The Space Industry Act 2018 - Rediscovering the UK sovereign launch capability

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The 28th October 1971 remains the only time that the United Kingdom has successfully launched a satellite into Earth orbit by means of a launch vehicle developed within the UK[[1]](#endnote-2). In doing so it became the sixth nation to attain this capability[[2]](#endnote-3). Unlike the others, however, the UK took the decision to abandon this capability, citing cost of development and the existence of alternative, cheaper arrangements with other states[[3]](#endnote-4). With the granting of Royal Assent to the Space Industry Act 2018[[4]](#endnote-5), however, the UK is taking legislative steps to regain sovereign launch capacity. Accompanied by a significant amount of publicity from the UK Government, the SIA represents an ambitious attempt to re-establish independent launch capacity and a launch facility within the UK to complement its burgeoning small satellite industry.

The SIA is undoubtedly a significant piece of domestic space law, providing the first major overhaul in the regulation of UK space activity for a generation. This discussion will look at both the new legislation itself and also the policy imperatives that have led to its creation. The UK Parliament’s approach to the level of detail within Space Industry has clearly been informed by general criticisms regarding the inadequacy of the regulatory regime that existed previously[[5]](#endnote-6). The size and scope of the Act suggests that the SIA is attempting to future-proof the law for nascent space tourism industry and has one eye on the development of Skylon, the single-stage to orbit satellite launch vehicle[[6]](#endnote-7). Despite the breadth of topics, the SIA is, in fact, somewhat skeletal in terms of the details and some of these omissions will be examined. As will be seen from this discussion, the SIA represents a framework upon which to build rather than the definitive last word on the regulation of space activities within the UK.

# Weaknesses of the existing regulatory regime

The central trunk of international space law is the Outer Space Treaty 1967[[7]](#endnote-8). That treaty places requirements on individual signatory States to authorise, licence, supervise[[8]](#endnote-9) and register[[9]](#endnote-10) all of their own space activity. It also imposes liability for damage caused by their space objects onto signatory states[[10]](#endnote-11) and gives responsibilities for jurisdiction and control of all of its registered space objects[[11]](#endnote-12). When examining the origins of the SIA, it is possible to identify a number of reasons why the UK government decided to revisit the regulation of UK space activity. First, there has been a significant shift in the nature of the small satellite market, the bread and butter of the UK space manufacturing industry. It is predicted that there will be a tenfold increase worldwide in small satellite payloads being launched into low Earth orbit (LEO). At the forefront of this is the mega constellation revolution, whereby large, expensive satellites are replaced with a fleet of easily replaced smallsats[[12]](#endnote-13). This changing landscape posed severe challenges for the antecedent regulatory regime under the Outer Space Act 1986[[13]](#endnote-14). The regulatory burden that the OSA imposes upon (especially but not exclusively) small space startups is considerable and has been extensively criticised as disproportionately disadvantaging UK manufacturing[[14]](#endnote-15).

In a consultation document on cubesats promulgated in June 2015[[15]](#endnote-16), the UK Space Agency recognised that the OSA regulatory regime was not well suited to deal with Cubesats. Section 4 of OSA provides the statutory authority for the granting of a licence for space activity[[16]](#endnote-17). Whilst the provision is a bland statement authorising the appropriate Secretary of State to grant a licence ‘where he sees fit’, in practice, this involves a rigorous and expensive assessment process during which there would be a financial, safety and environmental assessment of the application. Recognised as being high-cost and time intensive, this process was extremely onerous on small start up companies. The process itself considered the development of the project and also sought to assess potential areas of risk and liability arising from the proposed activity.[[17]](#endnote-18)

The main criticism of OSA, however, concerned the insurance requirements for satellite operators[[18]](#endnote-19). This imposes an obligation upon all applicants (irrespective of the nature of the project) to indemnify the government fully against any third-party liability (TPL) claims brought as a result of damage or loss arising out of activities. Despite being amended in 2015 to cap liability in most cases at €60million[[19]](#endnote-20), this still meant an additional burden imposed on UK satellite manufacturers that was not always imposed by other jurisdictions. This concern was echoed by the Regulatory Policy Committee, which stated ‘the treatment of contingent liabilities under the Act is inconsistent with practice in other space faring nations and in other UK sectors that have comparable contingent liabilities.’[[20]](#endnote-21)

# Launch bottlenecks and the need for Spaceports

It is clear from the limitations outlined above, that without legislative action

, the UK regulatory framework in place before March 2018 was not adequately equipped to deal with small, agile start-up companies that will not have the money or other resources to fulfil the licensing requirements. In addition to this however, as has been identified by those within the space industry, there is a lack of availability of primary payloads, with some small sat customers waiting 18 months before a suitable launch platform becomes available[[21]](#endnote-22). In addition, there is increasing momentum around the world for states to develop a sovereign launch capacity[[22]](#endnote-23). More cynically, perhaps it might also be viewed as an attempt by the UK Government to demonstrate that Britain is still ‘open for business’ despite the political turmoil surrounding the UK exit from the European Union[[23]](#endnote-24).

The creation of a UK spaceport and the attendant infrastructure for launching satellites, had been in the contemplation of the UK Government from as early as 2012[[24]](#endnote-25). In 2014, it was announced that there would be a competition to select a site to build a commercial spaceport within the UK and in March 2015, a shortlist[[25]](#endnote-26) was drawn up of potential locations around the UK that would be suitable to host rocket launches[[26]](#endnote-27). In May 2016, this competitive approach was abandoned and the UK Space Agency announced that, to ‘avoid restricting the development of the UK (launch) market, the Government will create the regulatory conditions for any suitable location that wishes to become a spaceport to take the opportunity to develop and attract commercial space business.’[[27]](#endnote-28) This decision shifted the model for funding for spaceports away from significant state support. The focus instead would be upon any site providing a business case to secure commercial funding.

It is against this backdrop that, in February 2017, the Draft Spaceflight Bill was unveiled. Observers within the UK space industry responded positively, praising the ambition of the Bill and the focus on the needs of the small satellite market[[28]](#endnote-29). During the parliamentary passage of the Bill (renamed the Space Industry Bill), some members of the science and technology committee questioned whether the the insurance and indemnity provisions of the Bill would, in fact, not inhibit commercial ambitions. Specifically, it was highlighted that insurance requirements on individual satellites would be wholly impractical for multiple satellite constellations.[[29]](#endnote-30) As the Bill continued its passage through Parliament, attempts at imposing a mandatory cap on liability to indemnify the government from liability were unsuccessful. In the end, the final provisions of the SIA left this question to be resolved by public consultation and then enacted by means of delegated legislation[[30]](#endnote-31).

# Regulation of UK Space Activity within the SIA

The SIA begins by defining the scope of ‘spaceflight activities’ that are to be covered. International space law provides no concrete definition of where outer space begins. As the the SIA is looking to cover both sub-orbital activity and outer space activity there is a need to provide definitional certainty. Sub-orbital activity is defined in s1(5) as applying to a rocket or craft capable of operating above the stratosphere or a balloon capable of carrying crew or passengers. The more readily understood ‘space activity’ is covered in s1(4) and covers the launching (or procurement of the launch or return to earth) of a space object, operating a space object or any activity in outer space.

The challenge, recognised here, is that existing space laws have evolved around (and are predicated upon) the use of vertical (rocket) launches to access space. The UK has, however, invested significantly in promoting the development of horizontal launch and sub-orbital spacecraft (including the so-called High-Altitude Pseudo Satellites)[[31]](#endnote-32). These horizontal launch platforms ‘intersect civil aviation law (during their launch) and space law (while operating in space)’[[32]](#endnote-33). The coverage of both sub-orbital and space activities within the SIA is intended to include horizontal launch craft that mimic aircraft that use airspace. It is not intending to replace the existing Civil Aviation Authority (CAA) regulatory framework for these craft, rather it will augment the regulation of airspace up to the air/space boundary.

The SIA, therefore utilises the existing frameworks for governing both space and airspace in a twin track approach to regulation. The first regulatory pathway is provided by the aforementioned, pre-existing ‘Outer Space Act 1986’, whereby UK space activities that occur overseas and are launched overseas are authorised, licensed and supervised via the provisions of the OSA 1986 outlined above. The SIA creates a second pathway focusing on licensing, authorisation and supervision for UK space activities that are launched from within the UK. The regulation will be by means of a tripartite relationship between the Health and Safety Executive (for the ground operations), the CAA (for sub-orbital activities) and the UK Space Agency (for space activity). Intriguingly, the SIA lays the foundations for regulating the, as yet non-existent, space tourism industry. Perhaps of more significance the SIA provides authority and the bare bones of a regulatory framework for the authorisation of launches from within the UK. There is provision within the SIA for the creation and management of spaceports. Indeed, to this end, the bulk of the SIA resembles a piece of planning legislation. There is provision for the development and operation of Range control services[[33]](#endnote-34), powers in relation to land that will be used for spaceports[[34]](#endnote-35), safety and security at spaceports[[35]](#endnote-36) and provisions for ensuring that licenses will not be granted unless the operator has submitted an environmental impact assessment[[36]](#endnote-37).

The requirement of consideration of environmental impact assessments is a welcome nod to the environmental impact of space activity. This is particularly germane as smallsat market growth predictions are almost exclusively focusing upon LEO, an area of space already under strain from over exploitation. Considering that, upon the passing of the SIA, the UK Government declared it to be “the most modern piece of space industry regulation anywhere in the world”[[37]](#endnote-38) there is little mention of the impact of space activity upon the delicate space environment. The draft Bill was amended during its passage through Parliament so that regulators had to ‘have regard to the space debris mitigation guidelines’[[38]](#endnote-39). Although included in the final iteration of the Act, the provision in Schedule 1, Para 1(f) is only made with reference to particular conditions that may be included in licences. It is disappointing that the UK Government did not take the opportunity to include genuinely innovative approaches to managing the threat to the delicate space environment.

There is no detail in the Act explaining how the new licensing and liability regime will operate in practice. It appears that such operational matters will be fleshed out by means of delegated legislation. The draft regulations for these draft delegated powers have not yet been promulgated and this lack of detail provoked some controversy during the passage of the SIA through parliament[[39]](#endnote-40). The UK Government’s position, reflected in the terms of the SIA, is that the legislation needs to be flexible in order to cover developments in technology. There is some justification for this view even if presently, this leaves the SIA short on crucial detail. As has already been mentioned, the liability issues and the need for capping the amount that a company needs to provide insurance cover, was a frequent source of criticism levelled at the OSA. With other countries capping liability, the capping of liability is viewed as a key prerequisite for growth within the space industry. The UK Government stated in the policy scoping notes for the Space Industry Bill that the government will cap to “the minimum extent necessary to address market failure in terms of the availability of affordable insurance.”[[40]](#endnote-41)

# Conclusion

There is little doubt that the previous UK regulatory framework needed urgent remedial action in order for the UK space industry to remain competitive. The SIA employs a curious combination of revolution and evolution to try and effect that change. Working with the existing expertise of the regulators at the HSE and CAA is a sensible use of resources and will provide the UK Space Agency with much needed support in the regulation of the emerging multi-sectored space industry. The changing nature of space activity, intersecting air and space law, meant that no existing model of regulation was likely to be satisfactory. It is of great disappointment that the Government did not use this opportunity to revolutionise the environmental protection of outer space. The Space Industry Act represented an ideal opportunity for the UK to take moral leadership in the protection of the orbits of the Earth that are so vital to the predicted economic growth. It is an opportunity that, sadly, has been missed.

The main area of concern for industry remains the lack of clarity regarding liability and insurance. It is, perhaps unsurprising that the Government has issued a call for evidence regarding these issues[[41]](#endnote-42). The SIA does, however, put in place, the legal framework for launch infrastructure to be created within the UK and a sovereign launch system to be developed alongside an active UK spaceport (or indeed multiple spaceports). The SIA is intended to create the necessary legal framework for the the expansion and growth of the UK space industry. In an industry that is subject to such rapid change and accelerated development, once the UK Government decided to utilise existing institutions and frameworks, it is difficult to see what else could have been done. The drafters of the legislation have tried to respond to the demands of the space industry, sacrificing detail and scrutiny upfront for flexibility in the future. Providing concerns regarding liability and insurance are addressed, it will be over to the UK space industry to deliver that growth.

# Endnotes

1. For further details see Millard, D. (2001), The Black Arrow Rocket: A history of a satellite launch vehicle and its engines, (Science Museum, London 2001). [↑](#endnote-ref-2)
2. The United Nations Office of Outer Space Affairs (UNOOSA) *Outer Space Objects Index* (available here: <http://www.unoosa.org/oosa/osoindex/index.jspx?lf_id=> ) shows that Soviet Union (1957), United States (1958), France (1965), Japan (1970) and China (1970). [↑](#endnote-ref-3)
3. For details of the political, economic and diplomatic reasons behind the decision to cancel the Black Arrow project see Hill, C.N., “Black Arrow Cancellation”, Space UK (Online) available at <http://www.spaceuk.org/ba/blackarrowcancellation.htm> accessed on 8 April 2018. [↑](#endnote-ref-4)
4. The Space Industry Bill received Royal Assent on 15 March 2018 after a relatively swift passage through Parliament. Hereafter the Space Industry Act will be referred to as the SIA. [↑](#endnote-ref-5)
5. See observations by this author in Newman, C.J. and Listner, M. “A Very British Coup: Lessons from the draft UK Regulations for Cubesats.” The Space Review, 31 August 2015, available at <http://www.thespacereview.com/article/2816/1> accessed on 8 April 2018. [↑](#endnote-ref-6)
6. For further information on the SABRE engine powering Skylon see <https://www.reactionengines.co.uk> for information on the projected operation of Skylon, see Tate, K., “How the British Skylon Space Plane Works” [space.com](http://space.com) 3 March 2016 available at <https://www.space.com/32112-how-skylon-space-plane-works-infographic.html> accessed on 8 April 2018. [↑](#endnote-ref-7)
7. The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Herein referred to as the Outer Space Treaty or OST) was adopted by the General Assembly of the UN on 19 December 1966 by virtue of Resolution 2222 (XXI). It was opened for signature on 27 January 1967 and entered into force on 10 October 1967. It can be found here:

   [http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html](http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetrea) [↑](#endnote-ref-8)
8. Article VI of the Outer Space Treaty [↑](#endnote-ref-9)
9. Convention on the Registration of Objects Launched into Outer Space A/RES/3235(XXIX) 1975 (Registration Convention) [↑](#endnote-ref-10)
10. Article VII of the Outer Space Treaty and also the Convention on International Liability for Damage caused by Space Objects A/RES/2777(XXVI) 1972 [↑](#endnote-ref-11)
11. Article VIII of the Outer Space Treaty 1967 [↑](#endnote-ref-12)
12. McIntyre, S., “Growth drivers, requirements and threats in the smallest industry”, ROOM - The Space Journal, Winter 2017/18 (#4 (14) 2017) 34-38, at 35. [↑](#endnote-ref-13)
13. Hereafter the Outer Space Act 1986 will be referred to as the OSA. [↑](#endnote-ref-14)
14. Regulatory Policy Committee, Impact assessment opinion: review of the “Outer Space Act 1986”, 11 December 2013 available online at <https://www.gov.uk/government/publications/impact-assessment-opinion-review-of-the-outer-space-act-1986> accessed on 8 April 2018. [↑](#endnote-ref-15)
15. UK Space Agency, Draft Cubesat regulation recommendations, 2 June 2015. [↑](#endnote-ref-16)
16. s4(1) OSA 1986 states that the Secretary of State may grant a licence ‘if he thinks fit’ - this discretionary power in reality is delegated to the UK Space Agency and the nature and form of the contents of the licensing application is determined by regulations. [↑](#endnote-ref-17)
17. See Newman and Listner (n5) for further explanation of this process. [↑](#endnote-ref-18)
18. Outer Space Act 1986, s10. [↑](#endnote-ref-19)
19. Deregulation Act 2015, s.12 and see also; UK Space Agency, Advanced notification: introduction of a liability cap for UK Outer Space Act 1986 licensees available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/447278/OSA_reform_guidance_text__2_.pdf> accessed on 8 April 2018. [↑](#endnote-ref-20)
20. Regulatory Policy Committee (n9). [↑](#endnote-ref-21)
21. McIntyre (n7) at 38. [↑](#endnote-ref-22)
22. A number of States have either developed or are in the process of developing launch capacity. See, for example, Foust, J., “Launch Canada” The Space Review 5 March 2018 available at <http://www.thespacereview.com/article/3445/1> accessed on 8 April 2018 and Amos, J., “NZ rocket launch heralds new wave’ BBC News, 22 January 2018 available at <http://www.bbc.co.uk/news/science-environment-42780872> accessed on 8 April 2018. [↑](#endnote-ref-23)
23. Newman, C.J., “The Precis: UK Domestic Space Law” Spacewatch Middle East, April 2017. Reproduced from Listner, M.J., *The Precis*, 31 March 2017 available at <https://spacewatchme.com/2017/04/the-precis-uk-domestic-space-law/> accessed on 8 April 2018. [↑](#endnote-ref-24)
24. Parnell, B., “[UK.gov](http://UK.gov) to clear way for Britain’s first Spaceport” The Register, 11 July 2012 available at <https://www.theregister.co.uk/2012/07/11/uk_gov_open_skies_to_spaceplanes/> accessed on 8 April 2018. [↑](#endnote-ref-25)
25. The five shortlisted sites were Campbeltown Airport, Glasgow Prestwick Airport, Stornoway Airport, Newquay Cornwall Airport and Llanbedr Airport. [↑](#endnote-ref-26)
26. Amos, J., “UK Ministers issue spaceport shortlist” BBC News, 3 March 2015 available at <http://www.bbc.co.uk/news/science-environment-31711083> accessed on 8 April 2018. [↑](#endnote-ref-27)
27. McArdle, H., “UK spaceport competition axed in favour of licensing model” The Herald, 20 May 2016 available at <http://www.heraldscotland.com/news/14506625.display/> accessed on 8 April 2018. [↑](#endnote-ref-28)
28. Henry, C., “UK industry praises spaceflight bill but calls 2020 launch goal unrealistic” SpaceNews, 29 March 2017 available at <http://spacenews.com/uk-industry-praises-spaceflight-bill-but-calls-2020-launch-goal-unrealistic/> accessed on 8 April 2018. [↑](#endnote-ref-29)
29. Sample, I., “Plans for British spaceports ‘in danger of being grounded by poor legislation’” The Guardian, 29 April 2017 available at <https://www.theguardian.com/science/2017/apr/29/plans-for-british-spaceports-in-danger-of-being-grounded-by-poor-legislation> accessed on 8 April 2018. [↑](#endnote-ref-30)
30. Space Industry Act 2018, s35(5). [↑](#endnote-ref-31)
31. Pulatarova, T., “How close are high altitude platforms to competing with satellites?” SpaceNews, 26 October 2017, available at <http://spacenews.com/how-close-are-high-altitude-platforms-to-competing-with-satellites/> accessed on 8 April 2018. [↑](#endnote-ref-32)
32. Hutton, G., *The Space Industry Bill 2017-2019,* House of Commons Briefing Paper, CBP 8197, 2 February 2018 available at <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-8197#fullreport> accessed on 8 April 2018 at 6. [↑](#endnote-ref-33)
33. Space Industry Act, ss.5-7. [↑](#endnote-ref-34)
34. Space Industry Act, ss.39-50. [↑](#endnote-ref-35)
35. Safety is governed by Space Industry Act, ss.19-21 and Security is dealt with by means of ss.22-25. [↑](#endnote-ref-36)
36. Space Industry Act, s11. [↑](#endnote-ref-37)
37. Cotton, B., “Space Industry Act to unlock billions for the UK Economy” Business Leader, 16 March 2018 available at <https://www.businessleader.co.uk/space-industry-act-unlock-billions-uk-economy/42010/> accessed on 8 April 2018. [↑](#endnote-ref-38)
38. UN Office of Outer Space Affairs, (2010). UN-Space Debris Mitigation Guidelines. Vienna: UNOOSA http://www.oosa.unvienna.org/pdf/publications/st\_space\_49E.pdf. [↑](#endnote-ref-39)
39. The so-called ‘Henry VIII Clause’ found in Clause 66 of the Draft Spaceflight Bill allowed secondary legislation to be brought in which could amend, repeal or even revoke primary legislation. This was removed by the House of Lords report stage. There still exists broad power to make primary legislation ‘to further the purpose of the Bill’ but this is in no way as constitutionally controversial as including Clause 66 would have been. For further detail see Hutton (n27) at 21-22. [↑](#endnote-ref-40)
40. Hutton (n27) at 15. [↑](#endnote-ref-41)
41. UK Space Agency, ‘Call for Evidence: Space Industry Act 2018’ available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/694761/Call_for_Evidence_-_Liabilities_insurance_and_charging_-_270318_-_FINAL_pdf.pdf> [↑](#endnote-ref-42)