



UK Engagement with Space Committee

Uncorrected oral evidence

Monday 12 May 2025

3.40 pm

Watch the meeting

Members present: Baroness Ashton of Upholland (The Chair); Baroness Bonham-Carter of Yarnbury; Lord Booth-Smith; Baroness Donaghy; Lord Lansley; Baroness Mobarik; Lord Shamash; Lord St John of Bletso; Viscount Stansgate; Baroness Stowell of Beeston; Lord Tarassenko.

Evidence Session No. 11

Heard in Public

Questions 105 – 113

Witnesses

I: Michele Dougherty, Executive Chair, Science and Technology Facilities Council; Mark Boggett, CEO and Co-Founder, Seraphim Space; Nayen Pankhania, Strategy and Consulting Director, Satellite Applications Catapult.

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Examination of witnesses

Michele Dougherty, Mark Boggett and Nayen Pankhania.

Q105 **The Chair:** Welcome, everybody, to this meeting of the UK Engagement with Space Committee. Thank you very much to our three witnesses for joining us this afternoon; we are delighted that you could be with us. This is an extremely important session. We are hoping that we will be able to look at issues of funding for the sector—this is particularly relevant for some SMEs, or small and medium-sized enterprises—and to think about the role of government. We could do no better than to have our three witnesses here. Can we begin by each of you introducing yourselves briefly? Mark, can we start with you?

Mark Boggett: I am the CEO and co-founder of Seraphim, which is an investment firm that focuses exclusively on the space market. We have been doing this for the past 10 years and have become the largest and most prolific investor in the space market globally, with a portfolio of 146 space tech companies. We have a growth fund listed on the UK stock market and a private investment fund. We also run the world's largest space accelerator programme.

Michele Dougherty: I was an academic based at Imperial College for 35 years. I am a planetary scientist, and I have an instrument on its way to Jupiter; it will take six years to get there, which is one of the reasons why I agreed to step into this new role. I recently became the chief executive at the Science and Technology Facilities Council. I am here today because I am talking to UKRI business, and I am the UKRI space champion.

The Chair: Not many people can say that they have something on the way to Jupiter—in fact, probably nobody else.

Michele Dougherty: It just takes so long.

Lord Shamash: How long?

Michele Dougherty: Eight and a half years.

Lord Shamash: When was it launched?

Michele Dougherty: April 2023.

Lord Shamash: Sorry; I could not resist.

The Chair: I know you could not. Nayen, it is lovely to see you again.

Nayen Pankhania: I am the investment and strategic finance director at the Satellite Applications Catapult, which is one of nine catapults in the Catapult Network. We are a technology organisation that is focused on increasing the use of space data and technology to grow the UK economy and for the benefit of society at large.

The Chair: We could not have better witnesses, so thank you so much

for being here. We are going to move at pace today.

Q106 Baroness Stowell of Beeston: Some of us around this committee table are familiar with the scale-up challenge, particularly around access to capital, through either work on other committees or other work we do. What, if anything, is specific to the space industry when it comes to access to growth capital, perhaps going beyond the normal things that we hear about in terms of deep tech?

Mark Boggett: The UK and Europe share the same issue: a risk aversion towards the later stage, which is the growth stage, of venture. We have largely addressed the early-stage issue. If you are a quality early-stage company, you can access the capital that you need, by and large. The big problem is around the later-stage venture. UK and European investors are cautious largely because these companies are capital intensive and prefer not to invest in these long-term type businesses.

However, there are also some demand-side issues. Although the UK has a great pool of entrepreneurs, they need more training, particularly when it comes to the new market of space. There is a general lack of understanding of what “good” looks like, particularly in the global marketplace; what “good” looks like in the UK; and what already exists in other markets. There tends to be a lack of vision around scale. In the US, entrepreneurs are looking to build multi-billion-dollar businesses, whereas that is not the same in the UK; they are not financing themselves for that. There is also a lack of knowledge around the space market and dual use, which results in investors choosing not to invest because they do not have the experience to do so.

Michele Dougherty: Following on from that, some start-ups supported by the European Space Agency Business Incubation Centre have reported that UK seed investors frequently require in-orbit demonstration of their hardware before they will invest at the seed stage. This indicates that UK investors, even those that are focused on technology investments, typically lack the risk appetite for space hardware investment at the seed stage, which really underpins what we said earlier.

Nayen Pankhania: If we consider life sciences, for example, because it is an industry that the UK has a great deal of success in, there is a high degree of R&D required and longer payback periods. There are plenty of investors and plenty of companies, principally because there is a clear exit path for those investors. That is well understood. Space is probably something like 20 years behind life sciences, partly because the market and economy for space are still forming so the supply and demand dynamics are not quite clear yet. Companies are trying to deliver services for a market that is not fully formed. Take a company such as Starlink: it was started when the demand for direct-to-mobile communications had not fully materialised, but that demand is now emerging and Starlink is the principal player. Companies need to move to where the puck is going; that requires an element of vision by investors and companies alike.

Mark Boggett: If I could just add one more thing, this really is a UK issue. We are international investors: the UK accounts for about 25% of our overall portfolio. We are heavily invested in the US and in Europe. UK funds have the highest challenge out of all those entrepreneurs for fundraising in this market. In the US, it is very straightforward, and, in the EU, due to recent measures that have been taken to increase the supply of funding, it is now much easier. So the UK in particular finds it difficult on the global stage.

Michele Dougherty: May I add to that? I always talk about collaboration and cohesion; it is the way I have always worked. If the space sector in the UK could develop a coherent, integrated funding strategy between UKRI, the UK Space Agency and private investors, that would help facilitate growth and attract additional investment. We just need more joined-up thinking.

Baroness Stowell of Beeston: Is that something you have seen in other sectors and industries?

Michele Dougherty: Yes. I have seen it in the US in other sectors. The only one I can think of that does it better in the UK is life sciences.

Mark Boggett: That is a good example. This is a big opportunity for us to get right because Europe does not have great experience in investing in this area, either, so there is an opportunity for the UK to focus on how it can leverage private investment into this area. That will enable the economy to grow on the back of the space market and its place in the defence market.

Lord Tarassenko: Can we learn anything from history? Just over 40 years ago, Racal Vodafone started as a very small enterprise. It is now a multi-billion-pound company in comms. Surrey Satellites started not long afterwards, but it has never grown to a multi-billion-pound company. Do you have a reason as to why that might be? Is it space versus comms?

Michele Dougherty: I can give you a counterexample. I am not sure about Surrey Satellites, but SSTL worked with a lot of different organisations and paved the way for low-cost demonstration missions. The team behind it went on to form In-Space Missions in 2015; it was founded by Doug Liddle then sold to BAE in 2021. It was a long, slow period of time from first inception, but UK companies, small companies and SMEs can evolve into being big enough that the large companies want to work with them. That is the only example I can think of; there may be others.

Mark Boggett: I can answer your question specifically. Elon Musk was an investor in SSTL. It was growing very quickly as a private company and leading on the world stage. It was then acquired by Airbus, so it became part of a larger group; it has effectively operated as a division of Airbus since. Its innovation, growth and speed have declined as a consequence, so it has not necessarily kept up with the pace of development of other private companies globally; that could be for a

range of reasons, not least the amount of funding resource that Airbus allows for SSTL's growth.

Lord Tarassenko: Was there funding available at the time it was acquired by Airbus?

Mark Boggett: No. I suspect that the reason why it went down the acquisition route was that the next level of funding simply was not available to give it the level of growth that it needed. There were few choices other than to be acquired.

Q107 **Baroness Mobarik:** How does the UK compare internationally when it comes to attracting investment? The committee has heard that the UK is second to the US when it comes to private investment in the space sector. It is around 17% of global private space investment in some years, I think, and you, Mark, have said that your company invests about 25%. Does that not indicate that we are in a good position?

Mark Boggett: I am happy to take this one. We run a quarterly publication called the *Seraphim Space Index*, which looks globally at all of the investment in the space market. Our statistics demonstrate that, in 2024, the UK was actually third, behind the US and China, in terms of the number of companies that have been invested in and the volume of companies. We are in fourth place, just behind Germany, in relation to the amount of funding that has been invested. So we are in a strong position but the issue is that it is going in the wrong direction.

There is another statistic to draw out: although the UK is either third or fourth, as I have just described, the UK is 17th in the world and 10th in Europe when you look at the average deal size. This tells us that we are identifying the right entrepreneurs and backing them in the earlier stages but consistently underfunding those businesses, which does not enable them to grow on the global stage.

This is an issue that is continuing to go in the wrong direction. We now have significant additional competition from the likes of Italy, Germany and Japan, in particular. We think that the UK really has to act now if it is going to continue in the strong position it has had in terms of global leadership.

Michele Dougherty: There is no issue with the fact that people want to work with UK scientists, engineers and the innovation hubs that we form, but it is about following up on that. I have another bit of data here: we are 31st in the world for absorbing the knowledge that we generate. Other people come in and take the ideas then go off and do something with them. We are really missing out; we start everything off beautifully, but then there is not the support that is needed to take it forward.

Nayen Pankhania: The only thing I would add is that space is becoming a strategic national priority for countries that we would not have considered traditional space-faring nations. The private capital and where we are in the league table are obviously influenced by not just what we do but what other countries are doing as well. If we want to

remain near the top of that table, it requires a redoubling of effort to make sure that that happens.

Lord Lansley: I am thinking in my brain about what Mr Boggett was saying about the European Union making changes that have made the availability of investment easier. Can you guide us through the sorts of changes that we are talking about?

Mark Boggett: Yes. For example, the EIF created a €600 million fund about three years ago, specifically investing in venture funds that would target space investments in the EU 27; that excludes those companies being invested in in Europe. It was hugely leveraged because the EIF typically accounted for about 25% of an overall fund, so it was able to use that to leverage additional private capital so that there are billions of capital available. All of this was targeted at the seed and series A stage of the market, so it is really starting to come through now, but the UK has not had an equivalent.

Lord Lansley: Would not the British Business Bank technically be an equivalent organisation?

Mark Boggett: It would be, but it has not had a space-focused strategy. The British Business Bank has been the cornerstone investor in our last two funds, so it does play in this area, but it is much more limited than the hugely ambitious fund that has been set up in Europe and is now proving well timed because it is now being operationalised and is actively in the market. There is a whole range of other debt funds that are either EIB or country-specific funds, such as Italy's, which has €1 billion of its own money targeted specifically at space. There are significant funds that UK companies can draw on, but accessing them requires them to be doing things in Europe.

Lord Lansley: Thank you; that is very interesting.

The Chair: We are now going to move on to think about government policy in this context. I am conscious that you, Mark, have to leave at the right time at the end of this, so we want to make the most of having everybody together.

Q108 **Lord Booth-Smith:** When it comes to the Government's overall philosophy on space, there is a belief—"perception" might be a better word—that the free market might underdeliver and that this means that the Government need to play a more proactive role in the development of technology and market creation. From your perspective, how true is that overarching philosophical outlook?

Nayen Pankhania: That is broadly correct. To my previous point, use cases are running ahead of demand. The space economy and markets are still forming, and supply and demand for products are still not entirely clear or well set in stone. That is a market failure of sorts. The free market, with a generally near-term focus, probably would not resolve that market failure. In such conditions, a proactive government approach is probably required in terms of producing a demand bridge between now

and the point where the free market would be able to ensure that such companies can survive. The Government are already a major user of satellite technology; doubling down and acting as a consumer or a smarter procurer of services would stimulate the demand needed.

Michele Dougherty: By “proactive role”, do you mean driving it or helping to steer it? The one concern I have is that we have to be really careful that we do not inhibit blue-sky research. There are some fantastic ideas that have come out of grant funding given to people where we do not think that something is going to succeed, so it needs to be a balance.

Lord Booth-Smith: It is more about enabling it than necessarily trying to drive it, which I am not convinced would be optimal.

Michele Dougherty: It sounds like we are on the same page.

Mark Boggett: I am also on the same page. I believe that there is an issue in the markets and that we need a proactive role from government, particularly in the case of the growth stage scaling up of these businesses. I can put this into perspective through our experience at Seraphim. We run a growth stage investment trust, which is listed on the main market of the UK, and I can evidence how the free market is currently underdelivering.

All private equity investment trusts, infrastructure investment trusts and private growth investment trusts—the category that we sit in—are sitting at historically high discounts. Let me put that into perspective: the average discount is 32% for private equity, 31% for renewable energy and 38% for growth capital. These are historically high numbers, but what they basically mean is that funds like ours cannot access new capital until such a time as that discount gets to zero. We do not know when that might happen. This is a structural problem with the market, and we do not know when it is going to be addressed. These numbers are absolutely huge: there is a record £14.6 billion of outflows from the investment trust market in the UK in the past year; 31 funds have left the market; and there have been 10 liquidations, nine acquisitions and 12 mergers.

What is happening is that fund managers are choosing to leave the market as a consequence of a lack of investment in this growth stage part of the market. That is a big challenge and where much of the growth capital for the scale-up of these types of businesses that we are talking about will need to come from. We need to do something to address this.

Michele Dougherty: Can I follow up with an example that does not need that much funding? If you inject funding at the right time, it can really help. An example is a recently completed UK Space Agency-funded project called Power for Space, where £100,000 was put into exploring opportunities with the Midlands Space Cluster to see whether the UK can take the lead on adopting nuclear power systems for space. That little pot of money enabled a strategic view to be taken, and a report is going to be published in July. So it does not need to be large pots of money: if

they are placed in the right places, they can really enable new ideas to come out of it.

Q109 **Lord Shamash:** I am sure that there will be an argument that it is probably not enough but the UK Government spend significant amounts on space science research, much of it through UKRI. The Government also play a role by providing grant funding and, on occasion, contracts for SMEs in the space sector. Do the Government strike the right balance between early-stage R&D funding and targeted support to help firms grow? This question is targeted at you, Michele, to start with.

Michele Dougherty: When I saw that question, I found myself wondering what the split is. I do not know what the split is. That then got me to thinking about the fact that, when R&D and innovation funding is made available, some also goes to enabling SMEs to decide in what particular area they would like to work. So there is a bit of a mix between the two. I have asked myself what I would want that split to be. It should not be more than 50% going to SMEs because of the fact that some R&D and innovation funding is also enabling SMEs.

Lord Shamash: So they are getting it two times over, so to speak.

Michele Dougherty: They are—but the pot is never enough, of course. We need to keep in mind that some of that R&D money is enabling.

Mark Boggett: Our view is that the approach taken at the moment is just too broad. It is trying to do too many things with too small a budget.

Lord Shamash: Is this the Government you are talking about?

Mark Boggett: Yes. There are lots of small funding amounts for a very broad number of businesses, but we would argue that that is not what is required in the current phase of where the market is. We believe that there should be more active movement towards doubling down and picking winners that can potentially scale, then trying to align all the government-related customer and funding opportunities behind these companies that have the best chance. We believe that that will ultimately lead to the crowding in of investors, with a sort of kitemark for that company, which will enable non-experienced investors from the space market to take more comfort in investing in those types of businesses. We would argue for larger grants and funding to be made available to a smaller number of businesses.

The Chair: Who picks the winners? How do you decide who is going to pick the winners?

Mark Boggett: This is where there should be a good working relationship with the private sector. The whole point of funds such as ours is to try to identify the likely winners. One of the things that Governments will focus on significantly is technology, whereas we are focused on the capabilities of the team and the team's abilities to scale a business, to hire and retain the right people, to set targets commercially and technically, and to meet those. It is a different way of looking at the

same company that comes to different points of view about the outlook for that business. A closer relationship between the investment community and the Government should help the Government be able to identify companies that at least the investors are prepared to put money behind.

Nayen Pankhania: I wholeheartedly agree with Mark's point. The UK has a generous approach to R&D funding and has created a huge number of start-ups. We should welcome that, but there may be something to be done along the lines of thinking about how to incentivise companies that receive R&D grants to focus on commercial outcomes. There is a huge population of companies that are very good at doing R&D but do not think ahead to what the commercial proposition is and how they become a self-sustaining, viable company.

It is difficult because you do not know in advance which R&D recipients will go on to be successful but, certainly from the perspective of the catapult, we have a notion of what we call high-potential businesses, where we try to do a rough assessment of the potential of a business to go on to do great things, to scale and to become a business of meaningful size. Although we will not always get that right, if the probability distribution supports great outcomes, we can work with investors such as Seraphim to get capital into those kinds of companies to make sure that they scale successfully.

Lord Booth-Smith: Do you think that part of this is to do with elements of historic UK corporate culture? In the US, you can see in lots of very fast-growth companies where the founding CEO—the visionary individual—remains CEO nominally but is paired alongside someone who is a very commercially minded individual with a lot more experience. We seem to do a little less of that here, and it happens much earlier in the US cycle. Is that a thing or am I off the mark on that?

Mark Boggett: It is about picking the winner, is it not? That is exactly what it is. Right now, it is much more risk averse to give everyone a little money and see how it goes but not reserve enough money for the scale-up of the companies that are proving themselves. We just do not have the next stage of engagement in place. We never have, but neither does Europe. So there is still an advantage for us to fix this and to lead by addressing this. It is very possible to do that.

Lord Shamash: How would you fix it, Mark?

Mark Boggett: The space market is dual use, and the biggest customer at the moment is defence. Defence funding across Europe has gone through a generational change over the course of the last couple of months. There is significantly more funding available now, and the UK has already gone through a process to change the remits of some important funds such as the British Business Bank and the National Wealth Fund. This then needs to be followed through so that those funds are both investing directly in the best opportunities that the UK and more broadly has to offer and enabling fund managers—similar to us and other

fund managers that the British Business Bank is very adept at identifying—to get that money into the market at scale.

The problem for today is that we need capability, but the problem for tomorrow is that we do not have the capability to fill some gaps. We need to invest in the companies that are going to take five years or more to be able to deliver against that. So we need to do both of those things at the same time; I think that we are on a pathway to do that.

Lord Lansley: I ask you, for a moment, to turn it round the other way and look at it from the SMEs' point of view in terms of having to navigate their way through all this. If we exclude the number of SMEs that have people who work in the industry who spin out or know that they have a market as a subcontractor to somebody, how complicated do you think the system is for those with new ideas or new technologies that are trying to navigate through this system? How do we enable them to best navigate their way through it?

Nayen Pankhania: It is fair to say that it is a challenge for SMEs to navigate the ecosystem. That is not to say it has not had an impact, but various organisations have multiple funding calls and these change over time. An SME is small by definition and has relatively few people, so staying on top of that is no mean feat. Certain organisations such as Innovate UK do a great job of trying to help SMEs navigate different funding approaches, but it is not without its challenges.

There is probably an opportunity for different organisations to co-ordinate better. For example, if the catapult were to support a company with technical facilities, could it then make sure that the handover to Innovate UK's scaling-up programme is seamless? We would like to get to a point where the SME's journey is seamless throughout so that it can go from one stage to the next without much friction. There is good collaboration between organisations that provide funding, but it is not easy for SMEs. We can probably do more to co-ordinate among ourselves.

Lord Lansley: When you say "we", do you mean your organisation, the catapult?

Nayen Pankhania: No—I mean, in a more general sense, how do organisations that support companies co-ordinate with each other? It is a big ecosystem.

Lord Lansley: You told us on Friday that there are 14 space clusters and you reach out to them all. So, in a sense, SMEs in the space industry are quite likely to connect somewhere with that kind of organisation.

Nayen Pankhania: Absolutely. There is good co-ordination within the cluster network because we manages that, to an extent, but, if we think about SMEs' interactions with various organisations in the funding network, the catapult has limited influence over many of those. Within regional clusters, there is reasonably good co-ordination, but there is more that we can do with other organisations.

Mark Boggett: There is broader technology—hubs, accelerators and incubators—which make it easier for technology SMEs to understand what is out there and how they are attractive. I do not really see that as the big problem. It goes to the problem I mentioned earlier: if an SME approaches us and says, “We have this giant grant. It’s the biggest one the UK has ever done in our particular market. You should really listen to us”, we are leaning forward in our seats to try to understand why that position has been made. If an SME comes along with a couple of hundred thousand pounds that they have, alongside a whole range of others, it does not send any signalling.

Lord Lansley: In an earlier evidence session, we heard about the desirability of there being greater reliance on contracts than on grants. Do you share that view? Obviously, in the current situation, there will be more defence-related contracts, but, in the civil use and research areas, how do you create more contracts and fewer grants? Perhaps Professor Dougherty can answer that?

Michele Dougherty: I do not know the answer to that question.

Lord Lansley: The implication of what you, Mr Boggett, were saying is that it is easier to find supportive private sector investment if you have a company that comes forward and says, “We have won this contract”.

Mark Boggett: Yes. The NSSIF—the National Security Strategic Investment Fund—is a great example. It is able to invest in a company with equity or give them the same amount in a contract. Most companies would take the contract: first, because it does not dilute the equity; and, secondly, since this is a first, important customer, it can use that as evidence for other investors and customers. So you would always naturally prefer to take a contract if you can get it. There are ways of doing that already, and they work really well. We just need to scale them up.

Viscount Stansgate: You made the point that you thought things are being spread too thin, as well as saying that we should find a successful way to pick winners. Everyone would like to do that. Out of the many SMEs you see out there, although some will not make progress or fail, do you fear—or is there a risk—that others could go overseas? If so, where?

Mark Boggett: There is a huge risk that they will go overseas—and they do as soon as they cannot access capital over here. Most of the companies do not deserve to be financed, frankly. We see 150 to 200 space deals a month. We look at 1% seriously, then we invest in 1% of the 1%. So the companies that deserve to access actual funding are quite limited; as for the others, the founders should go away and do something else. Those companies that have accessed the funding start to make progression against their plans but then get only half of the funding that is available in other countries in every single round. This is exactly what is happening in every single round: seed round, A round, B round, C round and D round. UK companies are getting half of what their US counterparts are getting in every round. It gets to the point where a

company will say, "I've tried and failed to raise money here in the UK. I'm going to go and look in Europe or I'm going to go and look at the US to try to find that"—and the good teams get it.

What comes next with that is a requirement to move their head office, to Americanise, to take the company over to Germany or whatever in order to access European funding. Ultimately, that European funding is tied because it is linked back to the EIF investing into funds like ours, with the requirements for companies to be based in certain areas.

Viscount Stansgate: Is the risk you see equally for America as for Europe? Will they go to both?

Mark Boggett: Previously, it was very much the US, but now Europe has really addressed the early-stage funding requirements; it is very vibrant over there. Companies will be doing this in parallel. They will be trying to raise money in the UK, they will be trying to raise money in Europe and they will be trying to raise money in the US. They will wait for an investor who gives them a term sheet; they will then lead with the choices that they have. That will often involve them moving as a consequence.

Lord Shamash: On Friday, we went on a wonderful day out to the Harwell campus. One thing that struck me was the seeming lack of collaboration. I am probably wrong about that, but we had all the companies together and each of them obviously wants to prosper and do well; I wondered whether there was something we could do to enhance that. How does the situation compare with Europe or the States? Obviously, everybody is competitive and wants to make money for themselves, but it would seem to me that we are all pushing in the same direction: we want to get up to space, we want to do it properly and we want to make money while we are up there. What is your view? Maybe I just got the wrong impression.

Michele Dougherty: No, I do not think you got the wrong impression. This is a real drive for me in my new role. We can do better only if we collaborate. Of course there is going to be competition, but, unless we each know what the other person is doing, we are not going to be able to know who the best person is to take a particular part of the problem forward. For the Harwell campus in particular, one of my real focuses in the coming years is to make sure that we pull the ecosystem together. It has a huge range of skills and you saw only part of it on Friday; I am sorry that I was not there at the same time as you. We can and must do better on that.

Lord Shamash: One of the things I discussed with the gentleman who is the overall chief exec is that there was no social centre, for example. There was no pub where everybody could go to. It sounds trivial, but that is where you go to make the links. There is a cricket pitch so people might play cricket; I do not know whether you play cricket.

Michele Dougherty: I used to, when I was in South Africa.

Lord Shamash: Exactly—but you see what I am getting at. Something small like that can have quite a generative effect. I do not know how it compares with Germany, France, Italy or wherever.

The Chair: Can we move on? I am conscious of time; it is an important point, but we can tie it up with the next group of questions on future policy.

Q110 **Baroness Donaghy:** My question is around the Government as a smart procurer, which you have already covered to some extent. Mark, you said that the Government should be more selective and perhaps end up giving more to those selected, but do you think that there should be a quantum leap to larger amounts as a whole for space? Can you provide some concrete examples of the type of services that the Government should procure, as well as their value to the public beyond just the stimulation and appreciation of the space sector?

Mark Boggett: I believe that there will need to be more money for space because of its position within the defence market.

Baroness Donaghy: We want to be useful so, if we as a committee can support you in giving advice to the Government that they should be doing this, this and this, I feel that we will have achieved something.

Mark Boggett: I am excited because I believe that procurement recognises the need for change. The way we have worked in the past is no longer valid because of the sheer pace of technological development. There is a wide recognition that the existing ways of doing this no longer work.

One of the things that is highly relevant for space—this is why it is good value for taxpayers' money—is dual use. Right now, we have a significant requirement to fill gaps in defence because the US is largely leaving Europe to fend for itself. So there is a huge requirement there. That money then gets invested into companies and, in effect, enables them to accelerate their technology road map. It brings the product to the market quicker and is financed by defence, in effect, but it results in a whole range of commercial activities that can be used by those companies, many of which could be used by private individuals and taxpayers.

You asked for concrete examples so let me give you a couple. In our portfolio, we have a UK company called ALL.SPACE. It develops antennas that enable you to connect to any satellite in low-earth orbit, mid-earth orbit or geostationary orbit from any moving vehicle—a car, a boat, a plane or a train. That is a unique, ground-breaking capability because, in enabling a connection to any satellite that can provide communication, it provides resilience against bad actors who are trying to block those communications because that vehicle can reliably access the internet. That is obviously something that will be required in our autonomous future.

Right now, that technology is largely used for defence and is quite costly, but, as they go through economies of scale in serving the defence

customer, it will bring the size, cost and weight of these antennas down so that, ultimately, they can be used in a mass market—for example, for cars. That will then support much bigger markets and provide a different payback for the UK taxpayer. That is one example.

Another one is that dual-use space companies, have a significant focus on climate and sustainability. We have a company called Satellite Vu, which has developed a constellation of small satellites that use infrared to look down at buildings and determine whether they are being used or not. There is a defence application for that but the climate application is that it can look at every building around the world, determine the thermal efficiency of that building then use that information to help position Governments to encourage the owners of those properties to improve their thermal efficiency.

So space is uniquely positioned to provide these dual-use applications. When we are investing for a defence application in these types of companies, there is a much larger payout when they ultimately get to the stage of being able to provide their services to commercial customers, too.

Michele Dougherty: We have some really successful programmes, but the issue is whether more funding for those would go a long way towards helping us do what we would like to do in the future. There is the cross-cluster proof of concept funding, which has supported over 319 organisations across the UK since its inception in 2017. This funding supports businesses to de-risk innovation and develop products, tools, technologies and services not just in space but in health and life sciences. Some businesses involved in that have found a further £100 million of funding to help progress things. Those kinds of successes could be expanded.

Nayen Pankhania: In response to the question of whether it is about better procurement, better use of existing funding or larger funding, it is a combination of both. The Government are a procurer of earth observation data, but that happens across multiple government departments. Is there something to be done in terms of co-ordinating that procurement so that you get better outcomes for less cost? There is smarter procurement, for sure.

In terms of more funding, you do not want to throw money at the problem but one approach is to think about a capability that you want to deliver for, say, the armed services or the emergency services. You then ask yourself, "What would space need to do to procure that?" Sovereign capability might be one approach. Satellite communication is a great example of civil defence dual use. With satellite communications, you can have ubiquitous connectivity—we have carried out projects looking at 5G connectivity in Dorset—but then you have defence, which is satcoms use in the field, such as Starlink in Ukraine. If you have that capability, others can use it to build applications; the Minister for Space has highlighted that train companies could use satcoms to deliver better connectivity on trains. There are similar sovereign capabilities, such as PNT—position

navigation and timing—which is potentially an alternative to Galileo. Those in turn support things like drone delivery and autonomous vehicles, which are future technologies but are supported by those underpinning infrastructure technologies.

- Q111 **Lord St John of Bletso:** The question we are asking is about not just funding but how government can become the procurer of this important data. You have mentioned monitoring wildfires and environmental threats, but there is no doubt that raising money is incredibly difficult because investors are very risk averse. Getting a government contract can go a long way to helping those SMEs get further funding down the road. That is really what I am trying to get at: it is not about the funding from government; it is about government becoming a customer.

That is my first question; I will move on to my second question after that first question has been answered.

Michele Dougherty: The public sector use of earth observation data is a clear opportunity for the Government because that is an example of where smart procurement will add real value beyond the current, highly distributed model. We have the Earth Observation Data Hub; that is a key step forward, but it is an area where smart procurement can really enable things going forward.

Mark Boggett: I go back to defence, which is the main focus at the moment. The UK and Europe are clear about where the gaps are as a consequence of us being overly reliant on the US. We know what capabilities we need to address. I believe that the UK should be providing contracts to buy those type of capabilities and enable UK companies to become leaders in those areas; to build intellectual property, because they have the building finance to be able to do so; and, then, to be able to sell their product in Germany, in France and around the world. The UK needs to focus on priorities and how it can use the budget it needs to spend anyway to buy these things to help the most relevant and deserving start-ups and use them as a reference. This is about the Government being a long-term, active partner rather than just a customer; they should be prepared to give references and have their name used so that companies can use those in other territories. The Government need to become a good customer.

Nayen Pankhania: If I may briefly respond, the Government are a customer in the context of problems they are trying to solve; they want to buy services to address specific problems. If they were open about saying, "These are the following problems we're trying to address, space sector, how can you help us address them?", the sector would be innovative and try to rise to that challenge. It is about being much clearer around what you are trying to buy services for then letting the sector try to respond to that. Rather than being a buyer of services just for the sake of buying a service, the Government should act as a customer in much the same way as a private customer seeks to purchase services.

Lord St John of Bletso: To follow up, the Government's space industrial

plan claims: “The City of London is becoming the pre-eminent global centre for space financial products and services”. I am aware that Seraphim is a listed company. We do not have many listed space companies. Obviously, EIS funding has been hugely beneficial, as have R&D rebates—although the grant funding is somewhat questionable—but there will come a time when space companies being listed will have a far greater opportunity to raise money globally. What can the Government do to support this?

Nayen Pankhania: The foundations are compelling. In London, we have an insurance sector that has been insuring launch for a long time. We have financial institutions such as Barclays supporting space companies such as Intuitive Machines and AST SpaceMobile for critical capital-raising functions. The catapult convened a group of participants in 2023 to ask how we can make London a global financial centre for space. There were many views from industry, as well as actions suggested for government and industry, but a few things of note stood out.

One is visible signalling and commitment: the Government should say explicitly that they have an ambition to make London and the UK more generally a de facto centre for space finance. We have talked about defining a clear role for the kind of customer the Government want to be.

There was considerable discussion around financial incentivisation: how do we create economic incentives to undertake high-risk projects in the UK that will motivate private capital to come in and back it, as we do with renewables and nuclear energy?

Then there are more tactical financial interventions that relate to tax; I am not a tax expert. Things relating to corporation tax, reductions in NI and raising caps on SEIS and EIS would together probably not cost the Exchequer very much, because of the size of the sector, but could have an impact for both investors and companies from overseas in making the UK an attractive place to do business. There was the view that companies that are UK domiciled or headquartered in the UK might be considered differently from those that were not. Given the insurance aspect, there was a lot of talk around regulation: how do we provide a clear legal and regulatory framework around issues that affect insurance, for example, and can we accelerate the certification process? We would like to position the UK as a global leader in space norms and regulations; the work that the SC is doing is core to that.

There is also international positioning. It is not enough for the UK to say, “We are a global centre for space finance”. Other countries have to agree that that is the case. One of the actions mentioned was instituting a global conference for space finance; I believe that action is being undertaken on that. So there are a range of things going on, but it is about using the pre-eminence of London as a way of supporting the UK space sector and for that to be mutually reinforcing.

Viscount Stansgate: Can I quickly ask about the future potential for using London’s legal services? London prides itself on being an

internationally recognised legal centre. This House has just passed an Act that will extend London's remit to develop the question of digital assets. What do you see in the space field as the potential for London's legal expertise?

The Chair: Just to interrupt briefly, our next session is specifically on the legal sector, so I am not expecting you to give a detailed answer. You are welcome to comment, of course, but, for Viscount Stansgate's knowledge, the next session will be entirely about legal work.

Michele Dougherty: It is probably best to wait for the experts, then.

Mark Boggett: I am quite happy to give you an answer. This week, we are holding an event with Milbank, a large US legal firm that specialises in space. It is coming over to the UK and we have a joint event with it around the UK's position on defence, including how space is going to be a key element of that. So we are using the convening power of a large US legal firm to support this activity in the UK. There is a recognition that significant defence funding is going to be available in the European market, which will have international law firms really focused on the space market and the opportunity it presents.

Q112 **Baroness Bonham-Carter of Yarnbury:** You will be glad to hear, Chair, that my question has pretty well been answered. The first part is: do you believe that the current government approach to space, anchored in the UK Space Agency, is effective in helping UK space firms to grow? You have pretty categorically said, "No", so let me ask you the next part of the question. Do we need some form of governmental or strategic overhaul to overcome these problems? If so, can you give specific details? To pick up on what Baroness Donaghy said, we want to help you in this report.

Michele Dougherty: I feel that we need a better co-ordinated national programme, linked to space. That would help support sector growth and strengthen the UK's economy. The relationship between businesses and government bodies, including UKRI, the UK Space Agency, DSIT and the MoD, is generally positive but it is focused on communication, project delivery, avoiding conflicts and programme timing. There is not that deep level of co-ordination that you need to be able to work together as a cohesive whole, so we need a proper national programme.

Baroness Bonham-Carter of Yarnbury: So it is not just about going to the pub; lack of co-ordination is a national problem.

Michele Dougherty: Yes.

Nayen Pankhania: There are probably three things here. First, there are the tactical financial incentives, if I can express them like that. The analogy with the film sector in 2004 is a good one. Although you may not have exactly the same approach, the incentivisation that that created clearly had great benefit. That is something to think about when it comes to the space sector.

Incentivising a more commercial approach among companies is also important. It is about really getting them to think, "Actually, why are we going to be a sustainable business?" That is not an easy question for government to answer but you should think about, "If we are providing money, whether through R&D or otherwise, what is it that you're doing to make sure that you're not going to be using R&D grants indefinitely?"

Finally, there is something around confidence and signalling. How do you make it explicit that space is a strategic national priority and is important to the Government—not just this Government but on a cross-party basis, and over time? Many of these companies have long development times. If you are an investor, you want to be confident that the environment in which you are investing is not going to deteriorate.

Those are the three things from my perspective: financial incentives, commercialisation as an approach, and confidence in signalling.

Mark Boggett: My response is to look over the pond to the US to see what it has done. It broke out the Space Development Agency from NASA to focus on the commercial development of space, leaving NASA focused on exploration and other areas. That is a really sensible thing to do. You have two completely different audiences, and it is about signalling and using the right language. It is something that we should look at doing.

Q113 The Chair: If there is anything else that you particularly would like to tell us we ought to be mindful of, please say so briefly. I am conscious that we have just hit the right time. I know that you all have other commitments; you have been incredibly generous. So, if there is anything else you want to say, this is the moment to say, "Don't forget to do this"—but we have covered a lot of ground.

Mark Boggett: I am excited about the outlook and the position that we are in. We talked about the UK being third or fourth globally in terms of investment. The world has changed in relation to the spending on defence outlook for the next decade; that is a generational change. This is our opportunity to get behind that and support the best companies that will then go on to sell their products elsewhere in Europe. There is a huge opportunity to do that. Because of this dual use, space is such a broad area, so we can link it with other areas that we are focused on; things such as quantum and AI, and even the life sciences, all have a space growth opportunity. We should be trying to co-ordinate all of those to build on the opportunity of the UK leading the world outside the US in this market. We can do that.

Michele Dougherty: You have said it exactly the way I would have liked to have said it had I thought about it. We have all the skills and everything we need in the UK to do this; we just need joined up thinking.

The Chair: Joined-up thinking is a common theme, I find. Nayan, do you have anything to add?

Nayan Pankhania: It is hugely encouraging to have this committee constituted to ask these kinds of questions; it makes us realise that there

is a way for us to express some of these views. It is important to have more focus on commercialisation rather than giving grants; business stimulation through incentives; clarity around what the Government want to use space for and being vocal about that in a much more emphatic way; and support for companies looking to scale up, not just to start up. Those are the main things.

The Chair: Thank you so much for coming to give evidence to us; it has been a great delight to meet you. Good luck with everything in the future. I am now going to suspend this session formally, while we allow you to leave and go about your business; we will then move on to our next session.