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Three-year action plan for the innovative development of the metaverse industry (2023-2025) in China

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Responsible for content:

Virtual Dimension Center (VDC) Fellbach

Kompetenzzentrum für Virtuelle Realität und kooperatives Engineering w.V.

Prof. Dr. Christoph Runde

Auberlenstr. 13

70736 Fellbach

URL: www.vdc-fellbach.de

Contact:

Tel.: +49(0)711 58 53 09-0

Email: info@vdc-fellbach.de

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The Metaverse is an immersive, collective space in which the digital and physical worlds merge. This is where the value creation of innovative applications and integration of information technology will take place in the future. The metaverse represents the further integration of the digital and real economies that will define the next generation of the digital economy.

We expect the metaverse to drive the development of the next generation Internet through the mutual stimulation of reality and virtual reality. It will accelerate the necessary smart and green transformation of the manufacturing industry and promote the construction of a modern economic system.

Supporting the build-up of a modern economic system

The global metaverse economy is currently accelerating. This metaverse strategy has therefore been formulated to guide the development of the metaverse economy in a healthy, safe and high-quality direction. It also aims to further support the strengths of our production, networks and culture.

I. Guiding principles

Guided by Xi Jinping's Principles of Socialism with Chinese Characteristics for a New Era and in full accordance with the spirit of the National Congress of the Communist Party of China, this new development strategy must be fully, accurately and comprehensively implemented, and economic development must be accelerated.

This strategy also aims to create a new development pattern that organically combines the expansion of domestic demand with structural reform on the supply side. It concentrates on building an industrial metaverse. The main objective is to strengthen the manufacturing industry. The integration and innovation of a new generation of information technology drives this strategy; the application demand of the real and virtual world leads it. The cultivation of new technologies, products and modes is the starting point.

Our main goal is the Industrial Metaverse, for which the manufacturing industry must be empowered.

We utilize the synergies between a competent government and an efficient market. We bring together economic development, safety and systematic planning. Systematic planning, engineering and industrialization will create a high-quality metaverse economy.

II. Basic principles

Continuation of the innovation campaign

We unleash the energy of integrated innovation in the metaverse and drive the development of seamless integration of adjacent technologies. We give equal importance to ad-hoc measures and long-term activities. We accelerate breakthroughs in key core metaverse technologies. We accelerate the economy's path to high-end technologies.

The right sequence of steps

We develop application scenarios for the metaverse. We promote the application of Metaverse technologies and products by creating use cases in order to create a high-level development situation in which demand leads to supply and supply creates demand.

Integration and mutual reinforcement

By merging reality and virtual reality in the Metaverse, we create a virtual image of the physical world. Support, overlay and duplication possibilities of this digital technology are stimulated. Productivity is increased both in the digital space and in the real world.

Safety and reliability

We link development and security. We strengthen political orientation, leadership in standardization and the development of a metaverse as a governance system. We create a solid industrial foundation, increase the resilience of supply chains and our ability to ensure security.

Commitment to openness and cooperation

We deepen international exchange and cooperation. We take the initiative to participate in international governance/leadership to achieve mutual benefits and win-wins. We strengthen co-operation between industry, colleges, research institutes and universities. We effectively allocate resources and promote the deep integration of the innovation, capital and talent chain.



III. Development policy goals

We expect breakthroughs in metaverse technologies, industrial and administrative applications by 2025. These breakthroughs will become an important growth pole of the digital economy. The digital economy will grow in scale and number; its technology will be further perfected; its ability to support industrial technology will be further consolidated; its performance and quality will reach advanced global levels. We will cultivate three to five enterprises with global influence and a number of specialized small and medium-sized enterprises. We will create three to five industrial development clusters.

The Industrial Metaverse will have begun to bear fruit. These include a number of typical applications, benchmark production lines, factories and industrial parks. Typical software and hardware products of the yuan universe will be widely applied, and a number of new enterprises, models and uses will emerge in the areas of consumption and public services. In the long run, major breakthroughs will be made in key core metaverse technologies and a world-leading industrial metaverse ecosystem will be formed.

We will build a mature industrial metaverse and develop a new growth engine for the manufacturing industry that mutually promotes the real and the virtual. We will build a ubiquitous, universal and unbounded metaverse space. We will promote the realization of humane production conditions and lifestyles, manufacturing and marketing. We will build a safe and efficient governance system for the metaverse and create an organic and sustainable industrial development environment

IV. Priority tasks

(i) Development of an advanced technological and industrial system for the metaverse

1. Promoting the integration and innovation of key technologies

We support breakthroughs in the integration of information technologies into new metaverse generations, such as artificial intelligence, blockchain, cloud computing, virtual reality. We promote the creation of key metaverse technologies, such as intelligent generation algorithms, distributed identity authentication and the circulation of datasets in important national science and technology projects.

We develop key enabling software, metaverse-oriented operating systems and middleware. We drive breakthroughs in 3D modelling software, render engines, physics simulation engines, immersive audio-visual encoding and decoding systems. We create a centralized metaverse development platform from a single source. We drive breakthroughs in high-end electronic components. We accelerate the development of computer graphics chips, high-end sensors, acoustic computer chips and components, displays and other fundamental hardware innovations.

Pillar 1: Upgrading key technologies (Box 1 on page 3-4)

Data transmission technologies

We promote the continuous use of blockchain, privacy computing and other technologies. We are researching the monetization of data assets, the protection and authorized circulation of data assets. We promote blockchain-centered data governance and cross-platform circulation technology for data assets. In this way, we want to transform data streams into value streams and also build a metaverse trust infrastructure.

Content production technology

We create intelligent tools for the production of content for the metaverse. We develop intelligent solutions for capturing, rendering, encoding, testing, controlling, generating and editing content. We improve the efficiency and quality of content production; we improve distributed collaboration in real time; we improve content production with integrated end-to-end rendering in the cloud.

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Pillar 1: Upgrading key technologies (Box 1 on page 3-4) – continued

Digital Twin

We focus on the development of real-time simulation, physical precision simulation, cloud modelling simulation, data-driven hybrid modelling, intelligent optimization simulation and other technologies. We promote research and development in the fields of hybrid modelling, intelligent group optimization simulation and other technologies. We research and develop model encapsulation, asset management shells and other model interoperability technologies. We build model libraries, process libraries and other fundamental knowledge bases for specific industries and applications.

Perception and interaction technologies

We strive for breakthroughs in gesture control, eye movement, head tracking, motion capture and other somatosensory interaction technologies as well as audio, and emotional interaction technologies. We design pioneering new displays, myoelectric sensing, etc. to achieve natural interaction based on people and objects, field synchronization based on natural interaction. We promote the development of the fusion of multi-channel sensory interaction.

Network and computer technology

We promote the development of 5G-A/6G, optical gigabit networks/ten thousand gigabit networks, FTTR, high-speed WLAN, satellite Internet, the convergence of cloud networks and other network technology innovations. We accelerate high-performance computing, heterogeneous computing, intelligent computing via quantum computing, brain-like computing and strive for further breakthroughs in context. We promote the synergetic development of cloud and computer networks.

2. Enrichment of the range of Metaverse products

We will expand access to the metaverse and launch a large-scale promotion of immersive display systems such as XR headsets and glasses-free 3D. We will enrich the metaverse through applications on mobile phones, computers, televisions and other terminals. We support the research and development of brain-computer interfaces and other cutting-edge products. We will develop innovative development tools and components for digital human models and virtual spaces. We simplify the creation of digital human models and increase their richness of detail and intelligence. We will support solutions such as virtual meeting rooms, virtual exhibition halls, virtual business offices and social spaces. We will develop intelligent products for content creation such as writing, painting and music composition. We will develop products with extremely high immersion, such as holographic real-time communication and 3D reality maps.

3. Building a synergetic industrial ecosystem

We will make efforts to cultivate leading companies and specialized small and medium-sized enterprises (SMEs) in the metaverse. We will create industrial innovation consortia and build an ecosystem where large enterprises and SMEs are integrated, develop, and where upstream and downstream sectors of the value chain collaborate and innovate. We will promote the establishment of pioneer zones, science, technology and industrial parks for the metaverse. We will create innovations and applications based on our industrial base in order to create distinctive metaverse industrial clusters. We want to support the establishment of metaverse open-source communities. We want to encourage users to actively participate in technological innovation and the production of metaverse content. We want to introduce and further improve new ways and mechanisms for distributing digital content.

Pillar 2: Promotion of an industrial ecosystem (Box 2 on p. 4-5)

Development of Metaverse Best Practices

We will continue to develop the economic mapping of the Yuan metaverse. We will create a catalogue of excellent Yuan Metaverse solutions. We support companies in expanding their co-operation channels on the market. We compile a list of benchmark solutions and collect typical metaverse use cases and scenarios. We organize thematic competitions and industry summits to further support outstanding technical products and solutions.

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Pillar 2: Promotion of an industrial ecosystem (Box 2 on p. 4-5) - continued

Promotion of well-known Metaverse companies

We create a tiered growth environment for companies in the Yuan metaverse. We promote special solutions, new unicorns, individual champions and pilot companies. We plan to make full use of the opportunities provided by industry associations such as the Yuan Universe Innovation and Exploration Square and the Alliance. We will explore the establishment of an economic ecosystem consortium in the Yuan metaverse to build a safe and reliable industrial ecosystem.

Creation of a metaverse zone of fame

We select regions with a good industrial base to establish pilot zones for metaverse innovations and applications. We establish science and technology parks for the metaverse based on top research institutes and enterprises. We build special industrial parks based on the comparative advantages of each region to support the development of upstream and downstream industrial value chains. We also build functional zones with special characteristics in virtual space, in the virtual time of the metaverse, so as to promote the mapping of real economic entities and models in the metaverse.

Creation of metaverse celebrities

We are building a group of famous digital characters. We create reference products and brands for digital people. We identify outstanding entrepreneurs with metaverse innovation spirit. We cultivate a group of leading technical experts and outstanding creators with driving impact. We form a group of 100 such personalities in the Yuan metaverse to create a communication platform for the Yuan metaverse industry and accumulate high-quality knowledge to develop the industry.

(ii) Promotion of an interactive, 3D industrial metaverse

4. Analyzing the metaversation of the most important industrial processes

We are building a basic, general modelling database for the Industrial Metaverse. We create a highly accurate and interactive virtual mapping space for the industry. We build a simulation platform to design and validate the Industrial Metaverse. We lay out the Industrial Metaverse on the assembly line to improve the effectiveness of design planning and the efficiency of industrial production. We explore new operation and maintenance methods for production lines and their inspection based on the metaverse. We strengthen predictive maintenance and improve operation and inspection efficiency and service quality. We are creating a marketing platform and a virtual training system based on the Industrial Metaverse to create an immersive sales and training environment.

5. Rapid implementation of the industrial metaverse in key industries

We are accelerating cross-industry collaboration based on the industrial metaverse for individual manufacturing industries such as household appliances, automobiles, ships, aerospace, large technical equipment and electronic information technology. We are building a database of mechanism models for our key industries. We develop personalized management systems for the entire life cycle of various products. For process-oriented manufacturing industries such as iron and steel, textiles and electricity, we are promoting the application of the Industrial Metaverse in key scenarios such as material formula optimization and process simulation, and expanding the capacity of predictive services such as process planning, material calculation and material tracking. This will strengthen the predictive capabilities of process planning, material calculation, material tracking, etc.

6. Research into innovative application models for the industrial metaverse

We build a digital identity management platform for the Industrial Metaverse. We are creating a credible identification service system for all connections. We are accelerating the use of industrial datasets and building a service platform for industrial data. We are exploring mechanisms for identifying, pricing, trading and distributing industrial data rights. We are exploring applications for monetizing value chains, supply chain financial services related to assets, equipment and order data. We are overcoming data barriers between the different stages of the industrial supply chain. We develop in-built VR applications for dynamic monitoring, early warning, production operations and decision making. Innovative research is being conducted on assessment methods for industrial metaverse applications and a tiered maturity assessment system is being introduced.



Pillar 3: Enabling the industrial meta-universe (Box 3 on p. 6)

Industrial Metaverse for the production line

We promote the combination of people, machines, data and other key elements to create virtual images and digital twins of production lines. We build virtual assembly rooms in the Industrial Metaverse to support the assembly of add-on and spare parts. We supplement non-contact inspection and use virtual simulation systems to realize three-dimensional, automated and intelligent quality inspection. We are building up a library of process simulation models to support the operation of production lines by means of standardization and to network them with experts via collaborative remote consulting.

Industrial metaverse for the factory

We design and realize a factory-level metaverse platform to create a digital twin of the factory with low latency, high reliability and for intelligent decision making. We promote the integration of different types of industrial software as well as the integration and application of logistics, capital and information flow. We are promoting the comprehensive introduction of immersive interaction technology to realize intelligent inspection, remote collaboration and other factory applications. We are establishing a production operation monitoring system that covers all aspects of production and operation. This initiative will also build a production operation monitoring system to enable comprehensive collection and real-time feedback of information on all aspects of factory production and operation.

Industrial Metaverse for the business park

We seek to overcome traditional temporal and spatial restrictions and promote the agglomeration of virtual space. New models for the construction of industrial parks are being developed that link the real and virtual worlds. We strive to improve the industrial planning and design capabilities of industrial parks. We explore virtual modes of operation of industrial parks and the optimization of their spatial layout, their support by other facilities, their use of resources and other collaborative service functions. A platform for scientific and technological innovation and investment incentives based on the industrial metaverse and for the purpose of innovating the service mode of industrial parks will be established.

(iii) Creating immersive and interactive applications for digital life

7. Promotion of immersive and interactive consumer solutions and lifestyle scenarios

A metaverse for culture and tourism will be built, providing products and services such as digital collections, digital interpreters, XR guides and other products and services around cultural venues, tourist attractions, neighborhoods, festivals and other application scenarios. We will develop digital performing arts, "cloud tourism" and other new business forms and create immersive experience spaces for digital culture and tourism. We will create 3D models of goods, digital shopping guides and virtual shopping centers to enhance immersive shopping experiences. Metaverse applications in broadcasting and the audiovisual scene will be promoted. We are promoting the establishment of a metaverse as a program production and broadcasting system. To this end, we are establishing a pool of virtual production and integrated VR tools, as well as a public service platform. We promote the iterative innovation of program production tools to create new forms of future television, to expand the capabilities of media services and to enrich people's mental world.

8. Creation of a public-law space that combines reality and virtuality

We are accelerating the use of digital customer services and real-time navigation for the creation and administration of an integrated administrative services metaverse for the general public. We promote the technology deployment of a digital twin for the electricity industry. We are building a comprehensive, time-independent network of digital twins. We promote the mapping of electricity companies in the Metaverse and the improvement of the level of electricity supply services. We promote the development of virtual classrooms, virtual laboratories and other teaching and educational environments. We promote the platform-based, comprehensive use of virtual simulation and practical training resources. In this way, we aim to expand the range of high-quality training resources. We want to actively and continuously promote clinical research on digital twins and other technologies. We intend to strengthen R&D co-operation between Metaverse companies and medical institutions.

9. Intelligent security for mastering emergency scenarios

We promote the innovative use of the metaverse for early warning and natural disaster prediction applications, as well as in the monitoring and enforcement of laws in corporate risk zones. We promote the innovative use of the metaverse for the prediction of disasters and accidents as well as for emergency response and disaster recovery



training. We are researching the creation of virtual and digitized real floodplains, the virtual construction of hazardous chemical parks and digital mines. We are researching the simulation of disasters and accidents and other scenarios for training purposes in order to establish accurate monitoring, intelligent early warning, fine control and rescue based on scientifically sound methods. We will build a smart city with real-time monitoring and immersive mapping that enables key scenarios such as safety prevention and power grid diagnosis and improves the efficiency of urban management.

(iv) Development of systematic and comprehensive industrial support

10. Improving industrial standardization

We will explore a standardization roadmap for the metaverse. We will build a system of industry standards and norms for the metaverse. We will comprehensively identify the standardization needs of the metaverse industrial value chain. We will promote the formulation of standards and norms in a hierarchical and classified manner. On the basis of basic commonality, networking, security, trustworthiness, privacy protection and industrial applications, we will organize and carry out the formulation and preliminary study of national standards, industry standards and group standards. We encourage metaverse user industries to formulate standards in specific areas. We will publicize and promote standards and their implementation in detail. We will promote the establishment of Metaverse standardization organizations and encourage industry to actively participate in international standardization work.

11. Expanding the ability to promote innovation

We support the establishment of laboratories in key areas, centers for manufacturing innovation, places for content creation and other platforms. We strengthen basic technological research and accelerate breakthroughs in cross-cutting technologies. We are building a metaverse pilot platform. We are strengthening testing and inspection capacities for new technologies and products. We accelerate the industrialization of outstanding achievements in context. We are building a system to evaluate, assess and improve the quality of metaverse products and services. We improve ways to protect the Yuan metaverse's intellectual property and provide high-quality and professional services for it. We channel financial capital into supporting metaverse development. We promote measures to reduce taxes and fees to favor metaverse-related industries. We create a healthy and sustainable environment of co-operation between the manufacturing industry and the wider economy.

12. Creating first-class infrastructure

We are building new types of networks, such as 5G-A/6G, optical gigabit network/optical ten thousand gigabit network, FTTR, satellite internet, etc., to meet the requirements of high speed, low latency and full 3D mapping in the metaverse. We are building new types of computing power that integrate environmentally friendly and low-carbon cloud and edge, computer networks and intelligent planning. In this way, we ensure computing power for extremely high content fidelity and free real-time interaction in the metaverse. We are developing a trust infrastructure for the metaverse. We test decentralized metaverse applications and support the need for trusted storage in the metaverse. We are building a comprehensive management platform for a metaverse infrastructure. We will develop distributed synergies of computing, storage and communication capacities and improve operational efficiency and reliability.

Pillar 4: Strengthening the industrial base (Box 4 on p. 8-9)

Strengthening leadership in standardization

We are setting up a working committee for metaverse standards to accelerate the formulation of important and urgently needed standards and to promote the linking of different metaverse systems. We strengthen the application of standards and promote the formulation of group standards. We select industries and regions where the conditions are right to carry out experimental developments and promote pilot projects.

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Pillar 4: Strengthening the industrial base (Box 4 on p. 8-9) - continued

Development of a rights system for intellectual property

We support the priority examination of intellectual property in key areas of the Yuan metaverse industry. We introduce patent navigation services and encourage enterprises to strengthen their cooperation in the context of intellectual property. We accelerate research on the granting of intellectual property rights in emerging areas such as digital assets, digital people and digital content.

Accelerating results

We are building a public service platform for the industrialisation of metaverse innovations. We are building a series of metaverse innovation centres to incubate metaverse achievements. We support the establishment of high-level sites for metaverse pilot industries. We accelerate the transfer and diffusion of cross-cutting technologies. We organise special docking activities and focus on the release of new technologies, new achievements and new products. We increase the pace of metaverse development.

Strengthening financial support

We set up development funds for small and medium-sized enterprises and other investment funds to support the yuan-metaverse industry. We improve the fund management system and perfect the market-oriented operation mechanism of funds. A yuan metaverse industry fund will be established and supervised. We will utilize a national cooperation platform to unite the industry, reduce financing costs, promote growth and consolidate enterprises.

(v) Establishment of a secure and trustworthy industrial governance system

13. Improvement of a synergetic metaverse control mechanism

We are continuously improving our metaverse policy and regulations. We are increasingly tracking and researching metaverse risks. We establish a governance system with sectoral coordination and social participation. We clarify the functions of metaverse regulators. We improve rules and procedures for content review, risk management and breach handling. We conduct ethical research on the metaverse and universal values. We plan to incorporate ethical requirements into the entire process of technological research, development and application. We strengthen the self-regulation of the metaverse industry. We improve compliance capabilities, strengthen corporate social responsibility awareness and define key responsibilities. We strengthen social supervision, prevent excessive, systematic speculation and ensure the fair and healthy development of the industry.

14. Capacity building for safety and security

We are increasingly researching metaverse security technologies. We conduct regular security risk assessments and establish a mechanism for dealing with security risks. We guide metaverse companies to strengthen their information security management. We establish a sound mechanism to monitor, identify and eliminate illegal information. We curb the spread of false and harmful information. We effectively prevent illegal activities such as cyber fraud. We create a data governance framework for the metaverse. We strengthen data security and export management. We regulate the collection, storage and use of user data. Data security governance and personal information protection capabilities are improved.



V. Security measures

(i) Strengthening integration and coordination

We will coordinate various departments to develop political synergies in the areas of industry, innovation, finance and regional cooperation. We will coordinate cooperation to promote technological research in the metaverse, set standards and build a governance system. Cooperation between the central government and local governments will be deepened. Encourage local governments to formulate targeted and feasible policies and measures based on their current situation, optimize industry construction, promote technological innovation and industrial development for the metaverse according to local conditions.

(ii) Optimizing talent development

We support universities in strengthening the training of talent in metaverse-related disciplines. Intensified cooperation between industry, universities and research is promoted. Companies are encouraged to train talents together with universities and research institutions and to support the establishment of metaverse-related training centers for technical and qualified talents. In this way, the supply of highly qualified talent will be expanded. We strive to strengthen the recruitment of highly qualified talents from abroad for the integration and innovation of new-generation information technologies such as artificial intelligence, blockchain and virtual reality. A number of high-level qualified management and technology talents of the metaverse are selected and supported by us. We improve the ability of companies to attract talent.

(iii) Deepening international cooperation

We participate intensively in the formulation of rules and standards for the international governance of the metaverse. We promote the establishment of a multilateral, democratic and transparent international metaverse governance system in line with China's proposal on metaverse governance. We strive to harmonize the rules of international metaverse governance with those of China and increase the degree of internationalization of domestic metaverse enterprises. We intensify international exchange and cooperation in the metaverse. We support the collection of global innovation resources. Applications are extended to the international market. We promote mutual support at national and international level.