European Commission

Advanced Technologies for Industry

Advanced technology landscape and related policies in the United States of America

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IDC Analyze the Future technopolis [group] Fraunhofer IDEA CONSULT thinking ahead nesta Capgemini invent

International Report on the United States

About the Advanced Technologies for Industry (ATI) project

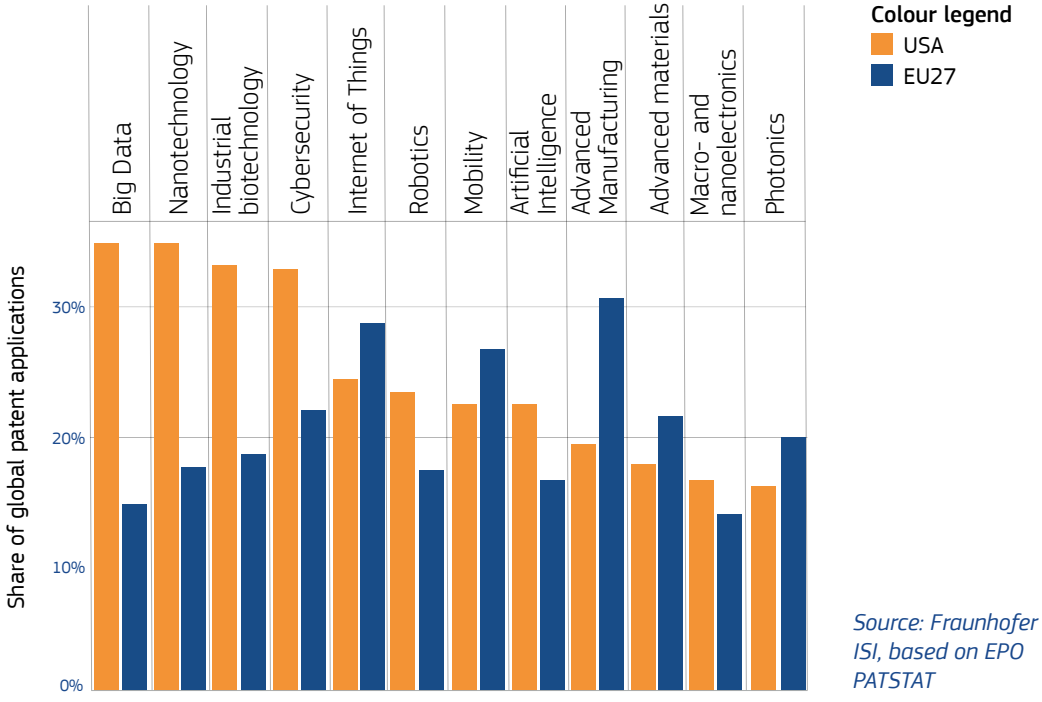
The ATI project – funded by the European Commission – supports the **implementation** of Europe's new growth strategy with a systematic monitoring of **technological trends** and reliable, **up-to-date data** on advanced technologies.

The International Reports explore the technology and policy landscape of non-EU countries including United Kingdom, China, United States of America (USA), Canada, Japan, South Korea and Russia. These reports provide European policymakers with insights into the most recent developments from overseas. Country performance regarding advanced technologies is presented based on patents, trade and investment data. A concise and informative review of policies relevant for advanced technology development and deployment is also part of the reports.

Compared to the EU, the US has a higher share in patent application for advanced technologies

Since the mid-1950s, the USA has been the world's leading nation in science and technology. Compared to the EU27, the USA has a higher share of worldwide transnational patent applications, a high relative specialisation, in:

Share in global transnational patent applications in advanced technologies (2018)



Source: Fraunhofer ISI, based on EPO PATSTAT

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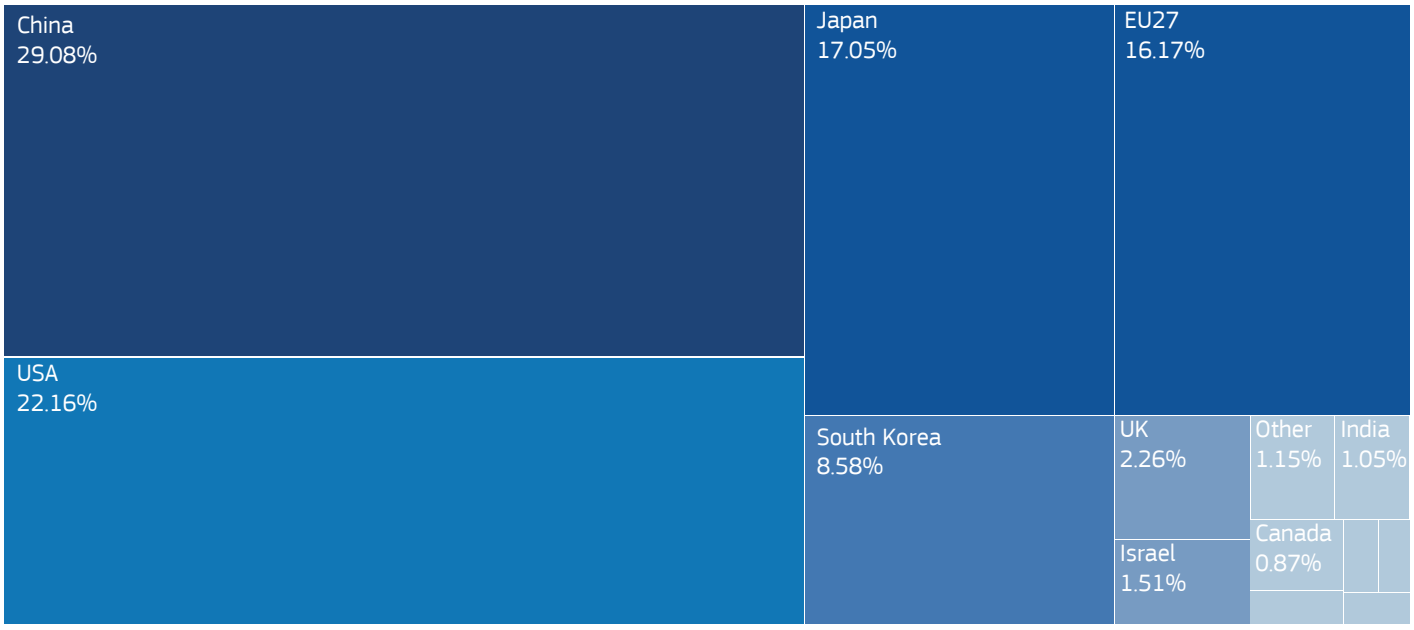
The USA is leading the AI race and is a key player in the global AI ecosystem

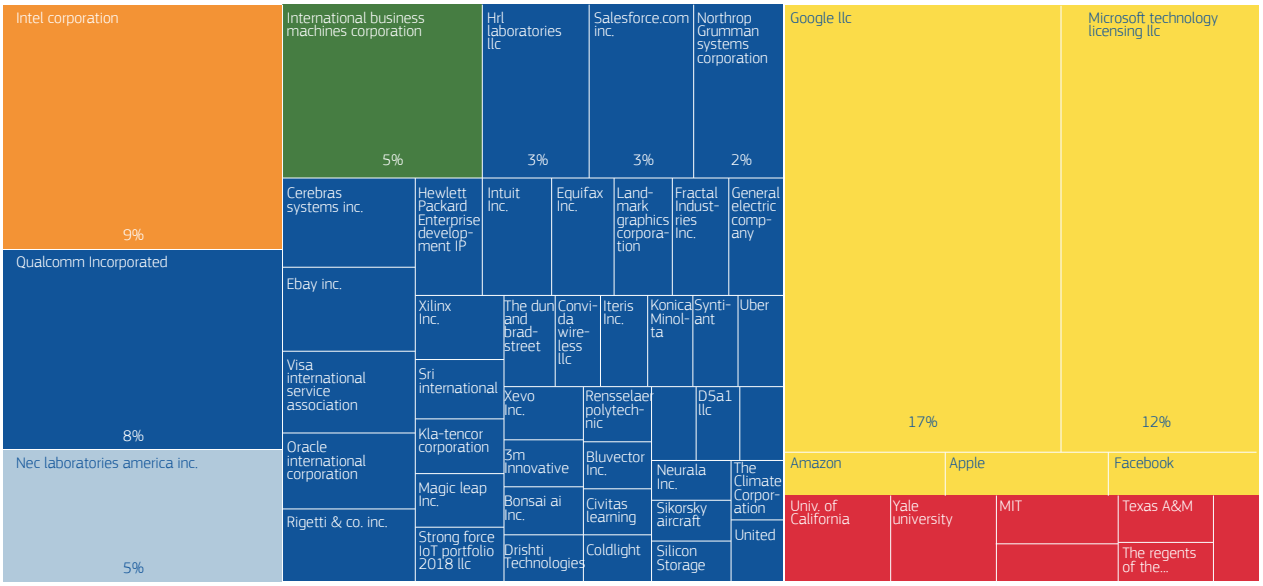
Share in global patent applications, international patent applications (PCT) and European patent applications (EPO) in Artificial Intelligence

The USA led the first wave of the Artificial Intelligence (AI) revolution, creating tech giants such as Amazon, Google and Facebook. As of 2018, they have the second largest share in global patent applications for AI, following China.



Source: Fraunhofer ISI, based on PCT and EPO PATSTAT

Share of international patent production of American organisations (2014 - 2017)



Source: Balland, 2021

A key feature of the American organisations AI ecosystem is that it is heavily dominated by a small number of players. These firms alone are responsible for more than 1/3 of the overall international patent production of American organisations between 2014 and 2017.

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AI policies in the USA were introduced later than other countries

In February 2019, the Executive Order for the American Artificial Intelligence Initiative was signed and became their national strategy for maintaining American leadership in AI. The initiative was codified into law as part of the National AI Initiative Act of 2020, which includes the 4 pillars:

- Invest in AI research and development
- Prepare the American workforce for an AI-dominated world
- Increase trust in AI technologies to accelerate their adoption, ensuring that the USA sets AI technical standards
- Provide access to high-quality cyberinfrastructure and data

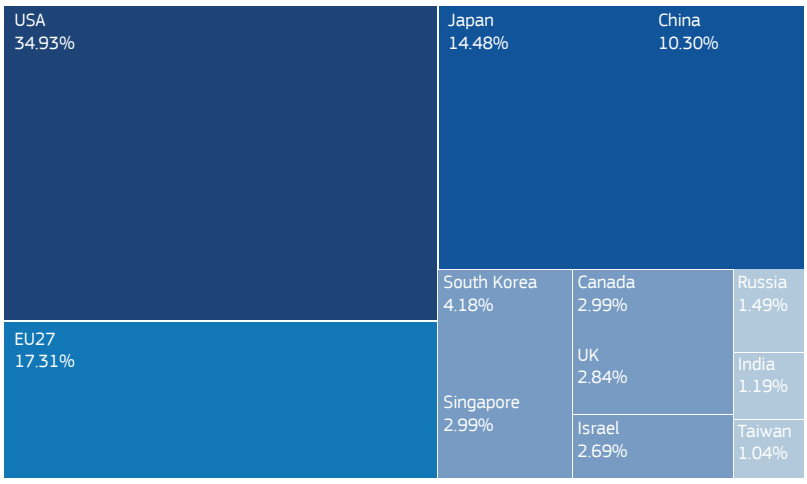
AI lessons learnt for Europe

- Europe needs an integrated and ambitious AI strategy.
- Overall public Research and Development spending needs to increase significantly.
- Europe needs to retain and attract top AI talent.
- European data should be used in priority by European AI companies.

Nanotechnology is a strategic focus for the US government

In 2018, the US accounted for 34.93% of global patent applications in nanotechnology, followed by the EU27 at 17.31% and Japan at 14.48%.

Share in global patent applications, international patent applications (PCT) and European patent applications (EPO) in nanotechnology



Source: Fraunhofer ISI calculations

Key players in the US nanotechnology ecosystem include:

- Extensive infrastructure of research and technology centres, such as the US National Nanotechnology Initiative
- Large companies, such as IBM and Samsung
- Venture capital investment and startups
- Public agencies

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Nanotechnology has been a political priority in the USA for more than two decades

The National Nanotechnology Initiative (NNI) was launched in 2000 to support the growth of the nanotechnology industry in the US. Since then, the budget to invest in nanotechnology has grown to €1.31 bn. New directions for the NNI are planed for 2021, including:

Sustainable nanotechnology for micro and nano particles

Nanotechnology using AI for nanomaterial and nano-system design

Emerging aspects of nanoelectronics, photonics, use of AI for smart materials and systems, and neuroscience

Convergence of nanotechnology with other emerging science and engineering fields

Nanotechnology lessons learnt for Europe

Easy access to core facilities enables startup companies to develop prototypes and test new applications.

Need for an overarching strategy for student recruitment and support to attract technology talent.

Policies reflecting the interdisciplinary nature of nanotechnology and that enable the nanotechnology ecosystem to reach out and tap into other digital and technological ecosystems.

Proactive policy frameworks that stimulate responsible nanotechnology and safe research and commercialisation.

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Covid-19 has had a negative effect on the US economy and has impacted efforts to invest in and adopt advanced technologies

Since the pandemic:

GDP has dropped and is expected to rebound up to a 4.2% growth rate in 2021, 3.2% in 2022, and 2.4% in 2023.

Unemployment has risen to 14.7% and remained in the double digits until August 2020. It further dropped to 6.7% in December 2020.

Small businesses in various sectors are still struggling, with a survey showing that by the end of 2020 only 34% of small businesses in the USA were profitable.

During the Covid-19 pandemic, there has been an increase in focus on privacy and security and misinformation globally. Reforms are expected to be launched on antitrust law with the objective to better regulate the biggest US tech companies and to prevent disinformation from spread. In February 2021, the bill 'Safeguarding Against Fraud, Exploitation, Threats, Extremism and the Consumer Harms Act' was introduced to the Senate. Potential changes from the bill include:

Upholding civil rights protection

Letting victims seek legal action when a platform is used to cause harm

Holding platforms accountable for ads and other paid content that scams vulnerable consumers

Ensuring platforms do not interfere with cyberstalking laws and cannot be held accountable by victims of targeted harassment and abuse.

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