

THE EMERGENCE OF CHINA'S STATE-BACKED BLOCKCHAIN PLATFORM

The Risks and Geopolitical Implications of
China's State-Backed Blockchain Platform



THE EMERGENCE OF CHINA'S STATE-BACKED BLOCKCHAIN PLATFORM

THE RISKS AND GEOPOLITICAL IMPLICATIONS OF
CHINA'S STATE-BACKED BLOCKCHAIN PLATFORM

By: Sreya Vaidyanathan | Andrew Davenport

A report by RWR Advisory Group

Copyright © 2021



TABLE OF CONTENTS

EXECUTIVE SUMMARY	P. 2
China Pursues Global Blockchain Solution as Path to Standardization and Interoperability Along the DSR	
Permissioned vs. Permissionless Blockchain	
China Launches the Blockchain-Based Service Network (BSN)	
State Control Over BSN	
BSN's Anticipated Global Footprint	
BSN China vs. BSN International	
China Enlists Cryptocurrency Trader to Push BSN to BRI Countries	
BSN a Framework for Expansion of China's Digital Currency	
Blockchain as a Facilitator of Chinese "Smart City" Solutions	
OVERVIEW	P. 8
INTRODUCTION TO BLOCKCHAIN	P. 10
CHINA'S COMMUNIST PARTY PRIORITIZES BLOCKCHAIN	P. 11
CHINA'S STATE-BACKED BLOCKCHAIN ECOSYSTEM	P. 13
State Control and Strategic Ambitions of BSN	
Technical Overview of BSN	
BSN's Competitive Offering Could Help Export the Platform	
THE POTENTIAL DATA SECURITY RISKS ASSOCIATED WITH BSN	P. 18
BSN China vs. BSN International	
BSN INTEGRATION INTO THE DIGITAL SILK ROAD	P. 21
DSN and State-Backed Digital Currencies	
BSN and Global Supply Chain Interoperability	
BSN and the "Smart City" Potential	
CONCLUSION	P. 26

EXECUTIVE SUMMARY

China Pursues Global Blockchain Solution as Path to Standardization and Interoperability Along the Digital Silk Road

A new point of focus is emerging within the framework of the Digital Silk Road (DSR), which is an effort by Beijing to ensure Chinese companies are front-and-center in the standardization and interoperability of global digital infrastructure (not just the equipping and construction of the infrastructure itself).¹ Beijing perceives its success in this endeavor as crucial not only to ensuring its long-term economic competitiveness in the global technology sector, but also to persuading foreign countries to adopt its norms for governing the internet and digital space more broadly. One important way that China is seeking to achieve this objective is through a state-backed blockchain system that Beijing is seeking to expand, both at home and abroad.^{2, 3}

If leveraged effectively, the adoption of Chinese blockchain infrastructure along the DSR could foreseeably allow China to integrate – and hold influence over – many of the core cross-sector digital solutions being implemented by Chinese companies around the world from financial technology (fintech) to smart logistics to new supply chain management strategies.

The Chinese Communist Party's (CCP) objective to proliferate blockchain infrastructure to foreign countries along the DSR (and beyond) thus raises national security and strategic considerations for the United States and its allies (as well as the target countries themselves).

Indeed, Chinese blockchain solutions represent another dimension of how Beijing intends to enhance its leadership and influence over the global digital economy, facilitated by state-owned or state-controlled enterprises operating abroad that are increasingly raising concerns about their susceptibility to being used by the CCP for espionage or other strategic purposes.^{4, 5, 6}

¹ <https://www.tandfonline.com/doi/full/10.1080/23311975.2020.1804180>

² <https://thediplomat.com/2021/04/chinas-digital-silk-road-and-the-global-digital-order/>

³ http://www.xinhuanet.com/2017-12/22/c_1122155113.htm

⁴ <https://illinoisnewstoday.com/blockchain-empowers-china-europe-rail-trade/145220/>

⁵ <https://smartmaritimene트워크.com/2021/04/14/digital-integration-with-chinas-belt-road-initiative/>

⁶ <https://www.ibm.com/blogs/blockchain/2020/04/blockchain-and-edi-do-they-complement-or-compete-with-each-other/>

Permissioned vs. Permissionless Blockchain: Beijing's Pursuit of Digital Control

Blockchain is an emerging technology that many expect will gradually and fundamentally change the economic and social exchanges of modern digital ecosystems.⁷ The technology is expected to protect the privacy and integrity of transactions from surveillance and manipulation by external actors, including institutional intermediaries controlling the flow of data (e.g., intrusive central authorities or administrators).⁸ Proponents of blockchain have tended to view this decentralization feature as a key element of the future digital economy that will alleviate some of the vulnerabilities that data on the internet is susceptible to today. Indeed, blockchain's advocates regard the technology as a countermeasure – a solution – to institutionalized control of the digital ecosystem.⁹

It is, however, important to distinguish that there are two different formats of blockchain platforms: permissionless and permissioned. Permissionless blockchain platforms (also known as public blockchains) are open, fully decentralized, and transparent systems that anyone can access and operate with anonymity. Permissioned blockchain networks, on the other hand, are less decentralized, operating instead as closed private networks controlled by one or more stakeholders. Permissioned networks require participants to acquire privileged access from the chain's main operator(s). While the anonymity of participants can be preserved on permissioned platforms, network operators typically have access to the identity of all users.

Permissioned blockchains are increasingly preferred by organizations and entities that the decentralized technology was originally thought to circumvent. They are predominantly used by enterprises and organizations that seek certain benefits of blockchain, such as efficiency and scalability of processes and systems, but without entirely giving up on centralization and control over the platform's users. Permissioned chains, where elements such as transparency, privacy, and immutability are diluted, are thus more susceptible to authoritarian manipulation and control. These systems are also preferred by the CCP, which sees great value in blockchain technology, including as a means of reinforcing its central control and strategic interests.¹⁰

This has been demonstrated by the increasing prominence of blockchain in the CCP's national agenda, including in China's 13th Five Year Plan (2016-2020)¹¹ and, more recently, in the draft of the 14th Five Year Plan (2021-2025), which was introduced in March 2021.¹² In 2019, blockchain

⁷ <https://hbr.org/2017/01/the-truth-about-blockchain>

⁸ <https://hbr.org/2017/01/the-truth-about-blockchain>

⁹ <https://cointelegraph.com/news/blockchain-power-and-politics-how-decentralization-engenders-freedom>

¹⁰ http://www.xinhuanet.com/politics/2018-05/28/c_1122901308.htm

¹¹ http://www.gov.cn/zhengce/content/2016-12/27/content_5153411.htm

¹² <https://www.coindesk.com/blockchain-gets-first-mention-in-chinas-5-year-policy-plan> ; <https://www.lexology.com/library/detail.aspx?g=61a368c0-ece4-441f-81b2-87827491058e>

featured prominently in President Xi Jinping's agenda for China's digital economy. Under Xi's guidance, the CPC Central Committee published a study in April 2019 on the integrated applications of blockchain technology in industrial transformation. Most recently, on June 7, 2021, China's Ministry of Industry and Information Technology (MIIT) and the Cyberspace Administration of China (CAC) issued detailed guidance on Beijing's plans to leverage blockchain for industrial applications and become a global leader in this space by 2025.¹³

[China Launches the Blockchain-Based Service Network \(BSN\)](#)

In April 2020, a consortium of Chinese government institutions and state-backed companies launched the government-controlled Blockchain-based Service Network (BSN). The BSN platform is described as a state-controlled, public "Internet of Blockchains"¹⁴ network and is purported to become the foundational infrastructure for massive, cross-sector blockchain-based data interconnectivity, both domestically and internationally (including along the DSR).¹⁵ The global version was launched in August 2020.

By its own description, BSN seeks to emulate the basic "plumbing" of the modern internet that underpins digital economic and social activities worldwide. Many surmise that the state-controlled blockchain network – not only in its deployment domestically but also internationally – seeks to become a "new internet" that challenges the conventional standards of the digital economy.¹⁶ During the 2020 Hong Kong Fintech Week, BSN's Secretary General Tan Min, indicated that the new blockchain network will allow Beijing "independent intellectual property rights and China [will] control the rights to internet access."

BSN represents an effort by Beijing to build one of the first blockchain-based networks that is cost-effective and interoperable on a global scale. In short, Beijing is not just creating one blockchain; it is building a framework for all emerging blockchains to operate on and is doing so in a manner that is designed to entice new customers with attractive terms.

[State Control Over BSN](#)

The domestic and international versions of China's blockchain network are entirely state-controlled by a consortium of state-owned and affiliated companies collectively called the

¹³ https://www.miit.gov.cn/jgsj/xxjsfzs/wjfb/art/2021/art_aac4af17ec1f4d9fadd5051015e3f42d.html

¹⁴ <https://101blockchains.com/bsn-blockchain/>

¹⁵ <https://www.chinabankingnews.com/2020/04/26/china-launches-national-blockchain-based-services-network/>

¹⁶ <https://bsnbase.io/static/tmpFile/bzsc/1bsnintroduction/1-1.html>

Blockchain Service Network Development Association. These companies include China's State Information Center, the central planning agency that also designs the country's vast internet surveillance system; China Mobile; China UnionPay Corporation; the lesser-known China Mobile Financial Technology; and the BSN's core software designer, Red Data Technology.¹⁷

Ultimately, the BSN's ties to Chinese government institutions and state-owned and state-controlled enterprises as well as the strategic ambitions of the CCP raise several questions about the data security and national security implications associated with the BSN's domestic and international platforms.

BSN's Anticipated Global Footprint

In the coming years, BSN is seeking to expand its platform's overseas infrastructure substantially. In January 2021,¹⁸ the BSN announced a five-year growth plan that includes specific steps toward the platform's internationalization: 1) establishing 50 new public city nodes internationally that will cover "most" developing and developed countries with high levels of projected economic growth; and 2) the allocation of 10 BSN International ports in 10 countries that will facilitate regional integration of the network.¹⁹

Whereas the internet is a network forged by a cluster of data centers and servers governed by the TCP/IP internet protocol, the BSN is a cloud-based network, instead interconnected by a cluster of "public city nodes" (PCN) that are geographically dispersed virtual centers controlled by local cloud and data center operators. As of mid-2020, BSN had established approximately 128 PCNs in China and 7 PCNs in overseas locations, including in Paris, Sydney, Sao Paulo, Singapore, Tokyo, Johannesburg, and California.²⁰ In the near future, China anticipates expanding the network to over 200 domestic and international PCNs that will effectively create a blockchain-based – and Beijing-controlled – virtual protocol²¹ between China and its trading partners.²²

The geostrategic implications of this new ecosystem are evident in BSN's value proposition offered to commercial enterprises and government institutions. The network provides cost reduction, interoperability, and a lower technical barrier of entry for smaller players to get into blockchain. These features of the platform, which could give BSN a competitive advantage over

¹⁷ <http://kb.bsnbase.com/wdap/show/Pubimgs.do?viewdocId=4028813e70be89f70170e29fd6be01e1>

¹⁸ <https://medium.com/bsnbase/bsn-2021-outlook-e2e6841db51b>

¹⁹ <https://sinoglobalcap.medium.com/an-intro-to-the-blockchain-services-network-bsn-d7852354caca>

²⁰ <https://sinoglobalcap.medium.com/an-intro-to-the-blockchain-services-network-bsn-d7852354caca>

²¹ <https://www.forbes.com/sites/tatianakoffman/2020/08/26/chinas-checkmate/?sh=33e62d724499>

²² https://www.youtube.com/watch?v=k9Gtq-j_3U&list=PL6UAM-eeqgp_w6sp13pAf9SSmkaembV09&index=3

its competitors, are likely to help China export the concept to foreign countries, including those along the already-established DSR. The Chinese government is acutely aware of the value of BSN's "first mover's" advantage in this space and appears to be moving forward aggressively.

If the platform gains enough traction among China's international partners to become a mainstay for different elements of trade and commerce between China and BRI countries (as well as other participating countries), the BSN could be utilized by the CCP to advance China's strategic economic and financial leverage.

[BSN China vs. BSN International](#)

BSN China, the domestic version of the network, is solely a permissioned network,²³ meaning that all operating blockchains on the platform are subject to monitoring by network operators (presumably the Chinese state-owned companies of the BSN Development Association).²⁴ BSN International, the international version of the network, also supports permissioned networks, but it has taken steps to become more decentralized to assure the global users of the network that suitable data and privacy protections are in place. Red Date and BSN's other state-owned operators are making a concerted effort to differentiate between the domestic and international versions of the platform, emphasizing the latter's more decentralized qualities – hoping that the international community will buy that there is a difference between the two – and choose to trust BSN International accordingly.

Despite the efforts of Chinese network operators to distinguish the international and domestic versions of the BSN, the reality that BSN International is state-controlled and interoperable with BSN China raises suspicion about the platform's data security and exposure to CCP surveillance and monitoring. Security experts continue to question BSN International regarding the potential exposure of foreign data to Chinese government-backed network operators. Security experts also highlight that if the Chinese government owns the encryption standard of the network, then there is "no guarantee" that back doors do not exist through which BSN operators could access the data of developers.²⁵

Based on the BSN's five-year plan issued in January 2021,²⁶ Beijing is positioning BSN International to become a critical conduit to achieve interoperability and cross-functionality of disparate elements of the Belt and Road Initiative. The platform is angling to become the largest

²³ <https://hyperledger-fabric.readthedocs.io/en/release-2.2/whatis.html>

²⁴ <https://www.coindesk.com/bsn-localized-chains>

²⁵ <https://decrypt.co/26693/bsns-chinachain-launches-globally>

²⁶ <https://medium.com/bsnbase/bsn-2021-outlook-e2e6841db51b>

and perhaps most ubiquitous global blockchain-based digital infrastructure, with diverse implications for trade, logistics, and supply chains.

[China Enlists Cryptocurrency Trader to Push BSN to Belt and Road Countries](#)

In December 2019, Huobi Group, a leading Chinese cryptocurrency exchange (based in Singapore), launched the Hainan Free Trade Port International Cooperation Forum on Digital Economy and Blockchain. The forum was a global gathering of ministerial-level government officials from several BRI members, including Russia, Malaysia, Thailand, Gibraltar, and Argentina (among others), aimed at driving cooperation and expansion of blockchain technology along the Belt and Road Initiative.

During the forum, Huobi was enlisted by the Chinese government to develop blockchain financial infrastructure in a few locations, including Uzbekistan, Indonesia, and Gibraltar. Huobi has ties to the Chinese government (e.g., it has trained party officials on blockchain technology and participated in an in-house CCP committee, which is a first for a cryptocurrency firm) that have elevated the company's role within Beijing's national strategy for blockchain.²⁷ With the launch of the forum, Huobi has emerged at the forefront of China's state-sanctioned blockchain ecosystem and as a global catalyst for BSN's expansion.^{28, 29}

[BSN a Framework for Strategic Global Expansion of China's Digital Currency](#)

BSN may also become a framework to expand the interoperability of China's digital currency with other government-backed digital currencies currently under development around the world. In the second half of 2021, BSN is planning to launch the beta version of the Universal Digital Payment Network (UDPN), a standardized blockchain payment method that would connect Central Bank Digital Currencies (CBDC) around the world.³⁰ CBDCs are digital tokens that represent the fiat currency of a country or region and are typically issued by their respective central banks.³¹

Beijing views mass adoption of digital currencies as a strategic opportunity through which to diminish the current global dominance of U.S. dollar-denominated banking and financial

²⁷ <https://www.bloomberg.com/news/articles/2020-01-28/the-crypto-mogul-who-s-got-the-ear-of-china-s-central-bank>

²⁸ <https://www.prnewswire.com/news-releases/huobi-china-to-play-pivotal-role-in-development-of-bsn-301054339.html>

²⁹ <https://en.prnasia.com/releases/apac/huobi-china-to-play-pivotal-role-in-development-of-bsn-279357.shtml>

³⁰ <https://www.163.com/dy/article/G02MDN460538AWCK.html>

³¹ <https://www.investopedia.com/terms/c/central-bank-digital-currency-cbdc.asp>

systems and reduce the exposure of China's global transactional data to the United States.^{32, 33} A global transition to digital currency may also allow China to operate a new global transaction system based on its emerging digital infrastructure. When describing UDPN, BSN claims that the new payment network will "completely change" current payment and currency circulation methods.³⁴

It is likely that overseas markets, such as those in Southeast Asia and Africa, where Chinese companies already dominate information and communication technology (ICT) sectors, will become critical markets for the UDPN if these economies develop their own state-backed digital currencies.^{35, 36}

Blockchain as a Facilitator of Chinese "Smart City" Solutions

Under the BRI, Chinese companies have forged several robust export markets of hardware and software systems that contribute to the "smart city" functionality of various urban centers around the world. Blockchain services are purportedly capable of increasing the efficiency and interoperability of these systems. It is foreseeable that China-backed blockchain integration would facilitate such capabilities in "smart city" locations that already feature Chinese-made equipment, software, and technical operations.

OVERVIEW

China's Digital Silk Road (DSR), a component of Beijing's Belt and Road Initiative (BRI), has primarily been defined since its introduction in 2015 as an effort to proliferate Chinese technology solutions (i.e., hardware, software and technical expertise) to overseas markets. As it has evolved, however, **a new point of focus is emerging within the framework of the DSR, which is an effort by Beijing to ensure Chinese companies are front-and-center in the standardization and interoperability of global digital infrastructure (not just the equipping and construction of the infrastructure itself).**

³² <https://www.atlanticcouncil.org/blogs/econographics/the-rise-of-central-bank-digital-currencies/>

³³ <https://www.reuters.com/article/china-swift-pboc/update-1-swift-sets-up-jv-with-chinas-central-bank-idUSL1N2KA0MS>

³⁴ <https://www.nfcw.com/technology/universal-digital-payment-network-udpn/>

³⁵ <https://www.coindesk.com/china-leads-africas-digital-currency-race>

³⁶ <https://www.pymnts.com/news/international/2017/unionpay-goes-global-wto-mastercard-visa-global-expansion-china/>

China perceives its success in this endeavor as crucial not only to ensuring its long-term economic competitiveness in the global technology sector, but also to persuading foreign countries to adopt its norms for governing the internet and digital space more broadly. Indeed, **the DSR is ultimately underpinned by the vision of the Chinese Communist Party (CCP) for a Sino-centric “common destiny in cyberspace,”³⁷ alluding to the expansion of Chinese standards and norms in the global digital order. One important way that China is seeking to achieve these objectives is by promoting a Chinese-managed global blockchain system, both domestically and internationally.³⁸**

The 2018-2020 Belt and Road Action Plan issued by the CCP speaks to China's efforts to proliferate its “national standards” globally, through the BRI's many sector-based initiatives, including core competencies in emerging technology, such as 5G and the “internet of things” (IoT). The plan also emphasizes China's desire to set the standards of global finance to build a “stable and fair” international financial system.³⁹ In recent years, Beijing's efforts to build dependencies on its technology solutions in overseas markets have been largely successful, with its low-cost, state-subsidized – but technically capable – solutions often winning major bids.

This report focuses on what is likely to be a transformational next phase in China's DSR strategy: the aggressive integration of Chinese blockchain-based services among countries that have become part of Beijing's DSR. **If leveraged effectively, the adoption of Chinese blockchain infrastructure along the DSR could allow Beijing to unify and control many of the core cross-sector digital solutions being implemented by Chinese companies from financial technology (fintech) to smart logistics to new supply chain management.**

China's explanation for why this is a mutually beneficial idea for target countries will be that the full potential of the DSR solutions being provided are currently being held back by fragmented systems that are inefficient and lack interoperability. **The CCP's DSR strategy for pushing blockchain infrastructure on foreign countries, however, raises serious national security and strategic considerations for the United States and its allies (as well as the target countries themselves).** Chinese blockchain solutions, as a component of its DSR initiative, represent **another dimension of Beijing's intent to enhance its leadership and control over the global digital economy, facilitated by state-owned or state-controlled enterprises operating abroad that raise concerns about their susceptibility to being utilized by the CCP for intelligence, espionage or some other strategic purpose.**

³⁷ <https://www.tandfonline.com/doi/full/10.1080/23311975.2020.1804180>

³⁸ <https://thediplomat.com/2021/04/chinas-digital-silk-road-and-the-global-digital-order/>

³⁹ http://www.xinhuanet.com/2017-12/22/c_1122155113.htm

INTRODUCTION TO BLOCKCHAIN

Blockchain is an emerging foundational technology that is expected to gradually and fundamentally change the economic and social systems of the present-day digital ecosystem. Blockchain is **a distributed virtual ledger underpinned by cryptographic protocols and consensus algorithms that records virtual exchanges between parties** in an efficient, permanent, and transparent manner. In short, **blockchain is a digital database that facilitates the authentication and “immutable” storage of data (i.e., stored in a manner that it cannot be changed or altered) in a decentralized format.**

Most blockchain transactions occur through a peer-to-peer democratized verification process that preserves the authenticity and integrity of transactional data (e.g., payments, contracts, licensing, identification, messaging, etc.). The technology is supposed to **protect the privacy and integrity of transactions from manipulation by external actors and institutional intermediaries controlling the flow of data** (i.e., from intrusive central authorities or administrators).⁴⁰

The increasing appeal of blockchain-based systems is rooted in their decentralized verification process. In the conventional internet model, authentication of online interactions is typically coordinated by a central authority, such as a bank, law firm, software company, or government body. By contrast, under a decentralized blockchain ledgering format, authentication of data is conducted in a peer-to-peer exchange between the individual participants of the blockchain. This is intended to mitigate the need for conventional third-party intermediaries. These peers anonymously and transparently verify “blocks” of data carrying uniquely identified records of online interactions (e.g., contracts, payments, logistics, etc.) that can encompass everything from local government services to transactions and logistics.

Proponents of blockchain have tended to view this decentralization feature as a key element of the future digital economy that will alleviate some of the vulnerabilities that data on the internet is susceptible to today. Indeed, blockchain’s advocates regard the technology as a countermeasure – a solution – to institutionalized control of the digital ecosystem.⁴¹

It should be noted, however, that there are two different formats to blockchain networks: permissionless and permissioned. **Permissionless blockchain platforms (also known as public blockchains) are open, fully decentralized, and transparent systems** that anyone can access and operate with anonymity. On the other hand, **permissioned blockchain networks are less decentralized, operating instead as closed networks controlled by one or more stakeholders**

⁴⁰ <https://hbr.org/2017/01/the-truth-about-blockchain>

⁴¹ <https://cointelegraph.com/news/blockchain-power-and-politics-how-decentralization-engenders-freedom>

(referred to as a “consortium chain” when operated by more than one operator). Permissioned chains require participants to acquire privileged access from the chain’s main operator(s). **While anonymity can be preserved among participants on permissioned platforms, network operators typically have access to the identity of all users.**⁴²

Indeed, those that view blockchain as a countermeasure to central authority in the digital ecosystem are most likely referring to permissionless or public blockchains, which are iterations of the technology where anyone can anonymously access and contribute to the decentralized data verification structure.

The very organizations and enterprises that blockchain technology was thought to circumvent now favor the applications of “permissioned” blockchain networks. Permissioned blockchain technology offers organizations efficiency and scalability of processes and systems while maintaining centralization and control over the platform’s users. Permissioned blockchains, where elements such as transparency, privacy, and immutability are diluted, are thus advantageous for authoritarian manipulation and control. Permissioned networks are preferred by the CCP over more decentralized public formats of blockchain.

The distinction between permissioned and permissionless blockchains is **important when analyzing the CCP’s possible implementation of blockchain technology**. Indeed, **the CCP’s intentions for engaging with this nascent technological field are viewed as yet another way to centralize control over persons, both domestically and internationally**. As such, this report seeks to improve awareness and understanding of the CCP’s blockchain centralization strategy, its emerging role in the DSR and the related national security implications.

CHINESE COMMUNIST PARTY PRIORITIZES BLOCKCHAIN

The conventional characterization of blockchain as a decentralized network appears to run contrary to the CCP’s decidedly centralized authoritarian internet model, which is based on the ubiquitous data-driven surveillance and control of its citizenry. The recent actions of the Chinese government to deter permissionless blockchain-based activities related to cryptocurrency trading⁴³ are an example of the CCP’s opposition to blockchain platforms that facilitate decentralized financial activities that circumvent party control.

⁴² <https://101blockchains.com/permissioned-vs-permissionless-blockchains/>

⁴³ <https://www.loc.gov/law/help/cryptocurrency/china.php>

Still, **the CCP sees the future strategic potential for blockchain technology; blockchain-based systems can be leveraged to reinforce Beijing's central control and the preservation of its core and strategic interests** – if deployed properly.⁴⁴

China's interest in blockchain is demonstrated by the increasing emphasis of the technology in the CCP's national agenda. On June 7, 2021, China's Ministry of Industry and Information Technology (MIIT) and the Cyberspace Administration of China (CAC), the two agencies in charge of the Chinese internet, issued detailed guidance on Beijing's plans to leverage blockchain for industrial applications and to become a leader internationally in this space by 2025.⁴⁵ Prior to this latest announcement, **the importance of leveraging blockchain was referenced in China's 13th Five Year Plan (2016-2020)⁴⁶ and more recently in the draft 14th Five Year Plan (2021-2025)**, which was introduced in March 2021.⁴⁷

In 2019, **blockchain featured prominently in President Xi Jinping's agenda for China's digital economy**. Under Xi's guidance, **the CPC Central Committee published a study in April 2019 on the integrated applications of blockchain technology** in industrial transformation. Based on this study, Xi publicly concluded that,

“We [China] must take the blockchain as an important breakthrough for independent innovation of core technologies, clarify the main direction, increase investment, focus on a number of key core technologies, and accelerate the development of blockchain technology and industrial innovation”.⁴⁸

Offering a glimpse of where the CCP seeks to focus blockchain integration, Xi noted that the technology has a number of use cases, including in digital finance, digital asset trading, intelligence manufacturing, supply chain management, and IoT.

Just one year following Xi's 2019 remarks, **in April 2020, blockchain-based infrastructure was classified by China's National Development and Reform Commission (NRDC) for the first time as a “new” infrastructure model**.

⁴⁴ http://www.xinhuanet.com/politics/2018-05/28/c_1122901308.htm

⁴⁵ https://www.miit.gov.cn/jgsj/xxjsfzs/wjfb/art/2021/art_aac4af17ec1f4d9fadd5051015e3f42d.html

⁴⁶ http://www.gov.cn/zhengce/content/2016-12/27/content_5153411.htm

⁴⁷ <https://www.coindesk.com/blockchain-gets-first-mention-in-chinas-5-year-policy-plan> ; <https://www.lexology.com/library/detail.aspx?g=61a368c0-ece4-441f-81b2-87827491058e>

⁴⁸ http://www.xinhuanet.com/politics/2019-10/25/c_1125153665.htm

In the same month, a consortium of Chinese government institutions and state-backed companies launched the government-controlled Blockchain-based Service Network (BSN). **The BSN platform is described as a state-controlled,**

public “Internet of Blockchains”⁴⁹ network and is purported to become the backbone infrastructure for massive, cross-sector blockchain-based data interconnectivity across China, as well as the DSR.⁵⁰ The BSN’s global version was subsequently launched in August 2020.



CHINA'S STATE-BACKED BLOCKCHAIN ECOSYSTEM

By its own description, BSN seeks to emulate the basic “plumbing” of the modern internet infrastructure that underpins digital economic and social activities worldwide. This has led many observers of **the emerging BSN framework to surmise that the state-controlled blockchain network – both in its deployment domestically, but also internationally – is looking to become a “new internet” of sorts** that challenges the conventional standards of the digital economy.⁵¹ To this end, the MIIT’s June 2021 policy guidance stated,

“Build the underlying platform. Strengthen technical research in key areas such as distributed computing and storage, cryptographic algorithms, consensus mechanisms, and smart contracts, and build the underlying platform of the blockchain. Support the use of sensors, trusted networks, and the combination of software and hardware to strengthen on-

⁴⁹ <https://101blockchains.com/bsn-blockchain/>

⁵⁰ <https://www.chinabankingnews.com/2020/04/26/china-launches-national-blockchain-based-services-network/>

⁵¹ <https://bsnbase.io/static/tmpFile/bzsc/1bsnintroduction/1-1.html>

chain and off-chain data collaboration. **Promote the integration of blockchain and other new-generation information technologies to create a safe, controllable and cross-chain compatible blockchain infrastructure.**"

It also stipulated,

"Centering on the strategic deployment of the 'Belt and Road,' build a blockchain international and exchange platform, and strengthen international blockchain cooperation in areas such as technical open source communities and talent training. Encourage enterprises to expand channels for international exchanges and cooperation, and improve the level of international development."

State Control and Strategic Ambitions of BSN

Indeed, **both the domestic and international versions of the blockchain network are entirely state-controlled by a consortium of state-owned and affiliated companies** collectively called the Blockchain Service Network Development Association. Within this association:

- ❖ **China's State Information Center, the central planning agency that also designs the country's vast internet surveillance system**, provides government oversight;
- ❖ **China Mobile** provides the telecommunications architecture;
- ❖ **China UnionPay**, alongside the lesser-known **China Mobile Financial Technology**, together provide the financial technology architecture for the network; and
- ❖ the BSN's core software is designed and operated by a relatively obscure Beijing-based private technology company, **Red Data Technology**.⁵²

It is also important to understand that, beyond the risk and threat implications that are embedded in the authoritarian, state-controlled characteristics of the "enterprise" behind BSN, **the solution represents an effort by Beijing to build a network of blockchains – this is unique in the industry, as China is seeking to eliminate some of the barriers of entry into the technology and to become the first to make it more cost effective and interoperable on a global scale.** In essence, Beijing is not just creating one blockchain; it is building a framework for all emerging blockchains to operate on.

⁵² <http://kb.bsnbase.com/wdap/show/Pubimngs.do?viewdocId=4028813e70be89f70170e29fd6be01e1>

Ultimately, **the BSN's ties to Chinese government institutions and state-owned and state-controlled enterprises as well as the strategic ambitions of the CCP raise several questions about the data security and national security implications associated with the BSN's domestic and international platforms.** The June 2021 report issued by MIIT and CAC reinforced how the state aims to support blockchain technology and the companies implementing it, noting the need to cultivate national champions that can compete and win business globally.⁵³ This status, as a technology solution provider made competitive internationally as a result of state support, was part of the downfall of Huawei, a technology company that was undermined by the perception of a cozy relationship with the state.

If the CCP intends to prop up companies implementing blockchain solutions to expedite their global footprint, it could once again result in global audiences enacting investment screening or special review processes to avoid being roped into Beijing's economic and strategic objectives via seemingly benign, commercial business activity.

BSN's State-Aligned Operators and their Function

Supervising Government Agency	State Information Center of China
Telecommunications Architecture	China Mobile Communications Corporation Design Institute; and China Mobile Communications Corporation Government and Enterprise Service Company
Financial Technology Architecture	China UnionPay Corporation; and China Mobile Financial Technology Co. Ltd.
Core Software Strategy	Beijing Red Date Technology

Technical Overview of BSN

Whereas the internet is a network forged by a cluster of data centers and servers governed by the TCP/IP internet protocol, the **BSN is a cloud-based network instead interconnected by a cluster of "public city nodes" (PCN) that are geographically dispersed** virtual centers controlled by local cloud and data center operators.

⁵³ <https://www.scmp.com/tech/tech-trends/article/3136515/china-plans-accelerate-blockchain-development-and-adoption-push#Echobox=1623169866>

Through the PCNs, the BSN operates as an expansive interoperable network for blockchain software developers (Dapp developers) to plug into and build blockchain-based virtual applications and services (e.g., smart contracts, supply chain management, digital assets, etc.), typically for enterprise and government use.⁵⁴

As of mid-2020, **BSN had established approximately 128 PCNs in China and 7 PCNs in overseas locations, including in Paris, Sydney, Sao Paulo, Singapore, Tokyo, Johannesburg, and California.**⁵⁵ In the near future, China anticipates expanding the network to over 200 PCNs, spread across China as well as overseas locations that will **effectively create a blockchain-based – and Beijing-controlled – virtual protocol**⁵⁶ between China and its trading partners. To this end, **BSN has disclosed that it will tap into a network of 131 data centers around the world (situated on every continent except Antarctica) to expand the scope of BSN worldwide.**⁵⁷

The geostrategic implications of this new ecosystem are linked to the attractiveness of BSN's value proposition to commercial enterprises, government institutions, and decentralized application developers. **The network provides cost reduction, interoperability, and a lower technical barrier of entry for smaller players to get into blockchain. These offerings constitute the sales pitch that Beijing is serving up as it seeks to proliferate the concept.**

Cost Reduction: The BSN's resource sharing model reportedly reduces the cost of operating on a standard blockchain cloud by approximately 20-30%.⁵⁸ This even undercuts the cost of private Chinese cloud operators, such as Alibaba, Tencent, and Huawei. The BSN can reduce costs, in part, by centralizing certain functionalities of building and operating a blockchain that would otherwise fall on individual developers at a peer-to-peer level.⁵⁹

Interoperability: Generally, blockchain industry experts have acknowledged that interoperability, or the ability of different blockchain frameworks to communicate with each other, remains one of the key barriers precluding mass adoption of cross-function blockchain services in enterprise and government services. The BSN claims to remove this barrier, facilitating interoperability between different blockchain frameworks, portals, and cloud servers. This is a quality that reportedly has yet to be achieved in blockchain interactions at the system-level.⁶⁰ In a 2019 whitepaper, BSN equates its functionality in this respect to that of the interoperability of the internet, stating,

⁵⁴ <https://www.coindesk.com/meet-red-date-the-little-known-tech-firm-behind-chinas-big-blockchain-vision>

⁵⁵ <https://sinoglobalcap.medium.com/an-intro-to-the-blockchain-services-network-bsn-d7852354caca>

⁵⁶ <https://www.forbes.com/sites/tatianakoffman/2020/08/26/chinas-checkmate/?sh=33e62d724499>

⁵⁷ https://www.youtube.com/watch?v=k9Gtq-j_3U&list=PL6UAM-eeqgp_w6sp13pAf9SSmkaembV09&index=3

⁵⁸ <https://101blockchains.com/bsn-blockchain/>

⁵⁹ <https://sinoglobalcap.medium.com/an-intro-to-the-blockchain-services-network-bsn-d7852354caca>

⁶⁰ <https://technode.com/2020/09/30/exclusive-chinas-bsn-to-test-cross-chain-interoperability-in-october/>

“Just as websites deployed on the internet can mutually interact and communicate, all Dapps [decentralized applications] on the BSN can also interchange data regardless of differences in their underlying frameworks.”⁶¹

Improved Technical Literacy: Technical literacy about blockchains is still limited, particularly among small and medium-sized enterprises, as well as many government institutions around the world. The BSN seeks to reduce the technical barrier of entry and integration of blockchain technology into the business and governance models by offering “smart gateways” or pre-built chains that streamline and simplify the ability of developers to build and operate blockchain applications within the network.⁶²

“DLTs [distributed ledger technology or blockchain] are essentially regional networks where they build applications in their own environment and are separate from each other...There could be an internet environment where there are tens of thousands of interconnected DLT networks. We have come to the realization that the current DLT industry is like the Internet in 1993.”

Yifan He,
CEO, Red Date Technology
Operator of BSN International

BSN's Competitive Offering Could Help Beijing to Export the Platform Globally

Although BSN's deployment globally is at a very early stage, **these features of the platform (i.e., cost, interoperability, and literacy threshold) could give BSN a competitive advantage and help China to export the concept to foreign countries, including along the already-established DSR.**

Ultimately, **if the platform gains enough traction among China's international partners to become a mainstay for different elements of trade and commerce between China and BRI countries, the BSN could very well be utilized by the CCP to**

“Once the BSN is deployed globally, it will become the only global infrastructure network autonomously innovated by Chinese entities and for which network access is Chinese-controlled.”

BSN White Paper
September 2019

⁶¹ <https://sinoglobalcap.medium.com/an-intro-to-the-blockchain-services-network-bsn-d7852354caca>

⁶² <https://101blockchains.com/bsn-blockchain/>

advance China's strategic economic and financial leverage in recipient countries.

Indeed, the Chinese government is acutely aware of BSN's "first mover's" advantage in this space and appears to be moving forward aggressively.

THE POTENTIAL DATA SECURITY RISKS ASSOCIATED WITH BSN

Just three months following BSN's domestic launch, the network branched into two versions: BSN China and BSN International, which, according to reports, occurred due to the pressures of integrating and permitting existing or new permissionless blockchains. Media reports suggest this division emerged due to internal tensions between the state-owned operators of the BSN network (China Mobile Communication and China UnionPay) and the private, China-based software provider for BSN, Red Date Technology. According to reports, the state-owned operators objected to the public (permissionless) blockchains, specifically for the reason that they could not be easily monitored or controlled.

BSN China versus BSN International

BSN China, **the domestic version of the network, is a permissioned network,⁶³ meaning that all operating blockchains on the platform are subject to monitoring by network operators** (presumably the Chinese state-owned companies of the BSN Development Association). **Even international decentralized blockchains welcomed into BSN's domestic platform are being required to build "localized" iterations of their protocols** that comply with Chinese laws and data standards.⁶⁴

BSN International was developed as a globalized version of the blockchain network that could host both permissioned and permissionless blockchains. BSN International caters more broadly to the global blockchain industry while allowing state-backed operators to preserve the domestic network as a solely permissioned network.

While BSN International supports permissioned networks, it has taken steps to become more decentralized to assure global users of the network that suitable data and privacy protections

⁶³ <https://hyperledger-fabric.readthedocs.io/en/release-2.2/whatis.html>

⁶⁴ <https://www.coindesk.com/bsn-localized-chains>

are in place. BSN International has succeeded in facilitating the integration and interoperability of some internationally well-known public (permissionless) chains into the network. As of March 2021, for example, BSN can support Dapps built on 15 such blockchains that include Ethereum, Polkadot, and Consensus, with plans to add 30 more public blockchains by the end of 2021.

Red Date Technology has also been sensitive to the data privacy risks that could ultimately cause problems for the network, perhaps motivated by the business considerations of being perceived by foreign audiences as susceptible to Chinese government oversight and surveillance. On the other hand, if the CCP were hoping for greater usage of BSN International, it may be in Beijing's interest to persuade foreign audiences that it is safe. In the 2019 white paper, BSN attempts to address these privacy concerns stating,

"Absolutely no private user data is stored on the BSN or within the platform...there is no API to personal private data on the empowerment platform used within portals, and personal information of all developers and DApp users is managed independently by each BSN portal."⁶⁵

"It seems unlikely, however, that the global portal will be allowed to operate freely if the CCP finds it hosting applications that greatly counter the party's interests, like programs that would support anti-CCP protestors in Hong Kong or Uighur human rights advocates."

Yaya J. Fanusie
Adjunct Senior Fellow
Center for New American Security

Despite these kinds of assurances, **security experts continue to question BSN International regarding the potential exposure it could bring of foreign data to Chinese government-backed network operators.** Although governed separately, **BSN China and BSN International will have complete interoperability,⁶⁶ which brings into question the exposure of blockchain data to flows of information between the two networks.** Security experts have also pointed to the fact that, **if the encryption standard of the network is owned by the Chinese government, then there is "no guarantee" that back doors do not exist through which BSN operators could access the data of developers.⁶⁷**

⁶⁵ <https://www.coindesk.com/meet-red-date-the-little-known-tech-firm-behind-chinas-big-blockchain-vision>

⁶⁶ <https://asiatimes.com/2020/07/what-bsn-split-means-for-chinas-global-reach/>

⁶⁷ <https://decrypt.co/26693/bsns-chinachain-launches-globally>

Then there is the matter of **China's draft Data Security Law** (which builds on a broader Cybersecurity Law passed in 2017)⁶⁸ that implies the CCP's jurisdiction over the network security architecture of Chinese companies and organizations operating abroad.⁶⁹ This raises questions about whether foreign users of the BSN networks are ultimately exposed to compliance requirements associated with Chinese data and privacy regulations. **This, in turn, leads to concerns about the vulnerability of foreign data on the BSN network to being leveraged by Beijing to serve its strategic interests abroad.**^{70, 71, 72}

One need only look at BSN's domestic platform in China to understand the extent to which BSN is capable of facilitating the CCP's surveillance and monitoring activities, despite its promoted privacy guarantees. All data on BSN China's network can be accessed and monitored by the government, and the identities of users are also thoroughly vetted before being allowed on the platform. These chains are also compliant with Chinese censorship policies. **Regarding smart contract development on BSN China,** Yifan He, the CEO of Red Date Technology has acknowledged that,

"if they [blockchain developers] do something wrong, the regulator says there is something wrong, **we can click a button and delete the whole chain.**"

Also indicating that all users of the permissioned tool must go through know-your-customer (KYCC) vetting process, He added that,

"If you do something wrong, we know who you are."

Amid such clear signals of the vulnerability (and, indeed, the deliberate equipping of the system to be overseen by the government) of BSN to state censorship and control, **Red Date and BSN's other state-owned operators are making a concerted effort to differentiate between the domestic and international versions of the platform,** emphasizing the latter's more decentralized qualities – hoping that the international community will buy into the differences between the two. Still, elements of the international version, including that it is state-controlled and interoperable with BSN China, indicate that ambiguities surrounding the platform's data security implications and exposure to CCP surveillance and monitoring persist even for those participating in BSN International.

⁶⁸ <https://www.newamerica.org/cybersecurity-initiative/digichina/blog/translation-cybersecurity-law-peoples-republic-china/>

⁶⁹ <https://www.secrss.com/articles/23542>

⁷⁰ <https://ia.acs.org.au/article/2020/blockchain-services-network.html>

⁷¹ <https://sinoglobalcap.medium.com/an-intro-to-the-blockchain-services-network-bsn-d7852354caca>

⁷² <https://www.lawfareblog.com/dont-sleep-chinas-new-blockchain-internet>

BSN INTEGRATION INTO THE DIGITAL SILK ROAD

In December 2019, Huobi Group, a leading Chinese cryptocurrency exchange (based in Singapore), launched the **Hainan Free Trade Port International Cooperation Forum on Digital Economy and Blockchain** in partnership with the Department of Industry and Information of Hainan Province and the Hainan Resort Software. **The forum was a global gathering of ministerial-level government officials from a number of BRI destinations, including Russia, Malaysia, Thailand, Gibraltar, and Argentina (among others), aimed at driving cooperation and expansion of blockchain technology along the Belt and Road Initiative.**

During the forum, **Huobi was enlisted by the Chinese government to develop blockchain finance in a few of these locations, including Uzbekistan, Indonesia, and Gibraltar.** Huobi, like many other Chinese counterparts, had moved its crypto trading platform to Singapore following the CCP's 2017 ban on cryptocurrency trading in China. Still, media reports indicate that **the company has kept other aspects of its business in China and maintained close ties with the Chinese government (training party officials on blockchain technology, instituting an in-house CCP committee – the first for a crypto firm, etc.) that has elevated the company's role within Beijing's national strategy for blockchain.**⁷³

With the launch of the forum, **Huobi has emerged at the forefront of China's state-sanctioned blockchain ecosystem and as a global catalyst for BSN's expansion.** In December 2019, Huobi joined the BSN Alliance of companies and developed a blockchain framework, Huobi Chain, which was integrated into the BSN in July 2020.^{74, 75}

BSN's International Public City Nodes:

1. Tokyo
2. Singapore
3. Sydney
4. San Paulo
5. Paris
6. Johannesburg
7. California

Beijing is positioning BSN International to become a critical conduit to achieve interoperability and cross-functionality of disparate elements of the Belt and Road Initiative. The platform is

⁷³ <https://www.bloomberg.com/news/articles/2020-01-28/the-crypto-mogul-who-s-got-the-ear-of-china-s-central-bank>

⁷⁴ <https://www.prnewswire.com/news-releases/huobi-china-to-play-pivotal-role-in-development-of-bsn-301054339.html>

⁷⁵ <https://en.prnasia.com/releases/apac/huobi-china-to-play-pivotal-role-in-development-of-bsn-279357.shtml>

angling to become the largest and perhaps most ubiquitous global blockchain-based digital infrastructure, with diverse applications for trade, logistics, and supply chains.

In the coming years, **BSN is seeking to substantially expand the network's already extensive overseas infrastructure**. In January 2021,⁷⁶ the BSN announced a five-year growth plan that includes specific steps toward the platform's internationalization: 1) establishing 50 new public city nodes internationally that will cover "most" developing and developed countries with high levels of projected economic growth; and 2) the allocation of 10 BSN International ports in 10 countries that will facilitate regional integration of the network.⁷⁷

BSN and State-Backed Digital Currencies

In the second half of 2021, **BSN is planning to launch the beta version of the Universal Digital Payment Network (UDPN), a standardized blockchain payment method that would connect Central Bank Digital Currencies (CBDC) around the world**, through a common API.⁷⁸ Central Bank Digital Currencies are digital tokens that represent the fiat currency of a country or region and are typically issued by their respective central banks. Unlike cryptocurrencies, CBDCs are centralized digital tokens.⁷⁹ The state-backed UDPN will be targeted for use by banking, insurance, and other mobile payment applications worldwide to conduct digital currency based transactions.

The UDPN may support ongoing efforts by the People's Bank of China (PBOC) to lead development of global standards for CBDCs. In March 2021, PBOC's Digital Currency Research Institute (DCRI) submitted new proposals to the Bank for International Settlements (BIS) that call for "global" rules for CBDC-based transacting. Regarding the proposal, the Director General of DCRI, Mu Changchun, echoed much of the BSN mandate,

"Interoperability should be enabled between CBDC systems of different jurisdictions and exchange...Information flow and fund flows should be synchronized so as to facilitate regulators to monitor the transactions for compliance...We [PBOC] propose a scalable and overseen foreign exchange platform supported by DLT [distributed ledger technology, or blockchain] or other technologies."⁸⁰

⁷⁶ <https://medium.com/bsnbase/bsn-2021-outlook-e2e6841db51b>

⁷⁷ <https://sinoglobalcap.medium.com/an-intro-to-the-blockchain-services-network-bsn-d7852354caca>

⁷⁸ <https://www.163.com/dy/article/G02MDN460538AWCK.html>

⁷⁹ <https://www.investopedia.com/terms/c/central-bank-digital-currency-cbdc.asp>

⁸⁰ <https://www.reuters.com/article/us-cenbanks-digital-china-rules/china-proposes-global-rules-for-central-bank-digital-currencies-idUSKBN2BH1TA>

In April 2020, China became the first major economy to launch a pilot version of a digital currency,⁸¹ as many countries around the world also jumpstart their respective development of CBDCs. A January 2021 survey by BIS found that approximately 86% of central banks around the world are exploring the issuance of state-backed digital currencies.

It is still unclear which countries will opt into the UDPN, but **it is noteworthy that China has already begun to collaborate on joint studies for digital currency integration.** In February 2021, the People's Bank of China joined an ongoing study by the Hong Kong Monetary Authority and the Bank of Thailand to assess the capability of blockchain to facilitate CBDC-based cross-border payments. The United Arab Emirates has reportedly also joined the study.⁸² Together, the four central banks plan to develop a proof-of-concept prototype of a real-time cross-border foreign exchange payment system. Known as the "m-CBDC Bridge" project, it is the first global inter-bank collaboration to study this premise.⁸³

Foreseeably, the participating countries in the m-CBDC bridge could become the first participants of the UDPN. **It is also likely that overseas markets, such as those in Southeast Asia and Africa, where Chinese companies already dominate information and communication technology (ICT) sectors, will become critical markets for the UDPN** if these economies develop their own state-backed digital currencies.^{84, 85}

Beijing views mass adoption of digital currencies as a strategic opportunity through which to diminish the current global dominance of U.S. dollar-denominated banking and financial systems and reduce the exposure of China's global transactional data to the United States.^{86, 87} **It would also allow for a new global transaction system based on emerging digital infrastructure, controlled by Beijing.** When describing UDPN, BSN claims that the new payment network will "completely change" current payment and currency circulations methods.⁸⁸

⁸¹ <https://www.atlanticcouncil.org/blogs/econographics/the-rise-of-central-bank-digital-currencies/>

⁸² <https://www.coindesk.com/central-banks-of-china-uae-join-hong-kong-thailand-cbdc-payments-project>

⁸³ <https://forkast.news/central-banks-bis-cbdc-bridge-asia-middle-east/>

⁸⁴ <https://www.coindesk.com/china-leads-africas-digital-currency-race>

⁸⁵ <https://www.pymnts.com/news/international/2017/unionpay-goes-global-wto-mastercard-visa-global-expansion-china/>

⁸⁶ <https://www.atlanticcouncil.org/blogs/econographics/the-rise-of-central-bank-digital-currencies/>

⁸⁷ <https://www.reuters.com/article/china-swift-pboc/update-1-swift-sets-up-jv-with-chinas-central-bank-idUSL1N2KA0MS>

⁸⁸ <https://www.nfcw.com/technology/universal-digital-payment-network-udpn/>

BSN and Global Supply Chain Interoperability

One of the primary challenges of the DSR is achieving the interoperability of conventionally siloed data systems and IT infrastructure at ports, terminals, and other logistics facilities along the BRI. To this end, **the DSR aims to standardize digital communication and connectivity. The geographic expansion of BSN International, could very well help the DSR address this challenge of interoperability and communication.**^{89, 90, 91}

Already, Chinese companies are turning to blockchain to achieve logistics standardization. In April 2021, for example, the Industrial and Commercial Bank of China's (ICBC) "China-Europe E-Single Pass 2.0" was officially integrated into the Chengdu International Railway Port, a major terminal for China-Europe cargo trains. The new logistics data platform reportedly cuts transit time of cargo by one-third⁹² and promotes the inclusion of small and medium sized-enterprises in cross-border trade to European markets by offering two primary functions:⁹³ 1) online issuance and verification of cross-border trade documentation; and 2) access to foreign trade e-loans through a point system determined by exporters' blockchain-based trade record.

The blockchain e-pass is intended to replace the use of waybills (documents issued by a carrier providing proof and verification of a shipment of goods) to track cargo transports across borders. Physical waybills were, however, often disparately issued, handled, and verified from country-to-country, creating a number of logistical and financial barriers along the path of trade. According to Chinese media, the blockchain-based platform mitigates inefficient banking and logistics along the China-Europe rail route, a mainstay of the BRI, by streamlining cross-border documentation and banking under one verification-based ledgering platform operated by ICBC. The rail network links 35 Chinese economic centers with 34 European cities.

The BSN is also emerging as a solution for supply chain logistics management. In December 2020, the BSN, alongside the Enterprise Singapore, Singapore University of Social Sciences, and public enterprise blockchain, VeChain, launched the Blockchain for Trade & Connectivity Network (BTC Network), a collaborative "unifying" platform intended to enable the blockchain-based interoperability of trade logistics and infrastructure.⁹⁴ The BTC Network will

⁸⁹ <https://illinoisnewstoday.com/blockchain-empowers-china-europe-rail-trade/145220/>

⁹⁰ <https://smartmaritimene트워크.com/2021/04/14/digital-integration-with-chinas-belt-road-initiative/>

⁹¹ <https://www.ibm.com/blogs/blockchain/2020/04/blockchain-and-edi-do-they-complement-or-compete-with-each-other/>

⁹² http://www.xinhuanet.com/english/2021-04/11/c_139873079.htm

⁹³ <http://sc.xfainance.com/html/Industries/Technology/2021/390363.shtml>

⁹⁴ <https://www.ledgerinsights.com/singapore-trade-network-to-integrate-with-chinas-blockchain-service-network-others/>

reportedly allow for innovating and testing blockchain solutions for multimodal global supply chain companies and digital trading platforms.⁹⁵

The BTC Network is also integrated with Singapore's existing government-backed Global E-Trade Services (GeTS), a digital services platform that streamlines physical logistics compliance, financial requirements, and other global supply chain logistics for its users, which are typically global commodities trading companies. GeTS has 61 customs nodes across six continents and approximately 175,000 connected parties. The network reportedly conducts 24.1 million transactions annually.⁹⁶

BSN and the "Smart City" Potential

Under the BRI, Chinese companies have forged several robust export markets of hardware and software systems that contribute to the "smart city" functionality of various urban centers around the world. "Smart city" applications typically refer to the aggregate and integrated digitalization of standard functions and services of an urban center such as utilities, transport, e-governance, and surveillance.

More than ever, Beijing appears to be clarifying the merits of blockchain technology for building truly integrated "smart city" functionality. In the June 2021 guidance document published by MIIT, Beijing notes,

"Smart City. Use the blockchain to promote the interconnection and orderly flow of production factors among cities in terms of information, capital, talents, credit investigations, etc. Deepen the application of blockchain in the field of information infrastructure construction, realize cross-departmental and cross-industry intensive deployment, co-construction and sharing, and support the construction of smart cities."

In short, blockchain services may be capable of increasing the efficiency and interoperability of "smart city" functions.

In its white paper, the BSN claims that it intends to provide a platform for information infrastructure that advances the development of "smart cities" as it would provide a resource-sharing mechanism that streamlines the layered functionalities of a "smart city." **It is thus foreseeable that China-backed blockchain integration would facilitate such capabilities in**

⁹⁵ <https://coin.fyi/news/vechain/vechain-becomes-founding-member-of-the-blockchain-for-trade-connectivity-bt-k92fgp>

⁹⁶ <https://globletrade.services/gets-profile>

“smart city” locations that already feature Chinese-made equipment, software, and technical operations. In one study published in January 2020, the U.S.-China Economic and Security Review Commission determined that Chinese firms are involved in “smart city” development projects in approximately 106 countries, (e.g., export of surveillance technologies, deployment of software, telecommunications infrastructure/cables, etc.)

In China, integration of BSN with “smart cities” is already in play.⁹⁷ There are more than 100 public city nodes established across the country as part of the BSN network that are intended to facilitate blockchain-based “smart city” functions in their designated geographic region.⁹⁸ For example, in April 2021, the city of Changsha was officially designated as a BSN node city whereby the city’s government services (data sharing, electronic invoicing, judicial deposits, bidding management, medical supervision, etc.) and “smarty city” development will be underpinned by the BSN network.⁹⁹

It is likely, therefore, that BSN will be exported to facilitate the interoperability and efficiency of existing Chinese-made and/or controlled network solutions that are also foundational to overseas “smart cities.”

CONCLUSION

China’s international blockchain platform, **the BSN network, has received extensive backing from the CCP and remains an important part of the CCP’s strategic agenda to set international standards and norms as well as control access to emerging technologies.** Just as Huawei was labeled as a “national champion,” worthy of state support to boost its prospects for becoming a leading technology company around the world, China has indicated it intends similarly to seek out national champions in the blockchain space that would help ensure the global competitiveness, growth, and proliferation of Chinese technology.

During the 2020 Hong Kong Fintech Week, BSN’s Secretary General Tan Min, indicated that **the new blockchain network will allow Beijing to build global blockchain network whereby China will have “independent intellectual property rights and China [will] control the rights to internet access.”** This mandate is also referenced in MIIT’s guidance document, which states,

⁹⁷ <https://www.globaltimes.cn/content/1168878.shtml>

⁹⁸ http://www.xinhuanet.com/english/2019-10/15/c_138474143.htm

⁹⁹ <http://www.chinasmartcity.org/detail.asp?id=37260>

“Promote the construction of blockchain standardization organizations and establish a blockchain standard system. Speed up the formulation of key and urgently needed standards, encourage the formulation of group standards, carry out in-depth promotion of standards, and promote the standards. Actively participate in blockchain global standardization activities and international standard formulation.”

Beijing is already active in leading the creation of international standards¹⁰⁰ for blockchain in global forums such as the International Telecommunications Union (ITU), a UN agency that sets common global standards for technologies, and Chinese officials and companies are increasingly influential on a number of technology standards issues such as global surveillance policy¹⁰¹ and even designs for a new technical architecture for the internet.¹⁰² In July 2020, the Digital Currency Institute of the People’s Bank of China, alongside China Academy of Information and Communications Technology and Huawei, introduced guidance on blockchain technology standards at the ITU.

Beijing is acutely aware of the advantage of becoming a “first mover” in the blockchain space, both as a critical market player and as a policy leader in what is effectively an emerging and foundational technology that is gradually becoming a mainstay in global trade, logistics, and other enterprise-related functionalities.

¹⁰⁰ <https://finance.sina.com.cn/china/jrxw/2020-09-04/doc-iivhuiipp2547123.shtml>

¹⁰¹ <https://www.ft.com/content/c3555a3c-0d3e-11ea-b2d6-9bf4d1957a67>

¹⁰² <https://www.ft.com/content/ba94c2bc-6e27-11ea-9bca-bf503995cd6f>

DISCLAIMER

This document is intended for general informational purposes. RWR disclaims, to the fullest extent permitted by applicable law, any and all liability for the accuracy and completeness of the information in this document and for any acts or omissions made based on such information.

RWR does not provide legal, regulatory, audit, or tax advice. Readers are responsible for obtaining such advice from their own legal counsel or other licensed professionals. This publication is designed to provide accurate and authoritative information in relation to the subject matter covered. It is provided with the understanding that the publisher is not engaged in rendering any form of professional or other advice or services. No person should rely on the contents of this publication without first obtaining advice from a qualified professional person.