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14th Five-Year Plan for National Informatization

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14th Five-Year Plan for National Informatization

December 2021

During the "14th Five-Year Plan" period, informatization is entering a new phase of accelerated digitized development and building a digital China. General Secretary Xi Jinping has stressed that without informatization, there is no modernization. Informatization brings opportunities for the Chinese nation to scale difficult peaks, and the historical opportunity of informatization development must be acutely grasped. Accelerating digitized development and building a digital China are inherent requirements for meeting the changed circumstances of a new development phase, grasping the opportunities of the information revolution, building new advantages for national competition, and accelerating the creation of a modern Socialist country; they are strategic steps in implementing new development ideas and promoting high-quality development; and they are a necessary road to promote building a new development structure and building a modern economic system. Directly facing the profound changes in industrial chains and supply chains in the "post-pandemic era" as well as the profound changes in global governance systems, responding to the change in the main contradiction of our country's society, accelerating digitized development, and building a digital China are necessary choices to foster new development drivers, stimulate new development vitality, bridge the digital divide, accelerate the advance of the modernization of the national governance system and governance capability, and stimulate the people's comprehensive development and society's comprehensive progress.

This Plan has been formulated on the basis of the "14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and 2035 Long-Term Objective Planning," the "National Informatization Development Strategy Outline," etc.; it is an important component of the national planning system for the "14th Five-Year Plan" period and a guideline for action for informatization work in all localities and all departments during the "14th Five-Year Plan" period.

I. Current status and circumstances

(1) Current Development Status

During the "13th Five Year-Plan" period, the Party Center with Comrade Xi Jinping at the core has paid high regard to informatization development, promoting theoretical innovation, practical innovation, and structural innovation in informatization work; making strategic policy decisions on building a cyber power, a digital China, and a smart society; strengthening top-level design, comprehensive coordination, integrating holistic advancement, and supervising implementation; and promoting informatization development to gain historical achievements, allowing historic transformation to occur. The major objectives and tasks in the "13th Five-Year Plan for China" have gained decisive progress and notable achievements.

The scale of [China's] information infrastructure is world-leading. The world's largest-scale optical fiber and 4G networks were completed, commercial use of 5G was a leader worldwide, and the Internet penetration rate surpassed 70%. From 2015 to 2020, fixed broadband household penetration rates grew from 52.6% to 96%, mobile broadband user penetration rates rose from 57.4% to 108%. Rural informatization development level disparities clearly shrunk; the proportion of administrative villages and poor villages connected with optical fiber and 4G networks reached 98%. The Beidou-3 global satellite navigation system was put into use.

Important breakthroughs were obtained in the information technology industry. Our country's global innovation index ranking jumped from 29th in 2015 to 14th in 2020. Breakthroughs were obtained in integrated circuits, basic software, and several other critical and core technologies. Since 2019, our country has become the largest source of patent applications globally, and ranks first worldwide in patent application numbers in areas such as 5G, blockchain, and artificial intelligence. The information technology industry is further expanding and strengthening; added value in the electronic and information manufacturing sector has sustained annual growth rates over 9%; and income in the software industry has sustained annual growth rates over 13%. Strategic technology industry ecosystems are continuously optimized.

The digital economy achieved leapfrog development. Our country's digital economy ranks second place globally in terms of overall scale; the share of added value in the core digital economy industries grew to a proportion of 7.8% of GDP in 2020; the digital industrialization base is becoming increasingly solid; the role of data in enabling capabilities and knowledge is becoming more prominent every day. Rural digitization development is accelerating; precision operations, digitized management, etc., are undergoing large-scale expansion. The digitization transformation of manufacturing accelerated its advance, with clear

reductions in cost, improvements in quality, and increases in efficiency. The progress of digitization in the services sector is accelerating, with flourishing development of new business formats and models. In 2020, the value of e-commerce transactions reached 37.21 trillion Yuan, becoming an important channel for residents' consumption.

The people's levels of information welfare and access increased substantially. The breadth and depth of "Internet + Government Services" rapidly grew, a national government service platform was basically completed and put into service, and the nationwide governmental website integration levels clearly increased. The world's first Internet court was established, and the national "Internet + oversight" system was preliminarily completed. The country achieved striking results in poverty alleviation, and digital technology played an important role in novel coronavirus pandemic prevention and control. Nationwide e-social security card issuance reached 360 million; long-distance healthcare cooperation networks cover over 24000 healthcare bodies in all districts and cities nationwide and all national-level poor counties' county-level hospitals; and the nationwide Internet access rate for primary and secondary schools (including tuition points) reached 100%.

Striking achievements were obtained in international cooperation in the digital area. Digital economy partnership relation networks were increasingly expanded; the "Proposal for Action to Join Hands in Building a Community of Common Destiny in Cyberspace" was published; the Global Initiative on Data Security was proposed; the G20 Digital Economy Development and Cooperation Initiative and the Initiative for International Cooperation on the Digital Economy in the "Belt-Road Initiative" were initiated; "Digital Silk Road" memoranda of understanding on cooperation were signed with 16 countries; and "Silk Road E-commerce" bilateral cooperation mechanisms were established with 22 countries. Cybersecurity and informatization enterprises globalized their development; network interconnection advanced profoundly; and international market competitiveness in information and telecommunication technologies, products, and services increased substantially. The concept of a community of common destiny in cyberspace was broadly disseminated.

The optimization of the environment for informatization development increased. Legal and policy frameworks for informatization development were essentially created; digital market reform and opening up accelerated its pace; and digital oversight services were optimized and improved. The Cybersecurity Law, E-commerce Law, Cybersecurity Review Measures, etc., were promulgated and took effect; positive progress was made in information technology and cybersecurity standardization; progress was made in scientific discipline building and talent training; and cybersecurity protection capabilities were clearly strengthened. Cyberspace is becoming cleaner and crisper every day; online culture is flourishing; the degree of online civilization is steadily improving.

(2) Development Circumstances

During the "14th Five-Year Plan" period, complex and profound changes are occurring in the external environment and domestic conditions of our country's informatization development. The present world is undergoing major changes unseen in a century; emerging market countries and developing countries are rising at unprecedented speeds; a new round of scientific and technological revolution, as well as industrial change, is bringing unprecedentedly fierce competition; global governance systems and international trends are changing at unprecedented rates; and the novel coronavirus pandemic's impact brought unprecedented instability and indeterminacy to the evolution of the global order.

From an international perspective, the world has entered a period of turbulent change, unilateralism, protectionism, and hegemonism, which constitute threats to world peace and development and the security and stability of our country's information technology industry chains; supply chains and innovation chains are presented with grave challenges. The digital transformation of the global economy is accelerating; a new generation of information technology is accelerating its iterations and converging in its applications; the digital economy is leading an omnidirectional change in production factors, organizational forms, and commercial models. International competition in the digital space is entering a new phase, and national innovation and competitiveness focused on information technology ecosystem advantages, digitization transformation capabilities, and data governance abilities at the core, is currently becoming the focal point of a new round of competition between countries worldwide; the competition over normative systems in the digital area and core technology ecosystems is growing more fierce by the day.

From a domestic perspective, our country has turned toward a high-quality development stage; its structural advantages are clear; its governance efficacy has been upgraded; long-term economic trends are good; the material basis is solid; human resources are abundant; market space is broad; development tenacity is tough the bigger social picture is stable; and there are advantages and conditions for sustained development in many areas. Accelerating digitized development, persisting in driving both wheels of technological innovation and structural innovation, and leading the construction of modern industrial systems with the digital economy all benefit the promotion of qualitative change, efficiency change, and driver change in economic development. Accelerating digitized development, advancing the modernization of the national governance system and governance capabilities, and forging publicly built, publicly governed, and public social governance structures help satisfy the popular masses' expectations for beautiful lives. Accelerating digitized development and enhancing upgrades to the industrial base as well as modernization levels of industrial chains assists in amending shortcomings in the capabilities of the industrial base and inciting the vitality of market subjects. Persisting in cooperation and mutual benefit and promoting the external openness levels of informatization to become wider in range and broader in scope benefits the construction of

a new development structure with domestic circulation in the lead and the dual domestic and international circulations mutually advancing each other.

At the same time, several prominent shortcomings still exist in our country's informatization development, primarily: the issue of unbalanced and incomplete informatization development is still comparatively obvious; the lag in rural informatization development level remains relatively large; structural and mechanistic obstacles to further unleash digitized productivity persist; shortcomings in crucial and core technologies are prominent; international competitiveness of the industrial ecology is lacking; the digital economy is insufficiently deeply merged with the real economy and its role in leading high-quality development awaits further elaboration; weak segments exist in the informatization building of social governance; grass-roots governance capabilities await upgrading; the construction of the national data resource system lags behind; the value potential of data factors has not yet been effectively activated; government service innovation and social public service digitization supply capabilities are insufficient; the masses' individualized and universalized demands cannot yet be satisfied; "China's plan" for international cooperation in the digital area has not yet been perfected; and digitized development governance systems urgently need to be completed.

The "14th Five-Year Plan" period is an important period of opportunity for innovation and leading high-quality development; we must accelerate the building of a digital China, forcefully develop the digital economy, promote the upgrading of the industrial base and the modernization of industry chains, promote the simultaneous development of new forms of industrialization, informatization, urbanization, and agricultural modernization; it is a period for deepening consolidation of advancing modernization of the national governance system and governance capabilities through informatization; we must accelerate the building of a digital society, greatly enhance modernization levels of data-based national governance capabilities and transform the structural advantages of Socialism with Chinese Characteristics into powerful national governance abilities; it is a period for important breakthroughs in building a [cyber superpower](#) and a digital China and for enhancing international discursive power; we must vigorously advocate building a community of common destiny in cyberspace, vigorously participate in building a system of international norms for cyberspace, and promote that the development of the Internet enriches the peoples of the world. Standing at a new historical starting point, we must profoundly understand the new characteristics and new requirements brought by the change in our country's major social contradiction, profoundly understand the new contradictions and new challenges brought by the intricate and complex international environment, profoundly understand the new opportunities and new spaces brought by the sustained deepening of the information revolution, strengthen awareness of opportunities and awareness of risks, maintain our strategic orientation and baseline thinking, ever more powerfully and effectively advance the building of core technologies, industrial ecosystems, the digital economy, digital society, and digital government construction, forge new

advantages for a digital country, and strive to realize development of ever higher quality, greater efficiency, greater fairness, greater sustainability, and greater security.

II. General Arrangements

(1) Guiding Ideology

Deeply implement the spirit of the 19th Party Congress and its 2nd, 3rd, 4th, 5th, and 6th Plenums, persist in abiding by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, especially General Secretary Xi Jinping's important thoughts and instructions on a cyber superpower, closely focus on comprehensively advancing the "Five Into One" general arrangements and coordinating the advance of the "Four Comprehensives" strategic arrangements, unwaveringly implement new development ideas, persist in the overall work style of seeking progress amid stability, with promoting high-quality development as the dominant theme, building a digital China as the overall objective, and accelerating digitized development as the general starting point. Realize the driving and leading role of informatization in economic and social development, promote the simultaneous development of new kinds of industrialization, informatization, urbanization, and agricultural modernization, and accelerate the construction of a modernized economic system; with deepening supply-side structural reform as the main line, we will further liberate and develop digital productive forces, accelerate the construction of a new economic structure with the great domestic circulation as the principal aspect, and the dual domestic and international circulations mutually promoting each other; with reform and innovation as basic drivers, we will perfect innovation systems and development environments, comprehensively manage development and security, advance the modernization of the national governance system and governance capacities, strengthen the construction of a digital society, digital government, and the people's ability to make a digital livelihood, let the popular masses have a stronger sense of gain, happiness, and security amid informatization development, and provide powerful drivers for the new march of building a modern Socialist country and the advance towards the second centenary struggle objective.

(2) Basic Principles

Uphold the comprehensive leadership of the Party. Uphold and perfect structures and mechanisms for the Party to lead informatization development, strengthen the top-level design, comprehensive coordination, overall advance, and supervision of implementation of building a digital China, and provide fundamental guarantees for realizing the high-quality development of informatization.

Uphold putting the people at the center. Placing increasing the people's prosperity and promoting the people's overall development as the starting point and landing point for informatization development, build a digital society and digital government, forge high-quality digital lives, and unceasingly realize the popular masses' aspirations for beautiful lives.

Uphold new development ideas. Let new development ideas penetrate into the entire process and all areas of building a digital China, foster new drivers with informatization, use new functions to promote new developments, advance building new development structures, stimulate qualitative change, efficiency change, and driver change.

Uphold the deepening of reform and opening up. Give full expression to the decisive role of markets in allocating resources, better exemplify the role of government, break through mechanistic and systemic obstacles constraining the liberation of digital productive forces, perfect basic data governance systems, and establish a new order for international cooperation in the digital area.

Uphold the systemic advance. Abide by the natural laws of informatization development, comprehensively deal with both the bigger picture both domestically and internationally, uphold the entire country as one chessboard, give ever more expression to the vigor of the Center, the localities, and all areas, strive to consolidate foundations, nurture advantages, repair shortcomings and strengthen weaknesses, strengthen the systematicness, integratedness, and coordination of the construction of a digital China.

Uphold equal emphasis on security and development. Establish a scientific cybersecurity vision, realistically defend the cybersecurity baseline, ensure development through security, stimulate security through development, promote the coordinated, consistent, and side-by-side advancement of cybersecurity and informatization development, and comprehensively enhance information security development levels and cybersecurity protection capabilities.

(3) Development Objectives

By 2025, the building of a digital China should make decisive progress, the level of informatization development should jump significantly, fundamental digital infrastructure should fully consolidate, the innovation capabilities of digital technology should be notably enhanced, the value of data factors should be given full play, the digital economy should develop with high quality, and the overall efficiency of digital governance should improve.

The digital infrastructure system should be more complete. 5G networks should be further popularized and adopted, and the requirements of sixth generation mobile communication (6G) technology clarified. Commercial applications of the Beidou system and satellite communication network should continue to expand. IPv6 and 5G, industrial

Internet, Internet of Vehicles, and other fields should be integrated and innovatively developed; infrastructure such as power grids, railways, highways, water transportation, civil aviation, water conservancy, and logistics should become increasingly intelligent. Data centers should be arranged in a pattern that is rational, green, and integrated. The capabilities of China's digital infrastructure, including 5G, Internet of Things, cloud computing, and Industrial Internet should reach globally advanced levels.

The digital technology innovation system should have basically taken shape. The innovation capability of key core technologies should be significantly improved, and major breakthroughs should be made in shortcomings such as integrated circuits, basic software, equipment materials, and core components. The technological innovation capabilities of Internet and informatization enterprises should be greatly improved; an ecosystem of collaborative innovation between production, education, and research should be basically formed; a free and flexible innovation market mechanism should be effectively established; a national-level common basic technology platform should be initially established; important progress should be made in the construction of the open source community ecosystem. Informatization laws and regulations, as well as a system for standards and norms should be basically formed, and talent training and introduction, incentive and guarantee mechanisms will become more complete.

Digital economy development quality and efficiency should reach world-leading levels. Digital industrialization and industrial digitization should develop flourishingly, and digital technology should converge with the real economy, creating a batch of digital industry clusters with international competitiveness. The leveling-up of the industrial base and modernization levels of industry chains should clearly rise; supply chain stability, security and competitiveness of industry chains should notably strengthen. New business models in the digital industry should develop healthily; digital commercial environments should be continuously optimized; digital product and service markets should become even more powerful.

Digital society building should advance steadily. A Party-led, service-oriented digital social governance structure with integrated resources, information support, and rule-of-law guarantees should be basically created. Social governance and public security systems should be perfected day by day, advance risk identification, early reporting and early warning capabilities should enhance notably, and capabilities to respond to sudden public incidents and emergencies should strengthen notably. The levels of informatization pushing up grass-roots governance levels should clearly rise. Novel smart cities should advance in a graded, categorized, and orderly manner; a digital countryside should be steadily built, urban and rural informatization coordination and development levels should notably increase.

Digital government building levels should increase overall. A Party and government body informatization building and management system suited to the Party governing the country

and running the administration in a new era should be basically created. Governmental service affairs should basically achieve uniform standards, overall joint action, and operational coordination on a nationwide scale; integration of online and offline governmental service models should be expanded overall, and nationwide integrated governmental service capabilities should notably increase. Authoritative and efficient governmental data sharing and coordination mechanisms should be completed unceasingly; public data resource openness standards and incentive mechanisms should be ever more perfected, and data resource use levels should increase notably. Oversight capability during and after processes should steadily improve, and fair oversight should be unceasingly perfected.

Digital welfare protection capabilities should be significantly strengthened. Obstacle-free informatized facilities should continue to be optimized; public service systems should become ever more convenient and beneficial to the people; the role of informatization in supporting basic welfare guarantees and basic social services should be given effective expression equalization levels of digital public services in areas such as education, healthcare, employment, social security, civil affairs, culture, etc., should rise notably; capabilities for diversified and convenient digital welfare service supply should strengthen notably; the disparity in urban-rural service level should notably narrow, and the digital accomplishments and skills of the entire population should steadily increase.

The digitized development environment should become more perfect every day. Standardized and orderly digital development and governance capabilities should increase notably; the digital ecology should be unceasingly optimized; the innovative vitality of new technologies, new products, new business formats, and new models should fully burst forth, and cyberspace governance capabilities and security protection capabilities should strengthen notably.

Main Targets for 14th Five-Year Plan Informatization Development

No.	Category	Indicator	2020	2025	Nature
	General development levels	Digital China Development Index	85	95	Expected
1	Digital infrastructure	Scale of netizens (million)	989	120	Expected
2		5G user adoption rate (%)	15	56	Expected
3		1000M and higher-speed optical fiber access users (1000 households)	6400	60000	Expected
4		IPv6 active user number (million)	462	800	Expected
5	Innovative capabilities	New-generation information technology industry invention patent holdings per 10000 inhabitants	2.7	5.2	Expected
6		IT project investment proportion of all social fixed asset investment (%)	3.5*	5.8	Expected
7		Strength of R&D investment in the computer, telecommunications and other electronic equipment manufacturing sector (%)	2.35	3.2	Expected
8		Nationwide number of high and new technology enterprises (1000)	275	450	Expected
9	Industrial transformation	Core digital economy industries' added value proportion of GDP	7.8	10	Expected
10		Proportion of completely digitized enterprises in critical operational segments (%)	48.3	60	Expected
11		Enterprise industrial equipment cloud usage rate (%)	13.1	30	Expected
12		Online retail value (trillion Yuan)	11.76	17	Expected
13		Information consumption scale (trillion Yuan)	5.8	7.5	Expected
14	Governmental services	Provincial-level administrative licensing online handling rate (%)	80	90	Expected
15		Online governmental service real-name usage scale (million)	400	800	Expected
16		E-social security card application rate (%)	25	67	Expected
17		E-litigation proportion (%)	18	30	Expected

Note: Numbers indicated* are 2019 data.

III. Primary Directions of Advance

Informatization in the "14th Five-Year Plan" period must: be based on the new development phase, implement new development ideas, build new development structures, and promote high-quality development; give prominence on focus points, concentrate resources, and strive to gain breakthroughs in areas such as deepening innovation drivers and optimizing factor and resource allocation; support joint construction, joint governance, and joint sharing; stimulate healthy and harmonious coexistence, prevent and dissolve risks, etc.; promote the realization of ever higher quality, more efficient, fairer, more sustainable, and more secure development.

Deepen innovation drivers, guide ever higher quality development. Deepen basic research, build information technology industry ecosystems, strengthen the dominant role of enterprises in innovation; promote higher education institutes, research institutions, and enterprises to launch high-efficiency cooperation, establish online-offline open, coordinated, and networked platforms; base converged development models on innovation chain sharing, supply chain coordination, data chain linkage, and industry chain cooperation; advance the upgrading of the industrial base and the modernization of industry chains; and enhance the modernization levels of industry chains and supply chains. Uphold the integration of opening up internally and opening up externally; give full rein to the important role of the digital industry in different sections of production, distribution, circulation, consumption, etc.; open up the internal circulation in the national economy, and shape a higher-level dynamic balance where demand leads supply and supply creates demand. Forcefully promote the profound integration of digital technology in the real economy, continue to optimize digital commercial environments, and stimulate the vitality of market subjects to advance.

Optimize factor and resource allocation, and promote ever more efficient development. Continue to deepen the "release, manage, serve" reform, promote the ever better integration of efficient markets and effective governments. Establish and complete structures and norms that use the Internet, big data, artificial intelligence and other such technological means to conduct administrative management, break though departmental and sectoral data barriers, enhance the efficiency of factor and resource distribution, the efficiency of public good supply, and the efficiency of governmental organization and operations. Steadily advance data factorization, accelerate the promotion of data factor circulation, let data application ecosystems flourish, strengthen data's ability to serve the real economy, and build a digital economy with data as a key factor. Promote cross-border data flow in an orderly manner, accelerate the development of data trade, forge ever more open, transparent, and inclusive ecosystems for the global data trading development.

Support joint construction, joint governance, and joint sharing, stimulating ever equitable development. Accelerate bridging the digital divide, make up for the

shortcomings in information infrastructure in rural areas, and enhance the digital skills of members of disadvantaged cyber groups. Comprehensively manage the development of urban and rural regions and deepen the integrated development of regional informatization. Compensate for weak points in people's welfare protection and social services; complete a multi-level social security system covering the entire population; comprehensively deal with urban and rural locations in a way that is fair, uniform, and sustainable; strengthen the construction of emergency response management, public health, and disease control systems; stimulate systematized, digitized, intensified, and precise development. Fully consider the needs of the elderly and special communities, advocate for the individualized design of digital products, and strengthen the inclusivity of the digital economy. Strengthen and innovate the application of informatization in grass-roots social governance and truly let the popular masses become the broadest participants, the greatest enjoyers, and the final arbiters of social governance.

Stimulate healthy and harmonious coexistence, and realize ever more sustainable development. Deeply advance the building of a green, smart, ecological civilization, and promote digitized and greened coordinated development. Continue to broaden smart green manufacturing, green efficient energies, and the greening of information carriers; develop smart logistics; advocate for low-carbon transportation; promote the creation of production methods, ways of life, and consumption patterns that are green and low-carbon, civilized, healthy, and create customs that are favorable for all. Strengthen digitized governance in the ecological environment, strengthen law enforcement, oversight in the Changjiang marine reserve and the protection of diversity of aquatic life, perfect joint mechanisms for pollution prevention and control regions as well as ecological environment governance systems dealing both with land and water. With the people's health as the objective, foster new digital health technologies, mold new business models for digital health, foster new ecologies for digital health, create new value in digital health, reconstruct healthcare and medicine management and service models, and unceasingly improve the popular masses' health and well-being.

Prevent and neutralize risks, and ensure increasingly secure development. Comprehensively strengthen the construction of the cybersecurity protection system and capabilities, deepen a security concept where strategic passes are reached and issue prevention is practiced; consolidate cybersecurity responsibilities; strengthen the building of comprehensive mechanisms for cybersecurity information; and create cybersecurity defense lines jointly built by multiple parties. Exploit cybersecurity technologies and related products and enhance indigenous cybersecurity defense capabilities. Perfect related laws, regulations, and technical standards; standardize the collection, management, and use of all kinds of data resources; and avoid the leaking of important or sensitive information. Strengthen the dynamic security risk assessment of the application of new technologies; progressively explore the establishment of governance principles and standards for artificial

intelligence, blockchain, and other such new technologies, and ensure that new technologies develop in the direction of social benefit throughout.

IV. Major Tasks and Focus Projects

(1) Building a Ubiquitous, Intelligent, and Connected Digital Infrastructure System

In order to promote the high-quality development and improvement of people's well-being, it is necessary to accelerate the construction of digital infrastructure, appropriately deploy the next-generation intelligent facility system in advance, deepen the intelligentization and upgrading of public facilities, and comprehensively promote the improvement of infrastructure capabilities.

Construct ubiquitous intelligent network connection facilities. Accelerate the scale, construction, and application innovation of 5G commercial networks, and implement the 5G application Set Sail action plan. For qualified cities, organize the construction and demonstration pilot of the Gigabit City network, and constantly promote upgrading urban broadband networks to high-speed and intelligence. Comprehensively promote the IPv6 transformation of the national backbone network, metropolitan area network, and access network; deepen the deployment of commercial application IPv6; improve the IPv6 support capacity of terminals; and realize the smooth evolution and upgrading of networks, applications, and terminals to the next generation Internet. We will comprehensively coordinate and promote the transformation of the backbone network, metropolitan area network, and access network IPv6; deepen the deployment of commercial application IPv6, enhance the support capability of terminal IPv6, and realize the smooth evolution and upgrading of networks, applications, and terminals to the next generation Internet. Strengthen research on new network infrastructure and 6G and accelerate the research and development of key technologies such as ground wireless and satellite communication integration and terahertz communication.

Box 1: Innovative 5G Application Projects

1. *Accelerate the construction of a 5G network.* Scientifically coordinate the layout of the 5G network and sites, bolster the sharing of 5G networks, open up public facilities and resources, promote in-depth coverage of major cities and key areas, and gradually extend coverage to key counties and towns, so as to form a pattern in which multiple networks coexist in hotspot areas and one network exists in remote areas. Gradually extend coverage to key cities and towns, forming multiple networks in hot spot areas and a single network in remote areas. Build a safety

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protection system suitable for 5G development and vertical application and strengthen the safety management of the 5G supply chain.

2. *Cultivate an ecosystem for the application of 5G technology.* Accelerate the integrated, innovative development and pilot application of 5G+Industrial Internet, and promote the development, utilization, and application of 5G in vertical industries such as energy, transportation, medical care, and postal express delivery. Accelerate the construction of audio and video transmission capabilities based on 5G networks; enrich 4K/8K, virtual/augmented reality (VR/AR), and other new multimedia content sources in the fields of education, sports, media, entertainment, and others. Accelerate the promotion of "public 5G high-speed rail," and provide high-quality public network services for high-speed rail passengers.

3. *Continue to promote innovation of 5G.* Strengthen the research on 5G enhanced technical standards and applications and carry out 5G industry virtual private network and 5G broadcasting technology research, standard formulation, test verification, and business development. Accelerate the research, development, and industrialization of key components such as 5G modules, core chips, key components, basic software, and instrumentation. Continue to carry out millimeter wave technology research and development experiments to promote the maturity of the millimeter wave industry. Continue to carry out millimeter wave technology research and development experiments and promote the mature millimeter wave industry.

Build new sensory infrastructure for Internet of Things (IoT) data communication.
Accelerate the digitization and intelligentization of public infrastructure in the realms of public safety, transportation, urban management, people's livelihood, environmental protection, agriculture, water, and energy conservation. Promote the incorporation of industrial IoT into public infrastructure construction planning; accelerate the formulation of unified platform specifications across departments, manufacturers, and industries. Coordinate the construction of a new metropolitan IoT private network integrating the IoT, data linkage and smart linkages., accelerate the collaborative deployment of 5G and IoT, and improve the resource sharing and comprehensive utilization level of sensory facilities. Conduct the pilot demonstration of the interconnection of the next generation information infrastructure in the Yangtze River Delta.

Box 2: 'Smart Network' Infrastructure Building, Application, and Expansion Projects

1. *Carry out innovative demonstrations of Internet of Vehicles (IoV) applications.* Select and build a national-level IoV pilot areas, accelerate the construction of IoV road infrastructure and 5G-V2X vehicle networking demonstration networks, improve the coordination between "people, vehicle, road, cloud, and network" through the use of vehicle-mounted intelligent equipment, roadside communication

equipment, road infrastructure, and intelligent control facilities; realize advanced automatic driving applications above level 3.

2. *Carry out innovative demonstrations of intelligent port system applications.* Build port information infrastructure based on technologies such as 5G, Beidou, and the IoT. Focus on coastal container hub ports as demonstrations to build an intelligent system with comprehensive perception, ubiquitous interconnectivity, and port-vehicle coordination. Increase the R&D and application of automated container terminal operating systems and remote operation control technologies. Actively promote the construction and transformation of next-generation automated terminals and storage yards. Promote the demonstration of automatic driving trucks inside port areas as well as the channels for collection and distribution in special scenarios; deepen the linkage between the port area.

3. *Carry out innovative demonstrations of Internet applications for the energy sector.* Accelerate the construction of an IoT for electric power, strengthen the perception capabilities of all links including source, network, load, and storage. Carry out "virtual power plants" and "energy microgrid" regional energy supply-side structural reform pilot programs, and build a multi-energy synergistic comprehensive energy network loop. Establish a structurally optimized and regionally balanced energy management and control system; build a platform for real-time monitoring, online analysis, and prediction of regional energy information and comprehensive optimal dispatching; promote the "singular integration of multiple tables." Promote the two-way interaction between electric vehicles and the smart grid; form an intelligent and efficient charging infrastructure system with adapted charging posts.

Building a new computing power facility for integration with the cloud-network.
Accelerate the construction of a national collaborative big-data center innovation system and build a national hub node for Beijing, Tianjin, Yangtze River Delta, Guangdong, Hong Kong and Macau, Chengdu, and Chongqing. Coordinate the deployment of public services such as medical care, education, radio and television, and scientific research, as well as cloud data centers in important fields; strengthen regional optimization of layout, intensive construction, and energy conservation and efficiency enhancement. Promote the construction and development of cloud-network integration, and realize the organic integration of cloud computing resources and network facilities. Coordinate the construction of computing power and algorithm centers oriented to blockchain and artificial intelligence, build edge computing nodes with surrounding environment sensing capabilities and feedback response capabilities, and provide low-latency, high-reliability, and strong security edge computing services. Strengthen the overall layout of the national supercomputing facility system, and explore a market-oriented cultivation mechanism for mainframe services to be opened to the outside world. Carry out China Science and Technology Cloud application innovation demonstrations to enhance scientific research and innovation service support capabilities.

Box 3: Nationwide Integrated Big Data Center System Building Projects

1. *Optimizing data center construction distributions.* Build direct data center connection networks between regional data center clusters as well as between clusters and major cities, stimulate the building of tiered and categorized distributions of data centers, and accelerate the realization of high-intensity, scaled-up, and greened development.
2. *Building and perfecting integrated algorithmic services.* Strengthen cloud resource access and integrated dispatching, promote the integration and openness of public algorithmic service resources from government affairs, science, education, healthcare, etc.; build low-cost, broad-coverage, reliable, and secure public algorithmic services, and stimulate the universal application of algorithms.
3. *Deepen public data resource exploitation and use.* Build regional general data circulation facilities and platforms with data sharing and openness and government-enterprise integrated use. Promote the innovative application of blockchain, secure multi-party computing, federated learning, and other such technological models in data circulation.
4. *Build an integrated and coordinated security protection system for basic networks, data centers, the cloud, data, applications, etc.* Conduct telecommunications cybersecurity protection; research and perfect risk identification and prevention technologies, data desensitization technologies, data security compliance assessment and certification, data encryption protection mechanisms, and related technical monitoring methods for mass data gathering and integration.

Explore the construction of cutting-edge information infrastructure. Accelerate the disposition of satellite telecommunications networks and other such novel networks aimed at global coverage, implement the major Beidou industrialization projects, and build application demonstrations and open laboratories. Accelerate the commercial application and integrated innovation of the Beidou system, satellite telecommunications networks, surface and low-altitude sensing, and other such space network infrastructure. Build blockchain infrastructure based on distributed identification; enhance blockchain inter-system linkage and interconnection capabilities. Advance the construction of smart maritime projects, strive to enhance comprehensive maritime information sensing, telecommunications transmission, resource handling, and smart application service capabilities. Explore the establishment of quantum information infrastructure and experimental environments aimed at the future. Continue to advance structural optimization and scaled-up trials of the National New Internet Exchange Center and the national Internet backbone direct connection points.

Box 4: Air-Space-Terrestrial-Maritime Three-Dimensional Network Construction and Application Demonstration Projects

1. *Forge aerospace information network nodes.* Accelerate the construction of aerospace information networks based on the Beidou system, satellite telecommunications networks, and remote sensing satellites; accelerate the deployment of smart Beidou terminals; strengthen remote sensing monitoring and emergency response and protection service capabilities in critical ecological sections such as deserts, grasslands, wetlands, lakes and rivers, forests, arable land, etc.
2. *Launch comprehensive application demonstrations for spatial information.* Comprehensively build spatial information exchange network systems and joint project research and development centers, strengthen international standards and project cooperation, and accelerate the establishment of internationalized satellite navigation industry technology alliances and patent pool services.
3. *Launch surface low-altitude sensing network project demonstrations.* Develop drone, camera, and smart terminal equipment with integrated cloud terminals with a precise orientation, smart recognition, and multi-dimensional sensing functions, compose low-level sensing networks continuous across space and time, focus on conducting full-time, whole-space sensing and monitoring of factors such as surface resources, the environment, ecology, natural disasters, project construction, urban development, etc., and create industrialized applications.
4. *Launch smart transportation application demonstrations.* Develop novel network telecommunications services aimed at air transportation, shipping and vehicle transportation, foster smart transportation applications for aerial, deep-sea, mountain, and desert environments. Advance the construction of a Beidou system-based nationwide uniform train operating timing and dispatching command system, and strengthen supervision, control, and management of train operations. Promote the construction of an international road transportation management and service system based on the Beidou system.

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(2) Establishing Highly Efficient Data Factor Resource Systems

Uphold the basic points of the strategy to expand internal demand, fully express the crucial role of data as a new production factor, establish and perfect data factor resource systems with data resource exploitation and use, sharing, and circulation; with whole-lifecycle governance and security protection as focus points, activate the factor value of data, enhance the role of data as a factor endowment, shape a strong domestic market that is innovation-driven, high-quality, supply-led, and creates new demand, and promote the building of new development structures.

Strengthen data governance. Strengthen national data governance and coordination, complete data resource governance structures and systems. Deepen data resource surveys, advance the construction of a data standards and norms system, formulate standards and norms for data collection, storage, processing, circulation, trading, derivative products, etc.,

and raise data quality and standardization. Establish and perfect national standards systems for data management and assessment systems for data governance capabilities. Standardize the use of estimated data, and conduct trials for the construction and application of national estimated data. Focus on data management, sharing, and openness, data applications, authorizations and permissions, security and privacy protection, risk management and control, and other such areas, and explore coordinated governance mechanisms with multiple subjects.

Box 5: Data Factor Market Cultivation Projects

1. *Strengthen data factor theory research.* Research the perfection of the nature of property rights based on the nature of data, and build data property rights frameworks oriented toward stimulating industry development. Explore data value assessment systems, and research the perfection of data value assessment frameworks.
2. *Establish and complete effective data circulation structures and systems.* Accelerate the establishment of basic structures, standards, and norms for data resource property rights, trading and circulation, cross-border transmission, security protection, etc. Explore the establishment of uniform and standardized data management structures, and formulate mechanisms for data registration, assessment, pricing, transaction tracing, and security inspection.
3. *Cultivate standardized data trading platforms and market subjects.* Establish and complete data property rights trading and sectoral self-discipline mechanisms. Develop systems for data asset assessment, registration and settlement, transaction matching, dispute mediation, and other such market operations.

Enhance data resource exploitation and use levels. Establish and complete nationwide public data resource systems, build uniform national public data openness platforms and exploitation and use interfaces, promote the secure and orderly openness of public data resources on topics including population, transportation, telecommunications, etc. Encourage enterprises to open up data on search, e-commerce, social interactions, etc.; develop third-party big data service industries. Raise interoperability capabilities of isomeric data, foster the development of a batch of data application products aimed at different settings, continue to enhance data exploitation and use capabilities. Accelerate the application of data in complete processes in all sectors and all areas. Support the construction of standardized data exploitation and use settings in areas such as agriculture, industry, commerce, education, healthcare, security protection, natural resources, water conservation, urban management, public resource trading, adjudication and enforcement, etc., and enhance the value of data resources. Complete tax collection and levy management structures suited to the characteristics of data factors, to promote the orderly development of the digital economy; encourage specialized big data service enterprises to develop. Optimize statistical production methods, and stimulate the profound convergence of government statistics and big data.

Box 6: Projects on Upgrading Big Data Applications

1. *Enhance the converged application capabilities of big data.* Build big data platforms in focus sectors, accelerate sectoral big data sharing and circulation, and converged use. Encourage the promotion of sectoral data application innovation through launching sectoral big data application competitions, authorizing openness, and other such methods. Organize the launch of big data industry development trials and demonstrations, select a batch of excellent big data trials and demonstration programs, summarize and popularize mature and reproducible experiences and methods. Launch online-offline data application and training activities.

2. *Enhance support capabilities for big data industries.* Formulate tiered standards for capabilities in areas such as precision services, innovative services, coordinated services, etc., and launch capability assessment aimed at supply-side enterprises for data technologies, products, and services. Encourage the construction of open-source communities for big data application with domestic champion enterprises at the core, with joint participation of enterprises, developers, and volunteers; launch research and formulation of testing and measurement standards as well as popularization and use of domestic open-source products. Support third-party specialized bodies to advance big data on-the-job special skills training, launch big data talent job capability certification, and accelerate talent training for knowledge, skills, and innovation-based jobs.

3. *Establish big data industry development quality supervision and analysis systems.* Build monitoring indicator forms and structures, research and compile big data value accounting guidelines, regularly launch big data industry operational analysis. Foster a batch of sectoral big data solution and plan providers, and develop big data analysis, consulting, exchange and other such specialized data services.

Strengthen data security protection. Strengthen security management across the whole lifecycle of data collection, compilation, storage, circulation, application, etc.; establish and complete related technical protection measures. Establish categorized and tiered data management structures and personal information protection certification structures; strengthen data security risk assessment, monitoring, early warning, testing and certification, and emergency response handling; strengthen protection of important data, enterprises' commercial secrets and personal information; standardize the use of minors' personal information. Strengthen the data security protection responsibilities of platform enterprises. Strengthen data trading security management, oversight and protection, strengthen the building of law enforcement capabilities, strictly attack acts of stealing or obtaining data in another illegal manner, illegally selling or illegally providing data to others. Establish and complete data export security management structures, and launch data export security assessment trials.

(3) Building Innovative Development Systems to Liberate Digital Productive Forces

Uphold the central position of innovation in national informatization development; make self-establishment and self-strengthening in critical and core technologies into a strategic support for digital China; stand on the frontlines of global science and technology; face the main economic battlegrounds, major national needs, and the lives and health of the people; deeply implement the innovation-driven development strategy, and build innovation development systems driven by both wheels of technological innovation and structural innovation, which fully liberate digital productive forces.

Strengthen fundamental information technology research. Give full rein to the driving effect of the National Natural Science Fund and other such factors; forcefully advance fundamental scientific theoretical research; optimize the arrangements of advanced and intersecting disciplines; advance the coordinated development of fundamental information science disciplines and applied disciplines. Support the launch of cross-disciplinary and cross-sectoral research, strengthen the supply of common fundamental technologies. Build national scientific research dissertation and science and technology high-end information exchange platforms. Promote the organic linkage of national science and technology plans and arrangements; strengthen the whole-chain coordinated innovation of fundamental research and key technological breakthroughs to applications and demonstrations. Support the construction of major scientific and technological infrastructure with participation from subjects in government, industry, education, research, and application; encourage all kinds of innovation subjects to use major science and technology infrastructure to conduct research on scientific questions.

Strengthen innovation in critical information technologies. Perfect top-level design for critical and core technology innovation in the information area, implement the "picking champions from project lists" and other such systems, deepen the convergence and mutual support of innovation chains and industry chains, finance chains, talent chains, policy chains, etc.; raise the overall efficacy of innovation chains. Comprehensively manage the industry arrangements of areas such as telecommunications technology, advanced computing, and security technology. Strengthen marketized and industrialized guidance, and strengthen key breakthroughs and concentrated tackling of primary shortcomings in crucial critical and core technologies.

Box 7: Core Technological Breakthrough Projects in the Information Domain

1. *Accelerate tackling of key problems in critical integrated circuit technology.* Promote innovation in computing chips, storage chips, etc.; accelerate research and development of critical materials such as integrated circuit design tools, prioritized equipment and high-purity targets, promote breakthroughs in specialized crafts such as insulated gate bipolar transistors (IGBTs), microelectromechanical systems (MEMSs), etc.
2. *Raise research and development levels of prioritized software.* Strengthen exploitation of prioritized software aimed at prioritized areas and major demand such as critical fundamental software, high-end industrial software, cloud computing, big data, information security, artificial intelligence, the Internet of Vehicles, etc. Strengthen the construction of a software intellectual property rights protection and information services system.

Deploy strategic advanced technologies. Aim at important directions that may trigger changes in informatization areas and forms; arrange strategic, forefront, originally created and disruptive technologies in a forward-looking manner. Strengthen strategic research deployments and scalable technological innovation in critical and advanced areas such as artificial intelligence, quantum information, integrated circuits, aerial information, neuromorphic computing, neural chips, DNA storage, brain-machine interfaces, digital twinning, novel non-volatile storage, silicon electrons, non-silicon semiconductors, etc.

Build open and flexible structures, systems and innovation environments. Perfect coordinated scientific and technological innovation structures, guide the establishment of a coordinated innovation system with enterprises at the core and markets as guidance, and profound convergence between industry, education, research, and application. Establish and complete intellectual property rights transfer income allocation mechanisms with equal rights and duties. Advance converged industrial cooperation trials, explore financial policies balancing the development of direct funding and indirect funding. Deeply advance and implement initial policy (sets) for major technological equipment, and explore marketized insurance mechanisms for technological innovation dissemination and application. Accelerate the perfection of the construction of a system of laws, regulations, standards, and norms focusing on the security of critical information infrastructure, cybersecurity, and data security. Expand legislative research for artificial intelligence, blockchain, and other such new technologies and new areas. Strengthen research and construction of informatized, digitized and smart theory systems. Complete digital economy statistics and monitoring systems; strengthen digital economy security risk early warning, and support the enhancement of macro-level economic governance capabilities.

Box 8: Information Technology Intellectual Property Rights and Standardized Innovation Projects

1. *Strengthen information technology patent innovation.* Strengthen critical and core technology intellectual property right creation and accumulation in the information area, implement scientific patent arrangements, and guide the creation of critical and core technology patent composition in technological research and original innovation. Strengthen high-value patent cultivation with a focus on 5G, artificial intelligence, quantum information, blockchain, the Internet of Things, the industrial Internet, big data centers, smart computing centers, etc. Strengthen the coordinated development of technology, patents and standards, promote the simultaneous advance of standard and patent incubation in forefront informatization technology areas with international standards research and formulation. Strengthen patent risk response for new business models and new applications in converged areas and open-source technology problems. Strengthen the industrialized application of patents, guide local governments, enterprise and undertaking work units, sectoral organizations and other such subjects to perfect patent navigation work systems.

2. *Enhance intellectual property rights' informatization service levels.* Relying on the national integrated big data center, enhance intellectual property rights information publication service levels, and upgrade the smartness levels of intellectual property rights data analysis operations, assessment, and decision making. Strengthen capabilities in public services such as for rights defense, reports and complaints, inquiry and investigation; build an intellectual property rights protection system with joint supervision, protection, and punishment through source tracing, real-time monitoring, online identification, and other such technological means. Strengthen intellectual property rights' basic information openness levels, support enterprises' innovative development and industrial transformation and upgrading. Strengthen intellectual property rights protection in areas such as 5G, the Internet of Things, the industrial Internet, artificial intelligence, quantum technology.

3. *Build informatization standard innovation systems.* Perfect the arrangement of the informatization standard system, support informatization-related standardization technical committees and scientific research institutes to cooperate deeply with advantaged institutions and enterprises, and create a closed-loop innovation mechanism with "technology research and development—standard research and formulation—industrial application." Promote standardization building in prioritized areas such as 5G, big data, artificial intelligence, blockchain, industrial Internet, etc., and accelerate the completion and perfection of existing data sharing and data application standard systems. Promote the creation of a standards-centered information technology innovation and application standard ecosystem, integrating applied capability assessment, product quality measurement and system-building testing. Advance standards building for new kinds of consumption, support and encourage platform enterprises, sectoral organization and research bodies, etc., to research and formulate service standards supporting new forms of consumption.

4. *Strengthening the application and dissemination of informatization standards.* Fully display the role of enterprises in standards implementation, enhance international cooperation in areas such as informatization standard formulation, information exchange and talent training; jointly initiate related technology standard proposals with countries jointly building the "Belt and Road Initiative" focusing on key areas such as industrial cooperation, technical exchange, trade and investment. Encourage our country's related bodies and enterprises to vigorously join major and core international technical open-source organizations; participate in international standard cooperation and joint construction.

(4) Cultivating Advanced and Secure Data Industry Systems

Make digital industries into important driving forces to promote high-quality economic development, accelerate the fostering of industrial ecologies for information technology; promote the transformation and application of digital technology achievements, promote digital industry capabilities to leap ahead; support the development and expansion of cybersecurity and informatization enterprises; forge digital industry groups with international competitiveness.

Forge high-level industrial ecosystems. Promote coordinated development in areas such as research and innovation, industrial development, market application, standards formulation certification and licensing, inspection, testing, talent training, and capital operations. Accelerate the research and development of core technology products suited to domestic economic and social needs, and build adaptation certification platforms and accelerate software and hardware adaptation work. Promote the merging of sectors such as governmental affairs, telecommunications, finance, healthcare, energy, construction, manufacturing into domestic core technology ecologies, and encourage and guide more sectors to participate in the construction of core technology ecosystems. Accelerate the advance of domestic open-source open community building; create operational mechanisms to participate in equal participation in development incomes and guide domestic open-source innovative forces to export innovation achievements to the international open-source community in an orderly manner. Strengthen the accumulation of scientific research data and industrial data resources. Vigorously build ecological innovation bases, perfect mechanisms for the transformation of scientific research achievements, and foster commercialized scientific research achievement transformation organizations.

Box 9: Information Technology Industrial Ecosystem Cultivation Projects

1. *Cultivate advanced dedicated chip ecosystems.* Strengthen basic theoretical framework research for chips, and accelerate the iteration of cloud-side, lateral,

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and terminal-side chip products aimed at supercomputing, cloud computing, the Internet of Things, smart robots, and other such settings. Promote the adaptive evolution of domestic chips with algorithmic framework platforms and operating systems, and perfect adaptive basic algorithmic blocks and software toolkits aimed at audiovisual analysis, heterogeneous computing, scientific computing and other such major settings. Support the establishment of dedicated chip developer communities, and establish testing indicators and testing standards aimed at dedicated chips together with the sector.

2. *Cooperate to optimize the computer software and hardware ecosystem.* Enhance central processing units' computing density and craft levels; promote the integrated iteration of central processing units and operating systems. Build compatible and controllable software and hardware interface standards; strengthen the international cooperation and mutual recognition of standards. Establish standard certification and evaluation systems and realize that testing once connects with multiple markets.

3. *Build and perfect open-source mobile ecosystems.* Build collaborative iteration mechanisms with multiple subjects such as complete machine, chip, and application makers and innovation platforms. Perfect tool chains with compilers, development-side tools and basic software blocks; guide enterprises to develop software versions suited to sectoral settings on the basis of general versions. Promote the iteration of hardware, software, and service interface standards, and manage the organization of mobile operating system version evolutions and ecosystem integration well.

4. *Cultivate higher education talent training ecosystems.* Strengthen demonstrative micro-electronics institutes and specialized demonstrative software institutes. Encourage leading enterprises to deeply participate in higher education talent training.

Promote a leap ahead in digital industry capabilities. Cultivate and expand new digital industries such as artificial intelligence, big data, blockchain, cloud computing, and cybersecurity; upgrade industrial levels in telecommunications equipment, core electronic components, critical software, etc. Accelerate the transformation of critical and core information technology achievements such as basic materials, critical chips, high-end components, and novel displays, aimed at upgrading the industrial base, and promote the industry to march towards the higher end of the global value chain. Launch software value increase campaigns; continue to forge well-known software cities, parks, enterprises, and products; guide the software industry to accelerate its integrated development. Accelerate the application of innovations based on network and information technologies, and cultivate the development of new products, new crafts, and new services.

Promote the expansion of cybersecurity and informatization enterprise development. Use the reform of the start-up board, the science and technology innovation board, and other such listing systems to open up diversified fund-raising channels. Guide ever more cybersecurity and informatization enterprises to focus especially on detailed areas, expand science and technology input, and enhance innovation capabilities. Give rein to the capability of cybersecurity and informatization enterprises to drive industry chain supply,

and stimulate the joint movement of upstream and downstream, industry, production, and sales as well as the compatible development of small, mid-size, and large enterprises.

(5) Building Digital Transformation and Development Systems for Industry

Firmly center efforts to develop the economy in the real economy; promote the profound convergence of the Internet, big data, artificial intelligence, etc., with all industries; forcefully advance the coordinated transformation of industrial digitization and greening; develop modern supply chains; raise the productivity of all factors; stimulate energy saving and emissions reduction powerfully enhance economic quality, efficiency, and core competitiveness.

Advance optimization and upgrading in traditional industries. Accelerate the converged application of new-generation information technologies and the real economy; implement the "Upload to the Cloud, Use Data, Enrich Intelligence" campaign; forge smart supply chain systems with big data support, networked sharing, and smart coordination. Establish smart agriculture, accelerate the digitized and intelligent upgrading of all segments in industrial chains of agricultural production, processing, sales, logistics, etc.; build an agricultural basic data resource system, accelerate the informatization building of agricultural science and technology services; provide powerful support for ensuring food security. Accelerate the digital transformation of the manufacturing sector; develop multi-level and systematic industrial Internet platform systems and innovative applications; establish national industrial big data center systems; strengthen converged standard systems building for the two "izations"; and deeply implement smart manufacturing projects. Develop new models for digitized management such as smart production, networked coordination, individualized bespoke production; foster new business models for industrial e-commerce, industry chain finance, etc. Deeply advance the digital transformation of the services sector and foster new growth points for crowdsourced design, smart logistics, new retail, etc. Accelerate advancement of the digital transformation of state-owned enterprises; strengthen the general digitization transformation services support of private and foreign-invested enterprises, and foster new subjects for converged development.

Box 10: Digitization Transformation Projects in the Manufacturing Sector

1. *Deepen industrial Internet innovation and development.* Expand internal and external industrial Internet network reconstruction; establish and complete identification and resolution systems. Forge an industrial Internet platform that is cross-industry and cross-sectoral, has characteristics of prioritized industries and regions, and is specialized for designated technological sectors. Implement the "pace-setter" plan for industrial equipment to enter the cloud, foster

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platform-based new models for industrial software. Continue to deepen the construction of industrial Internet demonstration areas, industrial Internet platform application innovation and dissemination centers, and hands-on training bases, and organize the launch of activities to propagate the enabling impact of industrial Internet platforms. Support sectoral champion enterprises in integrating manufacturing resources and capabilities through industrial Internet platforms; jointly build novel industrial work division systems with resource sharing and activity coordination that are mutually beneficial and win-win. Establish categorized and tiered management systems for industrial Internet enterprises and perfect monitoring, early warning, reporting, and response mechanisms.

2. *Profoundly advance informatized and industrialized converged development.* Research and formulate a series of guidelines for the converged application of 5G, big data, industrial Internet, blockchain, and other such new-generation information technologies into the manufacturing sector; accelerate research and formulation of national standards, sectoral standards, community standards, and international standards for converged detailed areas of the two "izations" — such as on the extent of governance of the two "izations," supply chain digitization management, product production lifecycle digitized management, and equipment entering the cloud. Create upgraded versions of currently implemented standards for converged management systems for the two "izations," develop automated standards implementation tools for integrating the two "izations," guide all localities to conduct a tiered assessment of standards implementation. Research and formulate evaluation and construction guidelines for the degree of integration of the two "izations," and launch monitoring and evaluation of the integrated development of the two "izations." Build assessment systems for industrial big data management capabilities. Encourage all levels of government to strengthen policy guidance and financial support in areas such as implementation of standards, personnel training, and outcome assessment.

3. *Deeply advance smart manufacturing development.* Research and develop applied technologies for application in industrial sectors based on artificial intelligence, 5G, blockchain, etc. Promote research, development, and iterative upgrading of critical equipment in smart manufacturing; encourage the research and development of smart manufacturing equipment suites aimed at specific sectors. Promote the softwarization of industrial knowledge, and the platformization of operational management software; develop embedded operating systems and software; forge specialized system solutions and plans; foster smart manufacturing system solutions and plan providers, and support the forging of solution and plan resource pools. Build smart manufacturing standards systems for detailed sectors such as automobiles, rail transport, iron, and steel. Build smart manufacturing demonstration plans; foster smart manufacturing pacesetter enterprises; support demonstration programs for the intelligent upgrading of industry chains; and foster smart manufacturing public service platforms.

4. *Accelerate the promotion of the integrated development of major technical equipment and new-generation information technologies.* Strengthen the integrated use of novel sensors, smart instrumentation, industrial control systems, network and telecommunication modules, and other such smart core equipment in major technological equipment products; use new-generation information technologies to strengthen product data collection and analysis capabilities. Vigorously explore

> the application of artificial intelligence technologies in major technology equipment areas such as electricity, advanced rail transportation, aerospace, high-end machine tools, healthcare, and agriculture.

Implement a digitization strategy for cultural industries. Stimulate the mutual convergence of the cultural industries and new-generation information technologies; develop next-generation immersive experience cultural industry products and services based on 5G, ultra-high definition, augmented reality, virtual reality, artificial intelligence, and other such technologies. Promote research and development of digital creativity, high and new audiovisual technologies, and equipment; accelerate the development of novel cultural enterprises, cultural business models, and cultural consumption models. Enrich online music, online cartoons, online performances, digital art, online presentations, online fitness, online competitions, live sports broadcasts, and other such digital content; enhance the digitization levels of cultural and sports product exploitation and service design. Forcefully develop digital cultural trade, vigorously use online platforms to display Chinese culture, and create and promote Sino-foreign cultural exchanges and mutual civilizational learning.

Stimulate the development of new business formats and new models. Forcefully develop digital commerce, foster new business formats and new models driven by digital technologies and digital resources. Encourage an upgrade of the intelligence levels and innovation of commercial models in areas such as personal transportation, food and beverage, housing, culture, travel, sports, logistics, and household management; stimulate branded consumption and qualitative consumption, foster high-quality digital services markets. Foster smart new business models for elder care and childcare. Support the healthy and orderly development of social media e-commerce, live streaming e-commerce, knowledge sharing, etc., and vigorously develop applications of novel commercial models and settings such as remote working, cloud exhibitions, non-contact services, and personnel sharing. Use the innovation advantages of specific regional policies to steadily advance the research and development of digital currencies.

Box 11: Information Consumption Inclusivity Expansion and Quality Improvement Projects

1. *Accelerate the organic integration of online and offline consumption.* Promote the online-offline integration of service sectors such as culture, travel, sports, household management, and real estate; advance the standardization of service sectors and brand-building; promote the upgrade of life-related services to reach high-quality and diversity. Relying on smart community building, encourage community service consumption. Innovate non-contact consumption models; explore smart supermarkets and other such retail models. Encourage digital

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> creative enterprises to develop in integration with production and manufacturing, culture and education, travel and sports, medicine, healthcare and elderly care, smart agriculture, etc.
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> 2. *Promote the healthy development of the sharing economy and the platform economy.* Encourage enterprises to open up platform resources; promote publicly-owned cloud resource sharing; forge new drivers for shared production. Explore new models for production material sharing, encourage all kinds of economic subjects to advance production material sharing according to market distribution methods. Complete a policy system suited to flexible employment by sharing platforms, and support enterprises to develop "shared labor use." Further reduce the operational, start-up, and employment costs of individual operators, and guide Internet platform enterprises to lower related service fees for individual operators.

Promote regional coordinated development. Implement the national regional grand strategy and the regional coordinated development strategy; give preference to exploring new models, new technologies, and new rules; forge systems enabling urban digital transformation, and drive the development of the neighboring digital economy. Focus on exhibiting regional resource endowments and advantages; optimize the arrangement of regional digital economic productive forces; forge integrated ecosystems for regional industry chains and supply chains; accelerate the creation of digital economy development spaces and structures, points, lines, and spaces integration, with the East, Center, and West operating in concert. Expand regional interaction and cooperation; advance deepening the application of digital technologies in the Central-Western regions and the North-Eastern regions, and accelerate the development of e-commerce, tourism, education, universal financial services, etc.

Promote digitized and green coordinated development. Implement green development in the process of advancing the digitization transformation; forcefully develop green smart terminals, green information networks, green data centers etc., and unearth all segments' energy saving and emissions reduction potential. Enable "production, life, ecology" with digitization; accelerate intelligent green growth with digitization driving agriculture, manufacturing, services etc. Lead greening with digitization; drive digitization with greening. Forcefully develop integrated digital and green new technological and industrial systems; forge new, high-quality development drivers; promote the profound transformation of ways of production and life, and assist the realization of carbon peaking and carbon neutrality objectives.

(6) Building Jointly Constructed, Jointly Governed, and Jointly Shared Digital Social Governance Systems

Use modern information technologies to guide new formats, create new tools and build new models for the "governance of China"; perfect jointly built, jointly governed and shared social governance structures; enhance data-based national governance efficiency, and

enhance the modernization levels of social governance and especially grassroots governance.

Establish three-dimensional smart social governance prevention and control systems. Deepen public security audiovisual and image network building; accelerate the deeply integrated application of image recognition, the Internet of Things, big data, artificial intelligence, and other such information technologies in public order management, prevention, and control areas such as ringed inspection and control, unit prevention and control, factor management and control, etc.; strengthen prevention and control at national gates and border regions, and enhance the integration, coordination, and precision of social order management, prevention, and control.

Box 12: Smart Public Security Construction and Enhancement Projects

1. *Strengthen intensified basic support systems.* Launch the construction of social and public security big data; comprehensively manage new-generation public security informatized infrastructure; enhance and perfect general application support platforms; deepen data sharing and operational coordination, and perfect public security big data centers.
2. *Build integrated command and communications systems.* Advance the indigenous, high-definition, and encrypted upgrading of command and communications; strengthen the integrated application of satellite technologies; strengthen the dissemination and application of police wireless local-area networks (PWLs); deepen the building of police digital trunking (PDT) networks, and complete "one web" for public security command and communications.
3. *Perfect precise crime attack systems.* Advance regional information sharing and police cooperation; strengthen smart applications in monitoring, early warning, and attack of law-breaking and crime; raise capabilities to restrain telecommunications network fraud and other such novel forms of crime, and enhance informatization levels of national counterterrorism, drug banning, etc.
4. *Upgrade three-dimensional order management, prevention, and control systems.* Strengthen the construction of social security smart sensing networks; upgrade public security audiovisual and imagery smart applications; perfect technological prevention systems in border regions, and build online active and integrated security frameworks.
5. *Complete convenient public welfare service systems.* Perfect national basic population information databases, enhance public security government service levels, accelerate the effective linkage of administrative management and public service information systems, and realize "common operations on one network" for public security government services.

Forge integrated smart public security systems. Build urban sensing and decision-making central hubs; enhance risk prevention and control capabilities in focus areas such as public health, disease prevention and control, food and drug security, production safety, urban security, natural disasters, express delivery and logistics, etc. Strengthen operational state

sensing and smart analysis in areas such as urban management networks, public spaces, road transportation, rail transportation, firefighting, water infrastructure, large ports, major event protection; increase public security risk identification, early reporting and early warning capabilities; support urban public security prevention and control system gateways to move forward, detailed management, and comprehensive decision making. Build scientific research platforms for social governance, big data, and virtual deduction, and launch social governance experiments under artificial intelligence conditions.

Box 13: Artificial Intelligence Social Governance Experimentation Projects

1. *Launch medical artificial intelligence social governance experiments.* Explore the effects of applying artificial intelligence in areas such as smart bed occupancy, computer-aided diagnosis, medical robot use, smart public health services, artificial intelligence-assisted drug research and development, and smart healthcare equipment management.

2. *Launch social experiments in urban management.* Research and explore artificial intelligence's impact on the efficiency of urban administration, the management of urban operations, urban road transportation, and enhancement of residents' satisfaction levels.

3. *Launch social experiments in elder care.* Explore the relation between artificial intelligence and the elderly's sense of happiness and elder care service levels; research the influence of artificial intelligence applications on elder care models and service content, and elder care nursing work; explore and research artificial intelligence-related standards and policies in the area of elder care.

4. *Launch social experiments for environmental governance.* Explore operational models for environmental governance systems under artificial intelligence conditions and coordinated environmental governance oversight models; research the effects of environmental governance under artificial intelligence conditions on personal privacy protection and data security.

5. *Launch social experiments in education.* Research artificial intelligence's influence on educational models and education counterparts; explore the influence of artificial intelligence-integrated education on society.

6. *Launch social experiments on risk prevention.* Explore and research the integration of artificial intelligence and satellite remote sensing, audiovisual supervision and control, the Internet of Things, emergency response broadcasts, etc.; identify risks early and provide precise early reports and warnings in areas such as production safety, urban safety, and natural disasters, reducing harm to the popular masses' lives and property.

7. *Build social governance big data and virtual inference scientific research platforms.* Build software-hardware integrated scientific research platforms with functions such as all-factor social systems data collection, high-definition super-scale virtual simulations, real-time sensing and inferences, big data exchange and analysis integrating the virtual and the real, etc., and provide data collection, virtual simulation, sensing and inference, exchange, and analysis in support of national and social governance.

Forge informatized emergency response systems integrating peacetime and wartime.
Promote the modernization of emergency response management through informatization;
completely upgrade monitoring and early warning capabilities, supervision, management,
and law enforcement capabilities, computer-assisted command and decision making
capabilities, disaster relief fighting capabilities and social mobilization capabilities with
coordination between multiple departments, and enhance international logistical supply
chain service protection capabilities. Complete disaster and incident information reporting,
early warning, and publication, information sharing and emergency response mechanisms
with coordination between multiple departments; strengthen oversight of production safety
during and after events, strengthen emergency response management equipment,
technological and platform support, strengthen emergency response management
comprehensive sensing, rapid response, precise oversight, and material protection
capabilities, effectively enhance disaster prevention, disaster reduction, disaster response,
and disaster relief levels, and restrain the occurrence of major, special, and large incidents.
Support the building of uniform national equipment systems through informatization;
strengthen food and strategic emergency response material data resource integration and
sharing, and enhance national equipment capabilities to respond to sudden incidents.
Promote information technology to even better support the construction of disease
prevention and control systems and major pandemic prevention, control and response
systems; strengthen data sharing and coordinated application in government, enterprise,
and healthcare bodies, and raise capabilities to respond to sudden public health incidents.

**Box 14: Emergency Response Management Modernization Capability
Enhancement Projects**

1. *Enhance risk monitoring and early warning capabilities.* Build comprehensive
   monitoring and early warning systems for natural disasters and production safety
   risks; gather monitoring resources for natural disasters, production safety and
   urban and rural supervision and control, build the "SkyEye Net" satellite
   constellation emergency response system; enhance comprehensive monitoring of
   multiple disaster categories and disaster chains, and early risk identification and
   early warning capabilities. Build decision making support systems for flood and
   drought relief; promote the research and application of flood and drought relief
   models; raise flood and drought relief emergency response management
   modernization capabilities. Build emergency response management data resource
   catalogs, and explore the establishment of urban and rural operational security
   signifier and indicator systems.
2. *Raise sudden incident reaction and handling capabilities.* Build mass
   telecommunications-based integrated space, aerial, terrestrial, and maritime
   emergency response telecommunications networks, and strengthen the
   cross-network integration of telecommunications methods. Build national
   emergency response broadcast systems relying on radio, television, and new
   media infrastructure. Accelerate the construction of national coordinated

> emergency response command platforms and national emergency response resource management platforms; realize emergency response and rescue actions' "one map" command adjustments. Advance the construction of smart firefighting and assistance, smart mining security, smart earthquake prevention and mitigation, digital food storage, and smart maritime salvage. Enhance emergency response and rescue equipment's informatized management capabilities, and realize that rescue equipment can be traced on a map and its state can be sensed.

Innovate grassroots social governance. Deepen the application of big data, artificial intelligence, and other such information technologies in grassroots regime building, urban and rural community governance and services; enhance grassroots Party building service management levels; complete Party organization-led urban and rural grassroots governance systems integrating self-governance, rule of law, and rule of virtue. Accelerate the forging of smart communities, fully integrate grassroots access points between departments such as civil affairs, health, and medicine, housing construction, emergency response, comprehensive governance, law enforcement, etc.; build open and shared grassroots governance platforms with networked management, detailed services, and informatized support. Open up channels for social organizations, social workers, and volunteers to participate in grassroots social governance and services online; forcefully expand channels for social resources to participate in public interest and welfare online; promote benign interaction between governmental management, social regulation, and residents' self-governance.

Advance the high-quality development of new kinds of smart cities. Advance the integrated development of smart city-clusters by suiting measures to local conditions; promote the coordinated joint action of a batch of smart application regions focusing on public transport, express delivery and logistics, medical appointments, school attendance, urban operational management, ecological and environmental protection, licensing management, market oversight, public security, emergency response and management, and other such focus areas, and promote the informatized and coordinated development of regional informatization. Encourage information sharing in the Guangdong-Hong Kong-Macau bay area. Steadily advance the construction of urban data resource systems and data brains; forge interconnected, open, and enabling smart hubs; perfect urban information model platforms and operational management and service platforms; explore the construction of digital twin cities. Implement the construction and transformation of smart urban governance infrastructure; effectively enhance the broad sensing and smart decision making capabilities of urban operations and economic operational states. Roll out models for "one map" datafied urban management and "joint management through one web". Enrich digital life experiences, and accelerate the development of digital households. Advance novel smart city and digital village comprehensive planning and simultaneous

implementation; explore new detailed and effective models for smart governance with joint rural-urban action and resource sharing.

(7) Forging Coordinated and Effective Digital Government Service Systems

Deeply advance the "release, manage, serve" reform; accelerate the transformation of government functions; forge marketized, rule of law-based and internationalized commercial environments; uphold the integrated and intensified construction of a digital government; promote the coordination of government operations horizontally and vertically; accelerate government data openness and sharing, exploitation, and use; deepen the advance of the "common operations on one network," "common operations across provinces," and "managing everything on one network," open up channels to participate in policy formulation, promote the ever greater perfection of the national administrative system, ever improved display of the role of government, and notable enhancement of administrative efficiency and credibility; promote the ever better integration of efficient markets and capable government, and forge a service-type government.

Enhance informatization building levels of Party and government bodies. Advance informatization projects for the Party's governance capacity, perfect core operational systems for all departments of the Party Center, and enhance supporting capabilities serving the Party Center's decision making and command. Optimize e-government network structures and security systems, intensify the building of governmental cloud platforms and data center systems, advance the migration to the cloud of government information systems, and completely advance the application of mobile handling of affairs. Continue to enrich government information resources, perfect data sharing and exchange systems, strengthen governmental systems' operational coordination and the secure and orderly sharing of information resources. Advance the intensified reform of government websites, and promote the development of open, interactive and integrated services. Promote the informatization and intelligentization building of People's Congresses and Consultative Conferences, and expand comprehensive service functions for representatives and members to fulfill their duties online. Deepen informatization building in supervision, and advance the digitization, standardization, and intelligentization of discipline inspection, supervision, and investigation work. Comprehensively deepen the building of smart courts, and advance and perfect Internet adjudication models. Deeply advance the building of smart investigations and perfect support and sharing platforms for investigations.

Promote the sharing and circulation of government data. Accelerate the creation of authoritative and efficient coordinated mechanisms for governmental data sharing at all levels, and provide support for national governmental data sharing. Establish and perfect effective mechanisms to match data supply and demand; publish ever more data sharing responsibility lists, and bring more data directly affecting businesses and masses to handle affairs, whose usage frequency is high, into the scope of sharing. Promote data to flow back

to grassroots service departments, and create upstream and downstream data circulation circle systems. Give full rein to the role of big data in reducing grassroots form-filling quantities; realize that data is collected once and used in many areas, and lighten grassroots burdens. Advance "common operations on one network" to make handling affairs ever more convenient for the masses. Optimize the national integrated governmental service platform's service levels, perfect general support systems such as the uniform identity authentication, and e-certification forcefully support standardizing, normalizing, and increasing the convenience of governmental services; realize "one certification handling affairs on the entire network." Establish dynamic management mechanisms for governmental service items; further standardize acceptance conditions, statutory time limits, quantitative limits, annual audits, and annual reports; service counterparts and other such factors on the basis of promoting "Four identical approaches at four levels" in governmental service items. Expand the scope of e-certification application areas and the "certification submission waiver"; promote interconnection and mutual recognition nationwide, and realize that the absolute majority of governmental service items "do not require going but can be handled straight away." Enhance integrated online service platforms' capabilities across the entire workflow; vigorously launch "completing an item efficiently," and realize that ever more high-frequency government service matters "are handled commonly across provinces." Stimulate the online-offline integration of governmental services and build diversified, seamlessly connected, online-offline integrated governmental service channels.

Box 15: Nationwide Integrated Governmental Service Enhancement Projects

1. *Advance "common operations on one network" and "arranging matters in one go."* Forcefully advance "one matter, arranged in one go," unceasingly promote "time reduction, segment reduction, workflow reduction, reduction in running around"; optimize service application systems aimed at enterprises and the masses, and formulate and perfect national integrated governmental service standards, norms, and management structures.
2. *Perfect governmental service platforms' "good and bad evaluation" mechanisms.* Continue to stimulate reform through evaluation; broaden "good and bad evaluation" structures in governmental services; open up pathways for government and the people to mutually share information; build "good and bad evaluation" management systems with convenient channels, omnidirectionally covering the nationwide integrated governmental services platforms, and promote service efficacy to be assessed by enterprises and the masses.
3. *Enhance governmental service support capabilities.* Further strengthen the hub role of national governmental service platforms, completely link up governmental service platforms of all relevant regional and State Council departments, upgrade public support systems aimed at local departmental platforms, perfect data management and sharing service systems, perfect support capabilities for

uniform identity verification, e-certification, e-document stamps, and data sharing, and promote the realization of "common operations across provinces" for high-frequency governmental service items.
4. *Enhance integrated, cross-level, and cross-departmental coordination administrative capabilities.* Promoting the creation of integrated general administration systems based on governmental service external networks; expand mobile common administration application settings, and enhance the efficiency of government administration. Perfect the nationwide integrated platform's security protection systems; build operational management systems for the nationwide integrated platform; comprehensively advance the construction of disaster-proof and back up systems for governmental service platforms, and ensure governmental data security.

Forge marketized, rule of law–based, and internationalized commercial environments. Enhance e-document management and application levels; deepen the orderly and effective application of e-certification, e-contracting, e-invoicing, e-accounting documentation, etc., in governmental services, taxation and finance, social management, people's welfare services and other such focus areas. Advance the onlline handling of the entire workflow of enterprise-related governmental affairs, forcefully advance whole-workflow electronic trading of public resources, and build public resource trading systems covering the entire country, which are transparent and standardized, interlinked and interconnected, with smart oversight. Accelerate the construction of "one network" for the receipt of complaints in the commercial area and tiered handling, and strengthen enterprise-related active services. Vigorously explore new applications of big data and artificial intelligence services; strengthen enterprise-related policy propaganda, explanation, and precise delivery, and promote the effective implementation of policy.

Promote the standardization, precision and intelligentization of governmental oversight. Vigorously advance "Internet + oversight" and smart oversight, perfect integrated online oversight systems, complete joint response and coordinated oversight mechanisms across regions, across departments, and across levels, and realize "entering the door once and inspecting many elements." Build credit supervision, management and coordination mechanisms with simultaneous data, uniform measures and consistent standards relying on the nationwide "Internet + oversight" systems, the Nationwide Credit Information Sharing Platform and the National Enterprise Credit Information Publication System; perfect the construction of national big data analysis and early risk warning systems during and after operations, and open up channels and windows for the social public to participate in "Internet + oversight." Stimulate all localities and all departments to establish and complete credit-based novel oversight mechanisms and broaden the scope of oversight coverage during and after operations. Strengthen smart oversight in focus areas such as the security of food and drugs, special kinds of equipment and industrial products, consumer rights and interests protection, online trading, and advertising and pricing.

(8) Building Universal and Convenient Digital Welfare Safeguarding Systems for the People

Continue to make realizing, maintaining, and developing the fundamental interests of the people well as the starting point and landing point of development; strive to complete basic public service systems through information technology, improve the people's quality of life, and let the popular masses enjoy the fruits of informatized development.

Launch lifelong digital education. Enhance the construction levels of informatized information education and build high-quality education support systems. Perfect national digital education resource public service systems and broaden the coverage of high-quality resources. Advance educational and tuition evolution by integrating information technologies and smart technologies with education and teaching. Give rein to the advantages of online education, virtual simulation training, etc.; deepen the application of big data analysis in the education area, incessantly expand and optimize all levels and all kinds of education and lifelong learning services. Explore the broadening of university branch bank trials and achievement accumulation, certification and transformation, and construct life-long learning experience public service systems.

Provide universal digital healthcare. Comprehensively launch the construction of national-level healthcare and medicine big data resource catalog systems, and perfect tiered assessment systems for smart hospitals and oversight systems for Internet healthcare services. Strengthen the application of artificial intelligence, big data, and other such information technologies in smart healthcare equipment and drug research and development. Deepen and expand the scope of informatized applications in healthcare; universalize the use of resident e-health numbers, and accelerate the online handling of the entire healthcare workflow including visiting medical referrals to other locations, medical appointments, hospital stays, and medical insurance. Accelerate the expanded application of e-documentation for medical insurance and complete the national uniform healthcare protection information platform. Vigorously explore the utilization of informatized means to optimize healthcare service workflows and create new experiences of comfortable hospital stays. Create and develop Internet hospitals, long-distance hospitals, online health consulting, health management, and other such services; continue to enhance the universalization of long-distance healthcare equipment in border, remote, and agricultural locations. Enhance the digitized and intelligentized levels of grass-roots health and medicine bodies and women-and-child protection bodies in terms of disease prevention and treatment, and disease-slowing management. Promote the profound integration of Chinese medicine and health services with the Internet.

Optimize digital social security, employment, and human resource services. Enhance the digitized supply capabilities of basic social services and social security; optimize online service functions, and continue to broaden e-social security card services; perfect the

nationwide uniform social security public services platform. Build dynamic monitoring systems for the low-income population; innovate "Internet + Benefits" models; integrate social benefits information resources; and enhance the precision of social benefits. Support and standardize the development of employment forms; deepen the construction of national dual start-up and innovation model bases; and strengthen linkage of supply and demand of industrial talent and precise services. Incessantly perfect and expand online employment and human resource services, and complete employment demand investigation and unemployment monitoring and early warning mechanisms. Accelerate the advancement of standardization and uniformization of human resource management services for talented individuals as well as information sharing and coordination. Build online services systems for retired military personnel and forge Internet services platforms for retired military personnel.

Enrich data culture, tourism, and sports services. Promote the digitized construction of public culture, accelerate the digitization of cultural resources such as cultural centers, museums, and cultural education bases; promote convenient, rapid, and resource-sharing nationwide public digital culture resources and services. Advance the implementation of the whole-media dissemination project; strengthen and use country-level integrated media centers well; advance the construction of smart radio and television, and enhance cultural service levels. Deeply develop smart tourism, promote scenic areas, museums, etc., to develop online digitized experience products; foster new business models such as cloud tourism, cloud streaming, and cloud performances; encourage the development of new bespoke, experiential, smart, and interactive consumption models, and forge new settings for immersive touristic experiences. Establish an electronic map for sports; perfect the national popular fitness information service platform, and promote the digitized upgrading of sports venues and equipment.

Box 16: Digital Public Service Optimization and Enhancement Projects

1. *Launch the construction of integrated "Internet + Education" cloud networks.* Accelerate the construction of the China Education Network and the "Internet + Education" platform; build extensive online study spaces; support the regularized application of all kinds of innovative teaching; promote the openness and sharing of high-quality teaching resources; reduce the gap between regions, urban, and rural settings, and schools; realize fairer and higher-quality education.
2. *Build major basic healthcare platforms.* Accelerate the construction of special healthcare clouds; promote the sharing, mutual recognition, and operational coordination of the healthcare and medical bodies information systems at all levels, and build authoritative and uniform, interconnected, and shared health information platforms for all people at all levels. Continue to strengthen the construction of the Chinese Medicine Hospital Health Information Platform, and

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comprehensively enhance capabilities for informatization in Chinese medicine at the grassroots.

3. *Establish "one common card" for residents' services.* Promote the online and offline application of the "one common card" for residents' services in areas such as governmental services, social security, and urban services; with the social security card as carrier, provide services for employment subsidies, social security treatment, agricultural worker salaries, welfare and agricultural benefit subsidy issuance, etc., and give priority to realizing "same-city treatment" in areas such as traffic and transportation, tourism and sightseeing, and cultural experiences.

4. *Optimize obstacle-free information environments.* Accelerate the advance of obstacle-free facility integration in areas such as informatized facilities and buildings, transportation, etc., and universalize obstacle-free self-service equipment for information in public venues. Expand obstacle-free services in smart terminals, websites, apps, and other such supporting information. Encourage the full-area deployment of obstacle-free information labels in novel smart city construction, create online-offline obstacle-free information sensing environments, and select a batch of obstacle-free information model cities every year. Further perfect the construction of basic databases of the disabled population nationwide and online service platforms for disabled people. Accelerate the progress of obstacle-free information-related legislative work, and ensure a standardized and rule-of-law obstacle-free information environment.

(9) Expanding Mutually Beneficial and Win-Win International Cooperation Systems in the Digital Area

Uphold the principles of peace, development, cooperation, and win-win, vigorously participate in the reform of the global cyberspace governance system, promote liberalizing and increasing the convenience of trade and investment; promote high-quality development along the "Digital Silk Road," and uphold the implementation of opening up to the outside world at a greater scope, in broader areas, and at greater depth.

Strengthen the research and formulation of international norms in the digital area. Vigorously participate in negotiations in the World Trade Organization and on free trade agreements, as well as cooperation in multilateral mechanisms such as the G20, APEC, BRICS, and accelerate the enhancement of our country's capability to participate in international norm formulation in the digital realm. Accelerate the advance of research and formulation of international norms and standards related to e-commerce, data security, digital currencies, digital taxation, etc., and promote a transformation from product and factor circulation openness to norms and other such structural openness.

Establish multi-level global digital cooperation and partnership relations. Strengthen legal, regulatory and digital technological cooperation on data, customs, taxation, auditing oversight, etc., and promote the liberalization and increase the convenience of trade and

investment. Strengthen cooperation on digital economic development with countries jointly building the "Belt and Road," jointly build high-quality, sustainable digital infrastructure at reasonable prices, in an inclusive and feasible manner, jointly build laboratories and technical linkage and cooperation platforms, jointly build a high quality "Digital Silk Road."

Box 17: Jointly Constructed and Shared Digital Silk Road Projects

1. *Advance the interlinkage and interconnection of network infrastructure.* Plan the construction of intercontinental undersea fiber programs accelerate the advance of cross-border fiber construction and expansion; support operators to build foreign points of presence (POPs). Strengthen cooperation with countries jointly building the "Belt and Road" on satellite planning, operations and applications; develop open public services such as precise navigation, emergency response telecommunications, radio and television, and secure telecommunications.
2. *Promote the joint construction and sharing of applied infrastructure.* Promote cooperative exploration with countries jointly building the "Belt and Road" in novel applied infrastructure areas. Jointly conduct research, planning arrangements, trials, and demonstrations in areas such as data centers, Internet of Things platforms, and industrial Internet platforms; advance integrated cooperation on standards. Expand international switching service and capacity sharing cooperation on the basis of expanding Internet exchange centers and other such capabilities.

Promote high-quality imports. Promote the continued expansion of openness in areas such as the digital economy and the Internet. Comprehensively implement national treatment and the negative list management structure before foreign investment access, expand openness in value-added telecommunications services in an orderly manner, start with practicing and trialing new models, new technologies, and new norms conforming to the needs of high-quality development in the digital area in the Hainan Free Trade Port, free trade trial zones, etc. Support foreign capital to participate in the construction of digital infrastructure according to laws and regulations; encourage foreign businesses to invest in smart manufacturing and other such areas; transform and upgrade traditional industries. Support foreign-invested enterprises to establish regional headquarters and innovation, research and development centers in our country, and enhance global resource allocation capabilities. Display the role of companies as vehicles to attract talent and support foreign high-level talent in the informatization area to innovate and start businesses within China.

Promote high-level marching out. Promote mobile payment and other such digital economy models to innovate and provide services for global users. Fully use digital technology and new media means to promote Sino-foreign cultural exchange. Encourage cybersecurity and informatization enterprises to expand third-party market cooperation; vigorously participate in international technology and digital product competition. Complete laws, policies, and service systems promoting and protecting foreign investments;

perfect nationwide foreign investment and cooperation management and services; enhance security protection work for Chinese citizens and entities abroad as well as foreign affairs information service levels, and strengthen capabilities to protect foreign interests, and for early warning and prevention of risks. Innovate financial services, and enhance commercial finance bodies' international information science and technology service levels.

Expand and strengthen new cooperation platforms. Organize the World Internet Conference and other such international gatherings, maintaining high quality; promote international cooperation and exchange on the digital economy; propagate, elucidate, and internationally disseminate our country's ideas and positions well. Accelerate the construction of internationalized open-source communities and open-source platforms, perfect the construction of open-source development platform interfaces jointly with relevant countries, standardize open-source product laws, markets, and licenses. Encourage and guide cybersecurity and informatization enterprises meeting conditions to participate in the construction of foreign cooperation parks; forge high-quality investment cooperation platforms, and establish global-level innovation centers for artificial intelligence, blockchain, etc.

(10) Establishing and Completing Standardized and Orderly Digitization Development Governance Systems

Continue to grasp promotion, development, supervision, management, and standardization with both hands—and both hands must be strong; standardize in development; develop in standardization; establish omnidirectional, multi-level, three-dimensional oversight systems; let supervision, management, and governance penetrate the entire process of innovation, production, operations, and investment. Clear up the relationship between government and markets; promote better integration of efficient markets and authoritative government; incite the vitality of all kinds of market subjects, and stimulate the sustained, healthy, and orderly development of a digital China.

Strengthen the platform governance system. Perfect the legal and regulatory system for Internet platform oversight, and clarify the responsibility that Internet platforms bear over the content they publish, etc. Consolidate the dominant responsibilities of platform subjects; strengthen the transparency of platform governance norms, and strengthen oversight over platform behavior of unfair competition and unfair pricing. Perfect reporting and handling disclosure mechanisms for unlawful content; guide platform enterprises to publish the self-inspection and handling situation of content violating laws and regulations in a timely, active, and open manner; provide timely warnings of and eliminate major risks and vulnerabilities. Incessantly strengthen and improve anti-monopoly and anti-unfair competition oversight; prevent the disorderly expansion of capital; safeguard fair and orderly competition in the platform economy area, and ensure the lawful rights and interests of on-platform operators, consumers, and all other kinds of subjects. Encourage

platform enterprises to use ever more resources for innovative technology applications; enhance platform quality services; optimize platform operating rules and platform commerce environment, and stimulate the healthy development of the sector.

Build technology norms and governance systems. Establish and perfect digital technology application inspection mechanisms and legal systems for oversight; launch technical algorithm regulation, standards formulation, security assessment and review, theoretical elucidation, and other such work; clarify dominant and related legal responsibilities in critical applications such as artificial intelligence, blockchain, etc. Establish and perfect digital economy anti-monopoly oversight rules and strengthen the digitized evidence-gathering capability of law enforcement bodies. Give rein to the comprehensive standardization, guiding and coordinating roles of the State Science and Technology Theory Commission, accelerate the building of science and technology ethical governance systems, strengthen technological ethics research stores, and standardize all kinds of scientific research activities. Strengthen cross-disciplinary analysis and research and research the formulation of digital technology ethical standards, guiding principles, and guidelines. Strengthen sectoral self-discipline and guidance, expand education and propaganda for the social public about digital technology security risks, and enhance the technology risk prevention and responsibility awareness for people from all walks of life.

Explore flexible governance for market subjects. Build whole-workflow, flexible oversight mechanisms with market subjects at the center, implement whole-chain and whole-area oversight with credit examination and credit commitment, credit assessment and tiered and categorized inspections during, and reward and punishments and credit recovery after. Explore trigger-type and other such innovative oversight mechanisms and promote preliminary practice and trials of high-quality innovative products and services. Develop tiered and categorized oversight systems based on data and credit; implement lawful publication of enterprise credit information, social supervision, and punishment for untrustworthiness. Perfect cross-departmental coordinated oversight mechanisms and realize coordination and mutual support between online and offline, as well as linkages and interactions between market oversight and sectoral oversight.

Perfect cyberspace governance systems. Strengthen network legislation and comprehensive planning. Perfect the legal structure for online real identity, advance the construction of management systems for the social public's digital identities, and expand the standardization, integration, and linkage of digital identity management systems. Explore linkage mechanisms for public network activities and the social credit system; strengthen online-offline coordination and management. Perfect online comprehensive law enforcement coordination mechanisms; strengthen oversight and inspection of minors' online protection work; strictly attack online law-breaking and crime. Encourage social subjects to participate in joint online content governance and management according to the law, open up closed-loop workflows for social oversight, acceptance, handling, feedback and

rewards, incentivizing vigor for joint social governance. Forcefully carry forward the view of the Socialist core values; expand diversified online propaganda platforms and channels' strengthen the propagation of positive energy information, and create a clean and crisp cyberspace. Deepen participation in the formulation of international cyberspace norms and technical standards with the "Global Data Security Initiative" as the basis; promote the establishment of a fair, reasonable, and transparent governance system and normative system, and join hands to build a community of common destiny in cyberspace.

Completely strengthen cybersecurity protection systems and capacity building.
Strengthen joint advances in cybersecurity core technologies; launch research in critical technologies such as high-level threat prevention, state sensing, monitoring and early warning; establish secure and controllable cybersecurity software and hardware protection systems. Implement the national basic cybersecurity protection capability enhancement project' strengthen the construction of critical information infrastructure security protection systems; strengthen cybersecurity platform support capabilities and the security protection of 5G, the industrial Internet, big data centers, the Internet of Vehicles, etc. Perfect cybersecurity monitoring, reporting, and early warning, emergency response and handling mechanisms, and enhance cybersecurity state sensing, incident analysis, and rapid recovery capabilities.

V. Priority Actions

Follow the natural laws of informatization development, adhere to the combination of overall promotion and key breakthroughs, persist in integrating remediation of shortcomings with forging strong points, adhere to gradual progress, and prioritize the promotion of basic capabilities, strategic frontiers, people's livelihood security, grassroots governance and other areas of informatization special projects. Take action to accelerate new major breakthroughs in core technologies, digital economy, digital society, and other fields; promote more substantial progress in digital livelihood protection; and give the people more sense of happiness and security in the development of informatization.

(1) Actions to Enhance Digital Accomplishments and Skills of the Entire Population

Action goals: By 2023, a nationwide digital skills education and teaching resource system should be initially formed, and digital literacy and information skills of disadvantaged groups should be significantly improved; by 2025, digital skills education and training should be widely popularized, allowing the people to share the fruits of information development. Build a national digital skills education resource system. Coordinate and formulate plans for promoting digital skills education for all; fully mobilize social resources such as educational institutions, public libraries, operators, and enterprises; optimize and

expand digital skills education resources and access channels; promote online and offline digital skills education and training pilot demonstrations by classification.

Carry out digital skills education and training. Carry out diversified digital skills training projects for the public, such as intelligent terminal use, employment, medical treatment, consumption, commerce, finance and network security, and promote and popularize digital skills education for the whole people. Set up regular and scene digital skills courses in primary and secondary schools to stimulate the potential for digital innovation. Combine high-quality traditional cultural ethics with digital etiquette education, cultivate the sense of responsibility of digital citizens, optimize the digital living environment, and improve the quality of digital life.

Precisely help information-disadvantaged groups. Fully mobilize resources from all sectors of society to carry out regular digital skills assistance for key groups such as low-income groups, the elderly, the disabled, orphans, left-behind children, children in distress, and residents of old revolutionary base areas, remote areas, ethnic areas, and poverty-stricken areas. Effectively improve the literacy level of information disadvantaged groups in the use of digital devices, online service acquisition, digital consumption, and prevention of online fraud. Focus on the flexible integration of online and offline service modes, provide contactless assistance, and achieve full coverage of information services. Support the development of voice, video, search technology and software in ethnic languages, and strengthen the construction of digital education content and the supply of cultural products in ethnic areas.

(2) Actions to Enhance Enterprises' Digital Capabilities

Action goals: By 2023, the beginnings of digital capability development systems for large and mid-size enterprises should be completed, new models, and new business formats for integrated development should come forward; by 2025, enterprises' digital capabilities should be enhanced overall, large-scale enterprises should have comprehensively marched into a phase of concentration and integration, and ecological innovation, and small and mid-size enterprises' quality and efficiency should strengthen notably.

Accelerate enterprises' digital capability standard system research, formulation, and expansion. Build digital transformation methodologies and digital transformation standards systems focusing on building enterprises' digital capabilities, create a batch of practical supplementary method collections, toolkits, and case study collections. Formulate digital transformation roadmaps for focus sectors and areas and advance the implementation of digital transformation standard systems sector by sector, capability by capability and phase by phase; organize the launch of digital transformation diagnostics checking; broaden integrated management systems for the two "izations" overall.

Advance enterprise digital capability trials and demonstrations in a tiered and categorized manner. Launch enterprise digital capability construction trials and demonstrations focusing on sectoral champion enterprises as focus, concentrate on the development direction of digital capabilities such as operational management and control, user service, ecological cooperation, personnel enablement, data exploitation; forge a batch of reproducible and scalable templates in a tiered and categorized manner, promote enterprise operational management to transform from being duty and workflow-driven to being data-driven, operational models to transform from operational digitization to digitized operations, inter-enterprise cooperation to transform from operational coordination to capacity sharing and joint ecology building; development models to transform from factor-driven to innovation-driven; foster and create a batch of digital enterprises and ecosystem-led enterprises.

Perfect enterprises' digital capabilities and building market service ecologies. Strengthen government guidance, fully exhibit the role of sectoral associations and industry alliances, promote the building of digital transformation public service platforms, promote services such as capacity diagnosis, precise supply and demand linkage, resolution and plan integration, knowledge and experience sharing, specialized talent training, propaganda and implementation exchange and dissemination, etc. Encourage third-party service bodies to innovate service methods and tools; create a batch of novel service bodies integrating strategic consulting, management optimization, resolution and plan innovation, digital capacity building, etc. into one. Encourage all levels' governments; champion enterprises, finance bodies, social organizations, etc., to launch tiered capacity information gathering trials, explore novel credit systems for enterprises with capacity as the link, and continue to stimulate enterprises' transformative drivers.

(3) Actions for Breakthroughs in Cutting-edge Technologies

Action goals: By 2023, notable advances should be made in artificial intelligence, blockchain, quantum information and other such cutting-edge technology research and development, and a batch of integrated application demonstrations should be implemented in some sectors; by 2025, cutting-edge digital technology innovation ecosystems should be more complete every day; sector-level integrated application demonstrations and pacesetters should emerge unceasingly, and industrial scales and increasing rapidly.

Promote the innovation and application at scale of artificial intelligence. Perfect basic artificial intelligence theory systems, launch cutting-edge intersectional research on artificial intelligence and basic disciplines such as neuroscience, cognitive science, psychology, social science, etc. Build open-source communities for artificial intelligence development and build artificial intelligence public data collections. Promote the development of open-source frameworks for artificial intelligence development, forge basic open-source software and hardware platforms, and accelerate the transformed application

of critical artificial intelligence technologies. Launch artificial intelligence ethics standards research, and explore the establishment of legal, regulatory, ethical and moral frameworks to ensure the healthy development of artificial intelligence.

Advance the healthy and orderly development of blockchain technology applications and industrial ecologies. Strive to advance core technology research in encryption studies, consensus mechanisms, smart contracting, etc.; support the building of a secure and controllable low-level technology platform and blockchain open-source community with sustainable development. Build blockchain standard and norm systems, strengthen blockchain testing and assessment, and formulate application standards and norms for the blockchain sector in critical and basic areas. Launch blockchain innovation and application trials; concentrate on launching application demonstrations in areas such as fintech, supply chain services, governmental services, and commercial science and technology. Build security protection and supplementary support systems suited to blockchain technology mechanisms.

Arrange research to explore quantum information technology. Strengthen general and critical technology and fundamental component research and development. Make forward-looking arrangements on quantum telecommunications, quantum computing and quantum sensing technology research, and promote the exploration of quantum computing and the building of industrial ecosystems. Explore the building of quantum information network technology and standard systems.

(4) Actions for Open Cooperation in Digital Trade

Action goals: By 2023, digital trade service capabilities should strengthen notably, and digital trade statistics systems should be basically created; by 2025, digital trade service systems should be basically created, and we should be in the front ranks in international competitiveness, and digital trade development support capabilities will enhance notably.

Launch advanced demonstrations for digital trade. Build digital service export bases relying on free trade trial zones and the Hainan Free Trade Port, accelerate the forging of important carriers for digital trade, create digital service export gathering areas, and forge advanced digital trade trial zones with global competitiveness.

Perfect digital trade services systems. Strengthen information services for digital enterprises' foreign market demand, legal and regulatory affairs, etc. Promote the building of the China–Central and Eastern Europe Customs Information Center, explore the launching of cooperative trials for "smart customs, smart borders, knowledge sharing and interconnection," perfect the construction of "single windows," optimize and expand customs information exchange and sharing platforms along the "Belt and Road," intelligentization of customs as well as convenient support capabilities for customs passage.

Expand digital trade market openness to the outside world and stimulate the coordinated development of digital trade areas.

Complete digital trade development support systems. Establish digital trade statistics structures and methods, perfect related auditing and monitoring, operational and analytical systems. Explore oversight systems conform to the characteristics of digital trade development in a new era, strengthen oversight cooperation, and explore fault-tolerant mechanisms for oversight innovation.

(5) Actions to Enhance Grassroots Smart Governance Capabilities

Action goals: By 2023, grassroots smart governance plans, policies, standards, and norms should be ever more perfected, data resource integration should gain major achievements, and support levels for grassroots social governance should substantially increase; by 2025, grassroots smart governance systems with detailed service sensing, precise risk identification, and networked operational coordination should be basically created, powerfully supporting grassroots governance system and governance capability modernization.

Perfect overall grassroots smart governance plans. Comprehensively advance the building of smart cities and smart communities; strengthen the overall planning, design, and composition of infrastructure, system platforms, application terminals, service resources, data integration, security, and oversight, etc. Formulate grassroots smart governance standard systems, promote the application of technologies such as information recognition technology, high-resolution satellite sensing and imaging, three-dimensional mapping, audiovisual imagery as well as smart sensing.

Promote grassroots data resource integration and sharing. Perfecting local and departmental data sharing and exchange mechanisms, consolidate the dominant responsibility of provincial-level governments for data sharing and application relying on national data sharing and exchange systems, strengthen the building of sharing and exchange mechanisms at the four levels of the province, city, country, and township (neighborhood), promote grassroots governments to share and integrate data with vertical departments, stimulate departmental data to be opened up for use to the grassroots on the basis of requirement. Perfect geographic information and other such basic data, build high-quality e-file databases for buildings, housing, personnel, enterprises, facilities, and other such basic counterparts, and enhance the completeness, standardization, and accuracy of data. Strengthen the correlative and comparative analysis and the precise use of grassroots data, enhance grassroots risk early warning and management policy decision levels in areas such as pandemic prevention and control, community safety protection, etc. Enhance intelligentized application capabilities. Promote digital government service capabilities to extend to the grassroots and advance the optimization and remaking of

grassroots service workflows. Rely on "Internet +", self-service terminals, etc. to integrate and concentrate services provided by government bodies, social organizations and third parties, and realize grassroots digitization and standardization of certification. Build and exploit smart community information systems and simple and convenient application software, integrate departmental systems in public security, urban management, healthcare and medicine, transportation, emergency response and other such departments as well as information resources such as grid officers, audiovisual images, mobile terminals to realize "one network" full-time sensing in the jurisdiction, "one map" comprehensive supervision and control, completely enhance grassroots governance sensing, prediction, adjustment, and other such comprehensive capabilities.

Stimulate the masses to participate in governance. Vigorously use the Internet to innovate grassroots Party organization and community organization activity methods, mechanisms, and carriers. Enhance urban and rural grassroots Party building informatization levels, and perfect grassroots Party organizations' leadership and mass self-governance structures. Fully use informatized means to expand channels for the masses to participate in grassroots governance, promote the construction of grassroots organizations, and online operations in affairs such as information dissemination, policy consulting, public opinion collection, democratic consultation, public services, mutual assistance in neighborhoods, etc. Forge "Internet + Mass Prevention and Mass Governance" systems, and enhance the capability of oversight departments to verify and rapidly respond to clues reported by the public.

(6) Actions for Constructing a Green and Smart Ecological Civilization

Action goals: By 2023, the dynamic monitoring network and supervision system for natural resources, ecological environment, national parks, water management, and energy should improve further. By 2025, the digital, network, and smart level of natural resource supervision, ecological environment protection, national park construction, water resource protection, and energy use should tremendously improve to support the construction of a beautiful China.

Strengthen real time perception, smart management, and smart supervision of natural resources and territory. Optimize the improvement of basic information on natural resources, territory, and geographical patterns, promote the capacity upgrading of dynamic perception technologies to cover natural resource development utilization and asset management, territorial planning implementation, arable land protection, ecological restoration, marine resource supervision, and monitoring of meteorological, geological, and marine disasters. In accordance with the demands of "unified map, unified standard, unified planning, and unified platform," promote the creation of a three-dimensional natural resources "map" and basic territorial information platform. Strengthen the intelligent application of comprehensive supervision, analysis and prediction, and macro decision-making, and provide natural resources and territory data sharing services.

Forge smart and highly efficient ecological and environmental digital governance systems. Enhance ecological and environmental smart monitoring and oversight levels, perfect informatized platforms for ecological and environmental comprehensive management, support precise pollution handling, scientific pollution handling and lawful pollution handling. Promote coordinated and informatized regional ecological and environmental governance, share relevant resources with public interest litigation, and enhance risk prevention and integrated protection capabilities. Support the forging of large atmospheric environment coordinated governance informatization demonstration zones in the Beijing-Tianjin-Hebei and Yangtze Delta zones, support the forging of ecological and environmental system governance informatization demonstration zones in the Yangtze economic belt, the Yellow River basin, and the Chengdu-Chongqing twin city economic circle, support the forging of green ecological city demonstration zones in the Guangdong-Hong Kong-Macau Bay Area. Strengthen the building of informatized capabilities to counter climate change and advance the exploitation and use of climate resources, stimulating green and low-carbon development. Perfect ecological and environmental protection big data service platforms along the "Belt and Road"; promote international cooperation and joint construction of ecological and environmental standards and norms, data resources, monitoring networks, and cloud service resources. Enhance sensing capabilities of ecological networks in forest and grasslands; perfect effective digitized monitoring and assessment systems for ecosystem protection. Strengthen the construction of law enforcement and oversight capabilities in the Yangtze Reserve, and enhance smart monitoring, assessment, protection, and management levels for maritime biology.

Promote the construction of smart systems for water conservation. Encourage the integration of next-generation information technology and the water conservancy business, improve the monitoring system for large rivers, strengthen the application of big data for use with water conservancy, and accelerate the orderly sharing of important water conservancy data such as hydrology and water resources. Utilize the watershed as a unit to enhance hydrological forecasting and intelligent scheduling capabilities. Strengthen the comprehensive supervision of national water conservancy, and continue to promote the improvement of national water-saving information management capabilities.

Build smart energy systems. Promote the deep integration of energy and information fields, improve the degree of informatization and intelligence level of the power grid, oil and gas, and coal infrastructure; promote the construction of an energy system with interconnectivity between the source, network, load, and storage with multi-energy synergy and complementarity, and automated regulation of energy demand. Implement the national energy management and supervision informatization project, formulate unified energy regulations, norms, and a regulatory data index system.

(7) Actions for Rural Digital Development

Action goals: By 2023, the policy system, standards and regulations of the action for digital rural development should improve; the effect of the national digital rural pilot demonstration should be clear, and the difference between urban and rural informationization development levels should narrow further. By 2025, the construction of rural digitization should make important progress; 4G should be more universal; 5G should be applied innovatively, and the difference between urban and rural informationization development levels should be notably narrowed; and entrepreneurship parks that combine startup incubators, technological innovation, and skills training should be preminilarly built. Cultivate and formulate famous, high-quality, and special rural e-commerce products and brands, and improve rural network logistics and distribution facilities. Rural Internet culture should be prosperous and developed, and the rural digital governance system should improve daily.

Improve and upgrade rural infrastructure. Promote the comprehensive development of urban and rural informationization, accelerate the construction of a new generation of rural information infrastructure, deepen the coverage of fiber optic broadband and mobile in rural areas, and promote the intelligent transformation and upgrading of IP networks. Accelerate the promotion of digitization and intelligent transformation of infrastructure like water management, roads, and electricity. Advance rural smart logistics development. Accelerate the digital transformation of farm construction, and strengthen the comprehensive management and supervision of farmlands across the entire country. Upgrade the capabilities for rural meteorological disaster supervision.

Develop the rural digital economy. Accelerate smart agriculture development; promote a new generation of information technologies and make widespread the advanced application of agricultural machinery and equipment in every area of agricultural production and operation. Strengthen the development and applications of national agricultural and rural big data, construct a national agricultural and rural big data platform, and establish a "map" for agricultural and rural big data. Improve the resource system for basic agricultural and rural big data, continuously promote the big data construction for the entire supply chain of important agricultural products. Deepen the carrying out of "Internet +" products from cities to rural areas and the process of digitally promoting agriculture. Promote the deep development of "Internet + special agriculture" and "Internet + rural tourism," cultivate new business models like urban agriculture, sightseeing agriculture, creative agriculture, and enlarge rural information consumption.

Promote rural smart governance. Deepen smart Party building; promote the enhancement of the ability of rural grassroots Party organizations to lead, mobilize, organize, and serve society. Explore new models of digital rural governance, using data-driven, information-sharing and data-mining techniques, solve complex problems faced by rural

governments. Strengthen the application of information technologies between rural group intervention and control and joint intervention and control, and enhance the level of emergency management, disaster prevention and epidemic prevention. Promote smart public legal services and advance the construction of a rules-based countryside. Increase the informationization of village-level comprehensive services, and vigorously promote the management of rural construction and supervision. Enhance the informatization level of rural housing management across the country.

Upgrade the level of information services to benefit farmers. Construct an offline and online integrated rural information services system, and enrich the content of market, technology, finance, and employment training agricultural information services. Promote the construction of rural education informationization, and assist rural schools to open up the national curriculum with complete satisfaction. Accelerate the development of "Internet + health care"; optimize management and service models of rural medicine and health. Promote the digitization of outstanding rural culture resources, and strengthen the guidance of rural online culture.

Upgrade sustainable development capacities of improvised areas. Promote the seamless connection of online poverty alleviation actions and digital rural strategies. Perfect poverty prevention dynamic supervision and assistance mechanisms, perfect the big data supervision platform for poverty, strengthen data sharing and connection between relevant departments, and fully utilize advanced technology to improve the accuracy of supervision. Support the inclusion of poverty reduction areas in national rural data plans. Accelerate the improvement of the digital skills of farmers; vigorously cultivate a new group of farmers.

(8) Actions for Universal Digital Financial Services

Action goals: By 2023, the digitization of the financial industry should produce a clear transformation; the model of financial services should improve even more, and the product supply and scope of business contact should be wider and more abundant. By 2025, the base of an advanced, reliable, and flexible infrastructure service system should form; the financial industry should realize preliminary digitization and intelligentization, financial inclusiveness and the capability to serve the real economy will notably strengthen; a supervisory system adaptable to financial technology should form, and finance should provide all-around support for the new development pattern.

Improve digital financial infrastructure. Optimize infrastructure layout and facilitate appropriate competition in digital financial services. Promote the interconnection of infrastructure and advance the free flow of factors. Further improve the credit reporting system; accelerate the improvement in key areas of credit processes and credit evaluation models. Upgrade and transform the payment and liquidation system; improve risk prevention and control and operation and maintenance safeguard capabilities. Further

improve the comprehensive statistics of the financial industry and accelerate the construction of a basic national financial database. Accelerate the healthy development of the country's financial services industry.

Improve the level of financial services for people's livelihoods. Comprehensively use blockchain, 5G, and other technologies to build a multi-level, extensive new financial services model, promote the continuous maturing and improvement of digital financing and digital correspondence, and increase the reach and capability of financial services. Earnestly protect the legitimate rights and interests of financial consumers in the process of using smart financial products and services, and put effort towards solving problems the elderly and other groups face such as the digital divide. Strengthen the innovation of agricultural financial products; accelerate the application and spread of practical accomplishments of financial technologies from city areas to the rural countryside. Expand the radius of financial services; increase efficiency of services; construct an inclusive digital financial services system that is premised on safety, centered on the people, and guided by demand, and realize the sustainable development of inclusive finance.

Strengthen the capability of finance to effectively support the real economy. Support market actors to use digital technology to reinforce financial service processes; under the premise of protecting data security and personal privacy, deepen the development and use of financial data resources across industries. Improve the nationwide comprehensive credit services infrastructure for small and medium-sized enterprises (SMEs), strengthen the collection and sharing of credit information in the water, electricity, coal, and gas, and related industries; and increase the ability of SMEs to obtain financing. Establish and perfect the transaction reporting system and database; strengthen the transparency of the financial market. Optimize the supply of finance for the industrial supply chain; configure finance resources to the key areas and weak links of economic and social development; and realize the quality, expansion, upgrading, and efficiency of financial services in various industries, especially private and small and micro enterprises. Strengthen the soft connectivity of international and regional financial markets, regulations, and standards; and promote the systemic opening of regulations, rules, management, and standards.

Improve the system for financial technology innovation supervision. Strengthen the work of formulating, monitoring, analyzing, and evaluating basic regulations; explore innovative management mechanisms for financial technologies; enhance piercing supervision abilities, and prevent systemic financial risks from occurring. Strengthen the supervision of financial technologies; completely spread the implementation of supervision tools for financial technologies; strengthen the management of the full life-cycle of financial technology innovation activities; and construct a "firewall" for financial and technology risks. Promote the global governance of cross-border financial services and technologies.

(9) Actions for Building Public Health Emergency Digitization

Action goals: By 2023, the system for public health emergencies should be even more improved and the ability of informationization to support the normalized prevention and control of epidemics should be greatly upgraded. By 2025, the functions of the public health emergency digital system should be greatly improved and significant uses of information to improve the capability of responding to sudden public health incidents and emergencies should be brought into play.

Strengthen public health monitoring and early warning capabilities. Upgrade the ability to monitor infectious diseases and sudden public health incidents, and increase the sensitivity and accuracy of monitoring assessments. Establish a multi-prong trigger mechanism for smart early warning; perfect the multi-channel monitoring and early warning mechanism; improve the ability of real-time analysis and concentrated judgments. Support data sharing between public health and medical institutions; realize rapid submission of related information; and achieve early discovery, reporting, and treatment.

Increase the response capabilities for sudden public health incidents and emergencies. Strengthen capacity building for concentrated, unified, and efficient public health emergency command and improve the response mechanism for public health incidents and emergencies. Actively use digital technologies such as big data, artificial intelligence, the Internet of Things, and cloud computing; and give play to supporting uses in epidemic monitoring and analysis, virus tracing, prevention and treatment, and resource allocation. Perfect the unified national reserve and emergency material support system; optimize the ability to guarantee and regionally distribute emergency materials; and improve resource efficacy.

(10) Actions to Expand Smart Elder Care Services

Action goals: By 2023, national pension data management levels should be continuously improved, appropriate smart products and services for aging continuously enriched, and the various needs of elder care services and management throughout the country effectively supported. By 2025, difficult problems in the use of smart technologies for the elderly should be solved, notably improving the level of digitization and intelligentization of the elder care system; the market for smart elder care should be rapidly developed; and the industrial ecosystem should be even more healthy and complete in order to provide the elderly an old life with a sense of obtainment, happiness, and security.

Build a national pension data resource system. In the area of elder care services, coordinate government affairs and social data resources, rely on the database for national base population information, combine basic data sets on health records and social security of the elderly, organization and service prices for elder care service agencies, and elder care

practitioners. Draw up operation specification standards for elder resource data, and form an elder resource system drawn from public demand, government oversight, and the participation of social capital.

Cultivate and standardize smart elder care services. Accelerate the promotion of the in-depth application of information technologies such as the Internet, big data, and artificial intelligence in elder care services, and help construct an elder care service system that coordinates home and community mechanisms and integrates medical and health care. Support R&D and application upgrading of end-of-life and aging smart products, actively develop smart end-of-life products such as smart assisted care, smart home, health monitoring, and elder care. Promote the optimized transformation of information services and strengthen the supply of digital services suitable for aging. Optimize the functions of government service platforms at every level and make the handling of affairs online more convenient for the elderly. Support communities and institutions to develop digital skills training for elderly groups and preserve necessary offline service channels. Soundly establish a comprehensive supervision system for smart elder care services and promote the healthy development of the smart elder care market.

VI. Organization and Implementation

(1) Strengthening Organizational Leadership

Every region and department must improve ideological awareness. Under the unified leadership of the Cyberspace Administration of China (CAC), [they] must place informationization development in a more prominent place within the overall work situation and strengthen the complete promotion and supervision of top-level design, overall layout, and complete coordination. The Cyberspace Administration of China and the National Development and Reform Commission share the responsibility of formulating the plan for implementation and labor, clarifying the division of responsibilities, coordinating the promotion of every major task, key projects, and priority actions, and following up on the implementation plans of every region and department. Continue to improve the digital China development evaluation index system; vigorously monitor the construction of digital China development; consistently evaluate the circumstances of implementation; analyze and identify potential risks, and publish the digital China development report. The regional offices of the CAC must strengthen the organization, promotion, and systemic coordination of informationization development work. All regions and departments must formulate informationization development plans in their respective regions and departments in accordance with this original plan; integrate the development of informationization in their townships and villages, and implement the plan earnestly.

(2) Improving the Policy System

Establish a sound policy system for the development of digital China. With respect to the development framework, main direction, and major tasks determined around planning, every interrelated department must improve the plans and policies in the related fields of digital economy, technological innovation, digital government, and digital society, and effectively connect with this original plan. Encourage and lead capital markets to strengthen vigorous support of core technologies and strategic emerging industries, and construct an investment and financing system where industrial funds and social capital participate in accordance with marketization. Innovate the method of financial funding and support, increase the vigorous coordination of existing technology plans, and support key core technology research and development, verification, and testing of major technologies. Explore the possibility of using cloud services, intelligent equipment, and digital transformation investments as mortgageable assets and R&D inputs. Optimize the intellectual property financing system and increase financial support for small and medium and micro-sized Internet businesses. Coordinate in the information field the good work of intellectual property protection, anti-monopoly action, and fair competition investigations, and facilitate the orderly flow and efficient allocation of innovation factors.

(3) Strengthening Team Building

Optimize talent cultivation mechanisms. Focus on cultivating high-level research and artisanal talents in the field of informationization. Promote wide exchanges of research talent through building a platform for international cooperation and exchange and carrying out research on world class scientific projects. Deepen the creation of new engineering; construct future technology colleges and modern industrial academies; and in the area of informationization, build a multi-level complex talent team. Continue to carry out various specialized entrepreneurial skills education and training programs; robustly improve systems relating to job titles, professional qualifications, vocational skills grading, and others, and enhance the directness and effectiveness of talent evaluation. Strengthen the education and training of leading cadres with respect to the Internet; vigorously promote leading cadres to learn, understand, and use the Internet; upgrade at every level the ability of leading cadres to obtain, analyze, and use data, and continuously strengthen their ability to drive the development of informationization.

(4) Standardizing Trials and Demonstrations

The CAC and the National Development and Reform Commission (NDRC) must concentrate on key industries, key areas, and priority directions; coordinate and promote the pilot demonstration work on informationization; organize the implementation of demonstration projects with a good foundation, high results, and sturdy effect; prevent the blind following

of trends; and avoid duplication. Every region and department must integrate implementation with practicality, unleash the benefits of pilots and demonstrations, adhere to a full-sided integration; summarize and shape the ability to replicate and spread practical experiences in a timely manner, and promote the acquisition of new breakthroughs in the construction of digital China.

(5) Strengthening Strategic Research

Continue to follow strategic planning and technology in the area of informationization and the cutting edge industrial international trends; strengthen research vigor and policy reserves with respect to strategic, forward-facing, and disruptive technologies. Strengthen theoretical research on the development of informationization with Chinese characteristics and build a theoretical research system for digital China. Encourage and promote scientific research institutes to set up high-end think tanks and educational research bases for digital China and digital society.

(6) Strengthening Public Opinion Propaganda

Innovate propaganda methods; enrich propaganda measures; strengthen the interpretation of informationization-related policies and concepts; and summarize and spread practical experience, typical models, and advanced personages. Carry forth the spirit of scientists and entrepreneurs and excite driving enthusiasm for innovation advocacy and courageous entrepreneurship. Construct a good atmosphere where all of society commonly pays attention, actively participates, jointly supports, and collectively promotes the development of informatization.