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Task SA2.2: Quality Assurance Process Definition and Monitoring

Task Description

From the EMI PoW: SA2 is responsible to define the software development processes to be adopted by software developers, integrators and testers within EMI. SA2.2 task deals with the definition of a standards compliant software engineering process and the continual activity of monitoring its correct application within the activities of the EMI project. The success criteria of this task are the availability of an agreed, documented and regularly updated process and the minimization of deviation in its application by the project members.

Software Quality Assurance (SQA) is defined as a planned and systematic approach to the evaluation of the quality of and adherence to software product standards, processes, and procedures. SQA includes the process of assuring that standards and procedures are established and are followed throughout the software life cycle.

Software Quality Engineering (SQE) is a process that evaluates, assesses, and improves the quality of software. Software quality is often defined as the degree to which software meets requirements for reliability, maintainability, transportability, etc., as contrasted with functional, performance, and interface requirements that are satisfied as a result of software engineering.

Note that software functionality is different from software quality. Software functionality is what the software is able to do. Software quality is how well the software performs.

Contacts

The following list of people are either part of the TSA2.2 task or have shown interest to be involved in the discussions:

Name	Institute	Role
Maria Alandes	CERN	TSA2.2 leader
Claudio Cacciari	CINECA	TSA2.2 and Unicore contact person for SQA
Jozef Cernak	UPJS	TSA2.5 leader and ARC contact person for SQA
Giuseppe Fiameni	CINECA	Quality Control task leader
Christian Bernardt	DESY	dCache contact person for SQA

If you want to get involved in SA2.2 discussions, please, join our mailing list [☞](#).

QA Report Deliverables

- DSA2.1 - Software Quality Assurance Plan - End of June 2010. SQAP twiki.
- DSA2.3.1 - Periodic QA Reports - End of July 2010. QA Report 1 twiki.
- DSA2.3.2 - Periodic QA Reports - End of April 2011. QA Report 2 twiki.
- DSA2.3.3 - Periodic QA Reports - End of April 2012. QA Report 3 twiki.
- DSA2.3.4 - Periodic QA Reports - End of April 2013.

Other QA Reports

- EMI 1 Documentation Review Report.

SQA Documentation

Please, refer to the main SA2 twiki where we maintain a table with the EMI QA policies and other useful QA documentation.

SQA Standards

The following standards are relevant to SQA and have been used when writing the SQAP:

- Software Life Cycle:
 - ◆ IEEE/ISO/IEC 12207:2008 Software Life Cycle Processes [↗](#) (Harmonised with ISO/IEC 15288 System Life cycle processes)
 - ◆ CMMI-DEV Process and Product Quality Assurance (PPQA) [↗](#)
- ISO 9000 related standards:
 - ◆ ISO/IEC 90003:2004 Software engineering -- Guidelines for the application of ISO 9001:2000 to computer software [↗](#)
- Metrics:
 - ◆ ISO/IEC 15939:2007 Systems and software engineering -- Measurement process [↗](#)
 - ◆ ISO/IEC 14598 Information technology -- Software product evaluation [↗](#)
 - ◆ ISO/IEC 15504-2:2003 Information technology -- Process assessment [↗](#)
 - ◆ ISO/IEC 9126 - Software engineering Product quality [↗](#)
- SQAP
 - ◆ 730-2002 IEEE Standard For Software Quality Assurance Plans [↗](#)
- Documentation:
 - ◆ ISO/IEC 18019:2004 Guidelines for the design and preparation of user documentation for application software [↗](#)
 - ◆ SO/IEC TR 9294:2005 Guidelines for the management of software documentation [↗](#)
- Software Development
 - ◆ Team Software Process [↗](#)
 - ◆ Personal Software Process [↗](#)
- SQuaRE: Software product Quality Requirements and Evaluation
 - ◆ ISO/IEC 25001 Planning and management [↗](#)
 - ◆ ISO/IEC 25012 Data Quality Model [↗](#)
 - ◆ ISO/IEC 25020 Measurement Reference Model and Guide [↗](#)
 - ◆ ISO/IEC 25030 Quality Requirements [↗](#)
 - ◆ ISO/IEC 25040 Evaluation process [↗](#)

Other useful links on specific examples where SQA is applied:

- NASA Software Assurance Guidebook and Standard [↗](#)
 - ◆ SOFTWARE ASSURANCE GUIDEBOOK, NASA-GB-A201 [↗](#)
 - ◆ SOFTWARE ASSURANCE STANDARD, NASA-STD-2201-93 [↗](#)
- ESA Guide to software quality assurance [↗](#)
- Examples of SQAPs:
 - ◆ ACIS (AXAF CCD Imaging Spectrometer) Software Quality Assurance Plan [↗](#)
 - ◆ Software Quality Assurance Plan for the EMD project [↗](#)
 - ◆ SpinGRID Software Quality Assurance Plan [↗](#)
- Examples of Quality Models
 - ◆ Object Oriented Quality Management [↗](#)

In the following twiki page, it is presented how the different standards have been used within the SA2.2 activity.

Articles

Title	Author	Journal
Using a Defined and Measured Personal Software Process ↗	Watts S. Humphrey	IEEE Software, May 1996, pp. 77-88. Vol. 13, Issue 3
Results of Applying the Personal Software Process ↗	Pat Ferguson et al	IEEE Computer, May 1997, pp.24-31. Vol. 30, Issue 5

Books

Title	Author
A Discipline for Software Engineering	Watts S. Humphrey
Building Quality into Software: A Guide to Manage Quality in Software Development and Use	Horst P. Richter
Customer Oriented Software Quality Assurance	Frank P. Ginac
The Handbook of Software Quality Assurance (3rd Edition)	G. Gordon Schulmeyer, James I. Mcmanus
Software Quality Assurance : From Theory to Implementation	Daniel Galin

Before EMI

[▣ Details](#) [▣ Hide Details](#)

SQA practices and SW engineering processes for gLite, Unicore, ARC and dCache before the EMI project.

gLite

Twiki/web pages:

- Developer's guide
- Product Team Release Process
- Testing
- Porting
- EGEE Quality Assurance activity [↗](#)

Documents:

- Software life-cycle process [↗](#)

Unicore

- Release Process [↗](#)
- Resources for Developers [↗](#)

ARC

Twiki/web pages:

- Useful information for developers [↗](#)
- Release Management [↗](#)
- Testing [↗](#)
- Porting [↗](#)

Documents:

- [Development and build](#)
- [ARC Documents](#) - Useful material under section [Public Deliverables](#):
 - ◆ [D5.1-2 Tested & certified KnowARC releases \(first release\), October 2007](#)
 - ◆ [D5.1-2 Tested and Certified KnowARC Releases \(second release\), October 2008](#)
 - ◆ [D5.4-1 Resource consumption profile and performance benchmark study of the final release of KnowARC, November 2009](#)
 - ◆ [D5.1-2 Tested and Certified KnowARC Releases \(final release\), December 2009](#)

dCache

Twiki/web page:

- [Release Process](#)

This topic: [EMI > TSA22](#)

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