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PAMIR Report

Displays are the New Batteries

China's Growing Dominance of the Global Display Market and its Implications for Our Economy and National Security

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Executive Summary

- Display technology is fundamental to our everyday lives. Although we commonly associate digital displays with civilian uses such as cell phones and televisions, they are better understood as a dual-use technology. Electronic displays are a component of countless sensitive national security technologies, ranging from control consoles in fighter aircraft and military communications devices to our critical national infrastructure.
- The display industry must be treated as an important part of a nation's defense industrial supply chain, akin to other more visibly dual-use industrial sectors such as batteries and semiconductors. Without an adequate supply of military-use displays, a nation does not have functioning weapons systems; with a supply of military-use displays that has been compromised by an adversary, a nation faces a supply chain threat to its national security.
- China recognizes the geostrategic importance of the display industry and has placed it on several official lists of nationally important technologies. The People's Republic of China (PRC) is attempting to dominate the global display market via state financial and regulatory support, including substantial subsidies for BOE Technology Group, its primary national champion, as well as for other major Chinese firms such as TCL, Tianma (a subsidiary of the state defense conglomerate Aviation Industry of Corporation of China, or AVIC), and Visionox. PRC subsidies in the display industry also include tax breaks, discounted access to capital, free or discounted land and utilities, and subsidies for hiring foreign talent.
- In addition, Chinese display makers have benefited from the PRC's rampant foreign IP theft. In July 2023, South Korea's Supreme Court found a dozen executives and employees of a key display industry subsidiary guilty of leaking core technological assets to BOE. In a separate case from July 2024, a South Korean engineer was sentenced to six years in a ROK prison for leaking \$24.5 million worth of OLED technology secrets to China.¹ The US International Trade Commission (USITC) also announced it would investigate allegations that several Chinese electronics companies stole trade secrets related to OLED display technology from a Korean display company.² USITC identified eight Chinese respondents in the case so far, including BOE and several of its subsidiaries.
- The PRC's largest display makers are major participants in the People's Liberation Army's "Military-Civil Fusion" (MCF or 军民融合) efforts, whereby civilian industrial capacity is leveraged for dual-use purposes in exchange for subsidies and other special treatment. As display technology becomes increasingly central to military equipment, and overlaps in its production methods with other critical industrial sectors such as semiconductors, the role of Military-Civil Fusion in the display market continues to grow.³ Reliance on China for displays presents a major supply chain threat to our national security.
- BOE, China's 'national champion' manufacturer of LCD and OLEDs for the global market, was spun off in 1993 from a state-owned military semiconductor enterprise. As a national champion designee, BOE remains deeply intertwined with the Chinese

Executive Summary

Communist Party (CCP) and its state and party institutions. BOE's single largest shareholder is a state-owned enterprise, and many members of BOE's executive leadership boast deep ties to the CCP.

- BOE makes no secret of its extensive connections to China's military-industrial complex and armed forces, with the company publicly highlighting their defense ties and military project work in the press. Among other things, they are involved in the development of military-use headgear and in a combat aircraft project.⁴ BOE reportedly founded a "Military-Civil Fusion Industrial Park" in Mianyang, Sichuan Province in 2016. There is no question whether BOE participates in military-use technology development; the only question is precisely which BOE facilities have most directly been supporting the PLA.
- BOE also has a range of ties to China's repression of the Uyghurs in Xinjiang. BOE has collaborated with the Xinjiang Production and Construction Corps (XPCC) on recruitment; XPCC is a state-run paramilitary corporate conglomerate that has been sanctioned by the US for its role in human rights violations against the Uyghur population. From at least 2017 to 2020, a major supplier that manufactures components for BOE's flat panel displays reportedly sponsored the alleged forced transfer of 1,000 Uyghurs per year to its manufacturing facilities, an arrangement tantamount to modern slavery. As recently as 2019, the Australian Strategic Policy Institute (ASPI) included BOE in its list of companies that may be using Uyghur forced labor.
- BOE's participation in both China's military development and domestic repression necessitate a policy response from Congress and regulatory bodies in the interest of national security. Measures such as the Entity List, the US Trade Representative's Section 301, the Department of Defense's 1260H list, and Treasury's Office of Foreign Assets Control (OFAC) must all be considered.
- Displays are a strategically important technology, and the American public must understand there are legitimate and concrete dangers to excessive technological dependence on the PRC. These concerns range from the penetration and sabotage of critical infrastructure during a conflict, to the exploitation of supply chain vulnerabilities targeting our most advanced weapons platforms such as the F-35. As Israel's recent attack on Hezbollah's pagers confirm, such supply chain attacks can be deadly and powerful while differentiating sharply between the target opposition and nearby civilians. China's support for its display industry is thus a concern for American national, economic, and technological security.

Displays are the new batteries

Electronic displays have countless applications over numerous different industries, most notably in consumer electronics, and decades of use in televisions, computers, mobile phones, etc. has led to a globalized supply chain for displays worth nearly \$200 billion that is dominated by a handful of leading companies. Contrary to popular misperceptions, however, displays have a wide range of both commercial and military applications.

Displays are frequently integrated as a component into sensitive national security technologies. On the modern information-driven battlefield, everything from control consoles in fighter aircraft to squad-level communications devices likely has a display of some kind attached to it. Far from being confined to consumer electronics, the display industry must be understood as an important part of a nation's defense industrial supply chain, akin to other more visibly dual-use technology industries such as batteries and semiconductors. Without an adequate supply of military-use displays, a nation does not have functioning weapons systems; with a supply of military-use displays that has been compromised by an adversary, a nation faces a threat to its national security.

Just as with batteries and semiconductors, the United States and its allies and partners must secure a guaranteed supply of displays that cannot be threatened by an adversary or compromised via supply chain infiltration. This fear is not merely a theoretical worst-case scenario.

The two sides of this coin reinforce one another. Pushing major South Korean and Japanese competitors out of the display market via massive subsidies and stolen intellectual property strengthens China's national champions in the production of both civilian and military-use displays; at the same time, depriving the US of alternative sources of displays from allied nations increases our reliance on potentially hostile supply chains, which are at greater risk of penetration by China's intelligence services. Projects as significant as the F-35 fighter jet could be

Israel's recent and highly successful attack on the terrorist group Hezbollah's communications supply chain, wherein it simultaneously detonated the pagers and radios worn by a large percentage of Hezbollah's senior cadres, is an example of how supply chain infiltration can be leveraged in a conflict.

Enter China. The alarms sounded in this report as to US vulnerabilities are not news to the PRC's leadership, and they have leveraged our lack of attention to the display market to develop economic and military advantages. China is disrupting the economic balance of the global display market via major financial and regulatory support, including substantial subsidies for BOE, its primary national champion in the industry, as well as subsidies for other major Chinese firms such as TCL, Tianma (a subsidiary of the PRC defense conglomerate AVIC), and Visionox. In the national security realm, China is attempting to secure its own supply chain for military displays by involving BOE, Tianma, and many others in numerous Military-Civil Fusion (MCF) projects.

catastrophically compromised in a conflict scenario by our reliance on component supply chains that are controlled by potential adversaries. Mitigating the PRC's strategic support for their domestic display industry is critical to America's national security.

Background: The Evolution of Display Technology

Modern displays utilize a wide range of technologies with highly differentiated applications; the most consequential distinction currently in display technology is that between liquid crystal display (LCD) and organic light-emitting diode (OLED). LCDs are a relatively long-standing technology that has been prevalent in televisions since the early 2000s, and despite some market share erosion are still a major presence by virtue of being a mature technology that combines versatility and higher lifespans with a comparatively low cost.^{5,6,7} OLED is the technology currently positioned to cannibalize the LCD's market share over the next ten years, thanks to generally higher picture quality and reduced power consumption.^{8,9} OLED's advantage in power consumption has already made it a mainstay in televisions, smartphones, wearable devices such as smartwatches, and next-generation flexible displays.^{10,11}

Through heavy investment in LCD technology in the 1990s, Japan emerged as a major player worldwide in displays.^{12,13} Market leadership shifted to South Korea by 2004, led by Samsung Electronics Co. Ltd. and LG Display Co. Ltd., but South Korea's position atop the international display market has been gradually eroded by large-scale investment in LCDs by China, led by BOE Technology Group Co. Ltd. (京东方科技集团股份有限公司, transliterated as Jingdongfang, originally known in English as Beijing Oriental Electronics). South Korea's focus on investment in OLED technology cemented it as the dominant force in high-end displays for decades, but recent analysis from the Korea Display Industry Association asserts that China has reduced the

“The PRC has strategically targeted the display sector since the early 2000s, eventually integrating it into the 12th Five-Year Plan for the Development of New Display Technology, and later the 2014-2016 New Display Industry Innovation Development Action Plan and its successors, which heavily prioritize R&D of micro-displays and printed micro display panels.”

technological gap in OLED technology to just over one year as China's influence in the high-growth mid-sized OLED market has rapidly expanded.^{14,15}

Not only has China maintained the top spot in the international display market since 2021, but Q1 2024 marked the first time that China surpassed South Korea as the leading producer of OLED displays.^{16,17} Chinese firms' global share of LCD production is now over 70%, while their share of the OLED market has surpassed 50%.¹⁸ China's recent ascent to the top of the display market has been fueled by sector-targeted national industrial policy. And as China's main player in the display industry, BOE has been a major beneficiary of China's state-subsidized economic model, receiving an estimated \$3.9 billion from the Chinese government between 2010 and 2021. BOE was the third-largest recipient of government subsidies in 2022 and the seventh-largest in 2023.¹⁹ As display technology becomes increasingly central to military systems and equipment, and overlaps in its production technologies with other critical sectors such as semiconductors, the importance of this unfair advantage has only continued to grow.²⁰ In addition to BOE's military ties (discussed in detail below), other heavyweight Chinese firms such as Tianma (a partial subsidiary of the state-owned defense conglomerate AVIC) have developed both civilian and military display technology for decades.²¹

Looking forward, 'microdisplay' technology will likely be one of the most important areas of ongoing competition between the US and PRC. "Microdisplay" technology refers to tiny displays used in a range of cutting-edge consumer, medical, commercial/industrial, and military markets, including augmented reality and virtual reality applications. The rising importance of microdisplays highlights that China's dominance in the display industry will continue to have new impacts as the industry itself evolves and expands.²²

The US can alter this trajectory if smart decisions are made now. If China's dominance continues, however, the national security implications will extend well beyond the current generation of display technology.

Background: PRC Industrial Policy Supporting the Domestic Display Industry

The PRC has strategically targeted the display sector since the early 2000s, integrating it into the 12th Five-Year Plan for the Development of New Display Technology, and later the 2014-2016 New Display Industry Innovation Development Action Plan and its successors, which heavily prioritize R&D into micro displays and printed microdisplay panels.²³ The Made in China 2025 strategy, launched in 2015, calls for the development of 100-inch-level, 8K, and 4K printed AMOLED displays by 2025. In addition, the Ministry of Industry and Information Technology (MIIT) promulgated the "Implementation Opinions on Promoting the Quality of Manufacturing Products and Services" in early 2024, which included funding for a flexible displays innovation center.

Government subsidies are omnipresent in China's industrial base, and more than 99% of listed firms receive direct government subsidies in some form. Chinese industrial subsidies in 2019 added up to about \$245 billion, or nearly 2% of China's GDP at the time.²⁴ The display industry has been one of the largest recipients of these subsidies.²⁵ BOE in particular is regularly among the top 10 annual recipients of Chinese government subsidies, ranking third as of June 2024, and its top shareholder is a fund owned by the Beijing municipal government.²⁶

Provincial governments also enact policies to support the display industry, such as Guangdong Province's 13th Five-Year Plan for National Economic and Social Development and Sichuan Province's 13th Five-Year Plan.

Provincial- and municipal-level subsidies have a direct impact on Chinese display makers' ability to construct new fabrication plants. For instance, BOE's recently-constructed plant in Chengdu will be operated by a joint venture between BOE and state-owned entities; the Chengdu city government contributed approximately 30% of the funding for construction.²⁷ In some cases, local government subsidies have provided up to 85% of the construction costs for display facilities.²⁸

PRC display technology firms openly acknowledge that they are heavily supported by the central government as a part of China's broader techno-nationalist industrial policy. As recounted in Tianma's own 2017 prospectus, the PRC considers the domestic display panel industry to be a "strategic emerging industry" and is managing its technological transformation via industrial policy carried out by the National Development and Reform Commission, Ministry of Industry and Information Technology, Ministry of Commerce, Ministry of Science and Technology, and numerous other government bodies.²⁹ The PRC's "macro-level state control of the development of the display panel industry" (again, in Tianma's own words) is accomplished via five-year plans, special plans, and occasional releases of separate planning documents such as "Guidelines for Industrial Structural Adjustment" and "Guidelines for Key Areas of High-tech Industrialization for Currently Prioritized Development." As Tianma puts it, the PRC recognizes that "the display panel industry is a strategic industry that supports the sustainable development of our country's information industry. It has a long industrial chain, has obvious driving effects on a [wide range] of upstream and downstream industries, and is of great significance to the upgrading and transformation of the entire information industry," and indeed China's broader "transformation of its mode of economic growth" towards high technology.

Therefore, Tianma explains, firms like itself and BOE in the display panel industry are "actively supported

by PRC national industrial policy." The firm recounts almost a dozen "major policies and laws and regulations in recent years" that directly support China's display industry, including:

- Five-Year Plans for National Economic and Social Development from the National People's Congress
- Five-Year Plans for National Science and Technology Innovation, Five-Year Plans for the Development of National Strategic Emerging Industries, and the Decision on Accelerating the Cultivation and Development of Strategic Emerging Industries from the State Council
- Guidelines to Key Products and Services of Strategic Emerging Industries and Guidelines for Industrial Structural Adjustment from the National Development and Reform Commission (NDRC)
- Special Action Plans for the Innovation and Development of the Smart Hardware Industry, New Display Industry Innovation and Development Action Plans, and the Notice on the Implementation of Major Engineering Packages for Manufacturing Industry Upgrades from MIIT and the NDRC
- The Notice on Further Supporting the Development of the New Display Device Industry and Related Tax Incentive Policies from the Ministry of Finance, the General Administration of Customs, and the State Administration of Taxation
- Guidelines for Key Areas of High-tech Industrialization that are Currently Prioritized for Development from the NDRC, MOST, MIIT, the Ministry of Commerce, and the State Intellectual Property Office

Overall, the PRC government covers 50 to 70% of initial investment costs for PRC display makers through equity investments, cash benefits, and discounts on loans, land, and infrastructure. China also provides a selling price subsidy of 5 to 15% when a panel maker

sells a product to their original equipment manufacturer. China also provides talent recruitment subsidies of up to 100% and supports annual salaries when display manufacturers hire personnel with advanced degrees from overseas. The PRC also makes sure to offer attractive financing to the sector, providing capital at zero or low interest rates. Companies in the sector are also eligible for reduced corporate tax rates of as low as 15%.³⁰ The combined effect of these various subsidies and measures is billions of dollars in state support for the display industry. China's massive subsidization of the display industry has led to a level of overcapacity in the sector that has in turn driven down prices, creating a perilous market environment for global firms that are not propped up by PRC-style state support and must remain genuinely profitable if they are to survive. China has doubled down in recent years with efforts to channel state subsidies to various industries through more indirect means, such as sector-specific tax refunds, in order to avoid international scrutiny and criticism for anti-free trade practices. The PRC government's annual tax rebates to major firms increased 400% over the past decade.³¹

Chinese theft of foreign IP in the display industry has also been rampant. In July 2023, South Korea's Supreme Court found a dozen executives and employees of Toptec, a key input supplier to the display industry, guilty of leaking core technological assets to BOE. In July 2024, a South Korean former engineer was sentenced to six years in a South Korean prison for leaking 340 billion won (\$245 million) worth of OLED technology secrets to China.³² In October 2023, the US International Trade Commission (USITC) announced it would investigate allegations that several Chinese electronics companies stole trade secrets related to OLED display technology from a Korean display company.³³ USITC identified eight Chinese respondents in the case so far, including BOE and six of its subsidiaries.

“BOE is a leading Chinese manufacturer of LCDs, OLEDs, and flexible displays for the global market. BOE was spun off in 1993 from the Beijing Electronics Factory (北京电子管厂), a state-owned military enterprise founded in 1956 that specialized in the research and development of semiconductor devices. BOE remains a core participant in the PLA's “Military-Civil Fusion” (MCF or 军民融合) efforts in the display industry, whereby civilian industrial capacity is leveraged for dual-use purposes in exchange for subsidies and other preferential treatment.”

Case Study: BOE Technology Group Co. Ltd. (京东方科技集团股份有限公司)



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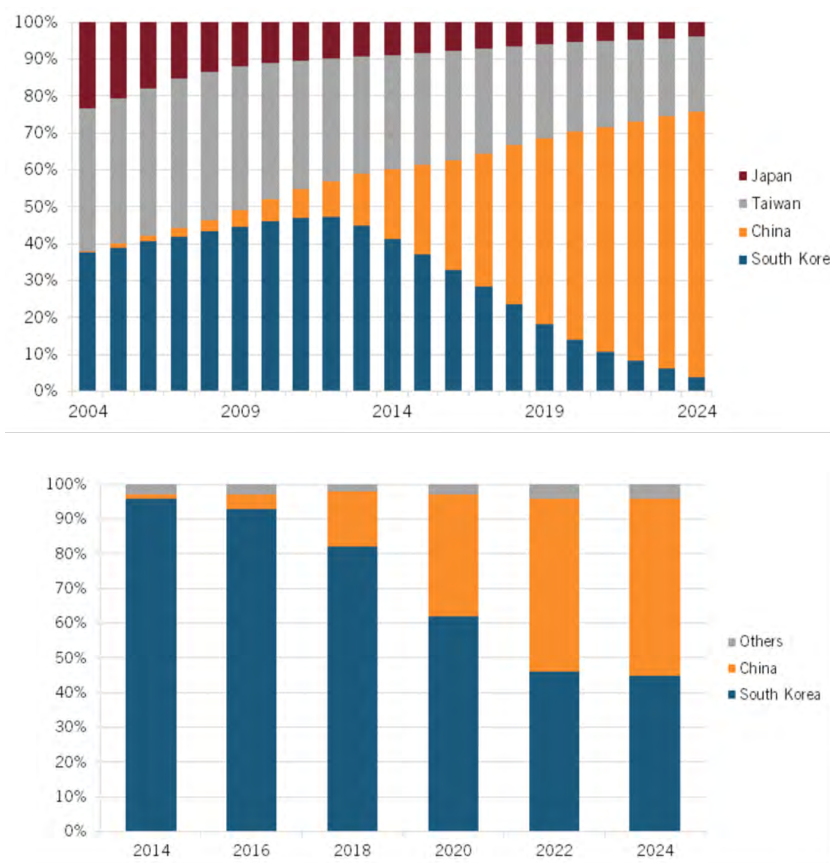
BOE is a leading Chinese manufacturer of LCDs, OLEDs, and flexible displays for the global market. BOE was spun off in 1993 from the Beijing Electron Tube Factory (北京电子管厂, also known as Factory 774), a state-owned military enterprise founded in 1956 that specialized in the research and development of semiconductor devices.³⁴ BOE remains a core participant in the PLA's "Military-Civil Fusion" (MCF or 军民融合) efforts in the display industry, whereby civilian industrial capacity is leveraged for dual-use purposes in exchange for subsidies and other preferential treatment.

Originally named Beijing Oriental Electronics Group Co. Ltd. and led by Dongsheng Wang (王东升), the company was renamed BOE Technology Group Co. Ltd. in 2001. BOE boasts a total of 90,563 employees, with listed A and B shares trading on the Shenzhen Stock Exchange from 2003 and 2001, respectively.³⁵ Detailed information on BOE's shareholders and ownership structure can be found in Appendix A.

BOE has several business segments, including: Display Devices, IoT Innovation, Sensors, MLED, and Smart Engineering Medicine.³⁶

- The **Display Devices** division covers the research, development, production and distribution of thin-film transistor-liquid crystal displays (TFT-LCDs), Active Matrix Organic Light Emitting Diodes (AMOLED), display screens, and thin film transistors, among others. This business segment is used for a spectrum of applications such as mobile phones, tablets, notebooks, monitors, TVs, vehicle displays (including through BOE subsidiary Varitronix), digital information displays, healthcare, finance, and wearable devices.
- The **IoT Innovation** division provides integrated Internet of Things solutions for mobile health products, the optoelectronics industry, vehicle and display networks, intelligent finance and intelligent displays, and smart industrial parks.
- The **Sensor** division integrates design and manufacturing services for glass-and silicon-based system solutions, specifically including smart display windows, glass-based sensor devices, micro-electromechanical systems (MEMS) sensors, industrial sensors, and consumer electronics.
- The **MLED** division focuses on LED backlight enhancements for LCD monitors, notebooks, televisions, vehicles, VR/AR devices, and mini/micro-LED displays.
- The **Smart Engineering Medicine** division combines medicine and life science research, including applications in mobile healthcare, digital hospitals, regenerative medicine, and healthcare parks.

Over the past decade, Chinese firms have dramatically gained market share in both the LCD and OLED markets, as seen in Figure 1 below, and BOE has been leading the charge.³⁷

Figure 1: Global LCD market share (above) and Global OLED market share (below) by country and year³⁸

BOE's Executive Committee and Corporate Leadership

Many members of BOE's executive leadership have deep ties to the Chinese Communist Party (CCP) and its institutions. Depending on the individual, these ties include not only Party membership itself, but also elite positions within the Party apparatus and awards and honors from Party organs. Full biographies of all members of BOE's corporate leadership team are offered in Appendix B.

Figure 2 from the 2024 Interim BOE Report shows the company's most recent senior management changes.³⁹

BOE's Ties to the Chinese Government and Chinese Communist Party

BOE is frequently referenced in media as an example of China's industrial "national champions," designated by the government to receive undue considerations, subsidies, and other benefits in order to capture a larger share of the international market. BOE Technology Group Co. Ltd.'s single largest shareholder is the Beijing State-owned Capital Operation and Management Center (北京国有资本运营管理有限公司), which holds 10.79% of outstanding shares.⁴⁰

Within the BOE family of companies, Beijing BOE Sensing Technology Co. Ltd. in particular has been designated a "little giant" (小巨人) enterprise.⁴¹

Figure 2: Changes of Directors, Supervisors and Senior Management

Name	Office title	Type of change	Date of change	Reason for change
Pan Jinfeng	Director	Resignation	23 January 2024	Voluntary resignation
Liu Xiaodong	Director	Resignation	12 March 2024	Voluntary resignation
Sun Yun	Director	Resignation	12 March 2024	Voluntary resignation
Feng Qiang	Director	Elected	26 April 2024	Elected
Zhu Baocheng	Director	Elected	26 April 2024	Elected
Wang Xiping	Director	Elected	26 April 2024	Elected
Sun Fuqing	Supervisor	Resignation	12 June 2024	Voluntary resignation
Zhu Baocheng	Director	Resignation	8 July 2024	Voluntary resignation
Song Ligong	Supervisor	Elected	24 July 2024	Elected
Liu Xiaodong	Senior management	Dismissed	24 July 2024	Job change
Liu Zhiqiang	Senior management	Appointed	24 July 2024	Appointed

Beijing Zhongxiangying Technology Co. Ltd., held 91% by BOE, operates BOE's industrial internet platform and was designated a "little giant" in 2023.^{42,43,44} The Chinese government's Ministry of Industry and Information Technology (MIIT) designates selected small-to-medium enterprises engaged in strategically important, cutting-edge technologies as "little giants," a form of national champion designation that is accompanied with substantial government support.⁴⁵

BOE's Ties to the Chinese Military

BOE makes no secret of its extensive connections to China's military-industrial complex and armed forces, with the company openly showcasing its defense ties to the press. China's financial press reported in 2015, for example, that a representative of BOE directly asserted that BOE is involved in a range of military projects. The report mentions BOE's involvement in the development of military-use headgear, as well as the firm's participation in a combat aircraft project.⁴⁶ BOE personnel are scheduled to represent the company at the upcoming 8th Nanjing National Defense Electronics

Exhibition in late November 2024.⁴⁷ Simply put, there is no question whether BOE participates in military-use technology development; the only question is precisely which BOE facilities are most directly involved in supporting the PLA.

The Chinese press also reported that BOE founded a "Military-Civil Fusion (MCF) Industrial Park" in Mianyang, Sichuan Province in 2016, along with several other companies including Sichuan Changhong Electric Co., Ltd.⁴⁸ Although none of BOE's facilities in Mianyang have been explicitly identified as this MCF park, BOE's primary facility in Mianyang was built in 2016 and is the most likely match. In addition to its size and centrality to BOE's operations in Mianyang, this facility is located a mere two blocks from the Changhong Intelligent Manufacturing Industrial Park (长虹智能制造产业园), which reportedly includes a significant MCF component.

A 2023 budget report for Pidu District in Chengdu, Sichuan mentions the presence of another BOE Military-Civil fusion industrial park in the area but does not mention the name of the facility.⁴⁹ BOE is currently



Figure 3: Mianyang BOE Optoelectronics Technology Co., Ltd.⁵⁰

constructing the BOE (Chengdu) Smart Technology Innovation Center (京东方成都智慧系统创新中心) in Chengdu's Pidu district making it the most likely location of this Military-Civil fusion center.⁵¹

In July 2024, representatives from Anhui Province's National Defense Posts and Telecommunications Union (国防邮电工会) toured the facilities of Hefei BOE Display Technology Co., Ltd.⁵² This appears to have been part of a tour to inspect various defense contractors; in addition to BOE, the Union visited Anhui Shenjian Technology Co., Ltd. (安徽神剑科技股份有限公司), a state-owned enterprise under China South Industries Group (中国兵器装备集团), which has been identified as a Chinese military company by the US Department of Defense; the Anhui Province branch of China Tower Corporation Ltd. (中国铁塔股份有限公司), which is jointly owned by China Mobile, China Unicom, China Telecom, and China Guoxin Holdings and collaborates with the Chinese military; and the 16th and 38th Research Institutes of China Electronics Technology Group Corporation (CETC, 中国电子科技集团公司), China's leading military electronics manufacturer.^{53, 54, 55, 56, 57} It is therefore likely that the Hefei facility is also involved in the BOE's military-use projects.



Figure 4: BOE (Chengdu) Smart Technology Innovation Center⁵⁸

BOE Sensor Technology Co. (北京京东方传感技术有限公司) has a range of defense and government customers, including CASIC's Beijing Machinery Equipment Research Institute (北京机械设备研究所) and, through its subsidiaries, the China Association for Science and Technology (中国科学技术学会).⁵⁹ The China Association for Science and Technology publicly defines its function as serving as a link between the Chinese Communist Party and Chinese scientists.⁶⁰

BOE's Ties to Defense Industrial Research and Academic Institutions

BOE has also built connections to Beihang University (北京航空航天大学, formerly the Beijing University of Aeronautics and Astronautics), which is one of the "Seven Sons of National Defense" universities selected by the Chinese state to play a privileged and central role in China's defense technology research and development ecosystem. The firm also has a working relationship with University of Electronic Science and Technology of China (电子科技大学 or UESTC), an important Chinese defense-industrial university with deep military ties."

BOE and Beihang University collaborate on medical



Figure 5: Signing ceremony for the Beihang-BOE Hefei Strategic Cooperation Agreement⁶¹

research and innovation through BOE Hospital in Hefei.⁶² Continuous collaboration in the medical field between BOE and Beihang University also occurs in Beijing, most notably through their joint “China Medical Silicon Valley” (中国医工硅谷) project.^{63,64} Cooperation on the project was cemented through a BOE-Beihang strategic cooperation agreement that also involves BOE and Beihang collaborating to build the Beihang School of Global Innovation Management.⁶⁵

At the signing ceremony for the BOE-Beihang strategic cooperation agreement in 2017, then-CEO of BOE Dongsheng Wang said that BOE and Beihang University “will jointly build an innovation management school and carry out talent training and project cooperation in related fields such as microelectronics, medical engineering, intelligent manufacturing, and big data.” The Secretary of Beihang University’s Chinese Communist Party Committee, Jun Zhang, asserted that

Beihang University’s Hefei Science City project would be a medium through which BOE and the university advance their cooperation.⁶⁶

Hefei Science City remains under construction and is slated to contain multiple science and technology industrial parks, national innovation platforms, and a national laboratory by 2025, making it a significant part of China’s state-led national innovation system.

However, Beihang University’s Hefei Innovation Research Institute, slated to be an important part of the city, is currently in operation, and it contains a “military-civil fusion research institute” (军民融合研究院) as well as other entities conducting research with military applications, including the Satellite Navigation and Location Services Engineering Center (卫星导航与位置服务工程中心).⁶⁷ BOE’s participation in this agreement very likely contains a military-industrial component.



Figure 6: Beihang University's Hefei Innovation Research Institute⁶⁸

As for the UESTC, the university has been partnering with BOE Technology's Joint Innovation Research Institute in research, applied development, and talent training since 2017.⁶⁹

A representative from the BOE Joint Innovation Research Institute also attended a meeting for the Tianfu Jiangxi Laboratory, jointly founded by UESTC and the Chengdu High-Tech Industrial Development Zone. Local Party representatives were joined by representatives from CETC, China's leading military electronics manufacturer, and Huawei, a US-sanctioned company that the Federal Trade Commission has designated a national security threat.^{70, 71} In a moment that highlighted the nexus between BOE, China's military-industrial complex, and the Chinese Communist Party, Jun Hu, UESTC's president and Deputy Secretary of its Chinese Communist Party Committee, spoke of the need for Tianfu Jiangxi Laboratory to strengthen cooperation with BOE in science and technology innovation.⁷²

In September 2024, the Tianfu Jiangxi Laboratory jointly hosted the "National Academic Conference on Electromagnetic Space and Ubiquitous Internet" with UESTC and the Chinese Institute of Electronics (中国电子学会 or CIE).



Figure 7 : Tianfu Jiangxi Laboratory's Second Meeting of the First Executive Council⁷³



Figure 8: The Second Executive Council Meeting for the BOE-UESTC Joint Innovation Research Institute (2023)

Advertising for the conference detailed the importance of the laboratory's research topics for the defense industry, underscoring the ties of this defense-academic nexus to China's military development.⁷⁴

In late January 2024, BOE appointed six academicians from the Chinese Academy of Sciences, in the fields of chemistry, materials, electronics, and computer science, as strategic technology consultants.⁷⁵ One of these scientists, Jianxin Xie (谢建新), is a professor at the Beijing Institute of Technology. Xie is linked to China's aerospace advanced materials research and development initiatives, including a working group with

CASC and CASIC that was founded to "build national strategic scientific and technological strength for advanced aerospace materials to support the construction of a powerful aerospace nation."⁷⁶

BOE's Ties to Repression in Xinjiang

BOE's subsidiary, Beijing BOE Energy Technology Co., Ltd. (京东方能源科技股份有限公司), has a range of operations in Xinjiang, including direct collaboration with government institutions persecuting the Uyghur ethnic minority population.⁷⁷ The company's business interests in the province are not fully known. For example, another Xinjiang producer of "smart electronic



Figure 9: University and research institute experts, including Jianxin Xie, appear at the founding conference of the China Aerospace Advanced Materials Alliance⁷⁶

glass covers” has a long-term business relationship with BOE, but the article appears to intentionally omit naming the company or the part of Xinjiang that the company operates in.⁷⁸

BOE held a joint “innovation development forum” with the Xinjiang Production and Construction Corps (XPCC) and Beihang University in 2017.⁷⁹ XPCC is a state-run paramilitary corporate conglomerate that has been sanctioned by the US government for its role in human rights violations against the Xinjiang region’s Uyghur population.⁸⁰

Several articles also detail cooperation between the XPCC 225th Regiment, 14th Division (新疆生产建设兵团第十四师225团) and the Beijing Economic-Technological Development Area (北京经开区), which counts BOE Technology Group Co. as one of its resident enterprises.⁸¹ The zone receives government support and preferential treatment for the ostensible purposes of economic development, with specially appointed government representatives.^{82, 83}

These articles discuss the two parties’ cooperation in the “Xinjiang Aid” effort (援疆). “Xinjiang Aid” is presented by the Chinese government as a program to economically develop the Xinjiang region and improve living conditions for the Uyghur ethnic minority, with initiatives like labor pairing programs and vocational training. However, these efforts are often involuntary and have been tied to forced labor.⁸⁴

Two articles mention BOE directly within the context of cooperation between the Beijing Economic-Technological Development Area and the 225th Regiment. One shows that BOE signed agreements to

participate in the “Xinjiang Aid” program in four local villages, and another quotes a representative of the Beijing Economic-Technological Development Area that the zone will support enterprises, including BOE, to “actively participate in local economic development.”^{85, 86} In March 2020, the Australian Strategic Policy Institute (ASPI), a think tank that actively tracks China’s military development and human rights abuses, included BOE Technology Group in a list of companies that potentially utilized Uyghur labor through abusive labor transfer programs as recently as 2019.

Tracking BOE’s Forced Labor Supply Chain: Hefei Highbroad Advanced Material Co.

These allegations of human rights abuses have specifically implicated BOE supplier Hefei Highbroad Advanced Material Co., Ltd., which manufactures components for BOE’s flat panel displays. Highbroad reportedly sponsored the alleged forced transfer of 1,000 Uyghurs per year to its manufacturing facilities between 2017 and 2020, with at least 500 reportedly working at Highbroad’s electronics factory in Hefei. Separately in 2018, 544 Uyghurs were allegedly forced to work at another factory in Hefei belonging to Highbroad’s subsidiary, Fuying Photoelectric Co., Ltd.⁸⁷

Company Name: Highbroad Advanced Material (Hefei) Co., Ltd.

Main Business Areas: Research, development, design, and manufacturing of backlight modules and display materials. Products include reflectors, polarizers, light guide plates, diffusions, and bright enhance films.

Origin: Founded on December 2, 2009; headquartered in Hefei, China.⁸⁸

Address: No. 699 Dayu Rd., Hefei, Anhui Province Key Executives and Board Members.⁸⁹

- Jiansheng Zhou (周健生), Chairman-Supervisory Board
- Huaixue Sheng (盛怀雪), Member-Supervisory Board
- Zhaozhong Wang (王照忠), Chairman & General Manager
- Zhiguang Xiao (肖志光), Member-Supervisory Board
- Yanping Li (李艳萍), Chief Financial Officer & Director
- Jimei Cai (蔡姬妹), Director & Deputy General Manager

BOE's Links to Companies and Government Organizations Undermining US National Security

BOE has a number of both direct and indirect links to firms in both China's private sector and China's broader state that have separately been identified as harming US interests.

- Shanghai Micro Electronics Equipment (SMEE or 上海微电子装备集团股份有限公司), a BOE supplier, is on the Entity List for "acquiring and attempting to acquire U.S.-origin items in support of China's military modernization."^{90, 91} The company is also a supplier to BOE's Sensor Technology affiliate.⁹²
- A subsidiary of ZTE Corporation named Nubia Technology (努比亚技术有限公司) is a BOE customer.⁹³ The Federal Communications Commission has determined that ZTE as well as its parents, affiliates, and subsidiaries pose a threat to national security.⁹⁴
- BOE is intimately connected to Huawei, the national champion that is the target of a variety of US sanctions. In the span of several years, BOE

“BOE has a number of both direct and indirect links to firms in both China's private sector and China's broader state that have separately been identified as harming US interests.”

has become Huawei's main supplier of displays, eclipsing even other Chinese suppliers.⁹⁵ As with SMIC in the realm of semiconductors, BOE is one of several Chinese national champion firms that are now central to Huawei's efforts to mitigate the impact of Western sanctions on its global sales and market share.⁹⁶

- Wuhu Dongxu Optoelectronic Equipment Technology Co., Ltd. (芜湖东旭光电装备技术有限公司) is a supplier of BOE; Dongxu has longstanding ties to the PRC government, the CCP, and the PLA.^{97,98}
- One of BOE's customers, Sichuan Changhong Electronics Holding Group Co. Ltd. (四川长虹电子控股集团有限公司), has a customer in Chengdu Guoguang Electric Co. Ltd. (成都国光电气股份有限公司), aka the state-owned 776 factory, which in turn has a range of defense-industrial customers including University of Electronic Science and Technology of China (UESTC), the China Academy of Engineering Physics (CAEP or 中国工程物理研究院), China Electronics Technology Group Corporation (CETC or 中国电子科技集团), and AVIC's China Air-to-Air Missile Research Institute (中国空空导弹研究院).⁹⁹ BOE technology may find its way through these nested customer relationships into military and defense-industrial end uses.
- Another customer of BOE, Konka Group Co., Ltd. (康佳集团股份有限公司), has a range of customers across both the People's Armed Police and the PLA.¹⁰⁰ The People's Armed Police, the armed forces of China primarily responsible for internal security and law enforcement, have been tied to repression and human rights abuses in ethnic minority areas like Tibet and Xinjiang.¹⁰¹ In addition to military uses, BOE technology may be employed in domestic repression through this nested supplier relationship.

BOE's Receipt of Major State Subsidies

According to BOE's 2024 Interim Report, BOE received nearly 3.5 billion RMB (\$495 million) in state subsidies over the past 18 months.¹⁰² This high level of state support is not a recent phenomenon; as early as 2019 BOE received \$283 million in state subsidies.¹⁰³ Indirect PRC subsidies in the display industry also include tax breaks, discounted access to capital, free or discounted land and utilities, and subsidies for hiring foreign talent.

Other PRC Display Companies' Participation in Military-Civil Fusion

In addition to BOE, many of the PRC's other prominent display makers are also participants in Military-Civil fusion efforts. The following PRC display firms have facilities identified by analysts as being co-located on known MCF bases:

- Leyard Optoelectronic Co. Ltd. (利亚德光电股份有限公司)¹⁰⁴
- Beijing Caiyida Technology & Development Co. Ltd. (北京彩易达科技发展有限公司)¹⁰⁵
- Beijing Zdvision Technology Co. Ltd. (北京卓达威视科技有限公司)¹⁰⁶
- Beijing Qingyun Aviation Instrument Company (北京青云航空仪表有限公司)¹⁰⁷
- Beijing Tricolor Technology Co. Ltd. (北京淳中科技股份有限公司)¹⁰⁸
- Beijing Huashi Ruizhi Electronic Technology Co. Ltd. (北京华视睿智电子科技有限公司)¹⁰⁹
- Zhongdian Guoji South Co. Ltd. (CETC 55th Research Institute or 中电国基南方集团有限公司)¹¹⁰
- Suzhou Changfeng Avionics Co. Ltd. (苏州长风航空电子有限公司)¹¹¹
- VATION (巨洋神州科技集团有限公司)¹¹²

- Hubei Anxin Smart Technology Co. Ltd. (湖北安心智能科技有限公司)¹¹³
- Shenzhen Easyvision Technology Co. Ltd. (深圳市易視信科技有限公司)¹¹⁴
- Shenzhen Liantronics Co. Ltd. (深圳市聯建光電股份有限公司)¹¹⁵
- Unilumin Group Co. Ltd. (深圳市洲明科技股份有限公司)¹¹⁶
- TCL Technology (TCL科技集團股份有限公司)¹¹⁷
- Sichuan Xuhong Optoelectronic Technology Co. Ltd. (四川旭虹光電科技有限公司)¹¹⁸
- Mianyang Exax Electronic Materials Co. Ltd. (綿陽艾薩斯電子材料有限公司)¹¹⁹

As this extensive participation in MCF demonstrates, disruption in trade flows for display technology could jeopardize a nation's military effectiveness, and reliance on Chinese companies for display procurement presents a serious supply chain threat to US national security.¹²⁰

Understanding this threat demands a thorough examination of the PRC's national champion firm in this sector, BOE Technology, including its deep ties to China's party-state, defense-industrial complex, and surveillance apparatus of domestic repression.

Key Takeaways and Policy Prescriptions

As detailed throughout this report, display technology is best understood as a dual-use industry due to its extensive presence throughout any modern supply chain for military electronics and information technology. The PRC's selection of BOE as a national champion corporation, and its subsidizing of BOE's development

with the hopes of cannibalizing foreign market share from existing market leaders, would therefore pose a significant national security challenge even if BOE were not involved with any objectionable entities and programs.

However, we know from BOE's own admissions that the firm – as with other major players in the PRC display industry such as Tianma and TCL – is deeply involved with the CCP, the PLA, and China's broader military-industrial complex. We also know that BOE has ties to organizations carrying out repression of the Uyghurs in Xinjiang and may have Uyghur forced labor in its supply chain through its suppliers. BOE's aggressive participation in both China's military development and domestic repression necessitate a policy response from US legislative and regulatory bodies in the interest of US national security. Measures such as the Entity List, USTR's Section 301, the Department of Defense's 1260H list, and measures from Treasury's OFAC must all be considered.

Beyond BOE, much broader measures are available that could help the United States and its allies/partners retake the initiative in the display industry, ranging from component tariffs to reshoring or friendshoring incentives. As detailed in this report, numerous display firms in China are involved in Military-Civil fusion efforts of some kind; restricting their access to American capital and technology should be a major priority. US policy can and should treat participation in Military-Civil Fusion efforts as grounds for limiting such participating entities' access to critical US institutions, particularly the financial sector.

Appendix A: BOE Shareholders and Shareholdings

Figure 10 shows the top ten shareholders and shareholdings in BOE Technology Co., Ltd. Beijing State-owned Capital Operation and Management Company Limited holds 10.79% shares, but indirectly also holds 100% equity in Beijing Jingguorui Investment Management Co., Ltd. And directly holds 77.5918% equity in Beijing Jing Guorui SOE Reform and Development Fund (LP).¹²¹

Beijing State-owned Capital Operation and Management Company Limited	State-owned legal person	10.79%	4,063,333,333
Hong Kong Securities Clearing Company Ltd.	Foreign legal person	6.05%	2,278,498,375
Beijing BOE Investment & Development Co., Ltd.	State-owned legal person	2.18%	822,092,180
Beijing Jing Guorui Soe Reform and Development Fund (L.P.)	Other	1.91%	718,132,854
Hefei Jianxiang Investment Co., Ltd.	State-owned legal person	1.77%	666,195,772
Fuqing Huirong Venture Capital Co., Ltd.	Domestic non-state-owned legal person	1.42%	535,302,540
Perseverance Asset Management- Perseverance Xiaofeng No.2 Zhixin Fund	Other	0.93%	349,999,919
Ningxia Risheng High-tech Industry Co., Ltd.	Domestic non-state-owned legal person	0.90%	339,525,766
Xu Lili	Foreign natural person	0.89%	336,599,581
FOTIC-Foreign Trade Trust- Perseverance Xiaofeng Hongyuan Assembled Fund Trust Plan	Other	0.88%	329,988,907

Figure 10: BOE Shareholders and Shareholding

The following chart shows the ownership ties between BOE Technology Group Co., Ltd. and the Beijing Municipal arm of the State-owned Assets Supervision and Administration Commission (SASAC), which is ultimately subordinate to the PRC State Council.¹²² SASAC is administrated under the State Council and responsible for managing all state-owned enterprises.

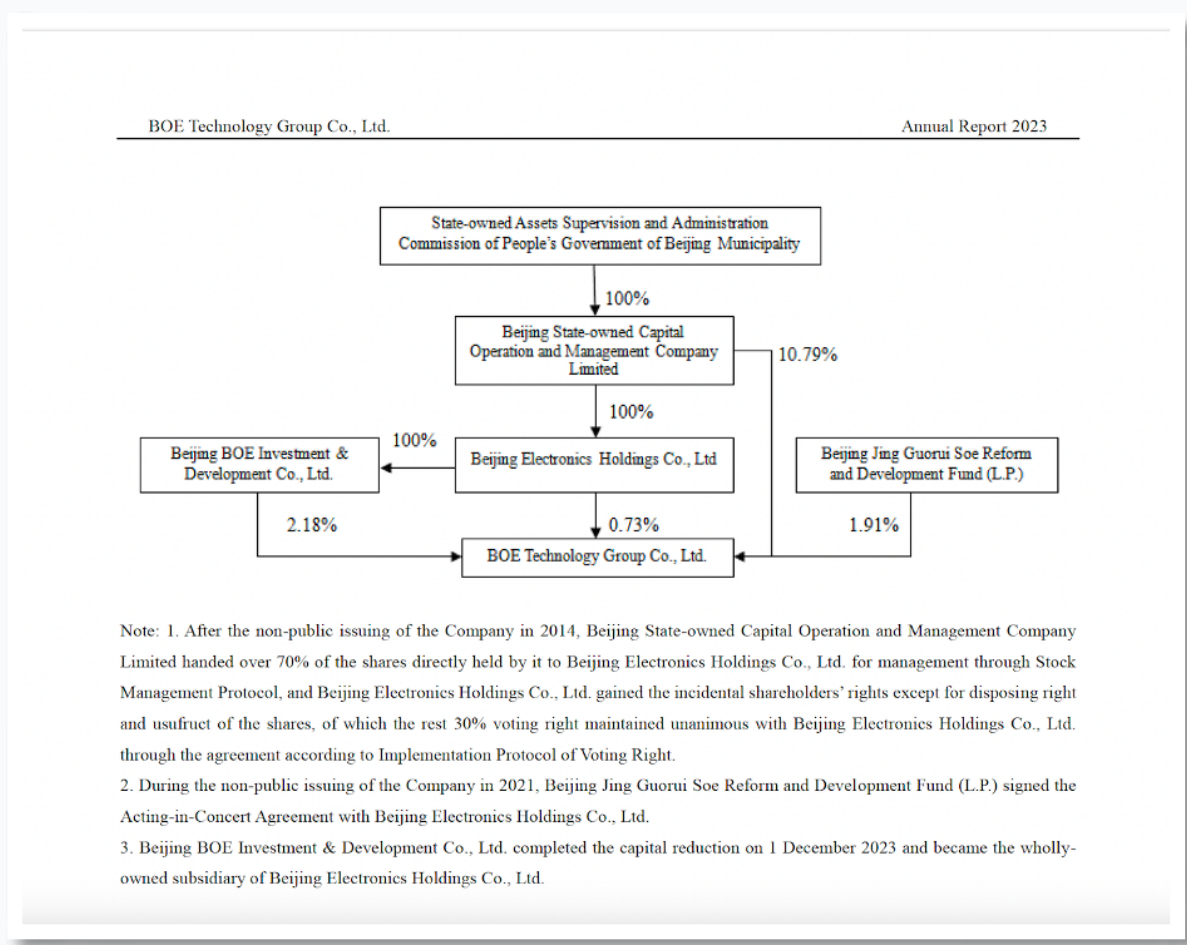


Figure 11: SASAC-BOE Shareholding Explanation (2023)

Tax Treatment of BOE's Main Subsidiaries

Numerous BOE subsidiaries are entitled to preferential tax treatment from the PRC government, as shown in the figure below.¹²³

The main subsidiaries that are entitled to preferential tax treatments are as follows:

Company name	Preferential rate	Reason
Beijing BOE Optoelectronics Technology Co., Ltd. (BOE OT)	15%	High-tech enterprise
Chengdu BOE Optoelectronics Technology Co., Ltd. (Chengdu Optoelectronics)	15%	High-tech enterprise
Hefei BOE Optoelectronics Technology Co., Ltd. (Hefei BOE)	15%	High-tech enterprise
Beijing BOE Display Technology Co., Ltd. (BOE Display)	15%	High-tech enterprise
Hefei Xinsheng Optoelectronics Technology Co., Ltd. (Hefei Xinsheng)	15%	High-tech enterprise
Ordos Yuansheng Optoelectronics Co., Ltd. (Yuansheng Optoelectronics)	15%	High-tech enterprise
Chongqing BOE Optoelectronics Co., Ltd. (Chongqing BOE)	15%	High-tech enterprise
Beijing BOE CHATANI Electronics Co., Ltd. (Beijing CHATANI)	15%	High-tech enterprise
Hefei BOE Display Lighting Co., Ltd. (Hefei Display Lighting)	15%	High-tech enterprise
Chongqing BOE Display Lighting Co., Ltd. (Chongqing Display Lighting)	15%	High-tech enterprise
Beijing BOE Vacuum Electronics Co., Ltd. (Vacuum Electronics)	15%	High-tech enterprise
Beijing BOE Vacuum Technology Co., Ltd. (Vacuum Technology)	15%	High-tech enterprise
Beijing BOE Energy Technology Co., Ltd. (BOE Energy)	15%	High-tech enterprise
Fuzhou BOE Optoelectronics Technology Co., Ltd. (Fuzhou BOE)	15%	High-tech enterprise
Hefei BOE Display Technology Co., Ltd. (Hefei Display Technology)	15%	High-tech enterprise
Mianyang BOE Optoelectronics Technology Co., Ltd. (Mianyang BOE)	15%	High-tech enterprise
BOE Wisdom IOT Technology Co., Ltd. (Wisdom IOT)	15%	High-tech enterprise
K-Tronics (Suzhou) Technology Co., Ltd. (Suzhou K-Tronics)	15%	High-tech enterprise
Beijing BOE Sensing Technology Co., Ltd. (Sensing Technology)	15%	High-tech enterprise
Chongqing BOE Smart Electronic System Co., Ltd. (Chongqing Smart Electronic)	15%	Encouraged enterprise in Western Regions
Beijing BOE Health Technology Co., Ltd. (Health Technology)	15%	High-tech enterprise
Chongqing BOE Electronic Technology Co., Ltd. (Chongqing Electronic Technology)	15%	Encouraged enterprise in Western Regions
Wuhan BOE Optoelectronics Technology Co., Ltd. (Wuhan BOE)	15%	High-tech enterprise
Nanjing BOE Display Technology Co., Ltd. (Nanjing Display Technology)	15%	High-tech enterprise
Chengdu BOE Display Sci-tech Co., Ltd. (Chengdu Display Sci-tech)	15%	High-tech enterprise
BOE Regenerative Medical Technology Co., Ltd. (Regenerative Medical)	15%	High-tech enterprise
Beijing Zhongxiangying Technology Co., Ltd. (Beijing Zhongxiangying)	15%	High-tech enterprise
Yunnan Invsight Optoelectronics Technology Co., Ltd. (Yunnan Invsight)	15%	High-tech enterprise
BOE Mled Technology Co., Ltd. (Mled Technology)	15%	High-tech enterprise
Hefei BOE Semiconductor Co., Ltd. (Hefei Semiconductor)	15%	High-tech enterprise
Qingdao BOE Optoelectronics Technology Co., Ltd. (Qingdao BOE)	15%	High-tech enterprise
Hefei BOE Ruisheng Technology Co., Ltd. (Hefei Ruisheng)	15%	High-tech enterprise
Chongqing BOE Display Technology Co., Ltd. (Chongqing Display Technology)	15%	High-tech enterprise
Mianyang BOE Electronic Technology Co., Ltd. (Mianyang Electronic Technology)	15%	Encouraged enterprise in Western Regions
BNJ Technology Co., Ltd. (BNJ)	15%	High-tech enterprise
Beijing United Ultra High-Definition Video Technology Collaboration Center Co., Ltd. (Beijing United Ultra HD)	15%	High-tech enterprise

Figure 12: Preferential Tax Treatment Granted to BOE's Primary Subsidiaries

BOE also has equity investments in a US nanotechnology company, NANOSYS, founded by Charles M. Lieber, a former Harvard University professor of chemistry, who was convicted in 2021 of six felonies, including two counts of making false statements to the FBI and investigators from the Department of Defense and National Institutes of Health regarding his participation in the Chinese government's Thousand Talents Program, as well as four counts of filing false tax returns.^{124, 125}

Organizational structure of the BOE Group's subsidiaries

BOE corporate filings also show the precise relationship between BOE and its many subsidiaries. These subsidiaries all have common business scopes, encompassing data centers, semiconductor technology, and technology development as well as services like technology consulting, software, real estate, and property management.¹²⁶ These subsidiaries extend BOE's reach across multiple service and technology sectors in China.

1	Interests in subsidiaries							
(1)	Composition of the Group							
						Shareholding (or similar equity interest) percentage		
Name of the subsidiary	Principal place of business	Registered place	Business nature	Registered capital	Direct	Indirect	Acquisition method	
Beijing BOE Optoelectronics Technology Co., Ltd.	Beijing, China	Beijing, China	Research and development ("R&D"), design and manufacturing of TFT-LCD	USD 649,110,000	-	100%	Founded by investment	
Chengdu BOE Optoelectronics Technology Co., Ltd.	Chengdu, China	Chengdu, China	R&D, design, manufacturing, and sale of new display devices and components	RMB 25,000,000,000	100%	-	Business combinations involving entities not under common control	
Hefei BOE Optoelectronics Technology Co., Ltd.	Hefei, China	Hefei, China	Investment, construction, R&D, production and sales of the relevant products of thin film transistor LCD and its auxiliary products	RMB 2,700,000,000	100%	-	Business combinations involving entities not under common control	
Beijing BOE Display Technology Co., Ltd.	Beijing, China	Beijing, China	Development of TFT-LCD, manufacturing and sale of LCD	RMB 8,941,456,800	97.17%	2.83%	Founded by investment	
Hefei Xinsheng Optoelectronics Technology Co., Ltd.	Hefei, China	Hefei, China	Investment, construction, R&D, production and sales of the relevant products of thin film transistor LCD and its auxiliary products	RMB 9,750,000,000	99.97%	0.03%	Business combinations involving entities not under common control	
Ordos Yuansheng Optoelectronics Co., Ltd.	Ordos, China	Ordos, China	Manufacture and sales of AM-OLED products and auxiliary products	RMB 11,804,000,000	100%	-	Founded by investment	
Chongqing BOE Optoelectronics Technology Co., Ltd.	Chongqing, China	Chongqing, China	R&D, production and sales of semi-conducting display devices, complete machine and related products; import & export of goods and technology consulting	RMB 3,845,200,000	100%	-	Business combinations involving entities not under common control	
			Investment, construction, R&D, production and sales of the relevant products of thin film transistor LCD and its auxiliary products (separate business site); self-support and agency for the import and export of various goods and technologies, except those goods and technologies that are restricted by the country or prohibited from import and export, business management consulting and services; property leases; machinery and equipment leases; technology development, transfer, consulting and services related to LCD products (For business activities subject to approval in accordance with laws and regulations, operations may be conducted only with the approval of the relevant government authorities).					
Fuzhou BOE Optoelectronics Technology Co., Ltd.	Fuzhou, China	Fuzhou, China		RMB 17,600,000,000	86.08%	-	Business combinations involving entities not under common control	
Beijing BOE Video Technology Co., Ltd.	Beijing, China	Beijing, China	Investment platform, sales of LCD	RMB 5,636,475,800	100%	-	Founded by investment	

Figure 13: A Comprehensive Accounting of BOE's Subsidiaries (1/7)

Name of the subsidiary	Principal place of business	Registered place	Business nature	Registered capital	Shareholding (or similar equity interest) percentage		Acquisition method
					Direct	Indirect	
Beijing BOE Vacuum Electronics Co., Ltd.	Beijing, China	Beijing, China	Manufacture and sale of vacuum electronic products	RMB 33,250,000	57.89%	-	Founded by investment
Beijing BOE Vacuum Technology Co., Ltd.	Beijing, China	Beijing, China	Manufacture and sale of electronic tubes	RMB 32,000,000	100%	-	Founded by investment
Beijing Yinghe Century Co., Ltd.	Beijing, China	Beijing, China	Management of engineering projects; real estate development; public parking lot for motor vehicles service; market survey	RMB 233,105,200	100%	-	Founded by investment
BOE Optical Science and technology Co., Ltd.	Suzhou, China	Suzhou, China	R&D, production and sales of LCD, back light for display and related components	RMB 826,714,059	95.17%	-	Founded by investment
BOE Hyundai LCD (Beijing) Display Technology Co., Ltd.	Beijing, China	Beijing, China	Development, manufacture and sale of liquid display for mobile termination	USD 5,000,000	75%	-	Founded by investment
BOE (Hebei) Mobile Technology Co., Ltd.	Langfang, China	Langfang, China	Manufacture and sale of mobile flat screen display technical products and related services	RMB 1,358,160,140	100%	-	Founded by investment
Beijing BOE Energy Technology Co., Ltd.	Beijing, China	Beijing, China	Design, consultancy and service of solar cell, photovoltaic system, wind power system and solar thermal system as well as the assembly units; energy-saving service	RMB 1,242,690,058	68.40%	-	Founded by investment
Beijing BOE Multimedia Technology Co., Ltd.	Beijing, China	Beijing, China	Technology development, technology transfer, technology consulting and technology services; sales of computer software, hardware and auxiliary equipment, digital video and audio technology products, electronic digital products, video telephone, mobile phones and spare parts, hardware (excluding electric bicycle), household appliances, photographic equipment, sporting goods, Class I medical devices, lamps, stationery, cosmetics, bathroom appliances, knitwear and textile, clothing, daily necessities, timepieces, glasses, toys and food, equipment maintenance; import and export of goods; basic software services; application software service; machinery and equipment leases; design, production, agency and publication of advertisements. (Market participants independently select the business activities and carry out the business activities in accordance with laws and regulations; sales of food and business activities subject to approval in accordance with laws and regulations, operations may be conducted only with the approval of relevant government authorities; business activities prohibited and restricted by the industrial policies of the state and the city.)	RMB 400,000,000	100%	-	Founded by investment
Beijing BOE Life Technology Co., Ltd.	Beijing, China	Beijing, China	Technology promotion services, property management, sales of electronic products	RMB 24,000,000	100%	-	Founded by investment

Figure 14: A Comprehensive Accounting of BOE's Subsidiaries (2/7)

Name of the subsidiary	Principal place of business	Registered place	Business nature	Registered capital	Shareholding (or similar equity interest) percentage		Acquisition method
					Direct	Indirect	
Ordos City Haosheng Energy Investment Co., Ltd.	Ordos, China	Ordos, China	Energy investment	RMB 37,440,000	-	100%	Founded by investment
BOE Semi-conductor Co., Ltd.	Beijing, China	Beijing, China	Processing, manufacturing and sales of precision electronic components, semi-conductor devices, micro modules, microelectronic devices and electronic materials; import & export of goods	RMB 11,250,000	84%	-	Founded by investment
BOE Optoelectronics Holding Co., Ltd.	Hong Kong, China	British Virgin Islands	Investment holding	USD 1,000,000,000	100%	-	Founded by investment
BOE (Korea) Co., Ltd.	Korea	Korea	Wholesale and retail trade	KRW 95,000,000	100%	-	Founded by investment
BOE Healthcare Investment & Management Co., Ltd.	Beijing, China	Beijing, China	Investment management and project investment	RMB 18,300,000,000	100%	-	Business combinations involving entities not under common control
Beijing Matsushita Colour CRT Co., Ltd.	Beijing, China	Beijing, China	Colour TV set, display tube, colour RPTV projection tube and materials of electronic components; property management and parking services, etc.	RMB 325,754,049	88.80%	-	Business combinations involving entities not under common control
Hefei BOE Display Technology Co., Ltd.	Hefei, China	Hefei, China	Investment, R & D and production of products related to TFT-LCD and the supporting facility	RMB 24,000,000,000	36.67%	-	Business combinations involving entities not under common control
Beijing BOE Technology Development Co., Ltd.	Beijing, China	Beijing, China	Development, transfer, consulting and service of technology	RMB 1,000,000	100%	-	Founded by investment
Hefei BOE Zhuoyin Technology Co., Ltd.	Hefei, China	Hefei, China	Investment, construction, R&D, production and sales of products related to OLED display device and auxiliary products	RMB 800,000,000	75%	-	Founded by investment
Beijing BOE Real Estate Co., Ltd.	Beijing, China	Beijing, China	Development, construction, property management and supporting service of industrial plants and supporting facilities; information consulting of real estate; lease of commercial facilities, commercial attendants and the supporting service facilities; motor vehicles public parking service	RMB 55,420,000	70%	-	Founded by investment
Beijing BOE Marketing Co., Ltd.	Beijing, China	Beijing, China	Sales of communication equipment, hardware & software of computer and peripheral units, electronic products, equipment maintenance; development, transfer, consulting and service providing of technologies; import & export of goods and technologies, agency of import & export; manufacturing consignment of electronic products and LCD devices	RMB 50,000,000	100%	-	Founded by investment

Figure 15: A Comprehensive Accounting of BOE's Subsidiaries (3/7)

Name of the subsidiary	Principal place of business	Registered place	Business nature	Registered capital	Shareholding (or similar equity interest) percentage		Acquisition method
					Direct	Indirect	
Beijing Zhongxiangying Technologies Co., Ltd.	Beijing, China	Beijing, China	Technology promotion services, property management, sales of electronic products Development, promotion, transfer, consultation and services of display technology, computer software, hardware and network system services; the construction, operations and management of e-commerce platform; product design, conference services; undertaking exhibitions and presentation activities; computer animation design; production, R&D and sales of OLED microdisplays and AR/VR whole widget, warehousing services; Project investments and management of the invested projects; import and export of goods and technologies; property leases, machinery and equipment leases	RMB 109,767,000	91.10%	-	Founded by investment
Yunnan Invsight Optoelectronics Technology Co., Ltd.	Kunming, China	Kunming, China	R&D, production and sales of flexible AMOLED, the products are mainly used in smart phones, wearable devices, car display, AR/VR, etc.	RMB 3,040,000,000	79.10%	-	Founded by investment Business combinations involving entities not under common control
Mianyang BOE Optoelectronics Technology Co., Ltd.	Mianyang, China	Mianyang, China	Formation of X-ray sensors, microfluidic chips, biochemical chips, gene chips, security sensors, microwave antennas, biosensors, logistics network technology and other semiconductor sensors, technology testing, technical consulting, technical services, technology transfer	RMB 26,000,000,000	83.46%	-	Founded by investment Business combinations involving entities not under common control
Beijing BOE Sensing Technology Co., Ltd.	Beijing, China	Beijing, China	Investing, researching, manufacturing and selling TFT-LCD products and accessory products	RMB 4,786,482,400	100%	-	Founded by investment Business combinations involving entities not under common control
Wuhan BOE Optoelectronics Technology Co., Ltd.	Wuhan, China	Wuhan, China	R&D, manufacture and sales of semiconductor display devices, whole widget and relevant products, import and export of goods and technical consulting	RMB 26,000,000,000	47.14%	-	Business combinations involving entities not under common control
Chongqing BOE Display Technology Co., Ltd. ("Chongqing BOE Display")	Chongqing, China	Chongqing, China	R&D, production and sale of TFT-LCD panels, colour filters and LCD whole-widget modules; providing products and business-related services, as well as other business activities related to the above; import and export of proprietary and agent commodities and technologies	RMB 26,000,000,000	38.46%	-	Business combinations involving entities not under common control
Nanjing BOE Display Technology Co., Ltd.	Nanjing, China	Nanjing, China		RMB 17,500,000,000	80.83%	-	Business combinations involving entities not under common control

Figure 16: A Comprehensive Accounting of BOE's Subsidiaries (4/7)

Name of the subsidiary	Principal place of business	Registered place	Business nature	Registered capital	Shareholding (or similar equity interest) percentage		Acquisition method
					Direct	Indirect	
BOE Education Technology Co., Ltd.	Beijing, China	Beijing, China	Technology development, technology consulting, technology services, technology transfer and technology promotion; software development, basic software services, application software services; computer system services; sales of stationery items, sporting goods, household appliances and electronic products; business management; market research; economic and trade consulting; business management consulting; education consulting; public relations services; corporate image planning; exhibition and presentation activities; conference services; research and experimental development in the natural sciences; research and experimental development in engineering and technology; agricultural scientific research and experimental development; medical research and experimental development; copyright agency; arts and crafts creation services. (Market participants independently select the business activities and carry out the business activities in accordance with laws and regulations; sales of food and business activities subject to approval in accordance with laws and regulations, operations may be conducted only with the approval of relevant government authorities; business activities prohibited and restricted by the industrial policies of the state and the city.)	RMB 55,000,000	100%	-	Founded by investment
Dongfang Chengai (Beijing) Business Technology Co., Ltd.	Beijing, China	Beijing, China	Technology development, technology services; application software services; basic software services; sales of daily necessities, fresh fruit, fresh vegetables, primary edible agricultural products, household appliances, electronic products and sporting goods; trade agency; translation services; conference services; organisation of cultural and artistic interchange activities (excluding shows); exhibition and presentation activities; design, production, agency and publication of advertisements; enterprise management; market research; real estate information consulting; warehousing services; public relations services; health management, health consulting (excluding diagnosis and treatment activities subject to the approval); ticket agency; hotel booking agency; airline ticket sales agency; railway and passenger ticket agency services; tourism consulting; hotel management; automobile leases; property management; public parking services for motor vehicle; landscaping management; cleaning services; import and export of goods, import and export agency, import and export of technologies; car decoration; operation of sporting events (excluding high-risk sports); accommodation (branch operation only); catering services (branch operation only); beauty services, hairdressing services (branch operation only); medical services (branch operation only); family services (branch operation only); inbound tourism business, sales of food; internet information services. (Market participants independently select the business activities and carry out the business activities in accordance with laws and regulations; sales of food and business activities subject to approval in accordance with laws and regulations, operations may be conducted only with the approval of relevant government authorities; business activities prohibited and restricted by the industrial policies of the state and the city.)	RMB 10,000,000	100%	-	Founded by investment

Figure 17: A Comprehensive Accounting of BOE's Subsidiaries (5/7)

Name of the subsidiary	Principal place of business	Registered place	Business nature	Registered capital	Shareholding (or similar equity interest) percentage		Acquisition method
					Direct	Indirect	
BOE Environmental Energy Technology Co., Ltd.	Beijing, China	Beijing, China	Technology development, technology consulting, technology transfer, technology promotion, technical services, technical testing of energy-saving technology, environmentally friendly new energy technology, environmental protection equipment, solar electrical energy generation, building integrated PV, electric power, power station operations and maintenance; software development; Internet data services (data centers for Internet data services, excluding cloud computing data centres with a PUE over 1.4); information processing and storage support services (data centers for information processing and storage support services, excluding cloud computing data centres with a PUE over 1.4); contract energy management; water pollution treatment, air pollution control; solid waste treatment; soil pollution treatment and restoration services; environmental protection monitoring; installation, maintenance, leasing of equipment; professional design services; property management; sale of special equipment for environment protection, lighting equipment, electronic products, machinery and equipment, electrical equipment, instruments, hardware products, computers, software and auxiliary equipment, chemical products (excluding licensed chemical products); import and export of goods; import and export of technology; import and export agents; power supply business; construction engineering design; electrical installation services; various construction and municipal infrastructure projects; construction labour subcontracting.	RMB 100,000,000	100%	-	Founded by investment
Chengdu BOE Display Sci-tech Co., Ltd.	Chengdu, China	Chengdu, China	R&D, production and sales of TFT-LCD panels and modules, liquid crystal display monitors, televisions, instruments, machinery equipment and accessories as well as provision of technical services; foreign trade in form of import and export of goods and technology	RMB 21,550,000,000	35.03%	-	Business combinations involving entities not under common control
Beijing BOE Chuangyuan Technology Co., Ltd. (Chuangyuan Technology)	Beijing, China	Beijing, China	Manufacturing of display devices; sale of display devices; manufacturing of electronic components; wholesale of electronic components; retail of electronic components; technical services, technology development, technology consulting, technical exchange, technology transfer, technology promotion; import and export of goods; import and export of technology; business management consulting; property management; machinery and equipment leasing; manufacturing of other electronic devices.	RMB 14,500,000,000	60.21%	-	Founded by investment

Figure 18: A Comprehensive Accounting of BOE's Subsidiaries (6/7)

Name of the subsidiary	Principal place of business	Registered place	Business nature	Registered capital	Shareholding (or similar equity interest) percentage		Acquisition method
					Direct	Indirect	
Beijing Shiyan Technology Co., Ltd.	Beijing, China	Beijing, China	Primarily engaged in technical services, technology development, manufacturing of computer software and hardware, as well as peripheral equipment.	RMB 209,000,000	80%	-	Founded by investment
Mianyang BOE Electronic Technology Co., Ltd. (Mianyang Electronic Technology)	Mianyang, China	Mianyang, China	Investment, research and development, production and sales of products related to semiconductor display and the supporting products	RMB 2,400,000,000	100%	-	Founded by investment
HC SemiTek Corporation	Wuhan, China	Wuhan, China	Research, development, production and sales of LED chips, LED epitaxial wafers, sapphire substrates, and third-generation semiconductor compounds GaN power electronics devices	RMB 1,616,698,797	23.01%	-	Business combination involving entities not under common control

Figure 19: A Comprehensive Accounting of BOE's Subsidiaries (7/7)

The following two lists show BOE's partnerships and networks of associates and joint ventures.¹²⁷ These entities reflect BOE's investments in developing a wide range of cloud, digital, medical, science, and semiconductor technologies.

3 Information about joint ventures and associates of the Company

Associates and joint ventures that have related party transactions with the Group during this year or the previous year are as follows:

<i>Name of entity</i>	<i>Relationship with the Company</i>
Beijing BOE Art Cloud Technology Co., Ltd.	Associate of the Group and the Company
Beijing Xindongneng Investment Management Co., Ltd.	Associate of the Group and the Company
Suzhou Chuangyi Culture Technology Co., Ltd.	Associate of the Group and the Company
TPV Display Technology (China) Limited	Associate of the Group and the Company
BOE Digital Technology Co., Ltd.	Associate of the Group and the Company
Beijing BOE Art Cloud (Suzhou)Technology Co., Ltd.	Associate of the Group and the Company
Beijing BOE Art Cloud (Hangzhou)Technology Co., Ltd.	Associate of the Group and the Company
Beijing BOE Art Cloud (Beijing)Technology Co., Ltd.	Associate of the Group and the Company
Beijing BOE Art Cloud (Yibin)Technology Co., Ltd.	Associate of the Group and the Company
Beijing Nissin Electronics Precision Component Co., Ltd.	Associate of the Group and the Company
Beijing Infi-Hailin Venture Investment (Limited Partnership)	Associate of the Group and the Company
Hefei Xin Jing Yuan Electronic Materials Co., Ltd.	Associate of the Group
Beijing BOE Microbial Technology Co., Ltd.	Associate of the Group
Biochain (Beijing) Science-Technology.Inc.	Associate of the Group
BOE Houji Technology (Beijing) Co., Ltd.	Associate of the Group
Vusion Group SA (Formerly known as SES Imagotag SA Co., Ltd.)	Associate of the Group
Beijing Houji Zhilian Information Technology Co., Ltd.	Associate of the Group
Hefei Jiangcheng Technology Co., Ltd.	Associate of the Group
SES-Imagotag GmbH Co., Ltd.	Subsidiary of associate of the Group
Chongqing Maite Optoelectronics Co., Ltd.	Subsidiary of associate of the Group
Pervasive Displays Inc	Subsidiary of associate of the Group
Beijing Borcheng Medical Laboratory Co. Ltd.	Subsidiary of associate of the Group

Figure 20: BOE Associates and Joint Ventures, (1/2)



4 Information on other related parties

*Name of other related parties**Related-party relationship*

Beijing Smart-Aero Display Technology Co., Ltd.	Under the same control of the ultimate holding company
Beijing Zhengdong Electronic Power Group Co., Ltd.	Under the same control of the ultimate holding company
Beijing Information Technology College	Under the same control of the ultimate holding company
Baic Electronics SK (Jiangsu) Technology Co., Ltd.	Under the same control of the ultimate holding company
Beijing Electrical Control Jiuyi Industrial Development Company	Under the same control of the ultimate holding company
Beijing Electronic Digital Intelligence Technology Co., Ltd.	Under the same control of the ultimate holding company
Beijing D.Park Cultural Development Co., Ltd.	Under the same control of the ultimate holding company
Beijing C&W Intelligent Equipment Co., Ltd.	Under the same control of the ultimate holding company
Beijing NAURA Microelectronics Equipment Co., Ltd.	Under the same control of the ultimate holding company
Beijing Zhaowei Technology Development Co., Ltd.	Under the same control of the ultimate holding company
761 Workshop (Beijing) Technology Development Co., Ltd.	Under the same control of the ultimate holding company
Sevenstar Semiconductor Technologies Co., Ltd.	Under the same control of the ultimate holding company
Beijing Electronic Information Technology College	Under the same control of the ultimate holding company
Beijing Ether Electronics Group Co., Ltd.	Under the same control of the ultimate holding company
Beijing BOE Investment Development Co., Ltd.	Under the same control of the ultimate holding company
Electronic City (Tianjin) Mobile Internet Industry Platform Development Co., Ltd.	Under the same control of the ultimate holding company
NAURA Technology Group Co., Ltd.	Under the same control of the ultimate holding company
Beijing Yandong Microelectronic Co., Ltd.	Under the same control of the ultimate holding company
Beijing Yandong Microelectronic Technology Co., Ltd.	Under the same control of the ultimate holding company
Beijing Electronic City Shuzhi Technology Co., Ltd.	Under the same control of the ultimate holding company
Beijing Dongdian Industrial Development Co., Ltd.	Under the same control of the ultimate holding company
Beijing Electronics Holding & SK Technology Co., Ltd.	Under the same control of the ultimate holding company
Beijing Zhengdong Power Equipment Installation Engineering Co., Ltd.	Under the same control of the ultimate holding company
Beijing Electric Intelligent Energy Co., Ltd.	Under the same control of the ultimate holding company
Beijing Dahua Electronic Instrument Corporation	Under the same control of the ultimate holding company
Beijing C&W Electronics(Group) Co., Ltd.	Under the same control of the ultimate holding company
Beijing Sevenstar PV Group Co., Ltd.	Under the same control of the ultimate holding company
Beijing C&W Zifu Equipment Technology Co., Ltd.	Under the same control of the ultimate holding company
Beijing 798 Culture Technology Co., Ltd.	Associate of enterprise that is under the same control of the ultimate holding company
New Vision Micro.(Hong Kong) Co., Ltd.	Associate of enterprise that is under the same control of the ultimate holding company
Beijing Senju Electronic Materials Co., Ltd.	Associate of enterprise that is under the same control of the ultimate holding company
Shanghai New Vision Microelectronics Co., Ltd.	Associate of enterprise that is under the same control of the ultimate holding company
China Minsheng Banking Corp., Ltd.	Other related parties
Beijing Yizhuang Environmental Technology Group Co., Ltd.	Other related parties
Nexchip Semiconductor Corporation	Other related parties
Hefei Construction Investment and Holding Co., Ltd.	Other related parties
Hefei Visionox Technology Co., Ltd.	Other related parties

Figure 21: BOE Associates and Joint Ventures, (2/2)

Appendix B: Biographies of BOE Senior Leadership and Directors



Yanshun Chen (陈炎顺)

Job Title: Chairman of the Board, Executive Committee Chairman
 From Tianmen City, Hubei Province (湖北省天门市). Master of Economics, Senior Accountant. Joined BOE Technology Group Co., Ltd. in 1993 and previously served as Secretary of the Board, Executive Director, President, and Vice Chairman of the company.¹²⁸ Previously served as the Party Secretary of the 3rd Committee of the Party Committee of BOE Technology Group Co., Ltd.¹²⁹ In 2015, Chen was awarded the title of “Beijing Model Worker” (北京市劳动模范) by the Beijing Municipal Committee of the Communist Party of China and the Beijing Municipal People's Government. In July 2021, he was awarded the title of “National Outstanding Party Affairs Worker” by the Central Committee of the Communist Party of China. In March 2023, he ranked 42nd on a list of the “50 Most Influential Business Leaders in China.”



Wenbao Gao (高文宝)

Job Title: President, Director, Executive Committee Vice Chairman
 Ph.D. in Microelectronics and Solid-State Electronics. Previously served as Deputy Technical Director, Production Director, and Executive Deputy General Manager of Beijing BOE Optoelectronics Technology Co. Ltd., Chief Director and General Manager of the Chongqing 8.5-generation TFT-LCD production line, Chief Director of the Chengdu 6th-generation AMOLED production line project, Senior Vice President, Executive Vice President of the Group, and CEO of the Display Business Unit.¹³⁰ Previously served as a member of the Party Committee of the 3rd Committee of BOE Technology Group Co. Ltd.¹³¹



Feng Qiang (冯强)

Job Title: : President, Vice Chairman of the Board, Chief Human Resource Officer, Executive Committee Vice Chairman

Executive MBA, Master's Degree in Engineering. Previously served as Deputy General Manager and General Manager of the company's Technology Park Division, Vice President of the company, and currently holds positions as Vice Chairman of the company, Deputy Chairman of the Executive Committee, Chief Human Resources Office , Chairman of Beijing BOE Life Science and Technology Co. Ltd., Chairman of Beijing BOE Real Estate Co. Ltd., Chairman of Beijing Yinghe Century Real Estate Co. Ltd. (北京英赫世纪置业有限公司), Chairman of Beijing BOE Songcai Innovation Co. Ltd., Director of Chongqing BOE Smart Technology Co. Ltd., Director of Shenzhen BOE Smart Technology Co. Ltd., and Director of Chengdu BOE Smart Technology Co. Ltd.¹³² She previously served as a member of the Party Committee of the 3rd Committee of BOE Technology Group Co. Ltd.¹³³



Xiaoping Yang (杨晓萍)

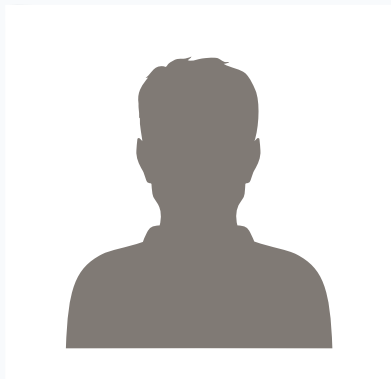
Job Title: Chief Financial Officer, Executive Vice President, Executive Committee Member

Graduated from the University of International Business and Economics (对外经济贸易大学) with an MBA degree. Has held various positions, such as Deputy Director and Director of the Corporate Finance Department, Director of the Group's Accounting and Taxation Center, Director of the Budget Center, and VCFO. She is currently a member of the company's Executive Committee, Executive Vice President, Chief Financial Officer (C O), and serves as a director for several of the group's numerous subsidiaries, including Beijing BOE Optoelectronics Technology Co. Ltd. (北京京东方光电科技有限公司), Chengdu BOE Optoelectronics Technology Co. Ltd. (成都京东方光电科技有限公司), Hefei BOE Optoelectronics Technology Co. Ltd. (合肥京东方光电科技有限公司), Beijing BOE Display Technology Co. Ltd. (北京京东方显示技术有限公司), Hefei Xinsheng Optoelectronics Technology Co. Ltd. (合肥鑫晟光电科技有限公司), Chongqing BOE Optoelectronics Technology Co. Ltd. (重庆京东方光电科技有限公司), Fuzhou BOE Optoelectronics Technology Co. Ltd. (福州京东方光电科技有限公司), and Wuhan BOE Optoelectronics Technology Co. Ltd. (武汉京东方光电科技有限公司).^{134, 135}

**Xiping Wang (王锡平)**

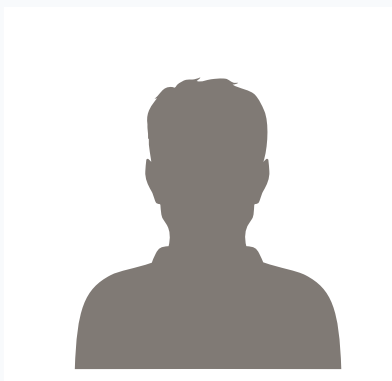
Job Title: Executive Vice President, Director, Executive Committee Member

Previously served as Manager of Nanjing HannStar Display Technology Co., Ltd. (南京瀚宇彩欣科技有限公司). Joined the company in 2009 and has held positions including Head of the Company's Production Management Center, General Manager of Hefei Xinsheng Optoelectronics Technology Co. Ltd. (合肥鑫晟光电科技有限公司), General Manager of Wuhan BOE Optoelectronics Technology Co. Ltd., and Co-CEO of the Display Business Unit.¹³⁶

**Liqiong Feng (冯莉琼)**

Job Title: Executive Vice President, Chief Counsel, Executive Committee Member, Chief Change and IT Management Officer

Previously served as Senior Vice President of the company, Head of the Legal Department, Secretary of the 5th Board of Directors, and Secretary of the 6th Board of Directors.¹³⁷

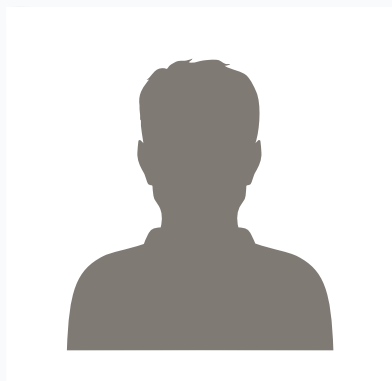


Zhanqiu Yue (岳占秋)

Job Title: Executive Vice President, Chief Audit Officer

EMBA from China Europe International Business School, Senior Accountant. Previously served as Head of Finance in the Power Division and Chief Accountant of BOE Technology Group Co. Ltd., Finance Manager of Beijing Huamin Smart Card System Co. Ltd. (北京华民智能卡系统有限公司), Finance Director of Beijing Sevenstar Huadian Technology Group Co. Ltd. (北京七星华电科技集团有限公司) Finance Director and Secretary of the Board of Directors of Beijing Sevenstar Electronics Co. Ltd. (北京七星华创电子股份有限公司), Finance Director, Deputy General Manager, and General Manager of Beijing BOE Optoelectronics Technology Co. Ltd.¹³⁸

Previously served as a member of the Party Committee of the 3rd Committee of BOE Technology Group Co. Ltd.¹³⁹



Yu Zhang (张羽)

Job Title: Former Executive Vice President, Former Executive Committee Member

Master's degree holder, engineer. Previously served as Deputy Director of the company's office, General Manager of the Hefei Regional Office, Supervisor of Hefei Xinsheng (合肥鑫晟) Optoelectronics Technology Co. Ltd., Director of Hefei Xinjingyuan Electronic Materials Co. Ltd. (合肥鑫京元电子材料有限公司), and Director of Hefei BOE Optoelectronics Technology Co. Ltd.¹⁴⁰

Previously served as a member of the Discipline Inspection Committee of the 3rd Committee of the Party Committee of BOE Technology Group Co. Ltd.¹⁴¹ Zhang recently resigned from his posts in September 2024.¹⁴²

Huaping Guo (郭华平)

Job Title: Senior Vice President, Chief Cultural Officer

CCP Member. Current Deputy Party Secretary and Secretary of the Discipline Inspection Commission of BOE Group previously served as the Minister of the Propaganda Department of the Party Committee of Beijing Electronics Holding Co. Ltd.¹⁴³

个人简介

姓 名	性 别	出生日期	学 历	国 籍
郭华平	男	1978	硕士研究生	
简 历	郭华平先生，硕士研究生，曾任北京798文化创意产业投资股份有限公司副总经理，北京吉乐电子集团党委书记，北京电子控股有限责任公司党委宣传部/企业文化部部长，北京京电进出口有限责任公司总经理。现任公司高级副总裁、首席文化官、工会负责人。			

Zhiqiang Liu (刘志强)

Job Title: Senior Vice President, Executive Committee Member. Bachelor's degree.

Previously served as General Manager and Chairman of Hefei BOE Optoelectronics Technology Co. Ltd., Chairman of Ordos Yuansheng Optoelectronics Co. Ltd. (鄂尔多斯市源盛光电有限责任公司), Chairman of BOE (Hebei) Mobile Display Technology Co. Ltd., Chief Director of the Qingdao BOE Optoelectronics Technology Co. Ltd. project, and General Manager of Nanjing BOE Display Technology Co. Ltd. Currently serves as a member of the company's Executive Committee, Senior Vice President, and as head of the Technology and Product Platform.¹⁴⁴

3月22日，合肥京东方医院组织开展京东方历史与文化专题培训。集团高级副总裁、集团党委副书记、纪委书记、工会负责人、首席文化官郭华平，亲临合肥医院授课。全院管理干部、科室负责人和核心骨干，共计170人参与培训。



Figure 22: Huaping Guo speaks on BOE history and culture

Hongfeng Liu(刘洪峰)

Job Title: Vice President, Secretary of the Board, Master's degree holder

Previously served as Deputy Director of the Company's Planning and Finance Department, Deputy Director and Director of the Board Secretary Office, Securities Representative, Secretary of the 7th Board of Directors, Secretary of the 8th Board of Directors, and Secretary of the 9th Board of Directors.¹⁴⁵ Due to BOE's relatively low stock price in recent years, Liu Hongfeng and other senior executives were criticized by Chinese netizens for their high salaries. In 2021, Liu received 7.45 million RMB, which sparked public outrage.^{146, 147}



Figure 23: Chinese netizen social media posts criticizing Liu's salary (2022)

Lishun Wu (吴礼顺)

Job Title: Director, CCP Member, Current Chairman of First Capital Securities Co. Ltd.

Li also serves as the Secretary of the Party Committee and Chairman of the Beijing Municipal Government State-owned Assets Supervision and Administration Commission (SASAC), while concurrently holding a position as a Director at BOE Technology Group Co., Ltd.¹⁴⁸

吴礼顺	董事	2022-08-14	2025-04-27	男	硕士	1975年4月	0.00	-	吴礼顺先生：中国国籍，无境外永久居留权，1975年4月出生，研究生学历。吴礼顺先生1997年7月至2001年9月在毕马威会计师事务所任职，2001年9月至2008年6月在北京大华咨询有限公司任职，2008年6月至2013年2月任北京市基础设施投资有限公司计划财务部副经理、融资计划副经理，2013年2月至2017年3月任首创集团副总经理，2017年3月至2021年2月任首创集团党委委员、副总经理，2017年4月至2018年4月任中国人民银行调查统计司副司长（挂职），2018年3月至2020年7月任河北省住房和城乡建设厅副厅长（挂职），2021年2月至2022年4月任北京市人民政府国有资产监督管理委员会党委委员、副主任，2022年4月至2023年12月任北京国资党委副书记、董事、总经理。现任第一创业证券股份有限公司董事长、北京国资党委书记、董事长，兼任京东方科技集团股份有限公司董事、首程控股有限公司董事、中国航空发动机集团有限公司董事、北京股权投资运营管理有限公司董事长、北京国管中心控股投资有限公司董事、北京国管中心投资管理股份有限公司董事、北京京国股权投资管理有限公司董事长、总经理。
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Figure 24: Lishun Wu's public online profile listing his SASAC work

Feng Ye (叶枫)

Job Title: Director, Formerly he served as the Director of Beijing Dahua Radio Instrument Factory (北京大华无线电仪器厂), an affiliated enterprise of Beijing Electronics Holding Co. Ltd.

Ye is currently an externally appointed full-time director of the company.¹⁴⁹ Beijing Dahua Radio Instrument Factory is one of China's earliest established large-scale military enterprises specializing in microwave measurement instruments. The company primarily engages in the development and production of instruments for national defense, scientific research, and key engineering projects.

个人简历				
姓名	性别	出生日期	学历	国籍
叶枫	男	1965	本科	中国
简历	叶枫先生，工学学士，工程师。曾任北京建中机器厂副厂长，北京七星华创电子股份有限公司董事会董事、总经理，北京北广电子集团有限责任公司副总裁，北京大华无线电仪器厂厂长，北京大华无线电仪器有限责任公司董事长。现任公司第九届董事会董事，北京电子控股有限责任公司外派专职董事，北京兆维电子（集团）有限责任公司董事，北方华创科技集团股份有限公司董事。			

Figure 25: Feng Ye's public profile showing his affiliation with the Beijing Radio Dahua Instrument Factory



He Guo (郭禾)

Job Title: Independent Director

Professor at the School of Law/Intellectual Property School of Renmin University of China (中国人民大学法学院) and PhD supervisor. Previously served as a member of the Academic Committee of Renmin University of China, a member of the Committee on Academic Integrity, Director of the Law Library, a member of the National Product Defects and Safety Management Standardization Technical Committee, a member of the Expert Group of the Inter-Ministerial Joint Conference Office or Promoting the Use of Legal Software in Enterprises, a member of the Law Teaching Expert Group at the Graduate School of the Chinese Academy of Sciences, a juror at the Beijing First Intermediate People's Court, a member of the Expert Advisory Group of the Joint Defense Working Group on Intellectual Property Risks in Mobile Smart Terminals, and a senior advisor on decision-making consultation at the Jiangsu Provincial Intellectual Property Office (江苏省知识产权局).¹⁵⁰

Guo concurrently holds positions as Vice President and Secretary-General of the Intellectual Property Law Research Association of the China Law Society, Vice President of the China Intellectual Property Society, member of the Academic Advisory Committee of the China Intellectual Property Society, and is a Specially Invited Consultant of the Supreme People's Court, Expert Consultant of the Supreme People's Procuratorate, Researcher at the Intellectual Property Judicial Protection Center of the Supreme People's Court, member of the Expert Committee on Civil and Administrative Litigation Supervision Cases of the Supreme People's Procuratorate, and member of the Expert Advisory Committee of the Intellectual Property Case Guidance Research (Beijing) Base of the Supreme People's Court, member of the first National Intellectual Property Experts Database.



Shoulian Tang (唐守廉)

Job Title: Independent Director, CCP Party member

He previously served as the Secretary of the Party Committee and Deputy Dean of the School of Economics and Management.



Jixiang Wang (王多祥)

Job Title: BOE Independent Director¹⁵¹

Born in September 1969 in Guangyuan, Sichuan (四川广元). Researcher and doctoral supervisor at the School of Engineering, Peking University. Director of the National Center for Technological Innovation in the Beijing-Tianjin-Hebei region (京津冀国家技术创新中心), and Director of the Research Center for China's Industry-University-Research Integration Innovation System (中国产学研融合创新体系研究中心). Former Chairman of Xiamen Beida Taipu Technology Co. Ltd. (厦门北大泰普科技有限公司), Vice Dean of the School of Engineering at Peking University, Vice Mayor of Baotou Municipal People's Government (包头市人民政府副市长), Vice President of Southern University of Science and Technology (南方科技大学), and Director of the Beijing Collaborative Innovation Research Institute (北京协同创新研究院).

Member of the Beijing Municipal Committee of the Chinese People's Political Consultative Conference (北京市政协委员 or CPPCC). In 2021, during the second plenary session of the fifth meeting of the 13th Beijing Municipal CPPCC, he represented the science and technology community and delivered a speech titled "Building a 'Professional-Industry' Coupled Beijing-Tianjin-Hebei Collaborative Innovation Community to Create an Upgraded Version of the International Science and Technology Innovation Center."¹⁵²



Xinmin Zhang (张新民)

Job Title: Job Title: Independent Director. CCP Party member since June 1985

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