



# The China AI and Autonomy Report

A biweekly newsletter on AI and autonomy developments in China

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Welcome to the *China AI and Autonomy Report*, a biweekly newsletter published by CNA. Read in [browser](#). In this issue, we report that a PRC regulation restricting the use of recommendation algorithms on internet platforms has entered into force. The regulation, which prohibits the production and dissemination of fake news, comes at a time when PRC social media apps are shutting down thousands of accounts for allegedly posting fake news about Russia’s invasion of Ukraine. PRC authorities also approved the construction of a network of interconnected national computing power hubs across eight regions in eastern and western China. Shenzhen Smart Drone UAV Co., Ltd. displayed a UAV known as the “Thunderbird” at the United Arab Emirates’ Unmanned Systems Exhibition in Abu Dhabi that reportedly operates in “fully autonomous” mode. Tsinghua University’s Institute for AI Industry Research released what it is claiming to be “the world’s first dataset for vehicle-infrastructure collaborative autonomous driving,” which uses algorithms that leverage data from both vehicle-based and infrastructure-based sensors. Meanwhile, the *PLA Daily* continues its discussion on what “intelligentized” operations might look like in the future, emphasizing that human operators will continue to play a prominent role in future warfare environments.

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## FUTURE WARFARE

**PLA Daily article identifies “four forms” of intelligitized operations.** *PLA Daily*, the official newspaper of the PLA, published an article titled “Analysis of the Emerging Forms of Intelligitized Operations,” which contrasts past forms of command and control with those of future intelligitized operations.<sup>1</sup> According to the article, intelligitized operations will exhibit the following characteristics:

- *Cloud-supported operational systems.* Big data and cloud computing technologies will be used to integrate information from multiple domains and rapidly disseminate battlefield information to operational platforms.
- *Decentralized and concentrated battlefield disposition.* Through nodal deployments, networked maneuvers, and virtual concentration, operational assets dispersed across a broad battlefield space will be able to achieve demand-driven reorganization and cross-domain fusion.
- *Human-machine integrated command and control.* A human commander will maintain control of operational actions while receiving support from an operational cloud composed of ubiquitous battlefield networks, AI assisted decision-making systems, and AI-enabled operational platforms.
- *Autonomous coordination of operational actions.* Intelligitized weapons will be highly capable of understanding operational intent, coordinating in a self-adaptive manner, and—with authorities granted by human operators—automatically executing attacks.

**PLA brigade employs smart technology to assist with equipment repairs.** According to [China Military Online](#), the PLA’s official news and information portal, an unidentified brigade of the 75th Group Army is incorporating intelligent technology into its maintenance operations.<sup>2</sup> Personnel from the 75th Group Army built a database of technical failures, their causes, and repair methods that is updated in real time. When there is an equipment failure, the system automatically consults the database and “intelligently” produces a repair plan. In practice, technicians scan a QR code to obtain the latest diagnosis on the state of the equipment in order to detect faults in the equipment and quickly identify needed repairs. The purpose of this integrated, intelligent system is to develop repair plans more efficiently and reduce human error so that maintenance technicians would not have to “memorize large amounts of technical manuals and data.”

## UNMANNED SYSTEMS

**PRC defense firms display multiple UAV models at Middle East defense show, including one UAV that reportedly has “AI functionality” and can operate in “fully autonomous” mode.** From February 21–23, the United Arab Emirates hosted the [Unmanned Systems Exhibition \(UMEX\)](#) in Abu Dhabi. Several PRC companies displayed systems at the event, including defense giants China North Industries Group Corporation ([NORINCO](#)) and the China National Aero-Technology Import-Export Corporation ([CATIC](#)), and relatively recent defense market entrant Shenzhen Smart Drone UAV Co., Ltd. ([SMD](#)). SMD displayed the V480 hybrid gas-electric fixed-wing UAV, known as “Thunderbird,” which can be used for surveillance and reconnaissance and operate in “fully autonomous” mode, according to the company’s [website](#).<sup>3</sup> According to one [online Chinese forum](#), the Thunderbird-V480 has airborne AI functionality and vehicle identification

systems, and can loiter for 10 hours.<sup>4</sup> NORINCO's stand included the [BZK-005E UAV](#), mini-drones, and the unmanned helicopter [Golden Eagle CR500A](#).<sup>5</sup> CATIC displayed the U8EA unmanned helicopter and several other unmanned systems. China's defense industry has been increasing its arms sales in the Middle East and Africa, despite ongoing claims of quality issues, as discussed in a [previous issue](#) of the *China AI and Autonomy Report*.

**PLA media website releases videos of “blue force” UAVs, highlighting challenges and technological capabilities they may anticipate from enemy forces.** China Military Video Net, which is part of the PLA's News Media Center, released two videos purportedly showcasing “blue force” UAVs (the PLA refers to enemy militaries in exercises as “blue forces”). Together, the videos convey that the PLA is training for scenarios in which they expect to engage enemy UAVs and in which their own UAVs may have vulnerabilities. The [first video](#) shows “blue force” UAVs and notes that one model has strong anti-jamming capabilities and a “smart identification system” for ground targets. The [second video](#) shows one of the UAVs automatically returning to the point of departure when it loses contact with the operator, in this case because of an attack from a shoulder-operated jammer.<sup>6</sup> The video highlights that this feature, which was installed to protect the drone, could expose the UAV controller location to enemy forces as the drone returns. Despite referring to them as “blue force” UAVs, it is unknown if the drones featured in the videos are of PRC or foreign manufacture.

## NATIONAL POLICY

**A regulation restricting the use of recommendation algorithms went into effect on March 1.** The Cyberspace Administration of China first [published](#) the final version of the “Internet Information Service Algorithmic Recommendation Management Provisions” online in January with a March 1 enforcement date (see English translation from DigiChina [here](#) and a summary of the regulation in a previous newsletter issue [here](#)).<sup>7</sup> The provisions allow users to opt out of algorithmic recommendation services and prohibit companies from engaging in “monopolistic and unfair competitive behaviors” and “generating and disseminating fake news.”<sup>8</sup> The *South China Morning Post* [reports](#) that the new regulations are taking effect at a time when misinformation and fake news are running rampant on Chinese social media, citing that in recent days, many of China's largest social media platforms have shut down thousands of accounts that were “spreading provocative content related to Russia's invasion of Ukraine.”<sup>9</sup>

**PRC authorities approve the construction of national computing power hubs across China.** On February 21, the National Development and Reform Commission (NDRC) [posted on its website](#) that, along with the Cyberspace Administration of China, the Ministry of Industry and Information Technology, and the National Energy Administration, it recently approved the construction of national computing power hubs in eight regions in eastern and western China and had made plans for ten “national data center clusters.”<sup>10</sup> The announcement marked the formal launch of China's “east-data, west-compute” (东数西算) project, which *Global Times*, a state-owned news outlet, describes as “transporting data from eastern regions of China to western regions for storage and calculation.”<sup>11</sup>

According to an NDRC official, eastern China, where the majority of data centers are located, has limited land, energy, and resources, making it “unsustainable” for the development of big data centers. Western China, however, offers abundant resources, especially renewable energy, and “has the potential to develop data centers to meet the computing power demand of the eastern region.” The official stated that “through the deployment of eight computing power hubs across the country, large and super-large data centers will be guided to gather in those hubs to form data center clusters.” The project aims to implement a “high-speed data transmission network” between the computing power hubs to promote the efficient linkage of computing power between the eastern and western regions.<sup>12</sup>

#### ***Eight National Computing Power Hubs***

- *Beijing-Tianjin-Hebei region*
- *Yangtze River Delta*
- *Guangdong-Hong Kong-Macao Greater Bay Area*
- *Chengdu-Chongqing economic circle*
- *Inner Mongolia Autonomous Region*
- *Guizhou Province*
- *Gansu Province*
- *Ningxia Hui Autonomous Region*

According to the official, the project not only improves the PRC’s computing power but also encourages development and investment across China, where development has been uneven between the more prosperous eastern regions and less-developed western regions. Acknowledging these differences, the official stated that in the initial phases of the project, the western data centers will perform tasks that do not require high network requirements, such as computing background processing, offline analysis, and storage backup. Activities that need higher network requirements, such as disaster warning, will be deployed in the eastern hubs.

**PRC tech executives emphasize the digital economy and advanced technologies in the lead-up to the annual “two sessions” event.** From March 4–11, the PRC is holding its “two sessions”—an annual event during which the National People’s Congress and the Chinese People’s Political Consultative Conference conduct concurrent sessions. An article in *China Daily*, the PRC’s official English-language newspaper, [emphasized](#) the importance of the digital economy in the lead-up to the “two meetings,” stating that advancing sound digital economy development, in which AI features prominently, is expected to be a “hot topic” during the event. *China Daily* also highlighted the perspectives of Baidu CEO Robin Li and Tencent CEO Pony Ma, who will both be attending as delegates to the “two sessions.”<sup>13</sup> Li, for example, stated that eight key technologies will be transformative for the development of the digital economy: autonomous driving vehicles, machine translation, biological computing, deep learning frameworks, digital city operations, knowledge management, AI-powered chips, and AI-enabled personal assistants.

## **RESEARCH & DEVELOPMENT**

**Tsinghua University research institute releases automated driving dataset that integrates data from vehicle-based and infrastructure-based sensors.** Tsinghua University’s Institute for AI Industry Research ([AIR](#)) has released a collaborative, open-source dataset for the use of self-driving cars.<sup>14</sup> AIR’s website stated that the dataset is the “the world’s first dataset for vehicle-infrastructure collaborative autonomous driving.”<sup>15</sup> Known as DAIR-V2X, the dataset can be downloaded by users in the PRC and includes more than 71,000 images from roadside cameras, weather radars, and other sensors.<sup>16</sup> DAIR-V2X has been developed in conjunction with Baidu Apollo and the Beijing AI Research Institute and is being tested at the Beijing High-level Automated Driving Demonstration Zone, which features about 10 km of highways and 28 intersections. High-quality data are critical to the advancement of self-driving cars and, according to AIR,

the integration of vehicle-based and infrastructure-based sensors will improve its algorithms for automated driving. The development of self-driving cars has been identified by the PRC's ["Intelligent Driving Innovation Strategy"](#) as an "important national strategic task."<sup>17</sup>

**A deep-sea mining research team is recognized for the development and successful sea trial of an "intelligent" system for deep-sea mining in the South China Sea.** The Chinese Society for Oceanography, a national professional society for ocean-related science and technology, released a list of [top ten marine science and technology projects for 2021](#) that included the PRC's first unmanned deep-sea mineral transport, the "Changyuan."<sup>18</sup> Research for this project was supported by the PRC's national key technology program for "deep-sea technology and equipment development." The Changyuan deep-sea mining transport system reportedly achieves "system monitoring, intelligent regulation and early warning decision-making" throughout the entire transport process.

The Dalian University of Technology led the [sea trial](#) of the Changyuan system, which included participants from Harbin Engineering University, Xiamen University, and other research organizations.<sup>19</sup> During the August 2021 trial in the South China Sea, the equipment was lowered to 519 meters below sea level and operated for more than 56 hours. Dalian University of Technology noted that the lead researcher worked with Changsha Mining and Metallurgy Research Institute, the 702nd Research Institute of China State Shipbuilding Corporation, China Ocean University, and Shanghai Jiaotong University to design a U-shaped pipeline that regulates the transport of minerals to the surface. The Chinese Society for Oceanography called the technology a "major breakthrough in deep-sea mining mixed-transport intelligent equipment technology."<sup>20</sup>

## NOTES

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<sup>2</sup> China Military Online, "Maintenance Center Becomes 'Smart Factory,' Uses Technological Means to Empower Equipment Support Capabilities" (维修中心变"智能工厂", 用科技手段为装备保障赋能), Mar. 2, 2022, [http://www.81.cn/lj/2022-03/02/content\\_10136482.htm](http://www.81.cn/lj/2022-03/02/content_10136482.htm).

<sup>3</sup> Shenzhen Smart Drone UAV Co., Ltd, "THUNDERBIRD-V480," n.d., <http://www.smd-uav.com/En/Zpro/index/id/16.html>.

<sup>4</sup> UAV Network, "Smart, Long-Dwell Drones Debut at the UAE Abu Dhabi UAV Exhibition" (智航长航时无人机亮相阿联酋阿布扎比无人机展会), Mar. 1, 2022, <https://www.163.com/dy/article/H1CJT56E05149OCK.html>.

<sup>5</sup> Agnes Helou, "Here's What Stood Out at the UAE's Unmanned Defense Expo," *DefenseNews*, Feb. 26, 2022, <https://www.defensenews.com/unmanned/2022/02/25/heres-what-stood-out-at-the-uaes-unmanned-defense-expo/>.

<sup>6</sup> China Military Video Net, "Clever Anti-Drone Warfare, Does Blue Army UAV Have More Anti-Jamming Capabilities" (反无人机作战有妙招 蓝军的无人机抗干扰能力到底有多强?), Mar. 2, 2022, [http://www.js7tv.cn/video/202203\\_271630.html](http://www.js7tv.cn/video/202203_271630.html).

<sup>7</sup> "Internet Information Service Algorithmic Recommendation Management Provisions" (互联网信息服务算法推荐管理规定), Cyberspace Administration of China, Jan. 4, 2022, [http://www.cac.gov.cn/2022-01/04/c\\_1642894606364259.htm](http://www.cac.gov.cn/2022-01/04/c_1642894606364259.htm); "Translation: Internet Information Service Algorithmic Recommendation Management Provisions – Effective March 1, 2022," *DigiChina*, Jan. 10, 2022,

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<sup>8</sup> See provisions 2.13 and 2.15 in "Internet Information Service Algorithmic Recommendation Management Provisions" (互联网信息服务算法推荐管理规定), Cyberspace Administration of China, Jan. 4, 2022, [http://www.cac.gov.cn/2022-01/04/c\\_1642894606364259.htm](http://www.cac.gov.cn/2022-01/04/c_1642894606364259.htm).

<sup>9</sup> Tracy Qu, "China's Algorithm Law Takes Effect to Curb Big Tech's Sway in Public Opinion," *South China Morning Post*, Mar. 1, 2022, [https://www.scmp.com/tech/policy/article/3168816/chinas-algorithm-law-takes-effect-curb-big-techs-sway-public-opinion?module=perpetual\\_scroll\\_0&pgtype=article&campaign=3168816](https://www.scmp.com/tech/policy/article/3168816/chinas-algorithm-law-takes-effect-curb-big-techs-sway-public-opinion?module=perpetual_scroll_0&pgtype=article&campaign=3168816).

<sup>10</sup> The Responsible Comrade of the High Technology Department of the National Development and Reform Commission Answered the Reporter's Questions on the Implementation of the "East Number and West Calculation" Project (国家发展改革委高技术司负责同志就实施"东数西算"工程答记者问), National Development and Reform Commission, Feb. 21, 2021, [https://www.ndrc.gov.cn/xwdt/ztl/dsxs/zjjd1/202202/t2022021\\_1316093.html?code=&state=123](https://www.ndrc.gov.cn/xwdt/ztl/dsxs/zjjd1/202202/t2022021_1316093.html?code=&state=123).

<sup>11</sup> "China Approves 10 National-Data Center Clusters for Greater Computing Power," *Global Times*, Feb. 17, 2022, <https://www.globaltimes.cn/page/202202/1252543.shtml>.

<sup>12</sup> The Responsible Comrade of the High Technology Department of the National Development and Reform Commission Answered the Reporter's Questions on the Implementation of the "East Number and West Calculation" Project (国家发展改革委高技术司负责同志就实施"东数西算"工程答记者问), National Development and Reform Commission, Feb. 21, 2021, [https://www.ndrc.gov.cn/xwdt/ztl/dsxs/zjjd1/202202/t2022021\\_1316093.html?code=&state=123](https://www.ndrc.gov.cn/xwdt/ztl/dsxs/zjjd1/202202/t2022021_1316093.html?code=&state=123)

<sup>13</sup> Fan Feifei, "Stress on Digital Economy Key to Pursuing High-Quality Development," *China Daily*, Feb. 21, 2022, <https://www.chinadaily.com.cn/a/202202/21/WS6212d1f7a310cdd39bc87c4f.html>.

<sup>14</sup> Tsinghua University Institute for AI Industry Research, "AIR Released DAIR-V2X, the World's First Vehicle-Road Collaboration Automated Driving Dataset," Feb. 24, 2022. For the article summary in English, see: [https://air.tsinghua.edu.cn/EN/news\\_detail.html?id=239](https://air.tsinghua.edu.cn/EN/news_detail.html?id=239); the full description, in Chinese, is here: [https://mp.weixin.qq.com/s?\\_biz=Mzl0NDg0OT11MQ==&mid=2247491083&idx=1&sn=6b2ca1bf4fa5f44d4c30b33de34db6fa&chksm=e956d107de215811659f5acbcd6e186bf9ddb8a7fdc8b864a2d7ddef06d9f28f6b9fcc73451&token=1127813292&lang=zh\\_CN#rd](https://mp.weixin.qq.com/s?_biz=Mzl0NDg0OT11MQ==&mid=2247491083&idx=1&sn=6b2ca1bf4fa5f44d4c30b33de34db6fa&chksm=e956d107de215811659f5acbcd6e186bf9ddb8a7fdc8b864a2d7ddef06d9f28f6b9fcc73451&token=1127813292&lang=zh_CN#rd).

<sup>15</sup> "Tsinghua AIR Released the World's First Vehicle-Road Collaborative Autonomous Driving Dataset DAIR-V2X" (清华AIR发布全球首个车路协同自动驾驶数据集DAIR-V2X), Feb. 24, Institute for AI Industry Research, Tsinghua University, <https://air.tsinghua.edu.cn/info/1007/1525.htm>; DAIR-V2X: The First Dataset for Vehicle-Infrastructure Collaborative Autonomous Driving, Feb. 23, 2022, <http://air.tsinghua.edu.cn/dair-v2x/english/index.html>.

<sup>16</sup> Tsinghua University Institute for AI Industry Research (清华大学智能产业研究院), "Tsinghua AIR Announces First Automated Collaborative Driving Dataset DAIR-V2X" (清华AIR发布全球首个车路协同自动驾驶数据集DAIR-V2X), Feb. 24, 2022, [https://mp.weixin.qq.com/s?\\_biz=Mzl0NDg0OT11MQ==&mid=2247491083&idx=1&sn=6b2ca1bf4fa5f44d4c30b33de34db6fa&chksm=e956d107de215811659f5acbcd6e186bf9ddb8a7fdc8b864a2d7ddef06d9f28f6b9fcc73451&token=1127813292&lang=zh\\_CN#rd](https://mp.weixin.qq.com/s?_biz=Mzl0NDg0OT11MQ==&mid=2247491083&idx=1&sn=6b2ca1bf4fa5f44d4c30b33de34db6fa&chksm=e956d107de215811659f5acbcd6e186bf9ddb8a7fdc8b864a2d7ddef06d9f28f6b9fcc73451&token=1127813292&lang=zh_CN#rd)

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<sup>17</sup> PRC National Development and Reform Commission, "Intelligent Driving Innovation Development Strategy" (智能汽车创新发展战略), Feb. 24, 2020, <https://www.ndrc.gov.cn/xxgk/zcfb/tz/202002/P020200224573058971435.pdf>.

<sup>18</sup> Chinese Society for Oceanography (中国海洋学会), "China's Top Ten Marine Science and Technology Achievements in 2021 Revealed" (2021年中国十大海洋科技进展揭晓), n.d., <http://www.cso.org.cn/zfsjxw/3063.jhtml>.

<sup>19</sup> "Our Country's First Deep Sea Intelligentized Mining Equipment System 'Changyuan' 500 Meter Success!" (我国首套自主研发的深海采矿智能化混输装备系统"长远号"500米海试成功!), Aug. 27, 2021, <https://www.163.com/dy/article/GIC84U3U0511KMS0.html>.

<sup>20</sup> Chinese Society for Oceanography (中国海洋学会), "China's Top Ten Marine Science and Technology Achievements in 2021 Revealed" (2021年中国十大海洋科技进展揭晓), n.d., <http://www.cso.org.cn/zfsjxw/3063.jhtml>.

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