Space is getting crowded: the challenge of space traffic management



Abstract:

Since the first spacecraft was launched into orbit more than 60 years ago, the number of satellites orbiting the Earth has significantly increased and so has the dependency of everyday technological systems to safe and continuous satellite operations. As the number of launches is expected to further boost in the near future, some *orbital highwa*ys might soon be on the verge of congestion and the risk of collisions among objects unsustainable. These situations are handled by a complex system including several elements: observing the sky to monitor and track satellites in orbit, predicting their trajectories, anticipating the risk of collision and re-entry on the ground and acting on hazardous scenarios, as well as adapting future missions and spacecraft design to the risk of congested orbits. A key element relies on finding an appropriate solution for the handling of space traffic at international level, balancing on one side safety and sustainability in space and on earth with innovation and development. This represents one of the most dynamic and intricate challenges of the years to come as diverse scientific, legal and governance questions are starting to be investigated and are yet to be answered.

Bio

Ms Maria Piera Padula is a scientific officer at the German Aerospace Center (DLR) in Bonn in the field of Space Situational Awareness (SSA). She joined DLR in 2016 and since then she has been working on project management, scientific and policy development in the context of European Space Surveillance and Tracking (SST) and space debris. Prior to this, she has worked at the European Space Agency (ESA) Headquarters in Paris in the field of Strategic Planning of future activities and briefly at GMV near Madrid on autonomous navigation for Martian robotic exploration (ExoMars).

She holds a BSc degree in Aerospace Engineering and a MSc degree in Space Engineering from Politecnico di Milano University and a Diploma from Alta Scuola Politecnica. She has been involved in university projects mostly focused on orbit determination of Near Earth Objects, business development of small satellites modular platforms and feasibility studies for a cluster of fractionated spacecrafts. She is a keen traveller and her main interests concern space policy and applications to cross domains.