

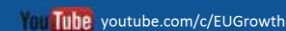


Support for the amendments to UN Regulation 79 to allow the approval of ACSF, in particular LCA and enhanced LKA systems

Initial project results: Annex 6 – 20 Sept 2016

**Directorate-General for Internal Market,
Industry, Entrepreneurship and SMEs**
Automotive and Mobility Industries Unit

*Internal market,
Industry,
Entrepreneurship
and SMEs*

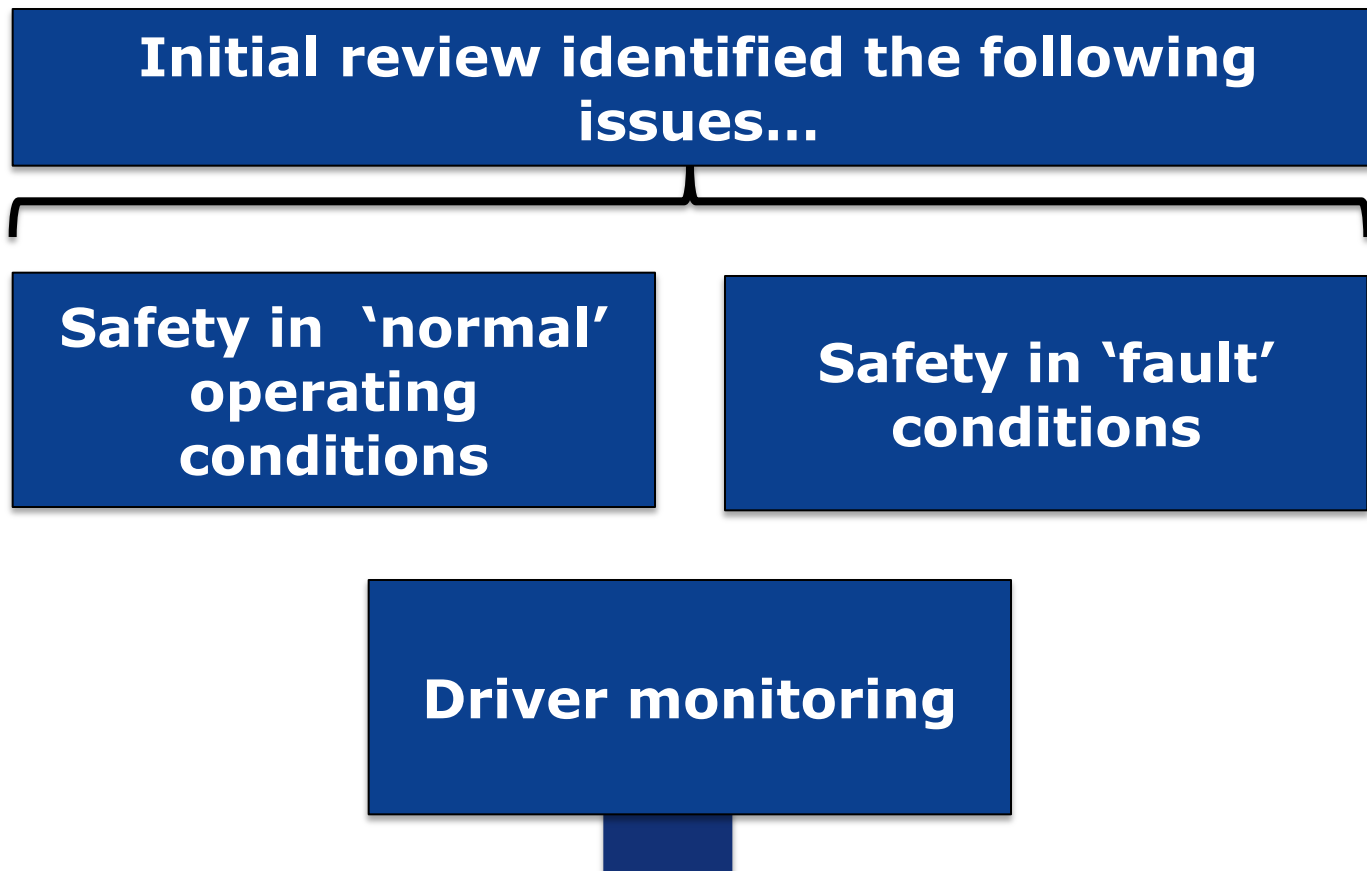


Follow us on:

Web sites:
ec.europa.eu/growth
ec.europa.eu/bienkowska

Project objectives

- **Support ACSF IWG to develop and build current proposal with focus on requirements to ensure safe system function in all real-world driving situations**



Rationale

System Level

Driver always
'in the loop'

CSF

-
-

B1

Safety in 'normal'
conditions

Safety in 'fault'
conditions

Driver monitoring

Safety assured by:

- Draft regulatory requirements
- Annex 6 'best practice'

Driver may not
be 'in the loop'

B2

-
-

E

Safety in 'normal'
conditions

Safety in 'fault'
conditions

Driver monitoring

- Additional requirement for 'operational safety' may be needed

- Safety assured by Annex 6 'best practice'

- Additional requirements for driver monitoring needed
- Possibly horizontal regulation

Annex 6: Safety aspects of complex electronic (CEL) vehicle control systems

- **Annex 6 is:**
 - Effectively an audit of the methodology (with verification) used to design the 'CEL system' to assure its safety and in particular to check that it does not adversely affect the main steering function
- **Issue:**
 - Annex 6 approval assessment process not consistent across technical services
- **Solution:**
 - Amend Annex 6 to enforce 'best practice'

Typical 'best practice' application of Annex 6

1. Initial meetings between TS and OEM (of the order of 6 months to 1-2 year before approval depending on complexity of system)

- Check if type approval possible / applicable for the system; e.g. check conformity with Convention of Road Traffic, Vienna 1968
- Estimate complexity of the system and develop plan for approval of system

2. Functional safety analysis including audit (Annex 6, paragraph 3)

- Analysis of manufacturer supplied documentation to understand and check safety concept and prepare for audit
- Assessment of general development process; (an audit, usually at manufacturer's premises)
- Assessment of system development (an audit, usually at manufacturer's premises)
 - Check safety approach at concept level (e.g. HAZOP)
 - Check safety approach at system level (e.g. FMEA and FTA)
 - Check validation plans
- As a result of audit, often recommendations are made for vehicle level tests to verify safety concept and check controllability

3. Functional safety assessment (Annex 6, paragraph 4)

- Verification of the function of the system
- Verification of the safety concept
- Provision for technical inspection

4. Compilation of technical report

Amendments required to enforce best practice:

- Early involvement of TS in the development process to ensure good understanding of safety approach and concept
- 'Audit' of confidential documentation provided, usually performed on site at OEM or if necessary supplier. Audit should include:
 - Inspection of safety approach at both concept (e.g. HAZOP) and system level (e.g. FMEA, FTA)
 - Note: safety approach at concept level should include risks driven by interaction of CEL system with other vehicle systems, e.g. effect of LKA on AEB and/or ACC
- Traceability of work performed by TS to level that would allow work to be repeated, e.g. versions of documents inspected are coded and listed
- Resistance to environmental influence, type and scope of tests on climate and mechanical resistance and electromagnetic compatibility should be inspected
- Possibly, include report template to assure all aspects addressed
- **Staff competence:** Critical to enable a 'best practice' assessment but currently enforced by Articles 41 and 42 of Framework Directive for EU and under discussion in the 1958 Agreement revision 3 draft

Questions?

Proposed amendments to Regulation 79 Annex 6 contained in informal document GRRF-82-xx