

Artificial Intelligence and the People's Liberation Army

Key Themes and Entities

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/ Key Findings

- The use of artificial intelligence (AI) is central to Beijing's efforts to prepare for "intelligentized" (智能化) warfare. Our analysts have utilized Datenna's unique dataset of military procurements to assess how the People's Liberation Army (PLA) seeks to leverage AI across military functions.
- The PLA's deployment of AI can be broadly grouped into four areas of activity: infrastructure security, information gathering, training, and intelligent combat systems.
- The procurement "bid winners" highlighted in this brief pose a range of national security risks: active contributions to China's military modernization, engagement in international academic collaboration and technology transfer activities, and the development of sophisticated surveillance infrastructure that could be exported abroad.

/ About Datenna

Datenna is the global provider of techno-economic intelligence on China, with unmatched depth of coverage of Chinese entities, and identification of hidden connections to the Chinese state and military.

To deliver these insights, our in-house team of China experts uses open-source intelligence (OSINT) to curate publicly available Chinese-language information and provide it to clients through a proprietary software platform. Decision-makers worldwide rely on Datenna's platform for extensive mapping of over 45 million Chinese companies, more than 70 million individuals, 27,000+ research institutes, over CNY 600 billion in research funding, 42+ million patents, and 850,000+ PLA military procurements.

By offering a comprehensive view of China's economic and academic landscape, we equip our clients with the tools necessary to accurately assess national-, economic-, and knowledge-security risks.

Datenna's intelligence platform supports a wide range of use cases, including inbound and outbound investment screening, export control of dual use technologies, due diligence on individuals and companies, as well as evaluations of China's technological advancements and research collaborations.

For more information, visit datenna.com.

/ Artificial Intelligence and the People's Liberation Army

Beijing is ramping up efforts to use artificial intelligence (AI) to bolster its military capabilities - a key military modernization goal crucial to its preparation for "intelligentized" (智能化) warfare. By analyzing data on Chinese military procurements since 2020, it is evident that China has targeted acquisition of semiconductor chips, an essential ingredient for not only intelligent processing, but Beijing's long-term success with military modernization efforts.

There was no significant decrease in the number of AI chips¹ being acquired by entities tied to the PLA after the U.S. government's tightening of controls on the export of semiconductor technology to China in 2022. In fact, procurement notices from 2022 and 2023 specifically mention chips such as TPU and AI accelerators, including NPU.

This brief overviews procurement efforts undertaken by specific Chinese military actors focused on the integration of "intelligent" technologies across a multitude of functions. The PLA procurements analyzed in this brief indicate a systemic endeavor within China to leverage decision-making technology to bolster the Observe-Orient-Decide-Act, or OODA loop.²

Since 2020, the keywords "smart" (智能) and "intelligence" (智慧) headline 1,617 procurement announcements in our dataset. These procurements can be divided into four general themes:

- Infrastructure security;
- Information gathering;
- Training;
- Intelligent combat systems.

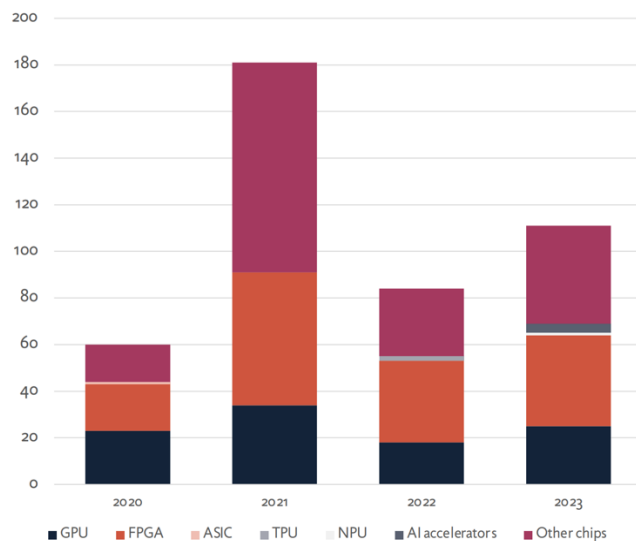


Figure 1. Number of Chinese military procurement tenders for chips

¹ AI chips include graphics processing units (GPU), field-programmable gate arrays (FPGA), application-specific integrated circuits (ASIC), and tensor processing units (TPU) which are a type of ASIC dedicated to deep-learning, as well as specialized hardware such as AI accelerators including neural processing units (NPU) for machine learning.

² The OODA Loop can be understood as an ongoing, interactive analytical process, a cybernetic process with multiple built-in feedback mechanisms. Within this, "observation" is not a single step but developing awareness based on constantly changing circumstances and imperfect information. Similarly, "orientation" constantly evolves as new data is incorporated. "Decide" and "act" parts of the cycle are also not isolated steps; rather, they are connected within the overall feedback loop. Actions can take place both simultaneously or in sequence. Alastair Luft, "The OODA Loop and the Half-Beat," The Strategy Bridge, March 17, 2020, <https://thestrategybridge.org/the-bridge/2020/3/17/the-ooda-loop-and-the-half-beat>.

/ Infrastructure Security

The use of intelligent systems for infrastructure and facility security is a recurring theme across procurement efforts since 2020. These include the acquisition and maintenance of “smart” facilities, perimeter defense, and “intelligent” access to equipment and information. China’s ongoing “Wisdom Rock” project, which seeks to secure its People’s Armed Police Force (PAPF) infrastructure, is one such endeavor. The aim of “Wisdom Rock” is to develop a multi-layered intelligent security system that collates information from operations at all levels, such as behavioral analysis of personnel, into one centralized system. A functional system could assess not only the readiness of facilities, but the status of equipment and personnel for deployment, as well as mitigate insider threats by providing insights into personnel behavior.

Bid Winner Profile

Hunan GEOSUN Hi-technology Co., Ltd. (湖南继善高科技有限公司) has won procurement tenders for “Wisdom Rock” projects. The company - founded by He Jishan, former president of Central South University (中南大学) and member of the Chinese Engineering Academy (中国工程院) - holds 130 patents and has bid for nine military procurement tenders since 2020 (winning seven). Central South University Asset Management Co., Ltd (a wholly-owned asset management subsidiary of the Central South University), maintains a 1.55 percent stake in the company.

Patents

Name	Year
▶ Piping detection inspection system	2022
▶ Open type electromagnetic method sending system	2022
▶ Open type electromagnetic method sending system and control method thereof	2021
▶ High-power transmitter based on phase-shifting control	2017
▶ Train vehicular infrared journal temperature monitoring device	2010
▶ Oil-gas fracturing fracture monitoring data processing method, system and storage medium	2024
▶ Fluid identification method, device and storage medium	2024
▶ Method and system for discriminating fluid properties of tight sandstone reservoir based on intersection graph method	2024
▶ Fluid identification method and computer readable storage medium	2024
▶ Geophysical data acquisition circuit and geophysical data acquisition device	2024

Procurements

Buyer	Year
▶ Shandong Flood Control and Drought Relief Material Reserve Center	2024
▶ Hunan Institute of Technology	2024
▶ Hunan Institute of Technology	2024
▶ Hunan Technology and Business University	2023
▶ Chinese People's Liberation Army	2022
▶ Chinese People's Liberation Army	2022
▶ Chinese People's Liberation Army	2022
▶ Chinese People's Liberation Army	2022
▶ Chinese People's Liberation Army	2022
▶ Chinese People's Liberation Army	2021

/ Information Gathering

Big data analysis is strengthening situational awareness of likely operational landscapes and adversary capabilities, including map-creation through multi-source, multi-lingual data collection, and the fusion of multi-source meteorological and oceanographic remote sensing data. Military preparedness is bolstered through assessments of expected in-theater conditions, created by retrieving and translating foreign language intelligence and annotating and identifying typical target multispectral data sets. Modeling based on big-data analysis also aids with identifying and visualizing anomalous activities in operational zones.

Bid Winner Profile

The Institute of Atmospheric Physics, or IAP (中国科学院大气物理研究所) of the Chinese Academy of Sciences is actively involved in developing meteorological models for the military. The IAP has won 12 out of 19 procurement bids for Chinese military tenders, primarily supporting the Strategic Support Force of the PLA. IAP is a government-funded civilian research institute holding over 400 patents with investments in five commercial entities. According to IAP's website, it cooperates extensively on joint research, talent exchange, and education, with universities and research institutes in the United States, Japan, Thailand, South Korea, Germany, the United Kingdom, Norway, France, Belgium, and others.

From 2014 to 2019, the IAP signed 18 cooperative agreements with scientific institutions abroad and carried out more than 40 major collaborative international projects. It secured more than 13 million USD for international projects during that same time period.

Institute of Atmospheric Physics, Chinese Academy of Sciences
中国科学院大气物理研究所

OVERVIEW PROJECTS RESEARCHERS FUNDING PATENTS 572 PROCUREMENTS 19 TOP SECTORS LATEST NEWS COMPANY PROFILE

Overview

Established in February of 1928 (then called institute of Meteorology of Academia Sinica), the IAP was the very first research center carrying out meteorological research in modern China. Today, the IAP has become a comprehensive atmospheric research institution, covering all aspects of the atmospheric sciences. As of 2020, 515 staff work at the IAP, about 80% of whom are researchers, including 129 full research professors, 198 associate professors, 148 intermediate faculty and postdoctoral researchers, as well as 541 postgraduate students. IAP's mission is to study and explore new laws governing interactions between physical, chemical and biological processes in the atmosphere and how, in the case of Earth, humans are perturbing these.

General info

- Total funding received: ¥ 209.0M
- Organization aliases: 大气所, IAP
- Contact information: <http://www.iap.cas.cn/>
- Address

Projects

Research project title	Year	Funding
Effect mechanism of temperature on cotton verticillium wilt epidemic in Xinjiang and construction of dynamic simulation model	2022	¥ 580.0K
Research on Fast Radiative Transfer Calculation Method Based on Cluster Analysis	2020	¥ 240.0K
Characteristics of turbulent transport at different heights of urban underlying surface and carbon-water flux exchange process	2020	¥ 250.0K
Estimation of Soil N2O Emission Fluxes and Distribution of Emission Hotspots	2020	¥ 240.0K
Study on the Lightning and Thunderstorm Characteristics of the Earth's Gamma Flash Parent Body Based on the Hard X-ray Modulation Telescope (HXMT)	2020	¥ 500.0K
Numerical Simulation of Sulfate Aerosols During Heavy Pollution in North my country Region Based on Atmospheric Chemistry Model Constrained by Oxygen Isotope	2020	¥ 270.0K
Study on the interannual variability of summer extreme precipitation in the northern hemisphere under the background of warming	2020	¥ 250.0K

/ Training

Intelligent systems are enabling complex, multi-agent simulation training for collaborative operations between personnel and other assets that may not be co-located. Our analysis of procurement data highlights a focus on the creation of augmented reality sandboxes, as well as intelligent interactive control systems. Recent procurements include projects for the development of "blue" army combat force generation, cross-domain agent training, mission planning, and assessments of personnel's training contribution.

Bid Winner Profile

Beijing Lanwei Technology Co., Ltd. (北京蓝威技术有限公司) is a software company that won military tenders for the creation of training modules. It is wholly owned by Lanwei Numerical (Zhuhai) Technology Co., Ltd. (蓝威数值(珠海)科技有限公司), which provides product reliability design solutions using big data, cloud computing, and intelligent reasoning algorithms. Lanwei Numerical is a hi-tech enterprise established by Professor Kang Rui of the School of Reliability and System Engineering at Beihang University (北航可靠性与系统工程学院). Beihang University is listed on two government blacklists – the U.S. Department of Commerce's Entity List and the Japanese Ministry of Economy, Trade and Industry's End User List.

The screenshot displays the datenna website interface for Beijing Lanwei Technology Co., Ltd. (北京蓝威技术有限公司). The page is divided into several sections:

- Header:** Includes the datenna logo, currency (CNY), and a search icon.
- Company Name:** Beijing Lanwei Technology Co., Ltd. (北京蓝威技术有限公司).
- Navigation:** Overview, NEARBY (194), SHAREHOLDERS (1), STAFF (2), INVESTMENTS, PATENTS (13), PROCUREMENTS (4), LICENCES (1).
- Overview Section:**
 - Image:** A stylized icon of a building.
 - Description:** Beijing Lanwei Technology Co., Ltd. is a software company that independently develops CAE, introduces CAE and HPC to the cloud, and provides industry CAE cloud computing software and cloud supercomputing services. Lanwei Technology was founded at the end of 2014 by a number of senior people and well-known investors in the field of industrial product design simulation. At present, there are offices in Beijing, Suzhou, and Chengdu, and HPC computing resources in Gui'an, Shanxi, Suzhou, and Changsha. Its products include Lanwei simulation cloud computing platform, Lanwei wind farm planning intelligent decision-making platform, and CRAFE electronic reliability analysis cloud platform company. Since its establishment, it has been committed to becoming China's leading one-stop industrial cloud platform solution provider. It provides customers with full-network (private, hybrid, public, and supercomputing) industrial cloud platform construction, operation and maintenance, and marketing servic...[read more](#)
 - General info:**
 - Legal representative: Zhao Yifei
 - Company type: Limited liability company (Wholly-owned by one entity)
- Nearby Section:** A map view showing the company's location in Beijing, with various landmarks and streets labeled in Chinese.

/ Intelligent Combat Systems

The most widely discussed aspect of “intelligentization” within the PLA remains the development of autonomous military platforms across air, sea, and land domains. Datenna’s unique procurement data indicates that the expansion of autonomous systems such as combat teams, low-cost unmanned aerial vehicles (UAVs), and unmanned clusters continues to grow. There is increased attention, however, toward developing AI-assisted military decision-making systems, such as multi-target fusion and recognition technology, as well as training of AI for brain-like intelligence.

Bid Winner Profile

Xi’an Jiaotong University (西安交通大学), which focuses on engineering and materials sciences, won 82 of 114 procurement bids since 2020 and is not listed on any government blacklist. Since 2000 Xi’an Jiaotong University has been approved for 8,117 National Natural Science Foundation of China projects, and has taken the lead in hundreds of national science and technology projects, national key research and development plans and bases and talent projects. In January 2015, Xi’an Jiaotong University initiated the establishment of the “Silk Road University Alliance” to promote cooperation in higher education and scientific research. Its members now include at least 151 universities across 38 countries and regions.

The screenshot displays the Datenna profile for Xi'an Jiaotong University (西安交通大学). The profile includes a navigation menu with 'OVERVIEW', 'SHAREHOLDERS', 'INVESTMENTS' (11), 'PATENTS' (53347), and 'PROCUREMENTS' (135). The 'Investments' section lists various entities with their investment amounts and percentages. The 'Patents' section lists several patents with their titles and years.

Investment Entity	Investment Amount	Percentage 1	Percentage 2
Xi'an Jiaotong University (Group) Corp.	¥ 30.0M invested	100.00%	100.00%
Xi'an Jiaoda Culture Investment Co., Ltd.	¥ 20.0M invested	100.00%	100.00%
Xian Jiaotong University Asset Management Co., L...	¥ 134.0M invested	100.00%	100.00%
Xi'an Jiaotong University Jingsheng Technology Dev...	¥ 600.0K invested	30.00%	30.00%
Xian Wiener Information Measurement and Control ...	¥ 1.5M invested	30.00%	30.00%
Shenzhen Jiaodatong Technology Industry Co., Ltd.	¥ 250.0K invested	25.00%	25.00%
Shaanxi Keyu Hengrun Technology Development Co...	¥ 1.3M invested	25.00%	25.00%
Xi'an Jiaoda Xibu Information Management Consulti...	¥ 1.0M invested	20.00%	20.00%
Xi'an Retong Technology Co., Ltd.	¥ 200.0K invested	20.00%	20.00%
Xi'an Jiaoda Sci.&Tech. Park Boyuan Electric Vehicle ...	¥ 300.0K invested	15.00%	15.00%
Xi'an Wenhua Xintong Technology Co., Ltd.		N/A	<0.01%

Patent Name	Year
Loading platform and method for driving dynamic load based on pulse discharge in water	2024
Potassium sodium sulfate mixed salt recycling high-value conversion process and system	2024
Closed air brayton cycle power generation system for coupling seawater desalination	2024
Turbojet engine fault tolerance test system and method based on unmanned aerial vehicle carrying platform	2024
Decoupling control method, system, equipment and storage medium after pressurized water reactor heat supply modification	2024
Single-point calibration method for off-pile detector under dynamic xenon condition of pressurized water reactor	2024
AUVMS-based modular mechanical arm cabin section structure	2024
Method for calculating fretting wear of pressurized water reactor control rod assembly	2024
Scene matching combined navigation method for unmanned aerial vehicle based on Gaussian gamma filtering	2024

/ Conclusion

Datenna's unique insight into PLA procurement activity show wide-ranging efforts to acquire technologies to support the development and deployment of AI-enabled systems. The overlap between academic research, commercial enterprise, government policy and the flow of technology to the Chinese military becomes evident when the primary actors involved in military procurement are examined. Many of these procurements are from Chinese entities which do not face any restrictions in doing business or research with Western partners. In numerous instances, Datenna uncovered linkages between these Chinese entities and organizations listed on blacklists, such as the Department of Commerce Entity List.

This report was compiled with care by Datenna B.V. (Datenna). While Datenna has made every effort to ensure the accuracy and completeness of the data presented, we acknowledge that inaccuracies may exist. At the time you read this report, the information might not be up-to-date. If the reader notices any inconsistencies or errors, please contact the Datenna team. Datenna assumes no responsibility or liability for any loss or damage resulting from the use of or reliance on this information.