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**Metis INSTRUMENT
for the
Solar Orbiter Mission**

**Specifications of the Metis Planning Implementation
Center**

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1 Scope of the document

This document is intended to define the functionality and the organization of the Metis Planning Implementation Center.

1.1 Contributors

This document has been completed thanks to the valuable contributions of V. Andretta (INAF-OACN), E. Antonucci (INAF-OATo), G. Capobianco (INAF-OATo), M. Casti (ALTEC), F. Frassetto (CNR-IFN), Landini (INAF-OAA), M. Messerotti (INAF-OATs), A. Mulone (ALTEC), M. Pancrazzi (UniFi), M. Rabaioli (ALTEC), C. Sasso (INAF-OACN), D. Spadaro (INAF-OACt).

1.2 Definitions

- **TM/TC Procedures:** Metis is operated by executing a series of both (time-tagged) TCs and TM checks, developed and validated on the Metis RM, are called in this document TM/TC Procedures. The naming convention to be used is defined in [AD-22].
- **S/C sequence:** Each relevant TM/TC Procedure Metis deliver to ESOC, will be converted into a S/C sequence containing only timetagged TC's, to be uploaded to the S/C for its execution. Metis do not have the direct visibility of the S/C sequences. TM/TC Procedures and S/C Sequences share the same name.
- **Flight Procedures:** ESOC will combine one or more S/C Sequences to compose a Flight Procedure, comprehensive of TC's timeline and TM checks to be performed off-line.
- **Timeline Products:** Each timeline is defined by the following products:
 - **Observational Timeline:** In this document a Obs. Timeline is a combination of temporal events (Metis operations, S/C constraints etc.) that concurr to the definition of an observing plan to be executed in flight.
 - **Timeline Report:** A human-readable information list which shall include a time tag, Metis state, power, telemetry, EMC cleanliness level.
 - **IOR:** TBW
 - **MDOR:** TBW
 - **PDOR:** TBW
- **Planning Repository:** the Planning Repository is the environment where IOR's, Obs Timelines and TM/TC Procedures are archived.

1.3 Operational Flow

The Operational Flow is the ensemble of activities (conceptual plan, test, validation, detailed plan) necessary to implement a scientific observation plan to an in-space executable obs. timeline.

The series of steps has to follow the ESA planning guidelines and standards (main reference is [RD-3]), and provide an exchange of information according to the mission adopted interfaces.

The overall flow can be divided into two main activities:

- 1) The **TM/TC Procedure** creation, test and validation
- 2) The construction of the **Observation Timelines** and the IOR generation

The first activity has the goal to create and archive a set of **TM/TC Procedure** performing basic actions and observations, to be used as building blocks in the definition of the **in-flight observing Timeline** or to run on-ground test/investigations.

The core tools to be used for this activity are the “TM/TC Procedure Builder” and the “Planning Repository”.

The logical flow is depicted in Figure 1-1.