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Abstract

This report, the twenty-fifth in a series of biweekly updates, is part of an effort by CNA to provide timely, accurate, and relevant information and analysis of the field of civilian and military artificial intelligence (AI) in Russia and, in particular, how Russia is applying AI to its military capabilities. It relies on Russian-language open source material.

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Approved by: **November 2021**

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14. ABSTRACT
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Highlights of Issue 25

- Russian government in collaboration with industry releases an AI ethics code, which is signed by numerous large Russian companies.
- Russian military testing swarm technology and attempting to defeat underwater saboteurs.
- AI technologies in medicine and agriculture continue to advance as the Russian government pursues standards.
- Moscow State University scientists create Russia's first robotic dog, as seen on a YouTube video.
- Russian companies continue to market and sell UAVs worldwide.

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Governance and Legal Developments

1. Russian government analytical center releases AI ethics code

As discussed in past issues of *AI in Russia,* the Russian government analytical center, the industry organization AI Alliance, and the Ministry of Economic Development have been jointly preparing a draft AI ethics code. This voluntary code was released and signed by several organizations on October 26 in Moscow at an international conference, "Ethics of Artificial Intelligence: The Beginning of Trust," sponsored in part by the Russian government. The signatories included Sberbank, Gazprom Neft, Yandex VK, MTS, the Russian Direct Investment Fund, and representatives of Skolkovo. The code will become part of the AI Federal Project.

According to the Russian government analytical center, the code, which focuses on the development and employment of AI systems, comprises 33 points that "establish the fundamental principles of life in a new reality where a human is surrounded by robots." It is also intended to improve the public's trust of AI systems in government and private industry. Russian deputy prime minister Dmitry Chernyshenko noted that up to 100 companies may join the code prior to the end of the year. The implementation of the code in their practices may be challenging for large Russian corporations that already rely on AI-enabled systems for numerous functions; however, the commitment of the Russian government to this code, as well as industry's participation in its development, suggests that this may become a norm in Russian businesses.

The code's official website is https://www.aiethic.ru/code.

Sources: "AI ethics code will be signed at TASS as part of AI forum" [Кодекс этики искусственного интеллекта подпишут в ТАСС в рамках форума, посвященного ИИ], TASS, Oct. 21, 2021, https://tass.ru/ekonomika/12727101; "First code of ethics of artificial intelligence signed in Russia," TASS, Oct. 26, https://tass.com/economy/1354187; "An AI code of ethics has appeared in Russia" [В России появился Кодекс этики в сфере искусственного интеллекта], Oct. 26, 2021, Russian government analytical center, https://ac.gov.ru/news/page/v-rossii-poavilsa-kodeks-etiki-v-sfere-iskusstvennogo-intellekta-27078.

2. Russian AI technical standards committee releases drafts of 36 AI-related standards

As discussed in previous issues of *AI in Russia,* the Russian AI technical standards committee (TK 164) has been working on Russian versions of standards in various areas of the AI field. The committee envisions that over time more than 200 of these will be developed, with the participation of leading universities and organizations in the AI field in Russia. Recently, the committee published 36 drafts of national standards in the following categories: (1) information technology, artificial intelligence; (2) AI technologies for aerospace imaging; (3) AI systems in natural and artificial radiation sources; (4) AI systems in clinical medicine; (5) AI for civil aviation aircraft; (6) AI for civil aviation aircraft navigation systems; and (7) AI systems in road transport.

Source: "36 draft standards in the AI field are presented" [Представлены 36 проектов национальных стандартов в области ИИ], D-Russia, Oct. 18, 2021, https://d-russia.ru.

3. Russian government to fund unmanned aerial cargo delivery

According to a report in *Vedomosti,* the Russian government will dedicate 3.7 billion rubles ($52.5 million) to the development of unmanned aerial cargo delivery. This is an initiative to bring together those seeking to deliver cargo with those developing unmanned systems. The Russian Ministry of Transport has noted that the former include the Russian Mail Service, Gazprom, Emergency Services Ministry, and Sberbank; the latter include Aeromaks, Helicopters of Russia, Mil and Kamov, and the Urals Civilian Aviation Plant.

Source: Vladislav Novyi, "Unmanned aerial cargo delivery will be funded at 3.7 billion rubles out of the budget" [Беспилотная аэродоставка грузов обойдется бюджету в 3,7 млрд рублей], *Vedomosti,* Oct. 20, 2021, https://www.vedomosti.ru/technology/articles/2021/10/20/892240-bespilotnaya-aerodostavka.

4. Moscow traffic police to develop AI-enabled system to track violators

According to a report in *Kommersant*, the Moscow traffic police will install cameras combined with a central analytical center using neural networks with big data analytics to track and issue fines to traffic violators. In 2022, the system will reportedly allow police to recognize partially obstructed license plates and to detect and track vehicles with expired registrations.

Source: Ivan Buranov, "GIBDD is hunting ghosts" [ГИБДД открывает охоту на призраков], *Kommersant,* Oct. 13, 2021, https://www.kommersant.ru/doc/5029693.

5. Russian government develops public draft of personal data use regulations

Russia's Ministry of Digital Development, Communications and Mass Media recently released drafts of two orders: "On approval of the list of risk indicators for violation of mandatory requirements for federal state control (supervision) over the processing of personal data" and "On the approval of indicative indicators for federal state control (supervision) over the processing of personal data." The former articulates circumstances that would trigger a check by a government oversight agency Roskomnadzor, while the latter articulates indicators for personal information control. These are part of the regulatory effort to enable the development of the AI ecosystem in Russia.

Source: "Ministry of Digital Development formulates signs of illegal use of personal data" [Минцифры сформулировало признаки незаконного использования персональных данных], D-Russia, Oct. 21, 2021, https://d-russia.ru/mincifry-sformulirovalo-priznaki-nezakonnogo-ispolzovanija-personalnyh-dannyh.html.

6. Russian law enforcement to use AI to examine criminality patterns

Russia's Investigative Committee (IC) has started using AI software that develops a profile of a repeat criminal with a reported accuracy of 80 to 96 percent. The focus is on identifying violent repeat offenders, which the AI software does by examining patterns in the criminal acts. The goal is to combine AI-based data with information from other sources in order to organize the investigation more efficiently. The profile includes the approximate age of the criminal, possible psychiatric illnesses, criminal record, likely place of residence, family information, and use of public transportation. According to an IC official, the development of the software took ethical considerations and risks into account. In addition, the IC is using aerial photography and remote sensing data from space to investigate economic, environmental, transport, and other crimes. Together with the Russian Academy of Sciences and Belarusian scientists, the IC is also is researching how to establish the age of a criminal and other identifiers through DNA.

Source: "Russia's Investgiative Committee began to use AI to search for serial criminals" [СК РФ начал использовать искусственный интеллект для поиска серийных преступников], TASS, Oct. 19, 2021, https://tass.ru/obschestvo/12698563.

Military and Security Developments

7. New counter-UAS system developed in Russia

(CUI) Kaspersky Lab, Russia's developer of computer antivirus systems, recently unveiled its own system for detecting and combating drones, named "Kaspersky Antidrone." The system was displayed at the Interpolitex-2021 international security expo in Moscow in October 2021. According to Kaspersky, Antidrone includes UAV detection by radar and radio frequency followed by recognition using a neural network. The platform purportedly also has a neutralization module for suppressing drones. Kaspersky noted that Antidrone sales started in 2021, with most orders coming from domestic airports, stadium management companies, and organizers of major public events. Kaspersky is one of many Russian companies developing a wide range of counter-UAS systems for civilian and military markets. In 2018, multiple Russian counter-UAS systems protected soccer and public venues from the threat of unsanctioned UAV use. It is likely that Kasperksy Antidrone will also be marketed internationally, given a growing demand for C-UAS technology to protect public venues and infrastructure.

Sources: "A new counter-drone system unveiled in Russia" [Новый комплекс для борьбы с дронами представили в России], RG.ru, Oct. 21, 2021, https://rg.ru/2021/10/21/novyj-kompleks-dlia-borby-s-dronami-predstavili-v-rossii.html; "Russian Anti-Drone Guns Tested in Syria Protect FIFA 2018 World Cup," Mil.today, July 3, 2018, https://mil.today/2018/Weapons19/.

8. Russian Navy launched drones from ship to monitor coastal strikes

The Russian Navy is increasingly using UAVs to support longer range targeting and missile strikes. According to recent reports from the Southern Military District, the Caspian Flotilla used UAVs to monitor and collect data on a long-range strike exercise—a first, according to the press service. The missile was fired from the small missile boat *Veliky Ustyug*, while Orlan-10 and Eleron-3 reconnaissance drones were launched from the flagship vessel *Dagestan*. The report indicated that UAVs allowed the surface vessels to monitor targets up to 120 km (Orlan-10's longest range), providing additional capability for precision targeting. The Southern Military District public affairs office noted the difficulty of launching drones from ships at sea, highlighting this as a positive step for the Russian Navy.

One report quoted military expert Dmitry Kornev, editor-in-chief of the website MilitaryRussia.ru, noting that the use of these drones to monitor the strike enables the military to obtain much more information about the effects of the strike systems. Kornev noted that such ship-based drone use provides "unique observation angles" to track target designation and elimination.

(U) While the Russian Navy is still learning ship-based drone use, its ability to do so could have significant long-term advantages. Kornev noted submarine-based UAVs might also be possible, providing significant long-term ISR capabilities to Russian forces.

Sources: "Russian sailors used reconnaissance drones from a ship for the first time" [Российские моряки впервые применили дроны-разведчики с корабля на учениях], Ria Novosti, Oct. 12, 2021, https://ria.ru/20211012/drony-1754135735.html; "'Unique angles.' A military expert on the first use of a UAV from a surface vessel" ["Уникальные ракурсы". Военный эксперт о первом применении БПЛА с корабля], RadioSputnik.ru, Oct. 12, 2021, https://radiosputnik.ria.ru/20211012/bespilotnik-1754171511.html.

9. Russian ports to be protected by underwater robots

According to *Izvestia,* the Russian Navy is testing unmanned underwater vehicles (UUVs) both as a way to protect Russian ports and as a possible means of inflicting damage on foreign ports in conflict. According to Hero of Russia Rear Admiral Vsevolod Khmyrov, the use of unmanned systems to counter underwater saboteurs is critical to the defense of Russian naval bases. There is a long history of reporting on the Russian Navy's efforts to protect ports from saboteurs, likely from a continued assessment that US special forces pose a serious threat to Russian port facilities and ships. According to the report, these new robots can function with a human in the loop or completely autonomously. This particular report highlights the robots being used alongside Russia's antisabotage forces (подразделений противодиверсионных сил и средств (PDSS)), which themselves are armed with SPP-1 underwater pistols. The report also highlights the role these forces play in protecting the Russian logistical supply point in Tartus, Syria.

Source; "Hit the bottom: Russian ports will be protected by underwater robots: Devices for hunting saboteurs are already being tested" [Бей до дна: российские порты защитят подводные роботы], *Izvestia,* https://urldefense.us/v3/__https://iz.ru/1236867/roman-kretcul-bogdan-stepovoi/bei-do-dna-rossiiskie-porty-zashchitiat-podvodnye-roboty__;!!JrmCwc4xXN63PQ!1wrFK_NwAN-CpwWujNtN7WD-1Iwt86mVZ7sdXtg2iPAp-er4yFSIb6ZfRun0$.

Corporate and Market Developments

10. AI in Russian medicine advances as standards are developed

In recent weeks, Russian companies have announced multiple developments in AI medicine. SbermedAI, an AI developer associated with Sber, announced that its "Lung CT" AI program now has the capacity to detect early-stage lung cancer using CT chest scans. The program can detect millimeter-level changes in nodular lung neoplasms, which is an early sign of lung cancer. It also highlights potential danger spots for future detection. The company manually trained 12,000 images for the machine learning algorithm. This development is in line with the massive increase in research on automated imagery programs in the wake of the COVID-19 pandemic. At present, the program is reported to be used in only 30 clinics associated with SbermedAI, although it is likely that more "digital medical diagnostic centers" working with the wider Sber ecosystem will be developed in the near term.

Other developments in AI imagery programming were announced as well, including a recent study by researchers at Skoltekh, Philips, and Goethe University Frankfurt, published in the journal *IEEE Access*. The study reported on a new neural network algorithm that speeds up the process of analyzing medical images.

Finally, the government-backed Russian Venture Company's (RVC's) Technical Committee for the Standardization of Artificial Intelligence (No. 164) recently published a final edition for draft national standards regarding AI in healthcare. The committee was created in 2019 by RVC with the support of the Russian Ministry of Industry and Trade as well as the Federal Technical Regulation and Metrology Agency (Rosstandart).

Sources: "AI service "SbermedAI" learned to detect lung cancer at an early stage by CT" [ИИ-сервис «СбермедИИ» научился выявлять рак легких на ранней стадии по КТ], CNews, Oct. 22, 2021, https://www.cnews.ru/news/line/2021-10-22_iiservis_sbermedii_nauchilsya; "Artificial intelligence found anomalies in medical images" [Искусственный интеллект нашел аномалии на медицинских снимках], CNews, Oct. 21, 2021, https://www.cnews.ru/news/line/2021-10-21_iskusstvennyj_intellekt; "The final editions of three drafts of national standards for the use of AI in medicine have been published" [Опубликованы окончательные редакции трёх проектов национальных стандартов для применения ИИ в медицине], D-Russia.ru, Oct. 19, 2021, https://d-russia.ru/opublikovany-okonchatelnye-redakcii-trjoh-proektov-nacionalnyh-standartov-dlja-primenenija-ii-v-medicine.html.

11. AI in Russian agriculture continues to advance

Two recent news items highlight the continued application of AI developments in the practical agricultural field in Russia. First, the Petersburg Tractor Factory (PTZ) and Cognitive Agro Pilot have agreed on the process for putting together an industrial production line for autonomous tractors, through an OEM license agreement. Production is expected to begin on fully self-driving tractors in 2024, after a testing phase and a partial integration of Cognitive Agro Pilot on existing tractors sold by PTZ starting in February 2022. Second, the grocery chain and food retailer Magnit has begun testing a smart digital platform to increase yields at "Green Line" greenhouses in one of its complexes in Plastunovskaya, Krasnodar Region. The platform is an AI-based control system that integrates sensor data from greenhouses, analyzes them, and recommends changes to increase efficiencies for yields. The program allows for iterated learning, and will be piloted through the end of 2021 before a company-wide decision is made on implementation of the system at an industrial level.

Sources: "Production for Russia's 1st OEM Contract for Autonomous Tractors to Begin in 2022," *Precision Farming Dealer,* Oct. 20, 2021, https://www.precisionfarmingdealer.com /articles/4815-production-for-russias-1st-oem-contract-for-autonomous-tractors-to-begin-in-2022; "'Magnit' Tests AI-Based Greenhouse Control" [«Магнит» тестирует управление теплицами на основе искусственного интеллекта], CNews, Oct. 13, 2021, https://www.cnews.ru/news/line/2021-10-13_magnit_testiruet_upravlenie.

12. RosElectronika announces new innovation hub in Novgorod Region

Rostec's "RosElectronika" has agreed to be a part of the new "Intellectual Electronics – Valdai Innovation Science and Technology Center" being developed in the Novgorod Region. This project is supposed to be a new "valley" hub for IT and electronics R&D, including 5G networks, the Internet of Things, quantum and biomedical tech, and component bases for electronics. The general director for RosElectronika managing company, Sergei Sakhnenko, stated that "combining the competences of the country's leading universities and the largest enterprises of the radio-electronic industry will create a powerful research and production cluster in the field of electronics, which will become a driver of digitalization and innovative development not only of the Novgorod region, but also of the country as a whole." As part of the project, a special legal regime is being prepared for the hub's territory, which will allow for specialized scientific research and will encourage innovation and easy pilot production for newly developed technologies. RosElectronika already has several enterprises located in the region, which makes further investment and coordination particularly attractive.

Sources: “Ruselectronika will take part in the development of the Intellectual Electronics – Valdai Center” [«Росэлектроника» примет участие в развитии центра «Интеллектуальная электроника – Валдай»], CNews, Oct. 18, 2021, https://www.cnews.ru/news/line/2021-10-18_roselektronika_primet.

Education and Training Developments

13. MSU engineers create Russia's first robotic dog

On October 20, engineers at Moscow State University, together with the "Voltbro Project," published a YouTube video showcasing their newest creation: Russia's first robotic dog. The engineering team has been developing the robot for two years. This follows the Boston Dynamic "BigDog" robot that was completed in the US in 2005. Anton Rogachev, leading engineer of the General Mechanics Laboratory of the Research Institute of Mechanics of Moscow State University commented, "There are not many laboratories in the world dealing with walking robotics. We believe that this development by engineers at Moscow University will give serious momentum to the development of four-legged robots in our country."

Sources: "Research Institute of Mechanics of Moscow State University and Voltbro presented the first Russian walking four-legged robot" [НИИ механики МГУ и Voltbro представили первого российского шагающего четырехногого робота], Oct. 20, 2021, https://www.youtube.com/watch?v=zjRUgZy0dUo; "The first domestic robotic dog was created in Russia. Video" [В России создана первая отечественная робособака. Видео], CNews, Oct. 21, 2021, https://www.cnews.ru/news/top/2021-10-22_v_rossii_sozdana_pervaya_otechestvennaya.

14. Tyumen State researchers outline new AI model

According to an October 13 RIA Novosti article, scientists from Tyumen State University have proposed a new approach to the development of AI systems, which they describe in the most recent issue of *Mind and Matter* journal. According to the researchers, the model integrates the results of a wide range of physical, mathematical, cognitive, philosophical, and other research in this area, which will make future AI systems "immune" from errors and capable of abstract thinking. Louis Vervoot, researcher at the School for Advanced Study (SAS) of Tyumen State University, said the following:

> We have deduced a key sign for a system to have "general AI": it must be able to understand and be able to apply different models of its environment, that is, in other words, different "worldviews" or "theories." Focusing on "theories" as certain paradigms of data evaluation, AI will not only be able to "look at the situation in different ways," but also deduce new principles and laws that are relevant to this area.

Source: "Russia wants to teach artificial intelligence to think differently" [В России хотят научить мыслить искусственный интеллект по-другому], RIA Novosti, Oct. 13, 2021, https://ria.ru/20211013/tyumgu-1754199941.html.

15. Siberian Federal University scientists to monitor risk of Arctic oil spills

According to Russia's Ministry of Science and Higher Education website, researchers from the Siberian Federal University have developed a self-learning AI to monitor the conditions and risks of accidents at oil rigs in the Arctic. In creating the AI, scientists used real data from an Arctic oil spill that occurred in Norilsk, Russia, in 2020. Researchers also chose to use the neural network simulator NeuroPro, which was developed at the Institute of Computational Modeling of the Krasnoyarsk Scientific Center of the Siberian Branch of the Russian Academy of Sciences.

Source: "The neural network will be able to assess the risks of accidents at oil industry enterprises in the Arctic" [Нейросеть сможет оценить риски аварий на предприятиях нефтяной отрасли в Арктике], Ministry of Science and Higher Education of the Russian Federation, Oct. 6, 2021, https://minobrnauki.gov.ru/press-center/news/?ELEMENT_ID=40904.

16. AI education and training events

A number of AI training and education events recently took place in Russia, some of which are highlighted below:

- More than 1 million Russian schoolchildren recently took part in the online "Digital Lesson" program—a nationwide educational campaign in the field of information technology. The first of several lessons planned for the 2021-2022 school year, titled "Artificial Intelligence in education," was held from September 27 to October 17. The program has expanded from last year's iteration.
- The sixth of 116 planned AI hackathons from 2021 to 2024 took place in Perm on October 15-17. The task of this event was to create an AI to automate the verification process for Russian charitable organizations using open-source data.
- Moscow hosted the International Collegiate Programming Contest finals on October 1-6. Nizhny Novgorod State University was awarded first place out of 175 universities from 63 countries.

Sources: “A participant from the Moscow region became the winner of the sixth artificial intelligence hackathon as part of the Profit team” [Участник из Подмосковья стал победителем шестого хакатона по искусственному интеллекту в числе сборной команды Profit], 360TV.Ru, Oct. 18, 2021, https://360tv.ru/news/tehnologii/uchastnik-iz-podmoskovja-stal-pobeditelem-shestogo-hakatona-po-iskusstvennomu-intellektu-v-chisle-sbornoj-komandy-profit/; “Hackathons and lectures on artificial intelligence” [Хакатоны и лекции по искусственному интеллекту], Hackathon 2021, https://hacks-ai.ru/hakaton/perm; Andrey Annenkov, “The ICPC final was won for the first time by the team of N.N. N.I. Lobachevsky” [Финал ICPC впервые выиграла команда Нижегородского государственного университета им. Н.И. Лобачевского], D-Russia, Oct. 5, 2021, https://d-russia.ru/moskovskij-final-icpc-vpervye-vyigrala-komanda-nizhegorodskogo-gosudarstvennogo-universiteta-im-n-i-lobachevskogo.html.

International Collaboration

17. Rostekh will supply Venezuela's PDVSA oil company with UAVs

RT-Proektnye tekhnologii, a subsidiary of Rostekh, and the Venezuelan state oil company PDVSA have signed memoranda to ensure security at critical sites related to Venezuela's oil infrastructure. PDVSA has long been concerned about terrorist acts against pipelines and other infrastructure. Most recently, in March, a gas pipeline in the northern city of El Tejeiro was attacked by terrorists, causing the region's gas infrastructure to go out of service temporarily. Rostekh will provide UAVs to monitor oil pipelines and detect oil spills, as well as supply fire-fighting foaming agents for extinguishing hydrocarbon fires and protective suits for fire brigades. The two sides are also discussing the possibility of manufacturing firefighting equipment in Venezuela under a license from Rostekh.

Source: "Rostekh promised to supply UAVs for PDVSA objects in Venezuela" [«Ростех» пообещал обеспечить беспилотниками объекты PDVSA в Венесуэле], RBC, Oct. 15, 2021, https://www.rbc.ru/business/15/10/2021/6169705c9a794777cbe327c2.

18. Kyrgyzstan to purchase UAVs from Russia and Turkey

According to Kamchybek Tashiev, the head of Kyrgyzstan's State Committee for National Security, Kyrgyzstan will purchase Bayraktar UAVs from Turkey and Orlan-10E UAVs from Russia. Bayraktar is a Turkish attack tactical medium-altitude unmanned aerial vehicle with a long flight duration. The Orlan-10E complex is intended for remote aviation monitoring of land and water surfaces. Both sets of equipment will be financed from the state budget, although the report did not provide the cost, the procurement timeline, or the number of each kind of UAV to be procured.

Source: "Kyrgyzstan to purchase Orlan and Bayraktar UAVs from Russia and Turkey" [Кыргызстан покупает у России и Турции беспилотники "Орлан" и "Байрактар"], Sputnik, Oct. 21, 2021, https://ru.sputnik.kg/politics/20211021/1054304646/kyrgyzstan-bespilotniki-priobretenie.html.

Spotlight: Marker UGV Update

According to a Ria Novosti military-industrial source, the Russian military recently tested a group of five Marker strike UGVs. The source indicated that the UGVs acted without human intervention. The vehicle group conducted reconnaissance, distributed targets among its members, moved to optimal firing positions, and responded to changes in the operational environment. The source went on to describe the actions of the group as exhibiting emergence—a phenomenon wherein the behavior of a system is greater than the sum of its individual parts. Such tests are part of MOD's strategy to develop air, ground, and maritime robotic swarms, with multiple efforts and R&D taking place across Russian military research agencies, defense companies, and academic institutions.

(U) The Marker UGV was developed by the Advanced Research Foundation (FPI) and NP Android Technology—the developer of the Fedor robot that visited the International Space Station. The Marker is a platform for the development and testing of security-related AI and autonomous technologies, as well as being billed as a "soldier's assistant on the battlefield." Some of the technologies associated with Marker include swarm control, smart vision, natural language processing and MUM-T (manned-unmanned teaming). FPI recently concluded a Marker trial in which the vehicle traveled unassisted for 100 km across forested terrain. For more on the Marker UGV and Russian MOD's development of robotic swarms, see CNA's

original report*, AI and Autonomy in Russia,* at https://www.cna.org/centers/cna/sppp/rsp/russia-ai.

"An Autonomous group of strike robots was tested in Russia," Ria Novosti, Oct. 19, 2021, https://ria.ru/20211019/robot-1755130790.html.

This report was written by CNA's Strategy, Policy, Plans, and Programs Division (SP3).

SP3 provides strategic and political-military analysis informed by regional expertise to support operational and policy-level decision-makers across the Department of the Navy, the Office of the Secretary of Defense, the unified combatant commands, the intelligence community, and domestic agencies. The division leverages social science research methods, field research, regional expertise, primary language skills, Track 1.5 partnerships, and policy and operational experience to support senior decision-makers.

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