



Metis planning management

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Summary

- Need for a planning team
- Solar Orbiter planning scheme
- Metis planning
 - Scientific objectives definition
 - High level planning
 - Low level planning
- Procedures and tools

Solar Orbiter planning history in brief

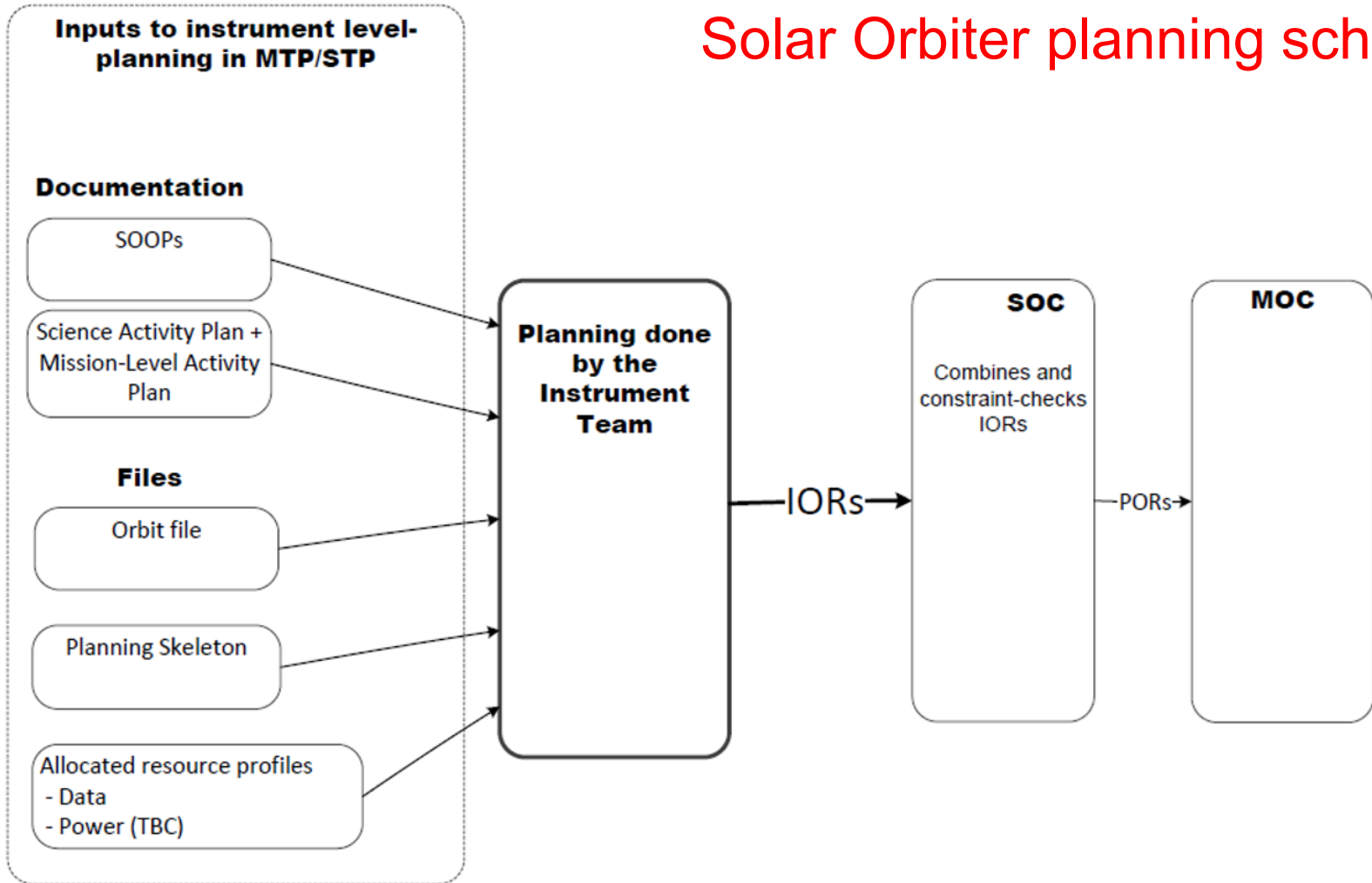
Due to telemetry downlink constraints, up to a few months before the Solar Orbiter launch, remote sensing instruments were well aware that their observation slots would have been scattered throughout the mission, and mainly limited to the **Remote Sensing Windows**.

While approaching the launch, a better planning of antenna time slot and a careful optimization of the resources on ESA side led to a considerable increase in the observation time for remote sensing instruments.

With the beginning of the mission, it was clear that at least a **synoptic program** would have run almost continuously, even though with a low cadence. Observation planning needed to be performed with constancy over time, thus a planning team was necessary.

In order to manage such an effort, several procedures and responsibilities were defined in order to enhance the effectiveness and mitigate the error risk.

Solar Orbiter planning scheme



Low level planning 1/

- 1) Set up a planning calendar with all responsibilities and deadlines.

	STP	FROM	TO	METIS STATUS AT END OF STP	DELIVERY	DEADLINE	TO MRM	MIB VERSION	LEADERS	REVIEWER	L
LTP12	276	18/09/2023	24/09/2023	ME and CE in OPS	01/08/2023	30/08/2023	09/08/2023	MIB_20230710M19123PFMS001_SOL	Clementina - Federico	Lucia	
	275	11/09/2023	17/09/2023		01/08/2023	30/08/2023	09/08/2023	MIB_20230710M19123PFMS001_SOL	Clementina - Giuliana	Federica	
	274	04/09/2023	11/09/2023		01/08/2023	23/08/2023	02/08/2023	MIB_20230710M19123PFMS001_SOL	Lucia - Federica	Clementina	
	273	28/08/2023	03/09/2023	ME and CE in OPS	01/08/2023	16/08/2023	26/07/2023	MIB_20230710M19123PFMS001_SOL	Clementina - Roberto	Giuliana	
	272	21/08/2023	27/08/2023		01/08/2023	08/08/2023	18/07/2023	MIB_20230710M19123PFMS001_SOL	Giovanna - Giuliana	Federica	
	271	14/08/2023	20/08/2023	ME and CE in OPS	04/07/2023	02/08/2023	12/07/2023	MIB_20230710M19123PFMS001_SOL	Federico - Giovanna	Roberto	
	270	07/08/2023	13/08/2023		04/07/2023	26/07/2023	05/07/2023	MIB_20230710M19123PFMS001_SOL	Lucia - Federica	Giuliana	
	269	31/07/2023	06/08/2023	ME and CE in OPS	04/07/2023	19/07/2023	28/06/2023	MIB_20230710M19123PFMS001_SOL	Clementina - Federico	Lucia	
	268	24/07/2023	30/07/2023	ME and CE in OPS	04/07/2023	12/07/2023	21/06/2023	MIB_20230313M07223PFMS001_SOL	Roberto - Giuliana	Federico	
	267	17/07/2023	23/07/2023	ME and CE in OPS (SAFE in STP)	07/06/2023	05/07/2023	14/06/2023	MIB_20230313M07223PFMS001_SOL	Giovanna - Federica	Federico	
	266	10/07/2023	16/07/2023	ME and CE in OPS	07/06/2023	28/06/2023	07/06/2023	MIB_20230313M07223PFMS001_SOL	Federico - Lucia	Giovanna	
	265	03/07/2023	09/07/2023		07/06/2023	21/06/2023	31/05/2023	MIB_20230313M07223PFMS001_SOL	Giovanna - Giuliana	Clementina	
264	26/06/2023	02/07/2023		07/06/2023	14/06/2023	24/05/2023	MIB_20230313M07223PFMS001_SOL	Clementina - Lucia	Roberto		
LTP11	263	19/06/2023	25/06/2023		10/05/2023	07/06/2023	17/05/2023	MIB_20230313M07223PFMS001_SOL	Roberto - Federica	Giovanna	
	262	12/06/2023	18/06/2023	ME and CE in OPS	10/05/2023	29/05/2023	08/05/2023	MIB_20230313M07223PFMS001_SOL	Clementina - Federico	Lucia	
	261	05/06/2023	11/06/2023	ME and CE in OPS	10/05/2023	24/05/2023	03/05/2023	MIB_20230313M07223PFMS001_SOL	Roberto - Giuliana	Federica	

- 1) For each STP, the STP leaders review high level planning report on ERM and SPK (<https://redmine.ict.inaf.it/projects/490/wiki/ScienceOperations>), then create the STP working sheet.

The working sheet is one of the most important documents, acting as a reference for data validators, planners and in general for the scientific team.

Low level planning 2/

	A	B	C	D	E	F	G	H	I	J	K	
1	Day	Start Time	End Time	Activity	Description	Sequence(s)	Parameter(s)	Expected data	Data volume (MiB)	TCs	Notes	Act
34	01/01/2024 DOY 001											
35	01/01/2024 DOY 001	04:29:00	04:29:01	METIS_SYNOPTIC	Conf. pol. angles	AITF107B	POL_0 = 0 POL_1 = 182 POL_2 = 133 POL_3 = 84 POL_4 = 49 POL_5 = 182 POL_6 = 84				SCI_RUN_SYN_3600_4CAD (5308)	
36	01/01/2024 DOY 001	04:29:04	04:29:07		Config. comp.	AITF605A	VL bin. 2x2 UV bin. 4x4 VL lin. mask. (460-1440) UV no mask. Lossless comp. Comp. factor VL = 12.6 Comp. factor UV = 42.6					
37	01/01/2024 DOY 001	04:29:10	04:29:11		Config. VL pB acq.	AITF402A	DIT = 15 s NDIT = 28 CADENCE = 3600 s					
38	01/01/2024 DOY 001	04:29:14	04:29:15		Config. UV acq.	AITF500A	DIT = 30 s NDIT1 = 1 NDIT2 = 14 CADENCE = 900 s					
39	01/01/2024 DOY 001	04:30:00	04:30:08		Start acq.	AITF650A	SESS_NUM = 400106 VL_DURATION = 12538 s UV_DURATION = 13952 s R2S = 13983 s	4x4 VL images 16 UV images 4 light curve	10.87			
40	01/01/2024 DOY 001	08:23:03	08:23:10		Disable SMON	AITF650B					24	
41	01/01/2024 DOY 001											
42	01/01/2024 DOY 001	09:00:00	09:00:04	METIS_VL_UV_RC	Dummy acq.	AITF502A	DIT = 10 s CADENCE = 20 s DURATION = 22 s R2S = 33 s	1 UV image			SCI_RUN_RC (5131)	
	01/01/2024 DOY 001	09:01:37	09:01:38		Conf. pol. angles	AITF107B	POL_0 = 0 POL_1 = 182					

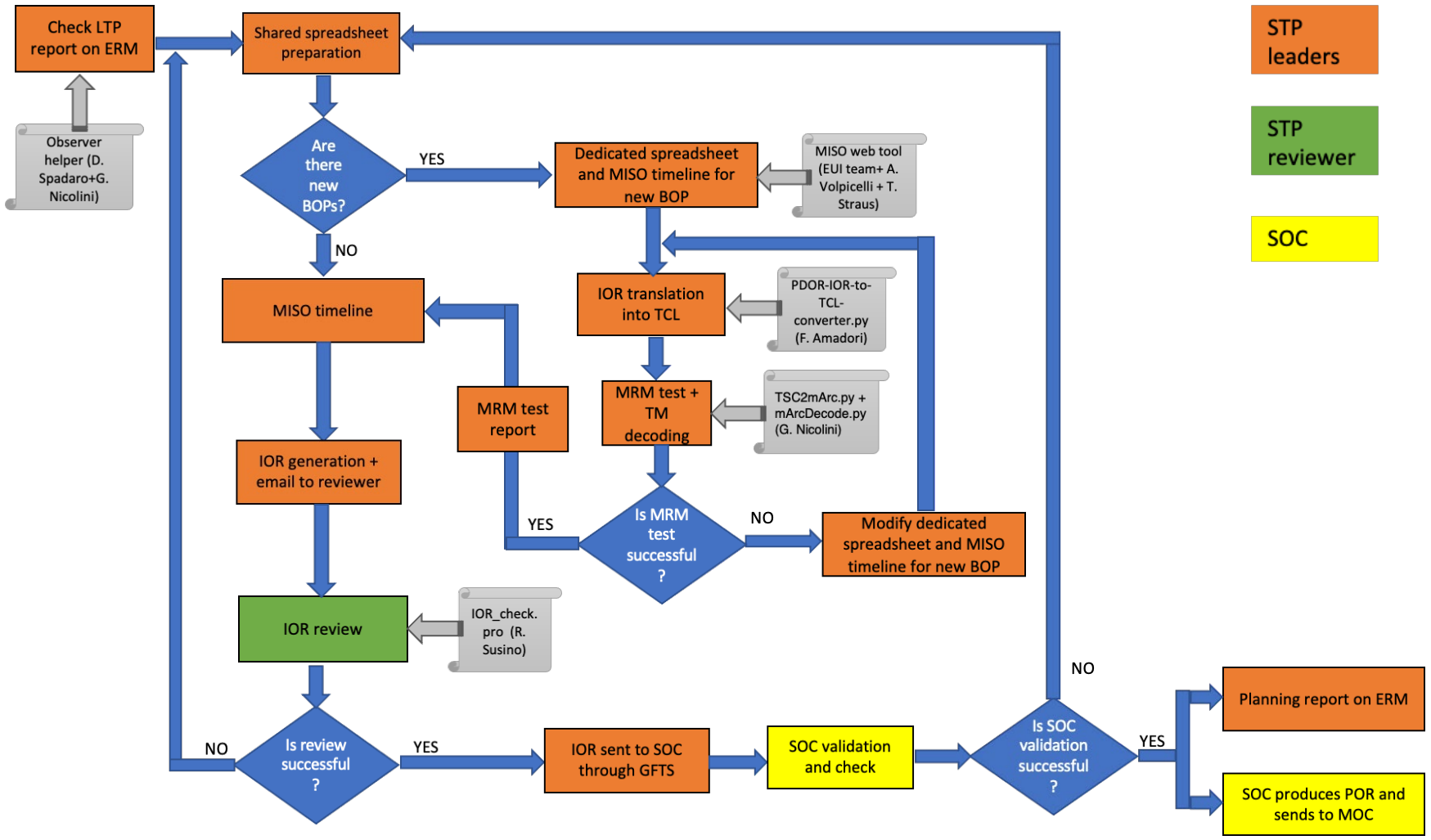
MISO

In order to generate and archive the IORs, a web tool has been developed.

MISO (Multi-Instrument Sequence Organizer), developed in Python-Django, was originally created by the SPICE team and successively enriched with tools and functionalities by the Metis Team (A. Volpicelli, T. Straus).

It is now possible with a unique web tool to plan IOR, PDOR and MDOR, to browse different versions of the Mission Databases, to browse the Event file and to store and browse everything that has been planned to date.

The working sheet is manually translated into the MISO tool, which operate some preliminary checks and allows to generate the IOR to be sent to SOC.



STP
leaders

STP
reviewer

SOC

Planning report (ready after IOR submission)

The screenshot shows a Redmine project page for STP293. The page is titled "Planning for STP-293 (22/01/2024 - 28/01/2024)". It includes a "Deadlines:" section with a table of key dates and a "PDOR delivery:" section. Below these are links to "Planning spreadsheet (work version):" and "Planning report (as planned):". There is also a "Note:" section with synoptics and a link to an MRM test report. At the bottom, there are links for "Planning report (as run) and validation:" and "Attachments (1)".

STP Cycle	IOR delivery opens	IOR deadline	Start of STP cycle on board	SOC responsible
293	05 Dec 2023	10 Jan 2024	22 Jan 2024 (01:33:43)	Jayne Lefort

General information on the STP

Link at the working version of the shared spreadsheet

Link at the MRM test report (if applicable)

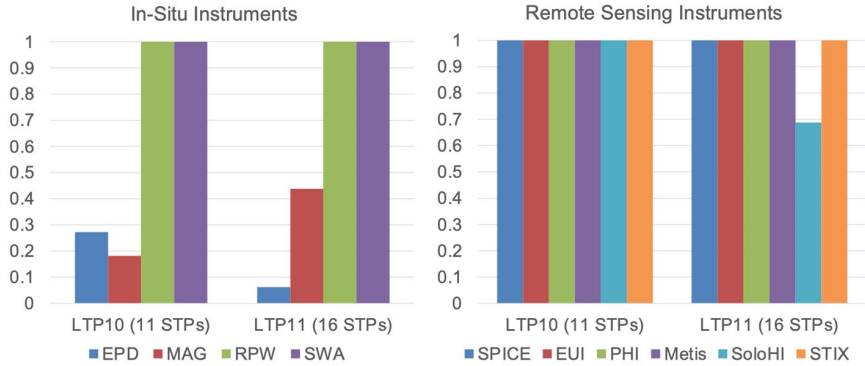
Link at the as planned spreadsheet

Link at the as run spreadsheet (for validators)

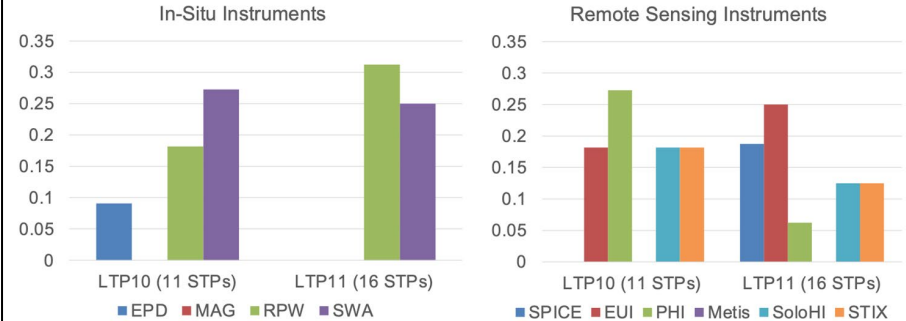
Full IOR bundle attached

Some statistics

Average of successful IORGs per STP



IORG Resubmission Average per STP



From “STP operations team” presentation (F. Martín and J. Arenas) during July 2023 SOWG