## 62esima sessione COPUOS Scientific and Technical Subcommittee (STSC) Vienna, Austria 03-14 Febbraio 2025

## **Statement Item 5: Space Debris**

Madam Chair, Distinguished Delegates,

Italy has a long-standing tradition in studying and monitoring space debris, which poses a critical threat to current and future space activities. Through the Italian Space Agency (ASI), Italy participates in the European Union Space Surveillance and Tracking Framework, leading the development of two of the three services: re-entry and fragmentation services.

Italy also participates in the European Space Agency's Space Situational Awareness Programme, which addresses, among other topics, the space debris problem.

At the national level, various projects have been funded over the last two years to support both scientific research and the development of new observational sensors.

Regarding scientific research, in 2023, the Italian Space Agency (ASI) signed two collaboration agreements. The first, focused on "Space Debris and Long-Term Sustainability," was signed with the National Institute for Astrophysics. The second, focused on "Space Surveillance and Tracking," was signed with the Politecnico di Milano. These agreements also involve several other research institutions, including La Sapienza University of Rome, the University of Padua, the National Research Council, the University of Rome Tor Vergata, and the University of Naples Federico II.

The research activities aim to enhance national capabilities in space debris observation and modeling. To improve the characterization of space debris, various optical telescopes equipped with photometric filters in both Johnson-Cousin and SLOAN bands are used. The development of algorithms for orbit determination, collision risk assessment, fragmentation analysis, and long-term orbital evolution is also addressed.

These agreements also support the Italian Space Agency's participation in the Inter-Agency Space Debris Coordination Committee (IADC), fostering international collaboration in this field.

Both agreements prioritize the involvement of PhD students and young researchers by offering numerous fellowships and raising awareness about the importance of space debris for future generations.

Regarding the development of new observational sensors, the Italian Space Agency is establishing a Space Debris Laser Station, which will integrate an adaptive optical system and be able to track objects from LEO to GEO orbits.

Moreover, we have started developing a network of four optical telescopes, called Flyeye, with a Field-of-View of more than 40 square degrees. These telescopes will be placed worldwide thanks to international cooperation with other countries that we are finalizing.

The telescope network will be remotely controlled by a Control Center, hosted at the Italian Space Agency facility in Matera, Southern Italy. The Control Center will also collect optical data and perform data processing to support Space Surveillance and Tracking activities.

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The Space Debris Laser Ranging Station, the telescope network, and the Control Center are funded by the European Union Recovery Fund, Next Generation EU, and are expected to be completed by 2026.

Madam Chair,

Italy continues to reinforce international partnerships, recognizing that only through global collaboration can the challenges of space sustainability be effectively addressed for the benefit of present and future generations.

Thank you for your attention.