



Collaborative Space: Overcoming Barriers to UK Space Prosperity in 2022/23

Survey Report

Survey Partner

QINETIQ

Acknowledgements

The research team at Defence Online would like to thank everyone who was kind enough to participate in our study, and especially those who found the time to offer additional insight via the comments section.

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Introduction

In September 2021, as part of the National Space Strategy, the Cabinet Office made clear its ambitions for the UK to remain a 'meaningful actor in space, with an integrated space strategy which brings together military and civil space policy for the first time.'

Within that strategy, the UK Government went on to endorse a very different approach to space development. Increasingly, the international community has recognised that space is no longer the province of governments alone. Already, commercial enterprises are playing a far greater role – driving innovation to commercialise spaceflight, for instance – and there's growing consensus that collaboration between public and private sector stakeholders will be the most efficient and cost effective method of furthering our lofty aspirations for outer space.

“Space and Cyber have now been recognised as operational domains in their own right and Defence must take advantage of this, integrating our capabilities so that they work together seamlessly across all domains.”

Indeed, the Secretary of State for Defence, Ben Wallace, recently opined in the Government's newly published Defence Space Strategy that: “Space and Cyber have now been recognised as operational domains in their own right and Defence must take advantage of this, integrating our capabilities so that they work together seamlessly across all domains.”

But integration requires collaboration, and true collaboration is a tricky proposition. How do we create a culture of collaboration and avoid the pitfalls that befell past public/private partnerships to take UK space development to new heights? What are the barriers, where are the solutions and how can dual-use technologies smooth the way?

These core questions underpin our latest research project: Collaborative Space: Overcoming Barriers to UK Space Prosperity in 2022/23. Together with our friends at Defence Online, QinetiQ recently embarked on an extensive study to identify how stakeholders in the defence and space sectors feel about the direction of travel for UK space development.

Their thoughts, collated in this key findings report, illustrate an industry on the cusp of change, contending with a growing number of constraints but nevertheless eager to be an active participant in the UK space domain. It remains to be seen if collaboration will truly take hold, but the industry is certainly ready, willing and up to the task.



About QinetiQ

As one of the world's leading innovators, QinetiQ deploys scientific and technological expertise, proven research capabilities and unique, purpose-built facilities to provide products and services that meet the needs of a wide range of global customers. Employing over 6,000 people worldwide, we operate primarily in the defence, security and critical national infrastructure markets.

QINETIQ

Find out more
www.qinetiq.com/en/sectors/space

Survey Methodology

Collaborative Space: Overcoming Barriers to UK Space Prosperity in 2022/23 was conducted by Defence Online in partnership with QinetiQ. The consultation period ran from Thursday 2nd December 2021 to Friday 10th December 2021.

76 individuals from 72 unique organisations participated in the survey, representing a broad cross-section of job functions across the UK defence and space sector,

including: Business Development Director, CEO, Managing Director, Network Architect, Operations Manager, Principal Consultant and Space Solutions Lead.

All survey participants have received a complimentary copy of the key findings report. There was no inducement to take part in our survey, and QinetiQ was not introduced as a survey partner.



Key Findings

Dual-use technologies have untapped potential

To begin with, we asked survey participants to tell us how important dual-use technologies - i.e. capabilities that can serve both commercial and military purposes –

are to the future of the UK space industry? In response, the overwhelming majority (79%) said that they viewed dual-use technologies as being of 'high importance.'

FIGURE 1: How important do you feel dual-use technologies are – i.e. capabilities that can serve both commercial and military purposes – to the future of the UK space industry?



However, when asked if their organisation was currently experimenting with dual-use technologies, 55% said they were not currently doing so. This suggests that many organisations are still in the exploratory stages, at least

from a UK space perspective. Indeed, when asked if the UK space industry is exploiting dual-use technologies to its fullest, 72% said no. However, of that 72%, 46% said they thought the industry was making progress.

FIGURE 2: Is your organisation currently experimenting with dual-use technologies?

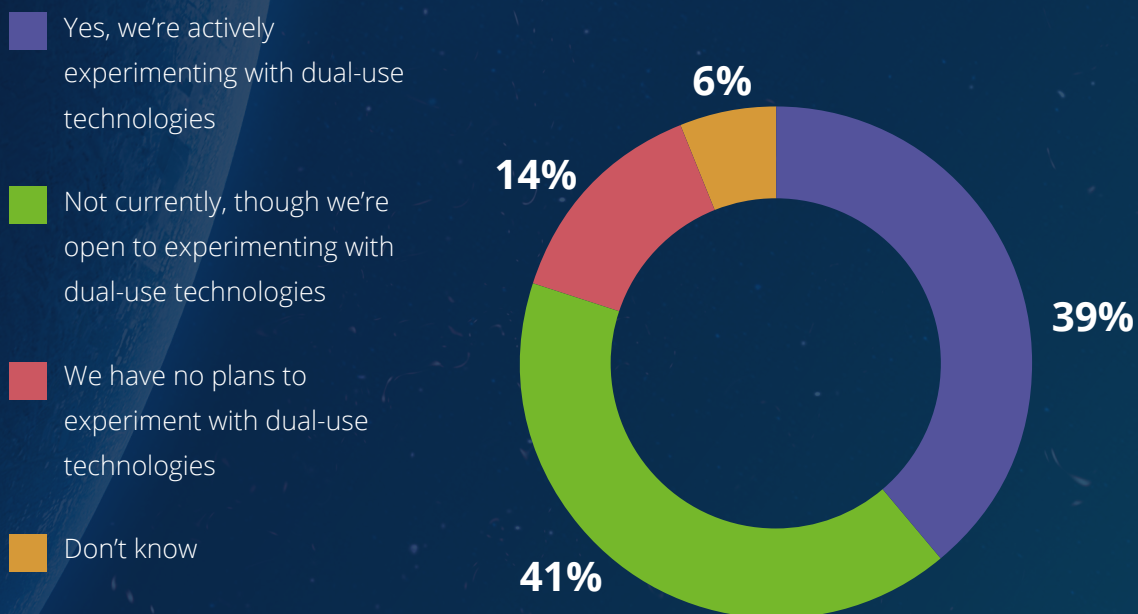
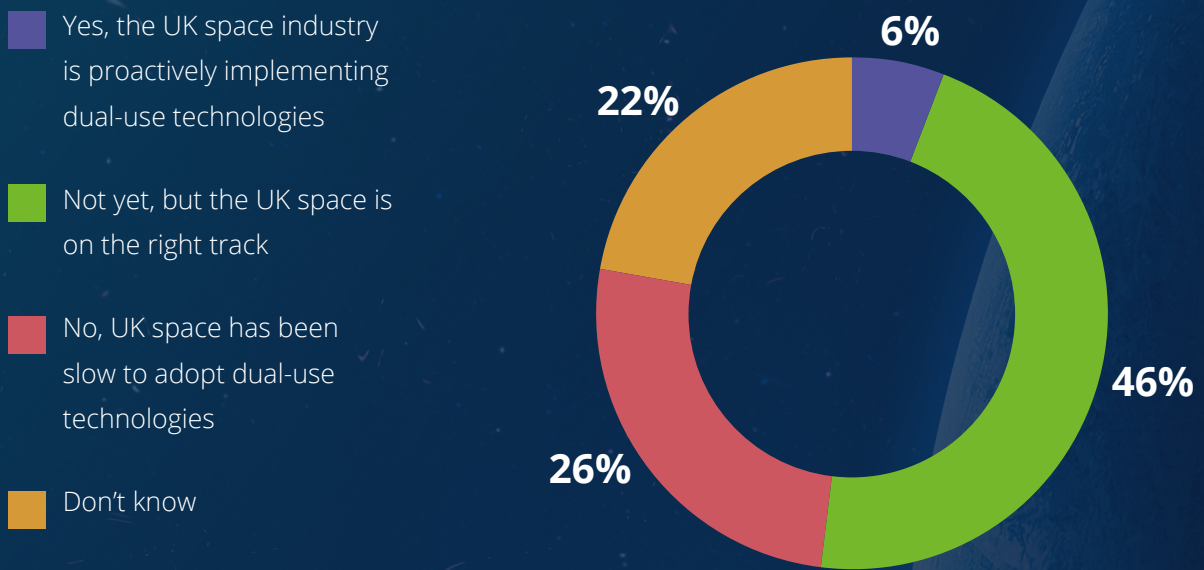


FIGURE 3: Do you feel the UK space industry is exploiting dual-use technologies to its fullest?



Regarding the potential benefits of dual-use technologies, 'cost effectiveness' (63%), the 'ability to meet both commercial and military needs' (57%), 'driving innovation' (56%) and 'increasing collaboration' (50%) all ranked highly. Clearly, whether it's cost or collaboration, the defence and space sectors are sensitive to the benefits of dual-use technologies.

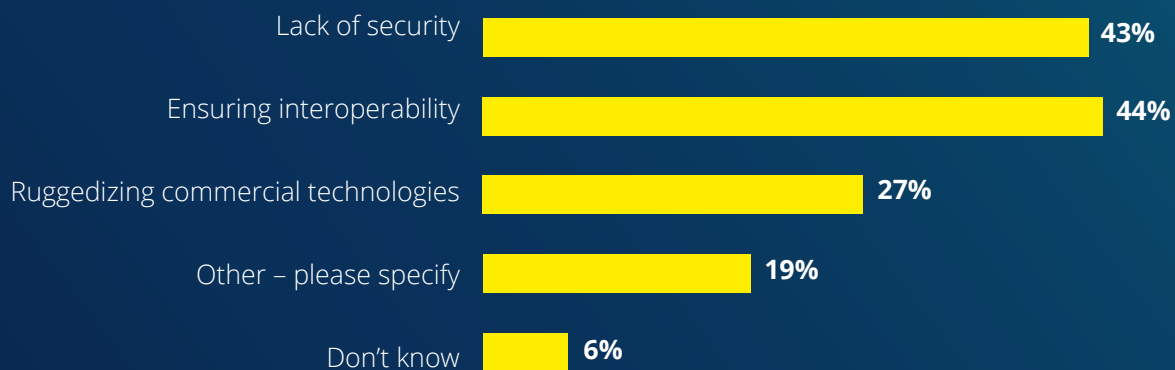
However, our respondents went on to identify a number of barriers that must be overcome to realise this

potential; principally 'ensuring interoperability' (44%), 'lack of security' (43%) and 'ruggedizing commercial technologies' (27%). Given that security and reliability are highly prized in the defence and space sectors, dual-use technologies must meet the needs of two very different marketplaces – each with diverse, and sometimes contradictory, requirements.

FIGURE 4: In your view, what are the biggest benefits to using dual-use technologies?



FIGURE 5: What do you feel are the biggest barriers to using dual-use technologies effectively?



Participants also took to the comments to raise a number of concerns around safety and security, with one

respondent referencing the need for 'clearer policies on cloud usage for researchers and program managers.'

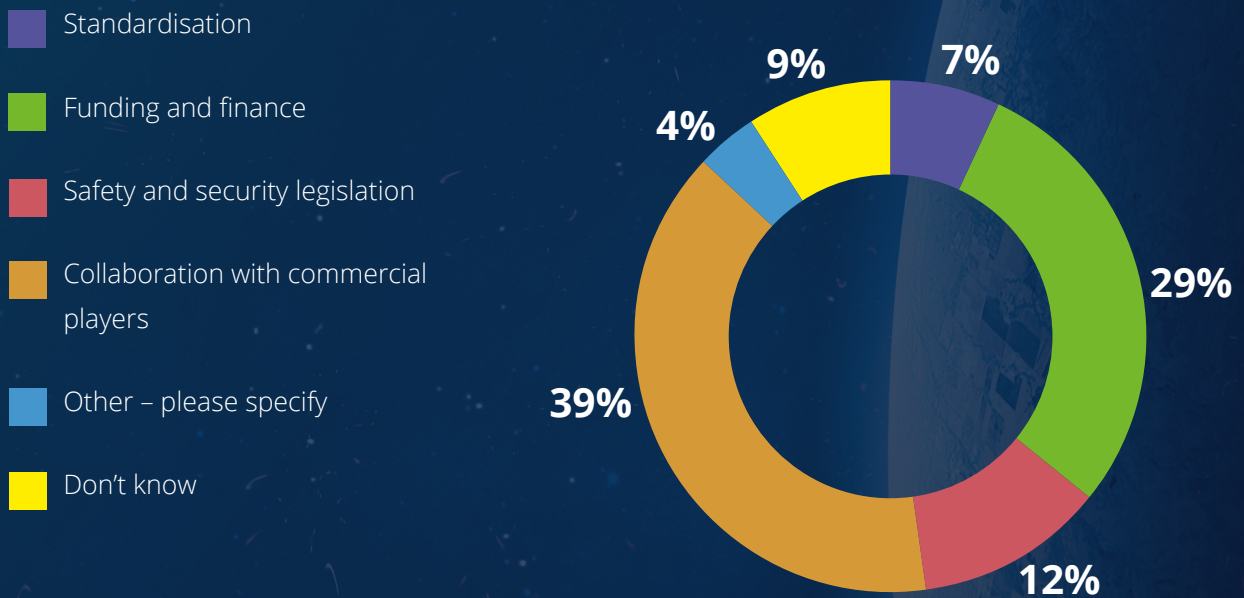


Collaboration between government and industry is key

Given that the Government has ambitions to grow the value of its space sector to £40 billion by 2030, we asked survey participants to identify their top priorities for the UK space

industry going forwards. In total, 39% cited 'collaboration with commercial players' as the number one priority, with 'funding and finance' not far behind (29%).

FIGURE 6: In your opinion, which of the following do you feel should be the top priority for the UK space industry going forward?



Additionally, 78% said commercial enterprises were of 'high importance' to the UK space industry, with a further 78% singling out SMEs and start-ups in particular.

Evidently, the burgeoning UK space industry presents a significant opportunity for public and private sector organisations to forge lasting partnerships.

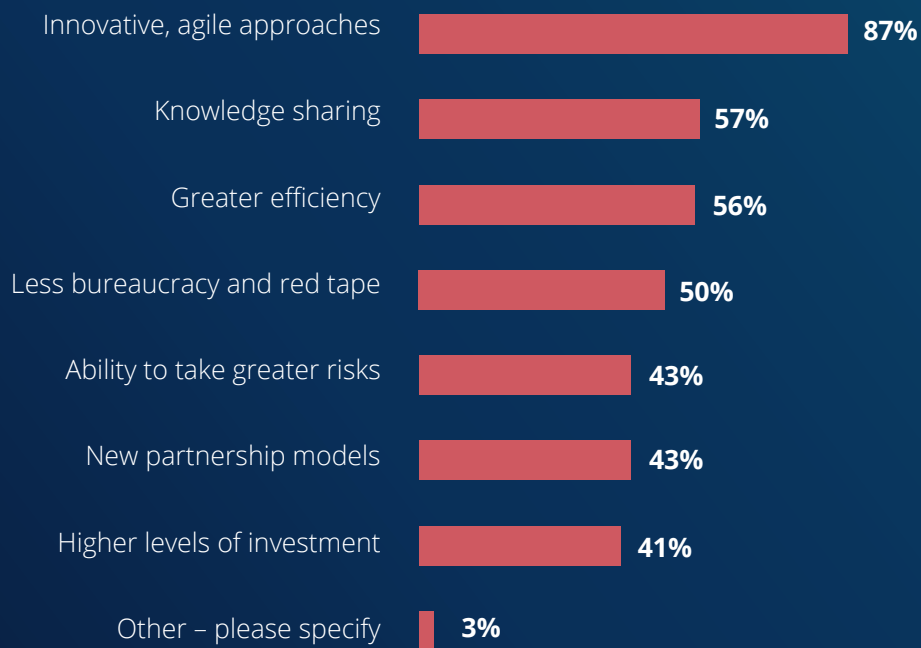
FIGURE 7: How important do you think commercial enterprises are to the future of the UK space industry?



But why are commercial enterprises so integral to UK space development? According to our participants, the benefits of collaboration are plentiful, including: 'innovative, agile approaches' (87%), 'knowledge sharing' (57%), 'greater efficiency' (56%) and 'less bureaucracy and

red tape' (50%). Innovation is especially important to UK space, so it's unsurprising the public sector stakeholders are keen to cultivate relationships with agile and unconventional SMEs.

FIGURE 8: Thinking about collaboration, what do you see as being the biggest benefits of partnership between public institutions and commercial enterprises?

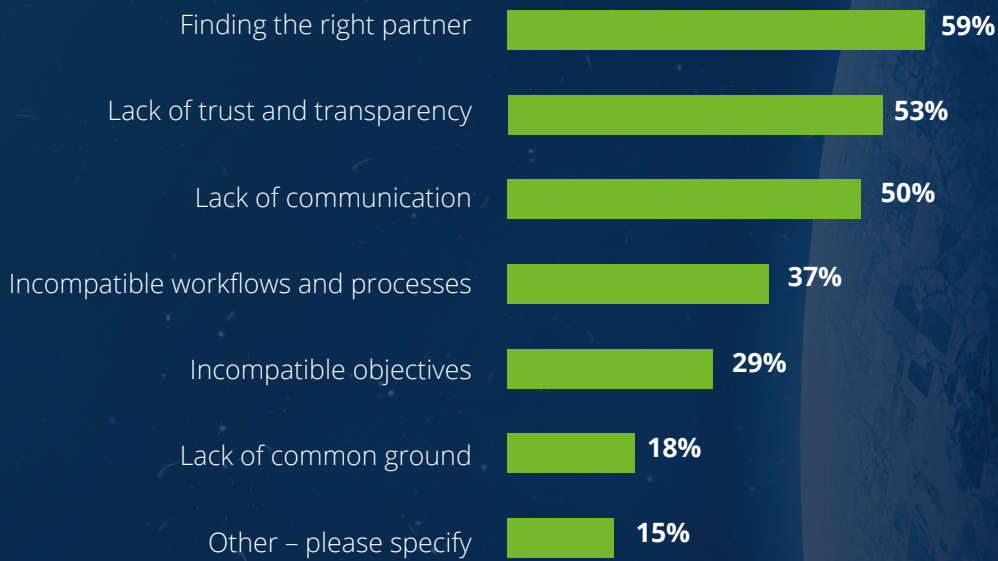


Closer ties requires clearer communication and procurement reform

However, while cooperation is clearly important, a number of barriers to collaboration between public and private sector organisations persist. In particular, our research

found that 'finding the right partner' (59%), 'lack of trust and transparency' (53%) and 'lack of communication' (50%) were the three biggest barriers for survey participants.

FIGURE 9: Which of the following do you think are the biggest barriers to effective collaboration between public/private sector organisations?

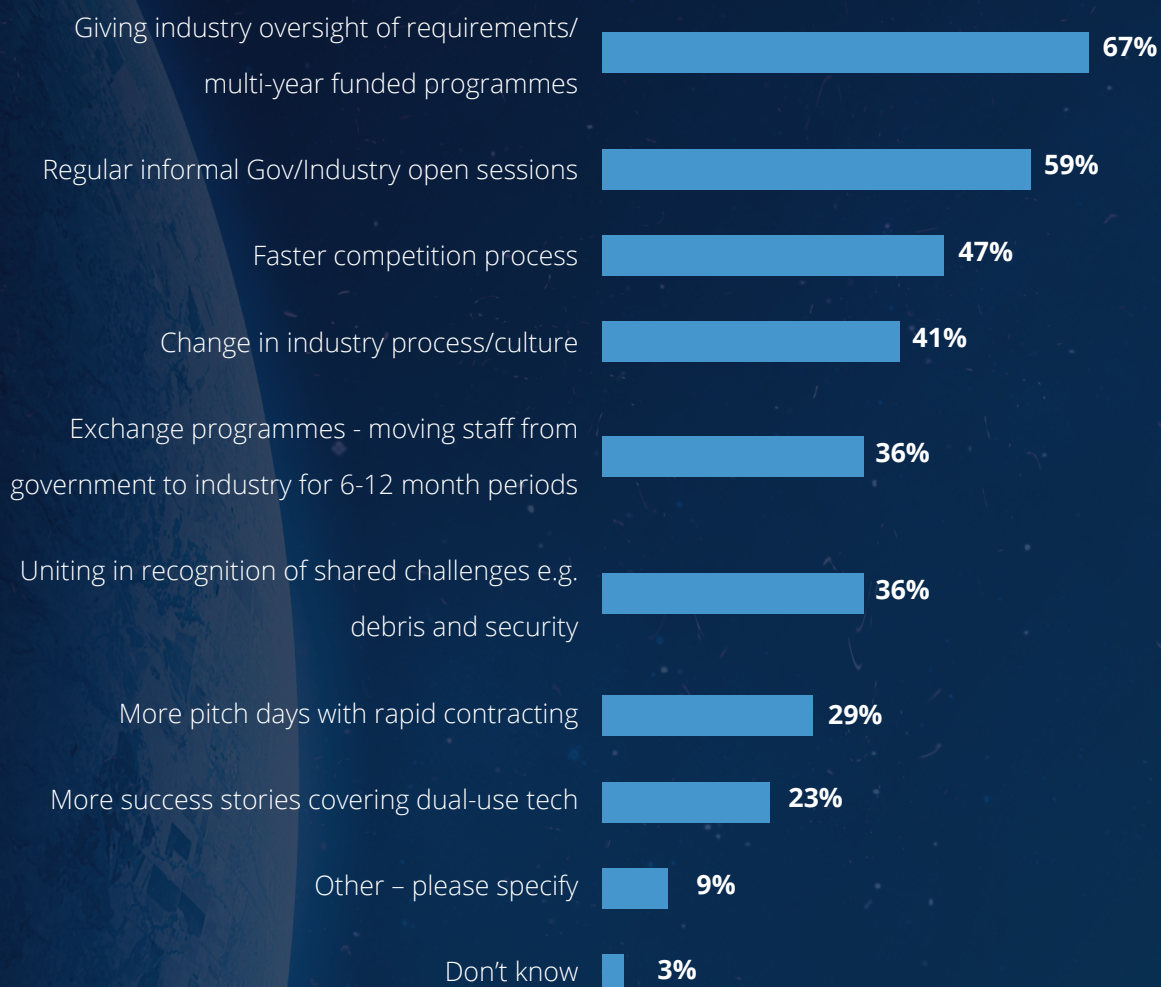


Additionally, a number of respondents took to the comments to voice their concerns, many of which focused on: "Entrenched bureaucracy and over reliance on past practices", "Inertia in getting things done that are in-line with Industry 4.0" and "Digital 4.0 and the willingness to pursue innovation".

Following this, we asked survey participants to consider how these barriers might be addressed. 'Giving industry

oversight of requirements/multi-year funded programmes' (67%) was the number one solution, while 'regular informal Gov/Industry open sessions' (59%) and a 'faster competition process' (47%) also ranked highly. These findings demonstrate an obvious but often overlooked observation; meaningful collaboration requires trust, transparency and active lines of communication.

FIGURE 10: In your opinion, what could help address barriers to greater collaboration between public/private sector organisations?



Again, respondents took to the comments to share potential solutions, including: “Focus on a small number of key national ambition programmes - with associated budgets and proper programme management”, “closer working between UKSA and Space Command” and “clarity on strategy and procurement approach for big programmes like Skynet and PNT.”

It’s also worth noting that public procurement reform emerged as a consistent theme throughout our research. In addition to calls for a quicker competition process, survey

participants also proposed a number of measures including the introduction of dynamic purchasing frameworks, with the flexibility to join at any time. Others added that public procurement required dedicated frameworks to engage more meaningfully with SMEs and include ‘micro business models which house the SMEs in a skills deficient industry.’

Given that SMEs and start-ups are very much at the heart of the Cabinet Office’s proposed procurement reforms, some of these concerns may be addressed in the near future.

Conclusion: Collaboration Can't Wait

In a joint statement prefacing the National Space Strategy, Defence Secretary Ben Wallace and Business Secretary Kwasi Kwarteng urged businesses and innovators across the UK and further afield to “take advantage of this moment of opportunity, and to come together and work with government to deliver on the strength of the UK’s ambitions.”

You would be hard pressed to find a clearer endorsement for collaboration. And yet, efficient public/private partnerships remain elusive within the UK space industry; the exception rather than the rule for many start-ups, SMEs and the supply chain at large.

While it’s certainly encouraging to hear that the Cabinet Office is eager to engage, the success of the UK space industry is now contingent on closer ties between government and industry - and this requires greater levels of trust, transparency and communication than ever before. However, given that survey respondents identified each of these aspects as a potential barrier to collaboration, it’s clear more must be done to erode the ‘us and them’ mentality that has historically held public/private partnerships and the UK space industry back.



Despite these difficulties, our study also confirms many of the more hopeful sentiments expressed in the National Space Strategy. For government and industry alike, space represents a significant opportunity – especially where the proliferation of dual-use technology is concerned.

According to almost 80% of survey respondents, dual-use technologies have a pivotal role to play in the UK space industry, particularly from a cost perspective. But beyond budget, dual-use technologies have immense potential to broaden the marketplace for non-military suppliers and those not traditionally associated with defence or space, enabling UK space development to reap the benefits of innovation from other fields.

Simply put, it's an exciting time for the UK space industry. However, in order to make the most of these opportunities, we must first ensure that the infrastructure for lasting collaboration is in place. But what does genuine collaboration look like?

At QinetiQ, we feel it's essential that government heads share their plans well in advance of any announcement; that collaborative teams are assembled and industry partners are actively encouraged to

share their perspectives. If a true culture of collaboration is to be established, industry voices must be heard and their feedback should be taken into account when developing strategy. With consistency in mind, it's also essential that government sticks to its pledges and proposals once agreed, and that the pathways to public procurement are smoother for all suppliers – start-ups and SMEs in particular.

Ultimately, it's in everyone's best interests to cultivate a collaborative process – open to all organisations, irrespective of size or turnover. Only by doing so will the UK space industry generate the critical mass it deserves and so desperately needs.



Appendix 1: Participating Organisations

- 5C Consulting Ltd
- Affini Technology Limited
- Amorosso Consulting Ltd
- AMP Group
- Amphenol
- Aquila Air Traffic Management Services
- ARES Software Limited
- Ascent Flight Training
- Au Astron Consulting Ltd
- Australian High Commission
- Babcock International
- Banelec Ltd
- Barnshaws Section Benders
- Becrypt Limited
- Belcan Test Systems
- BioViron International
- BT
- Cadmidium
- Cae (Uk) Plc
- Carbon Plan Engineering
- Carrier Refrigeration Uk Ltd
- CODA Security Limited
- Crime Scene Cleaning UK Ltd
- CYBERDEF Ltd.
- DAE Systems Limited
- Domus Architects And Project Managers Ltd
- DTD Consult
- Duvine Ltd
- Galleon Embedded Computing UK Ltd
- Global Security
- Harlin Ltd
- HGH Infrared Systems
- Hydra Technologies
- Inner Spec
- Innovation & Design Engineering Ltd
- Intelsat
- Interactive Technical Solutions Ltd
- Just Right Products UK & Europe Ltd
- Kannect Precision Services Ltd
- Karlsen Associates
- Karolann Solutions Ltd
- Kenards Engineering Co Ltd
- Lockheed Martin UK - Aeronautics
- Marprof Ltd
- Micro IT Global Ltd
- Misca Advisors
- MTM Vision Ltd
- Musketeer Solutions Limited
- Next Technologies Limited
- On-Site Kitchen Rentals
- Phoenix Security & Event Safety
- Premier Modular Ltd
- Procharter
- RED Scientific Ltd
- Reich Drive Systems Uk Ltd
- Risk Innovation
- Rushmoor Borough Council
- Saab Technologies UK Ltd
- Saratota Limited
- Scientific Management International Ltd
- Serco Group PLC
- Simplyfly Solution & Services Ltd
- Sirius Constellation Ltd
- SkyAngels Air Ambulance
- Supacat Ltd
- Tekdata Interconnections Ltd
- Tozer Consulting Ltd
- TriCIS
- Universal Defence And Security Solutions Ltd
- Vocavio Technologies Ltd
- Welwyn Business Services Limited
- Wilde Analysis Ltd

Appendix 2: Survey Questions

Question: As part of the National Space Policy, the UK Government has ambitions to grow the value of its space sector to £40 billion by 2030. In your opinion, which of the following do you feel should be the top priority for the UK space industry going forward?

| Answer | Percent |
|---------------------------------------|---------|
| Standardisation | 7% |
| Funding and finance | 29% |
| Safety and security legislation | 12% |
| Collaboration with commercial players | 39% |
| Other – please specify | 4% |
| Don't know | 9% |

Question: Historically, space has been the province of public institutions, but the balance is beginning to shift. How important do you think commercial enterprises are to the future of the UK space industry?

| Answer | Percent |
|----------------------|---------|
| High importance | 78% |
| Mid-level importance | 20% |
| Low importance | 0% |
| Don't know | 2% |

Question: Similarly, how important do you feel dual-use technologies are - i.e. capabilities that can serve both commercial and military purposes - to the future of the UK space industry?

| Answer | Percent |
|----------------------|---------|
| High importance | 79% |
| Mid-level importance | 18% |
| Low importance | 0% |
| Don't know | 3% |

Question: Is your organisation currently experimenting with dual-use technologies?

| Answer | Percent |
|--|---------|
| Yes, we're actively experimenting with dual-use technologies | 39% |
| Not currently, though we're open to experimenting with dual-use technologies | 41% |
| We have no plans to experiment with dual-use technologies | 14% |
| Don't know | 6% |

Question: In your view, what are the biggest benefits to using dual-use technologies?

| Answer | Percent |
|--|---------|
| Cost effective | 63% |
| Ability to meet both commercial and military needs | 57% |
| Driving innovation | 56% |
| Increasing collaboration | 50% |
| Other – please specify | 3% |
| Don't know | 1% |

Question: What do you feel are the biggest barriers to using dual-use technologies effectively?

| Answer | Percent |
|-------------------------------------|---------|
| Lack of security | 43% |
| Ensuring interoperability | 44% |
| Ruggedizing commercial technologies | 27% |
| Other – please specify | 19% |
| Don't know | 6% |

Question: Do you think progress can continue to be made in space without dual-use technologies?

| Answer | Percent |
|------------|---------|
| Yes | 53% |
| No | 31% |
| Don't know | 16% |

Question: Do you feel the UK space industry is exploiting dual-use technologies to its fullest?

| Answer | Percent |
|--|---------|
| Yes, the UK space industry is proactively implementing dual-use technologies | 6% |
| Not yet, but the UK space is on the right track | 46% |
| No, UK space has been slow to adopt dual-use technologies | 26% |
| Don't know | 22% |

Question: Broadly speaking, is your organisation open to working with public/private sector organisations in the UK space industry?

| Answer | Percent |
|------------|---------|
| Yes | 96% |
| No | 1% |
| Don't know | 3% |

Question: In your experience, how important are SMEs and start-ups to the UK space industry?

| Answer | Percent |
|----------------------|---------|
| High importance | 78% |
| Mid-level importance | 16% |
| Low importance | 4% |
| Don't know | 2% |

Question: Thinking about collaboration, what do you see as being the biggest benefits of partnership between public institutions and commercial enterprises?

| Answer | Percent |
|-------------------------------|---------|
| Innovative, agile approaches | 87% |
| Greater efficiency | 56% |
| Less bureaucracy and red tape | 50% |
| Ability to take greater risks | 43% |
| Higher levels of investment | 41% |
| Knowledge sharing | 57% |
| New partnership models | 43% |
| Other – please specify | 3% |
| Don't know | 0% |

Question: Additionally, which of the following do you think are the biggest barriers to effective collaboration between public/private sector organisations?

| Answer | Percent |
|--------------------------------------|---------|
| Finding the right partner | 59% |
| Incompatible workflows and processes | 37% |
| Incompatible objectives | 29% |
| Lack of communication | 50% |
| Lack of common ground | 18% |
| Lack of trust and transparency | 53% |
| Other – please specify | 15% |
| Don't know | 0% |

Question: In your opinion, what could help address barriers to greater collaboration between public/private sector organisations?

| Answer | Percent |
|---|---------|
| Change in industry process/culture | 41% |
| Giving industry oversight of requirements/multi-year funded programmes | 67% |
| Faster competition process | 47% |
| More pitch days with rapid contracting | 29% |
| Regular informal Gov/Industry open sessions | 59% |
| Exchange programmes - moving staff from government to industry for 6-12 month periods | 36% |
| Uniting in recognition of shared challenges e.g. debris and security | 36% |
| More success stories covering dual-use tech | 23% |
| Other – please specify | 9% |
| Don't know | 3% |

Question: Still thinking about collaboration, one of the key drivers to building a relationship between private and public sectors is the concept of knowledge sharing. How comfortable is your organisation with this practice?

| Answer | Percent |
|------------------------|---------|
| Very comfortable | 32% |
| Comfortable | 56% |
| Not comfortable | 6% |
| Not at all comfortable | 2% |
| Don't know | 4% |



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