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China–Russia IT Investment Cooperation and Information Security Governance: Current State and Future Prospects¹

Abstract: China and Russia are among Eurasia's fastest-growing IT economies, with expanding investment cooperation in the digital economy, green development, and cloud computing. Russia's importance as a partner for China is on the rise, yet scholarly work on their joint efforts to build independent IT capacity and define information security rules remains scarce. This paper addresses this gap by examining the current state of China–Russia IT investment and exploring potential future areas for cooperation. The analysis relies on a tripartite methodological approach. Legally, the study scrutinises core national instruments as well as treaties and memorandums within the BRICS and Shanghai Cooperation Organization (SCO) frameworks, assessing how China and Russia aim to shape digital governance norms. Empirically, it draws on qualitative case studies of Sino-Russian technology and investment projects launched after 2022, particularly in AI and the digital economy, to uncover the domestic drivers and external pressures influencing bilateral collaboration. Quantitatively, the research analyses bilateral IT industrial statistics from official records and databases, using descriptive trend analysis to track developments in cooperation scale, trade structure, total investment, and cross-border capital flows. China and Russia have adopted distinct models of network and information governance and investment. While China blends a statute-based cyber-governance framework with market-led investment dynamics and a mature AI sector, Russia prioritises sovereignty and security. Both countries use multilateral platforms such as BRICS and the SCO to advance alternative governance norms. The findings offer insights relevant to bilateral policy coordination, investor risk assessment, and the strategic design of future cooperation.

Keywords: cybersecurity, information security, artificial intelligence, economic sanctions, investment mechanisms, multilateral cooperation

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Сотрудничество Китая и России в сфере ИТ-инвестиций и обеспечения информационной безопасности: текущее состояние и перспективы

Аннотация. Китай и Россия относятся к наиболее динамично развивающимся ИТ-экономикам в Евразии. Между двумя странами расширяется инвестиционное сотрудничество в сфере цифровой экономики, зелёного развития и облачных вычислений. При этом роль России как партнёра Китая последовательно возрастает. Вместе с тем в научной литературе по-прежнему недостаточно работ, посвящённых совместным усилиям государств по формированию собственного ИТ-потенциала и выработке правил обеспечения информационной безопасности. Настоящая работа призвана восполнить этот пробел: в ней проведён анализ текущего состояния китайско-российского инвестиционного сотрудничества в ИТ-сфере, а также рассмотрены перспективные направления для дальнейшего взаимодействия. Методологическая база исследования состоит из трех компонентов. В правовом аспекте изучаются ключевые национальные нормативные акты, а также договоры и меморандумы в рамках БРИКС и Шанхайской организации сотрудничества (ШОС). Цель этого блока — оценить, как Китай и Россия формируют нормы цифрового управления и продвигают собственные подходы к регулированию цифровой среды. Эмпирическая часть исследования основана на качественных кейсах технологических и инвестиционных проектов, реализованных Китаем и Россией после 2022 г., в том числе в области ИИ и цифровой экономики. Анализ кейсов позволяет выявить внутренние стимулы и внешние факторы, определяющие динамику двустороннего сотрудничества. В количественном блоке используются статистические данные по ИТ-сектору из официальных источников и баз данных. С помощью описательного анализа трендов отслеживаются изменения в масштабах сотрудничества, структуре торговли, объёме инвестиций и трансграничных потоках капитала. Наблюдаются различия в подходах Китая и России к управлению информационной и сетевой средой, а также к инвестиционной политике. Китай сочетает нормативно-правовую основу киберуправления с рыночными механизмами привлечения инвестиций и развитым сектором искусственного интеллекта. Россия, в свою очередь, делает акцент на обеспечении цифрового суверенитета и безопасности. Обе страны задействуют многосторонние площадки, в частности БРИКС и ШОС, для продвижения альтернативных моделей регулирования цифровой сферы. Результаты исследования могут быть полезны при координации двусторонней политики, оценке инвестиционных рисков и разработке стратегий дальнейшего сотрудничества.

Ключевые слова: кибербезопасность, информационная безопасность, искусственный интеллект, экономические санкции, инвестиционные механизмы, многостороннее сотрудничество

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Introduction

In the current global landscape, the new technological revolution and the rise of Internet politics represent an irreversible trend that no country can afford to ignore. This process has given rise to a pronounced digital divide: it separates nations that actively embrace new technologies and keep pace with advancement from those that lack sufficient technological capacity and adhere to a closed-door approach. The result is a growing disparity manifested as a “digital divide” and a “knowledge gap”. Consequently, it is essential for countries to seize the available opportunities and accelerate their catch-up efforts to capitalise on the development potential offered by the new technological revolution.

The Internet and high technologies exhibit a dual nature. On the individual level, they empower citizens: people can stay informed about current events, articulate their demands, and participate more actively in social processes. At the economic

and social level, digital technologies foster cross-border cooperation and support systemic innovation by expanding access to knowledge and markets. On the other hand, the digital environment has become a breeding ground for information fraud and data leaks, posing a threat to the stability of the economic order. New Internet technologies have broadened information dissemination channels and transformed the mechanisms of economic and social operation. They have also enabled a wider range of actors to challenge state authority and potentially destabilise established systems. As a result, national security concerns now extend from the physical to the virtual realm, with network and information governance emerging as critical vulnerabilities. Thus, ensuring robust network security and accelerating information technology innovation have become pivotal factors in shaping the future global development trajectory.

China and Russia have adopted a state-led model of cyber governance, involving both enterprises

and individual stakeholders. Domestically, both nations have strengthened their legal frameworks for information security, enhanced monitoring mechanisms, addressed existing information vulnerabilities, and actively combated disinformation. At the international level, they have deepened bilateral cooperation in cyber and information security, including joint investment and development initiatives. Furthermore, they have articulated shared visions for information security within multilateral frameworks such as the Shanghai Cooperation Organization (SCO) and BRICS, fostering enhanced collaboration among member states.

From a broader developmental perspective, the evolving international economic landscape reflects both convergence and diversity, while the resurgence of national power fundamentally signifies a renewed emphasis on localisation and autonomy. In the context of network and information security, this translates into a strong focus on the principles of “sovereignty in cyberspace” and the establishment of a “sovereign network”.

This paper aims to examine the trajectory of China–Russia IT investment and to identify prospective areas for bilateral cooperation with a focus on overcoming technological barriers and establishing unified cross-border IT standards. Specifically, the study seeks to:

- assess how targeted IT investments and infrastructure development can help China and Russia overcome key technological barriers, leverage their comparative advantages, safeguard digital sovereignty, and reduce dependence on Western control over core equipment;

- analyse how the two countries can jointly establish unified cross-border IT standards within existing regional mechanisms, with particular attention to the potential of frameworks such as the Shanghai Cooperation Organization (SCO) and BRICS.

The analysis employs a tripartite methodological approach. From a legal perspective, the study examines the core regulatory frameworks underpinning each country’s digital governance strategy, as well as relevant treaties, memorandums, and agreements within multilateral formats such as BRICS and the Shanghai Cooperation Organization (SCO). This enables an assessment of how both states seek to influence the formation of digital-governance norms. The empirical dimension is grounded in qualitative case studies of Sino-Russian technology and investment projects launched after 2022, particularly in the fields of artificial intelligence and the digital economy. These cases help reveal the domestic drivers and external pressures shaping bilateral collaboration. Finally, the quantitative component draws on bilateral IT industrial statistics from official records and authoritative databases. Descriptive trend analysis is applied to track changes in key indica-

tors, including scale, trade structure, total investment, and cross-border capital flows, to map the evolving dynamics of the partnership.

Literature Review

The literature on China–Russia information security governance and investment cooperation remains relatively scarce; most existing studies focus on the ongoing development of information security in these two countries. The emergence of leading AI tools, such as DeepSeek, ChatGPT, and GigaChat, has, however, introduced new strategic and security dimensions to this landscape. As a result, scholarly attention is beginning to shift toward concrete policy and industrial responses.

One key area of focus is AI localization in Russia, including comparative assessments of its advantages and gaps relative to other countries. A distinct line of research uses statistical datasets to estimate the size of AI workforce, which is shaped by three core determinants: the public–private market ratio, the national economic employment structure, and the scale of the domestic information technology industry (Acemoglu & Restrepo, 2020; Wang & Tian, 2024). As an emerging industrial sector, Russia’s AI industry is expected to experience continuous growth in its workforce, especially in high-level specialist talent. Such growth is seen as a key driver of sustainable industry development (Averyanov et al., 2023).

Looking ahead, scholars (Porfiryev et al., 2020; Buklemishev, 2022) envision a positive trajectory for Russia’s socioeconomic development through 2035, expressing particular optimism regarding the country’s AI and digital economy sectors. According to these forecasts, digital industries will restructure Russia’s economic framework and provide substantial modernization impetus for the national economy (Porfiryev et al., 2020). A separate strand of research focuses on the deployment of AI in Russia’s public sector, critically assessing the institutional arrangements and state administrative mechanisms that govern the country’s AI ecosystem (Buklemishev, 2022).

A key question arises: is the expansion of artificial intelligence truly conducive to an equitable distribution of labour? In China, scholars argue that AI has transformed production models, enabling machines to handle a significant share of labour-intensive tasks (Wang & Tian, 2024). While this shift increases automation, it also risks marginalising the economic value of frontline workers. Rather than creating new jobs, AI often replaces human labour, which can lead to several adverse effects: reduced labour demand, a declining share of small enterprises in national income, a growing digital divide between countries, and, ultimately, lower overall productivity. This raises an important policy dilemma: how

can societies expand the economic pie and preserve the value of human labour while harnessing the benefits of information technology? Both China and Russia are tasked with strengthening their economies and maintaining a favourable investment environment. The need to reconcile rapid technological advancement with socioeconomic stability, while preserving human dignity in the face of continuous change, has become a focal point of current scholarly debate. Some researchers, drawing on China's experience, argue that open production capacity and open-source software are essential to a resilient science ecosystem (Syuye & Filimonenko, 2021). They emphasize the need to stimulate domestic demand and attract private investment from partner countries through cross-border cooperation.

In light of the foregoing, it is pertinent to examine the scholarly literature on Chinese investment in Russia. There can be identified two divergent perspectives regarding this matter. One school of thought advocates a cautious, wait-and-see approach to Russia's economic environment. Scholars in this camp argue that mounting geopolitical risks render the market too uncertain for enterprises, and they advise investment in Russia only after multi-faceted assessment (Liu & Pavlov, 2024). In contrast, a second group of researchers takes a more optimistic stance (Jiang & Belli, 2025). They highlight that the withdrawal of many Western firms from Russia has opened up market spaces that Chinese investors could fill. This positive outlook tends to prevail in much of the academic literature: scholars contend that, once risks and potential gains are carefully weighed, Russia remains an attractive destination for investment. Nonetheless, official data (see Xie, 2025) reveal a notable imbalance between trade and investment flows. While China is Russia's largest trade partner in terms of trade volume, it has not become Russia's top source of foreign direct investment (FDI). This indicates a substantial shortfall in the scale of Sino-Russian investment cooperation. These statistics collectively indicate a substantial shortfall in the scale of Sino-Russian investment cooperation. The sectors most appealing to Chinese enterprises in Russia are primarily agriculture, construction, and manufacturing. By contrast, Russian information technology industry remains in an early stage of development (Brizitskaya, 2023).

With regard to Sino-Russian collaboration in the sphere of AI, Russia faces severe barriers to accessing cutting-edge digital technologies from Europe and the United States. By contrast, China boasts a relatively integrated industrial chain covering digital industries, computing power, communication infrastructure, artificial intelligence and integrated circuits, positioning it as a stable and credible supplier of technologies for Russia. Furthermore, equal-footing cooperation between Russia and

China is often framed as a strategic response to U.S. hegemony in information technology, enabling the two countries to advance a distinct Eurasian technological and governance framework.

Turning to concrete areas of potential collaboration, scholars have highlighted synergies between Russia's industrial restructuring goals and deeper integration of its information and cyber technologies with artificial intelligence. One prominent proposal focuses on developing intelligent multi-modal transport systems, which are expected to enhance transport efficiency and reduce operational expenditures. Relatedly, there are suggestions to establish a unified national digital control hub for transportation, which could centralize monitoring and optimize logistics flows (Malygin et al., 2017).

From an international comparative perspective, Russia's approach to AI development diverges significantly from that of the EU (Kamolov et al., 2022). Against this backdrop, it has been argued that Russia should formulate a state-level AI development roadmap. Such a roadmap would allow the country to leverage its comparative resource endowments and to design well-structured development plans for its information technology industry.

However, Western scholars hold a skeptical posture. They argue that as two major neighboring powers, China and Russia cannot sustain peaceful coexistence, and that patterns of "warm politics but cold economy" often prevail¹. Sino-Russian bilateral cooperation is structurally anchored in Russia's supply of raw materials and China's provision of technologies, an asymmetric interdependence that stirs Russia's strategic wariness. Another strand of argument holds that Russia would face a shortage of high-end telecommunications hardware without Chinese technological support amid sweeping Western sanctions (Hsiung, 2021). In practice, both of them have expanded collaborative channels for civilian tech goods. Huawei and other major Chinese companies have expanded business in Russia (Kashin, 2018). Technical workers from both countries carry out regular exchanges, in order to build 5G networks and matching supporting facilities².

Core Theoretical Perspectives

Before proceeding to the methodological section, it makes sense to outline the four theoretical

¹ Peterson Institute for International Economics. (2022, March 2). New Technology Restrictions Against Russia Could Also Target China. URL: <https://www.piie.com/blogs/realtime-economic-issues-watch/newtechnology-restrictions-against-russia-could-also-target> (Date of access: 02.12.2025).

² NIKKEI Asia. (2021, October 20). China's 5G Base Installations Slow as U.S. Parts Dry Up. URL: <https://asia.nikkei.com/Spotlight/5G-networks/China-s-5G-base-installations-slow-as-U.S.-parts-dry-up>, (Date of access: 02.12.2025).

perspectives that this study draws on to analyse Sino-Russian cooperation in the IT sphere.

Liberalism highlights the linkage between development and security. Amid the ongoing technological revolution, IT is a priority investment area, and states align their strategies to reduce digital security risks (Khusnetdinova & Wang, 2026). Growth and safety are interdependent: stable security systems support technological progress and economic gains, while strong technological capacity underpins national security. Imbalances between development and protection risks widening the tech gap, intensifying competition, and increasing data vulnerability. For China and Russia, cooperation helps balance technical competitiveness with risk control and address weaknesses in tech investment.

Defensive realism explains how shared security threats drive cooperation. The theory holds that states prioritise national security and, when facing common threats, collaboration becomes a rational strategy (Mearsheimer, 2001). The US treats cyberspace and AI as pillars of its global influence and has imposed restrictive export controls that form a “tech iron curtain” against China and Russia. Joint technological development and shared digital resources are therefore a logical response to overcome these constraints.

Factor endowment theory (Ohlin, 1933) captures the complementary strengths of the two countries. China excels in human capital, capital availability, and mature digital infrastructure, while Russia holds advantages in defence industries, energy resources, and basic scientific research. Cross-border allocation of these factors enables both nations to offset their structural weaknesses and improve overall efficiency.

Global governance theory addresses the normative dimension of cooperation. The existing global governance architecture shows systemic imbalances (Bostrom, 2014). While Western powers promote a “rules-based order” that often reflects hegemonic interests, China and Russia advocate for a more inclusive system. They seek to reshape norms for cyberspace and AI and support alternative development models, such as open-source and decentralised AI approaches, to enhance accessibility and shared benefits.

Taken together, these theoretical approaches allow a more comprehensive view of Sino-Russian IT cooperation: they provide insights into the interplay of domestic incentives, strategic imperatives, resource complementarities, and broader normative struggles, offering a robust analytical lens to assess both current dynamics and future trajectories of the partnership.

Data and methods

This research employs three complementary methodological approaches to examine Sino-Russian IT cooperation, each designed to capture a distinct dimension of the partnership.

First, legal and document analysis. The study scrutinises core legal instruments, including China’s Cybersecurity Law and Russia’s Federal Communications Law, as well as multilateral treaties and cooperation memorandums within the BRICS and SCO frameworks. This legal-oriented analysis reveals how China and Russia seek to shape digital governance norms and expand their influence in rule-setting processes, highlighting the normative foundations of their collaboration.

Second, qualitative case research and area studies. Focusing on Sino-Russian technology and investment cooperation projects launched after 2022, the analysis covers key domains such as artificial intelligence, the digital economy, and quantum computing. By examining these cases in depth, the paper identifies the domestic drivers and external constraints that influence bilateral technology investment relations. This approach sheds light on the practical dynamics of cooperation and illustrates how strategic priorities translate into concrete projects.

Third, data analysis. Drawing on bilateral industrial statistics from the Sino-Russian information technology sectors, the research leverages data from official records and economic databases. The analysis tracks key indicators, including cooperation scale, trade structures, total investment volumes, and cross-border capital flow distribution, to map the evolving development trajectory of bilateral tech investment. In doing so, it identifies each country’s competitive strengths and structural vulnerabilities. Rather than relying on complex econometric modelling, the study presents its findings through descriptive analysis and trend evaluation, ensuring clarity while maintaining empirical rigour.

Results and Discussion

Information Technology Development in China and Russia: Current Status and Core Challenges

Russia

Russia’s communications and digital market still retain vast capacity for growth. First Deputy Chairman of Sberbank Alexander Vedyakhin estimated that the conservative valuation of Russia’s AI market is between 5 to 7 billion US dollars¹. Russia’s software industry has also seen rapid expansion. When compared with 2023, its application software market reached 89 percent in 2025. For the first time, business software usage surpassed consumer software. Russia has invested over 650 billion rubles in its AI industry. Industry forecasts show that the market size will soon hit 1 trillion ru-

¹ Science and Technology Daily. (2025, September 25). E tudong rengong zhineng lingyu duihua shendu hezuo [Russia Promotes Deep Cooperation with China in the Field of Artificial Intelligence]. URL: https://www.stdaily.com/web/gdxw/2025-09/25/content_406974.html. (Date of access: 02.05.2026). (In Chinese)

bles. Around 32 percent of Russian enterprises and government bodies now use AI tools. These figures prove that AI has become a key part of the economic system and still retained great potential for future growth. In terms of the workforce, official data indicate that 1.5 million full-time technology staff and 400 000 leading AI professionals are employed in cybersecurity, accounting for 2.4 percent of the domestic labour force.

However, this scale remains insufficient. On average, ICT professionals in Europe account for 3.9 percent of the total labour force. Finland leads the ranking with 7.8 percent. The UK, Norway, and Germany are quite close to Finland, with shares ranging from 4 to 5 percent. Overall, Russia's share of ICT personnel is slightly below the European average¹.

The level of the ICT industry is largely determined by top technicians and researchers, who are in high demand and extremely valuable. However, Russia faces a significant imbalance in its talent supply: on average, the country experiences an annual shortfall of approximately 250,000 senior ICT specialists and 220,000 mid-level technicians. The geographic distribution of the ICT sector in Russia is also uneven, with significant disparities across federal regions. Moscow alone accounts for 20 percent of the country's ICT workforce and functions as a highly concentrated technology hub. In contrast, the ICT industry is markedly underdeveloped in border regions and autonomous national oblasts. In summary, Russia's digital economy is constrained by two key challenges: a nationwide shortage of skilled ICT professionals and a geographically uneven distribution of the industry. This situation hinders the generation of broader economic spillover effects.²

Russia still has considerable room to strengthen its innovation capacity, as highlighted by the 2025 Global Innovation Index, which reveals notable gaps across several key dimensions. In the global innovation ranking, Russia holds the 28th position in human capital, the 46th in business development, and the 55th in creative output performance. The country demonstrates strong foundational

capabilities in fundamental science, maintaining world-class research standards in mathematics, physics, chemistry, and materials science. It also excels in applied technical fields, with notable strengths in aerospace equipment, laser materials, bioengineering, and nuclear energy technology. Despite these solid scientific and technical foundations, Russia's overall innovation efficiency remains relatively low. In 2025, the country ranked 60th globally and 32nd among European nations. More specifically, it stood at 62nd in knowledge and technology outputs and 76th in market maturity, which indicates a considerable gap between its research potential and its capacity to translate that potential into market-ready innovations.³ To narrow its IT development gaps, Russia needs to continuously increase investment in tech start-ups and long-term talent training.

Russia also faces practical cybersecurity risks amid its growing internet usage. According to the 2022–2023 Internet Report, Russia had more than 100 million internet users in the first quarter of 2023. This figure covered 83 percent of the country's total population. Around 98.3 million users go online every day, with an average daily online duration of nearly four hours.⁴ The large digital population has turned frequent data leaks into a persistent cybersecurity risk. In 2023 alone, breaches exposed 250 million phone numbers and 130 million email addresses. Moreover, over 20 million scam calls target ordinary residents every day, inflicting substantial economic losses nationwide (Rodeheffer, 2024).

To counter Western sanctions and technological isolation, Russia has intensified its focus on achieving technological sovereignty. This policy not only aims to uphold the country's distinct worldview and civilizational identity but also to leverage its institutional and normative influence in shaping global digital governance standards (Khusnetdinova & Wang, 2026). In early 2024, the Russian federal government issued Decree No. 124, updating the national artificial intelligence strategy. The revised framework underscores that safeguarding technological sovereignty and ensuring necessary technological independence are fundamental principles, including in the development of large generative models. The strategy further notes

¹ Association of Computer and Information Technology Enterprises. (2020). IT-Kadry Dlya Tsifrovoy Ekonomiki v Rossii. Otsenka Chislennosti IT-Spetsialistov v Rossii i Prognoz Potrebnosti v Nkh Do 2024 g. [IT Personnel for the Digital Economy in Russia: Estimation of the Number of IT Specialists in Russia and Forecast of Demand for Them Until 2024]. URL: https://www.apkit.ru/files/it-personnel%20research_2024-APKIT.pdf (Date of access: 20.12.2025). (In Russ.)

² Association of Computer and Information Technology Enterprises. (2020). IT-Kadry Dlya Tsifrovoy Ekonomiki v Rossii. Otsenka Chislennosti IT-Spetsialistov v Rossii i Prognoz Potrebnosti v Nkh Do 2024 g. [IT Personnel for the Digital Economy in Russia: Estimation of the Number of IT Specialists in Russia and Forecast of Demand for Them Until 2024]. URL: https://www.apkit.ru/files/it-personnel%20research_2024-APKIT.pdf (Date of access: 20.12.2025). (In Russ.)

³ World Intellectual Property Organization. (2025, September 16). Russian Federation Ranking in the Global Innovation Index 2025. URL: <https://www.wipo.int/gii-ranking/en/russian-federation> (Date of Access: 20.03.2026).

⁴ Ministry of Digital Development, Communications and Mass Media of the Russian Federation. (2023). Internet v Rossii v 2022–2023 Godakh. Sostoyanie, Tendentsii i Perspektivy Razvitiya [Internet in Russia in 2022–2023: State, Trends and Development Prospects]. URL: <https://digital.gov.ru/uploaded/files/internet-v-rossii-v-2022-2023-godah.pdf> (Date of access: 23.11.2025). (In Russ.)

that foreign AI platforms reflect value systems and ideological orientations that may not align with the societal values and worldview prevalent in Russia.¹

Overall, structural weaknesses continue to constrain the development of Russia's IT sector, especially the development of its high-end hardware and AI industries. These challenges can be grouped into four core dimensions. First, Russia needs to enhance its competitiveness in semiconductor manufacturing. While the country is capable of producing lower-tier microchips, it lacks the capacity for the stable, large-scale production of advanced, high-end semiconductors.² Second, a shortage of top-tier research professionals reduces the efficiency of translating scientific breakthroughs into marketable products. A fully integrated industrial ecosystem is required — one that covers engineering development, mass production, and feedback loops from the market. Moreover, demand for talent in other digital fields continues to grow steadily. Third, Russia also needs to strengthen its capabilities in training large-scale big data models. The limited hardware infrastructure may slow down the iterative improvement and upgrading of technologies. Fourth, the participation of private capital is still sluggish, resulting in a weak motivation for spontaneous innovation in society as a whole. Low activity levels among private venture investors create financing constraints for domestic tech firms and cap their growth trajectories.

China

China is a major player in IT development, boasting strong capabilities in open-source data models and hosting numerous leading AI companies. According to data from the Chinese government, by the end of 2023, the country had nearly 1.7 million enterprises operating in information transmission, software, and information technology services, with a workforce exceeding 15 million. This represents growth rates of 85 percent and 51 percent, respectively, compared to the end of 2018. A breakdown of the statistics reveals the following: 278 000 internet and related service enterprises, employing 2.43 million people; 1.377 million software and information technology service firms, with a workforce of 11.07 million. In 2023, total business revenue in the information and communications

sector rose by nearly 120 percent compared to 2018. IT professionals accounted for 4.45 percent of China's active working population. Of these, 90.4 percent worked for domestic enterprises, 5.7 percent for firms funded by Hong Kong, Macao, and Taiwan, and 3.9 percent for foreign-invested enterprises.³ In aggregate, this workforce scale moderately exceeds the European average and is larger than that of Germany, France, Poland, and several other European states. However, gaps persist when compared to more advanced digital economies such as Finland and Norway. In particular, China's pool of high-end R&D specialists still lags behind that of the most developed nations.

According to the China Digital Economy Talent Development Report (2025), China requires approximately 65 million digital workers in total. Annual recruitment needs fall into two distinct tiers. Each year, the country needs around 4.4 million new senior interdisciplinary researchers and specialists. These professionals are critical for advancing cutting-edge fields such as artificial intelligence, chip design, basic algorithm research, and industrial software development. In addition, about 3.7 million ordinary technical workers are required annually to handle software programming, system operation and maintenance, and basic data processing. Current trends indicate a growing talent shortage. By 2027, the deficit for mid-level technical positions is projected to reach approximately 3.5 million, while the shortage of high-end research and development talent is expected to rise to 5 million.⁴ Comparative data reveal that the shortage of high-end professionals is far more acute than that of ordinary and junior technical workers. China is currently facing numerous key technological bottlenecks, often referred to as core "stuck technologies." The pace of talent training and investment is unable to keep up with the rapid growth of the digital industry, resulting in a significant mismatch between the supply of technical talent and actual market demand.

Rising Security released the 2025 China Cybersecurity Report, which outlines worsening online risks for China. Cyber threats have become harder to detect, while malicious network attacks keep rising in number. In 2025, the company's monitoring system blocked nearly 50 million virus attacks and almost 200 million harmful web links. Both figures saw a clear year-on-year increase, showing a sustained deterioration of the domestic cybersecurity environment. Trojan viruses constitute the dominant threat

¹ Nezavisimaya Gazeta. (2024, June 25). Kak Obespechit' Tekhnologicheskii Suverenitet Rossii [How to Ensure the Technological Sovereignty of Russia]. URL: https://www.ng.ru/nauka/2024-06-25/9_9035_russia.html (Date of access: 05.04.2026); Official Internet Resources of the President of Russia. (2024, November 7). Zasedanie Diskussionnogo Kluba «Valdai» [Meeting of the Valdai Discussion Club]. URL: <http://www.kremlin.ru/events/president/transcripts/75521> (Date of access: 21. 03. 2026). (In Russ.)

² Cyberus. (2026). Kiberbezopasnost Rossii: Sila Tekhnologicheskogo Razvitiya [Cybersecurity of Russia: The Power of Technological Development], 7–40. URL: <https://cyberus.com/research2026.pdf>. <https://cyberus.com/research2026.pdf> (Date of access: 01.07.2026). (In Russ.)

³ National Bureau of Statistics. (2024, December 26). Official Communique No. 4 of the Fifth National Economic Census — Basic Conditions of the Tertiary Industry (Part I). URL: https://www.stats.gov.cn/xxgk/sjfb/zxfb2020/202412/t20241226_1957894.html (Date of access: 05.04.2026).

⁴ Chongqing China Human Resource Service Industry Development Research Institute. (2025). Annual Report on Development of China's Digital Economy Talents. China: Social Sciences Academic Press, 320.

category, accounting for nearly 75 percent of all detected malware. Such intrusions enable attackers to remotely compromise information systems, steal user private data and compromise data integrity.¹

China is advancing its Smart Cities initiative, planning to deploy a range of information management systems, including “one-stop service” platforms and the “smart city brain”. However, this expansion has deepened the interdependence between cyberspace and physical infrastructure, amplifying associated risks. Service disruptions and ransomware attacks are becoming increasingly common. China’s current cyber information governance framework requires a transformative upgrade. Existing approaches remain largely reactive, relying on measures such as selective patch updates and post-incident remediation. These passive defence mechanisms are no longer adequate for the complex and rapidly evolving cyber threat landscape. To address this, it is essential to strengthen collaboration among all stakeholders and build a comprehensive, multi-layered cybersecurity defence architecture.²

Shifting focus to China’s position in the international arena, the United States and its allies have pursued a “small yard, high fence” strategy to contain China’s technological development. This approach has led to successive rounds of tech sanctions and blockades targeting key sectors such as semiconductors, artificial intelligence, quantum computing, and communications equipment, with the aim of imposing targeted technological restrictions on China.

Following several revisions to regulatory frameworks, including the Export Administration Regulations (EAR) and the CHIPS and Science Act, the U.S. government has broadened its control scope to include civilian technologies, seeking to limit China’s access to critical technological products as much as possible. Since Donald Trump’s second presidential inauguration, the U.S. has further expanded its export controls, introducing explicit criteria that cover project characteristics, output scale, industrial output value, export channels, and transportation carriers for all shipments bound for China. Japan has banned exports of communications equipment to China, while the Netherlands has restricted the export of new extreme ultraviolet (EUV) lithography machines. Additionally, the U.S. and the European Union have formed the CHIP 4 alliance and are coordinating technology restrictions through the

Wassenaar Arrangement to create a cohesive technological blockade.³ The U.S. has also intensified the use of secondary sanctions and frequently invoked extraterritorial jurisdiction and affiliated sanctions to maintain its technological dominance.⁴

Consequently, China faces growing pressure to pursue independent research and development. The country must cultivate self-reliant core technologies and accelerate the mass production of advanced chips and semiconductor manufacturing equipment. Doing so is critical to preventing stagnation in its AI industry due to shortages of essential hardware component.

Cybersecurity Governance and Strategic Investment in China and Russia

China and Russia are major powers pursuing innovation-driven economies and strengthening their respective information industries through bilateral investment cooperation. Given their long-term limited access to cutting-edge technologies from Europe and the U.S., building self-reliant IT R&D networks is a strategic necessity. The two countries’ strengths are complementary: China leads in applied and civilian technologies, backed by a vast domestic market and ample labour resources, though its fundamental scientific research capacity needs strengthening. Russia, by contrast, retains strong capabilities in basic sciences and boasts a pool of high-calibre technical specialists, but struggles with low commercialisation rates of research outputs and a smaller domestic market. As former Chinese Premier Li Keqiang noted in 2014, combining China’s industrial and market strengths with Russia’s resource and scientific advantages can create synergistic effects and fuel innovation⁵.

³ Sichuan Provincial Department of Commerce. (2025, December 1). Suoxin zhizhan: Meiguo duihua bandaoti lingyu chukouguan zhi shengji cuoshi jixi [The Battle of Choking: Analysis of US Export Control Escalation Measures Against China in the Semiconductor Field]. URL: https://swt.sc.gov.cn/sccom/c25030606/2025/12/1/2dd0db5ec7594221b21ed84d1208dff8.shtml?f_link_type=f_linkinlinenote&flow_extra=eyJkb2NfaWQiOiJlZjYzYmYxMWY5OWZiNGJkLWJlMWFIZDA1N2FmNjRmYmYiLCJpbmxbmVfZGlzcGxheV9wb3NpdGlvbI6MCwiZG9jX3Bvc2l0aW9uJjowfQ%3D%3D (Date of access: 04.05.2026). (In Chinese)

⁴ Bureau of Industry and Security, U.S. Department of Commerce. (2026, January 13). Joint Communiqué. URL: <https://www.federalregister.gov/developers/documentation/api/v1> (Date of access: 04.05.2026). (In Chinese)

⁵ Ministry of Foreign Affairs of China, Li Keqiang (2014, October 15), Yi chuanguan shixian gongtong fazhan baorong fazhan — zai Disanjie Mosike Guoji Chuanguan Fazhan Luntan shang de yanjiang [Achieving Common and Inclusive Development Through Innovation — Speech at the 3rd Moscow International Forum for Innovative Development], https://www.fmprc.gov.cn/web/gjhdq_676201/gj_676203/oz_678770/1206_679110/1209_679120/201410/t20141015_9337077.shtml?f_link_type=f_linkinlinenote&flow_extra=eyJpbmxbmVfZGlzcGxheV9wb3NpdGlvbI6MCwiZG9jX3Bvc2l0aW9uJjowLCJkb2NfaWQiOiJlMDZmMDFhNjBiMTQwNjM1LTg4NzQxYzEwY2M0ZTVjYTAifQ%3D%3D (Date of access: 01.12.2025). (In Chinese)

¹ Xinhua Net. (2026, February 6). Wang luo Anquan zhi neng hua, yin bi hua he quan ju hua xin te dian [Cybersecurity Presents New Characteristics of Intelligence, Concealment, and Globalization]. URL: <https://www.news.cn/> (Date of access: 03.05.2026). (In Chinese)

² China Daily Han (2025, September 3). China and Russia Can Lead Way in AI: Leading Banker. URL: <https://www.chinadaily.com.cn/a/202509/03/WS68b7e0cea3108622abc9ea6d.html> (Date of access: 25.03.2026).

Russia places high priority on scientific and technological cooperation with China. The updated Concept of Russia's International Scientific and Technological Cooperation highlights "science diplomacy" as a key pillar aimed at promoting state-level scientific dialogue and facilitating academic exchanges for joint research.

Article 21 of Russia's revised Strategy for Scientific and Technological Development explicitly calls for enhanced cooperation with friendly countries to adopt foreign technologies. It also sets out the goal of leveraging digital technologies, including intelligent manufacturing, industrial robots, high-performance computing, cloud computing, and machine learning, to scale up industrial production.

Cooperation between China and Russia can therefore be advanced across multiple fields. In the following sections, I will consider the most promising of them. Before proceeding, however, let us examine the definitions of information security in both countries and how they differ from more Westernized understandings.

Definitions of Information Security in China and Russia

China's definition of information security is explicitly stipulated in its Cybersecurity Law. It prescribes that competent authorities should adopt necessary measures to guard information infrastructure and computer networks against attacks, intrusions, disruptions and unauthorized access, so as to guarantee the integrity and authenticity of data.

Unlike China, Russia's statutes and official documents predominantly adopt the term «information security».¹ The Federal Communications Law mandates that state agencies should exercise supervisory authority over the information technology and communications sector². Furthermore, Russia employs the concept «informational space» (informatсионное пространство) as a substitute for the concept of «cyberspace» (Kukkola, 2020).

Against this backdrop, China and Russia adopt cyber information security governance models distinct from Western approaches. First, Western security frameworks focus mainly on protecting data and technical systems, generally without incorporating state-level regulation of online content. In contrast, China and Russia adopt a broader approach that encompasses both data protection and the miti-

gation of large-scale online narratives that could harm public order or national security. Second, both countries stress the sovereign dimension of informational space. China frames this concept as «cyber sovereignty», while Russia advances the notion of a «sovereign internet»³. They jointly oppose Western powers' intervention in other states' internal affairs under the pretext of online human rights⁴. Since 2014, Russia has conducted multiple national internet isolation drills to test its capacity to maintain domestic network interconnectivity in the event of disconnection from external global networks.⁵

Investment in Telecommunications Infrastructure and the Development of 5G Technology

Following the withdrawal of Western corporations from the Russian market, Chinese telecommunications firms have emerged as pivotal players in the construction of Russia's telecommunications infrastructure. Huawei has gradually outperformed Ericsson, Nokia and other Western rivals to claim an important share of Russia's telecom infrastructure market, while ZTE and other Chinese vendors have also secured partial market access. In 2021, Huawei partnered with Russia's mobile operator MTS to launch a commercial 5G network in Moscow. The trial network achieved a data transmission speed of 5.6 Gbps, setting Russia's national 5G speed record at that time⁶. Such in-depth bilateral cooperation has guaranteed the critical infrastructure underpinning Russia's digital economic growth.

In terms of technological R&D and industrial application, Huawei has established an R&D centre in Russia, which boasted a workforce of more than 2,000 employees by 2022, to fully align its techni-

¹ Security Council of the Russian Federation. (2016, December 5). Doktrina Informatzionnoi Bezopasnosti Rossiiskoi Federatsii [Doctrine of Information Security of the Russian Federation]. URL: <http://www.scrf.gov.ru/security/information/document5/> (Date of access: 02.12.2025). (In Russ.)

² Expert Analytics Center InfoWatch. (2024, February 17). Strategii Kiberbezopasnosti [Cybersecurity strategies]. URL: <https://www.infowatch.ru/analytics> (Date of access: 01.05.2026). (In Russ.)

³ Kommersant. (2023, December 6). Dannye Vykhodiat na Natsionalnyi Uroven: V Rossii Gotovitsya Novyi Natsproekt Razvitiya Ekonomiki Na Baze Tekhnologii [Data Reaches the National Level: A New National Project for Economic Development Based on Technologies is Being Prepared in Russia]. URL: <https://www.kommersant.ru/doc/6380045?query=кибер-безопасности> (Date of access: 02.12.2025). (In Russ.)

⁴ NATO Strategic Communications Centre of Excellence. (2021, June 11). Russia's Strategy in Cyberspace. URL: <https://stratcomcoe.org/publications/russias-strategy-in-cyberspace/210> (Date of access: 02.12.2025).

⁵ Ministry of Digital Development, Communications and Mass Media of the Russian Federation. (2023, August 15). Proekt Strategii Razvitiya Otrazli Svyazi Rossiiskoi Federatsii Na Period Do 2035 Goda [Draft Strategy for the Development of the Communications Industry of the Russian Federation for the Period Up to 2035]. URL: <https://digital.gov.ru/ru/documents/9120/> (Date of access: 03.05.2026). (In Russ.)

⁶ Royal United Services Institute. (2024, March 1). Hi-tech, High Risk? Russo-Chinese Cooperation on Emerging Technologies. URL: <https://www.rusi.org/explore-our-research/publications/commentary/hi-tech-high-risk-russo-chinese-cooperation-emerging-technologies> (Date of access: 12.01.2026)

cal output with Russia's local industrial demands¹. Huawei also collaborated with Russian telecom operator Beeline to roll out dedicated 5G industrial zones. The two parties have deployed 5G technology on unmanned mining machinery and dump trucks to boost operational productivity. In the healthcare sector, Russia leverages 5G networks to link medical equipment for sophisticated remote surgical procedures, enabling real-time transmission of high-definition medical imaging. Such collaborative projects deliver mutual empowerment for both sides. Russia accelerates nationwide 5G rollout by absorbing Chinese technology, while Chinese enterprises expand diversified application scenarios via Russia's local R&D platforms and consolidate their global competitive edge in 5G technologies.

In addition, the China-Russia Joint Laboratory for Polar Technology and Equipment, established by Harbin Engineering University and Saint Petersburg State Marine Technical University, carries out polar research. It advances research on information and communication infrastructure adapted to extreme climatic conditions and thereby facilitates the construction of the China-Russia «Ice Silk Road». The Zhejiang Changxing Research Center, in partnership with Saint Petersburg Polytechnic University, conducts research on new battery materials, AI brain-controlled materials, structural design and related fields. The China-Russia Mathematics Centre, led by Peking University and Lomonosov Moscow State University, targets the cultivation of mathematical talents to consolidate the development of basic disciplines. The China-Russia Science and Technology Cooperation Alliance has built a project promotion platform covering comprehensive research areas including information analysis systems and high-performance material development.²

These cases demonstrate that China and Russia have conducted diversified, multi-tiered technological R&D cooperation across enterprises, universities and research institutions. Market-driven research by enterprises and technology commercialization by universities have become regular practice. Sberbank

of Russia has signed cooperation agreements with the Shanghai AI Research Institute and Tsinghua University. Qingdao University of Science and Technology and the Skolkovo Institute have invested in building the International Joint Laboratory for Industrial Intelligence, which focuses on lightweight machine learning and input-based software design and aims to develop reliable industrial intelligence platforms and advance the transformation and upgrading of manufacturing industries.³

Investment and Cooperation in the Sphere of Artificial Intelligence

AI constitutes a focal point of China-Russia scientific and technological cooperation. The cooperation mechanism includes three main areas: business collaboration, academic research, and technological exploration⁴.

At the corporate level, Chinese enterprises including Huawei, ZTE, Alibaba and Hikvision provide Russia with digital public security services and participate in the construction of smart cities. In addition, one Chinese firm invested 50 million US dollars to acquire the facial recognition technology rights of Russian start-up Vocord, deploying such technologies for monitoring scenarios in public spaces, transport hubs and other venues. Chinese software developer Vinci has partnered with Russian IT startup Jovi Technologies to co-develop AI products. In early 2025, riding on the global success of Chinese large model firms such as DeepSeek, Russia's Sberbank announced joint AI development projects with Chinese partners. The collaboration aims to expand AI applications in cloud computing and digital finance and fuel the growth of Russia's digital economy.⁵

Russia currently relies on a mixed supply of Western GPUs, Chinese semiconductors, and domestically produced Russian chips. However, domestic Russian chips lack the performance needed to support high-end computing workloads. Although

¹ University of Technology Sydney. (2022, November 3). China-Russia Cooperation in Advanced Technologies: The Future Global Balance of Power and the Limits of 'Unlimited' Partnership. URL: <https://www.uts.edu.au/acri/research-and-opinion/reports/china-russia-cooperation-advanced-technologies-future-global-balance-power-and-limits-unlimited-partnership> (Date of access: 12.12.2025).

² Russian Council on International Affairs. (2023, December 13). Sovremennye Formy i Mekhanizmy Vzaimodeystviya Rossii i Kitaya v Sfere Nauchno-Tekhnicheskogo Sotrudnichestva [Modern Forms and Mechanisms of Interaction Between Russia and China in the Field of Scientific and Technical Cooperation]. URL: <https://russiancouncil.ru/analytics-and-comments/analytics/sovremennye-formy-i-mekhanizmy-vzaimodeystviya-rossii-i-kitaya-v-sfere-nauchno-tekhnicheskogo-sotrud/> (Date of access: 24.12.2025). (In Russ.)

³ Skolkovo Institute of Science and Technology. (2026, May 22). Skoltech i Tsindaooskii Universitet Nauki i Tekhnologii v Kitae Otkryli Mezhdunarodnuyu Laboratoriyu II Dlya Promyshlennosti [Skoltech and China's Qingdao University of Science and Technology Launch International Joint Laboratory on AI for Industry]. URL: <https://www.skoltech.ru/news/skoltech-and-chinas-qingdao-university-science-and-technology-launch-international-joint-laboratory-ai-industry> (Date of access: 26.05.2026). (In Russ.)

⁴ Official Internet Resources of the President of Russia. (2022, February 4). Joint Statement of the Russian Federation and the People's Republic of China on the International Relations Entering a New Era and the Global Sustainable Development. URL: <http://en.kremlin.ru/supplement/5770> (Date of access: 12.11.2025).

⁵ Reuters.com. (2025, February 6). Russia's Sberbank Plans Joint AI Research with China as DeepSeek Leaps Forward. URL: <https://www.reuters.com/technology/artificial-intelligence/russias-sberbank-plans-joint-ai-research-with-china-deepseek-leaps-forward-2025-02-06/> (Date of access: 26.05.2026).

Sberbank holds a stake of over 40 percent in the electronics firm Element, the company's products are mainly used in defence and industrial applications, rather than in the high-speed chips required for big data processing. With chip supplies from NVIDIA and other Western vendors suspended, Sberbank will need to rely on large-scale imports of Chinese chips.

Sberbank has launched GigaChat Ultra — a large language model designed for sophisticated reasoning tasks. The bank plans to use Ascend 950 series chips to support the training and commercial deployment of complex models like GigaChat. Yet supply constraints remain a major hurdle: the annual production of these chips is projected to be below 800,000 units in 2026, with lead times potentially exceeding eight months. Moreover, domestic Chinese enterprises also have significant demand for the chip, so the extent of Huawei's potential supply to Russia remains uncertain.¹

Russia's domestic Baikal processors suffer from performance and ecosystem limitations, restricting their use in advanced digital applications. China's Loong series processors could help bridge this gap and support Russia's efforts to substitute imported chips. China and Russia have reached agreements on equipment procurement and core technology licensing. Russian hardware company Norsi-Trans has adopted Loongson processors and launched its Norsi-Dragon series of terminal devices. These products are suitable for office use, energy industrial control, 3D graphic design, and other applications, and are now in small-scale commercial operation. Russia has also developed its own Irtysh series chips, primarily for mid-to-high-end uses such as financial data computing and industrial simulation. This collaboration marks a shift from simple product trade to technology transfer between the two countries. It could help address Russia's shortage of high-end computing chips and strengthen its semiconductor ecosystem.²

In terms of academic and research collaboration, Huawei has set up joint laboratories at several Russian research institutions, exploring modelling and algorithm-based approaches for computational photography and image enhancement. Meanwhile,

Huawei has partnered with Kaspersky Laboratory to deliver anti-virus solutions for cloud computing services, and carried out technical coordination with Yandex to advance the development of HarmonyOS and Russia's domestic mobile operating system Aurora. Additionally, Huawei has invested in domestic networks built on self-developed computer processors in Russia. Prior to 2022, Huawei's cumulative R&D investment in Russia stood at approximately 1 billion US dollars. As Western sanctions intensified, Huawei shut down its telecom equipment sales division in Russia, yet retained its R&D hubs in Moscow, Saint Petersburg and other cities. Seizing the opportunities arising from market shifts, Huawei teamed up with Russian firm Yadro to recruit local technical specialists and expand the research team of Huawei Russia Research Institute. This partnership enables Huawei to scale up its R&D workforce while Russia retains its pool of skilled technical professionals.³

Most Western LLMs are trained mainly on English text corpora. This makes them less usable and less secure for non-English speakers. In comparison, Chinese AI models have clear practical advantages. They fit well with the actual operational needs of Russian industries. DeepSeek serves as a typical example. It runs stably in Russia without the need for VPN tools. The model can accurately identify Cyrillic characters and works independently of cross-border payment systems. Moreover, its open-source and free licensing terms make it a common tool for Russian researchers and workers, greatly speeding up its nationwide adoption. Several local Russian tech companies have begun embedding Chinese AI frameworks into their own systems. MTS AI upgraded its self-developed Cotype model by optimizing it with DeepSeek technology. In addition, Study AI integrated DeepSeek and Qwen3 into its free core functional modules, allowing all Russian users to access these AI services without restrictions.⁴

From an industrial complementarity perspective, Chinese LLMs do not compete against or replace Russia's AI solutions. Instead, the two countries form a reasonable and complementary industrial partnership with clear positioning differences. Russian homegrown models such as GigaChat and Yandex GPT have unique local advantages. They adapt well to Russia's cultural environment and store user data within the country. These models

¹ 3DNews. (2026, May 20). "Sber" Vstal v Ochered za Kitaiskimi Chipami Dlya «GigaChata» — Pered Nim ByteDance i Alibaba ["Sber" Stood in Line for Chinese Chips for «GigaChat» — ByteDance and Alibaba are ahead of it]. URL: <https://3dnews.ru/1142070/sber-vstal-v-ochered-za-kitayskimi-chipami-dlya-gigachata-pered-nim-bytedance-i-alibaba> (Date of access: 02.06.2026). (In Russ.)

² Kommersant. (2023, October 9). Vozvrashchenie Bludnogo Loongson: Kitaiskie Protsessory Ofitsialno Poyavyatsya v Rossiiskoi Tekhnike [The Return of the Prodigal Loongson: Chinese Processors will Officially Appear in Russian Equipment]. URL: <https://www.kommersant.ru/doc/6265820> (Date of access: 02.04.2026). (In Russ.)

³ Tom's Hardware. (2023, October 13). Huawei is Still Operating and Hiring in Russia. URL: <https://www.tomshardware.com/news/huawei-still-operating-in-russia-hiring-skilled-individuals-report> (Date of access: 13.12.2025).

⁴ Sputnikglobe. (2026, May 19). China's New AI Model Highlights Unique Ecosystem Built on Tech Sharing to Tackle Global Challenges. URL: <https://sputnikglobe.com/20260519/chinas-new-ai-model-highlights-unique-ecosystem-built-on-tech-sharing-to-tackle-global-challenges-1124149420.html> (Date of access: 20.05.2026).

also work smoothly with local financial systems, making it difficult for foreign AI products to replace them. In contrast, Chinese models like DeepSeek and Qwen excel in open-source features. They support local server deployment and secondary model optimization, while run independently without Western hardware support. This cooperative pattern brings benefits to both sides. It helps Russia build independent domestic AI capabilities, and creates new overseas development opportunities for Chinese technology enterprises.

Joint Development in Quantum Technology and Quantum Communication

Quantum communication works differently from traditional communication methods. It relies on quantum mechanics principles to encrypt and transmit data. This technology offers top-level protection, effectively stopping data eavesdropping and information leakage. Even in interfered environments, quantum communication ensures the secure transmission of sensitive data. China has long advanced research in quantum communication technology. It launched the Micius quantum science satellite in 2016, carrying out ongoing quantum experiment projects. Russia has also stepped up its layout in this field. In July 2023, Russian President Putin stated that Russia would soon launch a national data economy project. This initiative covers the research and application of high-precision quantum sensors, intelligent robotics, and quantum communication core technologies¹.

Consequently, research teams from China and Russia are actively pursuing these advancements. In May 2025, utilizing keywords transmitted by the satellite, China and Russia successfully conducted quantum communication over a distance of nearly 3,900 kilometers between Moscow and Urumqi, securely transmitting two high-magnification images and several documents. This achievement demonstrates the successful establishment of a quantum communication channel between China and Russia. The collaboration scientists not only pave the way for more secure communication networks but also has the potential to reshape the global communications landscape.²In March 2025, China also successfully tested quantum communication transmission

with South Africa, extending this technology to the Southern Hemisphere (Swayne, 2025).³

Sino-Russian Fund Investment in ICT

Supported by government policies and market dynamics, Chinese direct investment in Russia is growing steadily. As of 31 October 2025, there were 13,385 registered Chinese-invested enterprises in Russia — a doubling over the past five years and a 23 % increase compared to the end of 2024. In the first ten months of 2025 alone, 3,305 new enterprises were registered, which is seven times the number of German-invested companies registered in Russia in the same period. Last year, these enterprises generated over 3.3 trillion rubles in revenue, with the top 40 Chinese brands accounting for roughly 80 % of that total (General Chamber of Commerce of Russia in China, 2026).⁴

Three investment vehicles serve as flagship cooperative financing mechanisms: the Russia-China Investment Fund (RCIF), the Russian Direct Investment Fund (RDIF), and the China-Russia Regional Cooperation and Development Investment Fund. In the AI sector, RCIF's investments highlight the strategic importance of this field. Its first major investment supported Biren Technology, a Chinese chip developer specialising in GPUs designed for large language models and high-performance computing. The company aims to compete with leading tech firms such as NVIDIA. RCIF joined Biren Technology in its Series B funding round in March 2021. The strategic sensitivity of this investment became evident in October 2023, when the U.S. added Biren Technology to its Entity List, citing threats to U.S. investment security. The U.S. House of Representatives also launched investigations into American venture capital firms that participated in the funding round. RCIF's second landmark investment backed MiningLamp, which has received substantial support from the fund and secured nearly \$1 billion in total venture capital funding.

Beyond the funds mentioned, the China-Russia RMB Investment Cooperation Fund focuses on capital injections into Eurasian high-tech enterprises. The table below highlights representative firms funded by Sino-Russian joint investment vehicles (based on 2024 data from PitchBook, CB Insights, and Crunchbase, plus one RDIF investment in 2026), illustrating the complementary dynamics of bilateral investment ties.

¹ Kommersant. (2023, December 6). Dannye Vykhydyat na Natsionalnyi Uroven: V Rossii Gotovitsya Novyi Natsproekt Razvitiya Ekonomiki na Baze Tekhnologii [Data Reaches the National Level: A New National Project for Economic Development Based on Technologies is Being Prepared in Russia]. URL: <https://www.kommersant.ru/doc/6380045> (Date of access: 12.12.2025). (In Russ.)

² The Quantum Insider. (2025, May 9). China and Russia Test Quantum Communication Link. URL: <https://thequantuminsider.com/2024/01/02/report-china-and-russia-test-quantum-communication-link/> (Date of access: 11.12.2025).

³ The Quantum Insider. (2025, March 14). China Establishes Quantum-Secure Communication Links With South Africa. URL: <https://thequantuminsider.com/2025/03/14/china-established-quantum-secure-communication-links-with-south-africa/> (Date of access: 13.11.2025).

⁴ Institute of China and Contemporary Asia of the Russian Academy of Sciences. (n.d.). Zhongguo qi ye zai eluosi fa zhan bao gao [Report on the Development of Chinese Enterprises in Russia]. URL: <https://www.iccaras.ru/> (Date of access: 11.02.2026). (In Chinese)

Table 1

RCIF/RDIF's investments in enterprises (2024, 2026)

Company	Description	Deal Details	Total Capital Raised to 2024
Biren Technology	Fabless semiconductor design company for intelligent chip, develops general-purpose graphics processing unit (GPGPU) chips and GPGPU-enabled intelligent computing solutions. Support extensive AI model training and inference applications across cloud-to-edge scenarios.	The company is aiming to raise about \$245 million in its second big round of outside funding ('Series B')	\$633M
Binnopharm Group	A leading biopharmaceutical firm and one of Russia's largest pharmaceutical manufacturers. It covers in-house R&D and production, with a portfolio of prescription and OTC medicines, supplied across Russia and Eurasian markets.	undisclosed	\$96M+
DiDi Global	China's dominant mobility-technology platform and completed the acquisition of Uber's China. It provides diversified shared-mobility services for domestic users. It maintains investment in autonomous driving through its dedicated subsidiary, and pursues the large-scale commercial roll-out of robotaxi services.	The company is planning to raise \$300 million in its second major funding round ('Series B').	\$1.25B
Mininglamp Technology	A prominent enterprise big-data and AI software provider offering data-intensive analytical platforms for corporate and public-sector clients. It develops enterprise-grade data-intelligence solutions to support business decision making across various industries.	\$200 million is the target for the company's 5th major funding round ('Series E')	\$599.5M
FineEx	A Shanghai-based logistics-platform developer, providing nationwide warehouse-management and logistics systems for Chinese e-commerce and traditional retail enterprises. It targets business expansion into the Russian market.	The company is projected to raise around \$71 million in its fourth major funding round ('Series D').	\$170M+
OBL-Pharm	A generic drug manufacturer based in Russia. Its product portfolio includes hundreds of registered medicines serving domestic public procurement and retail pharmaceutical markets across Russia.	\$6.3 million was paid for existing shares in a secondary transaction	Undisclosed
Paisentech	A China-Russia joint venture in science and technology innovation. It supports the development of Russia's intelligent manufacturing base, including localised R&D of software and hardware and full-chain operations and maintenance.	2.565 billion in June 2026	Undisclosed

Source: Collected by the author. The data are drawn from the Pitchbook, CB Insights, and Crunchbase databases. <https://pitchbook.com/>; <https://www.cbinsights.com/>; <https://www.crunchbase.com/>

Investment Mechanisms for Sino-Russian Cooperation in ICT

As outlined in prior sections, China and Russia have established a steady division of labour in tech development. Russia focuses on fundamental theories, basic algorithms, special-purpose chip design, and supplying critical raw materials, while China leads in developing advanced AI chips, building computing infrastructure, and commercialising research. These technical solutions are compatible with Russia's local data systems. Both governments have introduced supportive policies to encourage private investment in the IT sector, promote cross-border joint investment, and align technical standards, thus accelerating IT project delivery. Continuous market feedback enables research teams to refine and optimise their solutions, creating a five-step development loop: open financing and enterprise engagement, government policy guidance, follow-up investment, industrial implementation, and market-driven long-term upgrades. This mutually supportive industrial system enables both nations to address their respective technical

gaps. It helps overcome reliance on external technologies and fosters a secure, self-reliant industrial ecosystem.

Multilateral Cooperation on Cyber and Information Security in Eurasia

As Eurasian regional integration moves forward, the internet economy has become a major growth engine for the whole continent. Cybersecurity, as a prerequisite for promoting the sustainable growth of the digital economy, becomes a key policy agenda. Nations on the Eurasian continent are at vastly different digital development levels, forming a unique geopolitical development pattern. The region is still troubled by many digital problems. These include uneven digital infrastructure, inconsistent cybersecurity defence capacities, and rampant cross-border cyber threats.

Western countries have erected a "technological iron curtain" that spans the globe. This undermines the principle of free market circulation, impeding open cooperation and technological advancement in the IT sector (Hsiung, C. W. 2021). Moreover, the

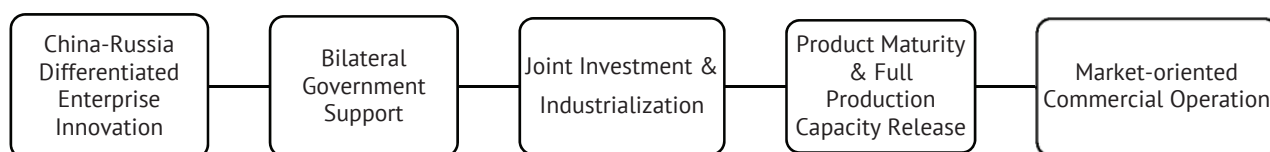


Fig. Flowchart of the Sino-Russian ICT Cooperation Pathway

Source: Drawn by the author.

West has pressured Eurasian countries to choose sides in great-power competition. Its policies of technological containment have deepened the fragmentation of the global market and significantly disrupted the economic development of emerging economies. As key Eurasian powers, China and Russia can leverage multilateral cooperation mechanisms and coordinate regional investment strategies to counter technological hegemony.

The Shanghai Cooperation Organization (SCO) serves as the core multilateral platform for China and Russia to carry out cybersecurity governance and digital cooperation across Eurasia. In recent years, the organization has rolled out multiple cooperation frameworks and kept expanding its digital cooperation initiatives. The SCO Expert Group Meeting on International Information Security took place on November 15, 2023. Participants reviewed the implementation progress of the 2022–2023 information security cooperation plan. They also clarified key work priorities for the next stage of cooperation. In April 2025, the 20th Meeting of the Supreme Courts' Chairmen of SCO Member States was held. The participants advanced the regional development plan for digital governance and cybersecurity coordination, issuing clear commitments to strengthen practical collaboration in these areas. Delegates underscored the importance of integrating big data security into judicial governance. They also plan to expand investment channels for information security technology cooperation under the SCO framework. These initiatives will enhance and refine the core agenda for regional digital security cooperation within the organization.

The BRICS Cooperation Mechanism serves as a key multilateral platform for coordinating cross-border digital governance and cybersecurity efforts. Within this framework, China and Russia have strengthened cooperation mechanisms and implemented a range of joint projects.

In 2017, Russia proposed signing the BRICS Government Agreement on Information and Communication Security. Later that year, at the 9th BRICS Summit, the cybersecurity cooperation roadmap was reviewed and formally adopted. This document established standardised rules to guide member states' cybersecurity activities.

A turning point came in 2022, marking a deeper phase of BRICS digital security cooperation. In May, China hosted the BRICS ICT Meeting, where participants assessed prior achievements and identified key

future cooperation priorities. In June, the 14th BRICS Leaders' Meeting adopted the BRICS Digital Economy Partnership Framework, further strengthening the bloc's cybersecurity governance structure. Through these efforts, the parties established regular consultation channels and committed to institutionalising cyber governance. Additionally, the Expert Group Meeting on International Cyberspace Security reconvened to review the implementation of the 2022–2023 Cooperation Program, thereby consolidating the tangible outcomes of multilateral collaboration.

The 2024 expansion and enhancement of the BRICS framework opened new opportunities for China and Russia's multilateral digital security engagement. Despite external challenges, BRICS underwent a significant enlargement, growing from five to ten member states. This expansion broadened the geographic scope and shared interests underpinning the bloc's digital cooperation agenda. During Russia's rotating BRICS presidency in 2024, the 16th BRICS Summit was held in Kazan. The resulting Kazan Declaration outlined comprehensive arrangements for joint work on ICT security. It calls for developing universally applicable and interoperable rules and standards for secure supply chains, stepping up efforts to combat ICT-related cybercrimes, and maintaining regular collaborative operations.

Beyond these intergovernmental platforms, Russia has led the development of a cross-border industrial cooperation network—the AI Alliance Network. By the end of 2025, it had secured full membership from nearly 30 institutions across more than 20 countries. The initiative has drawn participation from such nations as Azerbaijan, Serbia, Iran, Ethiopia, and Indonesia, as well as three Chinese tech enterprises. Together, these members have established a cross-border mechanism to coordinate joint research and practical applications.¹

Prospects for China-Russia Investment Cooperation in ICT

First, China and Russia need robust top-level design and long-term strategic planning. Guided by high-level diplomacy, the two countries have launched large-scale joint projects and established frameworks for AI cooperation, while in-

¹ TASS. (2025, November). Assotsiatsii iz 11 Stran Prisoeidinilis k Mezhdunarodnomu Alyansu v Sfere II [Associations from 11 Countries Joined the International Alliance in the Field of AI]. URL: <https://tass.ru/ekonomika/25673139> (Date of access: 02.05.2026). (In Russ.)

creasing investment in information security technologies. These efforts help both nations secure a strong position in the next wave of AI development. Cross-border industrial coordination requires forward-looking strategies. Currently, bilateral investment is heavily focused on technical R&D, but systematic cooperation in security-related areas, including tech ethics and countering Western ideological influence — remains underdeveloped. Going forward, the two countries can strengthen high-level strategic coordination to share technologies and research outcomes, and launch organised joint research programmes to pool resources and achieve breakthroughs in core critical technologies.

Second, China and Russia should deepen collaborative IT investment to help the Global South enhance its information security capabilities. Digital connectivity, underpinned by communication infrastructure, holds significant development potential and is a key driver for digital economic partnerships. To this end, the two nations should make greater use of multilateral platforms where Global South countries form the majority. During Russia's 2024 BRICS presidency, China's 2025 SCO chairmanship, and China's 2026 APEC presidency, both sides should fully implement the BRICS Digital Economy Partnership Framework and advance the development of the World AI Cooperation Organization. By balancing information security risks with investment viability, they can expand free trade zones, promote local currency settlements, reduce the digital divide in the Global South, and help usher in a new era of digital industrial growth led by developing nations.

Third, China and Russia should strengthen joint cooperation on IT governance to ensure secure cross-border investment in the global digital space. The UN Working Group on Information Security operated under a 2021–2025 mandate, which concluded at the end of 2025. The two countries could propose updated normative frameworks to reinforce the UN's central role in global cyber governance. They should also support UN conventions targeting cybercrime and launch additional initiatives on AI governance and investment outreach through various international fora.

Fourth, China and Russia could further scale up joint investment in the BeiDou and GLONASS satellite navigation systems to counter the militarisation of outer space led by Western countries. Both nations are committed to preserving peace in space. In recent years, the United States has deepened partnerships with SpaceX's Starlink programme and increased support for technology-aligned hard-line groups. It is using these assets for space-based intelligence gathering and surveillance, aiming to build an integrated defence architecture covering land, sea, cyberspace, and outer space. Against this backdrop, China and Russia should enhance the in-

teroperability of BeiDou and GLONASS, integrate dynamic security monitoring capabilities, and improve the quality and reliability of the navigation services provided by both systems.

Fifth, China and Russia may jointly develop impartial, equitable, and rational certification mechanisms for cybersecurity technical standards. The global technology landscape is becoming increasingly fragmented, and competition over international technical rules is intensifying. Western powers are actively promoting their own standards in international bodies, including the Quadrilateral Security Dialogue (QUAD) and the G7, and are also seeking to shape global 6G technical specifications according to their own frameworks. In response, China and Russia can work together to establish balanced rules for emerging technologies and develop investment standards that protect the interests of the Global South.

Sixth, China and Russia should adhere to market-oriented principles to boost investment activity among private enterprises and small and medium-sized enterprises (SMEs). Converting technological breakthroughs into market-ready products is an effective way to turn technical progress into societal benefits and to create a sustainable mechanism linking research and commercialisation. Based on existing experience, the two countries can accelerate technology commercialisation through three key approaches. First, they can optimise the bilateral investment environment: imbalances in two-way investment and excessive government intervention may hinder deeper cooperation, so authorities could establish dedicated "green" investment channels to lower market access barriers for SMEs. Second, they can expand mutual market access and align technical standards, which would help prevent harmful internal competition. Through these measures, the two countries can improve the efficiency of technology investment funds, attract more private venture capital to the sector, and foster the growth of local IT-focused private enterprises.

Concluding Remarks

As a major player in AI innovation, China adopts an open and cooperative stance, supporting countries in the Global South in accessing and leveraging new technologies. Such support contributes to a more inclusive and sustainable AI ecosystem.

Russia is an important partner for China, with ongoing collaborative projects in areas such as green agriculture, the digital economy, and new materials. However, there remains significant potential for expanding this cooperation. In this context, it is essential to examine the implications of AI-driven collaboration between the two countries, assess the associated challenges, and identify promising new directions for joint development.

This paper pursues two interrelated analytical tracks. The first focuses on institutional development and talent cultivation: China and Russia can strengthen their respective regulatory frameworks, scale up data monitoring and governance systems, and invest in training highly skilled ICT professionals. Through targeted state policies and robust investment feasibility assessments, the two nations can also mobilise greater private capital for joint information technology initiatives.

The second track addresses coordinated efforts to enhance technological self-reliance. Bilateral cooperation in this area centres on three key priorities:

First, the joint development of communication infrastructure to ensure seamless data transmission and the stable circulation of domain name resources and data flows. The two countries have already established dedicated quantum communication links designed to counter external digital infiltration by third-party actors.

Second, collaborative research and development in chip and processor technologies to improve semiconductor security and expand the economic scale of their AI industries.

Third, mutual efforts to raise the overall level of technological sophistication and accelerate digital economic growth, with the overarching goal of safeguarding technological sovereignty and reducing dependence on external technological sources.

In response to extensive sanctions imposed by Western nations, entities such as Huawei and the China-Russia Investment Fund have launched numerous joint investment projects. Through sustained collaboration, China and Russia have built well-established institutional frameworks for bilateral investment and significantly improved the quality and effectiveness of their technological cooperation.

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