

UK SPACE
AGENCY
ACCELERATOR



GovBridge Defence Boot Camp

Day 1 - 8th October 2024





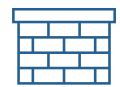
Unlocking Space for Dual Use



Programme Summary

Programme Structure

Phase 1 – Scoping Exercise



Barriers Scoping exercise (RFI)



Capabilities Mapping exercise



Designing the Interventions

Phase 2 – Intervention Delivery



Delivering the Interventions

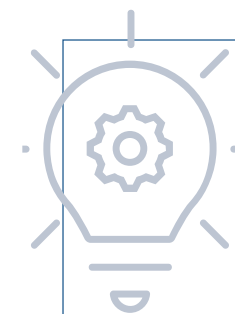


International Comparison exercise



Leading engagement with the Defence community

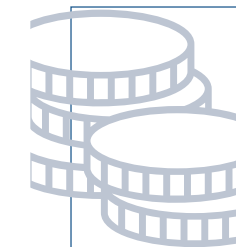
Programme Roles



One stop shop for
information



Strategic alignment



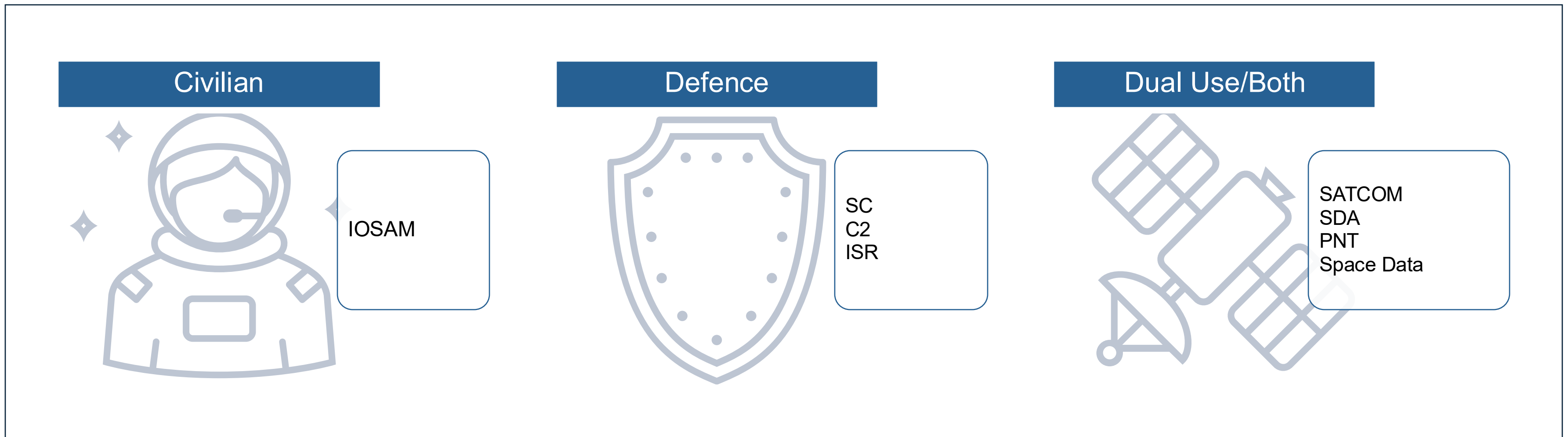
Funding support &
Investment streams

Barriers identified through the RFI

1 Unclear end-customer needs	2 Complicated procurement processes	3 Restrictive procurement conditions	4 Limited funding for early-stage tech	5 Lack of routes to market	6 Lack of clear Dual Use Funding Routes	7 Divergent requirements	8 Complex Dual Use landscape
9 Investment clarity in the UKSA	10 Clearance and classification	11 Defence Engagement & Collaboration	12 Lack of communication across HMG	13 Reduced human resources in the UKSA	14 Lack of interest from academia and start-ups	15 Export Controls & Regulations	16 Lack of access for SMEs
17 Funding and Investment availability	18 Limited access to facilities and infrastructure	19 Intellectual Property (IP) management	20 Technology adoption and adaptation	21 Perception of the Defence sector	22 Information access, awareness, and availability	23 Skills availability across sectors	24 Collaboration across the Space Sector

Capabilities Mapping

The Capabilities Mapping exercise was conducted to identify and assess the joint civilian and defence capability needs in order to deliver a clear demand signal for the UK space sector.



Potential Interventions*

*subject to SR and approvals

**One stop shop for
information**

**GovBridge Dual Use
module**

**UKSA – MoD funding
coordination**

**UKSA - MoD new
funding partnerships**

**Delivering through
others**

**Clearance &
Classification support**

**Funding
opportunities**

**UKSA – MoD
strategic coordination**

**Export Control &
Regulations support**

**Access to Facilities
support**

GovBridge Induction

Programme Outcomes

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Knowledge and
confidence



Business
Development Plan



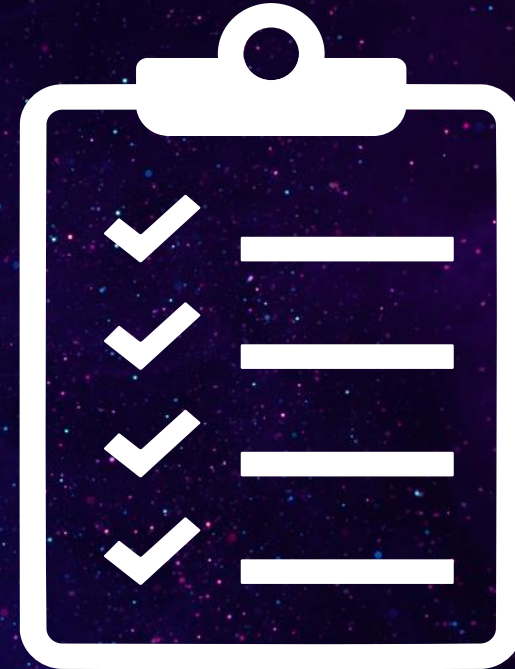
Connect with
experts & peers

Individual Outcomes

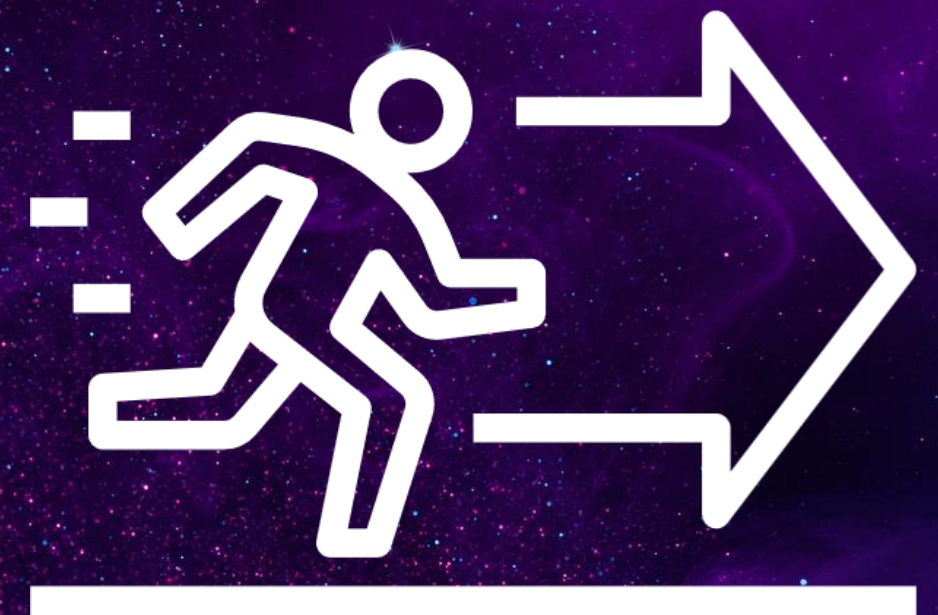
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Prepare your
business



Create a strategy



Execute on that
strategy!

UK Space Command

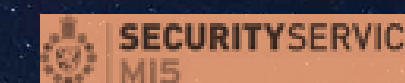
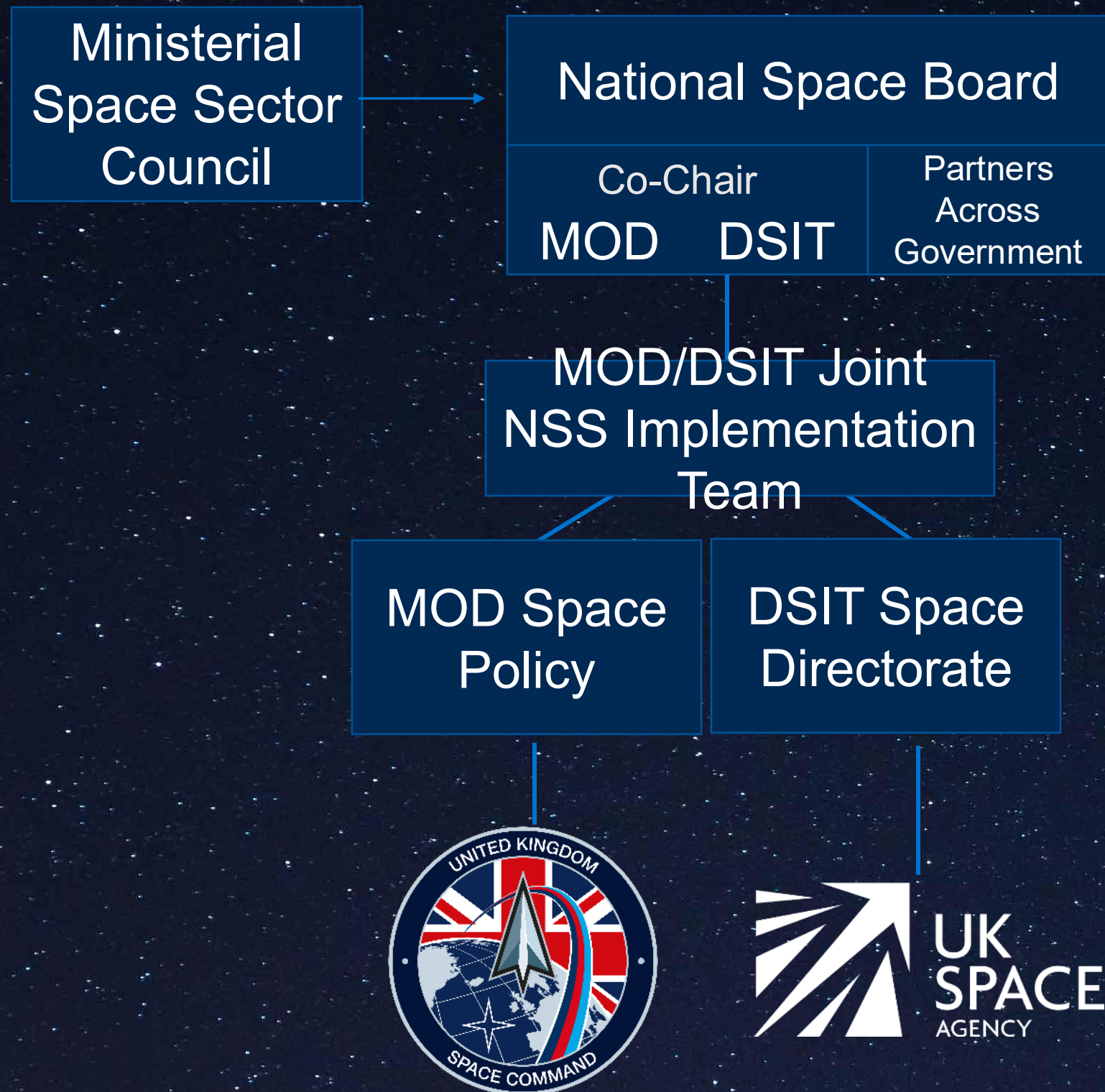
UK Defence & Security Priorities & Key Challenges

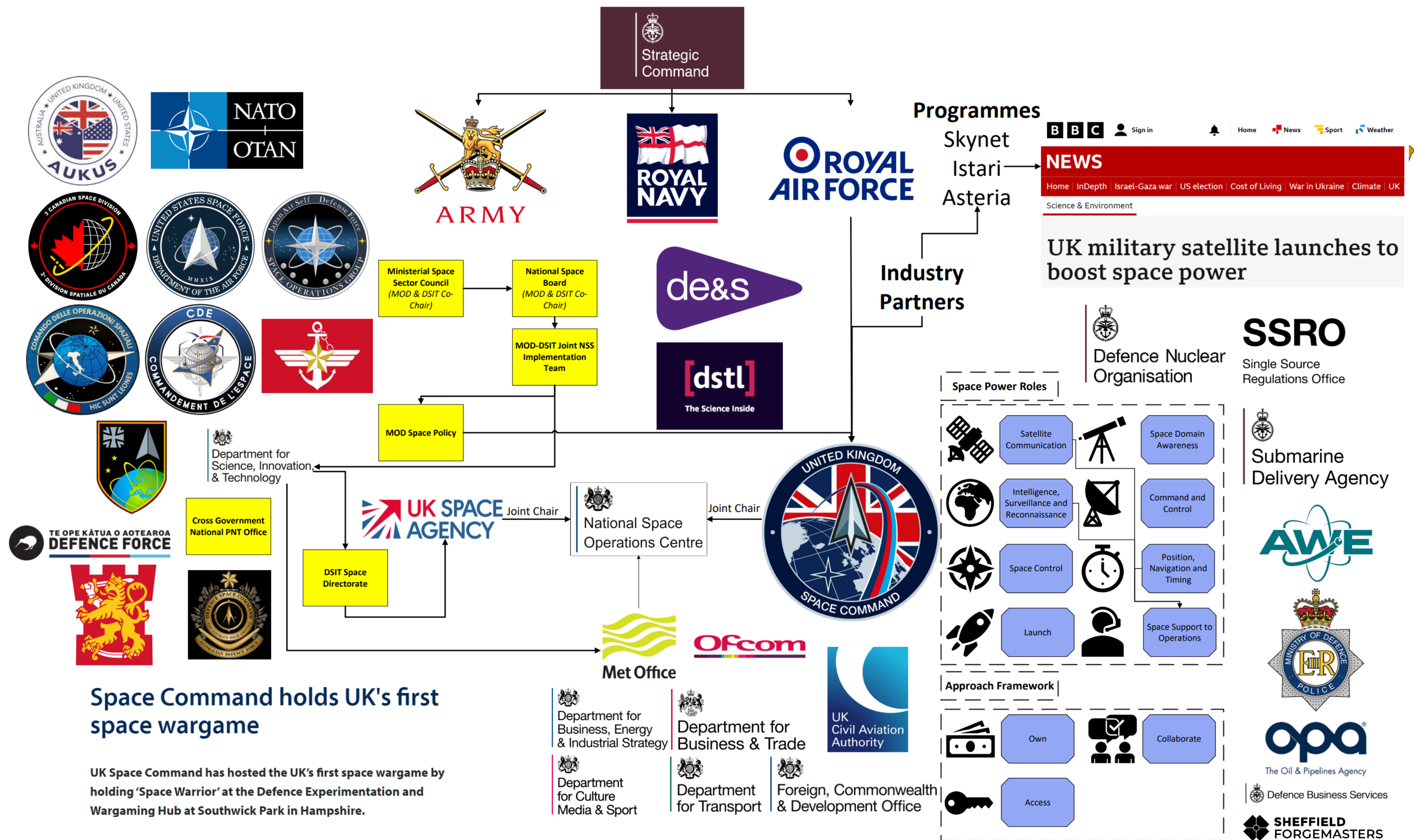
UK Space Command

GovBridge Defence Boot Camp - Day 1







X Govt Governance





Generate

Building a competitive
edge in space capability

-  Satellite Communications
-  Space Domain Awareness
-  Intelligence Surveillance Reconnaissance
-  Command and Control
-  Position navigation and timing
-  Launch



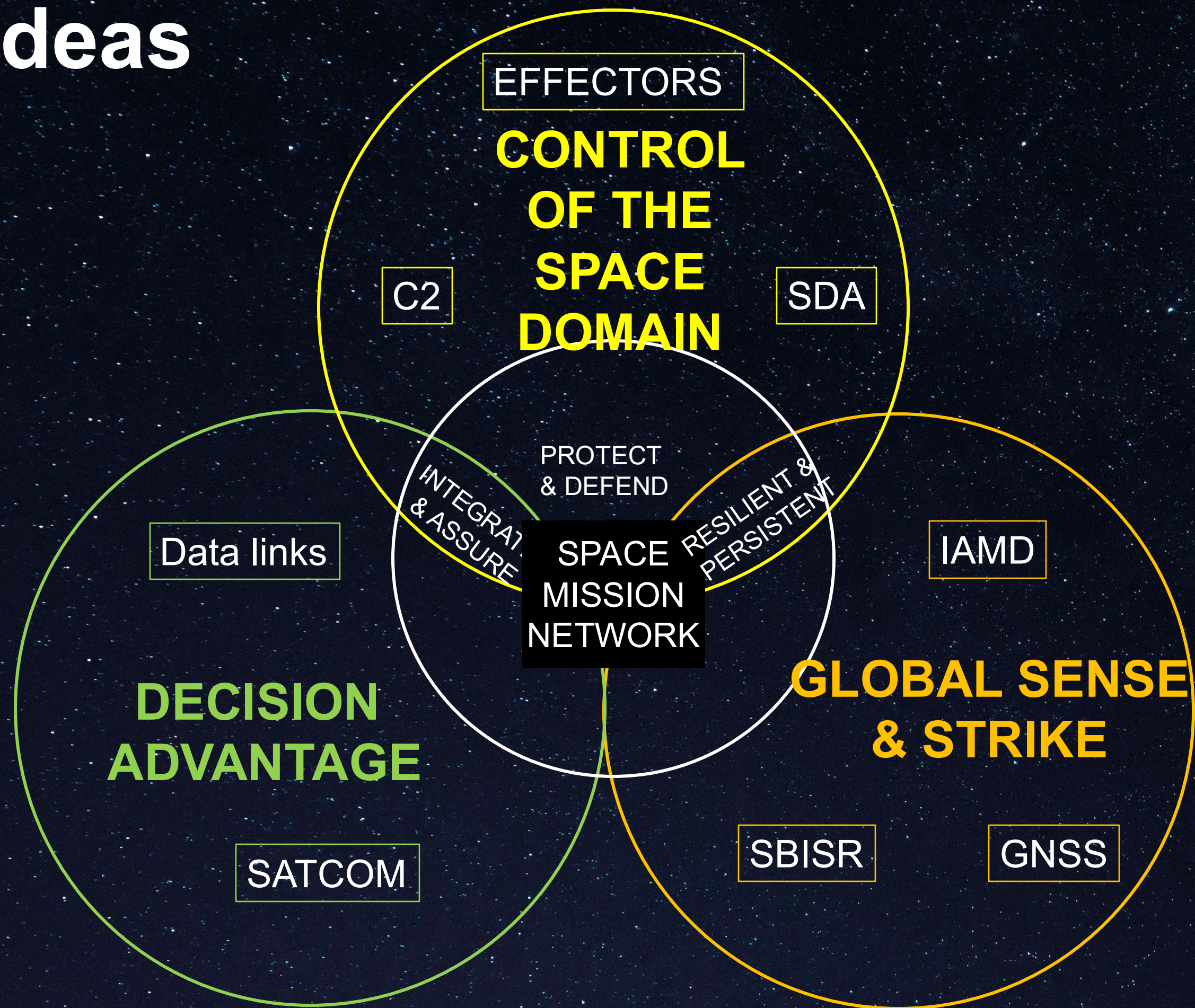
Capability Management Plan

Version 1.0
Oct 2022



UK Space Command

3 Big Ideas



Capability Development and Delivery

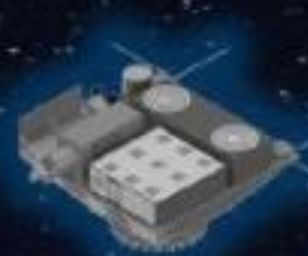


Programme ISTARI

Space Segment



JUNO
(EO)



TITANIA
(FSOC)



TYCHE
(EO)



OBERON
(SAR)

Ground Segment



HERMES



PRIMUS



MINERVA



PUCK

Programme ASTERIA

Project: PANOPTES (Sensors and Data)

- Sensor/Data Project to feed Project BOREALIS
- System of systems approach to SDA to support Space object detection and characterisation



Project BOREALIS (Software)



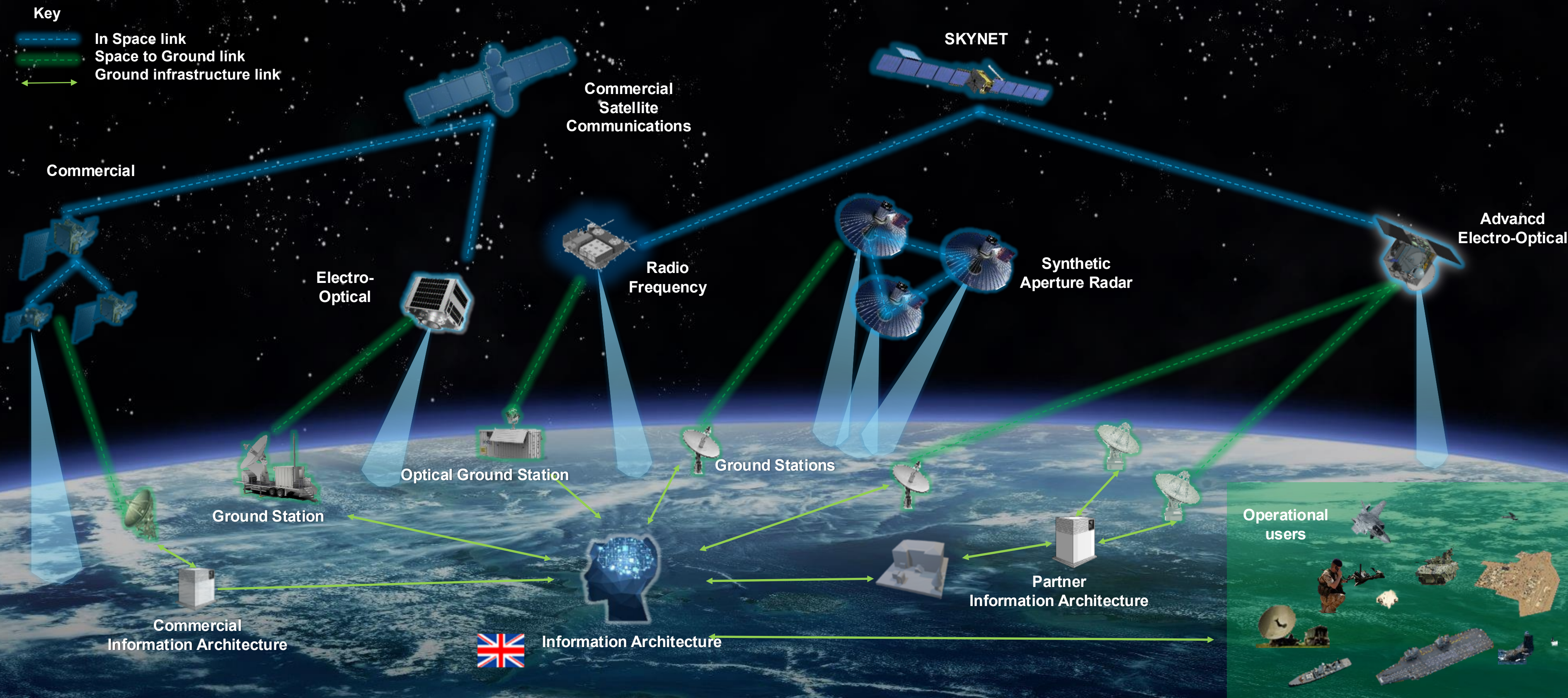
Delivering a national civil-military hub to understand the space domain, conduct space operations and support timely decision making.

- Heart of National Space Operations Centre C2 System
- Integration of disparate systems



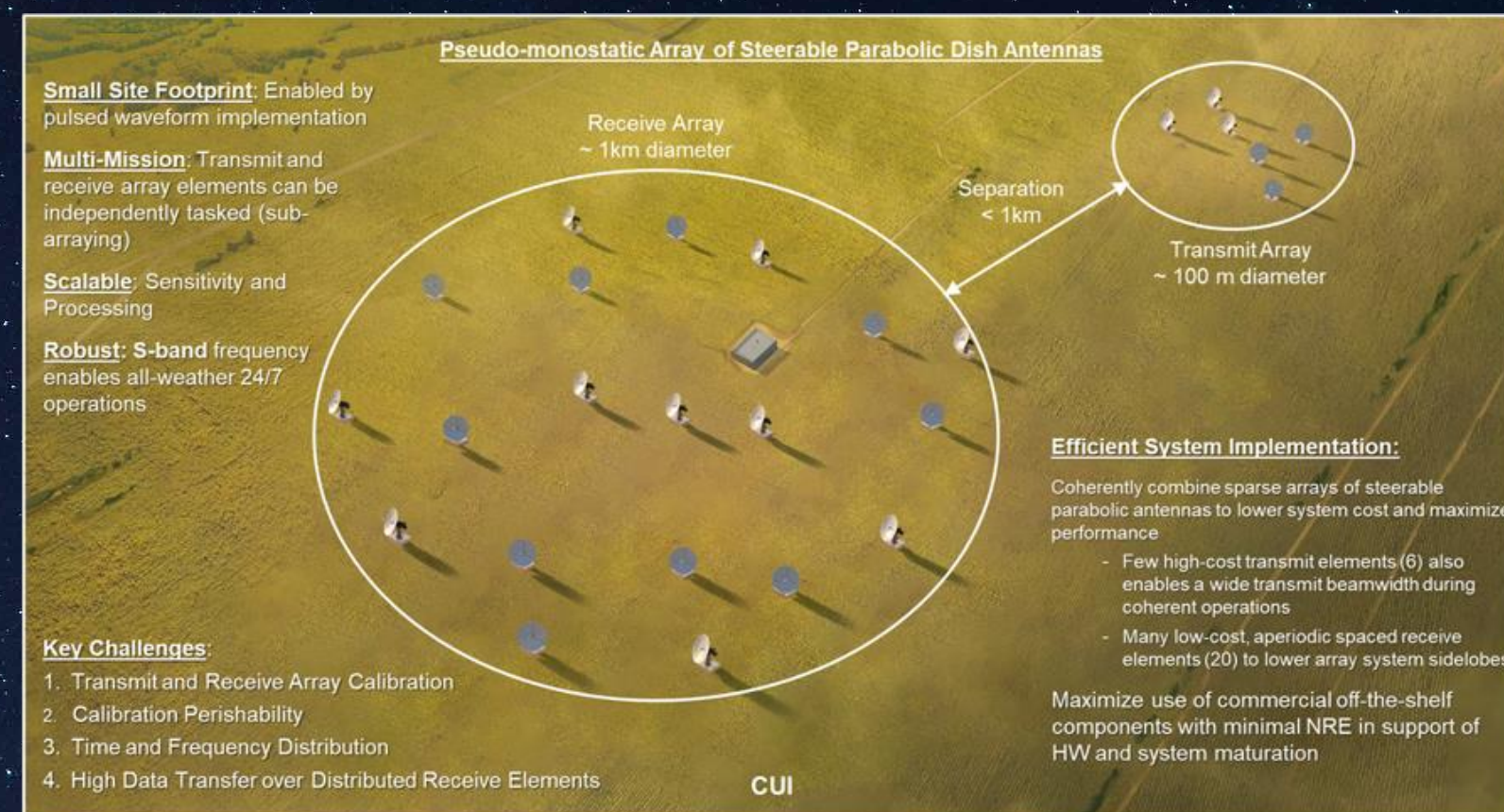
Programme ISTARI Vision 2026

Develop and deliver the UK Defence ISR Constellation
Integrate Research & Development projects to enable a foundation capability by 2025
Develop towards an operational constellation by 2031



Deep Space Advanced Radar Capability (DARC)

- Trilateral programme (US lead)
- Tracks satellite & objects out to and in GEO
- 3 global sites
 - US
 - UK
 - Australia
- MOU announced Dec 23
- Environmental and Planning Permission work ongoing to enable final UK site selection
- Nominal UK build start NET Oct 24



Space Control

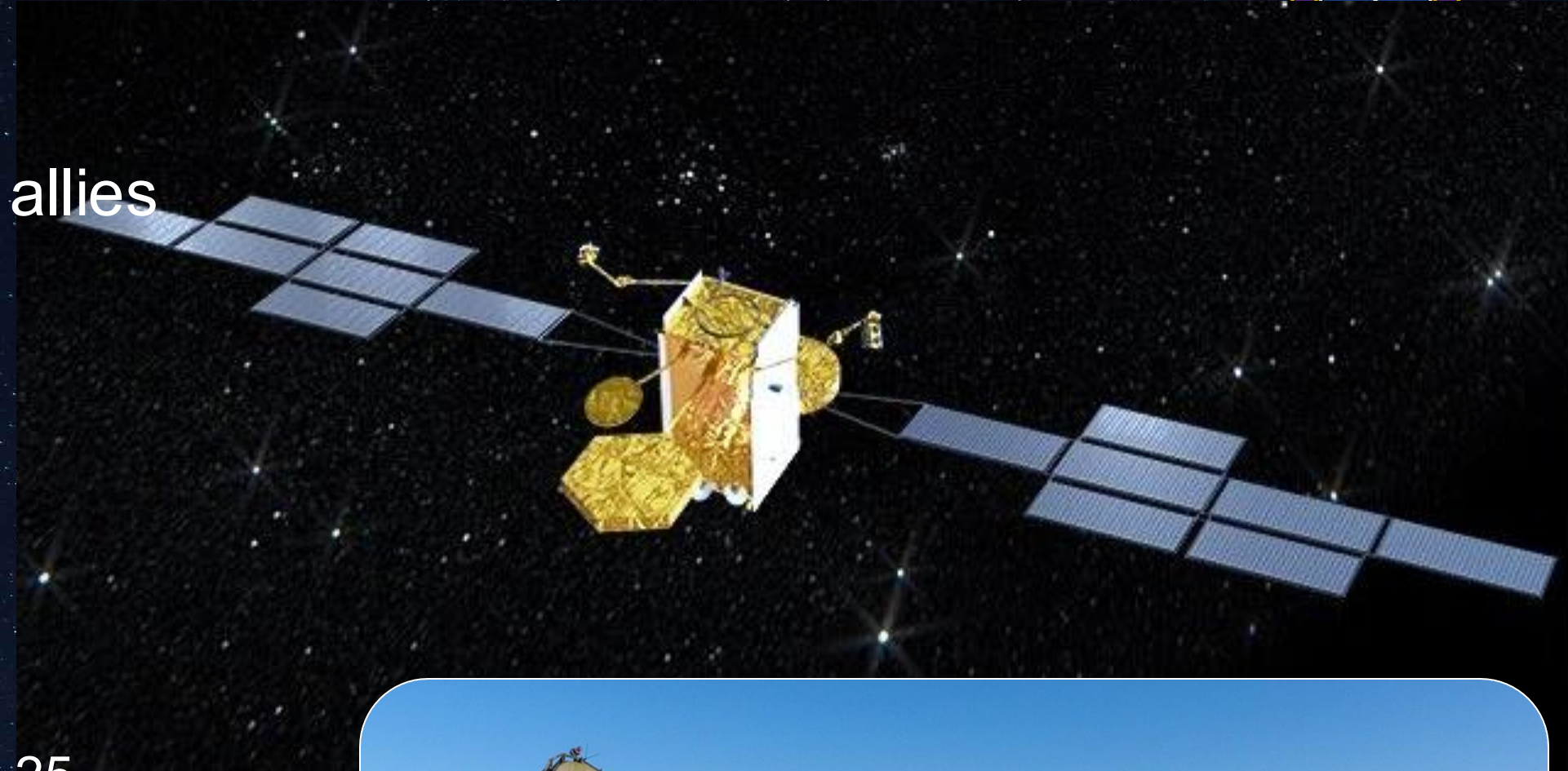
- UK Space Command Mission 'to protect and defend UK and Allies interests'
- Understanding current reliance and vulnerability
- Future space system design considerations for space mission assurance
- Threat and hazards
- Optimise Space Domain Awareness to support
- Understand the policy appetite
- Consider previous work and new areas for S&T consideration



SkyNet: Strategic Satellite Communication (SATCOM)



- Mil hardened SATCOM to Defence, OGDs and allies
- Provision
 - From 2003 to 2022 Airbus PFI
 - Skynet system reverted to MOD ownership Aug 22
 - Babcock 1 Mar 24
- Procurement
 - UK Strategic Command
 - Transfer to UK Space Command no earlier than 1 Apr 25
- Spacecraft Protect & Defend responsibilities with UK Space Command
 - Link
 - Ground Segment



SKYNET & PNT



SKYNET

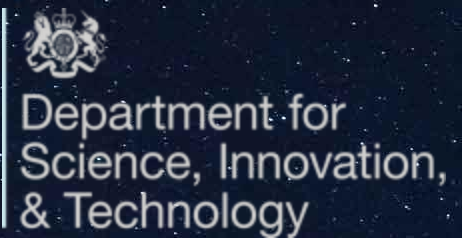
- Next Generation Maritime Terminals
- Next Generation Land Terminals
- Ka Satellite and Ground systems
- Narrowband Satellite System
- Wideband Satellite System
- SATCOM Private Sector Support
- SKYNET 6A Build



PNT

Current Activities

- PNT Programme Office
- Future Sensing and PNT Quantum
BRIGHT CORVUS
- Engagement with x-HMG
National PNT Office
- International Links (NATO, US, Allies, FVEY NAVWAR)



Programmes of Record

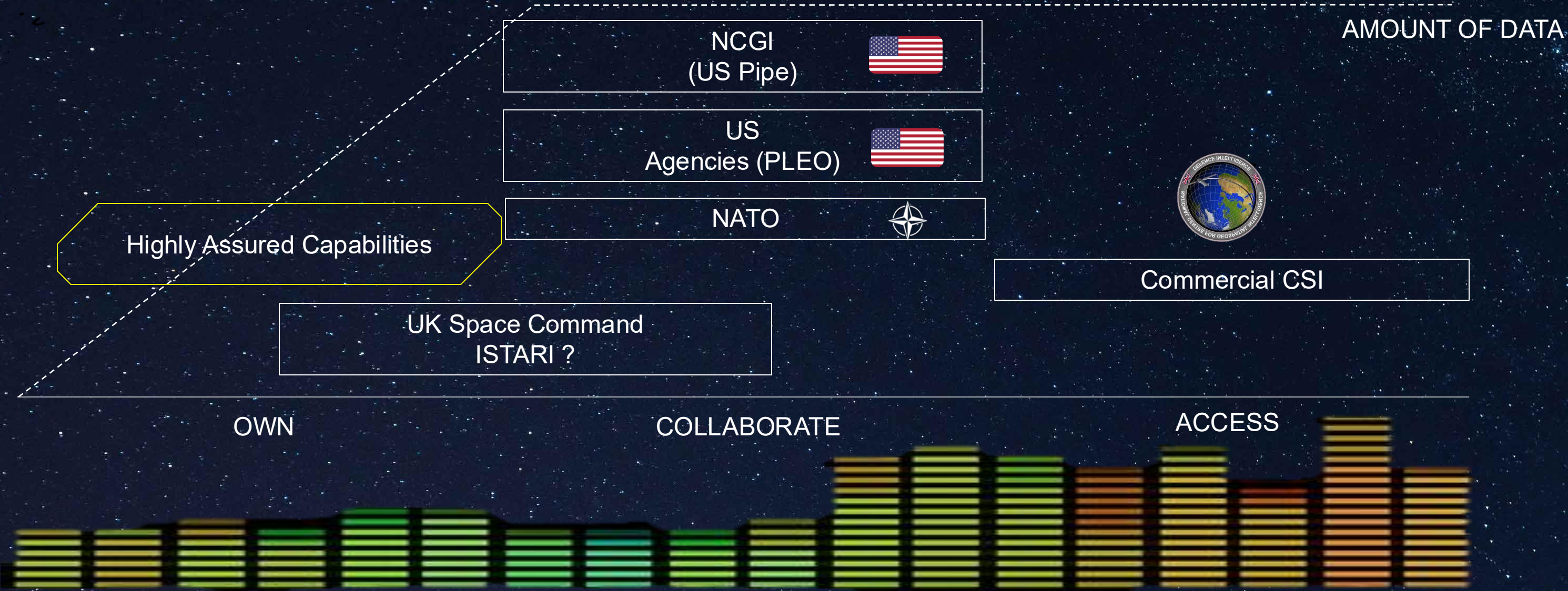


Robust Global Navigation System (RGNS)



Alternative Navigation (Alt Nav)

The Approach



Space 2030 ... a meaningful global leader in space



National Security Strategic Innovation Fund (NSSIF)

Defence Innovation Unit



**NATIONAL SECURITY
STRATEGIC**
Investment Fund

Investing in the future security and prosperity
of the United Kingdom

Introduction

October 2024

Our Mission

**To deliver standout capability to the
National Security and Defence
Community**

Our levers



Invest in leading venture funds, or directly in individual businesses, where there is strong strategic alignment.

Insight into advanced technology companies and their markets to inform technology decision making.

Contract for Work Programmes between companies and HMG teams to co-develop products that accelerate NS&D capability.

Our themes



Space, Satellites, Future Comms



AI, Data, Automation & Robotics



Quantum Tech, Advanced Compute & Semiconductors



Emergent Tech

As well as 12 areas of interest:



Audio and visual processing

Technologies that allow audio and visual data to be captured, recorded and analysed.



Commercial space, platforms and robotics

Low cost of deployment technologies for transporting sensor payloads into challenging environments.



Computational behavioural analysis

Technologies that automate processes for measuring and inferring human behaviour at scale.



Cyber security

Technologies to enhance and defend digital networks.



Data analytics and A.I.

Technologies and tools for interactive data transformation and exploitation, and to enable analysts to work more efficiently.



Financial technologies

Technologies that enable financial information to be tracked.



Identity technologies

Technologies that highlight or obscure identifying information about individuals and groups.



IOT and the evolving environment

Technologies that help understand the local environment or deliver a step change in infrastructure.



Novel data transport

Technologies to move data securely and without detection between geographical locations.



Sensors, novel materials and power sources

Technologies and novel manufacturing to enable operations.



Quantum technologies

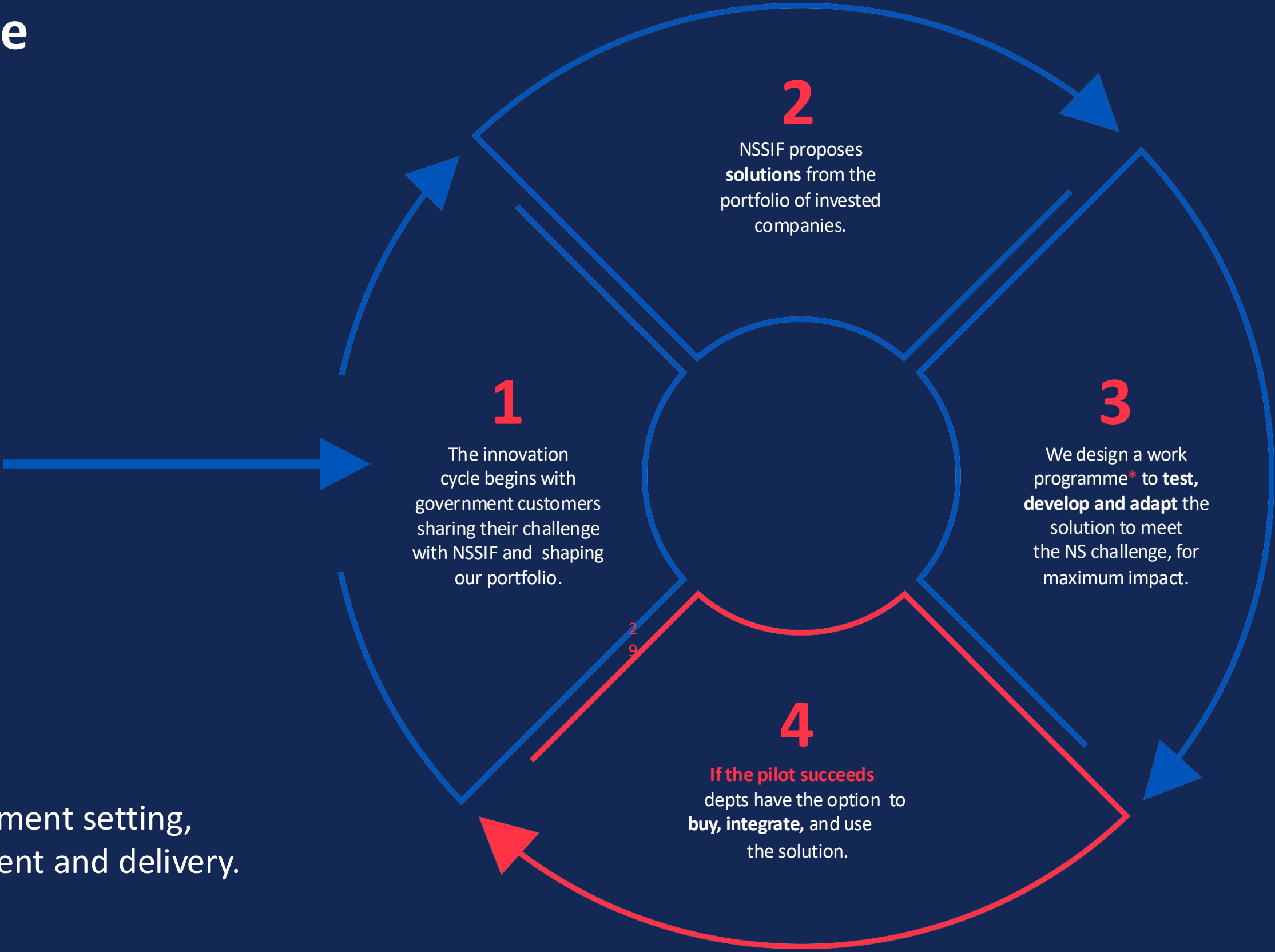
Novel technologies and techniques, viable in commercially exploitable timescales.



Biological and medical technologies

Technologies and techniques with national security implications, including to detect, manage and mitigate biosecurity risks.

Our Innovation Cycle



A value-adding cycle of requirement setting, investment, testing, enhancement and delivery.

*
Work Programmes are paid for and can be carried out by NSSIF. We use them to trial and adapt new technologies for NS&D customers.

Our team



Government partners

- Mission and Theme Partners collate NS&D requirements to inform NSSIF activity
- Support the adoption of new technologies into Government departments.



Technology partners

- Communicate national security and defence challenges to private companies
- Pilot and assess new technologies and adapt them to national security and defence needs



Investment partners

- Invest directly in companies, often taking Board Observer roles
- Build partnerships with trusted fund managers

How we invest

Investing in leading venture capital funds

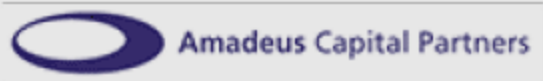
We invest via a select group of leading venture funds into a wide range of dual-use technology with potential National security and defence applications.

Direct investment

We invest directly in individual businesses.

Strategic Partnership

We sponsor the In-Q-Tel International Programme alongside the US and Australian Governments.

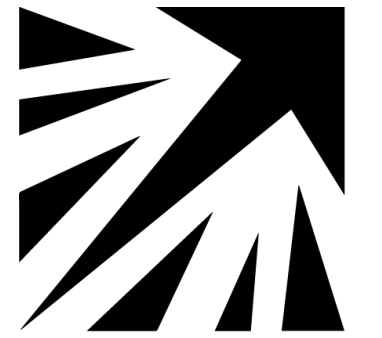


Defence Innovation Cluster

SME Toolkit for MoD Engagement



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Defence Innovation Cluster:
Defence Boot Camp – ‘SME Toolkit’
for MOD Engagement

Innovation Through Collaboration



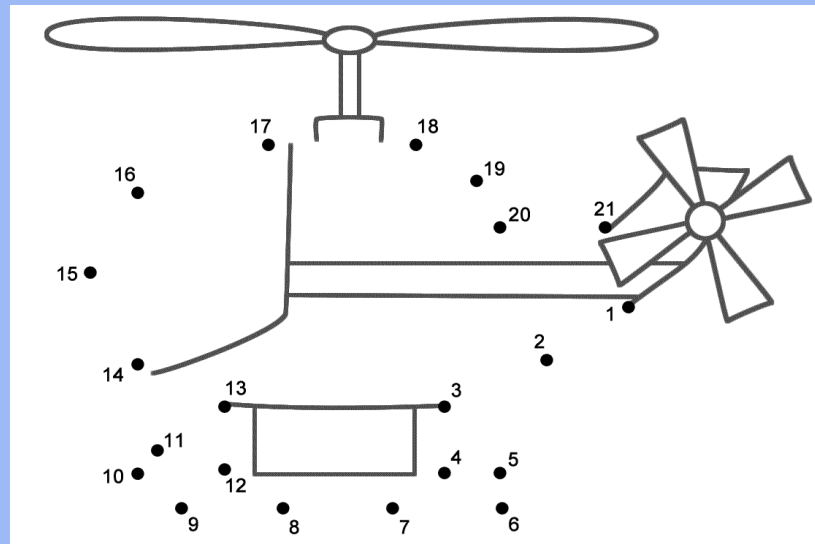
Strategic
Command



Defence Nuclear
Organisation

MOD Engagement – Key requirements

Join a lot of dots



Spin a lot of plates



Lots of frogs



Mesh the
matching cogs



You will get a significant shortcut and benefit from 35 years of field sales experience...14 of which are directly in Defence

Learning for today...

Key challenges - Awareness

Benefits for engagement - Why

Engagement methodology - How

Enterprise structure - Fabric

Engagement approach – Ways of working

Overview – Critical success factors

Case Study: Project 'Zeus' A working example of success

Trade bodies – Who and their value

Funding Routes – What and where they are

Workshop activity



Brief Introduction



- RAF Aeronautical Engineer – Number 1 (Fighter) Squadron, Harrier Jump Jets – Left in 1989
- Joined HIAB Cranes – General Sales Manager
- Joined Venture Capitalist Group – Group MD, 54th fastest growing company in UK, £500 M sales
- Part-time Entrepreneur in Residence for Coventry University – Trained 180 business's including the winner of the East Midlands Entrepreneur of the year.
- 14 years ago, started the Defence Innovation Cluster, 33 companies from 16 countries



Elements...

Takes 10,000 hours (250 working weeks) to get good at something, ½ a million miles

Well-developed network, 600+ quality contacts, long standing relationships/trust

Out in the field 3-4 days a week – Defence is a contact sport

Team Defence involvement (Space, Future Capabilities Innovation, Test & Evaluation)

Wide basket of innovative/disruptive technologies and services so attractive to engage with

Frameworks (Future Lab, DASA – DTEP, AURORA, DSP etc)

Digital Twins (award winning)

Ex-Military

Security Cleared

Unsolicited proposals

Specialist Generalist

14 years of operational experience and IP (extremely valuable – in and out of Defence)

Overview creation – Crystallise pitch and offer

There is no cold calling in Defence

There is no 'Yellow Pages' for contacts

Constant churn of seniors

It has a unique set of language and behaviours

Cannot advertise

As mentioned, takes 10,000 hours (250 working weeks) to get good at something

Judged on knowledge of the environment

Primes hold a lot of the cards if you let them



Engagement Benefits for Defence



- Maze of accreditations and prerequisites increases the cost of doing business
- Confusion caused by multiple points of entry puts them off
- Hard to understand language (402 pages of acronyms)
- Time taken for contact to contract can cause fatigue

Clarity, pace, empathy for a user-friendly experience delivers...

Access to previously invisible technology/services

Shaping of technology/services for best matched read across

Access to new 'Spin-In' technology (Paid for, developed and field tested outside but easily adaptable for Defence)

Budget magnification – Head start or off the shelf solutions can reduce direct investment required

Speed increased from requirement to delivery

Collaboration, one potential supplier may not have the complete solution, but others may so a trusted environment can be stimulated

Oversee so can shape OEM/Prime/Higher Tier integration

Become a more agile and intelligent customer

Increased empathy with the marketplace so can effect sound policy and

Benefits to Engagement



With some help everybody gains...

Defence want you (Mandated 25% target) – Across the landscape

It's a 'Blue Chip' industry and environment – Not going away

Realistic margins – Compared with many others (especially volumes)

Business resilience – Stable, continued investment, constant need

Feeds a good moral compass – Defence for many has extra patriotic value

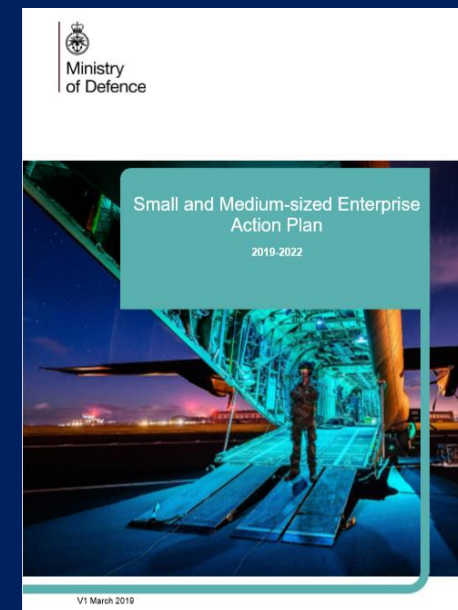
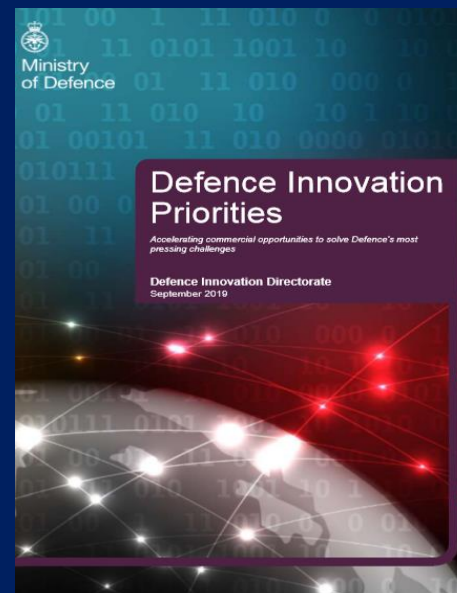
Interest – A multifaceted, fascinating environment compared to many others

Once they are in – They tend to be in, and it grows further iterations, so effort becomes justifiable and sustainable

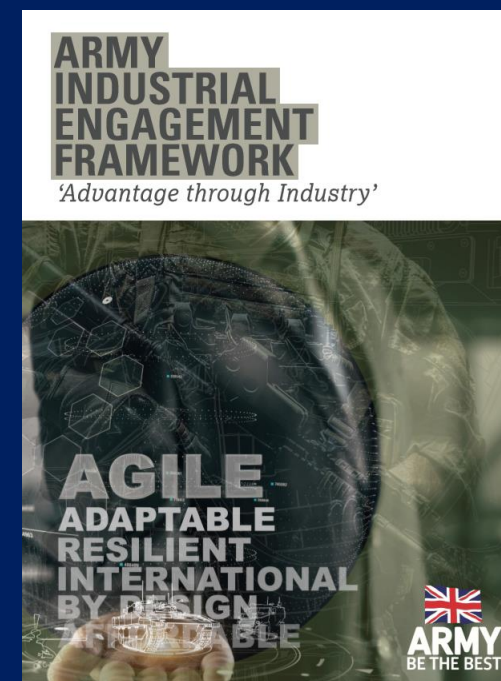
Contract duration – Can be long and repeated so attractive

Can generate collaborative partnerships for wider traction

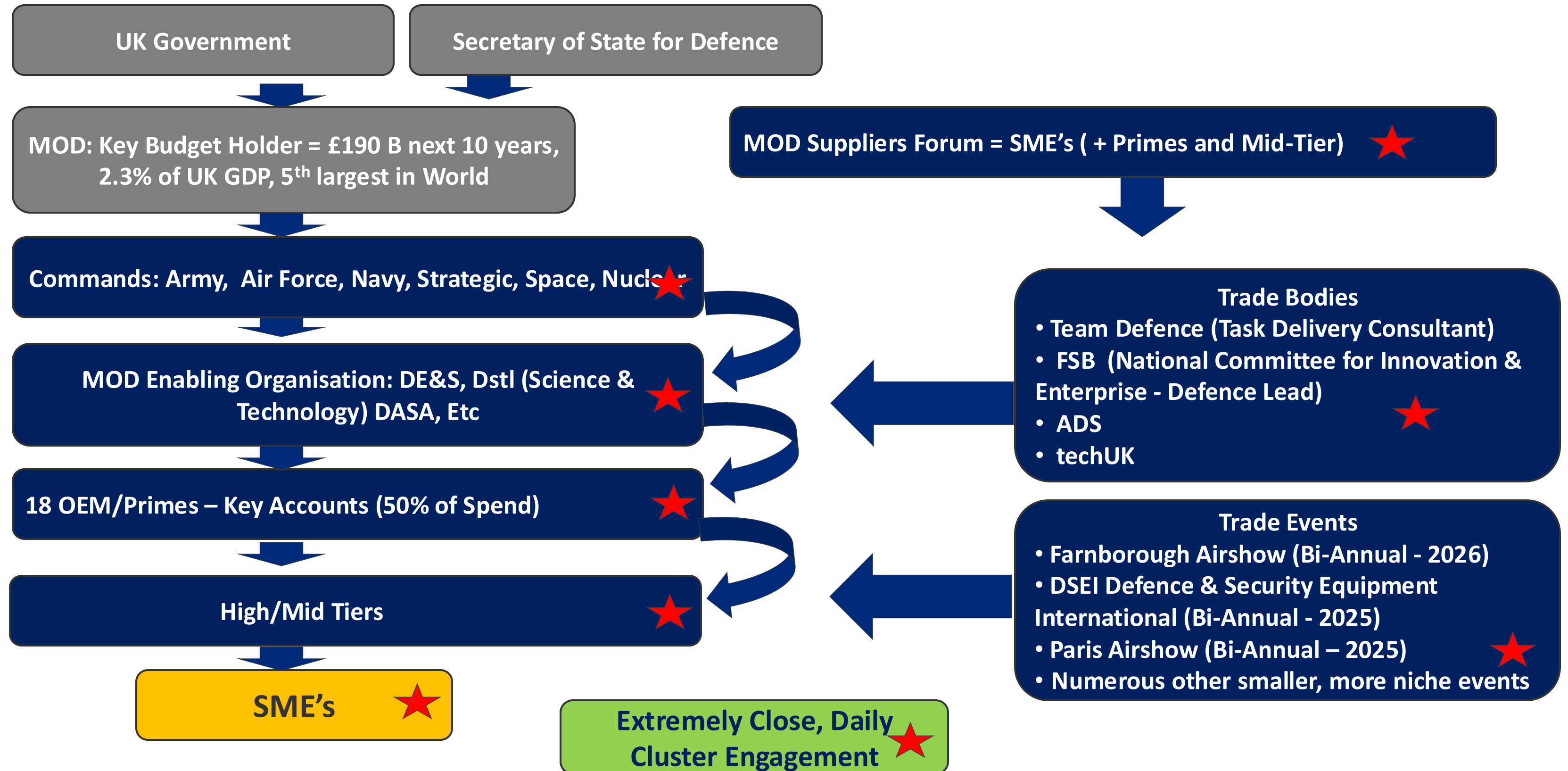
MOD Engagement – Where to look



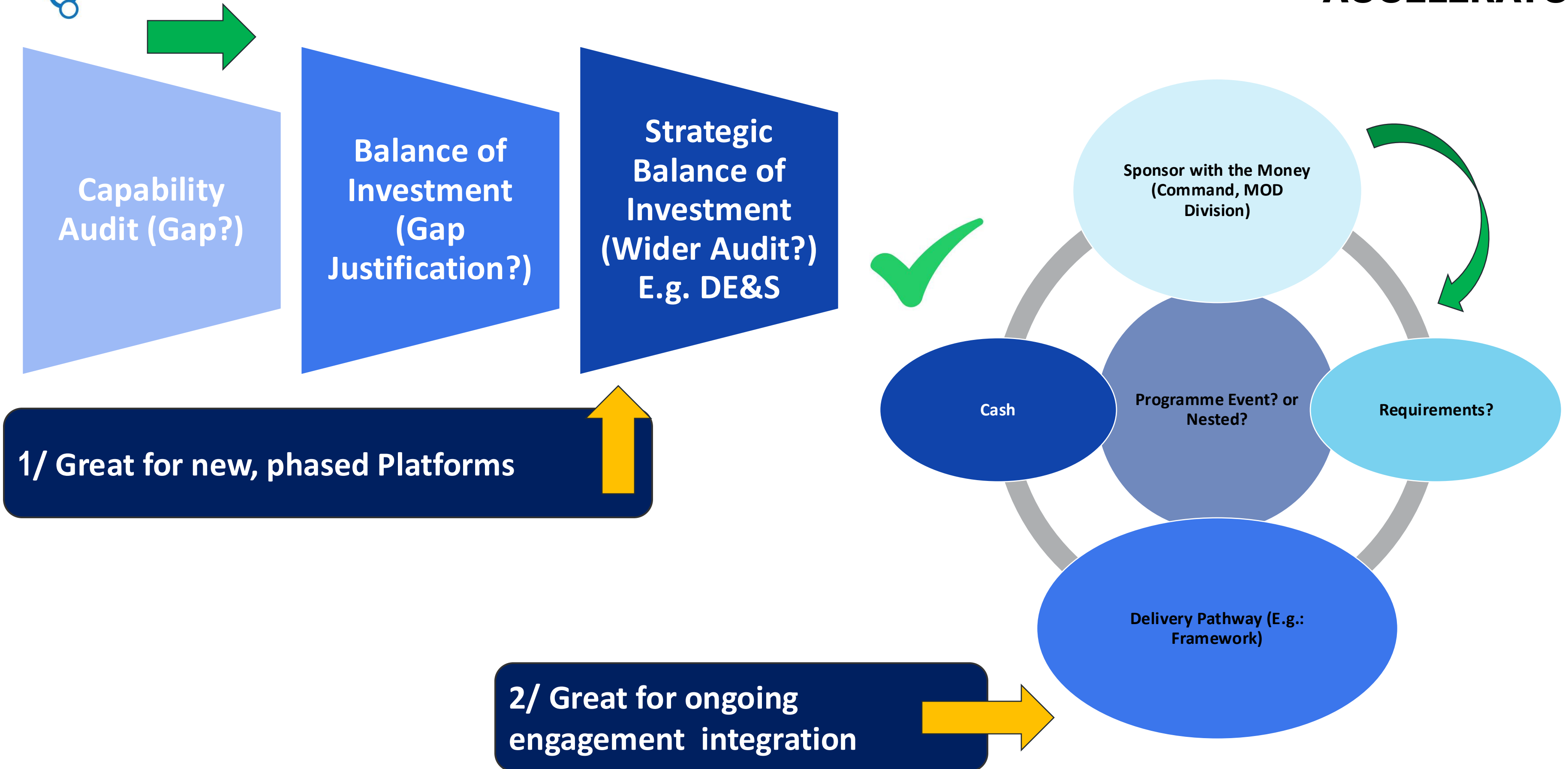
Strategy rich, tactical
roadmap poor



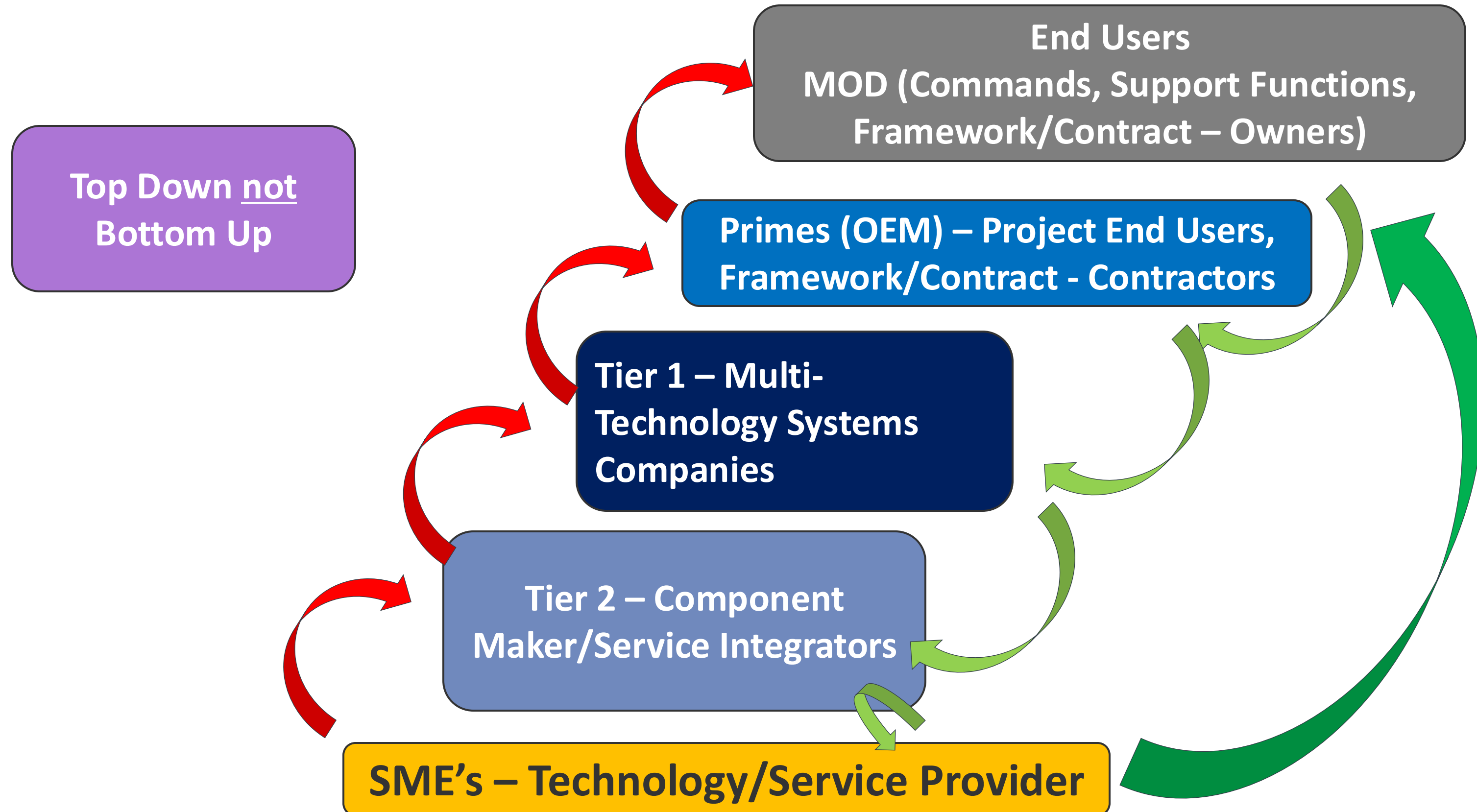
MOD Engagement on a Page



Contract Pathway



'Normal' Tier Progression



The Defence Enterprise

MOD Head Office UK MOD Departments and Agencies (all organisations are a part of MOD) Sets Policies and Direction

Army Command		Navy Command		Air Command		Strategic Command		Space Command (Under Air Command)		Defence Nuclear Organisation		Command Organisations Define requirements for the enacting organisation to deliver		
Defence Support & Equipment (DE&S)		Submarine Delivery Agency		Defence Infrastructure Organisation		Atomic Weapons Establishment		Defence Science & Technologies Laboratories (Dstl)		Defence Digital		Enabling Organisations through mix of self-delivery and placing contracts with industry		
UK Hydrographic Office		Defence Electronics & Components Agency		Single Source Regulations Office		Oil & Pipeline Agency		Defence Safety Authority		Defence Business Services				
BAE Systems	Babcock		Airbus		QinetiQ		Atlas Elektronik		General Dynamics		Leonardo		Fujitsu	
Rolls-Royce	Boeing		Lockheed Martin		Serco		Oshkosh		Thales		MBDA		BT	

MOD Rank and Seniority

RAF	Army	Royal Navy	MOD <small>(Function)</small>	Rank <small>(Star)</small>
Air Chief Marshall	General	Admiral	Group Head	4 Star ****
Air Marshall	Lieutenant General	Vice Admiral	Group Deputy Head	3 Star ***
Air Vice Marshal	Major General	Rear Admiral	Division Head	2 Star **
Air Commodore	Brigadier	Commodore	Division Deputy Head	1 Star *
Group Captain	Colonel	Captain	Wider Ownership	Senior Stakeholder
Wing Commander	Lieutenant Colonel	Commander	Ownership	SO (Staff Officer) 1
Squadron Leader	Major	Lt Commander	Day-to-Day Management	SO (Staff Officer) 2

Engagement Approach

Great, can you send me something...

Who you are? (Are you relevant...strapline helps)

What you do? (How you might fit)

How do you do it? (Is this special or different, and facts and figures, x£, y% to scale or quantify it)

When they need you? (Call to action points)

Credibility: De-risking (Who has gone before me?)

Communication asset (Not enough staff, resource or bandwidth - don't want to own the overhead burden, worlds best is what's on front of them)

- Websites
- They want to send it on to just 'Top and Tail it'
- Not their job to see the fit it is yours (any Elephants in the room)
- Called an '**Overview**' in fact this is a distance selling document, not a Power Point Presentation (Page and a half of text)
- Professionally produced, high impact, graphics, images



Trade Bodies

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- ADS
- techUK
- Team Defence Information

Team Defence Information (TDI)

- Team Defence is a not-for-profit membership organisation funded by industry that harnesses and co-ordinates volunteer contributions from its 167 members and the MOD
- A collaborative association that informs Defence policy and pilots new ways of working to transform the Defence ecosystem with a MOD 3 Star Governance Structure
- Team Defence is exceptional in the way it pursues obtaining a wider understanding for Defence
- Provides coherence, common solutions and corporate memory

MOD and Industry Lead:

1. DMSO/DSEP (Defence Synthetic Environment Programme) – Workshop and White Paper
2. Digital Twins - Three White Papers, capability development)
3. Hydrogen – Conference, Workshop and White Paper
4. **Space Command (Vanguard) – White Paper**
5. Test & Evaluation (Plus COP)
6. Futures Lab (Remote Autonomous Systems)
7. FCI (Future Capability Innovation)
8. Kindred (Hirst)
9. DASA - DTEP (Defence Technology Exploitation Programme)

Support

- Natural Resources & Infrastructure
- Trading Forum
- DCPD (Defence Protection Partnership) External Comms Working Group
- DAIC (Defence AI Centre)
- Dstl (Search Light)
- Dstl - Metis

Other

- DASA - DTEP (Defence Technology Exploitation Programme) - Panel
- Industry Nominations for CDLS Commendations 2024 - Panel
- Harnessing AI
- Babcock Postgraduates (Behaviours)

Outside but connected

- FSB (Federation of Small Businesses, 200,000 members) – National Enterprise and Innovation Committee
- Innovate UK Business Connect (Innovate UK KTN) – Vice Chairman Defence and Security Advisory Board

As a member



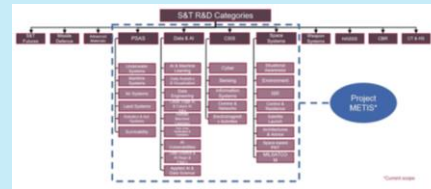
Funding Routes - MOD Anticipated Budget: £190 B over next 10 years

DASA

- Open Calls
- Focus Areas
- DTEP (Defence Technology Exploitation Programme)
- Ideas Market Place
- Defence Innovation Loan
- DIANA (NATO Version)

Dstl

- **R-Cloud** (Will remain till 2028 till Category Groupings contracts are established – See Metis)
- **Frameworks** (14 off i.e. Serapis) Mandated to stop money 'leakage' via direct contractor engagement
- **Tasking from Commands** - Was a 100% funded on demand operation now must share government cuts so will prioritize tasks (1 in 1 out recruitment)
- **Search Light**
- **Missile Defence – Storm**
- **Science & Tech Futures**
- **Weapons Systems - Thunderbolt**
- **Metis** (Starts process to replace frameworks: R-Cloud Version 5 (V. 4 current) - Centres of excellence



DE&S

- **Portal** - New industry Gateway – (Direct front door) - removal of stove pipes, FCI Heavily Involved
- **FCI** (Futures Lab)
- **EDP** (Engineering Delivery Partner) **Aurora**
- **PDP** (Project Delivery Partner)
- **LTPA (T3E)** - TEST PT

Front Line Commands

(Innovation Units)

- RAF - RCO
- StratCom – JHub
- Army – Aerial
- Navy – OCTO
- Space

MOD Central

- **Defence Sourcing Portal** (Committee)
- **Other Frameworks**
- **Other Functions – DIO** (Defence Infrastructure Organisation), **SDA** (Submarine Delivery Agency), **DD** (Defence Digital – SPACE – Higher TRL), **Team Leidos** (Logistics supply)
- **Commercial 'X'**
- **Acquisition Pipeline – General and DIO** (Update with forecasts)
- **DGP** (Defence Growth Partnership)
- **UKDSC** (UK Defence Solutions Centre)

Contractual Factors:

- Social Value (10%)
- JOSCAR (Hellios)
- Cyber Essentials and CE Plus
- SME Target = 25%
- Facility Security Clearance (Was List X)
- Government Procurement Reform Act (Single source, more flexibility)

MOD Key Accounts (18 off)

- | | |
|--------------------|---------------|
| • Airbus | • MBDA |
| • Babcock | • QinetiQ |
| • BAE Systems | • Raytheon |
| • Boeing | • Rolls-Royce |
| • Capita | • Serco |
| • DXC | • Thales |
| • General Dynamics | • Ultra |
| • KBR | |
| • Leidos | |
| • Leonardo | |
| • Lockheed Martin | |

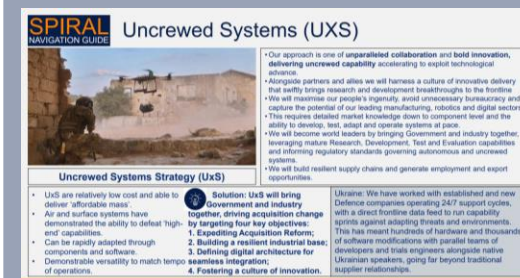
What does this mean?

- SME engagement will be more direct and with new emphasis, importance and focus
- MOD will have to own more risk (ways to mitigate)
- Even more reduced MOD available to 'users' bandwidth and SQEP
- Cannot fall back on frameworks to deliver work
- Dstl will 'reject' more work requests (commercial to take over)
- Less points/ways of entry directly to MOD
- Spiral approach – How, when and why help needed

Spiral Development:



Spiral Acquisition incorporates Spiral Development, but has some key additional features that relate to driving pace in the delivery of military capability



VC Funding in Defence

Venture Capitalists and Business Angels the difference

VC investment in NATO counties 2024 = \$3.9B (US 83%), VC total funding in Europe risen from 0.4% 2022 to 1.8% in 2024

Mission driven VC's

Smaller, cheaper and more connected and dual use

Bubble territory

VC Fund Managers may be excluded from ESC
(Environmental, Social, Governance) ESG examples...
Weapons, Tobacco, Coal

Governance – Ultimate Governance ‘Defending Democracy’

Slow – Life or death technologies collateral damage for
military or civilians



Could you?...

What do you have, is it a fit

Should you?

Invest in bottoming out, who will do it (Bandwidth, focus, resource, support), cost it (Time, overhead, lost opportunity),

Tenacity, patience, commitment

Culture (Correct fit, stakeholder agreement, staff agreement)

Road Map

Steps, correct sequence, approach, engagement assets (Overview), compliance (standards, certification), investment approval, clear strategy, pick on strengths not weaknesses, be flexible to adapt or even pivot

