The Space Industry Act 2018: Unlocking the UK Space Economy?

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Abstract

This paper will critically evaluate the provisions of the Space Industry Act 2018, its relationship with the Outer Space Act 1986 and the underlying arguments behind the UK Government's decision to use the new Act to encourage both the development of launch systems within the UK and the attendant infrastructure. It will also consider the ramifications for the space economy within the UK and how the legislation will facilitate access to space for small space start-up companies and encourage the growth of a nascent space tourism industry. Given that the UK has taken the opportunity to revivify its national space law, the paper will go on to discuss some of the key points of significance in the new legislation. In particular, the 2018 Act lacks specific detail on many key regulatory issues, instead providing a skeleton outline which requires augmentation by way of secondary legislation. The paper will consider the way in which the UK will seek to fulfil its international treaty obligations within the legislative framework and whether the legislation can serve to contribute to the growth of the UK space economy amidst unprecedented political turmoil.

1. Introduction

On the 28th October 1971, the United Kingdom became the sixth country[1] to successfully launch a satellite into Earth orbit by means of an independently developed launch vehicle[2]. The Soviet Union and the United States were already well established as space powers, but France, Japan and – most notably – China would go on to develop significant and enduring space programmes of their own. Unlike the others, however, the UK took the

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1 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) had accomplished this prior to the UK.

2 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).

decision to abandon this capability, citing cost of development and the existence of alternative, cheaper arrangements with other states[3]. As successive governments in the 21st century realised the folly of this approach, the introduction of the Space Industry Act 2018 represents the legislative phase of the UK seeking to regain an independent launch capability[4]. Indeed, the 2018 Act goes further as it attempts to regulate the establishment of small-satellite launch facilities within the UK to complement its burgeoning small satellite industry[5].

The Space Industry Act 2018 is undoubtedly an important addition to the corpus of domestic space law, and to the way in which space activity within the UK is regulated. Yet it comes at a time of great political tumult. Despite the passing of the 2018 Act, UK space activity is at something of a crossroads: as with so much of British society it faces an uncertain future given the departure of the UK from the European Union[6]. Despite this, the UK Government has reaffirmed its commitment to remaining within the European Space Agency (ESA)[7]. This is reflected on an institutional level with the UK Space Agency currently an active collaborator in a significant number of ESA projects[8] and making a significant budgetary contribution. The relationships within ESA are, however, dynamic ones, and the connection between the European Union (EU) and ESA cannot be ignored.

This discussion, coming as it does at the time of the UK's departure from the EU, cannot provide any meaningful answers to the conundrum of Brexit and the effects it will have upon the UK space industry. The paper will, however, look at both the new legislation itself and also the policy imperatives that have led to its creation. The discussion will start by assessing some of the

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 4 October 2019.

4 Parts of this paper draws on work previously published in Newman, C.J. "Rediscovering UK Sovereign Launch Capability" ROOM - The Space Journal, Summer #2 (16) July 2018. The work has been significantly updated to include the ambient political and policy developments surrounding the departure of the UK from the European Union.

5 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.

6 See for example https://spacenews.com/u-k-space-industry-act-to-future-proof-against-brexit/.

7 The situation will be increased in complexity if the UK fails to reach a trade deal following the UK exit from the European Union. See https://www.gov.uk/government/publications/satellites-and-space-programmes-if-theres-no-brexit-deal/satellites-and-space-programmes-if-theres-no-brexit-deal for more details accessed 5 October 2019.

8 See for example https://www.theengineer.co.uk/uk-confirms-e1-4-billion-of-spending-in-esa-projects/.

crucial space policy drivers that will ultimately determine the success or otherwise of the UK space industry. It will then examine the crucial role that a solid governance framework will have in bolstering the UK space economy. The granular detail of the regulatory frameworks will then be scrutinized, as the 2018 Act has clearly been informed by general criticisms regarding the inadequacy of the regulatory regime that existed previously[9]. The size and scope of the Act suggests that the government is trying to legislate prospectively for nascent space tourism industry and the development of single stage-to-orbit satellite launch vehicle[10]. Despite the breadth of topics, the 2018 Act 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 legislation represents a framework upon which to build rather than the definitive last word on the regulation of space activities within the UK.

2. Contours of UK space activity

The approach of the UK government to space activity is still developing, with the first substantial iteration of the national space policy being promulgated in 2015[11]. UK space ambitions have been, until recently, almost entirely civilian in aspiration[12] with the space infrastructure having some core dependency on the military alliance with the United States[13]. One of the key observations to be made is that a separation of civilian and military capacity has been sensible during the initial attempts to grow space activity in the UK and has helped focus efforts on the economic benefits of space[14]. Recent activity by both the space agency and Ministry of Defence points towards a more holistic approach to UK space interests. There is an increasing awareness that, as civilian capacity grows within the UK, integration of the

9 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 5 October 2019.

10 For further information on the SABRE engine powering Skylon see https://www.reactionengines.co.uk.

11 For the full policy, see https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/484865/NSP_-_Final.pdf accessed 5 October 2019.

12 This has changed with the UK Defence Space Strategy being promulgated. For further information see https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/712376/MOD_Pocket_Tri-Fold_-_Defence_Space_Strategy_Headlines.pdf Accessed on 5 October 2019.

13 For a full discussion on this area see Bowen, B.E, "British strategy and outer space: A missing link?" 20 Br J Polit Int Relat 2018(2) 323–340.

14 http://londoneconomics.co.uk/blog/publication/the-case-for-space-2015/ Accessed on 5 October 2019.

military provision should follow where possible. This is especially relevant in areas requiring significant infrastructure spending such as Space Situational Awareness capacity and Launching provision.

Inevitably, it is developments within the civilian sector that have had the highest profile. Starting in 2010, the Innovation and Growth Strategy[15] was one of the first explicit recognition by Government that the space sector had the potential to deliver sustained economic growth. From that, and following the creation of first national space agency that same year[16], sustained investment and a number of high-profile initiatives, including the first UK national to train within the ESA Human Spaceflight Programme[17], the creation of regional centres to attempt to capitalize on the benefits of data from space and then, in 2015, the launch of the UK's first national space policy[18].

The 2015 National Space Policy provides the clearest articulation of the UK's economic strategic intentions with regards to space. The policy, although with four interrelated policy headings, is industry focused and looks to maximize the return on investment from space. There is an explicit recognition that space has strategic importance due to the embedded infrastructure[19], but fundamentally because of the value it brings to the UK economy[20]. But it is the commercial thrust of the policy that is the most clearly defined aspect. Following the report on the health and state of the UK space industry, the UK Government has stated an ambition is to grow UK's share of that global space market to 10% by 2030[21] and all of the activities of UK Space Agency flow from that one policy directive.

The National Space Policy was written in 2015, before the referendum and the activity leading up to the departure of the UK from the EU. Accordingly, the policy has been one of an identifiable industry focus, aimed at developing the areas of strength, utilising a partnership approach between government, industry and academia. How robust this approach will turn out to be, given the challenges posed by Brexit, is not known. The government provided

15 See https://www.gov.uk/government/publications/update-report-uk-space-innovation-and-growth-strategy-2015 accessed 5 October 2019.

16 See http://news.bbc.co.uk/1/hi/sci/tech/8579270.stm accessed 5 October 2019.

17 For contrasting views on British involvement in Human Spaceflight see http://news.bbc.co.uk/1/hi/sci/tech/8579270.stm from 1998 and this published in 2015 by the UK Space Agency https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/649976/Space_Environments_and_Human_Spaceflight_Strategyv2.pdf accessed 5 October 2019.

18 see n11.

19 Space is now one of the 13 critical elements of national infrastructure. See https://www.cpni.gov.uk/critical-national-infrastructure-0 for further details. Accessed on 5 October 2019.

20 See n14.

21 See n15.

an update entitled 'Prosperity from Space'[22], written in May 2018, which looked to build on the 2015 National Space Policy and laid out a strategy designed to enhance growth in the space sector by focusing on four priorities; Earth information systems, connectivity services, in-space robotics and low-cost access to space (building on the above-mentioned *UK Launch* programme, intended to capture a significant portion of the small satellite launch market.)

3. Weaknesses of the existing regulatory regime

The UK was one of the first signatories to the Outer Space Treaty 1967[23]. As the core of international space law, this treaty places requirements on individual signatory States to authorise, licence and supervise[24] and register all their space activity. It also imposes liability for damage caused by their space objects onto signatory states[25] and makes states responsible for jurisdiction and control of all its registered space objects[26]. When examining the origins of the 2018 Act, it is possible to identify several reasons why the UK government decided to revisit the regulation of UK space activity. There has been a significant shift in the nature of the small satellite market, the staple product of the UK space manufacturing industry[27]. At the forefront of this is the large constellation revolution, whereby large, expensive satellites are replaced with a fleet of easily replaced small satellites. This changing landscape posed challenges for the regulatory regime under the Outer Space Act 1986 (hereafter referred to as OSA)[28]. The regulatory burden that the OSA imposes upon (especially but not exclusively) small space start-up

22 See https://www.ukspace.org/wp-content/uploads/2019/05/Prosperity-from-Space-strategy_2May2018.pdf for details. Accessed on 5 October 2019.

23 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.

24 Article VI of the Outer Space Treaty.

25 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.

26 The provisions of Article VIII of the OST which relate to registration were expanded upon in Convention on the Registration of Objects Launched into Outer Space A/RES/3235(XXIX) 1975 (Registration Convention).

27 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.

28 For detailed criticisms of the 1986 Act see Newman and Listner, n9.

companies is considerable and has been extensively criticised as disproportionately disadvantaging UK manufacturing.[29]

In a consultation document on the future regulation of small satellites in the UK, promulgated in June 2015[30], the UK Space Agency recognised that the OSA regulatory regime was not well suited to deal with Cubesats. Section 4 of the 1986 Act provides the statutory authority for the granting of a licence for space activity[31]. 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 by the UK Space Agency. Recognised as being high-cost and time intensive, this process is extremely onerous on smaller companies. As part of the revivification of spaceflight regulation as a whole, there has been an attempt to make the licensing system under the 1986 Act less burdensome with the posited introduction of a pre-application stage utilising a 'traffic light' system for indicating the likelihood of a licence being granted at an early stage of the project[32].

The main criticism of the 1986 Act, however, concerned the insurance requirements for satellite operators[33] and the way in which the liability imposed by the UK commitments under Art VII of the OST could be lifted from the UK taxpayer. The 1986 Act 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[34], this still meant an additional burden imposed on UK satellite manufacturers that was not always imposed by other jurisdictions.

The concerns about this statutory requirement were echoed by the Regulatory Policy Committee, which stated 'the treatment of contingent

29 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 5 October 2019.

30 UK Space Agency, Draft Cubesat regulation recommendations, 2 June 2015.

31 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.

32 For further details see https://www.ukspace.org/wp-content/uploads/2019/05/Alden-Orrery-October-2018.pdf accessed on 5 October 2019.

33 Outer Space Act 1986, s10.

34 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 5 October 2019.

liabilities under the Act is inconsistent with practice in other space faring nations and in other UK sectors that have comparable contingent liabilities.'[35] It is instructive that, although this has been perceived as a weakness of the OSA regulatory framework, the 2018 Act decided not to deal with this in primary legislation. Instead the drafters of the Act have adopted the pragmatic approach of allowing granular detail to be decided by means of more flexible secondary legislation. This does not add immediate clarity, of course, but it does show a recognition that the previous legislative approach needed to be modified.

4. Launch bottlenecks and the need for Spaceports

In addition to the above problems for small-satellite manufacturers, there is also a lack of availability of primary payload capacity, with some small sat customers waiting 18 months before a suitable launch platform becomes available[36] In addition, there is increasing momentum around the world for states to develop a sovereign launch capacity[37]. 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 Brexit[38].

The creation of a UK spaceport and the attendant infrastructure for launching satellites, had been something the UK Government were eager to pursue from as early as 2012[39]. In 2014, a competition to select a site to build a commercial spaceport within the UK was announced. In May 2016, however, the competition was abandoned. In its place, 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

35 Regulatory Policy Committee, n29.

36 McIntyre, n27 at 38.

37 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 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 5 October 2019.

38 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 5 October 2019.

39 Parnell, B., "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 5 October 2019.

develop and attract commercial space business.'[40] This decision heralded a significant shift in the way spaceports were viewed. Initially anticipating large amounts of 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[41]. During the parliamentary passage of the Bill (later to be renamed the Space Industry Bill), some members of the science and technology committee questioned whether 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[42]. As the Bill continued its passage through Parliament, attempts at imposing a mandatory cap on liability to indemnify the government from liability were unsuccessful. As stated above, ultimately the 2018 Act left this question to be resolved by public consultation and then enacted by means of delegated legislation[43].

5. Regulation of UK Space Activity within the Space Industry Act 2018

The Act 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 nor does it provide a substantive definition of 'sub-orbital'[44]. As the Act is looking to cover both sub-orbital activity and outer space activity there is a missed opportunity to provide definitional certainty on the precise altitude that such activity occurs[45]. Nevertheless, the legislation

40 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 5 October 2019.

41 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 5 October 2019.

42 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 5 October 2019.

43 Space Industry Act 2018, s35(5).

44 See McDowell, J.C., "The edge of space: Revisiting the Karman Line" (2018) 151 Acta Astronautica, 668-677.

45 Thus far only Australia has grasped this definitional nettle. Their Space Activities Act 1998, s2 defines a launch as 'space object means launch the object into an area beyond the distance of 100 km above mean sea level or attempt to do so'.

does attempt to categorise sub-orbital activity[46]. 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)[47]. These horizontal launch platforms 'intersect civil aviation law (during their launch) and space law (while operating in space)[48]. 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 2018 Act seeks to utilise the existing frameworks for governing both space and airspace in a twin track approach to regulation. The first regulatory pathway is provided by the pre-existing OSA 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.

The provisions for ensuring that licenses will not be granted unless the operator has submitted an environmental impact assessment is a welcome nod to the environmental impact of space activity. This is particularly germane as the small satellite 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",[49] there is little mention of the impact of space activity upon the delicate space environment. Section 2(2) lists the

46 Space Industry Act 2018, s1(4).

47 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 5 October 2019.

48 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 5 October 2019 at 6.

49 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 5 October 2019.

debris mitigation guidelines as one of the factors that regulators need to take into account when carrying out its functions and s13 provides the criteria for granting a licence, in which compliance with the debris mitigation guidelines *and the international obligations of the UK* are included in the attached schedule[50]. 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 and consider imposing a specific duty on new licensees to clean up or dispose of their spacecraft in an expeditious manner. Nonetheless, s2(2) and s13 of the 2018 Act provide a welcome statutory nod to the need to limit the damage to the space environment.

6. Licensing and the Space Industry Act 2018

Although liability and insurance are dealt with by ss34-38 of the 2018 Act, 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[51]. There is some justification for the view that the legislation needs to be flexible in order to cover ambient developments in technology. It was, after all, one of the most significant criticisms levelled at the 1986 Act, even if presently, this lack of detail leaves the Space Industry Act 2018 short on specific information. 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."[52] It should also be noted that whilst the lack of detail would be problematic should the Act need to be deployed immediately, the lack of launch capability from the UK currently does give the regulators time to draft the appropriate secondary legislation following a consultation process which started in summer 2018[53].

There is little doubt that the previous UK regulatory framework needed remedial action in order for the UK space industry to remain competitive. The SIA employs a curious combination of revolution and evolution to try

50 Space Industry Act 2018, s13 and Schedule 1.

51 Space Industry Act 2018, s34(5) provides for the provision of regulations to limit the amount of liability of an operator and s38 provides a power to make regulations to require holders of licences and all others engaged in spaceflight activities to be insured.

52 Hutton, n48 at 15.

53 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.

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[54]. The 2018 Act 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 intention to create the necessary legal framework for the expansion and growth of the UK space industry is a laudable one. In an industry that is subject to such rapid change and accelerated development, once the 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.

7. Conclusions

The 2018 Act is very much one of evolution and not revolution in its approach to managing domestic spaceflight. Whether this approach will prove attractive to investors or whether the spectre of forum shopping will manifest itself, is going to be tested over the next decade. The dangers to the space environment of less responsible states offering less rigorous regulatory licensing regimes to opportunistic entrepreneurs is a real one. The legislation is emblematic of a government keen to be viewed as a responsible and reliable spacefaring state. The UK have resisted engaging in a race to the bottom in terms of standards and it is to be hoped that this approach will be rewarded.

Any reform and realignment of a nation's regulatory framework for space is significant. Yet the 2018 Act is a reasonably conservative approach to

54 See above n53.

regulating spaceports and spaceflight within the UK. It places the onus on the regulator to ensure safety standards, and conformity with international norms such as the debris mitigation guidelines. It utilizes the existing expertise of regulators, allocating responsibility for orbital activities, including on-orbit operations and tracking to the UK Space Agency, Sub-Orbital activity to the Civil Aviation Authority. Hybrid activity such as Single-Stage to Orbit space planes are jointly overseen by USKA and CAA and responsibility for ground operations is allocated to the Health and Safety Executive[55]. By making it a criminal offence to engage in unlicensed space activity (as with the OSA 1986), the 2018 Act gives the regulator sufficient power to ensure compliance without being overly prescriptive.

The biggest challenge to UK space ambitions, however, lays within the political rather than the legislative arena. A fundamental truth of Brexit is that the UK space sector will move from complimenting EU space policy to becoming a competitor to the EU space industry. In the short to medium term, there is little that the UK Space Agency, the space sector or anyone else can do to affect this fundamental commercial reality. This discussion started with an examination of UK space policy and the underpinning policy aim of capturing 10% of the world space market by 2030. The Space Industry Act and underpinning framework can only be judged a success if this aim is achieved. The exit of the UK from the EU clearly makes such a task significantly harder.

55 Space Industry Act 2018, s16 enables the appointment of non-Governmental bodies to exercise regulatory functions alongside the Secretary of State. It is through this mechanism that the CAA and HSE will be brought into the regulatory matrix.