



Status ADCSS 2019



Savoir-MASAIS Working Group

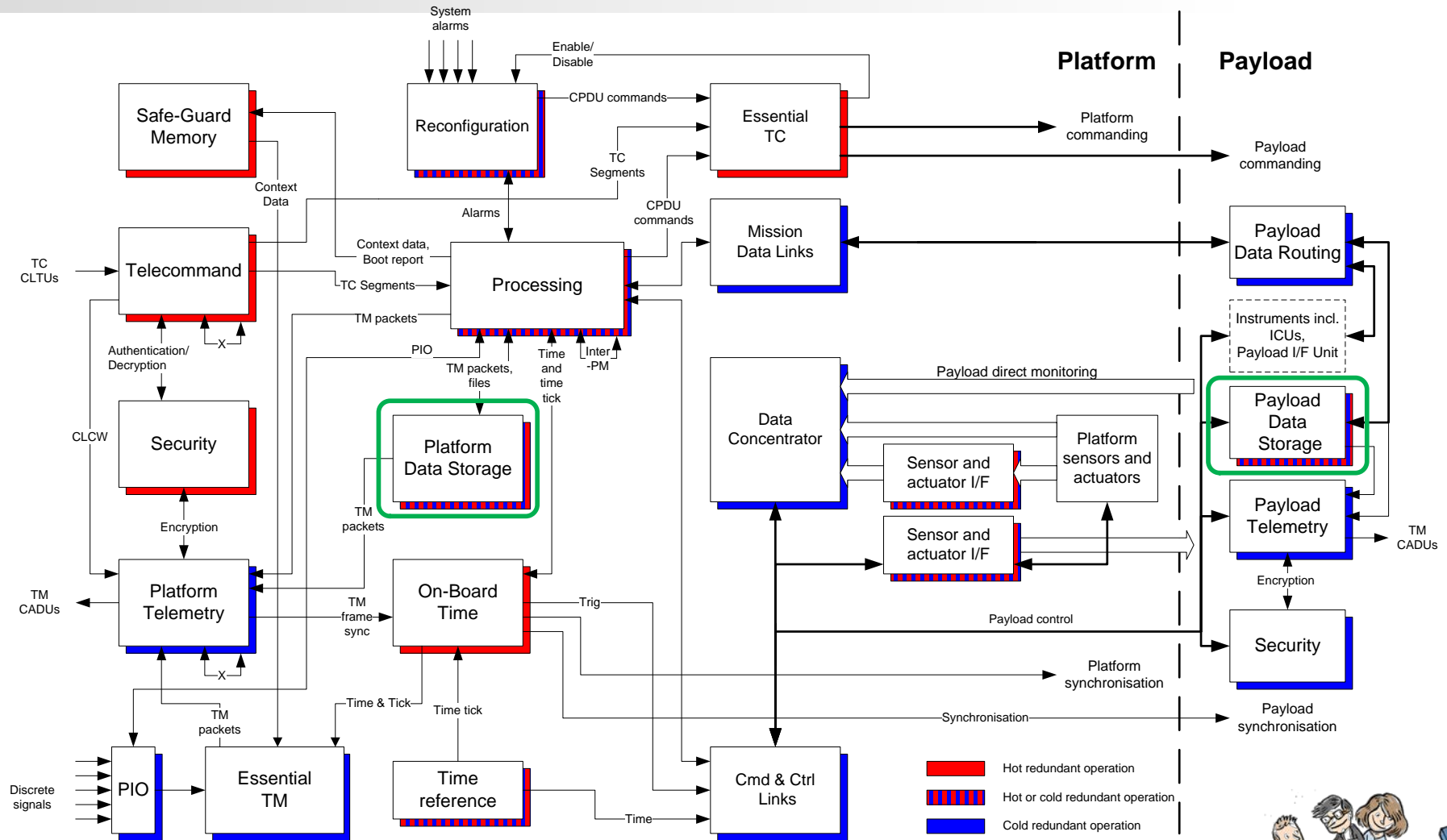


- The SAVOIR-MASAIS Working Group has as main goal the definition of the functional, performance, operational and interface requirements of the Data Storage function and its management.

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SAVOIR Reference Architecture



SAVOIR Data Storage System Requirement Document



- What it contains:
 - “Everything” required to safely store and access data on-board:
 - Generic requirements
 - Interface requirements
 - Organization
 - Packet Management System
 - Performances
 - FDIR
- What it does not contain:
 - Everything that is linked to the usage of the stored data:
 - Operability requirements (provided in Generic OIRD), e.g. CFDP
 - File format (organisation of data contained in files).
 - ...

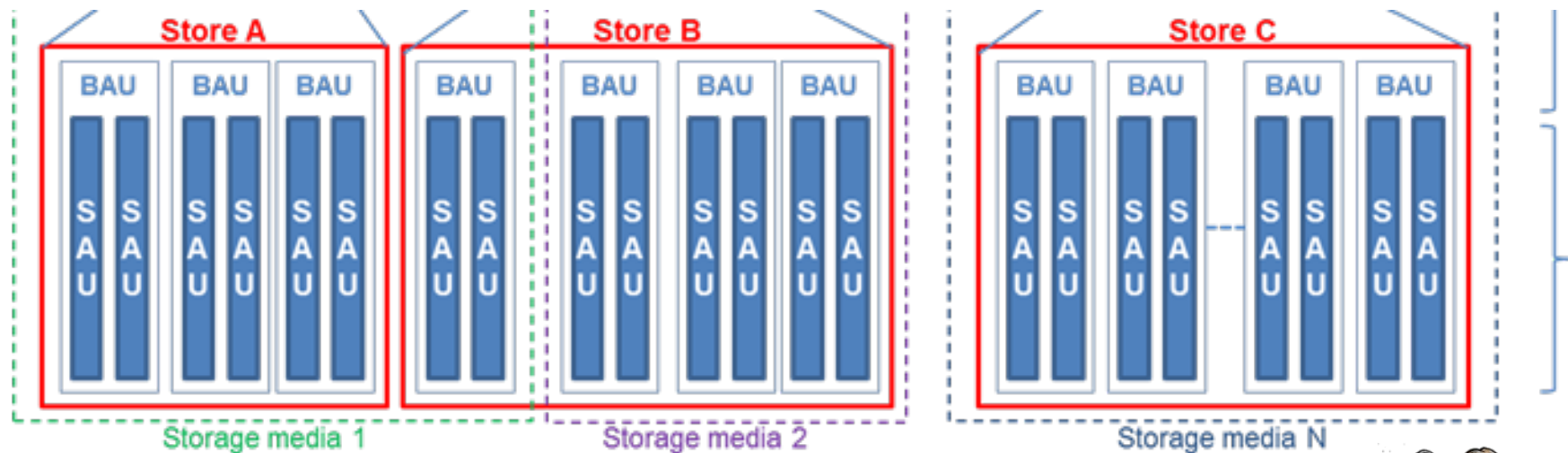


SAVOIR Data Storage SRD

Organisation - Hierarchical Storage



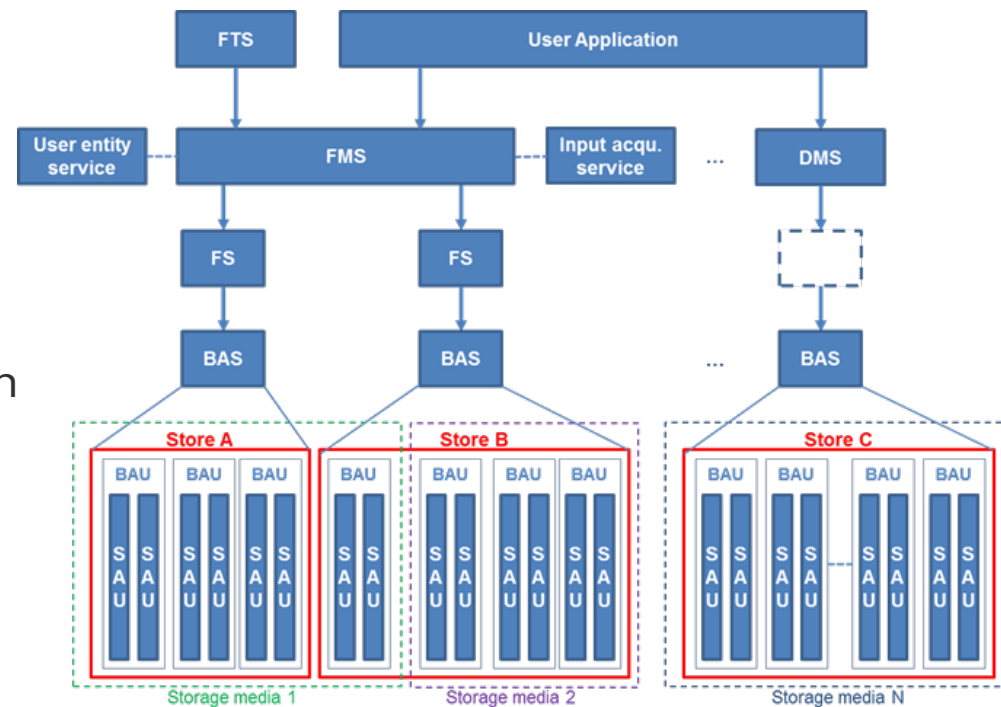
- Storage media: any device that can be used to store data.
- Smallest Addressable Units (SAU) : the smallest unit of memory addressable/accessible within a Storage Media.
- Block Access Unit: logical data unit consisting in a collection of SAUs.
- Store: Logical decomposition of the overall data storage capability, i.e. collection of BAUs of same or distinct Storage medias.



SAVOIR Data Storage SRD Organisation - Hierarchical Access



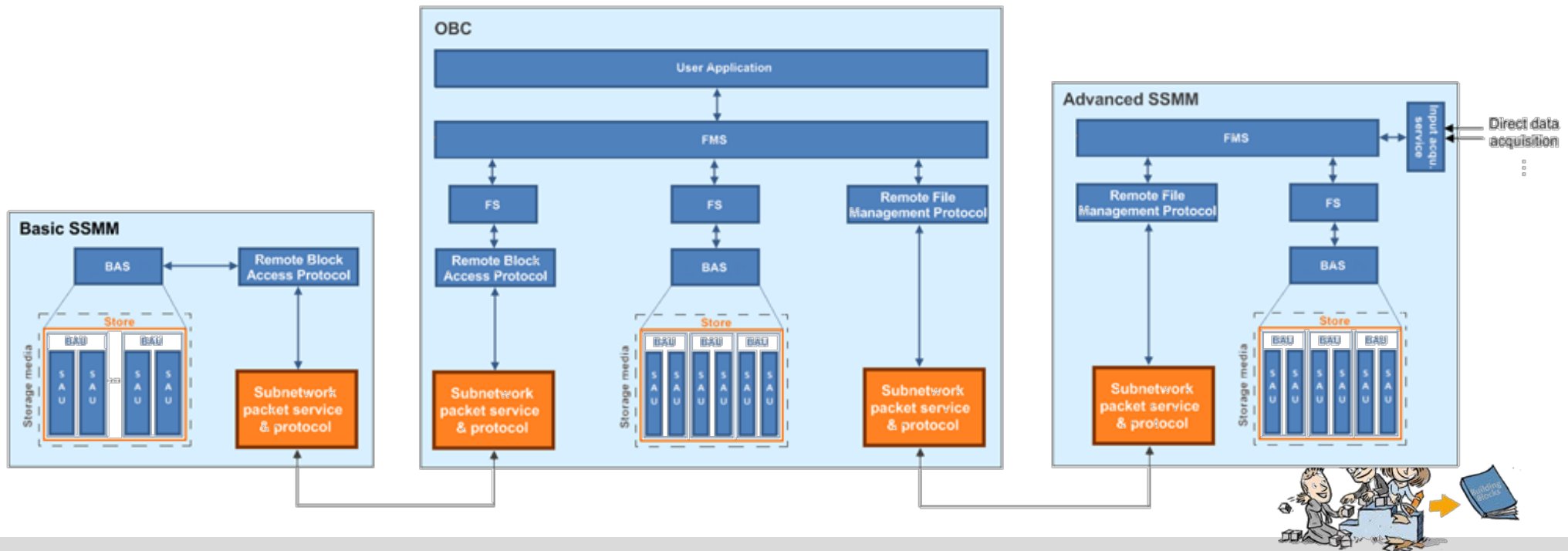
- Block Access Service: access to BAUs.
- File System: access to files and directories.
- File Management System: access to several File Systems. Provide capabilities and services needed by PUS Service 23 needs.
- Packet Management System: Relies on ECSS-E-ST-70-41C PUS Services 13 and 15.
- Data Management System: High-level logical organisation covering one or several data, packet or file management systems. FMS and PMS are instantiation of DMS.



SAVOIR Data Storage SRD Organisation – Distributed architecture



- Storage medias can be local (on same equipment that the User of the data storage) or remote (on a different equipment that is connected by a communication link).
- Storage medias can be basic (only managing block accesses) or advanced (able to support FMS).



SAVOIR Data Storage SIRD



- Topics
 - Concepts
 - Generic requirements
 - Interface requirements
 - Block Access Services
 - Data Storage Organization
 - File Management System Service Performances
 - FDIR

- Still to be done
 - Traceability to SAVOIR Data Storage System Requirement Document.



SAVOIR Data Storage SIRD Block Access



- Define all services required to manage Block
 - READ_BAU
 - WRITE_BAU
 - ERASE_BAU
 - DISABLE_BAU
 - ENABLE_BAU
 - LOCK_BAU
 - UNLOCK_BAU



SAVOIR Data Storage SIRD

Store management



- Define all services required to manage Stores
 - CREATE_STORE
 - DELETE_STORE
 - EXPAND_STORE
 - REDUCE_STORE
 - LOCK_STORE
 - UNLOCK_STORE
- Services are using list of BAUs in order to maximize the flexibility.
- List of contiguous BAUs can be used to ease implementation.



SAVOIR Data Storage SIRD

Store management



- Define all services required to manage Stores

- CREATE_FILE
- OPEN_FILE
- MAP_FILE
- CLOSE_FILE
- WRITE_TO_FILE
- READ_FROM_FILE
- SEEK_FILE
- SHRINK_FILE
- GET_FILE_STATUS
- SET_FILE_ATTRIBUTE
- GET_FILE_ATTRIBUTES
- FORCE_FILE_SYNC
- GET_FILE_CHECKSUM
- DELETE_FILE
- COPY_FILE
- SUSPEND_FILE_COPY
- RESUME_FILE_COPY
- ABORT_FILE_COPY
- GET_FILE_COPY_STATUS
- FILE_COPY_EVENT
- MOVE_FILE
- REGISTER_FMS_EVENT
- UNREGISTER_FMS_EVENT
- FMS_EVENT
- CREATE_DIR
- LIST_DIR
- DELETE_DIR
- RENAME_DIR
- LOCK_FILE
- UNLOCK_FILE
- LIST_LOCKED_FILES
- FIND_FILES



SAVOIR MASAIS

Conclusion



- SAVOIR Data Storage System Requirement Document has been published on the European Space Software Repository (ESSR - <https://essr.esa.int/project/savoir>). Reference is SAVOIR-GS-004.
- SAVOIR Data Storage Service and Interface Requirements is about to be published for public review (end 2019 – beginning 2020). Reference is SAVOIR-GS-008.
- Projects are encouraged to apply the SAVOIR Generic Specifications with appropriate tailoring.

