

Blueprint to Modernize China's IP Protection

Policy

By ZHONG Jianli

In its latest move to motivate innovation and create a sound business environment, China has taken a significant step forward in bolstering its intellectual property (IP) protection system.

The National Intellectual Property Administration, the country's top IP regulator, along with eight other government departments, issued a comprehensive plan for the establishment of an intellectual property (IP) protection system.

The plan serves as a roadmap for China to modernize and strengthen its IP system by 2035. It sets a short-term goal that by 2025, the average examination period for invention patents will be reduced to 15 months, and the registration period for general trademarks will be kept at seven months.

Efforts will be made to crack down on abnormal patent applications and ma-



A drone takes off from an automatic drone hangar independently developed by a Chinese technology company to conduct road inspection. (PHOTO: XINHUA)

licious trademark registrations, and strengthen IP protection in emerging fields such as AI, gene technology, and livestreaming.

To strengthen IP protection, the

plan proposes building specialized IP courts and tribunals, and creating hubs for international IP litigation.

The system of punitive compensation for IP infringement will be fully im-

plemented, and the rules of evidence and the standards for determining the amount of compensation for infringement damages will be improved.

The plan also outlines the goal of establishing a nationwide IP fast-protection network by 2027, with provincial-level coverage of such agencies reaching 90 percent.

At present, 71 national IP protection centers and 42 fast-protection centers are under construction or in operation, covering major cities and economically developed areas. From January to April this year, the fast-protection agencies accepted 35,000 cases, with an average handling period of two weeks.

Furthermore, the plan calls for training experts for IP protection, and setting up information platforms to build a professional, information-based and intelligent IP protection capability support system.

The comprehensive measures are expected to significantly improve the country's IP protection and foster a law-based, internationalized business environment.

Tech+Culture

Tech Brings Paleolithic Period to Life

By CHEN Chunyou, WANG Yingxia

Time travel just got a lot easier at the Shuidonggou Site Museum in Ningxia Hui autonomous region, where a visit back to the Paleolithic period 40,000 years ago is possible in the blink of an eye, thanks to the marvels of technology.

The Shuidonggou Site Museum is dedicated to showcasing the unique history and culture of the Paleolithic period. "We've been leveraging technology to bring Shuidonggou's cultural heritage to life for over 13 years," Luo Yan, deputy general manager of Ningxia Shuidonggou Tourism Development Co., Ltd., told *Science and Technology Daily*. "If culture is the soul of Shuidonggou, then technological innovation is its driving force."

The attraction of Paleolithic sites, especially those situated in remote areas, is often not high for the general public. As one of the earliest excavated Paleolithic cultural sites in China, Shuidonggou was once a desolate desert with only ruins to mark its past. How to generate interest in, and public awareness of, these ruins has become a challenge for museum staff across China.

"Managers of the Shuidonggou Scenic Area undertook field research on domestic and international museums to gain inspiration," said Gao Xing, a researcher at the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences. "We had made extensive discussions and deliberations with fine art designers and relevant archaeologists, before creating the museum design."

The museum's shape draws inspiration from the distinctive Western Mosterian culture stone blades of the Shuidonggou Paleolithic period, with a predominantly earthy yellow hue reflecting the primary tones of the stone tools and the site's environment. Its exterior re-

sembles unearthed stone tools, and the building area covers 4,308 square meters.

The Shuidonggou Site Museum exhibition hall has revolutionized the traditional display case format of this genre, seamlessly incorporating artifacts, charts, sculptures, paintings, scene reconstructions, sand tables, multimedia displays, and audience interactions. Furthermore, digital and multimedia technologies were adopted to upgrade the overall exhibition effect.

In the submerged exhibition area, a 270-degree panorama, real-life scenes, and holographic projections are combined with cutting-edge sound, lighting, and electrical, and adjustable earthquake platform technology to recreate scenes from 40,000 years ago, featuring ancient humans crafting stone tools, performing rituals, fishing and hunting, as well as the devastating scenes of natural disasters like torrential rain, flooding and earthquakes. The breathtakingly realistic scenes have pioneered a new form of display in Chinese museums, captivating a lot of visitors. During the 2024 May Day holiday, the Shuidonggou Scenic Area received more than 160,000 visitors.

Over the past century, six large-scale excavations have been made at the Shuidonggou site, uncovering 12 Paleolithic sites. Countless artifacts and relics were found to have been left behind by the ancient Shuidonggou people, including stone and bone tools, ornaments, animal bone fossils, and fire pits. The mysterious disappearance of the Shuidonggou people and their ultimate destination continue to intrigue the curiosity of visitors.

Bringing more unresolved mysteries to life is the charm of history and sparks public curiosity. "Leveraging technological advancements to popularize the Paleolithic culture to the public is our core responsibility," said Luo, who pledged to continue with the museum's mission.

China to Build More Top-level Archaeological Institutions

By CHEN Chunyou

The National Cultural Heritage Administration (NCHA) issued a trial guideline to assist with the development of world-leading archaeological institutions in late May, aiming to elevate the overall impact of China's archaeological institutions and accelerate the high-quality development of cultural relics and archaeology.

To apply for the construction of a world-class archaeological institution,

certain conditions must be met, says the guideline.

These include achieving fruitful academic achievements, maintaining a leading position in terms of the quantity and quality of academic output in China, and having an influence on archaeology at home and abroad. In addition, these candidates should have academic leaders and teams that are widely recognized both nationally and internationally, along with a robust team development strategy and comprehensive

facilities and equipment.

According to the guideline, the construction of world-leading archaeological institutions will focus on improving the levels of academic research, international cooperation, management innovation and talent development of archaeological institutions, seeking to propel a group of quality archaeological institutions into the world's first-tier ranks.

The implementation of this initiative will be phased in, with the first stage targeting the construction of 10 to

15 world-leading archaeological institutions by 2030, significantly bolstering the global influence of Chinese archaeology. By 2035, a group of world-leading archaeological institutions with Chinese characteristics will be established, significantly improving their comprehensive capabilities.

The NCHA will evaluate China's archaeological institutions every three years and adjust the list of world-leading archaeological institutions based on the review results, as per the guideline.

Shanghai Shines as Collaborative Biomedical Industry Hub

Case Study

By XIE Manbin, LIU Chun, ZHONG Jianli

The biomedical industry, one of Shanghai's leading industries, has emerged as a vital force in implementing its innovation-driven development strategy. After 30 years of progress, the city has cemented its position as a global hub for biomedical technology innovation and industrial development.

Collaborative innovation

At the exhibition hall of the United Imaging Group (UIG) in Jiading district, Shanghai, the world's first two-meter Positron Emission Tomography-Computed Tomography (PET-CT) medical equipment draws visitors' attention.

"This equipment boasts a two-meter scanning field of view and can complete a full-body scan in just 30 seconds," UIG

Chairman Xue Min said, adding that the machine's sensitivity is 40 times higher than that of traditional PET-CT scanners, while the radiation doses during scans are only 1/40th of those produced by conventional devices.

How has UIG developed this advanced equipment? Xue said in early 2021, the company signed a framework agreement with Shanghai Municipal Science and Technology Commission to advance basic research including applied basic research, initiating the Explorer Program.

"The Explorer Program has facilitated close collaboration between us and UIG," said Professor Lai Xiaochun from Shanghai University of Science and Technology.

Lai said their joint applied basic research project aimed to develop a photon counting spectral CT detector, capable of capturing clearer "color photos" of the human body, regarded as a significant technological breakthrough in CT

imaging in recent years.

The rapid growth of UIG exemplifies the development of biomedical enterprises in Shanghai. According to official data, in 2023, Shanghai's biomedical industry was worth 933.7 billion RMB. Between 2019 and 2023, a total of 30 innovative medical devices were approved, accounting for one-fifth of the country's total.

Medical experts join hands with industry

In the Innovation Center of Ruijin Hospital affiliated with Shanghai Jiao Tong University School of Medicine, a surgical robot delicately shells a quail egg with its mechanical arms.

This single-hole laparoscopic surgical robot was developed by Shurui Medical Technology (Shanghai) Co., Ltd. Xu Kai, founder of the company and a professor at Shanghai Jiao Tong University, said it can operate instruments inserted into a patient's abdominal wall through a skin incision less than three centimeters,

and perform complex surgical operations in limited spaces.

Xu acknowledged that the surgical robot was developed based on feedback from surgeons at Ruijin Hospital. More practical products can be developed only through close collaboration with hospitals to understand their needs, he stressed.

Ning Guang, an academician of the Chinese Academy of Engineering and president of Ruijin Hospital, said that frontline medical professionals, including doctors and nurses, who better know the "unmet needs" in the medical field, should play an essential role in medical industry innovation.

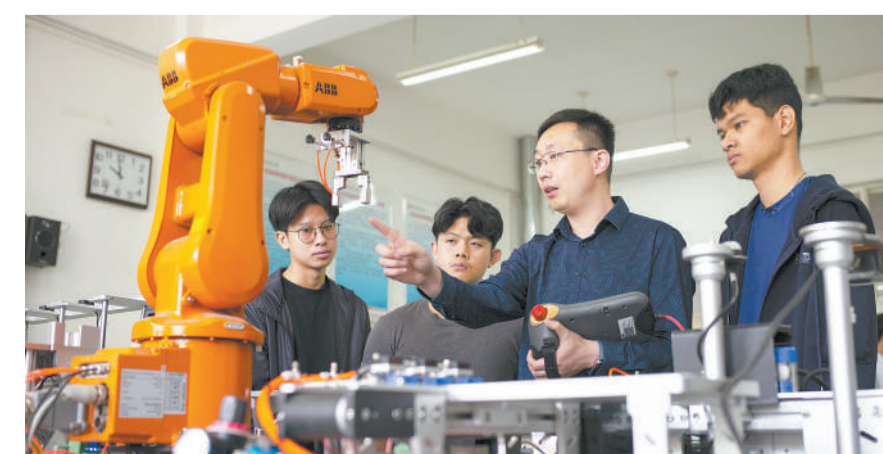
In Shanghai, many innovation projects are initiated by medical professionals. The city is seeking collaboration between the medical and industrial sectors, including "doctor + engineer" partnerships, to develop new models for innovative medical device industry development.



An exhibit featuring a replica of the natural landscape at the Shuidonggou Site Museum in Yinchuan, Ningxia Hui autonomous region. (PHOTO: VCG)

Photo News

As China strives for a higher level of opening up, vocational colleges are exploring new ways to train international students. The Laiwu Vocational and Technical College is working in collaboration with colleges and universities in the Belt and Road Initiative partner countries. The college has established overseas branches and is working with vocational schools in Southeast Asia to train technicians. The trainees learn both manufacturing skills and the Chinese language, which helps them to find better jobs when they graduate.



A teacher from the Laiwu Vocational and Technical College in Jinan city, Shandong province in east China, explains to students from Thailand how to operate industrial robots. (PHOTO: ZHOU Weihai)

Decoding Evolution History of Rice

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Wild rice naturally existed in the lower reaches of Yangtze River for at least 100,000 years ago, setting the stage for the subsequent utilization and domestication of rice, according to Zhang.

About 24,000 years ago, coinciding with the onset of the Last Glacial Maxi-

mum, our ancestors began gathering and processing wild rice, indicating their effort to seek new sources of food in response to the cooling climate.

Approximately 13,000 years ago, humans embarked on the practice of predomestication cultivation of wild rice.

Around 11,000 years ago, the pro-

portion of domesticated rice phytoliths increased sharply and eventually surpassed the domestication threshold.

The conclusions are well supported and highly novel, said the peer reviewer of the study, speaking highly of the study's significance to our understanding of the evolution history of rice, as

well as the origins of agriculture.

This work shows that plant use and domestication occurred concurrently in Southeast Asia and the Fertile Crescent, commented Bianca Lopez, editor of *Science*.

There are still many mysteries concerning the evolution of rice, said Lyu, adding that the research team will carry out interdisciplinary researches to unravel such riddles.

mate change challenges.

With China and the Arab states incorporating sustainable energy into their national development policies, it is expected that both sides will work together to advance more cooperation in renewable energy to build a greener world.

China, Arab States Join Hands for Sustainable Development

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The Al Shuaibah Photovoltaic Plant in Saudi Arabia is located in the desert. The solar project was undertaken by three Chinese companies in 2022 and is expected to be operational by 2025.

With a total production capacity of 2.6 GW, the plant will generate clean energy to power 450,000 houses in the region annually. It will support Saudi Arabia's goal to generate 50 percent of electricity from renewable sources by 2030.

Apart from collaboration on major renewables infrastructure, China and Arab states are also strengthening cooperation in the electric vehicle industry, which is increasingly playing a part in the energy transition to address the cli-