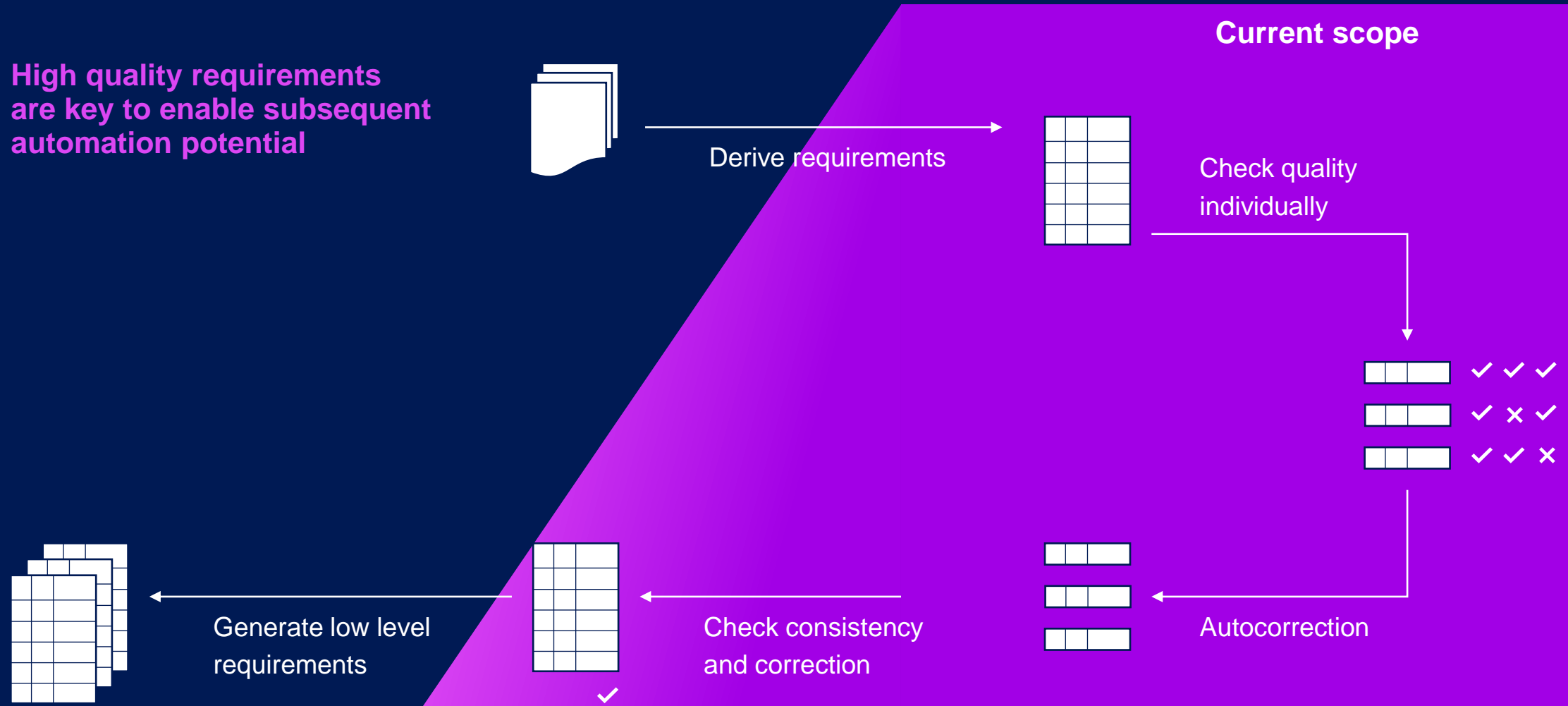


IAV AI infused engineering  
IAV Devpanion

# IAV Devpanion Requirements – AI assisted Requirements Engineering

High quality requirements are key to enable subsequent automation potential



# IAV Devpanion Requirements – Define your own Checks

Requirements Selection | **2 Configuration** | 3 Check and Correct | 4 Consistency Check

## Configuration

Set target requirement language:

### Validation Criteria

[Reset Configuration](#)

Name	Definition	Evaluate	Suggest Autocorrection	
atomic	Each requirement is atomic and cannot be divided into separate requirements without altering its meaning.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
unambiguous	Each requirement is subject to only one interpretation with only objective facts. Any forms of negative statements, universal quantification, compound statements and indefinite temporal statements are prohibited. However, as it is part of a collection of requirements, it must not describe any detail about the subject.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Consistent Language	Each requirement is written in (language).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
strict	Each requirement is a strict requirement, which means that it does not contain formulations like 'should' that suggest that the requirement or parts of it are mandatory instead of 'must' or 'shall'.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Follows Template	Each requirement must adhere to a specific, predefined sentence structure template commonly accepted in the field of requirements engineering.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Purpose Independent	Each requirement must not contain phrases describing the purpose or justification of the requirement, only a concise statement of the need.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Testable	It must be possible to derive a test for each requirement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Alliteration	<input type="text" value="Every Requirement must start with the letter 'A'"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="✖"/>

# IAV Devpanion Requirements – Quality Checks and Autocorrection

Requirements Selection Configuration **3 Check and Correct** 4 Consistency Check

Requirements **Total: 16** **Unhandled: 13**

ID	Requirement	Status	Actions
1	The vehicle attendant must have the ability to monitor the status of the shuttle.	1 (Red)	+ □
2	Assuming a normal distribution, the standard deviation of the lateral localization error from its expected value must not be more than 5 cm.	1 (Yellow)	+ □
3	It is necessary to ensure that the total weight does not exceed the value:	2 (Green)	- □
A system must ensure that the total weight does not exceed the value of 2000 kg.			
In the event of an emergency situation, aggression detection or an emergency braking maneuver, the video and audio data must be marked separately in the data record 15 minutes before and after the event. The data may only be overwritten after 7 days.			
4	All video and audio data must be marked separately in the data record 15 minutes before and after an emergency situation.	4 (Red)	- □
<p>Accept Reject</p>			
All video and audio data must be marked separately in the data record 15 minutes before and after aggression detection.			
<p>Accept Reject</p>			
All video and audio data must be marked separately in the data record 15 minutes before and after an emergency braking maneuver.			
<p>Accept Reject</p>			

Accept Selected Reject Selected

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Evaluation Results Expert View

Evaluation

Criterion	Comment
1 unambiguous	The requirement contains compound statements and indefinite temporal statements, making it subject to multiple interpretations.
1 Purpose Independent	The requirement describes the purpose of marking the video and audio data in the context of an emergency situation.
2 Testable	
3 atomic	The requirement contains multiple conditions and actions that can be separated.
4 Consistent Language	
5 strict	
6 Follows Template	The requirement does not follow a specific, predefined sentence structure template.
7 Alliteration	The requirement does not start with the letter 'A'.

# IAV Devpanion Requirements – Consistency check across requirements

✓ Requirements Selection — Configuration — Check and Correct — 4 Consistency Check

Requirements Check consistency Cancel

ID	Requirement	Status
1_1	● A vehicle attendant must have the ability to monitor the status of the shuttle.	✓
2	Assuming a normal distribution, the standard deviation of the lateral localization error from its expected value must not be more than 5 cm.	✓
3_1	● A system must ensure that the total weight does not exceed the value of 2000 kg.	✓
4_1	● All video and audio data must be marked separately in the data record 15 minutes before and after an emergency situation.	✓
4_2	● All video and audio data must be marked separately in the data record 15 minutes before and after aggression detection.	✓
4_3	● All video and audio data must be marked separately in the data record 15 minutes before and after an emergency braking maneuver.	✓
4_4	● All video and audio data may only be overwritten after 7 days.	✓
5_1	● A report of the lock status (locked/unlocked) must be sent to the control center.	✓
6_1	● A shuttle must have a maximum speed of 30 kmh.	✓
7_1	● All passengers must be informed in an appropriate manner that the number of passengers must be reduced before the start of the journey.	✓

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Identified Inconsistencies

- Inconsistency: There is a conflict regarding the duration for which video and audio data should be stored before being overwritten. Some requirements specify 7 days, while others specify 5 days. ⓘ +
- Inconsistency: The requirement about the vehicle attendant's ability to monitor the status of the shuttle is duplicated. ⓘ +

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# IAV Devpanion Requirements

## Also available as integration in Codebeamer – please contact us

The image displays two overlapping software interfaces. On the left is the 'Requirements Validator' tool, and on the right is the 'codebeamer' Application Lifecycle Management (ALM) interface.

**Requirements Validator - Requirements Input:**

Index	Requirements	
# 1	The vehicle attendant must have the ability to monitor the status of the shuttle.	-
# 2	Das Shuttle muss manuell rückwärts fahren können.	-
# 3	A ventilation system and an air conditioning system must be provided for air conditioning in the passenger compartment.	-
# 4	The energy requirements of the shuttle planned for the design must be communicated to the project team.	-
# 5	The shuttle must have an easily-visible electricity meter that counts any electricity brought into the vehicle.	-

**Requirements Validator - Requirements Output:**

- Unambiguous:** ✓
- Consistent Language:** ✓
- Follows Template:** ✓
- Design Independent:** ✗ (The requirement specifies that a ventilation system and an air conditioning system must be used for air conditioning in the passenger compartment. This places unjustified constraints on the design by requesting specific technologies to be used.)
- Purpose Independent:** ✓

**Codebeamer - Requirements Quality Checker:**

**Check and Correct**

Evaluate requirements against selected validation criteria and export corrected requirements back to Codebeamer.

Number of Requirements: 20  
 Unhandled Requirements: 12  
 Failed to Check: 1

**Evaluation Results**

1.2.3.4.4. Prioritisation of retention agents 2 issues

Each cockpit voice recorder shall record voice communications of flightcrew members using the passenger loudspeaker system, if there is such a system and if the fourth channel is available in accordance with the requirements of paragraph (c)(4)(i) of this section.

Autocorrect Suggestion  Analysis Result

Each cockpit voice recorder shall record voice communications of flightcrew members using the passenger loudspeaker system, if there is such a system.  
 Accept Reject

Each cockpit voice recorder shall record voice the passenger loudspeaker system, if there is such a system.  
 Accept Reject

1.2.3.4.5. Recorder container 15 issues

Each recorder container must be either bright orange or bright yellow.

