Hearing on

"21st Century Trade Barriers: Protectionist Cross Border Data Flow Policies' Impact on U.S. Jobs"

House Committee on Energy and Commerce
Subcommittee on Digital Commerce
and Consumer Protection

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Testimony of Victoria Espinel
President and CEO
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Good morning Chairman Latta, Ranking Member Schakowsky, and members of the Subcommittee. My name is Victoria Espinel, and I am the President and CEO of BSA | The Software Alliance.

BSA is the leading advocate for the global software industry in the United States and around the world.[1] Our members provide services that have a significant impact on the U.S. and global economy, and those services often depend on the ability to transfer data freely around the world. As a result, an important priority for BSA is promoting international trade by eliminating barriers to global data transfers. I commend the Subcommittee for holding a hearing on this important topic, and I thank you for the opportunity to testify on behalf of BSA.

When I testified before this Committee about international data transfers two years ago, the U.S.-EU Safe Harbor agreement had just been invalidated by the European Court of Justice, jeopardizing growth and job creation on both sides of the Atlantic. The Safe Harbor agreement was the critical mechanism that allowed data to be transferred between the EU and the United States. Without it, the many jobs that depend on transatlantic digital trade would have been in

[1] *BSA's members include: Adobe, ANSYS, Apple, Autodesk, Bentley Systems, CA Technologies, CNC/Mastercam, DataStax, DocuSign, IBM, Microsoft, Oracle, salesforce.com, SAS Institute, Siemens PLM Software, Splunk, Symantec, Trimble Solutions Corporation, The MathWorks, Trend Micro and Workday.*

jeopardy—and the development of new artificial intelligence (AI), analytics, and other tools would have been impeded.

This Committee played an important leadership role at that time. The bipartisan letter sent in October 2015 by the Chairmen and Ranking Members of the full Committee and this Subcommittee, as well as many members of this Subcommittee and others, instilled the needed confidence that the United States and EU would find an alternative mechanism—the Privacy Shield. I thank this Committee for its leadership and welcome its continued support of policy initiatives that promote global data flows.

I. Economic and Social Impact of Software and Data-Driven Innovation

Our economy today—and economic growth and job creation in the foreseeable future—are rooted in digital data. The dropping costs of data storage, alongside the acceleration of data-driven innovation by BSA member companies and others, have led to profound new uses of data by enterprises across the economy. In high-tech and low-tech industries alike, the analysis of data has made businesses more agile, responsive, and competitive, boosting the underlying productivity of many key pillars of our economy.

The sheer quantity of data available to fuel these developments is astounding. Indeed, the units with which we measure data are nearly unheard of in any other context: approximately 2 quintillion bytes of data (that's two followed by 18 zeros) are generated every day,[2] and every two years, we are doubling the rate at which data is produced. By 2021, global IP traffic will

[2] *See* BSA, *What's the Big Deal With Data?,* 7 (Oct. 2015), at http://data.bsa.org/wp-content/uploads/2015/10/bsadatastudy_en.pdf.

reach 3.3 zetabytes per year—over three *trillion* gigabytes of data.[3]

The software industry, and BSA members in particular, are at the forefront of the development of cutting-edge technologies and services that will drive the data economy, such as predictive analytics, cloud computing, AI, and blockchain technologies. These technologies spur job creation and economic growth, provide significant benefits to businesses, and improve the quality of life for many Americans, as well as people around the globe. These benefits are likely to grow substantially in the coming years.

A. Data Services Are Creating Job and Economic Growth

The economic implications of this software and data revolution are enormous. Economists predict that making better use of data could lead to a "data dividend" of $1.6 trillion in the next four years, and that data-enabled efficiency gains could add almost $15 trillion to global GDP by 2030.[4]

Last month, Software.org: The BSA Foundation released a study conducted by the Economist Intelligence Unit (EIU) that showed the software industry alone contributed more than $1.14 trillion to the U.S. GDP in 2016—a $70 billion increase in the past two years.[5] The study also showed that the software industry is a powerful job creator, supporting over 10.5 million jobs,

[3] Cisco, *Cisco Visual Networking Index: Forecast and Methodology, 2014-2019 White Paper* (May 2015), at http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html.

[4] *See* BSA *What's the Big Deal With Data?*, *supra* n. 2, at 14. Notably, the potential of digital data to improve the healthcare system is substantial: some estimates predict that if the healthcare sector were to use data more effectively to drive efficiency and quality, the sector could save more than $300 billion every year. *See* James Manyika et al., *"Big Data: The Next Frontier for Innovation, Competition, and Productivity," McKinsey Global Institute* (May 2011), *at* http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation.

[5] Software.org: The BSA Foundation, *The Growing $1 Trillion Economic Impact of Software* (Sept. 2017), 5, *available at* https://software.org/wp-content/uploads/2017_Software_Economic_Impact_Report.pdf.

with a significant impact on job and economic growth in each of the 50 states.[6]

B. Data Services Are Key to Growth Across Industry Sectors

Software and data-driven innovation are driving economic growth across virtually all industry sectors, as businesses are increasingly using software and cloud-enabled platforms. These platforms facilitate human resources management, virtual collaboration, sophisticated design and modeling, remote maintenance, and a variety of other business functions. This data analysis is occurring at the core of their businesses and helping define how businesses operate and the services they offer. Software increasingly not only underpins their products, but also their business processes.

Examples of how businesses are using data analysis to drive innovation and improve their competitiveness exist across the economy:

For instance, companies use cloud-based human resource management software to hire, support, and conduct performance management for a workforce of tens of thousands of people, who are often spread across numerous subsidiaries and affiliates.[7] Cloud-based solutions, such as those BSA members provide, increase HR functionality by providing real-time access to employee data worldwide, giving managers broad business insight across borders and business processes. By enabling powerful self-service tools available via a phone app, employing data analytics to give managers and HR departments more insight into their workforces, and enabling easy documentation and auditing of HR transactions, cloud-based HR systems

[6] *Id.*

[7] *See* Oracle, *Cummins Centralizes Key Customs and Compliance Processes to Minimize Supply Chain Risk*, *at* http://www.oracle.com/us/corporate/customers/customersearch/cummins-1-gtm-2602121.html; *see also* Workday, *Workday and Sanofi: Creating One Vision from Many*, *at* https://www.workday.com/content/dam/web/en-us/documents/case-studies/workday-sanofi-case-study.pdf.

increase efficiency and ease of use while reducing costs. They also improve security, as providers use their expertise to protect against cyberattacks and implement state of the art measures across the entire system through a unified approach to security.

In addition, software-enabled data analysis is also helping the financial sector detect payment card fraud. As companies increasingly use sophisticated data analytics tools to glean insight into consumers' purchasing patterns, they are better able to identify potentially fraudulent transactions around the globe, which harm both consumers and businesses.[8]

There are myriad examples across a wide swath of industries that underscore the significant impact of software-induced innovation.[9] Whether it is improving human resource management or detecting financial fraud, optimizing manufacturing production or enhancing transportation services, the impact of software is visible in every industry, in every state, and across the globe.

C. Data Services Offer Clear Societal Benefits and Improve Government Services

Data analytics and related software tools are not only delivering economic benefits across industry sectors, but are also contributing to public health, safety, and the social good. Indeed, innovative software products are empowering teachers with more effective educational tools,

[8] As an example, one leading technology company noted that it can detect and block online fraud attempts in five seconds on average, helping to reduce the losses attributed to online fraudsters by $2.2 billion. *See* Pablo Hernandez, *CA Technologies Uses AI Tech to Combat Online Fraud*, eSecurityPlanet, May 4, 2017, *available at* https://www.esecurityplanet.com/network-security/ca-technologies-uses-ai-tech-to-combat-online-fraud.html.

[9] Indeed, data analysis is even cultivating agricultural growth. For example, U.S. companies use virtual simulation software to improve the quality and reliability of new tractor models, helping them build durable and resilient tractors that allow U.S. farmers to be more productive and competitive. *See* Siemens, *Agricultural Machinery Manufacturer Uses LMS Virtual.Lab to Increase Endurance Simulation*, *available at* https://www.plm.automation.siemens.com/en/about_us/success/case_study.cfm?Component=222942&ComponentTemplate=1481. Software innovation has even helped improve dairy production. Cloud technology powers programs such as a cow-monitoring system that gives farmers constant information on the health of their cows, allowing them to boost milk production, smooth the calving process, and ensure healthier animals. *See* Microsoft, *Connected cows help farms keep up with the herd*, *available at* https://news.microsoft.com/features/connected-cows-help-farms-keep-up-with-the-herd/.

matching underprivileged families in developing countries with access to small business loans, and delivering dramatic improvements to medical diagnostics and patient care, including those with disabilities.

For example, artificial intelligence solutions, powered by data analysis, are at the heart of new devices and applications that improve the lives of people with disabilities, including helping people with vision-related impairments interpret and understand photos and other visual content, and even to navigate their physical surroundings.[10] This technology opens new possibilities for people with vision impairments to navigate their surroundings, giving them increased independence and greater ability to engage with their communities.

Artificial intelligence technologies also are enabling a cognitive computing system to analyze large volumes of data, including patient information and medical test results, to assist physicians in evaluating possible treatment options for cancer patients.[11]

Data analysis is also helping governments provide better services to their citizens. For instance, using software that uses predictive analytics, the New York City Fire Department is combining data from 7,500 individual data collection points pulled from 17 city agency data streams to predict which of New York City's 1 million buildings are at greatest risk for fires.[12] Charlotte, North Carolina, is harnessing smart city software and sensors to achieve a 20 percent

[10] For instance, Microsoft recently released an intelligent camera app that uses a smartphone's built-in camera functionality to describe to low-vision individuals the objects that are around them. *See* Microsoft, *Seeing AI*, *available at* https://www.microsoft.com/en-us/seeing-ai/.

[11] IBM, *Watson for Oncology*, https://www.ibm.com/watson/health/oncology-and-genomics/oncology/; *see also* Jo Cavollo, *How Watson for Oncology Is Advancing Personalized Patient Care*, The ASCO Post, June 25, 2017, *available at* http://www.ascopost.com/issues/june-25-2017/how-watson-for-oncology-is-advancing-personalized-patient-care/.

[12] *See* BSA | The Software Alliance, *The $1 Trillion Economic Impact of Software* (June 2016), 8 *available at* http://softwareimpact.bsa.org/.

reduction in energy usage—saving millions of taxpayer dollars in the process.[13] And Chicago has deployed a city-wide network of 500 lamppost-mounted sensors to monitor air quality, using software to identify environmental issues like pest infestations that could be connected to the incidence of asthma.[14]

In brief, the power of software is transforming our world for the better.

II. Data Flows Are Critical to These Data Services and Continued Innovation

These transformative technologies often rely on the ability to move data freely from one place to another and, in many instances, around the world. Without this ability, most data-analytics software applications that businesses use today simply could not function effectively. For example, most modern software applications do not operate fully in isolation on a single device; rather, they connect to other devices and remote data centers through a variety of online services. Although a software user often creates or receives data on his or her device, the processing of that data increasingly occurs elsewhere, oftentimes in locations miles or even continents away. The ability to transfer data around the world is essential to this structure.

In addition, AI applications, which use computational analysis of data to uncover patterns and draw inferences, depend on machine learning technologies that must ingest huge volumes of data, most often from a wide variety of sources. A language translation program, for example, cannot constantly improve its "understanding" of French without access to large volumes of French-language content—which may come from millions of search queries, mobile apps, databases, and other sources. The data for these AI systems may originate from many sources located in multiple jurisdictions, making it imperative that enterprises can transfer data freely

[13] *See id.*

[14] *See id.*

across borders. Therefore, rules that limit or prohibit such cross-border data transfers invariably limit the insights and other benefits that AI systems can provide.

Cybersecurity is another area where the ability to transfer data is critical. Cloud-based storage of data across multiple locations can improve data security by establishing redundant, geographically dispersed back-ups, which can help mitigate physical risks to data like natural disasters, and by eliminating single points of failure. Storing all information in a single location can increase security risks because it isolates data in a high-target "data honeypot"—increasing the stakes and potential consequences of a single breach. By contrast, distributing data storage across multiple locations compartmentalizes data sets, making it easier to contain a breach in one location and minimizing the risk—from either physical damage or cyber-attack—to the entire data set. The ability to transfer data across borders is often necessary to share information between these storage locations. Moreover, dispersed data storage can facilitate continuous, around-the-clock security monitoring and response, with security professionals working across multiple time zones. Requiring data and data centers to be localized within a single country can eliminate these advantages.

More broadly, the data analytics tools that BSA member customers and other companies are using to transform their businesses increasingly require unrestricted transfers of data. These tools often require picking out "needles in the haystack" by drawing meaningful inferences and connections within vast, unstructured datasets. For example, for multinational companies, the ability to collect and holistically analyze data on network analytics, employee technology usages, and data flows are critical to effective enterprise management–they enable a business to comprehensively examine their operations and supply chains. Digital trade restrictions that undermine this kind of technology could cripple enterprise operations.

III. Opportunities to Facilitate Digital Trade and Data Flows

Data services, including data storage, data processing, and analytics, are the fastest growing elements of digital trade, and these services rely on the free flow of data across borders. According to a 2016 McKinsey report, the amount of global data transfers has grown by a multiple of 45 since 2005 and is expected to surge in the next decade.[15]

This new digital data economy demands a globally recognized rules-based system for digital trade, establishing clear rules, rights, and protections.

We encourage the United States to lead on digital trade policies to ensure this tremendous economic growth will continue. If the United States fails to lead, other countries—with different priorities—will fill the gap.

We see three clear opportunities for Congress and the Administration to lead, promoting digital trade and ensuring the continued free flow of data: (1) modernizing NAFTA, (2) ensuring the continued success of the EU-U.S. Privacy Shield, and (3) strengthening relationships with other key trade partners.

A. Modernization of NAFTA

The digital economy has evolved significantly since NAFTA was originally concluded 25 years ago. When NAFTA was negotiated, digital trade was in its infancy, and there were relatively few services that were delivered digitally globally. It is therefore not surprising that the agreement

[15] James Manyika, Susan Lund, Jacques Bughin, Jonathan Woetzel, Kalin Stamenov, and Dhruv Dhingra, *Digital Globalization: The New Era of Global Flows*, McKinsey Global Institute (Feb. 2016), *available at* http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows.

does not address many of the digital trade issues our modern economy now faces; quite simply, the innovations of the last two decades were not and could not have been anticipated. Indeed, since NAFTA was negotiated, the American software industry has moved from floppy disks and bulky desktop computing to mobile apps, cloud computing, smart devices, and data analytics. NAFTA must now be modernized to enable the digital economy to continue to develop. We urge the United States to negotiate a well-constructed and modern agreement, with 21st century digital trade obligations that will drive U.S. job creation, competitiveness, and innovation.[16]

In particular, NAFTA should prohibit measures that impose barriers to market access for e-commerce and digital trade. Perhaps most importantly, NAFTA should contain an explicit commitment that the Parties will not adopt or maintain any measure that restricts the cross-border transfer of data, including personal data. NAFTA should also prohibit the Parties from mandating that data centers or other computing facilities are located domestically, or requiring the use of domestic products or technologies. Any exceptions should be narrowly limited to ensure that they are necessary to achieve a legitimate public policy objective, and do not discriminate against foreign service providers in arbitrary ways. The agreement should also prohibit measures that require the transfer of technology, such as source code or algorithms, or the disclosure of trade secrets as a condition of market access.

In addition, the agreement should promote cooperation among NAFTA governments on cybersecurity matters; provide providers with protection against intermediary liability; encourage the use of innovative technology in government and modernize procurement rules; ensure that governments do not undermine encryption in commercial products; and prohibit customs duties on e-commerce or digital data.

[16] For BSA's full agenda on modern digital trade, see BSA, *Modernizing Digital Trade: An Agenda for Software in NAFTA and* Beyond*, available at* http://www.bsa.org/~/media/Files/Policy/Trade/05222017BSANAFTAHandoutPress.PDF.

A modernized NAFTA agreement with these key elements would stimulate significant economic growth and strengthen the United States' leadership on digital trade issues.

B. EU-U.S. Privacy Shield

The EU-U.S. Privacy Shield framework provides another important opportunity to promote digital trade. The Privacy Shield, which replaced the U.S.-EU Safe Harbor Framework, strengthens transatlantic trade by facilitating data transfers between the United States and the EU that are critical to digital services affecting a wide range of industries. Since its launch last year, over 2,500 companies have self-certified to participate in the Privacy Shield, including many BSA members.

The Privacy Shield contains several new obligations that participating companies must undertake to protect the privacy of personal data, and companies have taken substantial steps to comply with these new requirements, resulting in robust privacy protections. The United States government also has made several commitments to ensure the success of the framework, including those related to its general administration of the program and creation of procedures to address concerns that implicate national security issues.

The U.S. government and the European Commission agreed to conduct an annual review of the Privacy Shield to assess the progress of its implementation. The first annual review, which occurred last month, was an important opportunity for the Administration to highlight the significant work that it has undertaken to fulfill its commitments, including devoting increased resources to the administration of the program; ensuring sufficient remedies are available to EU citizens by implementing important aspects of the arbitration program; developing procedures

for the Ombudsman who handles complaints that implicate national security issues, and announcing the nomination of officials to key position posts, such as the Chairman of the Privacy and Civil Liberties Oversight Board.

We applaud the Administration's commitment to the Privacy Shield framework and the continued support from Congress to help amplify its importance to transatlantic digital trade.

C. Strengthening Relationships with Other Key Trade Partners

Finally, as other countries seek to stimulate economic growth by modernizing their trade policies, the United States should leverage these opportunities to ensure that it is engaging with key global partners, and to encourage our trading partners to continue to adhere to trade policies that facilitate data-driven economic activity and protect against market access barriers for e-commerce and digital trade. American technology companies and their customers are at the forefront of using data analytics, AI, and other data-driven tools to innovate, compete more effectively, and create new jobs. It is vital that, at this critical juncture, the United States does not cede its policy leadership on these issues to countries with agendas and interests that might conflict with our own.

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We appreciate Congress's leadership on the important issue of preserving the ability to transfer data across borders, which fuels job creation and economic growth. Thank you and I look forward to your questions.