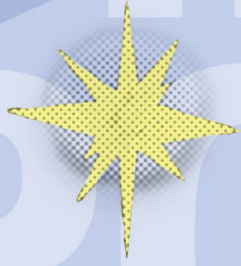


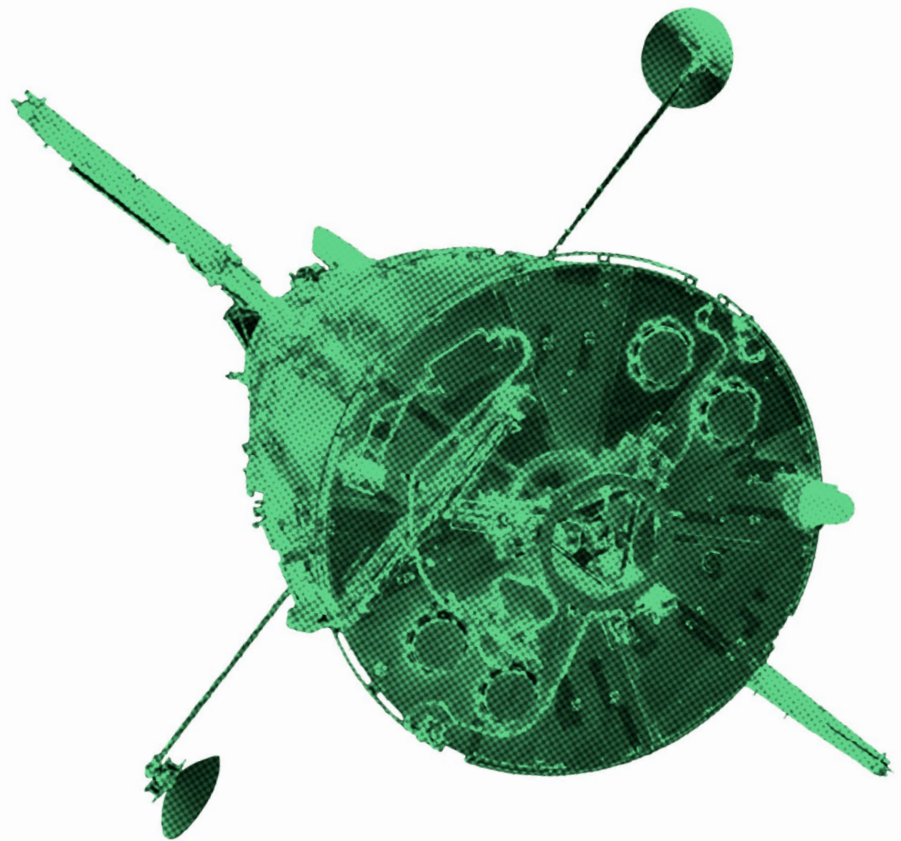
FINDING POLARIS IN THE FUTURE REGULATION OF THE UK SPACE INDUSTRY



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Finding Polaris in the Future Regulation of the UK Space Industry



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This policy brief sets out key policy issues in building robust legal frameworks to support the space industry and businesses in the UK.

We argue that further research and legislative development is needed in the UK to allow the space industry to flourish in an internationally competitive environment.

This policy brief is based on the discussion among legal practitioners, academics and space industry experts that took place in Truro, Cornwall, on 5 June 2019.

POLICY RECOMMENDATIONS

- The UK Government and businesses must be mindful of the cross-jurisdictional and internationally competitive nature of space business, which presents enormous opportunities and challenges to UK-based technology companies as space technologies advance further.
- The UK Government should seek to engage in exploratory studies on legal protection of space business interests, particularly in the form of intellectual property in relation to creations and inventions arising from or in outer space.
- The UK Space Agency should review regulatory barriers to the registration of space objects and licencing for space flight activities, including the lack of transparency, the length of time required for applications to be processed, and the cost of compulsory third-party liability insurance.

The regulatory environment for space businesses, particularly for small and medium enterprises and start-up companies, remains challenging. The existing national regulatory regime is built primarily upon the international legal framework developed in the 1960s-70s when the government had monopoly over space-related technological capabilities. With the rapid increase in commercial space activities, the traditional legal frameworks are not well equipped to enable the flourishing of space technology as business opportunities arise and diversify.

Regulatory development to support UK space industry and businesses must evolve around three aspects:

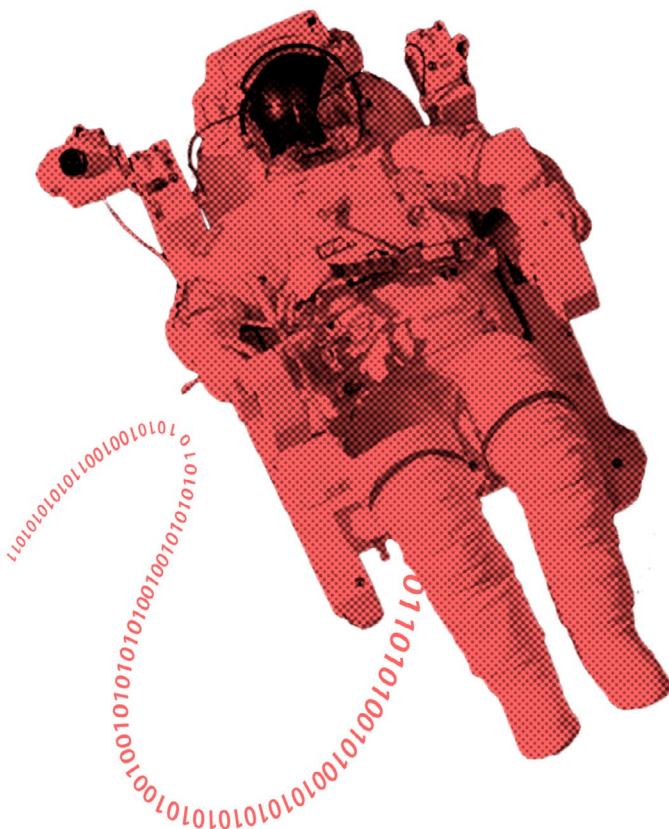
- 1 Cross-jurisdictional cooperation**
- 2 Legal protection of commercial interests**
- 3 International regulatory competitiveness**

1 CROSS-JURISDICTIONAL COOPERATION

Commercial space activities tend to involve multiple entities across a range of jurisdictions. A Dutch business entrepreneur may engage UK-based technology company to launch a CubeSat from Kazakhstan, with electro-optical remote sensors imported from the United States. However, law operates within jurisdictional boundaries, with the state's jurisdiction extending to space objects under its registration. As a result, regulatory requirements from multiple states may be applicable to a space activity; for example, while a UK-registered satellite will be subject to UK regulations, its components and the use of data may well be subject to various regulations of other states, such as export regulation and data protection. The way that space technology and commercial space activities operate across jurisdictions and terrestrial boundaries challenges traditional legal frameworks.

Cross-border regulatory challenges manifest in various aspects of commercial space activity. Data sharing is one of the areas where many business entrepreneurs are not aware of restrictions or may take unnecessary legal risks. In particular, greater caution must be exercised due to the application and implications of the **General Data Protection Regulation** (GDPR) of the European Union.¹ For example, with enhanced satellite imagery capabilities, **GDPR** compliance issues might arise with regard to the collection, use or transfer of purely space-generated data when particular individuals are identifiable.

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Export control is another area of regulatory challenge for commercial space activities. Many technological components and devices used for space activities, such as solid propellant rocket motors and electro-optical remote sensors, are dual-use technologies that are subject to export control in many countries. The length of time and costs involved in the application for export licences adds considerable hurdles especially to small and medium enterprises.

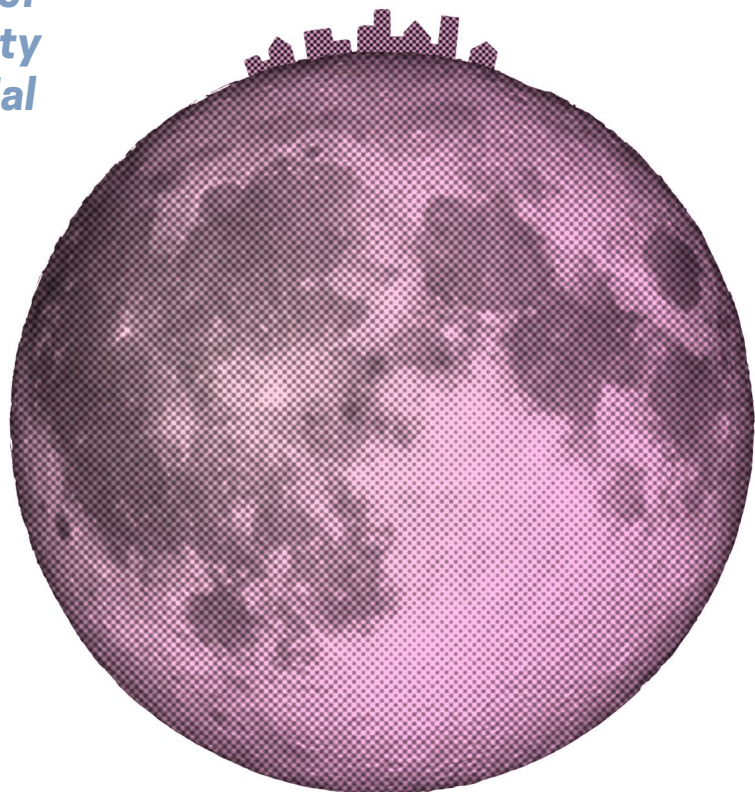
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LEGAL PROTECTION OF COMMERCIAL INTERESTS

The current regulatory regime in the UK is reflective of its obligations under international law. The different licencing regimes under the **Outer Space Act 1986** and the **Space Industry Act 2018**, which regulate commercial space activities carried out in the UK or by UK nationals,² are therefore designed to protect national and public interests, rather than commercial interests. This has meant that there is a lack of attention to the legal protection of commercial interests. Moreover, many small and medium enterprises and start-up companies are unaware of the need to seek legal advice in this respect, or are reluctant to incur the costs of specialist legal advice.

Critical uncertainty remains regarding the extent to which the rule of non-appropriation of outer space impacts on the legal protection of commercial interests.³ It is particularly unclear whether intellectual property rights (**IPRs**) subsist in relation to inventions or creations arising from or in outer space. Businesses may wish to claim IPRs, but also need clarity in terms of the rights held by others for freedom to operate without infringing those rights. The UK has ratified major space treaties, but importantly is not a party to the **Moon Agreement**.⁴ This means that while the rule of non-appropriation applies to space activities carried on from the UK or by UK nationals, its application in relation to the material collected from the Moon and other celestial bodies or inventions that originate therefrom remains uncertain.

It is essential that the UK clarifies its position on the application of intellectual property rights in commercial space activities at the national level.





Particular attention is required to the intellectual property protection available in the United States and Luxembourg.⁵ Both countries have adapted their domestic laws for intellectual property rights such as patents to apply to space activities conducted from their jurisdictions. On the other hand, in countries that have ratified the Moon Agreement, such as Australia, Belgium, Chile, Mexico and the Netherlands, there is a potential risk that the application of intellectual property in commercial space activities that take place on the Moon may be rejected or rendered invalid on account of the specific non-appropriation rule.⁶

The legal uncertainty over the application of intellectual property in space activities is detrimental to the commercial interests of the UK space industry. It is essential that the UK clarifies its position on the application of intellectual property rights in commercial space activities at the national level.

While clarity regarding intellectual property rights may encourage more businesses to invest in space activities for research and commercialisation, there is a risk that it may lead to a monopoly of access to various space activities by advanced space-faring nations. A broader range of options therefore should be explored as a means to protect commercial interests. Caution also needs to be exercised when the space activity is funded through grants, as funders often include requirements as to licensing of intellectual property arising from funded research.



3

INTERNATIONAL REGULATORY COMPETITIVENESS

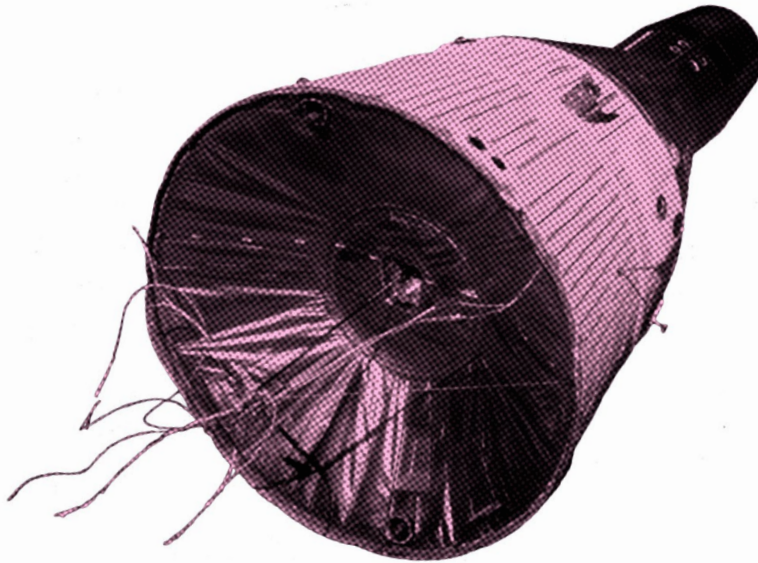
The soundness of the regulatory regime in the commercial space age is not determined by the degree of compliance with international legal obligations alone. It is also measured in light of cost-effectiveness in supporting and promoting the commercialisation of space activities while regulating risk elements in the public interest. Given the strong international dimension to many commercial space activities, variance in regulatory requirements among space-faring nations may have a long-term impact on the global picture of space industry. However, it has to be emphasised that stricter regulation in comparison to other jurisdictions alone is not seen as a barrier to the commercial decision regarding the location of business.

There are views that the national regulatory requirements for the registration of space objects and licencing for space flight activities has a direct impact on the number of launches of space objects in different jurisdictions. For example, the number of **CubeSats** launched in the United States is considerably higher than in the UK where only a very small number of CubeSats have been launched.⁷ A number of different factors explain this gap, including the availability of the required infrastructure and skill sets, as well as significant regulatory issues, such as the lack of transparency, the length of time for licencing applications to be processed, and most importantly, the prohibitive cost of insurance bills including compulsory third-party liability insurance. These regulatory issues form a significant barrier to the entry of small and medium enterprises and start-up companies to the UK space industry.

These regulatory issues form a significant barrier to the entry of small and medium enterprises and start-up companies to space industry in the UK.

The legal protection of commercial interests derived from space activities might also emerge as a relevant consideration for regulatory competitiveness. For UK-based businesses, the choice of English law as the governing law in commercial contracts is the prevalent practice. However, this may change when business operators and investors start seeking to reduce regulatory compliance costs, such as insurance, consumer protection standards, and labour conditions.

Concerns are also raised about lax regulatory practices that may be adopted elsewhere. Emerging space-faring nations may seek economic competitive advantages by compromising environmental and safety risk assessment standards.⁸ Environmental damage and safety concerns for the public are not the only concerns; weak regulatory control also creates vulnerability of space objects to hostile cyber operations.⁹ The adoption of lax regulatory practices in some countries, associated with lower costs for insurance bills, may attract many space businesses, including UK-based companies, to those countries for registration of their space objects, leading to the space version of **'flag-of-convenience'**.



POLICY RECOMMENDATIONS

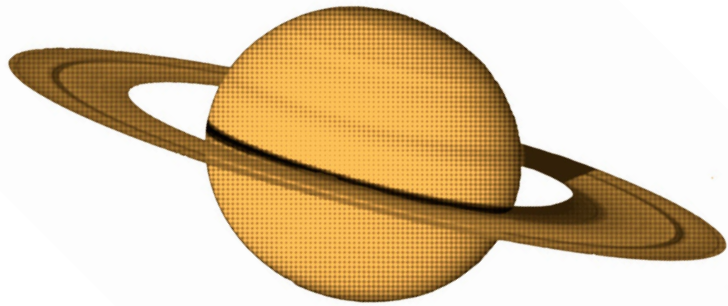
- The UK Government and businesses must be mindful of the cross-jurisdictional and internationally competitive nature of space business, which presents enormous opportunities and challenges to UK-based technology companies as space technologies advance further.
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ACKNOWLEDGEMENTS:

This policy brief arose following the discussion among legal practitioners, academics and space industry experts that took place in Truro on 5 June 2019. We thank all those present for their contributions.

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¹ EU Regulation 2016/679.

² The Space Industry Act 2018 regulates space activities carried on in the UK, whereas the Outer Space Act 1986 continues to regulate space activities carried out by UK nationals and companies overseas: see, Space Industry Act 2018 s 1(3).

³ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, signed 27 June 1967 and ratified 10 October 1967 by the UK Government, 610 UNTS 205 (entered into force 10 October 1967) art II.

⁴ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, opened for signature 18 December 1979, 1363 UNTS 3 (entered into force 11 July 1984).

⁵ Commercial Space Launch Competitiveness and Entrepreneurship Act (Spurring Private Aerospace Competitiveness and Entrepreneurship (SPACE) Act), Pub. L. No. 114-90, § 51303, 129 Stat. 721 (2015); *Loi du 20 juillet 2017 sur l'exploration et l'utilisation des ressources de l'espace Journal Officiel du Grand-Duché de Luxembourg*, JO. A674-1.

⁶ Moon Agreement, art 11. See Michael Listner, 'The Moon Treaty: Failed International Law or Waiting in the Shadows?', *The Space Review* (24 October 2011), available at: <http://www.thespacereview.com/article/1954/1>.

⁷ It has been reported that between 2011 and 2015, an estimated 217 CubeSats were launched mainly by the US, whereas the UK launched only three: Parliament Office of Science and Technology (POST), 'UK Commercial Space Activities' (UK House of Parliament, POST Note No. 514, December 2015) 2, available at <https://researchbriefings.files.parliament.uk/documents/POST-PN-0514/POST-PN-0514.pdf>.

⁸ See, for example, Greg Autry, 'Safety Last: Reckless Behavior Provides China with Economic Competitive Advantages in Space Launch', *Space News* (21 May 2019), available at: <https://spacenews.com/safety-last-reckless-behavior-provides-china-with-economic-competitive-advantages-in-space-launch>.

⁹ Gregory Falco, 'Our Satellites Are Prime Targets for a Cyberattack. And Things Could Get Worse', *The Washington Post* (7 May 2019), available at: https://www.washingtonpost.com/pb/opinions/our-satellites-are-prime-targets-for-a-cyberattack-and-things-could-get-worse/2019/05/07/31c85438-7041-11e9-8be0-ca575670e91c_story.html?commentID=&outputType=comment&utm_term=.19bfe234763b.