

BERGGREN



Overview of Innovation and Technology in Europe



INNOVATION & IP
FORUM AND AWARDS

GOLD AWARD
BEST IP ADVISOR 2020
NORDICS

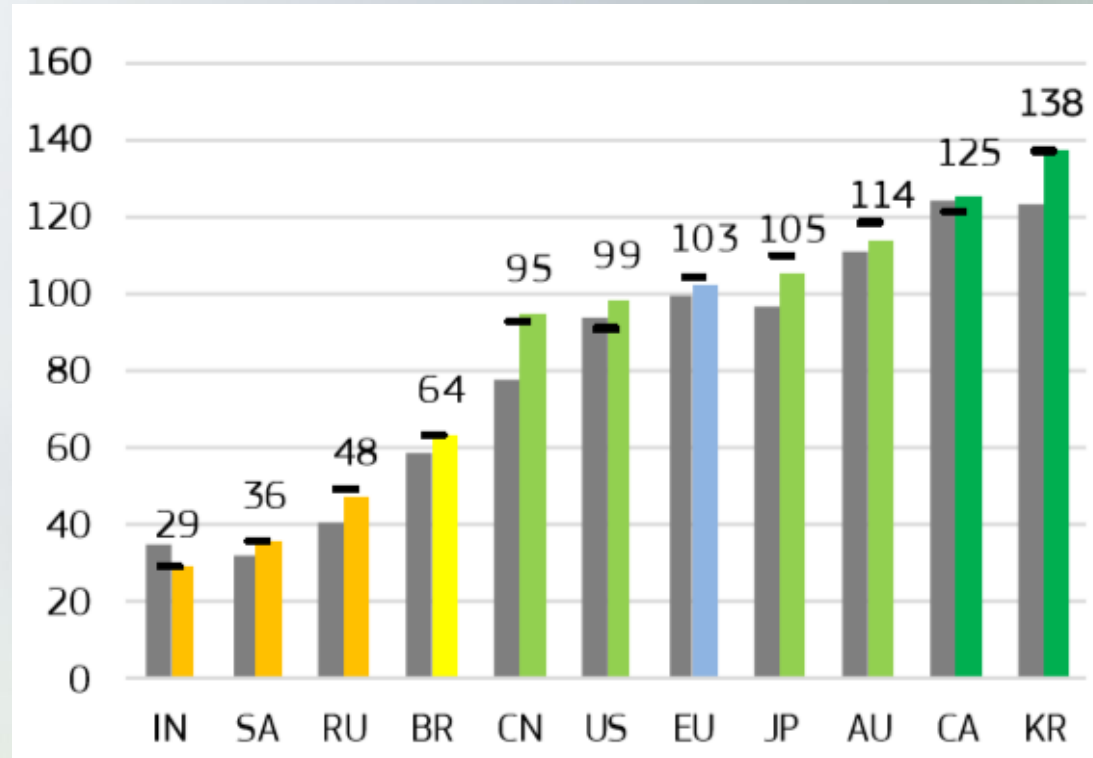
Mariella Massaro and Robert Alderson

Overview of Innovation and Technology in Europe

- The European Innovation Scoreboard 2020
- The Nordics as a Gateway to Europe
- Facts and Figures from Finland
- EPO Statistics on digital technologies
- SEPs related to 5G
- 3D-Printing technologies in Europe



EUROPEAN INNOVATION SCOREBOARD 2020



On average, the innovation performance of the EU has now increased by almost 9% points since 2012

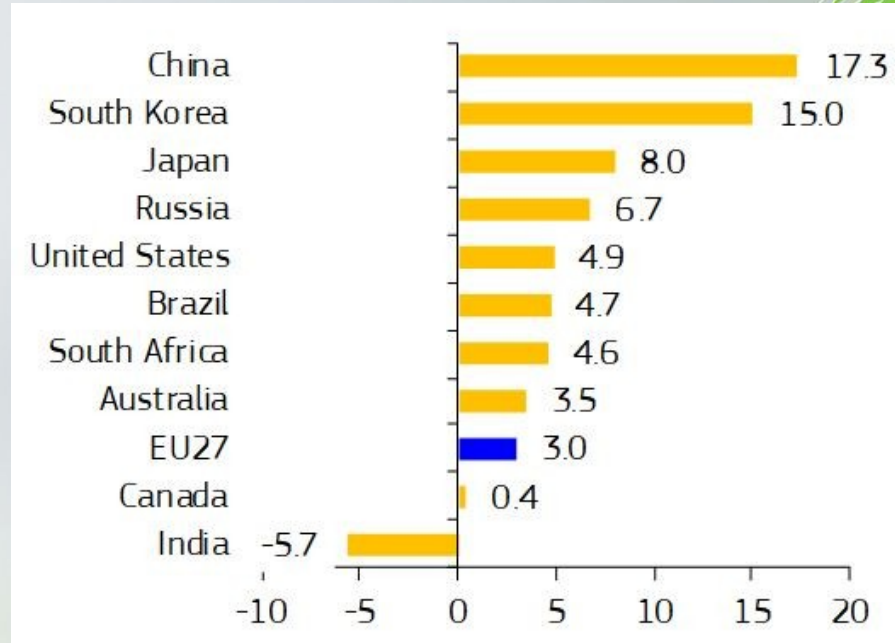
Coloured columns show performance in 2019 relative to that of the EU in 2012.

The horizontal hyphens show performance in 2018, relative to that of the EU in 2012.

Grey columns show performance in 2012 relative to that of the EU in 2012.

EUROPEAN INNOVATION SCOREBOARD 2020

Change in global performance since 2012



Since 2012, Chinese performance with respect to the EIS indicators has been growing 5 times more than the European performance

THE NORDICS: YOUR HIGHWAY TO EUROPE







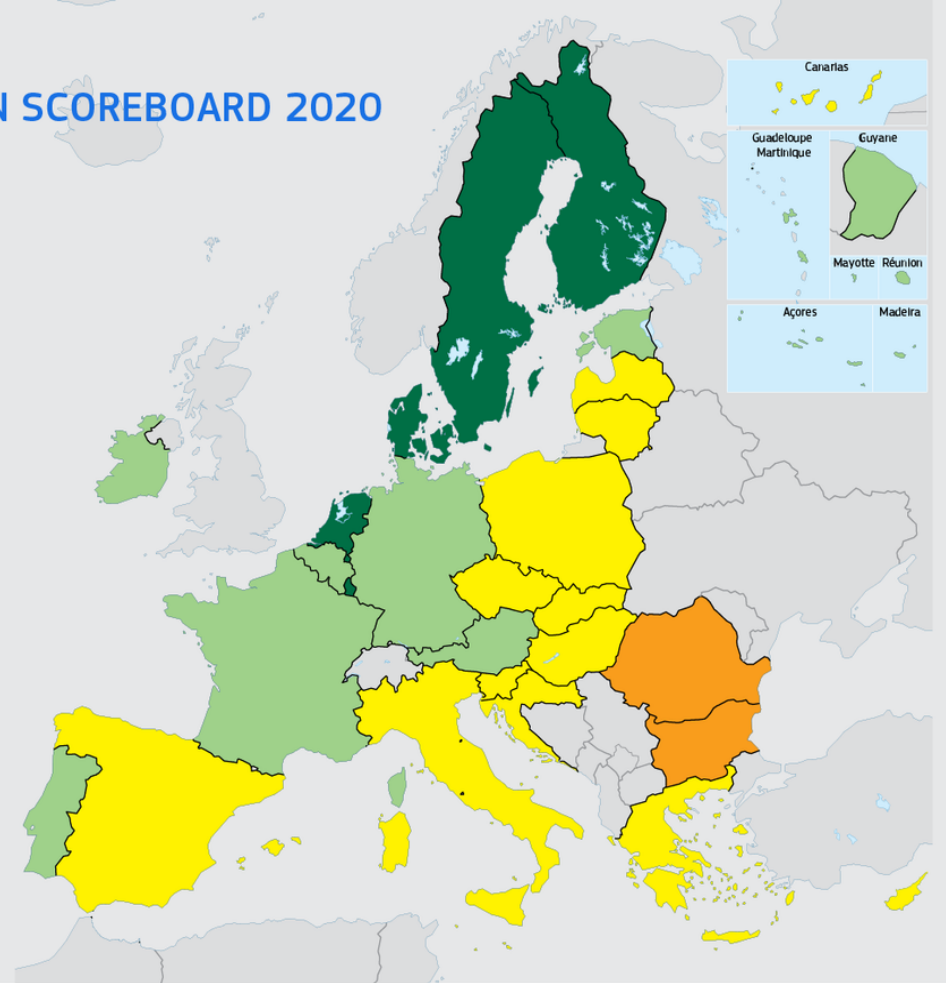
EUROPEAN INNOVATION SCOREBOARD 2020

The Innovation Leaders are Sweden, Finland, Denmark, the Netherlands and Luxembourg

The Innovation Leaders have a performance that is above 125% of the EU average.

Innovation performance groups

-  Innovation Leader
-  Strong Innovator
-  Moderate Innovator
-  Modest Innovator



European Innovation Scoreboard (EIS) 2020 - Indicators

Human resources: the number of new doctorate graduates, lifelong learning and population segments that have completed tertiary education

Attractive research systems: openness in cooperation with partners from abroad, level of connections of researchers at the international level, and the quality of research output

Innovation-friendly environment: the degree of broadband penetration and degree of opportunity driven entrepreneurship

Finance and support: the degree of research and development spending in the public sector along with level of venture capital investments

Firm investments: the level of research and development spending in the business sector, the level of non-research and development spending and the extent of information and communications technology training

Innovators: the degree of support for SMEs in introducing new products, novel processes and introducing marketing or organisational innovations

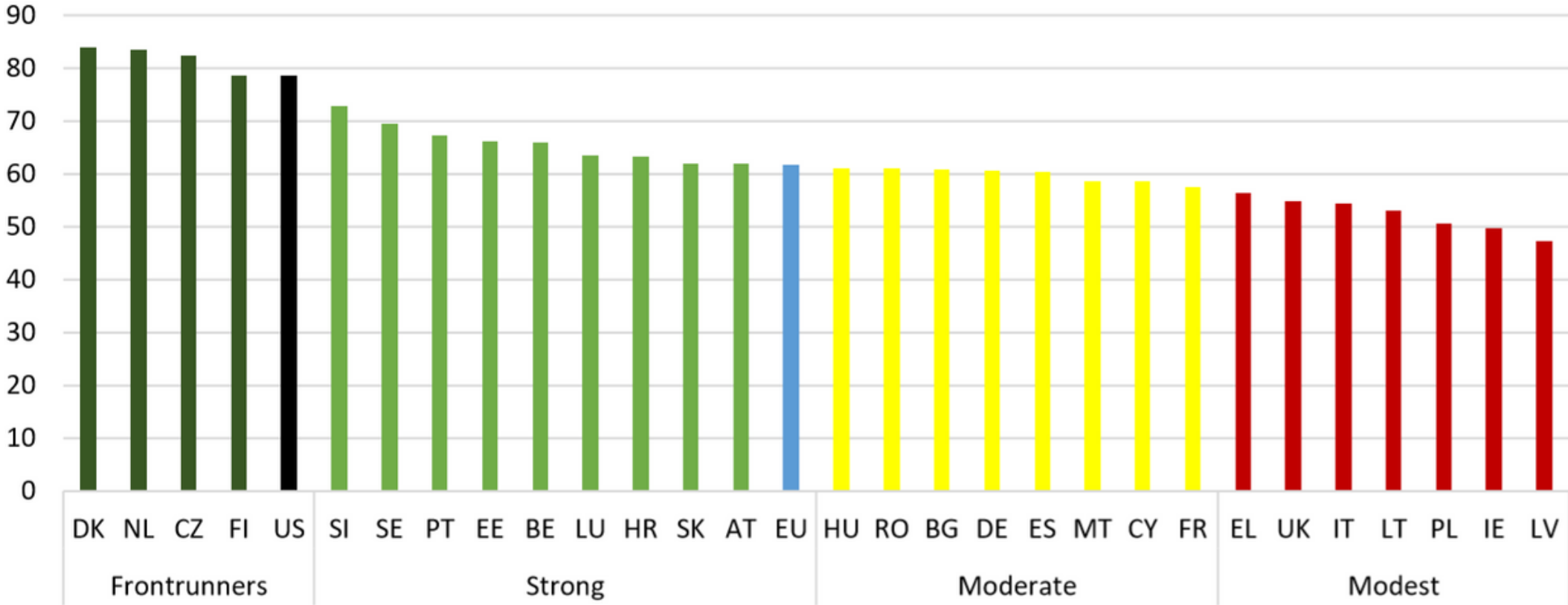
Linkages: the extent of innovative SMEs collaborating with others, public-private co-publications and private co-funding in public R&D activities

Intellectual assets: the number of trademark applications, design application and PCT patent applications

Employment impacts: the level of employment in knowledge-intensive activities and level of employment in fast-growing firms that work in innovative sectors

Sales Impacts: management and level of medium and high-tech product exports, knowledge-intensive services exports and sales of innovations to businesses and consumers

EIBIS Digitalisation Index



Source: Who is prepared for the new digital age? - Evidence from the EIB Investment Survey, in <https://www.eib.org/en/publications/who-is-prepared-for-the-new-digital-age>

FINLAND

No 1

**BEST BUSINESS
ENVIRONMENT
IN THE WORLD
2020**

(GLOBAL INNOVATION INDEX 2020)

No 1

**COUNTRY FOR
AVAILABILITY OF
LATEST
TECHNOLOGIES**

(WORLD ECONOMIC FORUM GLOBAL
COMPETITIVENESS INDEX 2017-2018)

No 1

**EU COUNTRY
FOR CHINESE
INVESTMENT
2019**

(RHODIUM GROUP)

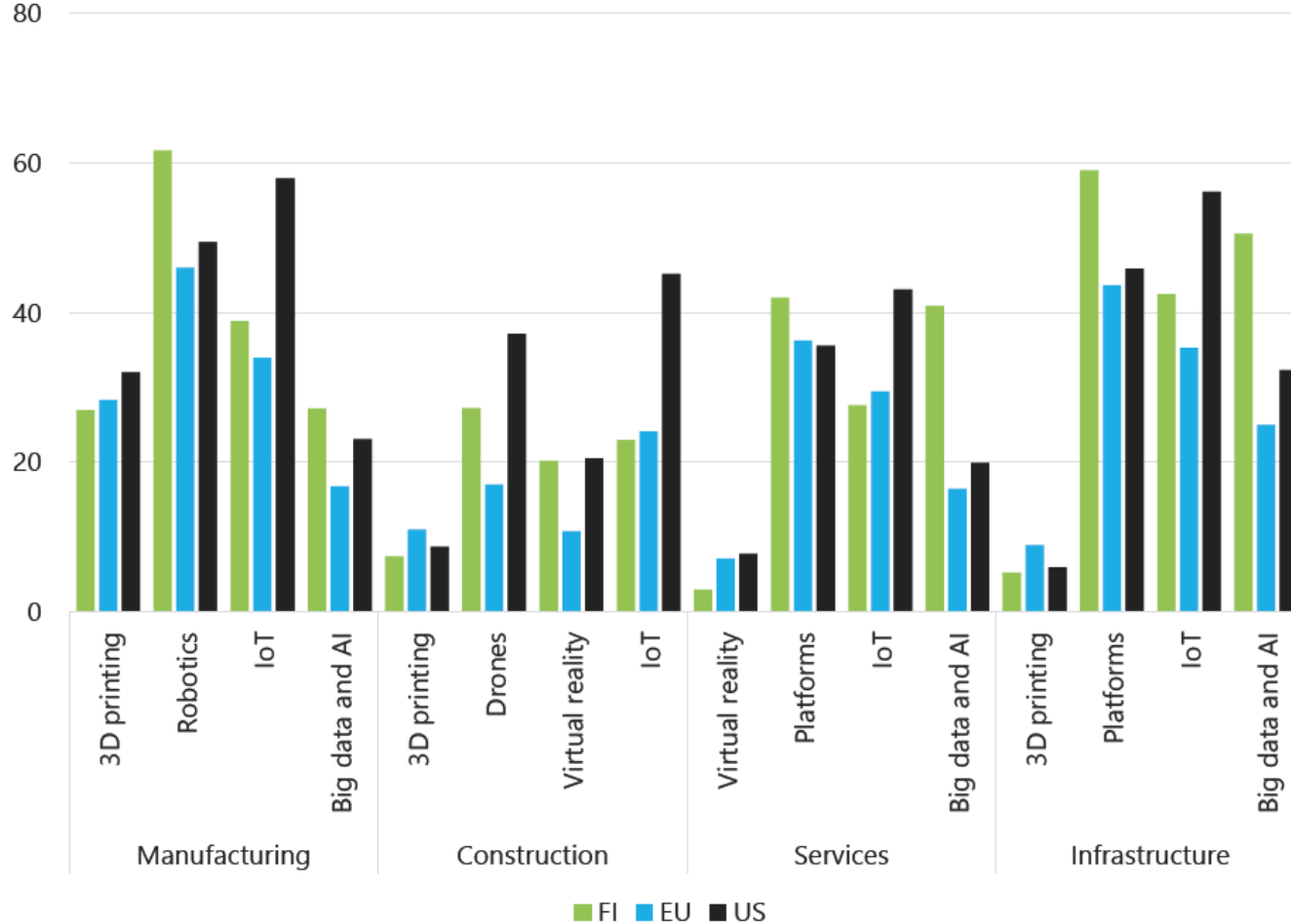
No 1

**COUNTRY FOR
CLEANER ENERGY
TRANSITION**

(WORLD ECONOMIC FORUM GLOBAL
COMPETITIVENESS INDEX 2019)



Adoption of different digital technologies (in % of all firms), by sector



Source: EIBIS wave 2019. Note: IoT: Internet of Things. AI: Artificial intelligence. Firms are weighted using value added.

FINLAND'S TALENTS

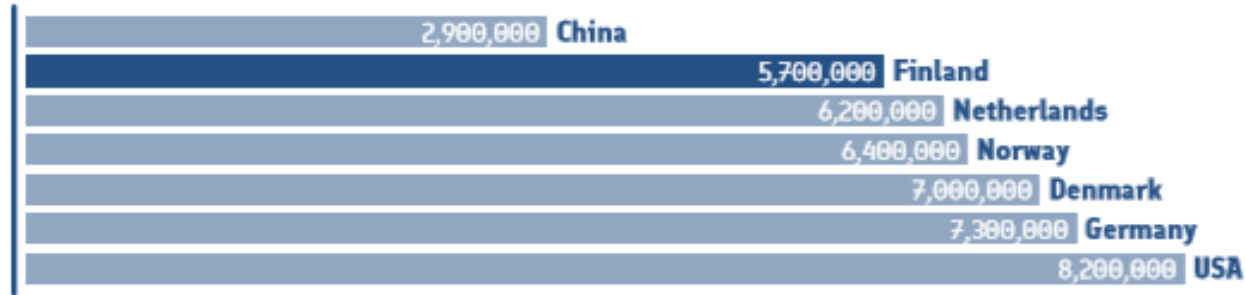
SUCCESS STORY:

Setting up the R&D team in Tampere is a milestone in our global expansion journey. On this journey, we will gain strength in our operations and business, and work with local talent to further improve our products with highly innovative technologies." WANG XIANG SENIOR VICE PRESIDENT XIAOMI, CHINA



TALENT AT REASONABLE COST

Labor costs (salary + additional costs) of a 100-employee software development center



All costs shown in EUR. Source: FDI Benchmark, Financial Times Ltd 2020

FINLAND: HEALTHCARE INDUSTRY

98%

OF PATIENT
RECORDS IN
ELECTRONIC
FORMAT

#1

AVAILABILITY OF
SCIENTISTS AND
ENGINEERS

#2

IN UNIVERSITY-
INDUSTRY
COLLABORATION
IN R&D**

#1

IN AVAILABILITY
OF LATEST
TECHNOLOGIES*

#2

LARGEST STARTUP
ECOSYSTEM IN THE
WORLD

20%

ONE OF THE LOWEST
CORPORATE TAX
RATES IN EUROPE

*WEF Competitiveness Report 2016-2017

**WEF Global Competitiveness Index 2016



SUCCESS STORY:

Finnish research is always highly professional. What distinguishes the Finnish ecosystem and Finnish hospitals is their very high efficiency and reliability. I would certainly recommend any healthcare company that is planning multicenter research projects to consider Finnish research centers.”
NATALIA MUEHLEMAN GLOBAL BUSINESS MANAGER
NESTLE HEALTH SCIENCE, SWITZERLAND

FINLAND and STARTUPS

HELSINKI

No 2

MOST APPEALING
CITY FOR STARTUPS IN
THE WORLDS
Startup Cities Index

SLUSH

Slush has grown from a single gathering of 300 people in Helsinki and is now a series of events organized all around the world, including China, attended by many thousands



THE ROLE OF DIGITAL TECHNOLOGIES

On 12 March 2020 The EPO published updated patent statistics according to which for the first time in more than a decade digital technologies have taken the lead in patent applications filed at the EPO.

EPO President António Campinos:

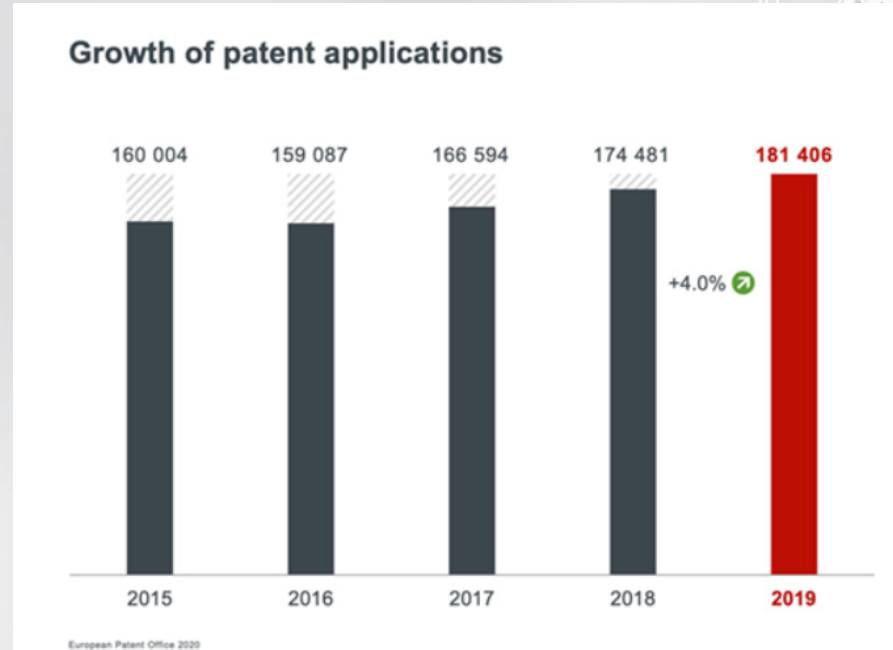
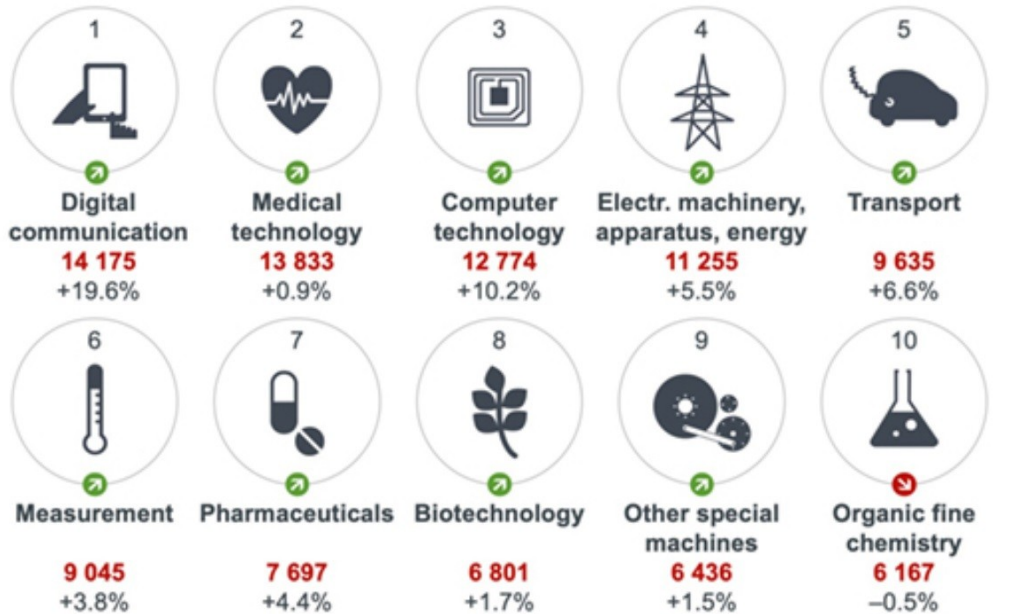
- *"The rapid rise of digital technologies is the most striking trend from our 2019 index,"*
- *"The digital transformation of the economy is now fully reflected in the patent applications reaching the EPO."*



DIGITAL TECHNOLOGIES:

➔ **Digital communication** (+19.6% v 2018): crucial technologies for implementing the **5G networks** were key drivers of growth in patent applications

➔ **Computer technologies** (+10.2% v 2018): the driving factor for growth was the increase in patent applications related to **AI** (machine learning and pattern recognition, image data processing and generation, and data retrieval)



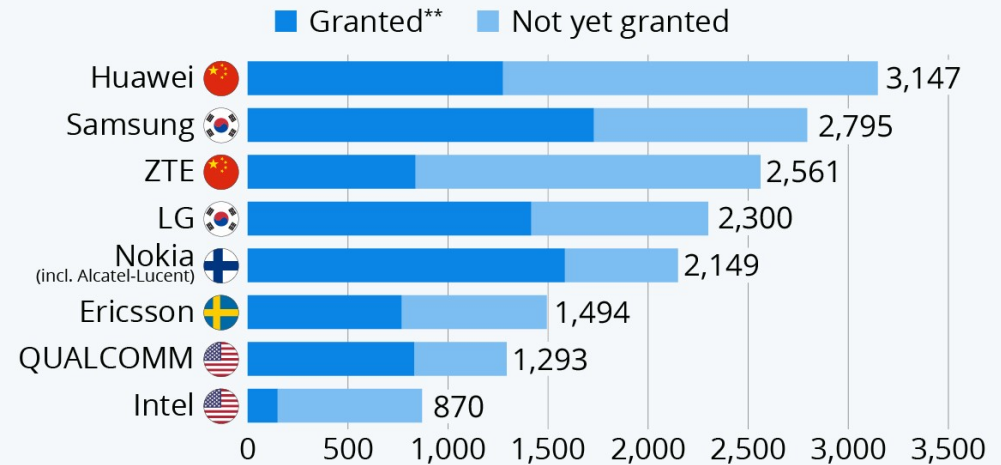
SEPs RELATED TO 5G TECHNOLOGIES

SEPs = Standard Essential Patents

FRAND = Fair, reasonable and non-discriminatory

Who Is Leading the 5G Patent Race?

Companies which have filed the most patents for 5G technology*



As of February 2020

* 5G SEP patent families, which is a group of patents covering the same technological area

** 5G SEP families with at least one granted patent counted

Source: IPlytics

3D - PRINTING TECHNOLOGIES

13-16 July 2020

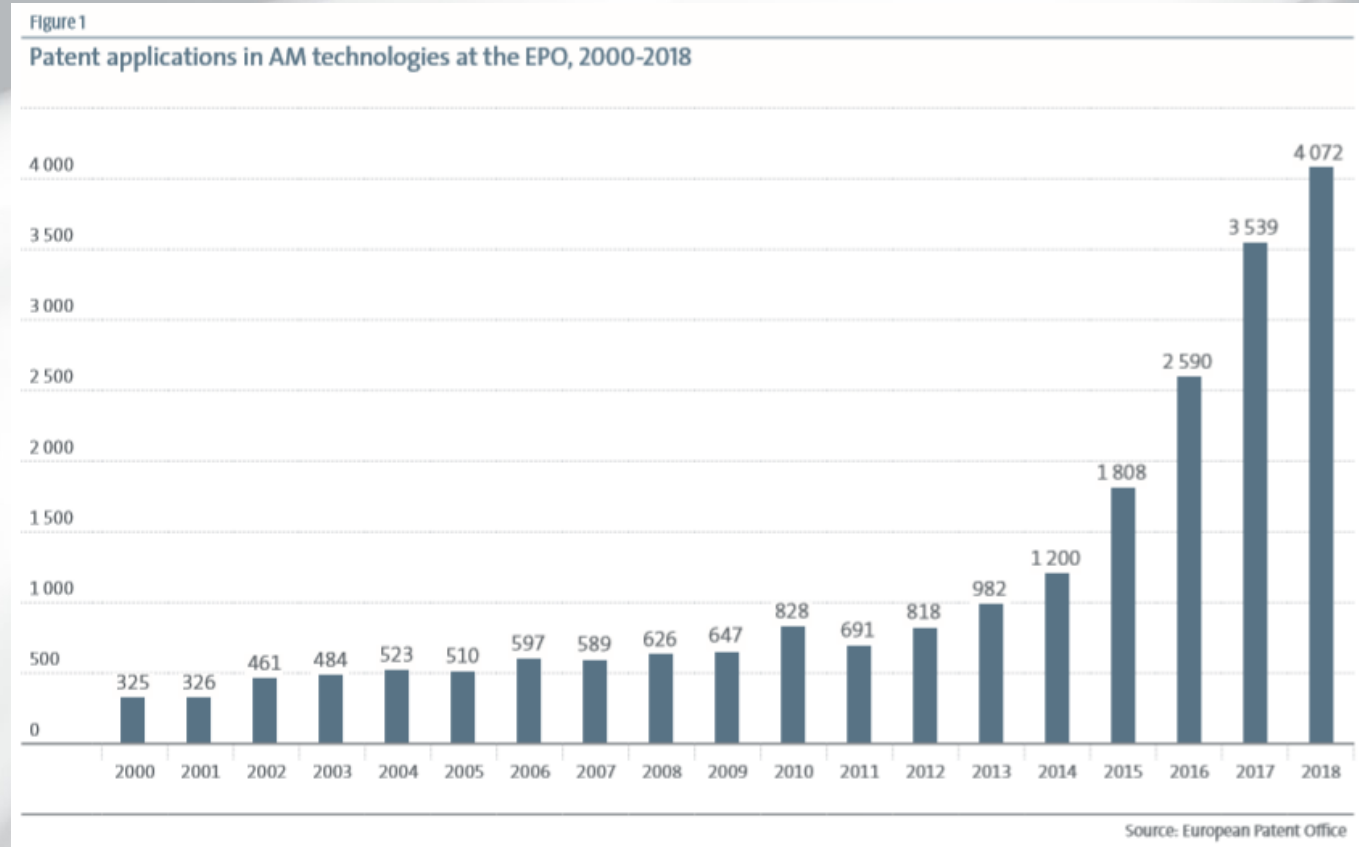
EPO and EUIPO organized a virtual conference on 3D printing technologies:

"Shaping Tomorrow and its impact on IP"

The EU Commission also published the paper:

The Intellectual Property Implications of the Development of Industrial 3D Printing

- + 36% patent applications between 2015-2018
- 47% applications filed by European applicants

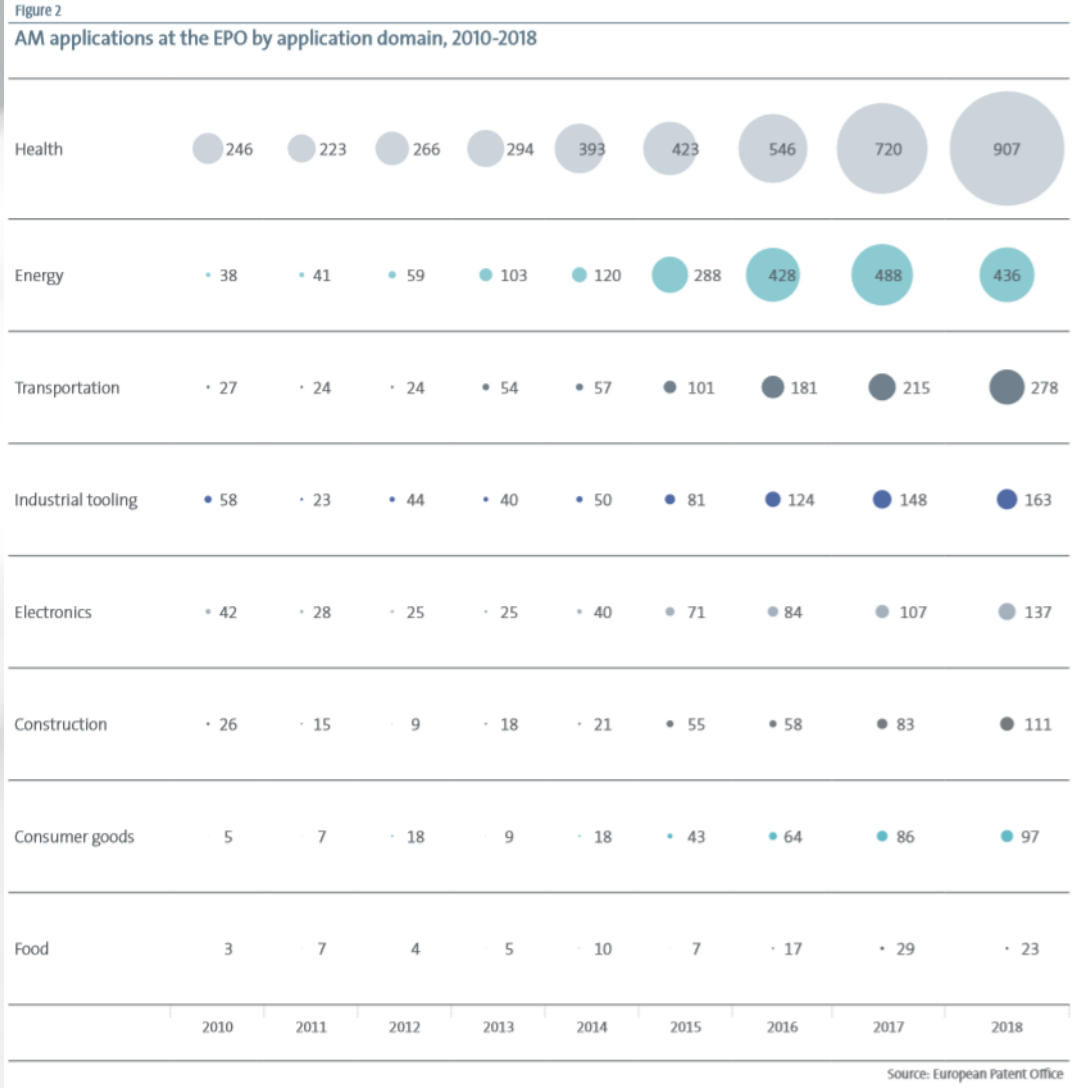


Source: Patents and Additive Manufacturing
<https://www.epo.org/news-events/news/2020/20200713.html>

3D - PRINTING TECHNOLOGIES

The most popular industrial applications for 3D-Printing technologies are:

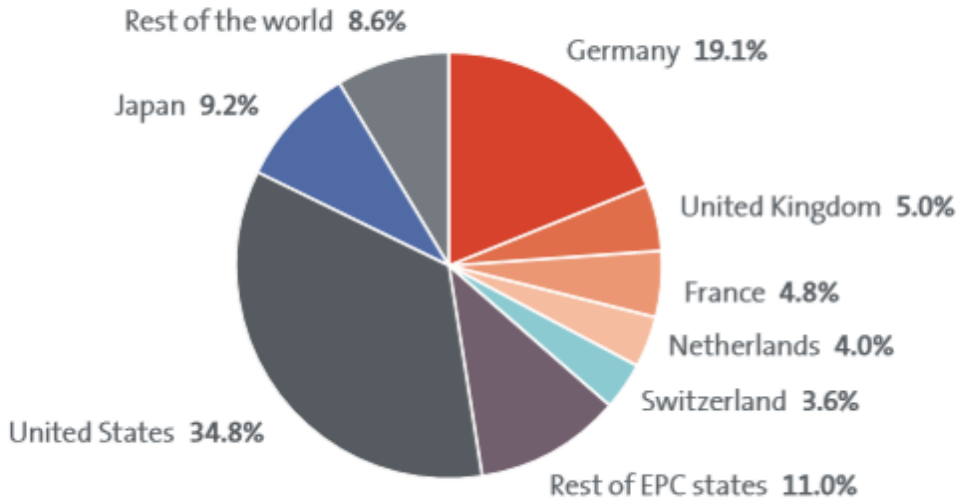
- Health
- Energy
- Transportation
- Industrial tooling
- Electronics
- Construction
- Consumer goods
- Food



Source: Patents and Additive Manufacturing
<https://www.epo.org/news-events/news/2020/20200713.html>

Figure 5

Geographic origins of AM applications, 2010-2018



Source: European Patent Office



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Thank you!
Stay tuned
for part 2!



Photo credit: Robert Alderson