

“Belt and Road” Space Information Corridor: Opportunities and Challenges from Legal Perspectives

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Abstract

The grand project of “Belt and Road” Space Information Corridor proposed by China, which aims to integrate its space-based platforms for comprehensive space applications under the Belt and Road Initiative, resonates with calls and recommendations of the United Nations conferences on the exploration and peaceful uses of outer space for increased international cooperation in space projects to address common challenges. This project is expected to translate the potentials of space technology for socioeconomic development into real benefits for billions of people along the Belt and Road region. The Chinese government has released guidelines in 2016 to identify the general goals and major tasks.

As we celebrate legacy of the UNISPACE conferences this year, it is beneficial to also focus on the ramifications of large scale space projects for governance of space activities on national, regional and international level. On the one hand, policy and legal aspects are important factors to be taken into account in project planning and implementation. On the other hand, the need to accommodate requirements of space projects could stimulate adjustment or innovation in space policies and regulations. The “B&R” Space Information Corridor offers us a chance to explore such interaction between space project and space governance. Based on analysis of the relevant aspects of legal environment, this paper purports to examine opportunities and challenges confronted with during implementation of the “mega-project” from legal perspectives.

I. Introduction

When visiting Central Asia and Southeast Asia in September and October of 2013, Chinese President Xi Jinping raised the initiative of jointly building the Silk Road Economic Belt and the 21st-Century Maritime Silk Road (collectively referred to as the Belt and Road), which has attracted close attention from all over the world. The Initiative has now expanded to cover

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more than one hundred countries in Asia, Europe, Africa and Latin America. One of the major tasks set out in the Action Plan on Building the Belt and Road¹ is to create an Information Silk Road through expanding spatial (satellite) information passageways. In order to implement concretely this task, the State Administration of Science, Technology and Industry for National Defense² and National Development and Reform Commission³ issued in 2016 the Guiding Opinions concerning Accelerating Construction and Application of Belt & Road Space Information Corridor (hereinafter “Guiding Opinions”).⁴ The concept of and vision for a Space Information Corridor strikes a responsive chord with recommendation contained in resolution adopted by UNISPACE III to increase the interlinking of telecommunications, remote sensing and space information systems in order to maximize the effectiveness of initiatives towards sustainable development of states.⁵

Kindled by the Belt and Road Initiative and in particular the Guiding Opinions, considerable efforts are being made in construction and upgrading of China’s space- and ground-based infrastructure, and to tap full potential of existing satellite resources (in remote sensing, navigation and communications etc.) for applications and services in Belt and Road countries through strengthened bilateral and multilateral exchange and cooperation. Within the context of this fledging Corridor initiative, this paper is intended solely as a primary discussion in general of legal issues pertaining to implementation endeavors to accomplish the “B&R” Space Information Corridor. More detailed studies will be conducted with focus on more specific issues as the Corridor initiative fully unveils.

II. Overview of Distinct Legal Issues

The basic principle established in the Guiding Opinions is to jointly build, share and utilize the “B&R” Space Information Corridor by all countries along the Belt and Road in the spirit of mutual consultation.⁶ The extensive

1 Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road, issued in March of 2015 jointly by the National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People’s Republic of China. For the full text, see <https://eng.yidaiyilu.gov.cn/qwyw/qwfb/1084.htm>, (last visited on September 8, 2018)

2 hereinafter referred to as “SASTIND”

3 hereinafter referred to as “NDRC”

4 http://www.ndrc.gov.cn/zcfb/zcfbqt/201611/t20161123_827548.html, (last visited on September 8, 2018)

5 The Space Millennium: Vienna Declaration on Space and Human Development, available at http://www.unoosa.org/oosa/en/oosadoc/data/documents/1999/a/aconf.1846_0.html, (last visited on September 8, 2018)

6 *Supra* note 4

process to set up this Corridor thus may involve many types of activities⁷ touching upon a multitude of legal issues. For instance, investment and export control issues feature prominently in construction of satellite systems in China and export of related products and technology to Belt and Road countries. Expansion of satellite application services to Belt and Road countries based on China's satellite resources gives rise to disparate legal issues in such spheres as remote sensing, navigation and telecommunications, which need to be dealt with separately. This part tries to examine some of the aforementioned specific issues.

1. Investment

A. Engagement of Non-governmental Sector

Most of the satellite resources that are being and will be utilized to build the "B&R" Space Information Corridor refer to those developed within the framework of the Mid- and Long Term Planning for National Civil Space Infrastructure (2015-2025)⁸ jointly issued by NDRC, Ministry of Finance and SASTIND in 2015. Pursuant to this planning policy, it is envisaged that the nation's overall space infrastructure also consists of satellite systems (including ground facilities) invested in whole or in part by the private sector. This is significant considering the fact that China's commercial space sector lags behind relative to other space powers despite the country's ascending status in global space competitiveness. Recent years are witnessing a large number of nascent space actors spawned by global trend of Newspace activities as well as favorable policies released by the government.

China's space policy over the past decade has been generally to encourage participation of non-governmental entities in national space activities, as reflected in the White Paper on China's Space Activities in 2006⁹ and in 2011¹⁰. On 16 November 2014, the State Council issued the Guiding

7 For analysis, see also Li Du, *Analysis of Legal Issues in International Space Cooperation under the "One Belt, One Road" Initiative*, Journal of Beijing Institute of Technology (Social Sciences Edition) Vol.20 No.1, at 118.

8 http://www.ndrc.gov.cn/gzdt/201510/t20151029_756378.html, (last visited on September 8, 2018)

9 One of the space development polices and measures is to encourage people of all walks of life to participate in space-related activities, including encouraging industrial enterprises, scientific research institutes, commercial corporations, institutions of higher learning and social organizations, under the guidance of national space policies, to give full play to their advantages, take an active part in space activities, and participate in international space-related exchanges and cooperation. <http://www.china.org.cn/english/features/book/183712.htm>, (last visited on September 8, 2018)

10 One of the space development polices and measures is to encourage scientific research institutes, enterprises, institutions of higher learning and social organizations, under the guidance of national space policies, giving full play to their advantages and taking an active part in space activities. <http://www.china.org.cn/government/whitepaper/2011->

Opinions regarding Innovating on Investment and Financing Mechanism in Priority Areas and Encouraging Nongovernmental Investment, which covered specifically the area of civil space infrastructure.¹¹ Section 24 stressed that the government shall upgrade policy framework as regards civil remote sensing data, establish the model of government purchasing services, encourage private capital to be invested for design, launch and operation of commercial remote sensing satellites in order to provide market oriented and professional services. Besides, the government will also guide channeling of private capital in building up ground application systems for satellite navigation.¹² In the White Paper on China's Space Activities in 2016, it is stated that non-governmental capital and other social sectors are encouraged to participate in space-related activities, including scientific research and production, space infrastructure, space information products and services, and use of satellites to increase the level of commercialization of the space industry.

B. Fixed Assets Investment

According to the Administrative Regulations on Approval and Filing for Enterprise Investment Projects¹³ promulgated by the State Council and the Administrative Measures on Approval and Filing for Enterprise Investment Projects¹⁴ issued by NDRC, an enterprise which intends to invest in construction of fixed assets project that relates to national security, development of strategic resources or significant public interest etc. shall apply for approval by competent government agencies. Accordingly, the list of investment projects subject to government approval (2016) made pursuant to the Regulation stipulates that, manufacturing of civil satellites and construction of civil remote sensing satellites ground stations are subject to approval by competent organs of the State Council.¹⁵ In addition, SASTIND has formulated detailed provisions and procedures for authorizing and filing of non-governmental investment (excluding foreign investment) project specific to national defense industry.¹⁶

12/29/content_24280440.htm, (last visited on September 8, 2018)

11 http://www.gov.cn/zhengce/content/2014-11/26/content_9260.htm, (last visited on September 8, 2018)

12 *Ibid.*

13 http://www.gov.cn/zhengce/content/2016-12/14/content_5147959.htm, (last visited on September 8, 2018)

14 http://www.ndrc.gov.cn/zcfb/zcfbl/201703/t20170322_841714.html, (last visited on September 8, 2018)

15 http://www.gov.cn/zhengce/content/2016-12/20/content_5150587.htm, (last visited on September 8, 2018)

16 <http://www.sastind.gov.cn/n6195634/n6195706/n6195716/n6427873/c6438885/content.html>, (last visited on September 8, 2018)

C. Foreign Investment

As regards foreign investment, encouraged categories of industries listed in the Catalogue of Industries for Guiding Foreign Investment (Revision 2017) include manufacture of launch vehicle ground testing equipment and equipment for mechanics and environmental experiments, design and manufacture of civil satellites; manufacture of civil satellite payloads, satellite components and parts, testing equipment for satellite-borne products; manufacture of satellite communications system equipment and civil satellite application technologies.¹⁷ In accordance with the Special Management Measures (Negative List) for the Access of Foreign Investment (2018), investment in manufacture of satellite ground reception facilities and core components by foreign capital requires a license, and foreign investment in broadcasting satellite is prohibited.¹⁸

It is worth noting that Chinese enterprises intending to invest abroad are subject to dual jurisdiction by source and destination countries of investment. The Administrative Measures for Enterprises' Outbound Investment (2018)¹⁹ stipulates that outbound investment involving sensitive countries and regions or sensitive industries shall be conditional upon verification and approval by competent government authorities. Moreover, they need to be aware of any restrictions on inbound investment in pertinent industries imposed by destination countries along the Belt and Road.

2. Remote Sensing

As observed by scholars, the current environment surrounding supply and use of data is that data from the governmental space systems as well as from private entities are widely disseminated both on a commercial and non-commercial basis.²⁰ With this in mind and within the framework of "B&R" Space Information Corridor, China aims to provide remote sensing data services to Belt and Road countries relying on its fleet of CHEOS²¹ satellites supplemented by commercial ones. The general plan laid down in the Guiding Opinions is to establish comprehensive remote sensing networks in

17 http://www.ndrc.gov.cn/zcfb/zcfbl/201706/t20170628_852857.html, (last visited on September 8, 2018)

18 Foreign investment is prohibited in the following areas: radio and television transmission and coverage networks (transmitting stations, relay stations, broadcasting satellites, satellite uplink stations, satellite receiving and transmitting stations, microwave stations, monitoring stations, and cable radio and television transmission and coverage networks). <http://wzs.mofcom.gov.cn/article/n/201806/20180602760432.shtml>, (last visited on September 8, 2018)

19 http://www.ndrc.gov.cn/gzdt/201712/t20171226_871563.html, (last visited on September 8, 2018)

20 Atsuyo Ito, *Legal Aspects of Satellite Remote Sensing*, Martinus Nijhoff Publishers, Leiden - Boston, 2011, at 13.

21 China's High-Resolution Earth Observation System. <http://www.cheos.org.cn/>, (last visited on September 8, 2018)

coordination with other countries and organizations, as well as to encourage enterprises for expansion of commercial data services in the Belt and Road region. Implementation of such plans brings forth a host of legal issues, which requires first and foremost a close look at regulations and policies of countries concerned.

A. Data Policies²²

SASTIND has formulated several data policy guidelines specific to²³ different series of earth observation satellites²⁴, which fully complies with principles enshrined in the UN Remote Sensing Principles.²⁵ With respect to access, distribution and application of CHEOS data, the Interim Measures for Management of CHEOS Satellites Data in 2015²⁶. Primary products²⁷ are categorized as publicly accessible and classified ones. Optical primary products with spatial resolution no better than 0.5 meter and microwave primary products with spatial resolution no better than 1 meter are open to the public. As far as international cooperation is concerned, the Interim Measures encourages domestic enterprises and institutions to sell satellite data, related ground and application system to users at home and abroad that engage in international business, on the precondition that cooperation agreement has been concluded between/among the involved countries at government or agency level, national information security is safeguarded and that CNSA²⁸ has issued authorization to specify scope of business and service standards. It is also stipulated that data products covering Chinese territory shall not be provided to any foreign individual or organization without prior authorization; policies as regards receiving and use of data covering areas other than Chinese territory will be accessible on a country-specific basis;

22 Data policies clarify who has access to which data under what conditions. Divergent data policies including access/distribution policies, pricing, conditions for use, and intellectual property rights are set commonly by different suppliers. See Atsuyo Ito, *Improvements to the Legal Regime for the Effective Use of Satellite Remote Sensing Data for Disaster Management and Protection of the Environment*, Vol.34, No.1, *Journal of Space Law*, 2008, at 52.

23 Data policies are usually set independently for each satellite. *Supra* note 20, at 201.

24 For example, data management rules for CBERS 01/02/02B released in 2007; data management rules for ZY-3 Satellite released in 2012.

25 1986 Principles Relating to Remote Sensing of the Earth from Outer Space

26 The Interim Measures made a few breakthroughs with a view to keeping abreast of the latest trends in the global remote sensing data market and to further removing barriers to commercial utilization of data products. Available at <http://gfplatform.cnsa.gov.cn/n6084429/n6084471/n6149428/c6155428/content.html>, (last visited on September 8, 2018)

27 Data products are grouped into a broad spectrum ranging from zero above. Zero level products refer to raw data, level 1 to level 2 products refer to primary products, and level 3 and beyond are deemed as advanced products. *Ibid.*

28 China National Space Administration

restrictions may be imposed where necessary regarding sale and commercial service of data involving sensitive regions and/or time periods. Apart from the Interim Measures, the guiding opinion on acceleration of CHEOS data application was issued in 2016, and the mechanism and procedures relating to access of CHEOS data for emergency response was issued in 2017.

Concrete problems might arise in setting up the "B&R" Space Information Corridor due to divergent data policies adopted in these countries.²⁹ Besides, most of the Belt and Road countries³⁰ are yet to establish an overall legislative framework addressing issues regarding satellite remote sensing as well as specific regulations on commercial remote sensing satellite systems. Commercial entities therefore have to keep vigilant over constantly changing policies and customary practices when expanding operations in foreign states.

B. Ground Station Infrastructure

Ground stations constitute an integral part of remote sensing satellite system essential to maximize its utilization. As stressed in the international forum, partnerships with satellite operators should be encouraged to construct and operate ground station infrastructure at the local and national levels in order to increase the use of remote sensing data and associated technology tools, particularly in developing countries.³¹ Alongside with the objective to provide remote sensing data services for the Belt and Road region, the Corridor initiative also proposes to establish an integrated earth observation system encompassing a number of virtual constellations. Furthermore, commercial remote sensing actors are competing to build their own systems that involve deployment of ground infrastructure as well. According to the Guiding Opinions, enterprises are encouraged to participate in building and operating network of remote sensing receiving stations.

29 Concrete problems lie in the inadequacy of the existing regime regarding two points. First, divergent data policies are commonly set by the different entities. Second, there is currently an ambiguity over the responsibility and liability arising from supply and/or use and misuse of the data and resulting products. These create obstacles for protecting the balanced interests of all parties concerned in the generation, supply, and use of the remote sensing data. See *Supra* note 22, at 46.

30 There might be a few exceptions. In Russia, acquisition, distribution and protection of remote sensing data is governed by the Government of the Russian Federation Resolution on the Order of Acquisition, Use and Provision of Geo-Spatial Information and The Federal Law on Information Technologies and Information Protection. See Sergey P. Malkov and Catherine Doldirina, *Regulation of Space Activities in the Russian Federation*, in National Regulation of Space Activities 315, 329 (R. Jakhu ed., Springer 2010). Indonesia's comprehensive space act also contains chapters dedicated to remote sensing.

31 Report of the Scientific and Technical Subcommittee on its fifty-fourth session, held in Vienna from 30 January to 10 February 2017. Available at http://www.unoosa.org/oosa/oosadoc/data/documents/2017/aac.105/aac.1051138_0.html, (last visited on September 8, 2018)

One legal issue worthy of attention is thus the intersection of licensing regimes of multiple states with regards to remote sensing, particularly building of ground stations in another country³². Some states exercise jurisdiction over foreign satellite operators purporting to set up ground stations within their territory, even though these operators may have already obtained licenses from their national states. Therefore, commercial operators are advised to take into account such regulatory requirements. One approach to alleviate regulatory burdens as noted above is to put in place appropriate bilateral or multilateral cooperation mechanisms as discussed later.

C. Information Security

It always remains a top priority for states to ensure information security while regulating acquisition and dissemination of remote sensing data.³³ These security concerns are partly exacerbated by development of new applications based on Earth observation data using deep machine learning.³⁴ National legislations devoted specifically to remote sensing³⁵ generally contain concrete measures to address information security risks. It is imperative to formulate pertinent rules at national level or through international cooperation in jointly building the “B&R” Space Information Corridor.

3. Navigation

China has established the BeiDou Navigation Satellite System (BDS) that is compatible with other GNSS.³⁶ The general plan is to provide basic services covering Belt and Road countries by 2018³⁷ and provide global coverage by

32 It is reported that small satellite operators wanting to build ground stations in multiple nations to connect with their satellites are finding it complicated dealing with different sets of regulations. <https://spacenews.com/international-ground-stations-tricky-for-smallsat-operators-to-license/>, (last visited on September 8, 2018) For example, Planet waited almost two years for the Global Affairs Canada (GAC) to decide on a remote sensing license the company needs to operate a ground station it has at Inuvik, Northwest Territories. <https://spacenews.com/planet-sets-deadline-for-canadian-ground-station-license/>, (last visited on September 8, 2018)

33 The view was expressed that all member States should be encouraged to put in place an appropriate legal framework to monitor and safeguard the collection and use of potentially sensitive Earth observation data. See *Supra* note 31.

34 It is reported that deep machine learning algorithms help U.S. government agencies analyze satellite imagery to quickly locate missile sites in China. <https://spacenews.com/with-commercial-satellite-imagery-computer-learns-to-quickly-find-missile-sites-in-china/>, (last visited on September 8, 2018)

35 The United States, France, Germany and Canada etc. have enacted specific legislations regarding remote sensing.

36 The System was in full service and had provided positioning, navigation, timing and short-message communication services to the Asia-Pacific region since 2012.

37 In the past three consecutive months from July to September, China successfully launched six (two at a time) BDS-3 networking satellites, and a total of 18 satellites

2020, as set forth in the 2016 White Paper on the development of BDS³⁸. The BDS is deemed as a vital part of infrastructure for comprehensive space information service according to the Guiding Opinions, which encourages enterprises to engage in building of ground-based augmentation system³⁹ in order to extend BDS' application in various fields. Operation of GNSS in the Belt and Road region raises a few legal issues as discussed below.⁴⁰

GNSS typically requires networks of ground facilities to ensure the accuracy and integrity of satellite signals⁴¹. Attention should thus be given to potential restrictions or barriers on building ground facilities abroad⁴², as noted previously with regards to remote sensing. For example, a Russia's proposal in 2013 to deploy Glonass ground stations in the United States met with strong opposition from its national security establishment⁴³ and the Congress⁴⁴, which was prompted to adopt a ban in NDAA 2014 on the construction of any GNSS ground monitoring station directly or indirectly controlled by a foreign government in the territory of the United States⁴⁵.

are scheduled to be launched by the end of 2018 as part of efforts to provide navigation and positioning services to Belt and Road countries. http://en.beidou.gov.cn/WHATSNEWS/201809/t20180921_16085.html; http://en.beidou.gov.cn/WHATSNEWS/201808/t20180827_15905.html; http://en.beidou.gov.cn/WHATSNEWS/201807/t20180731_15343.html, (last visited on September 8, 2018)

38 <http://www.scio.gov.cn/ztk/dtzt/34102/34674/34678/Document/1480626/1480626.htm>, (last visited on September 8, 2018)

39 For instance, the Continuously Operating Reference Stations (CORS)

40 Other important issues such as GNSS spectrum protection and intellectual properties in receiving equipment will be discussed hopefully in follow up studies.

41 For example, US's GPS control segment consists of a global network of ground facilities that track the GPS satellites, monitor their transmissions, perform analyses, and send commands and data to the constellation. The current Operational Control Segment (OCS) includes a master control station, an alternate master control station, 11 command and control antennas, and 16 monitoring sites. The locations of these facilities are shown in a map available at <https://www.gps.gov/systems/gps/control/>, (last visited on September 8, 2018)

42 Note that it is not unusual for states (including the host state) to exercise necessary regulatory oversight in GNSS ground facilities. For example, FAA is responsible for approving ground-based augmentation system (GBAS) that monitors and augments the GPS L1 C/A broadcast, which is installed by airports to aid navigation. https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/laas/, (last visited on September 8, 2018)

43 It was opposed by the national-security establishment on the grounds that an enhanced Russian GPS capability could be used to better guide satellite weapons targeting the U.S. and the facilities could be used as listening posts to spy on internal American communications. <https://www.newsmax.com/Newsfront/GPS-Russia-Glonass-stations/2013/11/18/id/537133/>, (last visited on September 8, 2018)

44 <https://spacenews.com/38340lawmakers-flag-proposal-for-us-based-glonass-ground-stations/>, (last visited on September 8, 2018)

45 § 2279 (b), NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2014, PUBLIC LAW 113-66—DEC. 26, 2013

In addition to the basic infrastructure, the promise of the BDS needs to be translated into reality through a complete industry chain.⁴⁶ In order to promote the wide application of BDS, China has released the sixth version of BDS interface control documents and one set of open service performance specifications. Service providers operating abroad have to be wary of any local technical standards⁴⁷ or any regulations pertaining to GNSS provider's obligations and liabilities⁴⁸ that may pose obstacles and risks.

Another issue relates to compliance of national regulatory measures with WTO agreements. From purely technical perspective, compatibility and interoperability of several GNSS (GPS, Glonass, BDS, and Galileo etc.) is more likely to achieve, thanks to bilateral and multilateral efforts made in this regard. However, states may adopt regulatory measures to give subtle priority to one GNSS over another, which might contradict with their commitments under the WTO framework. For instance, the Agreement on Technical Barriers to Trade prohibits discrimination among goods based on nontariff measures including regulations and certification procedures, and the Agreement on Government Procurement requires nondiscrimination in regulations.⁴⁹

Solution to all of the issues analyzed above lies in both international cooperation mechanisms and strengthened national legislation⁵⁰. As BDS is nearly ready to "go global", China is accelerating efforts to formulate a comprehensive regulatory regime comprising laws, regulations, provisions and

46 BDS chips were already used on a large scale, with the processing precision refined to 28 nanometers. BDS had been widely adopted in fields such as public security, transport, fisheries, electricity, forestry and disaster response. Report of the Scientific and Technical Subcommittee on its fifty-fifth session, held in Vienna from 29 January to 9 February 2018. http://www.unoosa.org/oosa/ootadoc/data/documents/2018/aac.105/aac.1051167_0.html, (last visited on September 8, 2018)

47 States might have specific technical specifications for incorporation of GNSS in their national communications services. For example, FCC of the United States was reportedly faced with a dilemma as to whether it could allow integration of Russia's GLONASS into the E911 system to help pinpoint the location of emergency callers. Opponents rejected this idea on the ground of national security concerns. <https://spacenews.com/editorial-crying-wolf-over-glonass/>, (last visited on September 8, 2018)

48 See *Supra* note 7, at 122.

49 When EU was presumably considering how to stimulate Galileo use, especially through regulatory measures requiring that navigation equipment be installed on aircraft, automobiles and other platforms, U.S. government officials voiced concerns that such regulations could unfairly tip the scales in favor of Galileo to the detriment of U.S. GPS-enabled hardware. <https://spacenews.com/42616us-warns-eu-against-making-galileo-mandatory/>, (last visited on September 8, 2018)

50 Russia has put in place a regulatory framework pertaining to its navigation system, including Federal Law on Navigation (2009), Regulation on the equipment of transport vehicles with GLONASS/GPS means (2008), Order on equipment of transport vehicles with GLONASS/GPS means (2010) by the Ministry of Transport

technical standards, which address various issues in construction and application of the BDS. Further studies are necessary to assess the impact of any existing legislation and policy of Belt and Road countries on BDS operation, and to evaluate the necessity for them to make additional regulations to ensure accomplishment of the "B&R" Space Information Corridor.

4. Communications and Broadcasting

Communications and broadcasting sector is typically intensively regulated at national level, with domestic operators accorded priority status. Nonetheless, few countries have adopted specific laws governing satellite communications and broadcasting⁵¹, and provisions are typically scattered in relevant legislations that have to be examined piecemeal.

In China, satellite mobile and fixed telecommunications services are classified as Category I basic telecom service, sale and lease of satellite transponders and VSAT communications are classified as Category II basic telecom services⁵², which are all subject to licensing pursuant to specific legislations⁵³. Besides, broadband communications services via satellites (including "mega-constellations") requires license in addition to frequency authorizations. There are also detailed requirements as regards foreign investment in telecom business.⁵⁴ Foreign funded telecom enterprises are allowed to engage only in telecom business China undertakes to open up in its WTO accession commitments. The proportion of contribution by foreign investors in a telecom joint venture engaged in value added telecom services (except e-commerce) shall not exceed 50%. Chinese party shall hold controlling shares in joint ventures engaged in basic telecom services.⁵⁵ One of the conditions

51 It is observed that in comparison to all other space technology applications, satellite telecommunications, including broadcasting, has witnessed the highest rate of development in terms of policy, legal and regulatory regimes.

The existing terrestrial telecommunications and broadcasting statutes are, however, inadequate and out of pace with current industry needs. See Ranjana Kaul and Ram S. Jakhu, *Regulation of Space Activities in India*, in National Regulation of Space Activities 153, 169 (R. Jakhu ed., Springer 2010)

52 Category of Telecommunications Services, <http://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057709/n3057714/c4564270/content.html>, (last visited on September 8, 2018)

53 Telecommunications Regulations of the People's Republic of China, available at <http://www.miit.gov.cn/n1146295/n1146557/n1146619/c4860613/content.html>, (last visited on September 8, 2018); Administrative Measures on Licensing of Telecommunications Service (Ministry of Industry and Information Technology), available at <http://www.miit.gov.cn/n1146295/n1146557/n1146624/c5727331/content.html>, (last visited on September 8, 2018)

54 Provisions on the Administration of Foreign-funded Telecommunications Enterprises (2016 Revision), available at <http://www.miit.gov.cn/newweb/n1146285/n1146352/n3054355/n3057254/n3057261/c4860696/content.html>

55 *Supra* note 18. Special Management Measures (Negative List) for the Access of Foreign Investment (2018)

for granting basic telecom services license is that state-owned equity or shares in the applying enterprise should be no less than 51%.⁵⁶

Chinese enterprises holding aforementioned licenses are expected to play a significant role in building the “B&R” Space Information Corridor.⁵⁷ They have to note, however, that other Belt and Road countries may have similar regulatory frameworks with respect to satellite communications.

III. Overview of General Legal Issues

It is widely recognized that tremendous success in the exploration and use of outer space for peaceful purposes has been accomplished as a result of international cooperation which has been an important principle from the very beginning of the space age.⁵⁸ This part thus concentrates on the red thread of international cooperation that will certainly run through the whole process of establishing “B&R” Space Information Corridor, with particular attention paid to general issues of cooperation mechanisms and dispute settlement.

1. International Cooperation Mechanisms

The “B&R” Space Information Corridor represents essentially an international cooperation program on monumental scale, the implementation of which calls for a labyrinth of cooperation mechanisms at various levels. As stressed by Chinese leaders on various occasions, the Belt and Road Initiative is not to replace existing mechanisms or initiatives for regional cooperation. Much to the contrary, we will build on the existing basis to help countries align their development strategies and form complementarity.⁵⁹

56 Article 5 of the Administrative Measures on Licensing of Telecommunications Service

57 For a list of companies that have been granted licenses to operate in satellite telecommunications related services, see <http://shenpi.miit.gov.cn/resultSearch?categoryTreeId=302>, (last visited on September 8, 2018).

It is reported that China Satellite Communications Co., Ltd was granted the license by Ministry of Industry and Information Technology in March of 2018, to engage in satellite mobile and fixed communications services nationwide, which was expected to further promote information interconnectivity in the Belt and Road regions. <http://www.sastind.gov.cn/n112/n117/c6800007/content.html>, (last visited on September 8, 2018)

58 Draft Report of the Working Group on the Review of International Mechanisms for Cooperation in the Peaceful Exploration and Use of Outer Space, available at http://www.unoosa.org/oosa/en/oosadoc/data/documents/2017/aac.105c.22017crp/aac.105c.22017crp.15_0.html, (last visited on September 8, 2018)

59 Quoted from the keynote speech given by Chinese President Xi Jinping at the Boao Forum for Asia Annual Conference 2015, available at http://www.xinhuanet.com/politics/2015-03/29/c_127632707.htm, (last visited on September 8, 2018)

Cooperative projects that serve wide public interest are better carried out in multilateral forum.⁶⁰ It proves particularly true in application of space information for purposes of disaster reduction and emergency response. As an important legacy of UNISPACE III, the International Charter "Space and Major Disasters"⁶¹ was gradually formulated through which satellite data are made available for the benefit of disaster management. "UN-SPIDER" is the first to focus on the need to ensure access to and use of space-based information to support all phases of disaster management cycle.⁶² In addition to its capacity-building efforts, UN-SPIDER is establishing and strengthening complementary relationships with other global and regional initiatives. Furthermore, regional mechanisms also exist to expand such efforts in making space-based data and information available to emergency services. While building the "B&R" Space Information Corridor, efforts will thus be directed towards aligning satellite resources to fit into the general picture of current cooperation network with reliance on the abovementioned mechanisms.

At multilateral level, China will continue its cooperation and exchanges activities in both international⁶³ and regional fora⁶⁴ with a view to building synergies for the Corridor initiative. In particular, coordination will be enhanced with other programs including BRICS remote-sensing satellite constellation and APSCO⁶⁵ joint small multi-mission satellite constellation program.

60 Usually within the framework of international intergovernmental organizations, especially the United Nations and its specialized agencies as well as regional organizations

61 Following the UNISPACE III conference held in Vienna, Austria in July 1999, the European and French space agencies (ESA and CNES) initiated the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (International Charter "Space and Major Disasters"), with the Canadian Space Agency (CSA) signing the Charter on 20 October 2000. Many more space agencies subsequently joined the Charter as members.

62 "United Nations Platform for Space-based Information for Disaster Management and Emergency Response". This program has offices in Vienna of Austria, Bonn of Germany and Beijing of China, benefiting from the financial and in-kind support provided by these countries.

63 Such as the International Committee on Global Navigation Satellite Systems (ICG), the Committee on Earth Observation Satellites (CEOS), the Group on Earth Observations (GEO), the International Space Exploration Coordination Group (ISECG), the Inter-Agency Space Debris Coordination Committee (IADC), the World Meteorological Organization (WMO) etc.

64 Such as APSCO, ASEAN etc. For example, China-ASEAN "B&R" Space Information Corridor Cooperation Development Forum has become part of the China-ASEAN Expo sideline forum. <http://www.sastind.gov.cn/n142/c6802890/content.html>, (last visited on September 12, 2018)

65 Asia-Pacific Space Cooperation Organization, <http://apsco.int/>, (last visited on September 8, 2018)

Moreover, bilateral space cooperation may not only benefit the countries involved, but also contributes to sustainability of outer space activities. For instance, China-Brazil cooperation program “CBERS”⁶⁶ is hailed as an excellent example of both space cooperation and south-south cooperation.⁶⁷ In addition to users in China and Brazil, other developing countries are provided access to CBERS data as well.⁶⁸

It is noteworthy that international agreements are fundamental in international space cooperation⁶⁹ for the advancement of the ultimate goal of peaceful uses of outer space.⁷⁰ As seen earlier, transboundary satellite applications in various fields can be greatly facilitated if bilateral or multilateral agreements are concluded to coordinate regulatory measures and to endorse implementation by execution entities.

2. Dispute Settlement

Approaches to dispute settlement in international space cooperation agreements are usually determined by the parties in accordance with international law and in view of nature of cooperation⁷¹. According to findings of the Working Group on the Review of International Mechanisms for Cooperation in the Peaceful Exploration and Use of Outer Space, bilateral space cooperation agreements often contain clauses for settlement of disputes, providing consultations and sometimes tribunals as the means.⁷² As there is no substantial difference between these agreements with other treaties in terms of dispute settlement, attention will be given to resolution of potential disputes among nongovernmental entities arising from contracts concluded under the Corridor initiative.

Arbitration is generally regarded as the more efficient means to solve disputes in commercial dealings due to its multiple advantages in comparison to

66 The China–Brazil Earth Resources Satellite program (CBERS).

67 Zhao Yun, the 2002 Space Cooperation Protocol between China and Brazil: An excellent example of South–South cooperation, *Space Policy* 21 (2005) 213–219

68 Zhao Yun, *New Perspective and Emerging Approach on Sustainable Development in Outer Space from China’s Practice in Space Cooperation*, *Studies on International Law*, Volume 3, 2017, pp. 67-69

69 International agreements can be seen as major and effective mechanisms for international space cooperation. *Supra* note 58

70 For more analysis, see presentation by Zhao Yun entitled “the Role of Bilateral and Multilateral Agreements in International Space Cooperation”, delivered at United Nations/China/APSCO Workshop on Space Law held in Beijing, China in 2014.

71 As far as disputes between states are concerned, the major space treaties do not provide means for binding dispute settlement.

72 When only consultations (or negotiations) are set forth, they contain detailed steps placing a strong emphasis on an amicable and non-judicial solution. When the establishment of a tribunal is called for, it is usually ad hoc and provides requirements for the set up and rules to be applied, such as UNCITRAL Arbitration Rules. *Supra* note 58.

adjudication by state courts.⁷³ In order to promote customized approach to settlement of space-related disputes, the Administrative Council of the Permanent Court of Arbitration (PCA) adopted the Optional Rules for Arbitration of Disputes Relating to Outer Space Activities (Outer Space Rules) in 2011.⁷⁴ Since the Belt and Road Initiative was launched, China's arbitration institutions have been keen to set up branches specializing in disputes with respect to Belt and Road Initiative projects.⁷⁵

However, arbitration is only mandatory when chosen by the parties by incorporating an arbitration clause in their contract or a separate arbitration agreement. In cases where parties fail or elect not to reach consensus on arbitration, they could only have recourse to litigation by national courts. In an effort to promote the Belt and Road Initiative and specifically to assuage concerns over court litigation, the Supreme People's Court of China instructed that people's courts shall strengthen international judicial assistance with countries along the "Belt and Road" and effectively safeguard the lawful rights and interests of Chinese and foreign parties. While promoting the conclusion of bilateral and multilateral judicial assistance agreements, mutual recognition and enforcement of judgments rendered by countries along the "Belt and Road" are encouraged. In absence of such agreements, the people's courts may consider the prior offering of judicial assistance to parties of the counterparty, on the basis of their intent and commitment to offering judicial benefits.⁷⁶

Although the mechanism of national or international arbitration itself is no different from other areas of business⁷⁷, the substantive issues arising out of

73 For example, thanks to the large number of contracting parties (currently 159) to the Convention on the Recognition and Enforcement of Foreign Arbitral Awards, also known as the "New York Convention", foreign arbitral awards are far more likely to be recognized and enforced than judgments made by foreign courts.

74 The Outer Space Rules were based on the 2010 UNCITRAL Arbitration Rules with changes in order to, *inter alia*, reflect the particular characteristics of disputes having an outer space component involving the use of outer space.

75 The China International Economic and Trade Arbitration Commission (CIETAC), one of the major permanent arbitration institutions in the world, which has already set up its Hong Kong Arbitration Center in 2002, established the Silk Road Arbitration Center in Xi'an in 2017, and the North America Arbitration Center in Vancouver in 2018. Wuhan Arbitration Commission set up the Belt and Road (China) Court of Arbitration in 2016, which currently specializes in construction projects undertaken abroad by Chinese enterprises.

76 Several Opinions of the Supreme People's Court of China on Providing Judicial Services and Safeguards for the Construction of the "Belt and Road" by People's Courts. Available at <http://www.court.gov.cn/zixun-xiangqing-14900.html>, (last visited on September 8, 2018)

77 Professor Böckstiegel concludes that frameworks for effective dispute settlement at the international level is less necessary for commercial space activities, especially as far as the participation of private enterprises is concerned, because the international business community has developed and used for many years international commercial

space contracts might be subject to special considerations due to their peculiarities. For instance, satellite-specific laws, regulations and customary contract practices, such as export clearance requirements, pervasive use of liability waivers and warranty disclaimers, may influence the schedule, discovery and/or outcome of the satellite contract arbitration.⁷⁸

IV. Concluding Remarks

Discussion in this paper serves merely as a periscope to locate the general and specific legal issues in connection with building of the “B&R” Space Information Corridor initiated by China in furtherance of the Belt and Road Initiative. Many of these issues are worth putting under microscope so that legal challenges posed by zigzag of national laws and policies in implementing the comprehensive project could be identified and dissected. Meanwhile, these challenges might incubate opportunities at least in two aspects. First, while in search for cures to the legal challenges, comparative studies of national regulatory frameworks are encouraged to promote sharing of experience and to harmonize legislation and policy formulation efforts, which is conducive to progress in space governance at national level. Second, while resorting to international cooperation as magic formula in addressing legal challenges, states are contributing to improved space governance at regional and international level as well. Perhaps the best way to celebrate this occasion of UNISPACE+50 is to enliven and enrich its perspectives through dealing with concrete challenges in concrete programs. This paper ends with the following:

*It is well to keep in mind at all times that, as lawyers, we speak here not of space law, but of national and international law concerning activities in outer space. The problems of human and international relationships are essentially the old and persistent ones; it is the milieu which is new. The interactions of the new setting are what challenge us.*⁷⁹

arbitration as the preferred method of dispute settlement. The space industry and state institutions active in commercial space activities are already using this option as well. See Karl-Heinz Böckstiegel, *Settlement of Disputes Regarding Space Activities*, *Journal of Space Law*, Vol. 21, No. 1, 1993, at 10.

78 See Pamela L. Meredith and Marshall M. Lammers, *Commercial Satellite Contract Arbitration: Special Legal Considerations*, the *American Review of International Arbitration*, Vol.24, No.3, 2013, at 436

79 S. Houston Lay and Howard J. Taubenfeld, ‘The Law Relating to Activities of Man in Space’ (1970), quoted in Andre G. DeBusschere, *Liability for Damage Caused by Space Objects*, *Journal of International Law and Practice*, Issue 3, 1994, at 103.