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WEEKLY EDITION

International Cooperation

China-Africa Cooperation Drives Meaningful Change

By WANG Xiaoxia

Good progress has been made through China-Africa cooperation under the Belt and Road Initiative (BRI), as the improving infrastructure and clean energy cooperation are bringing tangible benefits to Africa.

Since the founding of Forum on China-Africa Cooperation (FOCAC), Chinese companies have helped African countries build and upgrade more than 10,000 km of railways, nearly 100,000 km of roads, nearly 1,000 bridges and 100 ports. With 66,000 km of power transmission lines and 150,000 km of communication backbone cables built by Chinese companies, network services now cover nearly 700 million user terminals in Africa.

Thanks to economic and trade growth through speeding up infrastructure construction, Africa can better participate in global industrial cooperation.

Despite the global COVID-19 pandemic, China and Africa witnessed closer economic cooperation and increasing trade under the BRI. In 2021, China-Africa trade exceeded 250 billion USD, up 35.3 percent year on year, according to statistics from Chinese Ministry of Commerce. *See page 4*



A model of C919 passenger aircraft at the China National Convention Center in Beijing during a media preview of the 2022 China International Fair for Trade in Services (CIFTIS). (PHOTO: XINHUA)

Editor's Pick

Innovation Brings Chinese Robots to the World

By LU Zijian

China now has the largest robot application market in the world, according to Xin Guobin, vice minister of industry and information technology, speaking at a forum during the World Robot Conference 2022 (WRC 2022) on August 19.

A report on the development of China's robot industry released at WRC 2022 predicts that the scale of the country's robot market will hit 17.4 billion USD in 2022.

And as with all mega markets, it is not one that was created overnight.

Rising to robot R&D challenges

A key factor of China's progress in the robotics industry is the joint efforts of universities, research institutes and enterprises in tackling technological challenges in robot R&D.

Breakthroughs of technologies regarding key parts of robots, such as reducer, controller and servo systems, have been achieved, especially in enterprises, among which is SIASUN, a robotic enterprise belonging to the Chinese Academy of Sciences.

As a leading enterprise in Automatic Guided Vehicle (AGV) SIASUN was among the first enterprises to apply AGV

in real life situations like automobile assembling. The synchronous tracking technology developed by SIASUN can dynamically follow the passive reflector of the hoist for car body lifting, thus making dynamic assembling possible by checking the deviation of relative positioning.

Applying AGV in heavy truck assembling is a more recent challenge tackled by SIASUN. Different from the demand for AGV in car assembling, heavy truck assembling requires stronger bearing capacity, lifting ability and safety factors. To meet the needs, researchers in SIASUN achieved technological innovation in lifting structure, control unit and sensing unit through independent R&D.

There are also many other technological achievements in the robotics industry. Industrial robots have become more flexible after compliant force control features were added to them, which helps to realize their application in scenarios that require higher precision and stronger sensitivity.

Robots in daily life

Robots have deeply integrated into daily Chinese life. Industrial robots have been applied in 60 industry categories and 168 industries. According to the National Bureau of Statistics, the production vol-

ume of industrial robots in China in 2021 reached 366,000, soaring by 68 percent compared with that of the previous year.

Industrial robots are key to intelligent manufacturing systems, which play an important role in the digital transformation of the manufacturing industry. The application of industrial robots has also expanded from simple tasks like carrying materials, to precision machining like polishing.

Delivery robots are now a more common sight, along with housework robots. Meanwhile surgical robots are of great help to doctors in terms of completing highly difficult surgeries with precision, efficiency and safety, as they advance the limits of human hands, eyes and brain.

Also, special robots are widely adopted in emergency rescue, hazardous operations, and scientific expeditions in extreme conditions. Aerial work is quite dangerous as workers have to face both the risk of falling and extreme weather like strong wind, high temperature and severe cold. A special robot displayed at the expo during WRC 2022 can release workers from such situations and has a working efficiency six to eight times that of a human. *See page 2*

Satellite-aided Weed Control via Smart Agriculture

By LIN Yuchen

Drawing on BeiDou Navigation Satellite System (BDS), Professor Zhang Ruihong from the engineering school of Yangzhou University, along with his team, have made a breakthrough in weed control of paddy fields.

The team has developed a mechanical weeding robot, which is designed specifically for unmanned weeding in rice fields. Research on this robot began in 2018 and the technology required,

such as mechanization and unmanned navigation, has been sufficiently developed, laying the groundwork for the first - round trial of automatic weeding among rice.

One important feature of this tech is accuracy. Zhang's team developed independently a digitalized system channeling BDS to equip the robot with navigation functions.

This constitutes how the amount of herbicide used could be largely reduced as weeds among rice are now tar-

geted section by section.

"If our program succeeds as expected and our technologies are accepted widely, the amount of herbicide used today could be reduced by about 70 to 80 percent," said Zhang. Apart from lowering the cost by reduced staff, this method will also protect the environment.

"We are also preparing to launch a system next year that helps mix manure in the soil, after which all farmland weeding practices could be automated," said Zhang.

Smart China Expo Features Full Spectrum of AI's Potential

By LIN Yuchen

Attracting global attention, the AI implementation on display at the 2022 Smart China Expo, held in Chongqing this August, brought to light multiple technological innovations among the exhibitors.

Technologies such as smart warehousing and AI live streaming were all demonstrated at this expo, exposing a trend of automating work and systems as part of the high-quality development commitment by China.

"We were no more than a factory who took subcontracting orders for beepers many years ago," said the principal engineer Chen Jing of an exhibiting company of the expo. Now, relying on 5G and smart warehousing, the company can extract a single required hard disk from thousands of others with one simple order, said Chen.

"We have now become an industrial leader, thanks to the digital transformation of our industries," he said.

These AI-driven technologies also signal the acceleration of digital transformation among participating enterprises, creating new demands on a large scale. In 2021, the size of China's digital economy reached 45.5 trillion RMB, representing a rise of 16.2 percent year-on-year, accounting for 39.8 percent of the overall national economy. Digital economy, in light of this, has developed into a major component of China's national economic structures.

In line with the Development Plan on the New Generation of Artificial Intelligence by the State Council in 2017, the Smart China Expo aims to continually unleash growth potential through AI transformations, scaling up the domestic digital economy to a higher level.

WEEKLY REVIEW

Declaration on Internet Civilization Released

A declaration on jointly promoting an Internet civilization in the new era was released at the 2022 China Internet Civilization Conference on August 28 in north China's Tianjin. The declaration contains consensus on strengthening the construction of Internet civilization in areas like Internet ecology, culture and security.

Record Breaking Lvzhijiang Bridge Opened to Traffic

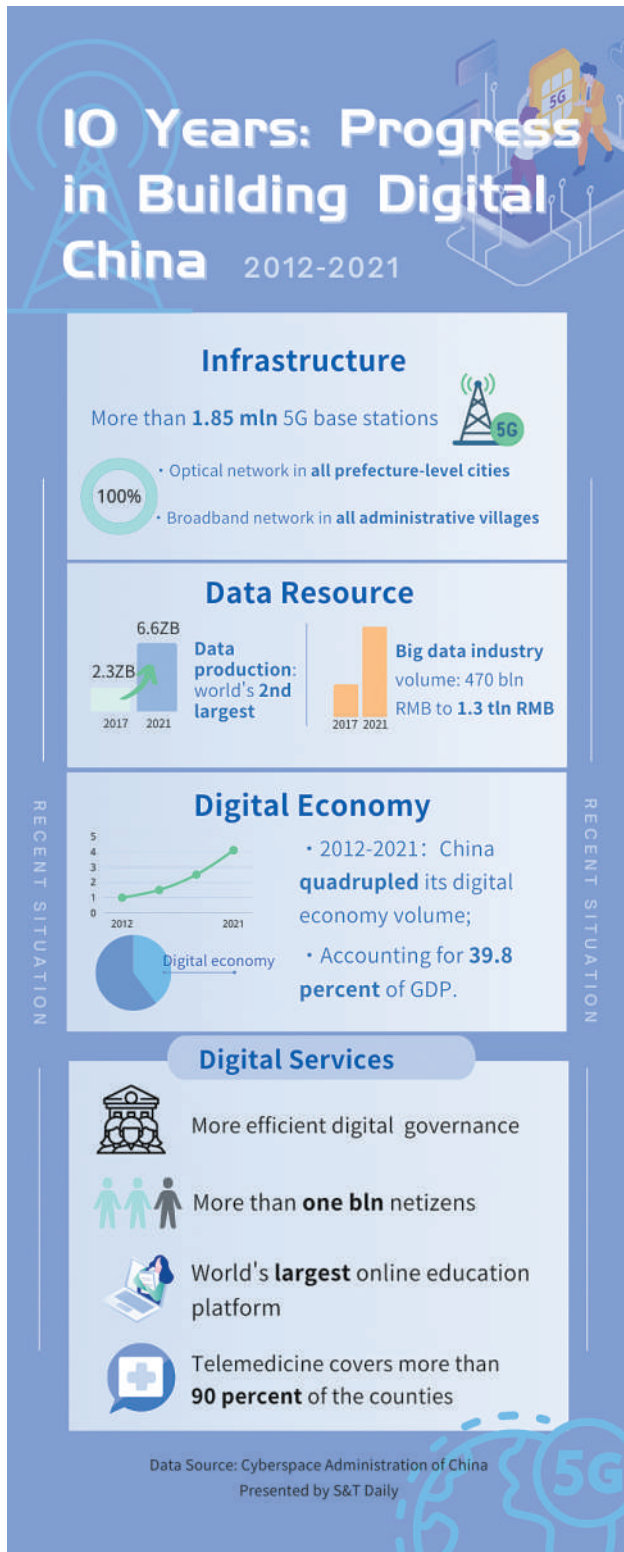
The Lvzhijiang Bridge on Yuxi-Chuxiong Expressway in southwest China's Yunnan province was opened to traffic on August 26. The bridge is the world's first single-tower single-span steel-box-girder suspension bridge, and has the longest main span of 780 meters.

China Completes Test of SRLV

China successfully completed the test of a self-developed, suborbital reusable launch vehicle (SRLV) on August 26, marking the country's first successful reusable flight of a sub-orbital vehicle. The vehicle was launched "vertically" from the Jiuquan Satellite Launch Center in the northwest China's Gansu province.

First Virtual Power Plant Unveiled

Adopting advanced communications technologies of "Internet+5G+intelligent gateway," China's first virtual power plant was launched in Shenzhen on August 26. The virtual power plant has a capacity of 870,000 kilowatts, equaling an installed capacity of a large-sized coal plant.



Solid progress has been made in constructing "Digital China" over the past decade. (Infographic by WANG Xiaoxia)

WECHAT ACCOUNT



E-PAPER

