

EUROPEAN MIDDLEWARE INITIATIVE

SOFTWARE MAINTENANCE QUALITY CONTROL REPORT

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Abstract:

This document describes the status and performance of the quality control task with details on the availability and execution of regression tests for the supported EMI components, the test unit availability and coverage and various static and dynamic metrics on released components.

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1. INTRODUCTION

1.1. PURPOSE

The Quality Control (QC) verifies the application of Quality Assurance (QA) processes and procedures and, through the execution of period reviews, reports the status and performance of the SA1 work. Quality Control report is meant to provide an aggregated view of quality inspection results and performance measurements, and to highlight which changes are necessary to correct anomaly or nonconformity discovered during the review. The change requests are submitted to the QA board that, on the base of project's priorities, determines which can be approved and then applied, which require further evaluations and which are discarded.

1.2. DOCUMENT ORGANIZATION

The document is organized as follows:

- Chapter 1 and 2 are the introduction and the executive summary respectively;
- Chapter 3 presents the organization of the Quality Control activity and which the interaction with the external entities are;
- Chapter 4 reports the Quality Review expected for PM6 as the defined review schedule;
- Chapter 5 describes the status of the regression tests;
- Chapter 6 reports the conclusions of the work.

1.3. REFERENCES

R1	Quality Assurance Plan , https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDSA21
R2	Quality Assurance Metrics , https://twiki.cern.ch/twiki/bin/view/EMI/TSA23
R3	Quality Assurance Wiki Page , https://twiki.cern.ch/twiki/bin/view/EMI/SQAP
R4	Software Release Plan , https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDSA12
R5	Software Maintenance and Support Plan , https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDSA11
R6	Technical Development Plan , https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDNA131
R7	Release Management Wiki Page , https://twiki.cern.ch/twiki/bin/view/EMI/TSA13
R8	Configuration and Integration guidelines , https://twiki.cern.ch/twiki/bin/view/EMI/EmiSa2ConfigurationIntegrationGuidelines
R9	Certification and testing guidelines , https://twiki.cern.ch/twiki/bin/view/EMI/EmiSa2CertTestGuidelines
R10	Change management guidelines , https://twiki.cern.ch/twiki/bin/view/EMI/EmiSa2ChangeManagementGuidelines
R11	DSA2.2.1 - QA Tools Documentation , https://twiki.cern.ch/twiki/bin/edit/EMI/DeliverableDSA221?topicparent=EMI.EmiDeliverables;nowysiwyg=1

R12	Certification report Template , https://twiki.cern.ch/twiki/bin/edit/EMI/EMICertificationReportTemplate
R13	Software Verification and Validation Template , https://twiki.cern.ch/twiki/bin/view/EMI/SoftwareVerAndValTemplate
R14	Quality Control Report PM6 , https://twiki.cern.ch/twiki/bin/view/EMI/SA1QCPM6
R15	Software Quality Assurance Plan Documentation , https://twiki.cern.ch/twiki/bin/view/EMI/SQAP#SQAP_Documentation
R16	Firs Principles Vulnerability Assessment , http://www.cs.wisc.edu/mist/VA.pdf
R17	Review of the Software Release Plan , https://twiki.cern.ch/twiki/bin/view/EMI/SA1QCRSRP
R18	Review of the Software Release Schedule , https://twiki.cern.ch/twiki/bin/view/EMI/SA1QCRSRS
R19	Review of the Software Maintenance and Support Plan , https://twiki.cern.ch/twiki/bin/view/EMI/SA1QCRSMSP
R20	Review of the Security Assessments , https://twiki.cern.ch/twiki/bin/view/EMI/SA1QCRSA

DOCUMENT AMENDMENT PROCEDURE

This document can be amended by the authors further to any feedback from other teams or people. Minor changes, such as spelling corrections, content formatting or minor text re-organisation not affecting the content and meaning of the document can be applied by the authors without peer review. Other changes must be submitted to peer review and to the EMI PEB for approval.

When the document is modified for any reason, its version number shall be incremented accordingly. The document version number shall follow the standard EMI conventions for document versioning. The document shall be maintained in the CERN CDS repository and be made accessible through the OpenAIRE portal.

1.4. TERMINOLOGY

ABI	Application Binary Interface
API	Application Programming Interface
CDS	CERN Document Server
DCI	Distributed Computing Infrastructure
DMSU	Deployed Middleware Support Unit
EGI	European Grid Infrastructure
EMT	Engineering Management Team
ETICS	eInfrastructure for Testing, Integration and Configuration of Software



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FPVA	First Principles Vulnerability Assessment
GGUS	Global Grid User Support
ITIL	IT Infrastructure Library
KPI	Key Performance Indicator
kSLOC	Kilo Source Lines Of Code
MCB	Middleware Coordination Board
NGI	National Grid Initiative
PEB	Project Executive Board
PTB	Project Technical Board
QA	Quality Assurance
QC	Quality Control
RfC	Request for Change
SLA	Service Level Agreement
SQAP	Software Quality Assurance Plan
SU	Support Unit

2. EXECUTIVE SUMMARY

Performing Quality Control is specifically concerned with monitoring work results to see whether they comply with the standards set out in the SQAP defined in SA2 [R1]. Operating throughout the project, it aims to identify and remove the causes of unacceptable results from a product and a release schedule perspective. Basically, all the releases of EMI components need to satisfy well-defined certification and validation criteria before being included in a stable EMI distribution, sufficient to guarantee to a high degree of confidence that all EMI products meet the requirements set by our direct customers and that no regression is introduced in the software code. This activity also deals with the security assessment of selected EMI components under the coordination of CSIC (<http://www.csic.es>).

More precisely, the QC is responsible to carry out the following two major activities:

- **perform periodic reviews**, on the base of predefined control tools, to constantly control the performance of the team and collect measurements for evaluating quality metrics. Further information about the scheduled quality reviews can be accessed at [R14];
- **elaborate project deliverables** to summarize and further elaborate the results of the execution of periodic reviews in order to point out any nonconformity or negative trends that might become defects in the future.

At the time of writing (PM6) there is no official EMI release available and no real measurements and checks can be effectively collected or executed. Nevertheless, the change requests present in the following paragraphs are intended to be effective and for each of them a response, according to the review procedures established in the SQAP, is expected. The change requests, corrective and preventive, can contribute to the improvement of the project quality and should be noted in the project's documentation for ensuring their traceability.

3. THE ORGANIZATION OF THE QUALITY CONTROL

The diagram below (Figure 1) describes how the QA and the QC interact and in which way the information flows between them.

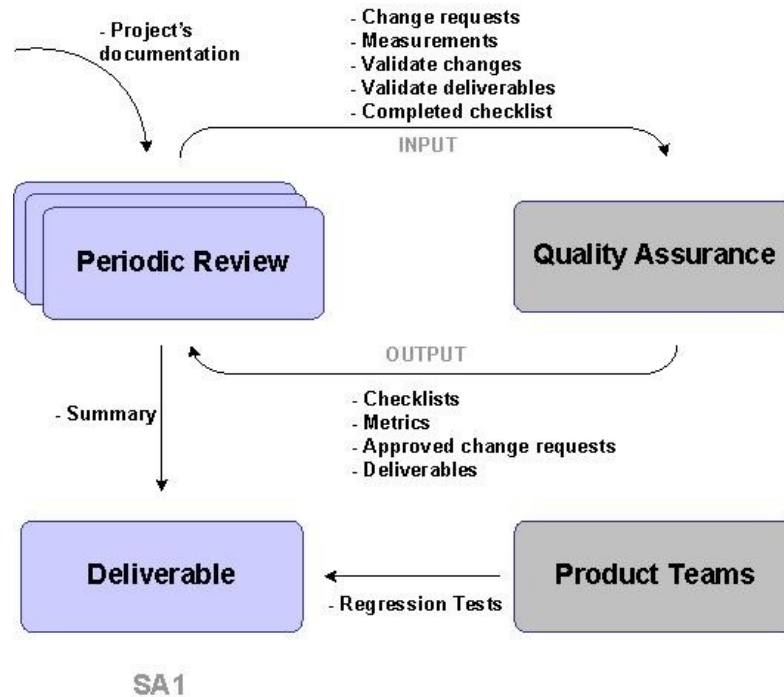


Figure 1: Quality Control Information flow

3.1. INPUTS

This paragraph presents the list of the information items that the QC receives as input and that are fundamental for the execution of reviews.

Quality Assurance Plan

The SQAP [R1] specifies the procedures, the metrics and the manner in which the EMI project is to achieve its quality goals in terms of software development.

Quality Checklists

A checklist is a structured tool used to verify whether the required steps in a process have been met. As each step is completed, it is checked off the list. In accordance to the SQAP, the input checklists for the QC in SA1 are:

- Review of the Software Release Plan
- Review the Software Release Schedule
- Review the Software Maintenance and Support Plan
- Security Assessments

Quality Metrics

A quality metric is an operational definition that describes, in very specific terms, a project or product attribute and how the QC process will measure it.

The metrics defined for the QC in SA1 are:

- Review of the Software Release Plan
 - *No metric defined for this review*
- Review the Software Release Schedule
 - *Delay on the release schedule (ID: DELAYONTHERELEASE)*
- Review the Software Maintenance and Support Plan
 - *Total user incidents per user month (ID: TOTALUSERINCIDENTS)*
 - *Training and support incident per user month. (ID: TRAININGSUPPORTINCIDENTS)*
 - *Average time to deal with an incident at the 3rd level of user support (ID: AVERAGETIMEFORUSERINCIDENTS)*
- Security Assessments
 - *No metric defined for this review*

Approved change requests

The list of approved change requests is provided as input to verify that their implementation is correct and satisfies the quality standards. Approved change requests can include modifications to the work methods or to the schedule and come as a result of the change management process led by the PEB.

Currently, there are no previous approved changes that need to be verified.

Deliverables

This is the list of deliverables (documents of products) that the QC verifies.

3.2. OUTPUTS

This paragraph presents the list of the information items that the QC returns to the QA for further elaboration.

Change Requests

This is the list of recommended corrective or preventive actions for preventing future defects in procedures or products.

Measurements

Quality control measurements are the documented results for the associated metrics.

Validated changes

Validated changes are the results of changes, defect repairs, or variances that have been inspected and corrected. Any changed or repaired procedures or products are once again verified and will be either accepted or rejected before the final decision is provided.

Validated deliverable

Main goal of QC is to determine the correctness of project's deliverables. If they satisfy the quality standards set out for the project are returned back to the QA as validated deliverables.

Completed checklists

Completed checklists are output of the QC activity and become part of the project's documentation.

Quality Baseline

The quality baseline is not a listed output of this process. Almost everything that is done throughout the quality process culminates in the quality baseline.

4. QUALITY CONTROL REVIEW

According to the schedule defined in the SQAP, this QC review refers to PM6 and it is the first performed within the SA1. In the following, the outcomes for each planned review are presented, including the information it receives as input and that it returns as output.

4.1. REVIEW OF THE SOFTWARE RELEASE PLAN

The aim of the Review of the Software Release Plan is to check that the release plan is up to date and that describes the actual release process.

The Software Release plan is available at [R4].

4.1.1 Input

Checklists

- *Checklist for the Review of the Software Release Plan [R18].*

Metrics

- *No metrics defined for this review.*

Approved change requests

- *No previous approved changes defined for this review.*

Deliverables

- *Software Release Plan [R4].*

4.1.2 Output

Completed Checklist

Check Number	Question	Response
1	Does the list of supported platforms correspond to the actual set of platforms on which software components are released?	N.A.
	<i>see [R4], chap. 5</i>	
	<i>see [R8]</i>	
	<i>see [R7]</i>	
2	Is the installation of external dependencies well documented?	N
	<i>see http://eticsssoft.web.cern.ch/eticsssoft/internal/public/VMWareImages/EMI_SL5_x86_64_EPEL_rpmlist.txt</i>	
	<i>see [R8]</i>	

3	Are instructions to build the software up to date?	Y
	<i>see [R8]</i>	
4	Is the list of supported delivery software formats up to date (source and binary packages, tarball, package lists, etc)?	N.A.
	<i>see [R4], par. 4.5.5</i>	
5	Is the description of the process on how to handle changes up to date?	N.A.
	<i>see [R4], par. 4.2</i>	
	<i>see [R10]</i>	
6	Are the communication channels published with updated information?	N.A.
	<i>see [R4], par. 4.5.5</i>	
7	Is the process on how to deliver software to the Production Infrastructures up to date and it's aligned to what the Production Infrastructures are expecting?	N.A.
	<i>see [R4], chap. 4.5.5</i>	

Table 1: Review of the Software Release Plan (N.A. = Not Available)

Measurements

There are no measurements for this review.

Comments

The table below (Table 2) reports specific comments for the checks that have returned a non-satisfactory response (i.e. N.A. or N). Although this review is only meant to give an overview of the current degree of compliance for the quality procedures, and will not have any effective impact on the prosecution of the work, it strongly recommended to take all the comments in account and to take corrective actions in response to the change requests defined for this review.

In addition, starting from the next review, the information needed to perform review's checks will be **exclusively** collected from the Software Release Plan and no other information sources, or external documents, will be considered. Each QC review will also refer to a specific version of the Software Release Plan to avoid that any non-documented change to the plan could invalidate the review outcomes.

Check Number	Comment
1	<p>Since no EMI components have been release yet, the check cannot be performed. The information that is necessary to make the comparison is not available.</p> <p>The list of supported platforms will be gathered from the Installation Guide that will be released with the software. The Installation Guide is one of the required documents as defined in the SQAP.</p>

2	Whether the check is referring to the installation of external dependencies in ETICS or to the installation of external dependencies for the deploy of the EMI components, no documentation is available in both cases.
4	No list available.
5	No information on how to handle changes to the Software Release Plan is available.
6	No communication channels are defined in any of the available documents.
7	The current release of the Software Release Plan does not contain any information regarding the delivery process of EMI components, either it does not mention which the Production Infrastructure requirements are and how EMI intends to address them.
	According to the SQAP, the documents governing the development, verification and validation, use and maintenance of the software processes should be made available on this page [R15] (<i>Software Quality Assurance Plan Documentation</i>) but at the moment of writing no items are currently listed there.

Table 2: Review of the Software Release Plan – Comments

Validated changes

There are no previous change requests that require to be validated for this review.

Validated Deliverables

None.

Variations from previous report

There are no variations from the previous review that can be reported here. The variations analysis will be performed starting from the next review when more information on review outcomes will be available.

Change requests

The list of the changes suggested/requested for this report follows:

- *to make the review more effective, **define** the tolerance range of positive checks for considering the associated EMI deliverables accepted. If the results fall within the range, the deliverables are accepted. Alternatively, the deliverables might be rejected because they do not meet the quality standards set for the project.*

The possibility of submitting change requests to the checklist structure (e.g. question text, number of questions) will be considered later on during the project when more information on the effectiveness of the review checks should be available.

4.2. REVIEW THE SOFTWARE RELEASE SCHEDULE

The Review of the Software Release Schedule should check that the priorities of the project are taken into account and reflected in the scheduled releases.

The Software Release Schedule is accessible at [R4].

4.2.1 Preamble on the EMI-0 release

According to the DoW, the first EMI release (EMI-1) will be delivered in March 2011. The product teams are currently working on an “exercise” release designed to understand how to apply the agreed procedures, find any problem about tools and processes and in general fine tune the EMI software engineering process before the EMI-1 release. The outcome of this exercise release, called EMI-0, is not expected to be made available to external users. Its main goal is to prepare a consistent, coherent repository of non-conflicting packages by the end of October 2010 without any specific commitment on functionality. For further information about the status of the EMI-0 release, please refer to [R7].

4.2.2 Input

Checklists

- *Checklist for the Review of the Software Release Schedule [R19].*

Metrics

- *Delay on the release schedule (ID: DELAYONTHERELEASE).*

Approved change requests

- *No previous approved changes defined for this review.*

Deliverables

- *Software Release Schedule [R15], [R4].*

4.2.3 Output

Completed Checklist

Check Number	Question	Response
1	<i>Has the previous schedule been kept?</i>	N.A.
	<i>see [R4], par. 4.6</i>	
	<i>see [R7]</i>	
2	<i>Does the new schedule take into account what wasn't accomplished in the previous schedule?</i>	N.A.
	<i>see [R7]</i>	
3	<i>Is the new schedule aligned to the Software Development Plan and the priorities of the</i>	N.A.

project?	
see [R6]	
see https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDJRA111	
see https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDJRA121	
see https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDJRA131	
see https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDJRA141	
see https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDJRA151	
see https://twiki.cern.ch/twiki/bin/view/EMI/DeliverableDJRA161	

Table 3: Review the Software Release Schedule

Measurements

In the following, the metrics list defined for this review is reported.

ID	DELAYONTHERELEASE
Name	Delay on the release schedule
Description	This metric could be provided as a histogram showing the delay time (in days) for each release, weighted using the release time
Unit	$(\text{release delay})/(\text{release time}) * 100$
Measurement	N.A.
Thresholds/target value	Ideally the release deadlines should be always met, leading to 0 delays for each release. Proper thresholds have to be defined. The trend of the delays over time could provide useful hints for process optimization.
Comment	The first EMI release will be made available at the end of March 2011 and thus no measurements can be collected for this metric.

Table 4: Delay on the release schedule – Metric

Comments

The table below reports specific comments on the check results.

Check Number	Question
1	Since no EMI components have been release yet, the check cannot be performed. The information that is necessary to make the comparison is not available.
2	It is not clear how changes or modifications across different releases are tracked, for instance to verify that what was not accomplished in previous releases has been included in the release under review. The adoption of a change tracking system is strongly encouraged.
3	In the Technical Development Plan [R6] and in the various sub plans, there is no evidence of the development road-map. GANTT charts or progress tables will certainly help the

	<p>Quality Control activity in elaborating more accurate review. At the moment only sparse pieces of information, scattered among various paragraphs, are available. In some cases the reported information is too vague (i.e. expression like "during the first year") making the execution of check difficult to perform. Moreover, even when deadlines are mentioned, there is no reference to any official document that might consent the QC to verify that those deadlines are met or not.</p>
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Table 5: Review the Software Release Schedule - Comment

As mentioned before, starting from the next review, the information needed to perform review's checks will be **exclusively** collected from the Software Release Schedule and no other information sources, or external documents, will be considered. Each QC review should also refer to a specific version of the Software Release Schedule to avoid that any non-documented change to the plan could invalidate the review outcomes.

Validated changes

There are no previous change requests that require to be validated for this review.

Validated Deliverables

None.

Variations from previous review

There are no variations to report from the previous review.

Change requests

The list of the changes suggested/requested for this report follows:

- *to make the review more effective, **define** the tolerance range of positive checks for considering the associated EMI deliverables accepted. If the results fall within the range, the deliverable is accepted. Alternatively, the deliverable might be rejected because it does not meet the quality standards set for the project;*
- *to facilitate the tracking of changes across different releases, it is strongly encouraged the adoption of a change management system to track changes life-cycle (see comment n. 2).*

4.3. REVIEW THE SOFTWARE MAINTENANCE AND SUPPORT PLAN

The Review of the Software Maintenance and Support Plan should check that the plan is up to date and describes the actual maintenance and support processes and that the SLAs are respected.

The Software Maintenance and Support Plan is accessible at [R5].

4.3.1 Input

Checklists

- Checklist for the Review the Software Maintenance and Support Plan [R19].

Metrics

- Total user incidents per user month (ID: TOTALUSERINCIDENTS)
- Training and support incident per user month. (ID: TRAININGSUPPORTINCIDENTS)
- Average time to deal with an incident at the 3rd level of user support (ID: AVERAGETIMEFORUSERINCIDENTS)

Approved change requests

- No previous approved changes defined for this review.

Deliverables

- Software Maintenance and Support Plan [R5]

Completed Checklist

Check Number	Question	Re- sponse
1	Is the process on how to handle incidents reported by EMI users using GGUS up to date?	Y
	see [R11]	
	see [R10]	
	see [R5]	
2	Is the process on how to handle requests coming from EMI users or other PTs up to date?	Y
	see [R5]	
	see [R10]	
3	Is the process on how to handle problems up to date?	Y
	see [R5]	
	see [R8]	

Table 6: Review the Software Maintenance and Support Plan

Measurements

ID	TOTALUSERINCIDENTS
----	--------------------

Name	Total user incidents per user month
Description	This metric covers defects not only in the software but also in the documentation, training and user support processes, per user month. User month means the number of users (in our case, deployed services?) per month.
Unit	GGUS tickets per user per month
Measurement	N.A.
Thresholds/target value	It is difficult to state a threshold valid for all the product teams, in general a decreasing trend would show positive results.
Comment	The first EMI release will be made available only at the end of March 2011 and thus no measurements for this metric can be collected. However if we were to start measurements collection tomorrow, we will be able to collect measurements for a consistent number of Supported Units.

Table 7: Total user incidents per user month

ID	TRAININGSUPPORTINCIDENTS
Name	Training and support incident per user month.
Description	This metric covers defects in the training and user support processes, per user month. User month means the number of users (deployed services?) per month. The training and support defects can be derived by subtracting the tickets in status unsolved (ticket that generated a bug) from the total number of opened tickets. It relies on proper bug opening from GGUS tickets, especially for what concerns ambiguous or missing documentation.
Unit	Incident per user month
Measurement	N/A
Thresholds/target value	Decreasing trend.
Comment	The first EMI release will be made available only at the end of March 2011 and thus no measurements for this metric can be collected. However if we were to start measurements collection tomorrow, we will be able to collect measurements for a consistent number of Supported Units.

Table 8: Training and support incident per user month – Metric

ID	AVERAGETIMEFORUSERINCIDENTS
-----------	-----------------------------

Name	Average time to deal with an incident at the 3rd level of user support
Description	This metric wants to measure the effectiveness of a product team to provide 3rd level user support. The time is measured from the time the ticket reaches a PT's 3rd level support and the time the ticket is moved to the status solved or unsolved
Unit	Days
Measurement	N.A.
Thresholds/target value	Need project wide agreement.
Comment	The first EMI release will be made available only at the end of March 2011 and thus no measurements for this metric can be collected. However if we were to start measurements collection tomorrow, we will be able to collect measurements for a consistent number of Supported Units.

Table 9: Average time to deal with an incident at the 3rd level of user support - Metric

Comments

The outcome of this report partly complies with the quality standards expected for the Software Maintenance and Support plan. Real measurements for the quality metrics have not been collected yet due to the unavailability of EMI components but if the measurements collection were to start tomorrow, it would be possible to collect values for most of the expected Support Units. Some minor adjustments to the GGUS interface are still under development but they will not affect the review outcomes and, most importantly, not influence the way users currently interact with the system.

Besides the comments reported above, it is important to report that there exists an inconsistency problem that needs to be addressed to avoid conflicts or reworks. The quality metrics set out for this review and the KPIs [R5] defined at the project level might potentially generate the same results leading to overlaps or crossings and, in the worst case, conflicts in the evaluation of quality performance. To reduce the risk of conflicts, the definition of the two indicators should be revised according to project's priorities and the task for the evaluation of their results concentrated in one single control.

Validated changes

There are no previous change requests that require to be verified for this review.

Validated Deliverables

None.

Variations from the previous review

There are no variations to report from the previous review.

Change requests

The list of changes suggested/requested for this review follows:

- *to avoid overlaps in performance evaluation, consider to aggregate the quality metrics defined for this review with the project KPIs.*

4.4. SECURITY ASSESSMENTS

Contribution from Elisa Heymann (UAB) is mandatory here. At the moment, no plan is available.

The Review of the Security Assessment should check that the different stages described in the First Principles Vulnerability Assessment (FPVA) approach are being followed. FPVA is a primarily analyst-centric (manual) approach to assessment whose aim is to focus the analyst's attention on the parts of the software system and its resources that are mostly likely to contain vulnerabilities. FPVA is designed to find new threats to a system. It's not dependent on a list of known threats.

4.4.1 Input

Quality Checklists

- *Checklist for the Review of the Security Assessment [R20].*

Quality Metrics

- *No metrics defined for this review.*

Approved change requests

- *No previous approved changes defined for this review.*

Deliverables

- *Security Assessment Plan [R15].*

4.4.2 Output

Completed Checklist

Check Number	Question	Response
1	The Architectural Analysis has been carried out and the output contains a diagram describing the interactions among components and end users.	N.A.
2	The Resource Identification has been carried out and the output contains the resource descriptions.	N.A.

3	The Trust and Privilege Analysis has been carried out and the output contains the trust levels and the delegation information for all the components and their interactions.	N.A.
4	The Component Evaluation has been carried out and the output contains identified vulnerabilities and their suggested fixes.	N.A.
5	The Dissemination of Results has been carried out.	N.A.

Table 10: Review of the Security Assessment Plan (N.A. = Not Available)

Measurements

There are no measurements for this review.

Comments

The Security Assessment Plan has not been released yet and thus no consideration on its compliance with the quality standards can be formulated.

Validated changes

There are no previous change requests that require to be verified for this review.

Validated Deliverables

None.

Variations from previous report

There are no variations from the previous review to report.

5. REGRESSION TEST

The Quality Control activity for the SA1 is specifically concerned with monitoring work results for software maintenance and release activities to see whether they comply with the standards set out in the QA plan. In addition, the QC should also contain details on availability and execution of regression tests for the supported EMI components. As outlined in [R9], regression tests are tests that are meant to verify specific bug fixes. A regression tests can be associated to a bug reported in the bug (defect) tracker. A Product Team should aim at providing regression tests whenever the bug fix can be automatically (i.e. with a script) verified. When regression tests are distinguished, their execution should be highlighted in [R12]. Regression tests should be performed always on a release candidate; exceptions can be done for the release of urgent bug fixes and special occasions agreed within the EMT.

5.1.1 General comments

Although no regression tests have been performed yet, it might be asserted that the instructions on how to implement, execute and document new regression tests are well documented and the procedure looks consolidate. At the moment no causes that may lead to unacceptable results are envisaged, but it is strongly encouraged to better clarify how the information on the execution of regression tests should be made available and in which format. The availability of a centralized repository where to collect information from, would really facilitate the QC's work and reduce the possibility of errors. Also consider to extend the Software Verification and Validation Template [R13] adding a specific section where details on regression tests can be reported.

6. CONCLUSIONS

This document reports the organization of the QC activity in SA1 and includes the results of the quality review expected for the PM6. The evaluation of SA1 performance, based on measurements collection, contains some inconsistency mainly due to the unavailability of necessary information. Despite the lack of information, the review reports remarkable and valuable results that, in the form of change requests, will be submitted to QA for further elaboration.

More generally, what results evident in reviewing the SA1 activity, and in the applicability of QA procedures, is the lack of a centralized place where relevant information is kept and made available to project's stakeholders in a more structured and standardized format.