Submitted by the TF on ADAS Co-Chair

Informal document **GRVA-15-44**
15th GRVA, 23-27 January 2023
Agenda item 6(a)

Report of the TF on ADAS for the 15th GRVA Session

Status after the 14th GRVA session

- Three online meetings (22 November 2022, 5 December 2022, 13+19 January 2023)
- Four online meetings of the Drafting Group
- Making progress with the draft DCAS UN Regulation
- Two proposals for UN R 79 are kept on hold; no progress
- One new proposal for UN R 79 is in the agenda of GRVA-15
- Vacant position of the ADAS TF Co-Chair
  - Needed to ensure continuity of activities
- Link to the TF documents: https://wiki.unece.org/display/trans/ADAS

Outcome on the pending proposals for UN R 79

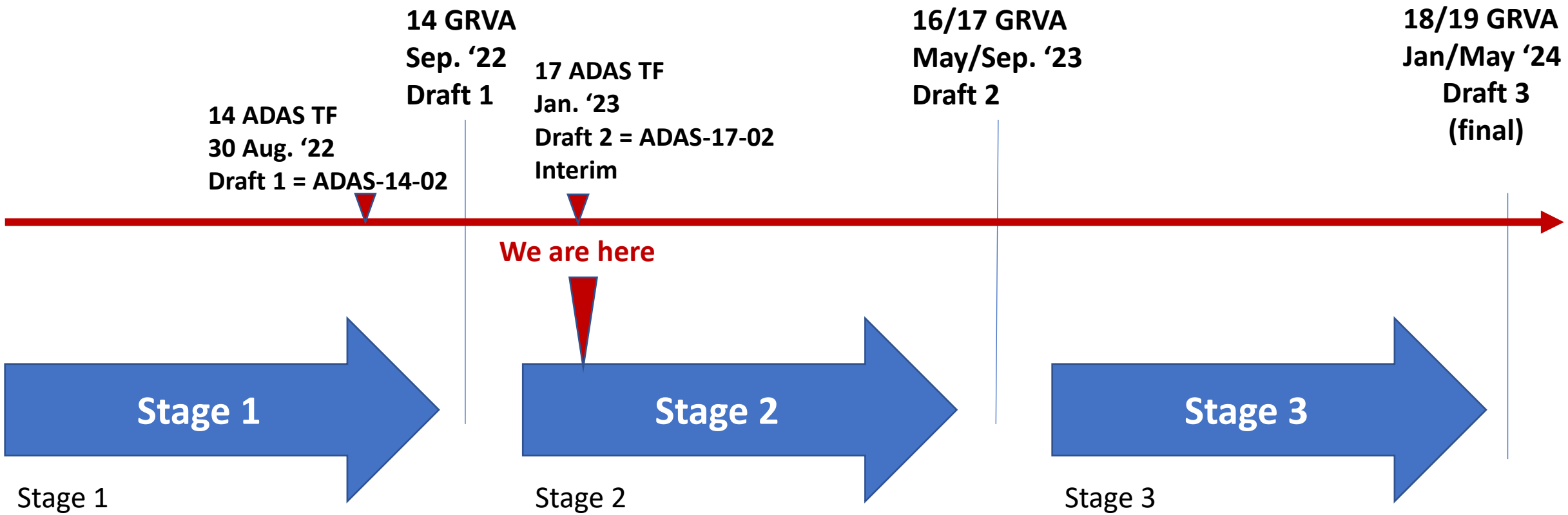
Document	System	Objective of the proposal	Status
GRVA/2021/09	ACSF C	Introduce a tolerance of 10% to the critical distance.	No progress. To be deleted from the GRVA agenda.
GRVA/2021/10	ACSF C	Extend allowed time to start a LCM to 7 s (or more).	No progress. To be deleted from the GRVA agenda.
GRVA/2023/6 GRVA-15-09 GRVA-15-30	ACSF C	A single deliberate action to activate ACSF-B1 and ACSF-C	The proposal is in the agenda of the 15th GRVA session.

Progress with drafting the DCAS UN Regulation

- The Small Drafting Group (SDG) was set up at the 11th ADAS TF session
  - The SDG participants: RUS, EC/JRC, NL, UK, AVERE, OICA, CLEPA, AAPC
- The SDG:
  - Achieved some progress with the content of the Master Document
  - Started development of the provisions for DCAS validation
  - The resulting Master Document ADAS-17-02 was presented to the ADAS TF with the invitation to the stakeholders to provide comments and proposals
    - Still, there are some gaps and open issues in the text of the Master Document
    - The requirements in the text shall be verifiable
  - Therefore, the amendments to the ADAS Task Force Deliverables and Timings (GRVA-09-15) are proposed for the consideration by GRVA (GRVA-15-43)
- Plus: The ADAS TF:
  - had endorsed the core principles of separation of different vehicle control assistance systems between UN Regulation No. 79 and the new DCAS UN Regulation for the purpose of the type approval
  - had reviewed the outcomes and report of the L2 Hands-Off study commissioned by the VDA

DCAS Master Document Review Process
Updated Stages & Timing

Dates amended based on the new timing in GRVA-15-43



Stage 1
- **overview and restructuring**
- identify issues (redundancies, contradiction with principles, interpretation…) to be solved on the Stage 2

Stage 2
- **detailed review**
- agree on content of the requirements

Stage 3
- **fine tuning**
- finalize wording and definitions

Separation of different vehicle control assistance systems between UN Regulation No. 79 and the new DCAS UN Regulation for the purpose of the type approval

- UN Regulation No. 79 presently covers:
  - ACSF A, ACSF B1, ACSF C, CSF, ESF, RMF
- DCAS UN Regulation to cover:
  - Any other vehicle control assistance systems (see use cases in ADAS-08-04)

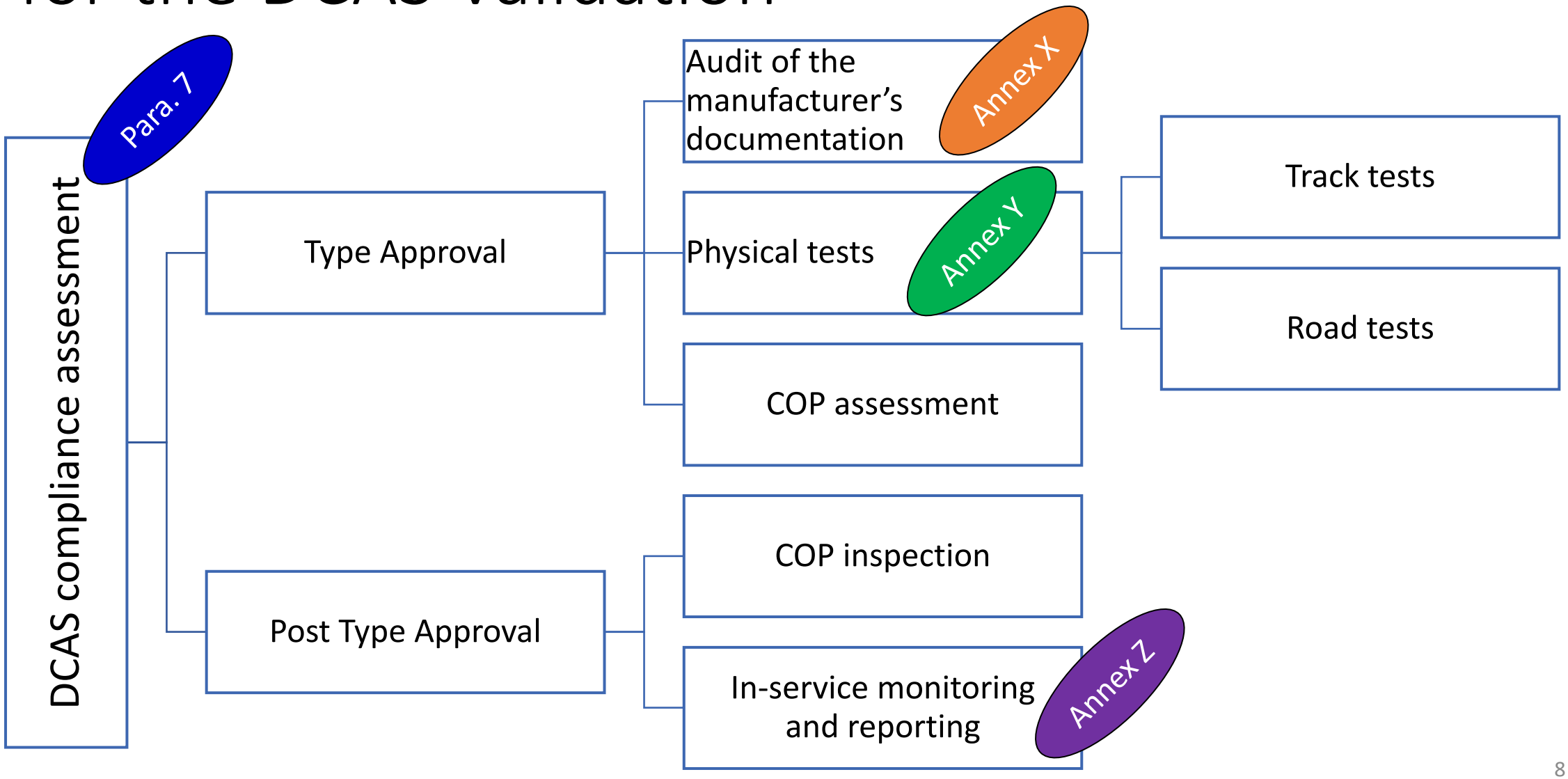
Core principles (ADAS-15-03):

- As long as a feature is not in contradiction to UN-R79, it can continue to be approved to UN-R79. (to ensure we do not re-regulate systems that are approved to UN-R79 today)
- Features that go beyond R79 (are in contradiction to R79) have to be approved to DCAS. (this is the purpose of DCAS… to find an appropriate way to regulate these new features)
- The manufacturer can choose to approve an entire system that provides lateral and longitudinal control on a sustained basis to DCAS, even though some of its features comply with UN R79. (This aims to keep the approval effort reasonable, if part of the system is approved to DCAS, the entire system should be approvable to DCAS, even though other features are R79 compliant)
  - The UK noted that further examples are required to allow proper consideration of the third principle
  - The Chair agreed with the UK that the TF should be careful not to integrate any inconsistencies of UN Regulation No.79 within the DCAS UN Regulation

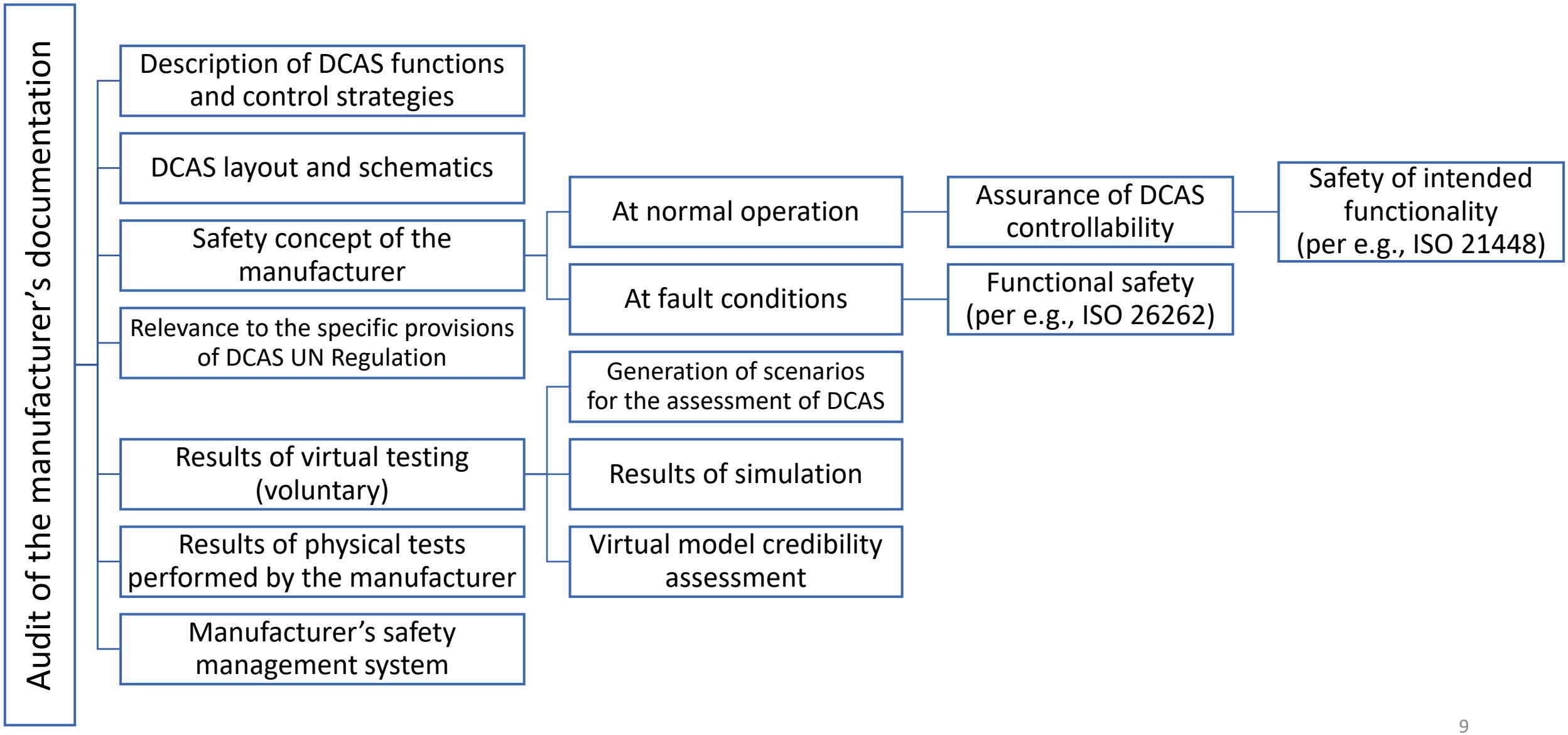
Proposed Approach for DCAS Validation (ADAS-17-03)

- Similarly to the NATM, to implement “multi-pillar” techniques for the assessment of DCAS:
  - The multiple assessment techniques compensate uncertainties related to operational cases that are not assessed directly and thus cover DCAS multiple operational cases that should be assessed;
  - The enhanced techniques are not new; they are already known and implemented in other areas: this would ensure easier implementation of those in the DCAS UN Regulation.

Proposed Multi-Pillar Techniques for the DCAS Validation



Details of the Audit of the Manufacturer's Documentation



L2 Hands-off Technology

(Chair's remark per the results of the study commissioned by the VDA and presented to the ADAS TF - ADAS-17-05)

- This technology refers to the way of the driver engagement monitoring: "Eyes-on" instead of "Hands-on":
  - This technology does not mean that the driver is allowed to immerse into the activities other that driving;
  - Strategic adaptation of driver's behavior exists for this technology, and it can be observed and assessed;
  - "Eyes-on" driver engagement monitoring integrated in DCAS can be a subject for type approval;
- The scientific study commissioned by VDA addressed the challenges potentially related to this technology and shown the same safety level of the two ways of the driver engagement monitoring: "Eyes-on" and "Hands-on"
- So that, the provisions addressing safety of this technology could be developed within the DCAS UN Regulation

Next steps

- Stage 2: detailed review of the provisions
  - Section Modes of Operation
  - Section Driver Engagement Monitoring
  - Requirements to the specific DCAS features
  - Assessment of DCAS → elaborating on the annexes
  - Response to comments and proposals by the stakeholders
- Introduction and definitions could be checked after finalizing the requirements in stage 3

- The SDG meetings:
  - 14 February 2023
  - The next one would depend on the progress with drafting
- 17th ADAS TF session: an extra day (Mid-February(?)) to discuss the results of the L2 Hands-Off study commissioned by the VDA
- 18th ADAS TF session → End of February or the 1st week of March 2023 (TBC)

Thank you for your attention!

Back-up

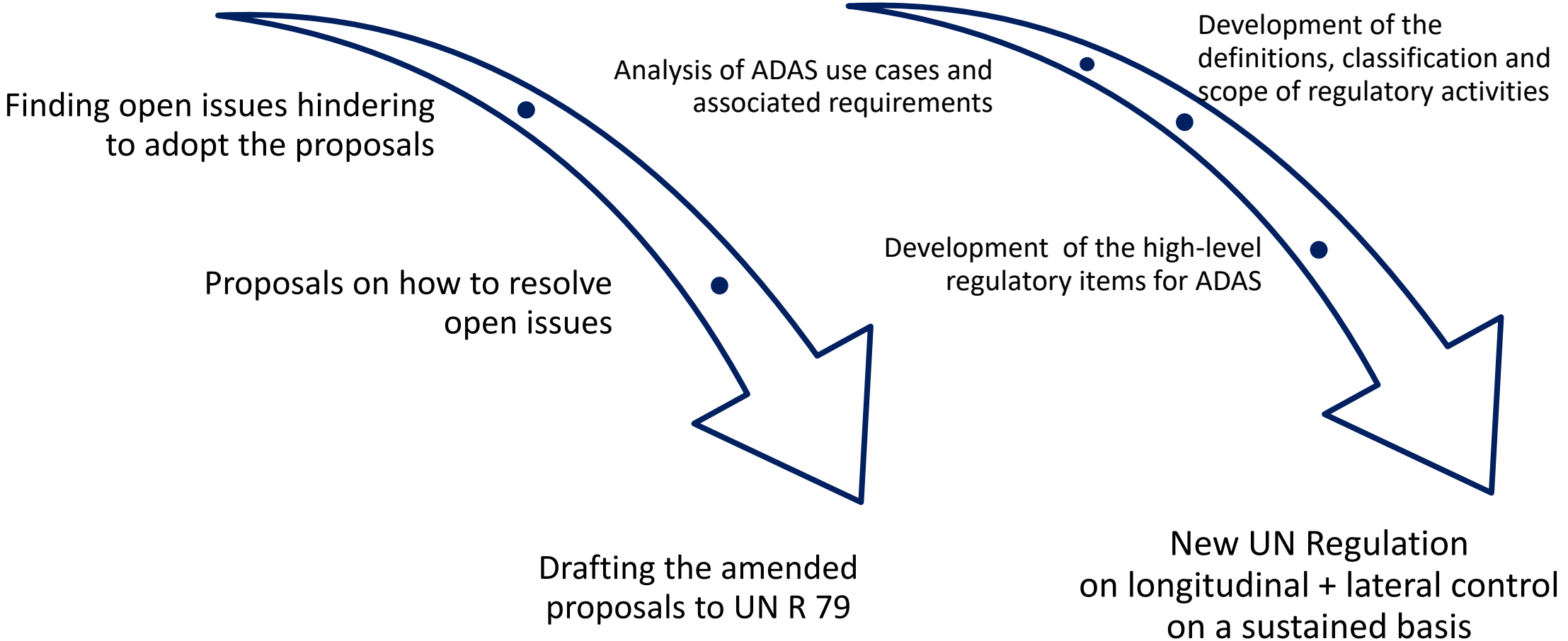
Background

- GRVA adopted at its 9th session in February 2021 the terms of reference for the Task Force on Advanced Driver Assistance Systems (ADAS).
- The Task Force (TF) focuses on Advanced Driver Assistance Systems (ADAS), and shall address the simplification of UN Regulation No. 79 and if needed, develop a new ADAS UN Regulation with a focus on ADAS systems up to of level 2 (as defined in ECE/TRANS/WP.29/1140).
- The TF on ADAS agreed to start developing a new UN Regulation

Two Parallel Workstreams of the TF

Working on the pending proposals for UN R 79

Development of the provisions for the new ADAS use cases



Agreed DCAS Key Principles

1. **“Driver” refers to a human being driving a vehicle.**
   - 1.1. A DCAS does not replace the driver (ADS); a DCAS assists the driver (ADAS).
   - 1.2. A DCAS does not change the driver’s responsibilities for control of the vehicle.
2. **A DCAS is a driver-operated vehicle system.**
   - 2.1. A DCAS must prevent reasonably foreseeable risks of driver misuse or abuse.
   - 2.2. A DCAS must have means to evaluate continuous driver involvement in and supervision of the vehicle operation.
   - 2.3. A DCAS do not aim to permit driver activities other than driving in addition to those permitted for manual driving.
   - 2.4. A DCAS must provide sufficient information to enable the driver to supervise its motion-control assistance.
3. **A DCAS assists the driver via sustained lateral and longitudinal motion-control support.**
   - 3.1. The DCAS support must not adversely impact road safety.
   - 3.2. The DCAS support must not adversely impact driver control over the vehicle behavior.
4. **The availability of a DCAS to the driver is constrained by defined system boundaries.**
   - 4.1. The manufacturer must describe the system boundaries.

Procedure of SDG for the review (Stage 1)

- Guiding questions:
  - Does each requirement comply with key principles?
  - Is each requirement applicable to all types of DCAS?
  - Does it need to be moved in another place?
  - Is side comment/discussion point relevant for this headline/sub-headline?
  - Should additional paragraph(s) be introduced to address such side comment/discussion point?

- Derived tasks
  - Check if the existing requirements are in line with the principles and in the right place
  - Add missing requirements, where necessary
  - Clustering of the several DCAS features (what is specific, what in common?)
  - Establishment of a new structure to address the clustering approach

The Results of Restructuring (1)

MD ADAS-14-02

The Results of Restructuring (2)

MD ADAS-14-02

Regulation

Annexes

Still under development

6.	**Requirements for specific DCAS features**
6.1.	**Specific requirements for advanced driver initiated maneuvers**
6.1.1.	Advanced driver initiated lane change
6.1.2.	Advanced assistance for other driver initiated maneuvers [Placeholder]
6.1.3.	[Low speed manoeuvring] [Placeholder]
6.2.	**System initiated manoeuvers**
6.2.1.	General requirements for system initated manoeuvres
6.2.1.1.	Functional requirements
6.2.1.2.	HMI
6.2.2.	Specific requirements for system initiated lane change
6.2.2.1.	Functional requirements
6.2.3.	Specific requirements for maneuvers to transition from one phase of lane keeping to another
6.2.3.1.	Functional requirements
6.2.3.2.	Special provisions for dedicated maneuvers
6.2.3.2.1	Special provisions when forming an access corridor for emergency and enforcement vehicles
6.3.	**Specific requirements for hands-free driving [Placeholder]** (VDA ongoing study)