# Proposal: FRAV method to derive requirements and specifications (V-model's left side)

Document FRAV-04-15-Add.1
Submitted by the experts from Germany
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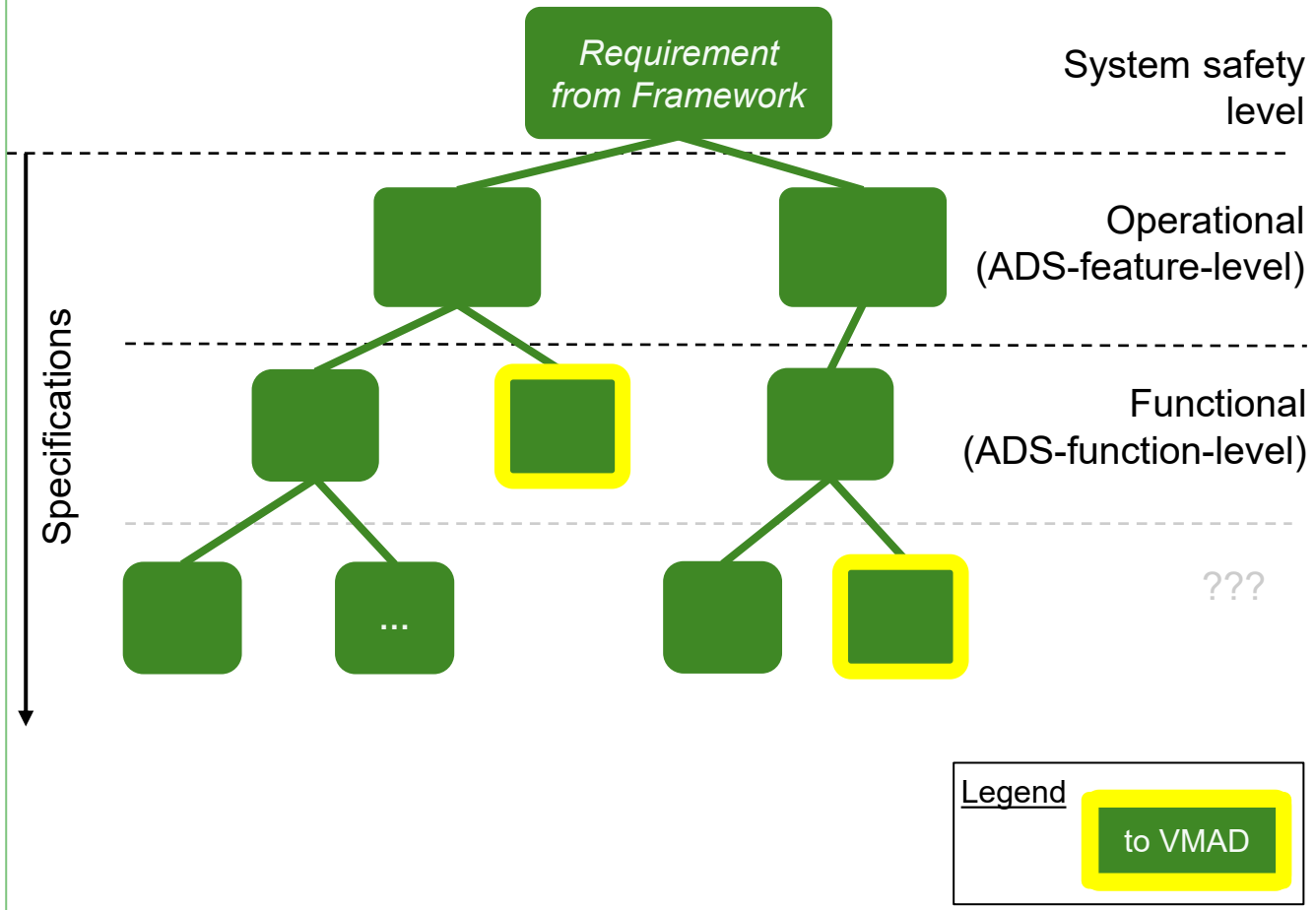
## Visualization

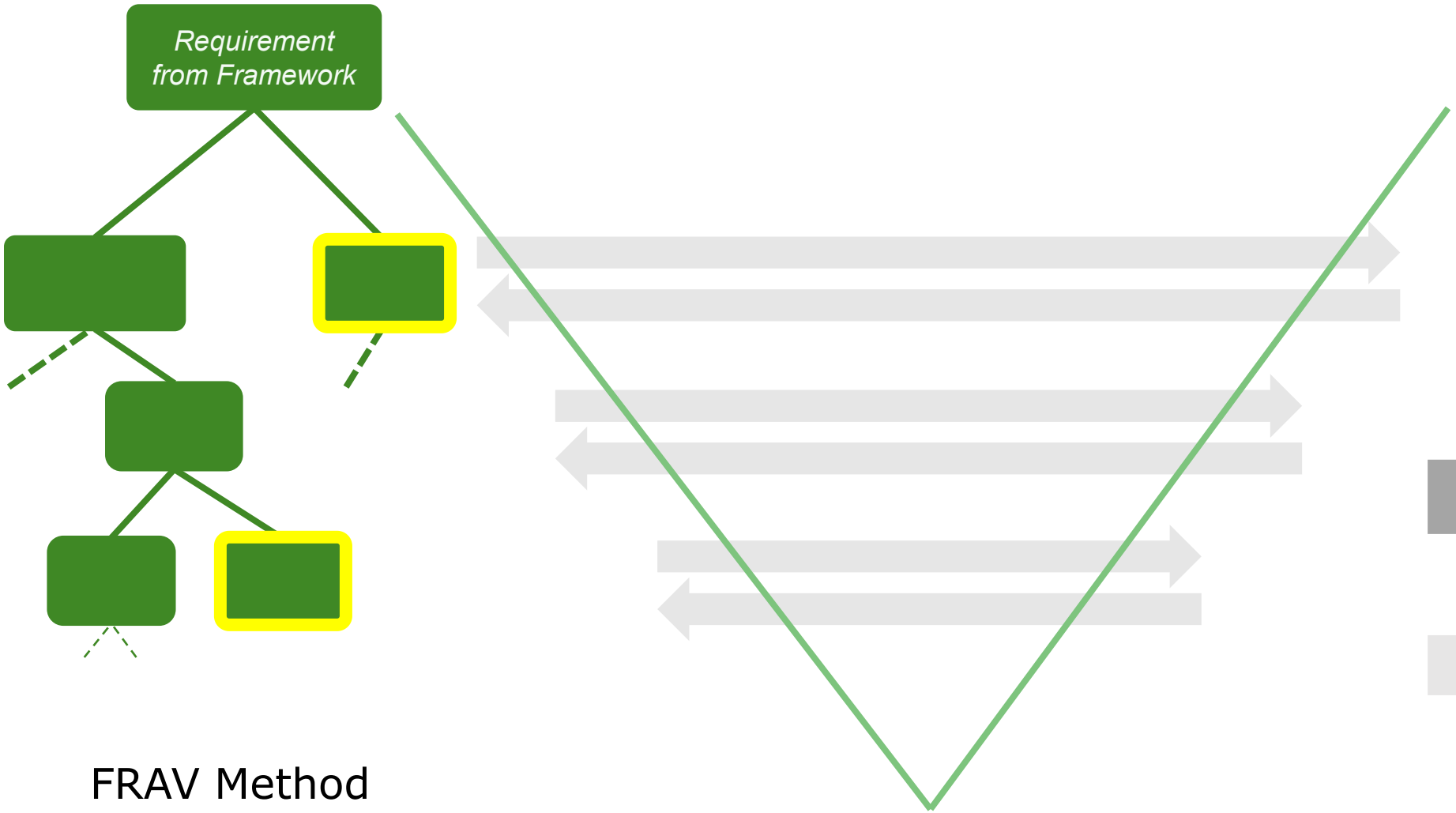



## Explanatory notes

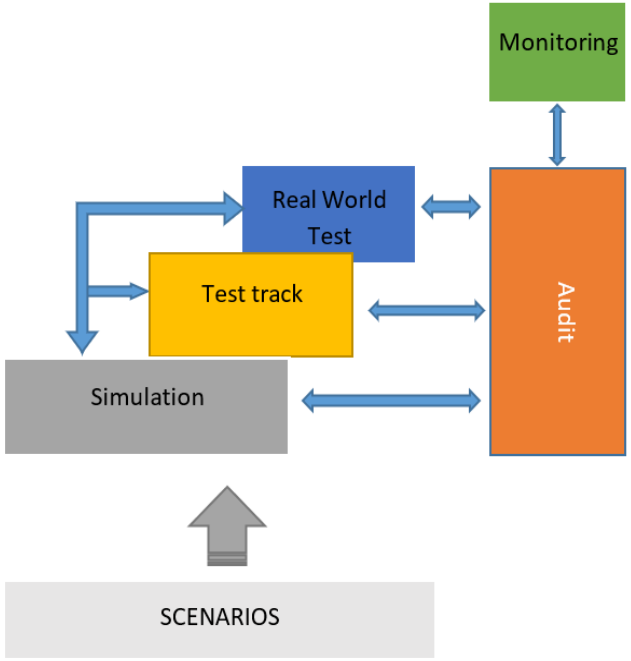
- Starting with requirements taken from the Framework Document, specifications can be formulated on different levels
- Specifications on every level need to be **unambiguous**
- If no further specification by FRAV is needed (e.g. specification = verifiable*), it can be passed over to VMAD
- Idea: FPR candidates (from candidates list) can be integrated where they are suitable in such kind of chart.

* Verifiable in the sense of: specification has pass/fail criterion

# Cooperation FRAV and VMAD




FRAV Method




VMAD Method

# Proposed idea of when to pass a specification to VMAD

- Question to ask: Is there a clear pass/fail criterion?
  - Requirement example: „An automated/autonomous vehicle shall not cause any non-tolerable risk.“
  - Answer: There is no clear pass/fail criterion. Further specification by FRAV is needed.
  - Specification example: „Follow Traffic Regulations“
  - Answer: There is a clear pass/fail criterion. No further specification needed.

# „Dos and Dont‘s“ of the proposed FRAV method – Germany‘s point of view as Regulator

- Dos:

  Define a clear direction for vehicle safety through:

  - unambiguous, measurable, verifiable specifications
  - specifications: as many as necessary, as few (!) as possible
  - technology-neutrality
  - leaving examination of system to validation method (e.g. audit procedure).

- Dont’s

  - Define too detailed vehicle behaviour (e.g. center in the lane…)
  - Define redundant criteria (e.g. define sensor ranges and require „no accidents“ → if „no accidents“ is fulfilled, sensor ranges will fit as well)
  - Define requirements not needed for safety, environment or traffic flow