

ROC ACCEPTANCE KEY POINT QUALITY REPORT

Software Quality Assurance
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Summary

- ① **Documentation status**
- ① **Documentation and test metrics**
- ① **Code quality : summary of analysis performed**
- ① **RIDS Status**
- ① **Issues status**

ROC SW Project Deliverables & Milestones



Related file	Document requirements list (e.g. Plan, document, file, report, form, matrix)	Preliminary Design KP	End of Design KP	TRR before validation (internal)	TRB after validation (internal)	Acceptance Commissioning Review	At each progress meeting
RB	SW User Requirements (Concept and Implementation Requirements Document), only interfaces level	D					
TS	SW Specification Document (SSS) including SRS and ICD	D					
DDF	SW Design Document (SDD)	P	D				
DDF	SW Configuration File (SCF)			C	J	D	
DDF	SW User Manual (SUM)					D	
DJF	SW Development Plan (with CMP) (SDP)	D				J	
DJF	Validation document (SVP and SVR) including Unit, Integration and Validation Tests		P	C	D		
DJF	Acceptance Test Plan			P		D	
DJF	SW Reused File (SRF)		D				
PAF	SW Product Assurance Plan (SPAP)	D	J			J	
PAF	Schedule	P					J

Legend:

- P : preliminary version
- C : full version
- D : final version
- J : updated version

📍 ROC SW Delivered Documentation Status

Document	Last Issue	Status	Notes
ROC Concept and Implementation Requirements Document (ROC-GEN-SYS-PLN-00002-LES)	02/00	To be finalized All requirements written	Few TBC/TBD remaining. Waiting for Applicable/Reference Document in requirements.
ROC Software System Specification (ROC-GEN-SYS-SPC-00026-LES)	01/02	To be finalized All requirements written	Few TBC/TBD remaining. Waiting for Reference Document in requirements.
ROC_User_Requirements (ROC-GEN-SYS-URD-00064-LES)	01/00	To be finalized All requirements written	Few TBC/TBD remaining. Waiting for Reference Document in requirements. AD1 : to be updated with 2/0
ROC Software System Design Document (ROC-PRO-PIP-SPC-00036-LES)	01/01	To be updated	The document should be updated according to the evolution of the design.
ROC Software System Validation Plan (ROC-GEN-SYS-PLN-00040-LES)	02/02	To be updated	Waiting for Reference Document from interface ESA, and for MUSIC and Pipelines test plans. To be updated (drawings) : Jenkins tool not used anymore. Few TBC/TBD/TBW present.
RPW Data Validation and Verification Plan (ROC-GEN-SCI-PLN-00077-LES)	01/00	Finalized	Few TBC present.
RSS4VC_Test_Plan (ROC-TST-VAL-PLN-00108-LES)	01/01	Finalized	
RSS4VC_Test_Report (ROC-TST-VAL-PLN-00111-LES)	01/02	Finalized	Parts of tables not readable
ROC_MUSIC_Software_Configuration_File (ROC-GEN-QAP-CDL-00115-LES)	01/00	To be completed	Chapters on anomalies, implementation, documentation not written
ROC_RGTS_Software_Configuration_File (ROC-GEN-QAP-CDL-00114-LES)	01/00		
ROC_RODP_Software_Configuration_File (ROC-GEN-QAP-CDL-00113-LES)	01/00		
SW Product Assurance Plan (ROC-GEN-MGT-QAD-00033-LES)	01/03	Finalized	
SW Product Assurance Milestone Report (ROC-GEN-QAP-NTT-00051-LES)	02/00	To be updated	List of issues, links to RD
ROC_Software_Source Code Analysis (ROC-GEN-QAP-NTT-00112-LES)	01/00	To be completed	Correction Status on coding rules errors to be written.
Traceability Matrix between CIRD/RSSS/URD and Test Plan and Test Report (ROC-GEN-SYS-CVM-00049-LES)	02/00	To be completed	Requirements not verified to be justified
ROC User Manual		To be written	Information exist but to be gathered.

🎯 ROC SW Documentation and test coverage metrics

Document Name	Covered by	Requirement Number	Requirement Covered	Requirement Uncovered	Coverage Ratio
EIDA	CIRD	31 (found applicable to ROC)	25	6	80.65%
CIRD	RSSS/URD	92	57	35	61,96%
RSSS	TestPlan	75	44	31	58,67%
URD	TestPlan	95	54	41	56,84%

Metric name	Target / Criteria	Results	Comment
Requirement allocation (CIRD to RSSS/URD)	100 %	62%	Justification for not covered requirements (management, document, ...) to be added in Traceability Matrix.
Requirement Validation & Verification coverage	100%	53.3% CIRD 57.6% RSSS+URD	Verification for requirements not covered by test to be added in Traceability Matrix.
Requirement testability	>= 80%	91.8%	<i>Requirements from RSSS and URD to be verify by TEST</i>
Structural code coverage : Source code statement coverage	>= 80%	MUSIC 0.2.0 : 58% ROC-SGSE 3.4.4 : 37% RODP 0.3.2 : 41%	<i>Results only for .py files</i>

🎯 ROC SW Source Code Quality Metrics (Understand tool)

	Criteria		MUSIC 0.2.0	RODP 0.2.0	ROC-SGSE 3.2.2
Metrics Name (From CNES Quality Specification)	Min	Max	Out (%)	Out (%)	Out (%)
Cyclomatic number (per function)	0	20	0	0	0.05
Number of lines of code (per function)	0	100	0.4	0.5	0.49
Number of nesting (per function)	0	7	0	0	0
Comment rate (All functions)	20%	+∞	77.6	70	68.4
Comment rate (functions with more than 10 lines)			31.1	33	32.6
The copy / paste rate in each module / component (Duplicated Lines)	0	15%	1.8 (at files level)	7.6 (at files level)	5.2 (at files level)
The state of the technical debt and its evolution since the beginning of the project	0	5%	0	0	0
Lines of code			17106	19558	21563

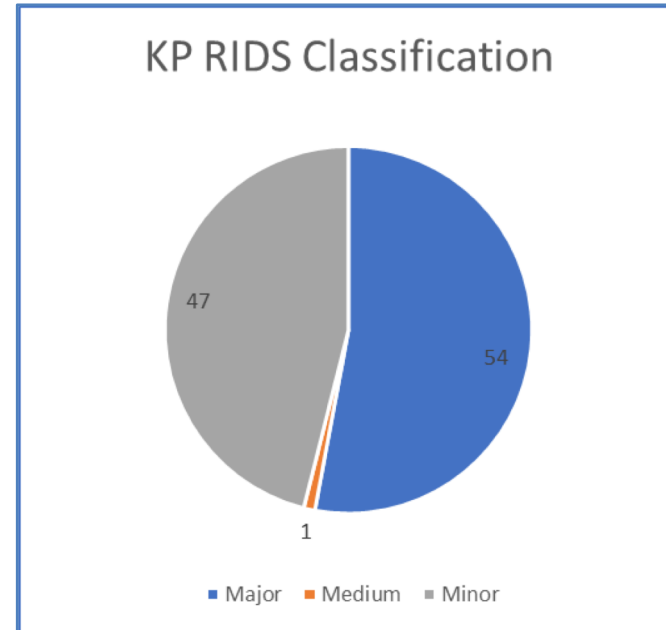
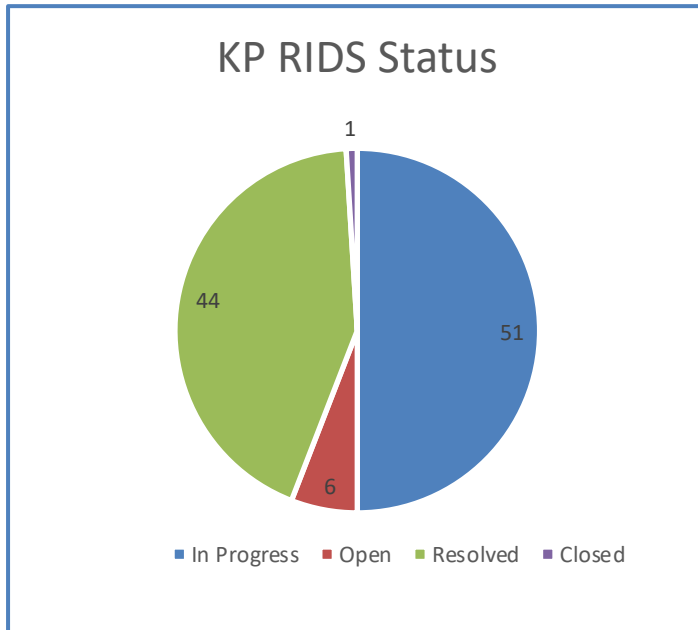
- **“Comment rate” out of threshold : more than 30% of functions (with more than 10 lines) under 20% of comments.**
- **An important effort should be done to improve the comment rate in order to facilitate the maintainability. This is crucial for understanding the code, and continue to improve it later.**

🎯 ROC SW Coding rules analysis (Sonarqube tool)

	MUSIC 0.2.0	RODP 0.2.0	ROC-SGSE 3.3.2	Comments
Bugs / Blocker	0	0	0	
Bugs / Major	1	3	5	
Code smells / Blocker	1	0	0	
Code smells / Critical	4	75	91	Most of them are linked to : - Cognitive Complexity of functions - Wrong import order
Code smells / Major	563	893	906	Most of them are linked to : - Comment rate : need of providing more details in the source code, at least on the classes and public methods. - Lines lenght. - Use of « return ».

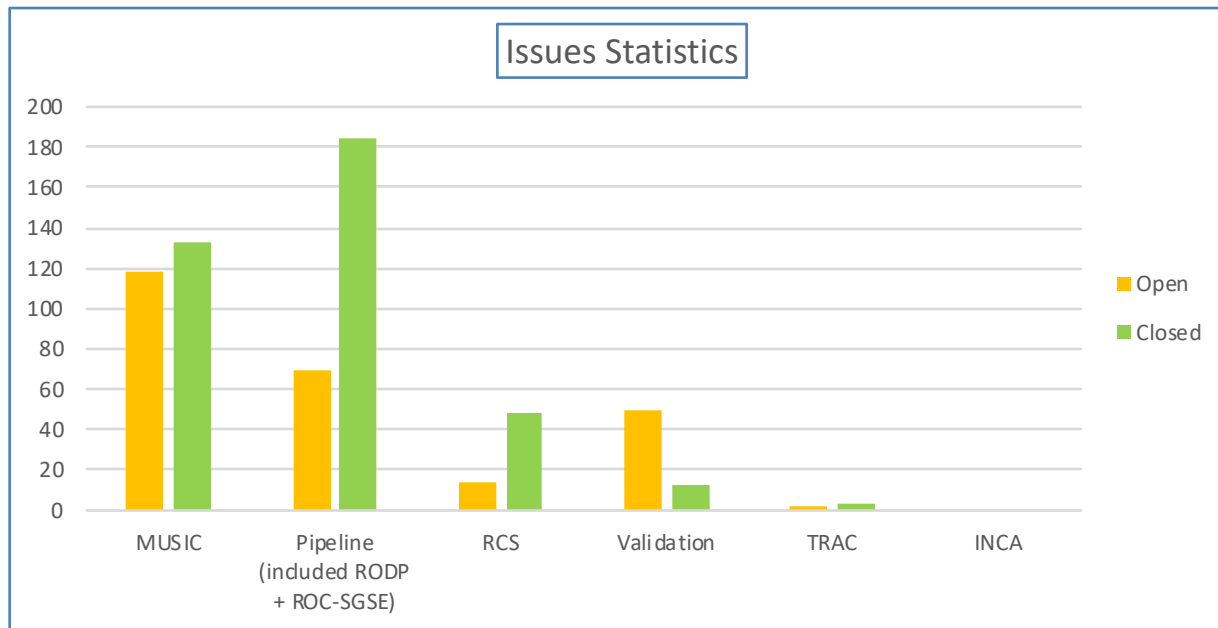
- **Bugs and code smells (classified as blocker or critical) have to be corrected in priority,**
- An effort should be done to decrease the other issues raised.

🎯 ROC SW RIDS Status



➤ RIDS « Open/In progress » to be updated and meeting for closure to be scheduled

🎯 ROC SW Issues and NCR Status



Component	Open NCR (Bug)
FAUST	3
FIGARO	2
IDB	1
LLDP	1
LLVM	2
MUSIC	1
MUSIC-IDB	1
RAP	2
RGTS	3
RODP	1
RPL	3
TV	1

- **Issues to be detailed by category (specification, bug, feature, improvement, etc.)**
=> consistency check of all issues labels to be scheduled.