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Sent via email to publiccomments@bis.doc.gov, subject "RIN 0694-AG32"

MIT appreciates the opportunity to comment in response to the Bureau of Industry and Security (BIS) RIN 0694-AG32, *Revisions to Definitions in the Export Administration Regulations*.

We support the efforts of the Departments of Commerce, Defense, and State to rationalize, clarify, and focus U.S. export controls. RIN 0694-AG32 and the accompanying RIN 1400-AD70 regarding revisions to ITAR definitions, include elements of progress toward harmonized and constructive definitions of terms. The exclusions to end-to-end encryption are a welcome change and will reduce administrative burden to the academic community, and BIS's confirmation of our understanding of the definition of fundamental research is very helpful. However, the proposed rules contains several other changes that would significantly hamper MIT's ability to achieve its missions of delivering high quality cutting edge education to its students, and maintain its leadership position as a world-class research and educational institution.

- Design laboratories are an integral part of technical education, particularly in capstone classes that help students integrate learning from separate subject areas. Under the proposed rule, these courses could be seen as going beyond "general principles" and be subject to the EAR, thereby restricting course participation based on nationality. This would violate MIT's "open university" policy without any evidence that these classes present risks to nationalist security.
- MIT researchers typically publish both the research results ("technology") and software resulting from fundamental research. The proposed rule would limit researcher's ability to publish the software. Both the results and any software resulting from fundamental research should be publishable under the EAR.

The above issues and responses to the questions asked in the proposed rule are discussed in detail below. Revisions are provided where appropriate.

Responses to issues for which BIS solicited comments:

1. Whether the proposed revisions create gaps, overlaps, or contradictions between the ITAR and EAR, or among various provisions within the EAR

Prepublication review of fundamental research: The changes to the ITAR proposed in RIN 1400-AD70 §120.49(b) Prepublication Review are significantly different from the EAR proposed rules, and discussed further in "Effective date" below.

2. Whether the proposed alternative definition of fundamental research should be adopted

MIT welcomes BIS' proposed alternate definition of "fundamental research", which increases clarity while remaining consistent with NSDD-189: "'Fundamental research' means non-proprietary research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community."

To address the undefined term "non-proprietary", MIT proposes a minor revision:

> **Proposed alternate definition of fundamental research**
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> "'Fundamental research' means research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, and for which the researchers have not accepted restrictions for proprietary or national security reasons."

This definition is objective, consistent with NSDD-189 (and with the intent of BIS' proposed alternative), and does not rely on the additional defined terms "basic research" and "applied research", which have multiple definitions in different areas of Federal regulations and are open to varying interpretations.

3. Whether the proposed alternative definition of applied research should be adopted

The proposed rule adopts a definition of "applied research" taken from the DFARS (48 CFR part 31.205-18). This would be further clarified by including the entire definition, which adds "for sale" as a criterion. The additional text is bolded below.

> **Proposed complete DFARS definition of applied research**
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> "Applied research," means the effort that:
> (i) Normally follows basic research, but may not be severable from the related basic research;
> (ii) Attempts to determine and exploit the potential of scientific discoveries or improvements in technology, materials, processes, methods, devices, or technique; and
> (iii) Attempts to advance the state of the art.
> **Applied research does not include efforts whose principal aim is design, development, or test of specific items or services to be considered for sale; these efforts are within the definition of the term development [**defined in 48 CFR part 31.205-18**]**

4. Whether questions and answers in Supplement No. 1 to Part 734 include criteria that should be retained

MIT urges BIS to retain the questions and answers found in Supplement No. 1 to part 734 in the regulations. While we agree that the questions and answers are illustrative, including them in the EAR has provided stability, minimizing differences in interpretation that occur outside the rulemaking process. We are concerned that removing the questions and answers would create increased uncertainty in our application of key concepts including fundamental research, publication, and educational instruction.

5. For End-to-end encryption, what standards should be adopted and should EAR and ITAR have the same standards

Excluding the sending, taking or storing of technology or software that is secured using end-to-end encryption from control as exports is welcome to the academic research community. It will reduce faculty burden associated with international travel and the use of main campus resources while abroad.

8. What should the Effective date for any changes to the regulation

We assume RIN 0694-AG32 and the accompanying RIN 1400-AD70 would take effect concurrently.

It would not be possible for universities to meet the compliance obligations imposed by the addition of the prepublication review language of ITAR §120.49(b) within 30 days of the publication date.

An extension would not relieve the basic problem: the effect of this change would be crippling to research sponsored by industry and foundations. As described above, this would force universities to choose among bad alternatives, all of which are inconsistent with the role university research has had in advancing U.S. innovation and competitiveness.

Fundamental Research

§734.3(b)(ii) and §734.8

The proposed §734.3(b)(ii) states that "information and 'software' that arise during, or result from, fundamental research, as described in §734.8 … are not subject to the EAR".

However, the referenced §734.8 is titled "'Technology' that arises during, or results from, fundamental research". This change from "information and software" in §734.3(b)(ii) to "technology" in §734.8 creates several problems:

- §734.8 doesn't cover the "information and software" referred to in §734.3(b)(ii). "Technology" is only a subset of information (§772.1), and "technology" doesn't include "software" (§734.3(b)(ii)).
- Fundamental research doesn't create "technology". "Technology" is a defined subset of information subject to the EAR (§772.1). The results of fundamental research — information and software — are not subject to the EAR §734.3(b)(ii).

- University research would be complicated and restricted if "fundamental research" doesn't include software. That would mean that natural-language documents written by a researcher would be "technology" that could be freely shared, but computer-language documents (software) written by the same researcher, would be subject to deemed export restrictions.
- "Published" treats "software" like "technology" (§734.7(a)), and "deemed export" treats software "source code" the same as "technology" (§734.13(b)) —recognizing that software is a publishable, communicable creation of human thought like other information.
- NSDD-189 speaks of fundamental research "results … which ordinarily are published and shared broadly within the scientific community". The language in §734.3(b)(ii) is consistent with this; the language in §734.8 is not.

MIT strongly recommends that the language of §734.3(b)(ii) be reflected in §734.8.

Proposed change to §734.3(8):

§734.8 Information and software that arise during, or results from, fundamental research.

(a) Information or software that arise during, or results from, fundamental research and is 'intended to be published' is thus not ''subject to the EAR.''

(b) Prepublication review. Information or software that arise during, or result from, fundamental research is ''intended to be published'' to the extent that the researchers are free to publish the information or software contained in the research without restriction or delay. Information that arises during or results from fundamental research subject to prepublication review is still ''intended to be published'' when: …

Note: information that arises during, or results from fundamental research includes software

Removal of specific criteria (current §734.8(b)):

MIT appreciates that the proposed definition of "fundamental research" clarifies its broad applicability regardless of organization type or location. However, U.S. universities have found the specific criteria for university based research (current §734.8(b)) helpful in evaluating proposed research activities and using paragraphs 2 – 6 to help reach reliable determinations of whether the research qualifies as "fundamental research" under the EAR.

We recommend that the specific language of §734.8(b) be retained in the EAR. If this is not possible, we suggest that BIS develop a decision tree tool for universities that incorporates the current criteria for university based fundamental research.

Education

§734.3(b)(iii)

Some university catalog courses would become subject to the EAR under the proposed rule, although the preamble states that "this proposed rule is not intended to change the scope of the current §734.9."

Under the current EAR, technology and software that are released by instruction in a catalog course or associated teaching laboratory of academic institutions are not subject to the EAR (§734.3(b)(3)(iii) and §734.9).

The proposed §734.3(b)(iii) adds two constraints, by stating that "information and 'software' that … concern general scientific, mathematical, or engineering principles commonly taught in schools, colleges, and universities, and released by instruction in a catalog course or associated teaching laboratory of an academic institution" are not subject to the EAR.

Design laboratories are an integral part of technical education, particularly in capstone classes that help students integrate learning from separate subject areas — these could be seen as going beyond "general principles" and subject to the EAR. Leading universities provide curriculum innovation by introducing new courses — these could be seen as not "commonly taught" because they're innovative, and subject to the EAR.

Education at universities is by nature open, limited only by prerequisite knowledge, not by citizenship or national origin. A narrow interpretation of the proposed §734.3(b)(iii) would inhibit U.S. universities' ability to develop new courses, and to continue to offer knowledge-integrating educational experiences areas of science and engineering that are critical to the future competitiveness of the industrial sector.

MIT believes that the national interest would be best served by deleting "concern general scientific, mathematical, or engineering principles commonly taught in schools" from the proposed §734.3(b)(3)(iii), which would harmonize with the current EAR definition.

MIT recommends deleting ""concern general scientific, mathematical, or engineering principles commonly taught in schools" from the proposed §734.3(b)(3)(iii), which would retain the current EAR definition.

> **Proposed change to §734.3(b)(3)(iii):**
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> "(iii) Released by instruction in a catalog course or associated teaching laboratory of an academic institution."

MIT appreciates the opportunity to provide BIS with the above comments on RIN 0694-AG32.

Sincerely,

Maria T. Zuber