

Space Traffic Coordination for Safety & Sustainability

Office of Space Commerce

IAF Space Traffic Management Committee IAC2024

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National Oceanic and
Atmospheric Administration

U.S. Department of Commerce
September 2024



Visualizing the Problem – Growth of Human Artifacts in Space



1957
2



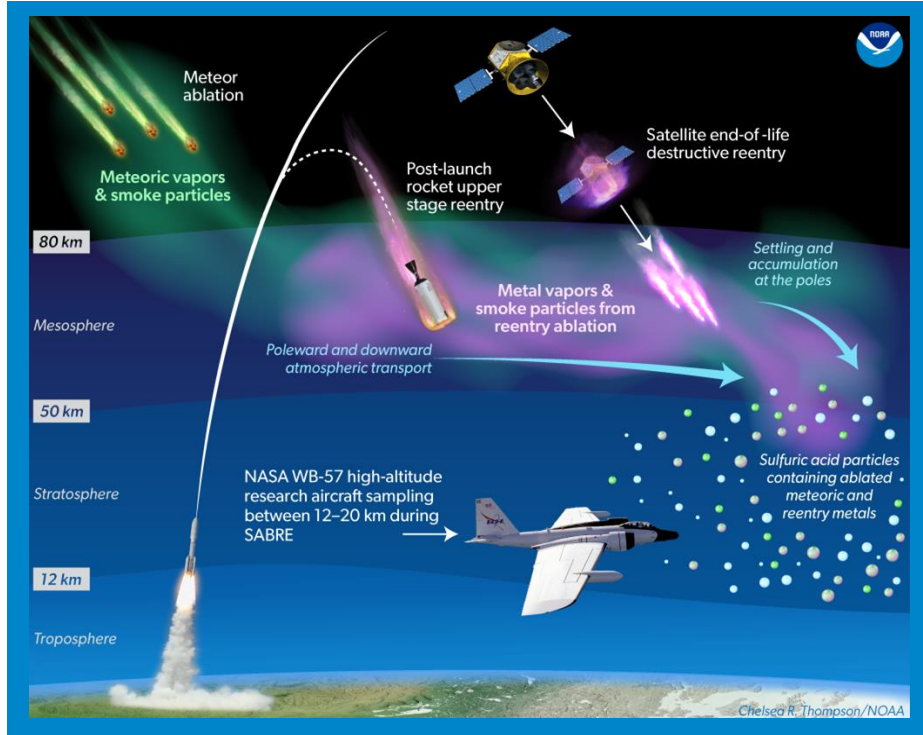
1990
~9000



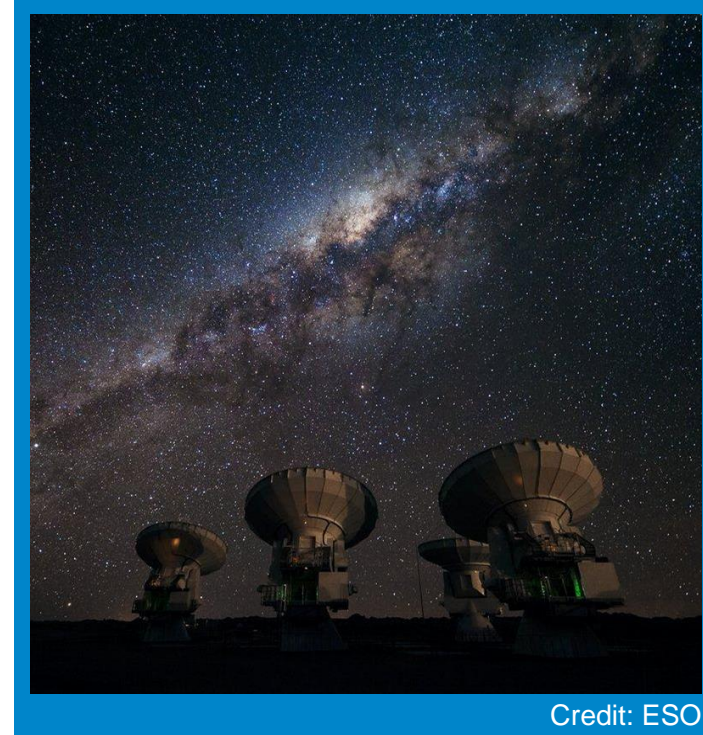
2024
~500,000
(> 1cm)

Sustainability is More than Space Debris

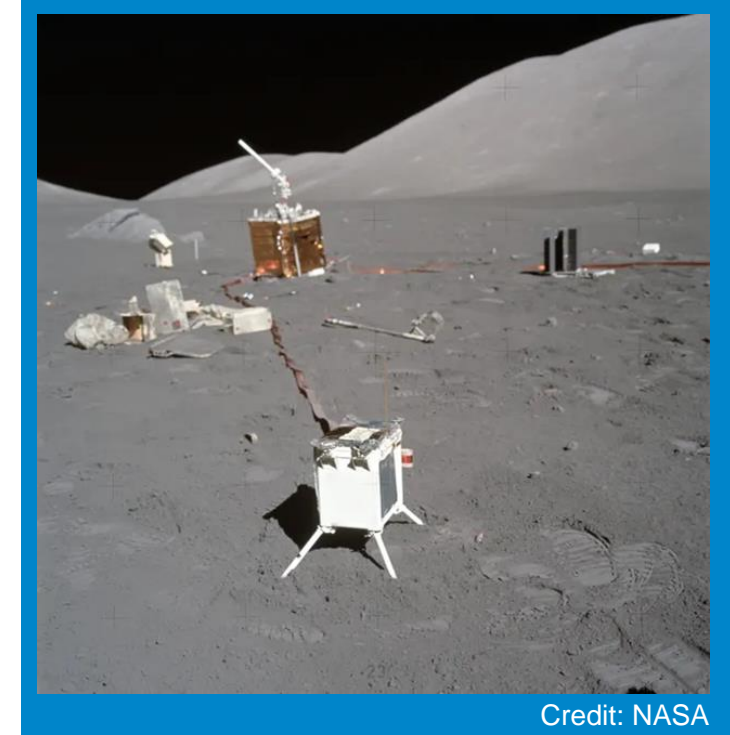
Reentry Materials into Stratospheric Particles



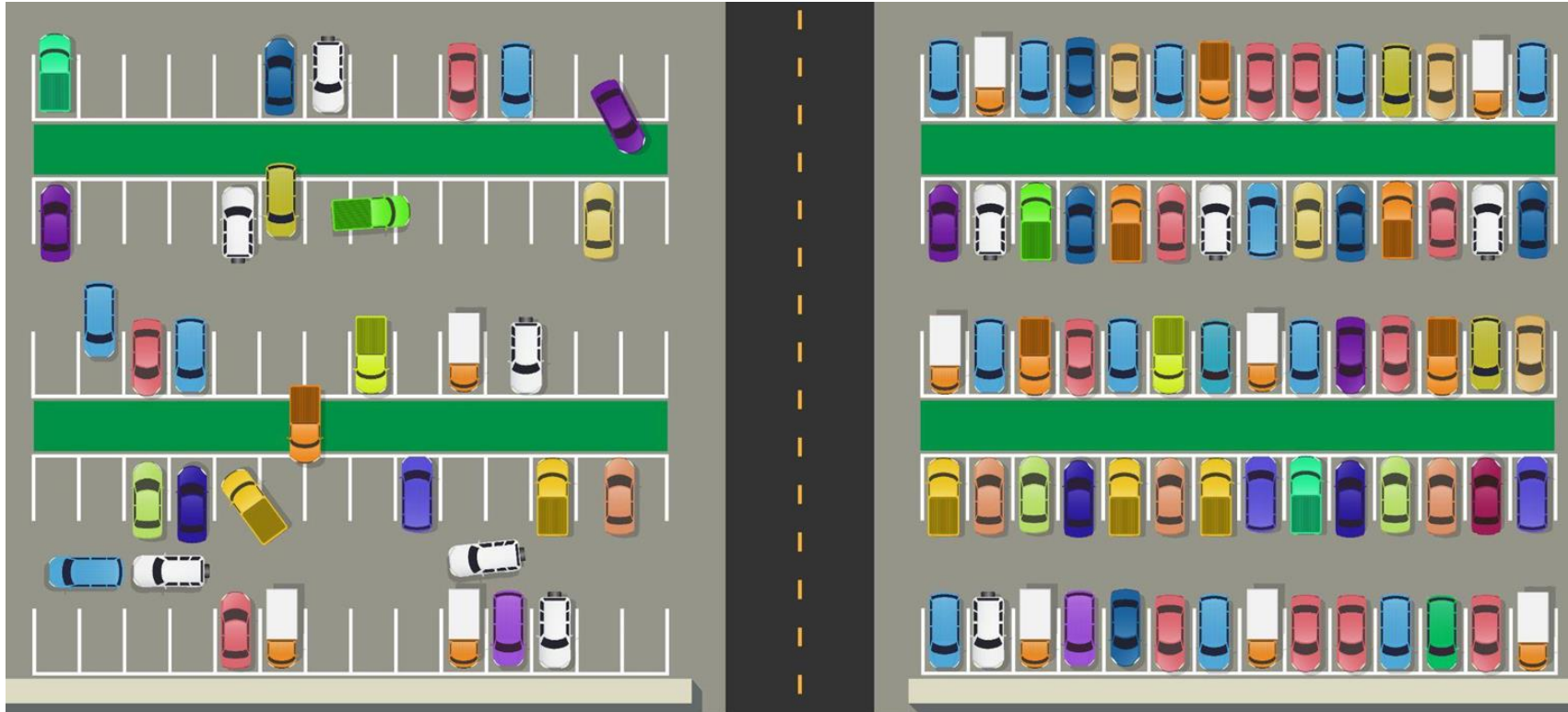
Dark and Quiet Skies



Lunar Debris



Orbital Loading Challenges



Structure increases capacity, but limits individual freedom

- Who gets to park in what spaces?
- Who, if anyone, enforces the rules?

Current SSA Limitations



- **Traditional SSA approaches have several known limitations:**
 - Limited sensors and field of view
 - Ephemeris updates can occur at a slow cadence
 - Ephemeris calculations may include errors- sometimes 100 meters or more
 - Challenges keeping up with a dynamic environment, i.e. constantly maneuvering satellites
- **Owner/Operator Ephemeris can contribute to safety, but there are still concerns:**
 - Wide range of quality, particularly between established and new operators
 - Limited insight into how ephemeris is generated
 - Limited insight into maneuver planning and changes

TraCSS' Safety Services



TraCSS will provide access to selected SSA data and information to spacecraft operators and governments, including:

- SSA data and information
- Conjunction screening every 4 hours using catalog and o/o ephemerides
- Risk assessment support information
- Detection and notification of emergency events
- Candidate maneuver screening
- Anomaly reporting



TraCSS Data Policy



The TraCSS Data Policy seeks to significantly advance transparency and openness.

- Conjunction Data Messages (CDMs) are shared with the operators involved in the conjunction
 - Countries have access to CDMs for all spacecraft affiliated with their nation
- TraCSS will also support and facilitate free and open sharing of data via our website, with no log-in required, including:
 - TraCSS Satellite database
 - TLE Catalog
 - Owner/operator ephemerides.
 - Emergency event notifications (conjunction messages for events that exceed a defined risk threshold)

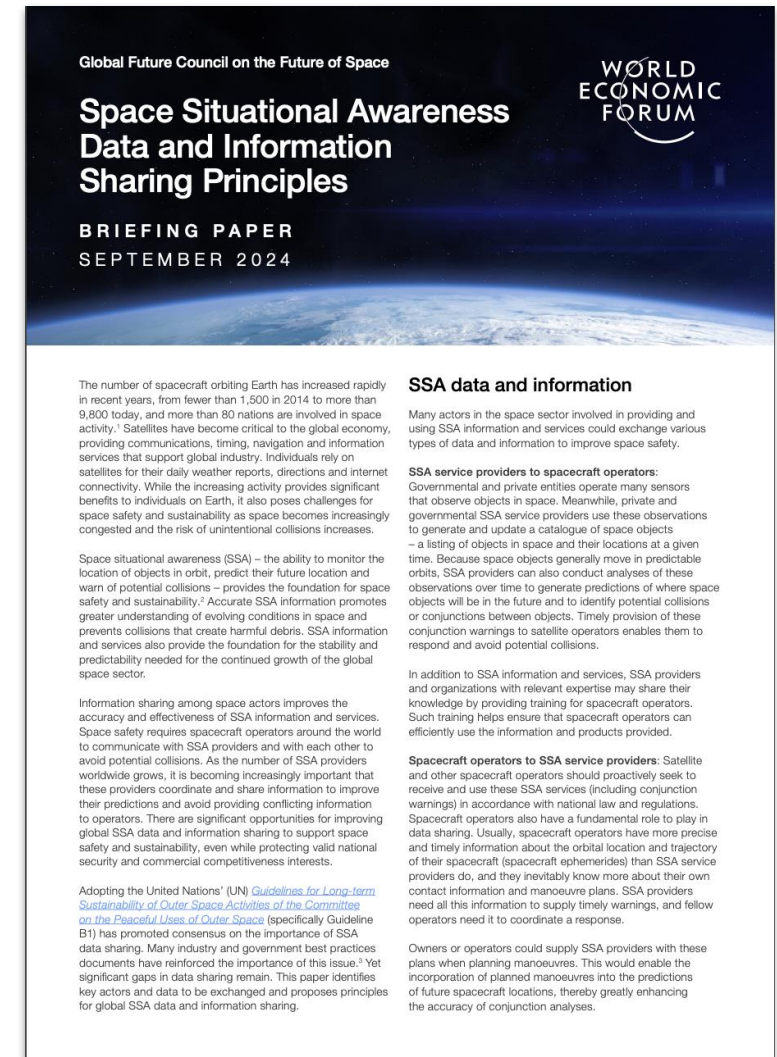


World Economic Forum

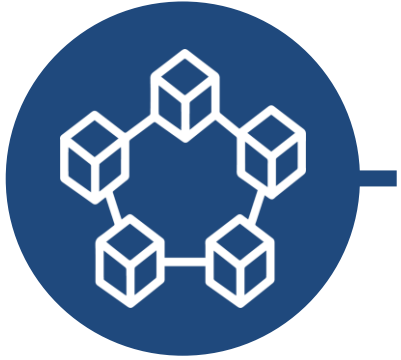
SSA Data and Information Sharing Principles



- SSA data and information should be made open by default while remaining consistent with national laws and regulations.
- Spacecraft owners/operators should share as openly as possible:
 - up-to-date contact information,
 - ephemerides,
 - manoeuvre plans, and
 - spacecraft characteristics (including size, mass, dimensions and manoeuvre capabilities)
- Spacecraft owner/operator information should be provided to at least one SSA provider. This provider should then make the data available to all other SSA providers.
- Government SSA providers should share conjunction warnings and other information.



The “Global SSA Future” Vision



We envision a **global coordinated system of space situational awareness providers**, with a series of national or regional hubs providing information and services to spacecraft operators. **These centers will be supported by networks of international and commercial partnerships.**



Government services will be augmented by a **robust global commercial space situational awareness sector that provides value-added services** to support business intelligence and other advanced services.

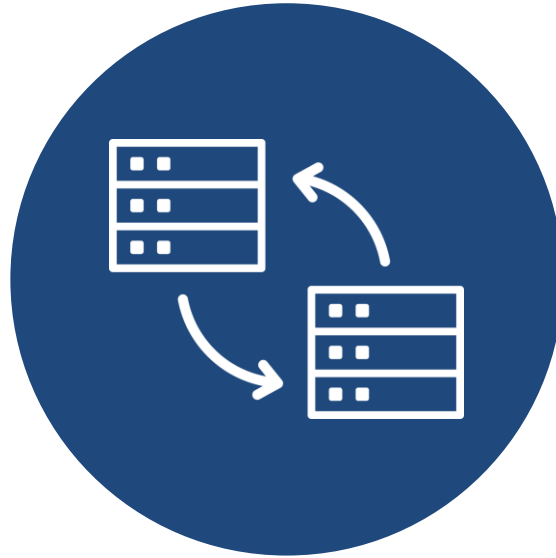


The Department of Commerce is committed to maintaining an **open and transparent system** that enables global coordination with other global SSA providers.

“Global SSA Future” Implementation



**SSA
Data
Standards**



**SSA
Information
Sharing
Principles**



**Satellite
Operator
Engagement**



**International
Partnerships &
Communication**

Engage with OSC on TraCSS



TraCSS webpage

<https://www.space.commerce.gov/tracss>

News, videos, and information on engagements, including past and upcoming public listening sessions



Email

tracss.commerce@noaa.gov

Submit TraCSS-related questions, comments, & feedback



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