# Briefing

Perspectives on transatlantic cooperation

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# Digital Economy


**SUMMARY**

Digitalisation is transforming our societies – new types of business activity are emerging and consumer habits are rapidly evolving. The internet, broadband networks, mobile applications, IT services and hardware form the basis of the digital economy which has a dynamic that is fundamentally different to that of more traditional sectors: it strengthens cooperation, enables a higher volume of cross-border activity and is a major factor in increasing prosperity and growth overall.

In this context, regulators and legislators are faced with a dilemma: How to legislate at national or at regional level on issues which are truly global? How to avoid unhealthy regulatory and taxation competition between the US and the EU? How to ensure that the US and the EU join forces regarding the development of a global digital economy? Will a joint approach of leading global economies lead to global impacts?

These are just a few of the questions to which the EU and the US must find answers in order to allow the smooth and fair development of the digital economy and digital transatlantic and global markets.

*This briefing forms part of a broader research project on the perspectives on transatlantic cooperation in the US election year, requested by the Chair of the European Parliament's delegation for relations with the United States.*


**In this briefing:**




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## Context and the state of play

Digitalisation is transforming our societies – new types of business activity are emerging and consumer habits are rapidly evolving. Digital innovation takes forms which are difficult to predict. The status quo is not a valid option for companies – financial technology, also known as FinTech, a type of business based on using software to provide financial services, is a good example of new, transforming, innovative technologies as part of the digital economy. The internet, broadband networks, mobile applications, IT services and hardware form the basis of the digital economy which has a dynamic that is fundamentally different to that of more traditional sectors. End-users can use digital services via multiple channels, which reduces market-entry costs, and new entrants can therefore challenge established market powers. The digital economy strengthens cooperation, enables a higher volume of cross-border activity and is a major factor in increasing prosperity and growth overall.

Regulators and legislators are faced with a dilemma: how to regulate/legislate in order to provide appropriate protection to consumers without also harming future innovation and new business models? How to regulate competition policies? How to legislate at national or at regional level on issues which are truly global? How to avoid unhealthy regulatory and taxation competition between the US and the EU? How to ensure that the US and the EU join forces regarding the development of a global digital economy? Will a joint approach of leading global economies lead to global impacts? These are just a few of the questions to which the EU and the US must find answers in order to allow the smooth and fair development of the digital economy and digital transatlantic and global markets.

Transatlantic cooperation has existed over decades. Europe and the United States share a long history of strong economic and political ties. Their economies have been, and remain, strongly connected, including in these new forms of economic activity. Indeed, never have the economies of the EU and US been so interconnected and their economic interests so intertwined than during the era of the digital economy. Never has it been clearer that cooperation is the best policy option available, both in the EU and the US.

**Benefits of integration**

European integration and the creation of the internal market are one of the greatest European achievements and have already substantially benefited millions of businesses, consumers and citizens. The relationship between European integration and economic benefits is clearly strong and positive.

Throughout the last decades, the EU has achieved considerable results by facilitating the removal of obstacles in order to merge fragmented national markets and to create a single European market. This includes success in the removal of physical, technical and other obstacles to the four fundamental freedoms (free movement of goods, persons, services and capital).

Modern market integration combines the removal of intra-EU borders and other barriers which hinder or prevent free movement, and the full exercise of the right of establishment, with the pre-emptive removal of distortions in the Single Market by means of, for example, common competition policy and other common powers (such as a common trade policy), as well as by solving or overcoming market failures no longer at national but at EU level.

Moving from a situation of autarky (no trade in goods and in factors of production among countries) to a situation of complete integration (no barriers to trade in goods and factors

of production) leads to substantial economic benefits in terms of incomes per capita, both in levels (static gains) and potentially also in growth rates (dynamic gains). Such benefits can be achieved through three main channels: a higher level of productivity associated with relocation of industries from low to high productivity locations; improvements in factor allocation (moving of labour and capital), and a larger market size (which may also lead to a greater variety of goods, with positive welfare effects).

The digital economy provides new opportunities for commerce based on the new technologies and markets that the digital sector creates (e.g. social media and mobile based services) in addition to the changes and innovation the digital economy facilitates in the traditional economy (e.g. more efficient payment systems, new channels for conducting commerce, and approaches to production). In some situations, the digital economy complements the traditional economy by improving efficiency, adding to an existing offer (e.g. complementary aftersales services) and attracting businesses/ consumers in a larger market than was previously possible (e.g. cross-border internet sales). In other areas, the digital economy actively competes with the traditional economy (e.g. taxis, hotels, travel agencies).

It is safe to assume, therefore, that mechanisms through which benefits of internal market deepening/integration are generated will also work in the digital economy.

However, traditional macro-economic models may not be accurate when assessing the digital economy environment. Intuitively one might assume that the introduction of digital technologies will increase productivity. A recent Federal Reserve study has shown, however, that the measurement of productivity gains due to information technology is not without possible biases.

Since 1996 the US has surpassed the EU in the area of productivity increases, but at declining rates. Why? It might be suggested that this could perhaps be because the US has started from a lower level of productivity; this is not plausible, however, because the US has been a leader on the technological front over decades. Therefore, the main contributing factor must be the existence of a single market and the dynamics which the single market brings: the US is a very large single market; US companies benefit from the economies of scale more than European ones; competition in the US is stronger than in Europe; the entrepreneurial atmosphere is better, and failure is not considered as negative as it is in the EU. Larger economies of scale, combined with stronger competition, force businesses to invest in productivity-boosting technologies in order to retain or increase the market share. Furthermore, the US financial system is better at deploying capital, and is more diverse in comparison with the EU's fractured and bank dominated financial market. Latest research released on 25 May 2016 by the Conference Board, a US think-tank, estimates that the rate of US productivity growth with gross domestic product per hour will drop by 0.2 % in 2016.

The EU remains the second most important research and innovation (R&I) centre after the US; however, in many areas the EU is lagging behind its main world competitors and its overall competitive position has been progressively declining during the last decade. This decline is partly due to the inability of the EU to address weaknesses in its R&I system, such as a severe underinvestment in research and education compared to the US and major Asian economies. The persistence of these weaknesses threatens the capacity of the EU to enhance its future R&I competitive position and its ability to accelerate its currently sluggish progress towards a knowledge-intensive economy. In a recent EPRS study, it was also stated that 'the inability to complete the Single Market in areas related

to ICT is one of the causes of the opening of the gap between productivity growth in the US and the EU, which started in the mid-1990s'.

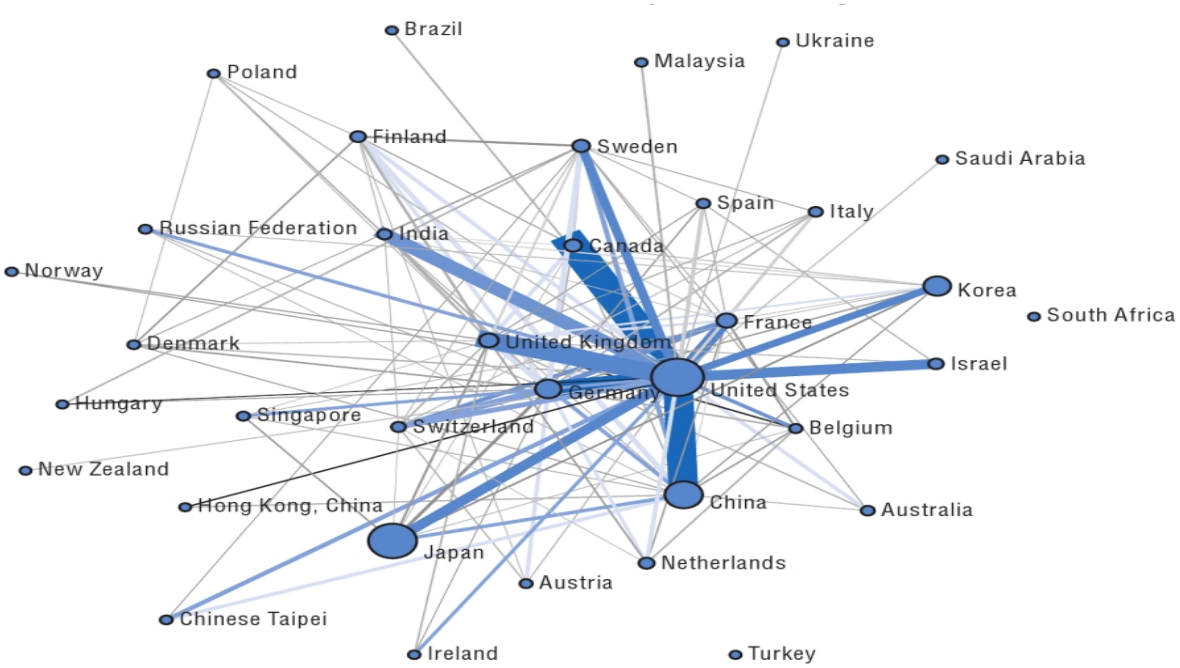
Nevertheless, Europe has been in the forefront of digital innovation from the beginning. The 'www' was invented in 1989 by Tim Berners-Lee, a British physician. He also introduced the first web server, the first browser and editor (the 'WorldWideWeb.app'), the Hypertext Transfer Protocol (HTTP) and, in 1990, the first version of the 'HyperText Markup Language' (HTML); while at CERN, he published the first-ever website (info.cern.ch) in 1991. SMS (short messaging service) was conceptualised in the mid-1980s; the first SMS was sent in 1992 and in 1994 Nokia launched its first text messaging phone, Nokia 2010.

Today the 'www' has grown from one address to more than 1 billion websites online, and every month more than 350 billion SMS are sent globally. Ray Tomlinson was an American computer programmer who implemented the first email programme on the ARPANET system, in 1971. This was the first system able to send mail between users on different hosts. In 2015, the number of emails sent and received per day in the world totalled over 205 billion. This figure is expected to grow at an average annual rate of 3% over the next four years, reaching over 246 billion by the end of 2019.

Innovation is a key to the future growth of the digital economy. The innovation pace is not slowing down. The world has shrunk, borders have become less important, and innovation has benefited from the new environment – innovation via collaborative networks. Instead of measuring absolute numbers of ICT related innovations (country strength), a better picture of global networking is obtained when analysing internationally co-invented patents. From that viewpoint, the link between the EU and the US is very visible and strong.

**Figure 1: International cooperation networks in ICT-related patents, 2010-12**

Whole counts of international co-invented patents




*Notes*: The data refer to counts of patent applications filed under the Patent Co-operation Treaty (PCT) to protect ICT-related inventions, with at least one co-inventor located in a different country, by priority date, using whole counts. ICT-related patents are defined using a selection of International Patent Classification (IPC) classes. *Source*: OECD, Patent Database, February 2015.

**Global leaders now – where in 2025?**

As recently as 2000, 95 % of the Fortune Global 500, including Airbus, IBM, Nestlé, Shell and the Coca-Cola Company, were headquartered in developed economies. By 2025, China will host more large companies than either the United States or Europe, and nearly half of the world's largest companies will be headquartered in emerging markets.

**Table 1: Top 20 Unicorns based on market capitalisation**

| # | Company | Valuation (US$ billion) | Year joined | Country |
|---|---|---|---|---|
| 1 | Uber | 62.5 | 2013 | USA |
| 2 | Xiaomi | 46 | 2011 | China |
| 3 | Airbnb | 25.5 | 2011 | USA |
| 4 | Palantir Technologies | 20 | 2011 | USA |
| 5 | Didi Kuaidi | 20 | 2014 | China |
| 6 | China Internet Plus Holding | 18 | 2015 | China |
| 7 | Snapchat | 16 | 2013 | USA |
| 8 | WeWork | 16 | 2014 | USA |
| 9 | Flipkart | 15 | 2012 | India |
| 10 | SpaceX | 12 | 2012 | USA |
| 11 | Pinterest | 11 | 2012 | USA |
| 12 | Dropbox | 10 | 2011 | USA |
| 13 | Lufax | 10 | 2014 | China |
| 14 | DJI Innovations | 10 | 2015 | China |
| 15 | Theranos | 9 | 2014 | USA |
| 16 | Spotify | 8.53 | 2011 | Sweden |
| 17 | Zhong An Insurance | 8 | 2015 | China |
| 18 | Snapdeal | 6.5 | 2014 | India |
| 19 | Lianjia | 6.2 | 2016 | China |
| 20 | Lyft | 5.5 | 2015 | USA |

Processing power and connectivity impact is multiplied by the data revolution, which places unprecedented amounts of information in the hands of consumers and businesses, and contributes to the proliferation of technology-enabled business models. Technology offers the promise of economic progress for billions in emerging economies.

It is difficult to grasp the extent and scope of the digital economy – it is everywhere, all the time - consequently, isolating it from other parts of the economy and society in order to measure its impact is practically impossible. What can be said with certainty is that it has already fundamentally changed our behaviour.

**Economic significance – World economy**

A McKinsey & Company study provides striking figures [the following is a direct citation]:

- 'US$26 trillion flow of goods, services, and finance in 2012, equal to 36% of global GDP.
- Up to US$450 billion added to global GDP growth each year by flows – and 40% more benefit for the most connected countries than the least connected.
- 63% of global goods flow through the top 50 routes in 1990, down to 54% in 2011.
- 18-fold increase in cross-border internet traffic between 2005 and 2012.
- 38% of total cross-border flows of goods, services, and finance from emerging economies in 2012, up from 14% in 1990.
- Up to US$85 trillion flow of goods, services, and finance by 2025, three times the value in 2012.
- 12% of global goods trade from China in 2012, vs. 2% in 1990.
- Growth in knowledge-intensive goods trade 1.3 times as fast as in labour-intensive goods.
- 90% of commercial sellers on eBay export to other countries, vs. less than 25% of traditional small businesses.'

**Potential for convergence and/or joint action**

The following list provides a synoptic, non-comprehensive overview of areas where EU-US cooperation/joint action would be beneficial.

***Connectivity**:* Every home, every business should have fast, reliable broadband services. This would help us all to be better connected, while boosting productivity and performance for every business.

***Digital infrastructure**:* Europe's digital health requires attention; without infrastructure investment, it is difficult to see the EU capitalizing fully on the benefits of the internet economy. Europe has gone from digital leader to laggard in less than a decade. The building-up and modernisation of digital infrastructure is done via public and private investments – stakeholders include communications service providers, digital service and content providers, and hardware and software manufacturers.

***Broadband – 5G**:* Average 4G speed is more than 15Mb - twice that of 3G. The 5G technology promises to be more than 100 times faster than 4G, which could provide mobile connections with average speeds measured in gigabits rather than megabits.

***Connected cars and autonomous driving**:* The connected car is an automobile designed with direct access to the internet, enabling automated links to all other connected objects, including smartphones, tracking devices, traffic lights, other motor vehicles, even home appliances. Annual sales of connected car technologies could triple to €122.6 billion by 2021. Over the next five years, the connected car could disrupt the entire automotive ecosystem. Some claim that the industry is likely to undergo fundamental change as semi-autonomous driving emerges, followed by an eventual shift to full autonomous driving.

***Autonomous shipping**:* An autonomous ship is a vessel primarily guided by automated on-board decision systems but controlled by a remote operator in a shore-side control station. The MUNIN project (Maritime Unmanned Navigation through Intelligence in Networks) is a collaborative research project, co-funded by the European Commission under its Seventh Framework Programme.

***Machine-to-machine communication**:* Machine-to-Machine (M2M) communication enables autonomous information exchange between machines via telecommunications

networks, e.g. eCall system (Emergency Call system) and smart metering system in the EU and the US. The increasing number of M2M devices presents many challenges to privacy and security, protocol standardisation and spectrum usage. Furthermore, in selecting any single network solution the manufacturer or end user may commit themselves to technologies that could become redundant. This is especially important for devices with a long lifecycle such as smart meters or technology for building maintenance. The power of M2M relies on connecting billions of devices and merging data within and across industry sectors to provide new services. In order to do this, the multiple systems that will make use of these data need to use common protocols for their communications. Several groups, including the International Telecommunications Union, have highlighted the importance of developing common standards and device interoperability as a critical part of enabling M2M. In January 2012, seven SDOs (standard development organisations), including the European Telecommunications Standards Institute (ETSI), agreed to work together to set global standards for M2M.

***Highway for cross-border data flows**:* Unnecessary barriers to cross-border data flows create considerable obstacles to global trade. Without the free flow of data consumer and business access to digital services will be restricted. Small and medium-sized enterprises can be disproportionately affected by barriers that are created. The rapid technological developments of cross-border data flows have left international trade laws outdated. Ongoing trade negotiations, such as the Trade in Services Agreement (TiSA), allow an opportunity for barriers to be eliminated and for the world's major trading nations to agree on an international framework which promotes free data flow.

***Privacy, data security**:* European firms (including international firms from the US and elsewhere with a European presence) have 24 months to become compliant with the European Union's General Data Protection Regulation, which entered into force on 24 May 2016. The accompanying Directive also addresses export of personal data outside the EU back to the US. Businesses operating in Europe (or targeting European customers) need to establish exactly who is accountable for data security and how data flows between EU countries and those outside.

***Galileo and GPS**:* Galileo will provide Europe with independence in satellite navigation but will also be inter-operable with GPS and GLONASS, the two other global satellite navigation systems. The US-EU Agreement on GPS/Galileo Cooperation, signed in 2004, established the principles for EU/US cooperation activities in the field of satellite navigation.

***Digital consumer protection**:* The line between businesses and consumers is further blurred by the financial opportunities opened to consumers to sell, rent and perform tasks for other consumers through internet platforms. Such online activity generates a wealth of data used to sketch out consumer profiles which has become core to e-commerce business models but also brings risks. Enhancing consumer trust remains a cornerstone for success in a dynamic and complex e-commerce marketplace. On 24 March 2016, the OECD revised its Recommendation on Consumer Protection for e-commerce, modernising its approach to fair business practices, information disclosures, payment protection, unsafe products, dispute resolution, enforcement and education. Protecting digital consumers was a key theme at the OECD Ministerial Conference on the Digital Economy held on 22-23 June 2016 in Mexico.

***Taxation on the digital economy/VAT for digital products**:* The current VAT system for cross-border e-commerce is complex and costly for Member States and businesses alike.

EU businesses are at a competitive disadvantage because certain non-EU traders can import VAT-free goods to the EU. The complexity of the system also makes it difficult for Member States to ensure compliance. The Commission has indicated that it will come forward by autumn 2016 with a legislative proposal to modernise and simplify VAT for cross-border e-commerce as part of the Digital Single Market strategy. This will include a proposal to ensure that e-publications can benefit from the same reduced rates as physical publications. As a second step, the Commission will present in 2017 a VAT simplification package designed to support the growth of SMEs and to make it easier for them to trade across borders.

***Regulatory fragmentation – competition policy**:* Errors committed by competition authorities when judging anti-competitiveness have negative effects on market dynamics and this could in turn have serious adverse effects on innovation. Since the innovation pace is very rapid, it is difficult to differentiate anti-competitive behaviour from normal market practices.

***Positive/negative profiling**:* Profiling covers the use of personal data to evaluate aspects relating to a natural person, and to use that data in turn for prediction or analysis of that person's performance at work, economic situation, location (which would include movement), health, personal preferences (and interests), reliability or behaviour. The EU General Data Protection Regulation introduces an obligatory element of human review: any data controller using profiling for automated decision-making to make a contract needs to include the possibility of human intervention to review any automated decision after it is made.

***Geoblocking**:* On 25 May 2016 the Commission made a legislative proposal to address unjustified geoblocking and other forms of discrimination on the grounds of nationality, residence or establishment. This is now under consideration by the co-legislators.

***Hacking digital structures – the SWIFT case**:* The SWIFT network is a core global financial services infrastructure for secured messaging between financial institutions in order to carry-out transactions. The global financial system would be seriously affected, and even temporarily stopped, should the SWIFT-network be put off-line. SWIFT has recently been attacked at least twice. Forensic experts believe that the malware used in the first reported customer incident was not a single occurrence, but part of a wider and highly adaptive campaign targeting banks. In both instances, the attackers have exploited vulnerabilities in the banks' fund transfer initiation environments, prior to messages being sent over SWIFT. The attackers have been able to bypass whatever primary risk controls the victims have in place, and thus initiate the irrevocable funds transfer process. SWIFT is already by far the biggest global payment system. There might now be a need to build on an even bigger scale to allow more people to make cross-border transactions and to do it faster and at less cost. The most resilient massive system is the internet – a truly decentralised system. A decentralised Blockchain based system can offer real-time payments.

***Cloud**:* 'Cloud computing' means accessing computer capacity and programming facilities online or 'in the cloud'. Customers are spared the expense of purchasing, installing and maintaining hardware and software locally. When purchased as a service, cloud computing is highly cost-effective as it is based on pay-per-use. It has the potential to slash user IT expenditure and optimise use of digital technologies throughout the economy. It has been suggested that making full use of the cloud could deliver 2.5 million extra jobs in Europe and add around 1% a year to EU GDP by 2020. New findings from the

Synergy Research Group show that 46% of major cloud and internet data centre sites are located in the US, with second placed China accounting for just 7%. The research is based on an analysis of the data centre footprint of 17 of the world's major cloud and internet service firms and highlights the dominance of the US in the cloud market place. Japan is listed at third with a 6% market share and Germany was the largest European player with just 4%.

***The content of internet platforms**:* Online platforms play a key role in innovation and growth in the Digital Single Market. On 25 May 2016, the Commission presented a new approach towards online platforms - such as online marketplaces, search engines, payment systems, social media, video and content-sharing sites.

This approach includes actions in the following areas:

- Comparable rules for comparable digital services;
- An obligation for online platforms to behave responsibly by addressing specific problems, such as audiovisual or copyright rules and combating hate speech online;
- Enhanced trust through cross-border cooperation on enforcement of consumer rights;
- Open markets for a data-driven economy, and
- A fair and innovation-friendly business environment.

***Digital signature* and electronic ID technology**: The broad category of eSignatures encompasses many types of electronic signatures, including digital signatures –which are created by using cryptographic techniques. Both digital signatures and other eSignature solutions allow people to sign documents and authenticate the signatory. The use of digital signature technology for eSignatures varies significantly between those countries, including the United States, which follow open, technology-neutral eSignature laws, and those, including many EU Member States, that follow tiered eSignature models that prefer locally defined standards based on digital signature technology. This means that additional requirements are needed for US eSignatures in order to comply with European requirements. Joint action in this field is important, as it will make the interaction easier for participating companies and organisations on both sides. For example, IT Security Association Germany (TeleTrusT) and the US organisation SAFE-BioPharma have recently established a transatlantic alliance for secure communication which, among other things, will make it easier for TeleTrusT subscribers to develop bilateral positions of trust with individual US companies in the future.

The EU is a global leader in the area of eGovernment strategy, where citizens can use digital identification when communicating with the administration. It is important to note that the first, pan-European legal framework on electronic identification and trust services for electronic transactions in the internal market came into force on 1 July 2016, with the aim of creating a uniform regime across the EU for the mutual recognition of electronic identification between Member States.

**Privacy Shield**

Reactions to the Privacy Shield have so far been lukewarm, with fears that it would allow the US to collect massive and indiscriminate data, at least in six specific cases, as the Obama Policy Directive 28/2014 indicates, and that new challenges could be brought before the EU Court of Justice. In its April 2016 Opinion, the Article 29 Working Party, while welcoming the efforts made, expressed concerns and practical recommendations

to improve the Commission's adequacy decision, referring to 'its' essential guarantees for justifiable interferences with fundamental rights.

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