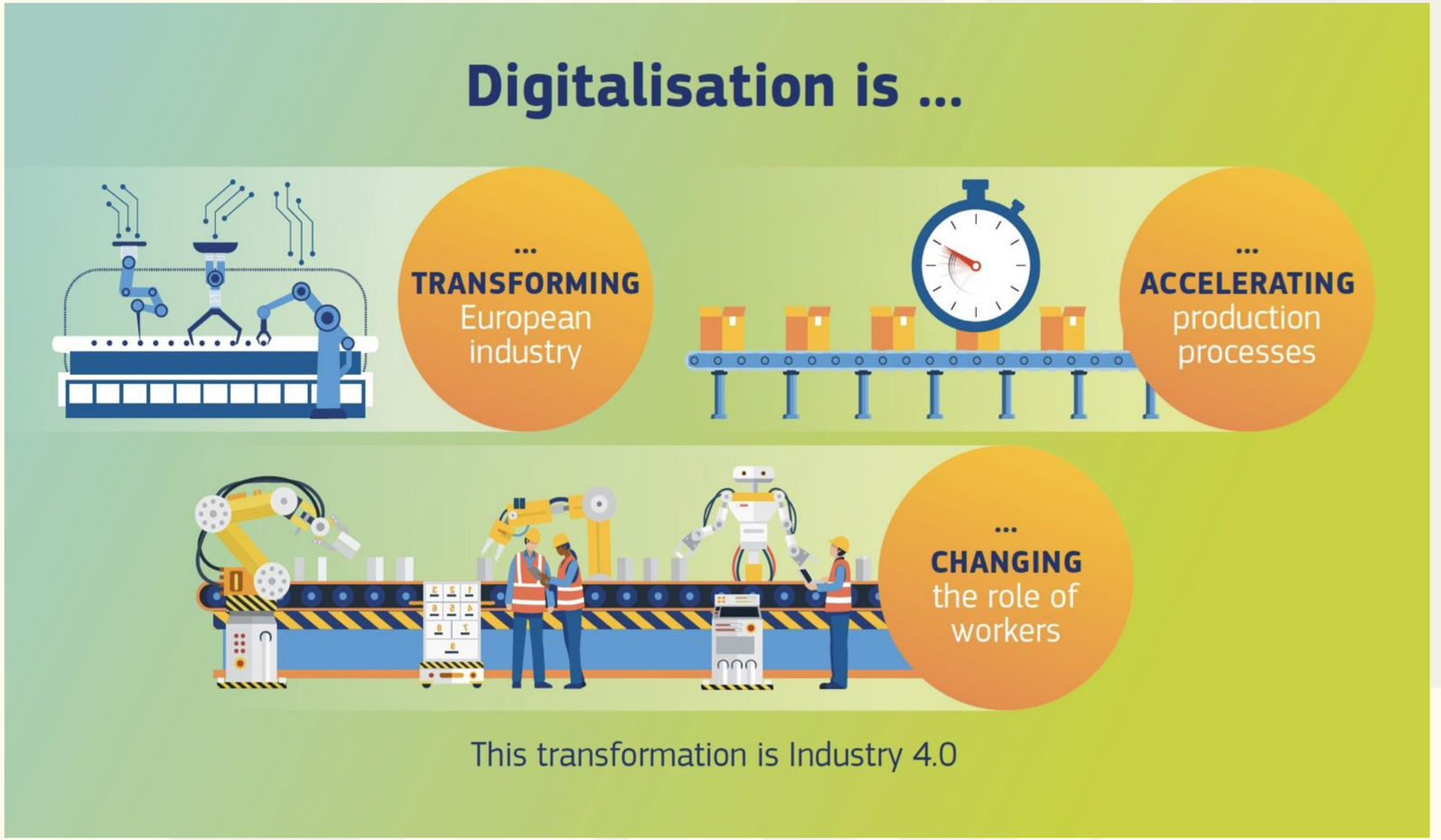
Industry 4.0



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Industry 5.0

Source: European Commission, Directorate-General for Research and Innovation, Industry 5.0 – Human-centric, sustainable and resilient, Publications Office, 2020

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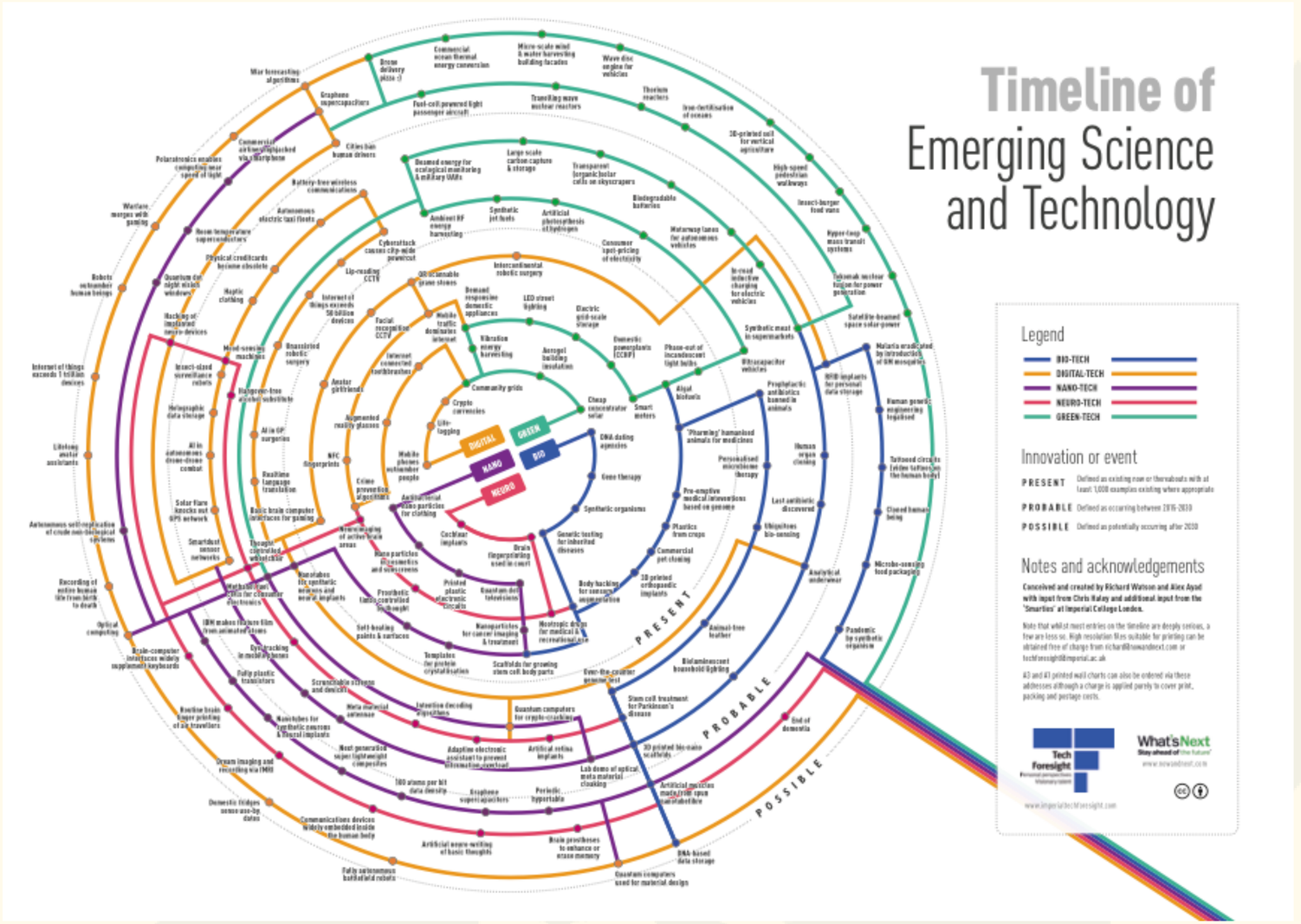

Source: https://toptrends.nowandnext.com/2014/06/27/timeline-of-emerging-science-technology-2014-2050/

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The Future of Digital Infrastructures

Fast, secure, and widespread connectivity is essential for the deployment of the technologies that will bring us into tomorrow's world:

- Connected mobility
- Personalised health care/ telemedicine
- Artificial Intelligence (AI)
- Internet of Things (IoT)
- Cloud computing
- Smart buildings
- Edge computing
- Smart factories

Source: 2024, White paper – "How to master Europe's digital infrastructure needs?"

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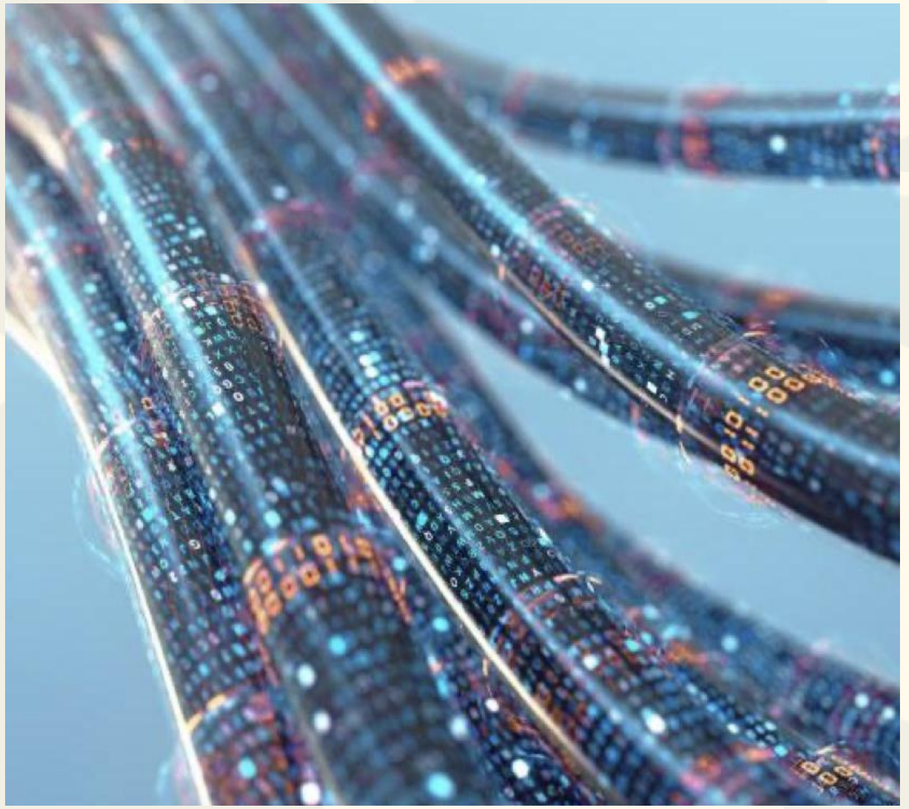
What is Big Data?

Big data refers to large amounts of data produced very quickly by a high number of diverse sources. Data can either be created by people or generated by machines, such as sensors gathering climate information, satellite imagery, digital pictures and videos, purchase transaction records, GPS signals, and more. It covers many sectors, from healthcare to transport to energy.



Source: https://digital-strategy.ec.europa.eu/en/policies/big-data

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European Data Act (2023)

The Data Act will ensure fairness in the digital environment by clarifying who can create value from data and under which conditions. It will also stimulate a competitive and innovative data market by unlocking industrial data, and by providing legal clarity as regards the use of data.

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References and Further Reading

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Unit Completed - What's Next?

To consolidate your learning and reflect on the key concepts covered, please take a moment to complete this quiz.

Your feedback and results will help you track your progress and support continuous improvement of the training experience.

By completing this quiz, you will also become eligible to receive a certificate of successful training completion.

Click the link below to begin the quiz!

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