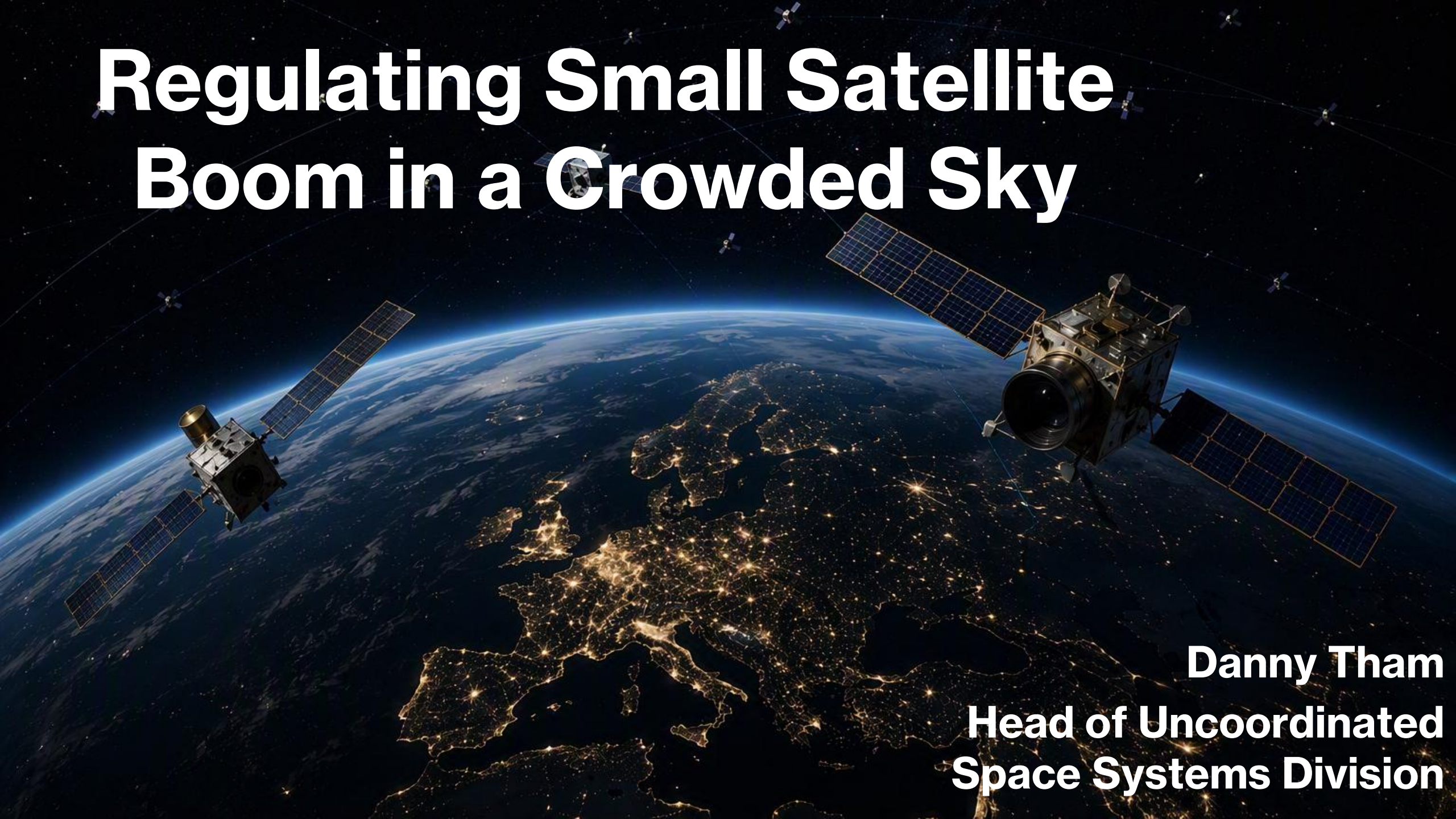


Regulating Small Satellite Boom in a Crowded Sky

A composite image showing two large satellites with solar panels in the foreground, orbiting Earth. Below them, the continent of Europe is visible at night, covered in a dense network of city lights. Several smaller satellites are scattered in the background against the blackness of space and the blue curve of the Earth's horizon.

Danny Tham
**Head of Uncoordinated
Space Systems Division**

Early History



Early History



SPACE ECONOMY

Space is moving from niche infrastructure



GLOBAL SPACE ECONOMY



WHAT IS POWERING THE BOOM?

10× LOWER

LAUNCH COSTS

over the last 20 years

50% GROWTH

SATELLITES LAUNCHED

per year

>\$70B

SPACE INVESTMENT

in both 2021 and 2022

UBIQUITY

SPACE-ENABLED SERVICES

comms • PNT • EO

**GROWTH CHANGES
THE REGULATORY
EQUATION**

spectrum • orbits • sustainability

ENABLING AND EMERGING TECHNOLOGIES

Advances made small satellites more capable, scalable and affordable

01 MINIATURIZED ELECTRONICS

More computing, sensing and communications capability in less mass and power.

02 STANDARD PLATFORMS & COTS

CubeSat standards and commercial components shorten development cycles and reduce cost.

03 LOWER-COST LAUNCH

Rideshare missions, reusable launch systems and dedicated services widen access to orbit.

04 PHASED ARRAYS & SPOT BEAMS

Electronic beam steering and frequency reuse support flexible, high-capacity coverage.

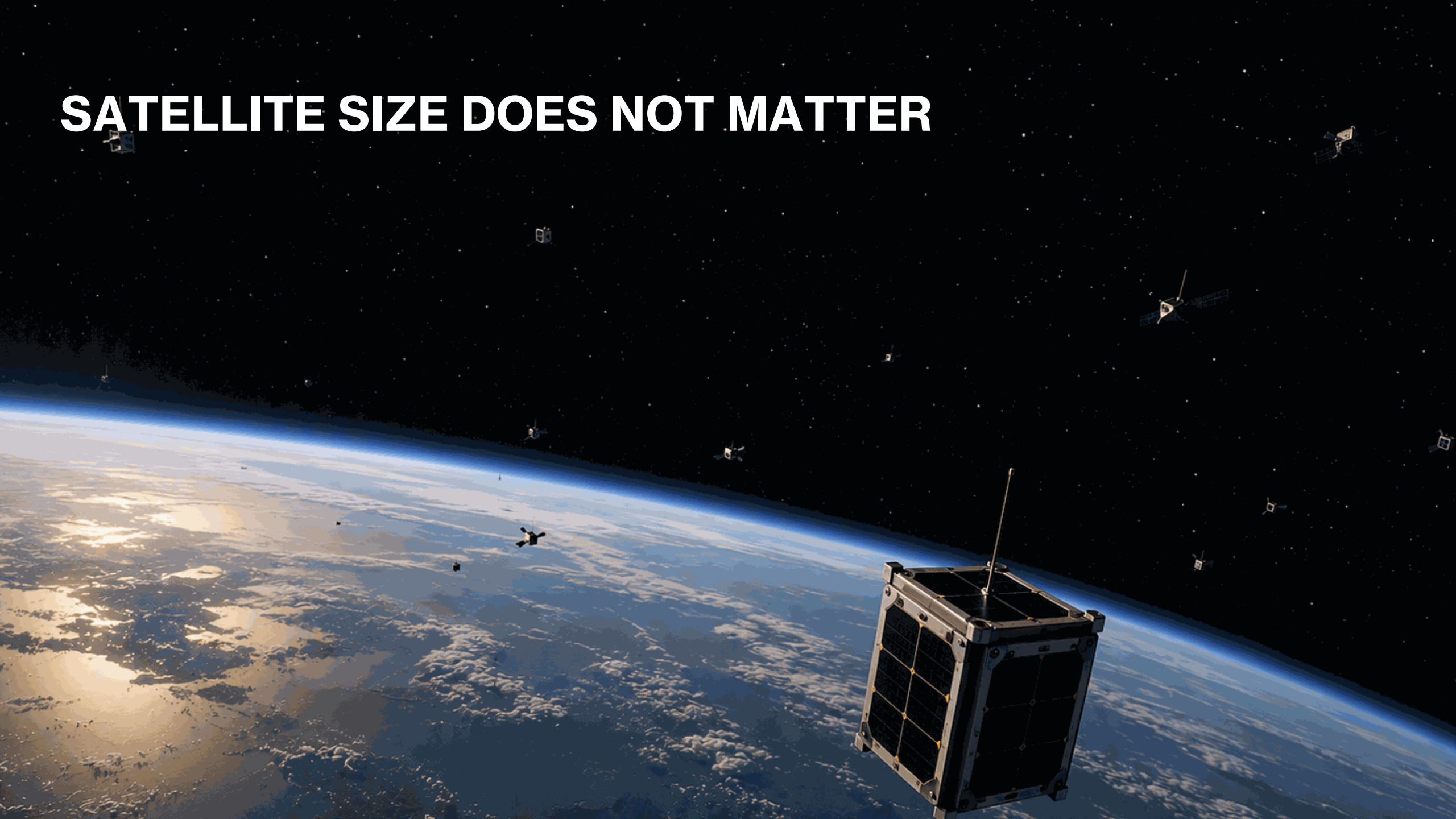
05 HIGHER FREQUENCY BANDS

Ku-, Ka- and emerging higher-frequency bands enable greater capacity for broadband and data-intensive services.

06 INTER-SATELLITE LINKS

High-speed links connect satellites directly and reduce dependence on ground gateways.

SATELLITE SIZE DOES NOT MATTER



A “standard 1U” CubeSat has a volume of one liter - 10 cm cube”



Promotes:

Technology transfer, Collaboration, Education,
Earth Science,
Testing innovative technologies, ...

“Faster, Cheaper, Better, Smaller”

TWO SATELLITES. TWO VERY DIFFERENT SCALES.

CubeSat platform and broadband geostationary satellite

ILLUSTRATIVE • NOT TO SCALE



COMPACT • MODULAR

CUBESAT

- Standardized small-satellite form factor
- Focused payload and mission design
- Lower mass and shorter development cycles

VS

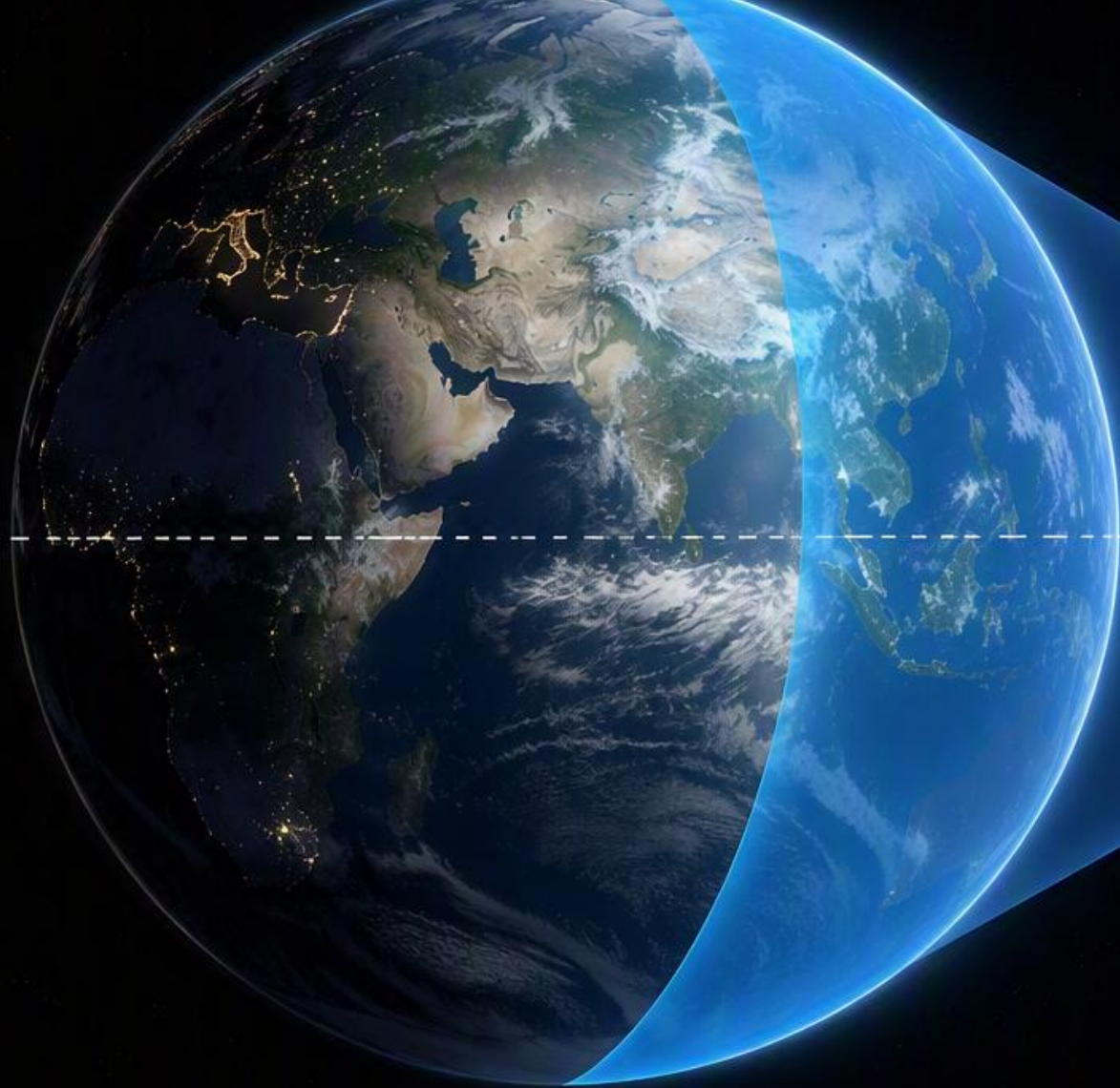


HIGH-POWER • WIDE COVERAGE

BROADBAND GEO SATELLITE

- Large communications spacecraft platform
- High-gain reflectors and large solar arrays
- Designed for continuous regional coverage

REGULATORY TAKEAWAY | Satellite size alone does not determine the applicable regulatory treatment.



Geostationary Satellite

35,786 km Altitude

Broadcast Coverage ~ 1/3 of the Earth

Space Systems Subject to Coordination¹

Typical services for systems subject to coordination

- **Fixed-Satellite Services**
- **Broadcasting-Satellite Services**
- **Mobile-Satellite Services**

A composite image showing the Earth from space at night, with city lights visible. Several satellites are in orbit, each with a colored beam (blue, green, purple) directed towards a specific region on the Earth's surface. The beams are labeled with small circular markers on the ground. The background is the dark, starry space.

INTERNATIONAL REGULATORY FRAMEWORK

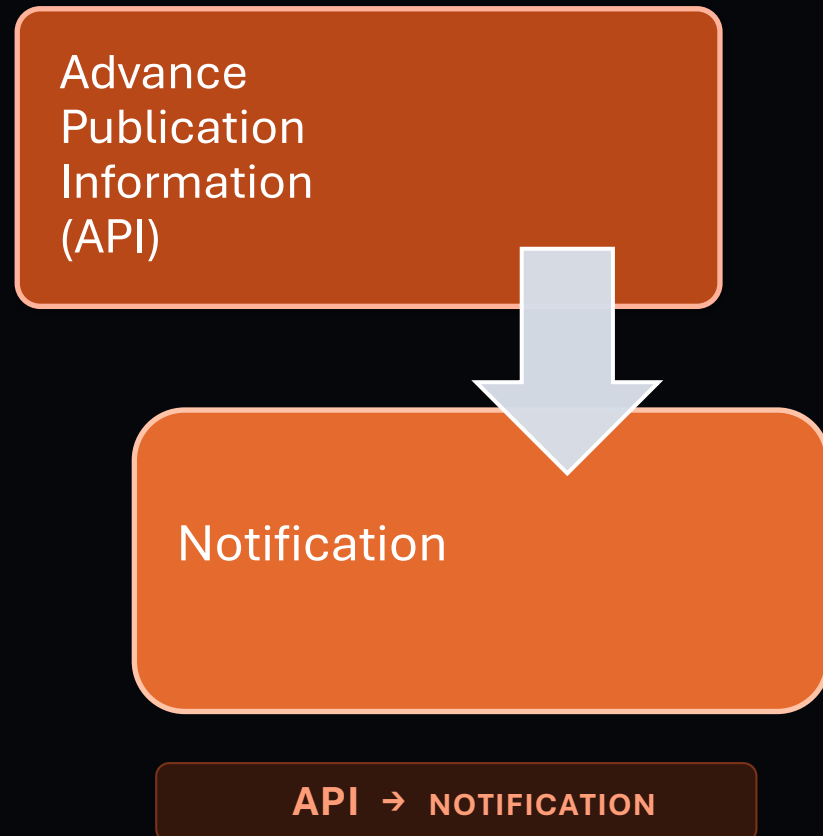
Space Systems Not Subject to Coordination¹

Typical services for NGSO systems not subject to coordination

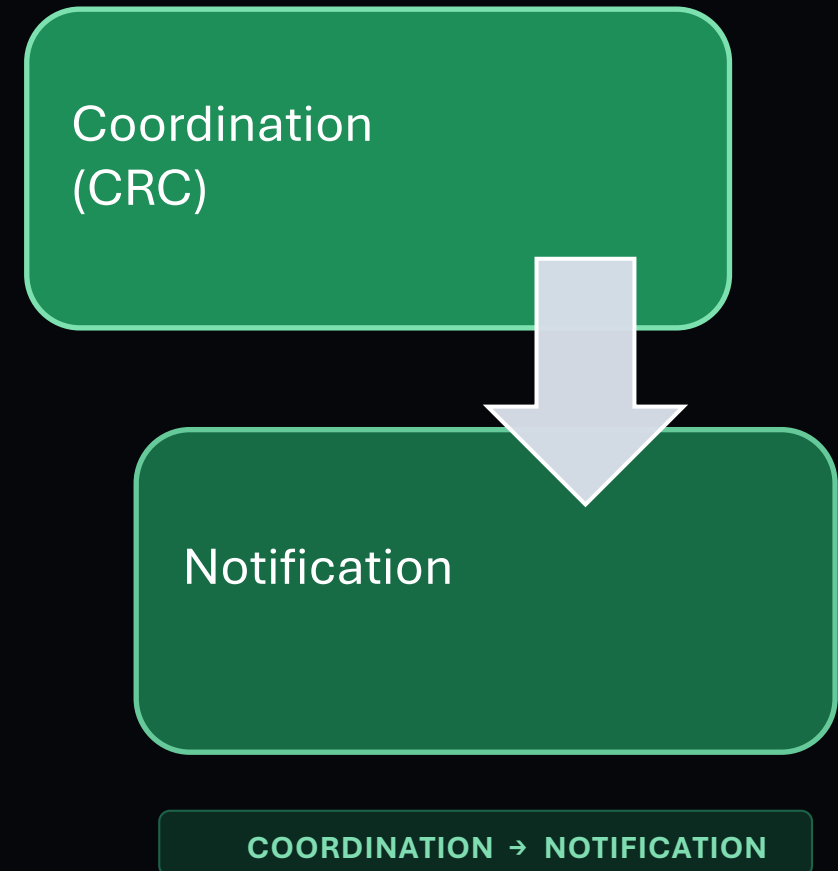
- Amateur-Satellite Service
- Earth Exploration-Satellite Service
- Meteorological-Satellite Service
- Space Research-Satellite Service
- Space Operation Service
- Others

COORDINATION APPROACH VARIANTS

**Not subject to coordination¹ under
Sect II of Article 9**



**Subject to coordination¹ under
Sect II of Article 9**



Allocation to services		
Region 1	Region 2	Region 3
2 200-2 290	SPACE OPERATION (space-to-Earth) (space-to-space)	
	EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space)	
	FIXED	
	MOBILE 5.391	
	SPACE RESEARCH (space-to-Earth) (space-to-space)	
	5.392	

ARTICLE 1 OF THE RADIO REGULATIONS

Terms and definitions

1.23 *space operation service:* A radiocommunication service concerned exclusively with the operation of *spacecraft*, in particular *space tracking*, *space telemetry* and *space telecommand*.

These functions will normally be provided within the service in which the *space station* is operating.

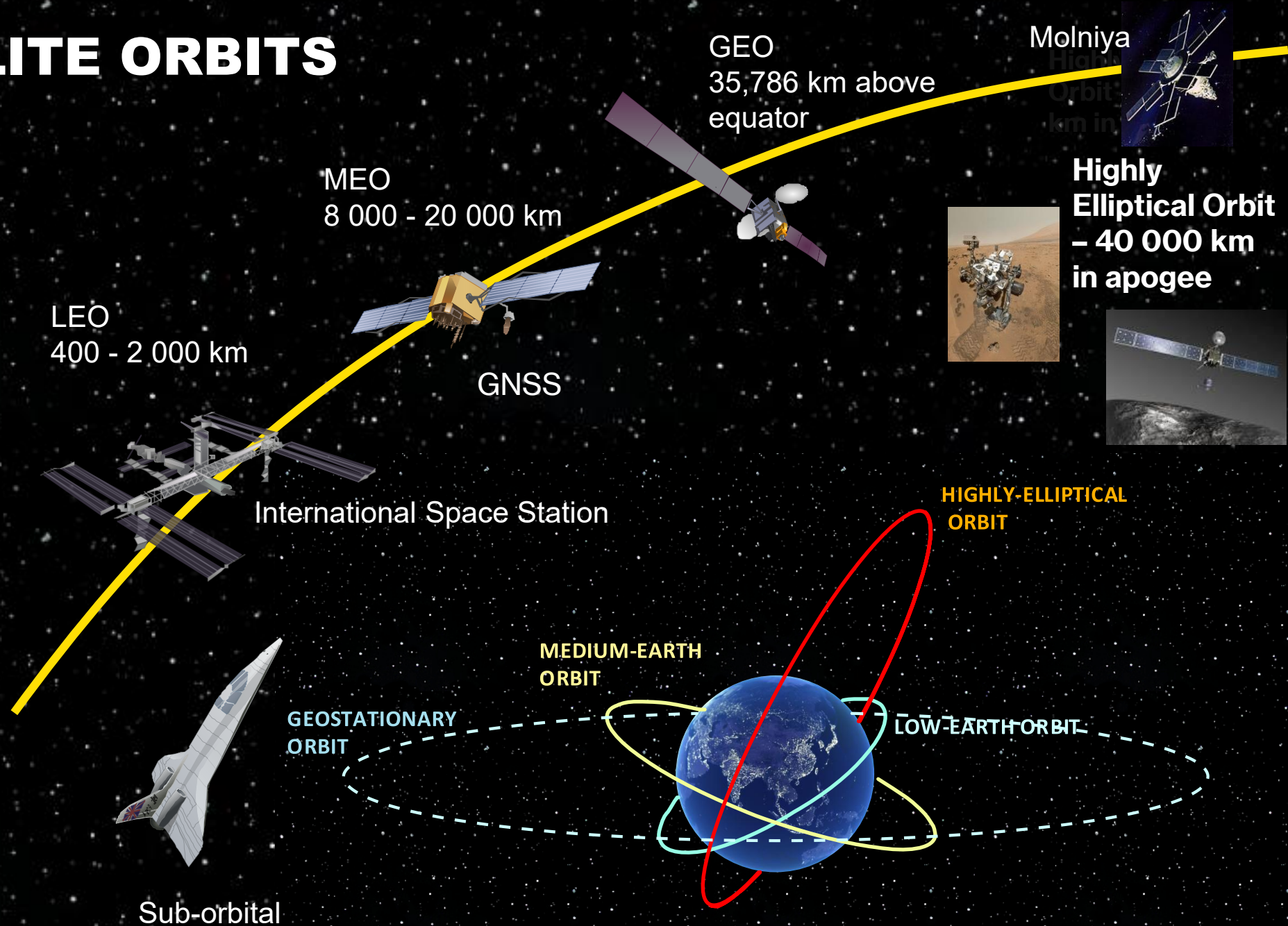
1.51 *Earth exploration-satellite service:* A radiocommunication service between *earth stations* and one or more *space stations*, which may include links between *space stations*, in which:

- information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from *active sensors* or *passive sensors* on *Earth satellites*;
- similar information is collected from airborne or Earth-based platforms;
- such information may be distributed to *earth stations* within the system concerned;
- platform interrogation may be included.

This service may also include *feeder links* necessary for its operation.

1.55 *space research service:* A radiocommunication service in which *spacecraft* or other objects in space are used for scientific or technological research purposes.

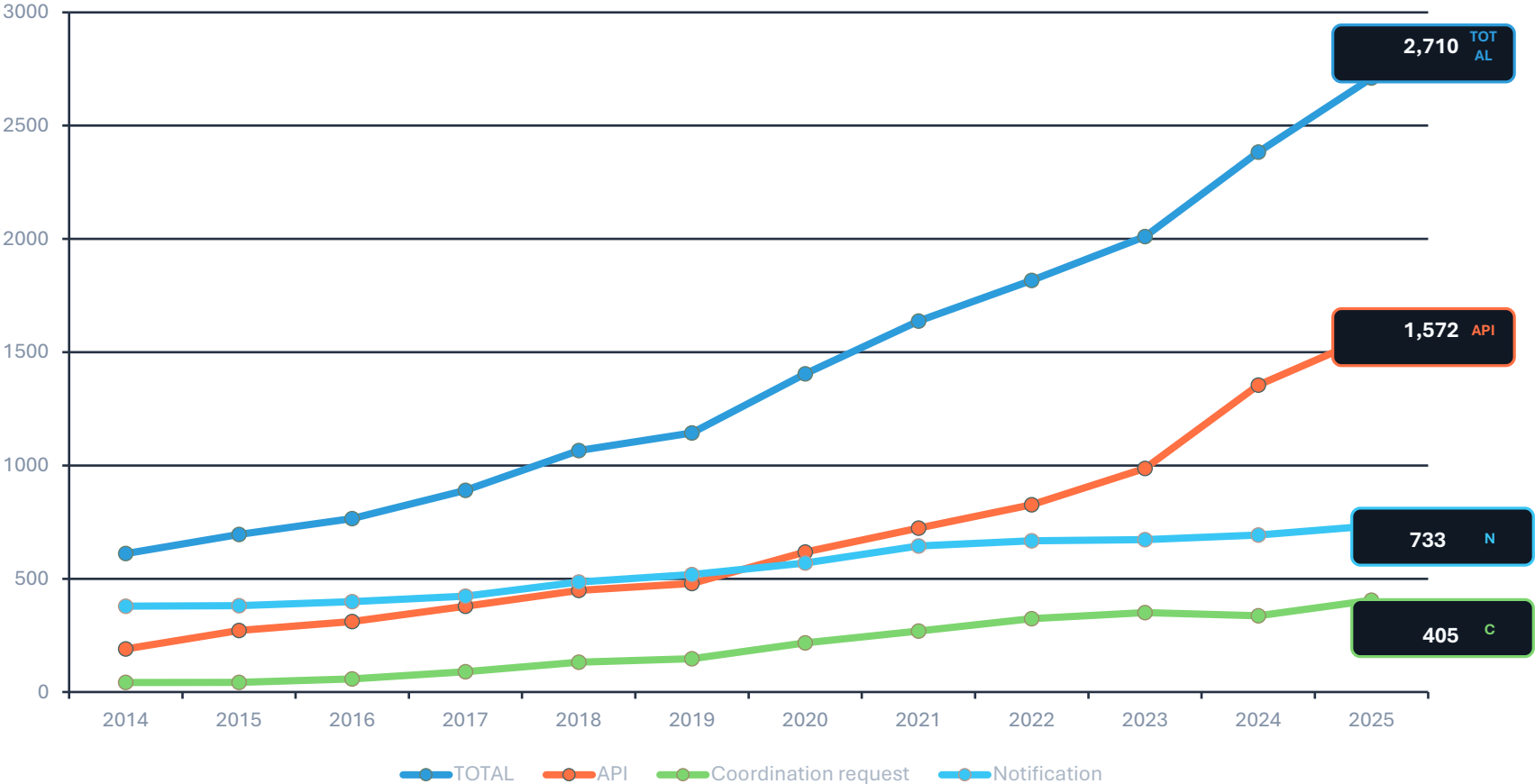
SATELLITE ORBITS



NGSO submissions

A twelve-year view of API, coordination and notification filings

4.4×



SUBMISSION TYPES

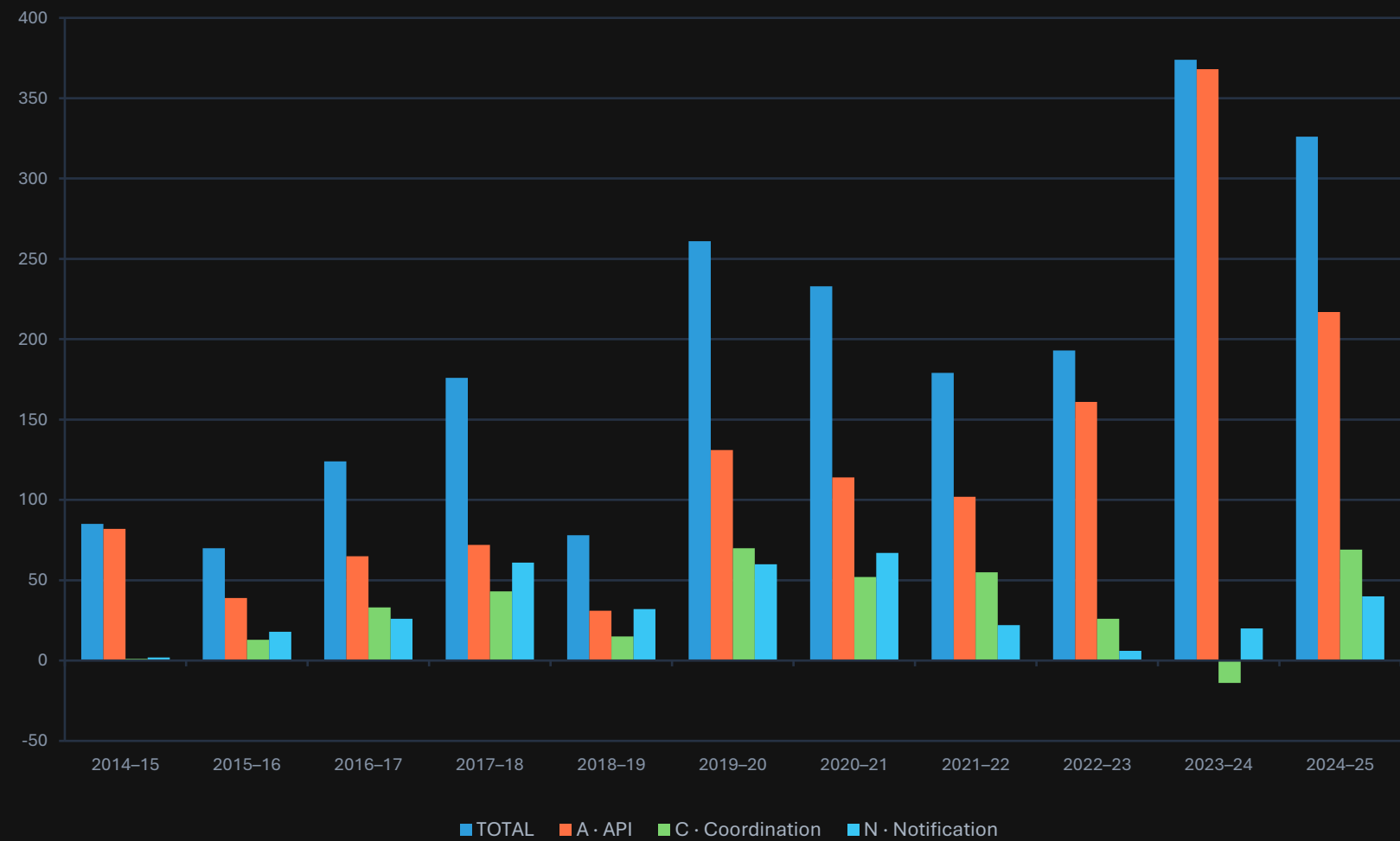
- A API**
Advance publication information
- C COORDINATION**
Coordination request
- N NOTIFICATION**
Notification filing

2,710 total submissions

Source: ITU Space Network List statistics

Annual net additions in NGSO submissions

Year-on-year change



YEAR-ON-YEAR HIGHLIGHTS

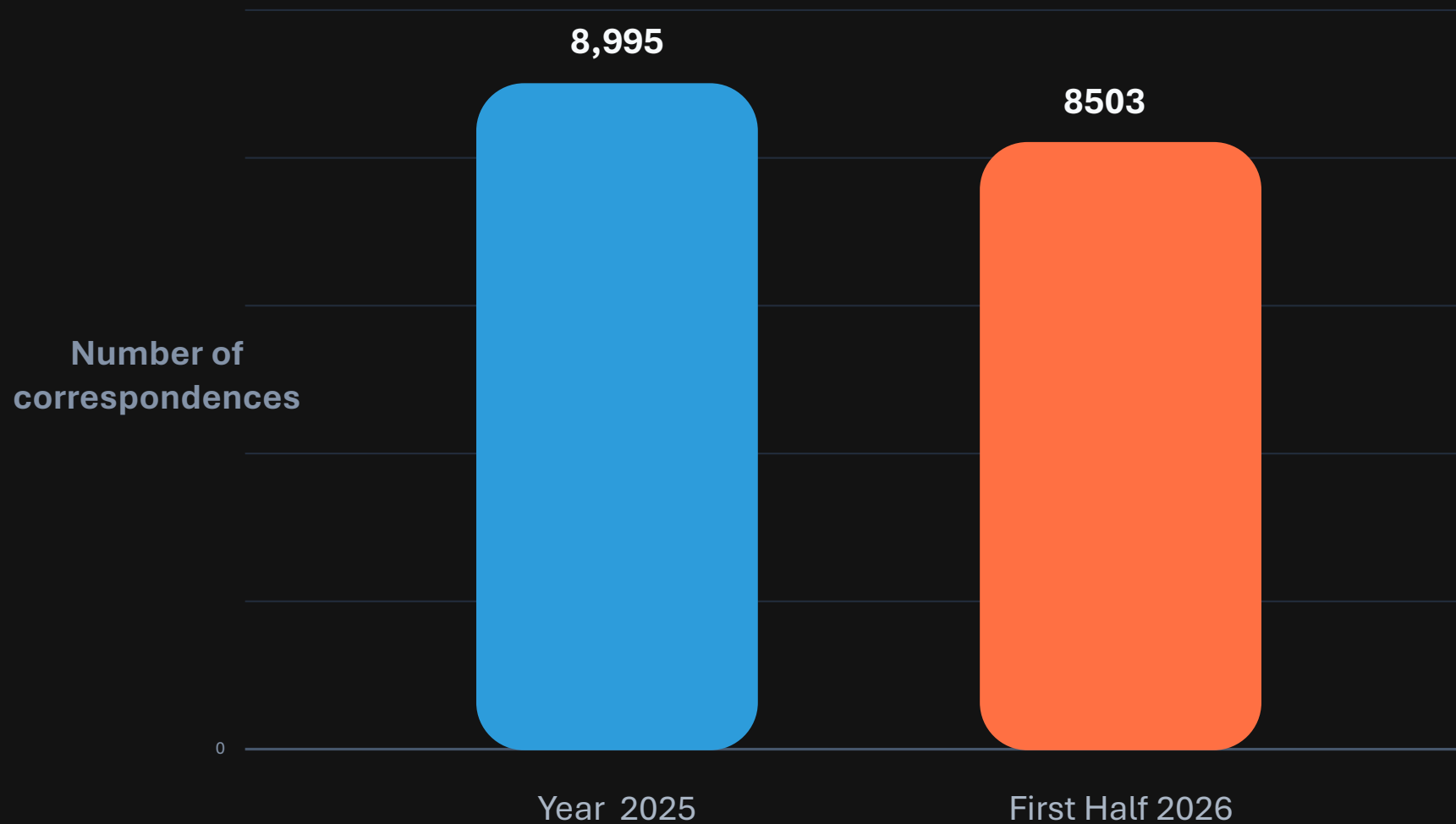
+374 Largest total increase
2023 → 2024

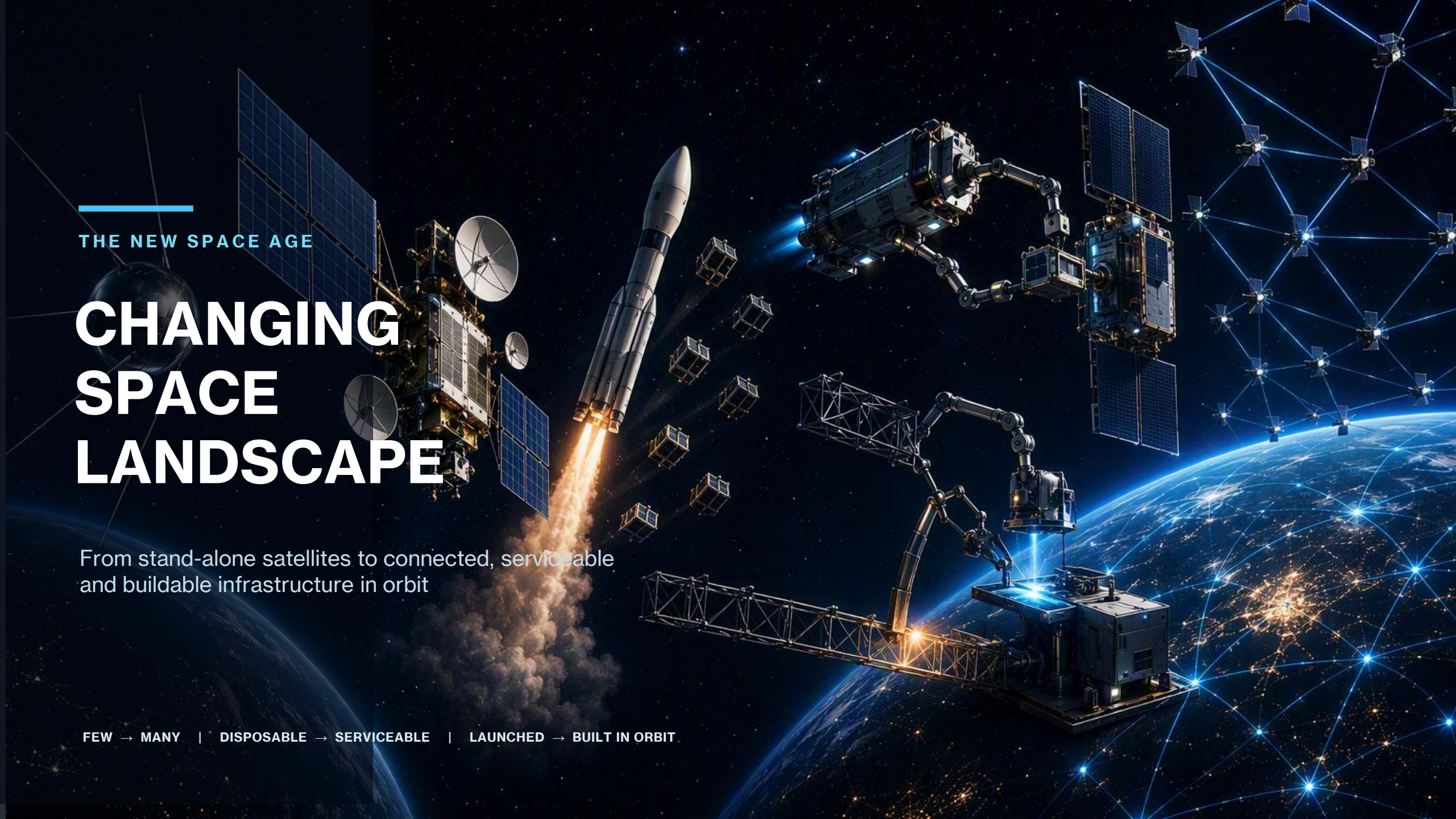
+368 Largest API increase
2023 → 2024

+326 Latest total increase
2024 → 2025

Number of correspondences

Number of records by reporting period





THE NEW SPACE AGE

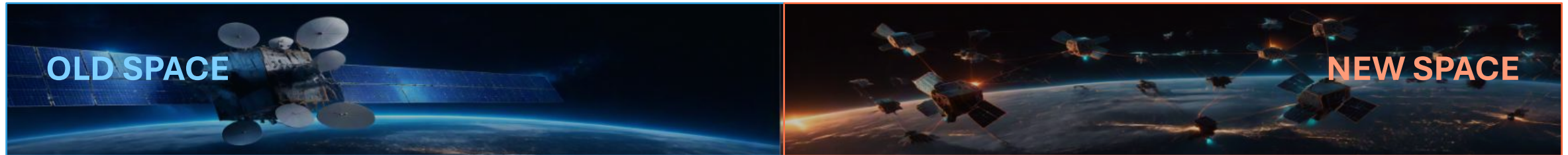
CHANGING SPACE LANDSCAPE

From stand-alone satellites to connected, serviceable
and buildable infrastructure in orbit

FEW → MANY | DISPOSABLE → SERVICEABLE | LAUNCHED → BUILT IN ORBIT

Old Space vs. New Space

How the space sector is evolving



Established model

Government-led

Large, bespoke satellites

Cost-plus contracts

Long development cycles

Limited number of actors

Evolving model

Commercially driven

Small, standardized satellites

Cost-conscious, venture-funded

Rapid development and deployment

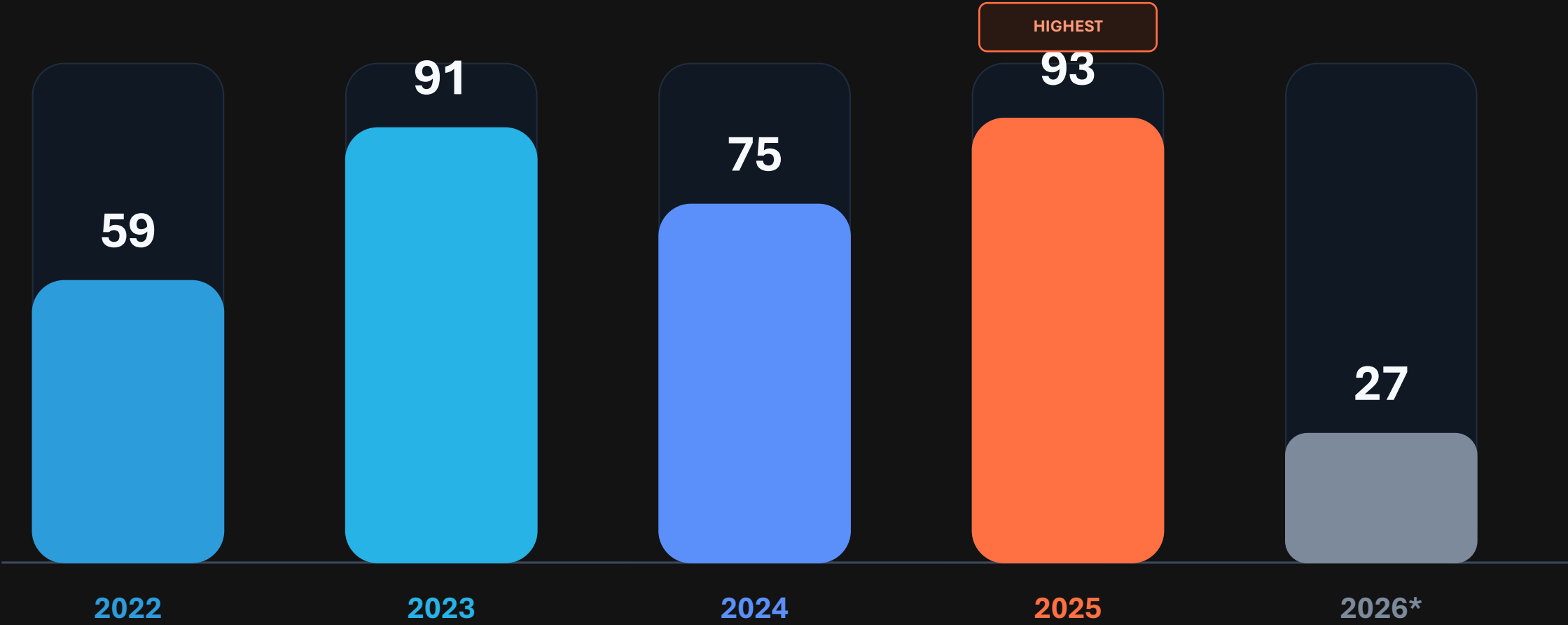
Many startups and private companies

SHIFT: fewer bespoke programmes → broader, faster and more commercially oriented activity

New Operating Agencies

Annual additions, 2022–2026

345 new agencies reported
2022 to July 2026



2025 recorded the highest annual figure, with 93 new operating agencies. *2026 figure is up to July

All numbers and labels are editable text boxes; columns are editable PowerPoint shapes.

The background is a dark, composite image of space. It features several satellites in various orbits, some with solar panels extended. Thin, glowing lines represent orbital paths or communication networks. The Earth's horizon is visible at the bottom, showing a blue and white curve. A bright sun or star is in the top right corner, creating a lens flare effect. The overall tone is futuristic and technological.

CHALLENGES TO EVOLUTION IN SPACE

Adapting the regulatory framework to a faster, more diverse and increasingly complex space environment

REGULATORY CHALLENGES OF NEW SPACE SYSTEMS

TEN AREAS REQUIRING REGULATORY ATTENTION

01

Rapid deployment cycles

02

Short mission lifetimes

03

Incomplete regulatory lifecycle

04

Increasing use of No. 4.4

05

New entrants to the space sector

06

Emerging space applications

07

Representation of dynamic orbits

08

Cost recovery considerations

09

Service classification challenges

10

Launch vehicle operations

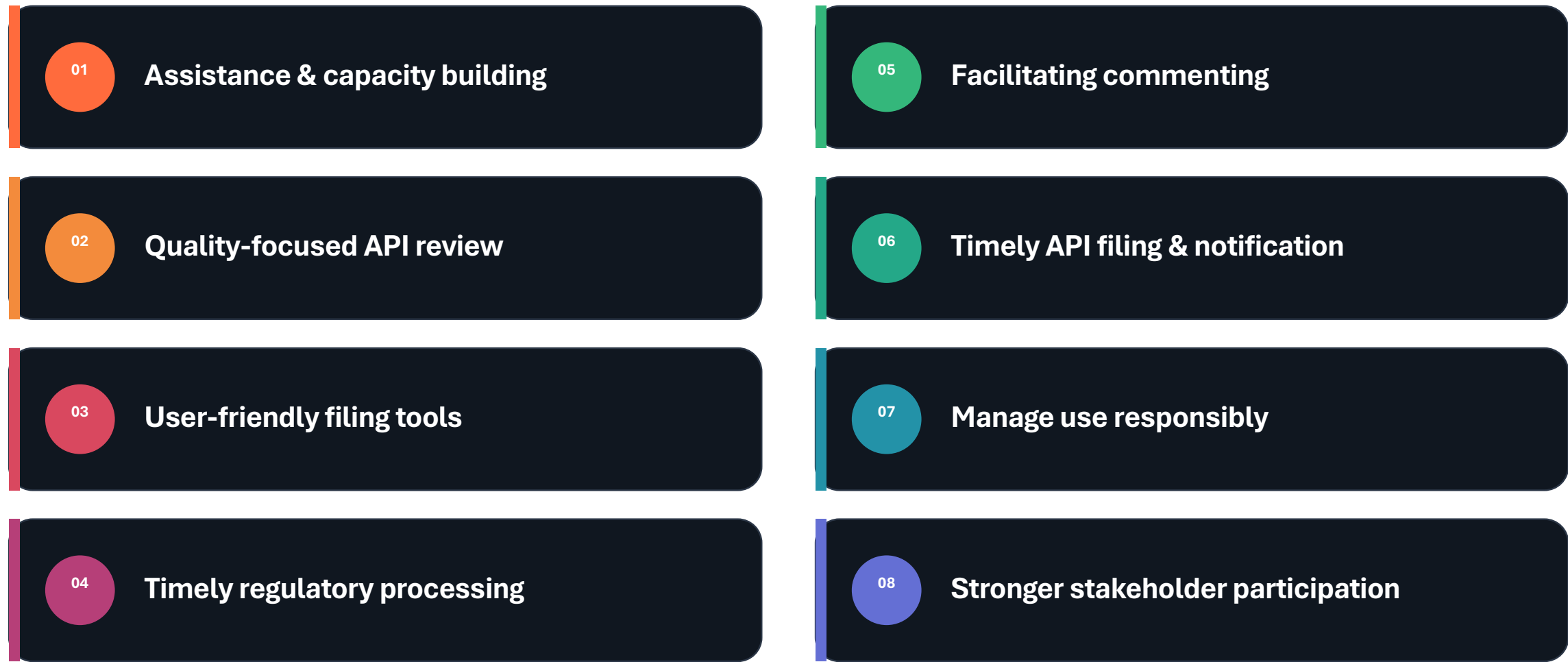
How can the Radio Regulations accommodate innovation while preserving regulatory integrity?

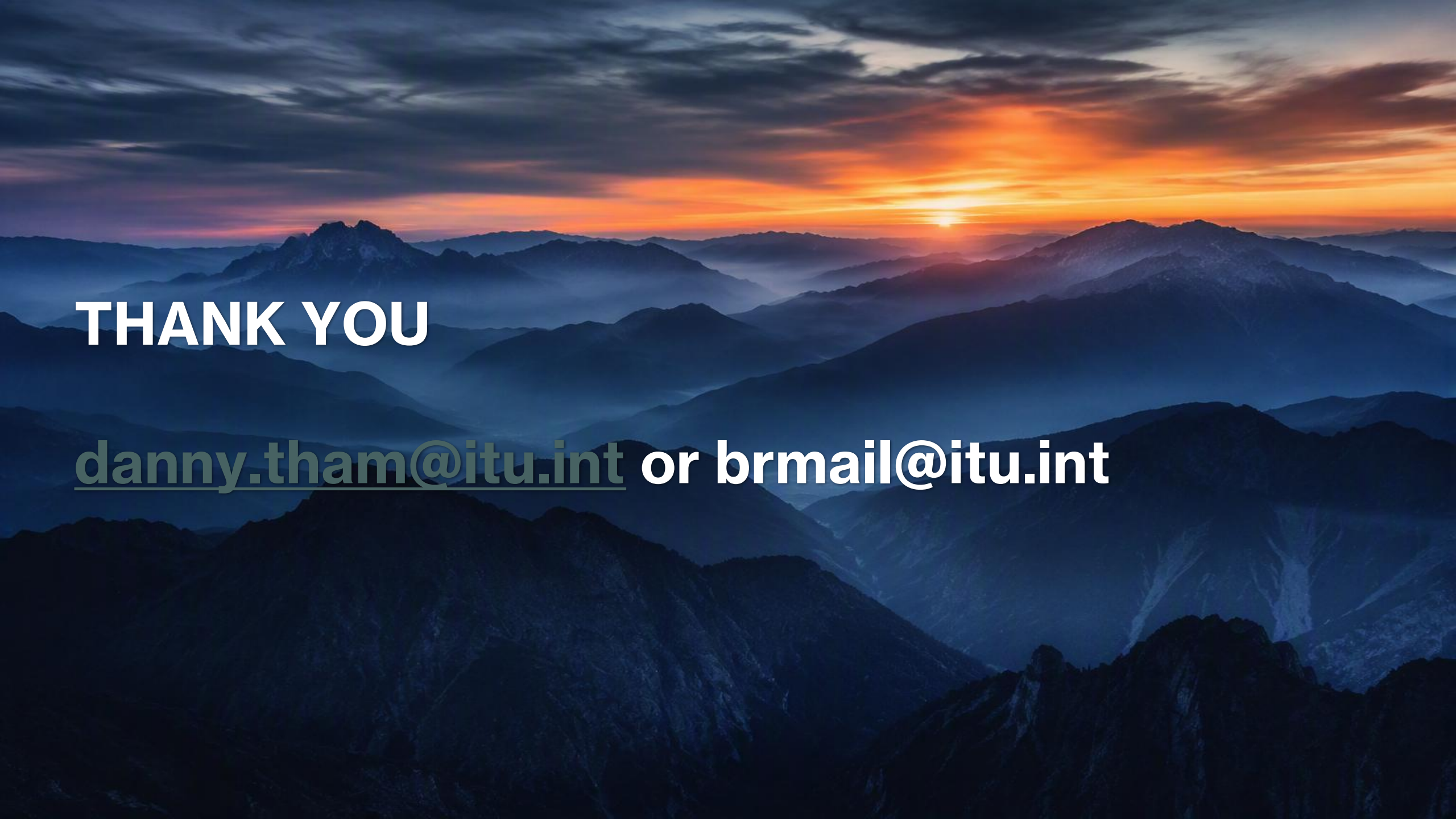
The background of the image is a dark, deep space scene. In the foreground, the curved horizon of the Earth is visible, showing a blue atmosphere and a dark, textured surface. Numerous satellites are scattered throughout the scene, some with large solar panels and dish antennas. A complex network of thin, glowing lines connects various points in space, representing a global communication or data network. Some lines are blue, while others are orange. A bright sun or star is visible in the upper right corner, casting a strong light and creating a lens flare effect. The word "RESPONSE" is written in large, bold, white capital letters on the left side of the image. Above it is a short, horizontal orange line.

RESPONSE

RESPONDING TO THE CHALLENGES

FROM REGULATORY SUPPORT TO RESPONSIBLE IMPLEMENTATION





THANK YOU

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