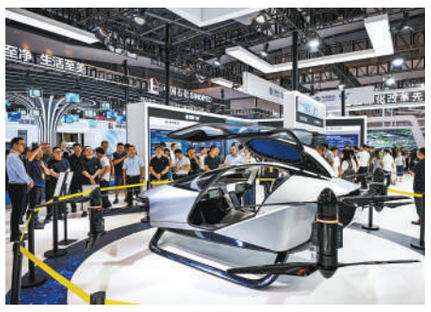
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A PUSH FOR AI-DRIVEN ENERGY REVAMP

PAGE 2 | FOCUS



CREATING SYNERGY THROUGH ENGINEERING EDUCATION

PAGE 4 | LIFE IN CHINA

China Rises to Global Innovation Top 10

By Staff Reporters

China has risen to the 10th position in the global innovation ranking for 2025, marking its first entry into the top 10, according to Global Innovation Index (GII) 2025 released by the World Intellectual Property Organization (WIPO) on September 16.

The GII 2025 uses approximately 80 indicators, ranging from research and development (R&D) spending, venture capital (VC) deals, high-tech exports and intellectual property filings to evaluate nearly 140 world economies on their innovative performance. It is the world's benchmark resource for policymakers, business leaders and others in promoting innovation and building strong innovation ecosystems.

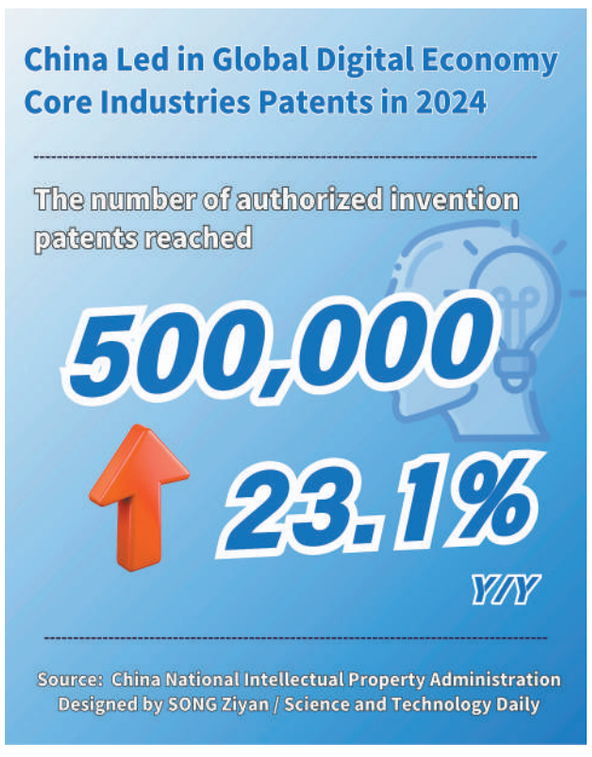
This year, China rose one place from its 2024 position, driven by strong performances in R&D investment, technological innovation, and intellectual property generation. Notably, China alone is home to 24 of the world's top 100 innovation clusters. The Shenzhen- Hong Kong- Guangzhou cluster ranked first globally, marking a milestone.

The index highlights a broader trend of rising innovation capacity among middle- income countries. Alongside China, nations such as India and Türkiye have shown consistent improvement in their rankings. In fact, 17 low- and middle-income economies have outperformed relative to their levels of economic development.

However, global innovation growth is showing signs of moderation. WIPO data indicates that global R&D expenditure grew by just 2.9 percent in 2024, down from 4.4 percent the previous year. The organization forecasts a further slowdown in innovation investment growth in 2025.

"The GII 2025 maps the contours of innovation across the world, showing us that the fastest-advancing economies in the GII are those that view innovation as a fundamental engine of resilience, growth and competitiveness. This year's GII reveals both encouraging progress as well as challenges that still need to be addressed for countries to fully harness their innovation potential. It is a reminder that innovation ecosystems require support and nurturing through thoughtful policies, meaningful investments and cross-sector collaboration," WIPO director general Daren Tang said.

New Graphic



WECHAT ACCOUNT E-PAPER



China successfully conducts the first-stage propulsion system test for the Tianlong-3 large liquid-propellant carrier rocket at the Haiyang Oriental Aerospace Port in Shandong province on September 15. (COURTESY PHOTO)

STI Frontier

Sowing Seeds for Better Future

By Staff Reporters

In northern China, corn has a short growth period, which often includes adverse conditions such as drought, floods, high temperatures, insufficient light and diseases. Sowing and harvesting methods are also diverse — so faced with so many uncertainties, how can farmers ensure high and stable yields, along with high-quality products?

To solve this conundrum, a smart maize variety "Jingke 501" has been developed, Zhao Jiuran, researcher at the Maize Research Institute, Beijing Academy of Agriculture and Forestry Sciences (BAAFS), told *Science and Technology Daily*.

The breeding of this new corn variety is a microcosm of the innovation in BAAFS' efforts to develop the seed industry. Over the years, it has made breakthroughs in breeding staple grains, vegetables, fruits and aquatic products. Today, many of its achievements are leading global seed breeding standards, enriching people's diets and safeguarding food security.

Intelligent breeding

With AI- driven tools, the accuracy and efficiency of seed breeding have been greatly enhanced, said Wang Yuandong, a researcher at BAAFS.

At the 32nd China Beijing Seed Industry Conference held recently, Zhao's team released the Maize6H- 60K chip. This high- density- high- quality SNP chip, utilizing whole-genome resequencing data from 388 representative maize inbred lines, was developed both at home and abroad. Based on this, the team successfully perfected a new molecular identification technology for corn that is compatible with solid-liquid chip platforms.

Along with the Maize6H- 60K chip, BAAFS unveiled the QeeG large model. As a service platform, it has gathered 1,165 datasets including grains, oil plants, fruits and vegetables, as well as 170 million cross- domain knowledge rules, and can provide full-chain services such as variety screening, pest and disease identification, and intelligent Q&A.

In fact, as early as eight years ago, BAAFS launched China's first large-scale breeding data management platform with independent intellectual property rights, known as the Golden Seed Breeding Cloud Platform. Currently, this platform has served 268 breeding enterprises and achieved full- process information management.

BAAFS has made breakthroughs in multiple key breeding technologies and has obtained over 100 international or national patents. In conjunction with the QeeG large model and service platforms, an intelligent breeding ecosystem integrating data, algorithms and technology has been established.

See page 2

Belt and Road Media Cooperation to Bridge Civilizations

By YU Haoyuan

Media around the world should strengthen cooperation, practice and promote the Silk Road spirit, and uphold the principles of equality, mutual learning, dialogue, and inclusiveness among civilizations, attendees at the 2025 Media Cooperation Forum on Belt and Road said.

Themed "Shared Media Responsibility for Exchanges and Mutual Learning among Civilizations," the forum, held in Kunming, southwest China's Yunnan province, on September 16, brought together over 200 representatives from 87 countries, international and regional organizations, and 165 media outlets and institutions.

They said the media should serve as recorders and storytellers of development achievements, continue to report on Belt and Road cooperation, and help build broad momentum for win-win cooperation.

At the opening ceremony, Pavel Negoitsa, general director of Russia's Rossiyskaya Gazeta, said the Internet should serve as an important platform for the Belt and Road Initiative (BRI), which is supported by over 100 countries and international organizations, to spread knowledge of outstanding cultural achievements and positive energy. The global Internet governance system should evolve toward a more fair and reasonable framework that fairly reflects the voices and interests of the majority of countries.

Hani Wafa, editor-in-chief of Saudi Arabia's *Al Riyadh* newspaper, said modern media has evolved beyond merely transmitting news or facilitating communication. It now plays a pivotal role in shaping public opinion, clarifying the truth and supporting development policies.

See page 2

Redstone Model for Sustainable Development

International Cooperation

By SUN Jin & FENG Zhiwen

The Redstone Concentrated Solar Thermal Power plant in South Africa's Northern Cape province, now supplying around 200,000 South African homes with clean power, marks South Africa's energy leap and the success of China-South Africa green energy collaboration.

The 100 MW project, the largest investment project in the province, is built by SEPCOIII Electric Power Construction Corporation, a subsidiary of PowerChina, and began commercial operation in May 2025.

The plant uses advanced tower-based molten salt storage technology. Over 41,000 heliostats — devices with flat mirrors that track the sun's movement to reflect sunlight onto a fixed target — circle the nearly 250-meter-high central receiver tower and reflect sunlight onto it.

The concentrated sunlight heats the molten salt in the tower into a heat transfer fluid and thermal energy storage medium. The 12-hour molten salt energy storage system can generate electricity day and night without fossil fuel backup. It is expected to generate 480 gigawatt-hours (GWh) of clean electricity annually, meeting the electricity needs of 200,000 households and effectively alleviating the power rationing crisis with more than 300 days a year.

According to South Africa's Department of Energy, the project will increase the country's renewable energy proportion by 1.2 percent, and reduce reliance on traditional fossil fuels. It could replace 147,000 tons of standard coal annually, making a vital contribution to the country's transition towards renewable energy.

In terms of climate action, the project will reduce CO_2 emissions by 426,000 tons annually. Its lifecycle carbon footprint is estimated to be 37 percent lower than that of photovoltaic power plants. It will contribute 4.3 percent of the national target to reduce carbon emissions by 28 percent by 2030.

See page 4

WEEKLY REVIEW

New Carrier Rocket Succeeds in 2nd Static Fire Test

China's new-generation manned carrier rocket Long March-10 successfully completed a second static fire test on September 12. This marks a breakthrough in developing the initial prototype of the Long March-10 series of carrier rockets.

Test Satellite Launched for Satellite Internet Technology

China successfully sent a test satellite for satellite Internet technology into space from the Jiuquan Satellite Launch Center on September 16. The satellite has reached its preset orbit.

DeepSeek-R1 Makes Breakthrough in AI Reasoning

The DeepSeek-AI team published the training method for their open-source AI model DeepSeek-R1 in *Nature* on September 17. It demonstrates that large language models can significantly enhance their reasoning capabilities through pure reinforcement learning, reducing reliance on human-labeled data. The trained model gives superior performance in verifiable tasks such as mathematics, coding competitions and STEM fields.

Progress Made in the Hunt for Light Dark Matter

A new experiment called QROCODILE, led by the University of Zurich and the Hebrew University of Jerusalem, has achieved record sensitivity in the hunt for light dark matter. This opens the door to future breakthroughs in one of physics' greatest mysteries.

Real-time Imaging of Brain Activity Achieved in Mice

Researchers at the University of California, Davis, have created a miniaturized microscope for real- time, high-resolution, non-invasive imaging of brain activity in mice. The first- of- its- kind imaging system, known as DeepInMiniscope, will revolutionize how neuroscientists study the brain.

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A Push for AI-driven Energy Revamp

Policy Express

By LIN Yuchen

A plan to accelerate the integration of AI with the energy sector, aiming to ensure high-quality development and enhance security levels across various energy industries is up and running.

Launched on September 8, by the National Development and Reform Commission (NDRC) and the National Energy Administration (NEA), the plan sets a target to establish a robust AI-energy innovation system by 2027, with the foundation for collaborative development of computing power and electricity firmly in place.

Specifically, the targets include widespread application of AI in core energy technologies, most notably in power grids, power generation, coal, and oil and gas industries. Development of over 10 demonstrative projects that are easily replicable and have strong competitive advantages are also targeted, along with the creation of over 100 typical AI application scenarios.

According to the plan, China sees its AI technologies and applications in the energy sector as global leaders by 2030. While progress has already been made in various AI-enabled energy scenarios, including power grids and renewable energy, challenges such as technological reliability, data limitations, and the reverse distribution of electricity remain obstacles to scaling AI applications in the energy sector.



An electric vertical takeoff and landing aircraft. (PHOTO: XINHUA)

The document outlines AI applications across key energy sectors, including coal, electricity, oil, and gas, with AI focusing on eight core application scenarios: power grids, new energy, hydropower, thermal power, nuclear power, coal, oil and gas, and emerging energy businesses. The goal is to enhance the quality and efficiency of energy production, distribution, and consumption, optimizing the entire energy supply chain. Specific tasks and objectives have been identified for each sector, with a focus on urgent intelligent transformation needs, comprehensive data infrastructure, and large-scale application potential.

To address universal technical challenges, the plan proposes three key focus areas for AI in the energy sector: data foundation improvement, enhancing computing power, and advancing algorithmic models. A key strategy is to create high-quality energy data sets and ensure the security and reliability of energy data flows. Additionally, the policy stresses the importance of deep integration between AI and energy software, with a special focus on green, low-carbon technologies to meet energy sustainability goals.

The NEA will head up coordinating the implementation of these ambitious goals, with ongoing analysis and ironing out glitches to ensure smooth progress. With this comprehensive and integrated approach, China is poised to redefine the future of energy by harnessing the transformative power of AI.

AI to Upgrade Manufacturing Sector

By Staff Reporters

Shanghai has introduced a comprehensive implementation plan to accelerate the integration of artificial intelligence (AI) into the manufacturing industry, in line with national strategies for AI to advance new industrialization. This plan aims to rapidly advance the intelligentization of the city's manufacturing sector and generate a batch of innovative achievements.

The primary goal of the initiative is to deepen the integration of AI technologies with manufacturing processes over the next three years. Key objectives include enabling 3,000 enterprises to adopt AI technologies, creating 10 benchmark industry models, and promoting 100 demonstration application scenarios. The initiative also targets the construction of approximately 10 AI-enabled manufacturing demonstration factories and the development of competitive service providers to support the ecosystem.

To achieve these goals, the plan identifies several technological development areas. The focus is on enhancing industrial models through innovations in multimodal algorithms, improving AI's understanding of physical laws, and bolstering decision-making capabilities. The development of an industrial metaverse and space computing technologies is also a priority, aimed at realizing digital mapping of factories and supporting factory layout optimization.

A crucial component of the initiative is industrial data governance, which includes creating standardized tools and systems for managing non-structured and semi-structured data. Meanwhile, the development of synthetic data technologies to assist in model training for complex industrial scenarios, furthering the AI integration process, is also in the pipeline.

In addition to the technological advancements, Shanghai plans to establish essential infrastructure for the AI-powered manufacturing ecosystem. These include the creation of an intelligent computing cloud platform to provide services such as model training and management, as well as an industrial corpus public service platform to facilitate the collection and sharing of high-quality, industry-specific data. Furthermore, it plans to develop "AI+ Manufacturing" fusion innovation bases to create demonstration application scenarios.

The initiative also targets key industries, including integrated circuits, electronics, automotive, high-end equipment, aerospace and pharmaceuticals, and aims to support the development of industry-specific models and specialized AI applications to drive productivity and operational efficiency across these sectors.

By focusing on technological infrastructure, talent development and policy support, Shanghai aims to make its manufacturing sector smarter and more competitive.

Vibrant China

Shanghai: Economic Integration Powerhouse

By Staff Reporters

Shanghai, at the heart of China's economic engagement with the world, plays a pivotal role in attracting global capital, thus becoming an essential force in China's high-quality development.

The city's financial infrastructure has become a powerful magnet for foreign capital, offering seamless access and high efficiency for international investors. From offshore institutions in Hong Kong trading Chinese bonds with a single click to insurance brokers in Shanghai effortlessly managing billions of insurance policies, Shanghai's financial ecosystem is a model of convenience and connectivity for global markets.

The city's remarkable transformation has helped China's bond market become the second largest globally, with the interbank foreign exchange market seeing a transaction volume of 261.7 trillion yuan in 2024 alone. Shanghai's policies have empowered international banks to innovate products tailored to the needs of global trade.

For example, the Standard Chartered Bank's participation in Belt and Road Initiative projects highlights the city's strategic role in global trade and investment, contributing to the clean energy, electric vehicle, and healthcare sectors.

Beyond financial services, Shanghai has made significant strides in supporting businesses going international. The Hongqiao Overseas Development Service Center's AI-driven platform, Aura, is a case in point. It helps enterprises quickly identify optimal overseas investment locations, dramatically reducing the time spent on market research.

Moreover, the city's "sea-going coaches" provide tailored guidance for first-time exporters, offering policy interpretations, risk assessments, and practical advice on navigating international markets.

Shanghai's logistical capabilities reinforce its position as a global economic node. State-of-the-art port facilities, like the Haitong international car terminal, ensure that Chinese-made automobiles are efficiently exported worldwide. The innovative "green channel" for customs clearance accelerates cross-border shipments, with real-time coordination between ports and customs ensuring a smooth flow of goods.

The city's continuous push for strategic openness, technological innovation, and infrastructure improvement has solidified its role as a linchpin in China's global economic narrative. With its streamlined business environment, state-of-the-art infrastructure, and policies tailored to facilitate international trade, Shanghai exemplifies China's broader ambition for high-level opening-up and global integration.



Visitors watch a performance by a humanoid robot at a company in Shanghai on September 12. (PHOTO: XINHUA)

New Era of Industrial Innovation to Strengthen Real Economy

By LIN Yuchen

In a recent briefing, China's Ministry of Industry and Information Technology (MIIT) outlined the achievements in new industrialization and consolidating the foundation of the real economy. With robust growth in key sectors like advanced manufacturing, new energy vehicles (NEVs), and emerging industries, China is increasingly positioning itself as a global leader in modern industrial development.

Over the past five years, the MIIT has made substantial strides in both upgrading traditional industries and nurturing emerging sectors. Traditional industries have seen a rapid transformation, with over 230 smart factories and 1,260 5G-enabled factories built across the nation.

The rise of industrial robotics has been particularly notable, with China now accounting for over 50 percent of the global increase in industrial robot installations.

Emerging industries are becoming key drivers of China's industrial growth. The production and sales of NEVs surged to 13 million units in 2024, nearly 10 times the volume in 2020.



A 5G smart packaging assembly line in a factory in Fujian province. (PHOTO: XINHUA)

Similarly, China has cemented its position at the forefront of renewable energy, leading globally in solar and wind energy equipment production. It has also developed over 60 advanced manufacturing clusters in emerging sectors, bolstering its position as an innovation powerhouse. Significant investment has been made in future industries, focusing on areas such as quantum computing, space technology, and advanced materials.

Over 100 research and development tasks have been launched under the "Mission-Oriented Innovation" program, which focuses on groundbreaking technologies like superconducting quantum computers and laser manufacturing, ensuring that China remains at the cutting edge of technological advancements.

Integral to this success is the deep integration of scientific innovation with industrial growth. The MIIT has expanded the network of innovation centers, with 33 national-level manufacturing innovation hubs now operational. These centers have facilitated breakthroughs in nearly 700 critical technologies, enabling smoother transitions from research to industrial application.

Efforts have been ramped up to foster innovation in enterprises, with R&D spending now accounting for more than 75 percent of the country's total R&D expenditure.

China's technological and industrial landscape is evolving rapidly. The government is committed to strengthening the synergy between technological innovation and industrial upgrading.

Moving forward, the MIIT plans to accelerate the development of key core technologies, streamline innovation resource allocation, and continue to foster industries of the future. By fortifying these foundations, China is ensuring its leadership in the global industrial landscape, ready to embrace new opportunities in the digital and green economies.

Sowing Seeds for Better Future

From page 1

Innovative ecology

With funding from the Beijing municipality, BAAFS has been continuously and steadily promoting research on breeding, including the protection of germplasm resources, making breakthroughs in basic research, building technology platforms, and upgrading modern breeding technologies.

To date, BAAFS has established 29 various national and Beijing-level agricultural and seed industry innovation platforms. The total number of large-scale instruments and equipment shared by all these platforms amounts to 1,040 units.

Meanwhile, the innovation system established by BAAFS covers the entire seed industry chain, including the collection of germplasm resources, theoretical research, variety breeding quality control, promotion and application.

"Breeding technology has been upgraded into a precise design that integrates multiple disciplines. We will further optimize our expert team to integrate technology innovation and talent cultivation with the industrial chain, and continuously inject impetus into the seed industry," Yang Guohang, vice president of the BAAFS, said.

International contribution

During the 14th Five-Year Plan period (2021-2025), BAAFS has achieved impressive results, cultivating over 500 new varieties of fruits and vegetables with independent intellectual property rights, covering more than 1,800 counties and cities across the country.

Furthermore, BAAFS was first to complete the de novo sequencing and genome analysis of an important core germplasm of corn, "Huangzao Si," and constructed the first high-throughput molecular breeding technology platform for vegetables, providing a foundation for the cultivation of major varieties.

Internationally, the academy also took the lead in constructing the complete genome maps and variation maps of fruit and vegetables such as watermelon, pumpkin, Chinese cabbage and cauliflower, and identified over 60 key genes for important traits.

BAAFS's high-quality fruit and vegetable varieties have been exported to over 20 countries, including the United States, Japan, and Vietnam. The "Jingkenuo 2000" variety of fresh corn has become the main cultivated variety in countries along the Belt and Road Initiative (BRI) route, such as Vietnam. Through technology transfer, China's new seed varieties are helping the agricultural development of the countries participating in the BRI, said Zou Guoyuan, director of the Transformation and Promotion Department of BAAFS.

Belt and Road Media Cooperation to Bridge Civilizations

From page 1

Initiatives like the BRI require responsible media coverage that prioritizes accuracy and credibility, while highlighting the humanistic and economic benefits for the participating countries.

A representative of China's *Science and Technology Daily* (*S&T Daily*) called scientific and technological innovation an important driving force of Belt and Road construction. He said *S&T Daily*, as a council member of the Belt and Road News Network, is ready to serve as a bridge, disseminating compelling stories of science and technology cooperation achievements for international communication, and contributing media strength to promoting high-quality development of Belt and Road cooperation.

Following the forum, the media participants from China and abroad will undertake reporting tours in Yunnan and other places across the country.

Since its inception in 2014, the Media Cooperation Forum on Belt and Road has been held nine times.

FCC Ban on Chinese Labs Shocks Global Supply Chains

Clear Voice

By HU Dingkun & SUN Jin



The Federal Communications Commission (FCC) in the U.S. announced it has launched proceedings to revoke U.S. recognition for seven Chinese testing laboratories on September 8. The FCC also confirmed that recognition for four other Chinese labs has expired and will not be renewed.

New FCC rules in May prevent any Chinese lab linked to firms listed on the FCC's Entity List from certifying devices for the U.S. market.

FCC chair Brendan Carr said, "Foreign adversary governments should not own and control the labs that test the devices the FCC certifies as safe for the U.S. market."

Under U.S. regulations, all electronic devices that emit radio frequencies must undergo certification by the FCC-accredited laboratory before entering the American market. Currently, 175 Chinese labs hold FCC accreditation, which is greater than the number of testing laboratories in the United States. About 75 percent of FCC-recognized tests currently occurs in China.

Though seven out of 175 seems to be a small number, the FCC is soliciting public feedback on whether to broaden the ban to include all labs in China and other nations classified as foreign adversaries. An immediate concern is the FCC's potential revocation of all Chinese laboratories' accreditation.

From 5G to TikTok to testing labs, branding Chinese tech a "national security threat" is the U.S. government's go-to tactic. Yet security concerns alone cannot explain the FCC's crackdown on Chinese labs, behind which lie other issues.

Last month, the Foundation for Defense of Democracies (FDD), an American think tank, stated in a written public comment to the FCC, "China's role within telecommunications certification bodies and other laboratory testing reinforces its manufacturing dominance. Proximity of manufacturing plants to these testing facilities allows companies to move prototypes directly from factory floor to a test lab within hours, shortening lead times and lowering costs. This clustering effect cements China's position as the global center for electronics production and certification while allowing major firms to influence each aspect of the supply chain, from design to certification."

Prior to this, in January, Michael Schafer, CEO of Compliance Testing, an accredited American testing service, petitioned the FCC chair and U.S. President Donald Trump that the 28 billion USD certification services market should relocate from Chinese facilities to U.S. laboratories. "This would be the first step in getting U.S. manufacturing out of China and back to the U.S.," he wrote.

Clearly, security concern is just a pretext. The FCC aims to dismantle China's telecommunications manufacturing clusters and erode its competitive advantages in order to accelerate the reshoring of critical industries to America.

While the ultimate outcomes remain uncertain, immediate disruptions are inevitable. Electronic certification has a critical role in global supply chains, directly impacting efficiency, cost, and globalization. The FCC's revocation will severely destabilize the global electronic supply chains. Numerous enterprises that manufacture or certify products in China for U.S. export will now have to transfer their testing labs, causing logistical obstacles and triggering a rise in costs.

In May, prior to the FCC's new regulations, CTOL Digital Solutions, an IT consultancy based in Switzerland, published an analysis indicating that the impending rules would trigger price escalation among non-Chinese testing firms. Certification laboratories outside China were reportedly raising quotes by 15-30 percent.

For U.S. consumers, changes in regulations may bring significant impacts, as the higher certification costs will be passed on to retail prices. Concurrently, non-Chinese laboratories may struggle to accommodate the relocated certification workload from China, resulting in backlogs, delay in some product launches, and shortage of certain devices.

The FDD also admitted that it will drive up testing cost and cause temporary inventory bottlenecks, and businesses may shift these costs onto consumers. Small-scale producers particularly will find this difficult to resolve as their certification fees constitute a larger share of unit costs.

China's laboratories have achieved a strategic position in testing accreditation due to decades of manufacturing efforts and market evolution. For most electronic manufacturers, conducting testing near the production base has significant logistics advantages and cost-effectiveness.

By disregarding these economic fundamentals, the FCC is compelling manufacturers to violate market principles. Ultimately, the additional costs, whether through price hikes or supply chain delays, will inevitably fall on American consumers.

Voice of the World

China's Automakers Transcend Boundaries in EV Tech

By LIANG Yilian & LI Shan

IAA Mobility 2025, the international motor show in Munich, Germany, held from September 9 to 14, brought together around 750 companies from over 30 countries and regions to showcase innovation and explore partnerships.

More than 100 Chinese exhibitors joined the event — their number second only to the host country's — underscoring China's growing role in the global automotive industry.

"China is not only back, but more present than ever," Jan Heckman, divisional head at German auto lobby VDA, told Reuters, adding that this year's edition had 40 percent more Chinese exhibitors compared to 2023.

Chinese electric vehicles (EVs), with their strength in battery technology, smart cockpits, and competitive pricing, are increasingly shaping global design trends. When Geely unveiled its Zeekr 001 with a long-range battery option in 2021, the model "shocked quite everyone," Stefan Poetzl, president of SAIC Audi Sales and Marketing, told Reuters. The car's European styling prompted Audi to accelerate its EV strategy, leading to new models like the AUDI E5 Sportback, developed with Chinese partner SAIC.

Toyota and Volkswagen are also co-developing China-focused EVs with local partners GAC and Xpeng respectively.

"Unquestionably, the Chinese are ahead in manufacturing technology," Bob Galyen, a retired executive whose long career in automotive batteries spanned both GM and the Chinese battery giant CATL, told NPR.

The results are evident in global sales: EVs, including plug-in hybrids, now represent 19 percent of all cars sold worldwide, up from just four percent five years ago. Chinese models account for 17 of the 20 best-selling plug-ins globally, according to CleanTechnica, the American cleantech news site.

"Now you have European companies that cut a deal saying, 'If you give us your EV technology, we can help you come into the European market,'" Stephen Ezell, vice president at the Washington-based Information Technology and Innovation Foundation think tank, told *The Washington Post*.

Rico Luman, senior sector economist for transport and logistics at ING, noted in an email to CNBC: "We know that Chinese players are valued for their digital features among European consumers. It's clearly a signal that they are ramping up competition with EV-only competitors by introducing a next level technology for their models."

Innovation at IAA Mobility extended beyond EVs. Christian Kleinert from Cellcentric — a joint venture of Daimler Truck and the Volvo Group — introduced a heavy-duty hydrogen fuel cell system for long-haul trucks. The system delivers 375 kW of continuous power with hydrogen consumption below six kilograms per 100 kilometers.

Kleinert told *Science and Technology Daily* that fuel cells complement batteries. With 80 kilograms of liquid hydrogen, trucks can exceed a range of 1,000 kilometers. While Germany leads in fuel cell development, China is ahead of Europe in overall infrastructure and framework conditions.

Through exhibitions like the Munich event, European consumers are gaining a renewed appreciation for China's advanced EVs. With affordable, high-tech models entering the market, Chinese automakers are poised to expand their presence across Europe, raising the competitive stakes in the years to come.

Opinion

Stage Set for 'AI Plus' Infrastructure Boom

By LIANG Yilian

In a significant move to accelerate technological integration, China's State Council recently released the "AI Plus" initiative, outlining a comprehensive roadmap for embedding artificial intelligence across economic and social domains.

This policy lays out overarching principles, key objectives, and priority fields — from manufacturing and agriculture to finance and healthcare — providing a strategic pathway toward an intelligent economy and society.

The introduction of the "AI Plus" initiative signals a shift from fragmented AI applications to systematic, ecosystem-driven integration. Much like the "Internet Plus" initiative that revolutionized digital connectivity, "AI Plus" aims to transform industries through deep restructuring — optimizing supply chains, enabling personalized education, enhancing precision medicine, and boosting agricultural productivity. However, rather than just adding AI tools to existing systems, the plan emphasizes fundamental upgrades in production models and service delivery.

Key to this transformation is AI infrastructure. Without robust underlying support, widespread AI adoption remains an abstract concept. The demand is multi-layered: intelligent computing centers and high-performance chips form the hardware foundation; large-scale AI models and open-source platforms provide the software core; and data sharing mechanisms, security standards, and governance frameworks constitute the operational safeguards. A combination of these elements create the essential environment for scalable AI implementation.

This policy is expected to trigger massive investment in AI infrastructure. Cross-regional computing networks, public data resource platforms, and industry-specific cloud services are expected to see accelerated development. Companies involved in semiconductors, cloud computing, data services, and AI solution provisioning are poised to benefit from new policy incentives and expanded demand.

The policy extends beyond China's borders. Recognizing that the future of AI depends on collaboration, the "AI Plus" initiative advocates global cooperation — promoting inclusive access, mutual trust, and shared benefits. It also backs building an open, equitable AI ecosystem and jointly shaping a global governance framework with broad international participation.

In essence, "AI Plus" represents a decisive step in China's digital transformation. By prioritizing infrastructure, security, and global cooperation, it lays the groundwork for sustainable, AI-powered growth.



BYD introduces the Yangwang U9 track edition, which has been awarded the title of "world's fastest EV." (PHOTO: LI Shan / Science and Technology Daily)

AI Model to Boost City Governance in Chongqing

Hi-Tech

By Staff Reporters

At the World Smart Industry Expo 2025 in Chongqing, southwest China, on September 6, Chongqing Architectural Design Institute Co. launched the Nexucity large-scale model, a next-generation AI system designed to accelerate urban digital transformation.

Positioned as a vertical AI model for city infrastructure, Nexucity bridges the gap between architectural engineering language and intelligent information modeling.

According to general manager and chief architect Chu Dongzhu, the model integrates three core functions: precise interpretation of engineering drawings, intelligent data modeling, and smart application of data elements. Together, they enable more efficient construction of urban information systems and improve city asset management, laying a stronger foundation for high-quality urban development.

The model is the result of eight years of independent research. Nexucity can decode engineering drawings, extract detailed structural data, and automatically generate layered 3D building models.

Compared with manual modeling, efficiency is boosted more than 1,000 times, while costs are slashed by over 80 percent — addressing long-standing challenges in building large-scale digital twins, according to Ran.

Gao Mindong, deputy director of the application center at the big data development bureau of Chongqing's Yuzhong district, said the district is using the Nexucity model to build a high-rise firefighting system characterized by "intelligent generation, smart alarms, self-rescue, and intelligent rescue," achieving real-time, full-domain fire safety perception.

Addressing the challenge of extinguishing fires in super high-rise buildings, the model also integrates management and service platforms to enable one-click airspace applications, define operation perimeters, and dispatch drones for reconnaissance, firefighting, and supply delivery — ensuring timely emergency response.

Chinese Games Shine in Gamescom 2025

Edited by SUN Jin

The recent Gamescom 25 held in Cologne, Germany witnessed a significant leap in the presence of Chinese games.

More Chinese game developers participated and basked in attention at the exhibition, the world's largest games event. Gamescom 2025 attracted over 1,500 exhibitors from more than 70 countries and regions, including a record 50 Chinese exhibitors.

The popularity of Chinese games abroad hinges on their successful transformation of Chinese cultural elements into artistic experiences with cross-cultural appeal. Beyond scale, Chinese games showcased polished original content with globally competitive visuals, storytelling, and gameplay mechanics, winning acclaim from overseas media and players, said Grace Pan, senior project manager at the Cologne Exhibition Center (Koelnmesse), co-organizer of Gamescom.

Chinese action-role playing game (RPG) Phantom Blade Zero drew one of the longest queues at Gamescom 2025. After the hour-long demo, a young gamer from Germany's Harz said the art style was cool, and the fighting with swords and knives looked great.

On the opening night, Chinese video game developer Game Science unveiled the first computer graphics generated teaser trailer of Black Myth: Zhong Kui, another action-RPG based on Zhong Kui, a figure from Chinese folklore. The two-minute video brought the house down, and the host called it the last big surprise before saying goodnight.

Shanghai-based Papergames participated in Gamescom for the second time, with its game Love and Deepspace winning the best mobile game award.

In recent years, Chinese game developers have emerged as "true content creators" and "peers of leading European, U.S., and Japanese studios," Pan remarked, adding that their focus on quality and long-term operations has earned global respect.

Chinese games' growth extends beyond exhibitions to market impact. According to a report by the German Game Industry Association (GGIA), four mobile games by Chinese developers ranked among Germany's top-10 mobile game downloads in 2024.

The game market is fiercely competitive in Europe, said Felix Falk, managing director of GGIA. For overseas developers, deep localization — including language adaptation and community building — is essential. For instance, Genshin Impact by Chinese video game developer miHoYo integrates European cultural elements into its content design and operation, from using regional instruments in the music to launching cafes in Berlin and Paris, effectively engaging local players.

The growing footprint of Chinese developers, coupled with the rise of China's gaming ecosystem, is accelerating partnerships with Europe. Falk said collaborations between Chinese studios and their counterparts in Germany and wider Europe are becoming more frequent, enabling both sides to better understand and access each other's markets.

Creating Synergy Through Engineering Education

Dialogue

By Staff Reporters

When French Professor Zied Moumni first arrived in Xi'an in 2012 to begin research collaboration at Northwestern Polytechnical University, he had no idea it would be the beginning of a deep and lasting relationship with China. Over the next decade, this initial academic partnership would develop into something far more significant — a personal and professional commitment to Sino-French educational cooperation, rooted in mutual respect, scientific excellence, and cultural understanding.

In 2024, he was appointed French dean of Shanghai Jiao Tong University's Paris Elite Institute of Technology (SPEIT).

From starting out as a mechanics researcher in France to being a key figure in cross-border engineering education, Moumni brings a wealth of experience and a clear vision of how science, teaching, and cultural exchange can come together to build lasting bridges.



Professor Zied Moumni. (PHOTO: SJTU)

Advancing smart materials research

Moumni's academic foundation is rooted in mechanics and materials science. He earned his PhD in Mechanics from école Polytechnique in 1995 and later completed his habilitation in engineering science at Sorbonne University in 2009.

His research focuses on smart materials and intelligent structures. These materials can adapt their properties in response to external stimuli, such as temperature, stress or electric fields — basically the building blocks of future technologies, including shape-memory alloys used in aerospace, biomedical devices, and advanced robotics. His work has contributed significantly to understanding how these materials can be modeled, tested, and integrated into real-world engineering systems.

One of Moumni's most influential collaborations began in 2012 with Northwestern Polytechnical University in Xi'an. Over a three-year period, he helped establish an international research group that brought together scientists from China, France, Turkiye and the UAE. The team's work on intelligent materials gained global recognition, and in 2015 Moumni was honored with the China Government Friendship Award, the highest accolade the Chinese government bestows on foreign experts. He described the award not as a personal achievement, but as recognition of successful international cooperation. "It was a great surprise," he recalled, "but more importantly, it was a sign that our joint efforts were making a real difference."

A decade of cultural and academic exchange

Apart from a previous brief stopover in Hong Kong, Moumni's true introduction to China began in Xi'an in 2012, a city where history and tradition are fully integrated. The cultural contrast was striking, and the experience left a lasting impression on him. "It was a real cultural discovery," he said. "In Xi'an, I began to understand the depth of Chinese values — family, respect for elders, and the importance of community."

He was particularly moved by the way older generations are valued, such as retired professors continuing to live on university campuses. "It shows a deep care for people and their contributions," he observed. Over time, he has developed a genuine appreciation for Chinese culture — from the art of tea drinking, which he compares to the significance of drinking wine in France, to the conviviality of shared meals at a round table.

This cultural sensitivity has also shaped his approach to teaching. While the scientific content he delivers in China is largely the same as in France, he quickly noticed a difference in student behavior: Chinese students were less likely to ask questions in class, not because they didn't understand, but due to cultural norms around respect and uncertainty. To overcome this, he adapted his style by asking students direct questions during lectures to gauge their understanding. "In France, someone will always speak up if they're confused," he explained. "In China, I had to create space for dialogue. Now, I see that both systems have strengths, and the key is to understand and respect those differences."

From his perspective, Moumni's experience teaching mechanics at SPEIT, from foundational courses to advanced topics in nonlinear systems and numerical methods, has given him a comprehensive perspective of engineering education. He believes strongly in the link between research and teaching: "Science advances through research, and teaching should reflect those advances. When we use real examples from industry or ongoing projects, abstract theories become meaningful," he said.

For students interested in research, Moumni encourages them to pursue doctoral studies. "A PhD is not just a degree. It is a mindset of curiosity, perseverance, and contribution. It benefits not only the individual, but society as a whole."

This article was edited and translated based on the Chinese version written by SJTU.

Tech+Culture

Ancient Qin Inscription Found at Roof of the World

By Staff Reporters

A stone inscription discovered on the Qinghai-Xizang Plateau, known as the "Roof of the World," has been identified as China's only known Qin Dynasty (221 B.C.- 207 B.C.) engraved stone still preserved at its original site and the highest-altitude example from that historical period, the National Cultural Heritage Administration (NCHA) announced on Monday.

Located in Maduo county at an altitude of 4,300 meters, the inscribed surface covers approximately 0.16 square meters and contains 37 characters carved in Qin zhuan (seal script). The NCHA confirmed these details after comprehensive field research and expert review.

The inscription was discovered in 2020 by a team led by Hou Guangliang, a professor from Qinghai Normal University. According to Hou, the finding provides early evidence of human activity on the plateau during the Qin Dynasty, offering "vivid historical testimony of China's diverse yet unified civilization."

In June 2025, Tong Tao, a researcher at the Institute of Archaeology of the Chinese Academy of Social Sciences (CASS), suggested in an article that the engraving documented Emperor Qinshihuang's dispatch of alchemists in search of an "elixir of life," who may have stopped at Gyaring Lake near the source of the Yellow River.

While the article drew widespread attention, it also sparked scholarly debate over the inscription's authenticity and dating.

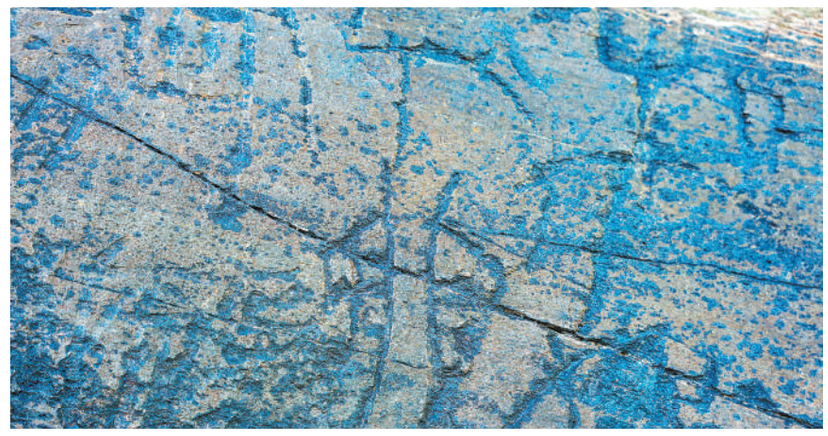
In response, the NCHA organized a multidisciplinary team, including experts from the Chinese Academy of Cultural Heritage (CACH) and the Qinghai Provincial Institute of Cultural Relics and Archaeology, to conduct on-site investigations.

Led by Li Li, vice president of CACH, the researchers employed advanced technology to analyze the inscription. They used high-precision information enhancement technology to collect textual data, macro-photography to examine engraving marks, and portable X-ray fluorescence spectrometers to test the stone's chemical composition.

A key question was preservation: How did the writing survive more than two millennia of exposure?

The research revealed the carving was made on a quartz sandstone formed 250 million years ago. The inscribed panel, facing southeast, was sheltered from the strongest winds and sunlight. Laboratory tests showed the rock has high abrasion resistance and compressive strength, contributing to its longevity.

To rule out forgery, scientists analyzed the tool marks and mineral composition. They found no traces of modern metals such as tungsten or cobalt. Moreover, weathering minerals such as chlorite and illite were present both inside the characters and on the surrounding rock surface, indicating the inscription has undergone ancient, natural erosion.



This photo taken on July 25, 2025 shows the Qin Dynasty engraved stone discovered on the northern shore of Gyaring Lake in Maduo county, Qinghai province. (PHOTO: XINHUA)

Berlin Symposium Advances Oracle Bone Studies

Overseas Echoes

By LI Shan & LONG Yun

The International Symposium on Yinxu Oracle Bone Inscriptions, hosted in Berlin by the Ethnological Museum Berlin in collaboration with scholars from China and around the world, marked a milestone in the international study of ancient Chinese civilization.

The event on September 8 and 9 saw the official release of groundbreaking digital documentation of oracle bones in Berlin's collections and paid tribute to pioneering scholar Professor Hu Houxuan, who has left a legacy in oracle bone inscriptions studies.

The symposium, made possible through the efforts of Dr. Zhi Xiaona, a visiting scholar from the Institute of Ancient Chinese History at the Chinese Academy of Social Sciences (CASS), showcased the fruits of the Sino-German collaborative project. Zhi led a team that documented and analyzed 486 pieces oracle bone fragments in the museum's possession using cutting-edge digital technologies, for a year.

In his opening address, Professor Lars-Christian Koch, director of both the Ethnological Museum and the Museum of Asian Art in Berlin, emphasized the cultural significance of these artifacts and the importance of international cooperation in preserving global heritage.

Henriette Lavaulx-Vrécourt, curator for North and Northeast Asia Department of the Ethnological Museum, outlined the historical context of the collection and the collaborative journey that led to this moment.

Zhi then presented the project's outcomes: high-resolution 2D images, reflectance transformation imaging for dynamic surface visualization, and ultraviolet imaging that revealed previously illegible inscriptions. The team also achieved new fragment reunifications and identified rare character forms.

"This project sets a replicable model for the 'digital repatriation' of scattered cultural relics," Zhi told *Science and Technology Daily*. "We aim to make these materials accessible to researchers worldwide."

The findings will be published in a trilingual corpus (Chinese, English, and German), creating a vital resource for future research.

Professor Song Zhenhao, a member of CASS and a leading figure in oracle bone studies, paid a moving tribute to Professor Hu Houxuan, who was his mentor, saying "Hu's life was dedicated to the collection, collation, and publication of oracle bone materials" and the Berlin project continues that unfinished mission.

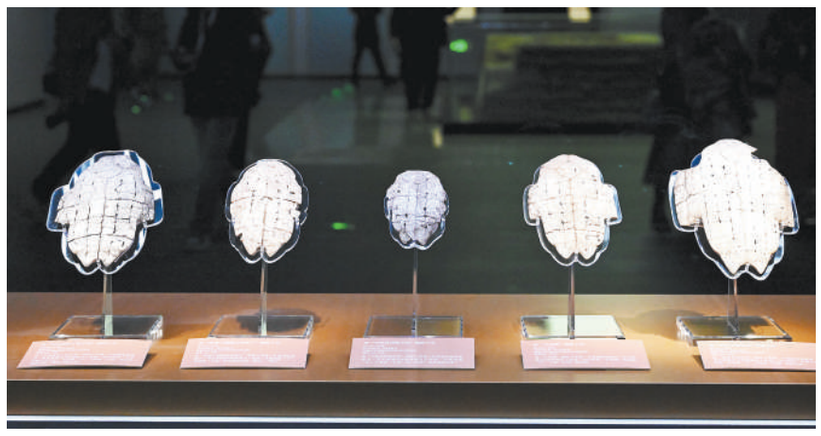
The initiative is a key component of Song's broader Global Oracle Bone Digital Revitalization Project, which aims to digitally reunite and share the information of approximately 160,000 oracle bone fragments scattered across the globe, an ambitious vision for the future of the field.

Professor Wang Zhenzhong, a member of CASS, president of the Chinese Society for Yin-Shang Culture, presented the newly published Collected Works of Hu Houxuan to the museum on behalf of Hu's family, symbolizing the enduring academic bond between generations and nations.

He Wenbo, deputy director of the China Cultural Center in Berlin, praised the symposium as a powerful example of cultural dialogue. "Oracle bones are living fossils of Chinese civilization," he stated. "This event strengthens mutual understanding and cultural exchange between China and Germany."

Over two days, more than 30 scholars from seven countries, including China, Germany, Britain, France, Poland, Spain, and the United States, made 27 presentations on four themes.

Oracle bone inscriptions, excavated from Anyang city in central China, were divinations on tortoise shells and cattle shoulder blades during the Shang Dynasty (ca.1400 BC- 1046 BC). Besides providing insights into ancient history, they are also the earliest writing system in China.



This photo shows oracle bones with inscriptions displayed at the new building of Yinxu Museum in Anyang, Henan province. (PHOTO: XINHUA)

How V-Day Parade Doves Return Home

Science Outreach

By Staff Reporters

When 80,000 doves spread their wings and flew across Beijing's Tian'anmen Square on September 3, it was a poignant moment that conveyed a message of peace to the world.

This spectacular display was made possible by many months of preparation. The doves were all on loan from the Beijing Pigeon Association and had undergone health screening and systematic training before being enlisted. Thanks to their strong homing instinct, all the birds returned safely to their original owners after their epic flyover.

But just how do so many birds find their way back home on a day of such mass celebration?

Homing doves use magnetoreception, or the ability to sense the Earth's magnetic field, for navigation through two primary systems: a light-dependent mechanism involving photoreceptors containing cryptochrome in their eyes, and a magnetite-based system located in the upper beak region. The visual system uses radical pair chemical reactions to act as a compass, while the magnetite-based receptors likely provide information about magnetic intensity to create a navigational "map."

Birds can also use the celestial system comprising the Sun, Moon, planets and other celestial bodies for orientation. Unlike the geomagnetic field, the sun's position varies daily, with latitude and with the seasons. Birds rely on their internal "biological clocks" for solar orientation.

Over time, doves learn to recognize familiar visual cues and landmarks to guide them home. In a similar way to how we find our way, birds memorize prominent geographical features such as rivers, mountains and buildings during flight. These familiar landmarks help homing doves to improve their navigational skills and return home quickly.

Furthermore, birds accumulate experience over time. From the time they are chicks, following their parents on their migrations strengthens their memory of migratory routes.

Redstone Model for Sustainable Development

From page 1

The Redstone project has pioneered a new paradigm for China-Africa cooperation. By integrating advanced technology with localized operations and emphasizing environmental duty and community engagement, it has made energy a key driver of South Africa's social and economic development through job creation and technology transfer.

The project supports energy security, economic recovery, climate action, and regional leadership.

Its success demonstrates a practical and systematic solution for regions with energy shortage, ecological vulnerability, and insufficient employment.

It has proved to be a scalable model for delivering replicable concentrated solar power with energy storage solutions to sun-rich countries worldwide.

Symbolizing a new phase of China-Africa cooperation from infrastructure construction to collaborative innovation in green technology, it has transformed the concept a community with a shared future for humanity into real energy transition action.