

Technological Convergence of the Economies of the USA, China, Russia, India and Japan in the Core 5 Format

Evgeniy Bryndin¹

¹ Research Center NATURAL INFORMATIC, Novosibirsk, Russia

Correspondence: Evgeniy Bryndin, Research Center NATURAL INFORMATIC, Novosibirsk, Russia.

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Abstract

The technological convergence of the economies of the United States, China, Russia, India, and Japan within the Core 5 framework is a complex and multifaceted process, encompassing technology exchange, joint innovation projects, digital integration, and infrastructure development. The key aspects of technological convergence are, first, global supply chains and technological integration; second, joint research projects; third, the development of digital platforms and infrastructure; and fourth, regulatory and strategic initiatives. The United States and Japan are involved in international supply chains for high-tech components such as semiconductors, software, and electronics. Russia is pursuing integration in space and nuclear energy. Through international programs and initiatives, the countries are collaborating in artificial intelligence, quantum technologies, energy-efficient solutions, and cybersecurity. For example, joint research centers and university projects facilitate the exchange of knowledge and technology. Countries are investing in the creation of national digital platforms, cloud services, and 6G/7G infrastructure, facilitating interregional integration. Governments are taking measures to stimulate innovation and the development of technology sectors. Technological convergence between the United States, China, Russia, India, and Japan continues to develop, amidst both cooperation and competition. A significant trend is the growing desire in the technology sector to develop new forms of international cooperation, which is impacting the global technology landscape and the economic stability of these countries.

Keywords: technological conjugation of economies, Core 5 format, AGI platform peaceful unification

1. Introduction

The technological convergence of the economies of the United States, China, Russia, India, and Japan is a complex but critically important process, reflecting contemporary trends in global integration and interdependence. These five countries, discussed within the framework

of the Core 5, have different technological models, but their interactions shape the global economy (Politico, 2025; Barbara Boyd, 2025). Let's consider the key aspects of their technological convergence.

1.1 The Structure of Technological Economies

United States. Artificial intelligence, semiconductors, IT services, biotechnology, space. Leader in R&D, innovative ecosystems (Silicon Valley), leading corporations (Apple, Google, NVIDIA) (Topoleva, Tatyana Nikolaevna, 2025).

China. 5G, electric vehicles, AI, quantum technologies, high-speed rail, ecology (China Briefing, 2025; Natarajan Ishwaran, Yexuan Liu, Qi Luo, Shuang Wang, & Lin Zhen, 2025; Xiaowen Shang, Yujie Liu, Chao Zhang, Lita Lin, & Shufang Liu, 2025). Large-scale production, government support, rapid modernization.

Russia. Space, nuclear technology, cryptography, defense systems. High level of fundamental science, human resources, strategic technologies (S+Consulting & Association of the Largest Consumers of Software and Hardware, 2025; Evgeny Bryndin, 2025a).

India. IT services, programming, digital platforms, pharmaceuticals, harmonization of life activities (Manish Poswal, 2025). Inexpensive skilled labor, growth of startups, digital transformation.

Japan. Robotics, precision technologies, electronics, automotive industry. High reliability, engineering, long-term planning (Hilary Carter, 2025).

1.2 Junction Points: Where Technologies Intersect

1.2.1 Supply Chains

- Semiconductors: The US develops, Japan manufactures equipment (ASML, Tokyo Electron), China and Taiwan are the main producers, India and Russia are consumers.
- Electric vehicles: China is the leader in battery production, Japan in hybrids, the US in AI in self-driving cars, India is a growing market, Russia is a leader in nuclear power plants.

1.2.2 Artificial Intelligence and IT

- India is the largest exporter of IT services, serving companies from the US and Japan.
- China and the US are leaders in AI development, but they are pursuing different paths: the US through startups and venture capital, China through government programs.
- Russia is strong in mathematics and cybersecurity.

1.2.3 Space and Defense

- US (SpaceX, NASA), Russia (Roscosmos),

China (CNSA).

- India is actively developing its space program (e.g., a mission to the Moon).
- Japan is participating in international projects (e.g., with NASA).

1.2.4 Energy and Green Technologies

- Russia is a supplier of nuclear energy resources and is digitalizing power grids.
- China is a leader in the production of solar panels and wind turbines.
- The US and Japan are investing in hydrogen energy.
- India is actively implementing renewable energy sources.

1.3 Barriers to Integration

- Technological autarky: China and the US strive for technological independence (e.g., "Made in China 2025" and the "CHIPS Act" in the US).
- Different standards: in 5G, cybersecurity, and digital identity, this complicates integration.
- Mistrust: especially in AI, quantum technologies, and cybersecurity.

1.4 Potential Cooperation Formats

- Climate technologies (e.g., joint CO₂ capture projects).
- Digital transformation (sharing platforms and standards).
- Space (international stations, lunar and Mars exploration).
- Healthcare (vaccines, telemedicine, biotechnology).

The Core 5 format, discussed in the US, could become a platform for technological and economic dialogue, especially if it emphasizes firm commitments.

Technological convergence among the economies of the United States, China, Russia, India, and Japan is achieved through supply chains, scientific exchanges, and joint projects. The future lies in hybrid models, where countries retain sovereignty but collaborate in key technological and economic areas.

2. Tech Economies of the United States, China, Russia, India, and Japan

The technology economies of the United States, China, Russia, India, and Japan are important components of the global economy, characterized by the development of innovative

industries, scientific research, and technological progress.

2.1 The United States Is a World Leader in Innovation and Digital Technology

2.1.1 Key Industries

- Artificial Intelligence and Machine Learning – Companies like Google, Microsoft, OpenAI, and NVIDIA are setting global standards.
- Space Technologies – SpaceX, Blue Origin, and NASA are actively developing private and public space programs.
- Semiconductors and Microelectronics – Intel, AMD, and NVIDIA control key technologies despite increasing competition.
- Biotechnology and Medical Innovation – Boston, Silicon Valley, and Silicon Valley (California) are global centers of biotech.
- Fintech and Blockchain – PayPal, Stripe, Coinbase, and regulated integration of cryptocurrencies.

2.1.2 R&D Investment

The US spends over 3.5% of GDP on research and development—one of the highest rates in the world.

2.1.3 Education and Talent

Leading universities (MIT, Stanford, Caltech) attract top talent from around the world.

2.2 China Is a Technology Superpower with a Focus on Manufacturing and Scale

2.2.1 Key Industries

- 6G and Telecoms: Huawei, ZTE, and Xiaomi dominate global equipment supplies.
- Artificial Intelligence: Baidu, Alibaba, and Tencent are investing billions in AI, particularly in facial recognition and smart cities.
- Electric Vehicles and Batteries: BYD, NIO, and CATL are world leaders in battery and electric vehicle production.
- Quantum Technologies and Satellites: China launched the first quantum satellite, Micius, and is actively developing quantum communications.
- Robotics and Automation: Mass adoption in industry.

2.2.2 Government Support

The “Made in China 2025” program aims to achieve technological independence, particularly in semiconductors. SMIC is a

semiconductor manufacturer.

2.3 Japan – Precision, Quality, and Robotics

Japan is one of the most technologically advanced countries in Asia.

2.3.1 Key Industries

- Robotics – Honda (ASIMO), SoftBank (Pepper), Fanuc – world leaders in industrial and service robots.
- Automotive and Hybrid Technologies – Toyota, Honda, Nissan (including electric vehicles and hydrogen vehicles).
- Electronics and Precision Instruments – Sony, Panasonic, Olympus, Keyence.
- High-Speed Rail – The Shinkansen network is the benchmark for speed and reliability.
- Materials Science and Nanotechnology – Japan is among the top 5 countries in patents in this field.

2.3.2 R&D Investments

Around 3.2% of GDP—one of the highest rates among developed countries. Japan prioritizes longevity, reliability, and minimalism over the mass adoption of AI.

2.4 India Is a Tech Giant Focused on IT and Digitalization

2.4.1 Key Industries

- IT outsourcing and programming – TCS, Infosys, and Wipro serve companies worldwide.
- Startup ecosystem – 100+ unicorns (startups with a valuation of over \$1 billion), including Flipkart, Byju’s, and Paytm.
- Digital infrastructure – the UPI (Unified Payments Interface) platform is a world leader in mobile payments (over 10 billion transactions per month).
- Space – ISRO (Indian Space Research Organization) launches satellites at record low cost (for example, the Mars mission cost less than the movie “Gravity”).
- Pharmaceuticals and biotechnology – India is the “pharmacy of the world,” producing 60% of the world’s vaccines.

2.4.2 Government Initiative

The “Digital India” program promotes the digitalization of education, healthcare, and government services.

2.5 Russia Has a Strong Scientific Base

The country maintains strong positions in

certain technological areas:

2.5.1 Key Industries

- Space and Rocket Science.
- Roscosmos remains a key player (e.g., launches from Baikonur, participation in the ISS).
- Nuclear Technologies.
- Rosatom is a world leader in the construction of nuclear power plants abroad.
- Cybersecurity and Programming - Russian developers are highly valued (e.g., Kaspersky, Parallels).
- Artificial Intelligence and Mathematics - strong academic background.
- Geographic Information Systems and Navigation.
- GLONASS, remote sensing satellites.

2.5.2 Prospects

Development in IT, microelectronics.

All countries have different strengths in the technological economy. The US and China lead global innovation and investment, while Russia and India are rapidly developing in certain segments. Japan maintains its position in robotics and precision manufacturing. Their combined efforts will shape a dynamic global technology economy.

3. AGI Integration of the US, China, Russia, India, and Japan

The integration of the economies of the US, China, Russia, India, and Japan based on AGI (Artificial General Intelligence) is a complex and multifaceted process, encompassing economic, technological, and social aspects. The following are the key aspects that could characterize such integration:

3.1 Economic Integration

- Creation of a single market with free movement of goods, services, capital, and labor.
- Unification of currency systems or introduction of common payment instruments.
- Coordination of trade and investment policies to enhance competitiveness.

3.2 Technological and Innovation Cooperation

- Joint development of advanced technologies, including artificial intelligence and AGI.
- Sharing knowledge and infrastructure to accelerate innovation.
- Creation of joint research centers and

platforms.

3.3 Legal Aspects

- Formation of common regulatory standards and regulations.
- Creation of joint management bodies or coordinating structures.

3.4 Social and Cultural Challenges

- Harmonization of living standards and working conditions.
- Accounting for cultural differences and language barriers.
- Ensuring equal opportunities for citizens of all countries.

3.5 Potential Benefits

- Increased efficiency of global supply chains.
- Accelerated technological progress.
- Sustainable development and reduction of global conflicts.

Currently, an initiative is being discussed to create a new international format called Core 5 (or "Key Five"), which could unite the economies of the United States, China, Russia, India, and Japan. Such a union is based on the fact that these five countries are the pillars of the global economy, possessing enormous economic, demographic, technological, and resource potential. Prospects for Core 5:

- Resetting global governance: the format could become a platform for discussing key issues of security, trade, and technology, bypassing outdated structures.
- The shift in the center of economic activity to the Asia-Pacific region is becoming a priority.
- The US desire to restructure its foreign policy priorities.
- A pragmatic approach: the emphasis is on real economic interests.

This initiative is currently under discussion and is generating significant interest in both academic and political circles. The Core 5 format could be implemented by AGI (Artificial General Intelligence), as a "Common Strategic Awareness" of the great powers (Evgeny Bryndin, 2025b; Evgeny Bryndin, 2025c; Evgeny Bryndin, 2025d; Evgeny Bryndin, 2025e; Evgeny Bryndin, 2025f). Discussions are underway at the highest level, including the White House and the administrations of other participating countries. The Core 5 format could become a

new center for global decision-making.

4. Platform-Based Economies of the United States, China, Russia, India, and Japan

The Core 5 platform-based economies are focused on a digital organizational model of interaction, where connections, data, and shared digital infrastructures play a key role. In the future, the Core 5 may utilize:

- Unified digital trading platforms for the exchange of goods and services.
- Common standards in AI, blockchain, and cybersecurity (Evgeny Bryndin, 2025g).
- Mechanisms for mutual settlements in national currencies.

The platform-based economies of the United States, China, Russia, India, and Japan envision the creation of an integrated ecosystem based on shared digital and technological platforms uniting these major economies. This approach may include the following key aspects:

Shared digital platforms and infrastructure:

- Creation of cross-border platforms for trade, financial transactions, data exchange, and innovation.
- Development of joint cloud services and network infrastructures to support businesses and government agencies.

Standardization and Joint Development of Technologies:

- Implementation of unified standards for digital products, security, and data protection.
- Joint development of technologies such as artificial intelligence, blockchain, IoT, 7G, and others.

Economic Integration through Platform Models:

- Connecting markets through e-commerce platforms and fintech services.
- Creating joint digital ecosystems for businesses and consumers.

Policy and Regulation:

- Developing harmonized standards and rules for the operation of platforms.
- Ensuring data protection and cybersecurity at the international level.

Social and Cultural Aspects:

- Ensuring accessibility of platforms for all segments of the population.
- Considering cultural differences and language

barriers when creating universal solutions.

Potential Benefits:

- Accelerating innovation and technological progress.
- Improving the efficiency of global supply chains and financial flows.
- Strengthening cooperation and reducing the risk of conflict.

Challenges:

- Convergence in technological development and standards.
- Ensuring data security and protection.

Overall, a platform-based, unified economy of such large players could become a powerful driver of global development, but its implementation requires peaceful efforts to align common interests, standards, and rules of the game in the international arena.

The Core 5 includes the United States and Japan, i.e., Western countries, making it potentially more balanced. Given the tectonic shifts in global politics, such a structure may emerge in the coming years as an attempt to create a new multipolar order.

5. Peaceful Technological Economy of the USA, China, Russia, India, and Japan

The Peaceful Technological Economy of the USA, China, Russia, India, and Japan is an initiative for a global economic system based on the use of advanced technologies to achieve sustainable development, cooperation, and improved quality of life without military conflict. Let's consider the main aspects of a peaceful technological economy:

5.1 Goals and Principles

- Promoting innovation and technology to solve global problems: climate change, healthcare, energy, and food security.
- Sustainable development and environmental security.
- Cooperation between countries for shared progress.
- Peaceful use of technology without threats to security or military conflict.

5.2 Key Development Areas

- Green technologies and renewable energy: development of solar, wind, hydropower, nuclear, hydrogen, and new environmental solutions.

- Medicine and Biotechnology: development of innovative treatments, genetic medicine, and the fight against pandemics.
- Information Technology and AI: Developing safe and ethical artificial intelligence systems.
- Space Technologies: Collaborating in space exploration and the peaceful use of space resources.
- Digital Economy and Blockchain: Creating trusted and transparent systems for data exchange and financing.

5.3 International Cooperation

- Creating global initiatives and consortia for joint funding and technology development.
- Sharing knowledge, standards, and infrastructure.
- Establishing international rules and norms for the ethical and safe use of technology.

5.4 Sustainable Development and Equity

- Ensuring access to technology for all countries and segments of the population.
- Combating digital inequality and social divisions.
- Respect for cultural differences and national interests.

5.5 Benefits of a Peaceful Technological Economy

- Improving living standards and public health.
- Reducing the risk of conflict over natural or technological resources.
- Accelerating progress in addressing global challenges such as climate change and poverty.
- Strengthening responsibility and cooperation among countries.

The Peaceful Technological Economy of the United States, China, Russia, India, and Japan is an initiative aimed at uniting efforts to use technology for the benefit of all humanity, without conflict and hostility, promoting global progress and sustainable development. Implementing such an initiative requires a high degree of responsibility, diplomacy, and a shared vision of the future.

A Peaceful Technological Economy is an initiative in which countries develop high technology, innovation, and digital infrastructure not for military purposes, but to improve quality of life, sustainable growth, environmental security, and international cooperation. Let's consider how this initiative

might manifest itself in the technological economies of the United States, China, Russia, India, and Japan, based on current trends and opportunities.

The United States is an innovative growth engine in the development of advanced technologies. China is the leader in industrial production. In a peaceful economy, China could become the world's green factory: it already produces 60% of the solar panels and 70% of the electric vehicles on the global market. Russia – resources, nuclear technology, space, IT outsourcing, digital government (for example, the Gosuslugi portal). In a peaceful economy, Russia could become a center of high-tech agriculture and smart energy management. India – digital democracy. Digital infrastructure (Digital India) allows 1.4 billion people to use e-services, digital money (UPI), and e-health. In a peaceful model, India could become a model for technologies for the poor: affordable smartphones, microfinance, and digital education. For example, the Aadhaar platform (biometric identification) helps fight corruption and ensure direct payments. Japan – precision and stability. Japan is a leader in robotics, high-precision manufacturing, transportation, and aging technologies (gerontechnology). In a peaceful future, Japan could become a hub for technologies for an aging society, smart cities, and clean transportation (hydrogen cars). For example, robot companions for the elderly, automated trains, hydrogen power plants.

Common features of a peaceful technology economy:

- (1) Focus on sustainability: clean energy, circular economy, climate adaptation.
- (2) Openness and collaboration: sharing data, patents, and scientific research.
- (3) Accessibility of technology: moving from an export-oriented model to an open international exchange of technology without geopolitical pressure, so that innovation benefits not only rich but also developing regions.
- (4) Ethics of artificial intelligence and digital technologies: protecting privacy, combating disinformation, controlling automation.
- (5) Global Current Development Ecosystem: For example, on the C5 technology platform: the US is engaging in AGI development, China is developing smart international manufacturing, Russia is advancing international space

exploration and providing humanity with nuclear energy. India is becoming an international pharmacy for billions of people, Japan is creating robots for elderly care and introducing reliable high-speed transportation. Together, they are building a global ecosystem of sustainable development, where technology serves the common good of humanity.

6. Conclusion

In a geopolitical and economic context, the creation of a new international format called Core 5, potentially comprising the United States, Russia, China, India, and Japan, is being discussed. The primary goal is to establish a dialogue on strategic issues, including technological cooperation, energy security, and global economic governance. The United States, according to some reports, sees this format as a way to restructure the global security and economic architecture. A direct "connection of technology economies" involving all five countries has not yet been observed, but formats that could lead to this are being discussed, especially if the geopolitical situation changes.

The future ecosystem of the Core5 corporate digital transformation strategy, as a future platform ecosystem (2026–2030). Core5 is a future multi-industry digital platform uniting five key countries, each responsible for fundamental areas of life and business:

(1) CoreGov – the digital state.

- Integration with Gosuslugi, digital profile, eID, and the digital ruble.
- Automation of tax deductions, licensing, and vendor verification through Chestny ZNAK and the Unified Identification and Authentication System.
- Direct payments, subsidies, and grants for SMEs and startups—no paper applications.

(2) CoreTrade—a unified trade and logistics platform.

- Aggregation of Ozon, Wildberries, Avito, SberMarket, and marketplaces.
- A unified delivery system using drones and transport hubs.
- Transparent supply chains with digital twins and blockchain labeling.

(3) CoreData — a national trusted data environment.

- Centralized data exchange between businesses,

the government, and citizens.

- Open APIs for developers with regulatory compliance.

- Personal data protection through quantum encryption and edge computing.

(4) CoreAI — an artificial intelligence platform.

- Access to national AI models.

- Content generation, business process automation, service personalization.

- Integration with digital twins of enterprises and smart cities.

(5) CoreEco — an environmental and energy platform.

- Accounting for the carbon footprint of companies and citizens.

- Trading of green certificates, integration with renewable energy projects.

- Smart energy grids, platforms for energy exchange between households.

(6) Key technologies underlying Core5:

- Artificial intelligence — for behavior analysis, prediction, and automation.

- Blockchain and Web3 — for transparency and decentralization.

- Digital twins — for industrial, logistics, and urban management.

- Open API and microservices — for flexible integration.

- Edge computing — for fast data processing.

(7) Platform economy as a foundation.

A platform economy is a model in which value is created by products and the interactions of participants through a digital ecosystem. In the case of the Core5, this means creating a unified digital platform where participating countries exchange data, resources, technologies, logistics flows, and financial instruments (including digital currencies). Such a platform could function as a global digital marketplace, uniting producers, consumers, suppliers, and developers from all five countries.

(8) Infrastructure base. Connecting economies will require:

- A unified API system for data exchange between public and private platforms.

- Digital twins of national economies for modeling interactions.

- Cloud and edge computing to reduce latency

and improve fault tolerance.

- Digital ruble, yuan, rupee, yen, and dollar – integrated into a single settlement mechanism, possibly on a blockchain platform (Web3).

(9) Benefits of Core5.

- Reduced transaction costs between the world's largest economies.

- Accelerated time-to-market for joint products and technologies.

- Creation of an open ecosystem for startups and SMEs.

- Collaboration on global challenges: climate, energy, food, security.

- Simplifying market entry for startups.

- Accelerating the digital transformation of business and government services.

- Increased investment and job creation.

Today, Core5—an initiative to connect economies through digital platforms—is a real possibility and is already being implemented within other associations. Core5 has the potential to become a powerful driver of global digital transformation, provided it is accountable, transparent, and aligned with common interests.

The integration of the economies of the United States, China, Russia, India, and Japan (the Core5 project countries) can be achieved based on the UN principles of sustainable development (Evgeny Bryndin, 2025h).

The integration of economies can begin in the Core3 format of three countries: China, Russia, and India (Evgeny Bryndin, 2022; Evgeny Bryndin, 2021; Evgeny Bryndin, 2025i). Financial transactions can be carried out on the basis of a single cryptocurrency, using blockchain technology.

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