

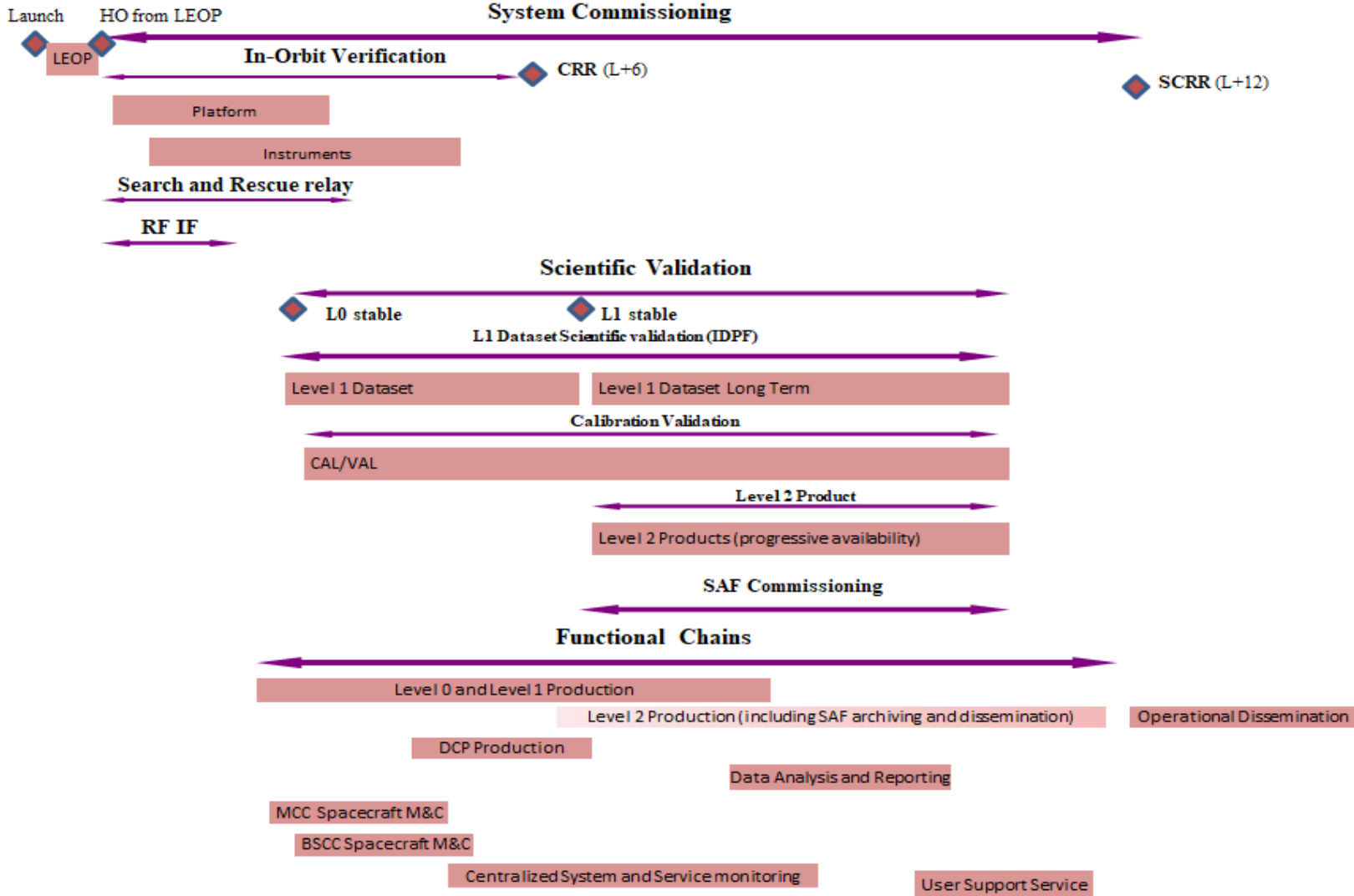
# MTG-1 Commissioning

LI MAG

# Commissioning Objectives

Satellite Level Objectives (In Orbit Verification - IOV)	<ul style="list-style-type: none"><li>➤ To assess the satellite and instruments functionality, operability and performance against the space segment requirements.</li></ul>
System Level Objectives	<ul style="list-style-type: none"><li>➤ To assess the system readiness to deliver validated L1 Dataset and L2 products (including calibration validations) to the End Users according to the specified operational availability prior to commencing routine operations.</li><li>➤ To assess the functionality, operability and performance of the entire MTG system prior to commencing routine operations against the system level requirements.</li></ul>

# Commissioning Logical Schedule



Date: 06/12/2019, REF # 381837

- Foreseen activities can be divided into the following steps:
  1. First activation: switching on the instrument for the first time
  2. Tuning: correlate hypotheses taken in E2E performance simulator to in-flight conditions
  3. Calibration: measure radiometric parameters (in-flight status) and optimise geolocation (INR) parameters
  4. Instrument Performance verification: check that the LI meet the required performance
- Final L0-L1 ground processor (IQT) used for space segment commissioning purpose accepted in March 2022, implementing the full LI processing (events, background image & calibration data)
- Discussions on scope and operational details of activities are ongoing between all parties to prepare the space segment IOV LI commissioning timeline.

# Commissioning Preparation

- **LI Test Spec:** for IOV and System commissioning are mature
- **LI Timelines:** for IOV and System, work is in progress
- **OSV\*:** planned in June 22: LI activities are related to LI switch ON and Instrument configuration change
  - LI-STAR will be used to monitor LI Coverage and the LI radiometric performance relative to FCI VIS08 (closest to the 777.4 nm band of LI).  
Level 1b events will not be processed due to an anomaly on the IDPF-I.
- **IOV Rehearsals:** planned in August 22 OSV scenarios with ESA/Industry participation.

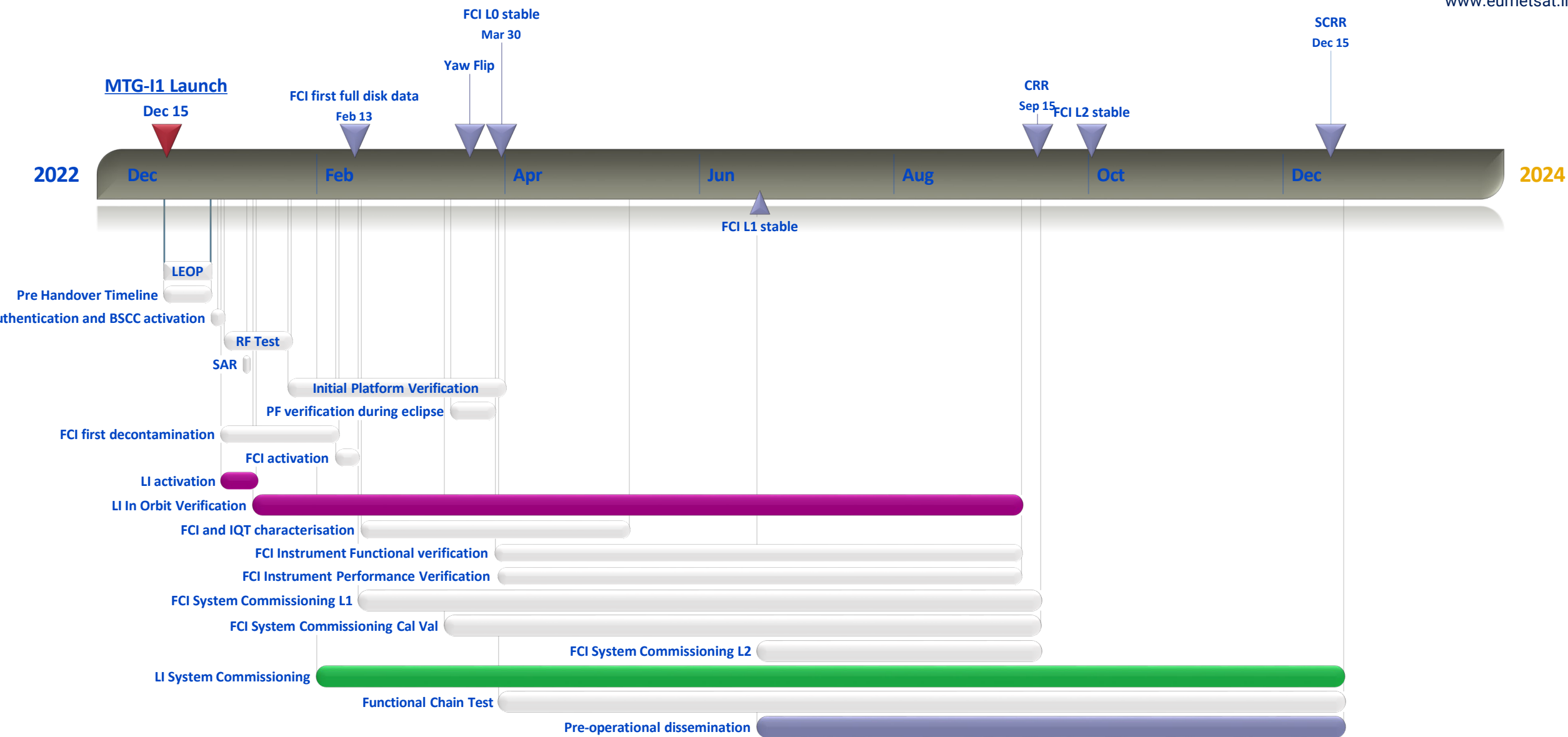
\* Operational System Validation

- The working version of the space segment commissioning schedule would end the IOV phase with a CRR\* in Sept23.
- In this period the IOV and System activities are interleaved.
- EUM System activities will continue until SCRR\*\*.

\* CRR: Commissioning Result Review

\*\* SCRR: System Commissioning Result Review

# Overall Commissioning Schedule



- Closed-loop users will be provided, in nominal planning, access to:
  - Level-1 data at launch + (6-7) months;
  - Level-2 data as soon as possible, tentatively launch + (8-10) months;
  - This planning is based on the overall duration for system commissioning of FCI (1 year from launch). However, the scheduling and allocation of tests between satellite and system commissioning is still not finalised.
- They will be requested to provide their reports on their analyses at Launch+11 months. These will feed into the Product Validation Review Board (PVRB) discussions, where applicable;
- The nature and extent of the work will be defined by the close-loop users themselves;
- A dialogue with the commissioning team at EUMETSAT throughout the evaluation is of course strongly encouraged.



- The LI IOV schedule needs to be optimized and integrated in the overall commissioning schedule
- Use of LI-STAR, comparison with Ground Network and feedback to the LI IOV activity

# Back up slides

# LI System Commissioning (remove column 3 and 5)

acquisition	duration	FCIL1TSPE test	Purpose	Impact on Industry activities
<b>Dedicated MVW acquisitions for reconstructing the Jitter Spectrum</b>	Observation time: 4 sec x 8 configurations	COM-835500.38-11 Jitter-Reconstruction Filter testing ( <i>high</i> )	Derive the Jitter spectrum and relate this to the Level 1b filtering of events.	TBC if this impacts the nominal acquisitions
<b>CAL observations to support the assessment of navigation performances with stars</b>	Observation time: 1d	COM-835500.29-11 ASPKE – LI GCAL with stars ( <i>low</i> )	Assessment of navigation performances through star analysis.	low
<b>Moon acquisitions with LI during FCI de-pointing campaign(s)</b>	Observation time: 20 min x 4 for assessing the optimal integration time + 1.5 h with the optimal integration time	COM-835500.15-11 Radiometric accuracy – Moon acquisition and calibration during de-pointing campaign ( <i>low</i> )	Radiometric performance assessment though Moon calibration	TBC if done in IOIP
<b>Characterization acquisitions in CAL mode</b>	Observation time: 3h x 12 configurations	COM-835500.23-11 Non-linearity evolution in time ( <i>high/medium</i> )	Characterization of the LI detectors: Offset, RON, Dark Current, and NL EUMETSAT would like to repeat this exercise also Eclipse Season	low
<b>Stray-light acquisitions and impact on performances</b>	Observation time: as many acquisitions as possible during Eclipse Season	COM-835500.24-11 Sun Stray light ( <i>high</i> )	Characterizing the impact of stray-light on Level 1b performances (in particular on FAR)	not a special acquisition
<b>Specific configuration during Eclipse Season</b>	Observation time: as many acquisitions as possible during Eclipse Season	COM-835500.06-11 Detection parameters configuration ( <i>high</i> )	Examining the response of the LI System to on-board configuration settings during Eclipse Season	low
<b>EUMETSAT tuning exercise</b>	Observation time: 8dd of continuous observations	COM-835500.06-11 Detection parameters configuration ( <i>high</i> )	Examining the response of the LI System to on-board configuration settings	low