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| FAQAS RISK REGISTER | | | | | | | | | | | | | | | | | | | | |
| Project: FAQAS | | | | | | Organization: SnT | | | | | | | | Source: | | | | Date: | | |
| WBS Ref.: | |  | | | |  |  | | | | | | | Controlled by: | | | | Issue: | | |
|  | |  | | | |  |  | | | | | | | Supported by: | | | |  | | |
| RISK SCENARIO and MAGNITUDE | | | | | | | | | | | | | | | | | | | | |
| No.1 | | Risk scenario title: Lack of expertise in testing of embedded satellite software. | | | | | | | | | | | | | | | | | | |
| Cause and consequence: | | | | | | | | | | | | | | | | | | | | |
| Severity (S)  4 | | | | | | | | Likelihood (L)  A | | | | | | | Risk index | RED | YELLOW | | GREEN | Risk domain |
| Negligible 1 | Significant 2 | | Major 3 | Critical 4 | Catastrophic 5 | | | Minimum  A | Low B | Medium C | | High D | Maximum E | |  | (\*) | (\*) | | X | Technical |
| RISK DECISION and ACTION | | | | | | | | | | | | | | | | | | | | |
| Accept risk ❑ | | | | | | | | | | | | | | Reduce risk ❑ | | | | | | |
| Risk reduction measures: | | | | | Verification means: | | | | | | Expected risk reduction (severity, likelihood, risk index): | | | | | | | | | |
| Action: | | | | | | | | | | | Status: | | | | | | | | | |
| Agreed by project management:  Name: Signature:  Date: | | | | | | | | | | | | | | | | | | | | Risk rank: |
| **Notes**  (\*) Mark box as appropriate for the value of “R” (risk index), according to the criteria defined in the risk management policy.  (\*\*) Indicate risk domain (e.g. technical, cost or schedule). | | | | | | | | | | | | | | | | | | | | |
| **RISK SCENARIO and MAGNITUDE** | | | | | | | | | | | | | | | | | | | | |
| No. | | Risk scenario title: | | | | | | | | | | | | | | | | | | |
| Cause and consequence: | | | | | | | | | | | | | | | | | | | | |
| Severity (S) | | | | | | | | Likelihood (L) | | | | | | | Risk index | RED | YELLOW | | GREEN | Risk domain |
| Negligible 1 | Significant 2 | | Major 3 | Critical 4 | Catastrophic 5 | | | Minimum  A | Low B | Medium C | | High D | Maximum E | |  | (\*) | (\*) | | (\*) | (\*\*) |
| RISK DECISION and ACTION | | | | | | | | | | | | | | | | | | | | |
| Accept risk ❑ | | | | | | | | | | | | | | Reduce risk ❑ | | | | | | |
| Risk reduction measures: | | | | | Verification means: | | | | | | Expected risk reduction (severity, likelihood, risk index): | | | | | | | | | |
| Action: | | | | | | | | | | | Status: | | | | | | | | | |
| Agreed by project management:  Name: Signature:  Date: | | | | | | | | | | | | | | | | | | | | Risk rank: |
| **Notes**  (\*) Mark box as appropriate for the value of “R” (risk index), according to the criteria defined in the risk management policy.  (\*\*) Indicate risk domain (e.g. technical, cost or schedule). | | | | | | | | | | | | | | | | | | | | |
| **RISK SCENARIO and MAGNITUDE** | | | | | | | | | | | | | | | | | | | | |
| No. | | Risk scenario title: | | | | | | | | | | | | | | | | | | |
| Cause and consequence: | | | | | | | | | | | | | | | | | | | | |
| Severity (S) | | | | | | | | Likelihood (L) | | | | | | | Risk index | RED | YELLOW | | GREEN | Risk domain |
| Negligible 1 | Significant 2 | | Major 3 | Critical 4 | Catastrophic 5 | | | Minimum  A | Low B | Medium C | | High D | Maximum E | |  | (\*) | (\*) | | (\*) | (\*\*) |
| RISK DECISION and ACTION | | | | | | | | | | | | | | | | | | | | |
| Accept risk ❑ | | | | | | | | | | | | | | Reduce risk ❑ | | | | | | |
| Risk reduction measures: | | | | | Verification means: | | | | | | Expected risk reduction (severity, likelihood, risk index): | | | | | | | | | |
| Action: | | | | | | | | | | | Status: | | | | | | | | | |
| Agreed by project management:  Name: Signature:  Date: | | | | | | | | | | | | | | | | | | | | Risk rank: |
| **Notes**  (\*) Mark box as appropriate for the value of “R” (risk index), according to the criteria defined in the risk management policy.  (\*\*) Indicate risk domain (e.g. technical, cost or schedule). | | | | | | | | | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Organization: SnT | | | | Date: 3/12/2019  Issue: 1 | | | |
| ID | Risk scenario title | **Red** | **Yellow** | | **Green** | Risk domain | Description, Action, Status | |
| R1 | Feasibility of case study systems |  |  | | X | Technical | **Description:** The case study systems may not match the project assumptions, which are: availability of test suites, system executable on SnT premises.  **Action:** SnT will start working on case study systems before WP2.  **Status:** SnT has obtained training on LXS case study. SnT has signed NDA with GSL. The risk is mitigated. | |
| R2 | Mutation testing expertise. |  |  | | X | Technical | **Description:** SnT researchers have a varying degree of expertise on mutation testing. Junior team members might encounter difficulties in applying mutation testing.  **Action:** SeniorSnT member will continuously supervise the activity.  **Status:** Meeting with Donghwan Shin providing insights of advanced use of mutation testing for safety critical systems. Dr. Cornejo has been the main contributor of D1. The risk is mitigated. | |
| R3 | Applicability of available mutation testing tools to case study systems |  | X | |  | Technical | **Description:** The mutation testing tools to be used in the proposal might present requirements incompatible with the case study systems provided by partners.  **Action:** SnT will investigate the compatibility between tools and case study systems early in the project.  **Status:** Theanalysis of LXS case study systems has shown that the system should met the requirements of some of the tools adopted in the project (e.g., MUSIC). The risk has been accepted. | |
| R4 | Scalability of mutation testing tools on case study systems |  | X | |  | Technical | **Description:** The mutation testing tools mentioned in the proposal might present scalability issues when applied in the context of the project. However, literature work present several solutions to improve scalability of mutation testing, which will be applied in this context when necessary.  **Action:** SnT should start evaluating early the scalability of existing tools  **Status:** LXS test suite take 10 hours to be executed, which highlight a scalability issues. However, scalability analysis is part of the objectives of the project. The risk has been accepted. | |
| R5 | Applicability of available test generation tools to case study systems |  | X | |  | Technical | **Description:** The test generation tools to be used in the project are research prototypes that might present requirements incompatible with the case study systems provided by partners.  **Action:** SnT will investigate the compatibility between tools and case study systems early in the project.  **Status:** accurate analysis will be performed once the case study system will be received by SnT. Since this analysis is part of the project objectives,the risk has been accepted. | |
| R6 | Scalability of mutation testing and test generation techniques. |  | X | |  | Technical | **Description:** The test generation tools to be used in the project are research prototypes that might not scale.  **Action:** SnT will investigate the scalability of these tools early in the project.  **Status:** accurate analysis will be performed once the case study system will be received by SnT. Since this analysis is part of the project objectives,the risk has been accepted. | |
| R7 | Inapplicability of mutation testing to ECSS procedures |  |  | | X | Technical | **Description:** the mutation testing process may not fit into ECSS practices.  **Action:** SnT will evaluate ECSS applicability at different stages.  **Status:** the analysis done for the project proposal (Section 1.1.2.2) has shown that mutation testing is, in theory, applicable to ECSS practice. | |
| R8 | Failure to comply with ECSS standard requirements. |  | X | |  | Organizational | **Description:** The FAQAS framework is required to comply with ECSS standards. Being the contractor a research center not a software development company, fully compliance with ECSS standard may overload the contractor with documentation activities that do not directly benefit the quality of the outcome.  **Action:** Appropriate tailoring agreements with ESA should be discussed.  **Status:** ESA is preparing project tailoring. The risk is accepted. | |
| R9 | Project personnel changes |  |  | |  |  | **Description:** project personnel may leave the team.  **Action:** In case research associates leave SnT before the project ends, SnT will increase the involvement of SnT permanent staff supervising the project. There is sufficient redundancy within the partnered teams to find suitable replacements.  **Status:** The risk is mitigated. | |
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