

# EXPORT CONTROLS ON EMERGING TECHNOLOGIES Managing Compliance Risk

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## Speaker Biography

Matt Silverman



**Matt Silverman** is the Global Trade Director & Senior Counsel at VIAVI Solutions in Chandler, Arizona. Matt leads the VIAVI Global Trade team and provides strategic guidance to management on international regulatory requirements – including customs, export controls, embargoes, sanctions and antiboycott laws – enabling compliant movement and market access for VIAVI's products, software, technology and services.

Prior to joining VIAVI, Matt held trade compliance roles in the technology, aerospace and energy industries. Prior to his corporate compliance career, Matt worked in Washington, D.C. on trade policy and legislation. Matt began his legal career as a litigator in Chicago, Illinois.

Matt earned his bachelor's degree from the University of Michigan, his J.D. from Loyola University Chicago School of Law and his LL.M. from Georgetown University Law Center.

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## Emerging Technologies: Background

- The concept of “emerging technologies” and their implications is neither new nor defined.
  - In 1960s, Department of Defense began to outline “emerging technologies”
  - At that time, export controls were handled differently, and anything “emerging” automatically went into the military/defense “bucket” that were highly controlled/restricted.
- Governments – including the US – have grappled with the idea that the next generation of technology –whether novel, disruptive or critical – requires a balance between management and development (e.g., expanding the pool of resources needed to development these technologies vs. the management of such technologies). Most governments take a risk-based approach to this balance (instead of just restricting them).
- In order to manage risks:
  - Must be able to identify them.
  - Can only identify them once you really understand what you’re dealing with.
  - Because they are emerging (yet unknown) they can be difficult to define.

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## Emerging Technologies: Background

- The globalized research and development environment has complicated the ability to define “emerging technologies” and to decide how best to manage them (e.g. now there are virtual laboratories or virtual platforms that didn’t exist in 60s, 70s, 80s). Emerging technologies back in the 60s, 70s 80s were generally born in government laboratory environments, with government-to-government sharing, therefore they were more easily defined, self-contained and managed.
- But now, we have the following, creating greater complexity in the definition and management of emerging technologies:
  - Global supply chain
  - Global student base
  - Localized market access
  - Talent acquisition competition



**Big question:** How to develop a risk-based compliance program re emerging technologies when they can be so difficult to define, contain, manage, etc., in this globalized world?

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## Emerging Technologies: Definition



### Defining “emerging technologies”

- Categorizing emerging technologies have been attempted (by US Commerce), but no one has stated specifically stated (with granular, technical performance characteristics) what “emerging technologies” entail.
- “Critical and emerging technologies (CET) are a subset of advanced technologies that are potentially significant to *U.S. national security*.” Biden Administration’s Critical and Emerging Technologies List Update: A Report by the Fast Track Action Subcommittee on Critical and Emerging Technologies of the National Science and Technology Council (February 2022).
- *U.S. National security* objectives related to CETs include, but are not limited to:
  - “protect[ing] the security of the American people”
  - “expand[ing] economic prosperity”

Broad set of objectives that can be folded into this *US national security* framework.

**Takeaway:** U.S. national security isn’t just related to comparative military/defense advantages. This makes developing a compliance program and managing risks more complicated. Companies have to ask: What is my technology, what are the applications, who may use it, etc.?

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## Emerging Technologies: The Expanded Scope

- CET policy builds upon the **National Security Strategy** and Biden’s recently published **2021 Interim National Security Strategic Guidance**
- The CET policy identifies technologies and areas of concern where the US believes a “qualitative technology advantage” is essential to protect national security interests.
- Over the past 7 years, the concept of national security has expanded and now includes topics such as corruption and climate change as well as economic development.
- The expanded concept of national security makes things more complicated going forward and ensures that “emerging technologies” need to:
  - Be protected, managed or controlled to retain a national security advantage
  - Continue to be developed in a global environment to ensure access to crucial talent that exists beyond the United States
  - Develop with defense/intelligence/military and civilian applications in mind, because of how the research environment is functioning.

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## Emerging Technologies: Compliance Complications

### Complications to Consider in Developing Compliance Processes/Procedures

- Dividing line between “defense” and “commercial” applications is becoming blurrier. The nature of the product itself is becoming less significant in comparison to the application of the product.
- Foreign government policies are not always consistent with US policies (e.g., China).
- US Government regulations over the past 5 years have increased the burden on industry with respect to diligence (e.g., knowing your customer, knowing end-use applications, etc.) while the government is also limiting the amount of information sharing needed to manage risks – US Government doesn’t always share information it has on companies (e.g., are they military end-users or are there other concerns that industry should know about).
- US Government regulations continue to increase in complexity, requiring greater resources and more interpretation required from the industry.
- Regulations generally do not provide sufficient details regarding which emerging technologies should be controlled.

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## Emerging Technologies: Arguments For/Against Controls

### Argument

- We shouldn’t control emerging technologies until such technologies are mature, robust and we have a good understanding of what the technology/product is or does, so that we can understand where the challenges are and what the technologies are being used for, and by whom they’re being used.

### Counter-Argument

- By the time we get to that point...isn’t it too late?

### Middle Ground Approach

- Broader categorizations that are “restricted” but with available license exemptions/exceptions pertaining to certain technologies that can be more clearly defined based on their performance capabilities, applications, etc.



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# Emerging Technologies: The EAR



## Export Administration Regulations (EAR), 15 CFR parts 730-774

- Administered by the Department of Commerce/Bureau of Industry and Security
- Has the greatest amount of complexity in determining how emerging technologies should be controlled.
- Includes the Commerce Control List – which identifies technical parameters and performance characteristics that the Government has determined warrant some level of control – identified as “dual use” (both civil and military applications) – EAR isn’t a cut and dry list.
- Establishes licensing, recordkeeping and reporting processes to manage the export, reexport, retransfer (in-country), and/or release of products, technology, software, equipment and materials (collectively, “items”)
- Licensing includes both an application process and a set of pre-approved license exceptions which parties may self-declare to authorize transfer of EAR-controlled items
- Recent trend has been for companies who do not find their emerging technology listed on the EAR (or the ITAR) to default to an ‘EAR99’ status (only controlled to a small group of countries – North Korea, Sudan, Syria, Cuba, Iran).

# Emerging Technologies: General Categories

Biotechnology  
Artificial Intelligence (AI)  
Position Navigation & Timing  
Microprocessor Technology  
Advanced Computing  
Data Analytics  
Quantum Information & Sensing Technology  
Logistics Technology  
Additive Manufacturing (3D)  
Robotics (micro drones/swarming)  
Brain computer interfaces  
Hypersonics  
Advanced Materials  
Advanced Surveillance



## Emerging Technologies: *The Rand Report*

In February 2022, Rand Corporation put together an assessment of where China and the US sit in the quantum technology area, including where there could and should be some controls.

An Assessment of the US and Chinese Industrial Bases in Quantum Technology (Rand Corporation 2022).

### Conclusions:

- Disagreements over the degree of control needed as well as the process for control – in general, the scientific community considers emerging or technologies to be sufficiently uncertain as to application, such that export controls would be problematic. In other words: export controls won't work in the emerging technology field of quantum.
- *"The eventual applications of quantum technology and their timelines remain highly uncertain... Many of the technologies are still being advanced through open scientific research that is highly international. We assess that imposing export controls on quantum computing and communications technology would slow scientific progress, and given the early stage of the technology, export controls cannot yet be applied in a way that is targeted to defense-relevant applications."*

The above conclusions are unlikely to be different for other emerging technologies (biotechnology, robotics, adaptive manufacturing, etc.) because the same core issues arise.

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## Emerging Technologies: Agency Inconsistencies

- Mismatch/Disconnect amongst Government agencies creates compliance difficulties:
  - Department of Defense has identified three key emerging technologies:
    - Artificial intelligence
    - Biotechnology
    - Quantum technology
  - Department of Commerce, however, has not established CCL categories for all these categories and, in some instances, such as for biotechnology, has yet to categorize technology clearly.
  - Commerce is a licensing agency, while the DOD is not (however, they advise on licensing to Commerce and State).



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## Emerging Technologies: New Controls (May 2019)

**3A001 Electronic Items** - paragraph b.3.f to control discrete microwave transistors.

**3D005 Continuity of Operation Software** - to control software that ensures continuity of operation when electronics are exposed to the Electromagnetic Pulse (EMP) or Electrostatic Discharge (ESD).

**5A002 Post-quantum Cryptographic Algorithms** - to address concerns that when large scale quantum computers are built, they will likely undermine the security of the current cryptographic systems.

**6A001 Acoustic Systems, Equipment and “Components”** -

**9A004 Air-Launch Platforms** - revising the Heading to add air-launch platforms.



## Emerging Technologies: New Controls (June 2020)

### Amends ECCNs 1C350, 1C351 and 2B352

- Twenty-four precursor chemicals, including chemical mixtures where at least one of the controlled chemicals constitutes 30 percent or more of the mixture
- Equipment capable of use in handling biological materials - Single-use cultivation chambers with rigid walls and related technology
- Middle East respiratory syndrome-related coronavirus (MERS-related coronavirus) due to its homology with severe acute respiratory syndrome-related coronavirus (SARS-related coronavirus) and its potential use in biological weapons activities

## Emerging Technologies: New Controls (October 2020)

**Hybrid Additive Manufacturing (AM)/ Computer Numerically Controlled (CNC) tools (2B001).** This control reflects integrated additive manufacturing, also known as 3D printing

**Computational lithography software designed for the fabrication of extreme ultraviolet (EUV) masks (3D003).**

**Technology for finishing wafers for 5nm production (3E004).**

**Digital forensic tools that circumvent authentication or authorization controls on a computer (or computer device) and extract raw data (5A004 / 5D002).**

**Software for monitoring and analysis of communications and metadata acquired from telecommunications service provider via a handover interface (5D001).**

**Sub-orbital craft (9A515).** This refers to aircraft designed to operate above the stratosphere and land on Earth without completing an orbit.

## *BIS Proposes New Controls, Plans to End Categorizing Foundational and Emerging Technologies – May 23, 2022*

- In May, the Bureau of Industry and Security (BIS) proposed new export controls on four dual-use biological toxins, all of which can be “exploited for biological weapons purposes.”
- The toxins would fall under BIS’s emerging and foundational technology control mandate but would not be specifically categorized as either emerging or foundational technologies.
- The agency said it plans to abandon efforts to categorize technologies as either emerging or foundational and instead refer to them as “Section 1758 technologies,” which it said will lead to a faster and more efficient rollout of restrictions.
- BIS is seeking feedback on the proposed restrictions. Comments are due June 22.





## Takeaways...

The best way to manage compliance with export controls on emerging technologies:

- Understand the technologies your company is developing, how they can be used (potential applications and end-uses) and who the actual/potential end-users are.
- Review the current export control regulations (EAR and ITAR) to determine whether your emerging technology is included in such regulations, thereby subjecting it to some level of restriction/control.
- Understand the license exceptions an/or exemptions that may be applicable to your emerging technology, thereby allowing its potential export.
- If your emerging technology is not specifically enumerated in the EAR and ITAR, consider whether it may fall within the “catch-all” EAR99 category...but be cautious! It may be advisable to seek a formal determination from Commerce - Commodity Jurisdiction (CJ) Request - as to the level of control, especially if the technology falls within an identified emerging technology category and/or has a defense/military application.

## References

Giovanna Cinelli: *Emerging Technology Debate Comes of Age* (2022)

Marwa Hassoun: *Emerging and Foundational Technologies: Evolution of Controls* (2021)





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