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# Creating A Global Centre for Space Finance in the UK

NOVEMBER 2023

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# Executive Summary

**The global space industry landscape has undergone a profound change in the last ten years and the rate of change in the sector will continue to increase.** Rapidly falling launch costs have reinvigorated the space sector with an explosion of private commercial activity and interest at the national level around the world. This trend will continue as new launch vehicles enable cost-effective launch of ever larger payloads, opening up greater possibilities of what humans can build and deploy in space including large in-orbit infrastructure. Indeed, the global space industry is predicted by Citi to reach \$1tn in size by 2040. A new international space race is underway with established space-faring nations now joined by a cohort of ‘emerging space’ nations which are setting up their own space agencies.

**The UK has a strong space heritage but must clearly define its role in this new space era.** Countries such as the US and China are able to deploy far larger sums of public money so the UK must, with a relatively modest budget, decide where it can and wants to lead. It will be essential to draw upon existing strengths and sources of competitive advantage, exemplified by the UK’s financial sector and London, in particular, given its position as a key global financial centre. We have already made significant progress as outlined in the National Space Strategy in Action policy paper and lead on major space issues such as sustainability through Astra Carta. Combining government commitment to building a world-class space industry and our deep financial ecosystem offers a chance to seize the opportunity before us.

In this context, **we state our goal to make the UK and London a global centre for space finance as a cornerstone for the UK’s space sector ambitions.** A number of interested parties from across the space and finance sectors have come together to address the following question: **what would be required to make the UK and London a global centre for space finance?** Working groups were formed to cover three principal domains: Pension Funds & Capital Markets, Insurance, and International Engagement. Each working group has considered what the UK and London being a global financial centre for space would require and articulated what government support might be necessary for realising this vision. This work is timely, aligning with other initiatives such as the [Mansion House Compact](#) to channel patient capital into productive assets.

## **Pension Funds and Capital Markets**

For pension funds and capital market participants, the engagement with space as an investment opportunity is still at an early stage. Awareness and understanding is low and education will be needed to enable decision-makers to get up the learning curve both within pension funds and asset managers but also across the entire institutional investment ecosystem. It will also be necessary to appropriately define the characteristics of what constitutes a ‘space investment’. A key observation is that risk-return considerations will remain a critical determinant of whether or not capital flows into space investment opportunities.

**Education and Awareness.** Since space is a relatively new source of investment opportunities, education will be required as well as a goal of ‘mainstreaming’ to reduce the perception that all space investments are high risk. Suggested industry actions include:

- Create education sessions for pension fund trustees, investment consultants, and in-house teams,
- Educate the institutional investment system on space finance and investments, and
- Raise overall awareness through, e.g. seminars, webinars, podcasts, and PR

**Investment Characteristics and Definition.** Pension funds and asset managers will need to understand how space investments fit into overall investment mandates/portfolios so specific investment characteristics will need to be assessed. This will include risk-return profiles but also whether they form an asset class in their own right. Suggested

industry actions include:

- Create a taxonomy or classification system for space investments,
- Work with auditors, exchanges, and ratings agencies on classification and ESG data,
- Consider the creation of a distinct space sector asset class (both debt and equity) under the ‘alternatives’ umbrella, making reference to existing UCITS, ETFs, and investment trusts,
- Encourage venture and private equity to incorporate space investments into existing multi-sector funds rather than developing specific space-themed funds,
- Where admissible, promote space opportunities as, e.g. government-backed, UK local investments, Net-Zero compliant,
- Ensure both debt and equity are incorporated into a classification/taxonomy structure.

***Institutional Investment Ecosystem.*** Early participation of the whole institutional investment ecosystem as well as the users of space finance will be required and appropriate demand-pull dynamics will encourage asset managers to launch new products. Pension funds will want to understand where and how they fit into the overall space investment landscape and their positioning versus other investor types. If the UK is to be a global financial centre for space then non-UK pension funds will also be encouraged to invest in opportunities originated here. Suggested industry actions include:

- Achieve awareness and shared understanding across the ecosystem to facilitate implementation,
- Have users of space finance characterise the risk profile of their investments,
- Reach agreement on where pension fund capital would be best deployed versus other investor types,
- Determine how non-UK pension fund participation would be enabled.

## **Insurance**

London is already a global leader in space insurance underwriting and broking with over 25% of global space insurance capacity located here. All leading space brokers have established London-based teams and are part of a space insurance community formed, in part, owing to the physical proximity of brokers and underwriters in the Square Mile. This community is able to offer direct space insurance support for space projects seeking finance in the UK based on experience developed on a variety of space projects globally over many years. In particular, space insurance plays a significant role in addressing technical risk for financiers.

‘Space insurance’ typically means insurance of those risks directly arising from launching and/or operating spacecraft but the industry can also facilitate accessing expertise in adjacent insurance markets including, for example, political risk, credit protection insurance, property insurance, and general commercial liability.

***Uncertainty of space regulation in the UK.*** UK space regulation is undergoing multiple reviews at present and the perceived uncertainty may put the UK at a competitive disadvantage versus other countries. The space insurance industry needs regulatory clarity to ensure that third-party liability insurance can be provided and such regulations should recognise that insurance provision depends on insurance market conditions. The space community and government must consider the consequences of the required insurance not being available at commercially reasonable terms.

***Changing space industry composition.*** To date, the London space insurance market has typically supported large-scale GEO satellite programmes, the principal source of income to the market over the last 40 years. However, large GEO satellite launch volumes are falling alongside a rapid expansion in the number innovative, lower-cost missions seeking insurance protection. This is welcome but has created uncertainty in the London space insurance market.

**The challenge of insuring new technology.** Related to the previous point, many new space projects are likely to involve the use of new technology or launch vehicle suppliers. Although commendable and supported, it presents a challenge since underwriters must be able to assess the launch vehicle and spacecraft risk to determine the terms, conditions, and pricing of the insurance. They need access to the relevant technical information. If the level of risk is deemed to be too high then underwriting capacity will reduce sharply and, in some cases, the market may struggle to offer cover on a commercially justifiable basis.

**Complications in insuring overseas operations.** The London space insurance market relies on income derived from supporting space projects overseas enabled by free trade. This has declined in recent years owing to, *inter alia*, diminished freedom of trade related to financial services (e.g. through Brexit), lack of clarity on treatment of insurance premium taxation for space, and sanctions and other embargoes (principally against Russia following the invasion of Ukraine). Additional complications arise when such legislation is drafted without fully considering the space industry (including space insurance).

## International Engagement

Positioning the UK and London as a global centre for space finance requires international recognition, both by other space-faring nations (established and emerging) and private international investors. There are two core elements to driving international engagement: segmenting our target audience and developing appropriate messaging, signalling, and branding.

**Audience Segmentation – Space Nations.** Countries engaged in space activities should be targets for engagement with a distinction made between established space powers such as the US and emerging space nations such as Chile, the UAE, and Luxembourg. Drawing capital from established space powers may be a challenge given structures and practices already in place. For emerging nations, the proposed approach is to build relationships to support capability, policy, skills, and/or financial gaps. Here the challenges will relate to the UK's reputation versus that of other established space nations, a misunderstanding about the UK's role in ESA (as opposed to the EU), and potentially its position as a formerly imperial country (although our deep Commonwealth relationships may present an opportunity to forge even stronger links).

**Audience Segmentation – Private Capital.** Proactive incentivisation measures and a strong understanding of the target investor community is required. Challenges in attracting capital from private investors include capital gains tax penalties, a low desire by private investors to race to invest in outsized prizes, low incentive caps for angel investors (e.g. SEIS, EIS), absence of access to state assets at low rates (to overcome early-stage capex requirements), no mandates to inwardly invest for whole-system capability, and the absence of a policy investment bias towards UK companies.

**Messaging, Signalling, and Branding.** The overall vision and messaging of the UK will be important since the international investment community will seek strategic consistency and coherence, policy stability, regulatory clarity, and government investment parity with comparable space nations. In addition, signalling strong commitment to the investment community will require highly significant incentive measures. From a brand perspective, the UK's starting point is strong. It has established research institutions, a depth of IP, world-leading financial services, a skilled workforce, and a strong regulatory environment.

## Recommended Government Interventions

As part of their discussions, the Working Groups identified interventions necessary for HM Government if it is to secure the position of the UK as a global centre for space finance, thereby underpinning jobs, IP, economic growth, and our international reputation as a leading space nation.



The primary interventions are:

### Visible Government Commitment

- **Explicitly and openly state an ambition for the UK and London to become the de facto global centre for space finance.**
- **Reframe the National Space Strategy** with greater focus on creating a bespoke role for UK in space and an associated delivery plan.
- **Define a clear role for government as a leading initial/early customer** for UK space products and services.
- **Create a National Space Institute** as a centre of innovation, education, development, investment, and insurance expertise for space in the UK.

### Financing & Investment Incentivisation

- **Consider economic incentives to encourage private investment into higher-risk projects** such as those provided for renewable and nuclear energy.
- **Develop an attractive tax regime** to encourage private investors to back UK space businesses. Address corporation tax, capital gains tax, and higher SEIS/EIS caps.
- **Create a UK Space Bank**, appropriately underwritten, to catalyse investment, extend debt guarantees and drive matched-funding from the markets.
- **Prioritise UK-owned/domiciled companies** for grants and subsidy awards.
- **Work with institutional investors and long-term patient capital providers** such as pension funds to direct capital into high-potential space investments.
- **Change the regulatory/taxation environment for mid-market funds** to encourage greater investment into the UK.
- **Have the UK Export Fund take a more active role in financing space projects** and promote the use of UK-based insurance brokers and insurers.

### Regulation, Insurance & Risk Management

- **Provide clarity on legal and regulatory issues** as a matter of urgency, working alongside the appropriate regulators, especially those relating to insurance of UK space activities.
- **Accelerate the certification process** to enable faster revenue generation and attract businesses to the UK ecosystem.
- **Position the UK as global leader in the definition of space norms and regulations.**
- **Collaborate with insurers** to produce appropriate insurance/reinsurance products for the space market.
- **Create a fund that acts as an 'insurer-of-last-resort'** for those UK space projects that may struggle to attract sufficient insurance capacity in their early stages.
- **Provide assurances around geopolitical risk management** in the context of space.

### International Positioning

- **Enhance the UK's international reputation as a 'space nation'** with a higher profile role and greater engagement with emerging space nations.
- **Identify key capabilities and make well-chosen space 'bets'** where the UK can lead and have sustainable competitive advantage.
- **Initiate a strategic communications campaign** to promote the UK as the pre-eminent global location for space finance and associated services.
- **Host an annual global space finance conference in London** and cement the City's role as a space financial centre.



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## 2. The Space Industry Landscape

**The last decade has been a period of unprecedented change in the global space industry.** Following many years of slow progress and relative stagnation, in recent years we have seen the space sector come alive, underpinned by rapidly falling launch costs. Private companies have overseen an explosion of commercial activity alongside the development of ambitious national plans to return to the Moon and, indeed, go beyond.

**The rate of change in the sector will continue to increase.** The orders of magnitude change in the space sector in the last decade has been remarkable but will be dwarfed by the changes that are yet to come. A number of companies, led by SpaceX, are developing launchers that will deliver a transformative catalyst in terms of the cost of getting ever larger payloads into orbit. SpaceX's Starship vehicle, in particular, exemplifies the potential of what could be achieved. The likely continuation of falling launch costs will open up far greater possibilities of what humans can build and deploy in space.

**A new international space race is underway.** The emergence of a vibrant, global, commercial space sector has been matched by renewed interest in space by national governments. Alongside established space powers such as the US and China, many countries have set up their own space agencies including the UAE, Australia, Luxembourg, Portugal, and Rwanda. Although capabilities and ambitions diverge significantly across established and aspiring space-faring nations, it is increasingly well understood that space is a domain that directly impacts countries and their citizens. For those countries that have been engaged in space activities for a long time, ensuring that they remain at the forefront is considered both a matter of national security as well as soft power and prestige. Landing on the Moon, for example, is a feat achieved by only a handful of countries, most recently by India which achieved a soft landing of the Vikram lander of Chandrayaan-3 in August 2023.

**The UK has a strong space heritage but must clearly define its role in a new space era.** The UK's space programme commenced in the 1950s in the midst of the Cold War. Today, through its role in the European Space Agency, its well established satellite manufacturing industry, and as a principal provider of insurance services to the space sector, it continues to occupy a central role in the global space industry. However, countries looking to establish themselves on the Moon or build infrastructure such as space stations often do so with far deeper pockets than those of the UK. To retain a seat at the table of leading space-faring nations and with a relatively modest public budget, the UK must decide where it can and wants to lead and how to enable that in a practical way.

**Drawing upon the UK's existing strengths and sources of competitive advantage – finance in particular – will be essential.** To position itself to win, the UK must draw upon those areas in which it has natural competitive advantage. The UK's financial sector is a major strength given London's role as a key global financial centre, and hosts a deep ecosystem of banks, asset managers, pension funds, insurers, law firms, and other professional services firms. Combining government commitment to building a world-class space industry and the resources of the capital flowing through the UK, offers a chance to seize the opportunity before us.





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### 3. The Goal: the UK and London as a Global Centre for Space Finance

In May 2023, the Satellite Applications Catapult hosted a Roundtable meeting at Guildhall in the City of London with participants from the space industry, government, and the financial sector. The purpose was to discuss the potential opportunities for space investment (particularly in the context of in-orbit infrastructure) and the UK's role in facilitating that investment.

Following the Roundtable, a number of interested parties came together to develop perspectives on this topic and coalesced around the following question: **what would be required to make the UK and London a global centre for space finance?** This challenge seeks to advance the UK's interests as a space-faring nation by building upon a strong financial and professional services ecosystem that is already in place.

Working groups were formed on a voluntary basis to capture insights, thoughts, and opinions from the following key domain areas:

- Pension Funds and Capital Markets,
- Insurance, and
- International Engagement

Each working group considered what the UK and London being a global centre for space finance would mean for them. The working groups also articulated what government support they considered necessary for realising this vision. The key outputs of their deliberations and recommendations are captured in this Advisory Paper which we present to HM Government (the Department for Science, Innovation, and Technology, in particular) and other interested parties.

We consider the content of this Paper a point of departure for advancing the UK space agenda rather than an end in itself. It is our intention that what we present aligns with and complements other UK space initiatives such as ESSI. Moreover, we see the proposed actions as a mechanism for engaging government and the financial sector on how to position the UK for success across both the space and financial industries in 2024 and beyond.



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## 4. Pension Funds and Capital Markets

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### 4.1. Overview

For both pension funds and capital markets participants more generally, the engagement with space as an investment opportunity is still at an early stage. For pension funds awareness of the sector is still low and education will be required to enable decision-makers get 'up the learning curve'. In addition, this process cannot be undertaken in isolation with individual pockets of investors. The entire institutional investment ecosystem must be engaged given the nature of how capital allocation decisions are made.

Ostensibly, pension funds and capital markets are potential sources of capital for investment into UK space businesses and space-focused investment funds. However, risk-return considerations will remain a critical determinant of investability given the specific fiduciary obligations of pension funds and other investors to their ultimate beneficiaries.

Ultimately, this ongoing work will need to provide a clear answer to how space finance can be structured to meet the needs of pension funds and asset managers.



## 4.2. Working Group Discussion Themes

The pension fund and capital markets working groups identified the following areas in which engagement and action is required:

### Education and Awareness

Space as a source of investment opportunities is new to pension funds and most asset managers. Consequently, a process of education and awareness generation will be essential. This will start with the historical and industry context for the space investment landscape and go on to articulate the purposes for which space finance might be used, both in the near- and longer term. A 'mainstream' feel about space investments will need to be created with a reduction in the perception that all space investments are high risk.

### Recommended industry actions:

- Create education sessions for pension fund trustees, investment consultants, and in-house teams (including DB and DC, e.g. master trusts, contract-based) to familiarise them with the space investment landscape. Extend these sessions to a wider group of asset managers as required.
- Educate the institutional investment system on space finance and investments. Beyond those mentioned above, include asset/fiduciary managers, consultants, annuity insurers, regulators, custodians, and data providers.
- Raise the overall level of awareness through, e.g. tailored seminars, webinars, and podcasts, with supporting material in different formats, alongside general PR and awareness-raising activities. There should be the promotion of the merits of both dedicated space funds and space assets as part of more diversified funds.

### Investment Characteristics and Definition

To understand how space investments fit into the overall investment mandate/portfolio of pension funds and asset managers, their specific investment characteristics need to be assessed. Specifically, there are two main areas of assessment:

1. Fit with existing asset classes - is it an asset class in its own right or do individual investments fit within existing asset classes such as infrastructure?
2. Investment parameter assessment including risk, return, income, and ESG/impact.

It will also be necessary to determine what enablers will be required for reporting purposes.

In general, an understanding of the risk-return characteristics for a range of space investments will be needed and the return profiles will need to reflect the nature of the risks involved. For example, for longer term investments, e.g. with timeframes of ten years or more, with large pre-commercialisation capital requirements an appropriate risk premium will be essential. For investors who are LPs in alternative asset classes (not typically UK pension funds) the risk-return profiles will need to be set alongside those of, say, private equity and venture capital which offer IRRs of 15-18% and >20% respectively. In addition, the investment instruments used should be broad and include debt as well as equity.

For capital markets firms, in particular, it will be easier to invest in service-based space businesses, i.e. those that are asset light, especially those within existing industry clusters, e.g. around existing aerospace and defence businesses.



**Recommended industry actions:**

- Create a taxonomy or classification system for space investments based on the criteria defined above.
- Work with auditors, exchanges, and ratings agencies on investment classification and data, ESG characteristics, and TCFD (Task Force on Climate-Related Financial Disclosures).
- Consider the creation of a distinct space sector asset class (covering both debt and equity) under the ‘alternatives’ umbrella, making reference to existing space UCITS, ETFs, and investment trusts.
- Encourage existing venture and private equity managers who are not currently investors in space assets to consider incorporating such investments in existing multi-sector funds rather than necessarily developing specific space-themed funds.
- Where admissible, promote space opportunities as government-backed, UK local investments, and/or Net-Zero compliant.
- Ensure both debt and equity are incorporated into any space investment taxonomy/classification structure.
- Engage with the London insurance market, and reinsurers specifically, on the scope for pension fund investment into space reinsurance as a potential asset class.
- If the creation of a space-specific investment trading hub is envisaged, define how in-house, fiduciary, and external managers would monitor and (as necessary) trade their space sector investments and specify what the role of London would be in terms of a rating agency or marketplace.

**Institutional Investment Ecosystem**

Engagement on space finance and investment cannot be undertaken with pension funds and asset managers alone. It needs the participation of the whole institutional investment ecosystem and, indeed, the users of space finance themselves. This needs to happen early. Investment consultants, fiduciary, and asset managers will need to be engaged as soon as possible to give them the opportunity to influence the taxonomy and categorisation of asset classes and capital markets.

To enable the flow of investment, pension funds will need to ask their investment consultants to find opportunities in the space/satellite sector. Demand-pull dynamics will encourage asset managers to launch new products. On the investee side, users of space finance and investment will need to collaborate and consider the risk characteristics of their investments and how their investments translate to institutional investors’ current asset classes.

Pension funds will also wish to understand where they fit into the overall space investment landscape. In particular, they will need to assess their positioning versus other investor types including, but not limited to, (early stage) venture capital, private equity, and infrastructure funds (manufacturing and energy in particular). In addition, if the UK/London is to be considered a global financial centre for space then non-UK pension funds will wish to participate in investment opportunities originated here and will need an appropriate mechanism for doing so.

**Recommended industry actions:**

- Achieve shared understanding across the institutional investment ecosystem around appropriate product development and investment categorisation to facilitate implementation. In particular, ensure that the approaches described in ‘Education and Mainstream Awareness’ above include the wider ecosystem.
- Have the users of space finance work together to characterise the risk profile of their investments.
- Reach agreement/consensus on where pension fund capital would be best deployed versus other investor types.
- Determine the process by which non-UK pension fund participation would be enabled.

## Private Markets

A primary challenge for UK mid-market private market investment firms is the flow of capital from large institutional investment managers to global investment management firms. Encouraging greater pension and insurance investment into the UK mid-market rather than the focus on large (overseas) asset managers would help the flow of money into this sector. This could be achieved by way of regulators influencing the requirement to maintain capital that is managed and invested in the UK through oversight of Solvency II related capital requirements. Specific actions could be requiring greater proportions of investments to be in sterling or in a longer tail of investments to diversify funds appropriately from strategy correlation which larger fund managers are more susceptible to.

Greater funding in the mid-market could then be combined with incentives to those mid-market managers to allocate to space, potentially through provision of a guarantee to any investment that adversely reduces the return profile of the fund.

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### 4.3. Government Action

Alongside the industry engagement and actions outlined above, the Pension Fund and Capital Markets Working Groups encourage government support/assistance in the following areas:

- **Policy commitments.** Government should make an explicit commitment to supporting the concept of the UK and London as a global centre for space finance.
- **Economic support.** Government should consider economic incentives to encourage private investors, similar to those provided for renewable energy and Hinkley Point C such as:
  - Guaranteed yield for investors (project finance type approach),
  - Initial subsidies followed by fixed prices for outputs, and
  - Scope for government to underwrite investments.
- **Role as an early customer.** Government ought to accept that it is likely to be an important initial customer and government/MoD should make an explicit commitment in this regard. In particular, transparency is needed from government/MoD about what they want and what they are interested in being a lead customer for.
- **Legal and regulatory matters.** Investors want clarity on regulatory and legal risks. Government and regulators should work with industry on key topics including:
  - Legal and regulatory domicile
  - Insurance exclusions
  - Sustainability (through ESSI, for example)
- **Complementary focus for the UK.** Government is requested not to replicate activities already being undertaken by the US and China. Focus on intellectual added value activities such as services rather than manufacturing.
- **Geopolitical risk assessment.** Government should provide assurances around how geopolitical risks will be managed and prioritised in the context of space.
- **Overseas pension funds.** Government should provide assurances that overseas pension funds will not be

given preferential treatment over prime space finance investments for political gain/relationships.

- **Mid-market private funds.** Consider changes to the regulatory/taxation environment to encourage greater investment into the UK mid-market and thereby into the space sector:
  - Through Solvency II related capital requirements, incentivise a greater proportion of institutional investments in sterling or into a longer tail of diversified (mid-market) investments.
  - Introduce a tax break allowing non-domiciled UK tax residents to remit cash back into the UK if investing into specific types of funds, e.g. space-focused/high-growth funds.
  - Declare an untaxed income amnesty into the first-loss tier of capital in new private market funds that invest in space and which meet strict government criteria.
  - Create incentives for mid-market managers to allocate to space, potentially through provision of a guarantee to any investment that adversely reduces the return profile of the fund.
- **National Space Institute.** Consider the creation of a National Space Institute as a centre of innovation, education, development, investment, and insurance expertise. May have multiple UK locations (complementing existing space clusters/locations) and take on the role of principal driver for international investment promotion by being able to clearly 'package' the UK's value proposition for long-term investors.





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# 5. Insurance

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## 5.1. Overview

London is already a global leader for space insurance, both underwriting and broking, with the UK having over 25% of global space insurance capacity. The London space insurance market has been the key innovative and creative centre of global space insurance industry for over 40 years. Originating within the Lloyd's market, it has since spread out to other companies. In terms of space insurance broking, all leading space brokers (Marsh, WTW, Aon, AJG) have established London-based teams.

A key reason why this influential space insurance community has formed in London is the physical proximity of the brokers and underwriters within the Square Mile. The ability of brokers and underwriters to meet face-to-face to discuss and develop insurance solutions has proved to be a productive way to solve the challenges that have arisen.

In terms of the global space insurance industry size vs domestic space industry size, the London space insurance market has “punched above its weight” for many years. We believe we have a lot to offer space financing in the UK from a risk management and insurance perspective including:

- Direct space insurance support for space projects seeking finance in the UK,
- Collectively, we represent a significant pool of space industry expertise in London with experience on a variety of space projects globally over many years, and
- Space insurance plays a significant role in addressing technical risk for financiers. We know the needs and expectations of financiers regarding space projects. We can ensure that space insurance can become a business enabler that encourages commercial financing of space projects.

The term “space insurance” is typically used in relation to the insurance of those risks directly associated with the insurance of risks arising directly from launching and/or operating spacecraft. However, we have seen how financing of space projects can touch on numerous other areas of risk and insurance. All London space insurance participants represent companies that also operate in other fields of insurance. Therefore, we can act as a facilitator for accessing the expertise, know-how

and support in these other insurance markets which could include, for example, political risk, credit protection insurance, property insurance, and general commercial liability.

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## 5.2. Working Group Discussion Themes

The Insurance Working Group has identified several areas where we would recommend further study to explore how the London space insurance market could meet the challenges and demands that future UK space activity may present.

### Uncertainty of Space Regulation in the UK

UK space regulation is undergoing multiple reviews at present with work being undertaken by UKSA, ESSI, CAA, and DFT. The current uncertainty of regulation relating to space activities may put the UK at a competitive disadvantage versus other countries. This impacts insurance because insurers are required to provide third-party legal liability for launch and in-orbit operations.

The space insurance industry needs to have clarity over regulations relating to third-party liability insurance required so that we can ensure this insurance is available and can be provided.

Regulation should recognise that the ability to secure space third-party liability insurance is dependent on insurance market conditions. The UK space community and government must consider the consequences of the UK space insurance market not being able to provide the required third-party liability insurance on commercially reasonable terms.

### Changing Space Industry Composition

The London space insurance market has evolved primarily in support of large-scale commercial geostationary satellite programmes (“large GEOs”). It is the provision of launch insurance and in-orbit insurance for these large GEOS that has provided the majority of insurance premium income to the London space insurance market over the last 40 years.

We are now at a time where the number of large GEO satellites launched each year has been decreasing yet at the same time we have been seeing a rapid expansion in the numbers of innovative, lower-cost, newer technology space missions seeking insurance protection.

Although this new space activity is very welcome, this transitional period has created uncertainty for London space insurance market participants.

### The Challenge of Insuring New Technology

Following on from the previous theme, many of the new UK space projects are likely to involve use of new technology or new suppliers in terms of their rocket or launch vehicle equipment. This is commendable as it shows development of cutting-edge technology in the UK which should be strongly supported.

However, it presents a challenge from a space insurance perspective as this relies on the underwriters being able to make a reasonably reliable assessment of the level of risk of the launch vehicle and spacecraft to be able to set the terms, conditions and pricing of the insurance. Space underwriters need good access to the relevant technical details and to have sufficient insight into testing, qualification, and prior missions to be able to do this.

It has always been a characteristic of the space insurance market that if the level of risk involved is deemed by insurers to

be very high, the premium rate level will rise significantly and the available underwriting capacity for risk will reduce sharply. Our concern is that for some very innovative and higher-value future UK-based space projects, the London space insurance market may struggle to provide launch and in-orbit insurance cover on a basis that is commercially justifiable (e.g. insuring maiden launches of payloads consisting of new technology).

### Complications in Insuring Overseas Operations

As explained above, the London space insurance market relies a great deal on income derived from supporting space projects in other countries. We rely on our ability to trade freely with other countries to be able to do this. Recent years have seen the ease of doing business with space companies in other countries decline.

There are a number of reasons for this, including:

- Diminished ability to trade freely in relation to financial services (e.g. through Brexit),
- Lack of clarity regarding how insurance premium taxation should be handled for space, and
- Sanctions and other embargoes (principally against Russia which constituted around 20% of global space insurance premiums prior to the Ukraine conflict).

We accept that many of the above are beyond the scope of this Working Group. However, in some cases what we have seen is additional complications arise because the space industry (including space insurance) is not fully considered when drafting any legislation in these areas.

Therefore, we may be left operating in a realm relying on interpretation of non-specific legislation, that is not necessarily the case for other larger classes of insurance business.

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## 5.3. Government Action

The Working Group suggests looking at a few areas that may provide an opportunity to ensure that the London space insurance market can provide the maximum benefit to assist in London becoming a global centre for financing of future space projects. We have captured these under the following headings:

### Regulatory

Recommended actions:

- Expedite clarification of UK regulation relating to insurance of UK space activities,
- Clarify roles and responsibilities of different entities, and
- Develop an approach to balancing sustainability with providing a nurturing environment for entrepreneurial projects.

### New Project Insurer of Last Resort

**Context:** recent market losses highlighted the precarious nature of space insurance profitability. UK space insurers (and brokers) are generally very supportive of new UK space ventures but the level of risk and lack of insurance track record of some of these ventures may prove to be a real challenge in the initial stages of the project.



It is a very real possibility that the UK space insurance industry will not be able to provide sufficient capacity in these initial stages (or capacity at affordable rates) to allow the financed risk to be transferred by insurance. However, if a new project is successful this “new technology” obstacle will be temporary. Over time with successful initial deployments, much more capacity will become available at reasonable rates.

Recommended action:

- Government supports/creates a fund that acts as “insurer-of-last-resort” for those UK space projects that may struggle to attract sufficient insurance capacity in their early stages (need to consider an appropriate mechanism and structure for this).

### Project Financing

**Context:** in recent years we have seen more talk of the use of the UK Export Fund to finance satellite projects. This is welcomed by the London space insurance community as, for many years, we have seen US Exim, Coface/BPI be used as financiers for satellite projects. It has been observed in these instances that a requirement of the export financing has been to maximise participation in launch insurance from the financing country.

Recommended action:

- UKEF takes a more active role in financing space projects and, as part of that, actively promotes the use of UK-based space insurance brokers and insurers.



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## 6. International Engagement

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### 6.1. Overview

For the UK and London to position itself as a global centre for space finance, this must be recognised by the international space community, both governments and private international investors. To this end, the International Engagement Working Group considered the question: ‘How does the UK achieve international recognition as a Global Centre for Space Finance?’

The Working Group’s outputs cover two main themes:

- Audience segmentation, and
- Messaging, signalling, and branding.

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### 6.2. Working Group Discussion Themes

#### **Audience Segmentation – Established Space Powers and Emerging Space-Faring Nations**

We determined that countries engaged in space activities were principal targets for engagement but distinguished between those that were established and those that were ‘emerging’. Established space powers were identified as Australia, Canada, the European Union, France, Germany, India, Italy, Japan, Spain & US. Emerging space-faring nations include, *inter alia*, Chile, KSA, Oman, UAE, Switzerland, and Luxembourg.

The principal challenge in drawing capital from established space powers is the established structures already in place in those countries. Specifically, there are pre-existing finance structures, precedents, practices, and incumbencies. In some nations, access to capital is easier and, in the US, there are more former start-up executives in the venture capital and private equity communities than in the UK.

In respect of emerging space nations, the proposed approach is to build relationships to support capability, policy, skills, and/or financial gaps. Challenges here will include the UK's reputation versus that of other space-faring nations. In particular, the perception (as mentioned above) may be that capital is more readily accessible in other leading space nations and that even UK companies which scale do that outside of the UK, e.g. on the NASDAQ. More generally, emerging nations may not see the UK as a leader which may be compounded by a misunderstanding that the UK's departure from the EU implies a departure from ESA as well. Finally, the UK's position as a formerly imperial country may influence the choice of emerging nations also but through our deep Commonwealth relationships we may be presented with an opportunity to forge even stronger links.

In both established and emerging space nations, there may be a perception of the UK having political instability and inconsistent policy/strategy. In addition, the FTSE and London more generally are not seen as primary locations for technology company listings.

### **Audience Segmentation – Private Capital**

We require proactive incentivisation measures and a strong understanding of the investor community we are targeting, and why the UK would be an attractive place to invest for them.

There are a number of challenges in attracting capital from private investors. These include, but are not limited to:

- Penalty capital gains taxes which impose significant risks to emerging businesses,
- Absence of private investors willing to race to invest in large prizes,
- Very low caps for angel investor incentives to invest in early-stage businesses (e.g. SEIS, EIS),
- Absence of access to state assets for low rates to overcome early-stage capex requirements,
- No mandates to inwardly invest for whole-system capability, and
- The absence of a policy investment bias towards UK companies.

### **Vision & Core Messaging**

The discussion of the Working Group was extended to include the overall vision and messaging of the UK as the international investment community will be seeking strategic consistency and coherence, policy stability, regulatory clarity, and government investment parity with comparable space nations.

### **Strategic Signalling**

Demonstrating strong commitment to the investment community will require highly significant incentive measures to be considered.

### **Branding**

The UK's starting point is strong. It has strong research institutions, IP, world-leading financial services, a skilled workforce, and a strong regulatory environment.

Against each of these discussion themes, the Working Group formulated requests of government to further the overall international engagement agenda.



## 6.3. Government Action

The International Engagement Working Group is seeking government support/assistance in the following areas:

### Audience Segmentation – Established Space Powers and Emerging Space-Faring Nations

- **Create and present clarity around structure, goals, and communications**
  - Reduce complexity around how government departments ‘handle’ space.
  - Reframe the National Space Strategy to be more focused and create a delivery plan. Seek cross-party consensus on the Strategy.
  - Build wider political awareness of space opportunities, threats, and risks.
- **Enhance the UK’s international reputation as a ‘space nation’**
  - Take a more high-profile, leading role at the UN, in ESA, and regionally.
  - Develop an attractive value proposition for engaging emerging space nations. For example, offer advice/consultancy/support to help emerging nations build appropriate space-related institutions and structures.
  - Identify alternative finance hubs and ‘outpitch’ their propositions.

### Audience Segmentation – Private Capital

- **Develop an attractive tax regime to encourage private investors to back UK space businesses**
  - Differentiate the tax treatment for space activity.
  - Develop a progressive space **corporation tax** structure. For example:
    - Zero-rate of corporation tax for early-stage companies,
    - Discounted rates until significant revenue growth achieved.
  - Develop a progressive space **capital gains tax** structure. For example:
    - Zero-rate of CGT on the five years/£500m of profit,
    - Progressive rates thereafter.

- Increase caps on other investment schemes, e.g. SEIS, EIS:
  - Raise the caps from £1m to, say, £10m (£1m is too low for capex-heavy investments),
  - Make caps progressive – the greater the success, the greater the payments.
- Incentivise apprenticeships and graduate schemes through tax-efficient funding schemes.
- **Prioritise UK-owned/domicile companies for grants/subsidy awards**
  - To access US grants such as SBIR or DARPA, the companies applying have to have 51% US citizen ownership. This is not the case in the UK. Large government grants may be awarded to international firms with nominal UK presence which leads to capital and IP drainage.
- **Mandate country-of-launch/operations in the UK or through UK companies**
  - The US, for example, mandates that all US-government assets have to launch on US-launchers if technically feasible.
- **Create incentives (for Primes) to crack specific industry problems that draw in private investment**
  - Private investors have shown themselves willing to invest in a race for large prizes. Historic examples include the Longitude Prize, which prompted the development of marine chronometers used for measuring time at sea.
- **Enable access to state-owned assets at no or low cost**
  - The US Commercial Space Launch Act, for example, allows private actors to take leases over state assets easily and relatively cheaply. It allows firms to piggyback on state investments that may be moribund and invigorate them.

### Messaging, Signalling, and Branding

- **Articulate what kind of space-faring nation the UK should be.** For example, the UK is a nation that:
  - Is the leading friend to all nations operating in space and is driven to ‘make space a safer place’,
  - Uses space as a context for diplomacy in which we accommodate our ‘natural’ allies,
  - Nurtures great ideas, mobilises them into concepts, and deploys them to space.
- **Make concentrated, well-chosen space bets and raise awareness around them.** The UK must identify where we have a competitive advantage and focus on those areas.
  - Suggestions include small-sat vertical launch, horizontal launch, small satellite construction, space-based solar power, and microgravity experimentation.
  - Make launch capability a national priority and build a rapid sequence of launches after the first successful launch. Make launch a day-to-day activity of the UK.
- **Be a global leader in the definition of space norms and regulations.** The UK has already made progress on this front and must double down on:
  - Creating the leading space regulation framework in the world (safest, swiftest, and smartest).
  - Accelerating clearance and certification timelines.

- Leading in codifying space norms in the UK and at other international bodies.
- Evolving Astra Carta into a global standard and promulgating the UK space sustainability kitemark.
- Positioning the UK as a global leader on highlighting and communicating the dangers of space.
- **Create a space investment fund/bank: the UK Space Bank (UKSB)**
  - Based the UKSB on the UKIB's structure, potentially located in Edinburgh.
  - Start with debt funding but grow into equity investment.
  - Seek matched-investment partners.
  - Encourage a Fund-of-Funds grouping to bear greater risk.
  - Potentially aggregate all space R&D, S&T, and innovation funding and disperse from the UKSB.
- **Initiate a strategic communications campaign**
  - Build strategic communications into ongoing government campaigns such as the 'Britain is Great' campaign.
  - Develop mechanisms to support space SMEs on trade missions. This will simultaneously expose UK businesses to export opportunities and build the Space UK brand.
- **Host a global space finance conference**
  - Make London the host of an annual global space finance conference, with the support of the convening power of the Lord Mayor of London and City of London Corporation, CityUK, Trade Bodies, and Livery Companies.



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## 7. Conclusions & Next Steps

The goal to make the UK and London a global centre for space finance is ambitious and challenging and will only be realised with sustained effort over the course of many months and years. Nevertheless, it is central to delivering on the UK's aspirations to retain its role as a leading global space power and draws upon many of our existing strengths and capabilities both in the City of London and beyond. In addition, government space policy must be bold, visionary, and framed in the context of industry obstacles and needs. We hope that the recommendations presented here are well received and acted upon.

We have brought together perspectives from pension funds and capital markets, the insurance industry, and experts on international engagement to take the first necessary steps. The financial community is composed of many more participants and their perspectives will also be essential if we are to succeed in the long run.

The key next steps will be to work with industry and government to distil the proposed actions into a delivery plan that is forward-thinking but pragmatic about what can be achieved in a reasonable timeframe. We must work with those that are willing and generate success where we can, as soon as we can. The Satellite Applications Catapult looks forward to this collaboration and believes that the future of the UK as a space-faring nation is bold and bright, underpinned by the power of capital and world-class innovation that exists here on our shores. Let us make this the moment when we step bravely and decisively into that future.

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