

Earth Observation Payload Data Ground Systems Infrastructure Evolution 2011-2014



LTDP SAFE

Specialisation Documents Organisation trade-off

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1 Introduction

1.1 Purpose

The purpose of this trade-off is to provide a new approach for the organisation of the SAFE Specialisation documents for SAFE 2.0, verifying if one Specialisation document per each product type (at different product levels) is better than having just one single Specialisation document for all instrument products.

1.2 Scope

The scope of this document is to provide a new approach for the organisation of the SAFE Specialisation documents presented during the PDR-C in order to consolidate it for the PDR. This analysis has been requested as results of the action PDR-C_A09 (see [PDRC_REP]) within the LTDP-SAFE project. The results obtained from this analysis will be used as a basis to update the SAFE documentation.

The document provides a description of the existing document organisation in SAFE 1.3 including its benefits/drawbacks and proposing alternatives to this approach according to the LTDP Guidelines.

1.3 Document Structure

This document is structured as follows:

- Introduction.
- Document organisation in SAFE 1.3
- Proposed organisation for SAFE 2.0
 - Alternatives
- Conclusions

1.4 Document Status

This is the first version of the document issued for open discussion in the SAFE Wiki/Forum web page (<http://wiki.services.eoportal.org/tiki-index.php?page=LTDP+SAFE+Wiki>).

1.5 Applicable Documents

The following table lists the Applicable Documents that have a direct impact on the contents of this document.

Acronym	Title	Reference	Issue
[SAFE_PRIMER]	STANDARD ARCHIVE FORMAT FOR EUROPE PRIMER	PGSI-GSEG-EOPG-FS-010-0001	2.0
[SAFE_CORE]	STANDARD ARCHIVE FORMAT FOR EUROPE CORE SPECIFICATIONS	PGSI-GSEG-EOPG-FS-05-0001	2.0

Acronym	Title	Reference	Issue
[SAFE_REC_SPEC]	STANDARD ARCHIVE FORMAT FOR EUROPE RECOMMENDATION FOR SPECIALIZATIONS	PGSI-GSEG-EOPG-FS-05-0002	2.0
[PDRC_REP]	SAFE PDR-C Review Report	PDGS-SAFE-GMV-RP-12/0130	1.0
[SSS]	Software System Specification	SAFE-GMV-SSS-001	1.0

Table 1: Applicable Documents

1.6 Reference Documents

Acronym	Title	Reference	Issue
[LTDP Guidelines]	European LTDP Common Guidelines	GSCB-LTDP-EOPG-GD-09-0002 – 30/09/2010	1.1
[PDSC]	Long Term Data Preservation Preserved Data Set Composition LTDP/PDSC	LTDP-GSEG-EOPG-RD-11-0003	3.0
[PROC_CHAIN]	Processing Chain analysis trade-off	PDGS-SAFE-GMV-TN-12/0195	1.0

Table 2: Reference Documents

1.7 Acronyms and Abbreviations

Acronym	Meaning
EO	Earth Observation
LTDP	Long Term Data Preservation
PDGS	Payload Data Ground System
PDR-C	Preliminary Design Review - Core
SAFE	Satellite Archive Format for Europe
TOC	Table Of Contents
XML	eXtensible Markup Language
XSD	XML Schema Definition

Table 3: Acronyms

2 Document organisation in SAFE 1.3

The SAFE 1.3 documentation is comprised by three SAFE core documents ([SAFE_CORE], [SAFE_PRIMER] and [SAFE_REC_SPEC]) plus a set of specialisation documents.

Each specialisation document is a restriction of the SAFE Core Specifications for a more specific type of data. Thus, in SAFE 1.3 the specialisation documents describe how this restriction has to be applied to preserve the L0/L1/L2 products of a specific mission or mission family.

As it can be seen in the following table, there are no clear criteria for the organisation of the specialisation documents in SAFE 1.3:

Mission/Family	Specialisation Document	Document Reference
ENVISAT	ASAR L0/L1/L2 Products	PGSI-GSEG-EOPG-FS-05-0003
	MERIS L0/L1/L2 Products	PGSI-GSEG-EOPG-FS-05-0004
	AATSR L0/L1/L2 Products	PGSI-GSEG-EOPG-FS-05-0005
	DORIS L0/L1 Products	PGSI-GSEG-EOPG-FS-05-0006
	GOMOS L0/L1/L2 Products	PGSI-GSEG-EOPG-FS-05-0007
	MIPAS L0/L1/L2 Products	PGSI-GSEG-EOPG-FS-05-0008
	RA2 L0/L1/L2 Products	PGSI-GSEG-EOPG-FS-05-0009
	MWR L0 Products	PGSI-GSEG-EOPG-FS-05-0010
	SCIAMACHY L0/L1/L2 Products	PGSI-GSEG-EOPG-FS-05-0011
	ENVISAT AUX DATA	PGSI-GSEG-EOPG-FS-05-0012
ERS	ERS L0 Products	PGSI-GSEG-EOPG-FS-05-0013
LANDSAT	Landsat L0 Products	PGSI-GSEG-EOPG-FS-05-0014
TERRA_AQUA	Terra/Aqua MODIS L0 Products	PGSI-GSEG-EOPG-FS-05-0015
NOAA	AVHRR L1 Products	PGSI-GSEG-EOPG-FS-05-0016
	AVHRR L0 Products	GMV-MEPOUP-TN-001
SeaStar	SeaWifs L1 Products	PGSI-GSEG-EOPG-FS-05-0017
	SeaWifs L0 Products	GMV-MEPOUP-TN-002
SPOT	HRV/IR L0 Products	PGSI-GSEG-EOPG-FS-05-0019
JERS	SAR/OPS L0 Products	PGSI-GSEG-EOPG-FS-05-0020
MOS	MOS Products	PGSI-GSEG-EOPG-FS-05-0021

Table 4: Document organisation in SAFE 1.3

Thus, for example, the specialisation document of the Landsat mission family would include a specialisation for all product levels generated by the MSS (Landsat-1/5), TM (Landsat-4/5) and ETM+ (Landsat-7) instruments. On the contrary, the specialisation for ENVISAT products is split in several documents (one for each instrument) mainly due to its size (more than 1000 pages per instrument in some cases).

However, there are no clear criteria to identify in which cases this separation has to be done, except the number of pages (which is very subjective and can differ from one specialisation creation to another).

2.1 Advantages of SAFE 1.3 documents organisation

The existing document organisation presents some advantages. One of them is that the whole set of SAFE specialisations is composed by a relatively low number of documents. In fact, except for the ENVISAT, NOAA and SeaStar cases, there is only one specialisation document per mission/mission family.

This document organisation assures that all the information needed to understand the products of a certain mission, can be stored in a single specialisation document.

2.2 Drawbacks of SAFE 1.3 documents organisation

However, one of the major disadvantages of this approach is that there is no clear organisation of the documentation. Sometimes a specialisation document contains the information of just one single instrument, but in other cases, a specialisation document includes the information of a set of instruments of the same mission/mission family.

With this approach, some of the resulting specialisation documents (e.g. ENVISAT-ASAR) contain more than one thousand pages. It is evident that this number of pages hampers its reading and comprehension, and hinders to find the information.

For the specific case of ENVISAT, its specialisations provide redundant information in all documents (mainly about the mission). Furthermore, there are some paragraphs along the ENVISAT specialisation documents differing only in a few words. Additionally, it has to be considered the SAFE requirements (see [SSS]) where it is said that it is required to include the sensor processing chains from L0 to L2 in the specialisations documents. In this case, the processing chain should be reproduced in every ENVISAT specialisation document, increasing the redundancy among documents. For more information about the processing chain see the [PROC_CHAIN].

Taking into account the recommendations described in the [LTDP Guidelines] and more precisely in the [PDSC] (sec 4.1.), the preferred entry point to describe a dataset target for preservation is the Instrument or Sensor and not the mission or mission family.

3 Document organisation proposals for SAFE 2.0

It is clear that an organisation of the specialisation documentation has to be done for SAFE in order to standardise the way of producing the overall documentation and trying to solve the main disadvantages existing in SAFE 1.3 seen previously.

Moreover, the proposals for document organisation have to take into account the inclusion of the sensor processing chains from L0 to L2 in the specialisations documents, as stated in the [SAFE-GEN-0150/2.0] requirement (see [SSS]).

The following alternatives are analysed in the following sections trying to solve the main problems existing in SAFE 1.3:

- **Alternative 1:**
 - To provide one specialisation document per each product level.
- **Alternative 2:**
 - To provide one specialisation document for each mission (or mission family) instruments.
- **Alternative 3:**
 - To provide one specialisation document for each instrument according to the LTDP sensor category.

3.1 Alternative 1: One specialisation document per each product level

One of the disadvantages of the SAFE 1.3 document organisation is the huge size and high number of pages of certain ENVISAT specialisations. This is produced by one of the following reasons:

- Some product-types are comprised by numerous measurement components (e.g. SCIAMACHY-NL). This case cannot be prevented during the generation of a specialisation document as the measurement components are the common target of preservation of each product-type and therefore it cannot be detached.
- There are several product-types for the same instrument (e.g. ASAR). In this case it is possible to reduce the size of the specialisation documents because it is possible to generate one specialisation document for each instrument product-type. However, this approach would lead to an enormous number of specialisation document files (there are around 20 different product-types only for ENVISAT-ASAR).

Nevertheless, the size of some of the specialisation documents required by the ENVISAT mission could be reduced if the specialisation for all products of a specific level is provided in separated documents for each instrument.

In order to avoid redundant information using this approach, it is proposed to provide the mission/mission family overview and all the mission-level specialisations in a separated document (called "Mission Specialisation").

Accordingly, it is also proposed to use this document to describe the existing mission processing chains (or a reference to an external document) in order to not repeat the information in several product specialisation documents.

Hence if the ENVISAT case is considered as example, the specialisation documents using this approach would be:

Mission/Family	Specialisation Description	Proposed Document Reference
ENVISAT	ENVISAT Mission Specialisation	ENVISAT-MISSION
	ASAR L1 Products	ENVISAT-ASAR-L1
	ASAR L1 Products	ENVISAT-ASAR-L1
	ASAR L2 Products	ENVISAT-ASAR-L2
	MERIS L0 Products	ENVISAT-MERIS-L0
	MERIS L1 Products	ENVISAT-MERIS-L1
	MERIS L2 Products	ENVISAT-MERIS-L2
	AATSR L0 Products	ENVISAT-AATSR-L0
	AATSR L1 Products	ENVISAT-AATSR-L1
	AATSR L2 Products	ENVISAT-AATSR-L2
	DORIS L0 Products	ENVISAT-DORIS-L0
	DORIS L1 Products	ENVISAT-DORIS-L1
	GOMOS L0 Products	ENVISAT-GOMOS-L0
	GOMOS L1 Products	ENVISAT-GOMOS-L1
	GOMOS L2 Products	ENVISAT-GOMOS-L2
	MIPAS L0 Products	ENVISAT-MIPAS-L0
	MIPAS L1 Products	ENVISAT-MIPAS-L0
	MIPAS L2 Products	ENVISAT-MIPAS-L2
	RA2 L0 Products	ENVISAT-RA2-L0
	RA2 L1 Products	ENVISAT-RA2-L1
	RA2 L2 Products	ENVISAT-RA2-L2
	MWR L0 Products	ENVISAT-MWR-L0
	SCIAMACHY L0 Products	ENVISAT-SCIAMACHY-L0
	SCIAMACHY L1 Products	ENVISAT-SCIAMACHY-L1
	SCIAMACHY L2 Products	ENVISAT-SCIAMACHY-L2
	ENVISAT Auxiliary Data	ENVISAT-AUXDATA

Table 5: Document organisation for ENVISAT using alternative 1

The specialisation (SAFE restricted types) at instrument level should be replicated in all product level specialisation documents of that instrument (e.g. ASAR) and analogously, if specialisation is applicable to different product levels, it should be also replicated in those documents linked to that product levels (e.g. ASAR L1-L2 specialisation).

Taking into account that the number of auxiliary files to be specialised for a mission (or mission family) is not really high, it is recommended to use one single document including all the auxiliary files of such mission (or mission family). However, in certain cases (e.g. ENVISAT with around 100 auxiliary files) the specialisation document could be divided in several books (B1, B2, B3, ...) if needed. In these cases, they should be classified by common files and instrument specific files:

Specialisation Description	Proposed Document Reference
ENVISAT Auxiliary data Specialisation Common files	ENVISAT-AUXDATA-B1
ENVISAT Auxiliary data Specialisation for ASAR	ENVISAT-AUXDATA-B2
ENVISAT Auxiliary data Specialisation for MERIS	ENVISAT-AUXDATA-B3
ENVISAT Auxiliary data Specialisation for AATSR	ENVISAT-AUXDATA-B4
ENVISAT Auxiliary data Specialisation for DORIS	ENVISAT-AUXDATA-B5
ENVISAT Auxiliary data Specialisation for GOMOS	ENVISAT-AUXDATA-B6
ENVISAT Auxiliary data Specialisation for MIPAS	ENVISAT-AUXDATA-B7
ENVISAT Auxiliary data Specialisation for RA2	ENVISAT-AUXDATA-B8
ENVISAT Auxiliary data Specialisation for MWR	ENVISAT-AUXDATA-B9
ENVISAT Auxiliary data Specialisation for SCIAMACHY	ENVISAT-AUXDATA-B10

In order to facilitate the identification of each specialisation document type, (i.e. mission, auxiliary data, or product specialisation) the following criteria is proposed to be used:

- Volume 1: Mission Specialisation document.
- Volume 2: Product Specialisation document.
- Volume 3: Auxiliary data Specialisation document for a specific mission.

The content of each volume will be discussed at high level in section 4 if this approach is finally considered.

Thus, following the ENVISAT example, the documents would be identified as follows:

Mission/Family	Specialisation Description	Proposed Document Reference
ENVISAT	ENVISAT Mission Specialisation	ENVISAT- V1 -MISSION
	[INSTRUMENT] L0 Products	ENVISAT- V2 -[INSTRUMENT]-L0
	[INSTRUMENT] L1 Products	ENVISAT- V2 -[INSTRUMENT]-L1
	[INSTRUMENT] L2 Products	ENVISAT- V2 -[INSTRUMENT]-L2
	ENVISAT Auxiliary data Specialisation	ENVISAT- V3 -AUXDATA

Table 6: Alternative 1 – Overview

See Appendix A for a detailed list of specialisation documents foreseen using this alternative.

3.1.1 Advantages of document organisation proposal

This approach provides a general criterion to generate the specialisation documents. The size of each document is manageable and allows an easy identification of the content.

In case of new auxiliary files are needed to be specialised (once a first version of the mission specialisations have been done) this won't produce any impact in the product specialisation documents because only the auxiliary data specialisation would be modified.

The new "Mission specialisation" document reduces de redundancy of information in all specialisation documents. It also allows the description of the processing chain information without adding additional redundancy in the product specialisation documents. If this document didn't exist, the processing chain descriptions should be included in all product specialisation documents.

3.1.2 Drawbacks of document organisation proposal

This alternative provides additional redundant information because the specialisation (SAFE restricted types) at instrument level should be reproduced in each product level document. In addition, when a common specialisation can be defined for different product levels (e.g. ASAR L1-L2) this should be also replicated in more than one document.

The information needed to understand the products of a certain mission is not stored in a single specialisation document file as it was done in SAFE 1.3.

Furthermore, the number of specialisation documents required for each mission is really high as it can be seen in Appendix A.

The proposed alternative is based in the mission as entry point to describe a dataset, which is not the recommended approach for the identification of the preservation dataset content as mentioned in [LTDP Guidelines] and [PDSC], where the instrument/sensor approach is preferred.

3.2 Alternative 2: One specialisation for each mission instrument

This alternative is focused on the idea of having common criteria for the generation of the product specialisation for a specific mission or mission family. This approach is based on the ENVISAT product specialisations done in SAFE 1.3.

One of the main problems of the original approach used in SAFE 1.3 for ENVISAT products is the information redundancy. In order to reduce this redundancy, it is proposed to provide the mission/mission family overview and all the mission-level specialisation in a separated document (called "Mission Specialisation"). Accordingly, it is also proposed to use this document to describe the existing mission processing chains (or a reference to an external document) to not repeat the information in several product specialisation documents.

Hence if the ENVISAT case is considered as example, the specialisation documents using this approach would be:

Mission/ Family	Specialisation Description	Proposed Document Reference
ENVISAT	ENVISAT Mission Specialisation	ENVISAT-MISSION
	ENVISAT ASAR Products	ENVISAT-ASAR
	ENVISAT MERIS Products	ENVISAT-MERIS
	ENVISAT AATSR Products	ENVISAT-AATSR
	ENVISAT DORIS Products	ENVISAT-AATSR
	ENVISAT GOMOS Products	ENVISAT-GOMOS
	ENVISAT MIPAS Products	ENVISAT-MIPAS

Mission/ Family	Specialisation Description	Proposed Reference	Document
	ENVISAT RA2 Products	ENVISAT-RA2	
	ENVISAT MWR Products	ENVISAT-MWR	
	ENVISAT SCIAMACHY Products	ENVISAT-SCIAMACHY	
	ENVISAT Auxiliary data Specialisation	ENVISAT-AUXDATA	

Table 7: Example of Specialisation document organisation using alternative 2

However, this approach doesn't solve the huge size of some of the resulting specialisation documents (e.g. ENVISAT-ASAR) which will still contain more than one thousand pages.

On the contrary, the size of some of the non-ENVISAT specialisation documents would be reduced drastically to less than 100 pages.

Taking into account that the number of auxiliary files to be specialised for a mission (or mission family) is not really high, it is recommended to use one single document including all the auxiliary files of such mission (or mission family). However, in certain cases (e.g. ENVISAT with around 100 auxiliary files) the specialisation document could be divided in several books (B1, B2, B3, ...) if needed. In these cases, they should be classified by common files and instrument specific files:

Specialisation Description	Proposed Reference	Document
ENVISAT Auxiliary data Specialisation Common files	ENVISAT-AUXDATA-B1	
ENVISAT Auxiliary data Specialisation for ASAR	ENVISAT-AUXDATA-B2	
ENVISAT Auxiliary data Specialisation for MERIS	ENVISAT-AUXDATA-B3	
ENVISAT Auxiliary data Specialisation for AATSR	ENVISAT-AUXDATA-B4	
ENVISAT Auxiliary data Specialisation for DORIS	ENVISAT-AUXDATA-B5	
ENVISAT Auxiliary data Specialisation for GOMOS	ENVISAT-AUXDATA-B6	
ENVISAT Auxiliary data Specialisation for MIPAS	ENVISAT-AUXDATA-B7	
ENVISAT Auxiliary data Specialisation for RA2	ENVISAT-AUXDATA-B8	
ENVISAT Auxiliary data Specialisation for MWR	ENVISAT-AUXDATA-B9	
ENVISAT Auxiliary data Specialisation for SCIAMACHY	ENVISAT-AUXDATA-B10	

In order to facilitate the identification of each specialisation document type, (i.e. mission, auxiliary data, or product specialisation) the following criteria is proposed to be used:

- Volume 1: Mission Specialisation document.
- Volume 2: Product Specialisation document.
- Volume 3: Auxiliary data Specialisation document for a specific mission.

The content of each volume will be discussed at high level in section 4 if this approach is finally considered.

Thus, following the ENVISAT example, the documents would be identified as follows:

Mission/ Family	Specialisation Description	Proposed Document Reference
ENVISAT	ENVISAT Mission Specialisation	ENVISAT- V1 -MISSION
	[INSTRUMENT] L0 Products	ENVISAT- V2 -[INSTRUMENT]
	ENVISAT Auxiliary data Specialisation	ENVISAT- V3 -AUXDATA

Table 8: Alternative 2 – Overview

See Appendix B for a detailed list of specialisation documents foreseen using this alternative.

3.2.1 Advantages of document organisation proposal

This approach defines a general criterion to generate the specialisation documents and allows an easy identification of the document according to the applicable mission or mission family. In addition, this alternative presents a reduction of the number of documents to be generated in comparison with alternative 1.

In case of new auxiliary files are needed to be specialised (once a first version of the mission specialisations have been done) this won't produce any impact in the product specialisation documents because only the auxiliary data specialisation would be modified.

The new "Mission specialisation" document reduces the redundancy of information in all specialisation documents. It also allows the description of the processing chain information without adding additional redundancy in the product specialisation documents. If this document didn't exist, the processing chain descriptions should be included in all product specialisation documents.

3.2.2 Drawbacks of document organisation proposal

This proposal doesn't solve the size problem of some specialisation documents (e.g. ENVISAT-ASAR) which will still contain more than one thousand pages.

The information needed to understand the products of a certain mission, is not stored in a single specialisation document file as it was done in SAFE 1.3.

Furthermore, the number of specialisation documents required for each mission is higher than in SAFE 1.3 as depicted in Appendix B.

The proposed alternative is based in mission which is not the recommended approach for the identification of the preservation dataset content as mentioned in [LTDP Guidelines] and [PDSC].

3.3 Alternative 3: One specialisation for LTDP instrument category

According to the [PDSC] and [LTDP Guidelines], the preferred entry point to describe a dataset is the Instrument or Sensor, even if in some context it is used a different entry point. Thus, for example in the EO domain it is usually referenced the mission (and then the instrument within a mission), or it is

usually used similar products of similar instruments/sensor from different missions, in order to access the information.

The two modes have advantages and disadvantages but the instrument/sensor way is the common way of all Earth Science domains.

This alternative tries to provide common criteria for the generation of the specialisation documents according to the LTDP categories. In that sense, the [LTDP Guidelines] provide the following categories for the EO Space Data:

- C1:** SAR imaging missions/sensors, high and very high resolution (different radar bands)
- C2:** Multi-spectral imaging missions/sensors, high and very high resolution.
- C3:** Medium resolution Land and Ocean monitoring missions/sensors (e.g. wide swath ocean colour and surface temperature sensors, altimeter, etc.).
- C4:** Atmospheric chemistry missions/sensors.
- C5:** Other Scientific missions/sensors.

According to this information and following the ENVISAT example used in previous sections, the instruments can be classified as follows:

Category	Instrument	Mission/Family
C1	ASAR	ENVISAT
C3	MERIS	ENVISAT
	AATSR	ENVISAT
	RA2	ENVISAT
C4	DORIS	ENVISAT
	GOMOS	ENVISAT
	MIPAS	ENVISAT
	MWR	ENVISAT
	SCIAMACHY	ENVISAT

Table 9: EO Space Data classification for ENVISAT Instruments

With this classification it is proposed to provide one product specialisation document (including all product levels) for each instrument of each category.

In order to reduce redundant information along the specialisation documents, it is proposed to provide a mission (or mission family) overview in a separated document (called "Mission Specialisation"). This document will be generated for a specific category only when at least one of their instruments belongs to this category. Regardless the general mission information, this document should provide information only of those instrument(s) of such category.

Accordingly, it is also proposed to use this document to describe the existing mission processing chains (or a reference to an external document) in order to not repeat the information in several product specialisation documents.

Hence if we consider the instrument category C4 only for the ENVISAT case as example, the specialisation documents using this approach would be:

Instrument Category	Specialisation Description	Proposed Document Reference
C4	ENVISAT Mission Specialisation for C4	C4-ENVISAT-MISSION
	MIPAS Products	C4-MIPAS
	DORIS Products	C4-DORIS
	MWR Products	C4-MWR
	SCIAMACHY Products	C4-SCIAMACHY
	GOMOS Products	C4-GOMOS
	ENVISAT Auxiliary data Specialisation for C4	C4-ENVISAT-AUXDATA

Table 10: Example of Specialisation document organisation using alternative 3

However, this approach doesn't solve the huge size of some of the resulting specialisation documents (e.g. ENVISAT-MIPAS) which will still contain more than 600 pages.

Taking into account that the number of auxiliary files to be specialised for each instrument is not really high, it is recommended to use one single document including all the auxiliary files of such instrument category. However, in certain cases (e.g. ENVISAT with around 100 auxiliary files) the specialisation document could be divided in several books (B1, B2, B3, ...) if needed. In these cases, they should be classified by common files and instrument specific files:

Specialisation Description	Proposed Document Reference
ENVISAT Auxiliary data Specialisation for C4 (common files)	C4-ENVISAT-AUXDATA-B1
ENVISAT Auxiliary data Specialisation for C4 MIPAS	C4-ENVISAT-AUXDATA-B2
ENVISAT Auxiliary data Specialisation for C4 DORIS	C4-ENVISAT-AUXDATA-B3
ENVISAT Auxiliary data Specialisation for C4 MWR	C4-ENVISAT-AUXDATA-B4
ENVISAT Auxiliary data Specialisation for C4 SCIAMACHY	C4-ENVISAT-AUXDATA-B5
ENVISAT Auxiliary data Specialisation for C4 GOMOS	C4-ENVISAT-AUXDATA-B6

In order to facilitate the identification of each specialisation document type, (i.e. mission, auxiliary data, or product specialisation) the following criteria is proposed to be used:

- Volume 1: Mission Specialisation document.
- Volume 2: Product Specialisation document.
- Volume 3: Auxiliary data Specialisation document for a specific mission.

The content of each volume will be discussed at high level in section 4 if this approach is finally considered.

Thus, following the example for C4 instruments, the documents would be identified as follows:

Instrument Classification	Specialisation Description	Proposed Document Reference
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Instrument Classification	Specialisation Description	Proposed Document Reference
C4	[MISSION_NAME] Mission Specialisation for C4	C4-V1-[MISSION_NAME]-MISSION
	[INSTRUMENT] products specialisation	C4-V2-[INSTRUMENT]
	[MISSION_NAME] Auxiliary data Specialisation for C4	C4-V3-[MISSION_NAME]-AUXDATA

Table 11: Alternative 3 – Overview

See Appendix C for a detailed list of specialisation documents foreseen using this alternative.

3.3.1 Advantages of document organisation proposal

This approach defines a general criterion to generate the specialisation documents compliant with the [LTDP Guidelines] and the [PDSC] and allows an easy identification of the document according the instrument category.

The product specialisation for common instruments existing in more than one mission (e.g. MWR) can be easily incorporated in the same document.

In case of new auxiliary files are needed to be specialised (once a first version of the mission specialisations have been done) this won't produce any impact in the product specialisation documents because only the auxiliary data specialisation would be modified

The new "Mission specialisation" document reduces the redundancy of information in all specialisation documents. It also allows the description of the processing chain information without adding additional redundancy in the product specialisation documents. If this document didn't exist, the processing chain descriptions should be included in all product specialisation documents.

3.3.2 Drawbacks of document organisation proposal

This proposal doesn't solve the size problem of some specialisation documents (e.g. ASAR instrument) which will still contain hundreds of pages.

There should be one "Mission Specialisation" document for each LTDP instrument classification. This introduces some redundancy if the overall mission description is reproduced for each instrument type.

The information needed to understand the products of a certain mission, is not stored in a single specialisation document file as it was done in SAFE 1.3.

Furthermore, the number of specialisation documents required for each mission is higher than in SAFE 1.3 as depicted in Appendix C.

4 CONCLUSIONS

The organisation of SAFE 1.3 specialisation documentation presents some drawbacks from the LTDP point of view that should be solved in SAFE 2.0. To this end, three alternatives have been analysed in the present document:

- **Alternative 1:** To provide one specialisation document per each product level.
- **Alternative 2:** To provide one specialisation document for each mission (or mission family) instruments.
- **Alternative 3:** To provide one specialisation document for each instrument according to the LTDP sensor category.

The following table describe how these alternatives provide an improvement on SAFE 1.3 or on the contrary deteriorate the existing organisation:

SAFE 1.3 PROS	LTDP Relevance	A.1	A.2	A.3
There are relatively few documents per mission/family mission (except for ENVISAT).	MED	✗	✗	✗
All the information needed to interpret a certain product is stored in a single specialisation document.	HIGH	✗	✗	✗
SAFE 1.3 CONS	LTDP Relevance	A.1	A.2	A.3
No clear organisation for specialisation documents.	HIGH	✓	✓	✓
Huge specialisation documents for certain missions (e.g. ENVISAT-ASAR)	MED	✓	≈	≈
Some specialisation documents include redundant information (mainly about the mission).	MED	✗	✓	✓
Processing chain should be reproduced in every ENVISAT specialisation document, increasing the redundancy among documents.	HIGH	✓	✓	✓
The document organisation is not in line with the [LTDP Guidelines] (and more precisely in the [PDSC] (sec 4.1.))	HIGH	≈	≈	✓

Notation:

✗ : The alternative get worst the exiting approach

≈ : The alternative doesn't provide a solution the exiting approach

✓ : The alternative improves the existing approach

Table 12: SAFE 1.3 vs. proposed alternatives

The previous table show that alternative 3 provides more solutions than the other. As results it seems clear that the specialisation per instrument classification is the best option. Therefore the alternative 3 is the recommended solution.

Next table provides a summary of the identified pros & cons described in section 3.3.1 and 3.3.2 for the recommended alternative:

Description	LTDP Impact
Pros	
This approach defines a general criterion to generate the specialisation documents compliant with the [LTDP Guidelines] and [PDSC] and allows an easy identification of the document according the instrument category.	HIGH

Description	LTDP Impact
The product specialisation for common instruments existing in more than one mission (e.g. MWR) can be easily incorporated in the same document.	MED
In case of new auxiliary files are needed to be specialised (once a first version of the specialisations have been done) this won't produce any impact in the product specialisation documents.	HIGH
Mission specialisation document reduces the redundancy of some of the information included in all specialisation documents.	MED
It also allows the description of the processing chain information without adding additional redundancy in the product specialisation documents.	MED
Cons	
Huge specialisation documents for certain missions (e.g. ENVISAT-ASAR)	MED
There is one "mission specialisation document" per instrument. This introduces a slight redundancy of information (mainly about the general description of the mission).	MED
The information needed to understand the products of a certain mission, is not stored in a single specialisation document file.	HIGH
Furthermore, the number of specialisation documents required for each mission is higher than in SAFE 1.3 as depicted in Appendix C.	MED

Table 13: Alternative 3 - Pros & Cons summary table

The most important drawback of this approach, considering the LTDP, is that the information needed to completely understand the product is not included in just one single file as it was done for SAFE 1.3. This drawback has two implications:

- It is needed to assure that all the documents are preserved altogether to assure the availability of the information (required to understand a product) and to facilitate the accessibility to these documents. However this is attenuated considering that the preservation it will be done not only at instrument level, but for the whole SAFE documentation dataset. The preservation and availability has to be guaranteed.
- It is more difficult to understand what documents are needed to find the required information. In this point the information could be hard to find if the document organisation is not clearly described and preserved for the long term.

In a second term, this alternative has some drawbacks on the usability of the documentation as the information it is spread in several documents and some of them are considerable large for easy handling. If we assume technology evolutions on software and hardware, it is not expected that this drawback could represent a major problem in the future, because large files will be easily loaded into memory and visualised without using specific tools.

In the last term, the redundancy introduced by this approach is really low, as only general descriptions of certain missions would be included in more than one document.

Therefore, it is recommended to organise the SAFE specialisation documents using the alternative 3: One specialisation for LTDP instrument category.

The proposed TOC for alternative 3 is described in Appendix D

Appendix A Proposed document organisation for alternative 1

#	Mission/Family	Specialisation Description	Proposed Reference	Document
1.	ENVISAT	ENVISAT Mission Specialisation	ENVISAT-V1-MISSION	
2.		ASAR L0 Products	ENVISAT-V2-ASAR-L0	
3.		ASAR L1 Products	ENVISAT-V2-ASAR-L1	
4.		ASAR L2 Products	ENVISAT-V2-ASAR-L2	
5.		MERIS L0 Products	ENVISAT-V2-MERIS-L0	
6.		MERIS L1 Products	ENVISAT-V2-MERIS-L1	
7.		MERIS L2 Products	ENVISAT-V2-MERIS-L2	
8.		AATSR L0 Products	ENVISAT-V2-AATSR-L0	
9.		AATSR L1 Products	ENVISAT-V2-AATSR-L1	
10.		AATSR L2 Products	ENVISAT-V2-AATSR-L2	
11.		DORIS L0 Products	ENVISAT-V2-DORIS-L0	
12.		DORIS L1 Products	ENVISAT-V2-DORIS-L1	
13.		GOMOS L0 Products	ENVISAT-V2-GOMOS-L0	
14.		GOMOS L1 Products	ENVISAT-V2-GOMOS-L1	
15.		GOMOS L2 Products	ENVISAT-V2-GOMOS-L2	
16.		MIPAS L0 Products	ENVISAT-V2-MIPAS-L0	
17.		MIPAS L1 Products	ENVISAT-V2-MIPAS-L0	
18.		MIPAS L2 Products	ENVISAT-V2-MIPAS-L2	
19.		RA2 L0 Products	ENVISAT-V2-RA2-L0	
20.		RA2 L1 Products	ENVISAT-V2-RA2-L1	
21.		RA2 L2 Products	ENVISAT-V2-RA2-L2	
22.		MWR L0 Products	ENVISAT-V2-MWR-L0	
23.		SCIAMACHY L0 Products	ENVISAT-V2-SCIAMACHY-L0	
24.		SCIAMACHY L1 Products	ENVISAT-V2-SCIAMACHY-L1	
25.		SCIAMACHY L2 Products	ENVISAT-V2-SCIAMACHY-L2	
26.		ENVISAT Auxiliary Data Specialisation	ENVISAT-V3-AUXDATA	
27.	ERS	ERS Mission Specialisation	ERS-V1-MISSION	
28.		AMI/SAR L0 Products	ERS-V2-AMI_SAR-L0	
29.		AMI/WS L0 Products	ERS-V2-AMI_WS-L0	
30.		AMI/SAR (WV) L0 Products	ERS-V2-AMI_SAR_WV-L0	
31.		ATSR L0 Products	ERS-V2-ATSR-L0	
32.		GOME L0 Products	ERS-V2-GOME-L0	
33.		GOME L1 Products	ERS-V2-GOME-L1	
34.		GOME L2 Products	ERS-V2-GOME-L2	
35.		MWR L0 Products	ERS-V2-MWR-L0	
36.		RA L0 Products	ERS-V2-RA-L0	
37.		EGH Products	ERS-V2-EGH-L0	
38.		ERS Auxiliary Data Specialisation	ERS-V3-AUXDATA	
39.	LANDSAT	LANDSAT Mission Specialisation	LANDSAT-V1-MISSION	
40.		TM L0 Products	LANDSAT-V2-TM-L0	
41.		MSS L0 Products	LANDSAT-V2-MSS-L0	
42.		ETM L0 Products	LANDSAT-V2-ETM-L0	
43.		LANDSAT Auxiliary Data Specialisation	LANDSAT-V3-AUXDATA	
44.	TERRA/AQUA	TERRA/AQUA Mission Specialisation	TERRA_AQUA-V1-MISSION	
45.		MODIS L0 Products	TERRA_AQUA-V2-MODIS-L0	
46.		TERRA/AQUA Auxiliary Data Specialisation	TERRA_AQUA-V3-AUXDATA	
47.	NOAA	NOAA Mission Specialisation	NOAA-V1-MISSION	
48.		AVHRR L0 Products	NOAA-V2-AVHRR-L0	
49.		AVHRR L1 Products	NOAA-V2-AVHRR-L1	
50.		NOAA Auxiliary Data Specialisation	NOAA-V3-AUXDATA	
51.	SeaStar	SeaStar Mission Specialisation	SeaStar-V1-MISSION	
52.		SeaWifs L0 Products	SeaStar-V2-SeaWifs-L0	

#	Mission/Family	Specialisation Description	Proposed Reference	Document
53.		SeaWifs L1 Products	SeaStar-V2-SeaWifs-L1	
54.		SeaStar Auxiliary Data Specialisation	SeaStar-V3-AUXDATA	
55.	SPOT	SPOT Mission Specialisation	SPOT-V1-MISSION	
56.		HRV L0 Products	SPOT-V2-HRV-L0	
57.		HRVIR L0 Products	SPOT-V2-HRVIR-L0	
58.		SPOT Auxiliary Data Specialisation	SPOT-V3-AUXDATA	
59.	JERS	JERS Mission Specialisation	JERS-V1-MISSION	
60.		SAR L0 Products	JERS-V2-SAR-L0	
61.		SAR L1 Products	JERS-V2-SAR-L1	
62.		OPS L0 Products	JERS-V2-OPS-L0	
63.		OPS L1 Products	JERS-V2-OPS-L1	
64.		JERS Auxiliary Data Specialisation	JERS-V3-AUXDATA	
65.	MOS	MOS Mission Specialisation	MOS-V1-MISSION	
66.		MESSR L0 Products	MOS-V2-MESSR-L0	
67.		VTIR L0 Products	MOS-V2-VTIR-L0	
68.		MOS Auxiliary Data Specialisation	MOS-V3-AUXDATA	
69.	Sentinel-1	Sentinel-1 Mission Specialisation	Sentinel_1-V1-MISSION	
70.		SAR-C L0 Products	Sentinel_1-V2-SAR_C-L0	
71.		SAR-C L1 Products	Sentinel_1-V2-SAR_C-L1	
72.		SAR-C L2 Products	Sentinel_1-V2-SAR_C-L2	
73.		Sentinel-1 Auxiliary Data Specialisation	Sentinel_1-V3-AUXDATA	
74.	Sentinel-2	Sentinel-2 Mission Specialisation	Sentinel_2-V1-MISSION	
75.		MSI L0 Products	Sentinel_2-V2-MSI-L0	
76.		MSI L1 Products	Sentinel_2-V2-MSI-L1	
77.		MSI L2 Products	Sentinel_2-V2-MSI-L2	
78.		Sentinel-2 Auxiliary Data Specialisation	Sentinel_2-V3-AUXDATA	
79.	Sentinel-3	Sentinel-3 Mission Specialisation	Sentinel_3-V1-MISSION	
80.		OLCI L0 Products	Sentinel_3-V2-OLCI-L0	
81.		OLCI L1 Products	Sentinel_3-V2-OLCI-L2	
82.		OLCI L2 Products	Sentinel_3-V2-OLCI-L2	
83.		SLSTR L0 Products	Sentinel_3-V2-SLSTR-L0	
84.		SLSTR L1 Products	Sentinel_3-V2-SLSTR-L1	
85.		SLSTR L2 Products	Sentinel_3-V2-SLSTR-L2	
86.		SRAL L0 Products	Sentinel_3-V2-SRAL-L0	
87.		SRAL L1 Products	Sentinel_3-V2-SRAL-L1	
88.		SRAL L2 Products	Sentinel_3-V2-SRAL-L2	
89.		Sentinel-3 Auxiliary Data Specialisation	Sentinel_3-V3-AUXDATA	
90.	Cryosat	Cryosat Mission Specialisation	Cryosat-V1-MISSION	
91.		SIRAL L0 Products	Cryosat-V2-SIRAL-L0	
92.		SIRAL L1 Products	Cryosat-V2-SIRAL-L1	
93.		SIRAL L2 Products	Cryosat-V2-SIRAL-L2	
94.		Cryosat Auxiliary Data Specialisation	Cryosat-V3-AUXDATA	
95.	GOCE	GOCE Mission Specialisation	GOCE-V1-MISSION	
96.		EGG L0 Products	GOCE-V2-EGG-L0	
97.		EGG L1 Products	GOCE-V2-EGG-L1	
98.		EGG L2 Products	GOCE-V2-EGG-L2	
99.		SSTI L0 Products	GOCE-V2-SSTI-L0	
100.		SSTI L1 Products	GOCE-V2-SSTI-L1	
101.		SSTI L2 Products	GOCE-V2-SSTI-L2	
102.		GOCE Auxiliary Data Specialisation	GOCE-V3-AUXDATA	
103.	SMOS	SMOS Mission Specialisation	SMOS-V1-MISSION	
104.		MIRAS L0 Products	SMOS-V2-MIRAS-L0	
105.		MIRAS L1 Products	SMOS-V2-MIRAS-L1	
106.		MIRAS L2 Products	SMOS-V2-MIRAS-L2	
107.		SMOS Auxiliary Data Specialisation	SMOS-V3-AUXDATA	

#	Mission/Family	Specialisation Description	Proposed Reference	Document
108.	SWARM	SWARM Mission Specialisation	SWARM-V1-MISSION	
109.		ACC L0 Products	SWARM-V2-ACC-L0	
110.		ACC L1 Products	SWARM-V2-ACC-L1	
111.		ACC L2 Products	SWARM-V2-ACC-L2	
112.		ASM L0 Products	SWARM-V2-ASM-L0	
113.		ASM L1 Products	SWARM-V2-ASM-L1	
114.		ASM L2 Products	SWARM-V2-ASM-L2	
115.		EFI L0 Products	SWARM-V2-EFI-L0	
116.		EFI L1 Products	SWARM-V2-EFI-L1	
117.		EFI L2 Products	SWARM-V2-EFI-L2	
118.		VFM L0 Products	SWARM-V2-VFM-L0	
119.		VFM L1 Products	SWARM-V2-VFM-L1	
120.		VFM L2 Products	SWARM-V2-VFM-L2	
121.		GPSR L0 Products	SWARM-V2-GPSR-L0	
122.		GPSR L1 Products	SWARM-V2-GPSR-L1	
123.		GPSR L2 Products	SWARM-V2-GPSR-L2	
124.		LRF L0 Products	SWARM-V2-LRF-L0	
125.		LRF L1 Products	SWARM-V2-LRF-L1	
126.		LRF L2 Products	SWARM-V2-LRF-L2	
127.		STS L0 Products	SWARM-V2-ST-S-L0	
128.	STS L1 Products	SWARM-V2-ST-S-L1		
129.	STS L2 Products	SWARM-V2-ST-S-L2		
130.		SWARM Auxiliary Data Specialisation	SWARM-V3-AUXDATA	

Table 14: List of specialisation documents to be provided using alternative 1

Appendix B Proposed document organisation for alternative 2

#	Mission/Family	Specialisation Description	Proposed Reference	Document
1.	ENVISAT	ENVISAT Mission Specialisation	ENVISAT-V1-MISSION	
2.		ENVISAT ASAR Products	ENVISAT-V2-ASAR	
3.		ENVISAT MERIS Products	ENVISAT-V2-MERIS	
4.		ENVISAT AATSR Products	ENVISAT-V2-AATSR	
5.		ENVISAT DORIS Products	ENVISAT-V2-AATSR	
6.		ENVISAT GOMOS Products	ENVISAT-V2-GOMOS	
7.		ENVISAT MIPAS Products	ENVISAT-V2-MIPAS	
8.		ENVISAT RA2 Products	ENVISAT-V2-RA2	
9.		ENVISAT MWR Products	ENVISAT-V2-MWR	
10.		ENVISAT SCIAMACHY Products	ENVISAT-V2-SCIAMACHY	
11.		ENVISAT Auxiliary data Specialisation	ENVISAT-V3-AUXDATA	
12.	ERS	ERS Mission Specialisation	ERS-V1-MISSION	
13.		ERS AMI/SAR Products	ERS-V2-AMI_SAR	
14.		ERS AMI/WS Products	ERS-V2-AMI_WS	
15.		ERS AMI/SAR (WV) Products	ERS-V2-AMISAR_WV	
16.		ERS ATSR Products	ERS-V2-ATSR	
17.		ERS GOME Products	ERS-V2-GOME	
18.		ERS MWR Products	ERS-V2-MWR	
19.		ERS RA Products	ERS-V2-RA	
20.		ERS EGH Products	ERS-V2-EGH	
21.		ERS Auxiliary data Specialisation	ERS-V3-AUXDATA	
22.	LANDSAT	LANDSAT Mission Specialisation	LANDSAT-V1-MISSION	
23.		LANDSAT MSS Products	LANDSAT-V2-MSS	
24.		LANDSAT TM Products	LANDSAT-V2-TM	
25.		LANDSAT ETM+ Products	LANDSAT-V2-ETM	
26.		LANDSAT Auxiliary data Specialisation	LANDSAT-V3-AUXDATA	
27.	TERRA/AQUA	TERRA_AQUA Mission Specialisation	TERRA_AQUA-V1-MISSION	
28.		TERRA_AQUA MODIS Products	TERRA_AQUA-V2-MODIS	
29.		TERRA_AQUA Auxiliary data Specialisation	TERRA_AQUA-V3-AUXDATA	
30.	NOAA	NOAA Mission Specialisation	NOAA-V1-MISSION	
31.		NOAA AVHRR Products	NOAA-V2-AVHRR	
32.		NOAA Auxiliary data Specialisation	NOAA-V3-AUXDATA	
33.	SeaStar	SeaStar Mission Specialisation	SeaStar-V1-MISSION	
34.		SeaStar SeaWifs Products	SeaStar-V2-SeaWifs	
35.		SeaStar Auxiliary data Specialisation	SeaStar-V3-AUXDATA	
36.	SPOT	SPOT Mission Specialisation	SPOT-V1-MISSION	
37.		SPOT HRV Products	SPOT-V2-HRV	
38.		SPOT HRVIR Products	SPOT-V2-HRVIR	
39.		SPOT Auxiliary data Specialisation	SPOT-V3-AUXDATA	
40.	JERS	JERS Mission Specialisation	JERS-V1-MISSION	
41.		JERS SAR Products	JERS-V2-SAR	
42.		JERS OPS Products	JERS-V2-OPS	
43.		JERS Auxiliary data Specialisation	JERS-V3-AUXDATA	
44.	MOS	MOS Mission Specialisation	MOS-V1-MISSION	
45.		MOS MESSR Products	MOS-V2-MESSR	
46.		MOS VTIR Products	MOS-V2-VTIR	
47.		MOS Auxiliary data Specialisation	MOS-V3-AUXDATA	
48.	Sentinel-1	Sentinel-1 Mission Specialisation	Sentinel-1-V1-MISSION	
49.		Sentinel-1 SAR-C Products	Sentinel-1-V2-SAR-C	

#	Mission/Family	Specialisation Description	Proposed Reference	Document
50.		Sentinel-1 Auxiliary data Specialisation	Sentinel-1-V3-AUXDATA	
51.	Sentinel-2	Sentinel-2 Mission Specialisation	Sentinel-2-V1-MISSION	
52.		Sentinel-2 MSI Products	Sentinel-2-V2-MSI	
53.		Sentinel-2 Auxiliary data Specialisation	Sentinel-2-V3-AUXDATA	
54.	Sentinel-3	Sentinel-3 Mission Specialisation	Sentinel-3-V1-MISSION	
55.		Sentinel-3 OLCI Products	Sentinel-3-V2-OLCI	
56.		Sentinel-3 SLSTR Products	Sentinel-3-V2-SLSTR	
57.		Sentinel-3 SRAL Products	Sentinel-3-V2-SRAL	
58.		Sentinel-3 Auxiliary data Specialisation	Sentinel-3-V3-AUXDATA	
59.	Cryosat	Cryosat Mission Specialisation	Cryosat-V1-MISSION	
60.		Cryosat SIRAL Products	Cryosat-V2-SIRAL	
61.		Cryosat Auxiliary data Specialisation	Cryosat-V3-AUXDATA	
62.	GOCE	GOCE Mission Specialisation	GOCE-V1-MISSION	
63.		GOCE EGG Products	GOCE-V2-EGG	
64.		GOCE SSTI Products	GOCE-V2-SSTI	
65.		GOCE Auxiliary data Specialisation	GOCE-V3-AUXDATA	
66.	SMOS	SMOS Mission Specialisation	SMOS-V1-MISSION	
67.		SMOS MIRAS Products	SMOS-V2-MIRAS	
68.		SMOS Auxiliary data Specialisation	SMOS-V3-AUXDATA	
69.	SWARM	SWARM Mission Specialisation	SWARM-V1-MISSION	
70.		SWARM ACC Products	SWARM-V2-ACC	
71.		SWARM ASM Products	SWARM-V2-ASM	
72.		SWARM EFI Products	SWARM-V2-EFI	
73.		SWARM VFM Products	SWARM-V2-VFM	
74.		SWARM GPSR Products	SWARM-V2-GPSR	
75.		SWARM LRF Products	SWARM-V2-LRF	
76.		SWARM STS Products	SWARM-V2-STS	
77.		SWARM Auxiliary data Specialisation	SWARM-V3-AUXDATA	

Table 15: List of specialisation documents to be provided using alternative 2

Appendix C Proposed document organisation for alternative 3

#	Instrument Classification	Specialisation Description	Proposed Document Reference
1.	C1	ENVISAT Mission Specialisation for C1	C1-V1-ENVISAT-MISSION
2.		ERS Mission Specialisation for C1	C1-V1-ERS-MISSION
3.		JERS Mission Specialisation for C1	C1-V1-JERS-MISSION
4.		Sentinel-1 Mission Specialisation for C1	C1-V1-Sentinel_1-MISSION
5.		ASAR products specialisation	C1-V2-ASAR
6.		AMI-SAR products specialisation	C1-V2-AMI_SAR
7.		SAR products specialisation	C1-V2-SAR
8.		SAR-C products specialisation	C1-V2-SAR_C
9.		ENVISAT Auxiliary data Specialisation for C1	C1-V3-ENVISAT-AUXDATA
10.		ERS Auxiliary data Specialisation for C1	C1-V3-ERS-AUXDATA
11.		JERS Auxiliary data Specialisation for C1	C1-V3-JERS-AUXDATA
12.	C2	MOS Mission Specialisation for C2	C2-V1-MOS-MISSION
13.		SPOT Mission Specialisation for C2	C2-V1-SPOT-MISSION
14.		LANDSAT Mission Specialisation for C2	C2-V1-LANDSAT-MISSION
15.		JERS Mission Specialisation for C2	C2-V1-JERS-MISSION
16.		Sentinel-2 Mission Specialisation for C2	C2-V1-Sentinel_2-MISSION
17.		MESSR products specialisation	C2-V2-MESSR
18.		VTIR products specialisation	C2-V2-VTIR
19.		HRV products specialisation	C2-V2-HRV
20.		HRVIR products specialisation	C2-V2-HRVIR
21.		TM products specialisation	C2-V2-TM
22.		MSS products specialisation	C2-V2-MSS
23.		ETM+ products specialisation	C2-V2-ETM
24.		OPS products specialisation	C2-V2-OPS
25.		MSI products specialisation	C2-V2-MSI
26.		MOS Auxiliary data Specialisation for C2	C2-V3-MOS-AUXDATA
27.		SPOT Auxiliary data Specialisation for C2	C2-V3-SPOT-AUXDATA
28.		LANDSAT Auxiliary Specialisation data for C2	C2-V3-LANDSAT-AUXDATA
29.		JERS Auxiliary Specialisation data for C2	C2-V3-JERS-AUXDATA
30.		Sentinel-2 Auxiliary Specialisation data for C2	C2-V3-Sentinel_2-AUXDATA
31.	C3	ENVISAT Mission Specialisation for C3	C3-V1-ENVISAT-MISSION
32.		ERS Mission Specialisation for C3	C3-V1-ERS-MISSION
33.		NOAA Mission Specialisation for C3	C3-V1-NOAA-MISSION
34.		SeaStar Mission Specialisation for C3	C3-V1-SeaStar-MISSION
35.		Terra/Aqua Mission Specialisation for C3	C3-V1-Terra_Aqua-MISSION
36.		Cryosat Mission Specialisation for C3	C3-V1-Cryosat-MISSION
37.		Sentinel-3 Mission Specialisation for C3	C3-V1-Sentinel_3-MISSION
38.		AATSR products specialisation	C3-V2-AATSR
39.		MERIS products specialisation	C3-V2-MERIS
40.		RA2 products specialisation	C3-V2-RA2
41.		RA products specialisation	C3-V2-RA
42.		ATSR products specialisation	C3-V2-ATSR
43.		AVHRR products specialisation	C3-V2-AVHRR
44.		SeaWifs products specialisation	C3-V2-SeaWifs
45.		MODIS products specialisation	C3-V2-MODIS
46.		SIRAL products specialisation	C3-V2-SIRAL
47.		OLCI products specialisation	C3-V2-OLCI
48.		SLSTR products specialisation	C3-V2-SLSTR
49.		SRAL products specialisation	C3-V2-SRAL
50.		ENVISAT Auxiliary data Specialisation for C3	C3-V3-ENVISAT-AUXDATA

#	Instrument Classification	Specialisation Description	Proposed Reference	Document
51.		ERS Auxiliary data Specialisation for C3	C3-V3-ERS-AUXDATA	
52.		NOAA Auxiliary data Specialisation for C3	C3-V3-NOAA-AUXDATA	
53.		SeaStar Auxiliary data Specialisation for C3	C3-V3-SeaStar-AUXDATA	
54.		Terra/Aqua Auxiliary data Specialisation for C3	C3-V3-Terra/Aqua-AUXDATA	
55.		Cryosat Auxiliary data Specialisation for C3	C3-V3-Cryosat-AUXDATA	
56.		Sentinel-3 Auxiliary data Specialisation for C3	C3-V3-Sentinel_3-AUXDATA	
57.	C4	ENVISAT Mission Specialisation for C4	C4-V1-ENVISAT-MISSION	
58.		ERS Mission Specialisation for C4	C4-V1-ERS-MISSION	
59.		MIPAS products specialisation	C4-V2-MIPAS	
60.		DORIS products specialisation	C4-V2-DORIS	
61.		MWR products specialisation	C4-V2-MWR	
62.		SCIAMACHY products specialisation	C4-V2-SCIAMACHY	
63.		GOMOS products specialisation	C4-V2-GOMOS	
64.		MWR products specialisation	C4-V2-MWR	
65.		GOME products specialisation	C4-V2-GOME	
66.		ENVISAT Auxiliary data Specialisation for C4	C4-V3-ENVISAT-AUXDATA	
67.		ERS Auxiliary data Specialisation for C4	C4-V3-ERS-AUXDATA	
68.	C5	GOCE Mission Specialisation for C5	C5-V1-GOCE-MISSION	
69.		SMOS Mission Specialisation for C5	C5-V1-SMOS-MISSION	
70.		SWARM Mission Specialisation for C5	C5-V1-SWARM-MISSION	
71.		EGG products specialisation	C5-V2-EGG	
72.		SSTI products specialisation	C5-V2-SSTI	
73.		MIRAS products specialisation	C5-V2-MIRAS	
74.		ACC products specialisation	C5-V2-ACC	
75.		ASM products specialisation	C5-V2-ASM	
76.		EFI products specialisation	C5-V2-EFI	
77.		VFM products specialisation	C5-V2-VFM	
78.		GPSR products specialisation	C5-V2-GPSR	
79.		LRF products specialisation	C5-V2-LRF	
80.		STS products specialisation	C5-V2-STC	
81.		GOCE Auxiliary data Specialisation for C5	C5-V3-GOCE-AUXDATA	
82.		SMOS Auxiliary data Specialisation for C5	C5-V3-SMOS-AUXDATA	
83.	SWARM Auxiliary data Specialisation for C5	C5-V3-SWARM-AUXDATA		

Table 16: List of specialisation documents to be provided using alternative 3

Appendix D Proposed TOC for Specialisation Document Volume using alternative 3

The following high level table of content is proposed for each of the volumes in which a specialisation can be organised considering the alternative 3:

D.1 Volume 1: Mission Specialisation document

This volume will contain the mission/mission family specialisation for all the instruments of a specific LTDP instrument class.

Thus, the proposed table of content of this specialisation volume is:

- Overview of the mission/mission family.
- Overview of the Instrument(s) for one specific LTDP instrument class.
- Product(s) overview L0/L1/L2.
- List of documents which are needed to understand the products.
- Product list.
- Auxiliary data list.
- Processing chain description (or link to the processing chain document).
- Specialisations at mission level.

D.2 Volume 2: Product Specialisation document

This volume will contain the specialisation for all product levels of a specific instrument.

Thus, the proposed table of content of this specialisation volume is:

- Instrument description.
- Document References.
- Specialisations at instrument level.
 - o SAFE/XFDU restricted types.
 - o Namespaces.
- L0 Specialisation at product level.
 - o *Product X.*
 - Product description.
 - New/Redefined types.
 - Physical/Logical/Information Models.
 - Namespaces.
 - Used XML Schemas.
 - XFDU Entity description.
 - Components description.
- L1 Specialisation at product level.
 - o *Product Y.*
(Same structure as L0 Specialisation at product level)
- L2 Specialisation at product level.
 - o *Product X.*
(Same structure as L0 Specialisation at product level)

All specialised Manifest and XML Schemas (currently included as “Appendix” sections in the SAFE 1.3) would be provided as separated XML files. These files along with the specialisation documents will comprise the “specialisation documentation dataset” that will be available for the community.

D.3 Volume 3: Auxiliary data Specialisation document

Taking into account that the number of auxiliary files to be specialised for each instrument is not really high, it is recommended to use one single document including all the auxiliary files of such instrument category. However, in certain cases (e.g. ENVISAT with around 100 auxiliary files) the specialisation document could be divided in several books (B1, B2, B3, ...) if needed. In these cases, they should be classified by common files and instrument specific files. The following table provides an example:

Specialisation Description	Proposed Reference	Document
ENVISAT Auxiliary data Specialisation for C4 (common files)	C4-ENVISAT-AUXDATA-B1	
ENVISAT Auxiliary data Specialisation for C4 MIPAS	C4-ENVISAT-AUXDATA-B2	
ENVISAT Auxiliary data Specialisation for C4 DORIS	C4-ENVISAT-AUXDATA-B3	
ENVISAT Auxiliary data Specialisation for C4 MWR	C4-ENVISAT-AUXDATA-B4	
ENVISAT Auxiliary data Specialisation for C4 SCIAMACHY	C4-ENVISAT-AUXDATA-B5	
ENVISAT Auxiliary data Specialisation for C4 GOMOS	C4-ENVISAT-AUXDATA-B6	

Thus, the proposed table of content of this specialisation volume is:

- Auxiliary data description.
- Document References.
- Specialisations at instrument level.
 - o SAFE/XFDU restricted types.
 - o Namespaces.
- Specialisation at product level.
 - o SAFE/XFDU restricted types.
 - o Namespaces.
- Specialisation at auxiliary data level.
 - o *Auxiliary data X.*
 - Data description.
 - New/Redefined types.
 - Physical/Logical/Information Models.
 - Namespaces.
 - Used XML Schemas.
 - XFDU Entity description.
 - Components description.

All specialised Manifest and XML Schemas would be provided as separated XML files. These files along with the specialisation documents will comprise the “specialisation documentation dataset” that will be available for the community.

Change Record

Issue	Revision	Date	Change Status	Origin
1	0	19th November 2012	Initial version	Adrián Sanz GMV

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