GSOA
GLOBAL SATELLITE OPERATORS ASSOCIATION

www.gsoasatellite.com
@GSOA_SAT
GSOA

# Addressing Space Sustainability - Operator Considerations

March 2022

GSOA
GLOBAL SATELLITE OPERATORS ASSOCIATION

www.gsoasatellite.com
@GSOA_SAT
GSOA

# The global voice of the satellite industry to promote common interests at national, regional & global levels.

2002 - 2013 **Europe**

2014 - 2021 **EMEA**

2022 **Global**

# GSOA Members





































**29 operators | Global and Regional | CEO-driven**

ESOA
EMEA SATELLITE OPERATORS ASSOCIATION


Available on
https://gsoasatellite.com

Sept 2021

# Actions to Ensure Space Sustainability

Collaboration between industry & government to develop frameworks to protect space environment across 3 areas:


⇒ **Space Debris Mitigation**

⇒ **Remediation and Disposal**

⇒ **Space Situational Awareness**

There is no panacea to ensure safety & sustainability in space

Multiple actions at different levels are useful, especially given that consensus at international level will take time:

⇒ Global, regional, national
⇒ Government & industry-led
⇒ Regulation & best practice

GSOA
GLOBAL SATELLITE OPERATORS ASSOCIATION

# Operators Share a Common Interest

**GSOA now has 29 operator members - diverse views but a shared common interest: The *preservation of assets in outer space***

| | |
|---|---|
| **Huge Private Investments** | Long-term space assets & constellations |
| **Near/medium/long-term risk profile** | Space assets often last 20+ years |
| **Contracts for essential services** | Security & defense, emergency communications, maritime safety, mobile backhaul, broadcasting, broadband etc. |

**Service disruption affects users, harms customer relationships, & costs money - whether due to collision, interference or other**

GSOA
GLOBAL SATELLITE OPERATORS ASSOCIATION

# GSOA Members Remain Committed

**Divergent views on *how* to address space sustainability exist at all levels - government & industry**

**Diverse viewpoints do not imply a reduced commitment to safe operations in space**

**Most GSOA members take measures to mitigate the creation of space debris, e.g.**

- ⇒ Satellite design
- ⇒ Graveyard orbits (for GSO)
- ⇒ Orbital decay/atmospheric burn up (for LEO)
- ⇒ On-board sensors
- ⇒ Data exchange
- ⇒ Manoeuvrability of spacecraft to avoid collisions

**Operator actions are based on Rules, Standards *AND* Best Practice**

GSOA
GLOBAL SATELLITE OPERATORS ASSOCIATION

# Rules, Standards, Best Practices

**Developing norms around Space Sustainability is an attempt to manage the unknown => worthy / necessary / risky**

- ⇒ New systems continue to emerge - risks in space increase (congestion, debris, collision, interference, etc.)
- ⇒ Steep learning curve for governments & industry - still trying to understand where the appropriate lines are to regulate new emerging systems without stifling innovation
- ⇒ Some rules are harmonized across countries (E.g. for GEO - graveyard orbit), other rules are not

**Much needs to be done to continue to improve 'norms' for Space Sustainability**

GSOA
GLOBAL SATELLITE OPERATORS ASSOCIATION

# Requirements for Future Developments

**Developing more norms requires greater understanding around numerous issues such as:**

- ⇒ How many satellites & systems can safely share LEO?
- ⇒ What steps should be taken to maximize the opportunity to utilize LEO?
- ⇒ What is an appropriate post mission de-orbit timeframe?
- ⇒ Maneuverability is fundamental but what performance metrics should be required regarding collision avoidance?
- ⇒ What are the minimum reliability metrics that satellites & key sub-systems should be designed to?
- ⇒ What is the role of iterative improvements in this fast-changing industry?

**Greater Understanding will Support Development of Effective Norms**

# Imperative Parallel Actions

**While gaining better understanding of what is & is not possible in physical space, policymakers must advance on:**

- ⇒ **Increased monitoring across all orbits** of the space environment (more sensors - radar/optical/laser/in-space - required to collect accurate / transparent data)
- ⇒ Securing **greater data-sharing** from all operators & between STM systems
- ⇒ Providing **outputs from existing systems that permit actionable options** for operators (E.g. from EU SST)
- ⇒ Enhanced **new capabilities to support** emerging In-Orbit-Servicing & manufacturing space missions (E.g. close-proximity operations)

**Such actions are also not a panacea for space sustainability, but they will help**

# GSOA Member Commitments

**Many satellite operators have:**

⇒ Decades of experience in safe operations, especially in GEO / HEO / MEO orbits

⇒ In-depth knowledge of regulations & guidelines with which they comply (international, regional & national)

**GSOA operators are committed to:**

- Sharing data with STM/STC entities where possible
- Supporting development of relevant norms, regulations, guidelines which are fit for purpose taking account of the rapid development of new satellite systems
- Ongoing dialogue with governmental bodies & other stakeholders to ensure safety of future space operations in all orbits

THANK YOU