

Building-up to a Sustainable Use of Outer Space

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Premises: our ability to use outer space in the long-term is not guaranteed.

- **10 nations have acquired a space launch capability**
- **About 70 to 80 launches per year (80 in 2011)**
- **More than 55 nations and regional governmental organizations operate satellites in Earth orbit**
- **An increasing number of private companies operate commercial satellite systems, both in the Geostationary Earth Orbit (mostly telecommunications) and in Low Earth Orbits (telecoms and earth observation)**

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Some numbers :

- **4841 launches**
from 1957 till end of 2011

- **80 launches in 2011**

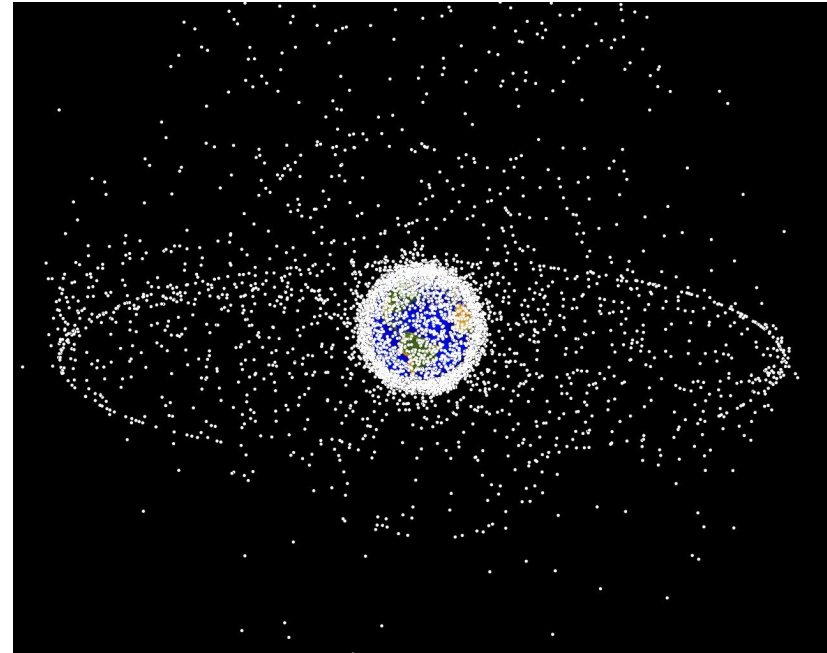
- **240 in orbit break-ups**

- **about 1300 operational satellites, of which 414 on the GEO ring**

- **16000 objects are**

tracked and cataloged by the US SSN:

21,5% are satellites, 12% rocket bodies, 7% mission-related objects, 59% fragments (up from 41% before the China ASAT test of Jan. 11, 2007)



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- **Increased crowding in low earth orbit as well as in the region around the geostationary ring creates new challenges**
- **Managing the orbital and radio spectrum resources requires a new discipline**
- **Proliferation of space debris on and around certain orbits is a major concern**
- **New international mechanisms may be needed to ensure a sustainable use of outer space**

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The space debris situation is a real concern.

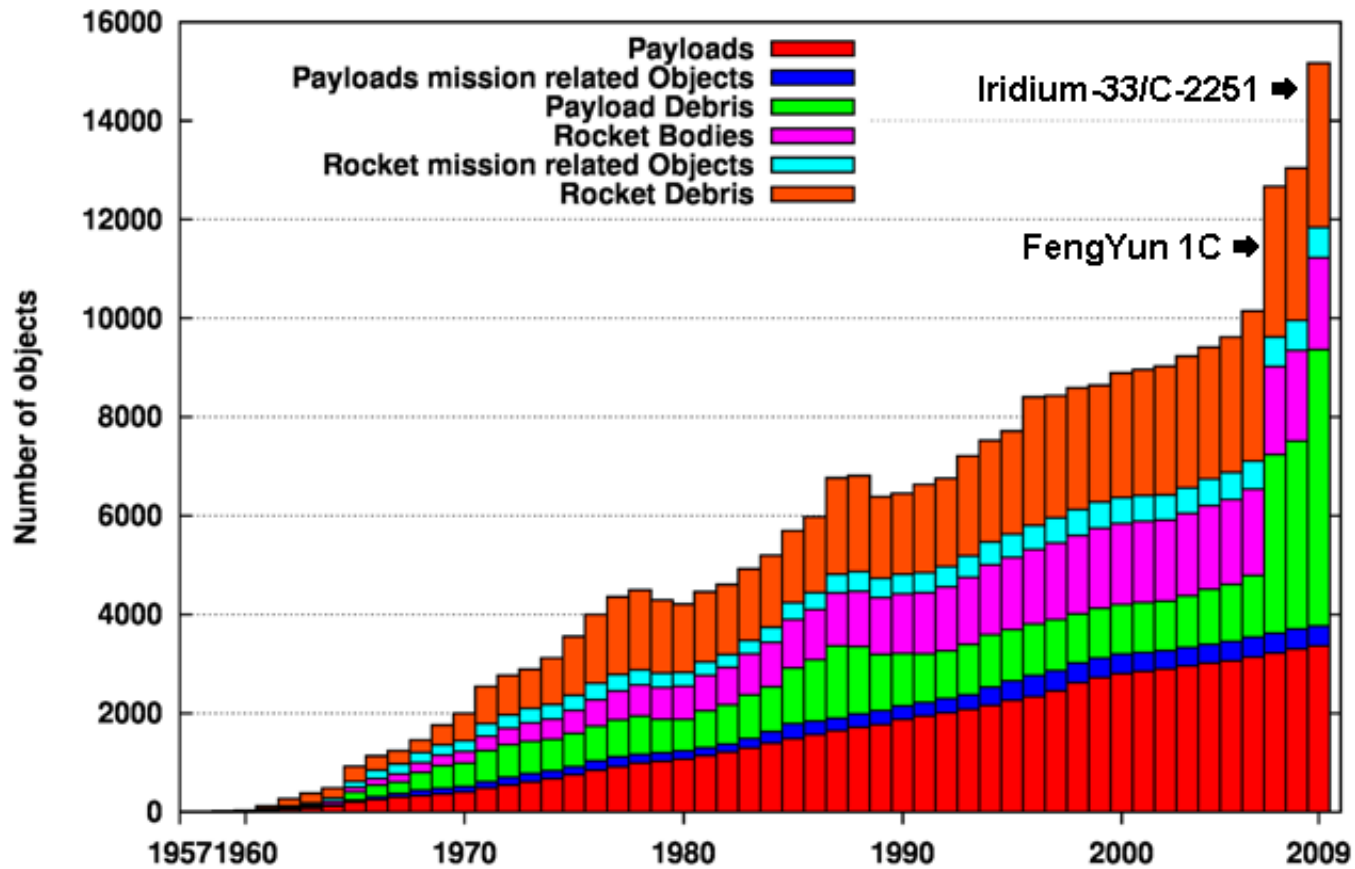
Recent events have added a sense of urgency:

- January 11, 2007: Chinese “experimental” ASAT test, 2700 to 3000 additional long lived fragments**
- Feb 10, 2009: collision Iridium 33 - Cosmos 2251, 1500 additional long lived fragments**
- rocket upper stages and spacecraft breakups in LEO**
- some GEO satellites failures**

Space debris represent an increased threat to safe orbital operations.

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Cataloged space objects 1957 – 2009 (source: ESA/ESOC)



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What about the risk of outer space becoming a battlefield?

- A positive fact: deployment of weapons in outer space has not apparently taken place.

- A less positive one: ground-based weapons can be used against spacecraft in Low Earth Orbit.

If they were activated during a conflict, they would jeopardize the secure use of near-Earth outer space.

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The safety and security of space activities are fragile, particularly if one takes a long-term view.

Responsible use of outer space by all actors is essential to preserve outer space as a safe and secure environment.

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The « space debris » work of the Inter Agency Debris Coordination Committee (IADC) and subsequent UNCOPUOS adoption of its Space Debris Mitigation Guidelines (endorsed by UNGA Resolution 62/217 of 21 Dec. 2007) provides a good model of how the international community can make some progress towards a regime of sustainable space operations.

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In June 2007, at its 50th session, I proposed to UNCOPUOS delegations that the Committee should tackle the issue of long-term sustainability of outer space activities with a **bottom-up approach similar to the development of the “Space Debris Mitigations Guidelines”.**

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In line with this proposal, a first implementation step took place early in 2008:

On February 7 & 8, the French Ministry of Foreign Affairs hosted in Paris an informal working meeting of space-faring nations on the topic of « Long-term sustainability of space activities ».

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The purpose of this informal meeting was to discuss the possibility of setting up an « ad hoc » working group to develop information exchange mechanisms and consensus-based rules of behavior which will contribute to a safer and more secure space environment.

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Participants to the Feb. 2008 meeting were :

- Representatives from 20 space-faring nations, including some developing countries, as well as from the European Union and the European Space Agency.**
- Commercial telecommunication satellite operators (Intelsat, Inmarsat, Eutelsat and SES).**
- Observers from the UN Office for Outer Space Affairs, the International Space Environment Service (ISES) and the World Meteorological Organization (WMO).**

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Main conclusions of the Feb. 2008 informal meeting:

- A- Brief the delegations at COPUOS on this initiative (session of the COPUOS Scientific and Technical Subcommittee in February and plenary session of the Committee in June)**
- B- Prepare a document presenting the various issues affecting Long-Term Sustainability of Space Activities**
- C- Organize communication channels with delegations involved in the discussions on Prevention of an Arms Race in Outer Space (PAROS) at the Conference on Disarmament. A specific presentation was made to CD delegations on Feb. 20, 2008 and regular presentations were made at the annual UNIDIR conferences on space security**
- D- Brief the Non Government Organizations actively involved in “Space Security” topics and activities on “Safety of Space Systems” and obtain their support and contribution**

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The document prepared by the informal working group, finalized at the end of 2009, addresses the following issues:

- Space debris mitigation and remediation;**
 - Improving the safety of space operations;**
 - Managing the radioelectric spectrum;**
 - Impact of space weather and other natural causes;**
 - Review of existing international mechanism(s) to improve the safety and sustainability of space activities;**
-and concludes with a set of preliminary recommendations.**

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- **At its 52nd session, in June 2009, the French delegation to UNCOPUOS formally proposed the topic of “Long-Term Sustainability of Outer Space Activities” as a new agenda item of COPUOS in 2010.**
- **COPUOS agreed to include this item as a new agenda item of its Scientific and Technical Sub-Committee in 2010 and beyond.**

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- **The document prepared by the informal working group serves as a reference document for COPUOS consideration of this new topic.**
- **It was distributed to all delegations to the 47th session of COPUOS/STSC (8 to 19 February 2010) as a Conference Room Paper* under the title: “Long-term sustainability of outer space activities, preliminary reflections” .**

***A/AC.105/C.1/2010/CRP.3,
available at www.unoosa.org/oosa/en/COPUOS/stsc/2010/docs.html**

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- **The COPUOS/STSC has decided to set up a formal Working Group to address this issue, as it had done in 2003 for the space debris issue**
- **Dr. Peter Martinez (South Africa) was selected to be the chairman of this new dedicated Working Group**
- **The first meeting of this new Working Group took place in conjunction with the 53rd session of COPUOS in Vienna in June 2010**
- **The Terms of Reference of the Working Group were approved during the 48th session of COPUOS/STSC in 2011***

*** Annex II to A/66/20**

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Four Expert Groups were set up, each addressing different aspects of the sustainability issue:

- **Expert Group A: Sustainable Space Utilization Supporting Sustainable Development on Earth, chair: Prof. Filipe Duarte Santos (Portugal)**
- **Expert Group B: Space Debris, Space Operations and Tools to Support Collaborative Space Situational Awareness, co-chairs: Claudio Portelli (Italy) and Dick Buenneke (USA)**
- **Expert Group C: Space Weather, chair: Mr Takahiro Obara (Japan)**
- **Expert Group D: Regulatory Regimes and Guidance for Actors in the Space Arena, chair: Prof. Sergio Marchisio (Italy)**

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- **Ensuring an active interaction of the Working Group on Long-Term Sustainability of Outer Space Activities with the community of commercial satellite operators, not formally represented in UNCOPUOS, is essential. Ad hoc workshops should achieve this purpose.**
- **In parallel, continuing interaction with IADC, with space weather organizations, with the International Telecommunication Union (ITU) for frequency management and with other interested parties such as the International Association for the Advancement of Space Safety (IAASS), is essential in order to benefit from their work and avoid any unnecessary duplication.**

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The expected output from this COPUOS Working Group are:

- a set of “Best practice guidelines for space operations”,**
 - and recommendations to establish new data exchange mechanisms,**
- both aimed at improving the safety of launch and in-orbit operations.**

Another possible output concerns recommendations for improvements to the ITU-led frequency and GEO orbital positions allocations mechanisms.

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- **The Working Group on Long-Term Sustainability of Outer Space Activities plans to prepare a report and develop draft guidelines or recommendations over the period 2012 - 2013 with a view to submit them to the COPUOS/STSC in 2014.**
- **These guidelines or recommendations would then be endorsed by COPUOS during its plenary session in June 2014 and be included in its report to the UN General Assembly.**
- **Although it is too soon to speculate as to its form, a specific resolution of the UNGA endorsing the COPUOS report on Long-Term Sustainability of Outer Space Activities would be appropriate.**

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The EU Draft Code of Conduct (1)

- **In parallel to the COPUOS activities on Long-Term Sustainability of Outer Space Activities, the discussions on the Prevention of an Arms Race in Outer Space (PAROS) at the Conference on Disarmament are stuck.**
- **As a consequence, the Council of the European Union has taken in 2007 an initiative to propose an “International Code of Conduct” for Outer Space Activities.**
- **A first version of the EU draft Code of Conduct was approved by the EU Council in Dec. 2008 and widely circulated.**

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The EU Draft Code of Conduct (2)

- **Bilateral consultations with major space-faring nations were conducted by the EU in 2009 – 2010, leading to a new version of the EU draft Code of Conduct circulated in September 2010.**
- **A first multilateral meeting took place recently, on June 5 in Vienna, where an updated version of the draft code was presented by the EU.**
- **A further multilateral meeting is planned in October in New York.**
- **The EU plans to convey in 2013 a Diplomatic Conference of adherence to finalize and sign this “International Code of Conduct” provided that a sufficient number of States have declared their willingness to sign in.**

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The GGE on Outer Space TCBMs (1)

- **In parallel, the 1st Committee of the UN General Assembly has adopted in 2010 Resolution 65/68 on Transparency and Confidence Building Measures (TCBMs) in outer space activities.**
- **This resolution requests the UN Secretary General to set up a Governmental Group of Experts to conduct a study on outer space transparency and confidence measures and report to the UNGA by end of 2013.**

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The GGE on Outer Space TCBMs (2)

The Group of Governmental Experts includes representatives from 15 countries:

**Brazil,
Chile,
China,
France,
Italy,
Kazakhstan,
Nigeria,
Romania,
Russian Federation,
Rep. of Korea,
South Africa,
Sri Lanka,
Ukraine,
United Kingdom,
United States.**

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The GGE on Outer Space TCBMs (3)

- **The GGE is now formally set up and will hold its first meeting in New York on July 23 to 27.**
- **It will hold two more meetings in 2013: one in April in Geneva and a final one in July in New York.**
- **Its plan is to produce the report of its study by second half of 2013.**

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Over the next two years, the challenge will be to progress in a consistent manner within these three parallel and complementary efforts:

- the Long-Term Sustainability of Space Activities WG of COPUOS,**
- the International Code of Conduct,**
- the GGE on Outer Space TCBMs.**

The first of these is technical, the other two are more politically driven.

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Conclusion

- **Ensuring secured and sustainable access to, and use of outer space is a major issue for all, national governments and commercial operators.**
- **The number of initiatives towards a sustainable use of outer space that were recently started at the international level is encouraging but political considerations will make it very challenging to reach an agreement.**

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Thank you for your attention.