ITU-FOCUSED INDUSTRY BRIEFING

Satellite Self-Broadcast (SS-B)

From Space Congestion to Space Governance

SS-B turns ITU's static satellite registration into dynamic identification — the bridge between ITU and UNOOSA

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AGENDA

Four Steps to Answer One Question

How do we bring order to orbit?

01

Congestion

Reality: orbit is congested, governance has fallen behind (P3–P5)

→

02

Governance Framework

ITU & UNOOSA: complementary roles, but no "dynamic identity" bridge (P6–P7)

→

03

SS-B Proposal

Learn from ADS-B, adapt for space — the identity broadcast layer (P8–P11)

→

04

Call for Action

Spectrum, identity, time window — what ITU should do now (P12–P13)

KEY TAKEAWAY: Problem → Governance Framework → Solution → Call for action

PART 1 • CONGESTION

Congestion is Real — Governance Has Fallen Behind

Congestion is no longer a forecast — it is a fact in today's data.

Even more troubling: ITU's "Registry Book" - MIFR no longer matches what is really in orbit.

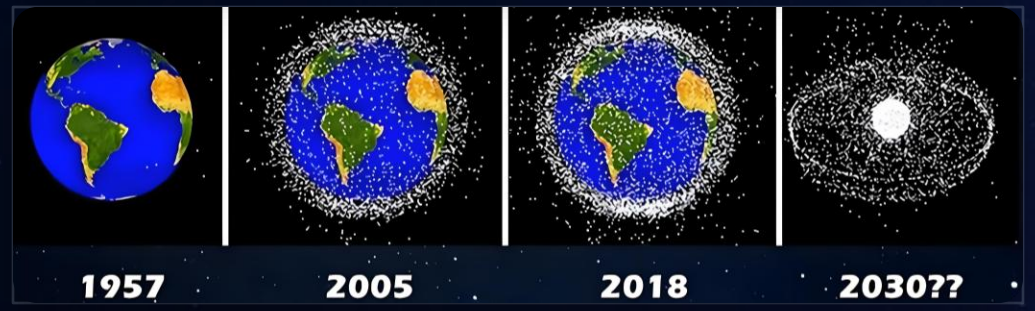
Two Views, One Conclusion: Governance Has Fallen Behind

① The Big Picture: Congestion

14,500+
active satellites (2026), ~70% commercial, still growing

50,000+
debris >10 cm (ESA est.) · >1.2 M debris >1 cm

~2,500 conjunction warnings per week;
~300,000 avoidance maneuvers in 2025 — yet coordination still runs on email — often months at a time.



② ITU's View: Registry vs. Reality

- MIFR registry gap: for NGSO, MIFR does not match on-orbit reality
- "Ghost Satellites": not registered but launched, causing interference
- Interference from NGSO cannot be traced — RR Art. 15 is weakened

KEY TAKEAWAY: ITU's registry can't tell "who's in orbit, who's interfering" — and "ghost satellites" are eroding its credibility

The Governance Gap: Seeing Without Identifying

Technology has hit its limits

Space Situational Awareness (SSA) systems have blind spots and detect space objects and assume who they are, but cannot replace satellites' self-declaration of identity.

What is truly missing: three governance elements

- **Information sharing**
- **Identification mechanism**
- **Coordination mechanism**

Together the three elements establish an order that makes every satellite identifiable, coordinatable and accountable.

Conclusion

Space governance is foundational infrastructure for a sustainable space development.

KEY TAKEAWAY: **Step one of space governance is to know "who is up there".**

PART 2 • GOVERNANCE

Who Governs Space: ITU & UNOOSA

ITU: resources & regulations • UNOOSA: observation & activity

While complementary, yet no "dynamic identification" bridge between them.

ITU vs. UNOOSA: Both Rely on Static Information

Dimension	ITU - Resources & Regulations	UNOOSA - Observation & Activity
Legal basis	Radio Regulations (treaty, binding)	Outer Space Treaties + soft guidelines
Manages	Spectrum/orbit resources, services, interference	Space activities, SSA information sharing,
Tools	Art. 5 allocation · Art. 9/11 filing · Art. 15 interference	SSA-EG priorities · LTS guidelines · TTX · capacity building
Shared weakness	Both rely on filed static information and cannot verify in real time "who is in orbit and who is causing interference"	

THE BRIDGE

One SS-B broadcast serves both: dynamic registry for ITU, a real-time situational picture for UNOOSA.

KEY TAKEAWAY: **SS-B is the "dynamic identification" bridge.**

PART 3 • THE SS-B SOLUTION

Learn from ADS-B — Adaptive for Space

Aircraft can announce themselves — why not satellites?

SS-B enables satellites to declare themselves: Who am I? Where am I? How am I maneuvering?

Aviation Precedent: ADS-B Proves Self-Announcement Works

Four factors

GNSS position
location source

1090/978 MHz
protected band

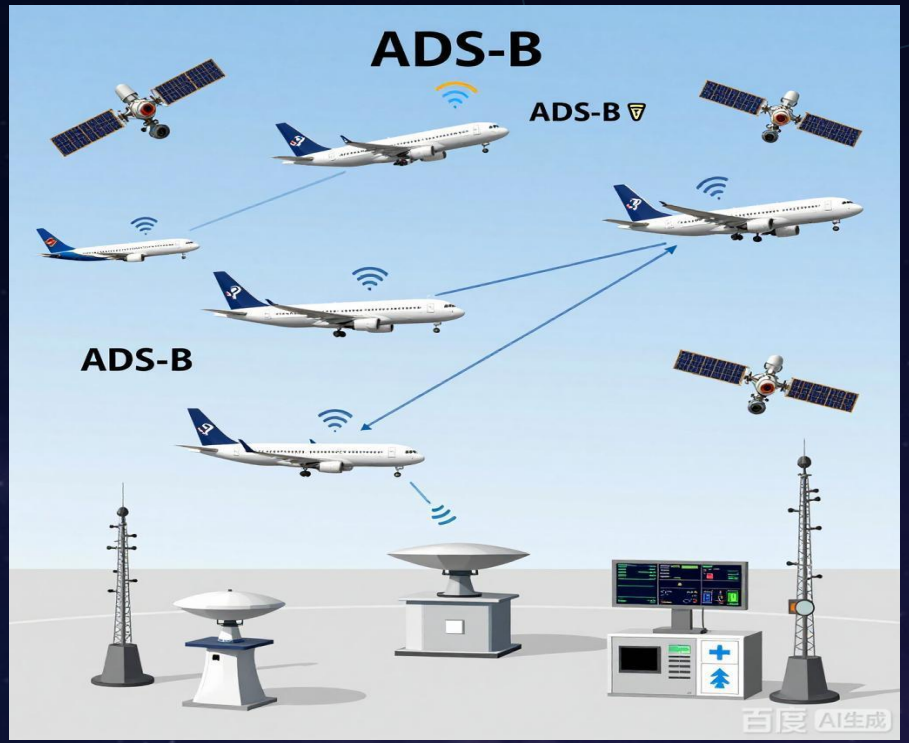
DO-260B
common standard

Unique identity: ICAO 24-bit address

Each aircraft carries one globally unique, machine-readable instantly resolvable identifier

The success formula

- Dedicated Spectrum
- Unique Identifiers
- Common Standards
- Mandatory Regulations



KEY TAKEAWAY: **Aircraft "announce themselves" — from being watched to self-announcing.**

Six Differences Between Space and Aviation

Dimension	Aviation ADS-B	Space SS-B
Environment	controlled airspace, air traffic control exists	global commons, no unified traffic controller
Identity	ICAO 24-bit address, mandatory filing	ITU/UNOOSA filing, needs dynamic broadcast
Broadcast timing	continuous broadcast	alert-triggered, rate scales with risk
Information	position, heading, callsign, etc.	minimum necessary
Spectrum	1090/978 MHz already protected	**no allocation yet — new one needed**
Coordination body	national air traffic authorities	ITU/UNOOSA, multilateral systems

Two insights: ① Three principles for SS-B minimal information: voluntary, alert-triggered, fast coordination.
② Five fields should be included: satellite Identity, operational status, maneuver capability, position, maneuver vector.

KEY TAKEAWAY: Borrow the logic, not the system. Minimal data with alert-triggered transmission

Why SS-B: Identity Is Announced, Not Observed

Aviation has the ICAO 24-bit address system. Space has no equivalent global identity system — none at all.

The three "cannots" without identity

Cannot identify	Space objects cannot recognize each other.
Cannot hold accountable	Liability cannot be assigned.
Cannot trust	Regulations cannot be effectively implemented.

Unique satellite identity and automatic broadcast are the foundation of space traffic management (STM) and space governance.

SSA sees only a dot: it may guess, yet cannot confirm. Only the satellite can verify its own identity.

KEY TAKEAWAY: Identity is not "observed" — it is "announced". Confirmed identity is the premise of liability and trust.

PART 4 • ITU ACTION

The Regulatory Gap — Spectrum & Identity Can Move First

Governance frameworks for ITU and UNOOSA are incomplete. Two priority levers: allocate spectrum for SS-B, define its usage rules, and assign each satellite a globally unique identifier.

PART 4 · ITU ACTION

The Path: Two Levers, One Legislative Window, Call for Actions

① Spectrum & Usage Rules

137–138 MHz candidate — already used for space operation service downlinks. Need to define technical parameters, interference limits, coordination procedure.

② Global Unique Identifier

ITU assigns each satellite a globally unique machine-readable identifier — linked to the MIFR filing and the SS-B broadcast.

③ Time Window

WRC-27 is the first key time point. → 2027–2031 ITU-R studies → WRC-31 allocation decision (4-year cycle — miss it, wait 4 more years).

Call for Actions

ITU-R
Study on spectrum and rules

ITU and UNOOSA
Define identifier & mechanism

Member States
Consensus on proposals

Industry
Standards and pilot project

KEY TAKEAWAY: **The first key time is at WRC-27. Take SS-B Forward and Starting Now**

Satellite Self-Broadcast (SS-B)

Making Every Orbital Encounter a Known Pass!

Thank you!

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