Emerging Technology Updates

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Emerging Technologies: When, Where and What?

- Emerging technologies are rarely predicted.
- Technology may emerge today, and by tomorrow, it's already being used in all types of applications.
- However, not all emerging technologies make it past research and development stage.
- Emerging technologies are those recently-developed or developing technologies not currently controlled for export that are essential to the national security of the United States and warrant implementation of export controls.

Impact(s) of Emerging Technologies

- Good use of emerging technologies:
  - Modern society and all its convenience.

- Misuse of emerging technologies:
  - Weapons of mass destruction;
  - Human rights violations;
  - Threats to national security of the US and the world.

Need for Emerging Technology (ET) Control

- ET in the hands of terrorists and rogue states are indiscriminately used against anyone, any nation, seen as a target - innocent civilians are often the victims.

- Because of the misuses, the threats and the dangers …, some forms of control on transactions and transfers of emerging technologies is good for the world.

- The United States is committed to working with allies and partners, working with and within the multilateral export control regimes, for common sense ET control.

US Commerce to Establish Appropriate ET Controls

- The Export Control Reform Act (ECRA) of 2018 requires Commerce to establish controls, including interim controls, on the export, reexport, or transfer (in country) of emerging technologies.

- The legislation mandates that emerging technologies essential to national security of the United States are controlled appropriately.

- Emerging technologies will be determined by an interagency process that will consider both public and classified information as well as information from the Emerging Technology Technical Advisory Committee and the Committee on Foreign Investment in the United States.

ET Controls Process

- In identifying emerging and foundational technologies, the process must consider:
  - The development of emerging and foundational technologies in foreign countries;
  - The effect export controls may have on the development of such technologies in the United States (and I would add and allies and partners); and
  - The effectiveness of export controls on limiting the proliferation of emerging and foundational technologies in countries of concern.

- The process must distinguish between emerging technologies and ‘‘fundamental research’’ described in Section 734.8 of the Export Administration Regulations (EAR).

2018 ET Advance Notice of Proposed Rulemaking

- November of 2018 Advance Notice of Proposed Rulemaking (ANPRM) sought public comment on criteria for identifying emerging technologies.
- The ANPRM identified 14 general areas warranting review for emerging technologies determined to be essential to national security.
- The ET ANPRM is publically available at 83 FR 58201 (Federal Register / Vol. 83, No. 223 / Monday, November 19, 2018 / Proposed Rules).

2018 ET ANPRM Technology Categories Listing

(1) Biotechnology
(2) Artificial intelligence (AI) and machine learning technology
(3) Position, Navigation, and Timing (PNT) technology
(4) Microprocessor technology
(5) Advanced computing technology
(6) Data analytics technology
(7) Quantum information and sensing technology
(8) Logistics technology
(9) Additive manufacturing.
(10) Robotics
(11) Brain-computer interfaces
(12) Hypersonics
(13) Advanced Materials
(14) Advanced surveillance technologies

ET Controls to Date

- Up to date, BIS published 37 emerging technology controls, mostly in agreement with multilateral export control regimes (particularly the Wassenaar, and the Australia group).

- In EAR, an ET control can be a modification of, a subparagraph addition to, or a new ECCN (Export Control Classification Number).

- Review of the 37 emerging technology controls published to date as part of the EAR.

The Five ET Controls and 2018 Wassenaar

- Certain microwave transistors, a major component of wideband semiconductors. (see ECCN 3A001)
- Continuity of operation software. (See ECCN 3D005)
- Postquantum cryptographic algorithms. (See ECCN 5A002)
- Underwater transducers designed to operate as hydrophones. (See ECCN 6A001)
- Aircraft specially designed or modified to be air-launch platforms (ECCN 9A004)

The Six ET Controls and Wassenaar 2019

- Hybrid additive manufacturing/computer numerically controlled tools. (See ECCN 2B001)
- Computational lithography software designed for the fabrication of extreme ultraviolet masks. (See ECCN 3D003)
- Technology for finishing wafers for 5nm production. (See ECCN 3E004)
- Forensics tools that circumvent authentication or authorization controls on a computer and extract raw data. (See ECCN 5A004.b)
- Software for monitoring and analysis of communications and metadata acquired from a telecommunications service provider via a handover interface. (ECCN 5D001.e)
- Sub-orbital aircraft. (See ECCN 9A515.a)

The ET Controls and the Australia Group

- 24 chemical weapons precursors (see ECCN 1C350)
- single-use biological cultivation chambers with rigid walls (See ECCN 2B352)

The One Unilateral ET Control

- software related to analysis of geospatial imagery (unilateral control: see ECCN 0D521)

Conclusion

- Emerging Technology control is a work in progress
  - Technologies evolve: ETs become obsolete, new ET emerge.
  - Technology categories evolve: new ones appear, others dwindle in importance.
  - ET controls can only evolve with evolving technologies.
- Emerging Technology control is and must be collaborative and inclusive
  - Internationally, working with allies and partners and through multilateral export control regimes.
  - Nationally, working through interagency process.
- Exchanges and sharing in conference's and seminar's platforms like this one feed into this work in progress.

Thank You

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