Regulation & Legislation Workstream Plenary Event #6

BEIS Conference Centre, Department for Business, Energy and Industrial Strategy
London| 19th September 2019

Welcome and introductions

Irina Mineva | UK Space Agency

About today

Aim: To continue our series of regular engagement events

- We will provide an overview of spaceports and space activity work
- We are happy to take Q and A throughout the day

The small print: No part of the discussions held (unless otherwise noted) should be taken as a reflection of developing or future government policy or legislation, and any decisions taken by any individual or organisation on the basis of any information they hear or see at these meetings are taken at their own risk

Agenda

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10:00 – 10:30	**Arrival and Registration**
10:30 – 10:45	**Welcome and introductions** Irina Mineva | UK Space Agency
10:45 – 12:00	**Spaceports** James Eales I CAA; Jeremy Ketley I DfT; Emily Butler I UKSA; Rosemary Whitbread I HSE
12:00 – 13:30	**Networking lunch**
13:30 – 14:45	**Space Activity** Thierry Berns| UK Space Agency
14:45– 15:00	**Summary and closing remarks** Irina Mineva | UK Space Agency

Opportunities to engage with us

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October

- Plenary Session, Bristol – 17 Oct (final topics tbc)

November

- Plenary Session, London – 11 Nov (final topics tbc)

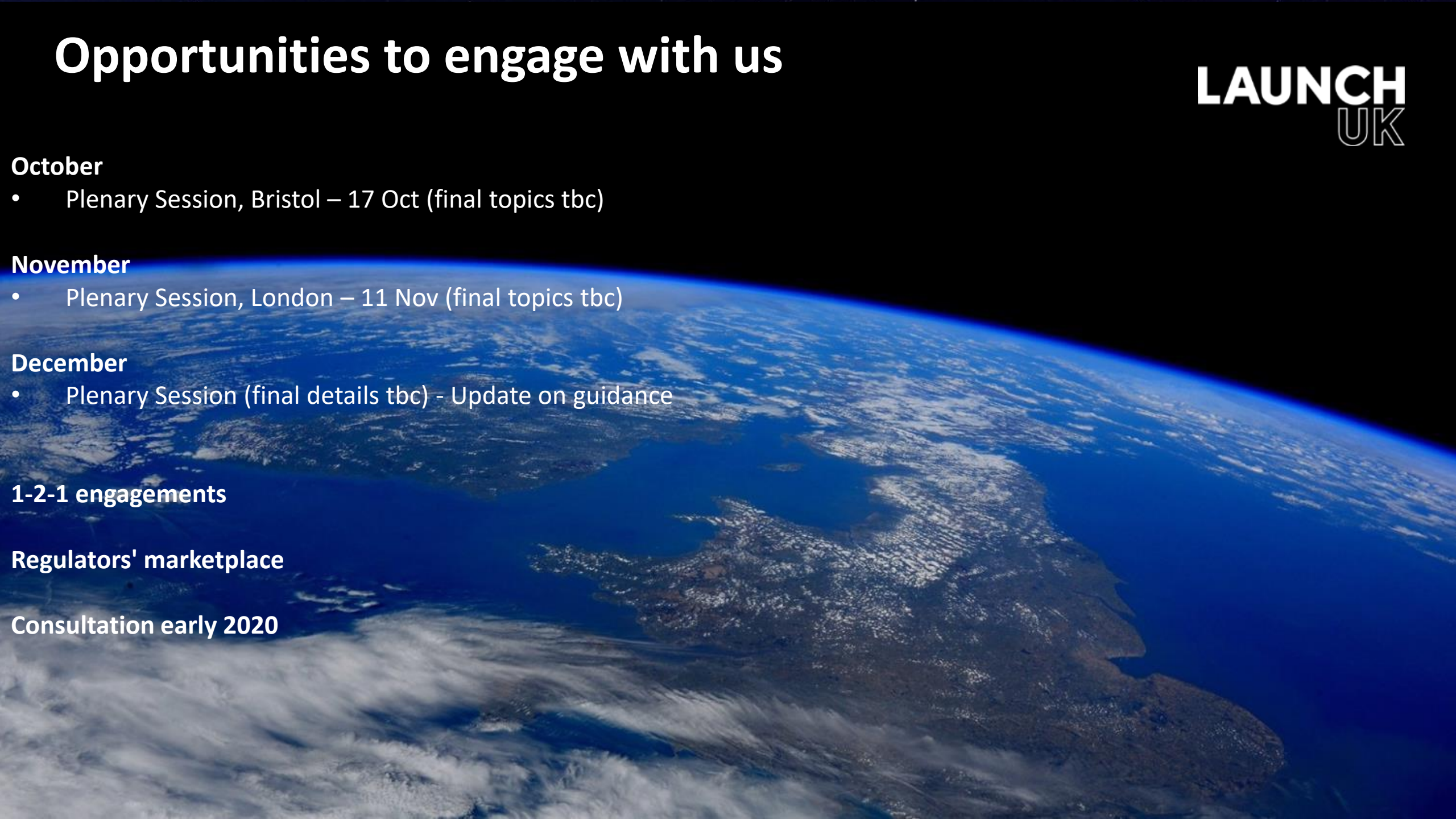
December

- Plenary Session (final details tbc) - Update on guidance

1-2-1 engagements

Regulators' marketplace

Consultation early 2020



Regulators' Marketplace

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What questions would be helpful to discuss with the Regulators?

- CAA
- Marine Scotland
- Marine Management Organisation
- UK Hydrographic Office
- Local Planning Authority
- OFCOM + International Telecommunications Union
- HSE
- Hazardous Substances Authority
- COMAH Competent Authority
- UK Reach Competent Authority
- UKSA
- FAA/AST
- National Cyber Security Centre + Security accreditor
- MoD
- Defence Safety Authority & Military Aviation Authority
- Ofgem
- ORR
- ICO
- CMA
- DIT/FCO
- Environmental Agency
- Natural England
- Joint Nature Conservation Committee
- Scottish Environment Agency
- Scottish Natural Heritage
- Welsh Environment Agency

Spaceport licences

James Eales | Civil Aviation Authority

Emily Butler | UK Space Agency

Jeremy Ketley | Department for Transport

Rosie Whitbread | Health and Safety Executive

Caveats

- This is our current thinking and policy regarding secondary legislation for spaceports
- It may change and develop further
- Secondary legislation and accompanying guidance material will go through a consultation as part of the regulatory process
- Work is ongoing with other agencies including HSE to develop the regulatory framework

- We want to give you the opportunity to understand our current thinking and to give feedback as we continue to develop the regulations.

Spaceports in the Space Industry Act

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Section 3: prohibition of unlicensed spaceflight etc

Section 8: grant of licences: general

Section 10: grant of a spaceport licence

Section 11: grant of licences: assessment of environmental effects

Section 13: conditions of licences

Section 18: training, qualifications and medical fitness

Section 19: safety regulations

Section 23: security regulations

Section 24: spaceport byelaws

Spaceports in the Space Industry Act

LAUNCH UK


Space Industry Act
2018

Section 3: prohibition of unlicensed spaceflight etc

Section 8: grant of licences: general

Section 10: grant of a spaceport licence

Section 11: grant of licences: assessment of environmental effects

Section 13: conditions of licences

Section 18: training, qualifications and medical fitness

Section 19: safety regulations

Section 23: security regulations

Section 24: spaceport byelaws

Key principles

- These regulations cover all types of spaceports
- Outcome-based and proportionate to the activity taking place
- The spaceport licensee will be responsible for demonstrating to the regulator that spaceport operations will be conducted safely through a safety case
- Launch vehicle operator licence will have to demonstrate that they can operate safely from a specific location during their licensing process
- Will enable a spaceport licence in advance of a launch vehicle operator identified

What is covered by a spaceport licence?

- Ground operations – providing a safe ground environment for launch activities

- Keeping the public in the vicinity of the spaceport safe from risks associated with pre- and post-launch activity; the storing, transporting or loading/unloading of propellants; engine testing on site

What is not covered by a spaceport licence?

Some areas are not covered by the spaceport licence under the SIA but are critical to operate a spaceport:

- Range requirements captured under ‘range control licence’
- Airspace assessments or Airspace Change Process
- Local planning regulations
- Health and safety legislation (HSE as enforcing authority)

What will be needed to get a spaceport licence?

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- Meet eligibility criteria under s3 regulations
- General licensing & eligibility under s8 of SIA
- Section 10 ALARP demonstration & other requirements under section 10 regulations
- Assessment of Environmental Effects

Section 10 - Grant of a spaceport licence

The regulator must not grant an application for a spaceport licence unless satisfied that—

(a) the applicant has taken all reasonable steps to ensure that risks to public safety arising from the operation of the spaceport are as low as reasonably practicable, and

(b) any prescribed criteria or requirements are met.

Section 10a ALARP demonstration

- Safety case to demonstrate that risks of operating the spaceport are ALARP
- Based on actual or representative launch vehicle
- Demonstrate feasibility of spaceport site to store/transport fuel etc

Spaceport siting assessment

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- Must relate to the proposed spaceport site
- Must be based on an actual or likely launch vehicle
- Must result in a numerical estimate of the annualised risk to members of the public posed by the launch activities from the site. The level of risk must be acceptable to the regulator
- Reviewed where spaceport wants to increase volume or host new launchers

Horizontal spaceports

- A horizontal launch spaceport should be located at either:
  - an existing EASA certified aerodrome;
  - an existing CAA licensed aerodrome,

- It must also – be Directed under the National Aviation Security Programme
- Non licensed sites will need to obtain a CAA aerodrome licence and become NASP directed as a prerequisite to obtaining a spaceport licence
- Location will operate under two regulatory regimes
  - EASA or CAA through the ANO; and
  - Space Industry Act

Section 19 - Spaceport safety regs

- Safety Case
- Safety Clear Zones
- Safety Management System
- Spaceport Manual
- Hazardous materials requirements
- Static testing area requirements
- Emergency Response Plan
- Rescue and Fire Fighting
- Miscellaneous other requirements on safety equipment, fuel & access for fire fighters

Safety case

A body of evidence providing a demonstrable and valid argument that a system or equipment is safe for use within a defined envelope, combined with the argument that makes sense of the evidence.

- This approach requires the licensee to assess the hazards and risk specific to their operation and to demonstrate to the regulator how it will mitigate these.
- It must take into account any operator licensee using the spaceport and any other spaceport users/aerodrome users.
- Must contain information about the main activities to be carried out on site, the location and layout of the site and any spacecraft licensed to operate from the spaceport.
- Must include an assessment of possible accident or incident scenarios and of the likelihood and severity of the consequences and mitigation measures applied.
- Must be reviewed at least every 5 years; when changes are made to the spaceport; after an accident/incident; as knowledge of safety matters/hazard assessment develops;

Safety clear zone

- Spaceports will need to put in place Safety Clear Zones to mitigate risk to members of the public from explosive debris, peak overpressure, exposure to toxic material and thermal radiation when activities are taking place.

- The spaceport will also be required to promulgate the area of the clear zone and time it is active - and monitor the zone during active periods.

- The safety case will be used to determine the hazards and risks – and appropriate clear zones.

Safety Management System

- Implement and maintain a Safety Management System (SMS)
- Implement and maintain an SMS to support a safety case
- Commensurate with activities
- There is lots of existing guidance on this (including CAA guidance)

Spaceport Manual

- Similar in concept to aerodrome manual
- Manual should contain known information and instructions as may be necessary to enable the spaceport operating staff to perform their duties
- Must be maintained, reviewed as necessary and the regulator informed of changes

Hazardous materials requirements

Where hazardous materials are stored on site the licensee must:

- Identify an appropriate area for storing them in accordance with the safety case
- Submit a plan to the regulator showing where hazardous materials are stored, the maximum quantities and separation distances between the material and
  - any other hazardous material storage facility at the spaceport;
  - an inhabited building;
  - a public road or railway line;
  - a public area.
- Clearly mark any hazardous materials

Areas must be designated in accordance with the safety case for propellant loading, unloading and venting of any hazardous materials

Static testing area requirement

- Where any test of spacecraft which potentially poses a risk to members of the public is to be carried out on site the licensee must designate an appropriate area at the spaceport for this.

Emergency Response Plan

- Spaceports will need to develop, implement, maintain and test an emergency response plan (ERP) commensurate with the spaceport and spaceflight activities taking place at or from there.

- Must be co-ordinated with the local authority and local emergency responders.

- Spaceports will need to test the adequacy of the plan and review the results in order to improve its effectiveness – at least every 3 years.

- In the case of Horizontal Spaceports (at EASA certificated or UK licensed aerodromes) the spaceport ERP can be part of or an extension to the existing aerodrome ERP.

Rescue and fire fighting

- Rescue and firefighting services (RFFS) and equipment that are commensurate to activities and launches taking place at the spaceport.
- The level of RFFS will be determined through the Safety Case.
- Corresponding requirement on launch operators to ensure that RFFS is available at the Spaceport for their launches and associated activities.
- Regulations will not specify that either the spaceport or launch operator provides the RFFS.

Other requirements to note

- Any safety equipment on site must be maintained in good working order and tested regularly

- Any fuel stored on site must be kept fit for purpose

- Where a spaceport provides its own on-site RFFS – the regulations will give spaceport fire-fighters the same powers as local authority fire-fighters – and is modelled on SI 2010/770 which amended the ANO to align aerodrome firefighters' with the powers enjoyed by Local Authority fire-fighters.

Next steps

- Guidance products to support you in your applications
- Ongoing plenaries and engagement
- Public consultation early 2020

Any questions?

Networking lunch

Space Activity

Thierry Berns| UK Space Agency

SIA Orbital Licensing Regime

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Legislative Process and Timelines

- The Space Industry Act was enacted in 2018.
- CAA, DfT and UKSA are currently producing the draft Regulations and Guidance that will regulate and inform the licensing of space activities.
- We aim to consult upon the Regulation and Guidance in early 2020.

Caveats

- The following slides represent the current policy thinking for orbital licensing under the SIA.
- However, this remains subject to confirmation, including via consultation and the Parliamentary process.
- We want to give you the opportunity to understand our current thinking and to give feedback as we continue to develop this regulatory policy.

Carrying out activities under the Space Industry Act 2018

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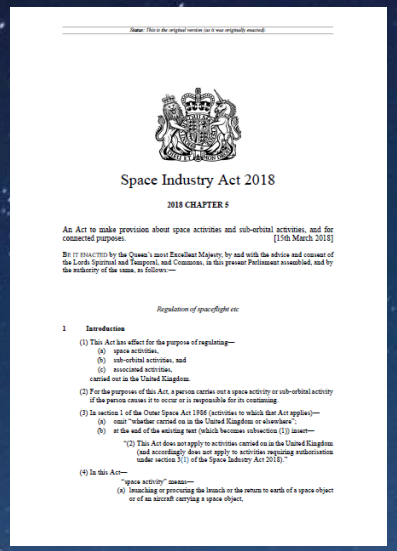
This Act has effect for the purpose of regulating—
(a)space activities,
(b)sub-orbital activities, and
(c)associated activities,
carried out in the United Kingdom.

[…]

“space activity” means—
(a) launching or procuring the launch or the return to earth of a space object or of an aircraft carrying a space object,
(b) operating a space object, or
(c) any activity in outer space;



Status: This is the original version (as it was originally enacted).

Space Industry Act 2018

2018 CHAPTER 5

An Act to make provision about space activities and sub-orbital activities, and for connected purposes. [15th March 2018]

BE IT ENACTED by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

Regulation of spaceflight etc

1 Introduction

(1) This Act has effect for the purpose of regulating—
(a) space activities,
(b) sub-orbital activities, and
(c) associated activities,
carried out in the United Kingdom.

(2) For the purposes of this Act, a person carries out a space activity or sub-orbital activity if the person causes it to occur or is responsible for its continuing.

(3) In section 1 of the Outer Space Act 1986 (activities to which that Act applies)—
(a) omit "whether carried on in the United Kingdom or elsewhere";
(b) at the end of the existing text (which becomes subsection (1)) insert—

"(2) This Act does not apply to activities carried on in the United Kingdom (and accordingly does not apply to activities requiring authorisation under section 3(1) of the Space Industry Act 2018)."

(4) In this Act—
"space activity" means—
(a) launching or procuring the launch or the return to earth of a space object or of an aircraft carrying a space object,

Who does the SIA Orbital Licensing Regime Apply to?

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The SIA Orbital Licensing Regime will apply to any party:

- procuring the launch of a space object from the UK; or
- Operating a space object from the UK

Space Activities carried out…	… in the United Kingdom	… Overseas
… by UK Nationals	SIA 2018*	OSA 1986
… by Foreign Parties	SIA 2018	N/A

* Space Activities carried out by UK nationals in the UK will previously have been licensed under the Outer Space Act 1986.

Which Activities are Covered by the Orbital Licensing Regime?

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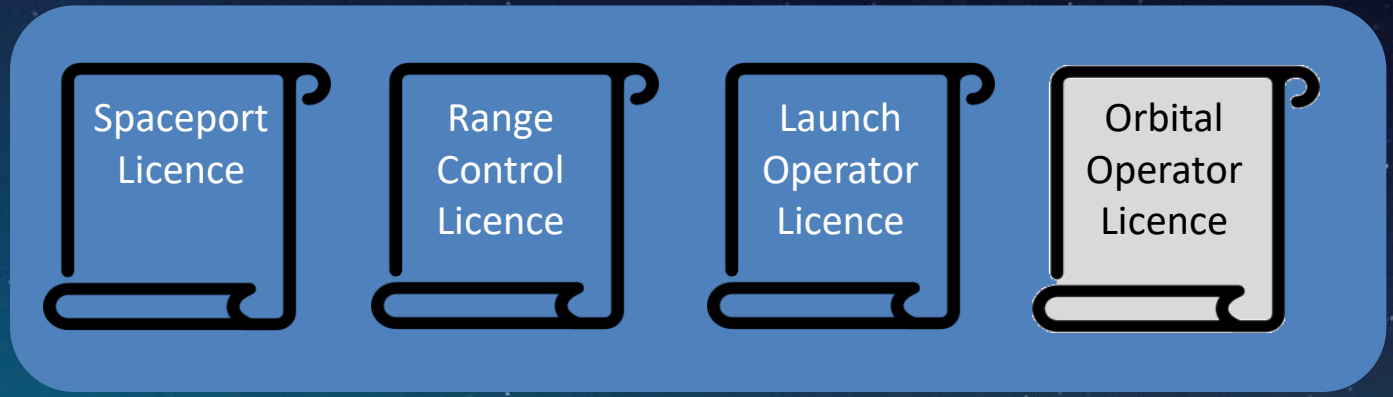

An SIA Orbital Operator Licence will be required to:

- procure the UK launch of a satellite;
- operate a satellite from the UK; and
- carry out any other activity in outer space

It will be an offense for a person to whom the Act applies to carry out such an activity without a licence.

Guiding Principles

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Duties of the Regulator

The Regulator's primary remit, under the SIA, will be in relation to safety.

- Safety extends to both persons and property
- Safety applies both in orbit and on the ground

However, in exercising its orbital licensing functions, the Regulator will also have regard to:

- National Security; and
- The UK's International Commitments, including those on the responsible use of space

Guiding Principles

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Regulatory Alignment

- The SIA orbital regime will be closely aligned to the existing orbital regime under the OSA.
- Alignment ensures level and fair treatment between OSA and SIA licensees.
- Alignment also provides continuity and coherence for licensees operating across regimes.

Orbital Licensing

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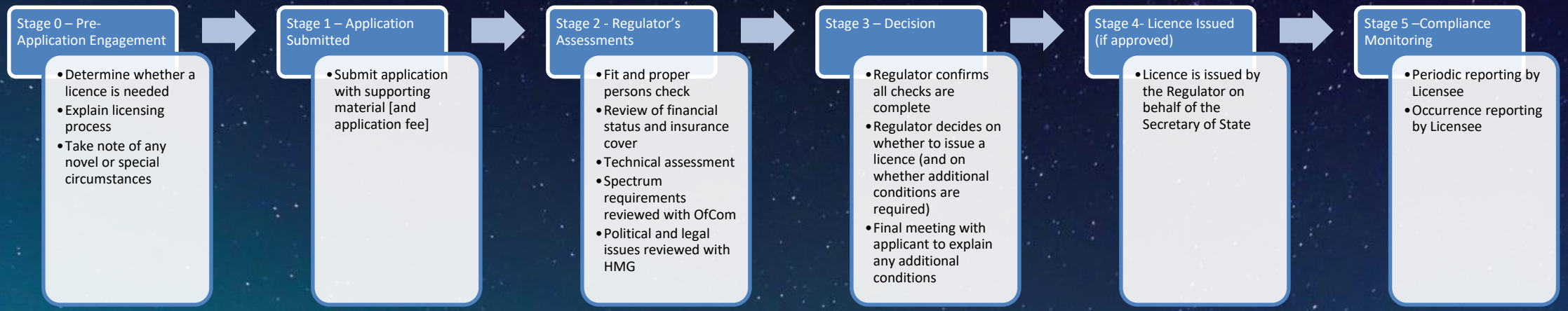
The Licensing Process



- Early engagement with the Regulator is encouraged to discuss the licensing process and take note of any novel or special circumstances which may apply (Stage 0)
- The application triggers the formal licensing process (Stages 1-4)
- This is an iterative process – the Regulator will assess the information provided in the initial application, but may request further information or clarification from the applicant
- Licensees will be subject to periodic reporting and occurrence reporting, where the latter materially affects safety or security.

The SIA Space Activity Licence

LAUNCH UK

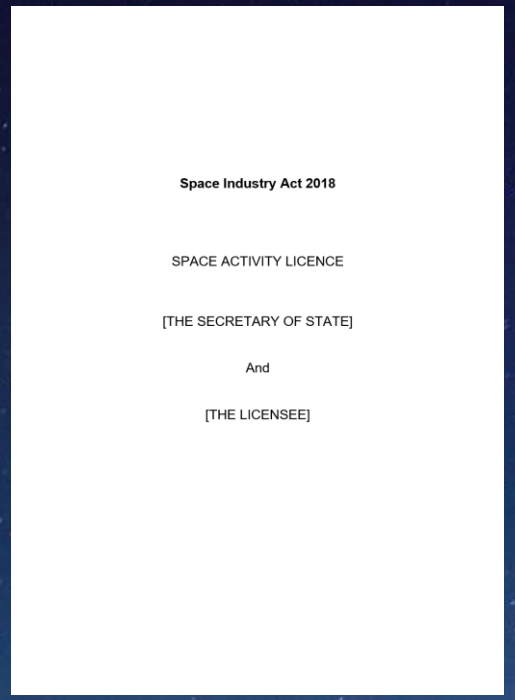
Spaceflight Activities

- The licence will authorise activities related to:

  (i) Procurement to Launch; and/or*

  (ii) Operation of a Space Object

  *dependent upon whether one or both activities are being carried out from the UK


Space Industry Act 2018

SPACE ACTIVITY LICENCE

[THE SECRETARY OF STATE]

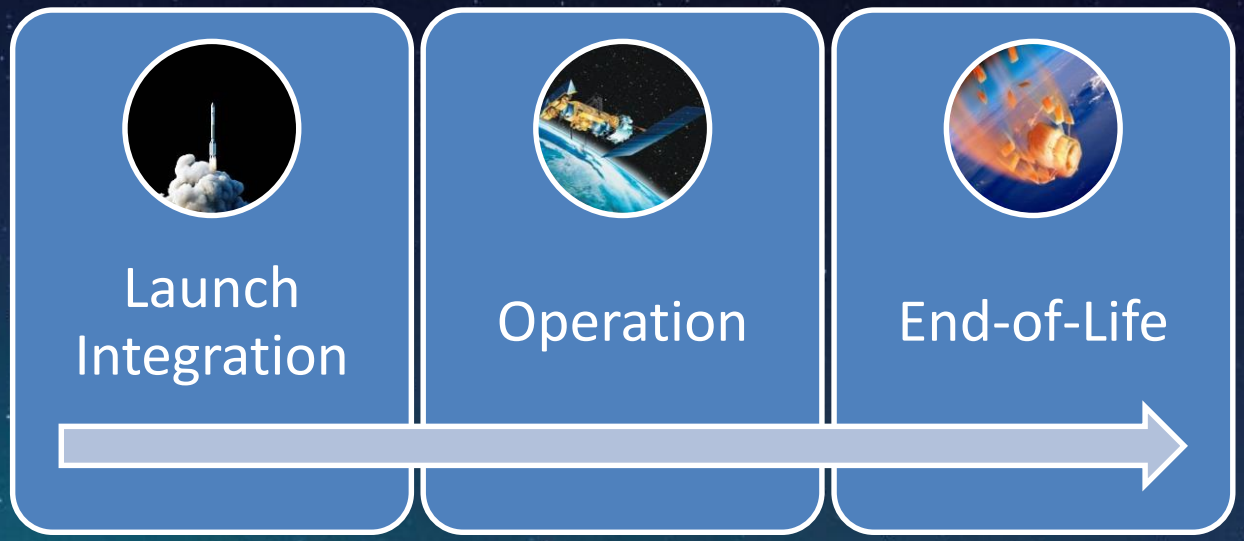
And

[THE LICENSEE]

Conditions

- The authorised activities will be subject to licence conditions.
- These will include **standard licence conditions** which will apply to all missions (e.g. liability conditions).
- However, the Secretary of State may also include **additional licence conditions**, which will address matters specific to the mission being authorised (e.g. specific to a constellation mission).

Technical Assessment



Applicants will be assessed on their proposed management of safety and security risks across the life-cycle of the satellite. The relevant phases include:

- Integration for launch
- Operation in orbit
- End-of-life operations (de-orbiting, graveyarding, etc…)

Technical Assessment - Safety

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Scope

- The Regulator will assess the spaceflight activity (e.g. a satellite being operated) in terms of the safety risks posed both to the Earth's surface and to the orbital environment.

Outcome Based

- The Regulator will adopt an 'outcomes based' approach to regulating orbital activities. Orbital Operators will be assessed on their ability to deliver safe outcomes.
- These assessments will be informed by established international guidelines and industry standards (e.g. IADC Guidelines on Debris Mitigation).
- This is in opposition to 'prescription based' approaches, where the focus lies on adherence to prescribed rules and conditions.

Technical Assessment - Safety

LAUNCH UK

Proportionate

- The orbital regulatory regime will adopt an approach that is proportionate to the safety [and security] risks of the particular activity (e.g. the risks posed by a telecom satellite in GEO are different to those of a cubesat in LEO).
- Licensees will be required to demonstrate that the specific risks tied to their particular activities are managed and mitigated.

Technical Assessment - Security

LAUNCH UK

Scope

- The Regulator will assess security measures for both the spaceflight activity (e.g. a satellite being operated) and the associated space sites (e.g. a mission management facility).
- Requirements may address physical, personnel and cyber aspects of security for orbital missions.

Appropriate and Proportionate

- Security requirements for orbital spaceflight activities will be applied in a manner that appropriate to the mission being considered and proportionate to the risks entailed.

Questions & Comments

Closing remarks

Irina Mineva| UK Space Agency

Thank You

https://www.gov.uk/guidance/how-we-are-promoting-and-regulating-spaceflight-from-the-uk