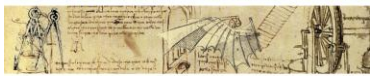
KONGSBERG

ADVANCED COMPUTER SYSTEMS



Project: Sentinel DFEP

Project no.: 8470

Internal Interface Control Document

Ref: DFEP-ICD-KSAC-ESA-1074

Issue: 1/~~1~~2

Date: 19 October 2012~~02 March 2011~~

Feltkode endret

Feltkode endret

Authors and Approval

Document Reference	*Issue*	*Date*
DFEP-ICD-KSAC-ESA-1074	1/2~~1~~	19 October 2012~~02 March 2011~~
Written By	Anders Mikkelsen	
Technical Review:	Arne Nylund	
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Issue	*Date*	*Sheets*	*Description of change*
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1/1 draft	31 January 2011		Updated according to • PDR-RID-61 • PDR-RID-60 • PDR-RID-30 • PDR-RID-25 • PDR-RID-33 • PDR-RID-26 • PDR-RID-35 Front page changed – RID PDR-RID-01 (Jira ID DFEP-57) Removed acronyms list, now referring to document [R-9] – PDR-RID-18 (DFEP-74)
1/1	02 March 2011		Updated for CDR delivery.
1/2	19 October 2012		Updated according to comments from the Agency.

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Formatert: Norsk (bokmål)

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Formatert: Engelsk (USA)

1. Introduction

1.1 Purpose

This document describes the Sentinel Telemetry DFEP – Internal Interface Control Document.

1.2 Intended Audience

The intended audience is the personnel at the Agency involved into DFEP development and Sentinel 1,2,3 ground segment contractor.

1.3 Definitions and Abbreviations

1.3.1 Definitions

This document uses the terms:

- The Agency to indicate the European Space Agency (ESA),
- The Consortium to indicate the Kongsberg Spacetec/ACS consortium
- CADU:
  - Channel Access Data Unit
  - Including Attached Sync Marker (ASM)
  - Including Reed-Solomon symbols
- VCDU/Transfer Frame:
  - Virtual Channel Data Unit (also Transfer Frame)
  - ASM not attached
  - Reed-Solomon symbols not present

1.3.2 Acronyms

See acronyms and Abbreviations document [R-4].

2. Documents

2.1 Applicable Documents

A-1	N/A	N/A
A-2	N/A ~~XSMS-GSOP-EOPG-SW-10-0002~~	N/A ~~Sentinel 1, 2, 3 Demodulation and Front End Processing System (DFEP) Statement of Work,~~ ~~Issue/Rev.: 1/0, Date: 21 May 2010~~
A-3	N/A ~~XSMS-GSOP-EOPG-RD-09-0002~~	N/A ~~Sentinel 1, 2, 3 Demodulation and Front End Processing System – Requirements Document,~~ ~~Issue/Rev.: 1/2, Date: 11 November 2010~~
A-4	N/A	N/A
~~A-4~~		~~Clarification No. 2 to ESRIN/AO/1-6414/10/I-NB – Sentinel 1, 2, and 3 Demodulator and Front End Processing System (DFEP)~~ ~~Date: 25 June 2010~~
A-5	DFEP-STD-KSAC-ESA-10521~~DFEP-ICD-KSAC-ESA-1074~~	DFEP System Technical Description and Budget Issue/Rev. 1/5~~1~~, Date: 05~~31 January~~October 2010~~2~~
A-6	DFEP-DRD-KSAC-ESA-1072	DFEP Requirements Document Issue/Rev. 1/3~~2~~, Date: ~~31~~29 ~~January~~April 201~~0~~1

2.2 Reference Documents

R-1	DFEP-ICD-KSAC-ESA-1067	DFEP ↔ Antenna System Interface Control Document [DFEP-AS-ICD] for Sentinel 1,2,3 Issue/Rev.: 1/5~~0~~ Date: 05~~30 November~~October 201~~0~~2
R-2	DFEP-ICD-KSAC-ESA-1066	DFEP ↔ PDGS Interface Control Document [DFEP=PDGS-ICD] for Sentinel 1,2,3 Issue/Rev.: 1/8~~0~~ Date: 21~~930 November~~October 2012~~0~~
R-3	MEOS-ICD-KSPT-MW-1091	MC Middleware ICD

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Formatert tabell
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Formatert tabell

		Issue/Rev.: 1/0 Date: 28 November 2010
R-4	DFEP-AA-KSAC-ESA-10536	Acronyms and Abbreviations Issue/Rev.: 1/1

3. Functional Interface Definition

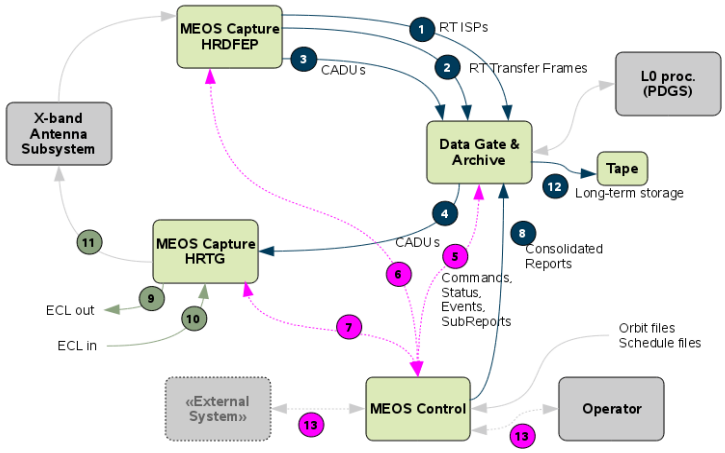

Figure 1: DFEP internal interfaces

The internal interfaces in the DFEP are defined in the table below.

The number in the first column refers to the numbering in the drawing above.

Data Description	Comment	From	To	Operational/ Test
ECL output (9)	It represents replay of data on ECL level for test and troubleshooting purposes. • CADUs • BER patterns	MEOS Capture HRTG	MEOS Capture HRDFEP	Test
IF output (11)	It represents replay of data on IF level for test and troubleshooting purposes. • CADUs BER patterns	MEOS Capture HRTG	MEOS Capture HRDFEP	Test
RT ISPs (1)	It represents the nominal data-flow of received ISPs (annotated)	MEOS Capture HRDDFEP	Data Gate & Archive	Operational
RT Transfer Frames (2)	It represents the nominal data-flow of received Transfer Frames (annotated)	MEOS Capture HRDFEP	Data Gate & Archive	Operational
CADUs from archive (4)	It represents the retrieval of CADU files from archive (annotated).	Data Gate & Archive	MEOS Capture HRTG	Test
CADUS to archive (3)	It represents the transfer of CADU files to archive (annotated).	MEOS Capture HRDFEP	Data Gate & Archive	Operational/ Test
Data to tape (12)	It represents the back-up of data to tape media	Data Gate & Archive	Attached tape library	Operational
M&C (5)	It represents the monitoring and control interface	MEOS Control Bi-directional	Data Gate & Archive Bi-directional	Operational

Formatert tabell

M&C (7)	It represents the monitoring and control interface	MEOS Control Bi-directional	MEOS Capture HRTG Bi-directional	Operational
M&C (6)	It represents the monitoring and control interface	MEOS Control Bi-directional	MEOS Capture HRDFEP Bi-directional	Operational
M&C (13)	It represents the monitoring and control interface	MEOS Control Bi-directional	Internal: HMI / GUI External clients Bi-directional	Operational
Sub-report (6)	It represents the sub-report for data demodulation and ingest.	MEOS Capture HRDFEP	MEOS Control	Operational
Sub-report (7)	It represents the sub-report for (test) data output on ECL/IF.	MEOS Capture HRTG	MEOS Control	Operational
Sub-report (5)	It represents the sub-report for data distribution	Data Gate & Archive	MEOS Control	Operational
Report (8)	It represents the consolidated report, sent to Data Gate & Archive for long-term storage, and distribution to external systems.	MEOS Control	Data Gate & Archive	Operational

~~1.~~4. ECL Output

Data Description	Comment	From	To	Operational/Test
ECL output	It represents replay of data on ECL level for test and troubleshooting purposes. • CADUs • BER patterns	MEOS Capture HRTG	MEOS Capture HRDFEP	Test

~~1.1~~4.1 Physical

This interface is described in [R-1],

~~1.2~~4.2 Logical

~~1.2.1~~4.2.1 BER patterns

This interface can output BER patterns for BER measurement purposes. The supported polynomials are:

- x^23 + x^5 + 1
- x^15 + x + 1
- x^9 + x^4 + 1

~~1.2.2~~4.2.2 CADUs

The system can replay data on CADU level, with the following functionality applied:

- Reed-Solomon encoding
- Pseudo-Random Noise (PRN)

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Formatert: Flere nivåer + Nivå: 1 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left

Formatert: Engelsk (USA)

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

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Formatert: Engelsk (USA)

Formatert: Flere nivåer + Nivå: 3 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

~~2.~~5. IF Output

Data Description	Comment	From	To	Operational/Test
IF output	It represents replay of data on IF level for test and troubleshooting purposes. • CADUs • BER patterns	MEOS Capture HRTG	MEOS Capture HRDFEP	Test

~~2.1~~5.1 Physical

This interface is described in [R-1],

~~2.2~~5.2 Logical

~~2.2.1~~5.2.1 BER patterns

This interface can output BER-patterns for BER measurement purposes. The supported polynomials are:

- x^23 + x^5 + 1
- x^15 + x + 1
- x^9 + x^4 + 1

~~2.2.2~~5.2.2 CADUs

The system can replay data on CADU level, with the following functionality applied:

- Reed-Solomon encoding
- Pseudo-Random Noise (PRN)
- Trellis encoding
- 8-PSK modulation

Formatert: Flere nivåer + Nivå: 1 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left

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Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

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Formatert: Flere nivåer + Nivå: 3 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

Formatert: Engelsk (USA)

Formatert: Flere nivåer + Nivå: 3 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

3.6. Real-Time ISP flow

Data Description	Comment	From	To	Operational/Test
RT ISPs	It represents the nominal data-flow of received ISPs	MEOS Capture HRDDFEP	Data Gate & Archive	Operational

*

3.16.1 Physical

The physical interface is LAN.

3.26.2 Data transfer protocol

This interface uses the Real-Time protocol as for the external ISP stream from the DFEP to PDGS. This interface is described in [R-2].

The Data Gate & Archive acts as a server in the connection phase of the transfer.

Port number allocation:

Satellite	Header/Data Port Number	Trailer Port Number
S1A	30000	30002
S1B	30010	30002
S2A	30020	30002
S2B	30040	30002
S3A	30050	30002
S3B	30060	30002

3.36.3 Data transmitted

The data transmitted on this interface is Annotated ISPs.

Formatert: Engelsk (USA)

Formatert: Flere nivåer + Nivå: 1 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

The annotation format is described in [R-2].

The MEOS Capture HRDFEP transmits all ISPs reconstructed on this interface, and performs no filtering.

4.7. Real-Time Transfer Frame flow

Data Description	Comment	From	To	Operational/Test
RT Transfer Frames	It represents the nominal data-flow of received Transfer Frames	MEOS Capture HRDFEP	Data Gate & Archive	Operational

4.~~1~~7.1 Physical

The physical interface is LAN.

4.~~2~~7.2 Data transfer protocol

This interface uses the Real-Time protocol as for the external Transfer Frame stream from the DFEP to PDGS. This interface is described in [R-2].

The Data Gate & Archive acts as a server in the connection phase of the transfer.

Port number allocation:

Satellite	Header/Data Port Number	Trailer Port Number
S1A	40000	40002
S1B	40010	40002
S2A	40020	40002
S2B	40040	40002
S3A	40050	40002
S3B	40060	40002

4.~~3~~7.3 Data transmitted

The data transmitted on this interface is Transfer Frames with annotation.

Formatert: Engelsk (USA)

Formatert: Flere nivåer + Nivå: 1 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

The annotations are described in [R-2].

The MEOS Capture HRDFEP transmits all Transfer Frames on this interface, and performs no filtering.

~~5.~~8. CADUs from Archive

Data Description	Comment	From	To	Operational/Test
CADUs from archive	It represents the retrieval of CADU files from archive for replay.	Data Gate & Archive	MEOS Capture HRTG	Test

*

~~5.1~~8.1 Physical

The physical interface is LAN.

~~5.2~~8.2 Protocol

The protocol used is the FTP protocol described in [R-2]. Data will be pulled from the Data Gate & Archive system.

~~5.3~~8.3 Data transmitted

The data transmitted are CADUs, which shall be replayed on the ECL or IF interface.

The data is replayed without modification.

The following functionality will be performed by the MEOS Capture HRTG in case of IF output:

- Trellis encoding
- 8-PSK modulation

Formatert: Engelsk (USA)

Formatert: Flere nivåer + Nivå: 1 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Tabulatorstopp: 1,5 cm, Left

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Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

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~~6.~~9. CADUs to Archive

Data Description	Comment	From	To	Operational/Test
CADUS to archive	It represents the transfer of CADU files to archive.	MEOS Capture HRDFEP	Data Gate & Archive	Operational/ Test

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

~~6.1~~9.1 Physical

The physical interface is LAN.

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

~~6.2~~9.2 Protocol

The protocol used is FTP, described in [R-2].

The MEOS Capture HRDFEP is the initiator of the transfer.

Formatert: Flere nivåer + Nivå: 2 + Nummereringsstil: 1, 2, 3, … + Start på: 1 + Justering: Venstre + Justert ved: 0 cm + Innrykk ved: 0 cm, Del ord, Kantlinje: Bunn: (Enkel heltrukket linje, Automatisk, 0,75 pkt Linjebredde), Tabulatorstopp: 1,5 cm, Left + 2 cm, Left

~~6.3~~9.3 Data transmitted

The data transmitted is CADUs with annotations as configured. The file will not be modified when transferred.

~~4.~~10. Tape format

Data Description	Comment	From	To	Oper./Test
Data to tape	It represents the back-up of data to tape media	Data Gate & Archive	Attached tape library	Operational

~~4.1~~10.1 Physical

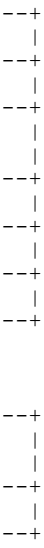
Tape: LTO-5

Compression: No

~~4.2~~10.2 Logical structure

The format follows the ACS ISM format.

The **logical structure** of an ISM media is the following:



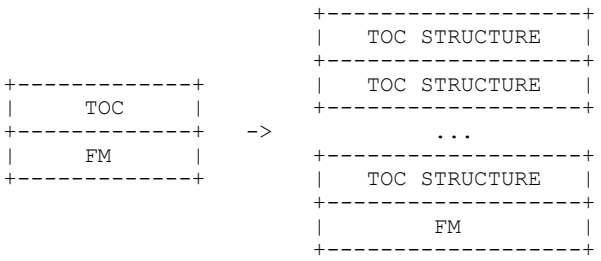
As shown, two different entities can be found:

- A **TOC Area**, always followed by a File mark (FM).
- A **Data File Area**, always followed by a File mark (FM)

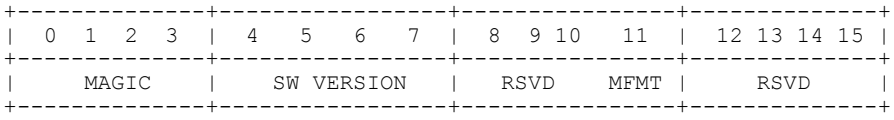
The logical format of the media can be summarized as following:

- A Cassette Header (an empty TOC, containing only information about the tape format and initializing)
- One or more Datafile Areas, followed by a File mark
- Each Datafile Area is always followed by a content description (a TOC Area, followed by a File mark).

The **TOC Area** is filled with one or more Binary TOC Structures, in this way:



If several TOC Structures are joined, only one Filemark will be placed, after the last TOC.
The **TOC Structure** is described below:



```
+--------------+--------------+----------
|  16 17 18 19 |  20 21 22 23 |  24 ...
+--------------+--------------+----------
|  TOC FORMAT  |   DATASIZE   |   BINARY TOC
+--------------+--------------+----------
```

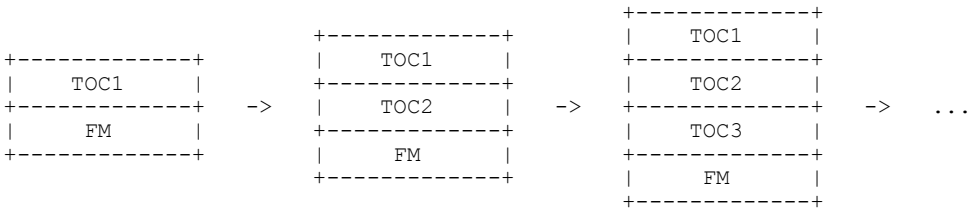
Bytes 0-3 **Magic number:** 32 bit pattern 0xFEB4F2BE
Bytes 4-7 **Software version:** tape-handling library version, expressed as 4 unsigned-bytes
Byte 11 **MFMT:** Media format, expressed as an unsigned-byte
Bytes 16-19 **TOC Format:** describes how the TOC is coded (e.g. TAR) [Big-Endian packed 32 bit unsigned-integer]
Bytes 20-23 **Datasize**: Size of the Payload data (the TOC). Set to 0 if TOC not provided. [Big-Endian packed 32 bit unsigned-integer]
From Byte 24 **Binary TOC:** Payload data (The Table of Contents, not described here).

The Binary TOC (and the TOC Structure itself) can span among several blocks.
The number of used blocks is given by the formula:

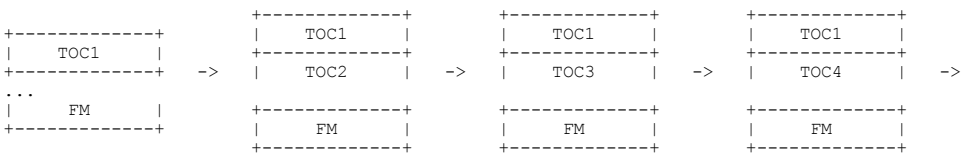
```
BLOCKS := ((DATASIZE+24 -1) IDIV BLOCKSIZE)+1
```

(IDIV = integer division)

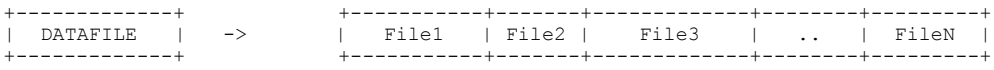
To append a TOC Structure below another one, the Filemark must be **removed** and placed after the last TOC:



In the current format (Ver. **0x01**), **only 2 different TOC Structures** can be joined:
The **first TOC** must always be kept, for security reasons.
The **second TOC** (if present) can be replaced and overwritten, also several times if needed:



The **Datafile Area** is described below:



- All the files are written in append-mode, without File marks or blanks
- Each file (and the Datafile Area itself) can span several blocks
- The Datafile area is always followed by a File mark
- The position and size of each file should be taken from the TOC
- The length (expressed as number of blocks) of a Datafile Area may vary depending on writing policies, and should be taken from the TOC.

~~5.~~11. MEOS Capture HRDFEP M&C

Data Description	Comment	From	To	Oper./Test
M&C	It represents the monitoring and control interface	MEOS Control Bi-directional	MEOS Capture HRDFEP Bi-directional	Operational

~~5.1~~11.1 Physical

The physical interface is LAN.

~~5.2~~11.2 Protocol

The protocol used is the MEOS MC Middleware protocol described in [R-3].

~~5.3~~11.3 Status and commands available

The MEOS Capture HRDFEP provides numerous statuses and commands, which are available to the MEOS Control system.

These are described **on file** in HTML format (see section 18~~13~~).

File: MEOS_CAPTURE_HRDFEP_MC.html

~~5.4~~11.4 Schedule information

The MEOS Control system received schedule information from external systems, or generates it based on TLE-files [R-2].

The MEOS Capture HRDFEP system is scheduled by the MEOS Control system through the MEOS MC Middleware protocol described in [R-3]], section *schedule_activity*.

The same interface is used in case of manual scheduling from the MEOS Control GUI.

~~6.~~12. MEOS Capture HRTG M&C

Data Description	Comment	From	To	Oper./Test
M&C	It represents the monitoring and control interface	MEOS Control Bi-directional	MEOS Capture HRTG Bi-directional	Operational

~~6.1~~12.1 Physical

The physical interface is LAN.

~~6.2~~12.2 Protocol

The protocol used is the MEOS MC Middleware protocol described in [R-3]

~~6.3~~12.3 Status and commands available

The MEOS Capture HRTG provides numerous statuses and commands, which are available to the MEOS Control system.

These are described **on file** in HTML format (see section 18~~13~~).

File: MEOS_CAPTURE_HRTG_MC.html

~~6.4~~12.4 Schedule information

The MEOS Control system received schedule information from external systems, or generates it based on TLE-files [R-2].

The MEOS Capture HRTG system is scheduled by the MEOS Control system through the MEOS MC Middleware protocol described in [R-3], section *schedule_activity*.The same interface is used in case of manual scheduling from the MEOS Control GUI.

~~7.~~13. Data Gate & Archive M&C

Data Description	Comment	From	To	Oper./Test
M&C	It represents the monitoring and control interface	MEOS Control Bi-directional	Data Gate & Archive Bi-directional	Operational

Please note that the Data Gate & Archive system also has a web-based interface, which is not described herein.
The interface described here is for the MEOS Control M&C purposes.

~~7.1~~13.1 Physical

The physical interface is LAN.

~~7.2~~13.2 Protocol

The protocol used is the MEOS MC Middleware protocol described in [R-3].

~~7.3~~13.3 Status and commands available

The Data Gate & Archive provides numerous statuses and commands, which are available to the MEOS Control system.

These are described **on file** in HTML format (see section 18~~13~~).

File: DATA_GATE_ARCHIVE_MC.html

~~8.~~14. MEOS Control M&C

Data Description	Comment	From	To	Oper./Test
M&C	It represents the monitoring and control interface	MEOS Control Bi-directional	Internal: HMI / GUI External clients Bi-directional	Operational

~~8.1~~14.1 Physical

The physical interface is LAN

~~8.2~~14.2 Protocol

The protocol used is the MEOS MC Middleware protocol described in [R-3]

~~8.3~~14.3 Status and commands available

The MEOS Control provides numerous statuses and commands.
These are described **on file** in HTML format (see section 18~~13~~).

File: MEOS_CONTROL_MC.html

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Report from MEOS Capture HRDFEP

Data Description	Comment	From	To	Operational/ Test
Sub-report	It represents the sub-report for data demodulation and ingest.	MEOS Capture HRDFEP	MEOS Control	Operational

~~8.4~~14.4 Physical

The physical interface is LAN.

~~8.5~~14.5 Protocol

The protocol used is (S)FTP.

The MEOS Control system initiates the transfer (the files are fetched) from the MEOS Capture HRDFEP system.

~~8.6~~14.6 Logical

The following report files are generated on the MEOS Capture HRDFEP system:

ingest_C1.xml	Ingestion status for channel 1
ingest_C2.xml	Ingestion status for channel 2
demod_C1.xml	Demodulator status for channel 1
demod_C2.xml	Demodulator status for channel 2
data_C1.xml	Data report for channel 1
data_C2.xml	Data report for channel 2

Please refer to the external ICD [R-2] for details about these files.

~~9.~~15. Report from MEOS Capture HRTG

Data Description	Comment	From	To	Operational/ Test
Sub-report	It represents the sub-report for (test) data output on ECL/IF.	MEOS Capture HRTG	MEOS Control	Operational

~~9.1~~15.1 Physical

The physical interface is LAN.

~~9.2~~15.2 Protocol

The protocol used is (S)FTP.

The MEOS Control system initiates the transfer (the files are fetched) from the MEOS Capture HRTG system.

~~9.3~~15.3 Logical

The following report files are generated on the MEOS Capture HRDFEP system:

mod_C1.xml	Data replay and modulation report for channel 1
mod_C2.xml	Data replay and modulation report for channel 2

Please refer to the external ICD [R-2] for details about these files.

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~~10.~~16. Report from Data Gate & Archive

Data Description	Comment	From	To	Operational/ Test
Sub-report	It represents the sub-report for data distribution	Data Gate & Archive	MEOS Control	Operational

~~10.1~~16.1 Physical

The physical interface is LAN.

~~10.2~~16.2 Protocol

The protocol used is (S)FTP.

The MEOS Control system initiates the transfer (the files are fetched) from the Data Gate & Archive system.

~~10.3~~16.3 Logical

The following report files are generated on the MEOS Capture HRDFEP system:

distribution_C1_ISP.xml	Distribution Report for channel 1 ISP stream
distribution_C2_ISP.xml	Distribution Report for channel 2 ISP stream
distribution_C1_TF.xml	Distribution Report for channel 1 Transfer Frames stream
distribution_C2_TF.xml	Distribution Report for channel 2 Transfer Frames stream

Please refer to the external ICD [R-2] for details about these files.

~~11.~~17. Report to Data Gate & Archive

Data Description	Comment	From	To	Operational/ Test
Report	It represents the consolidated report, sent to Data Gate & Archive for long-term storage, and distribution to external systems.	MEOS Control	Data Gate & Archive	Operational

~~11.1~~17.1 Physical

The physical interface is LAN.

~~11.2~~17.2 Protocol

The protocol used is (S)FTP.

The MEOS Control system initiates the transfer (the files are pushed) to the Data Gate & Archive system.

~~11.3~~17.3 Logical

The following report files are generated on the MEOS Control system:

Please refer to the external ICD [R-2] for details about these files.

~~12.~~18. Appendix A – Additional files

~~12.1~~18.1 Information in files

The status, configuration and command listings for the M&C interfaces are delivered on files (ref section 11~~5~~, 12~~6~~, 13~~7~~ and 14~~8~~).

The file structure is as follows:

File	Description
MEOS_CONTROL_MC.html	Top-level index file for the MEOS Control system. This document contains links to other files describing subsystems. Also links to • MEOS Capture HRDFEP • MEOS Capture HRTG • Data Gate & Archive information, since they are monitored through the MEOS Control system.
MEOS_CAPTURE_HRDFEP/ MEOS_CAPTURE_HRDFEP_MC.xml	Top-level index file for the MEOS Capture HRDFEP system. This document contains links to other files describing subsystems.
MEOS_CAPTURE_HRTG/ MEOS_CAPTURE_HRTG_MC.xml	Top-level index file for the MEOS Capture HRTG system. This document contains links to other files describing subsystems.
DGA/ DGA_MC.xml	Top-level index file for the Data Gate & Archive system. This document contains links to other files describing subsystems.

The other files delivered are linked from these top-level files.

~~12.2~~18.2 Viewing the files

The files can be viewed using a standard web-browser, either on the top-level file (MEOS_CONTROL_MC.html, see above), or on any of the other files (as listed in section 18.3~~13.3~~).

~~12.3~~18.3 Complete file list

The following files are delivered as part of this document on electronic format.

```
.
|-- DGA

|    |-- DATAGATEPROCESSOR.MONITOR.html
|    |-- PLAYBACK.MONITOR.html
|    |-- RTDISTRIBUTION.CH1_ISP.html
|    |-- RTDISTRIBUTION.CH1_VCDU.html
|    |-- RTDISTRIBUTION.CH2_ISP.html
|    |-- RTDISTRIBUTION.CH2_VCDU.html
|    |-- DGA_MC.html
|    |-- DIRECTDATACAPTURE.CH1_ISP.html
|    |-- DIRECTDATACAPTURE.CH1_VCDU.html
|    |-- DIRECTDATACAPTURE.CH2_ISP.html
|    |-- DIRECTDATACAPTURE.CH2_VCDU.html
|    |-- POSTPASS.SLOT_1.html
|    |-- HWMON.html
|    |-- POSTPASS.SLOT_2.html
|    `-- ISM.MONITOR.html
|-- MEOS_CAPTURE_HRDFEP
|    |-- MC.DEMOD_1.HRDR_DEMOD.html
|    |-- MC.DEMOD_1.PLOT_PLAYBACK.html
|    |-- MC.DEMOD_1.PLOT_SERVER.html
|    |-- MC.DEMOD_2.HRDR_DEMOD.html
|    |-- MC.DEMOD_2.PLOT_PLAYBACK.html
|    |-- MC.DEMOD_2.PLOT_SERVER.html
|    |-- MC.INPUT_1.FEP.html
|    |-- MC.INPUT_2.FEP.html
|    |-- MC.INPUT_3.FEP.html
|    |-- MC.INPUT_4.FEP.html
|    |-- MC.IO21000_1.HWMON.html
|    |-- MC.IO21000_1.OUTPUT.html
|    |-- MC.IO21000_1.TG.html
|    |-- MC.IO21000_2.HWMON.html
|    |-- MC.IO21000_2.OUTPUT.html
|    |-- MC.IO21000_2.TG.html
|    |-- MC.NRT_DISTRIBUTION_1.MDIS_SENDER.html
|    |-- MC.NRT_DISTRIBUTION_1.NRT_DISTRIBUTION_1_Q.html
|    |-- MC.NRT_DISTRIBUTION_1.VCDU_OUTPUT.html
```

```
|    |-- MC.NRT_DISTRIBUTION_2.ISP_OUTPUT.html
|    |-- MC.NRT_DISTRIBUTION_2.MDIS_SENDER.html
|    |-- MC.NRT_DISTRIBUTION_2.NRT_DISTRIBUTION_2_Q.html
|    |-- MC.NRT_DISTRIBUTION_3.MDIS_SENDER.html
|    |-- MC.NRT_DISTRIBUTION_3.NRT_DISTRIBUTION_Q.html
|    |-- MC.NRT_DISTRIBUTION_3.VCDU_OUTPUT.html
|    |-- MC.NRT_DISTRIBUTION_4.ISP_OUTPUT.html
|    |-- MC.NRT_DISTRIBUTION_4.MDIS_SENDER.html
|    |-- MC.NRT_DISTRIBUTION_4.NRT_DISTRIBUTION_Q.html
|    |-- MC.POST_DISTRIBUTE.DISTRIBUTE_1.html
|    |-- MC.POST_DISTRIBUTE.DISTRIBUTE_2.html
|    |-- MC.POST_DISTRIBUTE.DISTRIBUTE_3.html
|    |-- MC.POST_DISTRIBUTE.DIST_MANAGER.html
|    |-- MC.PROCESSING_1.RECONSTRUCT.html
|    |-- MC.PROCESSING_2.RECONSTRUCT.html
|    |-- MEOS_CAPTURE_HRDFEP_MC.html
|    `-- MW.SYS_HW_MON.html
|-- MEOS_CAPTURE_HRTG
|    |-- MC.IO21000_1.HWMON.html
|    |-- MC.IO21000_1.OUTPUT.html
|    |-- MC.IO21000_1.TG.html
|    |-- MC.IO21000_2.HWMON.html
|    |-- MC.IO21000_2.OUTPUT.html
|    |-- MC.IO21000_2.TG.html
|    |-- MC.OUTPUT_1.LOOPBACK.html
|    |-- MC.OUTPUT_1.MODULATOR.html
|    |-- MC.OUTPUT_2.LOOPBACK.html
|    |-- MC.OUTPUT_2.MODULATOR.html
|    |-- MEOS_CAPTURE_HRTG_MC.html
|    `-- MW.SYS_HW_MON.html
|-- MEOS_CONTROL_MC.html
|-- MW.SYS_HW_MON.html
`-- MW.TLE_MONITOR.html

3 directories, 53 files
```

END OF DOCUMENT