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November 8, 2021

Office of Technology Evaluation
Bureau of Industry and Security
U.S. Department of Commerce
1401 Constitution Avenue, N.W.
Washington, D.C. 20230
Reference: RIN 0694-XC084

Via the Federal eRulemaking Portal: https://www.regulations.gov
Reference: BIS 2021-0036

RE: COMMENTS IN RESPONSE TO DOCKET NUMBER BIS 2021-0036, NOTICE OF REQUEST FOR PUBLIC COMMENTS ON RISKS IN THE SEMICONDUCTOR SUPPLY CHAIN

To Whom This May Concern:

Argo AI, LLC ("Argo") respectfully submits these comments in response to the U.S. Department of Commerce's Request ("Request") for Public Comments on Risks in the Semiconductor Supply Chain. Argo is a technology platform company that is working with leading automakers to deliver a fully integrated self-driving system that can be manufactured at scale for safe and reliable deployment in ride sharing and goods delivery services. Argo is developing self-driving technology according to the strictest interpretation of automation that does not require passenger supervision. Founded by leaders in the self-driving field, Argo is bringing together some of the most experienced roboticists and engineers working in autonomy from around the world to develop autonomous vehicles for the U.S. and global markets.

Our responses to the questions contained in the Request for intermediate users and end users of semiconductor products or integrated circuits follow.

- **Identify your type of business and the types of products you sell.**
    - Argo is a technology platform company working with leading automakers and supply partners to design and deliver a fully integrated self-driving system.

- **What are the (general) applications for the semiconductor products and integrated circuits that you purchase?**
    - We use semiconductors as part of our sensor systems for data capture, as well as for our compute systems for processing sensor data, data storage, and power management.

- **For the semiconductor products that your organization purchases, identify those that present the greatest challenge for your organization to acquire. Then for each product,**

identify the product attributes and purchases in 2019 and 2021, as well as average monthly orders in 2021. Then estimate the quantity of each product your organization would purchase in the next six months barring any production constraints as well as the amount our organization expects to actually be able to purchase. For each of your organization's top semiconductor products, estimate each product's lead times and your organization's inventory for (a) 2019 and (b) currently (in days). Provide an explanation of any current delays or bottlenecks.

- ○ The products that are most difficult to acquire are complex chips used for data processing; FPGAs, GPUs, micro-controllers, automotive specialty devices (Phase locked loop - PLL), power converters, and other automotive-grade logic devices; and, automotive-grade memory modules. We anticipate that constraints could limit our ability to acquire the full volume of pieces needed this year, and could result in our receiving as few as one quarter of the needed volume. . Further,, we currently face lead times of more than 40 weeks for our semiconductor products. We work with vendors to get partial deliveries as soon as possible to allow us to move forward on our development and to provide our customers with pre-production quantities. Since we are in pre-production, the consumption rate is based on plans to deliver limited pre-production units and does not have the turnover of a large-volume full production (inventory turns).

- **What are the primary disruptions or bottlenecks that have affected your ability to provide products to customers in the last year?**
  - ○ Our business has been primarily impacted by increased lead times on key semiconductor devices. Where it had previously taken 16 to 24 weeks to receive a semiconductor order, it now takes closer to 52 weeks, or certain devices have become unavailable.

- **Is your organization limiting production due to a lack of available semiconductors? Explain.**
  - ○ We have had to slow down production partly due to material availability. We have also had to take additional measures, such as paying for expedited semiconductors and alternate part numbers, to meet production deadlines.
  - ○ Due to rising component lead times, our contract manufacturers face low inventory levels, which has reduced rate and flow, as well as split deliveries.

- **What percentage of your current production has your organization had to defer, delay, reject, or suspend in the past year? Explain.**
  - ○ Argo is in the pre-production phase of our program, which yields low volumes. This has allowed for greater flexibility in managing delays in our projected schedule. We have encountered issues with manufacturers' increasing prices after purchase and products taking much longer to produce.

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- **Is your organization considering or carrying out new investments to mitigate semiconductor sourcing difficulties? Explain.**
  - Argo is not currently considering carrying out new investments to mitigate semiconductor sourcing difficulties. As a company that was founded five years ago and still in the pre-production phase, we cannot carry out the investment needed to mitigate the broad and widely spread semiconductor shortage.

- **What semiconductor product types are most in short supply and by what estimated percentage relative to your demand? What is your view of the root cause?**
  - We have found it difficult to obtain many product types, including field programmable gate array (FPGA) devices, automotive-qualified semiconductor components, GPUs, micro-controllers, PMICs, and transceivers, as well as small <1K pcs requirements. It is challenging to determine the root cause of supply shortages because it is likely due to myriad issues. However, our belief is that the shortages are partly due to the effects of Covid-19, which saw semiconductor fabrication plants reallocate their capacities for products outside of the automotive space. There are also shortages on substrates and related processing materials.

- **Has your organization changed its material and/or equipment purchasing or practices in the past three years?**
  - Our decision to alter purchasing practices was influenced by the shortages we are experiencing now. We began to place orders further in advance of needing the product to help account for the long manufacturing and shipping delays. We are currently buying one year ahead of schedule.

- **What single change (and to which portion of the supply chain) would most significantly increase your ability to purchase semiconductors in the next six months?**
  - We suggest a number of changes are necessary to accomplish this goal, including:
    - U.S. and EU partnership on supporting semiconductor industry deployment in their respective markets;
    - Creation of reciprocal export license exceptions for certain semiconductors triggering licensing requirements;
    - Creation of an expedited export license review process for semiconductor products impacted by shortage (whose goal should be to prevent additional backlog delays due to the increase of export license applications resulting from the targeted sanctions in the telecommunication industry);
    - Semiconductor foundries' prioritizing chips for automotive applications and offering priority hot lots to lower volume customers;
    - Additional capacity for high-mix/low-volume chip manufacturing, assembly, and test, including domestic supply; and
    - Priority customs handling for automotive semiconductors.

Argo AI, LLC
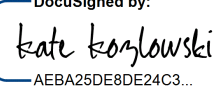2545 Railroad St., Suite 400
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- **What percentage of your orders are fulfilled by distributors versus through direct purchase orders to semiconductor product manufacturers?**
  - Argo's orders are mostly fulfilled by a contract manufacturer or Tier 1 suppliers that engage directly with the semiconductor product manufacturers. On a more limited basis, we purchase through brokers to fulfill low volume orders. We have seen around 20 percent of our orders fulfilled by distributors that are better able to locate stock and supply for our program needs.

- **For the semiconductor products your organization purchases, how long (in months) are the typical purchase commitments? How, if at all, do your organization's purchase commitments differ for products in short supply?**
  - Prior to supply shortages, our purchase commitments for all products, including semiconductors, were set at six months maximum. Due to the shortage, lead time has now increased to 12 months and greater.

- **Has your organization faced "de-commits" (defined as a notification from a supplier that expected or committed supply will not be delivered in the agreed-upon time and quantity in recent months? If this is a significant issue, please explain (*e.g.*, nature of product, supplier, impact).**
  - Suppliers have been cautious with their commitments to manage expectations. We have experienced delayed deliveries and been notified of cost increases on existing orders with the option to cancel the order. Additionally, some suppliers have phased out semiconductor products that we had planned to purchase for our builts.

Thank you for your kind consideration of Argo's views in this matter. Please do not hesitate to be in touch if we can be of any further assistance.

Sincerely,

DocuSigned by:

kate kozlowski

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Kate Kozlowski
Executive Vice President, General Counsel,
Chief Compliance Officer, and Secretary