



Room 20, Entrepreneurship Centre, Level 5, Cyberport 3 (Core F),
100 Cyberport Road, Hong Kong
+852 6263 2400
info@oasahk.org

PROPOSAL: HONG KONG AS A NEW SPACE SERVICE HUB

Prof. Gregg Li

Prof. Richard Leung

November, 2024



CONTENTS

- (A) Executive summary
- (B) Space as a key driver for economic and technology development
- (C) China's commercialization of space activities
- (D) Hong Kong as a New Space Service Hub
- (E) Proposed actions



(A) EXECUTIVE SUMMARY

Space is a new frontier for economic and technology growth, and China is in the forefront of it. Its strategy to commercialize space activities was first announced in 2014 by the State Council, followed by repeated and strong pushes by various bodies of the Central Government. As technology and application advance, the demand for commercial space services and products has been growing at an exponential rate within our Country, and with emerging demand from overseas.

The fast-growing space commercialization would demand huge volume of support of various kinds of financial services, particularly financing and insurance, as well as legal, telecommunication, data services, technology and others. Hong Kong is well-equipped, well-positioned and well-timed to capture this growth opportunity by offering the above-mentioned services, and also to contribute to our Country's strategies in space commercialization and Belt-and-Road Initiative. Therefore, this is the time for the HKSAR Government to lead the concerted efforts of related service sectors to start developing a New Space Service Hub ("NSSH") in Hong Kong.

Hong Kong is tasked by the Central Government to be an international financial center, an international arbitration center, a talent center, and an international research and technology center, and all these could be at risk if Hong Kong does not have an active role in New Space Economy in say five years down the road. It is alarming that Hong Kong is already behind Singapore and others, and it has to act now.

Our Vice-premier HE Lifeng made a speech on 19 November at the Global Financial Leaders' Investment Summit, and called for Hong Kong's action to create new financial growth points (新的金融成長點) and to find new competitive edges (競爭新優勢). He also pointed out that internationalisation was a distinctive advantage of Hong Kong (國際化是香港的鮮明特色和顯著優勢) thanks to its Common Law system. The NSSH could be a timely and perfect response to such a call.

The development of NSSH would require undemanding resources and a relatively short lead time, say 3 years, because all the key service providers are already in place, but apparently lacking the awareness of the opportunities in New Space Economy. It is critical for the HKSAR Government to give them a wake-up call by explicitly positioning Hong Kong as a NSSH and to provide the necessary policy and legislative support. These service providers are already experienced in servicing the marine and aviation sectors, and would learn to serve the space sector promptly. Hong Kong is a super-connector, and would attract Mainland Chinese space product/services providers and overseas parties to town to explore business opportunities with the one-stop service support of our NSSH. Space talents and companies would be attracted to Hong Kong, creating high-value-added jobs and businesses.



We would like to propose to the HKSAR Government to, as the first two steps to kick-start the NSSH initiative, (a) communicate our NSSH with the Central Government, and seek its guidance and support; and (b) appoint a task force to (i) educate and coordinate with service providers in Hong Kong in their pursuit for commercial space businesses; (ii) advise the HKSAR Government about the necessary policy and legislative support for the NSSH; and (iii) promote our NSSH internationally and in Mainland China in order to attract businesses and talents to Hong Kong. While the task force could be formed within the Government, it is also advisable for the Government to consider giving the mandate to a credible non-government organization, say Our Hong Kong Foundation or a local university. During our discussions with related service sectors, we have identified capable and willing practitioners to help promote the NSSH initiative.

(B) SPACE AS A KEY DRIVER FOR ECONOMIC AND TECHNOLOGY DEVELOPMENT

Space is a new frontier to humanity, pretty much like the Open Sea in the 15th century and the aviation in the 19th and 20th centuries. Portugal, Spain and Britain were among those that became superpowers by being ahead of the others in capitalizing on the maritime technology and economy. The story for aviation was similar. Now comes the space age, and China and the US are leading the world. The US and China have launched 116 and 67 rockets respectively into orbit in 2023, accounting for 82% of the total launches globally. China had 26 commercial launches out of its total of 67, i.e. 39%. (note 1)

Commercial space activities started more than three decades ago, with Year 2000 generally regarded as the beginning of the New Space Economy. According to a research report published on 8 April, 2024 by the World Economy Forum, the global space economy will be worth US\$1.8 trillion by 2035, up from US\$630 billion in 2023, almost twice the rate of global GDP growth. (note 2) Its rapid growth is fuelled by lowering costs and widening access to space-enabled technologies for communications, navigation, earth observation, tourism, in-orbit farming and manufacturing, space mining and other industries. Satellite-related products and services account for a great majority of New Space Economy, and the revenue of satellite industry was US\$271 billion, representing 74% of the total revenue of space economy in 2020. (note 3)

SpaceX is the largest private-sector space company in the world with headquarter in California, the US, and was founded by Elon Musk in 2002. It researches, designs, builds and operates



spaceport, rockets, spacecrafts, satellites, and Starlink satellite constellation. It provides not only 13,000 high-paid jobs, but also billions of dollars of business and research opportunities to universities, startups, and hardware and software providers. SpaceX is a very convincing example about the economic and technology contributions of New Space Economy. (Note 4) The other major players include Amazon.com, Boeing, Blue Origin, Rocket Lab, Airbus, and Apple in the US; Telesat in Canada; Eutelsat/OneWeb in Europe, Virgin Galactic in the UK, and Samsung in Korea.

(C) CHINA'S COMMERCIALIZATION OF SPACE ACTIVITIES

The commercialization of space activities in China was kick-started in 2014 by a white paper Document no. 60 of the State Council. It started slowly but then gained momentum with the continued and strong support of the Central Government and the active engagement of both the public and private sectors. (note 5) The number of companies of varying sizes engaged in it amounts to 113,272 in 2023, out of which 43% in rocket and 35% in satellite. Out of these companies, the number of registered and effectively operating commercial space enterprises in China had exceeded 400 by the end of 2022. The scale of the market jumped from RMB800 billion in 2019 to RMB1.9 trillion in 2023, at a compound annual growth rate of 23.3 percent. The market scale is expected to reach RMB2.34 trillion by the end of 2024. (note 6) (note 7) Selected trade and professional associations related to commercial space are listed in note 8. Selected companies engaged in rockets, satellite and land facilities are listed in notes 9,10 and 11.

Strong push by local governments

Many local governments have been pushing for the growth of the commercial space industry, introducing development policies and establishing industrial parks and bases, and Beijing, Shanghai and Shenzhen are among the most advanced ones. For example, Beijing is the home of 51 out of the top 100 commercial space companies in China in 2023. It announced the Beijing Action Plan for Accelerating the Innovation and Development of the Commercial Space Industry (2024-2028) in February 2024, which includes 18 policy measures. The action plan focuses on mapping the commercial aerospace industry chain and supporting cutting-edge research and development. It includes enhancing development guarantees, and fostering a high-quality industrial ecosystem. It will promote cross-border technology integration to



foster the development of internationally competitive innovative enterprises and industry clusters. It is also developing the “Beijing Rocket Street” (“北京火箭大街共性科研生产基地项目”) with 140,000 square meters of building areas, and expects it to be completed in 2025. It focuses on research and application of technology on rockets, satellites, and land facilities.

Beijing also handed out commercial space launch insurance premium subsidies for related companies for four years in succession, in a bid to support them in carrying out R&D, manufacturing and launch operations. (note 12) (note 13)

Another example is Shenzhen which published in July 2021 a list of available subsidies and support measures for companies developing satellite-related technology. It included support for reaching international certification, subsidies for international market access, and subsidies for joint ventures with foreign companies in related industries. (note 14)

Funding of commercial space industry

The development of New Space Economy in China will be to certain extents similar to that in the US. Space startups are initially funded by the founders' capital, followed by angel investment, venture capital, private equity and credit, government funding in the forms of capital, contract and partnership, and then the mainstream financing like bank loans, and IPOs (i.e. initial public offer). Family offices, ETF and mutual funds are among the investors in listed and unlisted space companies.

The funding statistics in the US reveal that the US government has been consistently reducing its investment in space as a percent of its budget (since the moon landing), and private funding has dramatically increased. When the space launches have shifted from government to private business, the funders of space innovation have shifted to the private sector. A total of US\$26.2 billion of non-government funding was invested in space startups globally during 2015-2020. (note 15)

The amount of investment in commercial space companies in China remains relatively small when compared with the US, but it is growing rapidly in last few years. We saw a total investment of RMB33 billion from 2014 to 2021, out of which RMB9 billion and RMB7 billion were recorded in 2020 and 2021 respectively. (note 14)

Huge growth potential ahead

Commercial space industry is in its early stage of development in China, with companies in varying sizes, and mostly in pre-introduction, introduction and growth phases of businesses. For example, 長沙天儀太空科技研究院有限公司 has over 30 satellites in orbit, and over 200 commercial clients. Its focus on earth observation provides data on hidden crisis and



continuous monitoring of roads, bridges, dams, subways, slopes, mines and icefields. It is planning to expand its annual production capacity of satellites. 上海垣信衛星科技有限公司 was established in 2018, and its “G60 星鏈” is a joint effort of nine cities (note 16). It has 4 experimental satellites in orbit, with a target of 12,000 satellites by 2030. It has successfully raised RMB6.7 billion in a Series A funding this year. 中國衛星網路集團有限公司 was newly set up in 2021, with around 10 experimental satellites in orbit, and is planning a “GW 星座計劃” with 12,900 satellites by 2035. (note 1) Furthermore, various local car manufacturers began to launch their own satellites and/or equip their cars with services enabled by connection with satellite since 2019. The precision positioning service by LEO (“low-earth-orbit”) satellites supports driverless and smart driving. (note 17)

There is also an urgent need to build additional rocket launch facilities in order to cope with the quantum leap in demand for rocket launches as a result of fast-growing demand for space services. China currently has only 4 land-based and 2 sea-based launch sites.

China’s commercial space industry is open to foreign countries and companies in the whole array of partnership, including provision and acquisition of services and products, R&D, and joint ventures in China and overseas. China’s 2021 Space White Paper called for more international cooperation across all fields. (note 13)

The impacts of New Space Economy on economic and technology development would be enormous because it involves the research, design, production, delivery, operation and applications of rockets, satellites, spacecrafts, spaceports, telecommunication, data science, in-orbit researches and industries, and others that are beyond our current anticipation. At the Two Sessions in March 2022, Chief Designer of China’s Manned Space Program Zhou Jianping called for increase of commercial involvement in China’s space sector. Therefore, the funding requirement of commercial space industry would likely embark on an uptrend going forward vs. the RMB9 billion and RMB7 billion recorded in 2020 and 2021.

(D) HONG KONG AS A NEW SPACE SERVICE HUB

China’s exponential growth in commercial space industry would require strong support from finance, insurance, legal, telecommunication, data management & analytics, research & technology, and last but not the least, connection with overseas partners. This is a gold



opportunity for Hong Kong to become a New Space Service Hub (“NSSH”) by providing these services for the benefits of Hong Kong, our Country and the world.

NSSH for the benefits of Hong Kong, our Country, and the world

New Space Economy will become a key pillar of economy and technology globally, and NSSH is a must for Hong Kong to maintain its roles as an international financial center, international arbitration center, international research & technology center, and talent center. NSSH would not only bring economic and technology advancement to Hong Kong but also boost the morale and mindset of our community with a new growth domain.

The financial service and insurance sectors would stand to gain handsomely by supporting projects and companies in China and those overseas. The comprehensive range of funding and investment services and products in Hong Kong would cater to their changing needs at different development stages, from angel investment, venture capital, private equity and credit to mainstream services like bank loans and IPOs. These funding options would also attract family offices, asset management and overseas investors to Hong Kong by enriching their choice of investment assets.

Furthermore, satellite services are an integral part of low-altitude economy, smart city, autonomous transportation and logistics, IoT, and mobile cellphone, which Hong Kong is pursuing.

NSSH would help Hong Kong contribute to the key policies and strategies of our Country, e.g. the commercialization of space; Belt-and-Road Initiative; and relationship enhancement with ASEAN, African and Middle East countries, companies and people. If China could help these countries with space technology, particularly the least equipped ones, the impacts would be significant and lasting.

NSSH would make China’s space technology more accessible to the world by connecting the various countries with Chinese space companies, and facilitating their partnership by offering one-stop services, all in Hong Kong.

Readiness and advantages of Hong Kong

Hong Kong is well-positioned, well-timed and well-equipped to develop its NSSH, and therefore it would require undemanding resources from the Government and the practitioners, and a short period of lead time.

Well-positioned for Hong Kong to be a super-connector between Mainland Chinese and overseas parties, with Common Law jurisdiction: China needs to connect with overseas parties for trade (both products and services), funding and investment, R&D, and joint ventures. On



the other hand, overseas countries and companies are increasingly looking for the services of or partnership in space technology, and China is one of the most competitive and preferred partners. The business opportunities could be inbound as well as outbound. These overseas partners may require rockets and satellites to be launched and operated in China for their uses, or they may ask for Chinese space companies to help them in space activities on their own soil. Common Law is the most commonly used for international business, and Hong Kong is the only city in China, that practices Common Law.

Well-timed for Hong Kong to be a NSSH given China's advance space development and emphasis to enhance relationship with overseas countries and parties: China's space offering is competitive and attractive to overseas parties, and on the other hand Chinese commercial space companies need to scale up and grow by capturing overseas businesses and funding. Space technology is a distinct and effective tool to enhance relationship with overseas parties, and it would strengthen China's Belt-and-Road initiative, and enhance relationship with countries in ASEAN, the Middle East, and Africa.

Well-equipped for Hong Kong to offer the services: The financial, insurance and legal practitioners in Hong Kong have been serving the marine and aviation industries well, and it is a matter of drawing their attention to the opportunities in New Space Economy, and coordinating their efforts to pursue the businesses. Telecommunication and data management are already in the game, and they will strategize and act accordingly when they see incremental business drawn by NSSH. Universities are engaged in space activities to different extents, and NSSH would help boost the interest of faculty and students in space, and generate research, startup and job opportunities.

(E) PROPOSED ACTIONS

THE TIME TO ACT IS NOW because places like Singapore is ahead and New Space Economy is developing fast. Besides, the Chinese space companies need strong service support from Hong Kong, not only in funding, but also connection with overseas parties for business and collaboration.

Hong Kong is fortunate that all the key service providers are already in place, even though some of them are not paying due attention to the opportunities of New Space Economy while others are waiting for the Government's support in policies and legislation and the marching order. The loud and clear marching order is important because it would draw the attention



and participation of related stakeholders, local and overseas, to the party, and it would help enhance the impacts with the concerted efforts of all service sectors.

We have discussed the idea of NSSH with practitioners of related service sectors, Legislative Councilors, prominent leaders of our community and a local university, and they are very supportive. Their names can be provided upon request. The practitioners are ready to act if the Government is going to provide policy and legislative support and lead their concerted efforts.

The following actions are proposed for your consideration after taking into account of our fruitful discussion on 15 November:

Action 1: The HKSAR Government to communicate with the Central Government about the proposition of having Hong Kong as a NSSH, and seek its guidance and support;

Action 2: The HKSAR Government to announce its intention to build the NSSH, and appoint a task force to (i) advise the HKSAR Government on the policies, legislation, infrastructure and plans for NSSH; (ii) educate and coordinate with the service sectors in pursue of business; and (iii) enhance Hong Kong's visibility in New Space Economy in China and internationally.

The Government can set up a task force as part of the Government, or preferably give the mandate to a credible organization. We are happy to propose some capable and possibly willing organizations to be the task force based on our earlier discussions with them.



SUPPLEMENTARY NOTES

Note 1: 经济观察报 2024-4-20: 冷了几几年，中国商业航天又热了
<https://www.eeo.com.cn/2024/0420/653847.shtml>

Note 2: World Economic Forum 2024-4-8: Space Economy Set to Triple to \$1.8 Trillion by 2035, New Research Reveals <https://www.weforum.org/press/2024/04/space-economy-set-to-triple-to-1-8-trillion-by-2035-new-research-reveals/>

Note 3: 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 25-29 October 2021: “Debt and Blended Finance are the Bridge to Realizing the Immense Value of Space” (IAC-21-E6.2)

Note 4: Forbes: SpaceX <https://www.forbes.com/companies/spacex/>

Note 5: China’s important policies regarding commercial space during 2014-2024

政策名称	出台日期	发布机关	相关内容
《关于创新重点领域投融资机制鼓励社会投资的指导意见》	2014.11	国务院	鼓励民间资本参与国家民用空间基础设施建设。完善民用遥感卫星数据政策，加强政府采购服务，鼓励民间资本研制、发射和运营商业遥感卫星，提供市场化、专业化服务。引导民间资本参与卫星导航地面应用系统建设。
《中国制造 2025》	2015.05	国务院	发展新一代运载火箭、重型运载器，提升进入空间能力。加快推进国家民用空间基础设施建设，发展新型卫星等空间平台与有效载荷、空地宽带互联网系统，形成长期持续稳定的卫

			星遥感、通信、导航等空间信息服务能力。
《国家民用空间基础设施中长期规划(2015-2025 年)》	2015.10	国家发改委 财政部 国防科工局	探索国家民用空间基础设施市场化、商业化发展新机制; 支持和引导社会资本参与国家民用空间基础设施建设和应用开发; 加速与物联网、云计算、大数据及其他新技术、新应用的融合; 支持民间资本投资卫星研制和系统建设; 制定完善卫星制造及其应用国家标准、卫星数据共享、市场准入等政策法规;建立健全民用空间基础设施建设、运行、共享和产业化发展机制。
《关于实施制造业升级改造重大工程包的通知》	2016.05	国家发改委 工信部	重点发展商业遥感卫星、通信卫星及运载火箭的研制生产线, 大幅提高商业航天的生产制造能力, 促进航天产业的产业化。重点推动遥感卫星、通信卫星地面系统的生产研制, 突破大型遥感接收天线、移动通信地面天线和国产数据处理软件的制造瓶

			颈，促进航天产业市场化、规模化发展。
《关于印发“十三五”国家战略性新兴产业发展规划的通知》	2016.11	国务院	推进卫星全面应用。统筹军民空间基础设施，完善卫星数据共用共享机制，加强卫星大众化、区域化、国际化应用，加快卫星遥感、通信与导航融合化应用，利用物联网、移动互联网等新技术，创新“卫星+”应用模式。推进商业卫星发展和卫星商业化应用。
《关于加快推进“一带一路”空间信息走廊建设与应用的指导意见》	2016.11	国家发改委 国防科工局	积极推动商业卫星系统发展。积极推进“一带一路”沿线国家政府对“一带一路”空间数据和服务的采购力度，不断探索政府引导下的市场运行新机制。支持以企业为主体、市场为导向的商业航天发展新模式，通过政府和社会资本合作模式(PPP)等多种模式鼓励社会和国际商业投资建设商业卫星和技术试验卫星，完善空间信息走廊。 推进“一带一路”建设工作总体部署，推动军民深度融合，统筹建设和利用我国空间信息资源，打造技术先进可

			靠、服务优质广泛的空间信息走廊。
《2016 中国的航天》白皮书	2016.12	国务院新闻 办公室	进一步完善准入和退出机制，建立航天投资项目清单管理制度，鼓励引导民间资本和社会力量有序参与航天科研生产、空间基础设施建设、空间信息产品服务、卫星运营等航天活动，大力发展商业航天；推动政府与社会资本合作，完善政府购买航天产品与服务机制。
	2017.06	习近平总书记重要讲话	“抓住党中央推进军民融合发展的战略契机，努力使太空领域的军民融合发展走在全军前列”。
《关于推动国防科技工业军民融合深度发展的意见》	2017.11	国务院办公厅	积极推进航天立法；完善相关配套法规和政策制度，不断健全军民融合法律法规体系，进一步引导、规范、保障国防科技工业军民融合深度发展； 加强太空领域统筹；面向军民需求，加快空间基础设施统筹建设；促进军民卫星资源和卫星数据共享

《关于促进商业运载火箭规范有序发展的通知》	2019.05	国防科工局 中央军委装备发展部	提出商业运载火箭的科研、生产、试验、发射、安全和技术管控相关要求； 鼓励商业运载火箭健康有序发展，以进一步降低进入空间成本，补充和丰富进入太空的途径
	2020.04	国家发改委	首次明确新型基础设施的范围，卫星互联网被列入“新基建”中的信息基础设施，即基于新一代信息技术演化生产的基础设施范畴，产业面临历史发展机遇，预计将成为贯彻“十四五”的重要投资主线，市场空间将成倍增长。
《中华人民共和国国民经济和社会发展第十四个五年规划和 2035 年远景目标纲要》	2021.03	2021 年两会	明确指出要打造全球覆盖、高效运行的通信、导航、遥感空间基础设施体系，建设商业航天发射场。
《关于促进微小卫星有序发展和加强安全管理的通知》	2021.05	国防科工局 中央军委装备发展部	鼓励商业企业参与国家任务，积极促进科技成果转化应用，倡导微小卫星企业技术创新、管理创新和商业模式创新，避免低水平重复投资建设。
《2021 中国的航天》白皮书	2022.01	国务院新闻办公室	建设商业发射工位和商业航天发射场，满足各类商业发射需求。

			研究制定商业航天发展指导意见，促进商业航天快速发展。扩大政府采购商业航天产品和服务范围，推动重大科研设施设备向商业航天企业开放共享，支持商业航天企业参与航天重大工程项目研制，建立航天活动市场准入负面清单制度，确保商业航天企业有序进入退出、公平参与竞争。 优化商业航天在产业链中布局，鼓励引导商业航天企业从事卫星应用和航天技术转移转化。
《政府工作报告》	2024.03		积极打造生物制造、商业航天、低空经济等新增长引擎。

Note 6: 人民日报 2024-3-18: 商业航天开启发展新篇章

https://paper.people.com.cn/rmrbhwb/html/2024-03/28/content_26049273.htm

Note 7: The State Council Information Office 2024-8-15: China's commercial space industry gets off the ground [http://english.scio.gov.cn/m/chinavoices/2024-](http://english.scio.gov.cn/m/chinavoices/2024-08/15/content_117369099.htm)

[08/15/content_117369099.htm](http://english.scio.gov.cn/m/chinavoices/2024-08/15/content_117369099.htm)

Note 8: Selected trade and professional associations related to commercial space include 中国卫星应用产业协会、中国卫星导航定位协会、中国遥感应用协会、中国卫星应用产业联盟、中国无线电协会



Note 9: Major companies engaged in rockets include: 航天科技一院(“长征”系列)、航天科技八院(“长征”系列)、蓝箭航天 (“朱雀”系列)、天兵科技(“天龙”系列)、星际荣耀(“双曲线”系列)、星河动力(“谷神星”系列)、中科宇航、东方空间、箭元科技、深蓝航天、天回航天.

Note 10: Major companies engaged in satellites include 银河航天、时空道宇、微纳星空、工大卫星、航天科技五院、航天科技八院、中科院微小卫星工程中心、上海微小卫星工程中心、中国卫星网络集团有限公司、上海垣信卫星科技有限公司、上海蓝箭鸿擎科技有限公司。

Note 11: Major companies engaged in land facilities and services include 北京航天驭星科技有限公司(卫星地面站网-“驭星网”)、北京天链测控技术有限公司、西安寰宇卫星测控与数据应用有限公司.

Note 12: 北京市科学技术委员会 2024-2-4: 北京火箭大街落地亦庄 吸引商业航天项目聚集
https://kw.beijing.gov.cn/art/2024/2/4/art_1134_673182.html

Note 13: SpaceNews 2024-2-9: Beijing government releases commercial space action plan
<https://spacenews.com/beijing-government-releases-commercial-space-action-plan/>

Note 14: Satellite Markets & Research 2022-6-1: A Rising Chinese Space Sector: Expectations vs. Reality <https://www.satellitemarkets.com/market-trends/rising-chinese-space-sector-expectations-vs-reality>

Note 15: 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 25-29 October 2021: Debt and Blended Finance are the Bridge to Realizing the Immense Value of Space (IAC-21-E6.2)

Note 16: The nine cities of “G60 星链” are 上海、杭州、嘉兴、金华、苏州、湖州、宣城、芜湖、合肥.

Note 17: Car makers engaged in satellite include 长城’s rocket CZ-11 WEY、长安欧尚’s rocket X7、广汽、吉利.