

CHINA'S ESPIONAGE PRIORITIES AND MODUS OPERANDI

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China's Fast Pace of Modernisation

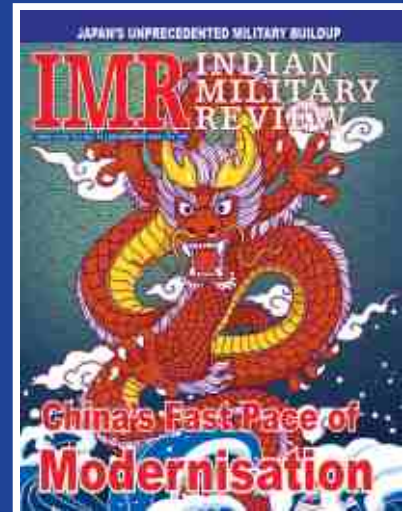
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EDITORIAL

Maj Gen (Dr) GD Bakshi, SM, VSM

Alarming Rise in Chinese Naval Power

China has been investing heavily in modernizing its submarine fleet, developing both nuclear-powered and conventional diesel-electric submarines with advanced stealth technology and more advanced weaponry, making them more capable and stealthy.

China's aircraft carrier fleet is becoming more advanced, with larger and more capable ships, making them more powerful projection of military power.

China's carrier-borne aircraft fleet is becoming more advanced and capable with the inclusion of stealth capabilities, making them more difficult to detect and defend against.

China's frigates and destroyers are becoming more advanced and capable with the inclusion of stealth technology and advanced weaponry, making them more powerful in their roles as defensive and offensive platforms.

Developments in anti-ship missiles have led to concerns about the potential threat they pose to naval vessels in the region, particularly in the event of a conflict in the South China Sea.

China's amphibious ships are becoming larger and more capable, making them more powerful platforms for amphibious operations and power projection.

Nuclear and Conventional Submarines

In terms of nuclear-powered submarines, China has developed the Type 095 and Type 096 classes of submarines, are believed to be equipped with advanced stealth technology and more advanced weaponry, including new types of cruise missiles and torpedoes.

China has also developed new conventional diesel-electric stealth submarines such as the Type 039A and Type 039B, equipped with land-attack cruise missiles.

Aircraft Carriers

The Chinese Navy currently operates two aircraft carriers, the Liaoning, a refurbished Soviet-era carrier and the Type 001A, which is a domestically built carrier.

China is currently building its third aircraft carrier, the Type 002. It will be the first aircraft

carrier to be equipped with an electromagnetic aircraft launch system (EMALS), instead of traditional steam catapults.

China is also developing a nuclear-powered aircraft carrier, the Type 003, which is currently under construction. It will be the first aircraft carrier of its kind in the Chinese Navy and will be equipped with advanced technologies such as an EMALS, a more advanced radar system,



and a larger flight deck.

Carrier-borne Aircraft

The Chinese Navy currently operates the J-15, a carrier-borne fighter aircraft, which is based on the Russian Su-33 aircraft and is primarily used for air defense and strike missions. The J-15 is equipped with advanced avionics, weapons systems, and radar, allowing it to engage both air and ground targets.

China is also developing a new carrier-borne fighter aircraft, the J-31, which is designed to have a stealth capability, to operate from both the Liaoning and the Type 001A aircraft carriers.

China is also working on a new advanced carrier-borne early warning aircraft, the KJ-600.

In addition, China has been developing new carrier-borne unmanned aerial vehicles (UAVs), such as the Lijian (Sharp Sword) stealth UAV which is designed for reconnaissance and strike

missions.

Chinese Naval Surface Combatants

In terms of frigates, China has developed the Type 054A and Type 054B classes of stealth frigates, which are equipped with advanced weapons systems, including anti-ship missiles and surface-to-air missiles, as well as radar and sonar systems.

In terms of destroyers, China has developed the Type 055 class of stealth destroyers, which are equipped with advanced weapons systems, including long-range anti-ship and anti-aircraft missiles, as well as radar and sonar systems.

China is also developing the Type 056 class of stealth corvettes, which are smaller than frigates but larger than patrol boats.

Anti-ship Missiles

China has developed long-range, supersonic anti-ship missiles such as the DF-21D and DF-26, which are capable of striking targets at distances of up to 1,500 and 2,500 km respectively. China has also developed the YJ-12, an anti-ship missile that can be launched from land, ships, and aircraft and is capable of flying at low altitude to evade radar detection.

Another recent development is the Type 022 fast attack missile boat which is equipped with YJ-83 anti-ship missiles. Also, the development of the H-6N bomber that can carry CJ-20 air-launched cruise missiles with a range of about 2,500 km, capable of striking ships and land-based targets.

Amphibious Ships

China's current amphibious ships include the Type 071 and Type 072III classes of landing platform docks (LPDs) and the Type 073 and Type 074 classes of landing ship tanks (LSTs) with a variety of capabilities.

China is also developing the Type 075 class of amphibious assault ships, which are larger than current ships and are expected to have a greater amphibious assault capabilities, including the ability to carry more landing craft and aircraft, as well as being equipped with a well-deck and a flight deck.

EVENT REVIEW

News from DEFEXPO India 2022

IMR Reporters

Prime Minister inaugurates DefExpo 2022

Prime Minister Narendra Modi inaugurated 'DefExpo 2022' in Gandhinagar, Gujarat, on 19 October 2022.

This was the 12th edition of the event that was organised on the theme 'Path to Pride'.

While addressing the event, PM Modi said, "Def Expo 2022 is displaying a grand picture of the New India, the resolution for which was taken by us during Amrit Kaal. It has the nation's development, states' participation, youth power, young dreams, young courage & youth's capabilities."

"Defence Expo used to be held in our country earlier too but Def Expo 2022 is unprecedented. It's the symbol of a new beginning. It's the first such Defence Expo in the country where only Indian companies are participating, where there are only Made in India defence equipment, he further added.

I'm delighted that when India is giving shape to these opportunities of the future, 53 African nations that are friends of India are standing shoulder to shoulder with us, the prime minister added.

He further said that biggest Defence Expo of the country so far has marked an emphatic beginning of a new future.

During the programme, Prime Minister also launched Mission DefSpace – to develop innovative solutions for the Defence Forces in the Space domain through industry and startups. At the inauguration ceremony, PM Modi also laid the foundation stone of 52 Wing Air Force Station Deesa.

At the India Pavilion, Prime Minister unveiled HTT-40 – the indigenous trainer aircraft designed by Hindustan Aeronautics Limited (HAL).

451 partnerships in terms of MoUs, Transfer of Technology agreements and product launches, almost double than the last edition, were expected during the Bandhan ceremony on October 20.

The India Pavilion – a marque pavilion of



Prime Minister Narendra Modi unveiled the HAL HTT-40 trainer aircraft at DEFEXPO 2022 on 19 Oct 2022

the Department of Defence Production – was showcasing the maturity of indigenous defence products, start-ups and the latest technology, including Artificial Intelligence in defence, while presenting India's vision for 2047.

In addition, there was an exclusive Innovations for Defence Excellence (iDEX) Pavilion to showcase the prowess of the country's start-ups carrying out R&D and innovation in futuristic technologies.

India-Africa Defence Dialogue Held

The India-Africa Defence Dialogue (IADD) was held on the sidelines of DefExpo 2022 in Gandhinagar, Gujarat on October 18, 2022. The dialogue successfully brought out various aspects of the IADD's theme 'Adopting Strategy for Synergizing and Strengthening Defence and Security Cooperation'. Delivering the keynote address, Defence Minister Rajnath Singh defined the theme of IADD as the underlying commitment of India and African countries to explore new areas of convergence

for defence engagements, including capacity building, training, cyber security, maritime security and counter terrorism. He termed India & African countries as important stakeholders in ensuring a safe and secure maritime environment, especially in the Indian Ocean Region. He pointed out that the two sides work together in many regional mechanisms, which foster inclusive and constructive collaboration in dealing with shared security concerns and address common challenges to peace and prosperity.

The IADD, as a part of DefExpo 2022, showcased to the African nations the growing prowess of the domestic defence industry, which is one of the major drivers of the nation's resolve to achieve 'Make in India, Make for the World' as envisioned by the Prime Minister. This interaction is expected to help fulfilling the Defence requirements of our African partners as also achieving the objective of catering to our domestic requirements. A Special Cover on IADD and a book on 'India-Africa Defence Cooperation: Opportunities and Challenges' were released during the event.

The IADD was institutionalised to be held



Bharat Forge and General Atomics executives exchanging MoU for electromagnetic and advanced power and energy technologies

biennially during successive DefExpos. It seeks to build on the existing defence partnerships between African countries & India and to explore new areas of convergence for mutual engagements including areas such as capacity building, training, cyber security, maritime security and counter-terrorism.

Emphasising that India & Africa share a multi-faceted defence and security cooperation relationship, Rajnath Singh reiterated India's support to Africa to deal with challenges of conflict, terrorism and violent extremism. "India remains united with African countries in their quest for peace, security, stability, growth and prosperity. Our partnership with Africa is centered on the ten guiding principles articulated by Prime Minister Narendra Modi during his address to Parliament of Uganda in 2018. He had clearly stated that Africa will be at the top of our priorities.

Later, the Gandhinagar Declaration was adopted as an outcome document of IADD 2022. It proposes to enhance cooperation in the field of training in all areas of mutual interest by increasing training slots and deputation of training teams, empowerment and capability building of the defence forces of Africa, participation in exercises and humanitarian assistance during natural disasters. India offered fellowship for experts from African countries through Manohar Parrikar Institute for Defence Studies and Analysis.

Fifty African countries, including 20 Defence Ministers, seven CDS/Service Chiefs and eight Permanent Secretaries participated in the Dialogue attesting to the high priority

accorded to India-Africa engagement in defence and security. On the sidelines of the IADD, Rajnath Singh and MoS Defence Ajay Bhatt met with the visiting African Ministers where issues related to defence and bilateral relations were discussed.

BEL signs MoU with MIL for Ammunition Exports

Navratna Defence PSU Bharat Electronics Ltd (BEL) signed an MoU with Munitions India Limited (MIL), a Defence PSU, to jointly address the requirements of Indian Defence and Export markets in the areas of Ammunition, Explosives and related systems.

Bhanu Prakash Srivastava, Director (Other Units), BEL, and Mr S K Rout, Director (Operations), MIL, exchanged the MoU documents at Defexpo in the presence of Ravi Kant, CMD, MIL, Joydeep Majumder, Executive Director, BEL and other senior officers of BEL and MIL.

The MoU aims at leveraging the complementary strengths and capabilities of BEL and MIL and strengthens the spirit of the Make In India initiative of Government of India, for achieving self-reliance in Defence Sector. The co-operation will enable the companies to jointly address the domestic and Export opportunities in the areas of Ammunition, Explosives and related systems and sub systems.

MIL is a DPSU under Department of Defence Production, Ministry of Defence, Government of India. MIL, India's largest

manufacturer & market leader, is engaged in the design, development and manufacture of various types of ammunition and explosives including Small, Medium and High Caliber ammunition, Mortars, Rockets, Hand Grenades, High Explosives, Propellants, Initiatory Compositions etc.

Bharat Forge Signs MoU With General Atomics

Bharat Forge Ltd, the world's leading technology solutions provider and forging company signed a Memorandum of Understanding (MOU) with General Atomics, US, a global leader in the research, design, and manufacture of a diverse portfolio of electromagnetic and advanced power and energy technologies.

Under the terms of the MOU, Bharat Forge and General Atomics' Electromagnetic Systems Group (GA-EMS) will collaborate for Lithium-Ion Battery System for naval platforms/submarines to address the requirements of Indian Navy. The parties have also agreed to partner with each other in the area of permanent magnet motors.

Speaking on the occasion, Mr. Baba Kalyani, Chairman Kalyani Group said, "We have been relentlessly working towards bringing niche technologies in the country with the aim of making Indian self-reliant in defence verticals. GA is a market leader for in-service Li-Ion Battery solutions for naval platforms/submarines and our partnership with General Atomics is a firm step in the direction to develop Make in India solutions for Indian Navy and setting up a strong defence technology and manufacturing vertical within India."

"We look forward to working with Bharat Forge to meet the requirements of Indian Navy. Our Li-Ion battery system has been developed after 10 years of rigorous R&D. Instead of the usual 'fault prevention', our design philosophy is based on assuming a fault and requiring fault containment', which has made our system extremely safe and reliable", stated Scott Forney, president of GA-EMS. "We are committed to working with companies like Bharat Forge, whose reputation for excellence and dedication to quality is synergistic with ours, as we continue to deliver technology innovations and cutting-edge systems for undersea and surface platforms."

Lockheed Martin Showcases India Supply Chain

Lockheed Martin showcased its diverse defence capabilities and solutions, such as a broad span of advanced technologies from the

Aeronautics, Rotary and Mission Systems, and Missiles and Fire Control business areas.

William L Blair, Chief Executive, Lockheed Martin India, said, "Our joint ventures with Tata and industrial relationships with many Indian companies such as Ashok Leyland, Lakshmi Machine Works, MIDHANI, Rossell Techsys, and SASMOS among others are a testament to the success of the Government of India's mission to create 'Atmanirbhar Bharat' in the defence sector."

The prime attraction at its booth this year was the 'Made in India' fuel-carrying, 9G, 12,000-hour, interchangeable/replaceable fighter wing. This wing was manufactured at the Tata Lockheed Martin Aerostructures Limited (TLMAL) facility in Hyderabad, which also serves as the single global source of C-130J empennage assemblies installed on all new Super Hercules aircraft. To date, TLMAL has manufactured and exported more than 180 C-130J empennages.

The F-21 fighter aircraft, which was on offer to the Indian Air Force (IAF), also occupied a prominent place at Lockheed Martin's booth. The company is leveraging both 4th and 5th generation technologies to offer the best solution to meet or exceed the IAF's capability needs, provide Make in India industrial opportunities, and accelerate India-United States cooperation on advanced technologies, including but not limited to fighter aircraft.

The Indian Navy's acquisition of the MH-60R 'Romeo' multi-mission helicopter was another highlight for Lockheed Martin at the show. The MH-60R is the world's most advanced maritime helicopter and brings vital anti-submarine and anti-surface warfare capabilities to the Indo-Pacific region. The US Navy already delivered the first three aircraft to the Indian Navy in 2021, and these aircraft are being utilised for training Indian pilots and crew members in California. In July-August 2022, the US Navy transported to India another three helicopters, which will be initially based at Naval Air Station INS Garuda in Kochi. A total of 24 MH-60Rs will be delivered to the country over the next few years.

India's workhorse, the C-130J Super Hercules airlifter, which represents a strong legacy of partnership between India and the US, was also on display at the Lockheed Martin booth. The S-92 helicopter also boosted Lockheed Martin's presence at the show; it recently surpassed two million fleet flight hours which is a testament to the reliability of the multi-mission aircraft.

As part of the Javelin Joint Venture, Lockheed Martin also produces the Javelin fire-and-forget anti-tank guided missile system.

The company's present and future programmes in India range from transport,



DRDO's Rudram Anti Radiation Missile

maritime and fighter aircraft to sea and land-based air and missile defence projects and capabilities in civil sectors, including new and renewable energy.

DRDO Brings Rudram Hypersonic Missiles

Rudram (meaning "remover of sorrows") is India's first anti-radiation missile (ARM). It is an Air-to-Surface missile developed by the Defence Research and Development Organisation (DRDO).

The first rendition, the Rudram-1 missile, primarily aims at Suppression of Enemy Air Defenses (SEAD). This consists of destroying enemy communication systems, surveillance radar stations with an operational range of approximately 250 km and a maximum speed of 2 Mach- double the speed of sound.

Beyond this, Rudram-2 and Rudram-3, with ranges of 350 and 550 km, respectively, are also under development.

While developed by DRDO, the indigenous weapons are jointly produced by Bharat Dynamics Limited (BDL) and Bharat Electronics Limited (BEL).

Rudram will provide air superiority tactical capability to the IAF jets.

Little is known about the features of the advanced versions of Rudram- namely, Rudram-2 and Rudram-3. It is believed that both also have INS-GPS navigation and come equipped with a passive homing head.

Lesser amount of information is available about Rudram-3.

DRDO's Long Range Glide Bombs

A long-range glide bomb has been designed for the Indian Air Force (IAF). The

bomb has been manufactured by Adani Defence and Aerospace. The bomb was designed by the DRDO . The bomb weighs around 1000 kgs and was successfully tested last year. Here is the strength, range and firepower of this bomb.

DRDO has designed the two types of smart bomb which can self-navigate, glide and destroy the enemy targets. The bomb was designed for the Indian Air Force. Following this Adani Defence and Aerospace took the lead in manufacturing the bomb.

The scientists of DRDO designed two types of Long Range Glide Bomb (LRGB). The bombs are named as Gaurav and Gautham. Gaurav is the winged version whereas Gautham is the non-winged version.

Gaurav has a range of 100 kms to glide. Whereas Gautham has to glide 30 km without wing. It can go up to a maximum height of 10 km.

Both the bombs have an inertial navigation system. They can reach the target with the help of GPS and NavIC Satellite Guidance System. It can be deployed on Sukhoi Su-30 MKI fighter jet.

In October 2021, Gaurav was successfully test fired from a Sukhoi fighter jet in Balasore. Earlier it was successfully tested in 2014. Both currently have an upgraded range of 50 to 150 km.

Akash NG Mobile Launcher Showcased

Bharat Dynamics Ltd (BDL) displayed the Akash – New generation (Akash-NG) Mobile Launcher. It was first revealed to the public during Aero India 2021.

Akash-NG is a medium-range mobile surface-to-air missile defense system developed by the DRDO and produced by BDL



DRDO-L&T Light Tank model on display

and BEL.

This missile is a successor to the Akash and Akash-1S series of missiles with improvements such as a Dual-pulse solid rocket motor, a canisterised launcher and an AESA Multifunction targeting radar to improve its probability of kill with a smaller ground operations and logistics footprint.

DRDO has successfully test-fired the Akash-NG surface-to-air missile air defence system off the coast of Odisha on 23rd July, 2021.

UP Announces Rs 600-crore Investment Target

Among the incentives that the UP state government offered to companies to pitch itself as a leading destination for defence and aerospace manufacturing at the expo were a capital subsidy of up to Rs 500 crore, a 25% land subsidy and research and development tie-ups with premier institutes.

The UP government announced that it was likely to sign 13 industrial MOUs worth Rs 564 crore at DefExpo-2022 to partner with over 100 companies with an estimated investment target of around Rs 600 crore.

"The UP government is committed to develop the defence and aerospace sector with modern infrastructure, better connectivity and policy support.

Among the key features of its recently announced policies, the government will be offering a capital subsidy of 7 per cent up to Rs 500 crore to all defence and aerospace units being set up in Aligarh, Agra, Lucknow and Kanpur nodes.

A 10% subsidy up to Rs 500 crore for investors in Jhansi and Chitrakoot nodes of Bundelkhand was also announced, along with a 25% land subsidy for anchor defence and aerospace units. The state government will bear the cost of developing infrastructure of all six nodes. The state will also offer research and development tie-ups with prominent academic institutions like IIT-Kanpur and IIT-BHU, as well as Defence Research and Development Organisation (DRDO) and HAL's Aerospace Systems & Equipment R&D Centre (ASERDC).

BAE Systems to produce ULH titanium castings in India

British arms company BAE Systems, on 19 October, signed an agreement with Indian components manufacturer PTC Industries to manufacture titanium castings for the Indian 155 mm M777 Ultra-Lightweight Howitzer (ULH). The castings will be produced at PTC Industries' production facility in Lucknow, Uttar Pradesh.

Under the agreement, the companies will jointly produce lightweight titanium castings. They will develop a controlled fabrication process and ensure that the same parts can be manufactured in any future production of the M777 howitzers for India.

The first sub-systems are expected to be produced by the end of 2022.

The manufacturing will eventually be extended to all three of the major structures of the gun namely the Saddle, Cradle, and Lower Carriage.

BAE Systems also said that it may soon

manufacture a 52-Calibre 155 mm barrel for the ULH in India. This would make India the first customer to have a 155mm 52-calibre platform under 5,800 kg in weight.

L&T's Light Tank Model, Futuristic Systems Displayed

Larsen & Toubro (L&T) unveiled a model of its light tank, being developed in collaboration with DRDO. It also displayed its Future Infantry Fighting Vehicle (FICV), Close In Weapon System (CIWS), futuristic high-performance Vertical Take-off and Landing (VTOL) remotely piloted aircraft system. The VTOL is equipped with a new highly efficient power plant with an outstanding power to weight ratio that will enable it to operate at extreme altitude of 5,500 metres.

According to L&T's JD Patil, the Light Tank will be ready for testing by mid-2023. "The development is on at full speed," he said.

The current design being developed by DRDO and L&T is completely ab initio, and not taking Vajra design. While L&T is involved in the development work, it is not assured of a role in the production phase. Developed equipment has to undergo field evaluation trials and emerge successful for the induction clearance, and then production ordering process begins.

Tactical Surveillance UAV Showcased by BEML

BEML displayed its Tactical UAV at DEFEXPO 2022. The UAV can be used for target correction for artillery fire and observation activities. The UAV will be pushed in the surveillance, naval application and weather tracking market.

The Tactical UAV was first unveiled at Aero India 2021. BEML is better known for its earthmovers and Metro coach assemblies.

BEML has taken a two-pronged approach in its foray into the versatile drone space: One, a partnership with the Czech innovation company Primoco UAV to jointly produce the Model One 150 with a 200 km range and payload capacity of 1-30 kg.

India's immediate requirement is for over 4,000 UAVs in the micro to weaponised categories, and BEML's entry is expected to add to the variety. This dictated the company's partnership with the Indian Institute of Technology, Kanpur, for joint indigenous development of a Pilotless Target Aircraft (PTA) and a tactical UAV. The tactical UAV will have an endurance of eight hours, the longest in its class.

DEFENCE COOPERATION

Photo Feature

Bilateral Exercises with Singapore and Indonesia

Exercise Garuda Shakti – Indian and Indonesian Special Forces Exercise

As part of military-to-military exchange programs, a contingent of Indian Special Forces troops carried out the eighth edition of the bilateral joint training Exercise Garuda Shakti with Indonesian Special Forces at Sangga Buana Training Area, Karawang, Indonesia. The exercise commenced on 21 November 2022. It was aimed at enhancing understanding, cooperation and interoperability between the Special Forces of both armies.



The scope of the joint exercise included orientation to advance special forces skills, sharing of information on weapon, equipment, innovations, tactics, techniques & procedures and lessons learnt from various operations undertaken, Special Forces Operations in Jungle terrain, strikes on terrorist camps and a validation exercise integrating basic and advance special forces skills apart from gaining an insight into the lifestyle and culture of both countries to foster military cooperation. The joint training also focused on a high degree of physical fitness, tactical drills, techniques and procedures for which a comprehensive 13-day training programme was worked out. The exercise culminated in a 48-hour long validation exercise.

Exercise Veer Warrior - India and Singapore

In December 2022, gunners from the 23rd Battalion, Singapore Artillery (23 SA), 24th Battalion, Singapore Artillery (24 SA), Headquarters Singapore Artillery (HQ SA) and Artillery Institute were at the Devlali Field Firing Range in India for Exercise Agni Warrior (XAW). The main highlights were the bilateral exercise with the Indian Army, live firing of their 155mm Singapore Light Weight Howitzer (SLWH) Pegasus and the Field Artillery Training Evaluation Programme (FATEP) for 23 SA, a three-day exercise aimed to evaluate our gunners' operational readiness. Since its inception in 2004, XAW has been a testament of the long-standing defence relationship between the Singapore Armed Forces (SAF) and the Indian Army.



CHINA

Chinese Espionage Operations and Tactics – Part 1

China's Priorities and Modus Operandi

Maj Gen Ravi Arora

China's main espionage activities in the United States are the illegal export of military and dual use technology. Of the 260 cases documented or in courts, 80 per cent occurred in the US. 43.7 per cent of these cases related to (in the US) IEEPA, EAR, and ITAR violations.

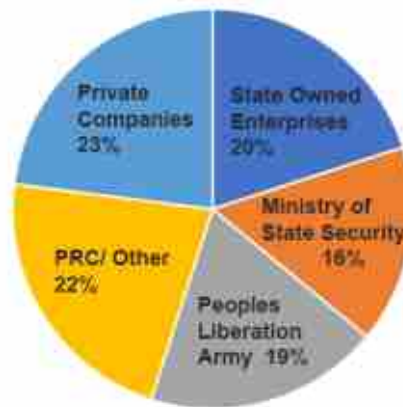
Known intelligence operations conducted by the Chinese have thrown up a basic question. What is the percentage of cases which have come to light? Is it 10 per cent or 90 per cent of Chinese operations. Quite likely the former. So, how many people are spying worldwide on behalf of the Chinese government? No one knows the answer. Yet some conclusions can be drawn.

Key Findings

There are over 600 documented cases of China's worldwide intelligence collection efforts. Some of the major findings are:

- There has been a phenomenal expansion of its espionage efforts over the last 20 years.
- Many Chinese government agencies, People's Liberation Army, State Owned Enterprises, private companies, individuals, and several universities are involved in conducting espionage.
- A major effort is directed towards military and space technologies.
- Predominantly (over 90 per cent) of espionage activities involve Chinese ethnic people, of whom 80 per cent are males.
- Social media is used by the Ministry of State Security (MSS) to target foreigners with access to sensitive information.
- Visa and border control system is used by the MSS to identify potential recruitments and manage clandestine assets.
- Almost half of China's traditional espionage efforts are targeted against Taiwan (political and military secrets).
- Priority technologies have been identified in government strategic planning documents

Chinese Organisations Conducting Espionage



“The CCP uses all elements of society, ie, universities, think tanks, foreign affairs departments, government sponsored overseas educational programs, military liaison programmes, friendship and student associations, etc, for espionage.”

- Made in China 2025, Space Science and Technology in China, and A Road- map to 2050, the National Key Technologies R&D Program, and the 13th Five Year Plan – for foreign science

and technology collection efforts.

- China follows a 'whole of society' approach to espionage, which negatively affects America's economy, diplomatic influence, and military capabilities.
- China uses espionage and coercion against government entities and business decision making to threaten European national and economic security

Legal Framework for Espionage

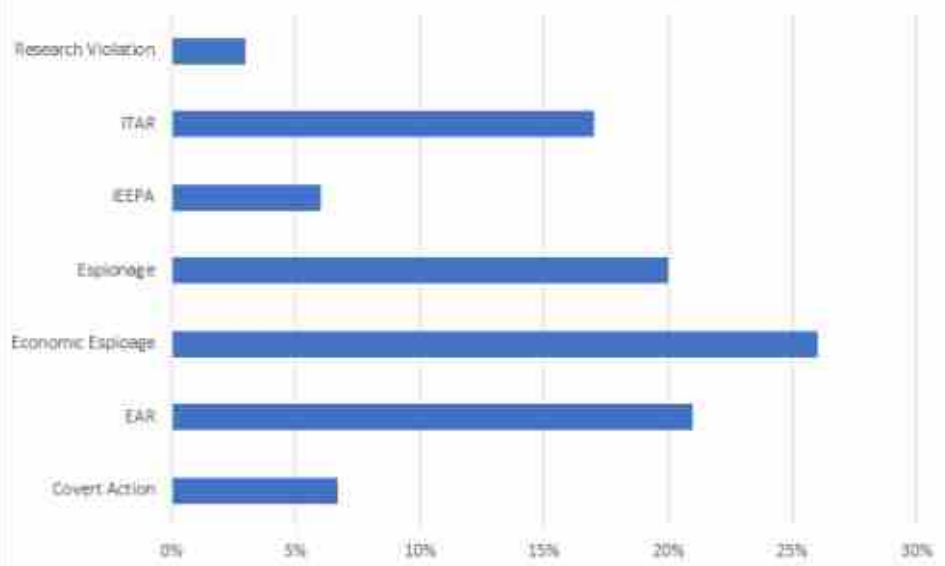
The CCP uses all elements of society, ie, universities, think tanks, foreign affairs departments, government sponsored overseas educational programs, military liaison programs, friendship and student associations, etc, - and through them, foreign government officials, scientists, academics, and students - to support its global espionage efforts. All Chinese government departments are required to support Ministry of State Security (MSS) intelligence operations.

China's legal system has been moulded to ensure the intelligence apparatus can exploit private industry to gain access to foreign individuals, secrets, and technology. In 2014, 2015, and 2017, the National People's Congress and State Council made public the requirements that all Chinese citizens and companies (operating in China or Chinese companies abroad) must collaborate in gathering intelligence.

Article 22 of the 2014 Counter-Espionage Law states that during a counter-espionage investigation, 'relevant organizations and individuals' must 'truthfully provide' information and 'must not refuse'.

Article 7 of China's National Intelligence Law of 2017 states that "Any organization or citizen shall support, assist and cooperate with the state intelligence work in accordance with the law, and keep the secrets of the national intelligence work known to the public. The state protects individuals and organizations

Categories of Chinese Espionage Cases



that support, assist and cooperate with national intelligence work.”

Article 14 provides intelligence agencies authority to compel any entity to provide this support: “The state intelligence work organization shall carry out intelligence work according to law, and may require relevant organs, organizations and citizens to provide necessary support, assistance and cooperation.”

The National Intelligence Law Implementing Regulations, was published in November 2017, which explained that “When state security organs carry out the tasks of counter-espionage work in accordance with the law, and citizens and organizations that are obliged to provide facilities or other assistance according to the law refuse to do so, this constitutes an intention to obstruct the state security organs from carrying out the tasks of counter-espionage work according to law.”

Companies and citizens face severe punishments for noncompliance.

Chinese Organizations Conducting Espionage

Espionage activities correlated to their sponsoring organization (the “customer” receiving the information or technology) showed five distinct clusters of organizations engaging in espionage. The governing CCP uses government, quasi-government, academic, and commercial entities as mechanisms to conduct all forms espionage abroad. Most interesting of these are China’s ‘non-traditional collectors’ which include State Owned Enterprises, universities, and private companies. The employment of such a broad set of entities for intelligence collection indicates China’s ‘whole of society’ approach to espionage.

China’s Ministry of State Security or Ministry of State Security (MSS) was formed in

“Major systems targeted for espionage include the Space Shuttle, Delta IV Rocket, F-15 Fighter, C-17 transport, F-22 Fighter, F-35 Fighter, B-1 Bomber, Ch 46/47 Chinook, C-130 training equipment and much more.”

June 1983.

Central Military Commission (CMC) Joint Staff Department, Intelligence Bureau (formerly 2 PLA) is responsible for collecting and analyzing foreign military intelligence including technology.

People’s Liberation Army (PLA) collection capabilities include military attaches conducting overt and clandestine collection, students, and other collectors under government and commercial covers.

There are 150,000 State Owned Enterprises (SOE) of which 50,000 are owned by the central government and include aerospace and defense companies, subordinate research institutes, and technology transfer organizations. In 2018, Xi Jinping directed all SOEs to amend their bylaws to ensure the concepts of service to the CCP keeping national and economic security above profit.

Some private companies and individuals indulge in illegal exports or trade secrets for commercial benefit. University are often involved in establishing shadow labs to copy

foreign research and commercial production facilities to replicate foreign material and technology.

Other PRC government elements like PLA Political Department Liaison Office, United Front Work Department (UFW) and many universities under the State Administration for Science, Technology, and Industry for National Defense (SASTIND) work for espionage.

SASTIND

SASTIND assigns research projects to ministries with military production responsibilities and manages military acquisition requirements for the CMC’s Equipment Department. SASTIND has two departments (Comprehensive Planning Department and the International Cooperation Department) responsible for developing and tasking technology related intelligence requirements, and for collecting intelligence related to them. MSS and PLA Joint Intelligence Bureau are also involved.

SASTIND also has direct supervision over seven universities as well as contracts for defense research with 55 additional universities. As many as 35 institutes and universities are on the US Department of Commerce Entities List for their research in support of Chinese defense entities involved in the theft of technologies.

There is a near equal distribution of espionage activities between the four major organizational clusters (MSS, SOE, PLA, Private Companies).

Aerospace & Aeronautical Equipment

China strongly focuses on collection of foreign aerospace and aeronautical equipment. The primary collectors are the PLA Joint Intelligence Bureau and private companies conducting export violations, and individuals (Insider Threats) working in foreign aerospace companies.

Key technologies stolen or attempted are: Cryogenic pumps for space vehicles, valves, transfer lines, refrigeration equipment, space qualified radiation hardened circuits, components for the storage and use of liquid hydrogen, cryogenic coolers, Ka-band space communications, satellite/missile insulation blankets - germanium coated polyimide film, and multi octave travelling wave tubes used as amplifiers in satellite transponders. Major systems include the Space Shuttle, Delta IV Rocket, F-15 Fighter, C-17 transport, F-22 Fighter, F-35 Fighter, B-1 Bomber, Ch 46/47 Chinook, C-130 training equipment and much more.

Information Technology

Information technology is a high priority target with strong emphasis on advanced

semiconductors and manufacturing technology. The US restricted semiconductor sales to the Chinese company ZTE for evading sanctions on Iran and North Korea and repeatedly lying to Department of Commerce officials and lifted the ban after the company paid a \$1 billion fine and agreed to reprimand its Board. Chinese company Huawei faces charges of espionage in the United States, Germany, and Poland.

Key information technology objectives include microelectronics, microwave integrated circuits, microprocessors, circuit boards, crypto key devices, data and voice transmission systems, semiconductors, and trade secrets such as laser manufacturing techniques.

Analysis of Espionage Cases

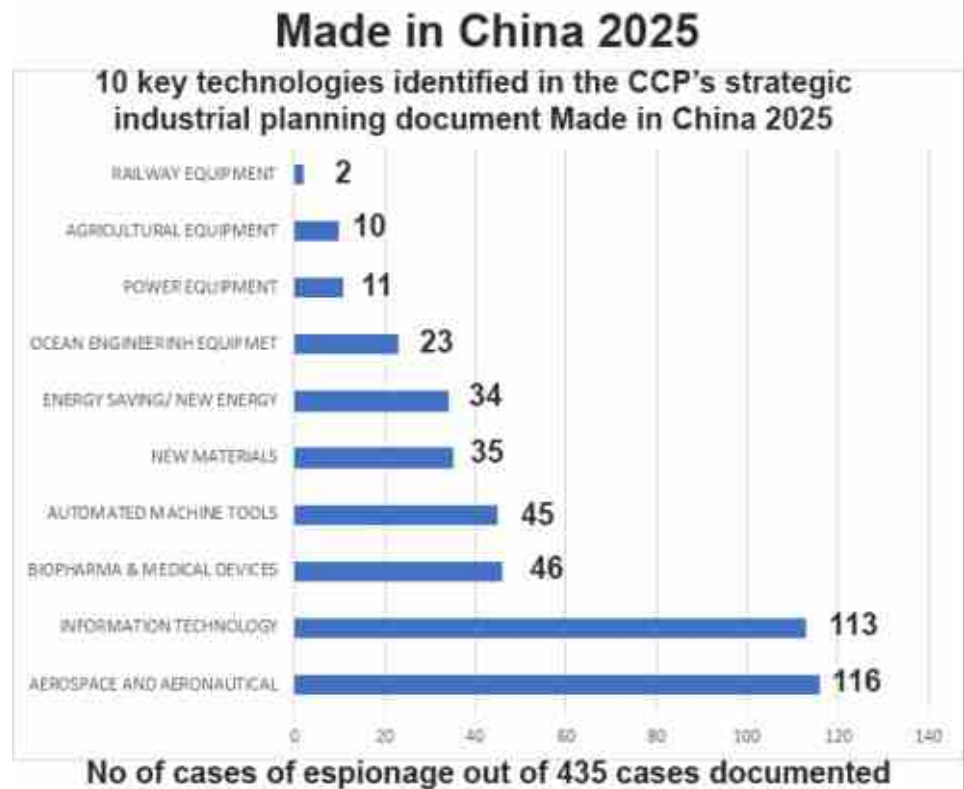
China's dominant espionage activities overseas are economic espionage, and export control violations. Half of them are related to ITAR, EAR, IEEPA, covert action, research violations in high-tech sectors.

Next is economic espionage. Traditional espionage comprises one-fourth of all espionage activity.

'Silicon Valley' in northern California is the number one spot for China's illegal technology collection efforts.

Information technology, aerospace and aeronautical equipment takes priority over automated machine tools and robotics.

Research universities are also primary targets for collection efforts most often accomplished through talent programs (i.e. Thousand Talents Program, Hundred Talents Program, etc.). In numerous cases, professors,



graduate students, and PLA researchers have also been arrested stealing research from overseas universities for use in China.

Chinese spies have used public and commercial encryption, hosting meetings in China to avoid detection, dead drops, covert communications) and use of third countries for

meetings.

Surprisingly a number of cases have been detected where the Ministry of State Security demonstrated no discernible tradecraft in agent recruitment, tasking, communications, and data transfer with no significant attempt to hide the activity.



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Recent Developments in Chinese Anti-Ship Missiles and Submarines

An IMR Report

Anti-Ship Ballistic Missiles (ASBMs)

China is fielding two types of land-based ballistic missiles with a capability of hitting ships at sea—the DF-21D, a road-mobile anti-ship ballistic missile (ASBM) with a range of more than 1,500 kilometers (i.e., more than 910 nautical miles), and the DF-26, a road-mobile, multi-role intermediate range ballistic missile (IRBM) with a maximum range of about 4,000 kilometers (i.e., about 2,160 nautical miles) that DOD says "capable of conducting both conventional and nuclear precision strikes against ground targets as well as conventional strikes against naval targets."

Until 2020, reported test flights of DF-21s and SDF-26s had not involved attempts to hit moving ships at sea. A November 14, 2020, press report, stated that an August 2020 test firing of DF-21 and DF-26 ASBMs into the South China Sea resulted in the missiles successfully hitting a moving target ship south of the Paracel Islands. A December 3, 2020, press report stated that Admiral Philip Davidson, the commander of U.S. Indo-Pacific Command, "confirmed, for the first time from the U.S. government side, that China's People's Liberation Army has successfully tested an anti-ship ballistic missile against a moving ship."

DF-21D Anti-Ship Ballistic Missile (ASBM)



DF-26 Multi-Role Intermediate-Range Ballistic Missile (IRBM)

“China may have developed a new type of ASBM, perhaps designed the YJ-21, that is small enough to fit into the vertical launch tube of a surface combatant”

In April 2022, it was reported that China may have developed a new type of ASBM, perhaps designed the YJ-21, that is small enough to fit into the vertical launch tube of a surface combatant, and that China had test fired such a weapon from a Type 055 cruiser (or large destroyer).

China reportedly is also developing hypersonic glide vehicles that, if incorporated into Chinese ASBMs, could make Chinese ASBMs more difficult to intercept.

Observers have expressed strong concerns about China's ASBMs, because such missiles, in combination with broad-area maritime surveillance and targeting systems, would permit China to attack aircraft carriers, other U.S. Navy ships, or ships of allied or partner navies operating in the Western Pacific. The U.S. Navy has not previously faced a threat from highly accurate ballistic missiles capable of hitting moving ships at sea. For this reason, some observers have referred to ASBMs as a "game-changing" weapon.

Anti-Ship Cruise Missiles (ASCMs)

China's extensive inventory of anti-ship cruise missiles (ASCMs) includes both Russian- and Chinese-made designs, including some advanced and highly capable ones, such as the Chinese-made YJ-18.

Although China's ASCMs do not always receive as much press attention as China's ASBMs (perhaps because ASBMs are a more-



Reported Image of Anti-Ship Cruise Missile (ASCM)

recent development), observers are nevertheless concerned about them. As discussed later in this report, the relatively long ranges of certain Chinese ASCMs have led to concerns among some observers that the U.S. Navy is not moving quickly enough to arm U.S. Navy surface ships with similarly ranged ASCMs.

Press reports in April 2019 and December 2021 state that China might be developing a YJ-18 launcher that can be packaged inside a standard commercial shipping container, for the potential purpose of surreptitiously deploying YJ-18s on merchant ships, a capability that, if implemented, could violate the law of naval warfare.

Submarines

Overview

China has been steadily modernizing its submarine force, and most of its submarines are now built to relatively modern Chinese and Russian designs. Qualitatively, China's newest submarines might not be as capable as Russia's newest submarines, but compared to China's earlier submarines, which were built to antiquated designs, its newer submarines are

“China might be developing a YJ-18 launcher that can be packaged inside a standard commercial shipping container, for the potential purpose of surreptitiously deploying YJ-18s on merchant ships”

much more capable.

Types and Numbers

Most of China's submarines are non-nuclear-powered attack submarines (SSs). China also operates a small number of nuclear-powered attack submarines (SSNs) and a small number of nuclear-powered ballistic missile submarines (SSBNs). The number of SSNs and SSBNs may grow in coming years, but the force



Reported Image of Anti-Ship Cruise Missile (ASCM)

will likely continue to consist mostly of SSs. DOD states that "the PLAN has placed a high priority on modernizing its submarine force, but its force structure continues to grow modestly as it works to mature its force, integrate new technologies, and expand its shipyards. The PLAN will likely maintain between 65 and 70 submarines through the 2020s, replacing older units with more capable units on a near one-to-one basis." ONI states that "China's submarine force continues to grow at a low rate, though with substantially more-capable submarines replacing older units. Current expansion at submarine production yards could allow higher future production numbers." ONI projects that China's submarine force will grow from a total of 66 boats (4 SSBNs, 7 SSNs, and 55 SSs) in 2020 to 76 boats (8 SSBNs, 13 SSNs, and 55 SSs) in 2030.

China's newest series-built SS design is the Yuan-class (Type 039) SS, its newest SSN class is the Shang-class (Type 093) SSN, and its newest SSBN class is the Jin (Type 094) class SSBN.

DOD states that "the PRC continues to increase its inventory of conventional submarines capable of firing advanced anti-

Reported Image of Anti-Ship Cruise Missile (ASCM)



Illustration of Reported Potential Containerized ASCM Launcher





Yuan (Type 039) Attack Submarine (SS)



Shang (Type 093) Attack Submarine (SSN)

ship cruise missiles (ASCMs). Between the mid-1990s and mid-2000s, the PLAN purchased 12 Russian-built Kilo class SS units, eight of which are capable of launching ASCMs. China's shipyards have delivered 13 Song class SS (Type 039) and 17 Yuan class diesel-electric (SSPs) (Type 039A/B). The PRC is expected to produce a total of 25 or more Yuan class submarines by 2025." DOD states further:

"Over the past 15 years, the PLAN has constructed twelve nuclear submarines-two Shang I class SSNs (Type 093), four Shang II class SSNs (Type 093A), and six Jin class SSBNs (Type 094). Equipped with the CSS-N-14 (JL-2) submarine-launched ballistic missile (SLBM), the PLAN's six operational Jin class SSBNs represent the PRC's first credible sea-based nuclear deterrent. Each Jin class SSBN can carry up to 12 JL-2 SLBMs. In 2019, Beijing displayed these missiles at the PRC's 70th anniversary parade, revealing that at least a full complement of 12 JL-2s are complete and operational. The PRC's next-generation Type 096 SSBN, which likely began construction in

"Over the past 15 years, the PLAN has constructed twelve nuclear submarines-two Shang I class SSNs (Type 093), four Shang II class SSNs (Type 093A), and six Jin class SSBNs (Type 094)"

the early 2020s, will reportedly carry a new type of SLBM. The PLAN is expected to operate the Type 094 and Type 096 SSBNs concurrently and could have up to eight SSBNs by 2030. This would align with Chairman Xi Jinping's 2018 directive for the SSBN force to achieve "stronger growth."

By the mid-2020s, the PRC will likely build the Type 093B guided-missile nuclear attack submarine. This new Shang class variant will

enhance the PLAN's anti-surface warfare capability and could provide a clandestine land-attack option if equipped with land-attack cruise missiles (LACMs).

In February 2022, the first of a new class of SS, smaller than the Yuan design, was reported, but it is not clear whether this design is intended for China's navy, for export to other countries, or both.

A May 16, 2022, press report states:

"A submarine seen in a satellite photo of a Chinese shipyard shows what could be a new class or subtype of a nuclear-powered attack sub with a new stealthy propulsion system and launch tubes for cruise missiles."

The satellite photo of the shipyard at Huludao in Liaoning province, northern China, which was provided to Defense News by Planet Labs, was taken May 3 and shows a submarine on a drydock.

The unidentified boat's presence at the yard was first noted in an April 29 satellite image by geospatial intelligence outfit AllSource Analysis. The organization said the submarine is possibly a new class undergoing construction by China.

Jin (Type 094) Ballistic Missile Submarine (SSBN)



Submarine Weapons

China's submarines are armed with one or more of the following: ASCMs, wire-guided and wake-homing torpedoes, and mines. Wake-homing torpedoes can be very difficult for surface ships to decoy. Each Jin-class SSBN is armed with 12 JL-2 nuclear-armed submarine-launched ballistic missiles (SLBMs). A May 2, 2021, press report stated that China's latest Jin-class SSBN is armed with a new and longer-ranged SLBM called the JL-3.

Based on the US Congressional Research Service Report on China Naval Modernisation, Nov 2022

CHINA

Recent Developments in Chinese Aircraft Carriers and Aircraft

An IMR Report

Overview

Compared with Liaoning and Shandong, U.S. Navy aircraft carriers are larger (about 100,000 tons full load displacement), nuclear powered (giving them greater cruising endurance than a conventionally powered ship), able to embark and operate a larger number of aircraft (60 or more), and launch fixed-wing aircraft using catapults, which can give those aircraft a range/payload capability greater than that of aircraft launched with a ski ramp.

China's third carrier, Fujian (Type 003), was launched (i.e., put into the water for the final stages of its construction) in on June 17, 2022. ONI expects the ship to enter service by 2024. It is expected to be conventionally powered, closer in size to U.S. Navy aircraft carriers, and equipped with catapults rather than a ski ramp for launching aircraft. China's fourth carrier reportedly may have begun construction as early as 2021.

Observers have speculated that China may eventually field a force of four to six (or possibly more than six) aircraft carriers. In late November 2019, it was reported that the Chinese government, while deciding to proceed with the construction of the fourth carrier, had put on hold plans to build a fifth carrier, known as the Type 004, which was to be nuclear-powered, due to budgetary and technical considerations. Observers expect that it will be some time before China masters

Shandong (Type 002) Aircraft Carrier



Liaoning (Type 001) Aircraft Carrier

“Observers have speculated that China may eventually field a force of four to six (or possibly more than six) aircraft carriers.”

carrier-based aircraft operations on a substantial scale.

Liaoning (Type 001)

Liaoning is a refurbished ex-Ukrainian aircraft carrier that China purchased from Ukraine in 1998 as an unfinished ship. It is conventionally powered, has an estimated full load displacement of 60,000 to 66,000 tons, and reportedly can accommodate an air wing of 30 or more fixed-wing airplanes and helicopters, including 24 fighters. The Liaoning lacks aircraft catapults and instead launches fixed-wing airplanes off the ship's bow using an inclined ski ramp.

Some observers have referred to the Liaoning as China's "starter" carrier. China has been using Liaoning in part for pilot training. In May 2018, China reportedly announced that the aircraft carrier group formed around Liaoning had reached initial operational capability (IOC), although that term might not mean the same as it does when used by DOD in connection with U.S. weapon systems.

Shandong (Type 002)

Shandong is a modified version of the



Fujian (Type 003) Aircraft Carrier



Fujian (Type 003) Aircraft Carrier

Numbers of Chinese and U.S. Navy Battle Force Ships, 2000-2030

	2000	2005	2010	2015	2020	2025	2030
Ballistic missile submarines	1	1	3	4	4	6	8
Nuclear-powered attack submarines	5	4	5	6	7	10	13
Diesel attack submarines	56	56	48	53	55	55	55
Aircraft carriers, cruisers, destroyers	19	25	25	26	43	55	65
Frigates, corvettes	38	43	50	74	102	120	135
Total China navy battle force ships, including types not shown above	210	220	220	255	340	400	425
Total U.S. Navy battle force ships	318	282	288	271	297	287	290 or 291
U.S. total above compared to China total above	+108	+62	+68	+16	-63	-113	-135 or -134

Source: Table prepared by CRS. Source for China's navy: Unclassified ONI information paper prepared for Senate Armed Services Committee, subject "UPDATED China: Naval Construction Trends vis-à-vis U.S. Navy Shipbuilding Plans, 2020-2030," February 2020, 4 pp. Provided by Senate Armed Services Committee to CRS and CBO on March 4, 2020, and used in this CRS report with the committee's permission. Figures are for end of calendar year. Source for figures for U.S. Navy: U.S. Navy data; figures are for end of fiscal year.

“ China has developed an upgraded, catapult-capable version of the J-15 that could have improved range/payload when operated from a catapult-equipped carrier.”

ncorporates some design improvements, including features that reportedly will permit it to embark and operate a larger air wing of 40 aircraft that includes 36 fighters. Its displacement is estimated at 66,000 to 70,000 tons.

Fujian (Type 003)

Earlier press reports had generally stated that Fujian might have a displacement of 80,000 tons to 85,000 tons. A November 29, 2020, press report, however, stated that satellite images of the ship under construction suggest that this estimate may be a bit low, and that Fujian might be closer in displacement to U.S. Navy aircraft carriers, which have a displacement of about 100,000 tons. Fujian is expected to be equipped with electromagnetic catapults rather than a ski ramp, which will improve the range/payload capability of the fixed-wing aircraft that they operate. A July 14, 2021, blog post stated that the ship might be launched (i.e., put into the water for the final stages of its construction) before the end of 2021.

China's Fourth Carrier

A May 1, 2022, press report states: "Recent images of a stealth fighter jet at a naval airbase suggest China has begun pilot training preparations for a fourth aircraft carrier, defence experts say." Some sources have stated that China's fourth aircraft carrier would be built to the Type 003 design. Press reports from October 10, 2022, and March 13, 2021, however, suggest that the ship may be nuclear-powered rather than conventionally powered.

Commercial Heavy-Lift Ship Reportedly Used in Exercise as Helicopter Carrier

In August 2020, it was reported that China had used a commercial heavy-lift ship in a military exercise as a platform for operating at least two PLA Army helicopters.

Carrier-Based Aircraft

China's primary carrier-based fighter aircraft is the J-15 or Flying Shark, an aircraft derived from the Russian Su-33 Flanker aircraft design that can operate from carriers equipped with a ski ramp rather than catapults, but which some observers have critiqued for its range/payload limitations in operations from carriers equipped with ski ramps rather than catapults. December 2021 press reports stated that China has developed an upgraded, catapult-capable version of the J-15 that could have improved range/payload when operated from a catapult-equipped carrier.

China reportedly plans to develop a carrier-capable variant of its J-20 fifth-generation stealth fighter and/or a carrier-capable variant of its FC-31 fifth-generation stealth fighter (reportedly now designated J-35) to complement or succeed the J-15 on catapult-equipped Chinese carriers.

China reportedly is also developing a carrier-based airborne early warning (AEW) aircraft, called the KJ-600, that is similar to the U.S. Navy's carrier-based E-2 Hawkeye AEW aircraft, and stealth drone aircraft.

Roles and Missions

Figure 14. Fujian (Type 003) Aircraft Carrier



Figure 15. J-15 Flying Shark Carrier-Capable Fighter

“China reportedly plans to develop a carrier-capable variant of its J-20 fifth-generation stealth fighter and/or a carrier-capable variant of its FC-31 fifth-generation stealth fighter”

Although aircraft carriers might have some value for China in Taiwan-related conflict scenarios, they are not considered critical for Chinese operations in such scenarios, because Taiwan is within range of land-based Chinese aircraft. Consequently, most observers believe that China is acquiring carriers primarily for their value in other kinds of operations, and to demonstrate China's status as a leading regional power and major world power. Chinese aircraft carriers could be used for power-projection operations, particularly in scenarios that do not involve opposing U.S. forces, and to impress or intimidate foreign observers.

Chinese aircraft carriers could also be used for humanitarian assistance and disaster relief (HA/DR) operations, maritime security operations (such as anti-piracy operations), and noncombatant evacuation operations (NEOs). Politically, aircraft carriers could be particularly valuable to China for projecting an image of China as a major world power, because aircraft carriers are viewed by many as symbols of major world power status. In a combat situation involving opposing U.S. naval and air forces, Chinese aircraft carriers would be highly vulnerable to attack by U.S. ships and aircraft, but conducting such attacks could divert U.S. ships and aircraft from performing other missions in a conflict situation with China.

Based on the US Congressional Research Service Report on China Naval Modernisation, Nov 2022

Recent Developments in PLA Navy Surface Combatants

An IMR Report

Surface Combatants

Overview

China since the early 1990s has put into service numerous new classes of indigenously built surface combatants, including a new cruiser (or large destroyer), several classes of destroyers and frigates, a new class of corvettes (i.e., light frigates), and a new class of missile-armed patrol craft.

These new classes of surface combatants demonstrate a significant modernization of PLA Navy surface combatant technology. DOD states that China's navy "remains engaged in a robust shipbuilding program for surface combatants, producing new guided-missile cruisers (CGs), guided-missile destroyers (DDGs) and corvettes (FFLs). These assets will significantly upgrade the PLAN's air defense, anti-ship, and anti-submarine capabilities and will be critical as the PLAN expands its operations beyond the range of the PLA's shore-based air defense systems." DIA states that "the era of past designs has given way to production of modern multi-mission destroyer, frigate, and corvette classes as China's technological advancement in naval design has begun to approach a level commensurate with, and in some cases exceeding, that of other modern navies." China is also upgrading its older surface combatants with new weapons and other equipment.

Renhai (Type 055) Cruiser (or Large Destroyer)



Renhai (Type 055) Cruiser (or Large Destroyer)

Type 055 Cruiser/Large Destroyer

China is building a new class of cruiser (or large destroyer), called the Renhai-class or Type 055, that reportedly displaces between 12,000 and 13,000 tons. A March 7, 2021, press report by a Chinese media outlet states that the ship displaces more than 12,000 tons. By way of comparison, the U.S. Navy's Ticonderoga (CG-47) class cruisers and Arleigh Burke (DDG-51) class destroyers (aka the U.S. Navy's Aegis cruisers and destroyers) displace about 10,100 tons and 9,700 tons, respectively, while the U.S. Navy's three Zumwalt (DDG-1000) class destroyers displace about 15,700 tons.

ONI states that Type 055 ships are being

built by two shipyards. The first was reportedly commissioned into service in January 2020. A total of six were reportedly in service as of August 2022. In August 2020, it was reported that the seventh was delivered to the navy in May 2020, and that the eighth was launched on August 30, 2020, and "will complete the first group of Type 055 destroyers." A January 2022 press report states that in addition to the first eight ships, at least two more are under construction.

Type 052 Destroyer

China since the early 1990s has put into service multiple new classes of indigenously built destroyers, the most recent of which is the Luyang III (Type 052D) class, which displaces about 7,500 tons and is equipped with phased-array radars and vertical launch missile systems that outwardly are broadly similar to those on U.S. Navy cruisers and destroyers. Type 052D ships have been in serial production for some time; an August 21, 2022, press report states that 25 of the ships are in service and at least six more are under construction at the two shipyards that build Type 052 destroyers. Press reports in March 2021 stated that China is now commissioning an upgraded version of the Type 052D, informally called the Type 052DL, that incorporates an extended-length helicopter flight deck and a new radar.



Type-055 Renhai Class Cruiser



Renhai (Type 055) Cruiser (or Large Destroyer)



Luyang III (Type 052D) Destroyer

Type 054 Frigate

China since the early 1990s has also put into service multiple new classes of indigenously built frigates, the most recent of which is the Jiangkai II (Type 054A) class, which displaces about 4,000 tons. ONI stated in February 2020 that 30 Type 054As entered service between 2008 and 2019, and that no additional Type 054As were then under construction. An August 2021 press report from a Chinese media outlet, however, stated that "China is reportedly building another batch of Type 054A frigates for the People's Liberation Army Navy (PLA Navy) after it had launched two new ships of this class over the past few months." The press report noted that a report from the Jane's organization had stated that the 32nd Type 054A ship had recently been launched (i.e., put into the water for the final stages of its construction). A May 7, 2022, press report stated:

"Speculation is mounting among China's military observers that construction is about to start on a bigger and faster frigate, designed to keep up with the PLA Navy's third aircraft carrier which is nearing completion."

An open tender for super high-strength

"China's military observers believe that construction is about to start on a bigger and faster frigate, designed to keep up with the PLA Navy's third aircraft carrier"

structural steel - the kind used in military hulls - was issued by the Huangpu Wenchong shipyard in Guangzhou, southern China, in March, with a delivery date of May 20.

It is unclear how many tonnes of the CCS-B structural steel plate were ordered by the shipyard, a subsidiary of the China State Shipbuilding Corporation (CSSC).

Several military commentators have taken to Chinese social media platforms to suggest the order could signal that work is about to

begin on a bigger, faster multi-role update of the Type 054A, better suited to combat operations on the high seas.

Type 056 Corvette

China has also built-in large numbers over a relatively short time period-a new type of corvette (i.e., a light frigate, or FFL) called the Jiangdao class or Type 056, which reportedly displaces 1,300 tons to 1,500 tons. Type 056 ships were built at a high annual rate in four shipyards-the first was commissioned in 2013, and the 72nd and final ship of the type was reportedly commissioned in early 2021, implying an average commissioning rate of about eight ships per year. DOD states that China's navy "commissioned its ninth Jiangdao over the year by mid-2020 with over 50 Jiangdao class FFLs in service out of an expected production run of at least 70 ships. The latest FFLs are anti-submarine warfare (ASW) variants with a towed-array sonar."

ONI states that as of February 2020, more than 50 had entered service and another 15 were under construction. In February 2021, a Chinese media outlet reported that the final two Type 056 ships-the 71st and 72nd such

Jiangkai II (Type 054A) Frigate



Jingdao (Type 056) Corvette





Yuzhao (Type 071) Amphibious Ship



Type 075 Amphibious Assault Ship

ships had been commissioned into service in January and February 2021, and that the completion of Type 056 production could permit a shift to production of greater numbers of larger warships.

Beginning in November 2021, it was reported that 20 to 22 of the ships were being transferred to China's coast guard and modified for coast guard operations, which would leave 50 to 52 in China's navy. Table 1 shows a total of 51 Type 056 ships in China's navy as of 2021. As shown in Table 1, the rapid growth in the number of Type 056 corvettes since 2013 accounts for a substantial share of the net increase in the total number of ships in China's navy since 2013.

Amphibious Ships

Type 071 Amphibious Ship

China's new Yuzhao or Type 071 amphibious ships have an estimated displacement of more than 19,855 tons, compared to about 25,900 tons for the U.S. Navy's new San Antonio (LPD-17) class amphibious ships. A May 6, 2021, press report states that the eighth Type 071 ship "recently

“The rapid growth in the number of Type 056 corvettes since 2013 accounts for a substantial share of the net increase in the total number of ships in China's navy since 2013.”

made its first publicly known maritime exercise appearance.”

Type 075 Amphibious Assault Ship

In April 2021, China commissioned into service the first of a new type of amphibious assault ship, called the Yushen or Type 075 that has an estimated displacement of about 35,000 tons, compared to 41,000 to 45,000 tons for U.S. Navy LHA/LHD-type amphibious

assault ships. In March 2022, it was reported that the first Type 075 ship had achieved initial operational capability (IOC), although that term might not mean the same as it does when used by DOD in connection with U.S. weapon systems.

The second Type 075 ship reportedly was commissioned into service in late December 2021. The third was reportedly commissioned on or perhaps a few days prior to October 1, 2022.

In July 2020, it was reported that China might be planning to build the first of a new class of amphibious assault ships, called the Type 076 by observers that would be equipped with electromagnetic catapults, which would enhance its ability to support operations by fixed-wing aircraft and make it somewhat more like an aircraft carrier.

Amphibious Ship Roles and Missions

Although larger amphibious ships such as the Type 071 and Type 075 would be of value for conducting amphibious landings in Taiwan-related conflict scenarios, some observers believe that China is building such ships as much for their value in conducting other operations, such as operations for asserting and defending China's claims in the South and East China Seas, humanitarian assistance/disaster relief (HA/DR) operations, maritime security operations (such as anti-piracy operations), and noncombatant evacuation operations (NEOs). Politically, amphibious ships can also be used for naval diplomacy (i.e., port calls and engagement activities) and for impressing or intimidating foreign observers.

Potential Use of Commercial Ships

In assessing China's capacity for conducting an amphibious invasion of Taiwan, some observers have focused on China's potential for using civilian ferries and other commercial ships to augment the transport and landing capacity of China's amphibious

Table 1. Numbers of Certain Types of Chinese Ships Since 2005

Figures for Chinese ships taken from annual DOD reports on military and security developments involving China for the years 2005-2021

Year of DOD report	SSB	SSN	SS	CV	CG	DD	FF	FFL	PC	LST/ LPD	LSM	Total PLAN ship types shown to right
2005	1	6	51	0	0	21	43	0	51	20	23	216
2019	4	6	50	1	0	33	54	42	86	37	22	335
2020	4	6	46	2	1	32	49	49	86	37	21	333
2021	6	9	56	2	1	32	48	51	86		57	348
2021: change since 2005	+5	+3	+5	+2	+1	+11	+5	+51	+35		+14	+132

Source: Table prepared by CRS based on 2005-2021 editions of annual DOD report to Congress



Type 075 Amphibious Assault Ship

ships. Reported Chinese exercises indicate that China is exploring and testing this concept.

Operations Away from Home Waters Ship Operations

Although China's navy operates primarily in China's home waters, Chinese navy ships are conducting increasing numbers of operations away from China's home waters, including the broader waters of the Western Pacific, the Indian Ocean, and the waters surrounding Europe, including the Mediterranean Sea and the Baltic Sea. A November 23, 2019, DOD news report quoted Admiral Philip Davidson, the commander of the U.S. Indo-Pacific Command, as stating that China's navy had conducted more global naval deployments in the past 30 months than it had in the previous 30 years.

While many of China's long-distance naval deployments have been for making diplomatic port calls, some of them have been for other purposes, including conducting training exercises and carrying out anti-piracy operations in waters off Somalia. China has been conducting anti-piracy operations in



Notional Rendering of Possible Type 076 Amphibious Assault Ship

“Chinese navy ships are conducting increasing numbers of operations [in the] Western Pacific, Indian Ocean, European waters including the Mediterranean Sea and the Baltic Sea.”

waters off Somalia since December 2008 via a succession of more than 40 rotationally deployed naval escort task forces.

Current or Potential Bases Outside China

China's distant naval operations are supported in part by China's military base in Djibouti, which China officially opened in August 2017 as its first overseas military base.

In December 2021, it was reported that China may be seeking to establish a military (including naval) base at a port in Equatorial Guinea, a country located on the Atlantic coast of Africa—a location that could enhance China's ability to

conduct naval operations in the Atlantic.

A June 8, 2022, press report stated: "Cambodian and Chinese officials broke ground on a Beijing-funded expansion of Ream Naval Base on [June 8], using the occasion to again reject reports the site will be used by China's military." A June 6, 2022, press report stated:

"China is secretly building a naval facility in Cambodia for the exclusive use of its military, with both countries denying that is the case and taking extraordinary measures to conceal the operation, Western officials said. The military presence will be on the northern portion of Cambodia's Ream Naval Base on the Gulf of Thailand...."

"The Wall Street Journal reported in 2019 that China had signed a secret agreement to allow its military to use the base, citing U.S. and allied officials familiar with the matter...."

"Over the weekend... a Chinese official in Beijing confirmed to The Washington Post that 'a portion of the base' will be used by 'the Chinese military...."

"The two governments have taken pains to mask the presence of the Chinese military at Ream, the official said...."

"The secrecy around the base appears to be driven primarily by Cambodian sensitivities and concern about a domestic backlash, the second official said."

A security agreement between China and the Solomon Islands that was announced by the Solomon Islands in April 2020 has led some observers to express concern that the agreement could eventually lead to, among other things, the establishment of a Chinese naval base in that country. The Prime Minister of the Solomon Islands ruled out that possibility, stating that it would "put our country and our people as targets for potential military strikes."

Based on the US Congressional Research Service Report on China Naval Modernisation, Nov 2022

Notional Rendering of Possible Type 076 Amphibious Assault Ship



NIDS China Security Report 2022

Assessment of the PLA's Joint Operations Capabilities

Sugiura Yasuyuki

Evolution of the PLA's Joint Operations Concept

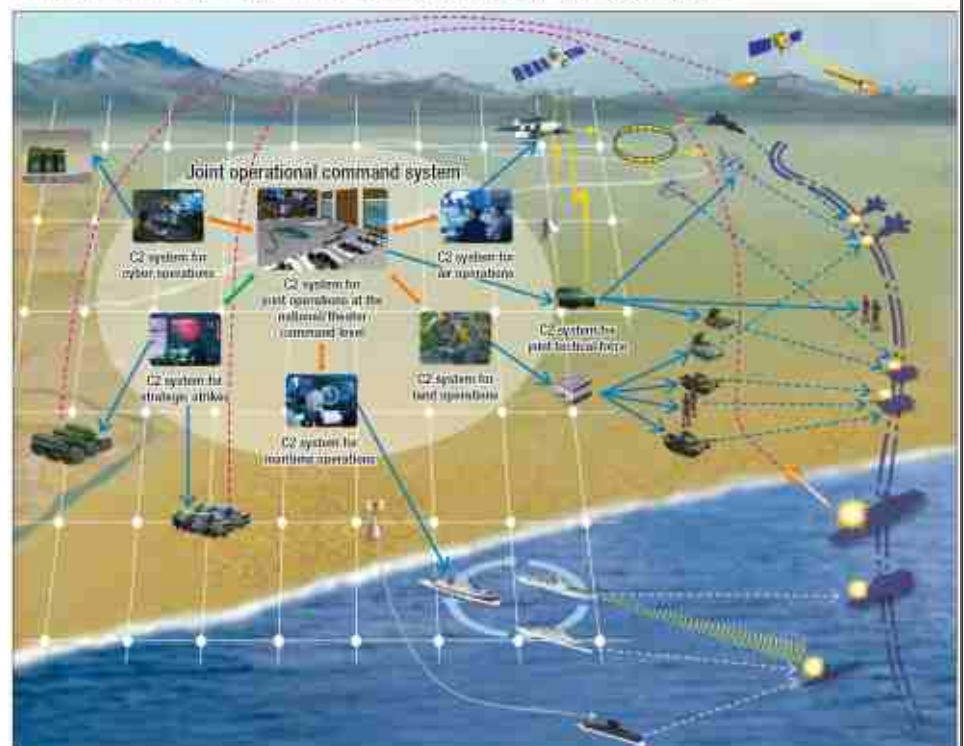
Based on the outcome of the Gulf War, the PLA started researching joint operations in earnest with informatized warfare in mind. From the mid-2000s, the PLA advocated the IJO concept and "Information System-Based System of Systems Operational Capability," and presented a joint operations concept that included traditional security domains (land, sea, and air) and new security domains (such as space, cyber electromagnetic, and cognitive domain). Meanwhile, during the Hu Jintao regime, the PLA's informatization was still in the initial stage. Therefore, the PLA set forth that, for the time being, the feasible joint operations were "joint operations under the conditions of informationization," which was based on the military doctrine of "local wars under the conditions of informationization." The joint operations capabilities of the PLA had not necessarily reached a sufficient level in the Hu Jintao era.

The Xi Jinping leadership established "informationized local wars" as a military doctrine. Under this doctrine, the Xi leadership undertook large-scale military reforms in order to strengthen joint operations capabilities based on the IJO concept and "Information System-Based System of Systems Operational Capability."

In October 2017, at the 19th National Congress of the Chinese Communist Party, Xi advocated the new concepts of "Joint Operations Capability Based on Network Information Systems" and "All-Domain Operations Capability" in order to deepen the IJO concept. The implementation of precision, stealth, and unmanned operations, as well as the gaining of information dominance, are positioned at the core of these concepts, putting more pronounced emphasis on new security domains.

With "intelligentized warfare" proposed from 2019, the PLA is conducting ongoing research on new joint operations concepts,

Conceptual Image of the PLA's IJO during the Xi Jinping Regime



→ The C2 system for strategic strikes concerns the operation of nuclear assets and conventional warhead systems used for strategic targets, such as DF-21D, and is therefore considered to be under the command of the C2 system at the national level, not the theater command level.

Source: Compiled based on 蓝羽石、毛永庆、黄强 [Lan Yushi, Mao Yongqing, and Huang Qiang] et al., eds., 联合作战指挥控制系统 [Joint Operations Command and Control System] (Beijing: 国防工业出版社 [National Defense Industry Press], 2019), p. 12.

such as "Multi-Domain Integrated Joint Operations" and "Joint Operations under the Conditions of Intelligentization." These discussions include the possibility of further PLA reforms, such as the establishment of new military services and the implementation of bolder military reforms.

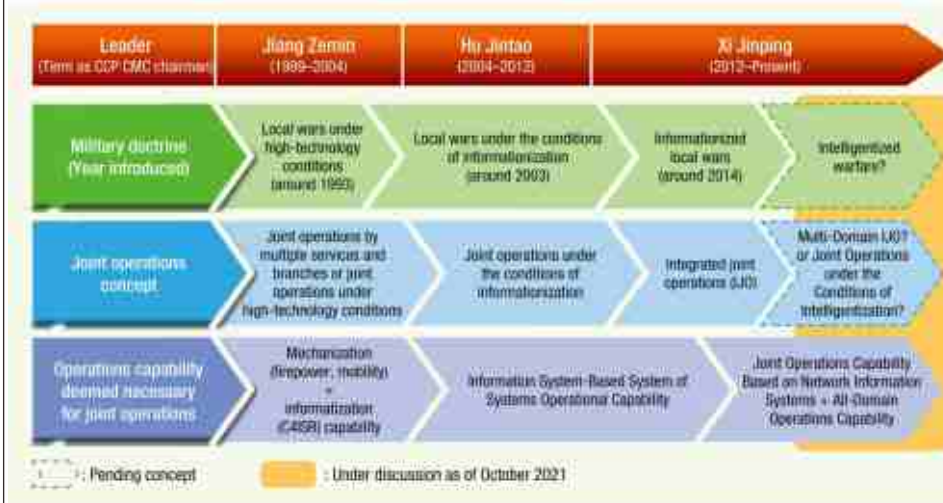
The Reformed PLA's Joint Operations Structure

The PLA carried out large-scale military reforms from the end of 2015 to 2016. The

reforms were wide-ranging and included:

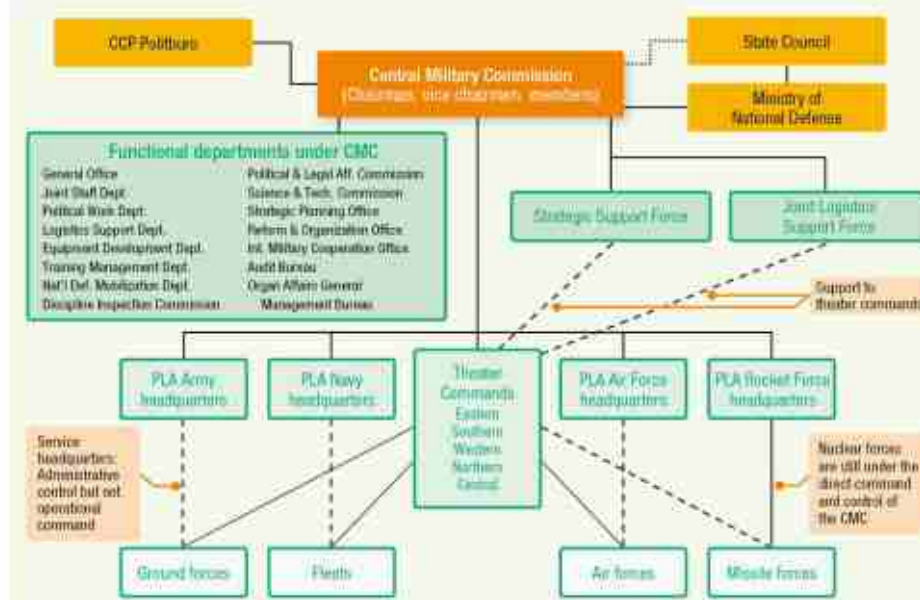
(1) the dissolution of four general departments and the launch of the multi-department system of the Central Military Commission (CMC); (2) the abolition of the seven military regions (MRs) and the establishment of five theater commands (TCs); (3) the creation of the PLA Army headquarters; (4) the upgrading of the PLA Second Artillery Corps to the PLA Rocket Force and the launch of the PLA Strategic Support Force and the PLA Joint Logistics Support Force; and (5) the

Conceptual Diagram of the Evolution of the PLA's Joint Operations Concept



Source: Compiled by the author.

PLA Organization Chart: After the Military Reforms



Source: Compiled based on Joel Wuthnow and Phillip C. Saunders, "Chairman Xi Remakes the PLA," in Phillip C. Saunders et al., eds., *Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms* (Washington D.C.: National Defense University Press, 2019), p. 6.

expansion of the PLA Navy Marine Corps.

The PLA reforms clarified the distinction between the operational chain of command (CMC-TC headquarters-operational units) and the administrative chain of command (CMC-service headquarters-operational units), based on the policy of "the CMC performs general management, the theaters are mainly in charge of operations, and the services are mainly in charge of force building" [junwei guanzong, ???; zhanqu zhuzhan, ???; junzhong zhujian, ???]. Under this policy, TCs were described as "the only supreme joint operations command organization in their

respective strategic directions." The TCs have greater power and command and control (C2) authority than the MRs before the PLA reforms and have gained in importance.

As part of the PLA reforms, the C2 authority of the People's Armed Police (PAP) was centralized in the CMC, and the China Coast Guard (CCG) was placed under the PAP, creating the new CMC-PAP-CCG maritime border security management system.

Enforcing the CMC chairman responsibility system strengthened Xi Jinping's C2 authority over the PLA. In addition, under Xi's leadership, loyalty to Xi and joint operations were

emphasized for selection of the PLA leadership. Nevertheless, PLA Army personnel still dominate the TC headquarters.

With the formation of the standing CMC Joint Operations Command Center and TC Joint Operations Command Organizations, the PLA established a joint operations command structure for "unification of peacetime structure and wartime structure" [Ping Zhan Yiti, ???]. In addition, the PLA has been developing C2 systems for joint operations, interconnecting them with the C2 systems of the military services and integrating them with the C2 systems of government organizations and the civilian sector.

The Transformation of Joint Operations Training and Talent Cultivation Programs through the PLA Reforms, and the Quest for Strengthening Party-Army Relations

In accordance with Xi Jinping's instruction to become an army that is "ready to fight and win wars," the PLA further strengthened its joint operations training after the PLA reforms, stepped up trainings in Taiwan's vicinity and in the South China Sea, and is enhancing its capabilities for commanding joint operations in China-Russia joint exercises. Through a series of joint operations trainings, the PLA has especially strengthened information sharing among the services and connecting their C2 systems. In addition, the PLA improved the quality of trainings by strengthening the training supervision structure.

In order to overcome the shortage of personnel for commanding joint operations, the PLA developed the "triad" System for training new types of military personnel, consisting of military institutional education, unit training practice, and military professional education (online education). The PLA National Defense University is the central academy for cultivating personnel for joint operations, and the joint operations personnel who have been trained at the university are assigned to operational units.

The PLA sought to strengthen the education and training structure by establishing and improving related documents, laws, and regulations. In terms of training, the PLA updated the "Military Training Regulations" and the "Military Training Outline" and enacted the "Trial Guidelines on PLA Joint Operations." In terms of education, it enacted the "Military Education Policy in the New Era," the "Trial Regulations on the Education in Military Academies," and the "Trial Regulations on Military Professional Education for Armed Forces."

As the PLA strengthens its joint operations structure, some scholars note that the traditional system for maintaining Party-Army relations will

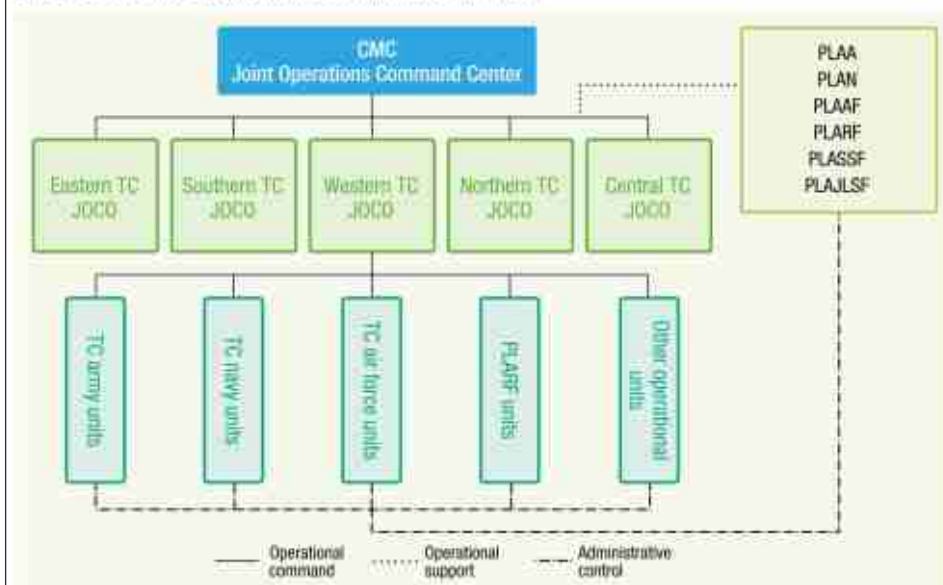
Newly Established Five Theater Commands



Notes: 1. 📍 Theater Command headquarters 🏢 Theater Army headquarters ⚓ Theater Navy headquarters
 2. Theater boundaries have not been officially announced. The above map was created based on U.S. Department of Defense reports, media reports, etc.

Source: Compiled based on Ministry of Defense of Japan, *Defense of Japan 2021* (Tokyo: Ministry of Defense of Japan, 2021), p. 66.

The PLA's Joint Operations Command Structure



Source: Compiled based on 刘伟 [Liu Wei], ed., 战区联合作战指挥 [Theater Command Joint Operations Command] (Beijing: 国防大学出版社 [NDU Press], 2016), p. 340.

become a setback. To address this, the PLA seeks the coexistence of the IJO concept and the maintenance and strengthening of Party-Army relations by: (1) enforcing the "system of division of the leader's responsibilities under the unified collective leadership of the Party committee"; (2) focusing on military expertise and scientific and technological knowledge in the selection and cultivation of political officers; and (3) emphasizing

the "Three Warfares" and promoting informatization in wartime political work.

Internal Structure of Main Command Post of TC Joint Operations Command

The Commanding officers in the TC JOCO (commander and political commissars) are:

- Intelligence Center
- Communication Center

- C2 Center (Info Warfare, AD and Special Ops Centres)
- Military Affairs & Mobilization Center
- Political Work Center
- Logistic and Equipment Center
- Command Support Center

Conclusion

Since the 1990s, the PLA has advocated IJO, a concept with broad applicability, in order to adapt flexibly to the developments in U.S. military theories and science and technology. The PLA sought to deepen the IJO concept by pursuing uniqueness, combining tradition (such as "Three Warfares," military-civil fusion, and maintenance and strengthening of Party-Army relations) and innovations (such as emphasis on long-range precision attack capability, shift to new security domains, and intelligentized warfare).

Under the strong initiative of Xi Jinping, the PLA reforms developed a joint operations structure that can realize the IJO concept. In line with this, the PLA evolved its joint operations training and personnel cultivation programs and aimed to reconcile the effective execution of the IJO concept and the maintenance and strengthening of Party-Army relations.

In the PLA reforms, the PLA accomplished many achievements in deepening its joint operations. Meanwhile, there still remain numerous challenges even after the reforms, such as: (1) coordination of authority and roles among the CMC, TCs, and services; (2) insufficient awareness of joint operations and service parochialism; (3) the formalism of joint operations training and coordination between the joint operations training led by the TCs and the training of the services and branches; (4) difficulties with recruiting, cultivating, and retaining personnel skilled in science and technology; and (5) the nature of command authority and capability of political commissars. Overcoming these challenges is expected to take time.

The timetable for the PLA's modernization sets 2027, 2035, and 2050 as milestone years. In these years, it will be important to estimate the joint operations capabilities of the PLA from multiple aspects, paying attention not only to the increase in defense spending, introduction of new equipment, and statements and actions directed at other countries, but also to the PLA's joint operations concept, military reforms and the formation of an organizational culture, qualitative improvements in education and training and personnel, and Party-Army relations.

Based on the NIDS, Japan, China Security Report 2022

CHINA

China's State Council's Seminar Document (Part 1) China's Next-Gen Artificial Intelligence Development Plan

Maj Gen Deepak K Mehta

Introduction

On July 20, China's State Council issued a seminal document, entitled "A Next Generation Artificial Intelligence Development Plan." This important aspirational document sets out a top-level design blueprint charting the country's approach to developing artificial intelligence (AI) technology and applications, setting broad goals up to 2030. This is a translated extract.

The rapid development of artificial intelligence (AI) will profoundly change human society and life and change the world. To seize the major strategic opportunity for the development of AI, to build China's first-mover advantage in the development of AI, to accelerate the construction of an innovative nation and global power in science and technology, in accordance with the requirements of the CCP Central Committee and the State Council, this plan has been formulated.

I. The Strategic Situation

The development of AI has entered a new stage. After sixty years of evolution, especially in mobile Internet, big data, supercomputing, sensor networks, brain science, and other new theories and new technologies, under the joint

Editor's Note

China has made significant advancements in the use of artificial intelligence (AI) for military applications in recent years. This includes the development of autonomous weapons systems, such as drones and unmanned ground vehicles, as well as the integration of AI into existing weapons systems to enhance their capabilities. China has also invested heavily in research and development in areas such as computer vision and natural language processing, which have potential military applications. Additionally, China has been building a large and sophisticated military-civil fusion system which allows for the development of dual-use technologies that can be used for both civilian and military purposes.

This article is based on a translation of a seminal document "A Next Generation Artificial Intelligence Development Plan" issued by the China's State Council on 20 July 2022.

impetus of powerful demands of economic and social development, AI's development has

accelerated, displaying deep learning, cross-domain integration, man-machine collaboration, the opening of swarm intelligence, autonomous control, and other new characteristics. Big data-driven cognitive learning, cross-media collaborative processing, and man-machine collaboration-strengthened intelligence, swarm integrated intelligence, and autonomous intelligent systems have become the focus of the development of AI. The results of brain science research inspired human-like intelligence that awaits action; the trends involving the chips, hardware, and platform have become apparent; the development of AI has entered into a new stage. At present, the development a new generation of AI and related disciplines, theoretical modeling, technological innovation, hardware and software upgrades, etc., all advance, provoking chain-style breakthroughs, promoting the acceleration of the elevation of economic and social domains from digitization and networkization to intelligentization.

AI has become a new focus of international competition. AI is a strategic technology that will lead in the future; the world's major developed countries are taking the development of AI as a major strategy to enhance national competitiveness and protect national security; intensifying the introduction of plans and strategies for this core technology, top talent, standards and regulations, etc.; and trying to seize the initiative in the new round of international science and technology competition. At present, China's situation in national security and international competition is more complex, and [China] must, looking at the world, take the development of AI to the national strategic level with systemic layout, take the initiative in planning, firmly seize the strategic initiative in the new stage of international competition in AI development, to create new competitive advantage, opening up the development of new space, and effectively protecting national

Chinese National Team for AI



Red boxes added to designate those companies placed on the U.S. Commerce Department's Bureau of Industry and Security Entity List.
Source: Benjamin Larsen, "Drafting China's National AI Team for Governance," New America (blog), November 18, 2021, <https://www.newamerica.org/cybersecurity-initiative/stgchina/blog/drafting-chinas-national-ai-team-governance/>.

security.

AI has become a new engine of economic development. AI has become the core driving force for a new round of industrial transformation, [which] will advance the release of the huge energy stored from the previous scientific and technological revolution and industrial transformation, and create a new powerful engine, reconstructing production, distribution, exchange, consumption, etc., links in economic activities; with new demands taking shape from the macro to the micro within each domain of intelligentization; with the birth of new technologies, new products, new industries, new formats, new models; triggering significant changes in economic structure, profound changes in human modes of production, lifestyle, and thinking; and a whole leap of achieving social productivity.

AI brings new opportunities for social construction. China is currently in the decisive stage of comprehensively constructing a moderately prosperous society. The challenges of population aging, environmental constraints, etc., remain serious. The widespread use of AI in education, medical care, pensions, environmental protection, urban operations, judicial services, and other fields will greatly improve the level of precision in public services, comprehensively enhancing the people's quality of life. AI technologies can accurately sense, forecast, and provide early warning of major situations for infrastructure facilities and social security operations; grasp group cognition and psychological changes in a timely manner; and take the initiative in decision-making and reactions-which will significantly elevate the capability and level of social governance, playing an irreplaceable role in effectively maintaining social stability.

The uncertainties in the development of AI create new challenges. AI is a disruptive technology with widespread influence that may cause: transformation of employment structures; impact on legal and social theories; violations of personal privacy; challenges in international relations and norms; and other problems. It will have far-reaching effects on the management of government, economic security, and social stability, as well as global governance. While vigorously developing AI, we must attach great importance to the potential safety risks and challenges, strengthen the forward-looking prevention and guidance on restraint, minimize risk, and ensure the safe, reliable, and controllable development of AI.

China possesses a favorable foundation for the development of AI. The nation has: deployed the National Key Research and Development Plan's key special projects, such

Strengths of China	Weaknesses of China
• Strong government support for AI • Robotics and automation • Supercomputers • Thriving research communities and AI innovation zones • Adoption across industries with AI+X concept • Focused on patenting new innovations • Fast-growing AI research base • Vast market and urban population • Access to and collection of data	• Attracting and retaining top AI talent • Semiconductor fabrication • Government-driven industries • Private venture capital declining • Dependence on international supply chains and open-source platforms, e.g. Github • Metrics-driven AI industry may value quantity over quality • Lack of diversity in AI workforce • Brain drain as top talent pursues graduate school in United States
Opportunities for United States	Threats to United States
• Increase international AI investments to capitalize on innovations outside United States • Untapped industrial and commercial areas for AI applications • Large network of allies and partners prefer U.S. technology • Leverage defense research to stimulate AI crossover to other sectors • Control access to critical supply chains and open-source systems upon which China relies	• Increasingly restrictive visa policies for students and researchers • Culture of open sharing for code and algorithms • Expanding employment opportunities and incentives for AI researchers in China • Chinese technology pricing undercuts U.S. competitiveness internationally • China publishing more academic papers in Mandarin limits two-way knowledge exchange

SWOT Analyses of competition between China and USA in AI

as intelligent manufacturing; issued and implemented the "Internet +" and AI Three-Year Activities and Implementation Program, releasing a series of measures from science and technology research and development; and promoted applications and industrial development, and other aspects. As a result of many years of continuous accumulation, China has achieved important progress in the field of AI, with the number of international scientific and technology papers published and the number of inventions patented ranked second in the world, while achieving important breakthroughs in certain domains of core crucial technologies. Leading the world in voice recognition and visual recognition technologies; initially possessing the capability for leapfrog development in adaptive autonomous learning, intuitive sensing, comprehensive reasoning, hybrid intelligence, and swarm intelligence, etc.; with Chinese information processing, intelligent monitoring, biometric identification, industrial robots, service robots, and unmanned driving gradually entering practical application; AI innovation and entrepreneurship have become increasingly active, and a number of leading enterprises have accelerated their growth, receiving widespread concern and recognition internationally. Accelerate the accumulation of technological capabilities and massive data resources, the organization integration of both the huge demand for applications and an open market environment, which together constitute China's unique advantage in AI development.

At the same time, we must also clearly see

that there is still a gap between China's overall level of development of AI relative to that of developed countries-lacking major original results in the basic theory, core algorithms, key equipment, high-end chips, major products and systems, foundational materials, components, software and interfaces, etc. Scientific research institutions and enterprises do not yet possess international influence upon ecological cycles and supply chain, lacking a systematic research and development layout; cutting-edge talent for AI is far from meeting demand. Adapting to the development of AI requires the urgent improvement of basic infrastructure, policies and regulations, and standards systems.

Facing a new situation and new demands, we must take the initiative to pursue and adapt to change, firmly seize the major historic opportunity for the development of AI, stick closely to development, study and evaluate the general trends, take the initiative to plan, grasp the direction, seize the opportunity, lead the world in new trends in the development of AI, serve economic and social development, and support national security, promoting the overall elevation of the nation's competitiveness and leapfrog development.

II. The Overall Requirements

(1) The Basic Principles

Technology-Led. Grasp the global development trend of AI, highlight the deployment of forward-looking research and development, explore the layout in key frontier domains, long-term support, and strive to achieve transformational and disruptive

breakthroughs in theory, methods, tools, and systems; comprehensively enhance original innovation capability in AI, accelerate the construction of a first-mover advantage, to achieve high-end leading development.

Systems Layout. According to the different characteristics of foundational research, technological research and development, industrial development, and commercial applications, formulate a targeted systems development strategy. Fully give play to the advantages of the socialist system to concentrate forces to do major undertakings, promote the planning and layout of projects, bases, and a talent pool, organically link already-deployed major projects and new missions, continue current urgent needs and long-term development echelons, construct innovation capacity, create a collaborative force for institutional reforms and the policy environment.

Market-Dominant. Follow the rules of the market, remain oriented toward application, highlight companies' choices on the technological line and primary role in the development of commercial product standards, accelerate the commercialization of AI technology and results, and create a competitive advantage. Grasp well the division of labor between government and the market, better take advantage of the government in planning and guidance, policy support, security and guarding, market regulation, environmental construction, the formulation of ethical regulations, etc.

Open-Source and Open. Advocate the concept of open-source sharing, and promote the concept of industry, academia, research, and production units each innovating and in principal pursuing joint innovation and sharing. Follow the coordinated development law for economic and national defense construction; promote two-way conversion and application for military and civilian scientific and technological achievements and co-construction and sharing of military and civilian innovation resources; form an all-element, multi-domain, highly efficient new pattern of civil-military integration. Actively participate in global research and development and management of AI, and optimize the allocation of innovative resources on a global scale.

(2) Strategic Objectives

These are divided into the following three steps:

First, by 2020, the overall technology and application of AI will be in step with globally advanced levels, the AI industry will have become a new important economic growth point, and AI technology applications will have

“[By 2025] China will have established a number of world-leading AI technology innovation and personnel training centers”

become a new way to improve people's livelihoods, strongly supporting [China's] entrance into the ranks of innovative nations and comprehensively achieving the struggle toward the goal of a moderately prosperous society.

- By 2020 China will have achieved important progress in a new generation of AI theories and technologies. It will have actualized important progress in big data intelligence, cross-medium intelligence, swarm intelligence, hybrid enhanced intelligence, and autonomous intelligence systems, and will have achieved important progress in other foundational theories and core technologies; the country will have achieved iconic advances in AI models and methods, core devices, high-end equipment, and foundational software.

- The AI industry's competitiveness will have entered the first echelon internationally. China will have established initial AI technology standards, service systems, and industrial ecological system chains. It will have cultivated a number of the world's leading AI backbone enterprises, with the scale of AI's core industry exceeding 150 billion RMB, and exceeding 1 trillion RMB as driven by the scale of related industries.

- The AI development environment will be further optimized, opening up new applications in important domains, gathering a number of high-level personnel and innovation teams, and initially establishing AI ethical norms, policies, and regulations in some areas.

Second, by 2025, China will achieve major breakthroughs in basic theories for AI, such that some technologies and applications achieve a world-leading level and AI becomes the main driving force for China's industrial upgrading and economic transformation.

- By 2025, a new generation of AI theory and technology system will be initially established, as AI with autonomous learning ability achieves breakthroughs in many areas to obtain leading research results.

- The AI industry will enter into the global high-end value chain. This new-generation AI will be widely used in intelligent manufacturing, intelligent medicine, intelligent city, intelligent agriculture, national

defense construction, and other fields, while the scale of AI's core industry will be more than 400 billion RMB, and the scale of related industries will exceed 5 trillion RMB.

- By 2025 China will have seen the initial establishment of AI laws and regulations, ethical norms and policy systems, and the formation of AI security assessment and control capabilities.

Third, by 2030, China's AI theories, technologies, and applications should achieve world-leading levels, making China the world's primary AI innovation center, achieving visible results in intelligent economy and intelligent society applications, and laying an important foundation for becoming a leading innovation-style nation and an economic power.

- China will have formed a more mature new-generation AI theory and technology system. The country will achieve major breakthroughs in brain-inspired intelligence, autonomous intelligence, hybrid intelligence, swarm intelligence, and other areas, having important impact in the domain of international AI research and occupying the commanding heights of AI technology.

- AI industry competitiveness will reach the world-leading level. AI should be expansively deepened and greatly expanded into production and livelihood, social governance, national defense construction, and in all aspects of applications, will become an expansive core technology for key systems, support platforms, and the intelligent application of a complete industrial chain and high-end industrial clusters, with AI core industry scale exceeding 1 trillion RMB, and with the scale of related industries exceeding 10 trillion RMB.

- China will have established a number of world-leading AI technology innovation and personnel training centers (or bases), and will have constructed more comprehensive AI laws and regulations, and an ethical norms and policy system.

(3) Overall Deployment

The development of AI is a complex systemic project related to the overall situation, that must be arranged in accordance with "build one system, grasp the two attributes, adhere to the trinity, and strengthen the four supports" to form a strategic path for the healthy and sustainable development of AI.

Construct an open and cooperative AI technology innovation system. Target the weak foundation in original theories, and the key difficulties and deficiencies in major products and systems. Establish foundational theories

contd on page 44

US Defense Intelligence Agency Forms 'China Mission Group'

By Colin Demarest

WASHINGTON — The Defense Intelligence Agency is pulling together a group of analysts and experts to monitor competition with China, a world power Pentagon officials consider the leading threat to U.S. national security.

John Kirchhofer, the DIA's chief of staff, on Nov. 29 said his agency, which produces, analyzes and disseminates military intelligence, established a "China mission group" that will reach full operational capacity early next year.

"It's as simple as this: We created a box and we called it China," he said during a livestreamed Intelligence and National Security Alliance event. "If you are in DIA and you are working China, you're in that box."

Whereas the CIA is focused on providing intelligence of all kinds to the president, the DIA is the principal source of foreign intel for combat endeavors. The new mission group will become the agency's repository for China knowledge and knowhow, meaning insiders including Director Lt. Gen. Scott Berrier as well as outsiders will know where to turn "for whatever deep expertise" is needed, according to Kirchhofer, the third-ranking officer.

"This is us integrating to the maximum extent possible on an existential threat to the long-term success of the United States," he said.

After decades of fighting in the Middle East and investment in counterterrorism and technologies related to smaller-scale conflict, the U.S. is now focusing on China and the Indo-Pacific, a region home to some of the world's largest militaries, ports and populations.

Defense officials in Washington are warning about the dangers posed by



Chinese President Xi Jinping waves as he leaves after speaking at a press event at The Great Hall of People on Oct. 23, 2022, in Beijing, China.

Beijing, and have rallied allies and partners to counteract its global ambitions. The annual China Military Power Report sent to Congress this week notes that China is the only country with the will and military capacity to eventually challenge what it called the U.S.-led "world order," Defense News reported.

While much of the intelligence community "has been heavily focused in Europe, and that goes back decades," Kirchhofer said, "that's not necessarily where this long-term threat is coming from, even with Russia being as belligerent as they are today."

DIA plans to move more resources —

including people, communications and information technology — to the Pacific. Talks to extend the military intelligence agency's footprint are already underway with friendly nations. The Army, Navy and Air Force are taking a similar tack.

The shift will help "with resiliency in the event of a crisis and some needed redundancy in the event of worst-case scenarios," according to Kirchhofer.

"It's very exciting, and I think that is putting our money where our mouth is," he said. "It really shows our long-term commitment to U.S. Indo-Pacific Command and the potential fight against China."

China Displays Air-launched Hypersonic Missile At Air Show

By Mike Yeo

MELBOURNE, Australia — China has unveiled air-launched versions of its ship-based hypersonic missile and a standoff cruise missile at the Zhuhai Airshow, in the southern Guangdong province near Taiwan in November.

A pair of air-launched hypersonic missiles carried under the wings of a Xi'an H-6K bomber were at the show, which ran 8 to 13 November.

The mock-ups carried the stenciling "2PZD-21." Chinese media outlets have referred to them as air-launched versions of the YJ-21 anti-ship hypersonic missile carried onboard China's Type 055 cruisers.

China's state media showed a test-launch of the YJ-21 from onboard a cruiser in April. The air-launched version differs from its ship-launched counterpart in that it lacks the booster section needed to accelerate the missile during its shipboard vertical launch sequence.

The other notable weapon on display at the show, held at the Zhuhai Jinwan Airport, was the AKF-98 standoff cruise missile. This appears to be a jet-powered cruise missile in the class of the Lockheed Martin AGM-158 JASSM or European Storm Shadow/SCALP.

The Chinese missile on display was fitted on an ungraded Xi'an JH-7A2 fighter-bomber and features foldout wings that deploy after launch. The shape of the weapon's body indicates that an effort was made to reduce the radar cross-section of



Sukhoi Su-35 fighters with the Chinese People's Liberation Army Air Force fly near the wing of a Xi'an H-6K bomber.

the missile, similar to its Western equivalents.

It is unknown if the weapons are already in service or still in development, although the fact that the H-6K at the air show flew into the airport carrying the missile mock-ups suggests that carriage tests were completed.

Also on display is a laser-guided bomb that was shown at the 2018 Zhuhai air show.

The 1,000-kilogram (2,205-pound) bomb, previously displayed as the YL-5, is now designated as the YJ-1000-1, with "YJ" being the abbreviation for YunJian, which translates to "Cloud Sword."

The weapon is fitted with a high-explosive penetrator warhead and was seen carried on the JH-7A2 at the air show, although the guided bomb can also be carried by the Shenyang J-16 multirole fighter.

Pentagon Sees No Imminent Threat To Taiwan From Chinese Buildup

By Meghann Myers and Joe Gould

A new report from the Pentagon details China's more provocative and aggressive actions toward Taiwan, but Defense Department officials say those actions do not mean an invasion will happen soon.

The annual China Military Power Report sent to Congress in last week November noted that the country's military overhaul is continuing apace, including the modernization of its capabilities and the expansion of its nuclear arsenal. It comes amid heightened tension between China

and Taiwan, and as President Joe Biden is expected to meet with Chinese President Xi Jinping in the coming months.

"I don't see any kind of imminent indications of an invasion," a senior defense official told reporters Monday. "We're definitely very focused on this level of more

intimidating and coercive behavior, and watching closely to see how things unfold.”

The report reiterates that China is the only country with the will and the military capacity, while still getting up to speed, to challenge what it describes as the U.S.-led “world order.”

The country has set 2049 as its goal for achieving a “world-class” military that could presumably rival U.S. capabilities, to be achieved through weapons modernization, expanded military basing and advanced warfare capabilities, to include information operations.

China is also getting into the multidomain game, according to the report, dubbing their “new core operational concept” with the eerily familiar “MultiDomain Precision Warfare.”

Like the U.S. doctrine, this approach involves advanced networking capabilities. Specifically, it “incorporates advances in big data and artificial intelligence to rapidly identify key vulnerabilities in the U.S. operational system and then combine joint forces across domains to launch precision strikes against those vulnerabilities,” the report reads.

Much of the focus on modernization is aimed at Taiwan.

Taiwan is squarely in China’s crosshairs, with an increase in 2021 of activity in the Taiwan strait, “to include increased flights into Taiwan’s self-declared Air Defense Identification Zone (ADIZ) and conducting island seizure exercises,” the report found.

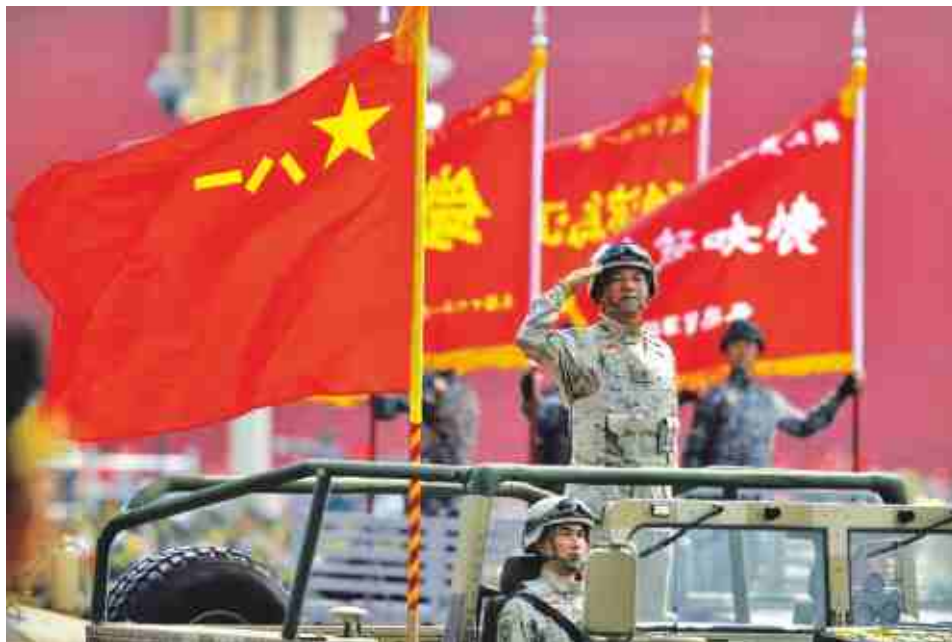
China’s goal of modernization by 2027, to include “mechanization, informatization and intelligentization,” would make its military “more credible” in its efforts to bring Taiwan under its control.

Beyond Taiwan, China is also likely looking into developing more overseas bases, beyond its current hub in Djibouti.

“The PRC has likely considered Cambodia, Myanmar, Thailand, Singapore, Indonesia, Pakistan, Sri Lanka, United Arab Emirates, Kenya, Equatorial Guinea, Seychelles, Tanzania, Angola, and Tajikistan, among other places, as locations for PLA military logistics facilities,” according to the report.

Nuclear weapons and beyond

China is continuing its accelerated nuclear expansion and has an estimated stockpile of more than 400 nuclear warheads — which still number fewer than America’s 3,750 nuclear weapons. At this pace, the third-largest nuclear armed power is likely to field a stockpile of 1,500 warheads by 2035, its target for “basically complete modernization” of its defense



An officer salutes during a parade to commemorate the 70th anniversary of the founding of Communist China in Beijing, Tuesday, Oct. 1, 2019.

forces, the report said.

The country had kept its nuclear arsenal in the low hundreds for years, but last year’s report said it was on track to have at least 1,000 by 2030, essentially tripling its arsenal within a decade. It’s also building a land-sea-air triad of delivery vehicles similar to those of the U.S. and Russia — including the H-6N air-to-air refuelable bomber, which it unveiled in 2019.

The U.S. acknowledged this month that China has fielding a new, intercontinental ballistic missile on six of its nuclear-powered submarines, meant to threaten the continental U.S. The senior defense official said Monday that China’s Jin-class submarines are on patrol with the JL-3 missiles, which let them hit the U.S. without traveling as far from protected Chinese coasts.

Pentagon officials said that the overall ramp-up, as Beijing resists U.S. efforts to draw it into arms control talks, suggests China may be moving away from its stated aim of having just enough nuclear weapons to maintain its national security.

“They’re going from what was often characterized as a minimum set of deterrence capabilities to one that’s much more sophisticated in scope and also larger in size. So they’re now kind of getting into the range of the middle nuclear powers here,” the official said.

The Biden administration is moving ahead with plans for a new bomber, the B-21 Raider, due to be unveiled next week.

It will be accompanied by the LGM-35A

Sentinel, also known as the Ground Based Strategic Deterrent, which will replace Washington’s aging Minuteman III intercontinental ballistic missiles. The Columbia-class ballistic missile submarine is due to come online by the end of the 2020s.

The administration’s defense strategy, released in October, voices concern that the U.S. will, for the first time, face “two major nuclear powers as strategic competitors and potential adversaries,” which will “create new stresses on stability and new challenges for deterrence, assurance, arms control, and risk reduction.”

Last year, China added three new ICBM silo fields for a total of at least 300 new silos, the new report said. China’s launch of roughly 135 ballistic missiles for testing and training last year, “was more than the rest of the world combined, excluding ballistic missile employment in conflict zones,” the report said.

The report also flags Beijing’s test of a new hypersonic weapon system in 2021, “building on previous progress in hypersonic weapon development.” Pentagon officials have acknowledged China’s test in July 2021 of a hypersonic glide vehicle and fractional orbital bombardment system — which achieved the greatest distance flown, 40,000 kilometers, and longest flight time of any Chinese test.

As with last year’s report, the Pentagon acknowledged China’s fielding in 2020 of the DF-17 medium-range ballistic missile, equipped with a hypersonic glide vehicle designed to evade American missile

Mark Schiefelbein/AP

defenses. Citing open source reporting, the report said the weapon appears designed to “strike foreign military bases and fleets in the Western Pacific.”

For military modernization and attaining more credible military tools to annex Taiwan, China has set 2027, 2035 and

2049 as its milestone years. To that end, its air force is rapidly catching up with the west, with more realistic training and exercises but also air-to-air missiles and other air defenses, the defense official said.

In a sign of China's strides in domestic production, its J-10 and J-20 fighters are set

to switch to Chinese-made WS-10 engines by the end of 2021. The report forecasts that China's first domestically produced high-bypass turbofan, the WS-20, will “probably” replace Russian engines by the end of 2022 after entering flight tests for its heavy transport aircraft.

Can The U.S. Air Force Train New Pilots Without Planes?

Simulators set to replace jets as officials prepare to retire the T-1A Jayhawk

By Rachel S. Cohen

Airmen are gearing up for what could be the most consequential move in military pilot training since the Air Force was created in 1947: teaching students to fly without stepping foot in a real airplane.

The new program, known as “Air Mobility Fundamentals-Simulator,” is the Air Force's next step in a yearslong attempt to modernize pilot training without sacrificing quality. It's also an opportunity for the service to embrace more cost-effective technology and retire its 30-year-old fleet of T-1A Jayhawk trainer jets.

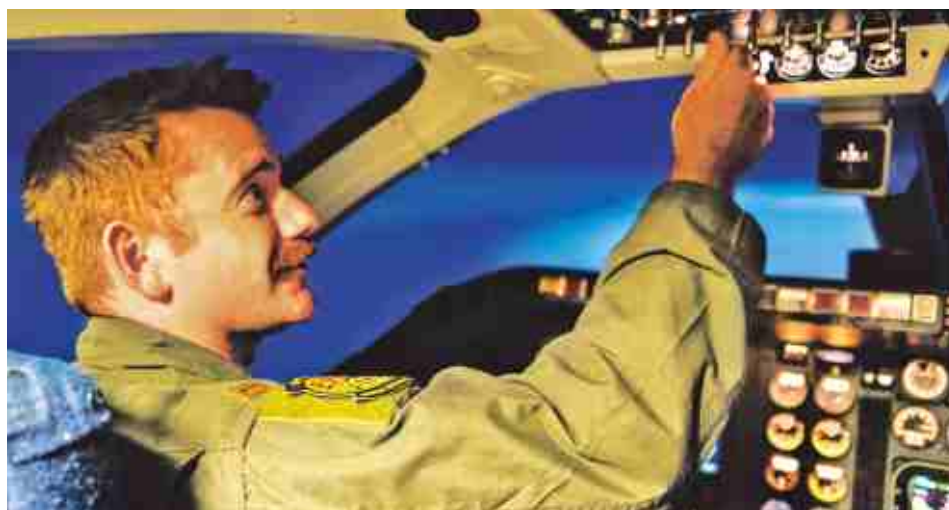
But experts warn that turning out experienced pilots is more complicated than trading an airworthy cockpit for a replica.

There's a lot of value to a simulator, but there's something fundamentally different when you're up in the thin air,” said Heather Penney, a retired Air National Guard fighter pilot who now researches defense policy at the Mitchell Institute for Aerospace Studies. “There's no do-overs, there's no resets.”

A new path

Here's how it works: The first military aircraft a new student touches is the T-6A Texan II, as part of the undergraduate pilot training curriculum. Earning pilot's wings in the T-6 takes about seven months, at which point a trainee is selected to continue on the fighter-bomber track or the mobility track.

About 900 students are picked for mobility-track pilot slots each year. Those airmen, who train to fly cargo and tanker aircraft as well as special operations and intelligence-gathering planes, typically spend about five months in the T-1 — an intermediate step toward their operational



2nd Lt. John Jacobson, 47th Flying Training Wing student pilot, straps into his seat and prepares for a simulated T-1 Jayhawk flight at Laughlin Air Force Base, Texas, in July 2021.

unit.

Those who pass the T-1 course then move on to learn about their assigned aircraft.

Members of the 3rd Flying Training Squadron walk to their T-1 Jayhawk aircraft at Northwest Arkansas Regional Airport, Aug. 26, 2018. Continuation training allows instructor pilots to maintain their proficiency and qualifications. (Tech. Sgt. Erik Cardenas/Air Force)

Members of the 3rd Flying Training Squadron walk to their T-1A Jayhawk aircraft at Northwest Arkansas Regional Airport in August 2018. The 30-year-old fleet of Jayhawks is being retired. (Tech. Sgt. Erik Cardenas/Air Force)

Starting in January, the interim step — known as specialized undergraduate pilot training — will use only simulators to teach more advanced flight skills in 75 days. That

includes the current T-1 simulator and a newly designed, more generic virtual-reality cockpit from Redbird Flight Simulations.

Each undergraduate pilot training base will host eight Redbird systems and four legacy T-1 simulators, the Air Force said in September.

Vance Air Force Base, Oklahoma, got its first Redbird simulators in September. Columbus AFB, Mississippi, is slated to receive its sims by March 2023, and Laughlin AFB, Texas, expects its sims in July 2023.

Teaching would begin four to six months after systems are delivered. That means the redesigned course may not be fully implemented until early 2024.

Redbird's custom-built faux T-1 cockpit uses software designed by SAIC and Lockheed Martin to closely, but not exactly,

Airman 1st Class David Phaff/Air Force

replicate the experience of flying the Jaybird.

Though the view outside the “airplane” is virtual, cameras on a headset let students see their own hands while they manipulate buttons and knobs. That makes the experience more realistic and useful than trying to move fake hands around a screen.

Effective approach

Simulators can be very effective tools for teaching emergency procedures or scenarios that aren’t possible in the local area, said two military experts who spoke to Air Force Times. It lets students safely explore what the airplane’s software can do, and to practice potentially sensitive maneuvers out of public view.

And in systems that track where a pilot is looking or the order in which they hit certain buttons, sim technology can help grade their performance.

A new curriculum has been in the works for about a year.

“We started from the target back,” Col. Robert Moschella, who leads pilot training reform efforts at 19th Air Force, told Air Force Times in a recent interview. “We established what [skills and traits the Air Force] would be looking for. Then we built a syllabus using some of our new technology and what we’ve learned over the years.”

In particular, the course emphasizes how to use a flight management system, properly manage resources, fly without one engine, run autopilot and read takeoff and landing data, the Air Force said.

The Air Force vetted its plan in three small group trials at Joint Base San Antonio-Randolph, Texas. Judging by their performance later on in training, Moschella said there’s “no discernible difference” in quality compared to past students.

“I think we’re on the right track,” he said.

Airmen offered plenty of feedback so

the companies could make the new sims realistic enough to teach the skills they need, Harnagel said.

“It’s all in relatively the right spot,” he said. “We use aircraft hardware where it makes sense, and then we use off-the-shelf commercial stuff where it makes sense to help reduce costs.”

Whether a simulator effectively stands in for live flight depends on its level of fidelity, whether physical, visual or mental. And how close that needs to come to the real thing depends on what a course is trying to impart.

For instance, a full-motion system can demonstrate what it feels like to land a helicopter on an uneven surface, said Tim Marler, a military training and technology expert at the federally funded think tank Rand Corp. Virtual-reality goggles can’t replicate those physical qualities.

Cost considerations

But if the objective is to teach decision-making under stress without feeling a physical impact, a VR headset could be a good fit compared to a costly full-motion simulator.

Efficiency also matters.

“You wouldn’t want to figure out where all the knobs, buttons and controls are while you’re in the air,” Marler said. “That’s just a waste of fuel. You can do that looking at a static picture.”

The Air Force has ordered 20 Redbird systems so far, Harnagel said. The company’s bespoke cockpits typically cost \$300,000 to \$500,000, including flight software.

That’s a fraction of the price of more advanced sims with the technology to replicate G forces, for instance. Those can run tens of millions of dollars apiece, which may not always offer enough bang for the buck.

“Ten percent [more fidelity] costs an extra, let’s say, \$10 million,” Harnagel said. “There really is not a lot of benefit for somebody who’s a pilot already.”

Moving to a sim-only curriculum doesn’t necessarily mean the Air Force needs fewer instructors. It’s up to the experienced pilots to make sure students understand what they’re doing right in the sim, so they don’t accidentally adopt bad habits.

Once up and running, the new approach won’t drastically change instructors’ responsibilities because the skill set is largely the same, Moschella said. His team is working to “train the trainers” before the first batch of student pilots begin at Vance in January.

The Air Force declined to make an instructor pilot available to discuss their expectations for the new program.

Concerns remain

Simulator instructors can become creatures of habit, especially those who feel bored or overworked, Penney argued. That could shortchange students who don’t get enough variety in their lessons.

“They will have pet scenarios that they do every time,” she said. “They’ll set the same weather, they’ll send you to the same airport, they’ll have the same wind, they’ll do the scenario in the same order. ... Students can decode that quickly.”

That makes it even more important that students get airborne to practice under less-predictable conditions, including the possibility of a real crash.

“My main concern is, having talked with [Air Mobility Command boss Gen. Michael Minihan] and knowing that his vision for the future is” single-pilot missions, Penney said. “You’re going to have to find some way to absorb and experience these young kids before you can transition them to single-pilot ops.”

Here’s The New US Marine Corps Strategy For Training Future Troops

By Rachel S. Cohen

ORLANDO, Florida — The Marine Corps’ top officer in charge of training on November 15 outlined the service’s sweeping new strategy that promises to modernize how troops learn and ready them for a faster, more connected era of

combat.

The three-part plan looks to bolster the service’s occupational training, professional military education, unit-level training, advanced individual training and service-level exercises, said Lt. Gen. Kevin Liams, head of the Marine Corps’ Training and Education Command.

“While we have progressed all of these in the past couple of years, it’s time to take new steps,” he said during a panel of senior leaders at the annual Interservice/Industry Training, Simulation and Education Conference here. “Everything has to be about lethality and war-fighting, and then rigorous, repeatable standards.”

"Training and Education 2030?" is the latest of three blueprints that Marine Corps Commandant Gen. David Berger has drawn up for organizing, training and equipping the future force. Earlier strategies have focused on talent management and force design.

It comprises three overarching projects dubbed "Triumph," "Trident" and "Tripoli," Iiams said.

The first, "Triumph," is a directive to offer more options for personalized learning that Marines can do at their own pace.

Technology from iPads to cloud-based lesson libraries promise to transform military education for the long haul. Officials hope those tools are a key to retaining members who may otherwise have felt boxed in or overwhelmed by more regimented, classroom-based lessons.

Though not foolproof, proponents argue a digital-first approach can help fast learners move on sooner and allow slower learners to repeat lessons as needed.

"How do we put more instructors in the field that can instruct across all of these modalities?" Iiams said.

The second initiative, Project Trident, aims to more tightly integrate the processes and systems that the Navy and Marine Corps use to track and strike targets.

Military forces long have struggled to share data across a patchwork of hardware and software, leading to myriad efforts to resolve the problem like the Army's Project Overwatch and the Air Force's Advanced Battle Management System.

Cross-service communication issues loom particularly large as the Pentagon contemplates the prospect of a fast-paced war in the Pacific.

"How do you use multiple sets of precision munitions to close a kill web on



Recruits with Hotel Company, 2nd Recruit Training Battalion, conduct a patrol during Basic Warrior Training aboard Marine Corps Recruit Depot Parris Island, S.C., November 16, 2022. Recruits conduct patrols to utilize the hand and arm signals and formations they have learned during BWT.

an advanced adversary, peer-level threat?" Iiams said.

He continued: "We don't have those right now, but we need the curriculum and we need our current naval forces ... to train our future forces and our future Marines and sailors exactly how to do that."

The Marine Corps announced its third effort, dubbed "Project Tripoli," in April.

Tripoli is the latest iteration of a yearslong attempt to build a networked training system that lets troops "fight" together in the digital realm despite operating different simulators.

Marine Corps Times reported in May that an initial version of the service's Live Virtual Constructive Training Environment was almost ready to debut at Marine Corps Air Ground Combat Center, Twentynine

Palms, California.

Officials expect five Marine Corps installations to receive the technology by 2025, followed by the broader ability to connect to airmen, guardians, soldiers and sailors sometime in the future.

"We're not just training our individual Marines and our units, but we're training decision-makers with AI to the high end, so that when we do have the next fight ... that we're going to be ready, relevant and capable," Iiams said.

He envisions future Marines as resilient, "stand-in" forces who can infiltrate enemy territory to disrupt their activity from the start of a conflict.

But even as the mission evolves, he said, "the alchemy of what it takes to make a Marine cannot change."

How Israel Is Preparing The Next Generation Of Cyber Soldiers

By Seth J. Frantzman

BEERSHEBA, Israel — Israel's new cyber defense training school is set inside a high-tech park in the southern city of Beersheba. Opened in August, the modern campus is part of the J6 and Cyber Defense Directorate, and it's part of a broader move by the Israel Defense Forces to shift units south.

Defense News spoke with three senior officers at the training center to discuss

their goals and how cyberspace is changing how Israel's military functions. Capt. Noa Givner, who leads the school's department of data science, has served with the IDF for seven years; Maj. Noam Bright, head of the department of computer science, has served for 12 years; and Maj. I, chief of the department of cybersecurity, has served for 10 years. (The full name of Maj. I was not provided for security reasons.)

This interview was edited for length and

clarity.

What is the school's purpose?

Maj. Noam Bright: We are here in the school of data science of the J6 directorate, of the C4i [command, control communications and computers/cyber and intelligence] forces. What we are doing is taking 18 year old and making them special technology experts. What we do the best is training them in all the high-tech fields —

Lance Cpl. Blake A. Gonter/Marine Corps

from data center management to cloud-centered training to programming and being the best software engineers.

Our graduates go to all the technological units across the army—from the Air Force to the Navy and the Ground Forces—and here in the school we train more than 1,500 students a year. We don't focus on pre-knowledge, but on the way they think. There are exams to get into the school; if they think well, we take them to our school and we are responsible to train them well, and our graduates become entrepreneurs and end up in startups.

We moved here three months ago from Ramat Gan [in central Israel]. What we are doing here is not just changing the base and location but creating an ecosystem to empower this region and the children here to come to our school and have access to technological fields.

Capt. Noa Givner: They teach Python [a programming language], and we give them tools so they can train here and get a profession in high-tech fields and serve in technological units. There is also a program that trains soldiers on the spectrum [or those with autism].

Maj. I: Our goal is to provide opportunities to many social groups in Israel, not just in the Negev but also to promote women and others in society, and give them the opportunity to empower themselves in the army and outside of the service.

Bright: We have many special programs, such as a women's preparation course; 52% of our soldiers are women, and the head of the school is a woman.

Were these fields previously dominated by men?

Givner: Yes. But here in Basmach Maslul Alpha, [the name of the school in Hebrew], women are in charge. Out of five colonels, four are women. The next brigadier general of the tech division is a woman.

How has the demand for technology and this kind of training changed over the last decades?

Bright: The demand for tech in the army was less than we see now; we see a big increase, by three or four times than when I was recruited. It used to be four units' worth was recruited for technology, and now [we recruit for] 10 units.

Givner: People are going into the field to make decisions with data. They are serving now, and not just in the technological units; they have to help the army base decisions on data for the next battle or escalation. Now there are data analysts at the division level.



The interior of Israel's new cyber training center in Beersheba.

Maj. I: We don't go only by foot with tanks; we attack from the air and on networks, we attack using different fields. Cybersecurity entered the army [in a big way] five years ago to defend the networks.

Givner: The next battle and threat is on the net, such as with Iran.

Bright: The number [of soldiers we are training] has increased because the demand has grown. For instance the army nowadays is based on technology—whether operations or non-operations, from logistics to human resource management. This demand has grown a lot, especially in the last two to three years.

In terms of software and applications, is the army creating applications itself?

Maj. I: It's complicated. Some systems we buy, some we develop for our needs. And if we buy something, we adjust for the army's needs, and it is classified.

What about artificial intelligence and the five-year modernization plan Momentum?

Givner: We are planning for the future in the data department. In the next [several] years, the IDF will own an AI lab so it can bring in the future things [needed] in the army. [Artificial intelligence] needs to be more developed. We can see that AI systems can make good decisions, and not just for commanders. In the end, we are humans, and we can't make decisions like machines. It will help in the future combat field.

Bright: It's not just in the data sector. In programming, we train [soldiers] to make algorithms based on AI and neural

networks. We have exercises that deal with AI... to identify things from pictures.

Maj. I: The army started with programming and cyber and DevOps—and the data field is a new one. When you combine all of this, [it's] AI.

How would you characterize digitization in the IDF?

Maj. I: In the past, the Navy and the Air Force did not work together. Digitization is about cooperation and technological change. Thanks to the systems we built in tech units, they can work together and shorten the fire circle [closing the gap between sensor and shooter].

How do you train for launching cyberattacks against adversaries?

Bright: We can't speak about that.

How do you deal with an overreliance on technology? For example, units in the field might become dependent on certain applications.

Bright: It's not related to our school. You always have a plan B, and offline there are alternatives; people plan for not having a network.

Do you deal with unmanned systems?

Bright: We train people to know their algorithms, but it depends. With units, we train them on the practical aspect, not theory. It's 65% practical [training]. If a soldier goes to a program course, they go to learn bugs in code, for instance. We do a lot of trial and error.

Are most of the soldiers coming here

directly from high school?

Bright: Yes, but after this they can go to earn an academic degree while they serve.

Maj. I: In the last several years, the army understood it needs to move all the units to the Negev, and it created [a center for most of the J6 units]. We are creating many areas of cooperation between the army and Ben-Gurion University [in the same city as the training center], the municipality of Beersheba and the technological ecosystem here.

Givner: We collaborate with high-tech companies in the park here. They come to our students, and students get lectures about new technology.

We work with the Ministry of Education on the Bagrut [standardized exam for the end of high school]. We developed a new program for data science, not just computer science; now they have data science courses, and we bring teachers here to learn what students to better prepare for military service.

Is it difficult to join this training school?

Bright: We are open to all of Israel's society, not just those with previous knowledge. We've seen a 50% increase in demand to get into the training center, and the army understands the need for technology and has increased the number the army allows us to train during the year. We already doubled and tripled the space we have here.

Maj. I: And in a few months we will expand again.

Givner: We doubled all the courses — some from 20 to 60 students.

If there are more soldiers in technology units, what gaps are left over as a result in other army areas?

Bright: The army now knows to optimize where people go. In the past, the army may have had soldiers end up in positions that didn't fit them, and they could have been programmers. Now we are able to fit the position to soldiers in their service.

Givner: In the past, if you were allergic to gluten, you'd be excused from army service. Now we implement adjustments to recruit [those who might have been rejected in the past].

Do those who join this training program take a special test?

Givner: Yes, to filter out the right candidates.

Bright: It's very special ecosystem here. Last week, a U.S. two-star general was here and was fascinated by what we are doing and the way we teach, how we take 18 year olds to make them technological experts. [The general] wants us to go to California to teach them what we are doing here. They aren't do a programming course in five months; theirs is a year.

Editor's note: The IDF declined to name the U.S. two-star general.

Singapore Unveils New Cyber-focused Military Service

By Mike Yeo

MELBOURNE, Australia — Singapore has officially inaugurated its fourth military branch as it seeks to combat modern threats in the digital domain, as well as leverage emerging technologies in this domain.

The new Digital and Intelligence Service, or DIS, was unveiled in an Oct. 28 ceremony attended by President Halimah Yacob and Defence Minister Ng Eng Hen. The government announcement in March that it would create the new service.

Its first commanding officer is Brig. Gen. Lee Yi-Jin, who has held command appointments with infantry and artillery units and was previously the director of military intelligence for Singapore's command, control, communications, computers and intelligence community.

The DIS will more tightly integrate the Singaporean military's capabilities to deal with a range of security threats, including those from the digital domain. It includes a service headquarters, a joint intelligence directorate, a joint digital and C4 organization, and cyber staff departments.

The intel directorate will support Singaporean military decision-making and operations through research and analysis,

doctrines, standards, and best practices as well as the integration of intelligence and operations. The combined digital and C4 unit is tasked with steering Singapore's military into the digital age by developing a digital strategy, master plan and resource governance.

Meanwhile, the cyber staff will lead and coordinate cybersecurity across Singapore's defense sector, developing cyber defense strategies and policies as well as orchestrating capability development.

The DIS will also have four separate commands, plus a digital operations technology center. The four commands are tasked with joint intelligence, C4 cybersecurity, digital defense and training. The center is aimed at providing several capabilities to the entire military, equipping the country with a quick-response force to meet needs in the digital domain and developing a core of personnel skilled in data science and artificial intelligence.

The Defence Ministry said in an earlier news release that the DIS will focus on realizing the full potential of emerging digital technology in areas like cloud computing, data science and AI.

The country also plans to establish a dedicated cyber range to train personnel on simulated "cyber terrain," which includes

enterprise information systems and critical infrastructure systems. The range is also expected to host bilateral and multilateral exercises, bringing together militaries, businesses and academia "to share best practices, insights and knowledge."

Defense News asked for funding information and procurement plans related to DIS, but the government declined to comment.

The Southeast Asian island of Singapore is a regional commercial and financial hub. Its local governments and businesses having been the targets of cyberattacks.

Benjamin Ang, a senior fellow at Singapore's S. Rajaratnam School of International Studies, said digital threats to the nation include data breaches, cyberespionage, denial-of-service attacks, ransomware and data wiping disguised as ransomware, and hostile information campaigns.

In an email to Defense News, he also flagged potential threats to the local supply chain by disrupting hardware, software or services, which "can come from different sources, ranging from rogue nations who use cybercrime to fund their states, and organized crime groups, to hostile nonstate groups and extremists."

NIDS China Security Report 2023

Assessment of Military Reforms to Strengthen Party Control

An IMR Report

Basic Structure Prior to the Reforms

The PLA is the Party's army. In China, the most important mission of the army is to bring and keep the Chinese Communist Party (CCP) in power. Conversely, ensuring the military's loyalty to the Party is an indispensable guarantee for the CCP to stay in power.

Prior to Xi Jinping's military reforms, the basic mechanisms by which the Party exercised control over the military consisted of the following components.

First, the chairman of the Central Military Commission (CMC) continued to be a key post held by the Party's supreme leader. Following Jiang Zemin's rule, the Party secretary concurrently served as president of the People's Republic of China (PRC) and CMC chairman in order to concentrate a high degree of power in the secretary.

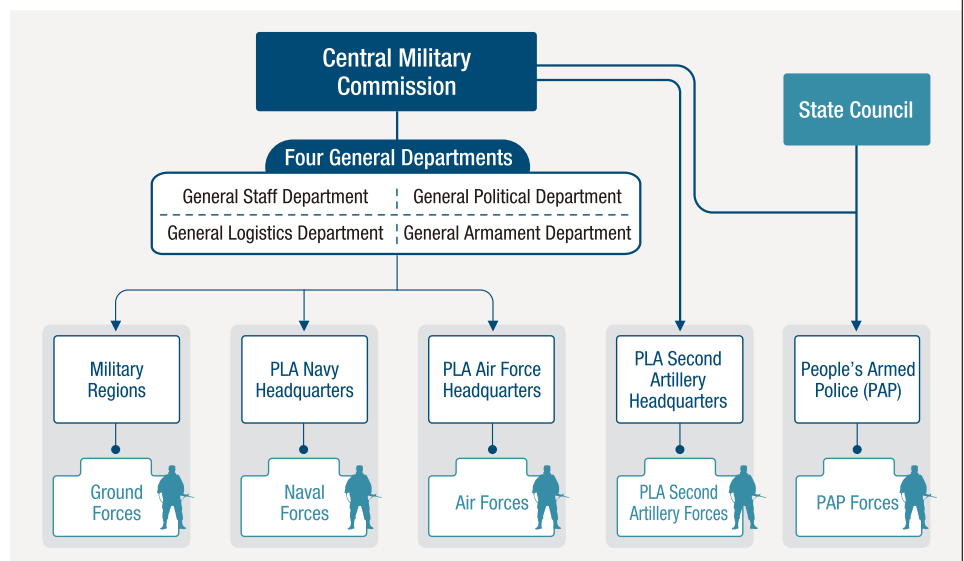
The second component was the existence of three systems:

- The General Political Department system
- The PLA Party committee system
- The political commissar system.

The General Political Department, which was in charge of political work, was established as the single agency responsible for Party-related activities and political work in the PLA. Until the military reforms, the political work carried out by political organs consisted primarily of:

- Ensuring implementation of the Party's guidelines, policies, state laws, and the CMC's directives and orders and steering ideologies in the military;
- Managing organizations;
- Cadre administration;
- Security and military justice work;
- Propaganda and cultural activities;
- Discipline inspection;
- Mass work (building relationships with the masses);
- Liaison work (intelligence and collusion with the adversary).

PLA Before Reforms



Party Committees in the military are responsible for decision making in military organizations. Political commissars have the same rank as military commanders and have engaged in decision making as secretaries of PLA Party committees. Military organizations were designed to have a dual leadership system, comprised of military commanders and political commissars under the command of Party committees.

Political Commissars were mainly responsible for ideological education and management of units, enforcement of military regulations, cadre work under the command of Party committees, and security. That is, ideological indoctrination, personnel and organization management, and inspections were carried out as political work to ensure that the Party had command of the military.

Issues Affected

A number of problems had beset Party-Army relations as of the start of Xi Jinping's

regime.

- CMC chairman had become a position merely in name.
 - The mid-level organizations held power, with the four general departments (General Staff Department, General Political Department, General Logistics Department, and General Armament Department) seizing most of the actual functions of the military. In particular, the General Political Department had internalized the functions related to military inspection, such as disciplinary inspection, safety, court procedure, and prosecution, and this created various problems. The PLA's nature as the Party's army had the potential of obstructing efficient execution of operations.
 - Problem of bribery and corruption.
 - Slackening of ideology and discipline due to social pluralization and lack of war experience.
 - Concern over U.S. ideological penetration.
- For these reasons, organizational reform of

Party-Army relations was essential for solving the problems with political control over the military. It was also inevitable for building an army that is capable of winning wars.

Reforms Introduced

In carrying out the most sweeping military reforms since the PRC's founding, President Xi Jinping has focused on strengthening the Party's leadership over the military through:

(1) Reestablishment of the CMC Chairman Responsibility System. In November 2012, shortly after he was appointed general secretary of the CCP and CMC chairman, Xi Jinping revised the "Regulations on Central Military Commission Work" so that the CMC chairman responsibility system was specified. The 19th CCP National Congress in 2017 marked the establishment of the CMC chairman responsibility system, and the system was written into the revised Party charter (constitution).

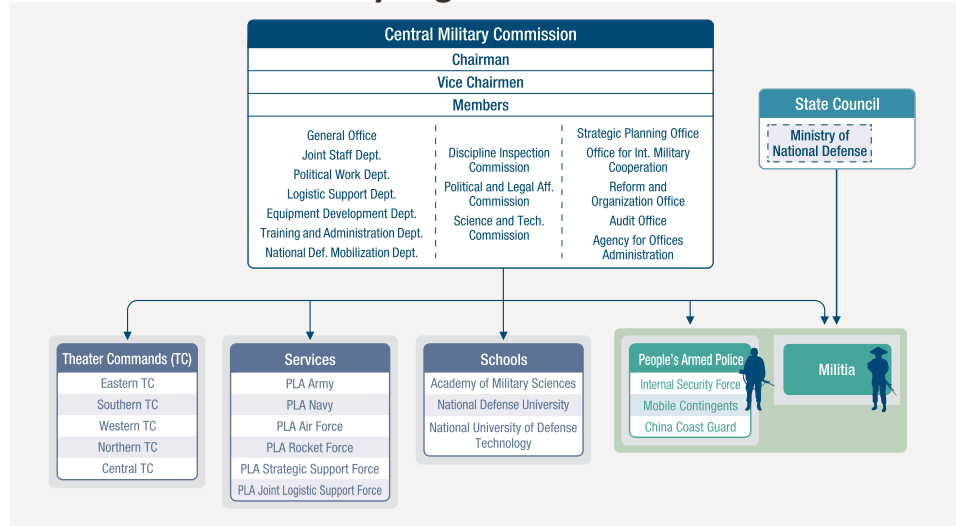
(2) Emphasis on the Leadership of Party Committees. Xi Jinping values the leadership of Party committees in the military and highlights the need to build Party cells in the military. When Xi attended the CMC Party Building Conference in August 2018, he stressed the significance of building Party cells in the military, especially Party committees in the military. Xi reaffirmed that the PLA's dual leadership system under the command of Party committees would be maintained, and that "All work will be conducted under the unified leadership of Party Committees, and all important issues will be studied and decided by Party committees." At the same time, for improving combat capability, Xi stated that Party committees in the military would focus on the main responsibilities and tasks of war preparation and war execution.

Xi argued that by enhancing the Party's leadership, organizational, and executive capabilities, the Party's political and organizational superiority can be converted into warfare superiority. In particular, he underscored the importance and significant responsibility of high-level Party committees at or above the corps level, and

Xi Jinping talked about problems with Party building in the military, which he referred to as the "seven weakenings." They are:

- The weakening of political awareness and political capability;
- The weakening of centralized and unified leadership by Party committees;
- The weakening of leadership over war preparations and war execution;
- The weakening of the principles and combat capability of Party cells;
- The weakening of management of Party cadres and personnel;

China's Military Organizations after Reforms



Sources: Compiled based on Office of the Secretary of Defense, "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020," August 21, 2020, among other sources.

"In carrying out the most sweeping military reforms since the PRC's founding, President Xi Jinping has focused on strengthening the Party's leadership over the military"

- The weakening of revolutionary will and combat spirit; and
- The weakening of responsibility for implementing Party management and Party governance.

(3) Independent Inspection Departments in the Military. Xi Jinping seeks to promote governance in the military and give power to inspection departments to strengthen objective control. He calls this the "fundamental transformation of the military governance system." Under the previous four general department system, all inspection departments, such as discipline, law, and financial management, were placed in the General Political Department and were unable to exercise independent inspection capabilities. As part of the military reforms, efforts were made to enhance the inspections. In February 2015, the CMC issued the "Decision on Deeply Promoting Law-based Governance of the Military and Strict Enforcement of Discipline in the New Situation." These refer to the goal of achieving

stable governance in the military through the strict application of law and Party discipline.

Organizational reforms were undertaken to effectively promote governance. That is, as part of the reforms of national defense and the armed forces, inspection departments that had been internalized by the four general departments were given independent status. With the dismantling of the four general departments, the CMC Discipline Inspection Commission, the CMC Political and Legal Affairs Commission, and the CMC Audit Office were established in the CMC.

The CMC Discipline Inspection Commission, which became independent by the reorganization in 2016, sent 10 inspection teams to 15 CMC departments and to each theater command for the first time since the PLA's founding and began inspection activities. The inspections focused on:

- The implementation status of directives to develop and bolster the Party's ways and attitude (verify problems, such as not doing even when ordered to, not stopping even when prohibited, not fully adhering to regulations, implementing selectively, and allowing for flexibility);
- The integrity of cadres;
- Compliance with regulations on encouraging saving and opposing wasteful spending; and
- Supervision over the management and use of official military vehicles. Other efforts to strengthen the discipline inspection system include establishing a discipline inspection commission in each military service and branch, as well as having a full-time secretary of the discipline inspection commission, which used to be a concurrent position with deputy

Designation of Peoples Armed Police After Reforms

Force	Destination and Primary Mission
Internal Security Force	Remained in the PAP; comprises the main force of the PAP Forces
Gold Force	Moved to the Ministry of Natural Resources; in charge of exploring the nation's metallic mineral resources
Forestry Force	Moved to the Ministry of Emergency Management; in charge of emergency rescue missions such as extinguishing forest fires
Hydropower Force	Moved to the State-owned Assets Supervision and Administration Commission of the State Council; in charge of hydraulic engineering construction
Transportation Force	Remained in the PAP and incorporated into the internal security forces
Border Defense Force	Moved to public security organizations, and all active units were incorporated into the People's Police
Firefighting Force	Moved to the Ministry of Emergency Management; in charge of firefighting, rescue and other emergency relief work
Guards Force	Moved to public security organizations, and all active units were incorporated into the People's Police

Source: Compiled based on 谢游麟 [Hsieh Yu-Lin], “析論中國大陸武警改革之意涵與發展 [The Implication and Development of China PAPF's Reform],” p. 133.

member of the Politburo.

At the theater command level, a dispatch mechanism has been established. This is not an internal mechanism in the theater command but a dispatch mechanism of the CMC Discipline Inspection Commission. Responsibility for discipline inspection lies with the central state, not the theatre command. The “Regulations on Discipline Inspection,” revised in March 2018, lists 10 categories of discipline inspections, namely, political discipline, organizational discipline, operational discipline (obedience to orders and commands), training discipline (supervision of training), work discipline, safety discipline, integrity discipline, financial discipline, mass discipline (attitude toward civilians), and life discipline. As the above indicates, discipline inspections are not limited to political loyalty and are highly broad in scope, extending to operations and training.

Training inspection, too, is being strengthened. In building an armed forces capable of winning wars, it is important to standardize training and acquire capabilities as intended by the central state.

In this context, supervision of training has been enhanced, including enacting regulations on training inspections. While the CMC Training and Administration Department oversees the training inspections, actual inspections are carried out also by the CMC Joint Staff Department, the CMC Discipline Inspection Commission, and the CMC Agency for Offices Administration, with the Training

“ The Regulations on Discipline Inspection, revised in March 2018, lists 10 categories of discipline inspections, namely, political, organizational, operational, training, work, safety, integrity, financial, mass (toward civilians) and life discipline. ”

and Administration Department playing a central role. As this fact reveals, the CMC Discipline Inspection Commission is engaged in training and operations as well.

In comparison, the CMC Political and Legal Affairs Commission underwent a more subtle transition. In 1982, the Political and Legal Affairs Leading Small Group was established in the General Political Department. This became an all-military political and legal affairs commission in 2007, but it remained under the jurisdiction of the four general departments. Although the reorganization in 2016 gave it

independent status as the CMC Political and Legal Affairs Commission, its authority is considered weaker than that of the CMC Discipline Inspection Commission.

(4) Introduction of a Patrol System. The CCP further seeks to strengthen its direct monitoring of organizations and regions by introducing a patrol system. The PLA enacted the “Regulations on Patrol Work” in January 2018. According to the regulations, patrol work is mainly conducted to monitor the discipline of high-level Party committees in the military. At the central state level, the CMC Patrol Work Leading Small Group was established to lead the patrol work. The CMC vice chairman is the head of the small group, the secretary of the CMC Discipline Inspection Commission is the managing deputy head, and the director of the Political Work Department and the secretary of the Political and Legal Affairs Commission are the deputy heads. An administrative organization is established in the CMC Discipline Inspection Commission. The patrols cover the Party committees of CMC departments, theater commands, military services and branches, the National Defense University, the Academy of Military Sciences, and the People's Armed Police (PAP). Furthermore, a Patrol Work Leading Small Group is established in the military services and branches and the PAP. The patrol system is headed by the leader of the Party committee in the military, and the secretary of the Discipline Inspection Commission is responsible for the implementation work.

The purpose of the patrol inspections is fourfold:

- Supervising and giving guidance on the implementation status of theoretical armament and real combat training under the leadership of Party cells, measurement of their effectiveness, and whether Party cells and cadres are supporting the core (Xi Jinping) and adhering to the Party's command;
- Supervising whether Party cells are taking proactive responsibility in promoting war preparation and war execution, and supervising measurements of the actual effectiveness of the training and units' fulfillment of combat capability standards;
- Understanding and resolving small issues, such as what officers and soldiers are opposed to and what they consider as hardships, and what the focus of their patrol inspections is; and
- Training the substratum Party cells and cadres through the process of patrol inspections.
- Reduced Role of the Political Work Department. The CMC Political Work Department, which took over the main activities of the General Political Department,

has reduced its authority and role considerably. First, as mentioned above, the Discipline Inspection Commission and the Political and Legal Affairs Commission in the military were given independent status. In addition, it was stipulated that the ultimate responsibility for political work rested with the CMC, and the Political Work Department was positioned as an enforcement body.

Furthermore, it appears that the political work organization at the theater command level has reduced functions. Military regions prior to the reforms had a political department staffed by a full-time director. In the post-reform theater commands, while a political work department is established, its director is no longer a full-time post, with a deputy member of the Politburo dual hatting as the director.

In addition, as mentioned above, the leadership of the Party committees at each level over the political work organs of the same level has been strengthened. It likely signifies weakening coordination between the upper and lower-level political work organs. This is because the authority of the same-level Party committees is currently being increased, whereas in the past the General Political Department had strong leadership power over lower-level political work organs.

Implications of Tightening Party Control

What are the implications of this tightening of Party control over the military for China's external activities? First, this tightening of Party control seems to be a vital means of reforming the military and creating an armed forces capable of conducting joint operations and fighting. It is very difficult for military organizations to carry out reform on their own. Especially for an organization like the PLA with rampant bribery and corruption, this requires powerful external intervention, which Xi Jinping is attempting to achieve by bolstering the Party's leadership.

Also of note is that strengthening the Party's leadership offers a means of enabling coordination between the military and other organizations. Such strengthening of the Party's leadership is essential for understanding China's activities in the maritime gray zone and in the psychological and cognitive domain.

This report has examined the relationship between military organizational reforms and struggles using non-military means. A number of conclusions can be drawn from the analysis.

First, Xi Jinping's military reforms drove the restructuring of Chinese military organizations and strengthened the Party's leadership over them. Previously, the Party controlled the military mainly through political work organizations and political commissars in the People's Liberation Army (PLA).

Today, more emphasis is placed on direct control by the Chinese Communist Party (CCP). Focus is on especially the implementation of the Central Military Commission's chairman responsibility system and the Party committees in the military. Furthermore, military governance through laws and rules is underscored. The Party's leadership has been reinforced not only over the PLA but also over other military organizations, and mechanisms are being developed for coordination between the military and other governmental actors. These measures were developed also as a response to modern forms of conflict that actively use non-military means.

The People's Armed Police (PAP) and its subordinate China Coast Guard (CCG) has been restructured. The PAP has been reorganized to specialize in maintaining public security in peacetime and easily contribute to PLA joint operations in a contingency. The reorganization was intended to strip the state of its armed forces and reassign them under the CCP.

The cooperation relationship between the military and other Party governmental organizations is not all that clear. In reality, the Party, the government, and the military may not necessarily be conducting activities in an integrated manner under a consistent system of command. Instead, each actor may be operating under the overarching policies of the Party.

What stands out is that:

- The Party's leadership is critical to China's external actions. The Xi Jinping regime strengthened the Party's leadership in all domains as well as over the organizations engaged in external actions including the military. This is considered not only necessary for maintaining the Party's rule but also for implementing more strategic external actions. By strengthening the Party's leadership, the Xi regime succeeded in easing to some extent the problem of "fragmented authoritarianism."
- What problems and weaknesses face China's use of non-military means? China has strengthened the Party's leadership over the military and governmental agencies and developed coordination mechanisms. However, they will not function if the Party itself weakens or falls into chaos. In this sense, the CCP can be both a major strength and a weakness for China's external actions. There is also no robust mechanism to correct any misjudgments that the CCP might make. Information that goes against the will of the Party is not reported precisely because the Party's leadership has been strengthened.

*Based on the NIDS China Security Report 2023
- China's Quest for Control of the Cognitive Domain and Gray Zone Situations*

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Chinese Media System for Mass Control

Maj Gen Ravi Arora

China population is currently 1.4 billion. It is on the way to becoming one of the leading Superpowers. In 2013, China's economic growth rate was 7.8%, almost three times higher than United States (2.8%).

China is a socialist, capitalist state ruled by a single-party – the Chinese Communist Party (CCP) – with Xi Jinping as their leader since 2012. In reality, China is much more orientated towards capitalism.

Development of Media

There were four phases in the development of the media in China.

- The first was the Founding of the new China in 1949 to 1966.
- The second was the Cultural Revolution from 1966 to 1978.
- The third involved a total change of the media system by Deng Xiaoping's market reforms.
- The last phase began with the Tiananmen square uprising in 1989.

After the founding of the People's Republic of China in 1949, the Communist party started to rule the country. General restrictions were placed on the media system. Private ownership of newspapers was abolished. General media became a party organ.

During the Cultural Revolution, media freedom suffered in the second phase. Anyone who had an opinion counter to Mao Zedong's was considered as an enemy of the revolution. Television channels were reduced to five. 43 newspapers, which were published were controlled by the party itself. But printed media increased rapidly during 1957-1977 by 358%. Wired broadcasting, a system with speakers in rural China reached 99 million in 1980. It was mainly used for communicating with the rural population and to spread propaganda.

From 1978 to 1989 (third phase), under Deng Xiaoping's rule there was a media boom, especially in radio and later in television. In 1987, 55% of China's population



A Chinese newsstand in Beijing

had access to television. Deng Xiaoping wanted to achieve economic independence by freedom of press.

From the Tiananmen uprising in 1989, when students demonstrated for more freedom, democracy and against governmental corruption, until today, there have been stricter restrictions of freedom of press and surveillance by the government. To circumvent this, people and organizations started to use their own distribution networks, like The Guangzhou Ribao, the daily newspaper in Guangzhou. This opened new markets for commercialization.

Television gained more popularity. Ownership of television increased many times. It became a status symbol and economic growth. But from 1980 to 1991, film audiences decreased by almost 50%.

When the Communist Party of China gained power, it created media outlets like the Xinhua News Agency, which became the mouthpiece of the government. Independent media is also regulated by the government.

China Media Today

There are still many restrictions on freedom of press.

Demographic. China has a literacy rate of 95%. The internet population is growing with about 600 million users. Over 90% of the internet population has a social network account and spends an average of 46 minutes a day on it. Most users of internet live in urban areas (72%). The number of mobile phones users hit 1.22 billion in 2013. One can say that in China new technologies are part of the daily life.

The majority of the people living in China are in the age between 25 and 54 (46.7%). The younger generation from 19 to 25 years account only for 19% of social media users in China. The Chinese use different social networks than in other parts of the world.

- Qzone (700 million users) is the ruling social network for blogging, sharing music and photos.

- Weibo (500 million users) is an alternative to Facebook and Twitter combined.

- WeChat (300 million users) is like

WhatsApp.

Legal Regulations. Article 35 in China's legal code is saying that "citizens of the People's Republic of China enjoy freedom of speech, of the press of assembly, of association, of procession and of demonstration." But in 1994, the propaganda department established the Six No's, including:

- No private media ownership.
- No shareholding.
- No joint ventures with foreign organization.
- No discussion of nature of news/press law.
- No openness for foreign television.

Besides the No's there is a "Chinese Newspaper Self-Discipline Agreement" what is saying that journalists must strictly follow all regulations and rules passed by the government. Further, discussions about passed laws and control of the CCP is forbidden.

Article 41 in China's legal code says that Chinese citizens have the right to criticize the government, but Article 51 says the opposite: "Chinese people may not infringe upon the interest of the state." The CCP's central propaganda department ensures this.

Economic Influences. Economic development has had a big impact on the media development. In 1992 all newspapers were subsidized by the state. Today all newspapers and television stations, especially those not owned by the government, are mainly financed by advertisement. The media is increasingly focusing on business and entertainment and not anymore on reporting the latest news.

Technologies. New technologies are shaping China's media environment, like the internet. China has the biggest online community in the world with around 618 million internet users, where netizens speak their minds.

The Chinese government has difficulties in controlling the media. Hence, it censors the internet in many ways. Some Google and Facebook are totally censored and Wikipedia pages are put offline in times of major discussions in China. Instead, Qzone, Weibo and Wechat are the ruling social networks in China.

Netizens try to circumvent censorship by using proxy servers, to contact western media and banned social networks like Facebook. As many as 95 million Chinese could be on Facebook.

Talk Radio is known to be the freest media, where people anonymously discuss China's problems. Talk Radios are very popular in China and the CCP is a little reserved into getting into conflict with its citizens.

Mass Media Infrastructure

China's mass media has been growing since the 1980's. Due to a range of technologies, it is more diversified, including wired systems, satellite, and the internet. With almost 2,000 newspapers, 9,000 magazines, 273 radio stations and 352 television stations they cover all kinds of different topics.

Xinhua News Agency, located in Beijing, is the primary and largest news agency. It is also considered as one of the world's leading news agencies with 100 branches worldwide. By purchasing many other Asian news agencies in Japan, South Korea and Singapore it has achieved an influential status. China News Service also supplies news to Chinese living overseas.

Print Media. State run newspapers like the People's Daily are more traditional and propagate the party's interest. Other commercial newspapers showcase greater freedom with increasing diversity. All printed media is controlled by the CCP. Many follow Xinhua News Agency, which reflects official policies and promotes government propaganda.

Reference News (3.4 million daily and owned by Xinhua News Agency), People's Daily (2.8 million) and Global Times (2 million) are the largest newspapers. None of the major newspapers reflect any different point of view than CCP's.

Local newspapers display a great variety and are more liberal orientated, even covering corruption among party workers.

Television and Radio. China has one large Radio station called China National Radio with 9 channels. Every province and region has its own local radio stations. China Radio International (CRI) is for the western world.

China Central Television (CCTV) is one large state-owned television network with 20 channels. It is state run and is a party organ of the CCP. It focusses more on news and traditional entertainment. Through its relationship with over 250 other television organizations in 130 countries it has a global impact. CCTV's viewership is declining due to that fact that the younger generation prefers other outlets.

Other TV stations and several local and



60 seconds on China's Internet

regional TV stations like Hunan TV Phoenix TV, Dragon TV and Travel TV display entertainment, documentaries and news. Almost every province has at least one satellite TV network.

Due to censorship all television channels including "independent" companies usually do not push the boundaries on news reporting.

Internet

2,000 out of 10,000 traditional newspapers are available on the internet. News pages like New York Times and BBC are censored.

- Qzone (712 million users) is targeted towards high school students and younger rural kids.

- Weibo is similar to Twitter, (500 million users)

- Gaming networks like 51.com has 259 million users.

Google is censored, and instead, Baidu is the dominant player in China's search engine market (80% market share).

It is impossible to censor a post right away which leads to an easy exchange of information through networks like Weibo long before the official news.

Legal Framework

The "Chinese Newspaper Self-Discipline Agreement" says that journalists must strictly follow all regulation and rules passed by the government. Licensing for a newspaper business in China is very complicated.

Censorship. The Central Propaganda Department of the CCP is responsible for the

media representing the party's interest. It is common that reporters and editors censor themselves. People who report on secrets of the government or for example, revolution, have to face tough consequences and long terms in Chinese prisons.

Foreign journalists do censor themselves because they are worried about not getting a visa again. Many journalists do not know where the red line is, hence they must be even more careful.

The CPD has influence on every part of the media through the "50 cent" army.

On social networks like Weibo, the CPD allows government criticism but silences collective expression. It is all done by keyword filtering, a 20,000 to 50,000 internet police and the "50 cent" army.

Western/American Influence

Western way of life or the American way of life has a huge impact in China. An increasing number of people prefer to watch "idol style" shows instead of the state owned television stations which show more documentaries and news. The CPD wants to cut back on American-style television like singing competitions by restricting the timings, despite being popular.

The authorities do not like the populist and western input that the shows promote. In addition, the voting system in singing competitions promote a democratic way of thinking. All of this could then lead to problems for the Chinese government.

Conclusion

The Internet and new forms of media are more open and diverse. The majority of Chinese people do not really mind censorship because they perceive their culture as something unique. China's internet environment is led by Weibo, Tencent, Baidu and many other small organizations. Rural television medium plays a significant part in conveying information to the Chinese people.

The Chinese legal framework is very controversial and it gives the CCP complete control over media freedom. In China all the media is controlled by the CPD. The Central Propaganda Department is using hard power approach for limiting media freedom in China. Reporters including foreign journalists are censoring themselves worried about the results if they write the whole truth.

As regards internet and social networks, the CPD focuses more on preventing collective actions than just individual critical posts about the government. The impact of Western and American style of media is not welcomed by Chinese authorities because they are worried about western inputs that could potentially lead to loss of power.

China's Malicious Use of Social Media

China uses a variety of methods to spread its narrative abroad through social media, including:

Government-controlled media: China has a large state-run media apparatus that includes major news outlets such as Xinhua and CCTV, which are used to disseminate official government views and information to a global audience.

Social media platforms: China has a large presence on global social media platforms such as Twitter, Facebook, and YouTube, where it uses official and unofficial accounts to disseminate information and engage with foreign audiences.

Influencers and opinion leaders: China uses a network of influencers and opinion leaders, including scholars, business leaders, and celebrities, to promote its views and interests abroad.

Fake news and disinformation: China has been accused of spreading false information and disinformation through social media platforms in order to influence public opinion and shape global perceptions of China.

Censorship and control: China censors and controls the information that is available on social media within its own borders and also the information that is disseminated abroad to control the narrative about China.

Cyber-espionage: China has been known to use cyber-espionage techniques to hack into foreign social media accounts and steal information that can be used to spread disinformation or to silence critics.

Artificial intelligence and automation: China is also known to use AI and automation to amplify its voices on social media and to spread disinformation at scale.

China's approach to social media is often seen as an attempt to shape global perceptions of China and to advance its own interests and agenda.

China's Next-gen AI Development Plan

cond from page 29

and a common technology system for a new generation of AI, laying out the construction of a major scientific and technological innovation base. Strengthen the high-end talent team in AI to promote innovation and cooperative interactions. Form a continuous innovation capability for AI.

Grasp AI's characteristic high degree of integration of technological attributes and social attributes. It is necessary not only to increase efforts in the research and development and applications of AI, maximizing the potential of AI, but also to predict AI's challenges, coordinate industrial policies, innovate in policies and social policies, achieve the coordination of encouraging development and reasonable regulation, and maximize risk prevention.

Adhere to the promotion of the trinity of breakthroughs in AI research and development, product applications, and fostering industry development. Adapt to the characteristics and trends of AI development. Strengthen the deep integration of the innovation chain and industrial chain, the interactive evolution of technology supply and market demand. Take technological breakthroughs to promote domain applications and industrial upgrading.

Through application demonstrations, promote the optimization of technologies and systems. At the same time as greatly promoting technology applications and industrial development, strengthen long-term R&D layout and research. Achieve rolling development and continuous improvement. Ensure that theory is in the front, the technological commanding heights are occupied, and applications are secure and controllable.

Fully support science and technology, the economy, social development, and national security. Drive comprehensive elevation on national innovative capability with AI technological breakthroughs. Lead in the process of constructing a global science and technology power. Through strengthening intelligent industry and cultivating the intelligent economy, create a new growth cycle for China's next decade or even decades of economic prosperity. Through building an intelligent society, promote the improvement of people's livelihoods and welfare and implement people-centric development thinking. Through AI, elevate national defense strength and assure and protect national security.

CHINA

China's globally focused disinformation Spreading the Narrative Through Youtube

An IMR Report

The CCP believes that China's ability to tell the party's political story is still not commensurate with the country's rise and its current place in the world. Xi Jinping has long stressed that the PRC needs to develop a global voice proportional to its 'comprehensive national strength and international status'.

The Chinese Communist Party's globally focused propaganda and disinformation capabilities are evolving and increasing in sophistication. This emerging approach to influence international discourse on China, including obfuscating its record of human rights violations, is of concern since it flies under the radar of US social media platforms and policymakers.

Youtube accounts are used by the Chinese Communist Party (CCP) to censor speech, promote disinformation and seed the internet with its preferred narratives. These accounts feature mainly female China-based ethnic-minority influencers from the troubled frontier regions of Xinjiang, Tibet and Inner Mongolia (frontier influencers or frontier accounts).

Frontier-influencer accounts are increasingly used as an emerging part of Beijing's growing propaganda arsenal. They're seen as a resource to be drawn on, but only if they're harnessed properly.

YouTube is blocked in China but it is seen by the CCP as a key battlefield in its ideological contest with the outside world. YouTube's use in China's foreign propaganda efforts has intensified in recent years. Earlier it was deployed on domestic video-sharing platforms to meet an internal propaganda need, thus has now been redirected towards global audiences on YouTube to counter criticisms of China's human rights problems and correct the country's image.

China uses carefully vetted domestic vloggers with a more personal style of communication and softer presentation to be more convincing than traditional party media content, which is often more rigid and didactic.



Screenshot from a video of the 'Story of Xinjiang by Guli' channel featuring Hurshidem Ablikim

Frontier influencers represent what may be called 'guerrillas or militia' fighting on the flanks in the arena of public opinion. The party media may be seen as the 'regular army' 'charging and killing on the frontlines.'

Frontier accounts have been created since 2019. They feature content derived from CCP narratives. A false sense of legitimacy and transparency comes from their less-polished presentations. The videos appear to be the creation of the individual influencers, but is in fact professional-generated content and specialists.

Young female Uyghur, Tibetan and other ethnic-minority influencers with such an active presence on a Western social media platform is clearly unusual. But, they are carefully vetted and considered politically reliable. The content is tightly censored and tested on domestic video audiences before being published on YouTube.

The Case of Annie Gul

The 'Annie Guli' account's videos about

cotton production in Xinjiang, which feature English-language subtitles, have been among its best performing on YouTube – something Chinese propaganda experts have made note of. Accounts such as 'Annie Guli', which present the lives of ethnic minorities in China in a CCP-approved way, can be particularly useful in combating criticism from foreign governments, media and civil society.

One scholar noted that views of 'Annie Guli's' Xinjiang cotton videos outranked Chinese state media outlet, the China Global Television Network (CGTN), on YouTube on the same topic. Similar videos by foreign vloggers in China, however, outranked them both.

Alongside foreign vloggers, carefully vetted domestic vloggers are increasingly seen as another key part of Beijing's external propaganda arsenal. The increased use of a combination of these two types of vloggers is being encouraged in order to further buttress the propaganda work of party-state media.

Among rural vloggers, the two authors

The Great Firewall

The blocking of YouTube, Twitter and Facebook in China has been inextricably linked with frontier issues and ethnic clashes since 2008. Before then, those websites were still accessible from China, although with some restrictions, but around the 2008 Beijing Olympics internal censorship increased steeply, and many websites were fully blocked.

In March 2009, Google reported that its video-sharing site YouTube had been blocked. Local media attributed the issue to the publication of a video depicting police brutality against Tibetans in Lhasa during the 2008 uprisings. The site had already been blocked a year earlier during the riots.

The 2009 Xinjiang riots caused an additional tightening of internet controls, and in July that year Twitter and Facebook were also blocked in the country. For months after the riots, the internet was completely shut across the entire region of Xinjiang, denying access to approximately 7 million internet

users at the time.

Despite being inaccessible, foreign social media platforms are monitored by Chinese authorities, who use them to clamp down on dissent and hunt down critics even outside of China's borders, especially if they hold Chinese citizenship. In the past decade, there have been many reports of people being harassed, interrogated, arrested and detained for posting about issues sensitive to the CCP on Chinese and foreign social media.

One of the most well-known cases is that of Zhang Zhan, a citizen journalist who became famous for her early reporting of the

Covid-19 outbreak in the city of Wuhan. In May 2020, after broadcasting about the impact of the lockdown on YouTube, Zhang was detained and tortured before being sentenced to four years in prison for 'picking quarrels and provoking trouble'.

For minorities in Xinjiang, state control over online activities is even tighter. Former

detainees have reported that having a virtual private network (VPN) and/or having a foreign messaging app such as WhatsApp installed on their phones had been used as a pretext for detention.

Watching a video filmed abroad also raises red flags, as well as simply speaking with someone overseas. Forms of religious expression such as wearing a hijab or wearing a scarf in the presence of the Chinese flag have been reported as reasons for arbitrary detention.

Because of the government's discriminatory crackdown targeting Turkic Muslims and other ethnic and religious groups, most people don't feel safe to express their faith online or to have a presence on foreign platforms. And, while the closely vetted vloggers featured in this report seem to have special permission to post content on YouTube, they still avoid making any direct reference to their faith or specific religious practices.

single out 'grassroots internet celebrities' such as Li Ziqi and Grandpa Amu as key examples of online video-content creators who already 'proved the great attraction of China's colourful culture to global internet users' on YouTube. These vloggers depict Chinese people as 'hard-working, brave, self-improving and self-reliant' individuals.

Some Chinese scholars have noted that these types of accounts are supportive of Xi Jinping's persistent call for external propaganda to 'tell China's stories well, present a true, multidimensional, and panoramic view of China, and enhance our country's cultural soft power.'

During his visit to Xinjiang in July 2022, Xi emphasised the need to 'launch multi-level, omni-directional, three-dimensional propaganda about Xinjiang directed abroad, perfect the work of "inviting in" and tell China's Xinjiang story well.'

Monetisation

Since YouTube is blocked in China, the influencers based in the country are not able to receive advertising revenue through the YouTube Partner Program. The party content creators have made arrangements with YouTube to monetise content for frontier influencers, as well as for hundreds of other China-based influencers on YouTube.

Professional support also ensures that state-backed content ranks well in search results because search-engine algorithms tend to prioritise fresh content and channels that post regularly. The continuous flooding of

“ The continuous flooding of content by party-state media, onto YouTube is aimed at outperforming other more critical but stale content about China.”

content by party-state media, onto YouTube is aimed at outperforming other more critical but stale content about China.

This is clearly the Communist Party's experiment to shape online political discourse. By such targeting the CCP can hide its affiliation with those influencers and create the appearance of 'independent' and 'authoritative' voices supporting its narratives.

Recommendations

The emergence of ethnic-frontier accounts on platforms blocked in China is a sign of Beijing's willingness to experiment in building its global voice. Some recommendations as follows are in order:

- Social media platforms should broaden the practice of labelling the accounts of state media, agencies, and officials to state-linked, PRC-based influencers, in order to give users context and awareness about more insidious forms of state-backed content that lack independence and transparency.

- US social media platforms should stop partnering with, promoting and giving awards to MCNs that are conducting propaganda and disinformation work on behalf of the Chinese party-state.

- Until the Chinese government allows their services to operate in China, US social media platforms should stop their practice of allowing MCNs to monetise content from creators based in the PRC. MCN's will still be able to post content on these platforms, but they should not be earning money for content as that effectively subsidises state-backed propaganda and disinformation efforts.

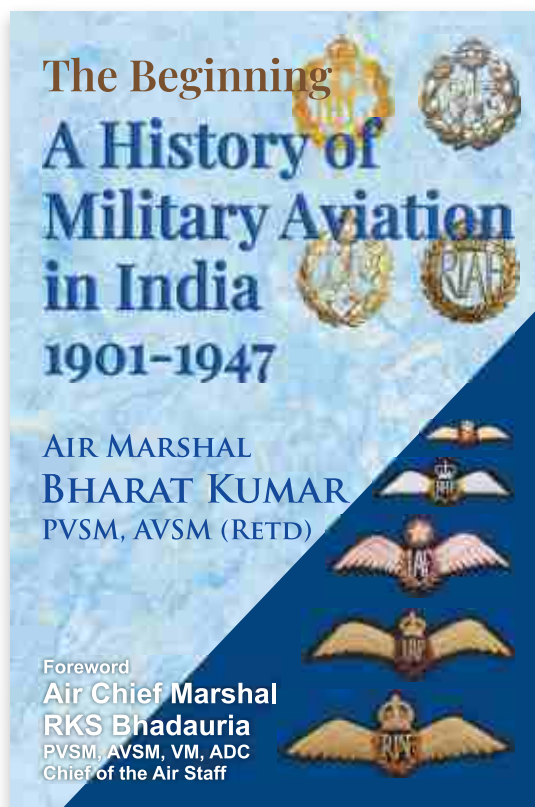
- Governments, social media platforms and civil society organisations which rely heavily on the research and insights produced by expert research groups, should increase their support to and funding of such groups. Research topics such as misinformation, information operations and propaganda are complicated, multi-language, data-heavy and rapidly evolving areas of study.

Conclusion

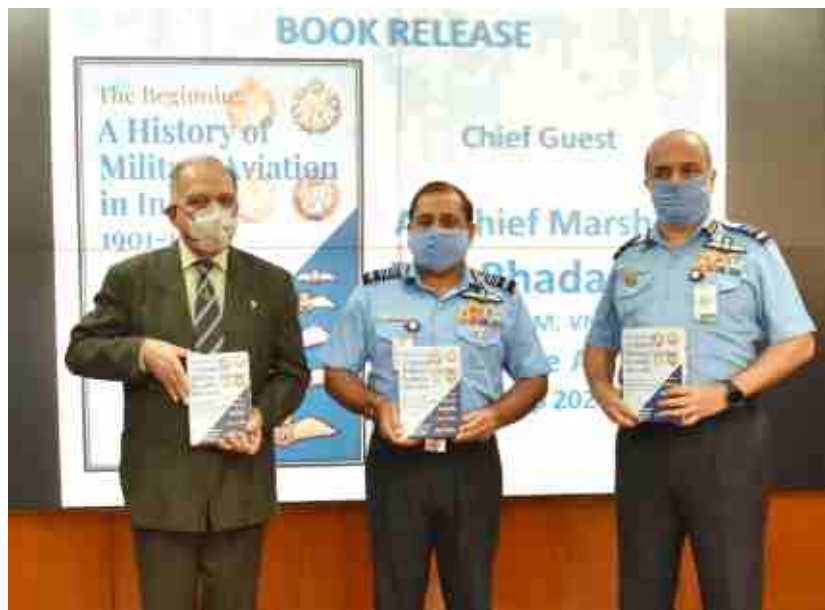
The Chinese Communist Party (CCP) has long deployed covert and overt online information campaigns to portray positive narratives about its domestic policies, while also flooding the global public discourse with disinformation and propaganda. But the potentially greater impact that influencers can have compared to party-state media or inauthentic social media activity is a point not lost on the CCP's leadership, as well as on propaganda experts and scholars working inside the PRC.

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66 Engineer Regiment
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663 R & O Squadron
17 R & O Flight
417 (I) Field Company
7 Guards
10 Guards
12 Mech Infantry (16 Mahar)
13 Mech Infantry (18 Rajput)
16 Mechanised Infantry
8 Grenadiers
14 Grenadiers
9 Jat
8 Sikh
6 Garhwal Rifles
9 Garhwal Rifles
13 Garhwal Rifles
11 Garhwal Rifles
24 Punjab
18 Punjab
5 Madras
12 Madras
26 Madras
6 Rajput
25 Rajput
10 Sikh Light Infantry
12 Sikh Light Infantry
8 Kumaon
9 Kumaon
18 Kumaon
20 Kumaon
42 Armoured Regiment
70 Armoured Regiment

83 Armoured Regiment

5 Assam
7 Assam
8 Bihar
12 Bihar
6 Mahar
12 Mahar
18 Mahar
4/1 Gorkha Rifles
5/1 Gorkha Rifles
5/4 Gorkha Rifles
4/5 Gorkha Rifles
5/9 Gorkha Rifles
3/11 Gorkha Rifles
7/11 Gorkha Rifles
14 J&K Rifles (Now Ladakh Scouts)
15 Jammu & Kashmir Rifles

2 January

3 Cavalry
55 Engineer Regiment

4 January

13 Guards

8 January

15 Mahar

9 January

6 Jammu & Kashmir Rifles

10 January

Army Air Defence Corps Day
3 Guards (1 Rajputana Rifles)

11 January

4 Rajput
11 Jammu & Kashmir Rifles
2/11 Gorkha Rifles

13 January

14 Guards

14 January

HQ 137 Works Engineers
873 Engineer Works Section

15 January

ARMY DAY
1 Field Regiment (SP)
23 Mountain Regiment
22 Punjab
19 Madras
16 Madras (Cochin)
15 Grenadiers
13 Rajputana Rifles
21 Rajput
4 Jat
7 Dogra
17 Kumaon
12 Kumaon
13 Mahar
14 Mahar
12 Jammu & Kashmir Rifles
2/3 Gorkha Rifles

16 January

9 Punjab
9 Rajput

25 January

5 Rajput

26 January

9 Dogra
2/5 Gorkha Rifles - VC Day,
Mortar Bluff Day

28 January

581 Field Survey Engineer Group
130 AD Regiment
5 Bihar

29 January

16 Sikh

31 January

33 R & O Flight
17 Engineer Regiment
415 (I) Engineer Squadron
418 (I) Field Company
Bombay Engineers Group - VC Day

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