US Department of Commerce Solicits Comments Regarding Emerging Technologies That Are Essential to US National Security

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On November 19, 2018, the Bureau of Industry and Security, U.S. Department of Commerce (BIS) published an advance notice of proposed rulemaking (ANPRM) soliciting comments on the criteria to be used to identify emerging technologies that are essential to U.S. national security. Such technologies could include those that have potential uses in connection with conventional weapons, intelligence collection, weapons of mass destruction or terrorist applications, or could provide the United States with a qualitative military or intelligence advantage.

The comments will inform the interagency review process established by the Export Control Reform Act (ECRA) to identify and describe "emerging and foundational technologies." This interagency process is expected to result in proposed rules for new Export Control Classification Numbers on the Commerce Control List under the Export Administration Regulations (EAR), the export control regime governing the export, re-export and in-country transfer of commercial and dual-use hardware, software and technology. Comments are due on or before December 19, 2018.

Background

On August 13, 2018, President Donald Trump signed into law the John S. McCain National Defense Authorization Act (NDAA) for Fiscal Year 2019, which included the ECRA, as discussed more extensively in our September 11, 2018, client alert. Among other things, the ECRA established an interagency review process to identify "emerging and foundational technologies"[1] and impose appropriate export controls. This interagency review process will involve the departments of Commerce, Defense, State and Energy, along with other federal agencies, as appropriate, and will draw on publicly available information, classified information and information from Commerce advisory committees, including, in particular, the Emerging Technology Technical Advisory Committee, and the Committee on Foreign Investment in the United States (CFIUS), to identify "emerging and foundational technologies."

Solicitation of Public Comments Regarding Criteria for Defining and Identifying Emerging Technologies and Likely Outcomes of Interagency Review

The ECRA directs the interagency reviewers to consider multiple factors in assessing whether a technology is "emerging and foundational," including (i) the development of similar technologies in foreign countries, (ii) the impact export controls would have on the development of the technology in the U.S., and (iii) the effectiveness of export controls on limiting the proliferation of the technology to foreign countries.

The ANPRM is intended to facilitate proposals for specific emerging technologies to be controlled. BIS specifically is interested in comments regarding:

- how to define emerging technology to assist identification of such technology in the future;
- the criteria to apply to determine whether there are specific technologies within these general categories that are important to U.S. national security;
- the sources to identify such technologies;
- other general technology categories that warrant review to identify emerging technolo-

[1] A separate rulemaking regarding the identification of foundational technologies will be forthcoming, although BIS would welcome comments on treating "emerging and foundational technologies" as separate types of technology.

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gies that are important to U.S. national security;

- the status of development of the technologies specified in the ANPRM in the United States and other countries;
- the impact specific emerging technology controls would have on U.S. technological leadership; and
- any other approaches to the issue of identifying emerging technologies important to U.S. national security, including the stage of development or maturity level of an emerging technology that would warrant consideration for export control.

Designation of a new technology as emerging will trigger BIS to impose export controls, including interim controls, on exports, re-exports and in-country transfers of such technology. Although BIS has broad discretion to specify the appropriate level of control, including by taking into consideration the potential end destinations, end users and end uses for such technology, the ECRA mandates that all technologies identified as "emerging and foundational" must at a minimum require a license for their export, re-export or in-country transfer to or in a country or territory subject to a comprehensive U.S. embargo or an arms embargo, which currently includes China.

Representative Categories of Potentially Emerging Technology

BIS has compiled a list of technologies that currently are subject to the EAR, but are controlled only to comprehensively embargoed countries, such as Iran, countries designated as supporters of international terrorism, such as Sudan, and restricted end users or end uses. According to BIS, this is a representative list of technologies that BIS, through the interagency process, will assess to identify any specific emerging technologies that are important to U.S. national security for which effective controls can be implemented without negatively impacting U.S. leadership in the science, technology, engineering or manufacturing sectors. Note that although BIS intends to assess and potentially increase restrictions on the export, re-export and in-country transfer of such emerging technologies, it does not seek to exert control over technologies that are not currently subject to the EAR, such as "fundamental research." The list of representative technologies appears as Appendix A.

Key Takeaways

Through comments in response to the ANPRM, and as proposed rules regarding specifically identified emerging technologies are published for further comment, industry will have a unique opportunity to shape the controls in place on a broad range of emerging technologies, many of which are key innovation drivers and potentially could be negatively impacted by additional export-related regulatory burdens. Furthermore, there may be significant consequences for a wide range of companies and investors as those technologies determined to be emerging technologies for export control purposes will be treated as critical technologies for CFIUS purposes, in which case there will be heightened scrutiny in the event of any proposed foreign investment and, potentially, a mandatory filing requirement.

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Appendix A

Representative Technology Categories

Biotechnology, such as:

i. Nanobiology;
ii. Synthetic biology;
iii. Genomic and genetic engineering; or
iv. Neurotech

Artificial intelligence (AI) and machine learning technology, such as:

i. Neural networks and deep learning (*e.g.*, brain modelling, time series prediction, classification);
ii. Evolution and genetic computation (*e.g.*, genetic algorithms, genetic programming);
iii. Reinforcement learning;
iv. Computer vision (*e.g.*, object recognition, image understanding);
v. Expert systems (*e.g.*, decision support systems, teaching systems);
vi. Speech and audio processing (*e.g.*, speech recognition and production);
vii. Natural language processing (*e.g.*, machine translation);
viii. Planning (*e.g.*, scheduling, game playing);
ix. Audio and video manipulation technologies (*e.g.*, voice cloning, deepfakes);
x. AI cloud technologies; or
xi. AI chipsets

Position, Navigation and Timing (PNT) technology

Microprocessor technology, such as:

i. Systems-on-Chip (SoC); or
ii. Stacked Memory on Chip

Advanced computing technology, such as:

i. Memory-centric logic

Data analytics technology, such as:

i. Visualization;
ii. Automated analysis algorithms; or
iii. Context-aware computing

Quantum information and sensing technology, such as:

i. Quantum computing;
ii. Quantum encryption; or
iii. Quantum sensing

Logistics technology, such as:

i. Mobile electric power;
ii. Modeling and simulation;
iii. Total asset visibility; or
iv. Distribution-based Logistics Systems (DBLS)

Additive manufacturing (*e.g.*, 3D printing)

Robotics, such as:

i. Micro-drone and micro-robotic systems;
ii. Swarming technology;
iii. Self-assembling robots;
iv. Molecular robotics;
v. Robot compliers; or
vi. Smart Dust

Brain-computer interfaces, such as:

i. Neural-controlled interfaces;
ii. Mind-machine interfaces;
iii. Direct neural interfaces; or
iv. Brain-machine interfaces

Hypersonics, such as:

i. Flight control algorithms;
ii. Propulsion technologies;
iii. Thermal protection systems; or
iv. Specialized materials (for structures, sensors, etc.)

Advanced Materials, such as:

i. Adaptive camouflage;
ii. Functional textiles (*e.g.*, advanced fiber and fabric technology); or
iii. Biomaterials

Advanced surveillance technologies, such as:

i. Faceprint and voiceprint technologies

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