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Public Interest Comment

Comments submitted to the Bureau of Industry and Security in the Matter of:

Emerging Technology and Research Advisory Committee Meeting

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Executive Summary

Balancing appropriately-tailored regulation of emerging technologies while protecting U.S. national security interests is a notoriously difficult needle to thread. Dual-use technologies are certainly capable of falling into the wrong hands. However, it is just as true that heavy-handed regulations can have massive distortionary effects on the competitiveness of domestic firms, driving investment capital and innovation overseas. To that end, the Niskanen Center recommends the Emerging Technology and Research Advisory Committee embrace the same emerging technology framework recently reaffirmed by the Department of Commerce: *The Framework for Global Electronic Commerce*. This framework can help guide effective policymaking in the regulatory rulemaking environment for emerging technologies. By ensuring a vibrant and innovation-friendly market environment, American firms will continue contributing to the growing digital economy. A growing economy, in turn, is the lynchpin of American security—at home and abroad.

Introduction

Properly addressing concerns associated with emerging technologies is among the most pressing public policy issues faced by regulators and legislators in modern times. From autonomous vehicles to the privacy considerations of interconnected devices, the current regulatory structure is increasingly incapable of keeping up with the rapid pace of technological progress. Nevertheless, it is incumbent upon regulators to get the rules right from the outset, lest onerously prescriptive constraints on entrepreneurs and innovators forestall the many beneficial qualities of new technological marvels.

It is with those challenges in mind that the Niskanen Center respectfully submits these comments to the members of the the Emerging Technology and Research Advisory Committee (ETRAC) for consideration. We will confine our suggestions to the issues of regulatory uncertainty surrounding emerging technologies and export controls related to dual-use space-based technologies.

Regulatory Uncertainty and Emerging Technologies

The ETRAC agenda notes a discussion of a paper from Robert Hoerr discussing the impact of uncertainty in the regulatory process and its effects on product development of emerging technologies. This is salient research given the scope of the Advisory Committee's responsibilities and focus. The following excerpt is particularly relevant to these discussions:

> *Prolonged regulatory ambiguity is a cause for concern because markets place a high value on risk mitigation and predictability of outcomes. Developing innovation technology requires capital from venture capital investors who are comfortable with the risk of complete failure in exchange for the substantial rewards of success. Uncertainty in the regulatory environment has the potential to increase both the costs and time needed for development, thereby making the commercialization process unpredictable and, in the worst case, incapable of being financed.*[1]

Although Hoerr's paper focuses specifically on the regulatory approval process at the Food and Drug Administration, his conclusions are widely applicable to any number of federal agencies examining emerging technologies. These insights are relevant to everything from artificial intelligence[2] and autonomous commercial systems[3] to commercial space development[4] and overland supersonic flight.[5]

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[1] Robert A. Hoerr, "Regulatory uncertainty and the associated business risk for emerging technologies," Journal of Nanoparticle Research, Vol. 13, Issue 4, April 2011, p. 1514, https://www.researchgate.net/publication/225321639_Regulatory_uncertainty_and_the_associated_business_risk_for_emerging_technologies.

[2] Ryan Hagemann, *Comments submitted to the Office of Science and Technology Policy in the Matter of: A Request for Information on Artificial Intelligence*, Docket No. 201615082, July 22, 2016, https://niskanencenter.org/wp-content/uploads/2016/07/CommentsArtificialIntelligencePolicyOSTP.pdf.

[3] Ryan Hagemann, *Comments submitted to the National Highway Traffic Safety Administration in the Matter of: Federal Automated Vehicle Policy*, Docket No. NHTSA-2016-0090, submitted November 21, 2016, https://niskanencenter.org/wp-content/uploads/2016/11/CommentsAutonomousVehicleStandardsNHTSA.pdf.

Innovation has a profoundly outsized impact on the growth of the American economy—in particular the digital economy, which is among the primary drivers of economic growth in the United States.[6] As a result, optimizing the regulatory rules for technologies that interact with, and take advantage of, digital connectivity is among the most important issues of the day. To that end, we wish to echo many of the concerns expressed by Hoerr, while offering additional suggestions for the Advisory Committee's consideration.

In an ongoing effort to realign the focus of regulatory action, the Niskanen Center has undertaken a longer-term project to address issues faced by regulators. In general, we suggest a regulatory framework for emerging technologies that roughly tracks along the following lines:

> *Governance of new, untried and untested technologies should begin with industry issuing standards and best practices. A multistakeholder review process—facilitated but not dictated by the appropriate federal agency—should follow, with clear process guidelines and objective goals and deliverables. This process should in no way be predicated on a presumption of regulatory action, but merely serve as a forum for discussion. Public comments should be sought throughout the process. During this time, firms should be granted a default approval to continue operating. Regulators should observe-and-respond to ongoing developments, proposing new rules only if a risk-based assessment warrants further action.*[7]

We advocated for a similar perspective in comments submitted to the National Telecommunications Information Administration (NTIA) in May 2016.[8] Recently, the Department of Commerce (DOC) laid out its agreement with this approach in its Green Paper on the Internet of Things (IoT), arguing in favor of the general principles originally laid out in the Clinton Administration's policy position on the early commercial Internet, *The Framework for Global Electronic Commerce*.[9]

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[4] Joshua Hampson, "The Future of Space Commercialization," Niskanen Center, January 25, 2017, https://science.house.gov/sites/republicans.science.house.gov/files/documents/TheFutureofSpaceCommercializationFinal.pdf.

[5] Samuel Hammond, "The Business Case for Supersonic Overland," Niskanen Center, February 28, 2017, https://niskanencenter.org/blog/supersonic-overland/.

[6] *See generally* Robert D. Atkinson and Andrew S. McKay, "Digital Prosperity: Understanding the Economic benefits of the Information Technology Revolution," Information Technology and Innovation Foundation, March 2007, https://www.itif.org/files/digital_prosperity.pdf; *See also* "Disruptive Technologies: Advances that will transform life, business, and the global economy," McKinsey Global Institute, May 2013, http://www.mckinsey.com/business-functions/businesstechnology/our-insights/disruptive-technologies.

[7] Ryan Hagemann, "New Rules for New Frontiers: A Regulatory Manifesto for Emerging Technologies," Niskanen Center, January 30, 2017, https://niskanencenter.org/blog/new-rules-new-frontiers-regulatory-manifesto-emerging-technologies/.

[8] Ryan Hagemann, *Comments submitted to the National Telecommunications Information Administration in the Matter of: The Benefits, Challenges, and Roles for the Government in Fostering the Advancement of the Internet of Things*, Docket No. 160331306630601, submitted May 23, 2016, https://www.ntia.doc.gov/files/ntia/publications/niskanencenter_ntia_iot_comments.pdf.

[9] The Department of Commerce, Internet Policy Task Force and Digital Economy Leadership Team, "Fostering the Advancement of the Internet of Things," January 12, 2017, p. 11, https://www.ntia.doc.gov/files/ntia/publications/iot_green_paper_01122017.pdf. (In particular, DOC noted its

When commenting on the Green Paper, the Niskanen Center pointed out that DOC is well-positioned to advocate on behalf of this intellectual framework for addressing regulations surrounding new emerging technologies. In particular, we argued that DOC:

> *is well-situated to advocate for the* Framework for Global Electronic Commerce *to be used, applied, and reaffirmed by other federal agencies in assessing the viability of regulations for new emerging technologies. Using the* Framework *as an intellectual basis for considering regulatory approaches to emerging technologies can be beneficial not only to DOC and NTIA, but to other agencies as well. The Department should recognize the significant role it can play in shaping the application of these principles throughout the federal government. By leveraging its position as a federal stakeholder, NTIA and DOC can help ensure the* Framework's *principles are promulgated beyond its jurisdictional borders.*[10]

The Bureau of Industry and Security should follow the Department's lead in embracing this framework as it applies to emerging technologies. One such area that could benefit from such an approach, and is particularly relevant to ETRAC's assessment of dual-use technologies, is commercial space.

The Impact of Export Controls on Commercial Space Activities

The United States regulates the export of "dual-use" technologies that have both commercial and military uses. The State Department's International Traffic in Arms Regulations (ITAR) controls the export of defense-related articles and services listed on the United States Munitions List (USML). DOC's Export Administration Regulations (EAR) oversee the export and import of commercial items listed on its Commerce Control List (CCL). Before 2014, most satellite and space-related technologies were listed on the USML—and subject to its more complicated and costly compliance mechanisms.

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support for utilizing the Clinton Administration's *Framework for Global Electronic Commerce* as an ideal template for the Internet of Things: "Dating back at least to the 1997 Framework for Global Electronic Commerce, the U.S. Government has been operating under the principle that the private sector should lead in digital technology advancement. Even where collective action is necessary, the U.S. Government has encouraged multistakeholder approaches and private sector coordination and leadership where possible. When governmental involvement is needed, it should support and enforce a predictable, minimalist, consistent, and simple legal environment for commerce.")

[10] Ryan Hagemann, *Comments submitted to the National Telecommunications Information Administration in the Matter of: Green Paper: Fostering the Advancement of the Internet of Things*, Docket No. 170105023-7023-01, submitted February 8, 2017, p. 4, https://niskanencenter.org/wp-content/uploads/2017/02/NiskanenCenter_CommentsIoTGreenPaperNTIA.pdf.

The United States undertook limited export control reform in 2014.[11] While the reform was a big step in the right direction—moving some satellites and related items from the USML to the CCL[12] —American companies still face unfair burdens due to U.S. export regulations. An increasingly competitive global space market, and foreign development of new space capabilities, means that the United States cannot rest on its laurels. Foreign competitors regularly use their ITAR-free status as a selling point for their systems, arguing that they can deliver systems to market cheaper and quicker than American firms.[13] Regular reviews of export controls are thus needed to ensure that American companies are not handicapped relative to foreign competitors.

If the United States is to remain a leader in space use and exploration, it cannot afford to cede global market share due to prescriptive export control regulations. While there are legitimate concerns regarding the proliferation of dual-use technologies that could be used for military purposes, there are steps DOC could take—such as coordinating with other federal agencies—that would improve the competitiveness of American companies without increasing risks to national security. Reforming remote imaging standards is one such example.

Remote Imaging Reform

The 2014 revisions to the USML and the CCL kept optical systems with apertures greater than 0.35 meters on the USML. However, as pointed out by the Satellite Industry Association (SIA) in comments submitted at the time, foreign optical systems already surpass that threshold.[14] SIA pointed out that a variety of countries, ranging from Thailand and Japan to the UAE, had access to markets producing systems with apertures greater than 0.35 meters.[15] They recommended that optical imaging satellites with apertures of 1.1 meters or smaller be shifted to the CCL. In January 2017, the Departments of State and Commerce revised the rules again to shift remote sensing satellites with apertures up to 0.5 meters from the USML to CCL, still short of industry recommendations and smaller than some foreign systems. DOC should coordinate with the State Department to determine whether further revisions can be made. Ideally, optical remote sensing satellites with apertures of 1.1 meters or less would be shifted to the CCL.

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[11] Bureau of Industry and Security, "Export Control Reform Spacecraft/Satellites," U.S. Department of Commerce, Nov. 14, 2014, https://www.bis.doc.gov/index.php/forms-documents/pdfs/1095-satellites-and-spacecraft-nov-14-2014/file.

[12] Bureau of Industry and Security, "Export Control Reform Spacecraft/Satellites."

[13] Peter De Selding, "U.S. ITAR satellite export regime's effects still strong in Europe," *SpaceNews*, April 14, 2016, http://spacenews.com/u-s-itar-satellite-export-regimes-effects-still-strong-in-europe/.

[14] Satellite Industry Association, "Comments of the Satellite Industry Association to the Department of State Regarding Remote Sensing Technology," June 27th, 2014, http://www.sia.org/wp-content/uploads/2013/04/SIA_Comments_on_Remote_Sensing_Technology_2014_06_27.pdf.

[15] Satellite Industry Association, "Remote Sensing Technology."

Other areas could benefit from further review as well. Post-reform, the restrictions on human spaceflight technologies seem disconnected from specific national security concerns.[16] While there is understandable apprehension over the use of rocket technology in human space exploration, other technologies used in manned space travel may be less worrisome. DOC should continue to work with the State Department to determine if non-propulsion technologies used in manned space travel truly merit inclusion on the USML rather than the CCL. This is not simply an exercise in definition; other countries continue to use the complexities of the U.S. export control system to advertise their products and undercut American firms.[17]

Reducing Ambiguities, Streamlining Process

Additionally, while the reforms in 2014 were a step in the right direction, they introduced some ambiguities into the export control system. Prior to the reforms, companies would apply to the State Department and receive a decision. Now, the system provides more licensing liberty, but also imposes greater complexity on industry actors.[18] It can be unclear whether a space technology falls under ITAR, EAR, or neither. As noted in Hoerr's paper, such "regulatory ambiguity is a cause for concern because markets place a high value on risk mitigation and predictability of outcomes."[19] The State Department and DOC both provide online tools for business to help make sense of the regulations.[20] That being said, the reforms—in complicating the process and laying more responsibility on the applicants—may have the unintended consequence of deterring smaller companies from becoming involved in space development.[21] The concern over ambiguity cannot be overstated. Even the National Aeronautics and Space Administration had to take technical reports off its website last August after one appeared to contain information that was under ITAR export control rules.[22]

DOC should deepen engagement with industry to assist them in navigating the export control system. The Department can also go further, and should regularly reach out to businesses to assess how user-friendly and helpful their online tools are. And, where possible, DOC should continue to work with the State Department to shift space technologies from the USML to the CCL.

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[16] Jeff Foust, "Federal Government Tweeks Space Export Control Rules," *SpaceNews*, Jan. 12, 2017, http://spacenews.com/federal-government-tweaks-space-export-control-rules/.
[17] De Selding, "U.S. ITAR satellite export regime's effects still strong in Europe."
[18] Giovanna Cinelli, "Post-Export Control Reform Challenges: To Go Where No One has Gone Before," *American Bar Association Forum on Air and Space Law*, June 9, 2015, http://www.americanbar.org/content/dam/aba/images/air_space/course/15-symposium/sm15-3-post-export-control-reform-challenges.pdf.
[19] Hoerr, "Regulatory uncertainty."
[20] Timothy Kauffman, "Export Control Reform (ECR) Latest Developments," *Global Space & Technology Convention*, TriVector, February 23-24, 2017.
[21] Without the legal compliance teams that larger companies can afford, these smaller firms may decide the risks of running afoul of the regulations is not worth the potential benefits, thereby undercutting American competitiveness and innovation.
[22] Jeff Foust, "NASA Advanced Technology Reports Taken Offline After Export Control Issue," *SpaceNews*, Aug. 24, 2016, http://spacenews.com/nasa-advanced-technology-reports-taken-offline-after-export-control-issue/.

Ensuring that "dual-use" technologies do not fall into the hands of those that would do the United States harm is important. However, in an increasingly competitive and complex global market, we must also ensure that we do not unintentionally handicap industry and our nation.

Conclusion

Insofar as the Advisory Committee will be making recommendations to DOC,[23] we suggest embracing the same general framework the Department supported in its Green Paper on the IoT. This will ensure a unified regulatory perspective trends across all sub-departments within DOC, and cuts across all relevant emerging technology issue spaces.[24] For particulars, we suggest the Advisory Committee consult the previously cited paper from NTIA—"Fostering the Advancement of the Internet of Things"—as well as the supporting comments from the Niskanen Center discussing the benefits of the Clinton Administration's *Framework for Global Electronic Commerce*.[25]

We are certainly sensitive to the fact that the Bureau of Industry and Security's "paramount concern is the security of the United States."[26] However, the Bureau's mission statement also correctly notes that protecting domestic security requires "ensuring the health of the U.S. economy and the competitiveness of U.S. industry."[27] Failure to do so will invariably lead American firms to outsource and offshore cutting edge technological developments. Global innovation arbitrage is a very real phenomenon and companies that encounter an uncertain regulatory environment or prolonged rulemaking processes will take their investments elsewhere.[28] This is all the more important given the technology industry's expansion into more traditional industries, such as manufacturing.[29]

Striking the correct balance between security and economic growth and innovation—especially with regards to emerging technologies of a dual-use nature—is no easy task. However, we believe that, on net, regulatory forbearance will go much further in achieving these goals than a regime that over-emphasizes strict regulatory precaution.

We thank you for the opportunity to comment and look forward to working with the Advisory Committee in whatever capacity we can be most helpful.

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[23] Pursuant to its charter, The ETRAC may be consulted by DOC with regards to the "issuance of regulations," as described in Section 3(e). https://tac.bis.doc.gov/index.php/documents/pdfs/279-etrac-charter/file.
[24] *See generally* "Fostering the Advancement of the Internet of Things."
[25] *See* "Fostering the Advancement of the Internet of Things" and *Green Paper: Fostering the Advancement of the Internet of Things*.
[26] Bureau of Industry and Security, "Mission Statement," https://www.bis.doc.gov/index.php/about-bis/mission-statement.
[27] Ibid.
[28] *See* Adam Thierer, "Global Innovation Arbitrage: Drone Delivery Edition," Tech Liberation Front, August 25, 2016, https://techliberation.com/2016/08/25/global-innovation-arbitrage-drone-delivery-edition/; *See also* Ryan Hagemann, "The Limits of Regulating Technology," Niskanen Center, August 24, 2016, https://niskanencenter.org/blog/limits-regulating-technology/.
[29] Ryan Hagemann, "The New Silicon Valley," Niskanen Center, August 9, 2016, https://niskanencenter.org/blog/new-silicon-valley/.