Proposal for a Subsection Describing a VnV User Story in the Verification Plan Version 2.0

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Abstract

This document contains a proposal for structure and content of an subsection to the verification or validation plan describing a "User Story" .

The proposal should be used as a guideline to check whether all information is given appropriately. The wording used in this proposal is by no means mandatory. And if you feel that more information is useful to describe your activity within the context of openETCS, you should of course do so. Feel free to add additional categories of description as adequate.

Also the LaTeX macros may be changed, though the use of `paragraph` and `subparagraph` enables easy integration into higher-level documents (they are not numbered automatically, which may be a draback in other respects).

0.1 <*headline*>

This subsection declaration has to be inserted into the file `WP41-V02-Project-Verification-Plan.tex`. A label to permit referencing the subsection number may be added. Following the the subsection declaration an `input` macro shall be inserted which refers to the file containing the desciption (the rest of this template, adequately instantiated. These are the only modifications to source files of the VnV plan which are necessary.

This section describes the verification plan of <*partner*>. It concerns <*verification object*>. The goal of the activity is to establish <*goal*>.

Different activities, even if performed by one partner, should be described in separate "user stories". What counts as different should be judged individually. There are two categories of goals: One is to do something for the EVC software to be developed in openETCS. That is, a design artifact is verified here. The other is to do something for the VnV methods, eg. evaluating or demonstrating the suitability of tools. Both goals could be relevant to a user story

Object of verification
The object of verification is *<name, github ref>*. It is from *<design phase>* and represents/describes/implements *<the what>*.

Design steps according to the openETCS process described in D2.3. Add more detailed characterisation if suitable.

Available specification

Specification to be implemented by the verification object.

<References, short description>

Methods and Means

Which methods are applied, tools, etc. Refer to descriptions in Part III of the VnV plan, if available

Results to be achieved

A detailed description of the goals.

Timeline

Describe the steps to be performed

<Step description>

What, How, When (dates or Verification Level), State and results (if partly of fully done). Several steps, usually at least one for each Verification Level

Maturity Classification The tools applied have the following TRLs (Technology Readiness Levels):

<*Tool*>**:** TRL <*level*>. reference or short explanation.

Technology readiness level of the tools in analogy to the definitions from `http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf`:

TRL 1 basic principles observed

TRL 2 technology concept formulated

TRL 3 experimental proof of concept

TRL 4 technology validated in lab

TRL 5 technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 6 technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 7 system prototype demonstration in operational environment

TRL 8 system complete and qualified

TRL 9 actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

These categories are formulated for "real" systems, not verification tools, so some interpretation of the definitions is needed. For us, the levels 3 to 6 seem the most probable. SCADE with its simulation capabilities would be an example of a system of higher TRL which could be used in verification. RT Tester (the plugin together with the server installed components) might perhaps be classified as 5 (DLR guess): It has been used like it would be applied in a real development, but not extensively (not demonstrated, just validated. This could be different at the end of the project.).

The activity shall comply in the following way to the requirements of a SIL 4 development. <*Compliance description*>

According to the role the activity would have in a development process. Tools must be qualified, depending on their usage (e.g., error detection by supplementing activities). If an activity is not intended to perform some verification completely, state what would be needed for being able to use its result. Qualify your statement if you are not sure about your judgment: e.g., guess, tentative, informed estimation, or similar.

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