



# ROC Human Machine Interfaces User Requirements

Ref: ROC-OPS-SFT-SWU-00039-LES  
Issue: 01  
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Date: 20/10/2016

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SOLAR ORBITER



## RPW Operation Centre

# ROC Human Machine Interfaces User Requirements

ROC-OPS-SFT-SWU-00039-LES  
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## Change Record

Issue	Rev.	Date	Authors	Modifications
1	0	20/12/2016	X.Bonnin	First release

## Acronym List

Acronym	Definition
CCSDS	Consultative Committee for Space Data Systems
CDF	Common Data Format
CLI	Command Line Interface
CP	Cruise Phase
CUC	CCSDS Unsegmented time Code
GSE	Ground Support Equipement
GUI	Graphical User Interface
HF	High Frequency
ICD	Interface Control Document
IOR	Instrument Operation Request
IT	Instrument Teams
LF	Low Frequency
LL	Low Latency
MDOR	Memory Operation Request
MEB	Main Electronic Box
NECP	Near Earth Commissioning Cruise Phase
PA	Pre-Amplifier



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PDOR	Payload Direct Operation Request
RFP	RPW Flight Procedure
RLLP	RPW Low Latency Pipeline
ROC	RPW Operation Centre
ROT	RPW Operation Toolkit
RPW	Radio and Plasma Waves instrument
SCM	Search Coil Magnetometer
SGS	Science Ground Segment
SGSE	Software Ground Support Equipment
SOC	Science Operation Centre
TC	Tele-command
TDS	Time Domain Sampler
THR	Thermal Noise and High Frequency Receivers
TM	Telemetry
SWF	Snapshot Waveform
XML	eXtended Markup Language



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## 1 GENERAL

### 1.1 Scope of the Document

This document addresses the user requirements about the Human-Machine Interfaces (HMI) of the ROC Software System (RSS). The RSS is the top-level software system of the RPW Operation Centre (ROC) in charge of the RPW ground segment activities.

The present document lists the user needs concerning the graphical user interfaces (GUI) and command line interfaces (CLI) of the RSS. However it does not cover the HMI user requirements related to the ROC Ground Support Equipment (GSE), which are described in [RD3].

### 1.2 Applicable Documents

This document responds to the requirements of the documents listed in the following table:

Mark	Reference/Iss/Rev	Title of the document	Authors	Date
AD1	ROC-GEN-SYS-PLN-00002-LES/1/1	ROC Concept and Implementation Requirements Document (CIRD)	Y. de Conchy X. Bonnin	26/10/2015
AD2	ROC-GEN-MGT-PLN-00013-LES/1/0	ROC Project Management Plan (PMP)	Y. de Conchy X. Bonnin	13/04/2016
AD3				
AD4				

### 1.3 Reference Documents

This document is based on the documents listed in the following table:

Mark	Reference/Iss/Rev	Title of the document	Authors	Date
RD1	ECSS-E-ST-40C/3/0	Space Engineering: Software	ECCS secretariat	06-03-2016
RD2	ROC-GEN-SYS-SPC-00026-LES/1/0	ROC Software System Specification	X. Bonnin	08-10-2016
RD3	ROC-TST-GSE-SWU-00003-LES/1/2	RPW Calibration Data Visualization User Requirements	X. Bonnin	10-02-2015
RD4	ROC-GEN-MGT-PLN-00041-LES/0/0	RPW Operations Management Plan	X. Bonnin	10-10-2016
RD5	ROC-GEN-SYS-NTT-00008-LES/1/2	ROC Engineering Guidelines	X. Bonnin	07/04/2016
RD6	<a href="https://soarde.v.esac.esa.int/prob/">https://soarde.v.esac.esa.int/prob/</a>	Solar Orbiter Procedure Builder (PRO-B)	ESA team	2016
RD7	RPW-SYS-MEB-GSE-NTT-000839-	RPW MEB MA-SGSE User Manuel	Loïc Gueguen	03/06/2014



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	LES/1/0			
RD8				

## 1.4 About this document

### 1.4.1 Access policy

The present document shall be accessible without any restriction to the teams involved in the RPW ground segment and ROC activities. Any access to the document from external people shall be requested to the ROC team for acceptance.

**Any modification of this document shall be approved by the RPW Ground Segment Project Manager before publication.**

### 1.4.2 Terminology

The definitions of terms listed in [RD5] are applicable in the present document.

### 1.4.3 Requirement identification

According to [AD2], every requirement defined in this document shall be assigned a requirement identifier (ID) of the form “**REQ-ROC-HMI-XXXX**”, where “REQ=Requirement”, “HMI=Human-Machine Interface” and “XXXX” is a 4-digits number starting at 0001, and that must be incremented by 1 each time a new requirement is provided (e.g., the first requirement identifier found in the document will be “REQ-ROC-HMI-0001”, the second one “REQ-ROC-HMI-0002”, etc.). The structure of the requirements shall comply the definition given in [AD2].

A summary list of all of the requirement IDs for this document is available in the appendix.





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## 2 INTRODUCTION

### 2.1 Context & Philosophy

The ROC is in charge of the ground segment activities of the RPW experiment on-board the Solar Orbiter spacecraft.

Especially, the centre has to foreseen dedicated software systems and related user interfaces to support its tasks during the mission.

There are two types of user interfaces, hereafter called Human Machine Interfaces (HMI):

- The Graphical User Interfaces (GUI), which should be developed and used in priority to support the ROC team in the instrument monitoring and operations activities.
- The Command Line Interfaces (CLI), only available from a terminal. This type of interface shall be reserved to the ROC developer team to administrate and maintain the ROC software and GUI.

### 2.2 Human Machine Interfaces (HMI) relative to the ROC Operations And Data System (ROADS)

The ROC Operations And Data System (ROADS) is the highest-level software system to monitor, commanding and process data of the RPW instrument.

It is divided into two sub-systems:

- The Monitoring and Control Subsystem (MCS)
- The Data Processing Subsystem (DPS)

Both sub-systems rely on a common software backend, the ROC Operations and Data Pipeline (RODP), and a common database, the ROC Mission Database (MDB).

#### **REQ-ROC-HMI-0001** *HMI specific to the MCS*

The execution and administration of the RODP and the MDB shall only be performed using a dedicated CLI. This CLI shall only be used from a specific user account on the roc prod. server.

#### **2.2.1 Human Machine Interfaces (HMI) specific to the ROC Monitoring and Control Subsystem (MCS)**

#### **REQ-ROC-HMI-0002** *HMI specific to the MCS*

The MCS shall include the following HMI:

- The RPW TM/TC Viewer (TV), which is a GUI to monitor and analyse the RPW TM/TC packets
- The RPW Flight Operation Procedure Editor (Figaro), a Web GUI dedicated to edit the Flight Operation Procedures for RPW
- The RPW Flight Operation Request Editor (Faust), a Web GUI dedicated to edit the Flight Operation Requests for RPW



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- The RPW Operation Planning Interface (Opera), a Web GUI to view and prepare the RPW Operation planning.
- The RPW SBM Interactive Selection Software Interface (SISSI), a Web GUI that allows ROC team to monitor and select the on-board SBM1/SBM2 event data.

These interfaces compose the MCS User interfaces (MUIC) suite, which is the ROC team GUI baseline support for the monitoring and command control activities.

The MUIC Web pages shall only be accessible from the intranet of the Paris Observatory. It means that external users shall need to login using a valid LDAP account to see them.

## 2.2.2 Human Machine Interfaces (HMI) specific to the ROC Data Processing Subsystem (DPS)

### REQ-ROC-HMI-0003 *HMI specific to the DPS*

The DPS shall include the following HMI:

- A Web GUI allowing external users to view the RPW data products availability, as well as the data processing pipeline status (i.e., “up-and-running”, “stopped”, etc.) in timelines.

## 3 ROC HMI NOMINAL USE CASES

This section enumerates the main nominal ROC activity use cases, which involve HMI.

The description of the related functional features to be implemented is listed in the following sections. The specification concerning the HMI backend processes, including the databases, is described in the “ROC Software System Specification” document [RD2].

### 3.1 RPW instrument monitoring use cases

TBW

### 3.2 RPW instrument commanding use cases

#### 3.2.1 RPW Operation Request (ROR) preparation and submission

Figure below gives the main steps to be realized by the ROC team, in order to prepare a RPW Operation Request (ROR) with the MUIC suite in the nominal case. There are three types of ROR: the Instrument Operation Request (IOR) to be sent to the SOC, and the Memory Direct Operation Request (MDOR) and the Payload Direct Operation Request (PDOR) to be sent to the MOC for special operations.

1. The ROC team uses the Figaro GUI to generate a new RPW Flight Procedure (RFP). It can also load and edit an existing RFP from the RFP library (RFPlib), stored on the ROC file system server.
2. The new RFP file can be exported into the MOIS Excel format in order to be submitted to the MOC for validation. Note that this step is only required to validate the RFP, and can be skipped if the ROC team wants to carry on the operation request process. It shall be able to tag a RFP as validated, even if it is already saved into the prolib. (*The RFP validation shall not be done from Figaro, but using the RODP CLI only?*)
3. The new RFP can be saved into the RFPlib. This step is required to be able to use the RFP in the Faust tool.



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4. The RFPLib can be directly imported into the Faust tool, including the RFP saved from Figaro, validated or not. (A filter shall allow the ROC team to select only validated RFP). Using the Faust tool, the ROC team can then build new ROR or edit an already saved one, using the RFP of the RFPLib. The saved RORs are also stored in a dedicated ROR library (RORlib) in the ROC file system server. Note that Faust shall use the IOR format by default, but shall permit to work with MDOR or PDOR formats too.
5. From the Faust tool, it shall be possible to export the ROR into the MEB Command-SGSE (C-SGSE) script format file. This script can be then ingested and run into the MEB GSE to test and validate the ROR with the instrument ground model. As for the step 2, this step is not required to save an ROR into the RORlib. However it shall be able to tag an ROR as validated, even if it is already saved into the RORlib. (*The ROR validation shall not be done from Faust, but using the RODP CLI only?*).
6. The ROR can be saved into the RORlib. This step is required to load the ROR from the Opera GUI tool
7. The Opera tool is used to visualize the mission timeline and plan the operations for RPW. RORlib can be loaded to edit the timeline and to build the STP/MTP according to the planning at Solar Orbiter level. Note the RORs that are not validated can also be used at the stage of the process in order to simulate possible scenarios, however the instrument operations submission to the SOC/MOC shall only be possible with validated RORs.
8. When an instrument operation planning is ready, and contains only validated RORs, authorized users can ask for an operation planning submission (OPS) from the Opera interface. The RPW ground segment project manager and the RPW PI shall then confirm the OPS before the request is effectively sent to the SOC/MOC.
9. The list of ROR corresponding to the OPS is sent to the SOC/MOC for approval. The exact submission process has **TBD** and will depend on the type of request (IOR, PDOR or MDOR). If the OPS has been validated by the SOC/MOC, the corresponding operation planning shall be tagged as “validated” (*done from Opera or RODP CLI?*). All of the steps of the validation process shall be visible from Opera.

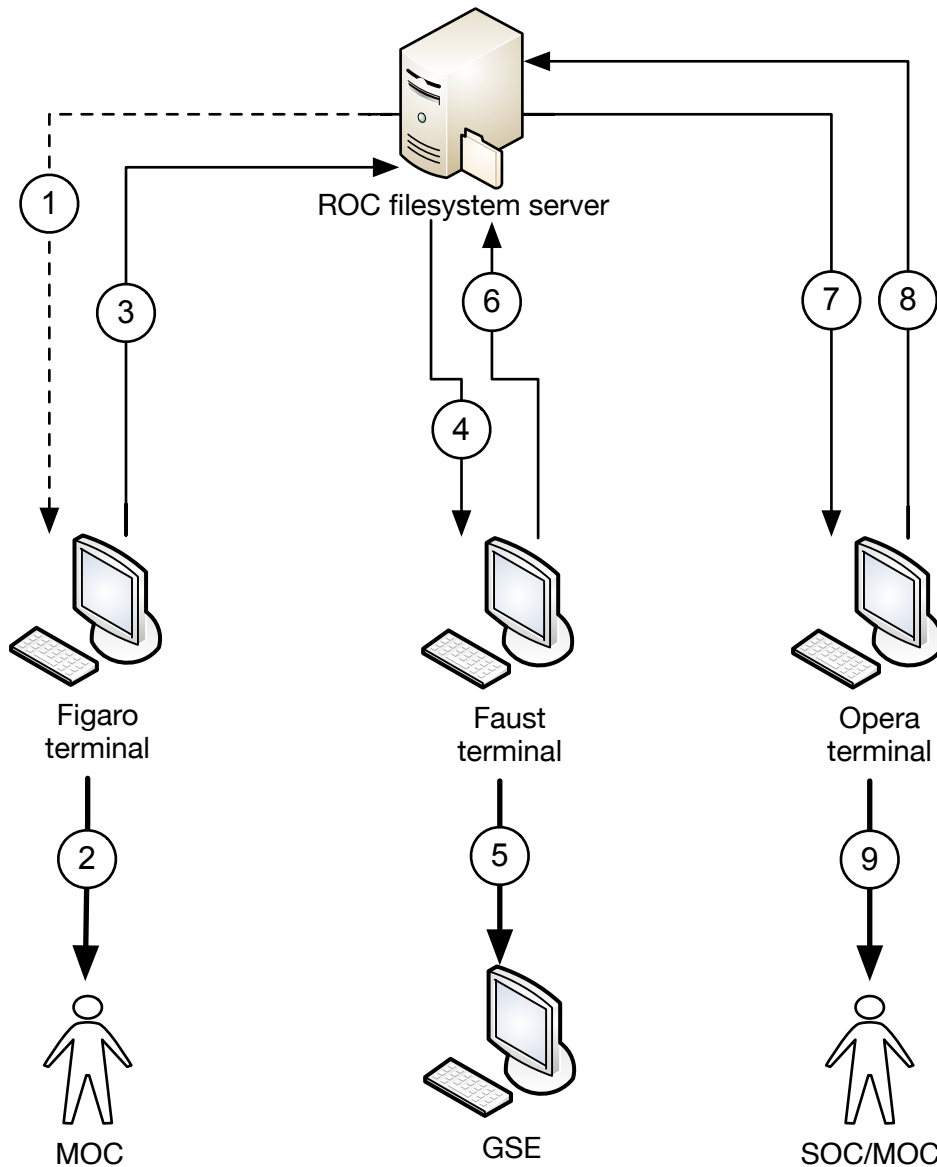


Figure 1. RPW Operation Request (ROR) preparation, validation and submission flow.

### 3.2.2 RPW SBM event data selection process life-cycle

Figure below gives the main steps to be realized by the ROC team, in order to select SBM event data to downlink and prepare the corresponding ROR.

1. The ROC team uses the SISSI GUI to view the list of SBM events stored on-board, and for which the data have been or not already downlinked. The information about the SBM event data status is loaded from the ROC Mission Database (MDB).
2. To choose which SBM event data must be retrieved, the instrument teams (IT) can use the SOC LL Web page. This page displays the instrument Low Latency (LL) data products, generated at the SOC with the instrument LL data pipelines. LL data are processed and displayed as soon as possible as a main support to the operations, including the SBM selection.
3. The ROC team, in agreement with the other IT, selects the SBM event data to downlink from the SISSI tool. This action shall be only possible for authorized people only. The selected event list is then saved into the ROC MDB.



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4. to 9. These steps are the same than for the ROR preparation and submission nominal use case (see previous section). *Do we need to develop specific features in the Faust and/or Opera tools in support to the SBM selection?*



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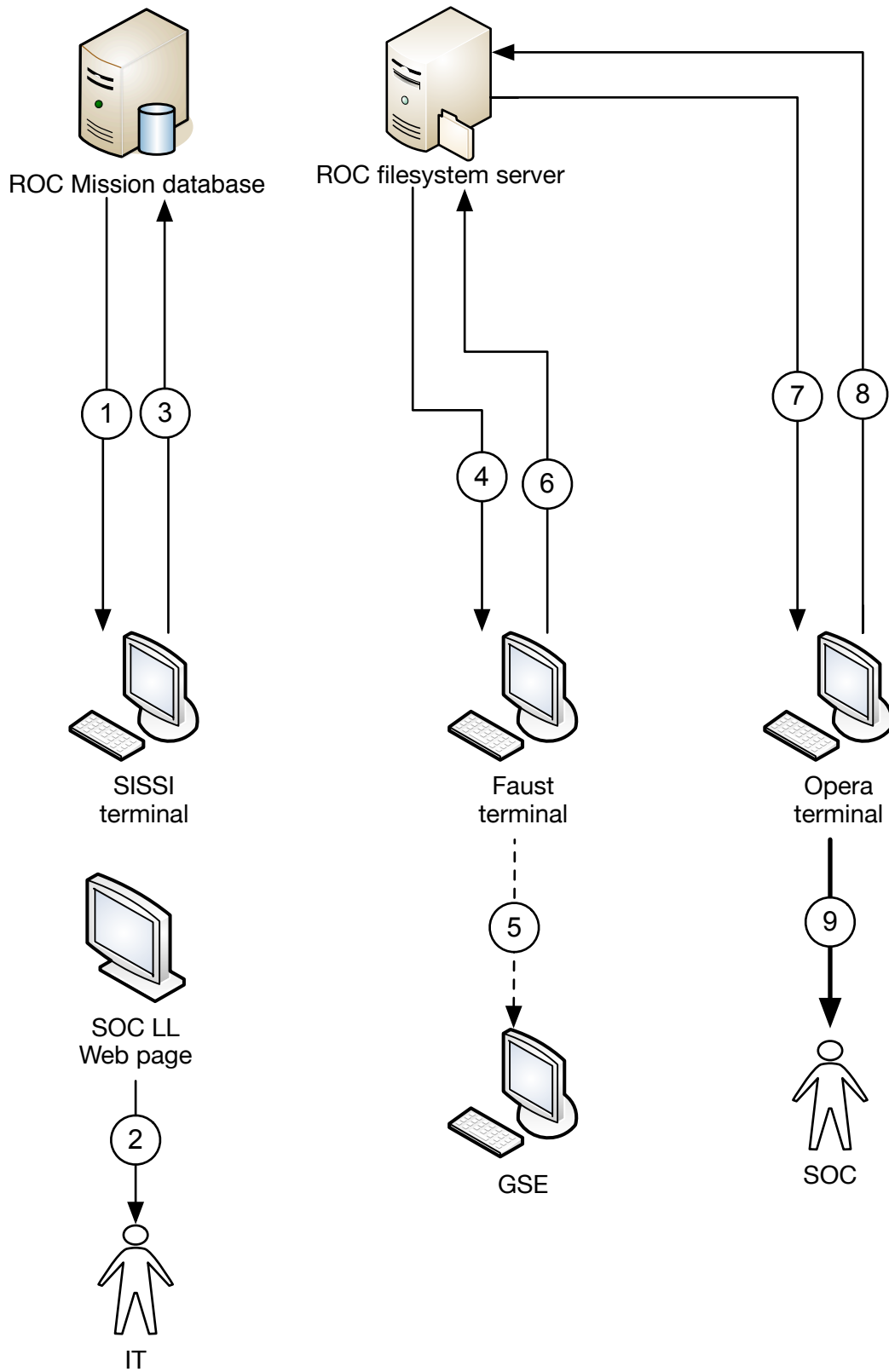


Figure 2. SBM Event data selection and request preparation flow.



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## 4 MCS USER INTERFACES (MUSIC) CAPABILITIES USER REQUIREMENTS

### 4.1 General user requirements

#### 4.1.1 Installation, execution, portability and access policy user requirements

##### REQ-ROC-HMI-0004 *MUSIC capabilities user requirements*

Except during the NECP, the MUSIC Web pages shall be installed and run at the LESIA site only.

##### REQ-ROC-HMI-0005 *MUSIC capabilities user requirements*

During the NECP, backup instances of the MUSIC shall be installed and run on the ROC machines at the MOC site. Except TV, this backup instance shall be used only in the case where the primary instances at LESIA are not accessible during the instrument operations. (Note that in practice, instrument operations during the NECP will be run without any direct intervention of the IT.)

##### REQ-ROC-HMI-0006 *MUSIC capabilities user requirements*

The ROC team shall supply the hardware/software support required to run the MUSIC backup instances during the NECP at the MOC site.

##### REQ-ROC-HMI-0007 *MCS capabilities user requirements*

The MUSIC client side shall be tested on the following Operating Systems (OS) and Internet browsers:

- Linux Debian Jessie - Firefox
- MacOS X 10.10 or higher - Firefox
- Windows 7 or higher - Firefox

##### REQ-ROC-HMI-0008 *MCS capabilities user requirements*

The MUSIC Web pages shall be reachable from the RPW Web portal.

### 4.2 RPW Telemetry/command Viewer (TV) specific user requirements

The TV is the main GUI to perform a first analysis of the instrument behaviour, from the downlinked data. The graphical design of the TV is largely inspired from the Monitoring and Analysis SGSE (MA-SGSE) [RD7], a MEB GSE tool developed at the LESIA.

#### 4.2.1 TV access policy

##### REQ-ROC-HMI-0009 *MCS capabilities user requirements*

The TV GUI shall only be visible from the Intranet of the Paris Observatory. It means that it requires to be logged with a valid LDAP account.



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## 4.2.2 TV main window

### 4.2.2.1 General user requirements

#### **REQ-ROC-HMI-0010** *MUStc capabilities user requirements*

The RPW TV main window shall allow user to open the following panels:

- RPW TM packet panel
- RPW TC packet panel
- RPW Event reporting panel
- RPW instrument general and sub-system status panel
- RPW statistics panel
- RPW science and HK data panel
- TV metadata information panel

Each of these panels shall be viewable from a separate window.

### 4.2.2.2 General options user requirements

#### **REQ-ROC-HMI-0011** *MUStc capabilities user requirements*

The TV main window shall allow users to easily activate/deactivate the TRACKING mode. This mode can be used to promptly follow the latest data received by the RSS.

#### **REQ-ROC-HMI-0012** *MUStc capabilities user requirements*

From the TV main window, the TRACKING mode can be switched between the two following states:

- *Activated* (i.e., “ON”), which allows users to lock the time interval for viewable data at  $[T_c - \Delta T, T_c]$ , when  $T_c$  is the current time and  $\Delta T$  is a time duration that can be defined by users.
- *Deactivated* (i.e., “OFF”), which stops the tracking of latest data and allows users to load and view data from a given older time range  $[T - \Delta T, T]$ , where both  $T$  and  $\Delta T$  can be defined by users.

#### **REQ-ROC-HMI-0013** *MUStc capabilities user requirements*

The TV shall allow users to export TM/TC binary packets in the format compliant with the MEB GSE XML test log import format.

## 4.2.3 TM packet panel user requirements

The TM packet panel shall help the ROC team to promptly and easily visualize the list of RPW TM packets actually downlinked by the MOC from the on-board instrument. It is the primary tool used by the ROC team to perform a first monitoring and analysis of the downlinked flow of TM packets. Especially, the TV shall allow the ROC team to promptly detect and track possible anomalies in TM.

The general design of the TM packet panel inherits from the Grid plugin of the MEB MA-SGSE [RD7].





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## REQ-ROC-HMI-0014

### *MUSIc capabilities user requirements*

The TM packet panel shall display a table of N received TM packets. If the TRACKING mode is ON, it shall be the N latest received TM packets of the time range  $[T_c - \Delta T, T_c]$ . If the TRACKING mode is OFF and a time interval  $[T - \Delta T, T]$  is selected, it shall be the N first TM packets of this time interval.

## REQ-ROC-HMI-0015

### *MUSIc capabilities user requirements*

The table columns of the TM packet panel to be displayed by default shall be:

- Packet index, packet CCSDS absolute acquisition date/time, packet type, packet category, packet APID, packet name, packet status

The number N of packets to be displayed on the table shall be a configurable parameter. The packet index shall be the 7 first numbers of the packet UUID assigned by the ROC system. The packet status corresponds to the automated integrity check for the TM (corrupted, not valid, partially parsed)

## REQ-ROC-HMI-0016

### *MUSIc capabilities user requirements*

In addition the interface shall offer the possibility to add/remove the default columns and to add/remove the following additional columns:

- Time synchronisation flag status
- TM Packet received date/time

The TM packet received date/time shall correspond to the date/time when the packet was received at the LESIA.

## REQ-ROC-HMI-0017

### *MUSIc capabilities user requirements*

The TM packet panel shall permit to sort the table by increasing/decreasing values of a given column.

The packet CCSDS absolute date/time column in decreasing order shall be set by default. (i.e., last packet is at the top of the table.)

## REQ-ROC-HMI-0018

### *MUSIc capabilities user requirements*

The TM packet panel shall permit to lock or not the table scrolling when TRACKING mode is ON.

## REQ-ROC-HMI-0019

### *MUSIc capabilities user requirements*

The scrolling shall be activated by default if the TRACKING mode is ON.

## REQ-ROC-HMI-0020

### *MUSIc capabilities user requirements*

The TM packet panel shall permit to filter the packets by:

- Category
- Status
- date/time range

## REQ-ROC-HMI-0021

### *MUSIc capabilities user requirements*



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In addition to the packet status, the TM packet panel shall permit to display the TM packets with the following colour legend:

- Green – Ok, no problem with the TM packet
- Orange – Warning, this is a TM packet that requires attention
- Red – Error, something goes wrong and requires an immediate attention

## REQ-ROC-HMI-0022

### *MUsIc capabilities user requirements*

It shall be possible to click on a given packet to show the details of this packet. This action shall open a new window, which shall contain at least the following information:

- *Packet header* parameters values
- *Packet data\_field\_header* parameters values
- *Packet data\_field* parameters values

It shall be possible to view the binary, raw and engineering values of a parameter. It shall be possible to visualize the position of the parameter in the binary data.

## 4.2.4 TC packet panel user requirements

The TC packet panel shall help the ROC team to promptly and easily visualize the list of RPW TC packets actually uplinked by the MOC to the on-board instrument. It is the primary tool used by the ROC team to perform a first monitoring and analysis of the uplinked flow of TC packets. Especially, the TV shall allow the ROC team to promptly detect and track possible anomalies about TC.

## REQ-ROC-HMI-0023

### *MUsIc capabilities user requirements*

The TC packet panel shall display a table of N uplinked TC packets. If the TRACKING mode is ON, it shall be the N latest uplinked TC packets of the time range  $[T_c - \Delta T, T_c]$ . If the TRACKING mode is OFF and a time interval  $[T - \Delta T, T]$  is selected, it shall be the N first TC packets of this time interval.

## REQ-ROC-HMI-0024

### *MUsIc capabilities user requirements*

The table columns of the TC packet panel to be displayed by default shall be:

- Packet index, packet CCSDS absolute acquisition date/time, packet type, packet category, packet APID, packet name, packet status

The number N of packets to be displayed on the table shall be a configurable parameter. The packet index shall be the 7 first numbers of the packet UUID assigned by the ROC system. The packet status shall be divided into 4 columns, which correspond to the TC acknowledgement parameter values (completion, progress, start, acceptance)

## REQ-ROC-HMI-0025

### *MUsIc capabilities user requirements*

In addition the interface shall offer the possibility to add/remove the default columns and to add/remove the following additional columns:

- TBD

## REQ-ROC-HMI-0026

### *MUsIc capabilities user requirements*



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The TC packet panel shall permit to sort the table by increasing/decreasing values of a given column.

The packet CCSDS absolute date/time column in decreasing order shall be set by default. (i.e., last packet is at the top of the table.)

## **REQ-ROC-HMI-0027**

### *MUSIc capabilities user requirements*

The TC packet panel shall permit to lock or not the table scrolling when TRACKING mode is ON.

## **REQ-ROC-HMI-0028**

### *MUSIc capabilities user requirements*

The scrolling shall be activated by default if the TRACKING mode is ON.

## **REQ-ROC-HMI-0029**

### *MUSIc capabilities user requirements*

The TC packet panel shall permit to filter the packets by:

- Category
- Status
- date/time range

## **REQ-ROC-HMI-0030**

### *MUSIc capabilities user requirements*

In addition to the packet status, the TC packet panel shall permit to display the TC packets with the following colour legend:

- Green – Ok, no problem with the TC packet
- Orange – Warning, this is a TC packet that requires attention
- Red – Error, something goes wrong and requires an immediate attention

## **REQ-ROC-HMI-0031**

### *MUSIc capabilities user requirements*

It shall be possible to click on a given packet to show the details of this packet. This action shall open a new window, which shall contain at least the following information:

- Packet header parameters values
- Packet data\_field\_header parameters values
- Packet data\_field parameters values

It shall be possible to view the binary, raw and engineering values of a parameter. It shall be possible to visualize the position of the parameter in the binary data.

## **4.2.5 Event reporting panel user requirements**

The event reporting panel is a tailored version of the TM packet panel, but dedicated to the event reporting category of TM packets. Its main goal is to help the ROC team to easily detect anomalies and keep a track of the on-board event history.

## **REQ-ROC-HMI-0032**

### *MUSIc capabilities user requirements*

The event reporting panel shall display a table of N received TM packets of the “Event reporting” category. If the TRACKING mode is ON, it shall be the N latest received TM



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packets of the time range  $[T_c - \Delta T, T_c]$ . If the TRACKING mode is OFF and a time interval  $[T - \Delta T, T]$  is selected, it shall be the N first TM packets of this time interval.

**REQ-ROC-HMI-0033** *MU*SI*c capabilities user requirements*

It shall be possible to export the visible event report table into an output TBD format file.

## 4.2.6 Instrument general and sub-system status panel user requirements

**REQ-ROC-HMI-0034** *MU*SI*c capabilities user requirements*

The Instrument general and sub-system status panel shall permit to display values of parameters listed in the Table 1.

Parameter name	Description	Source	Possible values
<b>DPU Status</b>			
Active DPU			Nominal, Redundant
Active SW			DBS, DAS
DBS SW Version			
DAS SW Version			
FPGA Version			
Current Mode			
Compr.			ON, OFF
Reset cause			
DAS Sw Addr			Unknown, RAM, EEPROM1, EEPROM2
Boot Addr. LFR			Not booted, RAM, EEPROM1, EEPROM2
Boot Addr TDS			Not booted, RAM, EEPROM1, EEPROM2
Boot Addr THR			Not booted, RAM, EEPROM1, EEPROM2
DAS Config in EEPROM			Missing, OK, Corrupted
BIAS Calib			
DPU Recovery			ON, OFF
<b>DPU Status - Anomalies stat.</b>			
Anomalies count - Low			
Anomalies count - Medium			
Anomalies count - High			



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Last error - Code			
Last error - RID			
Last error - Time			
<b>DPU Status - Sub-Systems State</b>			
THR – Hear beat			ON, OFF
THR – Link Err.			ON, OFF
THR – Transp. Mode			ON, OFF
LFR – Hear beat			ON, OFF
LFR – Link Err.			ON, OFF
LFR – Transp. Mode			ON, OFF
TDS – Hear beat			ON, OFF
TDS – Link Err.			ON, OFF
TDS – Transp. Mode			ON, OFF
BIAS – Hear beat			ON, OFF
BIAS – Link Err.			ON, OFF
PDU – Hear beat			ON, OFF
PDU – Link Err.			ON, OFF
<b>DPU Status - TM Statistics</b>			
DPU - SSMM			
DPU - OBC			
LFR – w/o SBM			
LFR - SBM			
TDS – w/o SBM			
TDS - SBM			
THR – w/o SBM			
<b>DPU Status – Link Status</b>			
LVDS Status – THR/LFR			
LVDS Status – TDS/BIAS			
SiS Status - PDU			
SiS Status - BIAS			
SpW Links – Link S/C - Enable			
SpW Links – Link S/C - State			
SpW Links – Link S/C – Rx Max			
SpW Links – Link S/C – Tx Max			
SpW Links – Link THR - Enable			



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SpW Links – Link THR - State			
SpW Links – Link THR – Rx Max			
SpW Links – Link THR – Tx Max			
SpW Links – Link TDS - Enable			
SpW Links – Link TDS - State			
SpW Links – Link TDS – Rx Max			
SpW Links – Link TDS – Tx Max			
SpW Links – Link LFR - Enable			
SpW Links – Link LFR - State			
SpW Links – Link LFR – Rx Max			
SpW Links – Link LFR – Tx Max			
<b>DPU Status – DPU Statistics</b>			
CPU load – Max.			
CPU Load Ave.			
S/C TX FIFO Rate Ave			
DPU Elapsed Time			
Maximal FIFO Size - TC			
Maximal FIFO Size - COMP			
Maximal FIFO Size – HK TM			
Maximal FIFO Size – SVY TM			
Maximal FIFO Size – OBC TM			
Maximal FIFO Size – SBM TM			
<b>PDU Status – Cmd/TM Counters</b>			
Cmd (Write)			
Cmd (Failed)			
Telem. (Read)			



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PDU Status – Cmd/TM Counters			
Voltage - Primary			
Voltage - Heater			
Current - Primary			
Current - Heater			
PDU Status – Temperature			
Temp1			
Temp2			
PDU Status – Power / Overcurrent			
CONV – Power On/Off			ON, OFF
SCM – Power On/Off			ON, OFF
ANT1 – Power On/Off			ON, OFF
ANT2 – Power On/Off			ON, OFF
ANT3 – Power On/Off			ON, OFF
BIAS – Power On/Off			ON, OFF
TNR/HFR – Power On/Off			ON, OFF
LFR – Power On/Off			ON, OFF
TDS – Power On/Off			ON, OFF
SCM – Over Current	3 sub-parameters: Global, -5V, +12V		ON, OFF
ANT1 – Over Current	3 sub-parameters: Global, +5V, -5V		ON, OFF
ANT2 – Over Current	3 sub-parameters: Global, +5V, -5V		ON, OFF
ANT3 – Over Current	3 sub-parameters: Global, +5V, -5V		ON, OFF
BIAS – Over Current	5 sub-parameters: Global, +5V, -5V, +3.3V, +1.5V		ON, OFF
TNR/HFR – Over Current	6 sub-parameters: Global, +5V, -5V, +12V, +3.3V, +1.5V		ON, OFF
LFR – Over Current	5 sub-parameters: Global, +5V, -5V, +3.3V, +1.5V		ON, OFF
TDS – Over Current	5 sub-parameters: Global, +5V, -5V,		ON, OFF



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	+3.3V, +1.5V		
<b>BIAS Status - Mode</b>			
Version			
ActiveLink			
HV			
BIAS 1			
BIAS 2			
BIAS 3			
Diff. Probe 1			
Diff. Probe 2			
Diff. Probe 3			
Byp. Probe 1			
Byp. Probe 2			
Byp. Probe 3			
Multiplexer Set - Mode			
Multiplexer Set – BIAS 1			
Multiplexer Set – BIAS_2			
Multiplexer Set – BIAS_3			
Multiplexer Set – BIAS 4			
Multiplexer Set – BIAS 5			
Multiplexer Set – Operation			
<b>BIAS Status - Status</b>			
Cmd Count			
Cur. Select. PAge			
Dummy			
AC Diff. gain			





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BIAS Status - Temperature			
ANT1			
ANT2			
ANT3			
PCB			
BIAS Status - Saturation			
Probe 1			
Probe 2			
Probe 3			
BIAS Status - Setting			
Probe 1			
Probe 2			
Probe 3			
BIAS Status - Voltage			
Reference - Ground			
Reference - +1.5V			
Reference - +2.5V			
High Voltage - - 100V			
High Voltage - + 100V			
LFR Status – LFR Status			
Current Mode			
Reset Cause			
Watchdog			ON, OFF
Calibration			ON, OFF
Sw Version			
FPGA Version			
LFR Status – LFR Configuration			
Gain			
V			
E1_F0			
E1_F1			
E1_F2			
E1_F3			
E2_F0			
E2_F1			
E2_F2			
E2_F3			
LFR Status – LFR Temperature			
PCB			
SCM			
FPGA			



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LFR Status – LFR SpW Links			
Enable			ON, OFF
State			ON, OFF
LFR Status – LFR TC Statistics			
TC Count – Update Info			
TC Count – Update Time			
TC Count – Exe Tc			
TC Count – Rejected TC			
Last Executed TC - ID			
Last Executed TC - Type			
Last Executed TC - SubType			
Last Executed TC - Time			
Last Rejected TC - ID			
Last Rejected TC - Type			
Last Rejected TC - SubType			
Last Rejected TC - Time			
LFR Status - LFR Anomalies stat.			
Anomalies Count - Low			
Anomalies Count - Medium			
Anomalies Count - High			
Last Error - Code			
Last Error -RID			
Last Error - Time			
TDS Status – TDS Status			
Current Mode			
Reset Cause			
Watchdog			ON, OFF
Calibration			ON, OFF
Sw Version			
FPGA Version			



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SpW Links - Enable			ON, OFF
SpW Links - State			ON, OFF
Configuration Status	Common, Normal, Burst, SBM1, SBM2, LFM		ON, OFF
<b>TDS Status – TDS Snapshot Statistics</b>			
Processed since last dump			
Q Factor	Min, Max		
Valid snapshot in queue	Norm, SBM2		
<b>TDS Status – TDS Temperature</b>			
PCB			
FPGA			
SRAM			
<b>TDS Status – TDS TC Statistics</b>			
TC Count – Update Info			
TC Count – Update Time			
TC Count – Exe Tc			
TC Count – Rejected TC			
Last Executed TC - ID			
Last Executed TC - Type			
Last Executed TC - SubType			
Last Executed TC - Time			
Last Rejected TC - ID			
Last Rejected TC - Type			
Last Rejected TC - SubType			
Last Rejected TC - Time			
<b>TDS Status - TDS Anomalies stat.</b>			
Anomalies Count - Low			
Anomalies Count - Medium			



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Anomalies Count - High			
Last Error - Code			
Last Error -RID			
Last Error - Time			
<b>THR Status – THR Status</b>			
Current Mode			
Reset Cause			
Watchdog			ON, OFF
Calibration			ON, OFF
Sw Version			
FPGA Version			
<b>THR Status – THR Anomalies stat.</b>			
Anomalies Count – Low			
Anomalies Count – Medium			
Anomalies Count – High			
Last Error - Code			
Last Error - RID			
Last Error - Time			
<b>THR Status – THR Temperature</b>			
PCB			
FPGA			
ANT1			
ANT2			
ANT3			
<b>THR Status – THR TC Statistics</b>			
TC Count – Update Info			
TC Count – Update Time			
TC Count – Exe Tc			
TC Count – Rejected TC			
Last Executed TC - ID			
Last Executed TC - Type			
Last Executed TC - SubType			
Last Executed TC - Time			



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Last Rejected TC - ID			
Last Rejected TC - Type			
Last Rejected TC - SubType			
Last Rejected TC - Time			
<b>THR Status – THR SpW Links</b>			
Enable			ON, OFF
State			ON, OFF

Table 1. Instrument general and sub-system status parameters.

The way these parameters shall be displayed is **TBD**.

## 4.2.7 Statistics panel user requirements

The statistics panel provides statistical information about the RPW TM/TC packets.

**REQ-ROC-HMI-0035** *MUSIc capabilities user requirements*

The statistics panel shall be able to display the following parameters:

**TBW**

**REQ-ROC-HMI-0036** *MUSIc capabilities user requirements*

The statistics panel shall allow users to view data using tables and/or histograms.

## 4.2.8 Science/HK data panel user requirements

The science/HK data panel capabilities inherit from the TV-SGSE capabilities requirements defined in [RD3]. Its purpose is to provide a first specific plotting tool for the science and HK packet data of RPW.

### 4.2.8.1 HK parameters plotting user requirements

**REQ-ROC-HMI-0037** *MUSIc capabilities user requirements*

It shall be able to select and plot one or more HK parameter values over the selected time range.

**REQ-ROC-HMI-0038** *MUSIc capabilities user requirements*

If more than one HK parameter is plotted, it shall be possible to over-plot all of the HK parameter values on the same figure or on distinct figures.

**REQ-ROC-HMI-0039** *MUSIc capabilities user requirements*

TV shall permit to display the HK parameter values using tables instead of plots.

**REQ-ROC-HMI-0040** *MUSIc capabilities user requirements*

It shall be possible to export HK plots in the following file formats:

- PDF
- JPG (**TBC**)



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## 4.2.8.2 Science data general plotting user requirements

### REQ-ROC-HMI-0041 *MUSIc capabilities user requirements*

It shall be able to select and plot science data over the selected time range for the following sub-systems, modes, data processing levels and product types:

- TDS, (NORMAL\_SURVEY, BURST\_SURVEY, SBM1, SBM2), (L1, L2), (Waveforms, histo1d, histo2d, stats, mamp and LFM data)
- LFR, (NORMAL\_SURVEY, BURST\_SURVEY, SBM1, SBM2), (L1, L2), (Spectral and waveform data, BP1, BP2)
- TNR-HFR, (NORMAL\_SURVEY, BURST\_SURVEY), (L1, L2), Spectral products

### REQ-ROC-HMI-0042 *MUSIc capabilities user requirements*

It shall possible to view both preliminary and definitive L2 calibrated science data (TBC)

## 4.2.8.3 TDS science data specific plotting user requirements

### REQ-ROC-HMI-0043 *MUSIc capabilities user requirements*

The TV shall be able to display the following specific data for the TDS receiver:

- Regular Waveform Snapshots (E+B)
- Triggered Waveform Snapshots (E+B)
- 1D histogram
- 2D histogram
- Low rate information
- LFR redundancy mode parameters

## 4.2.8.4 LFR science data specific plotting user requirements

### REQ-ROC-HMI-0044 *MUSIc capabilities user requirements*

The TV shall be able to display the following data for the LFR sub-system:

- Snapshots waveforms:
  - V, E1, E2, B1, B2, B3 of a given frequency f0, f1 or f2 at the same time or separately.
  - Snapshots waveforms should be displayed for a given time range and in TM units
- Continuous waveforms:
  - V, E1, E2, B1, B2, B3 of a given frequency f1, f2 or f3 at the same time or separately.
  - Continuous waveforms should be displayed for a given time range and in TM units.
- Average spectral matrices (ASM):
  - Values in TM and float units
  - Possibility to plot frequency spectra (up to 9 elements of the matrix amongst 25 on the same window to be chosen by user).



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- Possibility to plot color dynamical spectra: all frequencies (from  $f_0$ ,  $f_1$  and  $f_2$ ) for a given time range and for up to 9 elements of the matrices.
- Basic parameters (BP):
  - For BP2, same as ASM
  - For BP1, same as ASM applied to the de-commuted BP1 parameters (11 max.): PE, PB, NVEC\_V0/V1/V2, ELLIP, DOP, SX, SX\_Arg, VPHI, VPHI\_Arg.
- LFR waveforms versus TDS waveforms:
  - TDS “Low frequency mode” parameters (TC\_TDS\_LOAD\_LFM\_PAR)
  - It shall be able to combine LFR and TDS “low frequency mode” waveforms, cross and power spectrum plots (TM\_TDS\_SCIENCE\_LFM\_\*) for a given time range overlaid on same graph/window.

It could be useful to be able to overlay snapshots and continuous waveforms of the different frequencies ( $f_0$ ,  $f_1$ ,  $f_2$  and  $f_3$ ).

## 4.2.8.5 TNR science data specific plotting user requirements

### REQ-ROC-HMI-0045

#### *MUIC capabilities user requirements*

The TV shall be able to display the following TNR data for a one or more test files:

- AGC values as a function of time.
- Auto-correlation and cross-correlation values as a function of time for a given frequency range. If more than one time series are found in the frequency range, it shall be able to plot the individual data curves, an integrated curve or the maximal values.
- Auto-correlation and cross-correlation values as a function of frequency for a given time range. If more than one spectrum are in the time range, it shall be able to plot individual data curves, an integrated curve, or max.
- Auto-correlation and cross-correlation values as functions of time and frequency (i.e., dynamical spectrum).
- Phase in degrees as a function of frequency.

### REQ-ROC-HMI-0046

#### *MUIC capabilities user requirements*

It shall be able to display AGC, auto and cross-correlation values in TM units or calibrated values (i.e.,  $\text{dB}(\text{V}^2/\text{Hz})$ ) if possible. Time shall be given in count since the beginning of the test or in seconds and frequency in kHz.

### REQ-ROC-HMI-0047

#### *MUIC capabilities user requirements*

It shall be possible to plot TNR data for one or both channels (1 and 2) on the same plot and for each receiver band (A, B, C and D).

## 4.2.8.6 HFR science data specific plotting user requirements

### REQ-ROC-HMI-0048

#### *MUIC capabilities user requirements*

The TV shall be able to display the following HFR data for a given time range:



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- AGC values as a function of time for a given frequency range. If more than one time series are found in the frequency range, it shall be able to plot individual data curves or an integrated curve.
- AGC values as a function of frequency for a given time range. If more than one spectrum are found in the time range, it shall be able to plot individual data curves or an integrated curve.
- AGC values as functions of time and frequency (i.e., dynamical spectrum).

## REQ-ROC-HMI-0049

### *MUSIc capabilities user requirements*

It shall be able to display AGC values in TM units or calibrated values (i.e.,  $\text{dB}(\text{V}^2/\text{Hz})$ ) if possible. Time shall be given in count since the beginning of the test or in seconds and frequency in kHz.

## REQ-ROC-HMI-0050

### *MUSIc capabilities user requirements*

It shall be possible to plot HFR data for one or both channels (1 and 2) on the same plot and for each receiver band (HF1 and HF2). Figure 2 gives an idea of what a time series plot should look like in the HFR panel view.

## 4.3 RPW flight operation procedures editor (Figaro) user requirements

The Flight operation procedures editor (Figaro) shall allow ROC team to create, edit and save RPW Flight Procedures (RFP).

The design and functionalities shall be based on the Solar Orbiter Procedure builder (PRO-B) [RD6].

Mock-ups of the main interface can found in the section 7.1.

### 4.3.1 Figaro access policy

## REQ-ROC-HMI-0051

### *MUSIc capabilities user requirements*

Figaro shall only be visible from the Intranet of the Paris Observatory. It means that it requires to be logged with a valid LDAP account.

## REQ-ROC-HMI-0052

### *MUSIc capabilities user requirements*

Users shall be logged with correct access privileges to be able to use Figaro in edition mode.

### 4.3.2 RPW Flight Procedure (RFP) edition

## REQ-ROC-HMI-0053

### *MUSIc capabilities user requirements*

Figaro shall permit to load an existing RFP from the RFP library.

## REQ-ROC-HMI-0054

### *MUSIc capabilities user requirements*

Figaro shall allow users to edit the following RFP meta-data:

- Name of the procedure
- Category of the procedure
- Short description of the procedure





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**REQ-ROC-HMI-0055** *MUSIc capabilities user requirements*

Figaro shall display if a RFP is already validated (i.e., included in the FOP) or not.

**REQ-ROC-HMI-0056** *MUSIc capabilities user requirements*

Figaro shall permit to save a RFP into the RFP library.

### 4.3.3 Figaro import/export capabilities

**REQ-ROC-HMI-0057** *MUSIc capabilities user requirements*

Figaro shall permit to import RFP in a file in the MOIS importer format.

**REQ-ROC-HMI-0058** *MUSIc capabilities user requirements*

Figaro shall allow users to export RFP in a file in the MOIS importer format.

## 4.4 RPW flight operation request editor (Faust) user requirements

### 4.4.1 Faust access policy

**REQ-ROC-HMI-0059** *MUSIc capabilities user requirements*

Faust shall only be visible from the Intranet of the Paris Observatory. It means that it requires to be logged with a valid LDAP account.

**REQ-ROC-HMI-0060** *MUSIc capabilities user requirements*

Users shall be logged with correct access privileges to be able to use Faust in edition mode.

### 4.4.2 RPW Operation Request (ROR) edition

**REQ-ROC-HMI-0061** *MUSIc capabilities user requirements*

Figaro shall permit to load an existing ROR from the ROR library.

**REQ-ROC-HMI-0062** *MUSIc capabilities user requirements*

Faust shall allow users to edit the following ROR meta-data:

- Name of the ROR
- Type of the ROR. It can be MDOR, PDOR or IOR [default]
- Tag(s) of the ROR (optional)
- Short description of the ROR

**REQ-ROC-HMI-0063** *MUSIc capabilities user requirements*

Figaro shall display if a ROR is already validated (i.e., formed from validated RFP and has been validated by the SOC/MOC) or not.

**REQ-ROC-HMI-0064** *MUSIc capabilities user requirements*

Faust shall permit to save a ROR into the ROR library.

### 4.4.3 Faust import/export capabilities

**REQ-ROC-HMI-0065** *MUSIc capabilities user requirements*



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Faust shall be able to import IOR XML format file.

**REQ-ROC-HMI-0066** *MUSIc capabilities user requirements*

Faust shall be able to export the current ROR in a IOR format file.

**REQ-ROC-HMI-0067** *MUSIc capabilities user requirements*

Faust shall be able to export the current ROR in a MDOR format file. (TBC)

**REQ-ROC-HMI-0068** *MUSIc capabilities user requirements*

Faust shall be able to export the current ROR in a PDOR format file. (TBC)

**REQ-ROC-HMI-0069** *MUSIc capabilities user requirements*

Faust shall be able to export the current ROR in a MEB GSE C-SGSE import format file (TBC).

## 4.5 RPW Operation Planning interface (OPera) user requirements

### 4.5.1 Opera access policy

**REQ-ROC-HMI-0070** *MUSIc capabilities user requirements*

OPera shall only be visible from the Intranet of the Paris Observatory. It means that it requires to be logged with a valid LDAP account.

### 4.5.2 Main window

**REQ-ROC-HMI-0071** *MUSIc capabilities user requirements*

OPera shall display the RPW Operating modes using a horizontal timeline.

**REQ-ROC-HMI-0072** *MUSIc capabilities user requirements*

By default, OPera shall display the  $[T_c - \Delta T, T_c + \Delta T]$  centred time interval, where  $T_c$  is the current UTC time and  $\Delta T$  is TBD.

**REQ-ROC-HMI-0073** *MUSIc capabilities user requirements*

It shall be possible to change the default time interval to see the past/future of the planning timeline.

**REQ-ROC-HMI-0074** *MUSIc capabilities user requirements*

It shall be easy to set the current time range to the default state.

**REQ-ROC-HMI-0075** *MUSIc capabilities user requirements*

OPera shall permit to display or not the E-FECS using a horizontal timeline.

**REQ-ROC-HMI-0076** *MUSIc capabilities user requirements*

OPera shall permit to display or not the definitive mission events in the horizontal timeline.

**REQ-ROC-HMI-0077** *MUSIc capabilities user requirements*

From OPera, it shall be possible to open a new window to view the TMC graph for the timeline time range.



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**REQ-ROC-HMI-0078**

*MUStc capabilities user requirements*

From OPerA, it shall be possible to open a new window to view the Power consumption graph for the timeline time range.

**REQ-ROC-HMI-0079**

*MUStc capabilities user requirements*

OPerA shall display the RPW related events (TC uplink) using vertical lines.

**REQ-ROC-HMI-0080**

*MUStc capabilities user requirements*

For authorized LDAP user accounts only, it shall be possible to modify the RPW operation planning using OPerA.

Nevertheless, the final validation before transmitting the requests to the MOC/SOC shall be only possible using specific command of the RODP CLI.

## 4.6 RPW SBM Interactive Selection System Interface (SISSI) user requirements

Mock-ups of the SISSI interfaces can found in the section 7.4.

### 4.6.1 RPW SISSI SBM main page user requirements

**REQ-ROC-HMI-0081**

*MUStc capabilities user requirements*

The SISSI SBM main page shall display a table that lists the N latest SBM events detected on-board.

**REQ-ROC-HMI-0082**

*MUStc capabilities user requirements*

The table shall contain the columns defined in the Table 2.

Parameter name	Description	Comment
SBM COUNTER	SBM event counter value since the beginning of the mission. There must be one counter per SBM type	
TYPE	Type of SBM event. It can be "SBM1" or "SBM2"	
Detection Date/Time	Date and Time when the SBM event was detected.	
Retrieved Date/Time	Date and Time when the SBM event data was downlinked. If the event data has not been retrieved (yet), then print "N/A".	
Deletion Date/Time	Date and Time when the SBM event data was deleted on-board. If the event data has not been deleted (yet), then print "N/A".	
Duration before deletion	Approx. remaining time before	



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	the SBM event data will be deleted.	
Status	<p>Current status of the SBM1 event. Possible values are:</p> <ul style="list-style-type: none"> <li>- "Available" = Event data has been saved on-board and are available for downlink</li> <li>- "Downlinked" = Event data has been successfully retrieved by the ROC</li> <li>- "Deleted" = Event data has been definitively deleted in the on-board SSMM</li> <li>- "Requested" = Event data has been requested for downlinking</li> <li>- "Failed" = Event data has failed to be downlinked</li> <li>- "Missed" = Event data are not yet deleted, but it is too late for request a downlink.</li> </ul>	

**Table 2. SISSI SBM1 table content.**

<b>REQ-ROC-HMI-0083</b>	<b><i>MUSIc capabilities user requirements</i></b>
It shall be possible to view the older SBM events by browsing through a calendar.	
<b>REQ-ROC-HMI-0084</b>	<b><i>MUSIc capabilities user requirements</i></b>
The SISSI main page shall allow users to export the SBM event table into a PDF format file.	
<b>REQ-ROC-HMI-0085</b>	<b><i>MUSIc capabilities user requirements</i></b>
The SISSI main page shall allow users to filter SBM event per type (i.e., only display SBM1 or SBM2 events).	
<b>REQ-ROC-HMI-0086</b>	<b><i>MUSIc capabilities user requirements</i></b>
From the SISSI main page it shall be possible to click on a given event line to open a dedicated window containing the following information:	
<ul style="list-style-type: none"> <li>• SBM event type</li> <li>• SBM event detection date/time</li> <li>• SBM event data size in Kbytes</li> </ul>	



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- SBM detection mode (for SBM1 = [MAG-ON, SWA-ON], [MAG-ON, SWA-OFF], [MAG-OFF, SWA-ON] or [MAG-OFF, SWA-OFF]. For SBM2 = [EPD-ON], [RPW-ON])
- SOURCE\_DATA parameters from the TM\_DPU\_EVENT\_PR\_DPU\_SBM1/SBM2 packets

## REQ-ROC-HMI-0087

### *MUSIc capabilities user requirements*

For authorized LDAP user accounts only, it shall be possible to unlock the main page in order to select one or more SBM events (i.e., rows) in the table. Selected rows will indicate which events the user wants to downlink. Nevertheless, the final confirmation of event data to be downlinked shall be only possible using specific command of the RODP CLI.

## 5 DPS SPECIFIC HMI USER REQUIREMENTS

TBW

## 6 RODP CLI USER REQUIREMENTS

TBW

## 7 MUSIc MOCK-UPS USER REQUIREMENTS

### 7.1 Figaro mock-ups

TBW

### 7.2 Faust mock-ups

Figure 3 and 4 gives the preliminary design of the Faust main and procedure import windows respectively. The main windows can open up to 3 panels :

- A “IOR builder” central panel that can be used to build a given IOR
- A “Initial RPW Operation Mode” left panel to display and possibly edit the initial state of the instrument
- A “Final RPW Operation Mode” right panel to display and possibly edit the final state of the instrument, after the IOR execution.

The “import procedure” window shall help the users to import and edit RFP to be inserted into the IOR. The procedures are loaded by the Faust tool from the RFP library.



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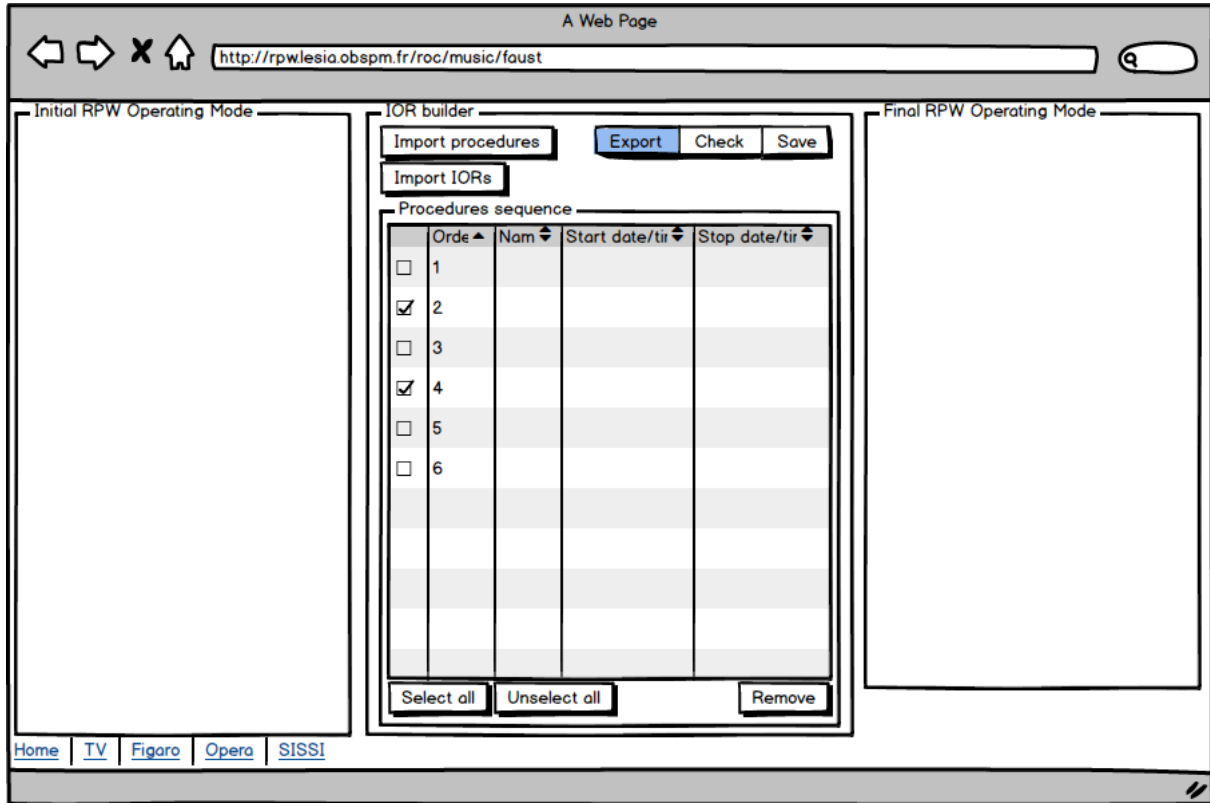


Figure 3. Faust main window (preliminary design).

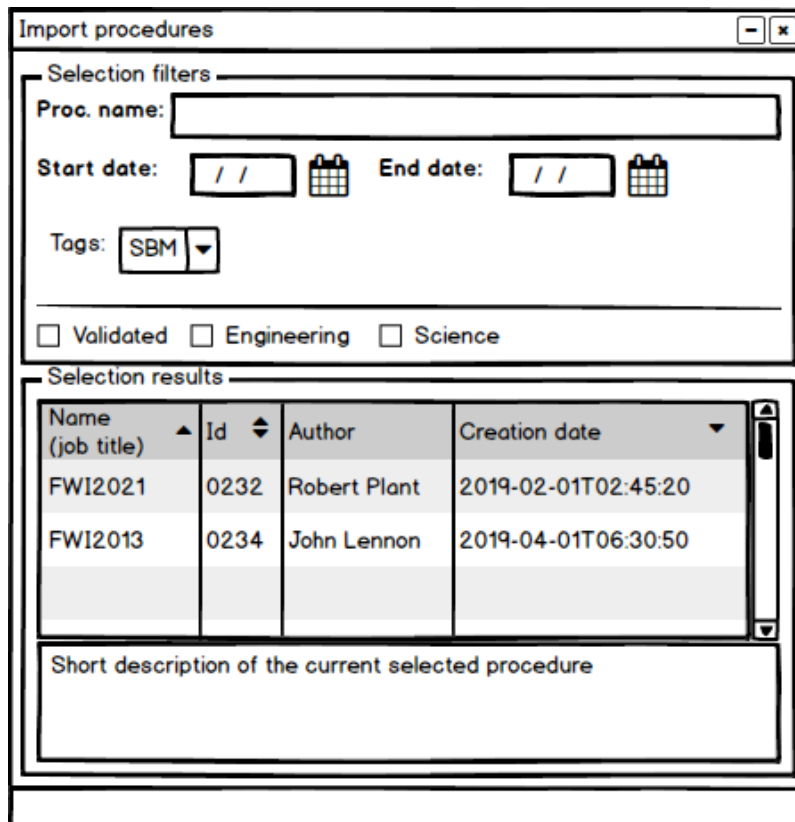


Figure 4. Faust procedure import window (preliminary design).



## 7.3 Opera mock-ups

Figure 5 and 6 presents the preliminary design of the Opera main and RPW Operating Mode (ROM) pop-up windows.

The main window displays the RPW mission timeline, with the past states of the instrument already executed (grey rectangle box on the figure) and the future states to be planned (coloured rectangle boxes on the figure). Each state is represented by a given ROM, which can be created/edited using the Faust tool and stored in the dedicated ROM library in the ROC system.

The main window shall also permit to plot the TMC, power cons. time series (TBC), as well as the mission events such as E-FECS, SBM retrieval pass, and IOR/MODR/PDOR effective execution times.

Clicking on a given ROM shall open a “ROM pop-up” window giving detailed information about the state of the instrument (see figure 6).

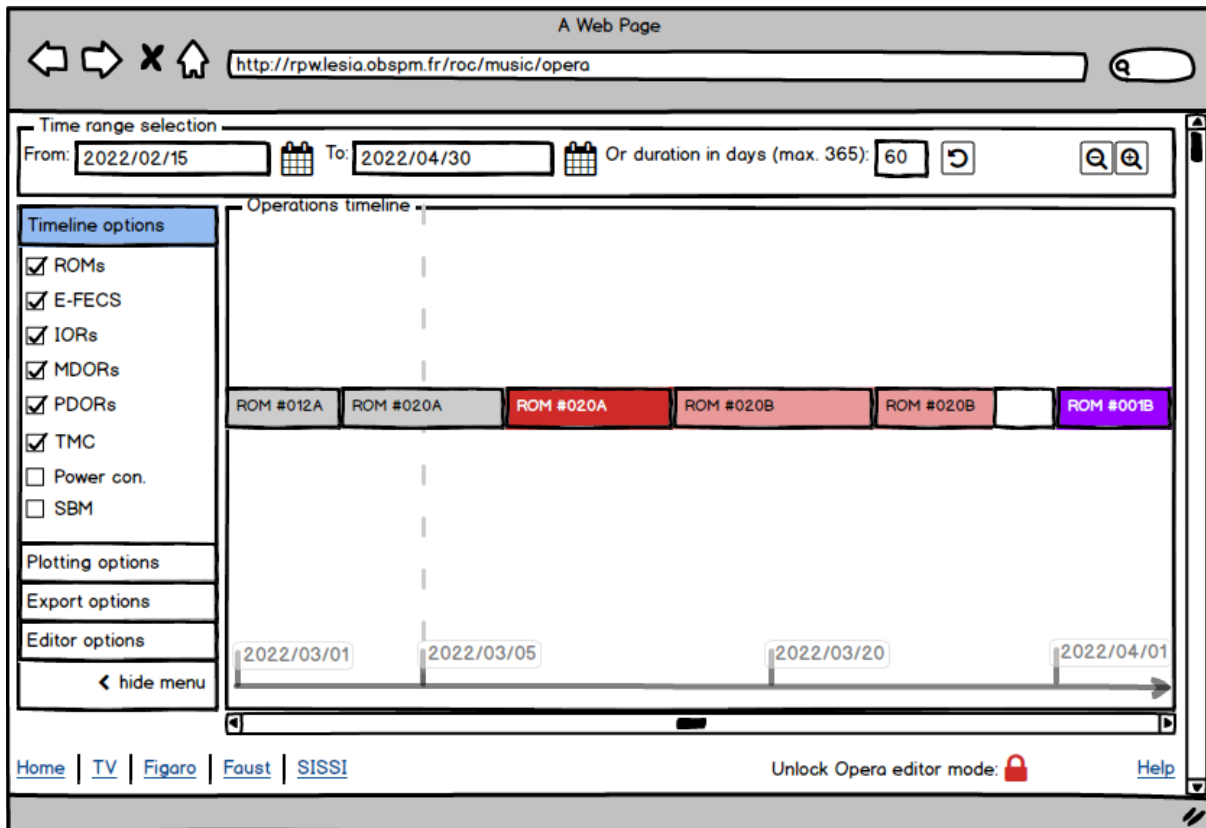


Figure 5. Opera main window - locked (preliminary design).



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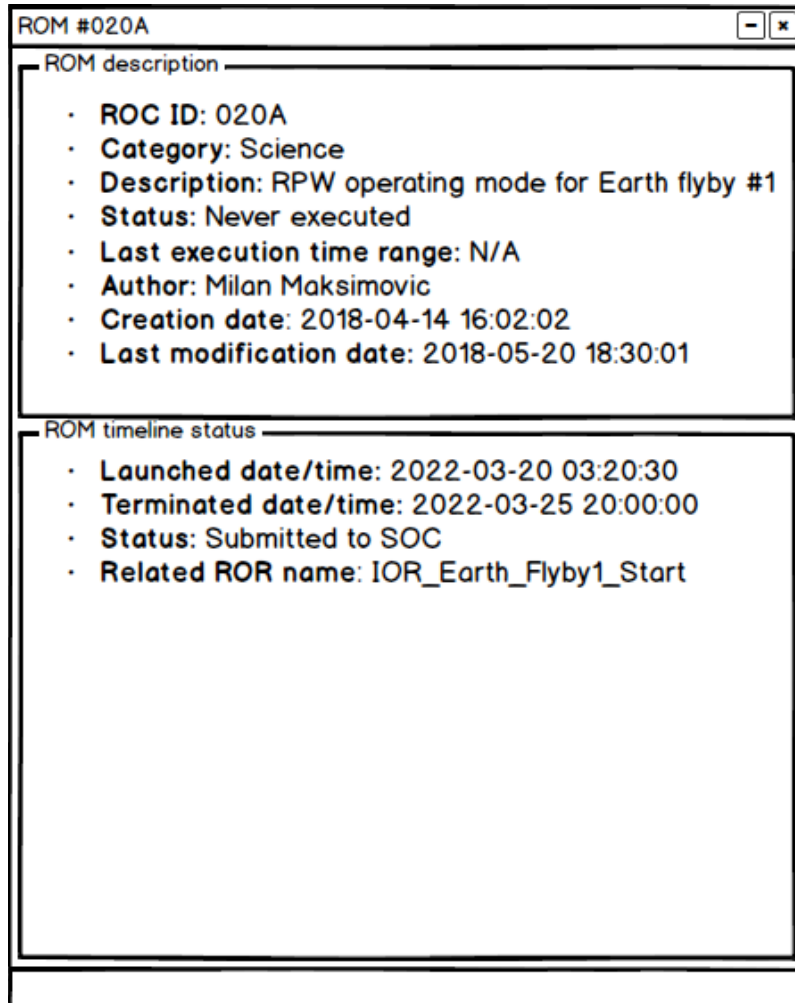


Figure 6. Opera RPW Operating Mode (ROM) pop-up window (preliminary design).

## 7.4 SISSI mock-ups

Figure 7 and Figure 9 display the mock-ups of the SISSI main page in locked (i.e., read-only) and unlocked (i.e., selection mode) modes respectively. Figure 8 presents the window that appears when clicking on a given event in the list.





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SBM Counter	Mode	Detection date/time	Retrieved date/time	Deletion date/time	Duration before deletion	Status
2831	SBM1	2020-06-24T00:23:30	N/A	N/A	11.5 days	Available
2830	SBM1	2020-06-23T18:10:20	N/A	N/A	10.9 days	Available
2829	SBM2	2020-06-23T10:42:01	N/A	N/A	10.7 days	Requested
2828	SBM2	2020-06-23T07:05:22	N/A	N/A	10.5 days	Available
2827	SBM1	2020-06-21T22:55:40	N/A	N/A	8.2 days	Available
2826	SBM2	2020-06-19T19:30:02	N/A	N/A	6.2 days	Requested
2825	SBM2	2020-06-19T19:10:30	N/A	N/A	6.2 days	Requested
2824	SBM1	2020-06-18T16:15:30	N/A	N/A	5.5 days	Available
2823	SBM1	2020-06-18T15:45:43	N/A	N/A	5.6 days	Requested
2822	SBM1	2020-06-10T18:47:28	N/A	N/A	4.2 days	Missed
2821	SBM2	2020-06-03T03:20:17	2020-06-20T06:30:00	N/A	N/A	Downlinked
2820	SBM2	2020-05-06T14:37:49	N/A	2020-05-17T13:12:50	N/A	Deleted

Figure 7. SISS main page (locked).

SBM1 2831	
Event information	
Event type = SBM1	
Event detection time = 2020-06-24T00:23:30	
Event data size = 5 kbytes	
Detection mode = nominal (MAG, SWA available)	
Event detection parameters	
Q = 0.2	
DT1_SBM1 = 180 s	
DT2_SBM1 = 720 s	
DT3_SBM1 = 180 s	

Figure 8. SISSI SBM event page (SBM1 type example).



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A Web Page

http://rpwlesia.obspm.fr/roc/music/sissi

SISSI V1.2.3

<< < 2020/06/25 > >>

SBM Counter	Mode	Detection date/time	Retrieved date/time	Deletion date/time	Status	Selection
2831	SBM1	2020-06-24T00:23:30	N/A	N/A	Available	<input type="checkbox"/>
2830	SBM1	2020-06-23T18:10:20	N/A	N/A	Available	<input type="checkbox"/>
2829	SBM2	2020-06-23T10:42:01	N/A	N/A	Requested	<input checked="" type="checkbox"/>
2828	SBM2	2020-06-23T07:05:22	N/A	N/A	Available	<input type="checkbox"/>
2827	SBM1	2020-06-21T22:55:40	N/A	N/A	Available	<input type="checkbox"/>
2826	SBM2	2020-06-19T19:30:02	N/A	N/A	Requested	<input checked="" type="checkbox"/>
2825	SBM2	2020-06-19T19:10:30	N/A	N/A	Requested	<input checked="" type="checkbox"/>
2824	SBM1	2020-06-18T16:15:30	N/A	N/A	Available	<input type="checkbox"/>
2823	SBM1	2020-06-18T15:45:43	N/A	N/A	Requested	<input checked="" type="checkbox"/>
2822	SBM1	202006-10T18:47:28-	N/A	N/A	Missed	
2821	SBM2	2020-06-03T03:20:17	2020-06-20T06:30:00	N/A	Downlinked	
2820	SBM2	2020-05-06T14:37:49	N/A	2020-05-17T13:12:50	Deleted	

Home | TV | Figaro | Faust | Opera | SOC LL Web page Help

Figure 9. SISSI main page (unlocked).





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## 9 DISTRIBUTION LIST

<p style="text-align: center;"><b>LISTS</b></p> <p>See Contents lists in “Baghera Web”: Project’s informations / Project’s actors / RPW_actors.xls and tab with the name of the list or NAMES below</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="border: none;"></td><td style="border: none;">Tech_LESIA</td></tr> <tr><td style="border: none;"></td><td style="border: none;">Tech_MEB</td></tr> <tr><td style="border: none;"></td><td style="border: none;">Tech_RPW</td></tr> <tr><td style="border: none;"></td><td style="border: none;">[Lead-]Cols</td></tr> <tr><td style="border: none;"></td><td style="border: none;">Science-Cols</td></tr> </table>		Tech_LESIA		Tech_MEB		Tech_RPW		[Lead-]Cols		Science-Cols
	Tech_LESIA										
	Tech_MEB										
	Tech_RPW										
	[Lead-]Cols										
	Science-Cols										

### INTERNAL

LESIA CNRS		

LESIA CNRS		

### EXTERNAL (To modify if necessary)

		C. FIACHETTI
		C. LAFFAYE
		R.LLORCA-CEJUDO
		E.LOURME
		M-O. MARCHE
		E.GUILHEM
		J.PANH
		B.PONTET
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