

21st IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Interactive Presentations - 21st IAA SYMPOSIUM ON SPACE DEBRIS (IPB)

Author: Ms. Cristina Pérez Hernández
CDTI (Centre for the development of Industrial Technology), Spain

Mr. Florian Delmas
Centre National d'Etudes Spatiales (CNES), France
Mr. Óscar González Martínez
GMV Aerospace & Defence SAU, Spain, Spain
Mr. Santiago Martínez Alcalde
GMV Aerospace & Defence SAU, Spain, Spain

THE EUSST COLLISION AVOIDANCE SERVICE READY TO SUPPORT THE NEW SPACE
ENVIROMENT

Abstract

The space debris and satellite population in orbit is dramatically increasing. This puts at risk the current and future satellite missions due to the severe damages and potentially loss of any satellite in case of a collision. Europe is committed to contribute to the global burden-sharing in the SSA domain and to ensure the safety and long-term sustainability of space activities. In this light and as part of the Space Situational Awareness component of the EU Space Programme, **EUSST is the key operational capability for the EU's future approach to Space Traffic Management.**

Currently, the EU SST Partnership provides collision avoidance service (CA) to more than 300 s/c from over 30 different users on a hot redundancy scheme involving the French and Spanish SST Operation Centres (FR-SSA and S3TOC, respectively).

The EUSST CA service is evolving towards a public service, **essential to ensure the security and safety of space operations.** Therefore, EUSST is working to an increased automated service understanding the different satellite operators' needs. The evolution of space actors and the availability of the CA service worldwide is having a major impact in the CA operations centres **challenging the current methodologies and procedures.**

The present paper presents how EUSST faces these new challenges by defining a **three-level user's profiles classification**: 1) non-manoeuverable small satellites typically with no GNC system onboard, 2) manoeuvrable satellites with automated provision of ephemerides and manoeuvre plans, and 3) large constellations. This classification aims at standardizing the CA service the user is to be provided according to its profile, and sets the basis to incrementing automatization in the CA service provision in particular cases such as High Interest Events (HIE) involving non-manoeuverable small satellites, Collision Avoidance Manoeuvre (CAM) recommendation, screening of special ephemerides, support to End-Of-Life or LEOP campaigns, etc. Additionally, the **EUSST approaches to establish a coordination process in conjunction events between two satellite operators is described.** Furthermore, a section gathering some of the most interesting cases managing events between different users' profiles as well as coordination with third-party entities is included.

To conclude, **real cases** showing how EUSST currently deals and, in the future, will manage conjunction events, in particular cases with multiple conjunctions and support to different mission phases will be assessed.