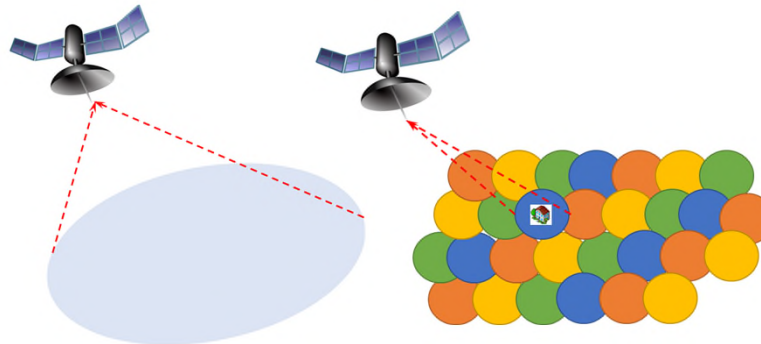# Space Insurance – Industry trends and associated risk evolutions

Underlying market evolution (1/3)
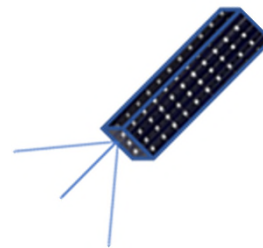
→ **High-throughput satellites in GEO**
- Heavy telecommunication payload
- On-board processing
- Multi-beam

➤ Several satellites launched (Konnect VHTS, SES-17, Viasat-3)

➤ Large accumulation due to high values

→ **Small satellites in LEO**
- 1-200 kg
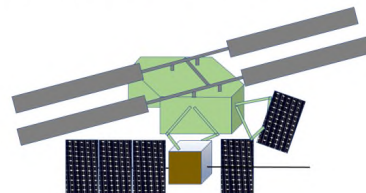- Large variety of mission, design, manufacturing philosophy

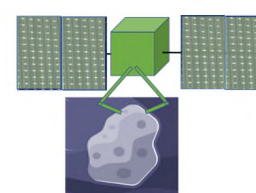➤ Several failures post-separation and in-orbit

➤ No reliability improvement

→ **In-orbit servicing (ISAM)**
- Specific mission

MANUFACTURING / REPAIR / REFUELLING

MINING / DEBRIS REMOVAL

➤ Still in trial phase

➤ Need for sustainability solutions

Underlying market evolution (2/3)

→ **Software defined satellites**

- Designed to have reconfigurable coverage in-orbit
- Optimized design

➢ **Manufacturing delays**

→ **Q and V-Band**

- Answer to crowed frequency spectrum
- New equipment

Frequencies used in space (GHz)							
1-2	2-4	4-7	7-12	12-14	12-18	20-30	>30
L	S	C	X	Ku	K	Ka	Q & V

➢ **Recently flight-proven**

→ **New launch vehicles**

- Recent : H3, RS1, Terran, Starship, Vulcan, Gravity
- Upcoming : Ariane 6, New Glenn, Neutron, Spectrum

➢ **Higher probability of failure for early flights**

AXA XL PROPRIETARY

Underlying market evolution (3/3) – new trends

→ **Deep space missions (e.g., Moon, Mars)**

- Communications, observation, navigation, power-beaming, rovers
- System architecture around the Moon
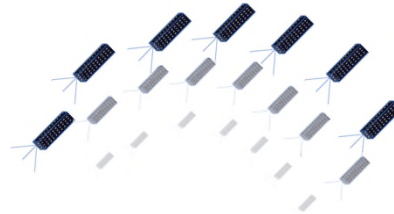- Support for future uncrewed and crewed missions

ESA - A constellation of satellites around the Moon

➢ Space environment
➢ Unusual mission profile
➢ Less visibility and more autonomy
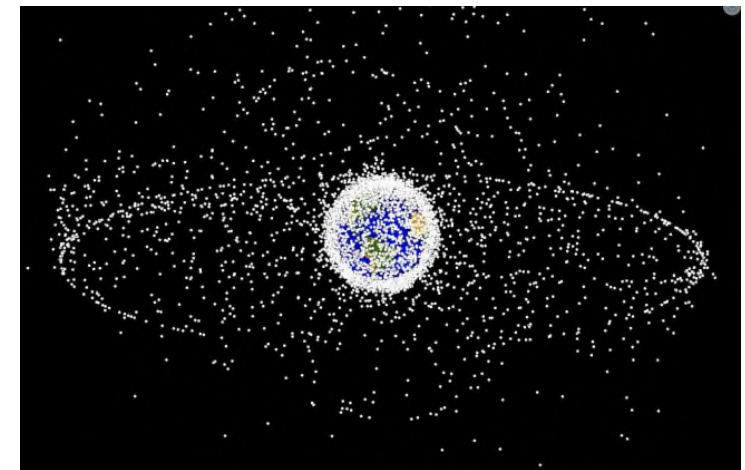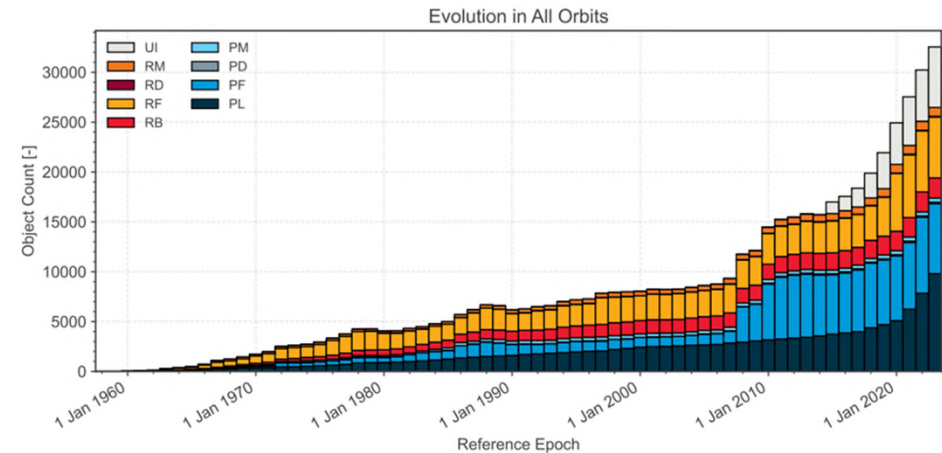

→ **Constellations**

- Financing challenge for large projects
- Some new projects close to flight testing with demo satellites

➢ Insurance is very different from Launch (large accumulation) and post-separation (with deductible)

Collision Risk

→ **Number of objects in orbit is increasing**

- Long term sustainability risk
- Main concern is in LEO

→ **Number of suspected collisions and close approaches has increased**

- Some recent claims on insured satellites

→ **Insurers role**

- Check operator behavior/awareness
- Sensitivity of design vs space environment
- Integrate collision probability into pricing
- Encourage responsible behavior

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Thank you !