PLENARY SESSION THREE

Presentation 4

PTI and Type Approval

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Service public fédéral
Mobilité et Transports
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Complex systems in Type-approval and PTI

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Content

- Policy in the EU about complex systems
- Complex systems
- Challenges for a relavant safety policy
- Actual approach
- Further approaches

Policy in the EU about complex systems

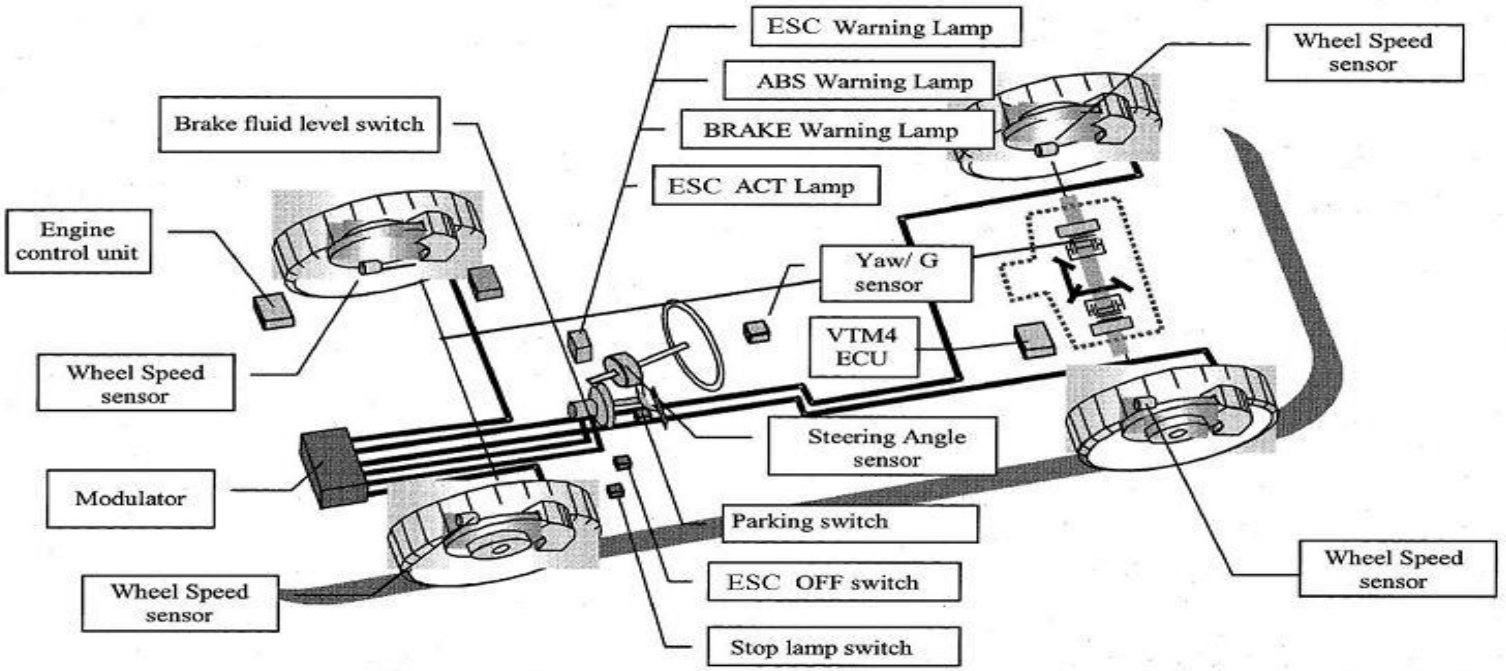
- Regulation 661/2009
  (General Safety Regulation (GSR))
- Regulatory Simplification
- Improve safety and update regulation (Advanced Vehicle Safety)
- Reduce CO2 (new Requirements on Tyres)

Complex systems

- EBS (electronic braking systems),
- ACC (Adaptive Cruise Control),
- ESC (Electronic Stability Program)
- BAS (Brake Assist System),
- LDWS (Lane Departure Warning Signal) ,
- TPMS (Tyre Pression Monitoring System),
- AEBS (Advanced Emergency Braking Systems)

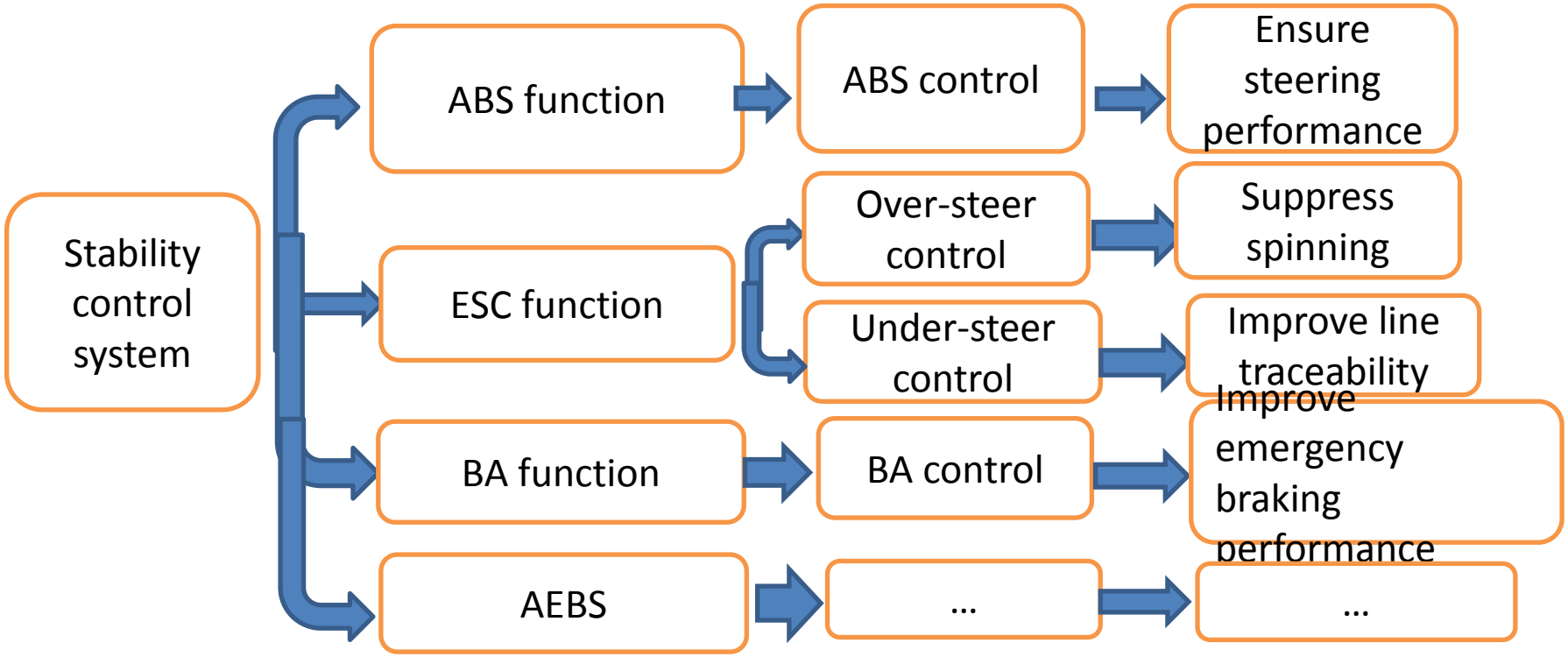
Complex Systems

a combination of units, designed to co-operate in the production of the stated vehicle control function by electronic data processing



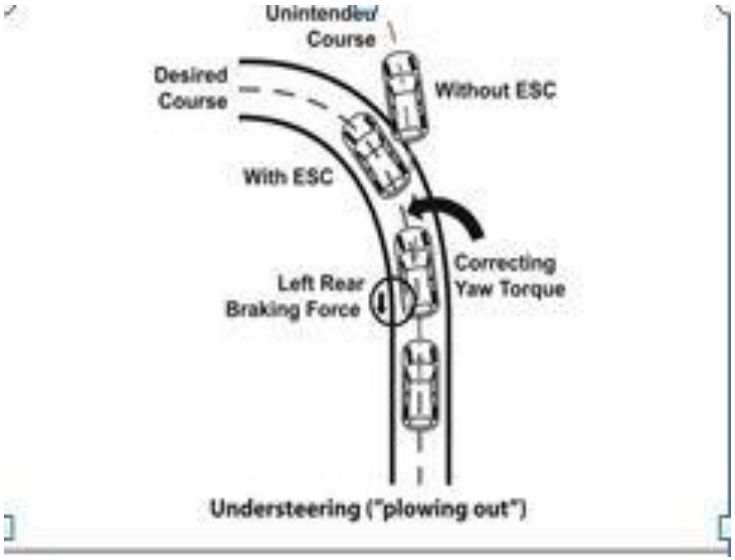
Complex Systems

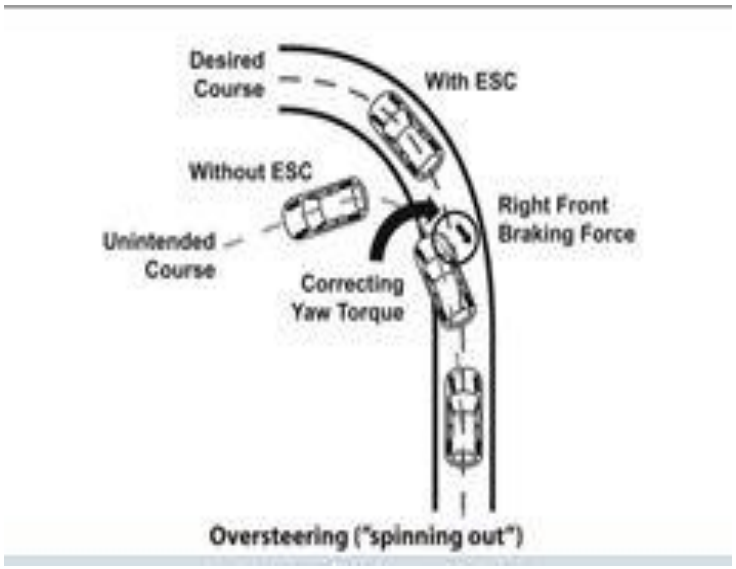
systems which are subject to a hierarchy of control in which a controlled function may be over-ridden by a higher level electronic control system/function



ESC passenger car

systems/functions employ additional processing and/or sensing provisions to modify vehicle behaviour by commanding variations in the normal function(s) of the vehicle control system.





Some challenges for TA and PTI

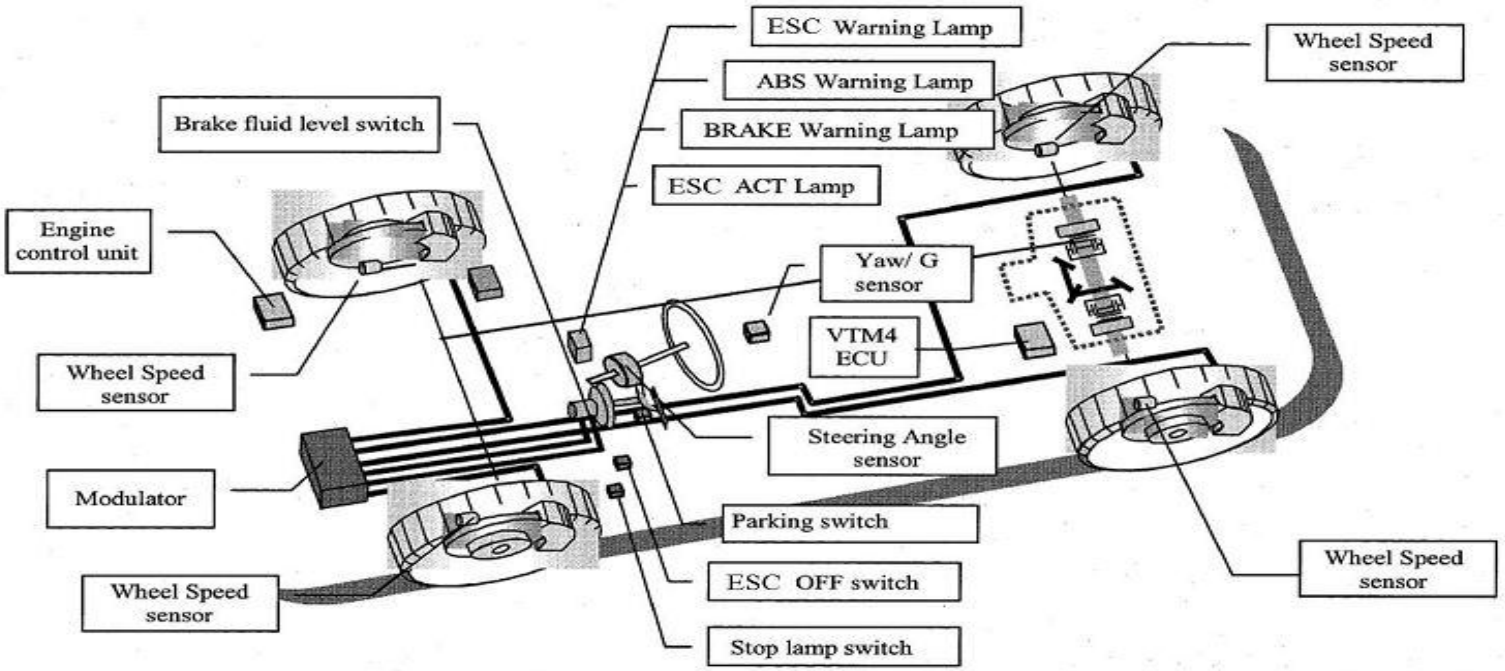
- Relevant data and information
- New/adapting test methods or inspection approaches because of new systems
- New/adapting test methods or inspection approaches because of more stringent criteria
- Harmonization

Complex systems: Type-Approval

- R13, R13h, R79, R130 (AEBS) with respectively annex 18, 8, 6 and 4
- No performance criteria but methodology to design proces and information
- Define requirements for documentation, fault strategy and verification

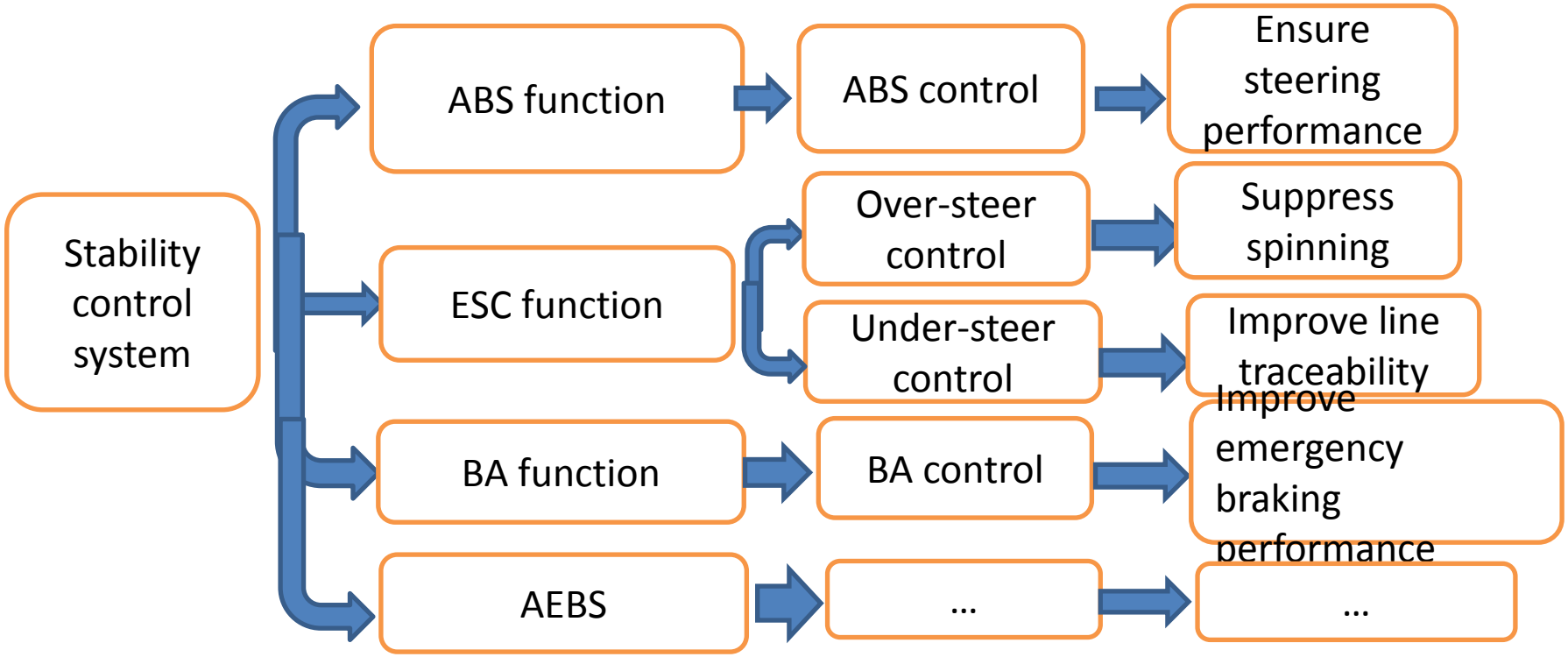
Complex Systems

Documentation and definition by the manufacturer
Explanation and design of the units, devices which co-operate in the production of the control function



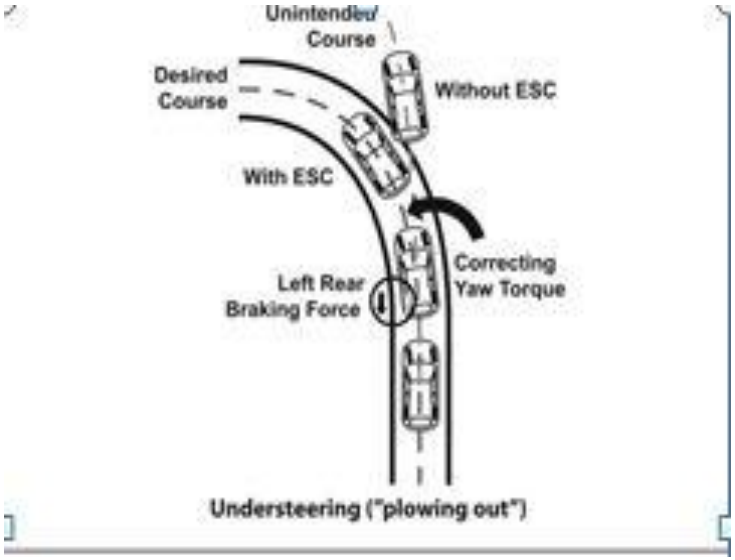
Complex Systems

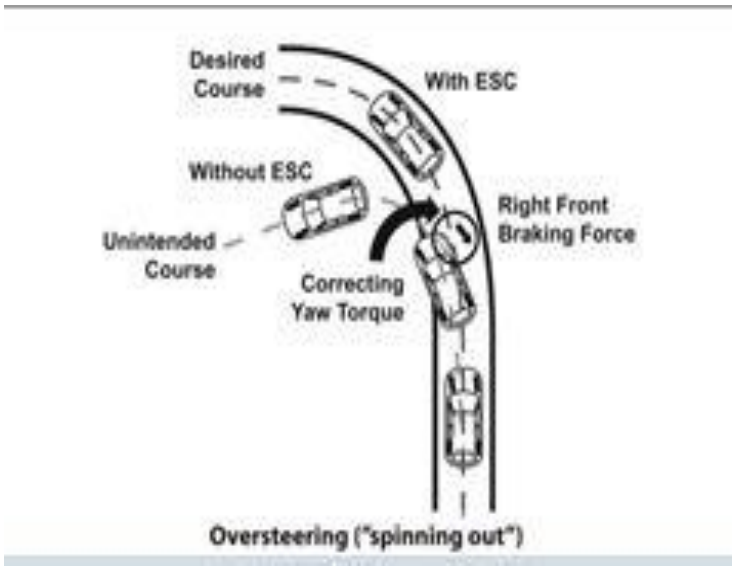
Explanation of the hierarchy of control in which a controlled function is over-ridden by a higher level electronic control system/function, the fault strategy, safety concept and how to verify al this



ESC passenger car

Explanation of the normal functioning of the different modifications to the vehicle behaviour by commanding variations in the normal function(s) of the vehicle control system and the fault strategy.



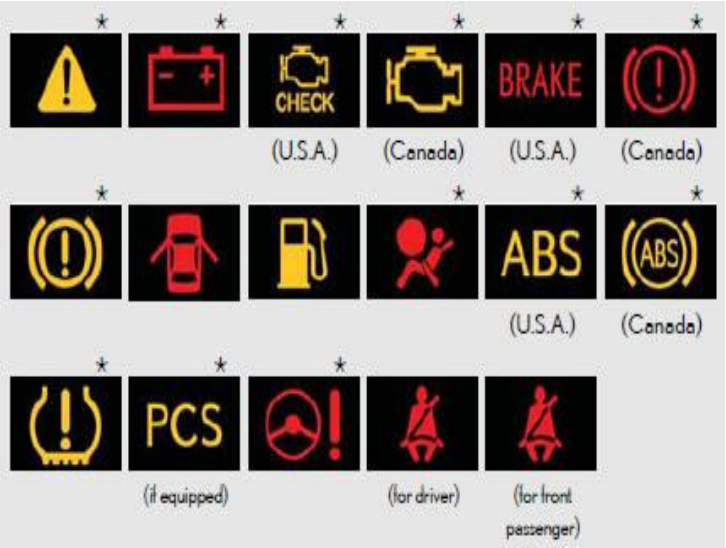


Complex systems: PTI

- Regulation “ impose that it shall be possible to verify, in a simple way, the correct operational status of those complex electronic systems which have control over braking, steering, etc.. . If special information is needed, this shall be made freely available. “
- In practice a MIL to inform the driver that the system is working or defect for example

Complex systems: PTI

Where the operational status is indicated to the driver by warning signals, it shall be possible at a periodic technical inspection to confirm the correct operational status by visual observation of the warning signals following a power-on.

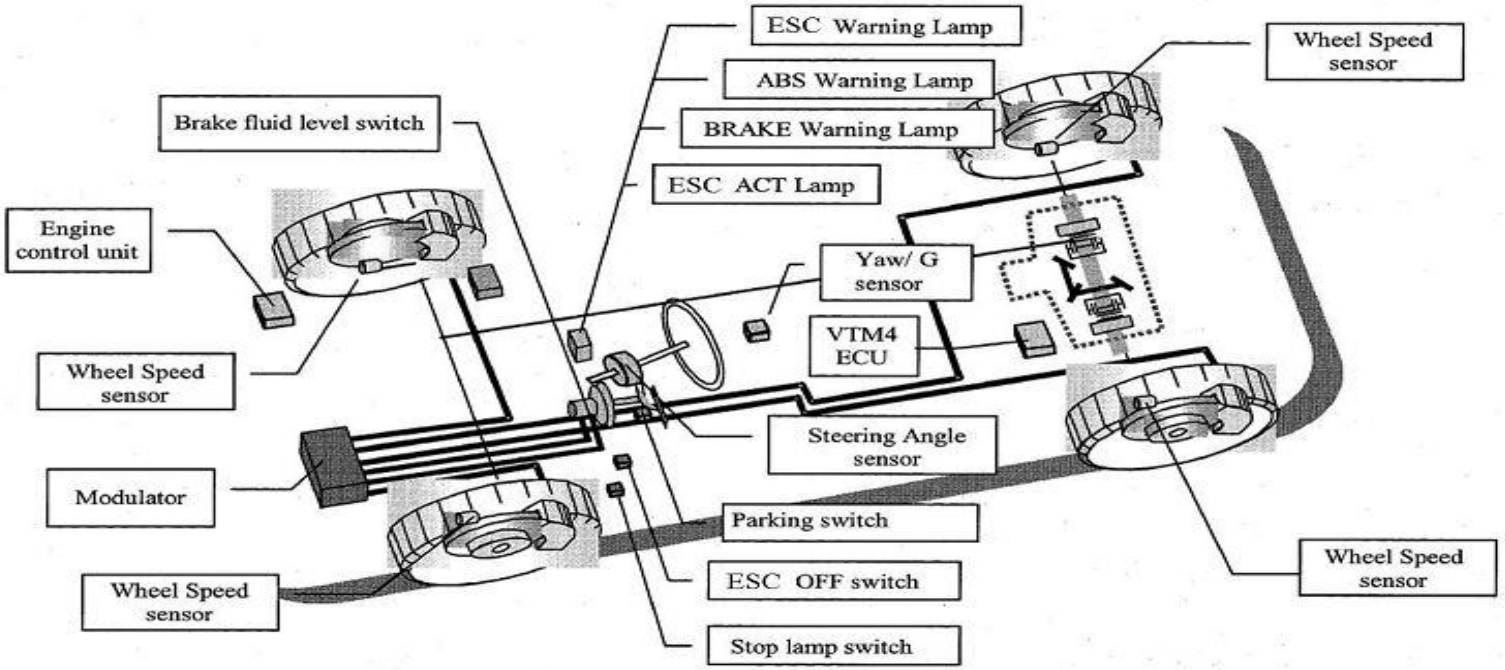


Further approaches: Type-Approval

- EOBD: diagnostics of the systems:
- obligation but only emission related
- additional approach
  - Monitor components and systems

Complex Systems

Due to failer for example of a unit/devise, or a devise goes out of his range, or there is a discordence within the logic of the function this would be memorised



ESC passenger car

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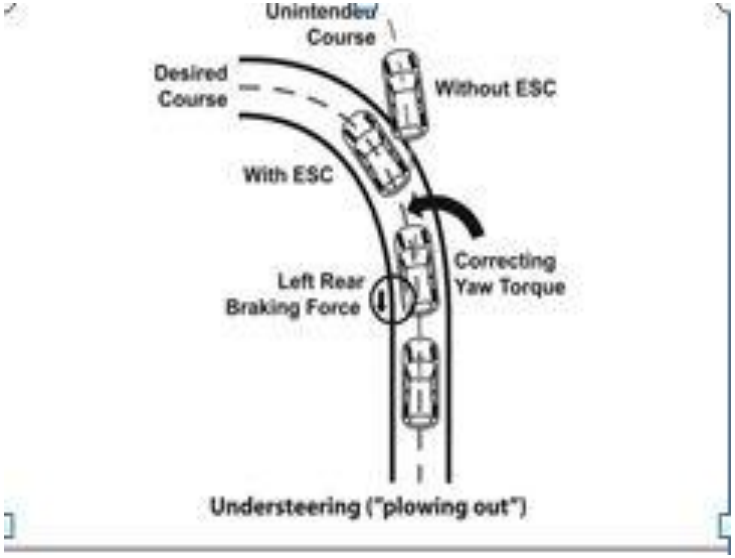

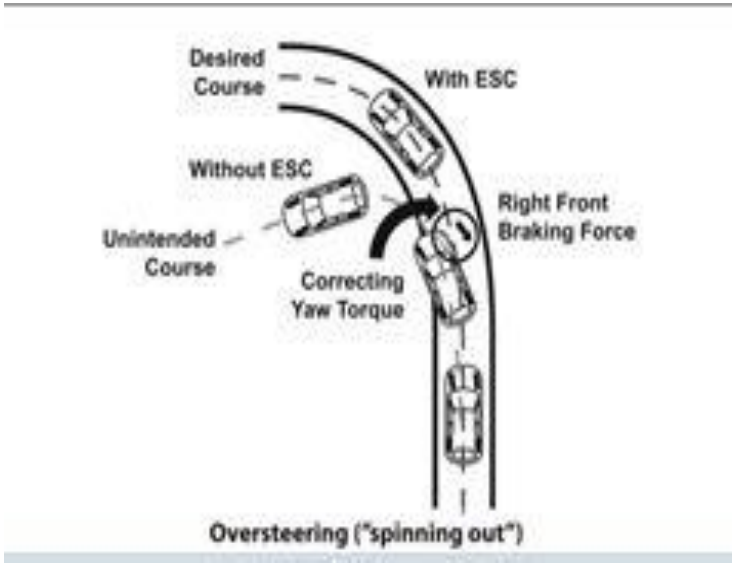

Further approaches: PTI

- EOBD is a diagnostic tool not a verification tool.
- Working out OBD for PTI :
  - emission and safety related systems:

Conclusion

- For TA: Extension of the approach of EOBD to safety related systems
- For PTI: Elaborate a proper diagnostic and verification approach and tool
- Harmonization and standardization in UNECE

Thank you for your attention.