



January 10, 2019

Kirsten Mortimer
Office of National Security and Technology Transfer Controls
Bureau of Industry and Security
U.S. Department of Commerce
Room 2099B
14th Street and Pennsylvania Avenue NW
Washington, DC 20230

**RE: Advance Notice of Proposed Rulemaking on Emerging Technologies
[RIN0694-AH61]**

Dear Ms. Mortimer,

BSA | The Software Alliance appreciates this opportunity to provide comments to the Bureau of Industry and Security (“BIS”) in response to the Advance Notice of Proposed Rulemaking (“ANPRM”) regarding the “Review of Controls for Certain Emerging Technologies.”¹ BSA is the leading advocate for the global software industry before governments and in the international marketplace.² The software industry contributes more than \$1.1 trillion to U.S. GDP and supports 10.5 million U.S. jobs.³ Software, combined with the more than \$63 billion that the industry

¹ 83 Fed. Reg. 58,201 (Dep’t Commerce Nov. 19, 2018).

² BSA’s members include: Adobe, Akamai, ANSYS, Apple, Autodesk, Bentley Systems, Box, Cadence, CNC/Mastercam, DataStax, DocuSign, IBM, Informatica, MathWorks, Microsoft, Okta, Oracle, PTC, Salesforce, SAS Institute, Siemens, Slack, Splunk, Symantec, Trimble Solutions Corporation, Trend Micro, Twilio, and Workday.

³ See Software.org: The BSA Foundation, *The Growing \$1 Trillion Economic Impact of Software*, at 5 (Sept. 2017), available at https://software.org/wp-content/uploads/2017_Software_Economic_Impact_Report.pdf.

invests annually in research and development, serves as a powerful catalyst for U.S. economic growth, making companies more competitive and the economy more robust.

BSA acknowledges the legitimate concerns expressed by the Congress in the Export Control Reform Act of 2018 (“ECRA”)⁴ and supports the Administration’s goal of modernizing the Export Administration Regulations’ (“EAR”) coverage of “emerging technologies” that are essential to US national security. Of course, as the ANPRM acknowledges, the Administration’s national security objectives can be achieved only through a careful balancing of equities, including the strategic imperative of ensuring that the US remains the global hub for innovation. Accordingly, we offer below a series of recommendations that BIS should consider as it defines the emerging technologies that may become subject to control under the EAR.

Guiding Principles

The ECRA and ANPRM include a number of important policy principles that should serve as essential guideposts as BIS undertakes the process of defining and implementing controls on emerging technologies.

Limited Scope – Excludes Software and Commercially Available

Technologies: By focusing narrowly on “technologies” that are “emerging,” Congress sought to limit the scope of any potential export controls in two key respects. First, the reference to “technology” must be understood as limiting the reach of any resulting export controls to specific forms of *information* necessary for the development of sensitive products or services, as opposed to controls on commodities or software. Indeed, Section 1742 of ECRA defines “technology,” consistent with the definition in the EAR,⁵ to include “information, in tangible or intangible form, necessary for the development, production, or use of an item.” By comparison, Section 1742(7) defines “item” as a “commodity, software, or technology.” Thus, the final rule must be limited to possible new controls on

⁴ Enacted as part of the National Defense Authorization Act for Fiscal Year 2019, Public Law No: 115-232.

⁵ See EAR § 772.1 (definition of technology).

information that is within the scope of the term “technology,” and does not include possible new controls on “software” or any other “item.”

Second, the scope of the final rule is further limited to the subset of technologies that can be considered “emerging.” While that term is not defined, Congress identified a number of exceptions to the potential license requirements that suggest “emerging” technologies should be understood as technologies that are not yet in production or use. Importantly, pursuant to Section 1758(b)(4), BIS is not permitted to impose license requirements on a range of transactions involving commercially available software and associated technology.

Nexus to National Security – Avoiding Harm to US Technological Leadership and Competitiveness:

Congress also directed the Administration to narrowly focus its controls on “emerging technologies” that are “*essential* to the national security of the United States.”⁶ Moreover, Congress sought to ensure that the “[a]pplication of unilateral export controls should be limited for purposes of protecting *specific* United States national security and foreign policy interests.”⁷ Although the phrase “essential to the national security of the United States” is not defined in the ECRA or the EAR, the ANPRM stipulates that emerging technologies are essential only when such technologies have “potential conventional weapons, intelligence collection, weapons of mass destruction, or terrorist applications or could provide the United States with a qualitative military or intelligence advantage.”⁸

The ECRA sets forth important policy guidance about how “national security” should be interpreted in the context of “emerging and foundational technologies.” The ECRA expresses the policy of the United States “to restrict the export of items which would make a significant contribution to the military potential of any other country or combination of countries which would prove detrimental to the national security of the United States.”⁹ Moreover, the EAR already implements “national security” controls in the context of U.S. or foreign military capabilities. Thus, a

⁶ ECRA § 1758(a)(1)(A) (emphasis added).

⁷ ECRA § 1752(6) (emphasis added).

⁸ ANPRM at 58201.

⁹ ECRA § 1752(1)(A).

technology's contribution to U.S. or foreign "military potential" should be assessed with reference to these parameters.

Yet for purposes of export control initiatives, the ECRA recognizes that "the national security of the United States requires that the United States maintain its leadership in the science, technology, engineering, and manufacturing sectors, including foundational technology that is essential to innovation."¹⁰ The ECRA likewise recognizes that such leadership "requires United States persons are competitive in global markets." Thus, any definition of (or corresponding controls on) "emerging technologies" that would undermine US leadership in the development or trade of those technologies must be understood as undermining the national security objectives that Congress has articulated.

Importantly, technologies that pertain to military potential may relate to "national security," but are not necessarily "essential." By limiting emerging technology controls to "essential" technologies, Section 1758 expressly limits the scope of any new controls. Although the EAR does not define "essential," technology controls in the EAR are limited to aspects of technology that are "required," or "peculiarly responsible," for achieving a controlled characteristic, function or capability. Accordingly, technologies should be considered "essential" with reference to a military capability only if required, or peculiarly responsible for achieving the relevant (and specific) military capability. Section 1758 does not contemplate controls for emerging technologies that merely "pertain to," or may be merely "important" for a military capability.

Avoiding Collateral Impacts: Prior to deeming any technology as "emerging," the ECRA also requires the Administration to perform a collateral impact analysis to determine whether the imposition of a unilateral control would advance the underlying objectives of the statute and whether countervailing economic considerations would disfavor the imposition of such a control. Specifically, before designating a particular technology as "emerging," Section 1758(a)(2)(B) directs the Administration to consider: (i) the foreign development of the technology, (ii) the impact that an export control would have on the development of such technologies in the United States, and (iii) the effectiveness an export control would have on limiting the proliferation of such technologies to foreign countries. The implication of

¹⁰ ECRA § 1752(3).

this collateral impact analysis is that the Administration should avoid the imposition of unilateral controls in circumstances where: (1) the underlying technology is available from a non-US supplier, (2) the control would undermine the development of such technologies by US suppliers, and (3) the control would have limited effect in stemming the proliferation of the technology abroad.

Maintaining Existing Exclusions: The ANPRM indicates that “Commerce does not seek to expand jurisdiction over technologies that are not currently subject to the EAR, such as ‘fundamental research’ described in § 734.8 of the EAR.”¹¹ While “fundamental research” is identified as one important exclusion, Section 734 also includes important exclusions, among other things, for information that is “published,” including information that is released by instruction at academic institutions, and information that is included in a patent or patent application.¹²

Proposed Definition of “Emerging Technology”

Consistent with the foregoing principles, we propose that “emerging technology” should be defined as follows:

“Emerging Technology.” An “emerging technology” is a “technology” that is “required” for the “development” of specific and identifiable conventional weapons, weapons of mass destruction, intelligence collection applications, or terrorist applications not yet in production and not yet controlled by one of the four multilateral control regimes (i.e., Wassenaar Arrangement, Nuclear Suppliers Group, Australia Group and Missile Technology Control Regime). This definition excludes (1) “published” information, (2) information arising from “fundamental research,” (3) “technology” that is not susceptible of effective control due to foreign availability and (4) “technology” which, if controlled, would impair United States leadership and competitiveness in the science, technology, engineering, and manufacturing sectors, including technology that is essential to innovation.

As explained above, the definition of “emerging technology” should be limited to the subset of “technologies” (as defined by the ECRA) that are essential to specific and identifiable national security interests. The proposed definition is thus limited to

¹¹ ANPRM at 58202.

¹² EAR § 734.3(b)(3).

technologies that are “required” (i.e., essential) for the “development”¹³ of such items.

The proposed definition includes a series of exclusions that are also necessary to give effect to the aforementioned guiding principles. The exclusions for information arising from “published” materials and “fundamental research” are based on the Commerce Department’s stated commitment to maintaining existing EAR exclusions and clarifies that any technology that is either described in the open literature or results from research where the operative intent is to either publish or patent the invention should be excluded from the definition of “emerging” technology.¹⁴ The imposition of unilateral controls on US suppliers of technologies that can readily be acquired from international competitors will not advance the national security interests articulated by the Congress. We therefore propose an explicit “foreign availability” exclusion. It is likewise important to build into the definition of “emerging technology” an exclusion for technologies, that if subjected to control, would undermine US leadership in science and technology.

Criteria for Identifying Specific Emerging Technologies

The ANPRM identifies 14 exceptionally broad technology categories from which the Commerce Department “seeks to determine whether there are specific emerging technologies that are important to the national security of the United States.”¹⁵ To that end, the ANPRM seek feedback on “criteria to apply to determine whether there are specific technologies within these general categories that are important to US national security.”¹⁶ As a preliminary matter, we note that the ANPRM asks about technologies that are “important” to U.S. national security. However, the statutory standard is whether technologies are “essential” – not “important” – for national security. Accordingly, the Commerce Department should note the distinction and should clarify that “important” technologies are not necessarily “essential.”

Drawing from the guiding principles, and consistent with the proposed definition of “emerging technologies,” we offer below criteria that the

¹³ As defined by Section 772 of the EAR, the term “development” relates to “all stages prior to serial production, such as: design, design research, design analyses, design concepts, assembly and testing of prototypes, pilot productions schemes, design data, process of transforming design data into a product, configuration design, integration design, layouts.”

¹⁴ The Patent Act includes procedures to ensure that patents involving inventions which may be “detrimental to the national security” of the US are not disclosed to the public. Accordingly, to the extent a technology is described in a publicly available patent, it should not be deemed an “emerging technology” for purposes of ECRA. See 35 USC § 181.

¹⁵ ANPRM at 58202

¹⁶ Id.

Commerce Department should rely upon as it moves to the next stage of identifying specific emerging technologies that may become subject to control under the EAR. Before deeming a technology as “emerging,” BIS should issue a Notice of Proposed Rule Making with sufficient information to justify why the proposed control meets each of the following criteria as well as specific technical parameters for each technology designated as “emerging.”

1. Nexus to a Specific National Security Risk

Congress characterized “emerging technologies” as both “essential to the security of the United States” and not currently regulated under existing export control regimes. Congress also stipulated that any new unilateral controls should be applied only to address “specific” national security interests. Thus, one critical criterion for determining whether a technology should be deemed “emerging,” will be a clear articulation of the specific national security interest that it is seeking to advance through the designation.

2. Narrowly Tailored and Well-Defined

Congress has directed that national security-related export controls must be carefully “tailored to focus on...core technologies” that pose a security threat to the United States,¹⁷ and that they must likewise be “transparent, predictable, and timely.”¹⁸ Congress imposed such requirements to ensure export controls are narrowly tailored to achieve their intended national security objectives and so that there is certainty about the specific technologies that are subject to control. These requirements are particularly important where, as here, the technologies that may become subject to control are rapidly evolving.

We recognize that the 14 technology categories identified in the ANPRM are merely a starting point for identifying potential “emerging technologies” that may become subject to control under the EAR. However, the exceptionally broad categories have sparked understandable concern about how BIS intends to proceed. Many of the identified categories (e.g., artificial intelligence, machine learning technology, neural networks and deep learning, natural language processing, data analytics technology) represent core technologies that have been in existence for decades and that are at this point ubiquitous, both in the US and abroad. To the extent that there are subsets of these broad categories that can even be considered “emerging,” BIS should identify them based on objective technical specifications using

¹⁷ ECRA § 1752(2)(G).

¹⁸ ECRA § 1752(8).

the existing Export Control Classification Number (“ECCN”) system in its Commerce Control List. In instances where clear technical control parameters are elusive (e.g. where a general-purpose technology constitutes a threat to US security only when used in a particular manner or by an actor with ill intent), BIS should consider alternative approaches. For example, if a list-based control would be overinclusive, BIS should rely on “end-user” and “end-use” controls for that technology.¹⁹ In all cases, it is critical to maintain explicit exemptions from any controls for technology that is in commercially available software, products or services.

3. Effects on US Leadership in Science and Technology

As both the ECRA and the ANPRM recognize, the long-term national security interests of the United States are best served by retaining US leadership in the development of emerging technologies. Accordingly, one criterion for determining whether an emerging technology should be subject to control under the ECRA is whether such a designation would undermine US leadership in science and technology. Such an analysis cannot be performed in the abstract based on the list of 14 extremely broad technology categories identified in the ANPRM. Instead, we urge BIS to perform a “US leadership” analysis for each individual technology that it proposes to classify as “emerging.” For such an analysis to be meaningful, BIS will need to solicit information from the full range of stakeholders that make up the US innovation ecosystem about the potential effects that deeming a particular technology as “emerging” could have on US leadership in science and technology.

When technologies are deemed “emerging,” we urge BIS to adopt license exceptions to ensure that the internal development processes of US companies are not disrupted. US industry leads the world in the development of many technologies because the United States has historically attracted top-flight international talent and maintained a regulatory framework that allows for seamless cross-border collaboration. Therefore, we recommend that the final rule implementing controls on emerging technologies should include exemptions for “deemed” exports and transfers to subsidiaries and employees of US companies, similar to the current License Exception ENC in section 740.17(a) (2) of the EAR. License Exception ENC authorizes the export of encryption technology by a U.S. company to its foreign subsidiaries and foreign national employees without any licensing or pre- or post-export reporting (except to subsidiaries or foreign nationals from embargoed countries). In order to avoid harm to U.S. leadership in attracting

¹⁹ However, end-user and end-use controls should also be used sparingly. In this regard, the end-user and end-use controls on weapons of mass destruction are instructive. Such controls can be effective, but only where BIS specifically identifies the end-users and end-uses of concern. Even in the case of end-user and end-use controls, it is critical to maintain explicit exemptions from any controls for any technology that is in a “commercial of the shelf” product or service.

the “best and brightest” employees, BIS should create a similar license exception for emerging technologies.

4. Lack of Foreign Availability

In reforming the ECRA, Congress recognized the application of unilateral export controls on “items widely available from foreign sources” are generally ineffective.²⁰ Therefore, prior to deeming a technology “emerging,” the ECRA requires the Administration to determine whether it is also under development in foreign countries and whether an export control could effectively limit its international “proliferation.”²¹ Thus, a critical criterion for evaluating an “emerging technology” is its foreign availability. Simply put, emerging technology controls cannot be effective if a technology is already available from a foreign supplier or under development outside of the US. Such technologies should thus not be considered emerging.

Like the earlier referenced criteria, it is not possible to meaningfully evaluate the foreign availability of the 14 categories of technology referenced in the ANPRM. In the absence of more direction in terms of the technical capabilities BIS believes to be “essential” to the national security, an analysis of the international landscape of firms capable of producing such technologies is unlikely to be forthcoming. As BIS refines the list of technologies that may be deemed “emerging,” it should establish a mechanism that allows for the submission of not only public but also confidential comments in response to future proposals.

Conclusion

BSA appreciates the opportunity to comment on the ANPRM for emerging technology and look forward to remaining engaged with BIS and the broader interagency as this process moves forward. Subjecting “emerging technologies” to control under the EAR implicates a range of important equities. To ensure that BIS receives all of the information it needs to balance those equities, it is imperative that industry is afforded the opportunity provide feedback on specific proposed “emerging technologies.” We specifically look forward to reviewing and commenting on any future Notice of Proposed Rule Making containing more specific ECCN technical control parameters and delineation of the license requirements and license exception eligibilities. We also appreciate that BIS wants to publish a separate ANPRM for “foundational technologies,” and we support that approach. However, some of the categories listed in this ANPRM include what we

²⁰ ECRA § 1752(6).

²¹ ECRA § 1758(a)(2)(B).

would consider to be foundational technologies, many of which have existed for decades and are ubiquitous in commercial products and services (e.g., data analytics and artificial intelligence). These are not now subject to export controls because they are not considered to be “essential to national security.” We hope that you will consider this point as well as the other points raised above, as you draft the ANPRM for “foundational” technologies.

* * * *

Thank you again for the opportunity to share our views on these important issues.

Sincerely,

A handwritten signature in black ink, appearing to read 'Christian Troncoso', is positioned above the typed name.

Christian Troncoso
Director, Policy