30th Session
User
working stream

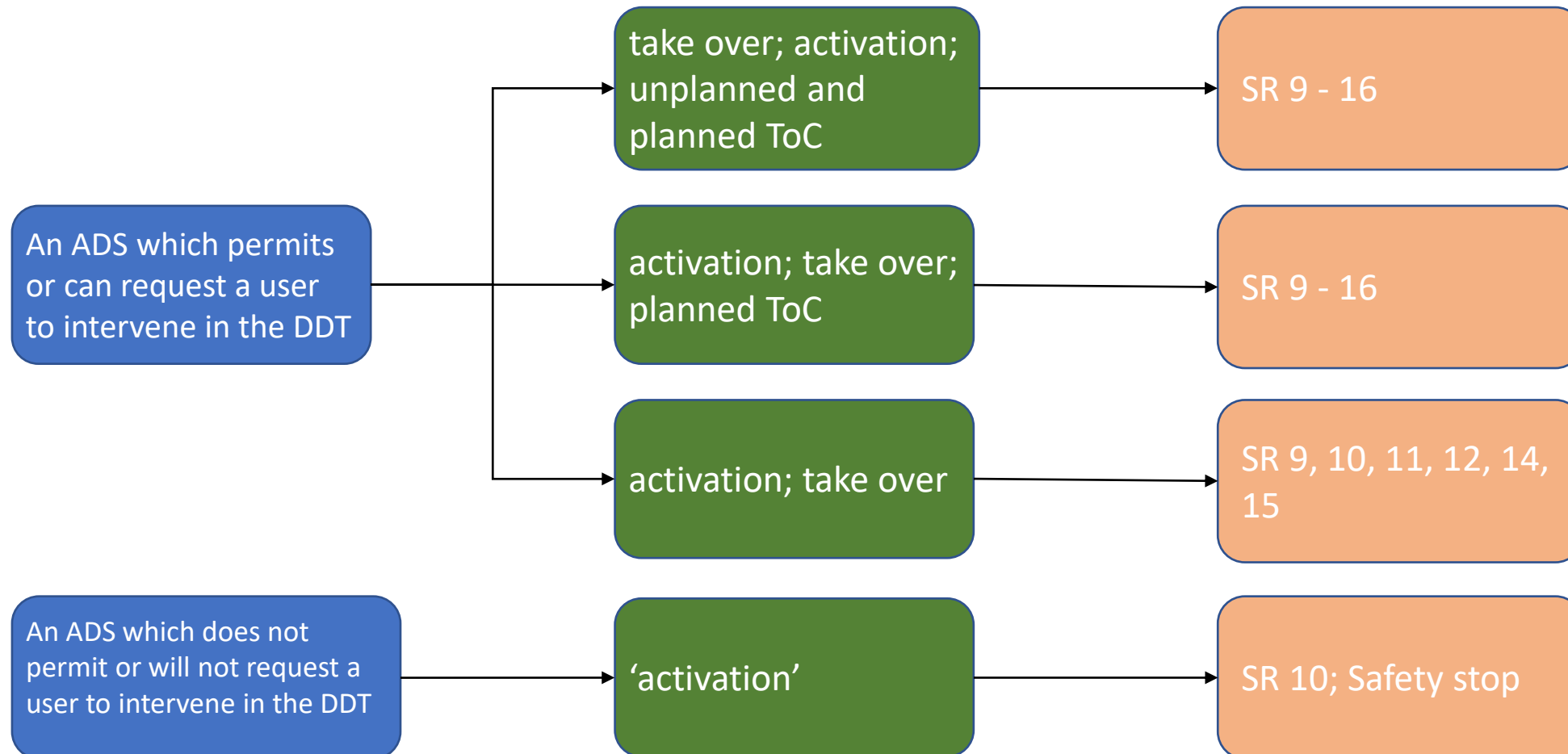Paris / Hybrid Conference
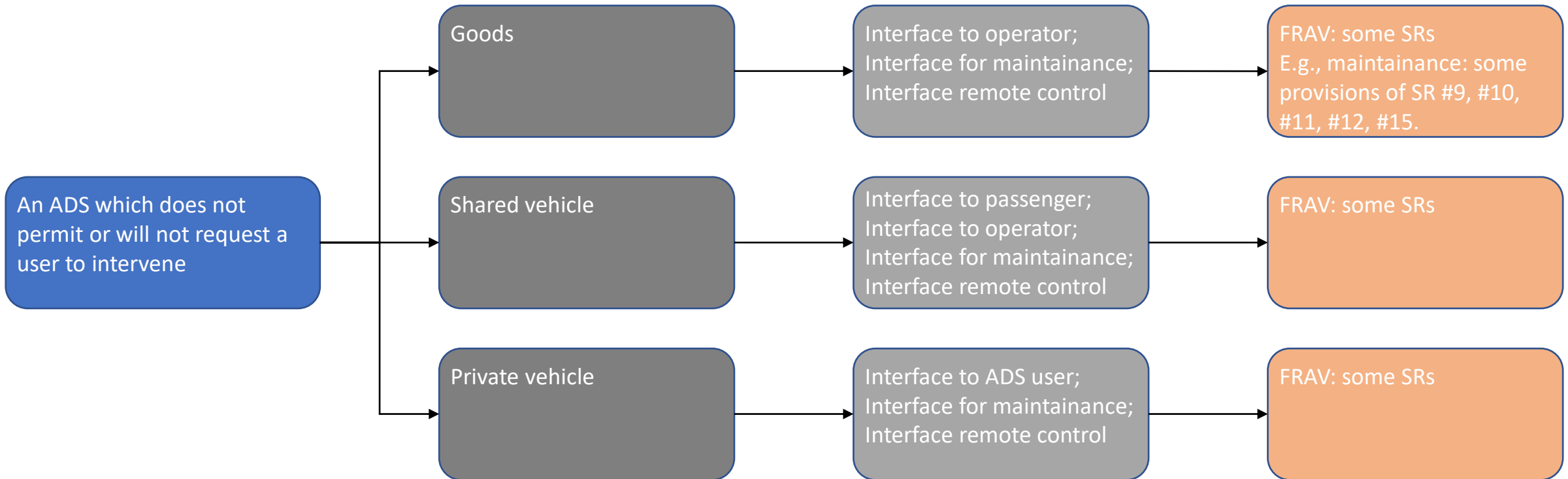
19 - 21 July 2022

FRAV

Status

	Safety Requirements for 'The ADS shall interact safely with the authorized user in the vehicle'
9	User interaction with and the interface of ADS (features) shall have a high-level commonality of design
10	The ADS HMI shall provide clear and unambiguous information to the user
11	The ADS shall be designed to prevent misuse and errors in operation
12	The ADS shall be designed to assure a safe ADS feature activation
13	An ADS which permits or can request a user intervention shall be designed to assure a safe Transition of Control
14	The ADS which permits a transition of control shall be designed to assure a safe user initiated take over.
15	The use of the ADS shall be supported by documentation and tools to facilitate the authorized user in understanding the functionality and operation of the system
16	The integration of an ADS which permits a transition of control with the entire vehicle HMI shall be assured

10	The ADS HMI shall provide clear and unambiguous information to the user	1) The vehicle shall indicate its ADS capabilities in terms of their automated [features] and their ODD.
		
		1) The ADS shall inform the user on the current conditions:
		  a) ADS status information
		  b) The availability of automated features
		  c) User Role
		  d) Responsibility
		  e) Permitted NDRA
		  f) Potential roles to activate
		  g) "Standard" information
		    i) Vehicle speed, range and Time to Fuel
		  h) ADS failure information
		
		1) The ADS shall inform the user on the upcoming conditions:
		  a) ODD boundaries
		  b) Upcoming actions or change in roles
		  c) Oncoming decisions/manoeuvers
		  d) Estimated time until take over in normal conditions
		  e) Transition related communication.
		
		1) The ADS shall ensure that safety related information is prioritised and presented in a clear and unambiguous manner.

Status

An ADS which permits or can request a user to intervene in the DDT
- take over; activation; unplanned and planned ToC → SR 9 - 16
- activation; take over; planned ToC → SR 9 - 16
- activation; take over → SR 9, 10, 11, 12, 14, 15

An ADS which does not permit or will not request a user to intervene in the DDT
- 'activation' → SR 10; Safety stop

Status

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An ADS which does not
permit or will not request a
user to intervene
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→

Goods
Interface to operator;
Interface for maintainance;
Interface remote control

FRAV: some SRs
E.g., maintainance: some
provisions of SR #9, #10,
#11, #12, #15.

Shared vehicle
Interface to passenger;
Interface to operator;
Interface for maintainance;
Interface remote control

FRAV: some SRs

Private vehicle
Interface to ADS user;
Interface for maintainance;
Interface remote control

FRAV: some SRs

		VMAD pillars	Requirement needs	Remarks
User interaction with and the interface of ADS (features) shall have a high-level commonality of design.	· The ADS should be designed to foster a level of trust that is aligned with its capabilities and limitations to ensure proper use of the system. · The operation of the interaction shall have in common: o [use of common sequence of states in the transition/activation/overriding/...] · The interaction should be simplified: o [Limit the number of roles] o [Limit the number of potential transitions] o [Limit the number of settings] o [Limit the number of different interaction modes]	Audit	There is currently no general specification to be able to check whether there is a high level of commonality. If such a commonality exists then a checklist would suffice.	
The ADS HMI shall provide clear and unambiguous information to the user.	· The vehicle shall indicate its ADS capabilities in terms of their automated [features] and their ODD. · The ADS shall inform the user on the current conditions: o ADS status information o The availability of ADS features o User Role o Responsibility o Permitted NDRA o Potential roles to activate o "Standard" information: § Vehicle speed, range and Time to Fuel o ADS failure information · The ADS shall inform the user on the upcoming conditions: o ODD boundaries o Upcoming actions or change in roles o Oncoming decisions/manoeuvers o Estimated time until take over in normal conditions o Transition related communication. · The ADS shall ensure that safety related information is prioritized and presented in a clear and unambiguous manner.	Audit; test track or real world with a wide diversity of typical drivers (this is an extensive test); human out of the loop simulation.	For the audit it should be ensured that a user centred design process in the development of an ADS is implemented and followed. Such a user centred design process should be developed. Some of the detailed provisions can be checked through a checklist; Standardisation on icons/earcons is needed (relates to commonality).	Whether the information is indeed clear and unambiguous should also be checked through driving on test track or real world with a wide diversity of naive drivers (this is quite an extensive test). The correct functioning of the HMI can be tested through human out of the loop simulation.
The ADS shall be designed to prevent misuse and errors in	· The ADS shall be designed to prevent inadvertent activation or deactivation. · The controls dedicated to the ADS shall be clearly distinguishable from other controls.	Audit	A user centred design process should be developed.	This could be part of the common

21 July 2022

- Work on the level of detail below the provisions
  - Since technology is not matured, research is necessary to evaluate the best solutions for standards
    - Commonality is not there yet
    - Research is needed which is not done within FRAV
  - To develop and gain experience in the success of different HM Interaction solutions the guidelines need to be clear enough to give direction and do give a certainty for future development (avoid depreciation through regulation)

- Standards & recommendations on HMI (e.g., symbols, tale-tales)

- Work on the state diagram for activation, de-activation (take-over), and transfer of control
  - Outcome could be a 0.0 version
  - Commonality related to this topic
  - High level assessment
  - Some functional tests
- Interface with VMAD
  - Verifiable criteria will be difficult in this stage
  - Items to be assessed are feasible
  - Recommendations are more related to assessment than fixed test methods
- Interface with TF ADAS

CAUTION

WORK IN PROGRESS

KEEP CLEAR AUTHORISED PERSONNEL ONLY

- User roles
  - a lot of light between driver and user
- There are many different users with different skills
  - averages won't work!
- Driver readiness
- Merge all into doc 5