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**Left of Launch: Using Corporate
and Trade Data to Map Adversary
Unmanned Aerial System (UAS)
Supply Chains**

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Background

Loitering munitions and other unmanned aerial systems (UAS)¹ are a ubiquitous element of modern conflicts, used in combat zones like Ukraine, Yemen, Myanmar, and Nagorno-Karabakh. Most notably, Russia's invasion of Ukraine has featured the large-scale deployment of UAS for combat engagements. Russia has reportedly launched thousands of Shahed 136-type UAS after developing a partnership with the Iranian government to import and then domestically reproduce the Iranian-designed system.^{2,3} Iranian-origin UAS, including the Shahed-136 and domestically produced variants, are also fielded by the Houthis in Yemen, where they have been used to disrupt commercial maritime traffic through the Red Sea.⁴

Analysis of wreckage recovered from UAVs deployed by Russia in Ukraine indicate that these UAS contain commercially available components, including items produced by Western manufacturers.⁵ As a result, trade and corporate data can provide insight into the transnational facilitation networks and supply chains through which adversary states and nonstate actors procure these components. Disrupting these networks can mitigate the impact of UAS "left-of-launch," or before the UAS take flight, as a more cost-effective alternative to targeting them on the battlefield with sophisticated air defense systems.

Case Study: TSMD Global

The case of New Delhi-based TSMD Global Private Limited ("TSMD Global")⁶ illustrates how dual-use component supply chains, which can fuel manufacturing of UAS and other weapons, can be exposed through the analysis of corporate and trade data. On October 30, 2024, TSMD Global was sanctioned under Executive Order 14024 for operating or having operated in the technology sector of the Russian economy as part of a broader series of designations and entity listings targeting nearly 400 entities by the Departments of State, Treasury, and Commerce.⁷ More specifically, the company was alleged to have exported items on the Common High Priority Items List (CHPL), including integrated circuits, to designated and undesignated Russian entities from July 2023 to March 2024.⁸

1 Note: In this report, we generally refer to UAS, which include the vehicle itself as well as launch and control equipment. Unmanned Aerial Vehicle (UAV) typically refers solely to the aircraft.

2 Matthew Bint and Fabian Hinz, "Russia Doubles Down on the Shahed," The International Institute for Strategic Studies, April 14, 2025.

3 Dr. Igor Anokhin and Spencer Faragasso, "Updated Analysis of Russian Shahed 136 Deployment Against Ukraine," Institute for Science and International Security, March 5, 2025, <https://isis-online.org/isis-reports/detail/updated-analysis-of-russian-shahed-136-deployment-against-ukraine/>.

4 Simon Scarr, Adolfo Arranz, Jonathan Saul, Han Huang, Jitesh Chowdhury, and Vijdan Mohammad Kawoosa, "Red Sea Attacks," Reuters, March 8, 2024, <https://www.reuters.com/graphics/ISRAEL-PALESTINIANS/SHIPPING-ARMS/igvdnngyvo/>.

5 "Documenting the Domestic Russian Variant of the Shahed UAV," Conflict Armament Research, August 2023, <https://storymaps.arcgis.com/stories/d3be20c31acd-4112b0aecece5b2a283c>.

6 Note: The company is identified as TSMD Global Private Limited in the State Department press release cited below as well as the company's [registration documents](#) accessed via Sayari Graph. OFAC's sanctions query tool does not include a TSMD Global Private Limited, but does include a company named TMSD Global Private Limited with the same Z-107 B, Dayalsar Road address. This appears to refer to the same entity with an apparent clerical error. In this report, we refer to the company as TSMD Global Private Limited in alignment with its registered name.

7 "New Measures Targeting Third-Country Enablers Supporting Russia's Military-Industrial Base," U.S. Department of State, October 30, 2024, <https://2021-2025.state.gov/new-measures-targeting-third-country-enablers-supporting-russias-military-industrial-base/>.

8 Ibid.

Analysis of Russian and Indian import/export data reveals that TSMD Global continued exporting electronics components, including tantalum capacitors, to Russian entities through July 2024. In total, the company exported over 800 shipments with more than 700 of them destined for Elektron Komponent LLC, which was sanctioned concurrently with TSMD Global. Other consignees include SDNs Alfa Limited Liability Company and Limited Liability Company VMK.⁹¹⁰ About 75% of TSMD Global's exports contained goods classified under HS codes on the CHPL. Indian export data and import data from more than 70 jurisdictions did not record shipments from TSMD Global to countries other than Russia.¹¹

The State Department press release announcing its October 2024 designation of TSMD Global notes that the company exported U.S.- and EU-origin components.¹² Trade data also sheds further light on the company's import activity prior to being sanctioned. The company imported over 900 shipments into India from July 2023 to July 2024, several months prior before TSMD Global was sanctioned, with the majority coming from the United States. More than 90% of these shipments were exported by two prominent U.S. electronics companies.¹³

TSMD may have broader ties to Russia beyond trade. TSMD Global lists multiple addresses in trade records, including its registered address (Z-107 B, Dayalsar Road, Uttam Nagarna, New Delhi) and 812-A, 8th floor, Indra Prakash Building, 21, Barakhamba Road, Connaught Place, New Delhi.¹⁴ The latter address appears to be the registered address of two additional entities, including the Volga Foundation for Russian Speaking Community In India ("Volga Foundation"), which describes itself as an "organization of socio-cultural and educational projects [...]" seeking to "promote closer ties between Russian and Indian organizations in the fields of business, science, sports and the arts."¹⁵¹⁶

One of Volga Foundation's directors, Ekaterina Semenushkova, was a director of TSMD Global until May 2023, according to Indian corporate data aggregators.¹⁷ In addition to the Volga Foundation, Semenushkova is also the director of India-registered Taxocount Solution Private Limited.¹⁸ Furthermore, an individual named Ekaterina Nikolaevna Semenushkova is the director of Russian entity Autonomous Non-Profit Organization Center for the Development of Socio-Cultural Relations "Atlas."¹⁹

While Indian corporate records don't include a patronymic that would help confirm that these are the same individuals, in April 2024 the Russian embassy in India presented a letter of appreciation from

9 [Trade data](#) accessed via Sayari Graph.

10 "New Measures Targeting Third-Country Enablers Supporting Russia's Military-Industrial Base," U.S. Department of State, October 30, 2024, <https://2021-2025.state.gov/new-measures-targeting-third-country-enablers-supporting-russias-military-industrial-base/>.

11 [Trade data](#) accessed via Sayari Graph.

12 "New Measures Targeting Third-Country Enablers Supporting Russia's Military-Industrial Base," U.S. Department of State, October 30, 2024, <https://2021-2025.state.gov/new-measures-targeting-third-country-enablers-supporting-russias-military-industrial-base/>.

13 [Trade data](#) accessed via Sayari Graph.

14 [Corporate and trade data](#) accessed via Sayari Graph.

15 [Corporate data](#) accessed via Sayari Graph.

16 Volga Foundation, "Home page," accessed April 30, 2025, <https://volga-foundation.com/>.

17 "TSMD Global Private Limited," Zauba Corp, accessed April 30, 2025, <https://www.zaubacorp.com/TSMD-GLOBAL-PRIVATE-LIMITED-U45300DL2020PTC365224>.

18 [Corporate records](#) accessed via Sayari Graph.

19 [Corporate records](#) accessed via Sayari Graph.

the State Duma to what appear to be Russian individuals operating cultural exchange organizations, including an Ekaterina Semenushkova, described as “founder of the Atlas Social and Cultural Relations Development Centre.”²⁰ In March 2025, the Russian Ministry of Foreign Affairs noted a World War II remembrance event attended by Ekaterina Semenushkova, described as the head of “ANO ‘Center for the Development of Social and Cultural Relations ‘Atlas.’”²¹ The event is also referenced on the Volga Foundation website, which suggests that these organizations may indeed be led by the same individual.²²

Case Study: TSK Vektor

While TSMD Global illustrates how trade and corporate data can illuminate multi-tier adversary supply chains of dual-use components with numerous civilian and military applications, the same methodology can be applied to components with more narrow applications in UAS and other civilian and military aviation systems.

OFAC sanctioned TSK Vektor Limited Liability Company (“TSK Vektor”) for assisting with procurement related to Russia’s development of attack UAVs in December 2023 and subsequently sanctioned China-based suppliers of TSK Vektor in May and October 2024.^{23 24 25} Trade data for shipments prior to December 2023 indicates that TSK Vektor imported more than 200 shipments of aircraft and electronic components, including aircraft engines (frequently described as “for general civil purpose” and classified under HS8407.10) and radio navigation devices (classified under HS8526.91).²⁶

Analysis of trade data accessible through Sayari Graph indicates that over 400 entities have imported more than 2,000 shipments to Russia classified under those two HS codes.²⁷ The prevalence of China, Hong Kong, Turkey, and the UAE among export jurisdictions for these shipments generally aligns with commonly observed hotspots for Russian dual-use technology procurement.^{28 29}

These buyers include U.S.-sanctioned companies such as TSK Vektor and PJSC Aeroflot, Russia’s largest airline. Buyers also include entities from the BIS Entity List, such as aircraft servicer Aviazapchast, which historically exported equipment to the Assad regime’s Ministry of Defense.³⁰ But many of these

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- 20 “Award Ceremony of Compatriots Held in the Russian Embassy of India,” The Embassy of the Russian Federation in the Republic of India, April 9, 2024, https://india.mid.ru/en/news/award_ceremony_of_compatriots_held_in_the_russian_embassy_in_india/.
- 21 “On International Campaign ‘Remembrance Garden’ at the Chandigarh War Memorial, India,” The Ministry of Foreign Affairs of the Russian Federation, March 4, 2025, <https://www.mid.ru/en/maps/in/2001218/>.
- 22 “Home page,” Volga Foundation, accessed April 30, 2025, <https://volga-foundation.com/>.
- 23 “Treasury Imposes Sanctions on More Than 150 Individuals and Entities Supplying Russia’s Military-Industrial Base,” U.S. Department of the Treasury, December 12, 2023, <https://home.treasury.gov/news/press-releases/jy1978>.
- 24 “Treasury Targets Actors Involved in Drone Production for Russia’s War Against Ukraine,” U.S. Department of the Treasury, October 17, 2024, <https://home.treasury.gov/news/press-releases/jy2651>.
- 25 “U.S. Continues to Degrade Russia’s Military-Industrial Base and Target Third-Country Support with Nearly 300 New Sanctions,” U.S. Department of the Treasury, May 1, 2024, <https://home.treasury.gov/news/press-releases/jy2318>.
- 26 Trade data accessed via Sayari Graph.
- 27 Trade data accessed via Sayari Graph.
- 28 “Leveraging Trade Data to Identify the Possible Transshipment of Dual-Use Goods to Russia,” Sayari, May 16, 2024, <https://sayari.com/resources/rpt-leveraging-trade-data-russia-transshipment/>.
- 29 “Department of Commerce, Department of the Treasury, and Department of Justice Tri-Seal Compliance Note: Cracking Down on Third Party Intermediaries Used to Evade Russia-Related Sanctions and Export Controls,” U.S. Department of the Treasury, March 2, 2023.
- 30 Sandrine Gagné-Acoulon, “Russian Company Sues Marine Le Pen’s Party over Unpaid Loan,” Organized Crime and Corruption Reporting Project, February 5, 2020, <https://www.occrp.org/en/news/russian-company-sues-marine-le-pens-party-over-unpaid-loan>.

importers are not identified on any government watchlist and may therefore be more likely to engage in ongoing international procurement of equipment with UAS applications. While these goods have alternate applications in civil aviation, for example, these shipments present significant risk of diversion to unauthorized military applications, including UAS.

Conclusion

UAS are ubiquitous in modern conflict zones and presently fielded by adversaries including Russia and the Houthis. The use of commercially available components in their construction makes it difficult to wholly prevent their proliferation, but this also creates an opportunity to identify adversary UAS supply chains in publicly available trade and corporate data for targeted disruption efforts.

A B O U T S A Y A R I

Sayari is the transparency company providing the public and private sectors with immediate visibility into complex commercial relationships. Drawing on a decade of innovation and support from industry-leading investors, Sayari delivers the largest commercially available collection of corporate and trade data as a dynamic, living model of global ownership and trade activity. Sayari's solutions harness this model to enable risk resilience, complex investigations, and clear-eyed business decisions.

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