S2-BOA: Tailoring of BOA for the Sentinel-2 mission

Dynamic data modelling for business operation analysis for Sentinel-2 mission

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Chapter 1

Introduction

This document describes the tailoring done, based on BOA, for monitoring the mission Sentinel-2.

The tailoring process is reduced just to create ingestion modules and views for the data stored.

Chapter 2

Purpose and scope

The purpose of this document is to explain the tailoring done for S2BOA component, which is based on BOA for monitoring the mission Sentinel-2. The scope will be limited to explain technically the tailoring.

S2BOA uses BOA's infrastructure to store the relevant data received from the external interfaces through the specific ingestion modules and allow its visualization through the specific views.

These are the available specific ingestion modules:

- **ingestion_nppf**: ingestion module for the planning received from the S2 Mission Planning
- **ingestion_orbpre**: ingestion module for the orbit prediction received from the flight dynamics
- **ingestion_station_schedule**: ingestion module for the station schedule received from the S2 Mission Planning
- **ingestion_dfep_schedule**: ingestion module for the DFEP schedule received from the S2 Mission Planning
- **ingestion_slot_request_edrs**: ingestion module for the EDRS planning received from the S2 Mission Planning
- **ingestion_station_acquisition_report**: ingestion module for the station acquisition report sent by the station operators
- **ingestion_dfep_acquisition**: ingestion module for the acquisition analysis sent by the station
- **ingestion_edrs_acquisition**: ingestion module for the EDRS acquisition analysis sent by the EISP
- **ingestion_vgs_acquisition**: ingestion module for the station acquisition analysis sent by the EISP
- **ingestion_dpc**: ingestion module for the processing generation analysis sent by the processor

- **ingestion_ophktm**: ingestion module for inserting the production information of the package, which contains the housekeeping telemetry received from the satellite, generated by PDGS to be sent to FOS
- **ingestion_tlm_req_b**: ingestion module for inserting the memory evolution information for the different storages (Nominal and NRT) as well as the last replayed scene information.
- **ingestion_rep_arc**: ingestion module for the indexing of products
- **ingestion_ai**: ingestion module for the archiving of products
- **ingestion_dc**: ingestion module for the circulation of products
- **ingestion_lta**: ingestion module for the long-term-archive of products
- **ingestion_ltas**: ingestion module for the long-term-archive of products
- **ingestion_dam**: ingestion module for the data access management of products
- **ingestion_dhus**: ingestion module for the data availability of products to users
- **ingestion_prip**: ingestion module for the archiving information of the PDIs (DSs, GRs, TLs, TCs, HKTM and AUX files) into the PRIP
- **ingestion_sup**: ingestion module for the satellite unavailabilities

These are the available specific views:

- **Planning**: view for planning study
- **TLE workflow**: view for the study of TLE circulation towards the expected destinations
- **Tracking**: view for following the S2 constellation
- **Acquisition**: view for acquisition performance from planning study
- **HKTM workflow**: view for the study of HKTM circulation towards the expected destinations
- **Data availability at DHuS**: view for the study of the dissemination of production towards DHuS
- **Sensing data volumes**: view for the study of the volume of data, query driven by sensing timings
- **Archive data volumes**: view for the study of the volume of data, query driven by archiving timings

Chapter 3

Ingestion modules

S2BOA implements ingestion modules for the areas of data shown in figure 1. This data is received inside files (ussually in XML format) from the Sentinel-2 PDGS, stations and FOS.

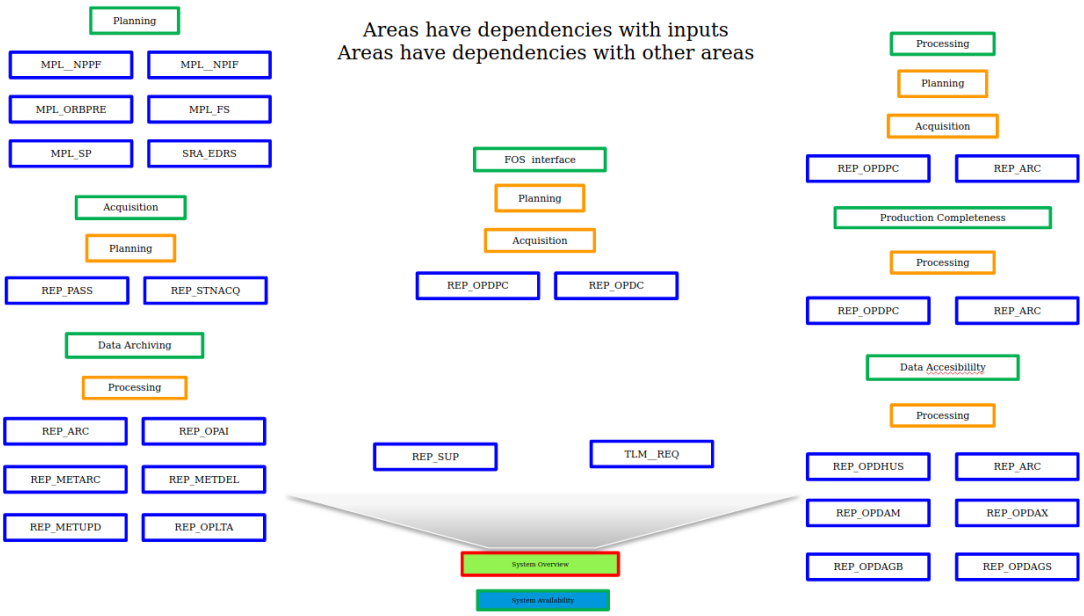

Figure 1: Areas of data related to the S2 mission

This chapter describes each of the ingestion modules in the following sections. The figure 2 shows the legend for the diagrams, used to represent the data stored.

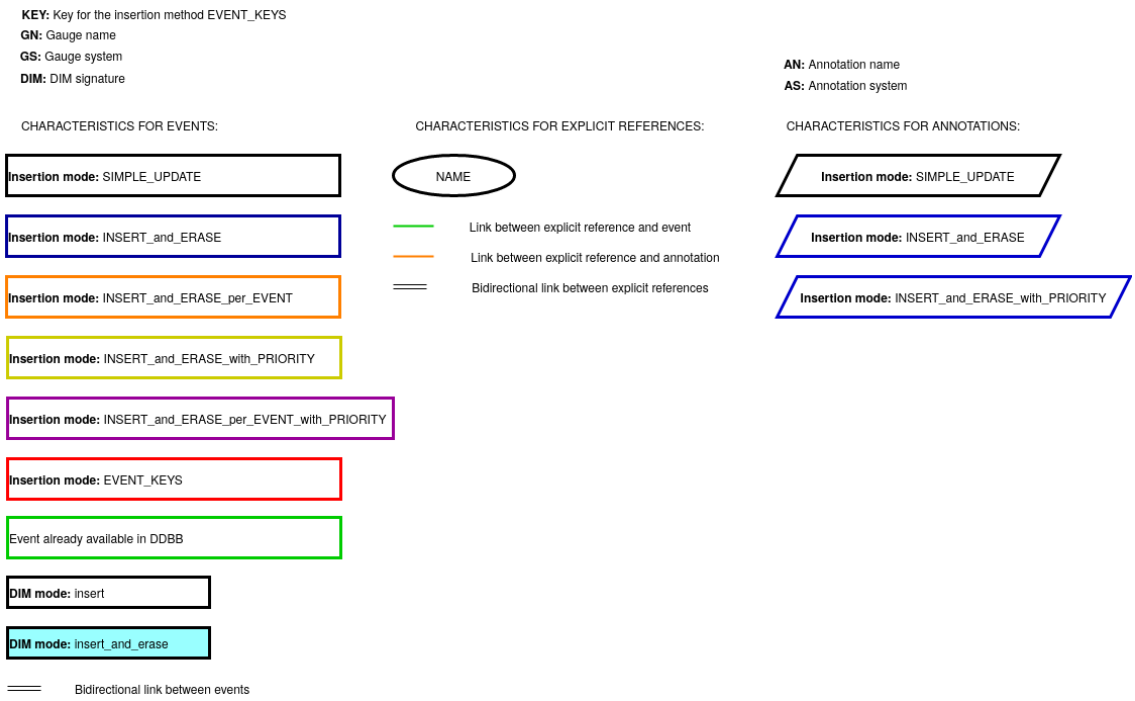

Figure 2: Legend for the diagrams, used to represent the data stored

3.1 Ingestion module for the MPL_NPPF file

This sections describes the ingestion module for inserting the planning of operations commanding the satellite.

The associated ingestion processor is:

- **s2boa.ingestions.ingestion_nppf.ingestion_nppf**

This module uses the following DIM signatures:

- **NPPF_XXX**: data corresponding to the planning of operations commanding the satellite.
- **CORRECTED_NPPF_XXX**: data corresponding to the planning of operations commanding the satellite corrected by the available orbit prediction data.
- **COMPLETENESS_NPPF_XXX**: data corresponding to the definition of planning completeness used for analysis. **Priority is equal to 10**.

Where XXX is the corresponding satellite id.

The figure 3 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

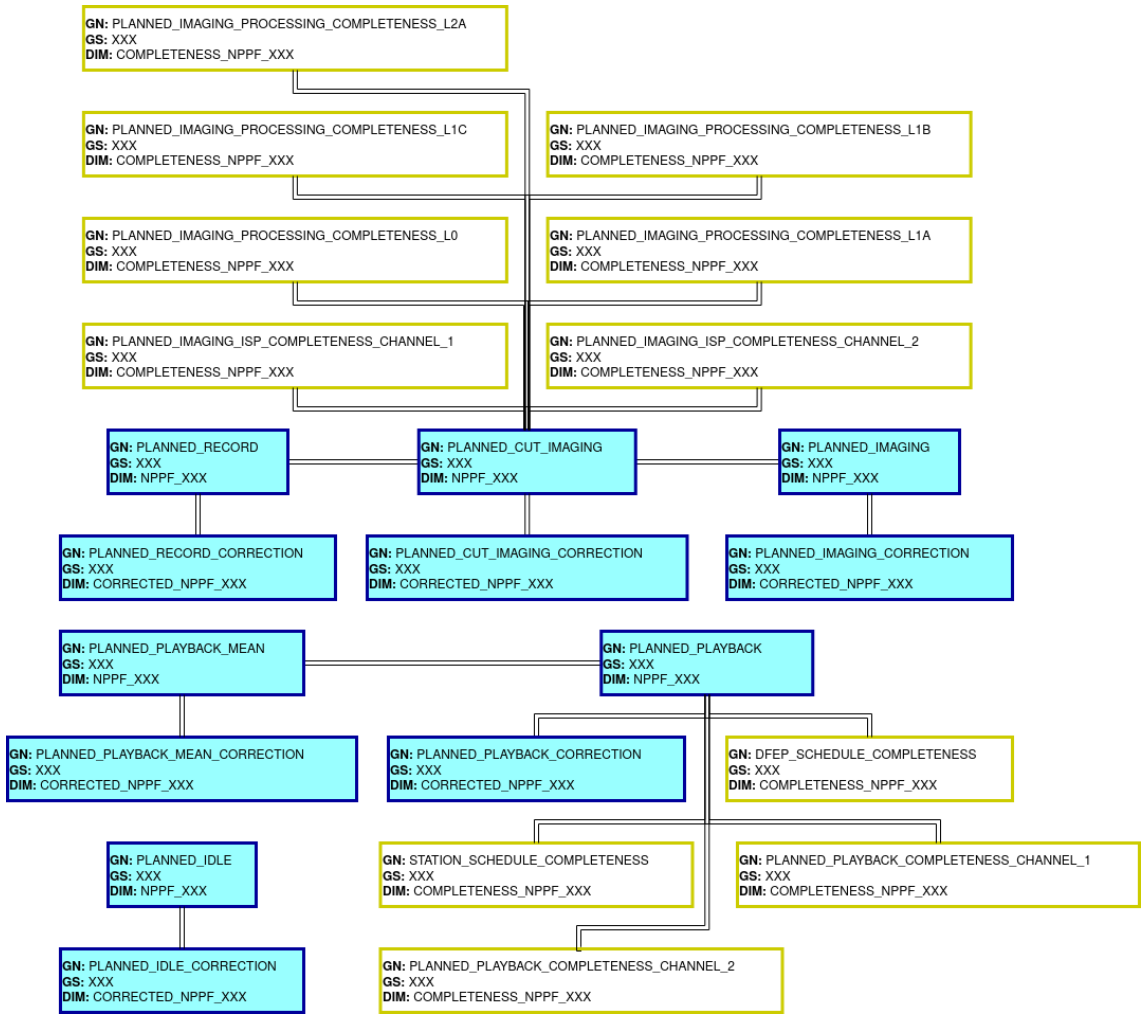

Figure 3: Structure of events inserted by the ingestion module for the MPL_NPPF file

The table 1 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
PLANNED_RECORD	XXX	NPPF_XXX	INSERT_and_ERASE (insert_and_erase)	Event for representing the **recording operation**	UTC time associated to command 'MPMMRNOM' or 'MPMMRNRT'	UTC time associated to command 'MPMMRSTP' or 'MPMMRNRT' or 'MPMMRNOM'
PLANNED_CUT_IMAGING	XXX	NPPF_XXX	INSERT_and_ERASE (insert_and_erase)	Event for representing the **imaging operation associated to a specific recording operation**	UTC time associated to command 'MPMSSCAL' or 'MPMSDASC' or 'MPMSDCLO' or 'MPMSIVIC' or 'MPMSNOBS' or 'MPMSIRAW' or 'MPMSIDTS' or 'MPMMRNOM' or 'MPMMRNRT'	UTC time associated to command 'MPMSIMID' or 'MPMSIDSB' or 'MPMMRSTP' or 'MPMMRNRT' or 'MPMMRNOM'
PLANNED_IMAGING	XXX	NPPF_XXX	INSERT_and_ERASE (insert_and_erase)	Event for representing the **imaging operation** covering one or several planned recording operations	UTC time associated to command 'MPMSSCAL' or 'MPMSDASC' or 'MPMSDCLO' or 'MPMSIVIC' or 'MPMSNOBS' or 'MPMSIRAW' or 'MPMSIDTS'	UTC time associated to command 'MPMSIMID' or 'MPMSIDSB' or 'MPMMRSTP'

PLANNED_ PLAYBACK	XXX	NPPF_XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **playback operation**	UTC time associated to command 'MPMMPNOM' or 'MPMMPREG' or 'MPMMPBRT' or 'MPMMPNRT'	UTC time associated to command 'MPMMPSTP'
PLANNED_ PLAYBACK_ MEAN	XXX	NPPF_XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **mean of the playback operation**	UTC time associated to command 'MPXBSBOP' or 'MPG1STRT' or 'MPG2STRT'	UTC time associated to command 'MPXBOPSB' (when start is associated to command 'MPXBSBOP') or 'MPOCPRY2' (when start is associated to command 'MPG1STRT' or 'MPG2STRT')

PLANNED_ IDLE	XXX	NPPF_XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **idle state**	UTC time associated to command ’MPMSIMID’ or ’MPMSSBID’	UTC time associated to command ’MPMSSCAL’ or ’MPMSDASC’ or ’MPMSDCLO’ or ’MPMSIVIC’ or ’MPMSNOBS’ or ’MPMSIRAW’ or ’MPMSIDTS’ or ’MPMSIDSB’
*****_ CORRECTION**	XXX	COR- RECTED_ NPPF_XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **planning events corrected using the orbit prediction events**	Start of the planned event corrected using the ORBPRE	Stop of the planned event corrected using the ORBPRE
DFEP_ SCHEDULE_ COMPLETE- NESS	XXX	COM- PLETENESS	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the DFEP schedule**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s

STATION_ SCHEDULE_ COMPLETE-NESS	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the Station schedule**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s
PLANNED_ PLAYBACK_ COMPLETE-NESS_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the planned playbacks using the channel 1**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s
PLANNED_ PLAYBACK_ COMPLETE-NESS_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the planned playbacks using the channel 2**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s

PLANNED_IMAGING_ISP_COMPLETENESS_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the planned imaging using the channel 1**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_IMAGING_ISP_COMPLETENESS_CHANNEL_2	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the planned imaging using the channel 2**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_IMAGING_PROCESSING_COMPLETENESS_L0	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_IMAGING_PROCESSING_COMPLETENESS_L1A	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L1A**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s

PLANNED_ IMAGING_ PROCESSING_ COMPLETE-NESS_ L1B	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L1B**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_ IMAGING_ PROCESSING_ COMPLETE-NESS_ L1C	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L1C**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_ IMAGING_ PROCESSING_ COMPLETE-NESS_ L2A	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L2A**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s

Table 1: Table describing the events associated to the ingestion

3.1.1 Ingestion details

This section describes some ingestion details for inserting the data. In particular:

- The correction of the generation time when is greater than the validity start

3.1.1.1 Correction of the generation time

Due to an operation procedure using the S2MP, the generation time could be greater than the validity start. This could result into having deprecated data in the DDBB.

To solve this issue the processor changes the generation time to be the validity start when the first is greater.

3.2 Ingestion module for the MPL_ORBPRE file

This sections describes the ingestion module for inserting the orbit prediction of the satellites generated by FOS.

The associated ingestion processor is:

- **s2boa.ingestions.ingestion_orbpre.ingestion_orbpre**

This module uses the following DIM signatures:

- **ORBPRE**: data corresponding to the orbit prediction of the satellites generated by FOS used for adjusting the timing of the planning events which are using the operations angle.
- **CORRECTED_NPPF_XXX**: data corresponding to the planning of operations commanding the satellite corrected by the available orbit prediction data.
- **COMPLETENESS_NPPF_XXX**: data corresponding to the definition of planning completeness used for analysis. **Priority is equal to 20**.

Where XXX is the corresponding satellite id.

The figure 4 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

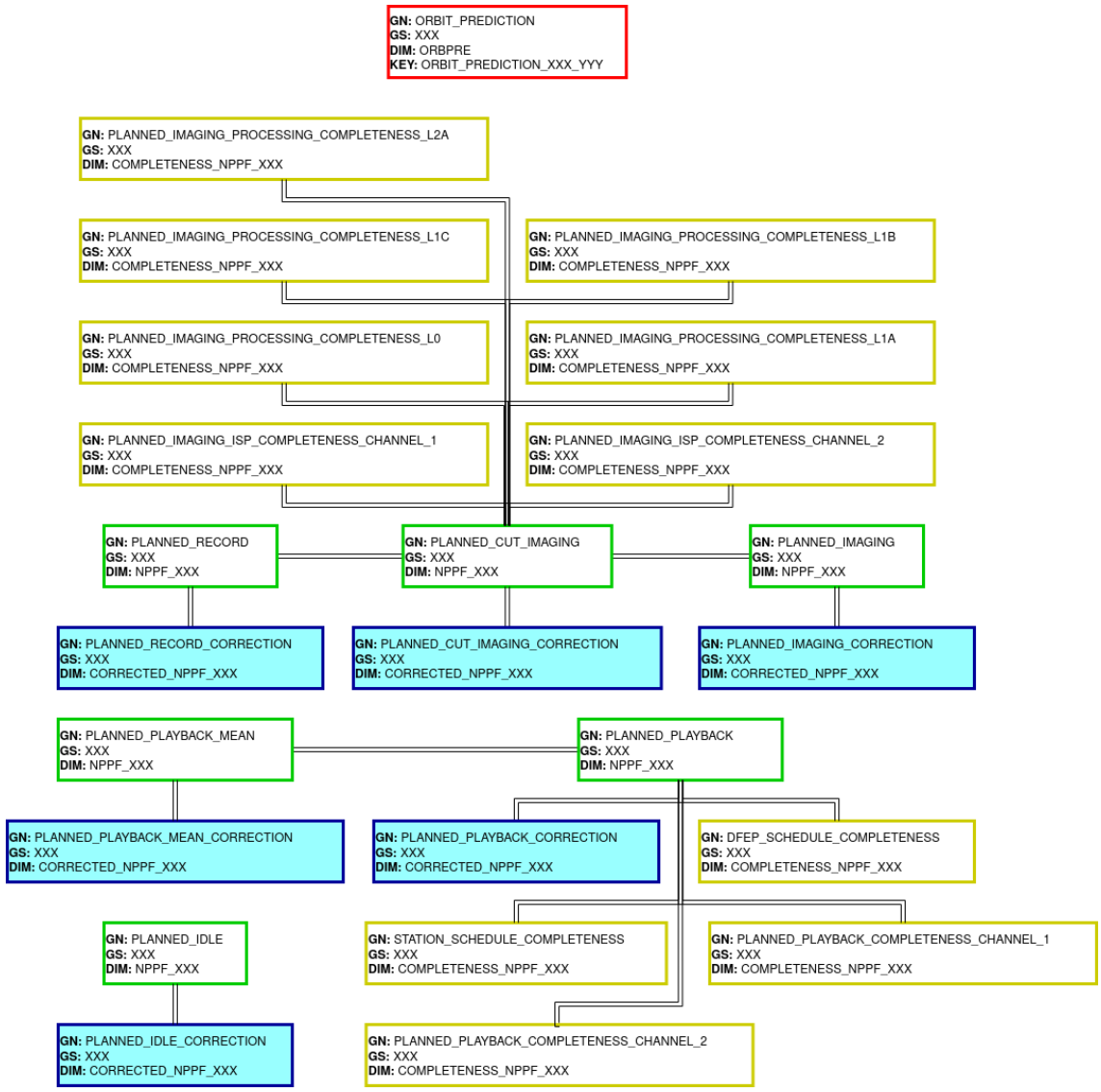

Figure 4: Structure of events inserted by the ingestion module for the MPL_ORBPRE file

Where YYY is the orbit number.

The table 2 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
ORBIT_ PREDICTION	XXX	ORBIT_ PREDICTION_ XXX_YYY	EVENT_ KEYS (insert) [KEY: ORBIT_ PREDICTION_ XXX_YYY]	Event for representing the **orbit predition information of a specific orbit**	UTC time related to the ANX of orbit N	UTC time related to the ANX of orbit N + 1
*****_ CORRECTION**	XXX	CORRECTED_ NPPF_XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **planning events corrected using the orbit prediction events**	Start of the planned event corrected using the ORBPRE	Stop of the planned event corrected using the ORBPRE
DFEP_ SCHEDULE_ COMPLETENESS	XXX	COMPLETENESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the DFEP schedule**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s

STATION_ SCHEDULE_ COMPLETE-NESS	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the Station schedule**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s
PLANNED_ PLAYBACK_ COMPLETE-NESS_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the planned playbacks using the channel 1**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s
PLANNED_ PLAYBACK_ COMPLETE-NESS_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the planned playbacks using the channel 2**	Corrected start of the planned playback + 2s (SAD/HKTM) or + 9s (MSI); (if start >stop) Corrected stop of the planned playback - 4s	Start (SAD/HKTM) or Corrected stop of the planned playback - 9s (MSI); (if start >stop) Corrected stop of the planned playback - 3s

PLANNED_IMAGING_ISP_COMPLETENESS_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the planned imaging using the channel 1**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_IMAGING_ISP_COMPLETENESS_CHANNEL_2	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the planned imaging using the channel 2**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_IMAGING_PROCESSING_COMPLETENESS_L0	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_IMAGING_PROCESSING_COMPLETENESS_L1A	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L1A**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s

PLANNED_ IMAGING_ PROCESSING_ COMPLETE-NESS_ L1B	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L1B**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_ IMAGING_ PROCESSING_ COMPLETE-NESS_ L1C	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L1C**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s
PLANNED_ IMAGING_ PROCESSING_ COMPLETE-NESS_ L2A	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L2A**	Corrected start of the planned imaging + 10s; (if start >stop) Corrected stop of the planned imaging - 12s	Corrected stop of the planned imaging - 10s; (if start >stop) Corrected stop of the planned imaging - 6s

Table 2: Table describing the events associated to the ingestion

3.2.1 Ingestion details

This section describes some ingestion details for inserting the data. In particular:

- The algorithm to correct the timing of the planning events
- The correction of the generation time to avoid overriding data used for completeness analysis

3.2.1.1 Algorithm to correct the timing of the planning events

The algorithm to correct the timing of the planning events is as follows:

For every planning event:

- Get satellite ID, start and stop orbits and start and stop angles.
- Get the ANX time from the orbit prediction information covering the previous orbits and the following ones
- Apply the following formula to the start and stop angles (α) using the orbital period (p) and the corresponding ANX timing (t):

  $sin_1 = sin(\alpha)$

  $sin_2 = sin(2 * \alpha)$

  $cos_1 = cos(\alpha)$

  $cos_2 = cos(2 * \alpha)$

  $cos_3 = cos(3 * \alpha)$

  Adjust angle to a circunference (perfect distribution in 360^{o}):

  $m = \alpha - 0.13175612 - 2 * (-0.0001529) * sin_1 - 2 * (-0.0660818) * cos_1 - 2 * 0.16855853 * sin_2 - 2 * (-0.0007759) * cos_2 - 2 * 0.0009872 * cos_3 - 2 * 0.00687159 * sin_2$

  Transform angle to δ time:

  $s = (m * p)/360.0$

  $UTCtime = t + s$

3.2.1.2 Correction of the generation time

The validity start of the ORBPRE is almost equal to the generation time. This makes the data extracted to be in priority with respect to the data extracted of other components which would need to be in priority.

To solve this issue the processor changes the generation time to be the generation time minus 1 day.

3.3 Ingestion module for the MPL_SP file

This sections describes the ingestion module for inserting the station schedule information received from the S2 Mission Planning.

The associated ingestion processors are:

- **s2boa.ingestions.ingestion_station_schedule.ingestion_station_schedule**

This module uses the following DIM signatures:

- **STATION_SCHEDULE_SSS_XXX**: data corresponding to station schedule information associated to a specific station and satellite received from the Mission Planning.
- **COMPLETENESS_NPPF_XXX**: data corresponding to the definition of planning completeness used for analysis. **Priority is equal to 10**.

Where XXX is the corresponding satellite id and SSS to the station ID.

The figure 5 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

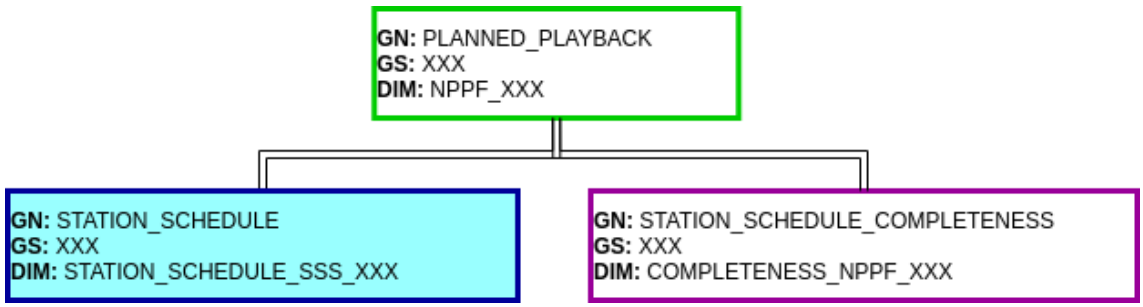

Figure 5: Structure of events inserted by the ingestion module for the MPL_SP file

The table 3 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
STATION_ SCHEDULE	XXX	STATION_ SCHED-ULE_SSS_ XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **station schedule**	UTC value inside the Data_start node	UTC value inside the Data_stop node
STATION_ SCHEDULE_ COMPLETE-NESS	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ERASE	Event for representing the **expectation of the Station schedule**	UTC value inside the Data_start node	UTC value inside the Data_stop node

Table 3: Table describing the events associated to the ingestion

3.3.1 Ingestion details

This section describes some ingestion details for inserting the data. In particular:

- The correction of the generation time to avoid overriding data used for completeness analysis

3.3.1.1 Correction of the generation time

The generation time of the data extracted is one day before the validity start. This could be a problem as the processor of the ORBPRE files could override this data.

To solve this issue the processor changes the generation time to be the validity start.

3.4 Ingestion module for the MPL_FS file

This sections describes the ingestion module for inserting the DFEP schedule information received from the S2 Mission Planning.

The associated ingestion processor is:

- **s2boa.ingestions.ingestion_dfep_schedule.ingestion_dfep_schedule**

This module uses the following DIM signatures:

- **DFEP_SCHEDULE_SSS_XXX**: data corresponding to DFEP schedule information associated to a specific station and satellite received from the Mission Planning.
- **COMPLETENESS_NPPF_XXX**: data corresponding to the definition of planning completeness used for analysis. **Priority is equal to 30**.

Where XXX is the corresponding satellite id and SSS to the station ID.

The figure 6 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

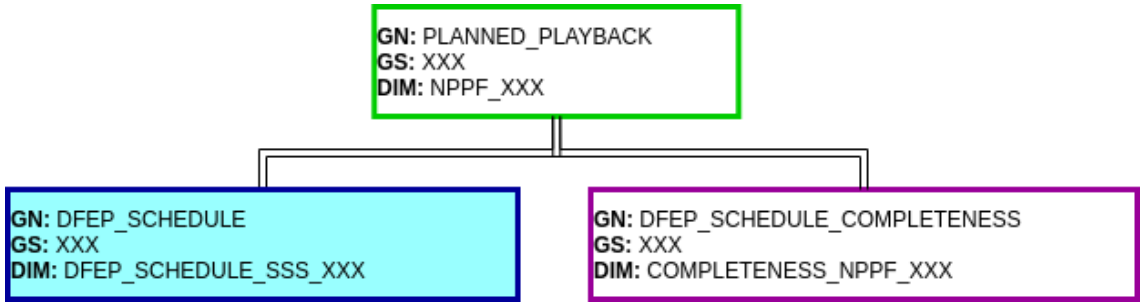

Figure 6: Structure of events inserted by the ingestion module for the MPL_FS file

The table 4 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
DFEP_SCHEDULE	XXX	DFEP_SCHEDULE_SSS_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **DFEP schedule**	UTC value inside the start node	UTC value inside the stop node
DFEP_SCHEDULE_COMPLETENESS	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE	Event for representing the **expectation of the DFEP schedule**	UTC value inside the start node	UTC value inside the stop node

Table 4: Table describing the events associated to the ingestion

3.4.1 Ingestion details

This section describes some ingestion details for inserting the data. In particular:

- The correction of the generation time to avoid overriding data used for completeness analysis

3.4.1.1 Correction of the generation time

The generation time of the data extracted is one day before the validity start. This could be a problem as the processor of the ORBPRE files could override this data.

To solve this issue the processor changes the generation time to be the validity start.

3.5 Ingestion module for the SRA file

This sections describes the ingestion module for inserting the SRA information received from the EDRS.

The associated ingestion processor is:

- **s2boa.ingestions.ingestion_slot_request_edrs.ingestion_slot_request_edrs**

This module uses the following DIM signatures:

- **SLOT_REQUEST_EDRS**: data corresponding to the slot request information associated to the EDRS service.
- **COMPLETENESS_NPPF_XXX**: data corresponding to the definition of planning completeness used for analysis. **Priority is equal to 30**.

Where XXX is the corresponding satellite ID.

The figure 7 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

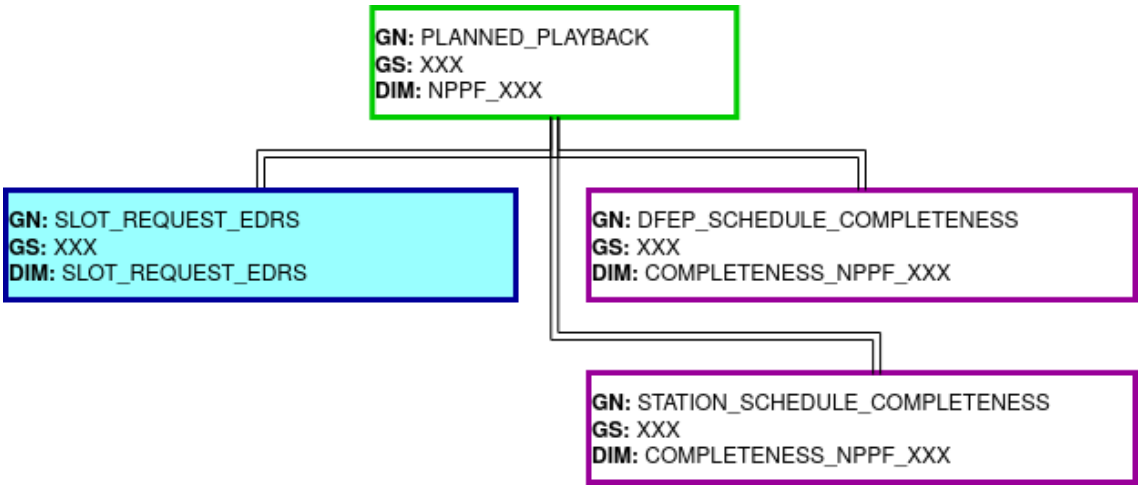

Figure 7: Structure of events inserted by the ingestion module for the SRA file

The table 5 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
SLOT_ REQUEST_ EDRS	XXX	SLOT_ REQUEST_ EDRS	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **slot request for EDRS**	UTC value inside the Start_Time node	UTC value inside the Stop_Time node
STATION_ SCHEDULE_ COMPLETE-NESS	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ERASE	Event for representing the **expectation of the Station schedule**	UTC value inside the Start_Time node	UTC value inside the Stop_Time node
DFEP_ SCHEDULE_ COMPLETE-NESS	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ERASE	Event for representing the **expectation of the DFEP schedule**	UTC value inside the Start_Time node	UTC value inside the Stop_Time node

Table 5: Table describing the events associated to the ingestion

3.5.1 Ingestion details

This section describes some ingestion details for inserting the data. In particular:

- The correction of the generation time to avoid overriding data used for completeness analysis

3.5.1.1 Correction of the generation time

The generation time of the data extracted is one day before the validity start. This could be a problem as the processor of the ORBPRE files could override this data.

To solve this issue the processor changes the generation time to be the validity start.

3.6 Ingestion module for the REP_PASS_[2|5] file

This sections describes the ingestion module for inserting the DFEP acquisition analysis after reception of data from the satellite.

The associated ingestion processor is:

- **s2boa.ingestions.ingestion_dfep_acquisition.ingestion_dfep_acquisition**

This module uses the following DIM signatures:

- **RECEPTION_XXX**: data corresponding to the acquisition analysis after reception of data from the satellite.
- **COMPLETENESS_NPPF_XXX**: data corresponding to the definition of planning completeness used for analysis. **Priority is equal to 30**.
- **ISP_VALIDITY_PROCESSING_COMPLETENESS_XXX**: data corresponding to the definition of ISP processing completeness used for analysis. **Priority is equal to 10**.

Where XXX is the corresponding satellite id, SSS is the station ID and VVV is the VCID number.

The figure 8 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

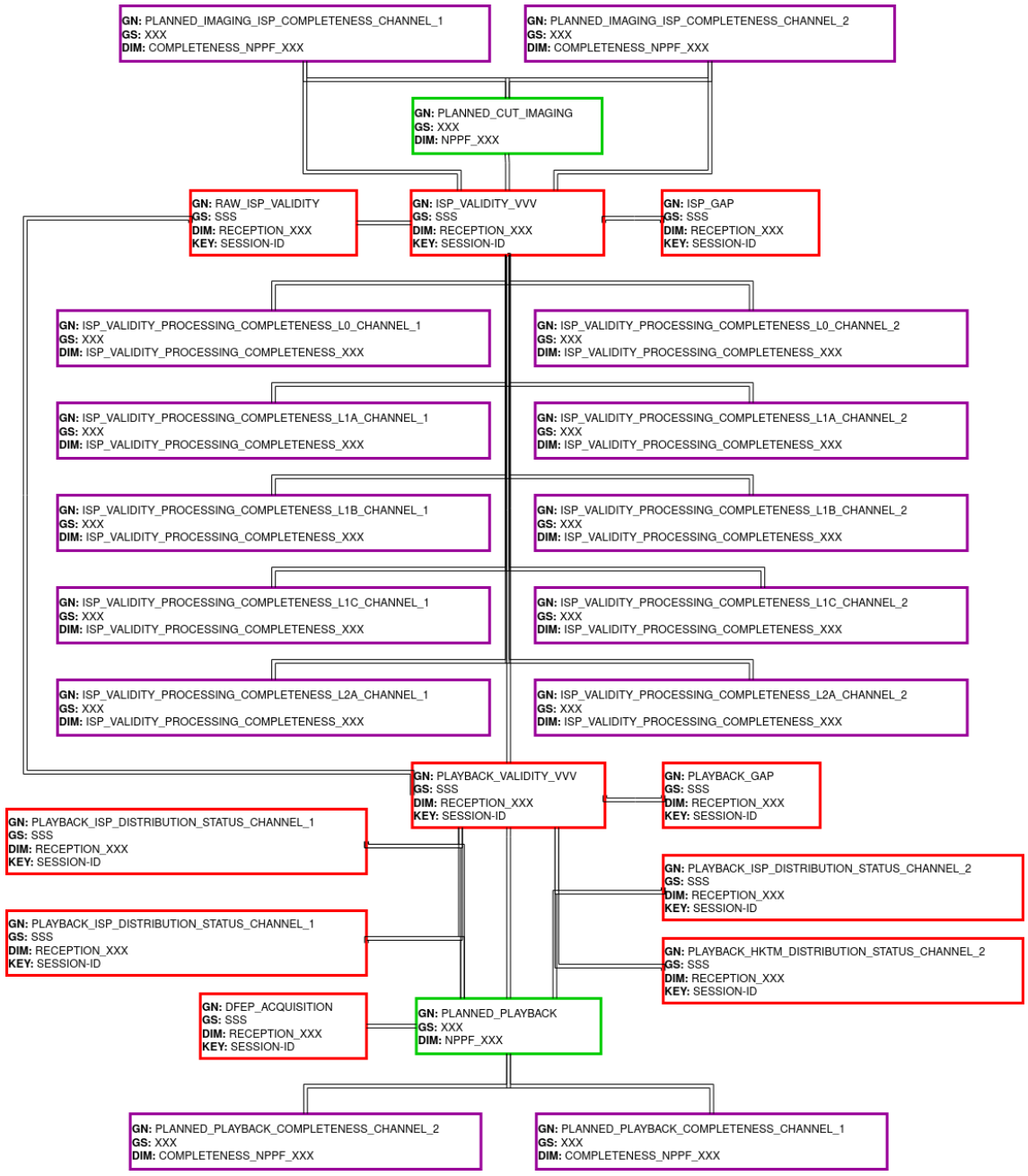

Figure 8: Structure of events inserted by the ingestion module for the REP_PASS_[2|5] file

The table 6 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
PLAYBACK_VALIDITY_VVV	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID]	Event for representing the **ground acquisition operation**	UTC time associated to the start of the reception	UTC time associated to the stop of the reception
PLAYBACK_GAP	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the corresponding gap in the reception	UTC time associated to the stop of the corresponding gap in the reception
PLANNED_PLAYBACK_COMPLETENESS_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for completing the **expectation of the planned playbacks through the channel 1**	Start of the reception through the channel 1	Stop of the reception through the channel 1
PLANNED_PLAYBACK_COMPLETENESS_CHANNEL_2	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for completing the **expectation of the planned playbacks through the channel 2**	Start of the reception through the channel 2	Stop of the reception through the channel 2

PLANNED_ IMAGING_ ISP_COM- PLETENESS_ CHANNEL_1	XXX	COM- PLETE- NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for completing the **expectation of the planned imaging sent through the channel 1**	Start of the first received scene thorugh the channel 1 of the corresponding continuous MSI segment	Stop of the last received scene thorugh the channel 1 of the corresponding continuous MSI segment
PLANNED_ IMAGING_ ISP_COM- PLETENESS_ CHANNEL_2	XXX	COM- PLETE- NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for completing the **expectation of the planned imaging sent through the channel 2**	Start of the first received scene thorugh the channel 2 of the corresponding continuous MSI segment	Stop of the last received scene thorugh the channel 2 of the corresponding continuous MSI segment
RAW_ISP_ VALIDITY	SSS	RECEP- TION_ XXX	EVENT_ KEYS (insert) [KEY: SESSION-ID]	Event for representing the **ground acquisition operation**	Start of the first received scene	Stop of the last received scene
ISP_VALIDITY	SSS	RECEP- TION_ XXX	EVENT_ KEYS (insert) [KEY: SESSION-ID]	Event for representing the **ground acquisition operation**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

ISP_GAP	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the corresponding continuous gap in the received MSI	UTC time associated to the stop of the corresponding continuous gap in the received MSI
PLAYBACK_ISP_DISTRIBUTION_STATUS_CHANNEL_1	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the MSI reception	UTC time associated to the stop of the MSI reception
PLAYBACK_ISP_DISTRIBUTION_STATUS_CHANNEL_2	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the MSI reception	UTC time associated to the stop of the MSI reception
PLAYBACK_HKTM_DISTRIBUTION_STATUS_CHANNEL_1	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the corresponding gap in the HKTM reception	UTC time associated to the stop of the corresponding gap in the HKTM reception
PLAYBACK_HKTM_DISTRIBUTION_STATUS_CHANNEL_2	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the corresponding gap in the HKTM reception	UTC time associated to the stop of the corresponding gap in the HKTM reception

DFEP_ ACQUISITION_ VALIDITY	SSS	RECEP-TION_ XXX	EVENT_ KEYS (insert) [KEY: SESSION-ID]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the validity start of the received file	UTC time associated to the validity stop of the received file
ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L0_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L1A_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L1B_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

ISP_VALIDITY_PROCESSING_COMPLETENESS_L1C_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_VALIDITY_PROCESSING_COMPLETENESS_L2A_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_VALIDITY_PROCESSING_COMPLETENESS_L0_CHANNEL_2	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L1A_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L1B_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L1C_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L2A_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

Table 6: Table describing the events associated to the ingestion

3.7 Ingestion module for the REP_PASS_E file

This sections describes the ingestion module for inserting the EFEP acquisition analysis after reception of data from the satellite.

The associated ingestion processor is:

- **s2boa.ingestions.ingestion_edrs_acquisition.ingestion_edrs_acquisition**
- **s2boa.ingestions.ingestion_vgs_acquisition.ingestion_vgs_acquisition**

This module uses the following DIM signatures:

- **RECEPTION_XXX**: data corresponding to the acquisition analysis after reception of data from the satellite.
- **COMPLETENESS_NPPF_XXX**: data corresponding to the definition of planning completeness used for analysis. **Priority is equal to 30**.
- **ISP_VALIDITY_PROCESSING_COMPLETENESS_XXX**: data corresponding to the definition of ISP processing completeness used for analysis. **Priority is equal to 10**.

Where XXX is the corresponding satellite id, SSS is the station ID and VVV is the VCID number.

The figure 9 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

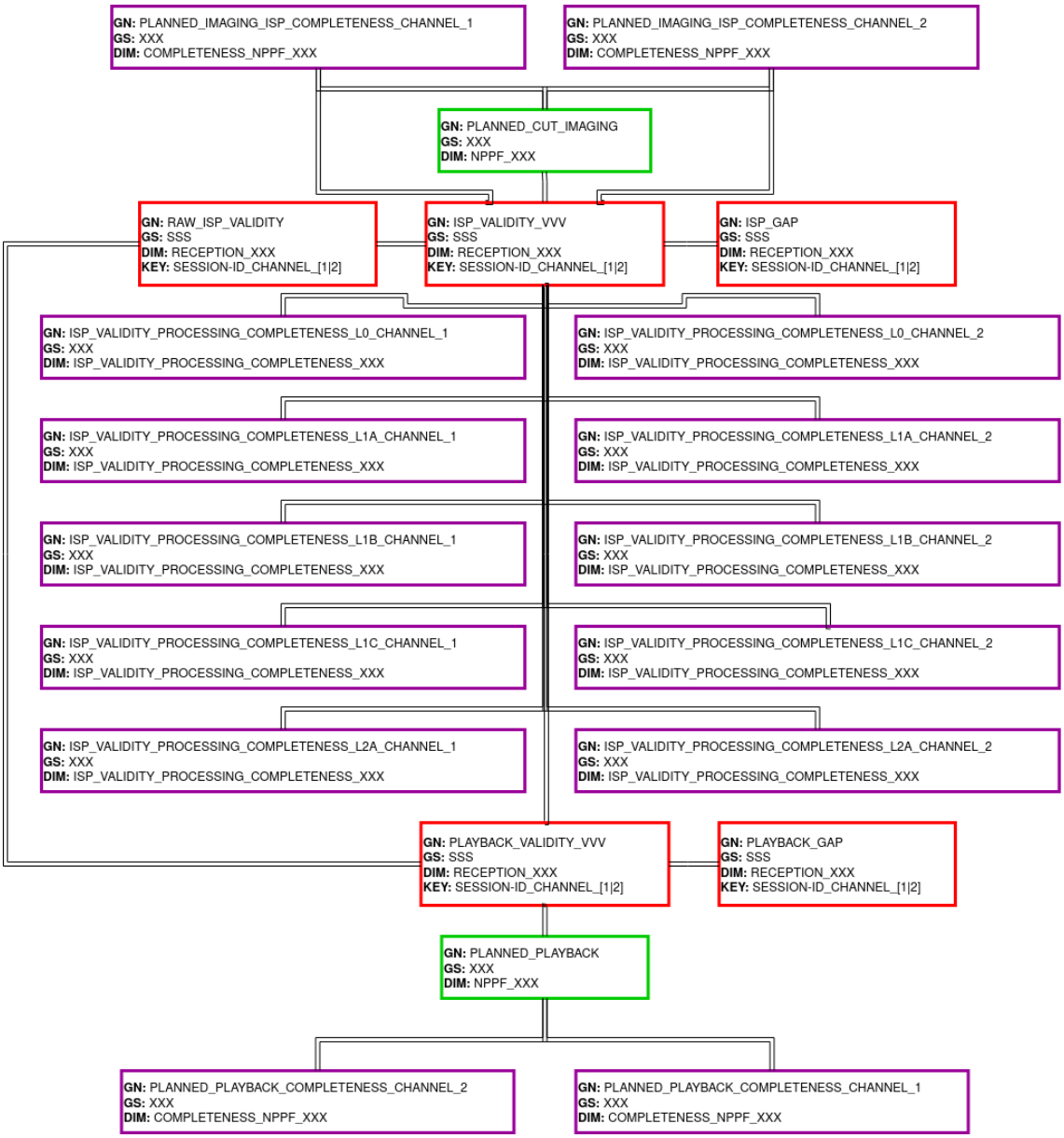

Figure 9: Structure of events inserted by the ingestion module for the REP_PASS_E file

The table 7 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
PLAYBACK_ VALIDITY_ VVV	SSS	RECEP-TION_ XXX	EVENT_ KEYS (insert) [KEY: SESSION-ID_ CHANNEL_ [1|2]]	Event for representing the **ground acquisition operation**	UTC time associated to the start of the reception	UTC time associated to the stop of the reception
PLAYBACK_ GAP	SSS	RECEP-TION_ XXX	EVENT_ KEYS (insert) [KEY: SESSION-ID_ CHANNEL_ [1|2]]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the corresponding gap in the reception	UTC time associated to the stop of the corresponding gap in the reception
PLANNED_ PLAYBACK_ COMPLETE-NESS_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for completing the **expectation of the planned playbacks through the channel 1**	Start of the reception through the channel 1	Stop of the reception through the channel 1

PLANNED_ PLAYBACK_ COMPLETE- NESS_ CHANNEL_2	XXX	COM- PLETE- NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for completing the **expectation of the planned playbacks through the channel 2**	Start of the reception through the channel 2	Stop of the reception through the channel 2
PLANNED_ IMAGING_ ISP_COM- PLETENESS_ CHANNEL_1	XXX	COM- PLETE- NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for completing the **expectation of the planned imaging sent through the channel 1**	Start of the first received scene thorugh the channel 1 of the corresponding continuous MSI segment	Stop of the last received scene thorugh the channel 1 of the corresponding continuous MSI segment
PLANNED_ IMAGING_ ISP_COM- PLETENESS_ CHANNEL_2	XXX	COM- PLETE- NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for completing the **expectation of the planned imaging sent through the channel 2**	Start of the first received scene thorugh the channel 2 of the corresponding continuous MSI segment	Stop of the last received scene thorugh the channel 2 of the corresponding continuous MSI segment

RAW_ISP_VALIDITY	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID_CHANNEL_[1|2]]	Event for representing the **ground acquisition operation**	Start of the first received scene	Stop of the last received scene
ISP_VALIDITY	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID_CHANNEL_[1|2]]	Event for representing the **ground acquisition operation**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_GAP	SSS	RECEPTION_XXX	EVENT_KEYS (insert) [KEY: SESSION-ID_CHANNEL_[1|2]]	Event for representing a **gap in the ground acquisition operation**	UTC time associated to the start of the corresponding continuous gap in the received MSI	UTC time associated to the stop of the corresponding continuous gap in the received MSI

ISP_VALIDITY_PROCESSING_COMPLETENESS_L0_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_VALIDITY_PROCESSING_COMPLETENESS_L1A_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_VALIDITY_PROCESSING_COMPLETENESS_L1B_CHANNEL_1	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L1C_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L2A_ CHANNEL_1	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L0_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

ISP_VALIDITY_PROCESSING_COMPLETENESS_L1A_CHANNEL_2	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_VALIDITY_PROCESSING_COMPLETENESS_L1B_CHANNEL_2	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment
ISP_VALIDITY_PROCESSING_COMPLETENESS_L1C_CHANNEL_2	XXX	COMPLETENESS_NPPF_XXX	INSERT_and_ERASE_per_EVENT_with_PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

ISP_ VALIDITY_ PROCESSING_ COMPLETE-NESS_L2A_ CHANNEL_2	XXX	COM-PLETE-NESS_ NPPF_XXX	INSERT_ and_ ERASE_ per_ EVENT_ with_ PRIORITY (insert)	Event for representing the **expectation of the processing of the planned imaging for the L0**	Start of the first received scene of the corresponding continuous MSI segment	Stop of the last received scene of the corresponding continuous MSI segment

Table 7: Table describing the events associated to the ingestion

3.8 Ingestion module for the OPHKTM file

This sections describes the ingestion module for inserting the production information of the package, which contains the housekeeping telemetry received from the satellite, generated by PDGS to be sent to FOS.

The associated ingestion processors are:

- **s2boa.ingestions.ingestion_ophktm.ingestion_ophktm**

This module uses the following DIM signatures:

- **HKTM_PRODUCTION_VGS**: production information of the package, which contains the housekeeping telemetry received from the satellite, generated by PDGS to be sent to FOS.

The table 8 shows the description of the explicit references inserted by the ingestion.

Reference	Description
HKTM PRODUCT_ ID	Identifier of the package generated by PDGS containing the telemetry to be sent to FOS

Table 8: Table describing the explicit reference associated to the ingestion

The figure 10 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

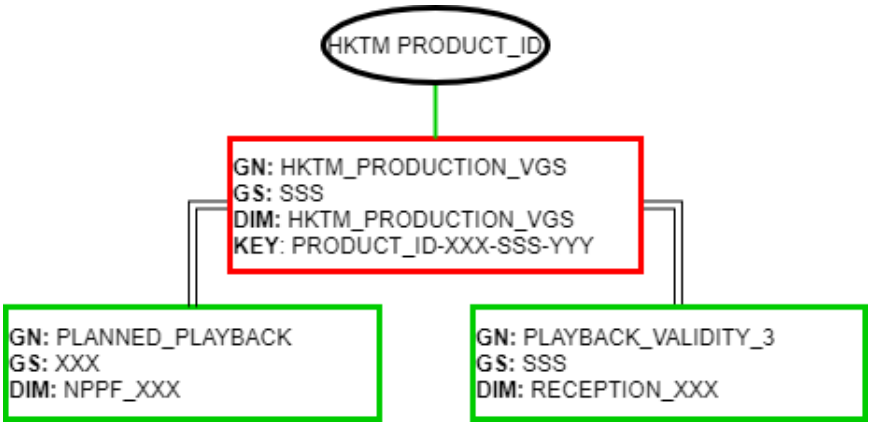

Figure 10: Structure of events inserted by the ingestion module for the OPHKTM file

Where XXX is the corresponding satellite id, SSS is the station and YYY is the orbit number.

The table 9 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
HKTM_ PRODUCTION_ VGS	XXX	HKTM_ PRODUC-TION_ VGS	EVENT_ KEYS (insert) [KEY: PRODUCT_ ID-XXX-SSS-YYY]	Event for representing the **generation of the HKTM product**	UTC value inside the generation_date node	UTC value inside the generation_date node

Table 9: Table describing the events associated to the ingestion

The figure 11 shows a simplified diagram of the structure of annotations inserted (associated structure of values not included for simplicity).

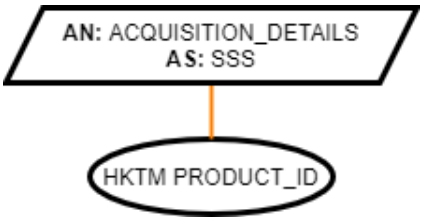

Figure 11: Structure of annotations inserted by the ingestion module for the OPHKTM file

Where SSS is the station.

The table 10 shows the description of the annotations inserted by the ingestion

Annotation name	Annotation system	DIM signature	Insertion mode	Description
ACQUISITION_ DETAILS	SSS	HKTM_ PRODUC- TION_ VGS	SIMPLE_ UP- DATE (insert)	Annotation for representing the **acquisition details for the generated HKTM package**

Table 10: Table describing the annotations associated to the ingestion

3.9 Ingestion module for the TLM_REQ_B files

This section describes the ingestion module for inserting the telemetry files containing the memory information of the satellite. The associated ingestion processor is

- **s2boa.ingestions.ingestion_tlm_req_b.ingestion_tlm_req_b**

This module uses the folowing DIM signatures:

- **MEMORY_EVOLUTION_XXX**: data containing the evolution of the memory in the different storages (NOMINAL, NRT) for the two channels as well as the last replayed scene to ground for the two channels.

Where XXX is the corresponding satellite id.

The figure 12 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

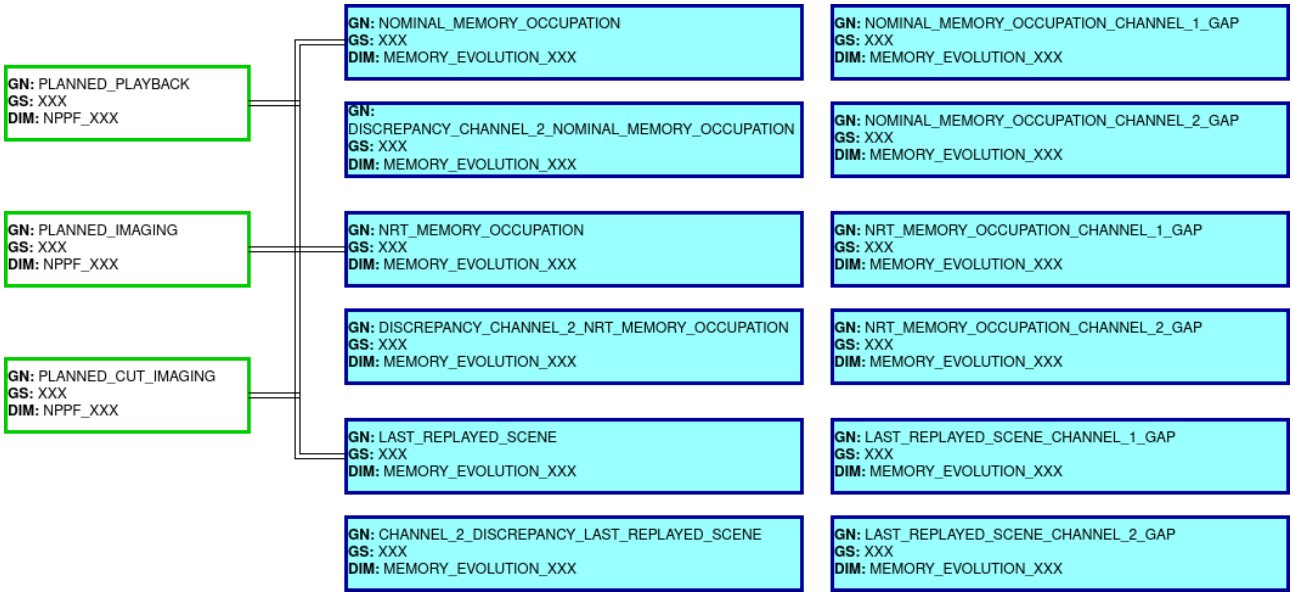

Figure 12: Structure of events inserted by the ingestion module for the TLM_REQ_B file

The table 11 shows the description of the events inserted by the ingestion module.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
NOMINAL_ MEMORY_ OCCUPATION	XXX	MEMORY_ EVOLUTION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **NOMINAL memory evolution** taking as reference the values for channel 1	UTC time associated to a new engineering_ value	UTC time associated to the last instance of the same enineering_ value
DISCREPANCY_ CHANNEL_2_ NOMINAL_ MEMORY_ OCCUPATION	XXX	MEMORY_ EVOLUTION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **discrepancy between the NOMINAL memory occupation of Channel 1 and the NOMINAL memory occupation of Channel 2**	UTC time associated to the discrepancy	UTC time associated to the discrepancy
NRT_ MEMORY_ OCCUPATION	XXX	MEMORY_ EVOLUTION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **NRT memory evolution** taking as reference the values for channel 1	UTC time associated to a new engineering_ value	UTC time associated to the last instance of the same enineering_ value
DISCREPANCY_ CHANNEL_2_ NRT_ MEMORY_ OCCUPATION	XXX	MEMORY_ EVOLUTION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **discrepancy between the NRT memory occupation of Channel 1 and NRT memory occupation of Channel 2**	UTC time associated to the discrepancy	UTC time associated to the discrepancy

LAST_ REPLAYED_ SCENE	XXX	MEMORY_ EVOLU-TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **last replayed scene** taking as reference the values for channel 1	UTC time associated to a new engineering_ value	UTC time associated to the last instance of the same enineering_ value
DISCREPANCY_ CHANNEL_2_ LAST_ REPLAYED_ SCENE	XXX	MEMORY_ EVOLU-TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **discrepancy between the last replayed scene of Channel 1 and the last replayed scene of Channel 2**	UTC time associated to the discrepancy	UTC time associated to the discrepancy
NOMINAL_ MEMORY_ OCCUPATION_ CHANNEL_1_ GAP	XXX	MEMORY_ EVOLU-TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **gaps in the NOMINAL memory occupation of Channel 1** of more than 6 seconds	UTC time associated to the beginning of the gap	UTC time associated to the end of the gap
NOMINAL_ MEMORY_ OCCUPATION_ CHANNEL_2_ GAP	XXX	MEMORY_ EVOLU-TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **gaps in the NOMINAL memory occupation of Channel 2** of more than 6 seconds	UTC time associated to the beginning of the gap	UTC time associated to the end of the gap
NRT_ MEMORY_ OCCUPATION_ CHANNEL_1_ GAP	XXX	MEMORY_ EVOLU-TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **gaps in the NRT memory occupation of Channel 1** of more than 6 seconds	UTC time associated to the beginning of the gap	UTC time associated to the end of the gap

NRT_ MEMORY_ OCCUPATION_ CHANNEL_2_ GAP	XXX	MEMORY_ EVOLU- TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **gaps in the NRT memory occupation of Channel 2** of more than 6 seconds	UTC time associated to the beginning of the gap	UTC time associated to the end of the gap
LAST_ REPLAYED_ SCENE_ CHANNEL_1_ GAP	XXX	MEMORY_ EVOLU- TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **gaps in the last replayed scene data of Channel 1** of more than 6 seconds	UTC time associated to the beginning of the gap	UTC time associated to the end of the gap
LAST_ REPLAYED_ SCENE_ CHANNEL_2_ GAP	XXX	MEMORY_ EVOLU- TION_ XXX	INSERT_ and_ERASE (insert_ and_erase)	Event for representing the **gaps in the last replayed scene data of Channel 2** of more than 6 seconds	UTC time associated to the beginning of the gap	UTC time associated to the end of the gap

Table 11: Table describing the events associated to the ingestion

3.10 Ingestion module for the PRIP file

This section describes the ingestion module of the PRIP reports, which contain information about the archiving of the different PDIs processed and sent by the PDGS to the PRIP.

The associated ingestion processors are:

- **s2boa.ingestions.ingestion_prip.ingestion_prip**

This module use the following DIM signatures:

- **PRIP_ARCHIVING**: archiving information of the different PDIs into the PRIP.

The table 12 shows the description of the explicit references inserted by the ingestion.

Reference	Description
DS PRODUCT_ID	Identifier of the archived DS generated by the PDGS
GR PRODUCT_ID	Identifier of the archived GR generated by the PDGS
TL PRODUCT_ID	Identifier of the archived TL generated by the PDGS
TC PRODUCT_ID	Identifier of the archived TC generated by the PDGS
HKTM PRODUCT_ ID	Identifier of the archived HKTM files generated by the PDGS
AUX PRODUCT_ID	Identifier of the archived AUXILIARY files
GIP PRODUCT_ID	Identifier of the archived GIP files

Table 12: Table describing the explicit reference associated to the ingestion

The figure 13 shows a simplified diagram of the structure of annotations and explicit references inserted (associated structure of values not included for simplicity).

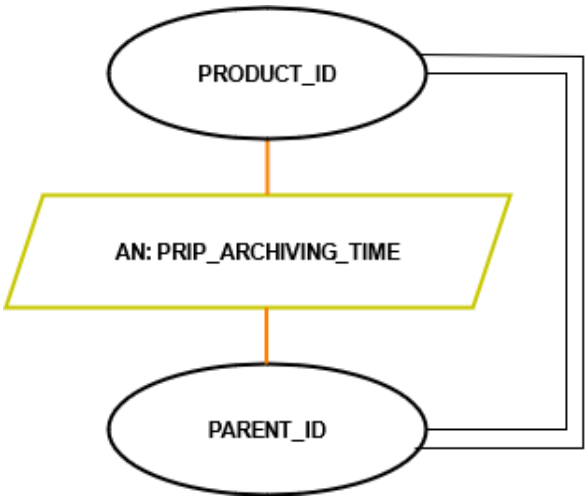

Figure 13: Structure of annotations and explicit references inserted by the ingestion module for the PRIP file

Where PRODUCT_ID includes all the different PDIs that are archived into the PRIP (DSs, GRs, TLs, TCS, HKTM, AUX, GIP, ...) and the PARENT_ID makes reference to the DSs to indicate the parent relation with the GRs, TLs and TCs (this does not apply to HKTM, AUX and GIP files).

The table 13 shows the description of the annotations inserted by the ingestion.

Annotation name	Annotation system	DIM signature	Insertion mode	Description
PRIP_ ARCHIVING_ TIME	None	PRIP_ ARCHIVING	INSERT_ and_ ERASE_ with_ PRIOR- ITY	Annotation representing the **archiving details of the generated PDIs into the PRIP**

Table 13: Table describing the annotations associated to the ingestion

3.11 Ingestion module for the EDR file

This sections describes the ingestion module for inserting the information of the link execution status files, which carry the reception status of the pass for both PEDC and BEDC.

The associated ingestion processors are:

- **s2boa.ingestions.ingestion_edrs_link_status.ingestion_edrs_link_status**

This module uses the following DIM signatures:

- **LINK_EXECUTION_STATUS_SSS**: information of the link execution status reported by EDRS team.

The table 14 shows the description of the explicit references inserted by the ingestion.

Reference	Description
EDRS SESSION_ID	Identifier of the link execution status reported by EDRS team

Table 14: Table describing the explicit reference associated to the ingestion

The figure 14 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

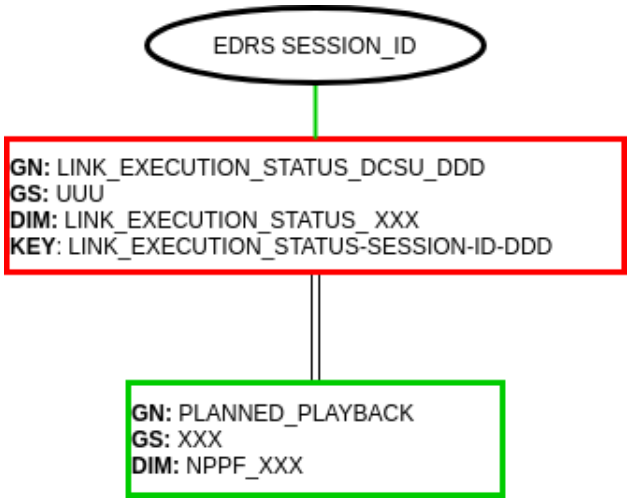

Figure 14: Structure of events inserted by the ingestion module for the EDR file

Where XXX is the corresponding satellite id, UUU is the EDRS unit DDD is the DCSU id. The table 15 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
LINK_EXECUTION_STATUS_DCSU_DDD	UUU	LINK_EXECUTION_STATUS_SSS	EVENT_KEYS (insert) [KEY: LINK_EXECUTION_STATUS-SESSION-ID-DDD]	Event for representing the information of the **link execution status reported by EDRS** team	UTC time associated to the validity start of the received file node	UTC time associated to the validity stop of the received file node

Table 15: Table describing the events associated to the ingestion

3.12 Ingestion module for the REP_SUP file

This section describes the ingestion module of the REP_SUP reports, which are generated by SUP and contain information about the satellite unavailabilities.

The associated ingestion processors are:

- **s2boa.ingestions.ingestion_sup.ingestion_sup**

This module use the following DIM signatures:

- **SATELLITE_UNAVAILABILITY**: information about the satellite's subsystems unavailabilities.

The table 16 shows the description of the events inserted by the ingestion.

Gauge name	Gauge system	DIM signature	Insertion mode	Description	Start	Stop
SATELLITE_UNAVAILABILITY	XXX	SATELLITE_UNAVAILABILITY	EVENT_KEYS (insert) [KEY: XXX-SUBSYSTEM-REFERENCE]	Event for representing the **unavailability impact.**	UTC start time value inside the subsystem node	UTC end time value inside the subsystem node

Table 16: Table describing the events associated to the ingestion

Where XXX is the corresponding satellite id, SUBSYSTEM is the name of the impacted satellite subsystem and REFERENCE is the unavailability reference for the impact on the given subsystem.

The figure 15 shows a simplified diagram of the structure of events inserted (associated structure of values not included for simplicity).

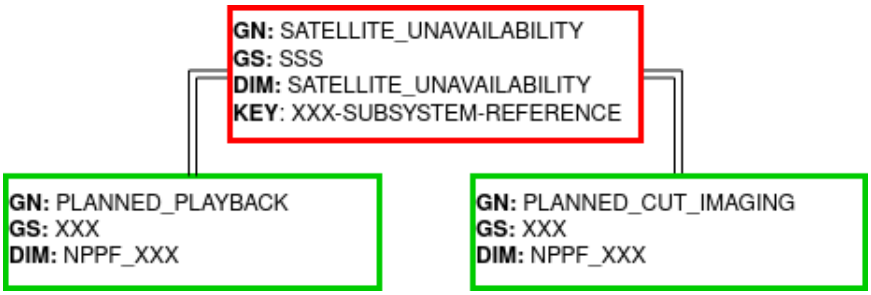

Figure 15: Structure of events inserted by the ingestion module for the REP_SUP file

Where the inserted event will be only linked to one of the two included events (PLANNED_PLAYBACK or PLANNED_CUT_IMAGING) depending on the impacted subsystem:

- If the satellite unavailability impacts the MSI or the MMFU subsystems (imaging), then the inserted event will be linked to the PLANNED_CUT_IMAGING events.
- If the satellite unavailability impacts the XBAND or OCP subystems (downlink), then the inserted event will be linked to the PLANNED_PLAYBACK events.

Chapter 4

Ingestion modules code documentation

4.1 Subpackages

4.1.1 s2boa.ingestions package

4.1.1.1 Submodules

4.1.1.2 s2boa.ingestions.ingestion_ai.ingestion_ai module

Ingestion module for the REP_OPAI files of Sentinel-2

Written by DEIMOS Space S.L. (femd)

module eboa

`s2boa.ingestions.ingestion_ai.ingestion_ai.process_file`(*file_path*, *engine*, *query*, *reception_time*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.3 s2boa.ingestions.ingestion_dam.ingestion_dam module

Ingestion module for the REP_OPDAM files of Sentinel-2

Written by DEIMOS Space S.L. (femd)

module eboa

`s2boa.ingestions.ingestion_dam.ingestion_dam.process_file(`*file_path*, *engine*, *query*, *reception_time*`)`

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.4 s2boa.ingestions.ingestion_dfep_acquisition.ingestion_dfep_acquisition module

Ingestion module for the REP_PASS_2|5 files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module eboa

`s2boa.ingestions.ingestion_dfep_acquisition.ingestion_dfep_acquisition.process_file(`*fi p e g q re c ti ti*

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance

- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.5 s2boa.ingestions.ingestion_dfep_schedule.ingestion_dfep_schedule module

Ingestion module for the DFEP schedule files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module eboa

`s2boa.ingestions.ingestion_dfep_schedule.ingestion_dfep_schedule.process_file`(*file_path*, *engine*, *query*, *reception_time*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.6 s2boa.ingestions.ingestion_dhus.ingestion_dhus module

Ingestion module for the REP_OPDHUS files of Sentinel-2

Written by DEIMOS Space S.L. (femd)

module eboa

`s2boa.ingestions.ingestion_dhus.ingestion_dhus.process_file`(*file_path*, *engine*, *query*, *reception_time*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed

- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.7 s2boa.ingestions.ingestion_dpc.ingestion_dpc module

Ingestion module for the DPC files of Sentinel-2

Written by DEIMOS Space S.L. (femd)

module eboa

`s2boa.ingestions.ingestion_dpc.ingestion_dpc.process_file`(*file_path*, *engine*, *query*, *reception_time*, *wait_previous_levels=True*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.8 s2boa.ingestions.ingestion_edrs_acquisition.ingestion_edrs_acquisition module

Ingestion module for the REP_PASS_E_VGS files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module eboa

`s2boa.ingestions.ingestion_edrs_acquisition.ingestion_edrs_acquisition.process_file`(*fi*
p
e
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ti

Function to process the file and insert its relevant information into the DDBB of the

eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.9 s2boa.ingestions.ingestion_lta.ingestion_lta module

Ingestion module for the REP_OPLTA files of Sentinel-2

Written by DEIMOS Space S.L. (femd)

module eboa

`s2boa.ingestions.ingestion_lta.ingestion_lta.process_file`(*file_path*, *engine*, *query*, *reception_time*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.10 s2boa.ingestions.ingestion_ltas.ingestion_ltas module

Ingestion module for the REP_OPLTAS files of Sentinel-2

Written by DEIMOS Space S.L. (femd)

module eboa

`s2boa.ingestions.ingestion_ltas.ingestion_ltas.process_file`(*file_path*, *engine*, *query*, *reception_time*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.11 s2boa.ingestions.ingestion_nppf.ingestion_nppf module

Ingestion module for the NPPF files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module s2boa

`s2boa.ingestions.ingestion_nppf.ingestion_nppf.process_file`(*file_path*, *engine*, *query*, *reception_time*, *tgz_filename=None*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.12 s2boa.ingestions.ingestion_orbpre.ingestion_orbpre module

Ingestion module for the ORBPRE files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module eboa

s2boa.ingestions.ingestion_orbpre.ingestion_orbpre.get_date_from_angle(*angle*, *orbital_period*, *ascending_node_time*)

s2boa.ingestions.ingestion_orbpre.ingestion_orbpre.process_file(*file_path*, *engine*, *query*, *reception_time*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.13 s2boa.ingestions.ingestion_rep_arc.ingestion_rep_arc module

Ingestion module for the REP_ARC files of Sentinel-2

Written by DEIMOS Space S.L. (femd)

module eboa

s2boa.ingestions.ingestion_rep_arc.ingestion_rep_arc.process_file(*file_path*, *engine*, *query*, *reception_time*, *wait_previous_levels=True*)

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.14 s2boa.ingestions.ingestion_slot_request_edrs.ingestion_slot_request_edrs module

Ingestion module for the SRA (Slot request for unit A) files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module eboa

`s2boa.ingestions.ingestion_slot_request_edrs.ingestion_slot_request_edrs.process_file`

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.15 s2boa.ingestions.ingestion_station_acquisition_report.ingestion_station_acquisition_report module

Ingestion module for the Station Acquisition Report files

Written by DEIMOS Space S.L. (femd)

module eboa

s2boa.ingestions.ingestion_station_acquisition_report.ingestion_station_acquisition_repo

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.16 s2boa.ingestions.ingestion_station_schedule.ingestion_station_schedule module

Ingestion module for the Station schedule files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module eboa

s2boa.ingestions.ingestion_station_schedule.ingestion_station_schedule.process_file(*file_path engine query reception_time*

Function to process the file and insert its relevant information into the DDBB of the eboa

Parameters

- `file_path` (*str*) – path to the file to be processed
- `engine` (*Engine*) – Engine instance
- `query` (*Query*) – Query instance
- `reception_time` (*str*) – time of the reception of the file by the triggering

4.1.1.17 s2boa.ingestions.errors module

Errors definition for the ingestions module

Written by DEIMOS Space S.L. (dibb)

module eboa

`exception s2boa.ingestions.errors.CentresConfigCannotBeRead(`*message*`)`
Bases: *s2boa.ingestions.errors.Error*

Exception raised when the centres configuration file cannot be read.

Attributes: message – explanation of the error

`exception s2boa.ingestions.errors.CentresConfigDoesNotPassSchema(`*message*`)`
Bases: *s2boa.ingestions.errors.Error*

Exception raised when the centres configuration does not pass the schema.

Attributes: message – explanation of the error

`exception s2boa.ingestions.errors.Error`
Bases: `Exception`

Base class for exceptions in this module.

4.1.1.18 s2boa.ingestions.functions module

Helper module for the ingestion_functions. of files of Sentinel-2

Written by DEIMOS Space S.L. (dibb)

module eboa

`s2boa.ingestions.functions.L0_L1A_L1B_processing(`*source*, *engine*, *query*, *granule_timeline*, *list_of_events*, *datastrip*, *granule_timeline_per_detector*, *list_of_operations*, *system*, *version*, *filename*, *satellite*, *priority*`)`
Method to generate the events for the levels L0 and L1B

Parameters

- `source` (*dict*) – information of the source
- `engine` (*Engine*) – object to access the engine of the EBOA
- `query` (*Query*) – object to access the query interface of the EBOA
- `granule_timeline` (*list*) – list of granule segments to be processed
- `list_of_events` (*list*) – list to store the events to be inserted into the eboa
- `datastrip` (*str*) – datastrip
- `granule_timeline_per_detector` (*dict*) – dict containing the granule segments per detector
- `list_of_operations` (*list*) – list of operations to be inserted into EBOA
- `level` (*str*) – level of the outputs being processed
- `system` (*str*) – center where data has been processed
- `version` (*str*) – version of the processor used
- `filename` – name of the processor file

Returns None

`s2boa.ingestions.functions.L1C_L2A_processing`(*source*, *engine*, *query*, *list_of_events*, *processing_validity_events*, *datastrip*, *list_of_operations*, *system*, *version*, *filename*, *satellite*, *priority*)

Method to generate the events for the levels L1C and L2A

Parameters

- `source` (*dict*) – information of the source
- `engine` (*Engine*) – object to access the engine of the EBOA
- `query` (*Query*) – object to access the query interface of the EBOA
- `list_of_events` (*list*) – list to store the events to be inserted into the eboa
- `processing_validity_events` (*dict*) – dict containing the events linked to the sensing date from the datablock analysed
- `datastrip` (*str*) – datastrip
- `list_of_operations` (*list*) – list of operations to be inserted into EBOA
- `system` (*str*) – center where data has been processed
- `version` (*str*) – version of the processor used
- `filename` – name of the processor file

Returns None

s2boa.ingestions.functions.associate_footprints(*events*, *satellite*, *orbpre_events=None*, *return_polygon_format=False*)

s2boa.ingestions.functions.build_orbpre_file(*start_events*, *stop_events*, *satellite*, *orbpre_events=None*)
Method to generate an orbpre file from data inside the DDBB

s2boa.ingestions.functions.convert_from_datetime_gps_to_datetime_utc(*date*)
Method to convert a date in GPS precission to UTC :param date: date in GPS precission and ISO format :type date: str

Returns date coverted in ISO 8601

Return type str

s2boa.ingestions.functions.convert_from_gps_to_utc(*date*)
Method to convert a date in GPS precission to UTC :param date: date in GPS precission and ISO format :type date: str

Returns date coverted in ISO 8601

Return type str

s2boa.ingestions.functions.correct_footprint(*coordinates*)

s2boa.ingestions.functions.correct_list_of_coordinates_for_ds(*list_of_coordinates*)
Method to correct the format of a given list of coordinates for a datastrip :param list_of_coordinates: list with coordinates :type list_of_coordinates: list

Returns list_of_coordinates

Return type str

s2boa.ingestions.functions.correct_list_of_coordinates_for_gr_tl(*list_of_coordinates*)
Method to correct the format of a given list of coordinates for a granule or a tile :param list_of_coordinates: list with coordinates :type list_of_coordinates: list

Returns list_of_coordinates

Return type str

s2boa.ingestions.functions.get_apid_numbers(*channel=None*)
Method to obtain the APID numbers used

Returns list of APID numbers

Return type list

s2boa.ingestions.functions.get_band_detector(*apid*)
Method to obtain the band and detector numbers related to the APID number

The detector and the bands are determined from APID

APID RANGE DETECTOR 0-15 12 16-31 11 32-47 10 48-63 9 64-79 8 80-95 7

256-271 6 272-287 5 288-303 4 304-319 3 320-335 2 336-351 1

APID MOD 16 BAND 0 1 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 8a 9 9 10 10 11 11 12 12

Parameters `apid` – APID number

Returns band_detector_configuration

Return type dict

`s2boa.ingestions.functions.get_centre_name_by_alias(`*alias*`)`

`s2boa.ingestions.functions.get_centres_conf()`

`s2boa.ingestions.functions.get_counter_threshold(`*band*`)`

Method to obtain the counter threshold related to the band number

BAND COUNTER THRESHOLD METRES 1 23 60 2-4 143 10 5-7 71 20 8 143 10 8a 71 20 9-10 23 60 11-12 71 20

Parameters `band` (*str*) – band number

Returns counter_threshold

Return type int

`s2boa.ingestions.functions.get_counter_threshold_from_apid(`*apid*`)`
Method to obtain the counter threshold related to the apid number

Parameters `apid` (*str*) – apid number

Returns counter_threshold

Return type int

`s2boa.ingestions.functions.get_satellite_name_by_alias(`*alias*`)`

`s2boa.ingestions.functions.get_satellites_conf()`

`s2boa.ingestions.functions.get_vcid_apid_configuration(`*vcid*`)`
Method to obtain the APID configuration related to the VCID number :param vcid: VCID number :type vcid: str

Returns apid_configuration

Return type dict

`s2boa.ingestions.functions.get_vcid_mode(`*vcid*`)`
Method to convert the VCID number into the storage mode :param vcid: VCID number :type vcid: str

Returns mode

Return type str

s2boa.ingestions.functions.insert_ingestion_progress(*session*, *source*, *progress*)

s2boa.ingestions.functions.list_of_coordinates_to_str_geometry(*list_of_coordinates*)

Method to receive a string of coordinates and return the same list but with a correct format :param list_of_coordinates: list with coordinates :type list_of_coordinates: list

Returns geometry

Return type str

s2boa.ingestions.functions.obtain_polygon_format(*footprint*)

s2boa.ingestions.functions.three_letter_to_iso_8601(*date*)

Method to convert a date in three letter format to a date in ISO 8601 format :param date: date in three letter format (DD-MMM-YYYY HH:MM:SS.ssssss) :type date: str

Returns date in ISO 8601 format (YYYY-MM-DDTHH:MM:SS)

Return type str

4.1.1.19 s2boa.ingestions.xpath_functions module

Helper module for the ingestion_functions. of files of Sentinel-2 using functions in XPATH

Written by DEIMOS Space S.L. (dibb)

module eboa

s2boa.ingestions.xpath_functions.dates_difference(*dummy*, *minuend*, *subtrahend*)

Method to perform the difference between two dates from XPATH :param dummy: parameter not used by lxml :type dummy: None :param minuend: first date in the substruction :type date: str :param subtrahend: second date in the substruction :type date: str

Returns seconds of difference

Return type float

s2boa.ingestions.xpath_functions.get_counter_threshold_from_apid(*dummy*, *apid*)

Method to obtain the counter threshold of the related apid :param dummy: parameter not used by lxml :type dummy: None :param apid: apid number :type apid: str

Returns counter_threshold

Return type int

s2boa.ingestions.xpath_functions.three_letter_to_iso_8601(*dummy*, *date*)

Method to convert a date in three letter format to a date in ISO 8601 format from

XPATH :param dummy: parameter not used by lxml :type dummy: None :param date: date in three letter format (DD-MMM-YYYY HH:MM:SS.ssssss) :type date: str

Returns date in ISO 8601 format (YYYY-MM-DDTHH:MM:SS)

Return type str

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Chapter 5

View modules code documentation

5.1 Subpackages

5.1.1 s2vboa.views package

5.1.1.1 Submodules

5.1.1.2 s2vboa.views.acquisition module

5.1.1.3 s2vboa.views.planning module

5.1.1.4 s2vboa.views.functions module

Views functions definition

Written by DEIMOS Space S.L. (dibb)

module s2vboa

s2vboa.views.functions.get_start_stop_filters(*query*, *current_app*, *request*, *window_size*, *mission*, *filters*)

s2vboa.views.functions.query_orbpre_events(*query*, *current_app*, *start_filter=None*, *stop_filter=None*, *mission=None*, *limit=None*, *offset=None*, *descending=False*)

Query predicted orbit events.

5.1.1.5 Module contents

Acronyms

ANX Ascending Node Crossing. 20

BEDC Backup EDRS Data Centre. 54

BOA Business Operation Analysis. 1, 3, 5

DCSU Data Consolidation Unit. 55

DFEP Demodulator and Front End Processor. 3, 23, 28

DHuS Data Hub Software. 4

DIM Data Ingestion Module. 6, 14, 21, 23, 25, 28, 37, 46, 48, 53, 54, 57

EDRS European Data Relay System. 3, 25, 27, 54–56

EFEP EDRS Front End Processor. 37

EISP EDRS Instrument Source Packet (applicable also to VGS). 3

FOS Flight Operation Segment. 4, 5, 14, 46

HKTM House Keeping Telemetry. 4, 32

ISP Instrument Source Packet. 28, 37

MSI MultiSpectral Instrument. 31–36, 40–45

PDGS Payload Data Ground Segment. 4, 5, 46, 53

PEDC Primary EDRS Data Centre. 54

PRIP Production Interface (delivery) Point. 53, 54

S2 Sentinel-2. 3–5

S2MP Sentinel-2 Mission Planning. 14

SUP Satellite Unavailabilities. 57, 59

TLE Two Line Elements. 4

VCID Virtual Channel Identifier. 28, 37