Revisions

Issue Number	Date	Authors	Description
ITT-1-9873-ESA-FAQAS-D2 Issue 1 Rev. 1	November 4th, 2020	Fabrizio Pastore, Oscar Cornejo	Initial release.

Contents

Chapter 1

Software system specification

1.1 Introduction

This document is the deliverable SSS of the ESA activity ITT-1-9873-ESA. Following the structure described in the SoW *AO9873-ws00pe_SOW.pdf* it provides the structured requirements baseline for the FAQAS framework according to ECSS-E-ST-40C.

Requirements are univocally identified with the paragraph id appearing on the left.

1.2 Applicable and reference documents

- D2 - Mutation testing survey
- D2 - Study of mutation testing applicability to space software

1.3 Terms, definitions and abbreviated terms

1.4 General description - Code Driven Mutation Testing Component

1.4.1 Product perspective

1.4.1.1 The code-driven mutation testing component (in Section **??** referred to as *the system*) implements the Mutation Testing Process for code-driven mutation testing described in D2.

1.4.2 General capabilities

1.4.3 General constraints

1.4.4 Operational environment

1.4.4.1 The system works with a Linux operating system and Bash shell.

1.4.5 Assumptions and dependencies

1.4.5.1 The system targets SUT built using either GCC Make [1] or WAF[2].

1.4.5.2 The system targets SUT compiled with GCC [3].

1.5 Specific requirements

1.5.1 Capabilities requirements

1.5.1.1 The gcov coverage information associated to each test case shall be stored in a separate directory.

[1] https://gcc.gnu.org/onlinedocs/gccint/Makefile.html
[2] https://waf.io/
[3] https://gcc.gnu.org

1.5.2 System interface requirements

1.5.3 Adaptation and missionization requirements

1.5.4 Computer resource requirements

1.5.5 Security requirements

1.5.6 Safety requirements

1.5.7 Reliability and availability requirements

1.5.8 Quality requirements

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1.5.12 System and software observability requirements

1.6 Verification, validation and system integration

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1.6.4 Verification requirements

1.7 System models

1.8 General description - Data-driven Mutation Testing Component

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1.8.1.1 The data-driven mutation testing component implements the Mutation Testing Process for code-driven mutation testing described in D2.

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