



A biweekly newsletter on AI and autonomy developments in Russia

CNA Russia Studies Program

HIGHLIGHTS OF ISSUE 38

- Electronics manufacturers in Russia have joined together to criticize a draft law submitted to the State Duma that “would criminalize the implementation of anti-Russian sanctions, as this law would put sellers and buyers at risk of either violating sanctions or suffering legal ramifications.
- Scientists from the MOD’s Pacific Higher Naval School developed a concept for an unmanned boat that can be used to train unmanned surface vehicle (USV) operators.
- A new AI-based intelligent drone-monitoring platform system, named “Kupol,” is being prepared for a first working launch at the end of 2022 in Tomsk province.
- Alfa-Bank and the Moscow Institute of Physics and Technology (MIPT) have launched a joint master's program called "Machine Intelligence in Finance" to train professionals to work with data and algorithms in the banking space.
- Russian government and industry have turned to India and Malaysia to explore import substitution opportunities and collaboration.

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GOVERNANCE AND LEGISLATION

RUSSIA TO DEVELOP ITS OWN TECHNOLOGY INNOVATION “VALLEY”

According to recent reports, Russia plans to create a development zone in the Ryazan region to foster innovation and produce advanced technologies and new products. The Innovation Science and Technology Center (ISTC) has deemed this project the “Aerospace Innovation Valley,” and it has been approved by Prime Minister Mishustin. It is believed that the project will create 2,800 new jobs and expand tax revenues for the Ryazan area by 2031.

Over 30 companies in the aerospace, biomedical, information technology, and electronic and radio engineering sectors have developed plans and projects to participate in the work of the ISTC. Leadership is optimistic that with the participation of companies such as Roscosmos, the Tactical Missiles Corporation, and the United Aircraft Corporation, import substitution capabilities will be vastly expanded.

Source: “An aerospace innovation valley will be developed in Russia” [В России появится аэрокосмическая инновационная долина], Tass.ru, Apr. 25, 2022, https://tass.ru/ekonomika/14461987?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com.

MOSCOW ACADEMICS AND LEADERS COME TOGETHER TO DISCUSS RUSSIAN ECONOMY IN BIPARTISAN ENVIRONMENT

April 21st was the first session of a bipartisan discussion group in Moscow, held among a diverse group of academics, politicians, and economic leaders to discuss the Russian economy and the reappointment of Elvira Nabiullina as head of the Central Bank of the Russian Federation. Within the group there was a broad disapproval of Nabiullina’s selection, and this disagreement fueled debate between different experts and officials about the future of the Russian economy. Except for the chairman of the State Duma Committee on the Financial Market, Anatoly Aksakov, almost everyone in the meeting had no faith that Nabiullina could battle inflation and implement the unique measures necessary to save the Russian economy in the current environment.

The meeting served as a platform for tangible change and economic conversation. The group leader, Sergey Mironov, emphasized the importance of the meeting’s “supra-party” nature and prioritized the goal of “marking the dotted lines” in the future of Russian economy. Attendees shared ideas of Soviet economic tactics, collaboration, and modernization within Russian society. By the end of the first discussion there was a solid consensus that Russia needs economic change to remain afloat throughout the modern economic and political situation.

Source: Ksenia Shiryayeva, “Sparrow Mountain: A discussion club has opened in Moscow, bringing together Academic Glazyev, TV star Vasserman and State Duma deputies” [Воробьевы горы»: в Москве открылся дискуссионный клуб, объединивший академика Глазьева, телеэрудита Вассермана и депутатов

Госдумы], Apr. 4, 2022, <https://www.gosrf.ru/vorobevy-gory-v-moskve-otkrylsya-diskussionnyj-klub-obedinivshij-akademika-glazeva-teleerudita-vassermana-i-deputatov-gosdumy/>.

SUGGESTION TO REINITIATE SOVIET STATE COMMITTEE FOR SCIENCE AND TECHNOLOGY

The vice president of the Russian Academy of Science (RAS) has publicly advocated for the re-creation of the Soviet State Committee for Science and Technology (SCST) in order to expedite decision-making and innovation in applied research to account for current and future import substitution. RAS previously collaborated with SCST to coordinate and streamline research, and RAS has been highlighting the benefits of such collaboration—one of which is to have a “supra-departmental structure to provide initiation and coordination as a country.” The article claims that at such a supreme time of need and technological blockade, RAS is motivated to jumpstart innovation and research by bypassing the traditional, lengthy way of coordinating tasks.

Source: “RAS proposed to build an analog of the Soviet State Committee for Science and Technology” [РАН предложила создать аналог советского Госкомитета по науке и технике], [Ria.ru](https://ria.ru/20220422/komitet-1784923942.html), Apr. 22, 2022, <https://ria.ru/20220422/komitet-1784923942.html>.

CRITICISM OF RUSSIA’S “NATIONALIZATION” OF THE IT INDUSTRY

Russian journalist Andrey Annenkov wrote an opinion piece criticizing the Russian government’s proclaimed widespread support initiatives for the IT industry. He supports the openness and encouragement for productive work but is wary of the quality of work that such unscrupulous economic support will create. He claims that the IT industry is a derivative of the overall economy, and that such widespread public support measures will have consequences for Russia’s overall quality of work/economic progress. He acknowledges the widespread concern for the future, but emphasizes the importance of preparing for the worst—for example, “providing the population with civil defense means in case Android and Windows are disabled.” His disapproval remains strong, and he cautions that such vast “motivational” initiatives will attract and create an unqualified and unreliable workforce.

Source: Andrey Annenkov, “State Nationalization” [Национализация государства], [d-russia.ru](https://d-russia.ru/nacionalizacija-gosudarstva.html), Apr. 22, 2022, <https://d-russia.ru/nacionalizacija-gosudarstva.html>.

IT INDUSTRY PROFESSIONALS SPEAK OUT AGAINST RUSSIAN ANTI-SANCTIONS LAW

Electronics manufacturers in Russia have joined together to criticize a draft law submitted to the State Duma that “would criminalize the implementation of anti-Russian sanctions, as this law would put sellers and buyers at risk of either violating sanctions or suffering legal ramifications.” The manufacturers request that the law not be applied to their industry. The head of the Association of Developers and Manufacturers of Electronics, Ivan Pokrovsky estimates that

if the law is implemented, Russia will lose up to 95 percent of its imported components for electronics. As of April 15, Russia was only restricted from receiving 5 percent of the materials needed, and still received standard semiconductors and electromechanical components. The article clarifies that Russia does not have the capabilities or capacity for mass production: its current domestic production capabilities are focused on military-industrial products, and civilian technologic production would fail upon losing a vast amount of imported components.

Source: “Russian anti-sanctions law will hurt domestic electronics” [Российский антисанкционный закон больно ударит по отечественной электронике], Cnews.ru, Apr. 15, 2022, https://www.cnews.ru/news/1:30-2:00/top/2022-04-15_rossijskij_antisanktsionnyj.

DEVELOPMENT GOALS FOR RUSSIA’S NANOMETER CHIP

The Russian government has designated 3.2 trillion rubles to a plan to develop domestic electronics by 2030. Of that, 420 million rubles have been allocated for the development and production of 90- and 28-nanometer (nm) processor chips and 1.14 trillion rubles to the reengineering of production in Russia and China. The Ministry of Digital Transformation, the Ministry of Industry and Trade, and two specialized vice-premiers—Dmitry Chernyshenko and Yuri Borisov—will be in charge of implementation of this initiative.

Before the end of 2022, the first infrastructure point of this project aims to reengineer foreign solutions in the field of electronics and transfer their production to Russia and China. Borisov aims to guarantee “100% import substitution” by 2024.

The second part within Russian infrastructure development goals is to develop production of microcircuits using first a 90-nm, and then a 28-nm, process technology. The current worldwide capability is 4 nm, which means that Russia must make a significant effort to achieve such vast goals in such a short amount of time. In addressing such concerns, the article quoted an industry professional criticizing the divorced reality of such a lofty 2030 goal, given that foreign companies will have reached 2 or 3 nm by that time.

Source: “Authorities have a new plan for the development of Russian electronics. The country will spent hundreds of billions on technological processors of 90 and 28 nanometers” [У властей новый план по развитию российской электроники. Страна потратит сотни миллиардов на техпроцессы 90 и 28 нм], Cnews.ru, Apr. 15, 2022, https://www.cnews.ru/news/top/2022-04-15_u_vlastej_novyy_plan_po_razvitiyu.

CHERYSHENKO AND RUSSIA’S FUTURE SUCCESS IN THE IT INDUSTRY

At a meeting of the council for the Development of the Digital Economy under the Federation Council, Chernyshenko delivered a statement regarding Russia’s “Digital Professions” key project. The Digital Professions program is intended to increase access to IT professionals and teachers to ensure entrepreneurial and scientific student activities under a public IT education. In his statement, Chernyshenko clarified that the international sanctions have not altered Russia’s priorities but have accelerated measures surrounding newfound gaps in production. Chernyshenko was quoted describing the government support program as geared to

develop a wide funnel of IT ideas/professionals to work towards and narrow into a select number of projects that allow venture investors to “spot the stars” and give them opportunities for success. He noted the evident success of the project thus far, given that in 2022 “more than 50 thousand people will be able to get 50-100% discounts on IT educational programs” and the project has already initiated two measures implemented in 2021 to increase tax revenue and insurance premiums.

Sources: “Chernyshenko: The Government will support up to 30 thousand IT startups by 2030” [Чернышенко: правительство поддержит до 30 тысяч IT-стартапов к 2030 году], Ria.ru, Apr. 25 2022, <https://ria.ru/20220425/chernyshenko-1785405363.html?in=t>; “Chernyshenko: technological progress in Russia is not slowing down, despite the global situation” [Чернышенко: технологический прогресс в России не замедляется, несмотря на ситуацию в мире], Tass.ru, Apr. 25, 2022, <https://tass.ru/ekonomika/14467539>.

MILITARY AND SECURITY

RUSSIAN SCIENTISTS DESIGN A NEW USV FOR OPERATOR TRAINING

Scientists from the MOD’s Pacific Higher Naval School developed a concept for an unmanned boat that can be used to train unmanned surface vehicle (USV) operators. The concept boat will be equipped with a remote and an automatic command and control system, and the ability to launch underwater vehicles and quadcopters. Noting the need for this particular proposal, the scientists claim that the current Russian unmanned surface vehicle designs do not incorporate training operators on additional unmanned technologies. The concept includes a command-and-control module for two operators—one for training to control the USV itself, the second to operate remote-controlled underwater vehicles and/or quadcopters. This design will therefore allow the operators to gain practical skills in piloting the USV in combination with additional onboard unmanned and autonomous vehicles. Prior to the February 2022 invasion of Ukraine, the Russian military was working on a number of USV projects, and discussed using a combination of surface, underwater, and aerial vehicles as mission multipliers.

Source: “A new unmanned surface vessel concept is developed in Russia to help train maritime autonomy operators” (В России создали концепт катера для обучения операторов надводных роботов), Ria.ru, Apr. 29, 2022, <https://ria.ru/20220429/kater-1786054838.html>.

ROSGVARDIYA CLAIMS ITS UAVS ARE “INVISIBLE” TO UKRAINIAN DEFENSES

Russia’s Rosgvardiya (National Guard forces), whose units are fighting in Ukraine alongside regular Russian troops, claimed recently that its aerial drones are practically “invisible” to Ukrainian air defenses. According to the claim, the ZALA 421-16E HD unmanned aerial vehicles they use for intelligence, surveillance, and reconnaissance are impervious to Ukrainian air defense countermeasures and visual surveillance, because of the drone’s electric motor, small size,

composite materials, and light camouflage. Rosgvardiya stated that these characteristics reduce losses among drones, including from ground-based small arms fire and MANPADS, to just a few isolated cases. The ZALA 421-16E HD reconnaissance unmanned aerial vehicle was developed by the ZALA AERO company, part of the Kalashnikov concern. The drone can stay in the air for more than four hours, and has a range of 75 kilometers. Russia's Rosgvardiya was stood up as a separate force in 2016, and is tasked with securing Russia's borders, combating terrorism and organized crime, protecting public order, and guarding important state facilities. In Ukraine, Rosgvardiya units from Chechnya have publicly advertised their war involvement on social media, including filming actual combat and their use of different UAV types for ISR missions. While there have been few documented cases of ZALA drone losses, the Russian military is still suffering a regular rate of attrition for its UAVs, as documented almost daily by Ukrainian military.

Sources: "A source discussed Rosgvardiya drones that are invisible for the Ukrainian military" [Источник рассказал о незаметных для ВСУ беспилотниках Росгвардии], <https://ria.ru/20220427/bespilotnik-1785650909.html?in=t>, Ria.ru, Apr. 27, 2022; Sam Jones, Max Seddon, and John Paul Rathbone, "Chechen 'wild card' joins Russian war effort," AFR.com, Mar. 15, 2022, <https://www.afr.com/policy/foreign-affairs/chechen-wild-card-joins-russian-war-effort-20220315-p5a4xn>.

NEW RUSSIAN MOD CONCEPT: ROBOTS CHECKING UP ON ROBOTS

Scientists from the MOD's Combined Arms Academy have proposed a new diagnostic system for ground combat robots (UGVs) that incorporates an aerial drone. According to their proposal, a UGV will have an adapter with a diagnostic socket located on the roof of the engine-transmission compartment, for an aerial copter to plug in via a connecting cable to test equipment status. The proposal aims to reduce potential loss of technical personnel that normally maintain and repair the UGVs, by remotely identifying technical specs in the event of failure or loss of control in combat. Once a potential UGV failure is detected, the maintenance team launches the copter from a safe distance; the drone then connects to the UGV adapter for an initial diagnostic, relaying data back to the specialists. In theory, this concept is in line with the Russian MOD's general approach to the development of unmanned and autonomous weapons and systems: to remove a human soldier/operator from direct line of fire and make missions more effective. At this point, it is not clear when this concept could be built and tested, given the ongoing war in Ukraine that is draining Russian technical resources and the global high-tech sanctions against Russian civilian and military industries that are impacting many projects and plans.

Source: "Aerial drones will monitor the state of Russian ground combat robots" [Беспилотники будут следить за состоянием российских боевых роботов], Ria.ru, Apr. 28, 2022, <https://ria.ru/20220428/bespilotnik-1785852908.html>.

SHOIGU CLAIMS AI IS HELPING IN PRECISION WEAPONS' TARGETING

Russian defense minister Sergey Shoigu recently claimed that new communication systems drastically reduce the time to bring target designation to the Kalibr and Kinzhal missiles

used in the Ukraine war. He noted that the MOD's development of communications systems for missiles includes advanced technologies such as artificial intelligence. Prior to its February 2022 invasion of Ukraine, Russian military sources discussed the use of artificial intelligence in a number of applications, including command, control, and communications. As reported in the *CNA AI and Autonomy in Russia* May 2021 report, AI use in missile guidance systems was one of the MOD's research, development, and testing priorities. While Kalibr and Kinzhal missiles were used in Ukraine, it is difficult to verify the MOD's claim due to lack of technical evidence.

Sources: "Shoigu: time to bring target designation to Kalibr and Kinzhal missiles reduced tenfold" [Шойгу: время доведения целеуказания до ракет "Калибр" и "Кинжал" сократили в десятки раз], Tass.ru, Apr. 19, 2022, <https://tass.ru/armiya-i-opk/14411063>; "Russian Buyan-M Class Corvette Fired Kalibr Missiles Against Ukraine," NavalNews.com, Mar. 28, 2022, <https://www.navalnews.com/naval-news/2022/03/russian-buyan-m-class-corvette-fired-kalibr-missiles-against-ukraine/>; *Artificial Intelligence and Autonomy in Russia report*, CNA Corporation, May 2021, <https://www.cna.org/centers/cna/sppp/rsp/russia-ai/>; Holly Ellyatt, "Russia says it fired hypersonic missiles in Ukraine. What are they and why would Moscow use them?" CNBC.com, Mar. 22, 2022, <https://www.cnbc.com/2022/03/22/hypersonic-missiles-why-would-russia-use-the-kinzhal-in-ukraine.html>.

MARKETS AND PRIVATE SECTOR

AI-ENHANCED MEDICAL ADVANCES CONTINUE

AI-based medical developments continue to be a key place of research growth in Russia.

Programs using AI algorithms to search for cancer through automated imagery technologies have been expanded significantly in the last two years. Master classes in Karachaevo-Cherkessia held by SberMedII, a Sber company, are only the latest in the further spread of AI approaches to the Russian provinces. Oncology research is an area of particular success. Lung screenings, which are also supported by the regional government, are forming a key part of the applied element to this line of research. On the R&D side, new "virtual biopsies" are also being explored using the same technology, with a project by researchers at Immanuel Kant Baltic Federal University (BFU) moving forward with progress. The project is supported by a grant from the Start-AI-1 competition held by the Innovation Promotion Foundation.

Sources: "Artificial intelligence helps to identify oncology in residents of Karachaevo-Cherkessia" [Искусственный интеллект помогает выявить онкологию у жителей Карачаево-Черкесии], *CNews*, Apr. 27, 2022, https://www.cnews.ru/news/line/2022-04-27_iskusstvennyj_intellekt; "In Russia they are developing a method of 'virtual biopsy' for cancer diagnoses" [В России разрабатывают метод "виртуальной биопсии" для диагностики рака], TASS, Apr. 20, 2022, <https://science.tass.ru/science/14426035>.

“EYE-PAYMENTS” FACIAL RECOGNITION INFRASTRUCTURE DEPLOYED FOR TICKET VENDERS

VisionLabs’ new “payment by eye” biometric checkout package is being deployed at Smartix self-service checkout kiosks in Russia. These are currently used at movie theaters, dental clinics, outpatient service centers at hospitals, and elsewhere. To make a payment, the customer only needs to look into a camera. The payment itself takes a few seconds, and the customer does not even need to take out a card or smartphone. This technology is growing in several commercial sectors in Russia.

Source: “Sber and VisionLabs introduce a payment service just by looking at the cash desks of self-service Smartix” [«Сбер» и Visionlabs внедрили сервис оплаты взглядом в кассы самообслуживания Smartix], CNews, Apr. 26, 2022, https://www.cnews.ru/news/line/2022-04-26_sber_i_visionlabs_vnedrili_servis.

UNMANNED ROBOTIC MINING EQUIPMENT PREPARING FOR ARCTIC TESTS

Robotic mining equipment developed by ARMZ Mining Machines and Zyfra Robotics is being prepared for a three-year testing regime in Arctic conditions at the end of the year.

The tests are focused on further developing and refining poor- and zero-visibility geolocation and navigation algorithms. The test site has been located on the Novaya Zemlya archipelago, near a deposit of lead-zinc ores. The robotic mining equipment has a carrying capacity of 90 tons and is built to withstand extreme climatic and landscape conditions. According to the CEO of VEB Ventures, which owns Zyfra Robotics, “The use of autonomous transport is another step towards the robotization of the Arctic, which can increase the recovery rate of minerals by 10-30%. And the reduction in the cost of mining will be up to 50%. According to our data, the use of robotic mining equipment can reduce labor costs by 80% and can increase the efficiency of transportation of rock mass by 20%.” The company notes that previous tests by other mining industry companies in Chile have been similarly successful.

Source: “Testing of unmanned vehicles in the Arctic will begin at the end of 2022” [Тестирование беспилотной техники в Арктике начнется в конце 2022 года], CNews, Apr. 26, 2022, https://www.cnews.ru/news/line/2022-04-26_testirovanie_bespilotnoj.

NEW FLIGHT SAFETY CONTROL SYSTEM FOR MANNED AIRCRAFT USES AI TESTING

A next-generation supersonic passenger aircraft being developed by researchers at the Moscow Aviation Institute (MAI) is using extensive AI testing programs to develop a new flight safety control system for the aircraft. The programs use both neural networks and adaptive control technologies to build out the new integrated safety system. The research laboratory is also working on using AI to solve other problems related to supersonic flight, such as trajectory optimization for noise reduction and collision avoidance, as well as monitoring systems, cybersecurity for the aircraft, and an “intelligent pilot support system.” Other research

groups at MAI are also working on AI-based technology to automatically diagnose defects and corrosion in unmanned aircraft through a “flaw detection system,” whose details are expected to be released in the near future.

Source: “Faster, Higher, Smarter, How MAI is Working On a New Supersonic Aircraft” [Быстрее, Выше, Умнее: Как в Маи Работают Над Новым Сверхзвуковым Самолетом], *Aviaport.ru*, Feb. 8, 2022, <https://www.aviaport.ru/digest/2022/02/08/708631.html>; “Drones, AI, neural networks, and biorobots: interview with the deputy director of the MAI UAV center” [Дроны, искусственный интеллект, нейросети и биороботы: интервью замдиректора центра БПЛА МАИ], *MAI.ru*, Apr. 20, 2022, <https://mai.ru/press/news/detail.php?ID=165149>.

DOCUMENT PROCESSING AUTOMATED AT RUSSIAN MANUFACTURERS

The “Eurotrading” manufacturer of plastic and concrete surface drainage systems has implemented an automated document processing and analysis system for its accounting systems. The company partnered with Softline, an IT services firm, to develop and integrate their “Soica” software into their systems. The system is now in place after a series of tests and is expected to allow for considerable efficiency gains, especially for processing financial documents. According to Igor Beznoshchenko, the CEO of Eurotrading, “Thanks to the innovative product Soica and Softline specialists, our company has almost completely abandoned routine manual labor—now the recognition and extraction of data from paper documents is automatic, easy and fast, and the probability of making an error under the influence of the human factor has significantly decreased.”

Source: “Softline helped Eurotrading to automate the process of processing and analytics of documents” [Softline помогла ТД «Евротрейдинг» автоматизировать процесс обработки и аналитики документов], *CNews*, Apr. 25, 2022, https://www.cnews.ru/news/line/2022-04-25_softline_pomogla_td_evrotrejding.

NEW PRIVATE-SECTOR STARTUP COMPETITION ANNOUNCED BY ROSATOM AND THE MOSCOW INNOVATION CLUSTER

The Moscow Innovation Cluster, in partnership with InnoHab, Rosatom's business accelerator, has announced the Rosatom New Tech 2022 technology competition. Its goal is to search for new ideas that may be in demand due to the pressures of import substitution. Grants of up to 5 million rubles are to be assigned for “innovative solutions...recommended for implementation in the ecosystem of Rosatom,” according to Moscow deputy mayor Natalia Sergunina. Target companies are those working in electronics, machine tool building and robotics, metallurgy, digital engineering, hydrogen energy, and additive technologies. The competition will close in June and is based on the Moscow government’s “My District” competition from 2018.

Source: “Moscow and Rosatom announce a competition for technology startups” [Москва и «Росатом» объявили конкурс для технологических стартапов], *Izvestiya*, Apr. 19, 2022, <https://iz.ru/1322876/2022-04-19/moskva-i-rosatom-obiavili-konkurs-dlia-tekhnologicheskikh-startapov>.

DRONE MONITORING PLATFORM UNDER DEVELOPMENTS IN TOMSK REGION

A new AI-based intelligent drone-monitoring platform system, named “Kupol,” is being prepared for a first working launch at the end of 2022 in Tomsk province. The system is being built by the “Unmanned Systems” innovation company, which is also registered as a regional operator in coordination with Tomsk University of Control Systems and Radioelectronics (TUSUR) and the “Systems. Technologies. Communications.” corporation. This project is made possible by a special experimental legal regime for unmanned aircraft in the region, which was created by a decree from the Russian government.

The system will automate processes of user registration, application acceptance, and monitoring drone movement in real time, and is being planned to be modular in design, such that functionality can be expanded over time. According to reports, the system is “primarily designed to automate the transportation of goods, inspect pipelines, power-lines, and other infrastructure facilities, as well as to support aviation work that will help implement ‘precision farming’ projects.” The first working flights are set to begin in July for drone operation under the general experimental legal regime, and the coordination system at the end of the month.

Sources: “In the Tomsk region, they will create an intelligent platform for monitoring drones” [В Томской области создадут интеллектуальную платформу для контроля за беспилотниками], TASS, Apr. 22, 2022, <https://tass.ru/ekonomika/14444277>; “The first flights of drones in the Tomsk region within the framework of the EPR will begin in July” [Первые полеты беспилотников в Томской области в рамках ЭПР начнутся уже в июле], TASS, Apr. 19, 2022, <https://tass.ru/armiya-i-opk/14407909>.

NEW VERSION OF GPT-3 NEURAL NETWORK CAN GENERATE TEXTS IN 61 LANGUAGES

SberDevices presented a multilingual version of the GPT-3 neural network: a model called mGPT can generate texts in 61 languages, including those of the peoples of Russia and CIS countries. mGPT is the world's first generative model that supports so many languages. It is available in two versions: the basic one, with 1.3 billion parameters published in the public domain in the Sberdisk cloud storage, and the extended one, with 13 billion parameters, which will soon be available on the ML Space machine learning platform from SberCloud.

According to the CEO of SberDevices, Denis Filippov, “In 2020, we introduced the Russian-language version of the GPT-3 neural network, it is used in two virtual assistants of the Salyut family from Sbera—Joy and Athena. We continued to develop our NLP technologies and introduced the mGPT model, which supports more than 60 languages, while for many of them previously generative models simply did not exist. This, among other things, will be our contribution to the preservation and development of the languages of the peoples of Russia: mGPT is able to generate texts, for example, in Tatar or Yakut.”

Source: "Sber presented a version of the GPT-3 neural network, capable of generating texts in 61 languages of the world" [«Сбер» представил версию нейросети GPT-3, способную генерировать тексты на 61 языке мира], *CNews*, Apr. 21, 2022, https://www.cnews.ru/news/line/2022-04-21_sber_predstavil_versiyu.

NEW BIOMETRIC SYSTEM ANNOUNCED WHICH MEETS ALL IMPORT-SUBSTITUTION STANDARDS

VisionLabs and ITRIUM presented a new program for running biometric access control systems which meets all import-substitution standards. The solution will help complement the functionality of integrated security systems for large corporations that are especially interested in cross-platform and rapid scalability of technologies. The new program is based on the latest software platform "NEIROS" from ITRIUM, which allows for the creation of "physical security management systems at facilities of any scale and purpose." NEIROS can run on almost any computer platform running various operating systems, including Russian general-purpose and special-purpose Astra Linux operating systems. VisionLabs' LUNA computer vision platform is built into the system for facial biometric identification. It provides accurate and fast recognition of a person regardless of the presence of a mask, glasses, hats, and other attributes. The whole process takes a fraction of a second. The two companies note that because the system passed all import-substitution requirements for Russia-based components, it can be used in many settings quickly, especially during ramp-up phases for new domestic business and industrial growth.

Source: "Access control with AI from ITRIUM and VisionLabs will help the corporate enterprise-segment in import-substitution projects" [Контроль доступа с ИИ от ИТРИУМ и VisionLabs поможет Enterprise-сегменту в проектах импортозамещения], *D-Russia*, Apr. 21, 2022, <https://d-russia.ru/kontrol-dostupa-s-ii-ot-itrium-i-visionlabs-pomozhet-enterprise-segmentu-v-proektah-importozameshenija.html>.

FUEL COMPANY INTRODUCES AI FOR TECHNICAL DOCUMENTATION VERIFICATION PROGRAM

TVEL, a Rosatom-affiliated fuel company has launched a new project to create an "automated system for the intelligent verification of technical reports and technical documentation." The system uses AI algorithms to sort and process documentation preparation and check for errors. The system will use a mathematical learning model processing in both English and Russian for document analysis. The program is being jointly developed by TVEL; DM Solutions, an AI company; and Preferentum, a digital platform manufacturer. According to Evgeny Garanin, the director for digitalization at TVEL, "The verification of multi-page documents containing texts, drawings, formulas, graphs and tables will take [only] several seconds. This will automate a huge volume of routine operations and accelerate the development and market launch of new nuclear and non-nuclear products of the company. This is another step in the digitalization of processes, which TVEL has been consistently engaged in for several years."

Source: "Fuel company 'TVEL' will introduce a system for checking technical documentation based on artificial intelligence" [Топливная компания ТВЭЛ внедрит систему проверки технической

документации на базе искусственного интеллекта], CNews, Apr. 18, 2022, https://www.cnews.ru/news/line/2022-04-18_toplivnaya_kompaniya_tvel.

HUMAN CAPITAL

AI HACKATHONS AND EVENTS

Recent news articles reported on several AI-related hackathons and training events, the most notable of which are mentioned below:

- According to an April 19 CNews article, the Moscow Innovation Cluster, in partnership with Innohub, the business accelerator of Rosatom, is accepting applications for a joint technology competition: New Tech Rosatom 2022. The competition is focused on identifying tech startups that could help Russia's atomic energy corporation, including in the field of import substitution. The competition will have various tracks, testing participants in electronics, machine building and robotics, metallurgy, digital engineering, hydrogen energy, additive manufacturing, and more.
- According to an April 29 article, the Health Data AI Hackathon was recently organized by the Moscow Center for Innovative Technologies in Health Care and the Moscow Institute of Physics and Technology (MIPT). The competition had three tracks: predicting the severity of pneumonia using AI; searching for cancer cells on histological preparations using AI; and searching for new molecules and targets for targeted cancer therapy using AI. According to the article, 520 teams applied and 151 teams passed the qualifying round.
- More than 120,000 applications were submitted for the National Technical Olympiad in the 2021-2022 academic year, according to an April 28 TASS article. The article states that 374 students won prizes during the year, with most prize winners from St. Petersburg, the Novosibirsk region, the Moscow region, and the Republic of Tatarstan. This was the seventh iteration of the competition, which is now available to middle school, high school, college, and university students.
- According to a press release, the second national "PROF-IT.Innovation" competition was held in April, which featured almost 200 project submissions. The participants were evaluated by representatives from Russian ministries, including the Ministry of Digital Development, the Ministry of Health, and the Ministry of Transport. The competition was organized by D-Russia's Electronic State Expert Center.
- The Global AI Challenge was recently held by the Artificial Intelligence Research Center at the Innopolis University. According to an April 19 TASS article, 90 teams from 15 countries participated in the competition, in which participants developed models for screening patients for the SARS-CoV-2 virus. The prize fund was 1.2 million rubles.

Sources: "Moscow and Rosatom announce a competition for technology startups" [Москва и «Росатом» объявили конкурс для технологических стартапов], CNews, Apr. 19, 2022, <https://www.cnews.ru/news>

/line/2022-04-19_moskva_i_rosatom_obyavili; "Participants of the Capital AI Hackathon offered new ideas for the development of medicine" [Участники столичного хакатона по ИИ предложили новые идеи развития медицины], *Riamo*, Apr. 29, 2022, <https://riamo.ru/article/557556/uchastniki-stolichnogo-hakaton-a-po-ii-predlozhili-novye-idei-razvitiya-meditsiny-xl>; "St. Petersburg became the leader in the number of winners of the National Technology Olympiad" [Санкт-Петербург стал лидером по количеству призеров Национальной технологической олимпиады], TASS, Apr. 28, 2022, <https://tass.ru/obschestvo/14503637>; "Prize-winners and winners of the II National competition of IT solutions 'PROF-IT.Innovation' announced" [Объявлены призеры и победители II Национального конкурса IT-решений «ПРОФ-IT.Инновация»], D-Russia, Apr. 27, 2022, <https://d-russia.ru/objavleny-prizery-i-pobediteli-ii-nacionalnogo-konkursa-it-reshenij-prof-it-innovacija.html>; "1.2 million rubles were raffled off in Innopolis as part of an artificial intelligence hackathon" [В Иннополисе разыграли 1,2 млн рублей в рамках хакатона по искусственному интеллекту], TASS, Apr. 19, 2022, <https://tass.ru/ekonomika/14418273>.

APPLIED AI UNIVERSITY RESEARCH

Several recent articles highlighted developments in university AI research:

- According to an April 27 *Naked Science* article, researchers from the Southern Federal University's Institute of Nanotechnology, Electronics and Instrumentation are working to develop microcircuits made with "intelligent" materials, which are capable of changing their resistance under varying electric fields. Such microcircuits would make it possible to fully realize the function of artificial synapses of neural networks.
- According to an April 21 *Scientific Russia* article, researchers from the Southern Federal University have also developed a smart system to reduce accidents at energy facilities. The AI-enabled technology can detect defects in transformers, as well as verify that high-voltage equipment is safe and functional before it is worked on. It also provides a cost-effective approach in deciding when or whether to replace expensive transformers.
- According to an April 29 TASS *Science* article, fourth-year students at the Tyumen Industrial University have developed a neural network-enabled screening system for detecting lung pathologies with an accuracy of up to 95 percent. The AI can detect Covid-19, lung cancer, and tuberculosis, and is designed to increase the bandwidth of radiology departments while maintaining accuracy in detecting the disease and reducing the burden on radiologists.

Sources: "SFedU took a step to create neural networks in the form of a microcircuit" [В ЮФУ сделали шаг для создания нейронных сетей в виде микросхемы], *Naked Science*, Apr. 27, 2022, <https://naked-science.ru/article/column/v-yufu-sdelali-shag-dlya-sozdaniya-nejronnyh>; "Southern Federal University Scientists Have Developed a Smart System for Diagnosing Power Transformers" [Ученые Южного федерального университета разработали умную систему диагностики силовых трансформаторов], *Scientific Russia*, Apr. 21, 2022, <https://scientificrussia.ru/articles/ucenye-ufu-razrabotali-umnuu-sistemu-diagnostiki-silovyh-transformatorov>; "University of Tyumen is developing a system for diagnosing lung pathology with an accuracy of up to 95%" [В тюменском вузе разрабатывают систему диагностики патологии легких с точностью до 95%], TASS *Science*, Apr. 29, 2022, <https://nauka.tass.ru/nauka/14432819>.

ALFA BANK AND MIPT LAUNCH JOINT MASTERS PROGRAM

According to an April 20 *Vedomosti* article, Alfa-Bank and the Moscow Institute of Physics and Technology (MIPT) have launched a joint master's program called "Machine Intelligence in Finance." The two-year program trains professionals to work with data and algorithms in the banking business, and will involve working with big data, machine learning, deep learning, and full stack development. The program also provides fundamental mathematical training as well as development of "flexible" skills: teamwork, leadership, and public speaking. The program is free for students and Alfa-Bank pays a scholarship stipend of 40,000 rubles a month.

Source: "Alfa-Bank and MIPT launched a joint master's program" [Альфа-Банк и МФТИ запустили совместную магистратуру], *Vedomosti*, Apr. 20, 2022, https://www.vedomosti.ru/press_releases/2022/04/20/alfa-bank-i-mfti-zapustili-sovmestnyu-magistraturu.

EFFORTS TO MITIGATE IT SHORTAGES AND BRAIN DRAIN

According to an April 26 *CNews* article, the Federation Council for the Development of the Digital Economy has proposed the return of a Soviet mandate which forced all state-funded graduates from universities, colleges, and technical schools to work at specified organizations for a period of three years. The new proposal is for a period of five years instead of three, and is designed to help develop Russia's IT industry and mitigate the effects of brain drain.

According to an April 20 *Kommersant* article, Russian IT companies such as Kaspersky and Yandex have begun to hire more experts and increase employees' salaries in efforts to mitigate brain drain. In April, these companies increased salaries by an average of 20 percent. However, this trend is affecting large Russian banks in the opposite way: they used to be a primary employer in the field of IT and digitization, but now they have begun to cut IT employees and are curtailing their IT/digitization spending.

According to an April 19 *CNews* article, Russian universities currently graduate only 20,000 experts with specialties in the field of electronics per year, and only within 5 percent remain in the profession; the rest go to other industries in search of, among other things, higher income. Moreover, in spring 2022, the Russian electronics development and production industry employed about 300,000 people, but only 2 percent were aged 20 to 29 and the average age of half of the employees was close to 50. In order to mitigate this problem, the Russian government is launching a new federal project, "Training personnel and scientific foundation for the electronics industry," for 312 billion rubles. The planned measures in this project include opening at least 25 "youth laboratories," issuing more young professional grants, and having "end-to-end personnel and training management" in schools, universities, and workplaces. According to the Russian government, these measures should increase the number of retained, Russian-based personnel in the field of electronics by approximately 60,000 people by 2030.

Sources: "In Russia, they want to return the Soviet system of distribution of students after graduation. Let's start with IT people" [В России хотят вернуть советскую систему распределения студентов после выпуска. Начнут с ИТ-шников], *CNews*, Apr. 26, 2022, <https://www.cnews.ru/news/top/2022-04->

26_v_rossii_vozvrashchaetsya_sovetskaya; "IT is overloaded" [IT перегружается], *Kommersant*, Apr. 20, 2022, <https://www.kommersant.ru/doc/5317032>; "There is a wild shortage of personnel in Russian electronics. Specialists need good salaries, but there is no chance of their growth" [В российской электронике дикая нехватка кадров. Специалистам нужны хорошие зарплаты, но шансов на их рост не видно], *CNews*, Apr. 19, 2022, https://www.cnews.ru/news/top/2022-04-19_v_rossijskoj_elektronike.

HSE REPORT ON RUSSIAN ICT INDUSTRY AND EFFECTS OF SANCTIONS

According to an April 26 TASS article, a report from the Moscow Higher School for Economics (HSE) states that at the peak of its long-term digital development, Russia is facing significant challenges imposed by sanctions. The report notes that there remains a strong dependence on foreign software of almost all types—both applied (ERP, CAD, CAM, CAE, PLM, MES, etc.), and basic (operating systems, virtualization, database management, etc.). There is similarly a dependence on foreign hardware, including computer and telecommunications equipment. The report notes that while 85 percent of ICT imports come from Asian countries (65 percent from China, 8.4 percent from Vietnam, and 3.7 percent from Taiwan), most of the equipment and electronics produced in Asian countries are based on the technologies of Western companies, which can impose restrictions on their supplies to Russia. "In addition, the category of ICT goods does not include a whole range of equipment with a high proportion of embedded electronics and software and hardware systems, for example, medical, laboratory equipment, automated lines and industrial robots."

Source: "HSE noted that the digital segment of the Russian economy is at a multi-year peak of development" [Во ВШЭ отметили, что цифровой сегмент экономики РФ находится на многолетнем пике развития], TASS, Apr. 26, 2022, https://tass.ru/ekonomika/14487199?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com.

MEDVEDEV DEMANDS IT SPECIALISTS FOR RUSSIA'S SURVIVAL

Dmitry Medvedev spoke in a meeting of the Presidium of the Council under the president of the Russian Federation for Science and Education and emphasized the importance of maintaining and training specialists who can develop military and dual-use equipment. He claims that this effort has only become more important in the context of NATO expansion, and that the industry must grow with the help of the specialists already contributing to the machines and mechanisms industry to survive in the modern environment.

Source: "Medvedev called the training of developers of military technology an issue of survival" [Медведев назвал подготовку конструкторов военной техники вопросом выживания], *Ria.ru*, Apr. 19, 2022, <https://ria.ru/20220419/tehnika-1784344546.html>.

INTERNATIONAL COLLABORATION

RUSSIA TAKING STEPS TO REDUCE DEFICIT OF IT SPECIALISTS, EVEN AS MANY MOVE TO UZBEKISTAN AND OTHER FOREIGN LANDS

The surge in the emigration of IT specialists from Russia that occurred in the first two weeks after the invasion of Ukraine is reported to have gradually stabilized, and now things are moving towards equalizing the number of IT specialists leaving and returning to Russia.

Most of the departing specialists are now those who work for development centers of foreign companies that have decided to completely relocate their personnel abroad. A second category involves exporting companies that work for clients from countries that have enacted sanctions against Russia. Many of these clients have stopped working with them for fear of being fined for violating sanctions, or because of problems related to transferring payments to Russia for completed contracts. Exporters have in some cases decided to withdraw their offices from Russia in order to sign contracts and receive orders and money from abroad, as well as to partially relocate their personnel abroad. Finally, a third category of migrants includes freelancers whose marketplaces no longer work in Russia, so they can no longer earn money by selling their own applications and providing software development services directly to consumers. These freelancers speak foreign languages and are generally familiar with foreign culture and business rules.

In recent months, Uzbekistan has become a real center of attraction for IT professionals from neighboring countries. At a meeting of the president of the republic, Shavkat Mirziyoyev, held on April 14, 2022, it was reported that since the beginning of 2022, about 3,000 foreign IT specialists had arrived in Uzbekistan. In February and March 2022, tens of thousands of IT personnel left Russia under various pretexts, for various periods, and for various countries. In April 2022 the country is thought to have lost about 100,000 more of their colleagues.

One example involves the US-based IT outsourcing company Epam Systems, which has been exporting Russian IT specialists abroad. The company has relocated several hundred of its Russian employees to Uzbekistan, but it also offers relocation to 10 more countries where it has offices. Epam completely left Russia in April 2022 as part of the exodus of IT specialists that began after Russia invaded Ukraine. Epam Systems has also offered its Belarusian employees to move to Uzbekistan. In total, over the last two months, between 600 and 1,000 people have moved to Tashkent, where Epam Systems has had its own office since 2019. The company was originally founded by Arkady Dobkin, a native of Belarus.

As of mid 2021, Epam's Tashkent office employed approximately 150 people, according to Forbes. One of the company's IT specialists who agreed to move to Uzbekistan told the publication that Epam covered the main costs of his relocation. According to him, Epam helped him both financially and with the search for housing in a new country. According to a Forbes source, Epam pays for the flight of not only employees but also their families. It also finances accommodations and compensates for daily expenses during the first month after relocation.

The company offers Russian and Belarusian workers relocation to about 10 countries, including Armenia and Georgia.

Epam was founded in Minsk in 1993. It develops custom software. At the beginning of March 2022, it had about 9,000 employees living in Russia and 9,500 in Belarus. Epam announced the

suspension of operations in Russia in early March 2022. A month later, the company confirmed its intention to leave the country, announcing a complete withdrawal from Russia and the relocation of its employees to other countries.

Employees of companies operating primarily in the Russian market have been largely unaffected by emigration, especially in comparison with the categories listed above. The Ministry of Digital Development and RUSOFT member companies are taking measures to stem the outflow by providing alternative jobs for IT specialists working for foreign and exporting companies.

Supposedly, there is also the start of a movement of IT specialists returning to Russia. Their return to Russia after a spontaneous relocation began three to four weeks after 24 February. Many were motivated to return by living conditions abroad (insurance, education for children, the cost of housing, gasoline and food). The president of the RUSOFT association expect at least half of those IT specialists who left Russia to return in the near future. He believes that the situation is likely to develop as follows: "Most of the personnel working for foreign owned development centers will be hired by Russian companies. Exporters will establish channels of working through third countries. Freelancers will partially return, having learned how to work on marketplaces through intermediary companies. Real import substitution will also require more and more personnel for companies operating in the Russian market. Venture funds and angel investors will also find prospects there."

Russian officials have also taken steps to make it easier for foreign IT specialists to obtain a residence permit in Russia, an action they believe will solve the problem of staff shortages in the IT sector. They have prepared amendments to the law "On the Legal Status of Foreign Citizens in Russia," which provides for obtaining a residence permit under a simplified scheme. This scheme will allow applicants to obtain a residence permit without already having a temporary residence permit. An IT specialist arriving from abroad will be able to conclude a contract with a Russian accredited employer. Having such an agreement in hand, a specialist can immediately submit an application to the Ministry of Internal Affairs for a residence permit in Russia under a simplified scheme. It is also designed for families: it spells out the rules for simplifying the relocation to Russia of an IT specialist's entire family.

This is normally one of the most stringent Russian laws, with almost no exceptions. Prior to the shortage of IT personnel in Russia, a simplified scheme for obtaining a residence permit extended to a very limited circle of people, including former citizens of the USSR, children of Russian citizens, highly qualified specialists and their families, and graduates of domestic universities.

Those who receive a residence permit under this simplified scheme will have to continue to work in the IT field at a Russian company. Those who leave such employment will have to find another job in the field or leave the country within 30 days.

Sources: Valentin Makarov, "On the emigration and return of IT specialists—first results and prospects" [Об эмиграции и возвращении IT-специалистов – первые итоги и перспективы], D-Russia, Apr. 12, 2022, <https://d-russia.ru/ob-jemigracii-i-vozvrashhenii-it-specialistov-pervye-itogi-i-perspektivy.html>; "To overcome the acute shortage of personnel in IT, foreigners will be brought to Russia, who will be given a residence permit under a simplified scheme" [Чтобы победить острый дефицит кадров в ИТ, в Россию

завезут иностранцев, которым дадут ВНЖ по упрощенной схеме], CNews, Apr. 29, 2022, https://www.cnews.ru/news/top/2022-04-29_chtoby_pobedit_ostryj_defitsit; “An IT giant created by a native of the USSR poaches IT specialists from Russia and exports them to Uzbekistan” [ИТ-гигант, созданный выходцем из СССР, переманивает у России ИТ-шников и вывозит их в Узбекистан], CNews, Apr. 19, 2022, https://www.cnews.ru/news/top/2022-04-19_sozdannyy_vyhodtsem_iz_cccr.

DIGITAL COOPERATION WITH UZBEKISTAN EXPANDING

Russian companies have recently launched several new AI-related IT projects in Uzbekistan.

The Russian company MegaFon, together with the Ministry for the Development of Information Technologies and Communications of Uzbekistan, is launching a program for the development and employment of IT specialists. Cooperation is aimed at training and development of IT specialists of various levels in the most popular specialties in the field of development and programming. After training, depending on qualifications, participants will have access to an internship program or the opportunity to immediately start working on projects as part of the MegaFon team.

Uzbekistan is looking to expand the number of IT specialists in the country from over 50,000 at present to 1 million by 2030. According to Oleg Pekos, first deputy minister, speaking about the development of information technologies and communications of the Republic of Uzbekistan, “We expect that cooperation with MegaFon will give impetus to the issues of training qualified personnel in the field of ICT.”

In addition, MegaFon, Digital Holding, and the State Committee of the Republic of Uzbekistan for Roads signed a memorandum of cooperation in the field of digital transformation of the road transport industry. The first project within the framework of cooperation will be the creation of an intelligent weight and dimension control system on the roads of the republic, in which MegaFon will act as a technology partner and share its own experience in creating such a system in Russia. The system will use video analytics, big data, and the internet of things to predict development needs of Uzbekistan’s transport system, monitor the condition of roads, and analyze and regulate flows and manage traffic.

Digital Holding is a joint venture between the Russian MegaFon, YueSeM Telecom, and the Government of Uzbekistan. The joint venture includes telecom operator Ucell, New Solutions (formerly ICS Holding Uzbekistan), and CRPT Turon. The activity of the joint venture is aimed at expanding access and improving the quality of telecommunications services in the Republic of Uzbekistan—in particular, through the formation of a digital infrastructure in accordance with international standards, as well as the introduction of advanced technologies and systems in the areas of data storage and processing, digital marking, and control of the movement of certain types of goods.

Another joint project involving Digital Holding and Megafon also involves the Uzbekistan Ministry of Health. The three organizations recently signed a memorandum of cooperation for the digitalization of healthcare in Uzbekistan, as part of the country’s eHealth 2025 implementation strategy.

The project will create a unified medical database and a complex of integrated medical information systems in Uzbekistan by 2025. In addition to developing solutions for telemedicine consultations and launching an electronic prescription platform, the project will develop information systems that make it possible to simplify the management of the health insurance fund and control the quality of provided services. The system will allow for the transition to electronic medical records and online appointment services for doctors, and will inform patients about the results of laboratory tests via SMS and e-mail.

Sources: "Megafon launches a program for the development of IT specialists in Uzbekistan" [«Мегафон» запускает программу развития ИТ-специалистов Узбекистана], CNews, Apr. 25, 2022, https://www.cnews.ru/news/line/2022-04-25_megafon_zapuskaet_programmu; "Megafon will ensure the introduction of innovative technologies in the transport industry of Uzbekistan" [«Мегафон» обеспечит внедрение инновационных технологий в транспортной отрасли Узбекистана], CNews, Apr. 26, 2022, https://www.cnews.ru/news/line/2022-04-26_megafon_obespechit_vnedrenie; "Digital Holding will digitalize healthcare in Uzbekistan" [Digital Holding займется цифровизацией здравоохранения в Узбекистане], CNews, Apr. 25, 2022, https://www.cnews.ru/news/line/2022-04-25_digital_holding_zajmetsya_tsifrovizatsiej.

RUSSIA HAS OPTIONS FOR SEMICONDUCTOR IMPORT FROM MALAYSIA

According to Bala Chandran, the Malaysian ambassador to Russia, Russia may be able to import advanced microelectronics from Malaysia, to replace semiconductors banned by sanctions. Chandran believes that "Malaysian industry is market oriented. And I am quite sure that any request from the Russian side regarding the supply of such products will be considered." The ambassador stressed that at present he is not aware of whether negotiations are underway on the supply of electronics to Russia at the state level. At the same time, he hopes that businessmen will find a way to agree on this matter.

Malaysia is one of the largest exporters of semiconductors in the world, with total turnover in this sector of \$8.7 billion annually, and it does not yet support anti-Russian sanctions. In 2019, Malaysia was in second place in terms of chip exports to Russia. Russian media argues that for Russia, partnership with Malaysia in the field of semiconductors can be very beneficial. In spring 2022, the American companies AMD and Intel stopped supplying chips to Russia, and, in early April 2022, Europe stopped the shipment of advanced semiconductors and high-tech electronics there. Under the same ban were software and quantum computers.

As of yet, there is no clarity with China. On the one hand, China has not yet joined the anti-Russian sanctions. On the other hand, Huawei first halved the supply of its products to Russia, and then began to remove the applications of Russian banks from its AppGallery store.

Russia needs imported semiconductors because it has no domestic production of modern semiconductors. On the territory of Russia, it is possible to produce, at best, 65-nanometer microcircuits on the equipment of Mikron. Baikal and Elbrus processors were produced at the factories of the Taiwanese company TSMC, which completely stopped the production of Russian CPUs after Russia invaded Ukraine.

Russian authorities are working on a package of measures to support Russian electronics, which includes an injection of hundreds of billions of rubles into the industry. Among other things, the plan of the authorities includes the development of 28-nanometer production in the country by 2030. Along with this, major domestic producers are looking towards expanding production. Mikron intends to increase the output of silicon wafers from the current 3,000 to 6,000 by 2025, although it can only make 180–90-nm semiconductors.

Source: "Malaysia intends to flood Russia with scarce semiconductors and not impose sanctions," [Малайзия намерена завалить Россию дефицитными полупроводниками и не вводить санкции], CNews, Apr. 25, 2022, https://www.cnews.ru/news/top/2022-04-25_malajziya_poobeshchala_zavalitSpotlight.

RUSSIAN IT COMPANIES LOOKING FOR JOINT VENTURE OPPORTUNITIES IN INDIA

Russian software companies are scouting for joint ventures in India and other BRICS nations, as an alternative to cooperative ventures made impossible by Western sanctions following the invasion of Ukraine, according to Valentin Makarov, the head of Russoft, an association of over 267 Russian IT firms. A delegation from several Russian companies recently participated in the Bengal Global Business Summit and held meetings with several Indian firms.

Makarov said that technology giants such as Microsoft, Intel, Dell, and HP have development centers in Russia, and some of these companies have shut shop in the country since the invasion of Ukraine. "In the last few days, our delegation has met representatives of a number of Indian companies, and we have found joint interest with 19 firms. Negotiations are yet to be finalised. There are several areas in which we can offer our expertise, including artificial intelligence (AI), automation of industrial production, cyber security, telemedicine and digital governance." He said that there are opportunities to bring Russian AI expertise to India in areas such as tax treatment, optimizing traffic movement through software, economizing electricity consumption and working on information systems for logistics.

Source: "Russian IT firms scouting Indian JVs post sanctions to expand footprint: Russoft chief," *Business Today*, Apr. 23, 2022, <https://www.businesstoday.in/technology/story/russian-it-firms-scouting-indian-jvs-post-sanctions-to-expand-footprint-russoft-chief-330953-2022-04-23>.

ROBBO EDUCATIONAL ROBOTICS COMPANY EXPANDS PRESENCE IN CHINA

The Russian developer of educational robotics "Robbo" has opened a Chinese division in Nanjing. Robbo is developing a network of programming and robotics clubs for children in the country. Robbo opened its Chinese division after receiving a targeted grant for commercialization in China. Robbo is working on localization of its products. In particular, educational materials are being finalized and translated into Chinese. A new bilingual learning format for Robbo will be tested in China: classes will be held in Chinese and English. Beginning in 2023, the company plans to start the first sales of the Robbo Club franchise in China.

According to Andrey Smirnov, Robbo's CEO, the company launched its first programming and robotics class in China in 2017 and has since then been discussing the possibility of opening a full-fledged representative office of the company. It sees "a huge potential for development in the country: the interest in robotics and STEM disciplines is enormous, but most educational organizations work on proprietary software and hardware and on ready-made templates. This does not allow children to fully immerse themselves in the learning process and hinders the development of future innovators and inventors. The Robbo methodology, built on the use of open technologies, can radically change the situation."

Source: "Robbo opens a representative office in China" [«Роббо» открыла представительство в Китае], CNews, Apr. 26, 2022, https://www.cnews.ru/news/line/2022-04-26_robbo_otkryla_predstavitelstvo.

RUSSIAN TEAMS WIN GLOBAL AI CHALLENGE HACKATHON

The Global AI Challenge hackathon, which included 90 teams from 15 countries, took place in February 2022 in Tatarstan. The event had a total prize fund of 1.2 million rubles and was organized by the Research Center for Artificial Intelligence at Innopolis University. First place was taken by the ClosedAI team from Moscow. Second place went to the Gradient Kekpointing team from Skolkovo. Third place was shared by the DrugANNs team from Moscow and Semyons, which includes developers from St. Petersburg and Vienna (Austria).

The 2022 season of the Digital Breakthrough series of events, implemented as part of the federal project "Artificial Intelligence" of the national program "Digital Economy of the Russian Federation," is dedicated to artificial intelligence. According to the plan, this year AI hackathons will bring together 10,000 participants: 8 district hackathons will be held in a hybrid format, and 25 regional and 3 all-Russian competitions will be held in the format of online championships lasting 25 days or longer. In addition to competitions, Digital Breakthrough will include master classes, lectures, seminars, and other educational events led by leading experts in AI, computer vision, data analysis, and machine learning. "By the end of the year, it is planned to hold 36 regional and district hackathons in the regions of the country," said Dmitry Chernyshenko, deputy prime minister of Russia and chairman of the Innopolis University Supervisory Board.

Source: "Innopolis sums up the results of the international hackathon on artificial intelligence Global AI Challenge" [В Иннополисе подвели итоги международного хакатона по искусственному интеллекту Global AI Challenge], Russian government press release, Apr. 19, 2022, <http://government.ru/news/45219/>.

This report, the thirty-eighth 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.

Approved by May 2022: Michael Kofman, Research Program Director
Russia Studies Program / Strategy, Policy, Plans and Programs

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