China's Digital Silk Road: Implications for India

Deepakshi Rawat and Chan Jia Hao

Executive Summary

China's Belt and Road Initiative (BRI) has been commonly associated with physical infrastructure projects, financing and trade development. However, less focused are China's rapid domestic technological advancements and their outreach overseas, known in the umbrella term as the Digital Silk Road. In March 2015, a white paper, jointly issued by the National Development and Reform Commission, the Ministry of Foreign Affairs and the Ministry of Commerce of the People's Republic of China, the BRI concept was first introduced as one of the sub-goals of facilities connectivity.

In building China's technological capacities, the Chinese government has made long-term strategic plans to enhance China's manufacturing and service industries, such as the 'Made in China 2025 Plan' and the 'Next Generation Artificial Intelligence Development Plan'. Building capacities in emerging technologies such as artificial intelligence, space and communication satellites, and 5G technologies have taken off as a result of these broad strategic plans. As the rest of South Asia integrates deeper with China's digital economy, it will remain an imperative for India to remain a key player in the global and regional digital economy, evident through its integration with its neighbours in South Asia.

This paper first discusses three core technologies used to propel the Digital Silk Road – Artificial Intelligence, Communication Satellites and 5G technologies. Thereafter, it discusses the possible implications for India in light of China's increasing prominence in technology.

Introduction

When Chinese President Xi Jinping announced a mega land-based connectivity initiative in September 2013, the Silk Road Economic Belt, very aptly in the landlocked nation of Kazakhstan, the magnitude of the ambition was not fully understood by the world.[1] A month later, in October 2014, in his speech to the Indonesian Parliament, he expanded the initiative to encompass the maritime domain and create a 21st Century Maritime Silk Road.[2] Even then, the two-pronged initiative, now popularly known as the Belt and Road Initiative (BRI), is widely understood as one aimed at building physical infrastructure to connect countries in order to spur financing, trade and investment. However, a less focused dimension of the BRI, a component which could possibly have the most far reaching impact,

---

[1] Ministry of Foreign Affairs of the People's Republic of China, 'President Xi Jinping Delivers Important Speech and Proposes to Build a Silk Road Economic Belt with Central Asian Countries', *FMPRC* (7 September 2018), https://www.fmprc.gov.cn/mfa_eng/topics_665678/xjpfwzysiesgjtfhshzzfh_665686/t1076334.shtml. Accessed on 13 October 2018.

[2] 中华人民共和国国务院新闻办公室, 'President Xi's statements on the Belt and Road Initiative', *SCIO* (17 April 2018), http://www.scio.gov.cn/31773/35507/35520/Document/1548585/1548585.htm. Accessed on 13 October 2018.

appears to be in the digital domain. The digital aspects of the BRI create the pathways on which much of the new economy and new technology would run. Already, a number of the South Asian countries are gradually accepting and adopting China's digital outreach to transform their technological landscapes.

This paper is divided into three sections. The first traces the recent developments in China's Digital Silk Road Strategy, as an important part of China's BRI framework. The second looks at the development and investments in three emerging technologies, namely, Artificial Intelligence (AI), Communication Satellites and 5G technologies that are critical aspects for the control and implementation of China's Digital Silk Route. Finally, it examines the implications of this outreach for India.

China's Digital Silk Road

The concept of digital connectivity in the BRI in the last few years has remained ongoing but less noticed by international observers. In a March 2015 white paper, jointly issued by the National Development and Reform Commission, the Ministry of Foreign Affairs and the Ministry of Commerce of the People's Republic of China, an Information Silk Road was first introduced as one of the sub-goals of facilities connectivity.[3] Shortly thereafter, in July 2015, such a conceptualisation resurfaced at a China-European Union digital cooperation forum. Chinese delegates at the forum proposed that higher digital connectivity between China and Europe could be achieved by building a public-private collaborated Digital Silk Road, where Chinese and European-based internet companies are encouraged to be key players in network infrastructure investments.[4] Last year, in his speech at the opening ceremony of the Belt and Road International Cooperation Summit Forum in May 2017, Chinese President Xi Jinping spoke about the 21st Century Digital Silk Road and stressed on the importance of connecting the BRI to areas such as digital economy, artificial intelligence, nanotechnology, quantum computing, big data and cloud computing.[5]

At the onset, such efforts on international collaboration may seem to only be a part of China's economic expansionism agenda as its investment and construction contributions in all BRI countries tripled from 2008 to US$95.86 billion (S$132.01 billion) in 2016.[6] Nonetheless, the Digital Silk Road has a broader agenda. Firstly, it falls in line with the Communist Party of China's Two Centenary Goals (两个一百年) which is said to be the basic foundation for the realisation of the "Chinese Dream" (中国梦). The Two Centenary Goals include achieving a moderately prosperous society (小康社会) by 2021 and building a "modern socialist country that is prosperous, strong, democratic, culturally advanced and

---

3   Suyash Desai, 'ASEAN and India Converge on Connectivity', *The Diplomat* (19 December 2017), https://thediplomat.com/2017/12/aseanand-india-converge-on-connectivity/. Accessed on 13 October 2018.

4   Zhao Huanxin, 'Web Companies asked to support 'digital Silk Road'', *China Daily* (18 July 2015), www.telegraph.co.uk/%20sponsored/china-watch/technology/11764541/tech-companies-tobuilddigital-silk-road.html. Accessed on 13 October 2018.

5   汪巍, '数字丝绸之路建设助力经济发展', *Belt and Road Portal* (25 November 2017), https://www.yidaiyilu.gov.cn/ghsl/gnzjgd/36420.htm. Accessed on 13 October 2018.

6   Data available from *China Global Investment Tracker*.

harmonious".[7] Thus, the promotion of technological transformation domestically can be seen as a means to build international technology industry linkages.

China's Technology Landscape

In building China's technological capabilities, the Chinese government has made long-term strategic plans to enhance China's manufacturing and service industries. The State Council released the 'Made in China 2025 Plan' (中国制造 2025) in 2015, which outlines the Chinese plan to shift to intelligent manufacturing through investments in advanced technologies with the aim to make key manufacturing sectors fully intelligent by 2025.[8] In July 2017, the State Council further released an AI specific 'Next Generation Artificial Intelligence Development Plan' (新一代人工智能发展规划) - a comprehensive vision document which sets an ambitious target for China in becoming the world's primary AI innovation hub by 2030. More recently, in July 2018, Tsinghua University issued the 2018 China Artificial Intelligence Development Report, a data intensive study of where China currently stands and can move forward in the global AI race.[9]

Building capabilities in emerging technologies such as AI, space and communication satellites and 5G technologies appears to have taken off as a result of these broad strategy plans.

<u>Artificial Intelligence</u>

When AlphaGo, a deep learning programme developed by Alphabet[10] beat Chinese world champion Ke Jie at the highly complex and intricate game of Go (圍棋) in early 2017,[11] that reflected the Chinese government's long-term commitment and recognition to expanding the magnitude of AI. Currently, China also has the highest number of AI-related academic papers and more than a fifth of the world's artificial intelligence patents.[12] Chinese home-grown companies like Baidu and Tencent are also now consistently producing research output that rivals that of Google. According to the Next Generation Artificial Intelligence Development Plan, AI will create entirely new sectors of the economy which are estimated

---

[7] New China, 'CPC Q&A: What are China's two centennial goals and why do they matter?', *New China* (17 October 2017), http://www.xinhuanet.com/english/2017-10/17/c_136686770.htm. Accessed on 13 October 2018.

[8] 国家制造强国建设领导小组办公室, '中国制造 2025 国家级示范区评估指南（暂行）的通知', *MIIT* (7 February 2018), http://www.miit.gov.cn/n973401/n1234620/n1234622/c6053533/content.html. Accessed on 13 October 2018.

[9] Tsinghua University News, '2018 年我国人工智能市场增速将达 75%', *Tsinghua University* (18 July 2018), http://news.tsinghua.edu.cn/publish/thunews/9650/2018/20180719152645352637517/20180719152645352637517_.html. Accessed on 13 October 2018.

[10] Alphabet Inc is the parent company of Google and several other collections of companies.

[11] Paul Mozur, 'Google's AlphaGo Defeats Chinese Go Master in Win for A.I.', *The New York Times* (23 May 2017), https://www.nytimes.com/2017/05/23/business/google-deepmind-alphago-go-champion-defeat.html. Accessed on 13 October 2018.

[12] 清华大学中国科技政策研究中心, '中国人工智能发展报告 2018' (July 2018), http://stdaily.com/index/kejixinwen/2018-07/13/689842/files/f3004c04e7de4b988fc0b63decedfae4.pdf. Accessed on 15 November 2018.

to be worth CNY$150 billion ($29.76 billion) by 2030.[13] It was also recently reported that China plans to build a US$2.1 billion (S$2.88 billion) technology park dedicated to developing AI near Beijing[14]. Thus, China sees AI as a core technology which is vital to its economic growth in the coming years, leading to a wave of investments in research and development as well as talent acquisition.

China's 5G Technologies

China's telecommunications market is also set for further expansion as 5G technologies set to become the backbone of China's digital economy. Already, the number of 4G subscribers exceeded 1.11 billion as in July 2018 out of China's estimated 1.3 billion people.[15] China Mobile, China Unicom and China Telecom, the three state-owned telecommunication companies, are planning to invest approximately US$180 billion (S$246.73 billion) in creating 5G infrastructure over a -seven-year period. With 5G technologies being crucial for the realisation of future projects in areas such as smart cities, Internet of Things, robotics, AI systems and other such advanced technologies, China now aims to be the front-runner in the development and adoption of this technology.

Furthermore, Chinese policymakers are increasingly assuming the nascent nature of 5G technologies as an opportunity for them to popularise the adoption of Chinese standards in this technology. Recent initiatives such as the joint collaboration between the Computer Network Information Centre and China Unicom to establish the '5G Technology Joint Lab' aim to strengthen the cooperation between the two parties in the field of 5G technologies.[16] This will not only allow local institutions to cooperate in areas such as edge computing, network slicing, Internet of Things and industrial internet, but also encourage the international standardization of these technologies.

Already, the number of smart cities in China powered by mobile data has been on the rise – more than 500 cities have been proposed for the transition to smart cities, while a Shanghai-Hangzhou-Ningbo 'internet highway' has incorporated mobile payments and data exchanges. Smaller cities such as Xiamen, Wuxi and Yinchuan (Northern region) have also begun smart urban management, with Yinchuan, in particular, using novel innovations such as facial recognition for payment and solar powered trash bins.

---

[13] 国务院, '国务院关于印发新一代人工智能发展规划的通知', *中国政府网*（20 July 2017), http://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm. Accessed on 13 October 2018.

[14] Iris Deng, 'China's AI Industry gets most funding, but lags US in key talent, says Tsinghua', *South China Morning Post* (17 July 2018), https://www.scmp.com/tech/china-tech/article/2155600/chinas-ai-industry-gets-most-funding-lags-us-key-talent-says. Accessed on 13 October 2018.

[15] Data available from the Ministry of Industry and Information Technology of the People's Republic of China, http://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057511/n3057518/c6265753/content.html. Accessed on 15 November 2018.

[16] 中国科学院, '计算机网络信息中心与中国联通共建 5G 技术联合实验室', *中科院只声电子杂志第 157 期*（3 July 2018), http://www.cas.cn/zkyzs/2018/07/157/yxdt/201807/t20180703_4656828.shtml. Accessed on 13 October 2018.

<u>Space and Communication Satellites</u>

Similarly, there is growth and international outreach taking place in China's space and communications satellite industry. The industry has been extensively promoting the development of BeiDou-2, a Chinese-constructed and operated global satellite navigation system set to consist of 35 satellites by 2020. It is now open for commercial use across the Asia-Pacific region since 2012. BeiDou-2's development is expected to continuously improve China's terrain mapping and tracking capabilities, coupled with the adoption of its navigation system in Chinese handsets. Recently, on 25 August 2018, China Aerospace Science and Technology Corporation launched two more BeiDou satellites, marking its 23rd launch of the year. The State Council Information Office is also promoting BeiDou's use in wide ranging operations, including power transmission and transportation. On the international front, China plans to expand BeiDou's coverage to most of the countries covered in its BRI initiative by 2018, while it aims to achieve global coverage by 2020. According to the Chinese Space White Paper 2016, China has already been contracted into 43 space cooperation agreements with 29 countries, space agencies and international organisations since 2011. Furthermore, China recently announced a decision to allow all United Nations-member states to use its future space station, which will be operationalised by 2022.

Implications for India

While China has relied on foreign technologies in the past few decades, it now plans on being the hub of technological innovation in the future. Domestically, China's digital dreams aim for global domination in future technology. At the opening ceremony of the 19th Meeting of the Academicians of the Chinese Academy of Sciences in May 2018, Xi re-iterated the importance of Chinese leadership in technology by pointing out that "only by taking key core technologies in their hands can we fundamentally safeguard national economic security, national defence security and other securities. We must strengthen the "four self-confidences" (四个自信), make breakthroughs in key common technologies, cutting-edge technology, modern engineering technology, and disruptive technological innovations, dare to take the road that our predecessors have not taken, and strive to achieve key core technologies that are self-controlled and innovative."[17]

This digital dream has attracted South Asia's interest in wanting to work with China's technological capabilities to a large extent. Under the China-Pakistan Economic Corridor plan for Pakistan's Digital Future, both sides pledged to work on an upgrade fibre optic network to improve bilateral communications. In early 2018, Pakistan also begun to replace its use of the United States Global Positioning System satellite navigation with BeiDou. Nepal has also operationalised a joint optic fibre link with China, providing the country new access routes to internet services via China. Similarly, Sri Lanka has been preparing for the Chinese navigation satellite system to set up over 10 of its Continuously Operating Reference Stations in the country since March 2017. Bangladesh together with Pakistan is also under China's leadership in the Asia-Pacific Space Cooperation Organisation.

---

[17] 桂强, '习近平在两院院士大会上的讲话(全文)', *Sina* (28 May 2018), http://news.sina.com.cn/c/xl/2018-05-28/doc-ihcffhsu4677507.shtml. Accessed on 13 October 2018.

India, on the other hand, has yet to formulate a coherent counter-strategy to the development of China's Digital Silk Road for the Subcontinent. This is as India continues to promote its neighbourhood first policy, most evident in its launching of the South Asia Satellite in May 2017. Three problems could persist for India in its efforts to continue pursuing its hegemonic interest within South Asia in light of China's technological dominance. First, India's refusal to bundle its economic and security considerations could render China's Digital Silk Road a more decisive and strategic channel for technology transfers than India's South Asia Satellite. India's neighbours could see its technology and space outreach as mere diplomacy. This is as China's Digital Silk Road gains substantive traction in powering the economies of the various South Asian countries, while India's technological capabilities are not as liberally shared with its neighbours. Second, India may lose its opportunity to set the technological agenda in South Asia. India's continued reliance on the West, particularly the US, for its technological infrastructure and protocols, may cause a divide between India and its neighbours who are increasingly adopting the usage of Chinese technological infrastructures. Finally, India could lose greater opportunities in trade and investment cooperation as compared to its neighbours within the region. Already, the expansion of the Digital Silk Route has enabled Chinese companies, such as China Mobile, Huawei, Alibaba and JD, to penetrate new markets along the belt.

Conclusion

China's BRI is one of the most daring attempts to re-engineer and re-organise global connectivity as we understand today. The 5G technologies, the BeiDou satellite positioning and communication system and AI are some of the key building blocks of China's Digital Silk Road initiative. These technologies and systems, and the companies that would make the Digital Silk Road possible, are being created in China and these would spread from China to other parts of the world. As the rest of South Asia integrates deeper with China's digital economy, it will remain an imperative for India to remain a key player in the global and regional digital economy, evident through its integration with its neighbours in South Asia.

. . . .

Ms Deepakshi Rawat is a Junior Research Consultant at Pulse Lab Jakarta. She can be contacted at deepakshi.rawat@un.or.id . Mr Chan Jia Hao is Research Assistant (Trade and Economic Policy) at the Institute of South Asian Studies (ISAS), an autonomous research institute at the National University of Singapore (NUS). He can be contacted at chanjiahao@nus.edu.sg. The authors bear full responsibility for the facts cited and opinions expressed in this paper.