The Digital Silk Road: Expanding China's Digital Footprint

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The DSR today

First unveiled in 2015, the Digital Silk Road (DSR) component of China's Belt and Road Initiative (BRI) has attracted more political and commercial attention as technology-related tensions between the US and China have risen.

Whereas large-scale traditional infrastructure projects have so far been the focus of the BRI, the DSR is using technologies that will serve as the foundation of a new digital economy. It is also becoming more central to the BRI—President Xi Jinping's signature international initiative—as Chinese technology companies improve their ability to expand globally, developing countries begin embracing digital technologies and considering moving to next-generation 5G networks, and Xi focuses increasingly on technology self-reliance and R&D in key technology sectors. The DSR is best understood as an umbrella branding effort and a narrative for Beijing to promote its global vision across a range of technology areas and projects. However, it is Chinese private companies that are the main drivers of the initiative, often using the DSR label to gain policy support to pursue overseas commercial expansion.

The geopolitical and technology landscape has shifted significantly since Eurasia Group's first report on the DSR (please see: China's Digital Silk Road to gain traction in 2018, 5 February 2018). Along with the coronavirus pandemic, other important changes include the arrival of next-generation wireless networks; the development of new applications using artificial intelligence (AI) such as smart city projects; and most importantly, increasing US government pushback against Chinese technology around the world. Intensifying US-China strategic competition has lent new momentum to a US whole-of-government effort to curb the use of Chinese technology. Initiatives such as the global anti-Huawei 5G campaign and the new Indo-Pacific focused Digital Connectivity and Cybersecurity partnership have drawn further lines between competing Western and Chinese technology spheres of influence or ecosystems. This is happening as the massive but still uncertain global health and economic impacts of the coronavirus crisis are already having geopolitical consequences, materially worsening US-China relations and increasing the likelihood of harsher steps by Washington to constrain China's technological influence, while simultaneously raising the risk of a sharp reaction by Beijing.

A key thrust of the DSR is to ensure that leading Chinese platform players such as Alibaba, Tencent, and Baidu—as well as Huawei and state-backed telecom carriers such as China Mobile, China Telecom, and China Unicom—can take advantage of the DSR umbrella and market access provided by BRI projects to compete in emerging markets with leading US companies in so-called over the top (OTT) services. These include smart cities, cloud services, mobile payments, and social media applications. They will eventually include technologies such as AI, autonomous vehicles (AVs), and internet of things technologies and services.

Chinese firms such as Huawei also play a significant role in setting technology standards for 5G and participating in mobile infrastructure roll-outs in many BRI countries. Other

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CONTACTS

Paul Triolo
Practice Head, Geo-technology
+1 202.903.0006
triolo@eurasiagroup.net

Kevin Allison
Director, Geo-technology
+49 151.2882.3945
allison@eurasiagroup.net

Clarise Brown
Associate, Geo-technology
+1 202.552.5392
cbrown@eurasiagroup.net

Kelsey Broderick
Analyst, China
+1 202.552.5398
broderick@eurasiagroup.net

Countries signing DSR-specific MOU with China

Region	Country
Africa	Egypt
Asia	Turkey
Asia	Bangladesh
Asia	Laos
Asia	South Korea
Central Europe	Kazakhstan
Eastern Europe	Czech Republic
Eastern Europe	Serbia
Eastern Europe	Poland
Eastern Europe	Hungary
Europe	Estonia
Europe	England
Latin America	Cuba
Latin America	Peru
Middle East	Saudi Arabia
Middle East	United Arab Emirates

Sources: Eurasia Group, Fudan University

Chinese firms are eager to follow suit and contribute to the standards-setting process to promote the adoption of a Chinese-centric technology stack. However, Western narratives likely overstate the extent to which overall leadership in new technologies and the rules for how they are deployed will be at risk if Chinese organizations and companies succeed in playing a greater role in global standards-setting. More important are issues such as market share and the ability of "Team China" to deliver solutions across sectors and with political backing from Beijing. However, it is possible that a significant worsening of the US-China relationship and technology competition could compel China over time to pursue a separate standards-setting process in certain areas in concert with a subset of BRI/DSR countries. The likelihood of such an outcome could depend on how the coronavirus pandemic evolves and its impact on the country's relations with the US.

Political perceptions of the DSR have also been influenced by a spreading narrative among Western policymakers that Beijing is directing the export of a Chinese "techno-authoritarian" model to countries along the BRI. This is true, to some extent. Chinese companies have participated in the export of facial recognition camera and other policing technologies.

However, Chinese companies are primarily responding to—and benefitting from—demand in developing countries for more telecommunications infrastructure, which often includes the security components of smart cities. The Chinese technology stack is offered as a package deal, encouraging reliance on Chinese technologies. These dependencies have the potential to make it more difficult for other technology companies to do business in BRI countries.

For multinational technology firms, going beyond the lofty aspirational speeches of Chinese leaders to understand what the DSR really is and what impact it will have on the competitive and business environment in participating countries is becoming increasingly important.

Coronavirus implications will depend on Chinese diplomacy and US moves against Huawei

The pandemic is further stressing an already strained US-China relationship. While President Donald Trump has stopped referring to the disease as the "Chinese virus," both countries increasingly view the crisis through the lens of a competition for global influence. The US is casting China's lack of transparency as a danger to the world, while also highlighting the risks of concentrating global supply chains in that country (particularly for products such as medical supplies). Beijing, meanwhile, is using its early success at containing the virus (after missteps that arguably exacerbated the initial outbreak) to provide medical assistance and medical supplies to a growing list of countries in Europe, Asia, and Africa—especially those countries that are part of the BRI.

Beijing's ambitions have moved beyond simply trying to repair its international image after being accused of attempting to cover up the virus; it is now making its own case for global leadership, that of a stable power with the capacity to overcome challenges and a growing willingness to provide global public goods. The fumbled response to the crisis in the US, and the Trump administration's lack of coordination with other countries during notable phases of the pandemic, has made China's job easier. The current dynamic is a sharp contrast with the 2004 Indian Ocean tsunami, when China was roundly criticized at home and abroad for failing to provide help to the region as the US military and aid agencies responded quickly.

While these actions may boost goodwill toward China among countries that receive significant amounts of aid from Beijing, the ultimate impact of the pandemic on the DSR will also depend on the extent of any global economic downturn and the success or failure of likely US efforts to further restrict the access of Huawei and other important Chinese technology companies to US technology. US moves to cut off Huawei from cutting-edge semiconductor technology pose particular risks to the appeal of BRI projects that depend on advanced telecommunications systems.

DSR elevated in importance

Over the past 12 months, Beijing has taken steps to make the DSR a top priority. These include promotion of the concept at key international forums such as the Second Belt and Road Forum (BRF), the 5th World Internet Conference (WIC), and other smaller domestic conferences such as one held in December 2019 in Shanghai. These events provide the opportunity for China to bring DSR into the mainstream, gain buy-in from companies and partner countries, and build on the efforts undertaken in 2017 and 2018 detailed in Eurasia Group's previous report. The outbreak of the novel coronavirus has put a brake on some DSR-related infrastructure projects—particularly labor intensive ones—but the disruptions are likely to be temporary.

The National Development and Reform Commission (NDRC), the lead agency and driver for the BRI, plays a key role in approving overseas investment. This includes BRI investments related to connectivity, advanced manufacturing, and R&D. The Cyberspace Administration of China (CAC) oversees China's cybersecurity and digital economy initiatives. It is also a key player in Beijing's efforts to build a data governance system, which will grow in importance for companies' development of DSR-related platforms and services. The Ministry of Science and Technology and the Ministry of Industry and Information Technology (MIIT) have announced cooperation agreements with counterpart ministries across BRI countries on science, technology, and ICT issues, laying the groundwork for Chinese companies to enter and expand their access in these markets. The two ministries, along with the NDRC, are also members of China's 5G promotion group, established in 2013 to lead China's national 5G strategy (please see Eurasia Group report, The Geopolitics of 5G, 6 November 2018).

At the second BRF: Last year's event featured, for the first time, a separate forum dedicated to the DSR. The NDRC and the CAC hosted the "Co-building 21st Century Digital Silk Road" forum, with the participation of nearly 30 countries. During the forum, 15 companies, including ZTE Corporation, signed new cooperation projects. After only getting seven countries to sign up to the 2017 launch of the BRI Digital Economy International Cooperation Initiative, Beijing signed cooperation agreements with at least 22 countries at the 2019 event, focused on DSR sectors and projects. For example, the governments of Japan, New Zealand, Israel, Austria, Chile, Brazil, Indonesia, and Kenya announced separate cooperation agreements with China on science, technology, and ICT, while Argentina announced a $28 million deal with ZTE to help build fiber optic cable systems. The China Export-Import Bank signed an agreement with the International Telecommunication Union (ITU) to address digital access and promote the 2030 Sustainable Development Agenda.

At the WIC: On the margins of the 5th World Internet Conference in Wuzhen in November 2018, China held an International Cooperation Along the Digital Silk Road Forum, involving key Chinese agencies,

foreign officials, and domestic and foreign technology companies. This built on initial discussions at the 4th WIC, where a number of countries signed on to a BRI-related digital economy cooperation. The 6th WIC in October 2019 in Wuzhen did not include any major new announcements related to the DSR, likely because of sensitivities related to US actions against Huawei and other Chinese technology companies.

Below follows an overview of the key steps Beijing has taken to create a cohesive external narrative, drive state-led opportunities, and secure the participation of private sector domestic firms for the DSR.

Key milestones for the DSR

April 2019	**The second BRF** featured, for the first time, a separate session on the DSR, with the participation of nearly 30 countries including Cuba, Egypt, France, and Serbia.
September 2018	The **Forum on China-Africa Cooperation** included in its summit communique a call for greater co-operation between China and African countries on cloud computing, big data, smart cities, undersea cables, and data centers, among other issue.
December 2017	China launched its **Initiative on BRI Digital Economy Collaboration** at the 4th WIC in Wuzhen as Beijing's framework for a more tangible vision of the DSR. This is the first time Beijing used the WIC to integrate and promote broader elements of the DSR concept. Laos, the UAE, Saudi Arabia, Egypt, Turkey, Thailand, and Serbia agreed to cooperate with China on this initiative to improve broadband access, promote digital technologies, and develop e-commerce capabilities, as well as to promote cooperation on international standards. The low-key roll-out of the agreement followed several months during which it had circulated widely, including among EU officials, suggesting that the rate of sign-on was lower than Beijing had hoped.
November 2017	Chinese server maker Inspur, along with Cisco, IBM, Diebold Nixdorf, and Ericsson launched the **BRI Digital Economy Strategic Alliance** in Jinan, Shandong, with the goal of integrating world-class IT resources for the DSR. The Export-Import Bank of China, the China Development Bank, and the China Export & Credit Insurance Corporation are also members of the alliance. The Alliance's goal is to integrate cutting-edge IT products, technologies, and solutions to accelerate the construction of the DSR, first through projects in South Asian and African countries and then more broadly in other BRI countries. There have been no recent updates on the initiative.
May 2017	Xi articulated his DSR strategy for the first time at the inaugural BRF in Beijing and reiterated the critical role of creating the "**digital silk road of the 21st century**" in the overall BRI. Xi called for further integration of "frontier areas" including the digital economy, AI, nanotechnology, and quantum computing, while advancing the development of big data, cloud computing, and smart cities within the BRI.
March 2016	China's State Council published its **13th Five-Year Plan for National Informatization**, which includes a section on the construction of an "online Silk Road" and a China-ASEAN Information Harbor, intended to be a bundle of internet connectivity projects that go from southwest and southern China through Guangxi to ASEAN countries. The NDRC, the CAC, the MIIT, and the Guangxi provincial government had led a **China-ASEAN Information Harbor Forum** in September 2015 that had also included an emphasis on cyberspace cooperation between China and ASEAN countries. The plan also encouraged full participation of Chinese Internet companies to improve internet and telecommunications links across BRI countries.
March 2015	The NDRC, the Ministry of Foreign Affairs, and the Ministry of Commerce published a **white paper** that lays out for the first time a vision for the DSR. It called for the development of "an information silk road" and the construction of cross-border optical cables and telecommunications networks, transcontinental submarine cable projects, and satellite passageways. Then CAC director Lu Wei told the China-EU digital cooperation roundtable "we can build a digital silk road … in cyberspace."
September 2013	Xi formally launched the BRI in a speech at Kazakhstan's Nazarbayev University.

Chinese tech firms go global

While the Chinese government has been working to promote a cohesive DSR narrative, more important actions have been taken at the company level. How China's technology companies use the DSR to pursue commercial opportunities abroad, and in China, will determine how DSR programs are actually implemented. Understanding this is key to assessing the program's long-term impact.

Since Eurasia Group's baseline assessment in its first report on the DSR, there have been new developments in technology company mergers and acquisitions; telecommunications infrastructure contracts for both current and next-generation networks; carrier services; OTT service providers; smart cities; and data center build-outs that could all be characterized as part of the emerging DSR.

Examples include:

Digital infrastructure: Huawei and ZTE are closely involved in developing 5G technology networks in third-country markets. Both companies have also submitted bids around the world for undersea and terrestrial telecommunications cables, among other ICT infrastructure areas. Huawei officials continue to claim success in winning new 5G contracts—including 28 in Europe—in addition to other projects. This year, in spite of US pressure, Huawei has signed a $175 million smart cities and data center contract with Kenya, a cloud data center contract with Pakistan, and a project to develop high-speed wireless (mostly 4G) internet for underserved communities in Canada.

Thailand in February launched Huawei's first 5G testbed in Southeast Asia. The country had previously set up a $22.5 million cloud data center in the country's Eastern Economic Corridor, in which Alibaba, JD.com, and Tencent have also expressed interest in investing. In April, Huawei launched its Cloud and AI Innovation Lab in Singapore, which is intended to align with the city-state's Smart Nation strategy.

Telecommunications carrier services: Domestically, Chinese carriers, working with municipal governments, automakers, and technology companies, are playing a significant role putting in place infrastructure to support large-scale AV deployments. This is part of a broader 5G build-out that will take some time. The early success of these efforts will also spill over into marketing campaigns for both vendors and carrier services for 5G in BRI countries, likely marketed as part of the DSR.

In early 2019, China Mobile announced a pilot program to develop a city-scale grid of roads supporting both mobile services and smart transportation in Wuhan. By the end of 2020, China Mobile had committed to installing 300,000 5G base stations. Most of the roll-outs by China Mobile and other Chinese carriers will be non-standalone 5G—higher data speeds, but not ultra-reliable low-latency communications or massive bandwidth—except for limited specific areas that will include dedicated corridors for AVs and include standalone 5G infrastructure (please see Eurasia Group special report: Chinese AV ambitions at risk amid trade war, 17 June 2019).

Carriers outside of China that were depending on Huawei to upgrade their 4G networks to non-standalone 5G remain concerned about the impact of the US entity list action on Huawei's ability to continue to field and upgrade 5G systems. European carriers have been forced into a wait-and-see game on Huawei and non-standalone 5G rollout plans. Many carriers, including those in BRI countries that are part of the DSR, are hoping for a full reprieve for Huawei, but this remains unlikely. Huawei rival ZTE could in some cases step in as a provider of 4G/5G systems for some BRI countries seeking lower-cost vendors.

Data centers/cloud services/smart cities: Chinese companies are working at many levels of the intersection between cloud services and major applications such as smart cities. Huawei is in talks with several countries in Central Asia, Southeast Asia, Africa, and elsewhere to promote smart city projects. Most are focused on "safe city" public security solutions involving Chinese AI and surveillance technology. Huawei has several smart city business lines, but it describes its "safe city" public safety solutions—involving networked surveillance cameras—as one of its most important. Huawei in April signed a $172.5 million contract to support the Konza Data Centre and Smart Cities project, a planned technology hub 40 miles south of Nairobi, Kenya. Alibaba Cloud, which continues its build-out of cloud computing services abroad, announced a partnership in May with smart traffic system controller Sena Traffic Systems to build a traffic management system in Malaysia.

Alibaba has more than 22 overseas data centers outside of China and over the past year has opened two new ones in the UK and its second data centers in both Indonesia and Japan. However, Alibaba decided last June to suspend plans to develop its second data center in the Middle East. Interestingly, AliCloud does not always build its own facilities, at least not initially, preferring in some cases to co-locate using partnerships with local data center operators. This has allowed the company to expand more quickly and avoid data localization issues. Last year, Alibaba discussed partnering with BT Cloud in the UK to offer its cloud services. The objective of this deal would be to allow Alibaba to compete with Amazon

in the UK. Alibaba also has partnerships with Singtel and South Korea's SK Group to provide cloud services. This strategy was successfully used during previous waves of Chinese firms going global—for example, Huawei in telecommunications and China UnionPay in payments.

OTT services providers: Chinese technology giants have made substantial investments in Southeast Asian unicorns. Didi Chuxing, along with SoftBank, invested $2 billion in Grab in 2017. Alibaba holds an 80% stake in Lazada and led a $1.1 billion investment in Indonesian e-commerce firm Tokopedia last year. Tencent and JD.com, along with Google, led a new $1 billion investment round in Indonesia's Go-Jek ride-hailing firm in early 2019.

Alibaba also prioritizes in its global expansion its payment system, AliPay. The AliPay strategy revolves around Ant Financial, which is targeting Chinese tourists traveling abroad, with a focus on Europe, Asia, and Australia. Ant Financial is also targeting investments in banks, insurance, and payment systems such as V-Key, Ascend Money, Paytm, and K Bank. It has led major investments in payments companies in Asia and Southeast Asia, as well as in Europe. Ant's attempted acquisition of US firm MoneyGram, however, was rejected by US regulatory authorities in January 2018 on national security grounds.

Unlike the state-owned conglomerates leading BRI infrastructure projects, DSR participants tend to be newer, privately owned tech firms, with less experience operating outside of China's protected market. As with infrastructure projects, Chinese firms may increasingly seek to partner with multinational corporations to benefit from their international reputations, technology, and risk management experience. The push on DSR comes as Chinese authorities grapple with challenges in structuring their data governance regime, which risks falling short of evolving international best practices. That could be a major hindrance for elements of the DSR effort in the coming months.

China's top digital companies

Top 5 digital economy innovative enterprises		Top 5 Chinese innovative software enterprises		Top 5 Chinese internet companies	
HUAWEI	Huawei (华为)	inspur	Inspur (浪潮)	Alibaba.com	Alibaba (阿里巴巴)
紫光集团 TSINGHUA UNIGROUP	Tsinghua Unigroup (紫光集团)	pony.ai	Pony.ai (小马智行科技)	Tencent 腾讯	Tencent (腾讯公司)
Haier	Haier (海尔)	科大讯飞 iFLYTEK	iFlytek (科大讯飞)	Baidu 百度	Baidu (百度)
HIKVISION	Hikvision (海康威视)	HIKVISION	Hikvision (海康威视)	JD.COM 京东	JD.com (京东)
Midea	Midea (美的)	地平线 Horizon Robotics	Horizon Robotics (地平线科技)	ANT FINANCIAL	Ant Financial (蚂蚁金服)

Source: Eurasia Group and Fudan University

Despite pushback against BRI, Chinese digital connectivity solutions still largely welcomed

Demands to renegotiate expensive infrastructure projects by BRI partners, including Sri Lanka, the Maldives, Myanmar, and Malaysia, were the subject of much discussion in late 2018 and in 2019. However, there have not yet been any high-profile renegotiations or cancelations of DSR projects, although security concerns—particularly related to 5G infrastructure—have started to put some Chinese ICT investments in Europe in doubt.

In addition to the security of Huawei-built networks, smart city projects with Chinese-developed surveillance and monitoring systems have generated unease and attracted increased scrutiny from the press and policymakers. The US, for instance, in October 2019 added Chinese AI and facial recognition firms Dahua, Hikvision, and SenseTime among others to the Commerce

Department's Entity List, imposing export restrictions against these firms. In many cases in other geographies, however, security or data privacy issues are considered less important than the need for telecommunications infrastructure and the difficulties of paying for more expensive Western equipment. Many countries continue to see Chinese technology investments as key to their economic modernization plans, and China is excellent at linking its Belt and Road to national plans, especially those championed by heads of state. Huawei, in particular, has been building out mobile infrastructure in many BRI countries over the past decade, providing needed capacity to countries that then welcome other OTT applications such as smart cities.

Recent BRI developments in Malaysia are instructive. Former prime minister Mahathir Mohamad, upon taking office, put Chinese BRI infrastructure projects under review. He threatened to cancel but then ultimately approved a significantly downsized version of the signature Chinese-backed East Coast Railway Link project in April. At the same time, Mahathir welcomed and oversaw the signing of an agreement at the 2019 BRF to develop a new $500 million AI park in Malaysia with Chinese unicorn SenseTime. Asked about Huawei's role in Malaysia amid the backdrop of global scrutiny of the company, Mahathir in May dismissed espionage concerns with Chinese companies, asking rhetorically: "… what is there to spy on in Malaysia?"

Other cases point to developing economies prioritizing cost considerations over security risks related to Chinese equipment. Many African countries, which rely heavily on Huawei and ZTE equipment, appear to have a similarly relaxed view of security concerns. In 2018, Western media reported that the African Union (AU) headquarters—for which Huawei supplied telecommunications equipment, configured servers, and trained technical staff—had its systems compromised, leading to a leak of information to China over a five-year period. Nonetheless, the AU president joined Huawei in denying allegations of espionage, and in 2019, the AU signed a new memorandum of understanding with Huawei to expand partnerships on a range of technologies, from cloud computing to 5G and AI.

Adjusting to concerns about large BRI infrastructure projects, Beijing has shown new flexibility and responsiveness to the concerns of recipient countries, including on debt sustainability and on sourcing more domestic labor and resources from these locales. Similarly, there may be increased demands by host countries for technology transfer by Chinese firms—taking a page out of China's own FDI policies—as well as demands to store data locally, challenging the efficiency of cloud services projects.

DSR now caught up in broader US-China tech confrontation

The DSR has taken on growing importance in the US-China technology cold war as next-generation 5G data networks are rolled out. The US and some partner countries have been pushing to exclude Chinese 5G equipment makers from their networks, while China looks to use its political influence and subsidized export financing to obtain for its firms big 5G contracts in BRI countries. The US pushback against the DSR, particularly in the area of 5G networks, has had mixed results (please see Eurasia Group special report: Huawei/5G issue highlights difficulties US faces in winning tech cold war in ASEAN, 14 June 2019).

The US government announced in mid-2018 a multi-year Digital Connectivity and Cybersecurity Partnership (DCCP), focused on the Indo-Pacific. The initiative is designed to support digital infrastructure investment, technical assistance, and cybersecurity capacity building. However, the initial $25 million allocated to the DCCP pales in comparison to the scale of investment that China is offering—and also to the scale of US security assistance in the region.

Japan offers a more credible and sizeable alternative to BRI investment across Asia. However, its investments are focused mostly on transportation infrastructure projects such as ports and railways, and less on ICT.

A more substantial area of pushback by US allies is on fiber-optic cables, as Huawei's cable-laying joint venture, Huawei Marine, has become a major player in the sector. Australia, with US and Japanese backing, in 2018 scrambled to offer to finance and build a fiber-optic cable to Papua New Guinea and the Solomon Islands as an alternative to a planned cable to be laid by a joint venture with Huawei Marine. Australian firm Vocus Group began construction in July 2019. However, PNG decided to continue with Huawei Marine to build its domestic infrastructure, with a key minister noting that he was not worried about security concerns.

Policymakers in the US are reportedly considering banning Huawei Marine from laying cables connected to any of the three countries. Huawei announced in June that it would be selling its 51% stake in Huawei Marine to leading Chinese fiber-optic cable manufacturer Hengtong Optic-Electric, stating that the subsidiary was not part of its core business. It is not clear if this change will affect Huawei Marine's ability to compete on new undersea cable projects, but Hengtong may soon find itself in the US's crosshairs—Huawei Marine was added to the US Commerce Department's Entity List on 19 August.

Divisions among EU member states on the role of Chinese technology companies will affect the pace and scope of DSR-related projects within the 27-member bloc. Beijing is closely watching how EU countries and others involved in the BRI react to DSR-related projects. Given the ongoing US anti-Huawei campaign, the debate over how to treat DSR projects using Chinese technology is likely to intensify once Covid-19 outbreaks recede, and they will remain prominent in diplomatic discussions between Beijing and EU member states capitals and the new European Commission.

China's 17+1 initiative with central and eastern European countries and now Greece will be important to watch, owing to its potential to serve as an avenue for the participation of Chinese ICT companies in telecommunications-related build-outs in eastern Europe. While frustration has mounted in European capitals that this effort is seeking to undermine EU unity, the less-developed 17+1 countries are eager for Chinese investment and low-cost telecommunications equipment, despite the security concerns of western European countries. Views within the 17+1 itself are split, with Hungary and Romania more favorably disposed to China. In Poland and the Czech Republic, however, high-profile espionage allegations involving Huawei have called into question the Chinese company's role in their 5G networks. Giving a sense of the incentives China offers in an attempt to overcome security concerns, Huawei in July publicly outlined plans to invest almost $800 million in Poland over five years—though this is dependent on the company having a role in Poland's 5G rollout. China is also reportedly considering how to leverage Covid-19 aid to obtain more favorable treatment for Huawei and technology investment.

Risks and opportunities for foreign firms

The DSR will continue to grow in importance for China as tensions with the US escalate, prompting Chinese firms that are denied access to the US and allied markets to look elsewhere to expand. The extent to which the DSR is perceived as a cohesive, integrated plan is overstated, however. While Beijing has taken steps to further codify the DSR in its national strategic priorities and as an international narrative, there is still a lack of direction and clarity across Chinese government agencies on the best way to promote the DSR concept. Agencies are aware that the DSR and expanding the country's digital footprint is a national strategy, but there is limited coordination at the working level and implementation is decentralized.

Partnerships with foreign entities to realize the varied goals of the DSR will be welcomed in China, including within city-level governments domestically or overseas. At least for now, DSR-related commercial opportunities for multinationals are likely to be found as much in China domestically as along the rest of the Belt and Road. Chinese cities and provinces, wanting to hitch their prospects to a national priority to curry favor with Beijing and receive policy support, may offer favorable regulatory or tax treatment for projects considered to be DSR-related.

Some Chinese technology firms that are leaders in the domestic market still struggle to compete internationally, and to deal with new political and operational risks in different overseas markets. The

Chinese government has increasingly pushed in the past few years for "third-country cooperation" with firms from advanced economies on Belt and Road projects, to help smooth Chinese companies' expansion overseas. As the DSR push intensifies, well-placed foreign companies will have a growing opportunity to partner with Chinese firms to operate across borders, including between countries participating in the BRI or DSR and China.

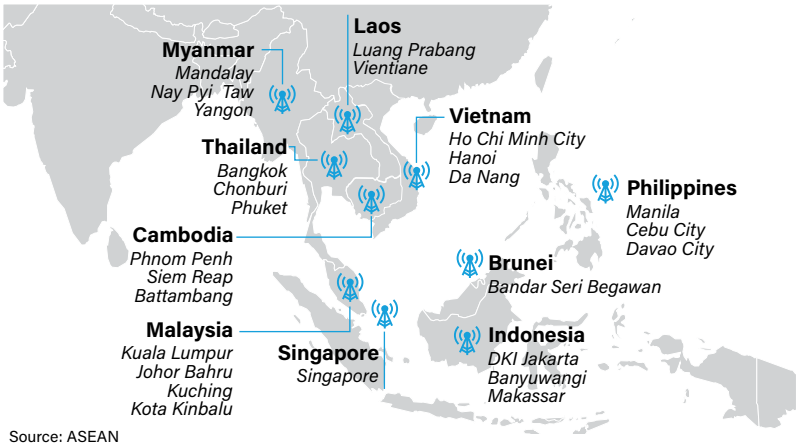
DSR involvement, however, can pose risks. For instance, smart city projects, which have a significant focus on public security solutions involving Chinese surveillance technology, could be implicated in the backlash against China's surveillance state. Chinese companies involved in the projects could be targeted by US sanctions for their activities in Xinjiang or elsewhere.

Another area to watch will be how data governance evolves across the DSR as Chinese companies gain access to and process data. China, with its massive internal market, is already data rich. As Chinese companies deploy smart-city solutions—powered by AI and big data applications—and cloud services across Eurasia and Africa, they stand to derive substantial further benefits from the commercialization of this data over time. With data being the key resource of the digital economy, the DSR could become the next chapter in China's resource diplomacy. However, China's own data governance shortcomings, including restrictions on cross-border data flows and a still developing data privacy/protection framework, threaten to hold back Chinese companies in foreign markets.

Regulators in the EU have already begun to focus more attention on major Chinese actors, including Huawei and Alibaba. Beijing's unwillingness so far to commit to exploring any adherence to the provisions of voluntary frameworks such as the APEC Cross Border Data Privacy Rules, or to joining the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, with its strong free flow of data provisions, means that China and Chinese companies will increasingly be viewed as outside the evolving web of international best practices that allow interoperability between different legal systems. This ultimately poses the greatest threat to the success of initiatives such as the DSR.

Pilot smart cities in ASEAN

Smart cities figure prominently in China's vision of DSR-related infrastructure, and Chinese companies are eager to provide key pieces of smart city infrastructure.



Source: ASEAN

Within the broader context of China's growing digital footprint, the country's leading platform firms Baidu, Alibaba, and Tencent are aggressively seeking opportunities for diversification into other industrial sectors and to continue expanding globally.

Baidu: Lagging in global expansion, but with new focus on AI and AVs

A common opinion about the firm among local experts is that it is becoming China's Yahoo, a once-dominant search and business services company that has struggled because of a lack of innovation and a series of management blunders. However, Baidu has taken steps to refocus, and though it lags Alibaba and Tencent in terms of its global presence, the company is investing heavily in R&D and has made big bets on AI, AVs, online video, and virtual and augmented reality technologies.

In addition to its search engine business, Baidu is moving into other product areas. Baidu Map, for example, which uses AI, targets Chinese tourists traveling abroad and provides Chinese language map services. This product is likely to raise Baidu's global service platform competitiveness. Baidu Map covers more than 150 countries and territories, with monthly active users reaching 300 million. Baidu's short-term goal is to have foreign users account for 50% of the total by 2020. Baidu has

likewise developed strategic partnerships with the ministries of tourism of Thailand, South Korea, Australia, Singapore, Indonesia, and four northern European countries.

Baidu is pursuing a three-step global expansion strategy around Baidu Map: first, target Chinese tourists traveling overseas; second, increase its database and service quality in selected countries and pursue localization; and third, leverage technology, data, and marketing to promote Baidu Map as a global application. This process will be facilitated by the company's development of AI technologies, which can be used for road guidance systems, linking online to offline ecosystems, and indoor navigation (facilitated by augmented reality). Adding to competition in the map space, Huawei plans to release its own service, Map Kit, by October, which will cover 150 countries and territories. Nevertheless, Baidu does have an open-source platform that, while not a product, could serve as a vehicle for its global aspirations.

Baidu's work on AVs, particularly its open-source platform Apollo, is likely to help it expand globally. Several Western carmakers, including Daimler, have signed agreements to collaborate with the firm in developing applications. There are now well over 100 partners on the platform, including carmakers, semiconductor firms such as Intel, Nvidia, and NXP, and imaging and sensor companies. The Apollo Platform uses AI both for Baidu's voice-activated telematic software, capable of leveraging facial recognition, and for monitoring driver fatigue. Baidu in June released the latest version of Apollo, dubbed Apollo 5.0, which includes an upgraded road scenarios perception model and a new, bespoke sensor calibration service.

Alibaba: Mergers and acquisitions, e-commerce, cloud services, and mobile payments

China's leading internet platform and digital champion Alibaba Group and its two principal subsidiaries, AliCloud and Ant Financial, have two ambitious long-term objectives in going global. Alibaba is far ahead of other Chinese platforms in terms of the scope of its business, long-term ambitions, and the resources it can bring to bear in expanding its global footprint. The firm wants its international businesses to generate 40% of its revenue by 2027—currently this is less than 10%. It also wants to expand the number of its active buyers from 423 million to 2 billion in 2036, including 1 billion users from outside of China, as well as increase the volume of merchandise handled.

To achieve its goals, Alibaba has made investments in a range of sectors, mainly through M&A in areas that support its core focus on retail commerce. The firm's forays into cloud computing, healthcare, and entertainment are still largely focused domestically. Alibaba prefers a slow but steady approach in which it acquires a small stake in a target company and gradually raises it, instead of a full acquisition. Its investment in Lazada, a Southeast Asian e-commerce company, is a good example of this strategy, and its unit Ant Financial has adopted this approach in acquiring online payment companies in Southeast Asia and South Korea.

The main product/service Alibaba is trying to push globally is its e-commerce platform, Aliexpress.com, mainly in developing countries in Southeast Asia and Latin America. Cost remains Alibaba's biggest competitive advantage. Countries that have generated the most growth for Aliexpress since 2015 are Russia, Brazil, and several countries in Southeast Asia.

The second product/service Alibaba prioritizes in its global expansion is its payment system, AliPay. The AliPay strategy revolves around Ant Financial, which targets Chinese tourists traveling abroad, with a focus on Europe, Asia, and Australia. Ant Financial is also making investments in banks, insurance companies, and payment systems such as V-Key, Ascend Money, Paytm, and K Bank.

Alibaba's e-commerce strategy faces challenges in developed countries. First, these markets are more mature, with Amazon, eBay, and other retailers already meeting the needs of most customers. Second, the brand image of Alibaba is still strongly associated with counterfeiting and fake products despite the company's efforts to acknowledge and address this issue, including through its Anti-Counterfeiting Alliance. In Europe and Japan, it faces stiff competition from Amazon, eBay, Rakuten, and other local players.

Alibaba Group overall is closely aligned with the Chinese government's current phase of internationalization, including the increased focus on soft power, focused on areas such as standards setting. While the BRI initially prioritized infrastructure-related investments and soft loan programs that primarily benefited companies such as Huawei, Alibaba and its CEO Jack Ma have also gained from the initiative's goodwill and expansive development programs. The group is also far more flexible than its Western competitors in the compliance and market entry positions it can adopt.

This often-overlooked aspect will become more important in terms of AliCloud's ability to participate in areas where other cloud computing companies struggle—because of data localization policies, for example—and Alibaba Group's ability to influence a host country's policy and regulatory agenda as a result of its willingness to compromise when necessary in areas such as data access or data transfers.

AliCloud has more than 22 data centers outside of China. As noted, it does not always build its own—at least not initially, preferring in some cases to co-locate using partnerships with local data center operators. This has allowed the company to expand more rapidly and avoid data localization issues. As a result, Ali Could is emerging as an alternative content service provider in "cloud-unfriendly" territories. This strategy has also been successfully used during previous waves of Chinese firms going global—for example, Huawei in telecommunications and China UnionPay in payments.

Alibaba is also expanding its data center reach by partnering with other cloud services companies. In 2017, it signed an agreement to collaborate with Equinix to provide companies access to AliCloud via the Equinix Cloud Exchange data centers in Hong Kong, Silicon Valley, Sydney, and Washington, as well as Frankfurt and London, expanding Alibaba's global reach. In July 2018, Alibaba confirmed it was in talks with BT to partner in the UK to offer its cloud services. The goal of this deal would be to allow Alibaba to compete with Amazon in the UK. Alibaba also has partnerships with Singtel and South Korea's SK Group to provide cloud services.

Tencent: Pushing WeChat in Southeast Asia, investing heavily in gaming

Tencent is the second largest and most ambitious Chinese internet platform company after Alibaba. Tencent offers a wide portfolio of digital services: social media, online gaming, cloud and payment services, music streaming, microblogging, and more. The company's growth in the past two years has primarily been in the area of mobile games. Chairman Ma (Pony) Huateng once said that WeChat is the only real product Tencent has to sell in its push for global expansion.

Tencent's FDI strategy is like Alibaba's: It is designed to support the firm's core business. The company invests with well-known funds and focuses on social network and gaming companies such as Snapchat, RiotGames, and Whisper. Its preferred market is the US, but it also has investments in India, South Korea, Japan, Russia, and Israel. Tencent tends to make joint investments with favored partners such as SV Angel and Andreessen Horowitz (co-invested in 11 projects). It recently has started to invest heavily in AI, fast becoming a leading player in this field in China, focused on applications in medical imaging.

Tencent is actively trying to expand globally in social networking. The firm is using the WeChat platform to focus on the fast-growing markets of Southeast Asia, including Indonesia, Thailand, Hong Kong, Taiwan, Singapore, and Malaysia—in some cases directly competing with the Line app from Japan. Malaysia will probably be the first foreign country to roll out a WeChat ecosystem: Tencent plans to launch e-payments there in 2018. Whereas Alibaba is looking to build a global payment system, Tencent is more interested in generating traffic for WeChat—two different globalization strategies.

WeChat is gaining users in Southeast Asia, Russia, and India, but all these countries also feature strong local rivals. For Tencent, the US and European markets will be even harder to crack. It will need to position WeChat to compete with established players such as WhatsApp and Facebook. In addition, Tencent faces the challenge of how to persuade customers living in more open societies to use a social network application that may be subject to monitoring by the Chinese government. Tencent appears to be focused on markets in Southeast Asia and Latin America, but its WeChat

app seems to have failed to gain traction in India and Brazil. WeChat has so far succeeded only in Malaysia, where it is the fifth most popular app. For Tencent and WeChat, the domestic market remains much more important.

Promoting Chinese technology standards through the DSR

Officials have talked about the need to increase their ability to play a role in internet governance and cyber norms discussions. They view Chinese company participation in building next-generation telecommunications infrastructure as critical to gaining a greater voice in international fora. Beijing also believes that the participation of Chinese companies across the communications sector stack as part of the DSR, from fiber optic systems to mobile communications and OTT services, will translate into a greater role for Chinese firms in standards-setting bodies. In addition, Chinese technology firms can work together to bring integrated solutions to BRI countries on telecommunications and services infrastructure, creating a de facto dependence on Chinese systems and solutions. This latter issue is often confused in the media with the separate issue of standards-setting.

China, through Huawei and China Mobile, has been increasing its participation in international standards-setting bodies such as the ITU and the International Organization for Standardization (ISO), as well as in industry bodies such as the Institute of Electrical and Electronics Engineers. Chinese companies are aiming to reduce their dependence on Western firms for patent royalties and to ensure that they are seen as contributors to technological progress in key sectors.

US government officials are also pushing for more US company participation in standards processes. This is partly a reaction to the success of companies such as Huawei and ZTE in 5G standards-setting, where they have gone from being small players to major contributors of intellectual property for standard essential patents (please see Eurasia Group special report: The Geopolitics of 5G, 6 November 2018).

The DSR broadly reflects China's efforts to expand its technology sphere of influence across BRI participating countries by going from a standards-taker to a standards-maker. In March 2019, China's Standardization Administration of China (SAC) published its policy objectives for the year, which include enhancing standards cooperation and integration with BRI participating countries. As part of this year's BRF deliverables, the SAC established a "national standards information platform among the Belt and Road partner countries to strengthen the exchange and sharing of standards information." It announced that China has signed 85 standardization agreements (more broadly) with 49 countries and regions to date. SAC's work plan for 2019 notably left out its former emphasis on technology standards integration among China, the EU, and the US. This omission may reflect a greater priority placed on promoting Chinese standards as potential alternatives amid a fracturing of the global technology landscape. There are rumors that Beijing could back an "Asian Standardization Organization," that would provide services to BRI partner countries in Asia, a strategy similar to the one China has followed with the Asian Infrastructure Investment Bank. SAC has claimed that standards designed to be internationalized via BRI projects will not be in opposition to existing ISO and IEC standards, but it remains unclear how this will work if the priority areas for standardization include the ICT and transport sectors part of the BRI and the DSR.

China is also increasingly focused on shaping global standards in AI. It has already developed domestic standards in this area—launched in the Artificial Intelligence Standardization White Paper released by the MIIT and the China Electronics Standardization Institute (CESI) in January 2018—with the goal of becoming the global leader in AI by 2030. CESI leads China's participation in the ISO committee on AI, which is developing international standards for the industry.

More broadly though, Beijing's evolving data governance system remains out of step with global trends. In the near term, it is not likely that China would be able to obtain an adequacy ruling from the EU under the General Data Protection Regulation (GDPR) or accede voluntarily to the APEC Cross Border Privacy Rules (CBPR). This incompatibility between China's evolving data governance system

and alternatives that are being adopted by BRI/DSR countries in Europe will eventually become a major challenge for Beijing and Chinese ICT companies critical to the success of DSR such as Alibaba, Tencent, Huawei, China Mobile, and China Telecom.

On the separate issue of global internet governance, China has also become more active in promoting its concept of cyber sovereignty, finding like-minded partners in some countries participating in the BRI. Domestically, China has been developing a comprehensive data governance regime focused on implementing regulations and guidelines developed under its cybersecurity law. Though the country has developed a strong market domestically for technologies such as facial recognition and autonomous vehicles, its firms could run into issues transferring data, for instance, if the privacy rules in the different operating jurisdictions are not compatible. China's restrictive approach to cross-border data flows is starting to pose challenges for Chinese firms expanding overseas, and China may need to balance its priorities for maintaining domestic control and promoting the DSR.

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