

Submitted by the experts of OICA and CLEPA

Informal Document: **ACSF-05-10**

# **Industry proposal**

## **Driver availability recognition system**

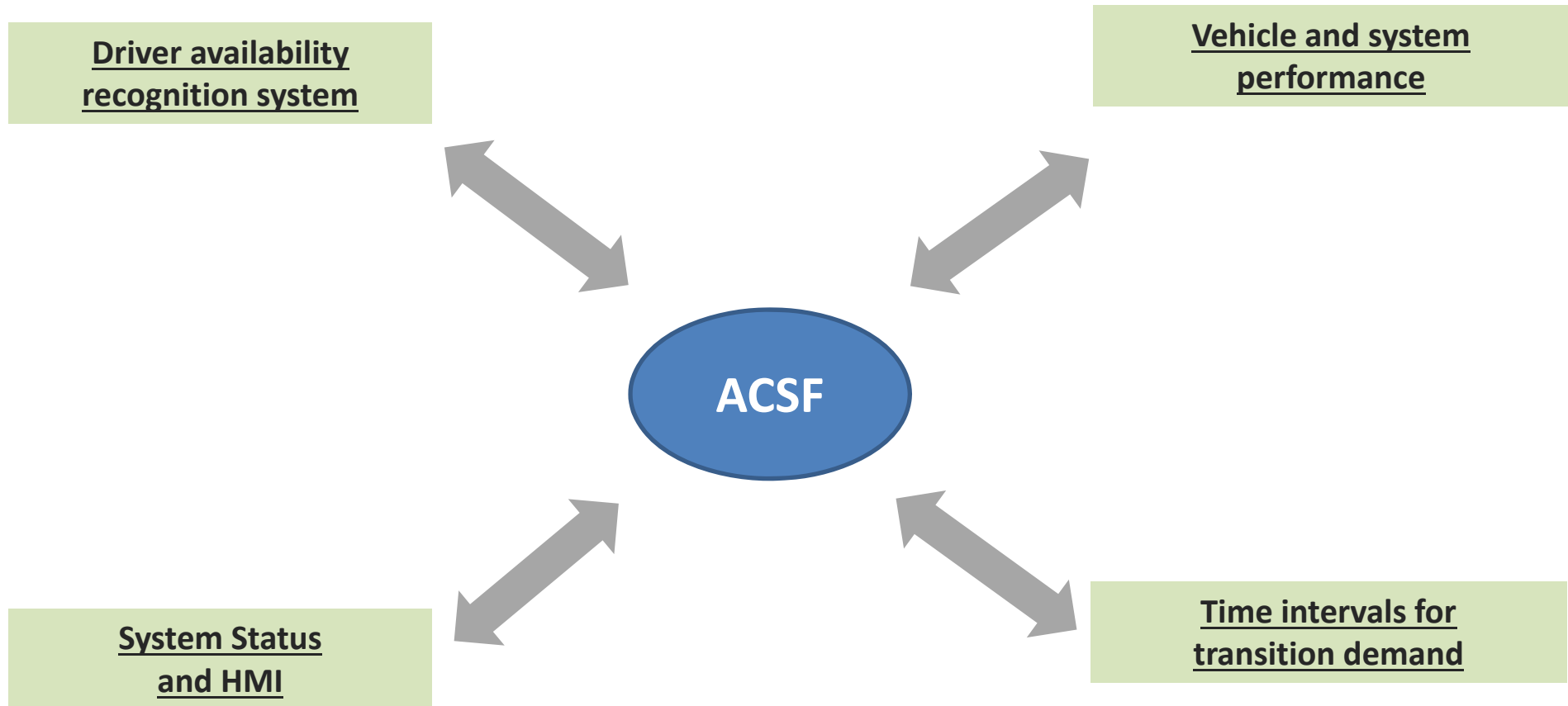
**ACSF-05 meeting**  
January 20-22, 2016 in Bonn

Version 1.1

# Background

- Industry is concerned a too stringent requirement on driver availability recognition system –as discussed in Tokyo last November- may jeopardise the deployment of the technology, at least delay and limit it to confidential volumes:
  - Eyes detection not mature
  - Requesting driver action every 10 seconds will be rejected by the drivers
- This document aims at showing how industry proposal is a safe balance between different vehicle requirements, compatible with the development of the ACSF technologies

# ACSF Trade-off



The right balance has to be found between these 4 sets of requirements, to ensure the system performance is compatible with what is expected from the driver. Next slides intends to show how industry proposal fulfils the need.

# ACSF Trade-off

## Driver availability recognition system

- **Ensure driver is in driver's seat.**
- Monitor driver activities related to built-in systems.
- Cascade of events if driver not available: warning → TD → MRM
- Switch-off infotainment in case of TD.

## System Status and HMI

- **Strong warning to catch driver's attention:** Escalating Visual + haptic/acoustic warning for transition demand.
- Driver permanently informed of system status etc.



+ Driver information,  
+ in-use requirements,  
+ traffic laws...

=

**A safe balance to let the system develop**

CATE system

F01	F02	EMTA	EMTB	EM2	TR1	TR2	TR3	TR4
curved track	straight track	straight track	straight track	stationary target	curved track	curved track	straight track	curved track
Lane keeping	Lane change	braking target	slow moving target	stationary target	lateral acceleration exceeded	missing lane marking	two objects on different lanes	failure in a curve
Tests necessary:								

## Vehicle and system performance

- **A number of testing situations**
- CEL Annex 6 for robustness in all other situations
- Sensor performance defined
- System boundaries declared
- MRM, emergency manoeuvre... **Potentially very few situations generating TD (motorway exit...)**

## Time intervals for transition demand

- **4 seconds time intervals**
- Fulfils the need for **drowsy drivers** in SAE study (worst case).
- Fail-safe strategy of Annex 6

Warning/Transition Time	CAT E Systems							
Situation	D	J	EC	SE	NL	ROK	CRCA	CLEPA
Normal	4.0 s	4.0 s	4.0 s	4.0 s*	4.0 s	4.0 s	4.0 s	4.0 s
Emergency	immediately	immediately	immediately	immediately	immediately	immediately	immediately	immediately
Failure	immediately	immediately	immediately	immediately	immediately	immediately	immediately	immediately
Red "functionality" after failure detection	4.0 s	4.0 s	4.0 s	4.0 s	4.0 s	4.0 s	4.0 s***	4.0 s***
Reaction after this	MRM	MRM	MRM	MRM	MRM	MRM	MRM**	MRM**

\* plus time for the driver to react (e.g. 10s)      \*\* depending on failure condition      \*\*\* in case of a sensor failure

Examples for "normal" Situation (expected end of ACSF)      Failure / not availability of the system  
 End of highway coming soon      System is temporarily not available  
 Exit in coming soon

Examples for "emergency" Situation  
 Missing lane markings  
 lane ends / merging lanes