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UK Space Policy & Brexit: Voyage into the Unknown

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Introduction

The United Kingdom is currently undergoing a period of dramatic and unpredictable political change. The result of the referendum on membership of the European Union (EU) has provided the political order of the UK with the greatest challenge in living memory. Uncertainty pervades every aspect of British political life as the economic, political and social impact of the British exit (Brexit) from the EU starts to become a reality. This discussion will provide insight into the web of constitutional and treaty issues which will impact upon the UK Space industry and examine some of the potential challenges and opportunities for UK Space activity, presented by Brexit.

[UK Space Activity: An Overview.](#)

UK space activity, as considered herein, is almost exclusively (though not entirely) concentrated on civilian applications in space, especially focusing on Earth Observation and Navigation applications. Civilian space activity within the UK is coordinated on a national level by the UK Space Agency (UKSA), which is an executive agency within the UK Government Department for Business, Innovation and Skills (BIS). It was established in 2011 to provide leadership for, and foster the growth of, the UK space sector. According UKSA's own figures, the value of the UK space sector worth around £11.3 billion annually to the UK economy. The UKSA is looking to increase this to £19 billion by 2019/20 and ultimately aims to treble the current annual turnover to £40 billion by 2030. This prediction however, was predicated on the maintenance of the existing treaty relationships with other European nations. Despite the

optimism within the UKSA about continued involvement in European space projects, a fundamental question that needs to be addressed, therefore, in respect of the UK Space industry is the extent to which that strong engagement will be possible given Brexit.

It is not just at governmental level where there is recognition of the collaborative and co-dependent nature of UK space activity. UKspace, the national trade association for the commercial space sector, has written to the UK government and reminded them that an exit from the EU is potentially disruptive to the nascent commercial space activity of UK firms. The UK has carved a significant niche in the design and manufacture of small satellites with firms such as SSTL (Surrey Satellite Technology Limited) and Airbus Defence and Space UK leading this renaissance in UK space manufacturing. The challenges of exiting the EU for such firms are clear, with other, European manufacturers (such as Thales Alenia) poised to step into lucrative EU funded space projects should UK firms become frozen out of EU funded space projects following Brexit.

[UK, ESA and the shadow of the EU](#)

It is impossible to consider the UK space sector without examining the position of the UK within the European Space Agency (ESA). ESA is an intergovernmental agency comprising 22 member states and was founded in 1975. According to the UKSA corporate plan [Available <https://www.gov.uk/government/publications/uk-space-agency-corporate-plan-2016-2017>] the UK contributes around £300 million to ESA, which represents over three quarters of the total UK space budget. ESA is an independent treaty organisation, legally distinct from the EU, but undoubtedly there is a significant interrelationship between the two organisations, with the EU providing around 20% of the total ESA budget.

The recent government publication ‘Satellites and Space: Government response to the House of Commons Science & Technology Committee’s Third Report of Session 2016/17’ <http://www.publications.parliament.uk/pa/cm201617/cmselect/cmsctech/830/830.pdf> contained explicit commitment to membership of ESA despite Brexit. The report stated that membership of ESA remains a central tenant of the UK space strategy. The level of this commitment was underlined at the recent ESA Council of Ministers in Lucerne, Switzerland

where the government minister responsible for overseeing space activity in the UK, Jo Johnson MP, produced a strong statement of intent to accompany the financial guarantees. In his statement to the ESA Council of Ministers, [see <https://www.gov.uk/government/speeches/speech-from-science-minister-jo-johnson-at-the-esa-ministerial>] he reaffirmed the UK commitment to European cooperation on science programmes, emphasised the commercial investments in collaborative projects and especially Navigation, Earth observation and the ExoMars project.

Ultimately, however, it is the financial contributions to ESA which will be the decisive metric when considering the UK's desire to remain within the European space community post-Brexit. Underpinning the statement of Jo Johnson, are the contributions of the UK government to ESA. Through the UKSA, the UK will provide €1.4 billion over the next five years to a variety of ESA projects (the exact breakdown can be found here <https://www.gov.uk/government/news/uk-commits-to-european-collaboration-on-science-and-exploration-satellite-technology-and-services>) equating to just under 14% of the total ESA budget. As reflected in the ministerial statement, a large part of this contribution is directed towards integrated applications, Earth Observation and navigation – this is unsurprising given that these are the areas upon which the UK space manufacturing business is at its strongest.

[The Galileo Conundrum](#)

The UK Government are keen to emphasise a sustained commitment to investing in European projects. Yet nowhere are the difficulties posed by Brexit more prevalent than when considering the most high-profile of these: the €10 billion Galileo satellite navigation system, a project funded entirely by the EU. Launched in 2003, and as per Reg. 1 of the GNSS Regulation 1285/2013 of the European Parliament and the Council, the Galileo and Copernicus Satellite programmes will establish the first global satellite navigation and global positioning infrastructure specifically designed for civilian purposes. UKspace have estimated that the potential market for Galileo and related applications and service could be around €6 billion by 2025 [see <https://www.ft.com/content/48e12b28-5e2d-11e6-bb77-a121aa8abd95>]. With the EU providing the funding and most ESA members also being EU member states, post-Brexit, the funding for Galileo and associated lucrative contracts may be funnelled through EU

member states within ESA which would have a significant impact upon UK space manufacturing.

The UK has significant input into the Galileo programme, with SSTL providing a significant contribution as prime contractor for navigation payloads. Given that, until formal notification is given, the UK is still an EU member state, these existing commitments will remain in place. As stated above, however it is inevitable that non-UK, European firms are already positioning themselves to replace SSTL, once the UK ceases to be a member of the EU. The damage to the UK government goals of trebling the UK space economy by 2030 has the potential to be significant if UK involvement in the manufacturing phase of the Galileo programme is not retained.

It is not just access to the manufacturing of Galileo and Copernicus hardware that may be limited post-Brexit. Whilst the rudimentary services afforded by the Galileo programme are designed to be available for free use, the more precise, securely-encrypted Public Regulated Service (PRS), the marquee service offered by Galileo, is presently limited to EU member states (as per Regulation 42 of the GNSS Regulation 1285/2013). The UK is seeking to align itself with the utilisation of space-based applications through the exploitation of data obtained from space and exclusion from PRS capability would have a further negative impact upon the UK space sector. The GNSS regulations do allow for non-EU members to gain access to PRS data and capabilities. For post-Brexit UK, this access will be subject to negotiations. Any such negotiations will not occur in isolation and, as will be seen later, there will inevitably be a cost associated with such access. Once Article 50 is activated (the legal mechanism contained within the Treaty of European Union, by which the UK formally gives notification of its intention to leave the EU) the price of PRS access will undoubtedly be a financial premium, but also may become a bargaining chip leveraged against access to other services.

[Beyond the Horizon: Research & Development Post-Brexit](#)

Beyond the specifics of individual programmes, there is yet more uncertainty when contemplating the impact of Brexit upon the wider research and development needed for a sustainable space industry within the UK. The free movement of European citizens around

member states is one of the founding principles of the EU. It was concerns around this, and over unfettered immigration that have been touted as one of the key factors behind the decision of those who chose to vote leave. Yet, a third of the UK space workforce comes from overseas and restrictions on free movement of persons may have a significantly chilling effect on space research both directly affecting the space industry and more broadly within UK Universities.

In addition, the UK has been a beneficiary of the funding made available by the EU for Research and Development in the space sector. The UK government has pledged to underwrite any shortfall in funding on science research, including the Horizon 2020 programme which has significant funds allocated for research into space-based technology. This was welcomed by the science community, but disquiet is still expressed in relation to R & D funding beyond Brexit. The UK government has indicated that there will be significant funding for R & D post-Brexit, but details have remained sketchy and, given the political and fiscal uncertainty that the triggering of Article 50 will undoubtedly bring, there is no sense of how this will manifest itself once the existing funding streams dry up.

[Opportunities and the 'Hard' or 'Soft' Option](#)

This uncertainty tends to lead to somewhat pessimistic predictions of the UK's post-Brexit economy. This should not mask the fact that there are opportunities whereby growth in the UK space sector can be promoted. First, and most obvious, is the continued involvement with ESA and the benefits afforded from greater collaboration in space-based research. Recently ESA Director General, Jan Woerner, stated that post-Brexit, he did not envisage a change in the UK role within ESA. Whilst the rest of the UK economy faces significant challenges, the space sector does at least have the anchor of ESA to provide a multi-lateral arrangement through which involvement in collaborative projects can be fostered. Indeed, it may be that ESA and the entire space sector takes on added importance within the post-Brexit UK industrial landscape.

It is difficult to accurately predict other opportunities that exist without knowing the nature of the UK's exit from the EU. There have been numerous suggestions as to what the UK's trading

relationship with the rest of the world will look like (see for example <http://cep.lse.ac.uk/pubs/download/brexit01.pdf>) and each one of these would establish a dramatically different trajectory for the UK economy. The options range from a 'Hard' Brexit (that is complete disengagement from the EU and the Single Market) through to a 'Soft' Brexit (whereby the UK leaves the EU but retains access to the single market and membership of the European Economic Area).

Each of these options present different opportunities and challenges. Until the formal activation of Article 50 and notification of the UK's intention to leave the EU, it is not certain which option the UK government will seek to adopt. The 'soft' Brexit option will undoubtedly be the most warmly received by the financial markets and will likely have the least economic impact (although there will undoubtedly still be some economic trauma). The 'hard' Brexit will be the most unpredictable and yet may well afford the greatest opportunities for the establishment of new trading relationships and economic policies that are both flexible enough to encourage new trading arrangements while still enjoying a relationship with the EU.

Conclusion: The Dark before the Dawn?

Unpicking the UK from its intricate relationship with the EU is arguably the single biggest challenge the UK and international law has faced since the end of the Second World War. The impact of Brexit upon UK space activity is a small, but significant aspect of the much bigger challenges facing the UK. At first sight, the UK space industry does have some insulation, given the pre-existing relationship with ESA and the avowed intention of the UK government to continue to fund UK Space activity. Until Article 50 is activated, however, and the formal process of a negotiated exit from the EU begins, there is no clear model upon which to base any predictions. Brexit may present some unparalleled opportunities for forging new, dynamic and hitherto impossible trading and technology-transfer relationships. Equally, Brexit may fatally weaken the nascent UK space industry, robbing it of access to key collaborative projects, R & D funding and causing a 'brain drain' of top space talent. The reality is, until the genie of Brexit is out of the bottle, the only certainty is more uncertainty.