

Policy Paper

The EU, Foreign Policy and the Race for Artificial Intelligence

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Executive Summary

Until now, liberal democracies have dominated the landscape of developed nations because they guarantee each individual rights and freedom that allow them to pursue a prosperous life. In this context, artificial Intelligence might be a game changer as it could give authoritarian dictatorships the resources to oppress and control their population more efficiently while, simultaneously, enable economic prosperity.

Historically speaking, countries that fell behind in technological advancement were dominated by those that mastered them suggesting that failing to develop and adopt technologies of the fourth industrial revolution is likely to lead to underdevelopment and backwardness. Although the EU is a world leader in basic AI research, it is currently lagging far behind in the commercialisation of AI. This is because the EU does not have a conducive commercialisation climate, it lacks long-term financial commitment by governments and companies while also failing to attract and retain talented researchers and entrepreneurs.

To counter this, it is inevitable for the EU to pursue strategies with a proven track record which would enable the proper cultivation of an AI industry and attract talented individuals from across the world. Introducing English as an official second language for government administration would facilitate this objective since native English-speaking countries and those that have high English literacy rates are among the primary landing spots for foreign talent.

Artificial Intelligence: A Foreign Policy Issue

The potential effects of artificial intelligence (AI) on international relations cannot be understated as the global race for AI has considerably picked up the pace in recent years. Exponential growth of processing power and data collection is at the centre of an innovation process that will disrupt every aspect of our lives.¹ Just as other international actors, the EU increasingly acknowledges the urgency of this matter by promoting a [common AI strategy](#) and incentivising member states to strengthen their efforts as well.

At the initiative of the Finnish EU Council Presidency as well as Vice President of the Commission Federica Mogherini, the [Global Tech Panel](#) recently came together with EU defence ministers to discuss the potential opportunities and challenges of this ground-breaking technology. With a focus on the potential harm of lethal autonomous weapons systems and the consequences for human rights and dignity, the EU, as the champion of liberal values, indicates its desire to develop ethical standards for AI in order to guarantee its safe appliance.

However, it is not just autonomous weapons that endanger the stability of the international system. China's effort to create a digital authoritarian state is a chilling warning of what the future might have in store if the technology is developed without concerns for human rights and individual freedoms.

Increased surveillance capabilities provided by AI enable the Chinese government to introduce the so-called [social credit system](#)² which meticulously monitors citizens through advanced facial recognition systems and the tracking of social media and online shopping behaviour. While obedient citizens enjoy better access to goods and services such as high-speed internet and low interest loans, people who do not show the proper behaviour will lack these amenities.

If this system proves to be efficient and delivers submissive but industrious citizens, it would constitute a legitimate rival to liberal democracy and threaten its global primacy especially among countries whose leaders are prone to authoritarianism. So far, in order to become an economically prosperous nation, a certain amount of openness to international trade and the assurance of some economic freedoms for individuals were inevitable.

Considering the growing AI surveillance capabilities and the possibility to recognise patterns in human behaviour invisible to the human eye, this might change and enable countries to meticulously [nudge](#) their population toward behaviour they deem appropriate. Even though China has not made efforts to export this system to other countries yet, technologies such as facial-recognition are [praised by law enforcement](#)³ worldwide while individual credit ratings based on [algorithms](#) are already common practise for banks to determine the creditworthiness of customers.

Israeli philosopher Yuval Noah Harari⁴ considers the rise of these digital dictatorships to be a real threat to individual freedom. In the past, totalitarian regimes with a centralised decision-making structure were at a significant disadvantage because nobody could analyse huge amounts of data from one central point.

¹ Schwab, Klaus (2016): The Fourth Industrial Revolution. Geneva: World Economic Forum.

² Kobie, Nicole (2019): The complicated truth about China's social credit system. In: WIRED UK.

³ Schuppe, Jon (2019): How facial recognition became a routine policing tool in America. In: NBC News.

⁴ Harari, Yuval Noah (2018): 21 Lessons for the 21st Century. London: Random House.

Democracies, by contrast, where decisions are taken diffusely by a wide-range of actors embedded in different parts of society, outcompeted them as they had better-informed judgement. However, since processing huge amounts of data is now possible, authoritarian regimes might gain the upper hand. In fact, nowadays, data is considered to be the [new oil](#)⁵ because the more of it is used to train [machine learning](#) algorithms, the more sophisticated these algorithms will become in detecting complex patterns.

China is clearly taking the lead in this field due to its openness to data collection and its large number of internet users which already exceeds the combined amount of the US and Europe.⁶ The EU, which is leading the world in data protection through its GDPR policy, could never make DNA scans mandatory for all citizens or obligate them to share their entire medical history with government authorities. An authoritarian state, on the other hand, would be able to do so, use the acquired data to train algorithms and gain a significant advantage in genetics and medical research.⁶

Historical Background on AI

Beijing's desire to take the lead in this technology is understandable considering the fact that Western imperialism was mainly based on a technological advantage which forced the Chinese into submission, a period known until this day as the Century of Humiliation.⁷ China, which has introduced a centralised state 2000 years before a similar concept came up in Europe, has been the most powerful state on the planet for most of the last three millennia.

This radically changed when the invention of the steam engine led to the first industrial revolution and ushered in the new era of mechanical production enabling Europeans, led by the UK, to enforce their will upon the rest of the world.

Since further technological progress was based on these innovations, European powers were able to perpetuate their global leadership position and become pioneers of electrification, the combustion engine and industrial machinery, all considered to be technologies of the second industrial revolution. A global power shift only occurred when the destruction of two World Wars crippled Europe and its empires and enabled the US to take over the role of global industrial leadership.

Its subsequent rise as the main innovator behind the third industrial revolution led to the invention of semiconductors, the technology on which modern computers are relying. Hence, it comes as no surprise that the internet was invented in the US and that the combination of the internet and computer technology led to the fourth industrial revolution whose central innovations are based on linking the digital, physical and biological worlds.¹

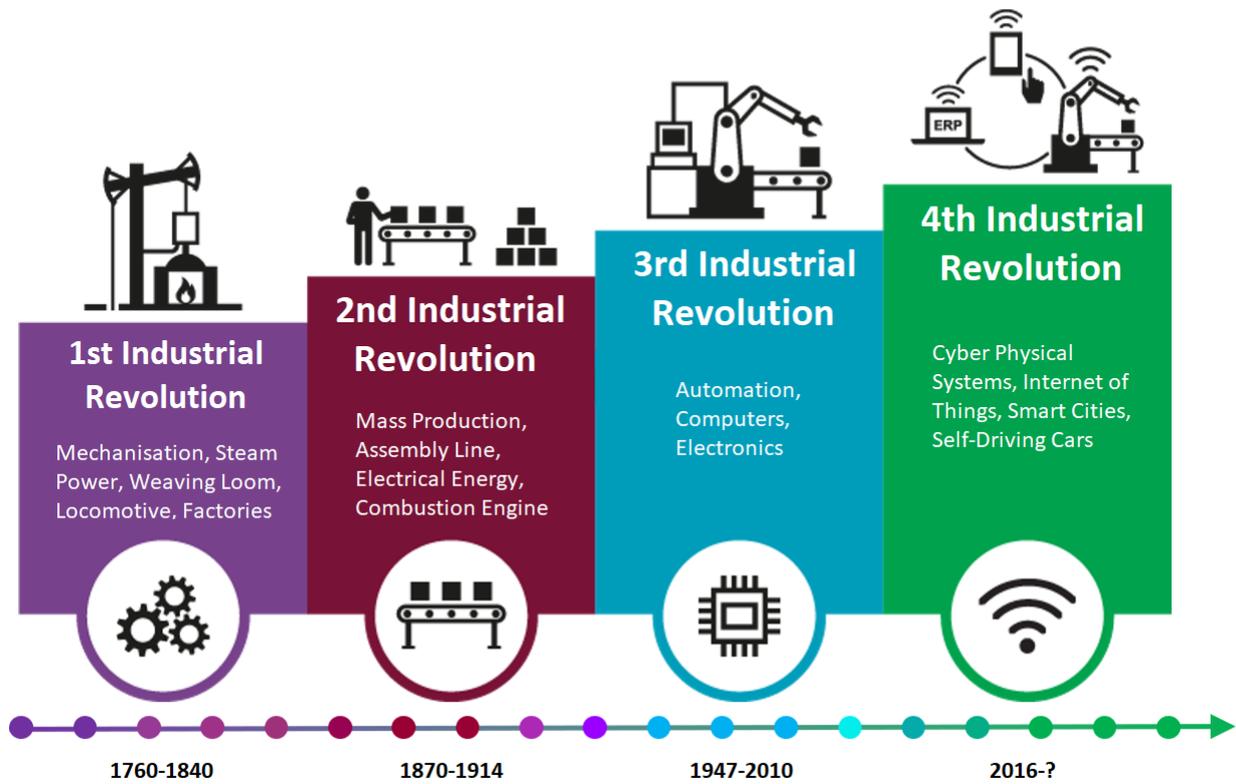
The importance of adopting these technologies becomes clearer if one looks at developing countries, most of which are still struggling to take on technologies of the second and third industrial revolution. Roughly 1.1 billion people lack [access to electricity](#) while more than 3 billion people did not have [access to the internet](#) as of 2018. Without embracing these technologies, it will be impossible for developing countries to make up leeway. By the same token, developed countries who fail to pursue technologies of the fourth industrial revolution will meet the same fate and fall behind.

⁵ The Economist (2017): The world's most valuable resource is no longer oil, but data.

⁶ Lee, Kai-Fu (2018): AI Superpowers: China, Silicon Valley, and the New World Order. Boston: Houghton Mifflin.

⁷ Wright, David Curtis (2011): The History of China. Second Edition. Santa Barbara: Greenwood.

The Four Industrial Revolutions



Source: Adm1 - cleanpng.com/png-fourth-industrial-revolution-technological-revolut-3378777 / Edited by the author

The Current State of Affairs on AI

Currently, the race for AI is led by the US. As shown by [Dr Uszkoreit](#) from the DFKI (German Research Centre for Artificial Intelligence),⁸ the three steps toward developing new AI products, basic research, product research and commercialisation, are all very highly developed in the US.

They have well-financed universities that provide exceptional education and research and attract talented individuals from all across the globe. Their government agency responsible for developing emerging technologies, DARPA, is extremely well-funded and provides access to financial resources to research projects as well as AI start-ups.

Furthermore, the commercialisation climate of the US is widely considered to be the best in the world and supplies the industry with large amounts of venture capital in a much more risk-tolerant environment compared to Europe. In addition, already established tech giants such as Google, Facebook and Amazon continually support AI research and development hoping to create the next big technological breakthrough.

Uszkoreit⁸ elaborates further that China has recognised the success of the US in this field and is establishing a similar system. It has expressed its strong commitment to AI and plans to become a [world leader](#)⁹ by 2030, a realistic goal that will be reached much earlier according to many experts in

⁸ Uszkoreit, Hans (2019): AI in China, Europe and USA. Presentation held at Rise of AI Conference.

⁹ Future of Life Institute (2019): AI Policy-China.

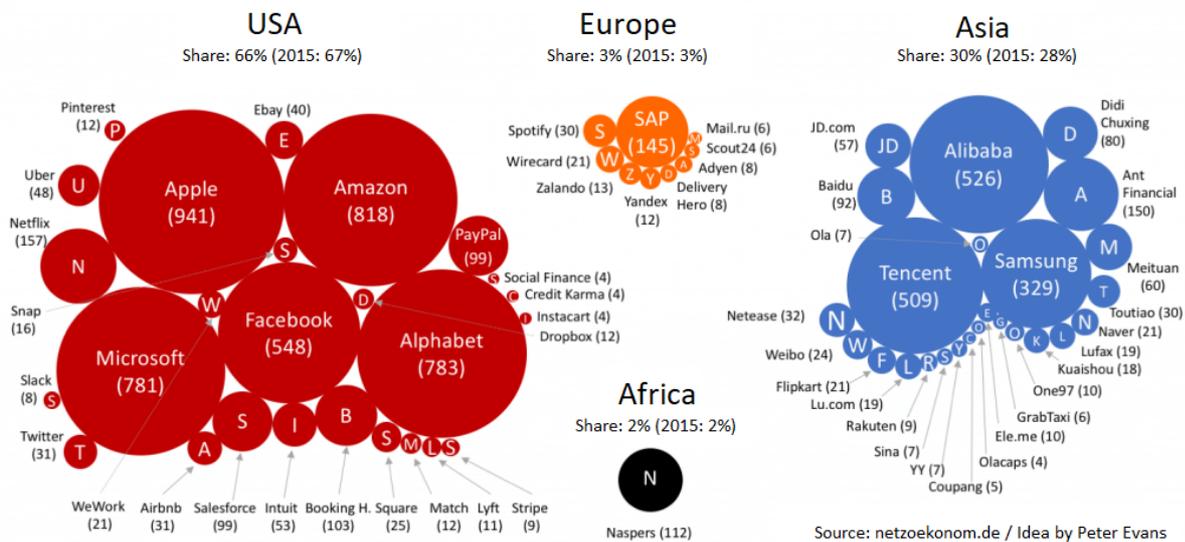
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the field. Furthermore, Beijing provides long-term funding for start-ups, research projects and talented researchers all while its universities have risen to become leading global institutions. Although the language barrier is an obstacle to foreign researchers, China makes up for it by having an incredibly large and culturally homogenous market.

This simplifies market access for start-ups as well as commercialisation of new products and has already led to the creation of tech giants such as Tencent, Baidu and Alibaba who, just as their American counterparts, funnel plenty of financial resources into the development of new AI products.^{6 10}

The 60 most Valuable Plattform Companies

(in Billion USD / June 2018)



Europe, in comparison, lacks many aspects that help emerging technologies flourish in China and the US according to Uszkoreit.⁸ There is not a lot of venture capital to fund AI start-ups and its society is rather risk-averse compared to its two competitors.

Thus, the commercialisation of research ideas does not take place as much in Europe which explains the lack of consumer internet companies. Furthermore, the EU alone has 24 different languages written in 3 different scripts and a rather heterogeneous culture making market access and commercialisation much more complicated.

If we look at [OECD numbers](#),¹¹ we see that in 2017 around 50 percent of all private equity into AI start-ups happened in the US whose global share has been in decline in recent years due to China which increased its stake from 3 percent in 2015 to 36 percent in 2017.

The EU, by contrast, went from 1 percent in 2013 to just 8 percent in 2017 of which more than half was coming from the UK, where the majority of European AI start-ups are located. These numbers are unsettlingly low considering the EU makes up 16 percent of global GDP compared to the US with 15 percent and China with almost 19 percent. Assuming the UK will leave the Union promptly, it is

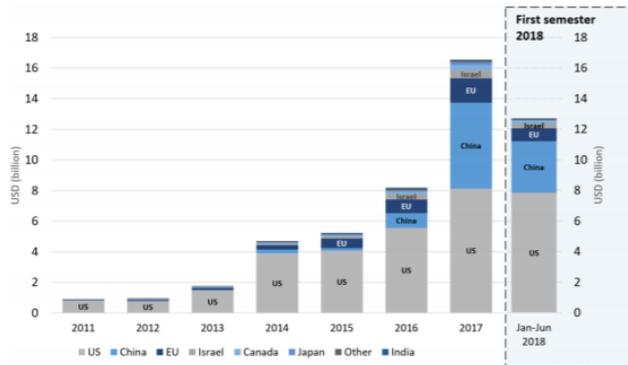
¹⁰ Minsky, Carly (2018): One former Google exec says there's no hope for Europe's artificial intelligence sector.

¹¹ OECD (2018): Private Equity Investment in Artificial Intelligence. OECD Going Digital Policy Note.

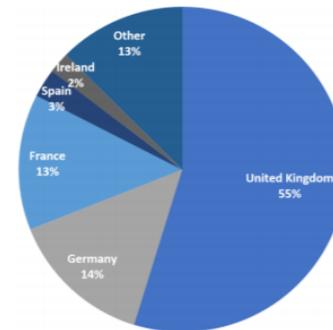
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understandable why Kai-Fu Lee, Chinese venture capitalist and AI expert, expressed doubt over whether Europe was even competing for bronze medal in the race for AI.¹²

Total estimated equity investments in AI start-ups, by start-up location 2011 to mid-2018



Percentage of total amount invested in EU-based start-ups 2011 to mid-2018



Source: OECD estimates based on Crunchbase (July 2018)

Nevertheless, as Uszkoreit⁸ concludes, Europe has not dropped off the race yet as it has great advantages in the field of basic research. Universities in Europe have the highest degree of academic freedom in the world which encourages creativity and is the main reason for why European research institutes are constantly ranking among the world's best. In fact, according to the [Artificial Intelligence Index 2018](#), each year between 1998 and 2017, the number of AI papers published has been led by Europe.

However, due to a lack of opportunities to develop research ideas into commercialised products, many European academics decide to move to the US. This brain drain is a significant shortcoming for Europe since only very few Americans decide to relocate permanently. [Celestino Alvarez](#),¹³ founder and CEO of the European robotics start-up Adele Robots, supports this argument by saying that Europe is effectively paying for the training of highly qualified workers in the US.

His suggestion, to create a European Airbus for AI, is, therefore, reflecting on the lack of commercialisation opportunities in the EU. While there are attempts at creating a better ecosystem for AI entrepreneurs such as [Cyber Valley](#) near the German city of Stuttgart, these undertakings are not nearly as well-financed as Chinese projects currently under way in [Beijing](#) and [Tianjin](#) let alone Silicon Valley.

In the EU, the topic of AI is particularly promoted by French President Macron.¹⁴ The European Commission has announced a [common strategy for AI](#), created the [High-Level Expert Group on Artificial Intelligence](#) and published a [flagship study on AI](#) which indicates its determination to make progress in the field of AI. While these developments surely raise hopes for the European AI community, they do not make up for the inevitable truth the EU has to come to terms with: in the race for AI, the EU is lagging far behind and needs to step up efforts in order to not drop off the race entirely as this would lead to a crisis of prolonged backwardness.

¹² Stodhard, Michael (2019): Europe is losing the AI race. [Available here](#).

¹³ Minsky, Carly (2019): What European AI lacks in funding it makes up for in ambition.

¹⁴ Franke, Ulrike/Sartori, Paola (2019): Machine Politics: Europe and the AI Revolution. ECFR Policy Brief.

The Way Forward

For Jared Diamond,¹⁵ honest self-appraisal is a crucial factor for nations who are faced with a crisis. He uses Germany as an example because it reacted very differently to the two national crises it experienced in the 20th century, each of which happened after the defeat in a world war it had started. The first time around, Germany saw itself as the victim who only lost the war because of socialist politicians stabbing the undefeated German army in the back by negotiating an armistice with the Entente Powers.

The second time, though, Germany came to terms with the crimes committed not only by high-ranking Nazi officials but also by ordinary citizens who perpetrated numerous atrocities during the Holocaust and the Blitz. This acknowledgement of guilt, which was particularly embodied by West German Chancellor Willy Brandt and his [Warsaw Genuflection](#) of 1970, paved the way for Germany's return to the world stage as a respected nation.

Even though the technological gap in AI is not as profound of a crisis as the one Germany has recovered from, the EU, nevertheless, needs to evaluate itself honestly and acknowledge its technological deficit. Unfortunately, so far, none of the documents that sum up AI strategies from the EU or any member state include a specific reference to this circumstance. This is a weak spot because recognising a deficit can be very productive due to making nations more susceptible to successful policies that worked elsewhere.

When Japan first laid eyes on Commodore Perry's four warships which were entering the Harbour of Edo on July 8, 1853, there was acute realisation that these foreigners could not be refused any of their demands. The only way to expel them was to adapt their technologies, mimic their political system and incorporate certain parts of their culture into their own so as to be accepted as an equal.¹⁵ Although the differences between the Tokugawa Shogunate of Japan and the Western imperial powers were much more significant than today's differences between China, the US and the EU, they were based on a technological edge.

The EU should learn from this historical example and start endorsing strategies that have a proven track record. China has been doing this from the start by copying Silicon Valley Websites in order to gain digital engineering and entrepreneurial skills, a practice deeply rooted in Confucian tradition where replicating desirable foreign items has always been the way to learn the underlying craftsmanship.

As a result, China has already caught up with the US in many fields of AI while the EU has not.⁶ What needs to be done was summed up quite accurately by Barry O'Sullivan, who is a professor in AI and the Vice Chair of the European Commission High-Level Expert Group on AI:

“We need to [...] create the research environment and the commercial environment to encourage the best people to stay here, return here, or to come here in the first place.”

According to a study by the European Commission on the [movement of skilled labour](#), there are many different push and pull factors that play a role in the migration of skilled workers. One factor that plays a major role is language because people are more likely to migrate to a country whose language is either similar to their own or already spoken as a second language. Thus, since English is the most widely spoken second language in the world, English-speaking countries have a natural competitive advantage.

¹⁵ Diamond, Jared (2019): *Upheaval: Turning Point for Nations in Crisis*. New York: Little Brown and Company.

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This corresponds to the findings of the [EF English Proficiency Index of 2018](#) (EPI),¹⁶ a study conducted by an education institute that teaches English worldwide and evaluates a country's proficiency on the basis of voluntary tests.¹⁷ In their study, they found that English proficiency has a significant positive correlation with the ease of doing business, higher GDP and higher gross income.

By the same token, the ICT sector flourishes much better in countries that have high English proficiency as the most commonly used programming language is English. This comes as a consequence of the transition from industrial manufacturing to a more knowledge-based economy which requires actors to sell their services on a global market.

Likewise, innovative ideas need to be formulated in English to reach a global audience and have an impact. Thus, researchers worldwide need to publish in English in order to be read. In fact, there is no scientific journal among the top 100 that uses a different language than English. International collaboration between scientists is of great benefit as it helps to improve on existing ideas and generate more innovation through joint projects. Since diversity of national origin is considered among the most powerful driver of innovation, these cooperations are a central aspect of producing cutting edge research.

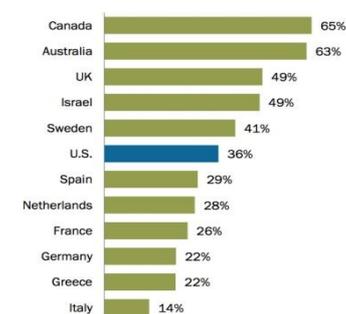
Moreover, societies with more literacy in English are more open and progressive because these people are better able to observe the world around them. More than half of the world's 10 million websites are in English giving people much better access to information through which many start to question traditional and rigid concepts of their own society.

Unsurprisingly, the report also affirms compelling correlation with the [Global Talent Competitiveness Index](#) which explores a country's ability to attract and retain highly skilled workers, an essential requirement for Europe to catch up in the AI race. While it is true that Europe is already quite well-represented among the top countries in this index, the total number of migrants with a university education is dwarfed by a substantial margin by the US whose large economy and population is able to absorb far more talent than all European countries combined.¹⁸

Skilled Migration to the US

Roughly a third of all U.S. immigrants have a college degree, a lower share than in many other advanced economies

% of country's foreign-born population, ages 25 and older, with a postsecondary diploma or degree, 2015



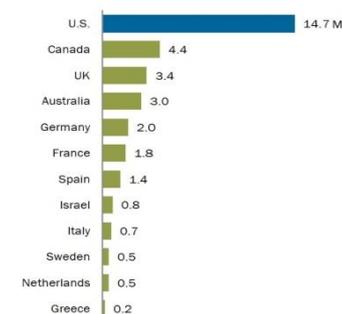
Note: College-educated immigrants are those who have completed a postsecondary diploma or degree.
Source: Country censuses and surveys. See Methodology for complete list of data sources and years. See Appendix B for additional advanced economies.
Majority of U.S. Public Supports High-Skilled Immigration

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Source: Connor, Phillip/Ruiz, Neil G. (2019): Majority of U.S. Public Supports High-Skilled Immigration. In: Pew Research Center.

U.S. has more college-educated immigrants than other economically advanced countries

Number of immigrants ages 25 and older with a postsecondary diploma or degree, in millions, 2015



Note: College-educated immigrants are those who have completed a postsecondary diploma or degree.
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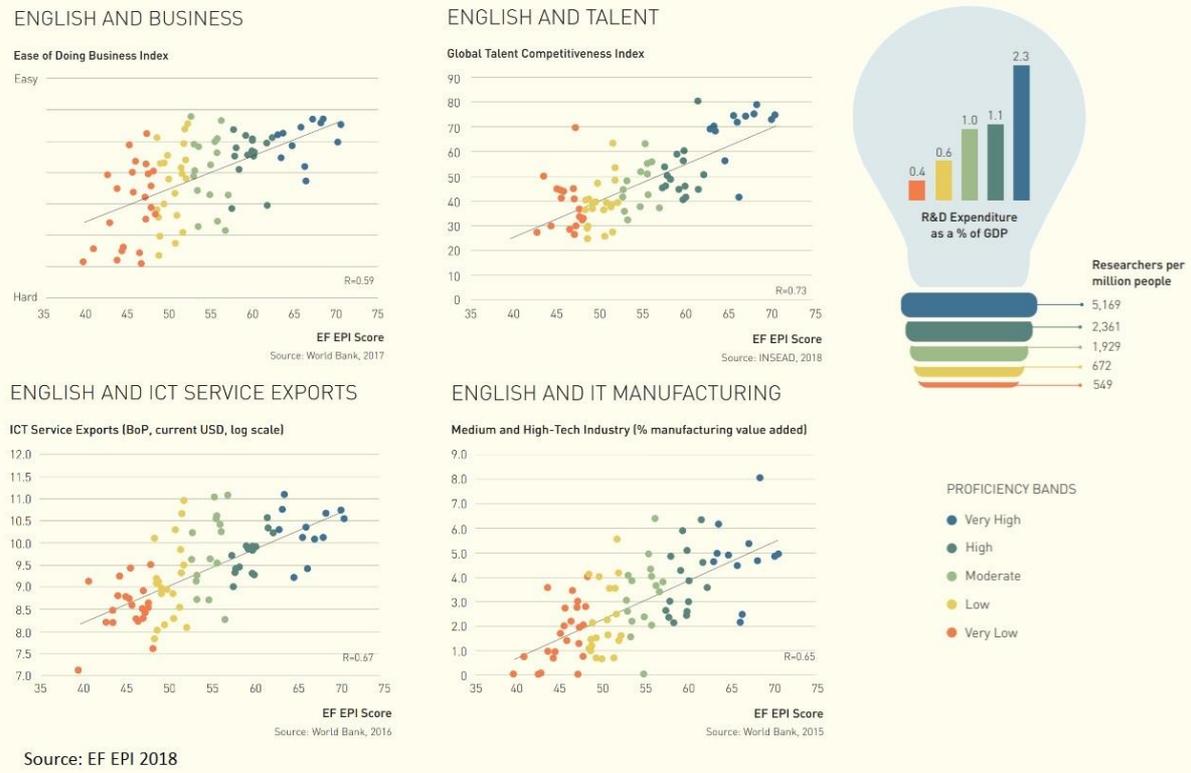
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¹⁶ Education First (2018): EF English Proficiency Index.

¹⁷ This is not a representative survey, but, since none such survey exists, it is regularly used as a reference by a variety of institutions, journalists and businesses.

¹⁸ Conner, Phillip/Ruiz, Neil G. (2019): Majority of U.S. Public Supports High-Skilled Immigration.

The Benefits of English Proficiency



In comparison with other regions in the world, Europe has the highest English proficiency rate thanks to effective policies which include Erasmus+ as well as many high-school exchange programmes. Nevertheless, the EU has still not introduced English as an official second language for government administration.

This regularly leads to complications when immigrants arrive at the host country as every visit at a public office can become an almost impossible task if not accompanied by someone with the necessary language skills. The same is true for other fundamental needs such as taking out health insurance, opening a bank account or communicating with a police officer.

[Mario Brandenburg](#)¹⁹, a German Member of Parliament who made the case for introducing English as a second administrative language in Germany at the [2019 Rise of AI Conference](#) in Berlin, explained it quite persuasively:

“If you are a badass data scientist who studied in Stanford, [...] the whole world wants to have you [so] why would you start to learn German in another three years just to fill in your tax form at the end of the year?”

Most of these highly trained migrants already live in international bubbles where extensive contact with natives is not a common part of everyday life. Hence, providing these basic services bilingually would certainly increase the comfort of living for foreign talent and make living in the EU more attractive. In fact, countries with a high rate of English proficiency, such as the Netherlands, already

¹⁹ Brandenburg, Mario (2019): Status Quo in Politics and Society. Presentation at Rise of AI Conference.

lead the way by making at least some official documents available in English and thereby simplifying the process for new arrivals.

Although a step into the right direction, merely introducing English as a second language will surely not solve the lack of competitiveness in AI on its own and, in addition, there will certainly be fierce resistance from nationalists who feel this will infringe upon their national identity and make their own language disappear.

However, as noted by Harari,⁴ identities are prone to change over time. Again, the example of Germany comes to mind as it underwent considerable change in identity during the last century. Not too long ago, Germans used to define themselves as loyal subjects of Kaiser Wilhelm II and took huge pride in their military accomplishments. Soon after, they became Nazis whose core belief was their racial superiority.

Once defeated, roughly a quarter of its population became communists identifying strongly with Marxist traditions while the remainder, slowly but surely, became liberal democratic citizens. As a matter of fact, it took Germany just 72 years, less than a life time, to go from being called [a country of unspeakable evil](#) to inheriting the name [leader of the free world](#) from one of its former main adversaries.

This illustrates Harari's⁴ argument remarkably well as it shows how rapidly identities change and that the identities we possess are forged by the challenges and opportunities a group of people face at a given moment in history. Since the challenges and opportunities we face nowadays are all global in nature, adapting to this reality by transcending national politics is the great task of our time.

This does not imply that everyone is losing their own culture and morph into a single, global entity. It rather means that we will increasingly become conscious of having several identities existing parallel to each other. The unratified 2004 constitution of the EU already reflects this by affirming that “while remaining proud of their own national identities and history, the peoples of Europe are determined to transcend their former divisions and, united ever more closely, to forge a common destiny.”²⁰

Other regions in the world have already shown that such a common destiny can be reached through an additional common language which creates a glue to facilitate communication and exchange between different cultures. The unity of the Indian nation was deemed impossible by the British at the time of independence due to being culturally, religiously and linguistically more diverse than the European continent.

Indonesia, equally rich in diversity with its 700 spoken languages, had zero national identity when the Dutch colonisers left the country after sabotaging any attempt at unification for years. In both cases, the introduction of a common language bonded²¹ the people together and contributed to the nations' success. Still to this day, citizens of these countries generally speak more than one language and, besides having a sense of nationhood, also keep strong ties to local cultures and traditions.

Due to being similarly diverse in ethnicity, culture and language, the EU should take these success stories as an example. Furthermore, it should leverage its competitive advantages vis-à-vis the US and China which are plenty in numbers. When compared with China, the most obvious advantages

²⁰ European Union (2005): Treaty Establishing a Constitution for Europe.

²¹ In India, English is one of the many official languages while, in Indonesian, Indonesian has become the official language of the country.

of the EU include individual freedoms, civil liberties and the rule of law. But also with respect to the US, there are many things that make living in the EU more fulfilling. A better work-life balance which includes more vacation days, paid maternity leave as well as better and cheaper healthcare coverage. [Violent crime](#) and the cost of living are lower on average while life expectancy, which has [decreased](#) in the US in recent years, is higher. Shorter distances in Europe combined with much better developed railway networks reduce travel times significantly and allow for exploration of its broad cultural wealth.

Cities are much more accessible on foot and via public transport which often eliminates the necessity to own a car. Indeed, there are many things that make the EU an attractive region to work and live. Considering the more restrictive approach to immigration by US President Trump and the looming threat of Chinese digital authoritarianism, the window of opportunity to attract more talent from overseas has never been bigger.

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