Being a leading tech innovator is vital to secure global influence in the future. But can Europe catch up with the U.S. and China?

Political leaders today are increasingly aware that being at the cutting edge of technological innovation will prove crucial for citizens to retain their sovereignty. Europe has struggled to come to terms with the dominance of American tech giants in particular, amid recurring scandals from tax avoidance to abuse of personal data on social media.

French President Emmanuel Macron recently affirmed that artificial intelligence, a topic traditionally receiving more attention from science fiction writers than heads of state, was also an area which would prove critical for Europe. [In an interview with Wired](https://www.wired.com/story/emmanuel-macron-talks-to-wired-about-frances-ai-strategy/), Macron said his "goal is to recreate a European sovereignty in A.I." and argued that "if you want to manage your own choice of society, your choice of civilization, you have to be able to be an acting part of this A.I. revolution". While artificial super-intelligence poses threats,
frontrunner nations in the field will earn themselves a decisive technological edge, with their leadership in A.I. enabling further innovation.

The European Union has certainly not been a passive observer in this area, but has scored clear wins in recent years, providing some justification for the bloc's stated intention to help its citizens to "shape globalization." For years, the Commission has pressured tech giants to pay their fair share of tax and reduce monopolistic practices, including inflicting record multi-billion euro fines. Even though the European Parliament made it easy for Mark Zuckerberg to avoid answering tough questions in his recent testimony in Brussels, the bloc’s relentless advocacy for data privacy may still have had an impact on Facebook’s CEO. Addressing hearings at the U.S. Senate earlier on, Zuckerberg said that his company would make EU data protection and privacy rules their global standard.

Europe's upcoming challenges

In the long run, however, the EU's leverage over foreign tech giants is likely to wane along with its shrinking share of the global economy. To remain relevant in tech, Europe will have to up its game in research and innovation. Here too, the Commission has not been passive but has made research and innovation a cornerstone of its strategy for economic growth and development. The bloc has shifted funding from agricultural and regional development programs to innovation and high technology, such as the Horizon 2020 program, which is ploughing over €24 billion euros into research, technology, infrastructure, and higher education.

And Europe faces significant challenges in its bid to up its tech track record, as shown by data from the Bertelsmann Stiftung's Sustainable Governance Indicators (SGI). While Europe is a highly innovative region compared to most of the world, the continent significantly underperforms North America and East Asia. The SGI grades developed nations' performance on research and innovation by considering factors such as the overall policy framework, R&D spending, patents, and number of researchers. According to these metrics, EU countries on average score 5.2, compared to the U.S. with 7.4 and Japan with 7.6.

Europe suffers from low R&D spending and relatively few patent applications. Typically for Europe, innovation policy is fragmented and uneven across the continent, with nations such as Germany and Sweden ranking among the world's leaders, and Bulgaria and Slovakia falling among the worst-performing developed nations.
Meanwhile, there are worrying signs that Europe is falling behind. In the private sector, European tech companies lack the combination of dynamism and scale enjoyed by their U.S. counterparts. As a result, there simply is no European equivalent to all-purpose U.S. tech giants such as Google, Facebook, Apple, or Amazon. China, in contrast, with its enormous homogeneous market, protectionist policies, and native innovation, has developed alternatives such as the search engine Baidu and the messaging app Tencent, which surpassed Facebook in value last November, becoming worth a whopping $500 billion.

**Where next on A.I.?**

There is not a single European company among the world's top 10 computer hardware companies although the continent has plenty of innovative startups and dynamic people working in tech. In the past, European social media players, such as DailyMotion in France or Twenti in Spain, have been able to conquer a national market, but then tend to gradually collapse in the face a far larger American rival. Innovative European products, meanwhile, such as Skype and Minecraft have been bought by Microsoft.

And in regard to A.I., Macron has his work cut out. The fact is that A.I. is absolutely dominated by the U.S. and China. A report by CB Insights found that China made up 48 percent of global funding for AI startups while the U.S. accounted for 38 percent. The U.S. and China also dominate in the numbers of top supercomputers they control, with China having a decisive lead. Europe lags both in the area of venture capital, with $14.4 billion invested in the sector in 2015 in the old continent, trailing $72.3 billion in the U.S. and $49.2 billion in China.

The EU's innovation capacities will also be harmed by Brexit. The United Kingdom is a top performer in tech and startups, and is a net contributor to the EU budget. The U.K. has the highest investment in venture capital in Europe, over 50 percent more than Germany, being worth $4.8 billion in 2015. The UK is also home to the biggest number of Europe's tech giants: Its companies worth more than $1 billion add up to $49.9 billion, putting it far ahead of Sweden, the next-best performer. So European nations will have to make a major effort if they want to stay relevant in the technological race.

Some obstacles are relatively insuperable. The EU market, unlike that of the U.S. or China, is nationally fragmented for cultural and linguistic reasons as well as regulatory ones. The EU as a multinational body furthermore cannot be as
reactive and decisive as a national government, let alone an authoritarian one such as China's.

**Top marks for research in Europe**

At the same time, the EU does have specific assets. What the Union lacks in immediate reactivity, it gains in the consistency of long-term policy. The bloc is for the first time in years enjoying a welcome spell of economic growth. The Eurozone has, on average, an astonishingly low deficit spending of less than 1 percent of GDP and with growth debt levels as a percentage of GDP are actually declining. This is in marked contrast to the U.S. and Japan, which have continued to resort to deficit spending to sustain growth, a strategy which is likely to be inflationary in the long run. The silver lining to the Eurozone's long economic crisis may also be the adoption of a growth model with greater macroeconomic discipline and, with any luck, less of a tendency towards boom and bust cycles than other advanced economies.

The SGI (http://www.sgi-network.org/2017/Policy_Performance/Economic_Policies/Research_and_Innovation/R&I_Policy) notes that many European nations are top performers in research and innovation, best practices which other EU countries can learn from. The economic windfall from the current growth could be used to make up the gap in R&D spending and EU funds can continue to be used to finance upward convergence.

The European authorities remain keenly aware of the bumpy road ahead. The Commission has been working to develop the digital single market, breaking down national regulatory barriers where possible. Twenty-four EU nations recently signed a pact pledging to increase A.I. spending (https://www.euractiv.com/section/digital/news/twenty-four-eu-countries-sign-artificial-intelligence-pact-in-bid-to-compete-with-us-china/) and this is no doubt an area where a great Franco-German research project could bear fruit, in the tradition of Airbus. The Commission has recently presented plans to increase spending for A.I. by 70 percent to €500 million and to invest €2.1 billion in venture capital.

Brexit's negative consequences for the EU's innovation capacities can be mitigated somewhat. The EU has proved remarkably cohesive and strong-handed in its negotiations with London. Both sides would benefit from making any changes to market access as predictable and clear as possible, to maintain cooperation in high technology and research projects, and generally to make each other's innovation systems as open and connected to each other as possible. With good will, no doubt such a deal can be secured in the interest of both British and European citizens.
In an age increasingly defined by technology, whether in culture, society, or economics, retaining a technological edge in innovation will be crucial to retaining European citizens' sovereignty and values. This includes issues such as privacy, data protection, and social equity, all themes where Europe is a world leader in protecting citizens' rights. Europe has among the highest concentrations of human capital. To exploit that potential, the region will have to increase and pool their efforts in innovation and tech if they are to catch up with the U.S. and China.

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