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## Unleashing 6G Connectivity by 2030

By Staff Reporters

China has become the first country to grant frequency usage permits for sixth-generation (6G) technology trials. This key regulatory step, made possible after the 6GHz band was approved by the Ministry of Industry and Information Technology (MIIT), will shift 6G research from laboratory simulations to scenario validation, significantly accelerating its commercialization.

### Key milestone

The 6GHz mid-band spectrum, dubbed the "golden spectrum" by industry experts, offers continuous large bandwidth, wide coverage, high capacity and reliability.

According to MIIT, the band is highly compatible with existing 5G mid-band ecosystems. This compatibility allows China to leverage mature global industrial foundations, lower networking and construction costs, and ensure a smooth transition from 5G to 6G.

In addition, the newly allocated spectrum resources are expected to help unify research, industry and academic efforts, accelerating the progress of 6G chips, terminals and testing equipment.

6G has entered a critical phase with clear requirements, technical breakthroughs and the start of standards establishment, said Du Ying, deputy director of the wireless and mobile communications institute at the China Academy of Information and Communications Technology. Du noted that 6G commercial services are expected to launch around 2030, with large-scale deployment likely by 2035.

China completed its first-phase 6G key technology tests from 2022 to 2025, accumulating over 300 core technologies. The second-phase technical trials — now underway — will focus on integrated technical solutions and prototype system development. With the 6GHz band approved, testing will gradually move into real-world environments such as cities and industrial sites to verify performance and accelerate maturity.

### Transformative impact

6G will deeply integrate communication, sensing, computing and AI to enable ubiquitous coverage of space, air and ground, said Shao Chunju, director of the Future Research Lab at China Mobile Research Institute.

In manufacturing, 6G is expected to upgrade the industrial Internet, allowing robots to perform high-precision collaborative work in fully smart factories.

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Black-necked cranes rest in Shigatse city, southwest China's Xizang autonomous region. Xizang boasts a stunning ecological landscape, where blue skies, white clouds, snow-capped mountains, and lakes complement one another, highlighting a growing harmony between humans and nature. (PHOTO: XINHUA)

## STI Frontier

# 5G Factory Upgrades Smart Manufacturing

By LU Zijian & SHEN Wei

At the Zhuzhou Times New Material Technology Co., Ltd.'s (TMT) innovation center's 5G factory, a high-efficiency sandblasting machine works automatically, mechanical arms deliver workpieces to designated stations with slick precision, while the facility's operation parameters, material delivery status and quality inspection data are updated in real time.

The cutting-edge factory was recently selected as one of last year's 5G Factory Typical Application Practices by the Ministry of Industry and Information Technology.

With 5G as the core of the network infrastructure, TMT has established an integrated collaborative system featuring edge-side sensing and execution, real-time edge computing and cloud-side global decision-making. This enables

end-to-end connectivity and intelligent collaboration across devices, data and services, according to Peng Chaoyi, deputy general manager of TMT.

### Enhancing efficiency

Sandblasting is a crucial link in the process of metal-rubber composite element production, as the metal and rubber can bond firmly only after the metal has been sandblasted.

The factory introduced a high-efficiency sandblasting machine which can precisely control the path of the moving spray gun, as well as the angle and distance between the spray gun and the workpiece surface to be sandblasted. This ensures a 100 percent sandblast cover rate and improved roughness stability of  $\pm 10$  microns.

Zhao Bin, deputy chief engineer of TMT's rail transportation department, said the sandblasting machine provides high-quality base material surfaces for

the succeeding rubber coating process. It also increases blasting efficiency by 65 percent and the yield by 15 percent, saving substantial costs.

In addition to the cutting-edge sandblasting machine, almost 80 automated guided vehicles (AGVs) of different types form a logistics network in the factory. Some fetch materials from warehouses, or shuttle through connecting corridors, while others interface with vulcanizing machines, enabling unmanned and precise material delivery for production lines.

The optimal routes are calculated with the help of the intelligent route planning function, updated in real time to deal with unexpected situations.

According to Zhao, the AGV's delivery on-time rate is as high as 99 percent, reducing line-side inventory by 30 percent and shortening changeover time by 40 percent.

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# Embodied AI Backed by Systematic Progress

By WANG Xiaoxia & CHEN Xi

During the recently concluded World Intelligence Expo 2026 in Tianjin, China, over 150 types of embodied robots showcased their astonishing skills, making the Embodied Intelligence Pavilion the focus of the entire event. This technological feast benefited from systematic breakthroughs in fundamental technologies such as computing power, chips and operating systems (OSs).

**All-round support from computing power**

The essence of embodied AI is to endow machines with capabilities in perception, decision-making and action.

Computing power is the "engine." At the expo, the National Super Computer Center in Tianjin showcased its multiple achievements in computing power.

The new-generation Tianhe supercomputer provides exascale computing power, essential for training large models and simulating complex environments for embodied AI. The center released a "three exascale integration platform," integrating supercomputing, intelligent computing and massive data storage, to support the entire chain from algorithm development to deployment.

In collaboration with the National University of Defense Technology, the center is working on a tightly coupled

prototype system combining supercomputing, intelligent computing and quantum computing, expected to be completed by the end of 2027. This will provide hybrid computing support for complex tasks like path planning.

Also, a collaborative model between space-based powerful computing satellites and ground data centers was unveiled. The vision is to build a new generation of ubiquitous computing infrastructure, evolving from single high-power devices to satellite constellation coordination and from ground-based to space-based supercomputing, said Meng Xiangfei, chief scientist of the center.

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## International Cooperation

# China-Nauru Ties Benefit Local Lives

Edited by WANG Xiaoxia

On a regular morning in Nauru, a small island nation in the Pacific, fresh lettuce goes from harvest to shopping cart in just 80 minutes.

At 9:00 a.m., workers at a Chinese-built soilless cultivation facility start cutting green lettuce. By 10:20 a.m., packaged vegetables with both Chinese and Nauruan flags are already on supermarket shelves. "This is my second time buying locally grown vegetables. They are fresh, healthy and cheaper than imported ones," said a local resident.

For years, Nauru — a coral reef island of only 21 square kilometers with an estimated population of just 12,000 — has struggled with poor soil and heavy reliance on imported produce. Fresh vegetables were costly and hard to get, leading to unbalanced diets and high obesity rates.

Now, a project led by Jiangmen Agricultural Holding Group from Guangdong, is changing the status quo. Two shipping containers, equipped with Chinese soilless hydroponic technology, now produce fresh lettuce and other vegetables every Monday, Wednesday and Friday. The system is efficient and climate-independent — ideal for an island nation like Nauru.

"The vegetables sell out fast. I even have to rush to get some myself," said David Aingimea, CEO of Eigigu Holding Corporation, which runs the local supermarket.

And it's not just food products that are benefiting locals. Nearly 500 solar streetlights from China now line Nauru's ring road. With panda patterns, "Jiangmen, Guangdong" and "China" printed on them, they light up previously dark and remote areas.

"These lights have greatly reduced accidents and changed our nighttime life," said Anthony Dimapilis, CEO of Nauru Utilities Corporation. China's Ambassador to Nauru, Lyu Jin, summed up the impact, starting from the specific needs at people's doorsteps and on their dinner tables, these cooperation projects have produced tangible results and quickly improved daily life — and truly are a vivid example of "small yet smart" livelihood projects under the Belt and Road Initiative.

## WEEKLY REVIEW

### China's First Green Computing Full-stack AI Platform Unveiled

China's first full-stack AI platform for green computing went live in the Hohhot area of the Inner Mongolia Pilot Free Trade Zone on May 30. The platform integrates one-stop functions including computing power scheduling and trading, easy model invocation, and token trading and settlement.

### New Test Satellite for Internet Technology Launched

China successfully launched a new test satellite for internet technology from the Xichang Satellite Launch Center in southwestern Sichuan province on May 31. The satellite will be primarily used for technical tests and verification of direct satellite-to-mobile phone broadband connectivity, as well as integrated space-ground network technologies.

### WMO: El Niño 80% Likely in June to August

The World Meteorological Organization issued a bulletin on June 2, stating that considering factors such as unusually warm waters in the tropical Pacific, there is an 80 percent probability of an El Niño event occurring from June to August, and the risk of extreme weather will increase in the coming months.

### Microsoft Unveils AI-assisted Quantum Chip

Microsoft recently unveiled a new quantum computing chip developed with the help of AI, saying it expects to have commercially useful quantum computing systems by 2029. Microsoft's approach to quantum computing is based on quasiparticles known as Majoranas. The company says it has observed evidence of these quasiparticles, a claim that underpins its quantum computing strategy.

## New Graphic

IN 2025

China's Total Data Production

52.26 zettabytes

Global Share

approximately

27.44%

Source: National Data Administration  
Designed by SONG Zijan / Science and Technology Daily

WECHAT ACCOUNT



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