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A 'Chinese Starlink' Launches New Era For Domestic Space Industry

by Arran Hope



60 Starlink satellites stacked together before deployment on May 24, 2019. (Source: [Wikipedia](#))

Executive Summary:

- A commercial company has become the first enterprise in the People's Republic of China (PRC) to launch a batch of internet satellites into low-Earth orbit. PRC media has framed this "Qianfan" constellation as one of the country's principal competitors to SpaceX's Starlink.
- The success of Yuanxin Satellite—also known as Shanghai Spacecom Satellite Technology Ltd (SSST)—follows policy and regulatory changes in recent years to stimulate a more dynamic commercial space sector in the PRC.
- China SatNet, the state-owned company behind the Guowang constellation project, does not have a clear timeline for deploying its own answer to Starlink. This could be partly due to corruption problems, both within the company and in the state-owned space sector more broadly.

At 14:42 on August 6, a Long March 6 (LM-6) carrier rocket took off from the Taiyuan Satellite Launch Centre in Xinzhou, Shanxi Province ([Xinhua](#), August 7). The rocket carried 18 satellites—the first official batch of the Qianfan (千帆) constellation—into orbit. Qianfan, formerly known as “G60,” constitutes an initial response by the People’s Republic of China (PRC) to Starlink, the private satellite internet constellation operated as a subsidiary of Elon Musk’s commercial space venture SpaceX.

The company behind the launch, Yuanxin Satellite (垣信卫星)—also known as Shanghai Spacecom Satellite Technology Ltd (SSST)—is not a state-owned enterprise (SOE). This is surprising, as SOEs usually take precedence in the unveiling of new, strategic technologies. Analysts therefore have described the August development as “the most significant commercial launch in Chinese space industry history” ([The China Space Monitor](#), August 31). A confluence of factors led to SSST winning the race to launch a constellation of internet satellites in non-geostationary orbit (NGSO). These include problems in the state-owned constellation sector coupled with an explosion of activity in the burgeoning commercial sector. The initial trigger for PRC efforts in this area has been the launch and dramatic expansion of Starlink since 2019. The PRC’s space sector is still centrally controlled, but the emergence of a more dynamic commercial sector indicates that Beijing is learning how to successfully combine government direction with market forces ([China Brief](#), November 20, 2023).

The PRC Mobilizes in Response to Starlink

The rise of the PRC’s commercial space industry has been meteoric. From its origins only a decade ago, it has now attracted billions of dollars of investment and encompasses hundreds of companies across the value chain. Most of these firms are concentrated in urban clusters dotted around the country ([The China Space Monitor](#), June 30, 2023). This partly comes from a loosening of the regulations that govern the industry. As Beijing has come to see space as a strategic industry and pivoted to focusing vast resources on advanced technologies, attempting to catch up with Starlink has become a priority.

PRC state media makes clear that its American competitor is a motivating factor. A Xinhua article published this week states that Starlink “has proved in practice that giant constellations are economically viable, and that low-orbit satellite constellations are expected to become a new generation of globalized information infrastructure, whose occupants will be given a monopoly position of dominance.” It goes on to note that the company has launched over 6,000 satellites into low-Earth orbit (LEO) within the last five years, and plans to launch 42,000 in total ([Xinhua](#), September 3). As an American company whose products have direct military applications (as seen in conflicts in Ukraine and Sudan, for example), Starlink is also perceived as a threat to PRC national security. A Beihang University professor noted in March that Starlink “has brought unprecedented pressure to our country” ([WeChat/C114 Communications Network](#), March 7).

Space has traditionally been the domain of the People’s Liberation Army (PLA). All of the PRC’s launch sites are controlled by the military and retains ultimate authority over most space activities ([China Aerospace Studies Institute \[CASI\]](#), March 1, 2021). This has begun to change in the last decade, as President Xi Jinping hopes for the PRC to become the world’s foremost “space power (航天强国)” by

2045 (Xinhua, [January 28, 2022](#)). Some of the more significant developments have occurred in the last five years. In 2019, the State Administration of Science, Technology, and Industry for National Defense (SASTIND; 国家国防科技工业局) and the Equipment Development Department of the Central Military Commission (CMC), published regulations that allowed private space companies to obtain permits from the military for launches. That same year, government policies began to encourage foreign investment in the PRC's space sector ([National Development and Reform Commission \[NDRC\]](#), June 30, 2019). Then, in 2020, the NDRC added satellite internet to its list of strategically important digital infrastructure and called for “upholding taking market investment as the primary source (坚持以市场投入为主)” ([NDRC](#), April 29, 2020).

Pursuit of a “Chinese Starlink” kicked off soon thereafter. In April 2021, China Satellite Networks Group Limited (中国卫星网络集团有限公司; China SatNet) was born ([36Kr](#), July 1). China SatNet, the operator of the state-owned constellation Guowang (国网; GW), was long believed to be the frontrunner in the race to deploy a “Chinese Starlink,” not least because it had enormous backing from the state.

It is unclear why China SatNet has fallen behind some of the commercial alternatives, though corruption in the state sector could be part of the story. In March 2023, the Central Commission for Discipline Inspection (CCDI) announced that China SatNet was a target for investigation ([MOJ](#), March 28, 2023). This led to the replacement of the company's general manager ([The Paper](#), April 9, 2023). Several months later, news emerged of the removal of senior industry figures from the Chinese People's Political Consultative Conference (CPPCC). These included Chairman and Party Secretary of the China Aerospace Science and Technology Corporation (CASC) Wu Yansheng (吴燕生), Chairman of Norinco and former Chairman and General Manager of China Aerospace Science and Industry Corporation (CASIC) Liu Shiquan (刘石泉), and CASIC Deputy General Manager Wang Changqing (王长青) ([Caixin](#), December 27, 2023).

Any problems that may have befallen the state sector have done little to dent the PRC's progress, however. 2023 saw the country launch 213 payloads into orbit, an increase from 182 the previous year and 111 in 2021 ([The China Space Monitor](#), December 30, 2023). In the first half of 2024, PRC companies have sent 88 spacecraft into orbit after 29 successful launches. This represents an increase over the previous year in terms of launches (though not in terms of satellites). The last twelve months have also seen further efforts from the state to stimulate the industry. In October, the Ministry of Industry and Information Technology (MIIT) released a draft opinion that included plans to “promote the reform of the satellite internet business in steps ... and expand the scope for private enterprises to participate in telecommunications business” ([MIIT](#), October 10, 2023). This signaled an opening for commercial enterprises to take on a larger role in the country's satellite internet plans. In February, SSST announced the industry's largest-ever funding round, raising nearly \$1 billion from Shanghai government entities, national-level funds, the Chinese Academy of Sciences, and various private investors ([China Venture](#), February 1). In July, the Decision document from the Third Plenum called for “promoting the development of strategic industries such as ... space flight (完善推动 ... 航空航天 ... 等战略性新兴产业发展政策和治理体系).” Under the section on deepening

reform in the military, the document also focused on strengthening coordination in the space sector ([State Council](#), July 18).

The launch of the Qianfan constellation satellites in August is the latest data point that suggests the PRC's nascent space sector is beginning to hit its stride. The sector still has problems, as the launch also exemplified—the breakup of the rocket carrying the satellites led to a cloud of over 700 pieces of debris in LEO. This is a relatively minor blemish on a remarkable achievement, however, and will not perturb the program's trajectory. Before the launch had taken place, Genesat (上海格思航天科技), the company manufacturing the satellites, had already announced that the second batch had been completed and were ready to be launched ([WeChat/Genesat](#), July 26).

Conclusion

In the years ahead, the PRC's space sector is expected to grow dramatically, according to industry projections and ambitious national plans. While its satellite internet projects—of which Qianfan and Guowang are the most prominent—remain far behind Starlink, the capacity for the industry to grow is substantial. This includes expansion overseas. The PRC space sector already has strong ties with countries around the world, particularly among One Belt One Road (OBOR) nations. PRC SOEs are partnering up to help create “space cities” in Abu Dhabi and Egypt, and has brought a number of its traditional partners on board with its International Lunar Research Station ([The China Space Monitor](#), April 30).

The military angle remains top of mind for the PRC's planners too, making it unlikely that any competition with Starlink will be fully settled in the commercial domain. As research from the CASI has shown, PRC scientists are already investigating ways to “incapacitate a large portion of Starlink satellites” in order to retain “space superiority (空间优势)” ([CASI](#), June 3). Geopolitical competition now has entered the space domain. How explosive that competition will be, however, rests among politicians on the ground.

Arran Hope is the editor of China Brief.

MBZUAI Partners With US Tech, Collaborates With PLA Scientists

by Cheryl Yu



Logo of the Mohamed bin Zayed University of Artificial Intelligence in Abu Dhabi. (Source: [Wikipedia](#))

Executive Summary:

- There are connections between the Mohamed bin Zayed University of Artificial Intelligence in Abu Dhabi (MBZUAI) and People's Liberation Army (PLA) and PLA-affiliated institutions. This includes research collaborations with scientists from those institutions, as well as a career pipeline between Abu Dhabi and the People's Republic of China (PRC).
- Research collaborations funded by the PRC have produced articles published in top journals on topics that have military applications, such as machine learning algorithms, network security, and Internet of Things technologies.
- MBZUAI has access to technologies that are currently subject to US export controls, such as NVIDIA A100 graphics processing units (GPUs). It is plausible that these are being used in research that assists in the development of PLA capabilities.

The Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), a research university in Abu Dhabi, has ties to the united front system in the People's Republic of China (PRC). It also has access to US technologies that are currently subject to US export controls, such as NVIDIA A100 graphics processing units (GPUs). This raises the possibility that the university could function as a site for entities or individuals from the PRC to acquire or gain access to such technologies, thereby circumventing US export controls. Numerous PRC researchers are based at MBZUAI, many of whom come from People's Liberation Army (PLA) or PLA-affiliated institutions. Meanwhile, US companies such as IBM and Meta, and academic institutions such as the University of Michigan and University of California, Berkeley, have partnered with MBZUAI ([China Brief](#), August 15). The PRC's weaponization of international cooperation to bolster its defense capabilities suggests the potential scale of this problem. Ultimately, research done at MBZUAI and using US technology could later be used to enhance the PRC's military capabilities.

International Collaboration to Boost Defense Modernization

The PRC has long advocated for international technology cooperation. In November 2023, at the inaugural "One Belt One Road" Technology Exchange Conference ("一带一路" 科技交流大会), the PRC proposed an "International Science and Technology Cooperation Initiative (国际科技合作倡议)." This initiative advocates for building "a global community of science and technology (全球科技共同体)" and an "open and free ecosystem of international technology cooperation." The aspiration is for "scientific and technological innovation personnel and resources to flow freely around the world" ([Ministry of Science and Technology \[MOST\]](#), November 7, 2023).

This initiative appears to emphasize global collaboration and openness. However, as CCP Chairman Xi Jinping stated at a meeting in June 2024, part of this openness is intended to buttress the PRC's military capabilities. In a speech delivered at an event in Beijing where he presented the country's most prestigious science and technology award, he argued that "to build a technologically strong country, [the PRC] must possess world-leading technology and innovation capabilities to support leaps in economic strength, defense capabilities, and comprehensive national power" ([Xinhua](#), June 24).

International cooperation remains one of the most efficient ways for the PRC to access advanced technologies that are critical to its national defense. In 2018, a professor at the PLA's National University of Defense Technology (NUDT; 国防科技大学) concluded an article in the *PLA Daily* newspaper by writing that if the PRC "deepens international exchanges and cooperation and fully uses global innovation resources," it will "advance independent innovation in national defense technology from a higher starting point" ([PLA Daily](#), March 28, 2018).

MBZUAI Hires Scientists From PLA-Affiliated Universities

MBZUAI has recruited scientists with connections to the PLA and the PRC's defense industry. One professor at MBZUAI's Machine Learning Department, Mohsen Guizani, has a long history of research collaboration with PLA scientists. He has published 17 research papers with Fu Xiao (伏晓), an associate professor at the

Software Institute at Nanjing University who has received funding for multiple projects from the PLA ([Nanjing University](#), accessed August 21). Gao Jianbin (高建彬), who has hosted research projects for the PLA's Information Technology Safety Research Center, is another collaborator. Guizani has also worked on various projects with researchers from the PLA University of Science and Technology ([Jiangsu Internet of Things Technology and Application Collaborative Innovation Center](#), August 22, 2018; [Free Kaoyan](#), September 12, 2021). In total, Guizani has co-authored at least 167 articles in journals published by the Institute of Electrical and Electronics Engineers (IEEE) alongside PRC-affiliated researchers. Thirty-one of these papers involved collaboration with individuals from PLA-affiliated universities. [1]

Xiong Huan (熊欢), an assistant professor of machine learning at MBZUAI, is also a professor at the Harbin Institute of Technology (HIT; 哈尔滨工业大学). His bio on MBZUAI's website, however, makes no reference to his academic career in the PRC ([HIT](#), December 20, 2023; [arXiv](#), Jul 30; [MBZUAI](#), Accessed August 20). Gu Bin (顾彬), another assistant professor of machine learning, received his PhD from the Nanjing University of Aeronautics and Astronautics. Both of these institutions are among the “Seven Sons of National Defense (国防七子)” (See Appendix 1.). [2] At least four other MBZUAI researchers and professors have received degrees from other “Seven Sons” universities. [3]

MBZUAI has partnered with institutions that have been blacklisted by the US government for their ties to the PLA and has employed scientists from such institutions. This is perhaps best exemplified by an October 2019 visit by MBZUAI's then-CEO Shao Ling (邵岭) to the Beijing Institute of Technology (BIT; 北京理工大学), another “Seven Sons” university. While there, he hosted an information session on MBZUAI's scholarship program, actively seeking to attract BIT students to the university ([BIT](#), October 14, 2019).

This relationship also operates in the opposite direction, where researchers who work at MBZUAI later move to “Seven Sons” universities. For instance, Guan Dayan (官大衍), now an associate professor at HIT, previously served as a research scientist at MBZUAI from March 2022 to July 2023 ([HIT](#), July 12). Similarly, Xie Guo-Sen (谢国森), who was a researcher at MBZUAI from 2020 to 2022, is now a professor at the Nanjing University of Science and Technology (NJUST; 南京理工大学) ([NJUST](#), Accessed June 13).

MBZUAI Research Collaborations with PLA Scientists

MBZUAI has collaborated with scientists at each of the “Seven Sons” universities. It has not, however, only collaborated with institutions that have close ties to the military establishment. It has also worked directly with scientists and researchers at PLA universities. These include the PLA Information Engineering University (PLAIEU; 中国人民解放军战略支援部队信息工程大学) (formerly under the now-defunct Strategic Support Force), NUDT, the PLA Army Engineering University (AEU; 中国人民解放军陆军工程大学), and the Academy of Military Sciences. The focus of these research projects, which have taken funding from PRC institutions, have often aligned with goals that have been articulated in PRC strategy documents, focusing on areas such as communications and network security, cloud computing and Internet of Things (IoT) security, and cybersecurity more generally. This research could also be applied for offensive purposes

([ASPI](#), November 25, 2019). NUDT and PLAIEU are directly engaged in cyber operations ([ASPI](#), May 13, 2017).

A paper published in the journal *IEEE Transactions on Dependable and Secure Computing* as a result of one such research collaboration details a new protocol to make messaging over 5G networks more secure and more efficient ([IEEE Xplore](#), December 9, 2022). Another paper, this time co-authored by Guizani and researchers at NUDT and the Academy of Military Sciences and published in the journal *IEEE Transactions on Mobile Computing*, focuses on IoT research. The paper proposes a new method of detecting problems in IoT systems and making them more secure ([IEEE Xplore](#), November 6, 2023).

Much more research stemming from collaborations between MBZUAI, NUDT, and others has been published since the gulf state university was founded five years ago. A collaboration between MBZUAI, NUDT, and others, including the University of Kent in the United Kingdom, looked at “digital twin” technology, using virtual simulations of systems to study and optimize them. Specifically, the research investigated improving the performance and efficiency of Vehicle-to-X (V2X) communication in 6G networks ([IEEE Xplore](#), October 24, 2023). Another research collaboration between MBZUAI, NUDT, and JD Explore Academy proposed a new machine learning algorithm to optimize performance in certain data processing scenarios ([arXiv](#), October 8, 2023).

MBZUAI researchers again teamed up with AEU, this time with others, including the University of Houston, for a separate project on “digital twin” technology. In a paper they published, the researchers proposed a framework for digital twin-enabled wireless systems for better protection against cyberattacks ([IEEE Xplore](#), November 20, 2023). Other MBZUAI scientists have also published research with academics at the Academy of Military Sciences and other PRC universities on innovative approaches to network security ([IEEE Xplore](#), June 26, 2023).

MBZUAI has also collaborated extensively with military-affiliated institutions in the PRC, including “Seven Sons” universities. Researchers at MBZUAI and Beihang University have presented papers at NeurIPS, one of the most prestigious machine learning conferences, for example. Beihang University specializes in aerospace and information technology ([arXiv](#), October 7, 2022; [BUAA](#), accessed August 29). This work was partially done while Huang Lei (黄雷) was a visiting scholar at MBZUAI. Huang is currently an associate professor at Beihang University’s Artificial Intelligence Institute, where he received his PhD. He was also a research scientist at the Inception Institute of Artificial Intelligence, another institution in the United Arab Emirates with close PRC ties ([Beihang University](#), March 22, 2021). Other projects include work on machine learning optimization problems led by HIT PhD student Xinzhe Yuan (袁新哲) with contributions from MBZUAI professors Xiong Huan and Gu Bin, and work with Harbin Engineering University on IoT security for connected vehicles and other applications ([IEEE Xplore](#), December 23, 2021; [IEEE Xplore](#), June 20, 2023; [MBZUAI](#), May 23). Zheng Peng (郑鹏), who co-authored research on computer vision techniques, was affiliated with MBZUAI while simultaneously a graduate student at the Nanjing University of Aeronautics and Astronautics (NUAA; 南京航空航天大学) ([Association for the Advancement of Artificial Intelligence](#), June 25, 2023). During his time as a research assistant at MBZUAI, he was supervised by an NUAA Professor

([Peng Zheng](#), March 23; [NUAA](#), accessed August 29). Finally, MBZUI scientists have collaborated with academics at NJUST, also on computer vision ([arXiv](#), March 26, 2021).

All these research projects are upstream of potential military applications. For instance, as the PRC focuses more on cyber warfare and informatized warfare, the security and efficiency of networks has become increasingly important. Similarly, using machine learning techniques such as computer vision to enhance object identification in surveillance imagery can improve the accuracy and effectiveness of threat detection, targeting, and situational awareness. As IoT technologies progress, connected vehicles and other networked devices are changing how modern militaries can operate. Much of the research on which MBZUI and PRC scientists have collaborated focuses on more theoretical approaches to solving narrowly defined problems. These foundational innovations form the basis for military technologies that other PLA scientists likely are seeking to develop and deploy.

Conclusion

MBZUI has numerous ties with PLA institutions, as well as with the universities known as the “Seven Sons of National Defense.” These include research collaborations with scientists at all seven of those universities, as well as a career pipeline, with a number of researchers moving between MBZUI and the “Seven Sons.” This presents challenges to the US government’s attempts to restrict technology transfer to the PRC over fears that US technology could be used to support the development of the PRC’s military capabilities. NUDT and the “Seven Sons” appear on the US Department of Commerce Entity List ([Code of Federal Regulations](#), Accessed September 3). Yet MBZUI provides a potential pathway for these entities to bypass US restrictions, as it has access to technologies such as NVIDIA A100 GPUs. This suggests that more rigorous research into both corporate and academic partnerships must be done if the US government is to fix the problems its export controls are intended to solve.

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Notes

[1] IEEE is a global professional organization known for its central role in advancing technology and innovation. It publishes some of the most influential academic journals in the fields of electrical engineering, electronics, and computer science, and hosts numerous conferences each year ([IEEE](#), accessed September 3). In this article, the term “PRC-affiliated researchers” refers to individuals who have affiliations with universities or institutions within the PRC as noted in the IEEE publications. PLA-affiliated universities include both universities with direct PLA links and the “Seven Sons of National Defense” universities (see [2]).

[2] The “Seven Sons of National Defense” are a consortium of universities directly overseen by the PRC’s defense industrial authority which are known for their close ties to the military establishment and which have been blacklisted by the US government ([ASPI](#), November 25, 2019; [eCFR](#), accessed August 31).

[3] These are: Xu Min (徐旻), MBZUI Affiliated Associate Professor of Computer Vision, who got his Bachelor of Engineering in computer science from Beihang University ([MBZUI](#), accessed August 20; [Xu Lab](#), accessed September 3); Gao Zhengqing, who became a PhD student in machine learning at MBZUI after graduating from HIT ([LinkedIn](#), accessed August 20); Guokan Shang (尚国侃), who is a Lead Research Scientist at MBZUI France Lab and received a Bachelor’s degree in 2013 from HIT ([Guokan Shang](#), accessed August 21); and Liu Nian (刘念), a research scientist at MBZUI who received his PhD from the Northwestern Polytechnical University ([Google Sites/liunian228](#), accessed August 29).

Appendix 1 Examples of MBZUI’s collaboration with the ‘Seven Sons of National Defense’

Defense universities	Research projects	PRC Funding	Other institutions involved	Link to Published Research
Beihang University	Adaptive Optics Compensation for Orbital Angular Momentum Optical Wireless Communications	Yes	Beijing Institute of Technology; Beijing University of Posts and Telecommunications	(IEEE Xplore , July 19, 2022)
	Understanding Whitening Loss in Self-supervised Learning	Yes	University of California, Merced (USA); Google	(IEEE Xplore , June 21)
	An Investigation into Whitening Loss for Self-supervised Learning	Yes	N/A	(arXiv , October 7, 2022)
	Active Aerial Reconfigurable Intelligent Surface Assisted Secure Communications: Integrating Sensing and Positioning	Yes	Northwestern Polytechnical University; Hosei University (Japan); Xi’an Jiaotong University; Shenzhen MSU-BIT University (a PRC, Russia joint university); University of British Columbia (Canada)	(IEEE Xplore , June 14)
	An Optimized Plane Detection-Based Topological Metric for Indoor LiDAR SLAM	Not disclosed	Wisedawn Auto Co., LTD	(SSRN , January 10)

	Achieving Fast Environment Adaptation of DRL-Based Computation Offloading in Mobile Edge Computing	Yes	Institute of Software Chinese Academy of Sciences	(IEEE Xplore , September 28, 2023)
	Management of Positioning Functions in Cellular Networks for Time-Sensitive Transportation Applications	Yes	Nanjing University of Aeronautics and Astronautics; Beijing Institute of Technology; University of Edinburgh (UK)	(IEEE Xplore , January 20, 2023)
Beijing Institute of Technology	Multi-Level Representation Learning With Semantic Alignment for Referring Video Object Segmentation	Not disclosed	Inception Institute of Artificial Intelligence; Terminus Group; University of Macau	(IEEE Xplore , September 27, 2022)
Harbin Institute of Technology	Special Characters Usage and Its Effect on Password Security	Yes	Jiangxi University of Science and Technology; City University of Hong Kong	(IEEE Xplore , February 19)
	A Malicious Domains Detection Method Based on File Sandbox Traffic	Yes	East China Normal University; City University of Hong Kong	(IEEE Xplore , October 25, 2022)
	A Comprehensive Detection Method for the Lateral Movement Stage of APT Attacks	Yes	East China Normal University; State Key Laboratory of Public Big Data, Guizhou University; City University of Hong Kong	(IEEE Xplore , October 6, 2023)
	Dynamic Spiking Framework for Graph Neural Networks	No	Hebei University of Technology; Microsoft Corporation; Technology Innovation Institute (TII, UAE); Jilin University	(arXiv , July 30)
	NDOT: Neuronal Dynamics-based Online Training for Spiking Neural Networks	No	TII; Sant'Anna School of Advanced Studies (Italy); Jilin University	(OpenReview , accessed August 20)
	New Insight of Variance reduce in Zero-Order Hard-Thresholding: Mitigating	Not disclosed	Jilin University	(MBZUAI , May 23)

	Gradient Error and Expansivity Contradictions			
Harbin Engineering University	AI-based Intrusion Detection for Intelligence Internet of Vehicles	Yes	N/A	(IEEE Xplore , December 23, 2021)
	Privacy-Preserving Outsourcing of K-Means Clustering for Cloud-Device Collaborative Computing in Space-Air-Ground Integrated IoT	Yes	N/A	(IEEE Xplore , June 20, 2023)
Northwestern Polytechnical University	GP-NeRF: Generalized Perception NeRF for Context-Aware 3D Scene Understanding	Yes	Hefei University of Technology; Nanyang Technological University (Singapore); Baidu Inc.; Hefei Comprehensive National Science Center	(Computer Vision Foundation , accessed August 20)
	Learning Non-Target Knowledge for Few-Shot Semantic Segmentation	Yes	IIAI; National Center for Artificial Intelligence of the Saudi Data and AI Authority	(IEEE Xplore , 2022; IEEE Xplore , September 27, 2022)
Nanjing University of Aeronautics and Astronautics	Multi-UAV-Assisted Federated Learning for Energy-Aware Distributed Edge Training	Yes	Guizhou University; Nanyang Technological University (Singapore); Singapore University of Technology and Design	(IEEE Xplore , July 24, 2023)
	Memory-Aided Contrastive Consensus Learning for Co-salient Object Detection	Yes	ETH Zurich; IIAI	(Association for the Advancement of Artificial Intelligence , June 25, 2023)
	GCoNet+: A Stronger Group Collaborative Co-Salient Object Detector	Yes	Institute of High Performance Computing (Singapore); ETH Zurich; Hong Kong University of Science and Technology	(MBZUAI , September 1, 2023)
Nanjing University of Science and Technology	Non-Salient Region Object Mining for Weakly Supervised Semantic Segmentation	Yes	University of Electronic Science and Technology of China; University of Adelaide; University of Technology Sydney	(arXiv , March 26, 2021)

Murky Media Network Aligns with Beijing on Sensitive Issues

by Shannon Van Sant

Beijing Times

☀️ 22.7 °C Beijing
Thursday, August 22, 2024



HOME CHINA WORLD BUSINESS LIFESTYLE CULTURE TRAVEL SPORTS TOP LISTS



Walmart Sells Entire Stake in JD.com to Focus on China Operations and Sam's Club
Walmart, the largest shareholder of Chinese e-commerce...



Google Faces Revived Lawsuit Over Chrome Data Collection Without User Consent
A U.S. appeals court has ruled that...



Federal Judge Blocks FTC Ban on Noncompete Agreements from Taking Effect
A federal judge in Texas has blocked...

Deconstructing the 'Forced Labor' Narrative: Unmasking Western Media Tactics in Xinjiang

China • Deconstructing the 'Forced Labor' Narrative: Unmasking Western Media Tactics in Xinjiang



Screenshot of an article on the Beijing Times website. (Source: [Beijing Times](#))

Executive Summary:

- The online media website Beijing Times publishes stories on topics the Chinese Communist Party (CCP) deems sensitive and aligns with the CCP's preferred narrative. These stories are interspersed with neutral coverage of international affairs, providing credibility to increase the publication's audience.
- The publication's articles praising advances in the People's Republic of China's military technology have gained traction with mainstream media in the West and have been picked up, cited, linked to, and quoted by outlets including Newsweek, the Daily Mail, and The Defense Post.
- The Beijing Times is an obscure organization. Some of its reporters do not appear to exist, as no trace of them can be found elsewhere on the Internet, and their photos appear to be AI-generated.
- The website is part of a larger network of dozens of "news" websites aimed at local readerships in cities throughout the United States, Europe, Africa, and the Middle East.

On March 3, 2023, a digital publication called Beijing Times began operation ([EIN Presswire](#), March 3, 2023; Beijing Times, [August 18](#); [accessed August 18](#)). [1] Produced by Delaware-based Cedrus Media, the outlet says it provides “unbiased English news on China.” Its font and layout mimic *The New York Times*, and the website publishes articles primarily about domestic news in the People’s Republic of China (PRC) and international stories related to the PRC. The outlet describes its mission as “enlightening the World on China.” Its website reads, “Tightened media controls within China and budget cuts in foreign reporting globally have led to a dearth of in-depth, unbiased information about this crucial player on the world stage. Beijing Times is here to bridge this information gap” ([News Channel Nebraska](#), January 4). There is more to this publication than meets the eye, however. Not only do many of its articles align with the preferred narratives of the Chinese Communist Party (CCP), but its main journalists do not appear to exist. Beijing Times articles have been cited and quoted in mainstream media in the West, likely by journalists who are unaware of the dubious credibility of its coverage.

Coverage Toes Party Line on Sensitive Issues

The Beijing Times appears to be well-resourced and funded and is part of a much larger network of information websites targeting local audiences around the world. It publishes long-form articles that often appear studiously balanced. The outlet makes efforts to present all sides, claiming that its “neutrality” is its strength. “We are not pro- or anti-China, nor do we carry biases for or against any nation,” the website reads. “Our goal is to paint a comprehensive and nuanced picture of China, allowing our readers to form their own informed opinions on everything from censorship and human rights to technological advancements and environmental policies” ([Beijing Times](#), August 18). The Beijing Times’ coverage of the PRC has included short pieces on the history of Beijing and biographies of PRC diplomats who have worked in the United States (Beijing Times; [June 30](#), [August 18](#), [August 22](#)).

Interspersed with articles about the arts, culture, and international affairs, however, are several pieces that clearly communicate Beijing’s points of view. This is particularly true for topics that Beijing deems sensitive. In these pieces, which are often strikingly in line with the official statements and perspectives of the Chinese Communist Party (CCP), authors sometimes quote PRC scholars and government officials. The erosion of democratic institutions in Hong Kong and the ongoing human rights abuses in the Xinjiang Uyghur Autonomous Region (XUAR) are two illustrative topics that the publication has covered.

Hong Kong

An article from October 2023 by Aarav Shen is titled “Media Freedom in Hong Kong: A Tale of Diverging Views.” The piece refers to Jimmy Lai, the Hong Kong media tycoon and pro-democracy advocate, as a “well-known anti-China figure” ([Beijing Times](#), October 1, 2023). The protests held in the city starting in 2019 are framed as “disturbances,” and mainland PRC scholar Li Xiaobing (李晓兵) is quoted describing Lai’s advocacy as part of Western efforts to “meddle in Hong Kong’s affairs with the intention to destabilize China’s financial nerve center.” The piece goes on to describe the government of the Hong Kong Special Administrative Region as “genuinely dedicated to advancing the well-being and developmental prospects of the Hong Kong populace.”

Another story from March 2023 is titled “Hong Kong’s National Security Law and its impact on the region’s stability, security, and economic development.” It describes the testimony of a youth representative from Hong Kong before the United Nations Human Rights Council (UNHRC) ([Beijing Times](#), March 18, 2023). The representative, Alex Yeung Ching Loong, is a member of the 14th National Committee of the Chinese People’s Political Consultative Conference and the 14th Beijing Municipal Committee of the Chinese People’s Political Consultative Conference. He is also a committee member of the All-China Youth Federation, the Chairman of Hong Kong United Youth Association, and the Vice Chairman of the Beijing Youth Federation ([Emperor International](#), accessed August 27). Loong told the UNHRC that “rumors” of foreign companies leaving Hong Kong due to the National Security Law (NSL) are “baseless and unfounded,” according to the Beijing Times. PRC state-run Xinhua News Agency also published a story on Loong’s testimony before the UNHRC ([Xinhua](#), March 18, 2023). A separate article published by the same author is titled “Chinese Spokesperson Says Hong Kong National Security Law Brings Stability and Improved Business Environment.” This piece described remarks made by Wang Chao (王超), spokesperson for the 14th National People’s Congress ([Beijing Times](#), March 4, 2023). Aarav Shen concludes that, overall, the NSL “has been successful in its aims of improving national security, ensuring the rule of law, and better protecting the rights and freedoms of Hong Kong residents.”

Xinjiang

Aarav Shen has also written articles for the Beijing Times on forced labor in the XUAR. One piece from October 2023 is titled “Deconstructing the ‘Forced Labor’ Narrative: Unmasking Western Media Tactics in Xinjiang.” In it, Shen claims to have analyzed over 30,000 XUAR-related stories sourced from 22 media outlets spanning 15 countries and regions to “comprehend the political and economic motivations behind the ‘forced labor’ allegations” ([Beijing Times](#), October 15, 2023). He appears to use tactics, techniques, and procedures, or TTPs, a term used by cybersecurity analysts, to analyze “public opinion manipulation” in the XUAR.

Shen concludes that the “‘forced labor’ narrative” was a “meticulously planned process driven by Western anti-China forces” and a “smear campaign.” He cites several tactics deployed by these forces. These include criminalizing the PRC government, demonizing the PRC’s poverty alleviation policies, stigmatizing assistance measures for transfer employment, distorting service work for labor transfer employment, and attacking the PRC with misleading claims. He also argues that the UN’s Universal Declaration of Human Rights and its European counterpart “do not offer a universal definition of human rights standards” and suggests that the PRC’s different perspective on human rights should be respected.

A separate article by Lynn Hatem from August 2023 documents a visit by foreign envoys from Iran, Myanmar, Samoa, Mexico, and the Commonwealth of Dominica to the XUAR ([Beijing Times](#), August 14, 2023). This piece, subtitled “Unraveling the True Essence of Xinjiang,” highlights the “stark contrast” between Western media narratives and the reality on the ground. The envoys are alleged to have “unanimously attested to China’s dedication towards upholding the linguistic and cultural identities of the ethnic minorities residing in Xinjiang.” [2]

The author began observing the Beijing Times’ website in December 2023. Shortly thereafter, the publication announced it had been hit with a cyberattack. Some of the articles on its website disappeared, and the website’s

search function was disabled. In the days before publication of this article for *China Brief*, the Beijing Times shifted its front-page content to focus on general news and international affairs not concerning the PRC.

United Front Work

The Beijing Times often quotes staff from Chinese friendship associations across the world which are affiliated with the PRC's united front system. A piece titled "Beijing Xiangshan Forum: Global Defense Leaders Convene for Security Dialogue" quotes Joseph Kahama, Secretary-General of the Tanzania-China Friendship Promotion Association ([Beijing Times](#), November 3, 2023). Kahama "lauded China's approach to international relations, which is rooted in dialogue and mutual respect," the article reads. It goes on to say that Kahama "highlighted the shifting dynamics from a bipolar world dominated by a few interests toward a more inclusive, multipolar world order where dialogue among civilizations is not only possible but actively encouraged, with China at the forefront of this transformation."

Other stories cite organizations such as the Somalia-China Friendship Association and the China-Japan Friendship Association, and document the work of the Chinese People's Association for Friendship with Foreign Countries (CPAFFC) ([Beijing Times](#), [March 5](#), [October 24](#), [November 27](#), 2023). CPAFFC is a Ministry of Foreign Affairs-linked organization that falls under the united front system, which is used to control and mobilize organizations and individuals on the Party's behalf (see [China Brief](#), June 24).

Obscure Reporters and Shady Business Structure

The two most frequent contributors to the Beijing Times are Aarav Shen and Lynn Hatem. The publication's website describes Shen as "an esteemed journalist with over 15 years of experience reporting on business, finance, and economics." It proceeds, "With a rich background that spans from Southeast Asia to the heart of Wall Street, Aarav offers a piercing global perspective on market dynamics and economic policy. His work, recognized for its depth and clarity, has shaped international dialogue, making him a trusted voice in a complex industry. Currently based in Hong Kong, he distills intricate financial trends into compelling narratives for a worldwide audience" ([Beijing Times](#), accessed August 18).

Hatem's bio notes, "despite not being native to China, her unique international perspective has made her a powerful voice in articulating the richness of global cultures. She continuously navigates the multifaceted cultural landscape, painting a vivid picture of contemporary life and trends" ([Beijing Times](#), accessed August 18).

Neither author's bio mentions other publications in which their writings have appeared. Attempts by this author to find examples of their work outside the pages of the Beijing Times have been unsuccessful. This makes it difficult to assess their credentials or the credibility of their reporting. Cross-referencing Hatem and Shen's photos using "Sightengine" and "ChatGPT 4o" suggests they might be AI-generated ([Sightengine](#), accessed September 5; [ChatGPT 4o](#), accessed September 5). Performing the same test with some of the other Beijing Times reporters' photos renders the same result. The photos show some of the hallmarks of being created by Generative Adversarial Networks (GAN), a form of AI imagery used in PRC-linked campaigns like Spamouflage ([Graphika](#), August 2020; [Content Authenticity Initiative](#), Accessed September 6).

The publisher of the Beijing Times, Cedrus Media, is a Delaware-based company that also runs a network of 50 other global news websites ([Cedrus Media](#), accessed August 18; [LinkedIn/Cedrus Media](#), accessed August 25). [3] Some of these websites are now defunct, but others have promoted both Cedrus Media and Daher Media—a separate company named after Cedrus’s CEO, Giorgio Daher. The websites also share content across similar publications catering to local readers in places like New York, Atlanta, and Tampa ([Cedrus Media](#), accessed August 18). Daher says he specializes in reshaping “political narratives” ([LinkedIn/Giorgio Daher](#), accessed August 25; [Daher Media](#), accessed August 25).

Giorgio Daher and the Beijing Times have published and promoted work by a “Giorgio Daher” (emphasis added) ([LinkedIn/Giorgio Daher](#), 2023). According to LinkedIn, Giorgio Daher is an executive at S&P Global in London. While the two men share a similar name, they have different profile photos ([LinkedIn/Giorgio Daher, PhD](#), accessed August 25).

Giorgio Daher of S&P Global has engaged with some PRC government entities in the United Kingdom. He has appeared on state-run Phoenix Television and attended events at the Hong Kong Economic & Trade Office (HKETO) in London (YouTube/Giorgio Daher, [February 15, 2023 \[archived version\]](#); [March 14, 2023 \[archived version\]](#)). Daher posted on LinkedIn about a 2023 HKETO event, saying, “Business, banking and resilience are part of the DNA of Hong Kong; and what a rich and unique shared history between Hong Kong and the UK” ([LinkedIn/Giorgio Daher, PhD](#), accessed August 25). He also serves on the board of “Headline Bulletin,” a UK-based media network ([LinkedIn/Giorgio Daher, PhD](#), accessed August 26).

Daher’s article for the Beijing Times was originally published on a website called Global Economy 63 (GE63) ([Global Economy 63](#), April 4, 2023; [Beijing Times](#), April 6, 2023). GE63 publishes on international affairs and appears similar in format to Politico ([GE63](#), accessed August 26). GE63’s website describes itself as “your premier source for leading news and insights that help shape the global economy. In Chinese numerology, 63 is often associated with success and abundance, hence we zoom in on Global Economy 63 (success and abundance)” ([GE63](#), accessed August 26). GE63 also has a list of reporters with impressive bios. Some of the GE63 advisors’ backgrounds are verifiable, but, as with the Beijing Times authors, examples of some of the reporters’ work or existence beyond the GE63 website have been hard to find ([GE63](#), accessed August 21).

Daher’s stance appears supportive of the PRC. His piece, “A US-China Technological Cold War and the Law of Unintended Consequences,” analyzes US government efforts to stop technology transfer to the PRC, US export controls on semiconductor and AI technologies, and technology competition. In it, he concludes that US policies will likely backfire in the long term. Instead, they will “compel the Chinese to double-down on their technology investments, fill any gaps, increase self-sufficiency, and reinforce areas where they have a competitive advantage” ([Beijing Times](#), April 6, 2023).

Mainstream Media Citations Legitimize Dubious Coverage

The Beijing Times is an opaque publication, with obscure authors and a murky organizational structure. This is not the case for its content, however. Far from being obscure, Beijing Times articles have been cited, quoted, and linked to by mainstream media outlets. As such, it may have succeeded in spurring and shaping headlines in these

publications. One example is Aarav Shen's article "Revolutionizing Laser Weaponry: The Internal Beam Path Conditioner Breakthrough," which describes the development of high-energy laser weapons by military researchers in the PRC ([Beijing Times](#), August 11, 2023). This piece was cited and quoted by Newsweek magazine, and also linked by The Defense Post, the Daily Mail, and Asia Times ([The Defense Post](#); [Asia Times](#); [Daily Mail](#), August 14, 2023; [Newsweek](#), August 15, 2023). These publications led their articles with headlines such as, "China claims laser weapon gain on US space dominance" and "China Claims 'Huge Breakthrough' in Laser Weapon Development." The headlines were favorable to the PRC and gave the impression that its military had made an important leap in its technological capabilities. Separately, in 2023, the Lawfare Institute, in cooperation with the Brookings Institution, published an article titled "Water Wars: U.S. and China Tug-of-War for Influence in Pacific Islands." This article cited and quoted a Beijing Times story, "China's Electromagnetic Coil Gun: The Future of Modern Warfare," calling it "the most potent coil gun on earth" ([Beijing Times](#), August 25, 2023; [Lawfare](#), October 4, 2023).

PRC state media has tried to heed President Xi Jinping's call for innovation of "external propaganda methods" and "new expressions that integrate the Chinese and the foreign, telling China's story well, and spreading China's voice" ([Xinhua News Agency](#), August 20, 2013). Organizations like CCTV and Xinhua News Agency, however, will always run into hurdles in gaining trust. They are explicitly and transparently government-run, thus drawing criticism and skepticism from some audiences. Beijing Times is different. It has no discernable connection to the PRC, which allows its stories to gain more traction.

With newsrooms' decline in resources and staff to conduct due diligence on sources and pressure to create content under tight deadlines, stories by outlets like Beijing Times can be easily shared, cited, quoted, and linked to without proper vetting. This can draw readers deeper into content that explicitly echoes CCP perspectives and lead to the spread of misinformation, or even disinformation

Conclusion

Beijing Times pieces that echo CCP perspectives are sandwiched between neutral and informative articles. They are published through websites that mimic the formatting of prominent US publications such as *The New York Times* and Politico, increasing their credibility. The outlet's reporters have detailed biographies, inspiring trust. As such, their stories about human rights and international security that align with the PRC government's perspectives achieve greater reach. The publication thus succeeds in the founder's stated mission of "reshaping political narratives," but in Beijing's favor.

The Beijing Times' parent company has sought global impact. Its broader network of websites has targeted audiences in local communities across the United States, Europe, Africa, and the Middle East. It has succeeded in influencing mainstream media in the United States, suggesting that its broader network is also affecting the perceptions of its readers elsewhere in the world.

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Notes

[1] This piece includes hyperlinks to videos filmed on Loom, as a means of archiving the webpages referenced. The Loom video will rest for a few seconds on an opening shot and then scroll down through the website page and articles so viewers can see them. It should also be noted that the Beijing Times shares its name with a daily newspaper that was published by state-run media company People's Daily between 2001 and 2016 ([The South China Morning Post \[SCMP\]](#), November 14, 2016). The *Beijing Times* newspaper experimented with investigative journalism and was part of a push by Beijing's propaganda organs to commercialize and respond to market forces ([Want Daily](#), September 24, 2010). The new digital publication is of a distinctly different editorial slant.

[2] Hatem has also documented a visit by young scholars to the region in a piece from October 2023 ([Beijing Times](#), October 23, 2023).

[3] Cedrus Media's network has included the US Daily Post, Euro Examiner, The London Daily Journal, The Wenzhou Times, The Kingdom Journal, The Executive Journal, The American Magazine, Asia Examiner, Cypriot Times, Zambian Times, Tunisian Times, Belgian Times, Scottish Examiner, Ontario Examiner, Romania Examiner, Ireland Journal, Zero Waste Magazine, Khaleej Report, France Opinion, Bangkok Wire, Florida Opinion, and Salvador Daily.

Kubernetes: A Dilemma in the Geopolitical Tech Race

By Sunny Cheung



Graphic illustrating US-PRC competition over Kubernetes. (Source: AI-generated image)

Executive Summary:

- Huawei and Alibaba have influence in the Cloud Native Computing Foundation that controls open-source platform Kubernetes, which underpins US military technology, including F-16 fighter jets and nuclear infrastructure.
- The use of open-source technologies in critical systems raises concerns. Despite US efforts to mitigate risks, Kubernetes remains tempting to exploit for attackers from the People’s Republic of China (PRC).
- Open source fosters global innovation, from which the United States benefits. But this same openness also strengthens US competitors. The United States should therefore develop a clear framework to understand and mitigate the challenges posed by open source.

To date, open-source technologies have remained an area of cooperation between the United States and the People's Republic of China (PRC). This comes despite worsening geopolitical tensions that have impacted or even severed cooperation in other technological domains. Kubernetes, an open-source platform, presents an unusual case of cooperation. It has been widely adopted not just in commercial industries but also in sensitive areas like US military systems. It is even used in F-16 fighter jets and nuclear infrastructure. On the PRC side, tech giants like Huawei that face sanctions from the United States, are major contributors to the platform and beneficiaries of its development.

While open source offers advantages over closed source systems, its use in critical systems and by US competitors are not without risks. The presence of state-affiliated companies from the PRC in the management and built environment of Kubernetes compounds those potential problems. Given the platform's centrality and widespread use, however, it is unlikely to be replaced by an alternative any time soon. This suggests that risks surrounding Kubernetes's use will need to be managed carefully.

Kubernetes Underpins Global Software Companies

Kubernetes, often called K8s, is an open-source platform developed by Google and now managed by the Cloud Native Computing Foundation (CNCF). CNCF also holds the trademark for Kubernetes. The platform is analogous to a highly efficient orchestral conductor. It automatically configures, coordinates, and manages containers—small, isolated environments for running applications. To extend the analogy, containers are akin to individual musicians, each playing their discrete part. Kubernetes ensures that the containers all perform in harmony, whether the “orchestra” is running in the cloud, a private data center, or both ([Mirantis](#), last accessed August 16; [Google Cloud](#), accessed August 19). If a container fails, Kubernetes steps in and quickly replaces it without interrupting the performance. This enables applications to run reliably and efficiently across different environments, whether they are small internal apps or massive AI workloads, such as those seen in the finance, telecommunications, and healthcare industries.

Kubernetes has a wide range of use cases. It is common in multi-cloud environments, making applications portable across cloud providers like Amazon, Azure, and Google Cloud. Major international platforms such as Spotify and Adobe have also migrated their services to Kubernetes in recent years ([Altoros](#), [May 18, 2021](#), [September 27, 2021](#)). As of this year, it is used by over 50,000 companies globally, 60 of whom depend on it to manage their cloud infrastructure ([Bacancy](#), June 18). Its versatility and ability to streamline operations make it a backbone for digital infrastructure, powering everything from basic web services to advanced machine learning applications.

The Pentagon's Embrace of Kubernetes

The US Department of Defense (DoD) has integrated Kubernetes into its software modernization strategy. This includes deploying it in mission-critical environments such as managing the software for F-16 fighter jets. the US Air Force's Chief Software Officer from May 2018 to October 2021, has applauded Kubernetes and led 37 teams within DoD that built applications on top of the system. In a 2020 interview with CNCF, Chaillan said, “We have teams doing this at every side of the weapons systems, from the space systems to

the nuclear systems to the jets” (CNCF, [May 5, 2020](#), [May 7, 2020](#)). Kubernetes also enables rapid updates, secure management of systems, and scaling of computational resources during missions—capabilities that are crucial for modern military operations.

The DoD has made Kubernetes a critical component of its DevSecOps strategy, a modern approach that enables agile and secure software delivery. The use of Kubernetes offers advantages, such as the ability to implement immutable infrastructure, continuously reconcile system configurations, and manage multi-cluster environments effectively. These features help DoD in navigating the complex environments of disconnected, tactical, and highly secured networks, where cloud-native operations must be resilient against near-peer threats. Kubernetes provides the flexibility to securely manage distributed applications, even in constrained environments.

PRC Firms Involved in Kubernetes’s Governance

PRC tech companies are heavily involved in the development and shaping of Kubernetes’ built environment. CNCF, as the governing body behind Kubernetes, promotes the growth and sustainability of cloud-native technologies. Its mission is to build and maintain a robust ecosystem for the technologies it hosts, which involves a global community of contributors, including large corporations like Huawei and Alibaba. Both firms hold “Platinum Membership” within CNCF, the highest tier available. This allows them significant input into the direction and governance of Kubernetes and other cloud-native technologies ([CNCF](#), accessed August 16).

Huawei and Alibaba’s influence within CNCF may enable them to shape the technology in accordance with their own interests. Chris Aniszczyk, the Chief Technology Officer of CNCF, has stated that the PRC has contributed more to CNCF projects than any other country or region outside the United States between 2023 and the organization’s founding in 2015. In total, the PRC has accounted for 9 percent of all contributions in that time ([CNCF](#), last accessed August 16). Meanwhile, Huawei’s Chief Software Architect and Community Director for Open Source, Hou Peixin (侯培新), has claimed that Huawei is now the biggest contributor to the Kubernetes community. He believes that the more Huawei contributes, the greater the benefits they receive will be ([Kubernetes](#), last accessed August 16). Hou has stated that Huawei’s adoption of Kubernetes led to substantial improvements in company’s efficiency, cutting operating expenses by 20-30 percent and thereby spurring greater investment in the technology ([Kubernetes](#), last accessed August 16). Over the years, Huawei has claimed that it has participated in Kubernetes’ steering committee and in more than ten special interest groups to guide the project, including federation, architecture, and resource management and container policy. Huawei was also one of the first companies to receive the Kubernetes Certified Service Provider (KCSP) certification ([Huawei](#), October 30, 2017).

Currently, Huawei’s involvement in Kubernetes’s day-to-day operations may be limited. However, it is not the only prominent PRC firm involved. ByteDance, whose subsidiary TikTok has raised national security concerns in the West, employs an individual who acts as one of four principal organizers of the Kubernetes Serving Working Group, which works to enhance Kubernetes’ support for AI inference serving ([Github](#), last

accessed August 16). The existing Kubernetes Steering Committee, responsible for the project's governance and oversight, also includes members from DaoCloud, a leading PRC cloud service provider that plays a crucial role in advancing Kubernetes's implementation and governance, particularly in the cloud-native ecosystem ([Github](#), last accessed August 16).

PRC Policy Seeks to Exploit and Harness Open-Source Technology

The PRC has made open-source technology a focus of its innovation policy. In March 2021, the PRC's 14th Five-Year Plan became the first to explicitly reference open-source technology. This underscored the government's commitment to fostering open-source communities to drive digital innovation ([Xinhua](#), March 13, 2021). The PRC aims to elevate its status from a "major open-source player (开源大国)" to a "strong open-source nation (开源强国)." This is a vision articulated by Ni Guangnan (倪光南), a prominent scientist at the Chinese Academy of Engineering ([Shanghai Observer](#), May 27, 2023). This strategy dovetails with the PRC's broader ambition of becoming self-reliant in critical technologies, reducing its dependence on foreign software, and potentially using open-source tools for both commercial and military purposes ([Reuters](#), May 30).

Meanwhile, the PRC's intelligence community has been systematically studying and exploiting loopholes in open-source technologies such as RISC-V (see *China Brief*, [December 15, 2023](#); [May 24](#)). It has also been leveraging open-source technologies' openness to weaponize them against the United States ([CISA](#), August 20, 2021). For instance, state-sponsored organizations like advanced persistent threat groups (APT) APT27 and APT41 have specifically targeted Linux vulnerabilities in cloud services and enterprise systems ([TechMonitor](#), March 2, 2023; [Google Cloud](#), August 7, 2019). These groups often manipulate open-source projects, inserting malicious code or exploiting known flaws before they can be patched.

Russia's military has utilized open-source tech's vulnerabilities as well. The Kremlin's military intelligence agency, the Main Directorate of the General Staff (GRU), was found to have used a Kubernetes cluster to conduct large-scale brute-force attacks targeting US government systems, including those of the DoD between 2019 and 2021 ([NSA](#), July 2021).

The PRC's military sector has also discussed the potential of leveraging Kubernetes. In 2023, experts from China Electronics Technology Group's (CETG) (中国电子科技集团) 28th unit published a research paper detailing the development of a military-grade intelligence annotation system that leverages machine learning and Kubernetes to enhance the efficiency of handling large volumes of data ([Sohu](#), August 2). CETG's 28th unit is the sole domestic research unit capable of managing joint operations and developing, maintaining, and servicing command systems for all the PLA's military branches and theater commands. [1]

In the commercial domain, Huawei has been leveraging Kubernetes to strengthen its global cloud capabilities ([Outh](#), August 28; [Volcano](#), last accessed August 16). Recently, Huawei's cloud services have expanded across the Middle East and Central Asia. In total, it has a presence in over 170 countries worldwide ([EastMoney](#), June 20; [Huawei](#), November 7, 2023). At the Huawei Cloud Summit Egypt 2024,

Huawei became the first global provider to launch a public cloud node in Cairo, positioning Egypt as a digital hub for North and Central Africa ([Huawei](#), May 22). The company entered the Russian market in 2018, becoming the country's first public cloud provider from the PRC and quickly solidifying its leadership through localized services and compliance expertise ([FromGeek](#), March 22, 2019).

The US government has thus raised concerns that relate to cloud services. These are based on fears that interconnected cloud services could enhance the PRC's capabilities in areas such as AI training and potentially sensitive technologies like nuclear systems ([Outh](#), August 28; [AsiaTimes](#), July 19; [The New York Times](#), June 21, 2023). As the PRC successfully harnesses Kubernetes and other open-source platforms to strengthen its cloud capabilities, this could undermine the efficacy of current US export controls aimed at delaying the PRC's technological advancement.

US Government Persists but Mitigates Risks

Both the public and private sectors increasingly rely on Kubernetes, which has turned the platform into a critical piece of global software infrastructure. As its role grows, so does its appeal as a target for attackers seeking to disrupt international supply chains through large-scale cyberattacks. Earlier this year, Microsoft discovered a critical flaw in Azure Kubernetes Services (AKS) ([Microsoft](#), April 17). Attackers were able to elevate their own privileges and access sensitive credentials, potentially leading to severe data breaches and financial losses. In August, Microsoft discovered that an attacker with access to a vulnerable Azure Kubernetes Services cluster could grant themselves elevated privileges and retrieve credentials for other services in the cluster. Similar attacks in the future could lead to further data theft, financial loss, and other serious impacts ([Microsoft](#), August 19).

Governments are nevertheless drawn to Kubernetes as it offers undeniable advantages in managing complex, large-scale applications. However, this does not necessarily make it the wisest option for underpinning advanced weapons systems. Research has exposed further risks posed by an overreliance on Kubernetes. In 2023, PRC researchers published a paper on the risk presented by third-party add-ons with excess permissions in Kubernetes environments. They demonstrated that one-third of such apps in CNCF have security risks. They also discovered that the Kubernetes services of the top four cloud vendors are vulnerable to these type of permission attacks. For reporting these issues, the researchers received a bounty from Google—standard practice in the open-source community to incentivize the discovery of vulnerabilities in order to patch them ([DL](#), November 21, 2023). US programs and policy guidelines such as the Cybersecurity & Infrastructure Security Agency's (CISA) Open Source Software Security Roadmap 2023 and the National Security Agency's Kubernetes Hardening Guidance also focus on mitigating risks in this way ([CISA](#), September 12, 2023; [NSA](#), March 15, 2022). CISA's roadmap highlights the federal government's role in enhancing open-source security, outlining strategies such as reducing risks to critical infrastructure and establishing visibility into software usage. Similarly, following the Russian GRU's brute-force attacks on US systems via Kubernetes, the NSA's guidance proposes security measures for Kubernetes environments such as scanning for vulnerabilities, enforcing strict authentication, and implementing network segmentation. It remains to be seen how effective these measures are. According to

Google cybersecurity subsidiary Mandiant, “Kubernetes can be difficult to harden” ([Mandiant](#), August 19). Incidents where Kubernetes has been found vulnerable serve as a reminder that even sophisticated, well-developed open-source systems are not immune to security breaches.

Conclusion

The openness that fuels innovation and benefits nations can also expose them to security risks. The US government has begun to investigate the risks of PRC’s use of open-source technologies, beginning with RISC-V, an instruction set architecture for chips ([Reuters](#), April 23; for more on RISC-V, see [China Brief](#), December 15, 2023). The rise in Kubernetes’s prevalence and the close involvement of entities linked to the PRC with the CNCF suggests that these investigations will continue. The more government systems rely on open source tech, the more politicized the technology is likely to become, as the suspension of Russian developers working for sanctioned companies by GitHub in 2022 indicates ([Bleeping Computer](#), April 16, 2022).

There are no easy answers to the problems that open-source technologies pose in an era of geopolitical competition. Governments will have to continue to weigh the benefits of the technology against the potential risks, and then to compare that against alternative, closed-source systems. While there is no suggestion that Kubernetes will become any less central, it is necessary that increased attention be paid to how open-source platforms represent a double-edged sword for both the United States and its rivals. As technology evolves, so too must the frameworks for understanding and managing subsequent risks.

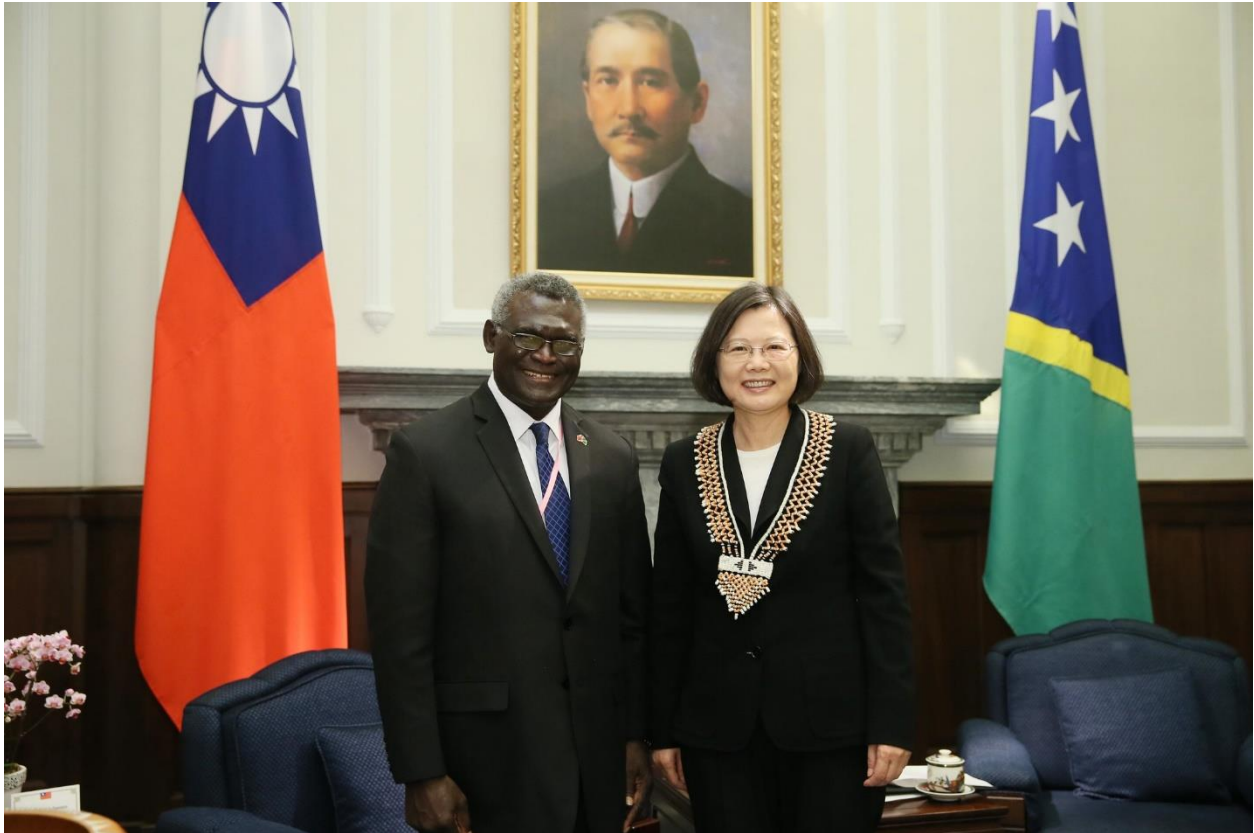
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Notes

[1] Chen, Mengmeng. “Design and Implementation of Intelligent Annotation System in Field of Military Public Opinion.” *Industrial Control Computer*, vol. 4, 2023, pp. 125-128.

One Partnership at a Time: Beijing Steadily Creates a New Type of International Relations

By Anabel Saba



Former president of Taiwan Tsai Ing-wen meets former Solomon Islands prime minister Manasseh Sogavare in 2016. (Source: [Flickr](#))

Executive Summary:

- The People's Republic of China (PRC) has established a framework of authority and values that fosters voluntary compliance from subordinate states, as exemplified by the Solomon Islands' recent diplomatic alignment with Beijing, abandoning recognition of Taiwan in favor of the PRC.
- The PRC makes explicit demands of its international partners, such as endorsing national reunification and rejecting Taiwan's sovereignty, to encourage alignment with its foreign policy goals.
- The PRC's ideological formulations of the "community of common destiny," "a new type of international relations," and "true multilateralism" underpin its negotiations with other countries.
- Initiatives like One Belt One Road (OBOR), the Global Development Initiative (GDI), the Global Security Initiative (GSI), and the Global Civilization Initiative (GCI) mark a new phase in the PRC's engagement with the international system. The GSI and GCI currently exist as rhetorical formulations, while OBOR and the GDI have been actively implemented.

On September 4–6, Beijing hosted the 2024 Summit of the Forum on China-Africa Cooperation (FOCAC), which was attended by a record number of foreign leaders ([MFA](#), August 23). In President Xi Jinping's keynote address at the opening ceremony, he proposed ten partnership actions that would elevate the overall relations between the PRC and all African countries (with the exception of the Kingdom of Eswatini) to an “all-weather China-Africa community with a shared future for the new era” ([Xinhua](#), September 5). The ten partnerships are underpinned by the PRC's key initiatives—One Belt One Road (OBOR), the Global Development Initiative (GDI), the Global Security Initiative (GSI), and the Global Civilization Initiative (GCI)—with a marked emphasis on modernization and the elevation of strategic relations. Xi pledged 360 billion Renminbi (\$50.7 billion) of financial support over the next three years, distributed to implement the ten recommended partnership actions ([Xinhua](#), September 5).

This year's FOCAC Summit is the latest instance of the PRC using a mixture of bilateral and multilateral fora to push its foreign policy concepts. In recent years, the PRC has accelerated efforts to ensure other countries share its preferences. Enforcing the “one-China principle,” under which Taiwan is seen as an inalienable part of the PRC, has long served as an important part of the country's diplomatic strategy. Now, Beijing has begun to demand that its partners provide explicit endorsement of national reunification and the rejection of Taiwan's sovereignty in order to reap the rewards of closer partnership ([Nikkei Asia](#), June 24). Some countries, such as the Solomon Islands, have faced particular pressure in this regard. Earlier this summer, one of Islands' members of parliament, Peter Kenilorea Jr., faced public criticism from his own government for his participation in the Inter-Parliamentary Alliance on China (IPAC) summit in Taipei ([Solomon Star](#), August 3). PRC diplomats pressured politicians from at least six other countries not to attend ([AP News](#), July 28).

Hungary Achieves Highest Level in PRC Diplomatic Hierarchy, Affirms ‘One-China’ Principle

Several key phrases recur in the PRC's foreign policy pronouncements, statements, and agreements with other states. What Beijing refers to as a “new type of international relations (新型国际关系)” is the practice of what it calls “true multilateralism (真正的多边主义),” where countries build a “community of common destiny for humankind (人类命运共同体为)” ([CIIS](#), 2023). While the phrases appear lofty in nature, in reality they refer to constructing a new international order, molding the United Nations in Beijing's image, and reducing the power of other states to censure or restrict its activities ([China Brief](#), February 26, 2018).

In terms of bilateral relationships, the PRC does not seek traditional alliances, instead promoting a system of “partnerships.” The PRC's notion of “partnership” originated following the end of the Cold War, forming its first “strategic partnership” with Brazil in 1993, followed by a “partnership of strategic coordination” with Russia in 1996 ([Shine.cn](#), July 26; [FMPRC](#), accessed July 30). According to a report by the China Institute for International Studies, there are five discernible levels in the PRC's diplomatic hierarchy ([CIIS](#), October 20, 2023):

1. “All-weather” or “permanent” strategic partners (“全天候”“永久”的战略伙伴关系);
2. “Comprehensive” or “global” or “all-round” strategic partners (“全面”“全球”“全方位”的战略伙伴关系);
3. Strategic partners (一般性战略伙伴关系);
4. “Comprehensive” or “all-round” partners (“全面”或“全方位”的伙伴关系); and
5. Partners (一般性伙伴关系).

Several countries sit at the top level of this hierarchy, including Russia, Pakistan, Venezuela, and Belarus. As of May 2024, Hungary has also been promoted into this bracket, following a visit from Xi Jinping during his first European tour in five years ([MFA](#), May 10). This built upon the “comprehensive strategic partnership” established in 2017 ([Xinhua](#), May 10; see [China Brief](#), May 23). The announcement was accompanied by the unveiling of several additional agreements, including advancing cooperation on OBOR and Hungary’s “Eastern Opening” policy ([Xinhua](#), May 10; [China-CEE](#), April 10). During the talks, Xi Jinping remarked that the two countries “have set a model for building a new type of international relations,” and emphasized that collaboration with Hungary will contribute to “positive efforts” to building a “community of common destiny” ([Xinhua](#), May 10). In return, Hungary reaffirmed its commitment to the “one-China principle” and its opposition to “all forms of separatist activities” aimed at breaking the PRC’s unity ([Xinhua](#), May 10).

The language in these bilateral agreements, though largely symbolic, provides valuable insights into how the PRC perceives its partners. Integrating principles and objectives into a unique partnership is crucial for shaping a world order aligned with Beijing’s preferences. Hungary is not the only country to have articulated its opposition to “separatist activities.” Recently, both Kazakhstan and Belarus made statements to this effect, with the former promising to support “all efforts made by the Chinese government to achieve national reunification” ([People’s Daily](#), July 4; [International Department](#), July 9).

OBOR and Global Initiatives as Vectors of Influence

Alongside promoting adherence to its ambitions for unification with Taiwan, the PRC has also unveiled three global initiatives in recent years to cast itself as an innovative and ambitious stakeholder in the international order. These proposals—the Global Civilization Initiative (GCI), Global Development Initiative (GDI), and Global Security Initiative (GSI)—aim to reshape international cooperation in accordance with the PRC’s principles (see [China Brief](#), [November 21, 2023](#), [March 3, 2023](#)). In Beijing’s terminology, the GCI emphasizes respect for cultural diversity, common human values, and promoting international exchanges, while the GDI focuses on people-centered development and practical cooperation in areas like poverty alleviation and climate change. PRC Foreign Minister Wang Yi has stated that over 100 countries have requested to participate in the GDI ([FMPRC](#), September 21, 2022; for the list of participants, see [UN Department of Economic and Social Affairs](#), accessed August 16). The GSI, meanwhile, which seeks to build a security community through dialogue and partnerships, is also said to have garnered support from over 100 countries and regional organizations, being incorporated into more than 90 bilateral and multilateral

documents ([People's Daily Online](#), July 29).

While the GSI, GCI, and GDI are still new, OBOR has been expanding its influence for over a decade. Described as a “vivid example” of building a global community of common destiny and a “global public good and cooperation platform provided by China to the world,” it has enlisted more than three-quarters of the world’s countries and 30 multilateral organizations ([Embassy of the PRC in Italy](#), September 26, 2023). The GSI and GCI currently exist just as rhetorical formulations, while OBOR and the GDI have produced tangible results. The GDI has focused on targeted development efforts, such as the “Smiling Children” project in Nepal and the “Kit of Love” project in Cambodia ([Xinhua](#), accessed August 14).

OBOR has already gone through several rounds of evolution since 2013. One key factor that differentiates it from other PRC initiatives is the bilateral character of its implementation. In contrast, the three global initiatives are framed in multilateral terms. OBOR is often conducted in ways that are recognizable as a form of checkbook diplomacy, using economic coercion to achieve diplomatic goals. For example, on March 26, 2023, Honduras switched its diplomatic recognition from Taiwan to the People’s Republic of China (PRC). A mere three months later, it joined OBOR. Taiwan’s Ministry of Foreign Affairs argued that the PRC had used economic coercion to incentivize this flip ([MOFA](#), March 26, 2023). Similarly, Panama (2017), the Dominican Republic (2018), El Salvador (2018), and Nicaragua (2022) all joined OBOR within a year of breaking diplomatic ties with Taipei. These countries also signed several memoranda of understanding (MOUs)—characteristically lacking transparency—on a variety of areas for cooperation, potentially allowing a high degree of PRC influence into their politics ([The Prospect Foundation](#), April 8, 2022). Beijing has effectively combined hard economic power with non-material sources of national power to advance its diplomatic agenda in this way. Despite its claims of anti-hegemonism, Beijing’s approach to foreign policy is unusually coercive.

The PRC Extends Influence in the Solomon Islands

On July 12, in a one-on-one meeting in Beijing between PRC President Xi Jinping and Prime Minister Jeremiah Manele of the Solomon Islands, the latter reaffirmed his country’s commitment to the “one-China principle” and explicit support for Beijing’s efforts to achieve national reunification. Manele stated, “the Solomon Islands is ready to further deepen the comprehensive strategic partnership with China and build a community with a shared future between the two sides” ([Xinhua](#), July 13). [2]

The Solomon Islands maintained diplomatic ties with Taiwan for 36 years, from May 23, 1983 to September 16, 2019. At that point, then-Prime Minister Manasseh Sogavare—a proponent of pro-PRC policies—initiated a switch toward recognizing the PRC ([MFA](#), September 16, 2019). This shift included a 2022 security pact which raised concerns among Western leaders about the potential establishment of a PRC military presence in the South Pacific ([SCMP](#), March 20). A leaked copy of the security agreement appears to show that the Solomon Islands granted the PRC military privileges, such as ship visits and logistical support, leaving the door open to the possibility of a permanent military base, which would significantly extend the PRC’s strategic reach in the region ([X.com/@Anne MarieBrady](#), March 24, 2022; [Saipan Tribune](#), May 16, 2022). In August

2022, Huawei and the China Harbor Engineering Company (CHEC; 中国港湾工程) were authorized by the Solomon Islands government to build 161 mobile broadband towers throughout the country. This was to be financed by a 20-year \$65 million loan from the Export–Import Bank of China, a policy bank under the State Council, at a 1 percent interest rate ([Global Times](#), August 19, 2022).

Diplomatic rapprochement with the PRC has not been universally accepted on the islands, however. Malaita, the Solomon Islands' most populous province, has shown resistance to PRC influence and its activities in the country. Following the diplomatic switch, former Malaita Premier Daniel Suidani publicly rejected PRC aid in his 2019 “Auki Communiqué.” Ahead of provincial elections held in April this year, Suidani claimed that “many of us have received phone calls from [the opposing camp] telling them if they join the camp they will be given projects for their wards and also they will be receiving SI\$300,000 [\$35,000] each member—it’s getting to the next level” ([The Sunday Guardian](#), May 5; [X.com/@CleoPaskal](#), November 28, 2021; [MPGIS](#), 2017).

The PRC also acted as the primary source of funding for the construction of the Pacific Games stadium in the Solomon Islands' capital, Honiara. While Sogavare declared the diplomatic switch a developmental miracle, the World Bank has struck a more cautious note. In a report, the organization noted that the country had “a moderate level of debt” that “is consistently increasing amid persistent fiscal deficits driven by spending associated with the COVID-19 response and the Pacific Games 2023” ([RNZ](#), May 8; [World Bank](#), March 7). The Solomon Islands' exposure to diplomatic and economic pressure from the PRC has led to public discontent and unrest. Paradoxically, this serves the PRC's interests by providing it with greater leverage to weave itself further in the country's social, political, and economic fabric ([Reuters](#), November 29, 2021). This can be characterized as a form of “entropic warfare,” whereby unrest leads to a retrenchment of PRC interference and dependence, justified in the name of “stability” ([The Sunday Guardian](#), June 4, 2022).

Conclusion

The PRC's evolving foreign policy and diplomatic strategies reveal a sophisticated and multifaceted approach to global influence. Since its establishment in 1949, the PRC has consistently championed principles of peaceful coexistence and non-interference in its rhetoric. But its recent shift toward more assertive diplomacy underscores a broader ambition to reshape international relations. Through One Belt One Road and the three global initiatives (the GDI, GSI, and GCI), the PRC is not only expanding its economic and strategic footprint but also embedding its ideological framework into global diplomacy.

The strategic shift in countries such as the Solomon Islands highlights the effectiveness of the PRC's checkbook diplomacy, where economic incentives and strategic partnerships are leveraged to secure political support and reshape regional dynamics. This approach not only advances the PRC's geopolitical goals but also reinforces its position as a dominant force in international affairs. As the PRC continues to assert its vision of a “community of common destiny,” the implications of its diplomatic maneuvers will continue to resonate across the globe, challenging existing power structures and impacting the international order for years to come.

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Notes

[1] The Five Principles of Peaceful Coexistence (mutual respect for sovereignty and territorial integrity, mutual non-aggression, non-interference in each other's internal affairs, equality and mutual benefit, and peaceful coexistence) are PRC foreign policy principles first put forward by then-PRC Premier Zhou Enlai on December 31, 1953, during a meeting with a delegation from the Indian government. At the 1955 Bandung Conference, the Five Principles were included in the Ten Principles for conducting international relations that Indonesia adopted; and in 1970 they were included in the Declaration on Principles of International Law concerning Friendly Relations and Co-Operation Among States in accordance with the Charter of the United Nations. They are characterized as fundamental principles behind PRC foreign policy (see [Embassy of the PRC in the Islamic Republic of Iran](#), June 29, 2014). The links Xi mentions were also echoed at a recent event in Beijing commemorating the 70th anniversary of the Principles ([PLA Daily](#), July 8).

[2] The “community of shared future” is Beijing's updated, preferred English translation for “community of common destiny.” Outside of direct quotation, *China Brief* prefers to stick with the latter, which was the original official translation, and more closely reflects the Chinese term.