

Translation



The following document, the “Internet+” Artificial Intelligence Three-Year Action and Implementation Plan, is one of China’s earliest national strategies for the AI industry. The plan encourages China’s application of AI technology in industries and fields such as smart home, self-driving cars, unmanned systems, security, wearables, and robotics.

Title

“Internet+” Artificial Intelligence Three-Year Action and Implementation Plan
“互联网+”人工智能三年行动实施方案

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Source

Website of the Central People’s Government of the People’s Republic of China (中央政府门户网站). The *Action and Implementation Plan* is dated May 18, 2016 and was uploaded to the website on May 23, 2016.

The Chinese source text is available online at:

<http://www.gov.cn/xinwen/2016-05/23/5075944/files/9cb49ac44cf341b29adf687b6857da34.pdf>
An archived version of the Chinese source text is available online at: <https://perma.cc/X2M9-N7RQ>
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“Internet+” Artificial Intelligence Three-Year Action and Implementation Plan

This Implementation Plan is specially formulated in order to implement the *Guiding Opinions of the State Council on Vigorously Advancing the “Internet+” Campaign* ([2015] No. 40), give full play to the leading role of artificial intelligence (AI) technology innovation, support “Internet+” entrepreneurship and innovation in various industries and fields, and cultivate new momentum for economic development.

I. Overall Philosophy and Objectives

Overall philosophy. We must implement the innovative, coordinated, green, open, and shared development concept, take the improvement of the level of national economic and social intelligentization (智能化) as our main line of effort, strive to make breakthroughs in certain key and core AI technologies, and enhance our supply capacity for intelligent hardware. We must make efforts to strengthen production chain coordination and industrial ecosystem cultivation and enhance the service capabilities of public innovation platforms. We must focus on strengthening innovation in AI applications, guide the development of industry clusters, and advance the promotion of AI in key areas of the national economy and society. We must accelerate the development of new "Internet+" models and business formats, cultivate and expand the AI industry, and provide strong support for creating "twin engines" for popular entrepreneurship and mass innovation (大众创业、万众创新), and enhancing public products and public services.

Implementation objectives. By 2018, we will build platforms for AI basic resources and innovation, basically construct an AI industry system, innovation service system, and standardization system, make breakthroughs in the basic core technologies, bring our overall technological and industrial development to international parity, and have some locally leading application- and system-level technologies. We will cultivate several world-leading AI backbone enterprises in key areas, initially build a green and safe AI industry ecosystem with a solid foundation, active innovation, and open collaboration, and form an AI market application scale measured at the 100-billion level.

II. Cultivate and Develop AI Emerging Industries

Main tasks: We must accelerate the construction of a massive training resource library and a basic resource service public platform for documents, voice, images, videos, maps, and other types of data, build new types of computing clusters that support ultra-large-scale deep learning, and establish and improve industrial public service platforms. We must research full-cycle cybersecurity services and provide cloud-network-terminal integration and comprehensive security services. We must further promote the research and development (R&D) and industrialization of key technologies such as computer vision, intelligent speech processing, biometric feature recognition, natural language understanding, intelligent decision control, and new human-computer interaction and lay a solid foundation for the intelligentized upgrading of the industry.

Key Projects:

(i) Core Technology R&D and Industrialization Projects

We must strengthen industry-academia-research institute-user (产学研用) cooperation, support the construction of innovation platforms such as national engineering laboratories and national engineering (technology) research centers, deploy national-level innovation centers, and jointly promote research on basic theories, general purpose technologies, and applied technologies of AI. We must promote R&D on deep learning technology based on big data such as perceptual data (感知数据), multimedia, and natural language and carry out research on cutting-edge theories and technologies in brain-inspired (类脑) intelligence fields, such as brain-inspired neural computing systems and brain-inspired information processing. We must support the development of basic software and hardware technologies in the AI field such as chips, sensors, operating systems, storage systems, high-end servers, key network equipment, cybersecurity technology equipment, and middleware and support the construction of open-source software and hardware platforms and ecosystems. We must accelerate the R&D and industrialization of AI-based application technologies, such as computer vision and hearing, biometric feature recognition, complex environment recognition, new human-computer interaction, natural language understanding, machine translation, intelligent decision control, and cybersecurity. We must strengthen the layout of cutting-edge technologies and construct the technological foundation for future integration and innovation.

(ii) Basic Resource Public Service Platform Projects

We must build AI massive training resource libraries and standard test data sets that are open to society and contain multiple data types, such as documents, voice, images, video, maps, and industry application data. We must build basic resource service platforms such as new computing cluster sharing platforms, cloud intelligent analysis and processing service platforms, algorithm and technology open platforms, intelligent system security public service platforms, and basic identity authentication platforms for multi-type biometric feature recognition that meet intelligent computing needs such as deep learning, and reduce the cost of AI innovation. We must support the construction of brain-inspired basic service platforms, simulate the cognitive information processing process of the nervous system of a real brain, and promote the development of AI through research on brain-inspired intelligence. We must integrate resources from government, industry, academia, research institutes, and users (政产学研用) and establish industry public service platforms. We must promote stronger cooperation among public service platforms, leading enterprises, and innovative enterprises, bring together AI innovation and entrepreneurship resources, and provide professional innovation and entrepreneurship services such as relevant R&D tools, inspection and evaluation, security, standards, intellectual property rights, and entrepreneurial consultation.

III. Promote Intelligent Product Innovation in Key Fields

Main tasks: We must promote integration and innovation between the Internet and traditional industries, accelerate the promotion and application of AI technology in fields such as home, automotive, unmanned systems, and security, improve cybersecurity assurance capabilities in key areas, and improve the intelligentization service level for work and daily life. We must support AI application pilot demonstrations in important fields such as manufacturing, education, environment, transportation, commerce, healthcare, cybersecurity, and social governance, promote the large-scale application of AI, and comprehensively enhance the cluster-based innovation and entrepreneurship capabilities of AI in China.

Key Projects:

(iii) Smart Home Demonstration Projects

We must encourage home furnishing enterprises to integrate production chain resources, improve the intelligentization level and service capabilities of household appliances, durables, and other household products, and create new consumer market spaces. We must support smart home enterprises as they innovate service models, carry out innovative application service demonstrations in the fields such as health care, smart entertainment, home security, environmental monitoring, and energy management, and provide interconnection and sharing solutions. For hotels, office buildings, shopping malls, residential communities, and homes, we must carry out the custom design of smart home products and provide big data application services.

(iv) Intelligent Vehicle R&D and Industrialization Projects

We must support backbone auto companies and Internet companies as they carry out in-depth cooperation, and establish cross-border, interdisciplinary, and integrated innovation platforms. We must accelerate the R&D and application of software and hardware products such as intelligent driver assistance, complex environment perception, and on-board intelligent equipment and support the R&D of technologies such as adaptive cruise control, automatic parking, and safe driving. We must promote technology R&D, application, and ecosystem construction for self-driving cars, develop key technologies such as smart vehicle chips and on-board intelligent operating systems, high-precision maps and positioning, intelligent perception, and intelligent decision-making and control, and achieve the gradual maturity of self-driving car technology and products. We must implement smart vehicle pilot projects in places where conditions permit, build a safe, ubiquitous, and intelligent cloud-network-terminal integrated Internet of Vehicles (IoV; 车联网 system, and promote typical applications of intelligent vehicles.

(v) Intelligent Unmanned System Application Projects

We must promote the integration and application of AI technology in the field of unmanned systems and develop various forms of unmanned equipment, such as unmanned aerial vehicles (UAVs) and unmanned surface vessels (USVs). We must accelerate the commercialization of consumer-grade and industry-grade unmanned systems and improve the airworthiness management, safety management, and operation mechanisms of UAVs and other unmanned systems. We must support the R&D and application of miniature and light and small intelligent unmanned systems and make breakthroughs in technologies such as the structural design of high-performance unmanned systems, intelligent materials, automatic cruise, remote control, and image return transmission (图像回传). Guided by needs, we must promote the application demonstration of intelligent unmanned systems, improve the intelligentization level of unmanned systems, and promote innovative applications in important industries and fields such as logistics, agriculture, surveying and mapping, power line monitoring, safety patrols, and emergency rescue.

(vi) Smart Security Promotion Projects

We must encourage security enterprises to develop partnerships with Internet enterprises, research and develop intelligent security products that integrate various technologies such as accurate image and video recognition, biometric feature recognition, and code recognition, and promote the intelligentization, intensification, and networkization (网络化) of security products. We must support R&D on, and the conversion of achievements into practical applications for (成果转化), intelligent sensing technologies for societal security, industrial safety, and fires, harmful gases, earthquakes, epidemics, and other natural disasters and promote the application and deployment of intelligent security solutions. We must support some qualified residential communities or cities as they carry out AI-based public security area demonstrations and accelerate the intelligentized transformation and upgrading of security equipment in key public areas.

IV. Improve the Intelligentization Level of Terminal Products

Main tasks: We must accelerate the R&D and industrialization of core technologies for smart terminals, enrich the services and formats of products such as mobile smart terminals, wearable devices, and virtual reality (VR), and improve the supply level of high-end products. We must formulate a special action plan for the innovation and development of the intelligent hardware industry and guide the healthy and orderly development of the intelligent hardware industry. We must promote the deep integration of AI and robotics and improve the technology and application level of intelligent robots such as industrial robots, special robots, and service robots.

Key Projects:

(vii) Intelligent Terminal Application Capability Improvement Projects

We must support R&D on intelligentized applications of cloud-terminal collaboration such as intelligent interaction and intelligent translation and support R&D on basic software and hardware for intelligent terminals such as image processing, operating systems, and applications optimized for AI applications. We must encourage innovation in service models and business formats, develop personalized, specialized, and other diversified supply models, and accelerate the innovation and development of intelligent terminal products that meet the needs of personal consumption, family life, vehicle driving, medicine and health, and manufacturing.

(viii) Smart Wearable Device Development Projects

We must make breakthroughs in key technologies such as lightweight operating systems, low-power high-performance chips, flexible displays, high-density energy storage, fast wireless charging, VR, and augmented reality and accelerate the application of technological achievements in smart wearable devices. We must encourage enterprises to actively carry out differentiated and refined market demand analysis in the fields of health, healthcare, sports, personal safety, industry, and commerce, promote the innovation of wearable devices using AI technology, vigorously enrich application services, and improve the user experience.

(ix) Intelligent Robot R&D and Application Projects

We must promote the in-depth application of Internet technology and intelligent technologies such as intelligent perception, pattern recognition, intelligent analysis, and intelligent control in the field of robotics, vigorously improve the performance and intelligentization level of robot products in terms of sensing, interaction, control, collaboration, and decision-making, and increase core competitiveness. We must support demonstrations of intelligent industrial robot applications in industries with high labor intensity, high hazard levels, and high requirements for production environment cleanliness and production process flexibility, promote the application of intelligent special robots in special fields such as disaster relief, anti-terrorism, and riot prevention, and promote the R&D and application of intelligent service robots in specific scenarios such as medical rehabilitation, education and entertainment, and family services.

V. Assurance Measures

(i) Funding Support

We will make use of multiple funding channels such as central budget funds, special project construction funds, industrial transformation and upgrading funds, and national major scientific research plans in a coordinated manner and allow government

fiscal funding (财政资金) to better play its guiding role. We will improve various financing channels such as angel investment, venture capital investment, venture capital funds, and capital market financing, and guide diversified investment from society. We will encourage the development of enterprises through bond financing and other means and support the issuance of corporate bonds by qualified AI enterprises.

(ii) Standards System

We will build an integrated standards system in the AI field, establish and improve technical standards such as basic general purpose standards, interconnectivity standards, industry application standards, cybersecurity standards, and privacy protection standards, and carry out assessments of the intelligentization level of AI systems. We will strengthen standardization work for networks, hardware and software, data, systems, and testing in popular sub-sectors such as smart home, intelligent vehicles, intelligent robots, and smart wearable devices, ensure open collaboration and fair competition in the AI industry, and form an industrial ecosystem featuring healthy development. We will encourage relevant departments, research institutions, standardization organizations, industry organizations, and enterprises to actively participate in international standardization work in the AI field and establish standards exchange and cooperation mechanisms with the International Organization for Standardization (ISO) and influential international academic and industrial organizations. We will promote the export of Chinese AI standards to the wider world and continuously enhance our international clout (话语权).

(iii) Intellectual Property

We will encourage enterprises to strengthen their patent layouts in key AI technologies and application fields. We will strengthen AI intellectual property rights policy research and enhance the effective linkages between standards and patent policies. We will establish patent cooperation authorization mechanisms and patent risk prevention and control mechanisms in the AI field and promote the conversion of intellectual property achievements in the AI field into practical applications. We will accelerate the opening and sharing of basic patent information resources, build AI public patent pools, support the construction of online intellectual property rights public service platforms, encourage service model innovation, and enhance the added value of intellectual property rights services.

(iv) Talent Training

We will encourage relevant research institutes, colleges and universities, and experts to carry out training in basic AI knowledge and applications. Relying on major national talent projects, we will accelerate the training and recruitment of a group of high-end and hybrid (复合型) talents. We will improve AI-related major and curriculum

setup in colleges and universities, pay attention to the cross-integration of AI and other disciplines, encourage cooperation between colleges and universities, scientific research institutes, and enterprises, and build a number of AI training bases. We will support high-end talents in the AI field as they go overseas to carry out academic exchanges on cutting-edge technologies and standards and we will improve the level of technical exchanges.

(v) International Collaboration

In combination with major national strategies such as the "Belt and Road Initiative,"¹ we will encourage AI companies with competitive advantages to take the lead in "going global" ("走出去"), actively expand overseas users, and jointly develop international markets. We will encourage cooperation with relevant countries to strengthen the R&D and application of AI technology, integrate domestic and foreign innovation resources, and enhance the innovation capabilities and international competitiveness of the AI industry. We will support relevant industry associations, industry alliances, and business service organizations as they build service platforms and provide international cooperation and overseas innovation services for innovative companies in the AI field.

(vi) Organization and Implementation

We will make full use of the "Internet+" inter-ministerial joint conference system and establish a regular liaison mechanism for "Internet+" AI experts and backbone enterprises. We will effectively coordinate central and local resources, promote the establishment of an AI industry development alliance, give play to the supporting role of various enterprises, institutions, and organizations, and promote the smooth implementation of various projects. All departments and regions must clarify their division of responsibilities, track and supervise the implementation situation, implement relevant work, and strengthen communication with the Office of the "Internet+" Inter-Ministerial Joint Conference in a timely manner in important cases.

¹ Translator's note: The "Belt and Road Initiative" ("一带一路"), abbreviated BRI, refers to the Silk Road Economic Belt (丝绸之路经济带) and the 21st Century Maritime Silk Road (21世纪海上丝绸之路).