

# 58<sup>th</sup> COLLOQUIUM ON THE LAW OF OUTER SPACE

INTERACTIVE PRESENTATIONS



# Space Stations and International Cooperation

## *Possible Models of Jurisdiction for the Impending China Space Station (CSS)*

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### Abstract

The China National Space Administration (CNSA) announced that China is targeting the year of 2022 for the orbiting of its space station, which will establish China as the third country that has independently constructed and operated a space station. In this article, the feasibility of different models of jurisdiction for this space station is examined, namely the Soviet Salyut, Sino-ISS, European Space Agency (ESA), and China-led models, which take into account the various factors that are not only limited to legal issues. This article concludes that due to legal, political, financial and technological reasons, a model of jurisdiction that is led by China is the ideal model for the impending space cooperation of China.

### I. Introduction

In September 1992, the Chinese government authorized the Chinese National Manned Space Program with three phases of development.<sup>1</sup> After successfully implementing the first phase, a manned space station project was initiated in 2010.<sup>2</sup> The first target-spacecraft and space laboratory, Tiangong-1, was

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1 The first step is to launch a manned spaceship, set up primarily integrated experimental manned spacecraft engineering, and carry out space application experiments; The second step is to make technology breakthroughs in Extravehicular Activities (EVA) as well as space rendezvous and docking of manned spaceships and spacecraft, launch a space lab, and provide a solution for space application of a certain scale with man-tending on a short-term basis; The third step is to establish a space station, and provide a solution for space application of larger scale with man-tending on a long-term basis. See China Manned Space Engineering website. <http://en.cmse.gov.cn/list.php?catid=42>, (last visited on 1 September 2015).

2 The basic introduction of China's manned space program. See China Manned Space Engineering website. [www.cmse.gov.cn/project/show.php?itemid=480](http://www.cmse.gov.cn/project/show.php?itemid=480), (last visited on 1 September 2015).

launched on September 29, 2011, and fulfilled the critical task of space rendezvous and docking with the unmanned Shenzhou-8 spacecraft.<sup>3</sup> The launch of the second spacelab, Tianong-2, is scheduled in 2016.<sup>4</sup> According to official announcements, a relatively large scale state-level space laboratory which will be human-tended on a long-term basis will be established around 2022.<sup>5</sup> According to the latest White Paper published by the State Council of China, the concept of “open development” is an important factor for the Chinese space industry, which means that China is fully open to international cooperation in its space activities.<sup>6</sup> During the past decade, China has been involved in various international space cooperation and collaboration activities by signing multilateral and bilateral agreements and memorandum of understandings (MOUs) with different countries, space agencies and organizations,<sup>7</sup> participating in space-related activities organized by international organizations, particularly the United Nations (UN),<sup>8</sup> and promoting the participation of Chinese enterprises in international space commercial activities.<sup>9</sup> Obviously, the space practices of China to date have demonstrated that Chi-

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3 Id.

4 The interview of China's astronaut Yang Liwei in the 11<sup>th</sup> China International Aviation & Aerospace Exhibition. See China Manned Space Engineering website. [www.cmse.gov.cn/news/show.php?itemid=4372](http://www.cmse.gov.cn/news/show.php?itemid=4372), (last visited on 1 September 2015).

5 The future mission of China's manned space station project. See China Manned Space Engineering website. <http://en.cmse.gov.cn/list.php?catid=46>, (last visited on 1 September 2015).

6 “Open development: China persists in combining independence and self-reliance with opening to the outside world and international cooperation. It makes active endeavors in international space exchanges and cooperation on the basis of equality and mutual benefit, peaceful utilization and common development, striving to promote progress in mankind's space industry.” See *The White Paper: China's Space Activities in 2011*, published by the Information Office of the State Council of China in December 2011. Full text available at the State Council Information Office website. [www.scio.gov.cn/ztk/dtzt/69/3/Document/1073810/1073810.htm](http://www.scio.gov.cn/ztk/dtzt/69/3/Document/1073810/1073810.htm), (last visited on 1 September 2015).

7 Such as cooperation with Russia, “Sino-Ukrainian Space Cooperation Program”, “Status Quo of China-Europe Space Cooperation and the Cooperation Plan Protocol”, China-Brazil Earth resources satellites bilateral cooperation, etc.

8 China has taken part in activities organized by the UNCOPU and signed relevant agreements with the UN on disaster management and emergency response based on the space-based information platform; China has cooperated with the space institutes of various countries through the mechanism of the “International Charter on Space and Major Disasters”; promoting the establishment of APSCO in 2008, etc.

9 China has exported whole satellites and made in-orbit delivery of communications satellites to Nigeria, Venezuela and Pakistan; provided commercial launch services for the Palapa-D satellite of Indonesia and the W3C satellite of Eutelsat, and signed commercial satellite and ground system export contracts with Bolivia, Laos, Belarus and other countries.

na not only prioritizes space cooperation but also emphasizes the necessity of doing so.

To address international cooperation, the first significant legal issue that China needs to consider for its space station is to select the type of territorial jurisdiction, i.e., deciding which country has the right to make and enforce legal rules on a particular person, thing or event in a space station.<sup>10</sup> Based on the practical experiences of human space stations, four possible models of jurisdiction are examined and one ideal recommendation for CSS is proposed in this article.

## II. Possible Models of Jurisdiction for CSS

Jurisdiction is exercised in a place where sovereignty could be claimed, and in this regard, the high seas and outer space are similar in that both are not subjected to national appropriation by claims of sovereignty under international law, and jurisdiction cannot be exercised in areas that are considered as *res communis*. Similar to the solution used to address the jurisdiction over a ship on the high seas as stipulated by maritime law, Article 8 of the OST (1967) provides that “A state Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body”. This rule is further elaborated in the Convention on Registration of Launched Objects into Outer Space (Registration Convention),<sup>11</sup> which can be generally defined as the treatment of registered objects in outer space as if they are part of the territory of the country in which they are registered.

After recalling the historical development of space stations, it can be found that jurisdiction is not merely a simple legal concept, as it often has technical, political, financial, military and diplomatic considerations. For a multinational space station, the question of which country or countries have jurisdiction over parts of or the entire station will depend on the ownership of the space objects and the terms of negotiation of the relevant space station agreement.<sup>12</sup> There are four possible models of jurisdiction which could be considered as options for the CSS.

10 Andrew D. Watson and William G. Schmidt, *Legal Issues Surrounding the International Space Station*, 7 Journal of Legal Studies 159-175, 162 (1996).

11 Convention on Registration of Objects Launched into Outer Space, adopted by the UN General Assembly in its resolution 3235 (XXIX) of 12 November 1974.

12 Such as the jurisdiction arrangement of International Space Station (ISS), Article 5 of the 1998 Intergovernmental Agreement (IGA). [www.state.gov/documents/organization/107683.pdf](http://www.state.gov/documents/organization/107683.pdf), (last visited on 24 September 2015).

## II.1. Soviet Salyut

The space stations of the Salyut series were exclusively designed and operated by the Soviet Union during the period of 1971 to 1982. The Salyut 1-5 stations were the first generation of space stations with only one docking port for the Soyuz spacecraft. The Salyut 6-7 stations were the second generation of space stations with one more docking port for the cargo spaceship.<sup>13</sup> The similarity among all of these Salyut space stations is that they are all national space stations under the sole jurisdiction of the Soviet, and therefore, the Soviet could retain complete control over them. Moreover, besides the Salyut, the Soyuz spacecraft and cargo spaceships are all solely owned by the Soviet. Therefore, the property right pattern of a single nation for space objects as demonstrated by the Soviet example means that the complexity and potential controversy of joint or cooperative multinational ownerships and operations can be averted.

In the Soviet Salyut model, a space station can only be registered by a country under the provisions of the Registration Convention. Compared with the legal status of ships and aircrafts provided in the UNCLOS and air law, the legal status of space stations would be similar to that of a ship or airplane that is flying the flag of the registry state. The nationality of ships and aircrafts is that of the registry state and the same applies to space stations. As long as there is compliance with the framework of international law, the registry state of the space station has the exclusive power to legislate and implement the rules of law with regard to the daily operation and management of such a space station. Even though there was no previous international space cooperation for the case of Salyut, it can be presumed that if any country wanted to participate in the operation of a space station which is solely owned by one nation, such cooperation could be coordinated by bilateral or multilateral agreements between the participants, and such cooperation arrangements may not be related to the issue of jurisdiction distribution.

The Soviet Salyut model means that a space station is under the sole jurisdiction and control of one country. It was developed and utilized in a sensitive era when two space powers were striving for hegemony and trying to carry out military strategies in outer space. As this model of jurisdiction is not only based on advanced technology and significant capital investment but also on the unique social circumstances, it is not profitable and practical for China, as a developing country, to construct and operate a long-term on-orbit space station without cooperating with other countries. China needs a model that utilizes the least amount of capital investment to reap the maximum value of a space station.

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13 See Manned: Salyut Era. [www.russianspaceweb.com/spacecraft\\_manned\\_salyut.html](http://www.russianspaceweb.com/spacecraft_manned_salyut.html), (last visited on 24 September 2015).

## II.2. Sino-ISS

The current ISS is a multinational space station that has different modules provided by its member states, of which each member has independent jurisdiction and control right of its own module(s).<sup>14</sup> It has been generally acknowledged that the cooperation of the spacefaring nations in forming the ISS has been a success.<sup>15</sup> To acknowledge the different contributions provided by its member states,<sup>16</sup> the 1998 Inter-governmental Agreement (IGA) clearly established rules on the registration, jurisdiction and control right of the space station: “[...] a launching State shall register a space object in accordance with the Registration Convention [...] retain jurisdiction and control over the elements it registers [...] and over personnel in or on the Space Station who are its nationals”.<sup>17</sup> The jointly built elements of the space station, such as the power supply, might be separately owned and provided for common use through other types of specific agreements (e.g. the MOUs and implementing arrangements under 1998 IGA).

There are two options for China if China elects to use a model of jurisdiction like the ISS (thus a Sino-ISS). One is that China could become involved in the current ISS as a member and equally involved in the cooperation framework, which also means that its impending space station becomes a component of the ISS. China would then have sole jurisdiction and control over the space station and all of its parts. The other option is to develop an entirely new multilateral space station. China would invite new members to dock their own modules to the new space station, and the jurisdiction and control right still fall under the nationality of each module.

In terms of the former, China has indicated interest in participating in the ISS since 2001.<sup>18</sup> However, to date, China has yet to do so, as various factors have resulted in resistance to the entry of China to the ISS, such as technical and safety problems, the issue of technology transfer, its opaque political system,

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14 The ISS is considered as the largest cooperative space projects by far and it has 16 member states in total, including the U.S., Russia, Canada, Japan, Brazil and 11 countries of ESA.

15 Rachel Nuwer, *International Space Station's Boon to Scientific Achievement Just Beginning, NASA Open to Support Citizens' Research Aboard*, February 25, 2013, <http://txchnologist.com/post/43990065156/international-space-stations-boon-to-scientific>, (last visited on 17 September 2015).

16 Annex: Space Elements to be provided by the Partners, Agreement among the Government of Canada, Governments of Member States of the European Space Agency, The Government of Japan, The Government of the Russian Federation, and the Government of the United States of America concerning cooperation on the civil international space station (1998 IGA), (Jan. 29, 1998).

17 *Supra* note 12.

18 Staff Writer, China Eyes Entry to ISS project, SPACE DAILY, May 1, 2001, [www.spacedaily.com/news/china-01zd.html](http://www.spacedaily.com/news/china-01zd.html), (last visited on 17 September 2015).

and the perception of the lack of human rights in China.<sup>19</sup> Although it seems that China and the US have friendly relations, NASA has still not received authorization from the US Congress to cooperate with China, as some of the lawmakers consider this cooperation to threaten the national security of the US.<sup>20</sup> Moreover, even though the operations of the ISS has been extended to at least 2024,<sup>21</sup> the lifespan of the ISS has almost reached its end. As the US is still assuming the leading and dominant role with the power to make some of the final ISS related decisions,<sup>22</sup> it would be difficult for China to fully realize its manned space program development strategy by participating in the coming last decade of the lifespan of the ISS.<sup>23</sup>

In terms of the latter, the development of another multilateral space station appears to be unrealistic for China, as the current major space-faring nations are all involved with the ISS program. Despite that the ESA and Russia have indicated interest in cooperation,<sup>24</sup> the actual possibility of their space cooperation with China seems uncertain. Without key technologies and a large amount of capital investment from the established space-faring countries, it would be disadvantageous for China to attempt to initiate a multilateral space station in hopes that the other countries would provide the main components. Thus, the establishment of a new space station in which its member countries share the same legal status and equally participate in its management, operation, and utilization appears to be an unrealistic scenario for China.

After examining the two possible Sino-ISS options as a model for China, it can be concluded that participating within the ISS framework or establishing

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19 Zhao Yun, Legal Issues of China's Possible Participation in the International Space Station: Comparing to the Russian Experience, 6(1) Journal of East Asia and International Law, 155-174 (2013).

20 Staff Writers, *China, US move toward cooperation in space*, Jan 12, 2014. [www.space-travel.com/reports/China\\_US\\_move\\_toward\\_cooperation\\_in\\_space\\_999.html](http://www.space-travel.com/reports/China_US_move_toward_cooperation_in_space_999.html), (last visited on 17 September 2015).

21 Charles Bolden and John P. Holdren, *Obama Administration Extends ISS until at Least 2024*, Jan 10, 2014. [www.space-travel.com/reports/Obama\\_Administration\\_Extends\\_ISS\\_Until\\_at\\_Least\\_2024\\_999.html](http://www.space-travel.com/reports/Obama_Administration_Extends_ISS_Until_at_Least_2024_999.html), (last visited on 17 September 2015). See also Staff Writers, *NASA Hopes to Continue Cooperation on ISS Until 2024*, Feb 27, 2015. <http://sputniknews.com/science/20150226/1018770023.html>, (last visited on 17 September 2015).

22 *Supra* note 19, at 168.

23 In September 1992, Chinese government made a decision to implement the manned space program and prescribed the "Three-step Strategy" of development. The third step is to establish a space station, and provide a solution for space application of larger scale with man-tending on a long-term basis. See the website of China Manned Space Engineering. <http://en.cmse.gov.cn/list.php?catid=42>, (last visited on 17 September 2015).

24 China Daily, *China May Become Space Station Partner*, Jun 02, 2010. [http://news.xinhuanet.com/english2010/china/2010-06/01/c\\_13326632.htm](http://news.xinhuanet.com/english2010/china/2010-06/01/c_13326632.htm), (last visited on 17 September 2015).



a new multinational space station is not compatible with the manned space project proposal of China. It is thus inevitable that one or more new types of cooperation need to be explored for the sustainable development of the next generation of a space station.

### II.3. ESA Model

The establishment of a space station at a regional organizational level, with members from the same geographic region defines the parameters of the ESA,<sup>25</sup> which delegates its own member countries and has absolute international legal personality. The ESA has sole jurisdiction and control right of the entire space station which is jointly owned, managed and operated by its member states. Article VII of the Registration Convention provides the legal basis for the registration of the ESA: “[...] the organization declares its acceptance of the rights and obligations provided for in this Convention [...] a majority of the States members of the organization are States Parties to this Convention and to the OST”.<sup>26</sup>

Therefore, as authorized by the member states, this regional type of space intergovernmental organization would have quasi-legislative powers, which would allow the organization to exercise both legal and operational measures in the space station without negotiating separate agreements among the members.<sup>27</sup> As the ESA is geographically based, if China takes this model of jurisdiction into consideration for its space station, the regional space organization should also be fully taken into consideration. The Asia-Pacific Space Cooperation Organization (APSCO) is the only intergovernmental space organization in Asia-Pacific that China is a member.<sup>28</sup> Therefore, the feasibility of developing a space station based on the APSCO should be carefully examined.

The ESA is the first regional intergovernmental space organization and by far, the most integrative regional space union. Pressurized laboratories (MELFI, MSG, Cryosystem) and an external payload pointing mechanism (Hexapod) that were provided by the ESA to the ISS have been in operation for more than a decade,<sup>29</sup> and the ESA has been proven effective and productive. Thus, some

25 *Supra* note 16, Article 5, “[...] the European Partner having delegated this responsibility to ESA, acting in its name and on its behalf.”

26 *Supra* note 11, Article 7.

27 U.S. Congress, Office of Technology Assessment, *Space Stations and the Law: Selected Legal Issues-Background Paper*, OTA-BP-ISC-41 (Washington, DC: U.S. Government Printing Office, August 1986), at 32.

28 APSCO is an inter-governmental organization operated as a non-profit independent body with full international legal status. It is headquartered in Beijing, People's Republic of China. In 2005, the APSCO convention was signed in Beijing. See further at [www.apsco.int/](http://www.apsco.int/), (last visited on October 18, 2015).

29 A. Petrivelli, *The ESA Laboratory Support Equipment for the ISS*, ESA bulletin, February 2002, available at ESA website.

academics have recommended that the APSCO should take the experiences of the ESA into account in terms of institutional setting, decision-making mechanism, cooperation arrangements and legal framework.<sup>30</sup> However, some differences between the two space organizations have been neglected, including economic and political differences, space capacity, and technology and capital reserve which would render this recommendation difficult to carry out.

### II.3.1 Economic and Political Differences

Even though the APSCO is also an intergovernmental space organization with a completely international legal personality, the economic and political aspects of its member states are quite different from those of the ESA member states. In terms of economic development, all of the APSCO partners are developing countries while the ESA members are obviously more developed. As the ESA members are mostly EU countries, this means that their economic and political integration has already formed the basis of mutual trust for the ESA,<sup>31</sup> whereas the situation in Asia is much more complicated due to the diversity in geography, history, population, culture and society. Therefore, it would be rather difficult for the APSCO countries to cooperate in an environment which encompasses territorial disputes, ethnic issues, and resource sharing problems. The lack of reciprocal political trust would make space cooperation in Asia also less feasible.<sup>32</sup>

Moreover, Japan, India and South Korea have not been interested in becoming a member of the APSCO, which inevitably affects its space capability. Interestingly, based on Asia-Pacific region, Japan and India have respectively hosted the Asia-Pacific Regional Space Agency Forum (APRSAF) and the Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP).<sup>33</sup>

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[www.esa.int/esapub/bulletin/bullet109/chapter5\\_bul109.pdf](http://www.esa.int/esapub/bulletin/bullet109/chapter5_bul109.pdf), (last visited on 17 September 2015).

30 Zhao Haifeng, Current Legal Status and Recent Developments of APSCO and Its Relevance to Pacific Rim Space Law and Activities, 35 *Journal of Space Law* 559 (2009). See also Zhao Yun, Way Forward for Promoting Awareness of Space Law in Asia: A Proposal for Institutional Capacity Building, 4 *Journal of East Asia and International Law* 335 (2011).

31 ESA and the EU, See the ESA website. [www.esa.int/About\\_Us/Welcome\\_to\\_ESA/ESA\\_and\\_the\\_EU2](http://www.esa.int/About_Us/Welcome_to_ESA/ESA_and_the_EU2), (last visited on 17 September 2015).

32 Zhao Haifeng, *The Status Quo and the Future of Chinese Space Legislation*, 58 (1) *Journal of Air and Space Law* 99 (2009).

33 The Asia-Pacific Regional Space Agency Forum (APRSAF) was established in 1993 to enhance space activities in the Asia-Pacific region. [www.aprsaf.org/](http://www.aprsaf.org/), (last visited on 17 September 2015). Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) was established in India on November 1, 1995 under an agreement signed initially by 10 member countries of the region. The Centre is hosted by the Government of India with Department of Space (DOS), as the nodal agency. [www.cssteap.org/](http://www.cssteap.org/), (last visited on 17 September 2015).

Historically and realistically speaking, the “three pillars” scenario for regional space cooperation created by China, Japan and India will continue for a long period of time, as the differences among Asian countries and geographical political situations result in difficulties to effectively resolve their relationships.<sup>34</sup>

### II.3.2 Space Capacity

The ESA has 20 member states, and most have outstanding space capabilities, such as Germany, France, and the UK. They have been pooling resources for space activities for over 40 years, thus placing Europe as a leader of space science, technology and related applications.<sup>35</sup> In comparison, among the eight APSCO member states, only China has a strong space capacity.<sup>36</sup> According to the space capacity classification carried out by Setsuko Aoki, the rest of the APSCO members are classified as a second category of nations that can manufacture, possess, or utilize remote sensing technology or launch vehicles, or as a third category of nations that passively obtain the benefits of space applications from other space-faring nations.<sup>37</sup>

The overall space capacity of the two space organizations are also different. The ESA is the third largest space agency only second to NASA and the Russian Federal Space Agency (Roscosmos), and its space commercial activities account for a large portion of the global market.<sup>38</sup> Besides the ISS project, the ESA has also initiated a series of space related activities, such as commercial satellite launching, human space flight, micro-gravity experiments and new generation of rocket development.<sup>39</sup> In contrast, China is the only member among the APSCO that has space launch capability, which means that the other members heavily rely on the space capacity of China in this regional space cooperation. Moreover, although there are nine projects that have been approved by the APSCO council, only the Data Sharing Platform Project has

34 *Supra* note 30, Zhao Haifeng, at 591.

35 Space for Europe, See ESA website. [www.esa.int/About\\_Us/Welcome\\_to\\_ESA/Space\\_for\\_Europe](http://www.esa.int/About_Us/Welcome_to_ESA/Space_for_Europe), (last visited on 18 September 2015).

36 The 8 APSCO members are: Bangladesh, China, Iran, Mongolia, Pakistan, Peru, Thailand and Turkey, See APSCO website. [www.apsco.int/default.asp](http://www.apsco.int/default.asp), (last visited on 18 September 2015).

37 Setsuko Aoki, Regional Cooperation in Asia relating to Space Activities (Commentary), in Proceedings of the Space Law Conference, Asian Cooperation in Space Activities a Common Approach to Legal Matters (Ministry of Information and Communication Technology (Thailand) and the McGill Institute of Air and Space Law, Bangkok, Thailand, Aug. 2-3, 2006).

38 OECD (2014), *The space sector in 2014 and beyond*, in The Space Economy at a Glance 2014, OECD Publishing, Paris.

39 ESA-Our Missions, See ESA websites. [www.esa.int/ESA/Our\\_Missions](http://www.esa.int/ESA/Our_Missions), (last visited on 18 September 2015).

reached the execution phase.<sup>40</sup> It can therefore be concluded that the strong space capacity of the ESA supports its cutting-edge space missions, whereas the APSCO lacks the resources and does not have the capability or means to compete with the ESA.

### II.3.3 Technology and Capital Reserve Differences

It is well known that technology and capital reserve are the two most critical factors for space activities, and without them, space projects would not have sustainable development. The close ties between the EU and ESA have enabled the ESA to access a large amount of capital reserve from the EU, and some 20 percent of the funds managed by the ESA now originate from the EU budget. This financial support is based on a Framework Agreement which came into force in May 2004.<sup>41</sup> The Framework Agreement has established a legal mechanism that enables member state representatives from both the ESA and EU to cooperate in specific space fields.<sup>42</sup> Moreover, as the commercial launch services of the ESA account for a large share of the global market, the profits made exceed the capital investment from the EU,<sup>43</sup> which provides the ESA with an abundance of fiscal resources to develop its space industry. The APSCO has also made financial arrangements with the Convention of the APSCO, in which the funds for the organization shall be provided by compulsory contributions of the member states and the voluntary grants from other organizations.<sup>44</sup> However, as the overall economic development of the APSCO countries lags behind that of the ESA members, and also due to the lack of income from commercial activities, the APSCO capital reserve cannot support large space projects, such as space stations, which require continuous technical innovation and financial investment.

There is substantial difference between the ESA and APSCO in many aspects. Therefore, the application of the ESA model does not seem to be feasible for China for developing its space station through the APSCO platform. In learning

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40 Data Sharing Service Platform and Its Applications Pilot, See APSCO website. [www.apsco.int/program.asp?LinkNameW1=DSSP&LinkCodeN=82](http://www.apsco.int/program.asp?LinkNameW1=DSSP&LinkCodeN=82), (last visited on 18 September 2015).

41 EC/ESA Framework Agreement (entered into force in May 2004). See more at *EC and ESA sign historic co-operation agreement*, November 26, 2003. [www.spaceref.com/news/viewpr.html?pid=13111](http://www.spaceref.com/news/viewpr.html?pid=13111), (last visited on 18 September 2015).

42 *Supra* note 31. Eight specific fields of co-operation have been identified: Science; Technology; Earth observation; Navigation; Communication by satellite; Human space flight and micro-gravity; Launchers; Spectrum policy related to space.

43 The 2015 ESA budget has reached 44.33 billion Euro, only 10.3 billion euro comes from EU. See the ESA website. [www.esa.int/For\\_Media/Highlights/ESA\\_budget\\_2015](http://www.esa.int/For_Media/Highlights/ESA_budget_2015), (last visited on 18 September 2015).

44 Article 18, Financial Arrangements Convention of The Asia-Pacific Space Cooperation Organization (APSCO). [www.apsco.int/apscon/apSCO-AD/imapic/201261315125947542.pdf](http://www.apsco.int/apscon/apSCO-AD/imapic/201261315125947542.pdf), (last visited on 18 September 2015).

from the successful regional cooperation experiences of the ESA, some factors of consideration can be taken into account to address the issue of finding ways to balance space station international cooperations and selection of the model of jurisdiction, namely political, financial and technological factors. In summary, an ideal model for the CSS should strive for sustainable space cooperation relationships, which also means that sustainability is a judging criterion to determine the ideal model.

#### **II.4. China-Led Model**

##### **II.4.1. Necessary Characteristics for an Ideal Model**

Based on the above discussion on a possible model of jurisdiction for China, some similarities can be found from successful experiences in space cooperations. Some of the necessary characteristics of an ideal model are as follows. First, a successful model would promote cooperation in various forms and at different levels, such as governmental and non-governmental cooperation, cooperation in commercial and non-commercial matters, cooperation between developing and developed countries, etc.<sup>45</sup> Second, mutual political trust is essential between participating countries, just like the case of the ESA, because harmonious political relationships can facilitate efficient decision-making and realize the principle of the peaceful use of outer space as stipulated by the OST.<sup>46</sup> Third, by implementing such a model, space commercialization could be fully realized and carried out, and there could be ongoing technology and capital for the Chinese space station but also compliance with the common interests of humankind (for e.g., the developing countries could also get equitable benefits from outer space).<sup>47</sup>

##### **II.4.2 China-Led Model**

China will establish a large spacelab system in 2016,<sup>48</sup> and with the prevalence of space commercialization, it is time for China to seriously consider the issue of international space commercial cooperation and model of jurisdiction. If this problem is still not fully resolved by the authorities when the space station is fully established, China may have to deal with the embarrassing situation of addressing the sustainable development of its own space station. Bearing in mind the above factors, a China-led model of jurisdiction is proposed as the ideal approach for space commercial cooperation. This model means that

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45 UNGA Res. 51/122 (December 13, 1996), "Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries".

46 Article 9, UNGA Res. 2222 (XXI) (December 19, 1966), "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies".

47 *Id.* Article 1.

48 *Supra* note 4.

China is the sole owner of the space station of which the major components are constructed and operated by China alone.

In considering the commercialization trend of outer space, there should be two objectives of this nationally owned station. One is for peaceful space exploration and exploitation, such as space science and technology experiments; the other one is to establish a commercial cooperation platform, where foreign countries or private entities could participate by various means and forms. It would be feasible for this model to achieve these goals for the following reasons. First, as China has absolute jurisdiction and control right of the space station, possible jurisdiction conflicts with other participating countries are prevented, and Chinese law could be easily applied and enforced within the confinements of this space area. Moreover, this would mean a legally stable environment that not only would increase the ease of coordination and management work, but also can incite the confidence of commercial investors. Second, the proposed model is internationally accessible, as in the space age, every country, especially the developing countries, aspire to benefit through the exploration and utilization of outer space. This model will definitely enable a wider range of countries or private entities to participate in the space station project. Consequently, the “principle of promoting international cooperation in the outer space” established in the 1967 OST and the essence of international space cooperation elaborated in the 1996 Space Cooperation Declaration can also be met.<sup>49</sup>

#### **II.4.3 Legal Basis for China-Led Model**

As mentioned above, a model of jurisdiction that only involves one country does not necessarily mean a reduction in international space cooperation; on the contrary, it has the possibility of securing more space participants. As the forthcoming space station will have at least two docking ports, besides multinational space cooperation for the main modules, cooperation could also be realized by offering the berth for the short-term for the space capsules or modules of other countries. In terms of the jurisdiction attributes of these foreign components that are attached to the CSS, a legal framework of outer space treaties could be used as the solution, such as that stipulated in the OST, in which the state of registry shall retain jurisdiction and control over the registered object and any personnel thereof.<sup>50</sup> According to the Registration Convention, there are four types of launching states, “the state which launched or procures the launching of a space object, and the state from whose territory or facility a space object is launched.”<sup>51</sup> If there are more than one launching state, only one of these states could be the state of registry.<sup>52</sup> By utilizing these

49 *Supra* note 46, Article 3&10. *Supra* note 45, Article 3&4.

50 *Supra* note 46, Article 8.

51 *Supra* note 11, Article 1(a).

52 *Id.*

legal arrangements, China would be one of the launching states through the establishment of cooperation with other countries, and China could also be the state of registry for the space capsules or modules owned by foreign countries. Thus, China could extend its jurisdiction and control right to foreign components. Even though these foreign modules are registered by their owner countries, the jurisdiction and control over the space object and over any personnel thereof could also be amended by signing internal agreements among the launchings states.<sup>53</sup> In summary, by complying to the current OST space law regime, the jurisdiction issue in commercial types of cooperation in space could be resolved by launching a comprehensive framework agreement or an on-orbit commercial project-oriented bilateral or multilateral agreement beforehand.

#### **II.4.4 Model of Multiple Jurisdictions**

To achieve sustainable development of the China-led model space station, all kinds of commercial cooperations in the space station should be encouraged. It could be reasonably envisaged that on-orbit foreign space modules could one day directly dock with the station, and assert to maintain the original jurisdiction of their owner state and reject China's jurisdiction. In such a scenario, each module would be under the jurisdiction and control of the country that owns, operates, and has registered the module.<sup>54</sup> As there may exist the flow of people, data and goods between China and the modules of other countries, possible civil and criminal disputes or conflicts may arise, and therefore, the determining of the jurisdiction with regard to different cases is a complicated issue which should be taken into careful consideration. It appears that the ISS solutions to the issues of jurisdiction, liability and goods flow have reference value;<sup>55</sup> however, new legal mechanism innovations which are exclusive to the China-led model would emerge beyond the ISS framework. As this article focus on a single model of jurisdiction for a nationally owned space station in an international commercial cooperation era, a model of multiple jurisdictions warrants further studies when this situation becomes reality.

### **III. Conclusion**

After analyzing the possible models of jurisdictions for the CSS, a proposed China-led model is recommended as the most ideal. The key characteristic for

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53 *Supra* note 11, Article 2(2). "Where there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object in accordance with paragraph 1 of this article, [...] [...] and without prejudice to appropriate agreements concluded or to be concluded among the launching States on jurisdiction and control over the space object and over any personnel thereof."

54 *Supra* note 27, at 32.

55 *Supra* note 45, Article 5, 6, 16, 17, 18, 19, 20, 22.

this model is its sustainability. Under this model, it is expected that cooperation in various forms and at different levels should be promoted, mutual political trust between participating countries and entities could be created, and the space commercialization trend would be fully utilized and applied. Moreover, in the commercial utilization process of the space station, private and public interests should be both realized through detailed legal arrangements that are progressive in nature.