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Author: Ms. Katia Caceres
CDTI (Centre for the development of Industrial Technology), Spain, katiamaria.caceres@cdti.es

Mr. David Moreno
GMV Aerospace & Defence SAU, Spain, Spain, dmespinosa@gmv.com
Mr. Francisco Ayuga García
Spain, fjayuga@gmv.com
Mr. Alfredo Anton
GMV Aerospace & Defence SAU, Spain, amanton@gmv.com
Mr. Mihai Ghita
European Union Satellite Centre (SatCen), Spain, mihai.ghita@satcen.europa.eu
Ms. Mirela Bivolaru
Romanian Space Agency (ROSA), Romania, mirela.bivolaru@rosa.ro
Mr. Daniel Stelmecke
DLR (German Aerospace Center), Germany, Daniel.Stelmecke@dlr.de
Mr. Pascal Richard
CNES, France, Pascal.Richard@cnes.fr
Mr. Albino Carbognani
INAF, Italy, albino.carbognani@inaf.it
Mr. Tomasz Zubowicz
Polish Space Agency (POLSA), Poland, Tomasz.Zubowicz@polsa.gov.pl
Mr. Bruno Coelho
Portugal Space Agency, Portugal, brunodfcoelho@av.it.pt

HOW WILL COPLA WORK WITHIN EU SST?

Abstract

The "Decision of the European Parliament and the Council Establishing a Space Surveillance and Tracking Support Framework" was adopted on April 16, 2014. It established the European Space Surveillance and Tracking (EU SST) Support Framework at European level, which evolved into a fully-fledged component of the European Union Space Programme adopted on 28 April 2021. EU SST contributes to the global burden sharing of ensuring the sustainable and guaranteed access to and use of space for all. Its primary objective is the provision of space-safety services, namely, to protect spacecraft from the risk of collision, to monitor uncontrolled re-entries, and to survey the in-orbit fragmentation of space objects.

CDTI, as partipating entity in the EU SST programme, is developing the Coordinated Planner (COPLA). COPLA's objective is to coordinate the observation schedule for all contributing sensors (while sensor control remains under the responsibility of the Member States) with the ultimate goal of improving the quality of the SST services.

This paper presents the processes of COPLA within the EU SST system and answers the most relevant functional questions. How will COPLA manage availability and scheduling in EU SST? How will COPLA coordinate the tasking requests? How are the observations for services, calibration campaigns and particular exercisesto be scheduled? How will COPLA and the EU SST Catalogue interact? These

questions arise facing the coordination of the EU SST sensor network with heterogeneous capabilities, programmatic constraints, and technical characteristics.

Functionally, COPLA is composed of two differentiated computational chains, survey and tracking, which require to be executed sequentially to obtain the maximum benefit from the observation resources. While the survey chain is in charge of optimizing the survey operations to gain the best possible accuracy of orbit covariances during the survey activities, the tracking chain is in charge of managing the tasking requests for objects of interest. Priorization and object weighting are described in this paper.

Finally, understanding timeliness for COPLA is understanding the "rhythm" of the EU SST sensor network. As changes in the operation of sensors occur on a daily basis, e.g. due to maintenance periods and calibration campaigns, COPLA will update the sensor schedule using a configurable frequency, considering an extended temporal horizon and updating dynamically the planned slots in order to consider the latest available orbital information of the objects and tasking requests from the catalogue and services.