New Policy to Spur BCI Industry

Policy Express

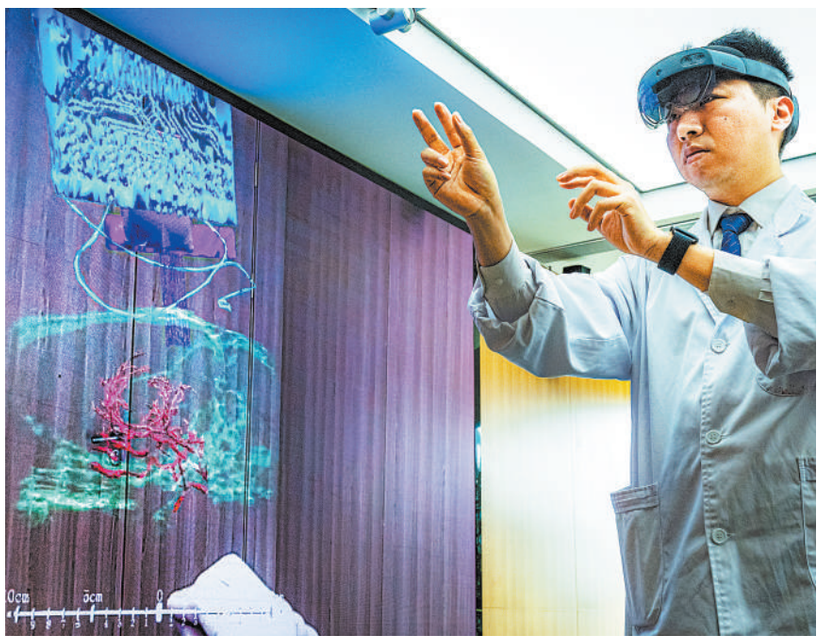
By LIN Yuchen

China has unveiled a new policy to accelerate the innovation and commercialization of brain – computer interface (BCI) technologies.

The implementation guideline on promoting the innovative development of the BCI industry, jointly issued by the Ministry of Industry and Information Technology (MIIT), the National Development and Reform Commission, the Ministry of Education, and four other ministries, outlines building world-leading BCI sectors by 2030.

BCIs establish a direct communication channel between the brain and external devices, enabling coordinated interaction between biological and machine intelligence. They hold the potential for restoring motor and speech functions in patients with strokes, traumatic brain injuries, amyotrophic lateral sclerosis (ALS), or paralysis.

According to the guideline, by 2027, China aims to achieve breakthroughs in core BCI technologies, establish advanced technical, industrial and standard systems, and bring electrode, chip and device performance up to international levels. BCIs are expected to see accelerated adoption in industrial manufacturing, healthcare and consumer applications, with two to three industrial clusters formed and a range of new application scenarios emerging.



A scientist shows major blood vessels in rats through brain-computer interface devices. (PHOTO: XINHUA)

By 2030, the country seeks to create a secure, globally competitive industrial ecosystem, develop two to three internationally influential leading enterprises, and foster a cohort of specialized and innovative Small and Medium-sized Enterprises (SMEs). In addition, it aims to build an internationally competitive industrial ecosystem and become one of the world's leading countries in terms of comprehensive strength in this area.

Progress has been made in BCI development, such as the "Beinao-1" semi-invasive, fully implantable wireless BCI system developed by the Chinese Institute for Brain Research and NeuCyber NeuroTech, which has entered the clinical validation stage. More time is, however, needed from the proof of concept to large-scale clinical application.

The guideline sets out several key tasks: advancing core hardware and software research and development, including brain signal sensors and BCI chips; developing high-performance implanted and non-invasive devices; promoting application pilots and expanding testing capacity; strengthening innovation entities and industrial clusters; and reinforcing standard settings, safety frameworks, and talent pipelines.

Policy support will include major project deployment, strengthened collaborative innovation, and financial backing through national industrial funds. Regulatory facilitation will be provided for priority products such as implanted medical devices, while insurance and compensation schemes for first-batch products will help speed market entry.

With a combination of targeted research and development, policy incentives, and industrial ecosystem building, China aims to position itself at the forefront of BCI, balancing rapid technological advances with safety, reliability and global competitiveness.

Vibrant China

Chongqing's Green Transformation

By LIN Yuchen, LIU Yuanyuan, WANG Shanshan, TENG Jipu & YONG Li

This year marks the 20th anniversary of the concept that "Lucid waters and lush mountains are invaluable assets," formulated to guide sustainable development in China.

Chongqing, located at the heart of the Three Gorges Reservoir area in southwest China, is a beneficiary of this concept. The city's commitment to green development not only safeguards ecological balance but also sets an example for the entire Yangtze River Economic Belt.

In the scenic Qutang Gorge, the Yangtze flows through the towering Kuimen or Kui Gate, where two blue mechanized boats continuously collect floating debris from the water. Wu Fuchun, head of Fengjie county's environmental sanitation department, explained that this is essential due to the river's unique flow dynamics that trap floating waste, especially during the flood season. Without timely cleanup, the debris would be carried downstream, harming the ecosystem of the Three Gorges.

Fengjie has also implemented an intelligent waste management system to streamline the cleanup process. This system, launched in April, uses drones to identify floating waste and alert teams to remove it. The result has been a significant reduction in pollution. Ninety-five percent of the waste is collected and 100 percent of it is safely transferred.

The Hanfeng Lake in Kaizhou district, once heavily polluted, now has pristine waters where local children enjoy paddleboarding. The area is being ecologically restored, transformed into a vibrant wetland park. The number of bird species around the lake has risen dramatically from 144 to 243 over the past decade, signaling the success of the restoration efforts.

In Yongle, a town on the banks of the Yangtze, orange trees in vast orchards sway gently in the breeze. These trees, nourished by the river, have brought prosperity to the region. A stark contrast to its coal-based economy 20 years ago, Fengjie now grows over 383,000 mu of navel oranges, producing 507,000 tonnes annually, worth more than 6.5 billion RMB. The growth of this orchard industry has reduced soil erosion by over 10,000 tonnes, proving that ecological restoration and economic development can go hand in hand.

Chongqing's green initiatives are not only enriching the local economy but are also creating a sustainable path for future generations, as the city continues to explore ways to integrate ecological protection with economic growth. By focusing on ecological tourism, the region is laying the groundwork for a greener, wealthier future.

A view of Hanfeng Lake in Kaizhou district in southwest China's Chongqing. (PHOTO: XINHUA)

Judicial Guidelines to Back Private Economy

By LIN Yuchen

The Supreme People's Court (SPC) has released guidelines on implementing the law promoting the private economy, outlining judicial measures to ensure the smooth enforcement of China's first comprehensive legislation aimed at supporting private-sector growth.

A staff member works on a drip coffee machine production line in Shunde city, south China's Guangdong province. (PHOTO: XINHUA)

The law, in effect since May 20, 2025, elevates long-standing policy commitments to legal obligations. The SPC's guidelines translate the law's provisions into operational rules for courts nationwide, aiming to address persistent challenges in market access, financing, contract enforcement and intellectual property protection.

It emphasizes accurately assessing the impact of market access liberalization in natural monopoly industries and the service sector on the validity of contracts, and rendering fair judgments in accordance with the law. It also calls for the dismantling of administrative and regional market barriers.

Courts are urged to strengthen anti-monopoly and anti-unfair competition enforcement, ensure fair access to financing, and prevent financial institutions from arbitrarily withdrawing loans.

Measures to speed up the resolution of overdue payment disputes and strengthen protection of high-tech intellectual property are also included.

To foster a healthy business environment, the SPC wants strict penalties imposed on internal corruption, collusion in bidding, and misuse of corporate control. The guidelines encourage improvements in corporate governance structures to prevent abuses that could undermine company growth.

The SPC highlights the need for fair, transparent and predictable judicial practices, as well as the importance of guiding enterprises to follow lawful operations. In addition, the court pledges to ensure that legal enforcement supports high-quality private-sector development.

Courts are urged to apply laws consistently, avoid arbitrary rulings, and align their judicial services with national economic strategies. By combining legislative authority with judicial clarity, the SPC aims to reinforce the private sector's role as a vital engine of China's economic growth.

Smart Energy Systems Power Drones

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Zhang explained: "Just like the hybrid mode of a car, when kicking off, the lithium battery instantly releases high power (with a peak power up to 20 kilowatts), while the hydrogen fuel cell supplies power during the cruise phase (with a power of about 5 kilowatts) and also replenishes the lithium battery."

This coordination keeps the system always operating efficiently, reducing energy consumption by 18 percent compared to a single energy solution.

To improve the adaption of traditional hydrogen fuel cells, the team has innovated the design of materials and controlling pattern, said Wu Si, the technical person in charge of the team's intelligent management system.

They adopted an eight-micron ultra-thin proton exchange membrane and an independently developed composite catalyst and hydrophilic group modification technology system to equip the membrane electrode with a self-humidification function. The cathode diffusion layer is designed with a gradient pore size structure to optimize the gas flow distribution and prevent water flooding or membrane drying.

The dynamic control system can predict and adjust the air flow, ensuring the stability of the drones during intense flight. High specific surface area heat dissipation fins and mass transfer enhancement technology improve heat dissipation efficiency and optimize reaction efficiency, ensuring the efficient and stable operation of the battery.

In addition, the team has also solved the problem of ultra-low temperature performance degradation of lithium batteries through the "anti-freezing formula" of the electrolyte and the modification of the negative electrode material.

Full-chain ecosystem

The ultimate value of technological breakthroughs lies in promoting the deep integration of innovation and industry.

According to Zhang, through multiple testing flights, the team has established a battery database under multiple scenarios, environments and dynamic loads, providing references for all-weather, wide-range temperatures and cross-regional flights, and improving the maturity of the technology.

At present, the hydrogen-lithium hybrid power technology has completed pilot production and approval, and has entered a period of accelerated commercialization.

Equipped with the hybrid power system, drones can be used in multiple fields such as agriculture, culture and tourism, forestry, fishery, and emergency response, to monitor natural resources and issue early warnings for diseases.

"We are building a full-chain ecosystem covering materials, components, systems and scenarios," said Chen. Shanghai Emperor of Cleaning Hi-Tech Co., Ltd has established a branch dedicated to producing hydrogen-hybrid power cells and high specific energy lithium batteries. Its production line is under construction, with a planned annual production capacity of 7,500 sets of power systems.

Chen stated that the team will continue to delve deeply into hydrogen-lithium coupling technology, making China's energy solution a green benchmark for the global low-altitude economy.

Mao Yisheng and an Epic Bridge Rebuilt from Ashes

80 Years On
Salute to Scientists

By SUN Jin & SUN Mingyuan

It was the Dragon Boat Festival in 1906, and crowds of people had gathered on the ancient Wende Bridge in Nanjing, Jiangsu province in east China, to watch the passing boats. Overwhelmed by the weight, the bridge collapsed.

Images of the broken bridge and the ensuing deaths were seared into 10-year-old lad Mao Yisheng's mind. They made him determined that one day he would build bridges that no force would be able to destroy.

Driven by his determination, Mao excelled academically and in 1916, graduated from Tangshan Engineering College. He obtained his master's degree in civil engineering from Cornell University in the U.S. in just one year, and finished his doctoral study at the Carnegie Institute of Technology (now Carnegie Mellon University). His dissertation, Secondary Stress on Frame Construction, tackled critical issues and gained widespread recognition in American academia.

He had glittering career prospects in the U.S., but the newspapers carried grim news from China about the war. For Mao, the choice was clear. He was returning home. As he said, "Science knows no borders, but scientists have their motherland."

The Qiantang River, linking the vital cities of Hangzhou, Ningbo and Jiaxing, was known for its ferocious tide. In 1933, Mao made the design for a combined road-and-rail bridge, despite skepticism as China lacked domestic expertise in large bridge construction at that time.

Construction was perilous. Deep, slippery silt destabilized the bridge piers and powerful currents hindered precise caisson placement. He pioneered ingenious techniques to address these challenges.

On August 13, 1937, the Battle of Shanghai erupted just 150 km away. Japanese bombers began targeting the bridge, seeing its strategic importance. Mao's team persisted with their work despite the bombing.

On September 26, 1937, the first train successfully crossed the Qiantang River via the bridge. It was a huge engineering achievement: China's first modern large bridge built primarily by the Chinese.

While it stood, Mao knew the bridge transcended steel and concrete; it was a symbol of defiance.

With Shanghai fallen, the bridge became the critical evacuation route for civilians and retreating troops. Realizing the bridge's capture by the Japanese was inevitable, Mao's team carefully placed explosives under it even as it operated.

Mao wrote in his memoirs, "Thousands crossed above those explosives daily, and trains also ran over them."

On December 23, 1937, as invading Japanese troops reached Hangzhou, the fuse was lit and the bridge detonated. There was a resounding crash as steel twisted and buckled and China's first modern large bridge was demolished just 89 days after its completion. In that time, it had been used to evacuate Chinese troops and civilians while transporting military supplies whose value exceeded the bridge's construction cost.

Mao saw China's victory in the war as something inevitable, when the bridge would be rebuilt.

The future, he knew, depended not only on faith but on knowledge.

So amid the retreat, he prioritized one vital asset: 14 crates containing the bridge's blueprint, construction logs and other information were transported to safety. True to his pledge, after Japan's surrender in 1945, Mao returned to Hangzhou and supervised the bridge's reconstruction.

After the founding of the People's Republic of China in 1949, he played a pivotal role in the construction of the Wuhan Yangtze River Bridge, in central China, resolving many complex structural problems.

After the construction, the natural barrier was transformed into a vital thoroughfare.