

**Written evidence from Professor Christopher Newman and Lauren Napier on behalf of  
Northumbria Law School TFP0013)**

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## **Executive Summary:**

- The UK is uniquely positioned to use its soft power to act as a 'digital broker' by using downstream data from space to incentivise responsible behaviour in the regulation of new technology.
- The UK has reputational strength for a high level of regulatory expertise. The increasing prominence of the space, cyber and AI industries within the UK means that the FCDO should become a champion for regulation as providing stability to the industrial context and as a mechanism to encourage adversarial States to engage more broadly with the UK.
- The UK has been a pioneer in the space domain, through UNGA Res 75/36. The FCDO should be emboldened to use the momentum gained from this in other areas of technological governance.
- The FCDO should work with technology companies to explore the way in which distributed ledger technology can be used to manage big data and potentially unlock wicked problems of technological governance
- The FCDO should actively identify collaborators from the private sector and academia and provide leadership on regulation in the realm of civilian space. The FCDO should work with 'norm entrepreneurs' in the private sector to place the UK at the forefront of shaping industry standards.

## **About Us:**

Northumbria Law School based within the University of Northumbria at Newcastle is one of the largest law schools in the UK, with a national and international reputation for excellence in legal education and research. Northumbria Law School has an established and ambitious research agenda encompassing theoretical, empirical, socio-legal and doctrinal approaches.

Global in outlook and ambitious in impact, the research of a number of our academics is embedded in international and multi-disciplinary collaboration in areas of law and technology and we have world-leading expertise in space law and policy, the regulation of the use of artificial intelligence, and environmental and water law.

## **Background:**

The recent Integrated Review 'Global Britain in a competitive age' highlighted the role of space-based applications and technologies. The government identified that these are going to be key drivers in the exercise of soft power, extending the influence of the United Kingdom and also in generating trade and commercial activity. Given the research expertise of the submitting institution, this submission will focus on the role the FCDO can play in relation to space governance and the potential linkages that exist with other forms of technological governance such as cyber and AI.

The management of space objects within the Earth's orbital environment is proving to be one of the most challenging areas of technological governance. Space is a multi-national and multi-sectored common area, where scientific investigators and commercial actors work alongside sensitive military activities. The ubiquity of space applications in society coupled with the dependency of a whole range of essential earth-based systems means that national governments now need to work

The Outer Space Treaty 1967 (OST) is the central trunk of international space law. It grants States the freedom to explore, use and investigate space and that use should be for peaceful purposes as. It also prohibits certain activities, such as claims of ownership being made in outer space and the positioning of nuclear weapons in orbit or on celestial bodies. A crucial aspect of the OST is that it provides that states must carry out their activities in space in accordance with international law.

The positioning of nuclear weapons, and weapons of mass destruction is prohibited by Article IV of the OST. Nonetheless, space has become a significant domain for enabling the military in respect of command-and-control functions, enhanced communications, remote sensing and global positioning systems. Additionally, within the military space sector, there are various technological advances that are shifting power that pose potential asymmetric threats to space systems such as ground stations, data, or satellites. These potential threat capabilities include anti-satellite testing, cyberattacks, or electronic warfare.

In December 2020 the United Nations General Assembly adopted Resolution 75/36 on *Reducing Space Threats Through Norms, Rules and Principles of Responsible Behaviours* backed by the UK and other States. This Resolution suggests discussing responsible State behaviours in space specifically regarding space security issues such as the potential threats to space systems.

There is considerable overlap between space security issues and cyber issues in terms of building understanding on responsible behaviours and norms in order to reduce misunderstandings and threats. There are also international cyber instruments that can offer support and further input on reducing cyberattacks and threats to space systems.

### **Opportunity for Engagement with the Private Sector to encourage responsible behaviour**

The civilian space sector needs to develop rules and identify emerging normative behaviours. The rise of the large 'constellations' of satellites that will provide global internet connectivity present a significant challenge to the governance of the Earth's orbit. Indeed, the UK has already made a significant investment in OneWeb in partnership with a private telecommunications firm.

It is clear that it is private sector firms who are leading the way in populating Low Earth Orbit, Starlink has gained approval from its domestic regulator to place 42,000 satellites in orbit. Amazon's Project Kuiper will also look to place thousands of satellites in orbit. Both of these provide clear evidence that any future discussion of space governance must include private

technology companies if they are to provide meaningful change and ensure sustainable use of space.

This change of power balance, from state to private leadership in orbital space, provides the FCDO with an ideal opportunity to engage with commercial partners to augment the existing international governance framework. It is the responsibility of individual states for regulating their own national space activity, yet many states do not yet have a framework for doing this.

The FCDO should adopt a prominent presence in organisations that tangentially deal with the development of behaviours in space, such as the International Telecommunications Union (ITU), the International Organization for Standards (ISO) and private sector-led bodies such as the Consortium for Executing Rendezvous and Servicing Operations (CONFERS).

The FCDO should take a leadership role within United Nations Committee on the Peaceful uses of Outer Space to promote good governance and regulation and highlight the benefits of working with all stakeholders, especially private technology companies.

### **Unique Deployment of Distributed Ledger Technology**

The increase of satellites in orbit also provides a significant challenge for the management of space traffic. A robust system of space traffic management is needed to ensure that vital space systems are not disrupted due to becoming damaged in an on-orbit collision.

The use of distributed ledger technology is being proposed as a potential solution for dealing with the vast amounts of data produced in respect of the orbital environment. Use of a trusted, system, with the capacity to work computer-to-computer would greatly enhance the ability of the space community to manage the increasingly complex space environment.

The UK can shape behaviour in space with the FCDO enabling the use of distributed ledger technology to manage an increased amount of data about. This would position the FCDO as 'data brokers', increasing the influence of the UK and embedding UK digital infrastructure at the heart of space operations.

### **The Impact of Cyber technology upon shifting Power**

There are significant areas of overlap between issues of behaviours and governance between the cyber and space domains. In Space, national governments are still the biggest consumers of space-based services.

In the cyber domain, however, there is a significant imbalance in power between the state and private companies. National governments are now having to rely on commercial data to fulfil a wide range of activity that would traditionally have been undertaken by state entities.

Private companies in the cyber realms are releasing their product directly to market and allowing the consumers and courts to determine the appropriateness of the scope of services that can be provided, especially (but not exclusively) in respect of privacy. Additionally, the vulnerability of all systems to cyber attacks means that a combined response to cyber governance is needed.

The FCDO should look to bring together stakeholders from both national governmental entities and the private sectors to prominently identify vulnerabilities and systems that may need specific and bespoke regulation (such as energy provision, health, waste disposal).

The FCDO should also work to bring together stakeholders from across the domains of space and cyber. Many of the threats posed to space activity come from the cyber realm (both in space and disabling of satellites and also to the ground segments).

By showing leadership, and bringing these stakeholders together, the FCDO will position the UK at the forefront of addressing the multifaceted challenges to governance posed by cross-domain concerns.

### **Recommendations:**

- The FCDO should view cyber, space and AI governance as being part of the emerging digital infrastructure. Establishing leadership in this area would embed the UK as a
- The FCDO should continue to join with like-minded or allied nations in order to find ways forward on a work plan to further discuss UNGA Resolution 75/36 and the upcoming UNGA Report through the United Nations system.
- The FCDO should also consider expanding their expanded role in respect of the identification of norms of responsible behaviour in space (currently limited to the First Committee) and look to take leadership within UNCOPUOS. The UK should look to build consensus on a coherent, rules-based global framework on space governance in order to encourage all interested States and private sector stakeholders to take part on in these discussions.
- The FCDO should encourage all stakeholders, including those in the private sector to promote responsible behaviours in space. The FCDO should look to become a 'digital broker' to share implementation strategies with other nations, especially with emerging space nations.
- The FCDO should consider establishing a working group within established organisational frameworks on developing cross-regime understanding of cyberspace and outer space issues regarding responsible State behaviour as cyberspace issues are applicable to space systems.

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