

ADS-IWG Credibility Phase 1 summary

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Summary on Credibility section

- 5 meetings held between the 3rd (Brussels) and 4th (London) IWG-ADS:
 1. Transposition of VMAD-SG2 guideline document into regulatory text:
 - Extract part of the guideline text containing explicit and implicit requirements
 - Rephrasing to match the “who shall do what” format
 2. Restructuring of the document to match regulation’s structure:
 - **4. General Requirements:** general obligation for the manufacturer to demonstrate suitability of the simulation toolchain through credibility assessment
 - **5. Requirements/Specification:** lists requirements for credibility (management, analysis, V&V) which address the manufacturer
 - **6. Assessment:** role of the auditor
 - **Annex:** TBD

Summary on Credibility section

- General agreements on most requirements transposed from the guideline
- Open items:
 1. Possibility of using more than a simulation toolchain and whether the current text (using wording “*toolchain(s)*”) is clear in this regard:
 2. Possibility of re-using only a tool part of a simulation toolchain for a different use-case
 3. Add additional clarification details to overcome vagueness on specific requirements.
- Future work (Phase 2/3) :
 - *Role of the assessor*: limited supporting text from guideline, new text to be developed
 - Need to find the right balance in providing clarity without overengineering requirements
 - Link with SMS (e.g., competency of the personnel, interaction with suppliers)

Open item 1

- **Dealing with multiple toolchains**
- **Rationale:** manufacturers might wish to use different simulation toolchains to cover different aspects of the ADS assessment (e.g., HIL for failure scenarios and MIL to complement some physical tests/parameters exploration...).
- **Options:**
 1. (current) Use notation “*simulation toolchain(s)*” throughout the requirements’ list
 2. add specific requirement in the specification section that clarifies the point, ex:

5.X.Y. [*tentative*] The manufacturer may use multiple simulation toolchains provided that each simulation toolchain is suitable for the specific use case

Open item 2

- **Dealing with tool(s) from another toolchain(s)**
- **Rationale:** manufacturers might wish to use an already developed tool from a toolchain for a different use-case with potentially different criticality
- **Option:** suggested definition for simulation toolchain that might fit better:
 - [OLD] “*Simulation toolchain*” means a combination of simulation tools that are used to support the validation of an ADS
 - [NEW] “*Simulation toolchain*” means a simulation tool or a combination of simulation tools that are used to support the **confirmation of the ADS safety case's claims**
- The new definition has the following clarifications:
 1. it makes clear that a simulation toolchain might be made up of a single tool;
 2. it ties the scope of a toolchain to the safety case (requirements + AoUR).

Open item 3

- **Level of detail in requirements**
- **Rationale:** original guideline document listed approaches to document the credibility and its sub-pillars (e.g., criticality based on ISO 26262). The guideline nature affords to be more exhaustive but in the regulatory text a suitable *trade-off* between level of detail and flexibility for the manufacturer is needed.
- **Options:**
 1. (current) relatively open text derived from guideline where provisions which could potentially force explicit approaches towards credibility assessment have been removed
 2. Develop new content/add examples in the body of the text
 3. Move discussion to interpretation document

Thank you

Back-up slides

Updates – definitions

- 3.33 “*Simulation*” means the imitation of the operation of a real-world process or system over time **utilizing a software implementation for some (or all) of the models, tools or test environment.**
- **Rationale:** previous definition of “simulation” (no text in green) did not rule out test environment like this:



Criticality

- Option 1: Criticality-centred approach:

5.X.2. [JRC Proposal] The manufacturer shall demonstrate that the simulation toolchain(s) is suitable to use for virtual testing by:

- performing a criticality analysis that evaluates the potential risk and consequences of using the simulation toolchain(s) for the assessment of the ADS safety case and functional/user requirements;
- demonstrating that the simulation toolchain(s) fulfils the credibility requirements corresponding to the identified criticality as per the requirements listed in this section.

- Option 2: Capability-centred approach:

5.X.2 [RH/UK Alternative] The manufacturer shall demonstrate that the simulation toolchain(s) is suitable to use for virtual testing by demonstrating compliance with the requirement listed in this section.

- The manufacturer shall document the capability of the simulation toolchain and explain their claim that it is suitable to undertake the virtual testing.
- The manufacturer shall document the activities and processes that support the claim that the simulation toolchain is suitable to use for virtual testing.
- The manufacturer shall provide evidence that supports their claim that the simulation toolchain is suitable to use for virtual testing.

Roles

- Manufacturers (Section 5):
 - Define the minimum level of credibility to deem results credible based on the criticality of the application
 - Perform the credibility assessment on the simulation toolchain to verify suitability
- Authorities (Section 6):
 - Review/audit credibility assessment
 - Demand the execution of virtual tests on the (credible) simulation toolchain

Flow – to be updated

