

Product/Quality Assurance, verification, validation

David Berghmans Acting PA/QA responsible for P3SC development at ROB



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PROBA-3 SOC development is

- an ESA/PRODEX funded activity
- a part of the PROBA-3 Ground Segment
- subject to ESA reviewing (SRR, PDR, CDR, QAR)



[*] European Cooperation for Space Standardisation



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Space product assurance

Software product assurance

ECSS Secretariat ESA-ESTEC Requirements & Standards Division Noordwijk, The Netherlands PROBA-3 SOC is not mission critical & Resources are scarce



"Tailoring" of PA/QA requirements ongoing



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Some PA/QA related processes

- configuration management
- document handling
- risk registry
- verification/validation

ROB PA/QA overview does not look into internal processes of partners

[*] European Cooperation for Space Standardisation

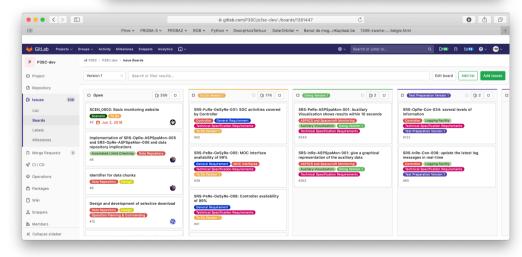
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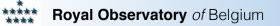
Management



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Repository	D Label ~"PDR Action Item"		Created date
0) Issues 118	TR-01: parameters in auxiliary data and processing of auxiliary data		۵ 🗅
List	#158 - opened 4 months ago by Bram Bourgoignie DPDR Long Term Action	Items Aug 30, 2019 PDR Action Item To be closed by ESA	updated 3 weeks ago
Boards Labels	TR-02: Description Level-0 and Level-1 Processor #159 - opened 4 months ago by Bram Bourgoignie	Items 🗆 Jun 17, 2019 (PDR Action Item)	updated 3 months ago
Milestones	TR-03: Flowcharts #160 - opened 4 months ago by Bram Bourgoignie	Items I Aug 30, 2019 (PDR Action Item) To be closed by ESA	updated 1 month ago
11 Merge Requests 0	TR-05: description non-linearity #161 - opened 4 months ago by Bram Bourgoignie □ PDR Short Term Action	Items 🗆 Jun 17, 2019 (PDR Action Item) To be closed by ESA	(∂) □ 2 updated 1 month ago
Operations	TR-06: remove Druckmueller #162 - opened 4 months ago by Bram Bourgoignie □ PDR Short Term Action	Items 🗆 Jun 17, 2019 (PDR Action Item) To be closed by ESA)	🌏 🗆 1 updated 3 months ago
Packages	TR-07: Correct names and roles #163 - opened 4 months ago by Bram Bourgolgnie □ PDR Short Term Action	Items 🛛 Jun 17, 2019 (PDR Action Item) To be closed by ESA)	updated 3 months ago
🖞 Wiki 🗶 Snippets	TR-08: further information on flat field/PRNU correction into DPM #164 - opened 4 months ago by Bram Bourgoignie	Items 🗆 Jun 17, 2019 (PDR Action Item) To be closed by ESA)	@ □ 6 updated 3 months ago
🏟 Settings	TR-10: Include description coordinate transformation #165 - opened 4 months ago by Bram Bourgoignie	Items I Jun 17, 2019 (PDR Action Item) To be closed by ESA	(∂) □ 2 updated 3 months ago
	TR-17: Add section on processing #166 - opened 4 months ago by Bram Bourgoignie	Items 🗆 Jun 17, 2019 (PDR Action Item) To be closed by ESA	updated 3 months ago
	TR-19: Add that ROB manages the international partners #167 - opened 4 months ago by Bram Bourgoignie	Items 🗆 Jun 17, 2019 (PDR Action Item) To be closed by ESA)	🌸 🗆 1 updated 3 months ago
≪ Collapse sidebar	TR-20: P3SC team monitored by ESA Prodex, ESA Project, and ESA Projec	t Scientist	⊛ □1

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I Issues 118 Merge Requests 0	Docum	P3 SOC ROB TN 001 DetailedProcessingModel appendix1								
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Operations	DPM	P3SC	P3-SOC-ROB-TN- 001	Detailed Processing Model	1.2	PDR long-term action items	DOCX PDF WIKI	list_of_calibration_characteristics		
Packages Wiki	G2G	P3SC	P3-SGS-ROB-IF- 001	Ground to Ground ICD	2.3	PDR long-term action items	DOCX PDF WIKI	G2G CMakeLists		
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Risk register

L=5: certain L=4: probable

S=3: major S=2: significant

Risk ID	Risk title	Affected Subsystems	Likelihood, Severity, RI	Mitigation
R1	Remaining TBDs in MOC/SOC IRD	SOC data repository structure depends on details of interchanged data	L=2, S=3, RI=6	Develop on the basis of assumtions
R2	Delays in Project ICD	Delay in specific subsystems: Data Repository, Operations Planning & Instrument Commanding, and MOC Support Software & Products	L=4, S=3, RI=12	For the time being we can focus on other work but this is becoming increasingly hampering as planning needs to be reorganized.
R3	Developments by international partners not usable	Various partner contributions	L=3, S=2, RI=6	Enhanced monitoring develop in-house instead
R4	Unsurmountable documentation workload	Delay in all subsystems	L=5, S=3, RI=15	Focus on the actual technical work
R5	Grafana not integratable with data repository subsystem	Delay in ASPIICS and Spacecraft Monitoring System	L=2, S=2, RI=4	Add ASPIICS and spacecraft monitoring data in Prometheus
R6	MIB not available	Delay in Auxiliary Data Processors subsystem	L=2, S=1, RI=2	Manually write parsers for the auxiliary data
R7	Complexity of the Data Repository	Delay in the Data Repository subsystem	L=2, S=2, RI=4	Simplify the required functionality of the Data Repository, reduce the generalisation of the Data Repository subsystem
R8	Future evolution of used open source tools	Delay in all subsystems	L=2, S=2, RI=4	Make changes to the code of the open source tool if needed, use older version or in the worst case replace the open source tool
R9	Complexity of the interoperability of the workflows	Workflow manager	L=3, S=2, RI=6	Run the system non-optimally resulting in longer processing times
R10	Delays in planning and testing	Delay in all subsystems	L=5, S=2, RI=8	Delay documentation workload

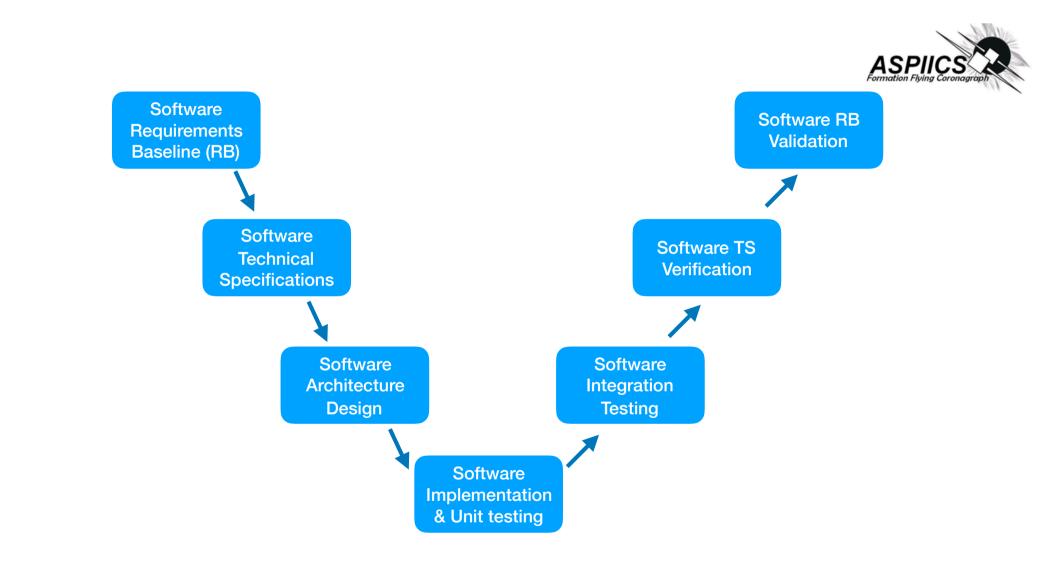




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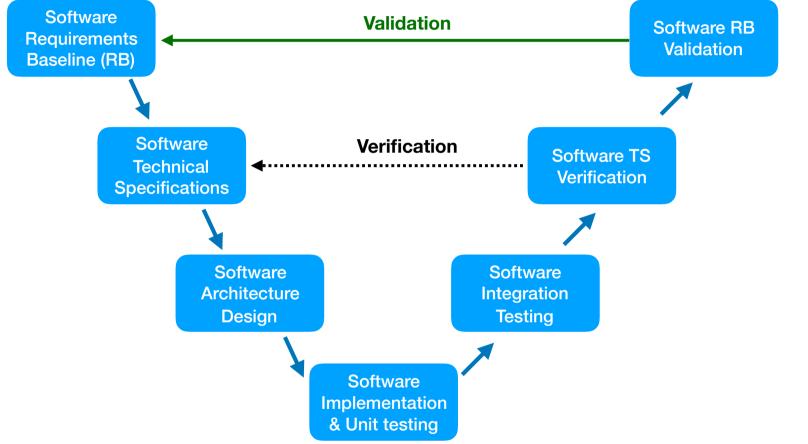


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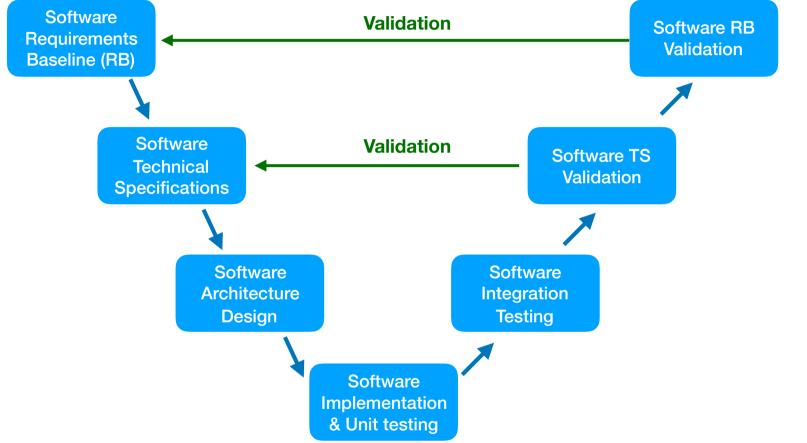


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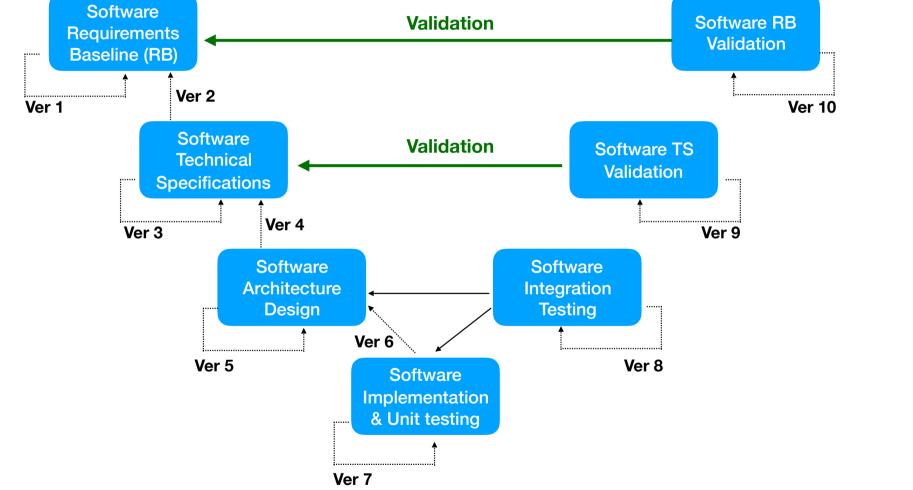
















Conclusions

- Tailoring of "ECSS Software Product Assurance" underway
- Contributed documents will be inspected for traceability
- "Verification and Validation Plan" VVP, becomes just "Validation Plan" covering both checking against RB and TS
- New document "Verification Plan", to check completeness and correctness of information flows between development cycles

