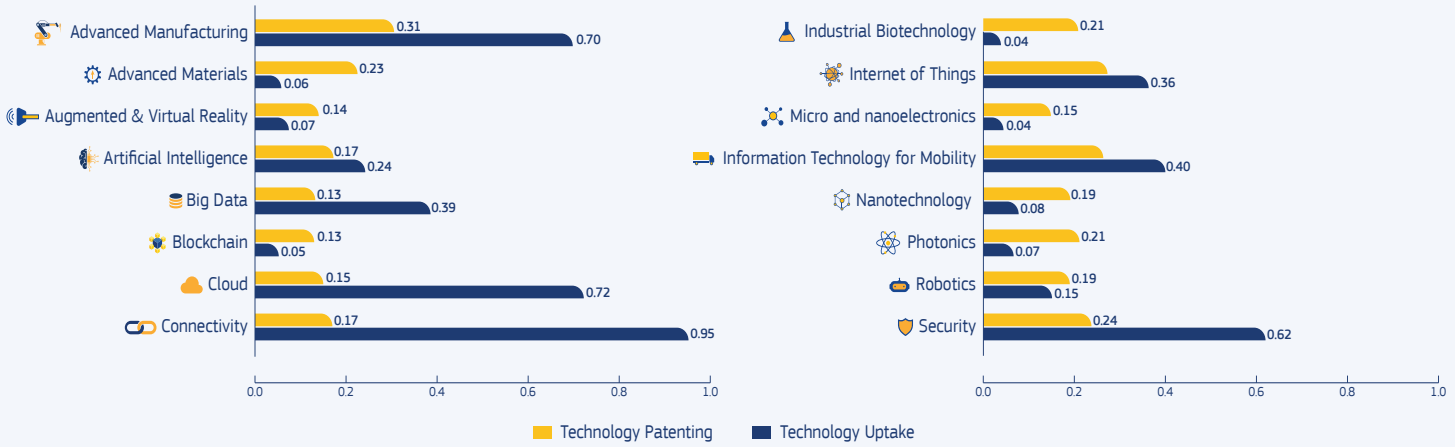
European Commission

Advanced Technologies for Industries - Report on general findings in the EU in 2020

Technology trends, technology uptake, investment and skills in advanced technologies

The level of technology adoption is indexed as the EU's share in world transnational advanced **technology patent applications**. Moreover, the level of **uptake** is indexed as the share of firms in the EU who have already adopted the specific technology.

Advanced Technologies



NB: some advanced technologies are relevant across all sectors, while others are limited in their applications within industries; the lower adoption rate should be interpreted accordingly.

Patent applications have increased for:

- **Artificial Intelligence**
- **Robotics**
- **Big Data**
- **Information Technology for Mobility**

In order to protect the EU's competitive advantages, its advanced technologies need more investment

The EU27 is falling behind its main competitors in terms of Artificial Intelligence and Big data

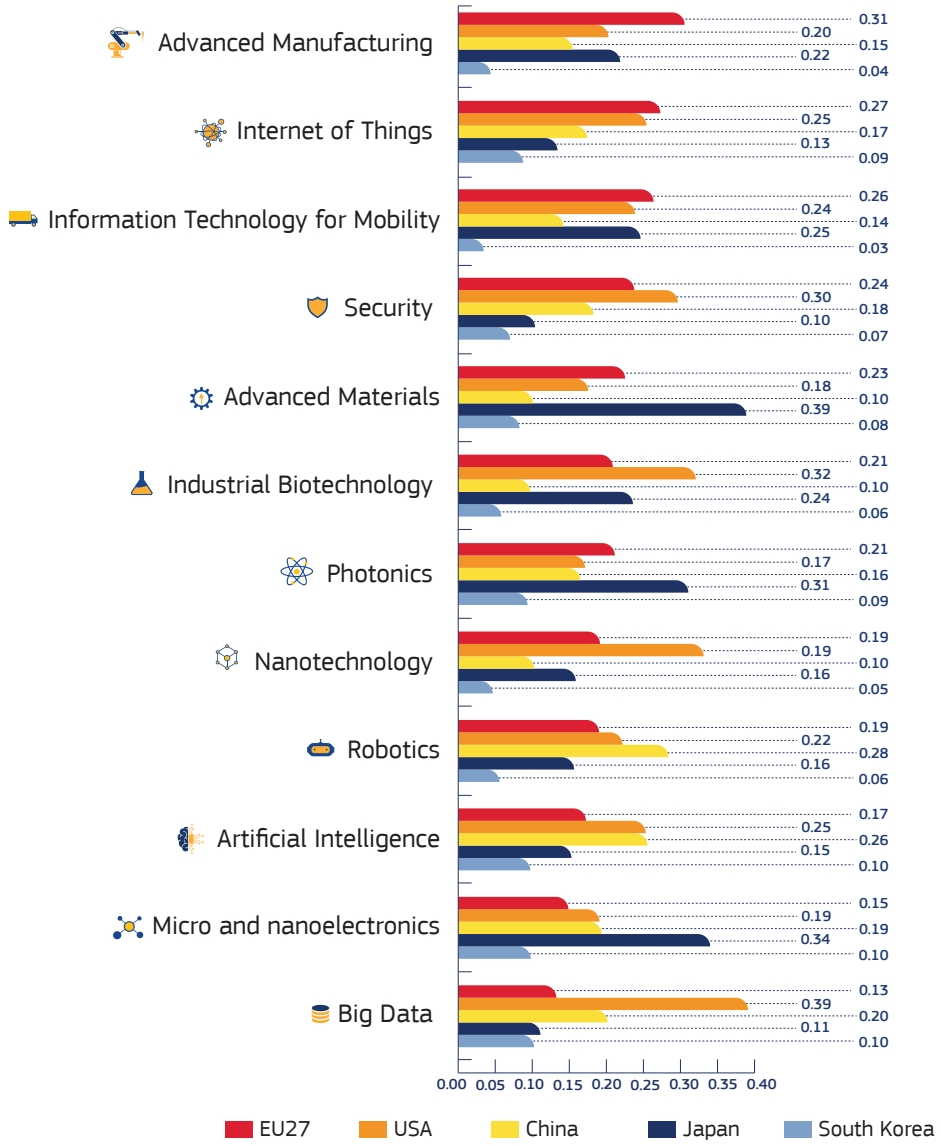
The EU27 share has significantly dropped in Robotics

The EU27 has been gradually losing leadership in most of the technologies in terms of its share in worldwide patent applications

For more information, read the ATI General Findings report here:
https://ati.ec.europa.eu/reports/eu-reports/report-technology-trends-technology-uptake-investment-and-skills-advanced

The EU27 has a leading position in terms of **the invention of various advanced technologies, although its competitive advantages are greatly challenged by others in the world**

Share in world technology patents, EU27 and global comparison, 2017



The EU holds the highest share of worldwide patent applications in **Advanced Manufacturing Technologies**

Over **25%**

The EU also holds a large share in patent applications relating to the **Internet of Things** and **Information Technology for Mobility**

China is catching up fast, **overtaking** Europe in some market segments in Robotics

Although lagging behind the US, the EU also holds a high share of patent applications in **Digital Security, Nanotechnology** and **Industrial Biotechnology**

The EU holds a good share in **Advanced Materials** and **Photonics,** but lags behind Japan

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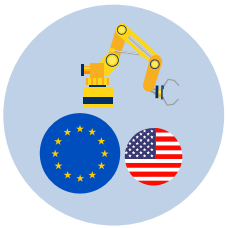
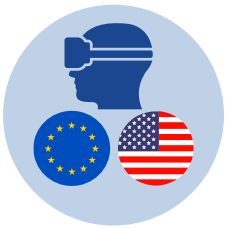
The EU27 is particularly strong in advanced technology skills driven by science and engineering

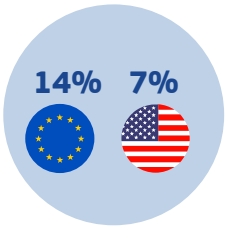
Comparing the share of professionals with advanced technology skills between Europe and the US:



The EU has a higher relative share than the US in **Advanced Manufacturing Technology, Advanced materials, Industrial biotechnology** and **Nanotechnology**



The EU and US have similar shares in **Blockchain, Augmented & Virtual Reality Reality,** the **Internet of Things, Micro and nanoelectronics, Information Technology for Mobility, Robotics** and **Photonics**



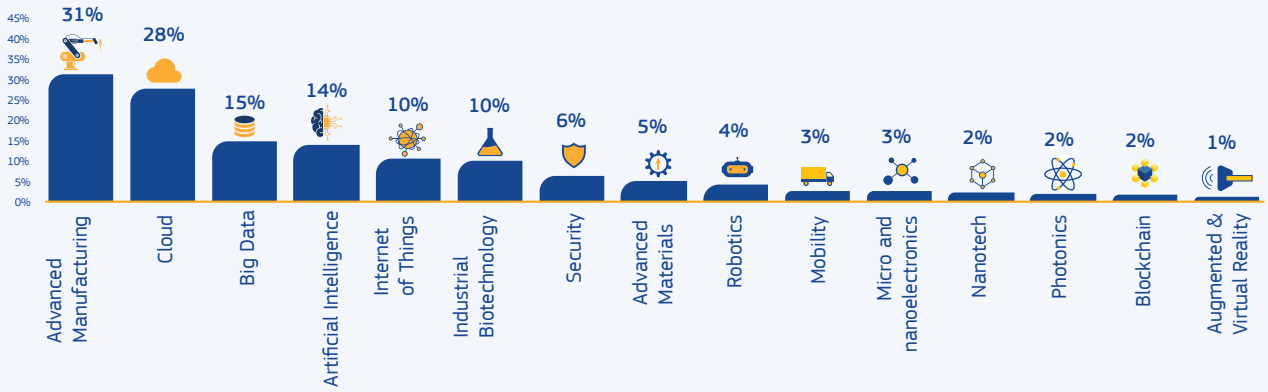
The EU also shows higher growth rates of employing skilled professionals in the fields of the **Internet of Things, Micro and nanoelectronics, Advanced Materials, Industrial biotechnology** and **Cloud Computing**

The European industry employs less professionals than the US in particular in **Security, Big Data, Artificial Intelligence,** and **Cloud technologies**

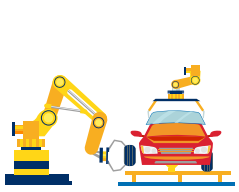
Skills can increase in value when used in combination, however, **the fusion of advanced technology and other professional and business skills within individuals is still low** with the EU27 performing slightly behind the US

In the EU27 **Advanced manufacturing (31%) and Cloud technology (28%)** are the two top available skills

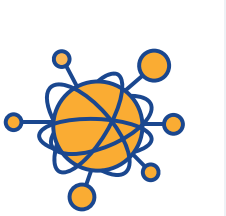
Skills supply: Share of professionals with advanced technology skills measured within the total AT professionals in absolute figures in the EU27, 2020



Europe's manufacturing industry absorbs the highest number of professionals with advanced technology skills



Particularly in the **Automotive** sector where technologies such as **Advanced Manufacturing** and **Internet of Things** are clearly instrumental for the development of Industry 4.0 strategies



Other industries such as **Electronics** and, to a lesser extent, **Chemicals,** employ a large amount of skilled professionals, especially for technologies like **Advanced Manufacturing** and **Internet of Things** (in Electronics) and **Advanced Materials** and **Industrial Biotech** (in Chemicals), confirming that **manufacturing as a whole** remains at the forefront of the digital transformation and modernisation processes in Europe

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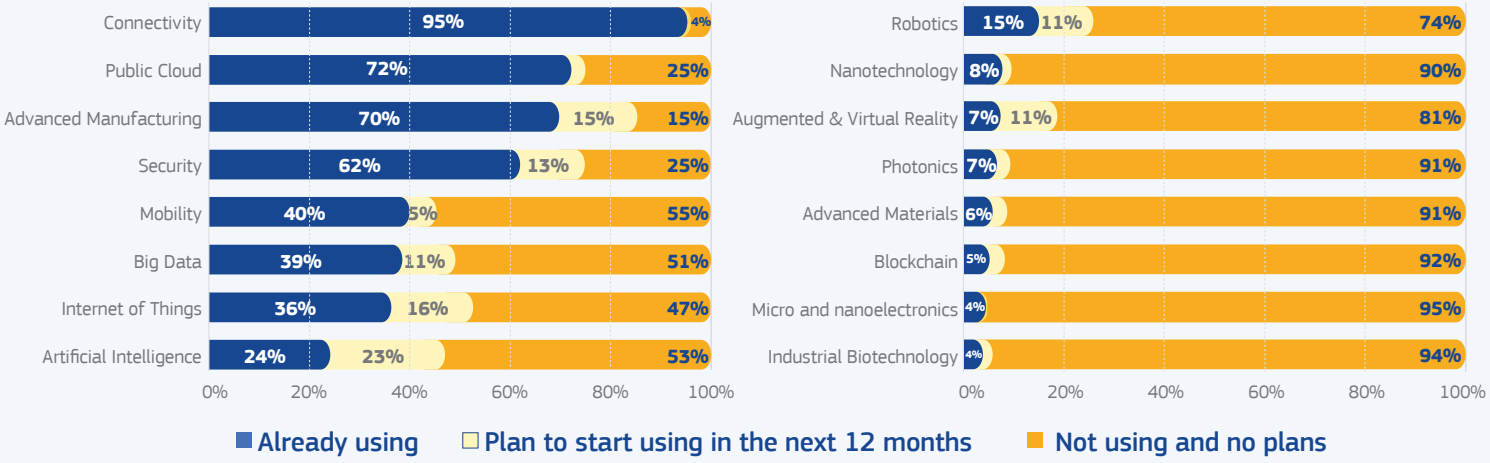
The uptake of **advanced technologies** has been accelerating, thus contributing to the ongoing process of **industrial modernisation in Europe**

Current uptake of advanced technologies in the EU



Cloud Computing, Security, Connectivity are at the forefront of Europe's digital transformation

Big Data, Internet of Things, Artificial Intelligence, Augmented & Virtual Reality, Blockchain, Industrial Biotechnology and **Photonics** are rapidly gaining in uptake

In terms of technology co-presence, about **78%** of European companies and organisations adopt between **2 and 5** advanced technologies

General awareness and adoption of digital platforms in Europe is high, with nearly **60%** on average evaluating platform related business cases

The technologies that are likely to be implemented together are **Cloud** and **Security solutions,** often in synergy with **Internet of Things, Artificial Intelligence** and **Big Data**

Reaping the benefits from advanced technologies requires having not only technological capabilities, but also **data management culture, organisational culture,** as well as **trust** and **ethics**

About the Advanced Technologies for Industry (ATI) project

The ATI project – funded by the European Commission – supports the **implementation** of Europe's new growth strategy with a systematic monitoring of **technological trends** and reliable, **up-to-date data** on advanced technologies.

The **ATI General Findings report** assesses and interprets trends in the generation and uptake of advanced technologies, the related entrepreneurial activities and venture capital investment, the supply of and demand for skills and the digital opportunities for Europe.

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