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Bureau of Industry and Security
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Review of Controls for Certain Emerging Technologies
Comments of the Coalition of Services Industries (CSI)
January 10, 2019

CSI is the leading industry association devoted exclusively to promoting the international trade and investment objectives of the U.S. services sector, particularly digitally enabled services. Our members include the vast array of U.S. companies that provide services domestically and internationally, including information and communication technology services, financial services, express delivery and logistics, media and entertainment, distribution, and professional services.

Services and digital trade are inextricably linked. Together they support sectors across the economy by working through digital platforms and internet services, communications networks, cloud storage and big data analytics, machine learning and Artificial Intelligence, 5G technology and social media. Digitally enabled services and their underlying infrastructure facilitate: data that flows through mobile devices, secure digital payment transactions, streaming of movies over the internet, voice commands to one's mobile phone, tracking of packages online, and improvement of airline safety. Digital services are at the heart of the U.S. financial services industry with banks, insurance firms and other financial service suppliers relying heavily on the ability to process and store financial records digitally.

Services are also boosting the productivity and competitiveness of the U.S. manufacturing and agricultural sectors, particularly through smart manufacturing which combines advanced technology, software, and services.ⁱ In fact, as the Organisation for Economic Co-operation and Development (OECD) recently reported, up to 60% of employment in manufacturing firms is found in “service functions such as R&D, engineering, transport, logistics, distribution, marketing, sales, after-sales services, IT, management and back-office support.”ⁱⁱⁱ

Cloud computing and storage, as well as machine learning and artificial intelligence, are significant parts of the digital ecosystem, bringing cost efficiencies and advances in technology. Information technology spending on cloud services in 2016 was more than \$100 billion and is expected to double by 2020.ⁱⁱⁱ Cloud services are becoming a leading U.S. services export. According to a 2016 Accenture study:

Artificial intelligence (AI) could double annual economic growth rates by 2035 by changing the nature of work and spawning a new relationship between man and machine...the impact of AI technologies on business is projected to boost labor productivity by up to 40 percent by fundamentally changing the way work is done and reinforcing the role of people to drive growth in business.^{iv}

The positive impact of the growth of information and communication technology (ICT) and digitally deliverable services exports on U.S. economic growth is significant. In 2016, “Potentially” ICT-enabled (PICTE) services accounted for 54 percent of all U.S. services exports, 48 percent of all services imports, and 64 percent of the trade in services surplus.^v

Government policies that support this growth and innovation must be essential pillars of U.S. economic policy. While considering controls to help protect our national security, it is critical to recognize the importance of also maintaining an environment that fosters services and digital technology innovation and investment that will keep the U.S. globally competitive. Failure to maintain this balance risks loss of the U.S. competitive edge in areas such as AI and could constrain innovation, adversely impacting the economy as well as undermining our ability to develop intelligence and military systems.

The ANPRM asks several questions, including: how should emerging technology be defined to assist identification of such technology in the future; what criteria should be applied to determine whether there are specific technologies within these general categories that are important to U.S. national security; what sources should be utilized to identify such technologies; and what other general technology categories warrant review.

It is critically important that the Bureau of Industry and Security (BIS) strike the right balance between protecting national security and promoting U.S. technology leadership. To that end we offer the following recommendations: (1) parameters for the identification of technology potentially subject to export controls, (2) developing a definition of emerging technology that takes into account the impacts of technology controls on industry and U.S. technology leadership; and 3) a proposed definition of emerging technologies.

1. Identifying Technology Subject to Potential Export Controls

- **Technologies should be narrowly defined to include only those essential to U.S. national security.** The government’s focus should be on identifying only those emerging technology and related components that are essential to the national security of the United States, as reflected in the Export Control Reform Act of 2018 (ECRA). We are concerned that throughout the ANPRM reference is made to identifying emerging technologies that are “important” to national security. Such an expansive focus could lead to overbreadth in application of a new export control regime to the detriment of economic growth and innovation. To this end, we recommend BIS take the following actions:
 - **When identifying emerging technologies BIS should focus on specific *components and uses that are essential to national security*.** We urge BIS to avoid designating broad categories of technology as essential to the national security within the context of ECRA and instead, determine what is unique within a given technology category. It is critical that more general technology not be restricted to avoid significant negative economic consequences.
 - **When evaluating emerging technologies, BIS should carefully consider existing dual-use criteria and the commercial availability of existing technologies to avoid**

establishing an overly prescriptive export regime. There are existing regimes such as the Wassenaar Arrangement that already define criteria for dual use items. This includes criteria such as the foreign availability outside of a participating state, the ability to control effectively the export of the goods, the ability to make a clear and objective specification of the item, and whether another regime controls the item. These are all factors that BIS should consider in determining whether to control a technology. CSI does not support imposition of unilateral controls unless there is a clear path to agreement regarding such controls by the Wassenaar member countries.

- **BIS must also consider the overall commercial availability of devices and technology.** Many of the broad categories suggested by BIS in the ANPRM include products that are commercially available within and outside the U.S. This widespread availability not only makes it impractical to impose an export control regime, but also potentially is damaging to U.S. interests. Any requirements should be focused on new technology developed in these categories not readily available outside of the U.S.
- **BIS should consider establishing a transparent process, including opportunity for stakeholder input, to determine which emerging technology should be considered for export for application or removal of controls. It is vital that this process provide a formal mechanism for soliciting industry input, including the possibility of an industry advisory board, on proposed export controls. It is also imperative that BIS establish a means for industry to provide confidential or business proprietary information without risk of public disclosure.**
 - Given the complexity determining controlled technologies, it will likely need to be done on a case-by-case basis. It may be reasonable for BIS to develop some general factors for consideration in identifying controlled technologies such as commercial availability, the impact on economic growth, the efficacy of export controls, and the impact on industry. However, given the stakes, BIS will likely need to, at a minimum, conduct a case-by-case review and breakdown of the unique sub-components in each technology category. BIS should ensure that this case-by-case consideration is done in a fully transparent manner that includes industry views.
 - Industry is best positioned to understand the economic and market impact and should be consulted by BIS prior to any decisions being made to control technology. There is the potential that adding technologies to the controlled list will have significant economic, market and competitive implications. Given the potential for unforeseen consequences it is imperative that BIS develop a formal process that includes sufficient time for industry to provide meaningful, detailed, and comprehensive input.
 - An interagency process should also be established to ensure that multiple agencies within government, including Team Telecom, can interact with BIS in making such determinations.

- **BIS should develop a process for technologies to be removed from the controlled list that includes regular reviews and updates.** Equally important to having a process with stakeholder input for deciding what emerging technologies should be on the controlled list, is a BIS process to remove technologies when they become more commercially available at which point maintaining export controls would be counter-productive. Having a removal process is particularly important because of the rapid pace of technological innovation.

2. The Impact of Emerging Technology Controls on Industry and U.S. Technology Leadership

- **Any new export controls should be developed to maintain efficiencies in existing exporter supply chain and operational processes.** BIS should narrowly tailor any controls to only those essential to national security interests and should seek to avoid creating ineffective bureaucracy that hampers the efforts of U.S. firms to develop new forms of technology while other nations can operate freely.

Classifying a technology under the export control regime creates numerous obligations on industry. The process of obtaining licenses for the exporting of technology may have a major impact on time to market in the competitive race between the U.S. and other countries. Exporters also incur substantial cost establishing processes to identify products, maintain records of shipments and the exchange of technical data, monitor lists of parties denied from purchasing such technology, maintain internal controls including on personnel with access to such technologies or take other measures for each category determined by BIS. There are also a variety of related actions that take place such as software updates that may or may not be considered controlled under the export control regime. BIS should take these and other factors into consideration to ensure that the benefit outweighs the potential burden.

- **BIS should allocate sufficient transition time for exporters to adjust supply chain and operational processes before imposing technology controls.** Imposing export controls and requiring a licensing regime (or exemption process) for emerging technologies that are essential to national security within any of these broad categories has the potential to disrupt ongoing technology development and investment. The imposition of a licensing regime may require existing industries to adjust their supply chains and operations, product development and manufacturing processes. Such a licensing regime would also have an impact on companies' employee base and existing contractual and financial obligations. These changes can take months and in some cases years (and will have a correlative impact on planned operating budgets and investment decisions).

As BIS conducts risk assessments to designate emerging technologies, it should use license exceptions or other mechanisms to allow for unrestricted intra-company exports, re-exports, and transfers between and among US companies and their non-US subsidiaries, as well as intra-company deemed exports to foreign national employees of the U.S. company and its non-U.S. subsidiaries. Failing to safeguard the

exchange of ideas and technology within multinational U.S. companies and among their employees would severely undermine the lead of U.S. companies in these technological areas.

- **Export controls should minimize the negative impact on personnel developing and supporting impacted technologies and undermining U.S. technology leadership.** Many multinational companies employ U.S. and non-U.S. nationals to ensure the best talent is leveraged in the development of emerging technology. This is particularly the case for technologies such as AI, quantum information systems, position, navigation, and timing technology and in a variety of other areas. Moreover, a large amount of technology research is conducted cooperatively by universities and firms spread around the world, which requires a free exchange of ideas to advance technology. Further, software is increasingly being created by individuals contributing to its development from a variety of locations worldwide.

Export controls could make it difficult for U.S. firms to continue to lead in technology development as necessary personnel and collaborations may be required to obtain additional licenses and face undue administrative burdens to work on these vital projects. As noted above, licensing regimes can also disrupt the employment of non-U.S. nationals currently working in emerging technology areas. For this reason, it is critical that export controls be narrowly targeted to specific geographic areas as noted below

- **Export controls, regardless of country, should be narrowly targeted.** In developing export controls that apply to identified emerging technologies that are essential to the national security, BIS should narrowly tailor any controls. This is critically important for cooperative research and development that is occurring between countries on a variety of emerging technology areas like quantum computing. This is similar to the dual use export control system already used by BIS.
- **The critical importance of Foreign Direct Investment (FDI) to U.S. innovation and the potential adverse impact on FDI of making an emerging technology subject to export controls must be taken into account and carefully balanced with appropriate National Security considerations.** It is widely reported that the [U.S. is the largest single recipient of Foreign Direct Investment \(FDI\)](#) in the world, and it is a source of thousands of U.S. jobs. However, as the global economy develops the U.S. must actively compete to retain and attract new investment. Many of the technologies in the categories identified in the ANPRM are supported by FDI in startup firms and other research. In other cases, they may be developed via consortiums that include both U.S. and international firms. Imposing export controls may make those investments less attractive and shift FDI away from the U.S. to rivals for emerging technology leadership, including China, India, and the EU.

3. Definition of Emerging Technology

In light of the above considerations, CSI offers the following definition of emerging technology. The definition below includes terms defined in the Export Administration Regulations (EAR) that are widely understood and applied by the exporting community.

Emerging Technologies are specific technologies that:

(a) are “required” for the “development” of items that:

(i) provide the United States with a specific and identifiable qualitative military advantage;

(ii) are essential to the national security interests of the United States; and

(iii) are not identified on the Commerce Control List or the United States Munitions List; and

(b) are not available in or being produced in foreign countries; and

(c) do not include “production” technology or any aspect of “use” technology for items in production.

ⁱ Stephenson, Sherry. “The Linkage Between Services and Manufacturing in the U.S. Economy.” April 17, 2017.

ⁱⁱ Miroudot, S. and C. Cadestin (2017), “Services in Global Value Chains: From Inputs to Value-Creating Activities,” OECD Trade Policy Papers, No. 197, OECD Publishing, Paris, 5.

ⁱⁱⁱ Gartner, “Gartner Says by 2020 “Cloud Shift” Will Affect More Than \$1 Trillion in IT Spending,” July 20, 2016, <http://www.gartner.com/newsroom/id/3384720>.

^{iv} Accenture, “Artificial Intelligence Poised to Double Annual Economic Growth Rate in 12 Developed Economies and Boost Labor Productivity by up to 40 Percent by 2035, According to New Research by Accenture,” September 2016, <https://newsroom.accenture.com/news/artificial-intelligence-poised-to-double-annual-economic-growth-rate-in-12-developed-economies-and-boost-labor-productivity-by-up-to-40-percent-by-2035-according-to-new-research-by-accenture.htm>.

^v Nicholson, Jessica R., “Digital Trade in North America,” U.S. Department of Commerce, January 5, 2018, <https://www.commerce.gov/sites/commerce.gov/files/media/files/2018/digital-trade-in-north-america.pdf>, 1.