

AEBS-HDV IWG Industry input

AEBS-HDV-08

November 30 & December 1st, 2021

Content

- AEBS deactivation
- Sensor performance impairment
- Transition provisions

AEBS deactivation - Specific HDVs need

Some typical cases (reminder from AEBS-HDV-07-11)

- **Slippery and/or curvy roads (the “Norwegian case”)**
 - need of a “permanent” deactivation;
 - Need a deactivation while driving
 - Skilled drivers, able to determine when AEBS should be on or off
- **Construction areas on motorway**
 - Wide vehicle in a narrow path; mobile barriers which may be misaligned / slightly overlapping on the path
 - Need a deactivation while driving (e.g. at least until 60kph)
 - Speed usually below 60 or 70kph
- **Coaches in “Serpentines”**
 - Need a deactivation while driving
 - Speed usually below 60 or 70kph (in between two 180° curves)
- **Milk collectors (or trucks used in closed or construction sites / gravelled path)**
 - Drive both on national and secondary roads, but also on narrow paths to the farms
 - Need a deactivation while driving (even if stopping on a path to deactivate AEBS is feasible)

Major concerns to apply R152 solution to HDVs

- The described typical cases are real cases which need to be addressed.
- Deleting the possibility to deactivate AEBS while driving may lead drivers to deactivate for longer period than really needed, which may then be **counter-productive with regard to safety.**

These typical cases can be addressed by the two following situations:

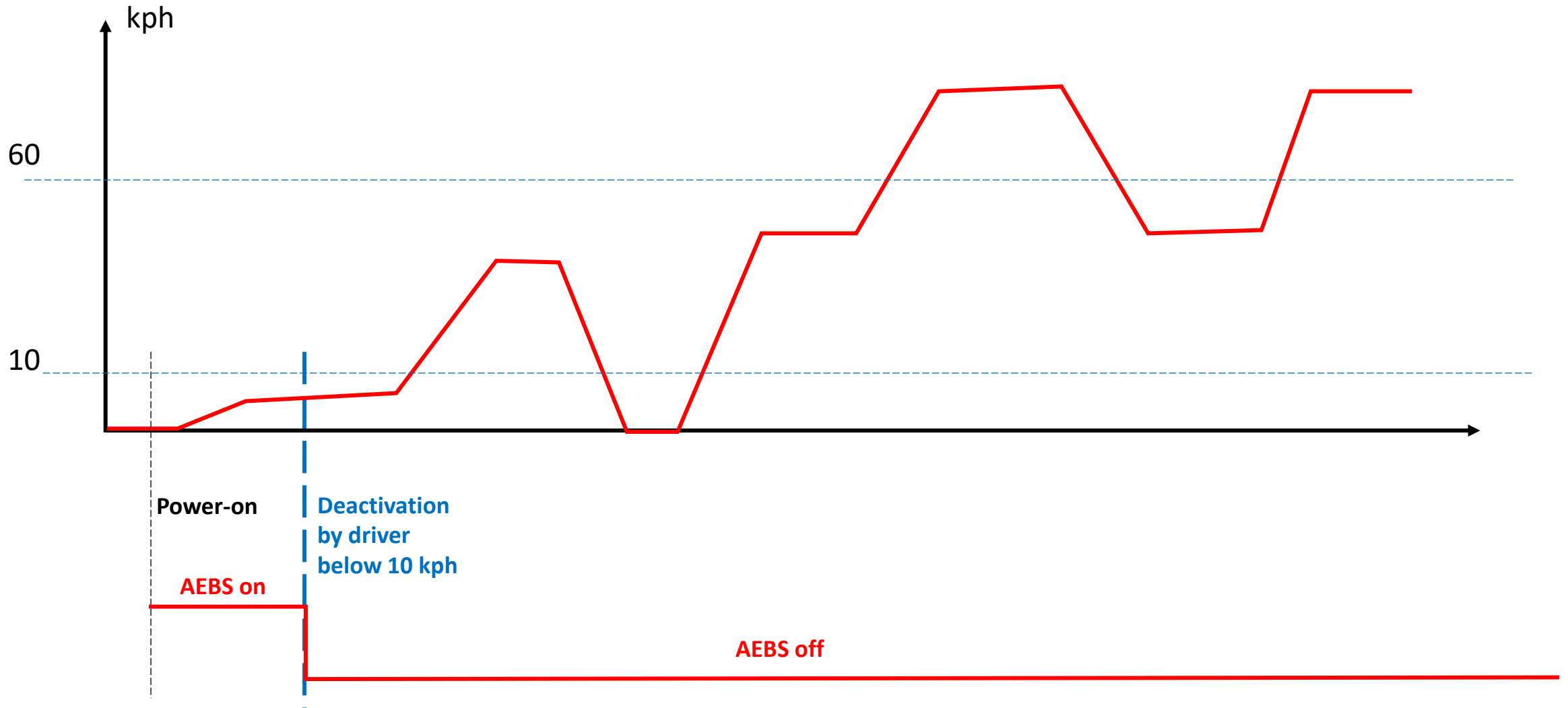
Situation 1

- Deactivation “Below 10kph” is manageable by the driver
- The deactivation is permanent

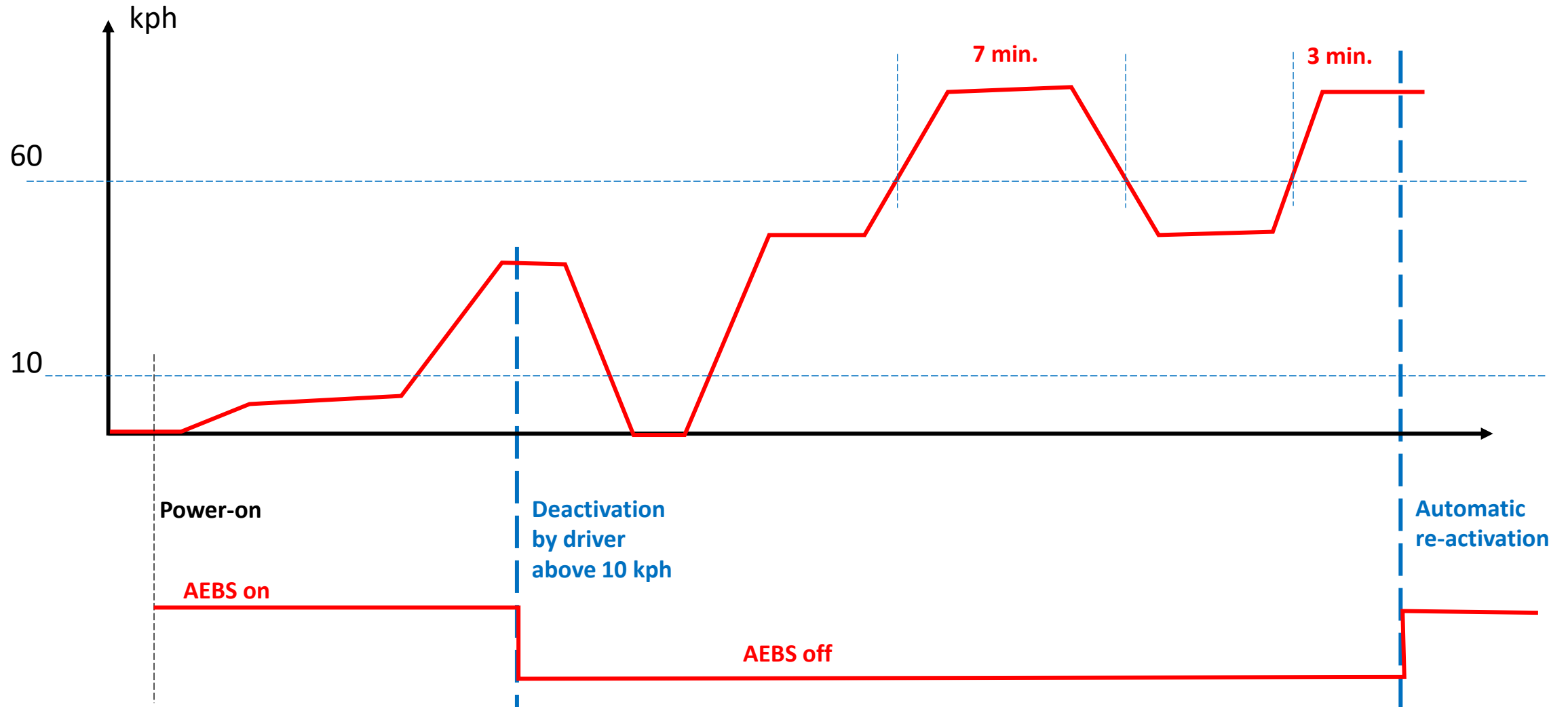
Situation 2

- Limited time is manageable by the driver
- Deactivation “While driving” is possible

AEBS deactivation - Description of Situation 1



AEBS deactivation - Description of Situation 2



AEBS deactivation - Different solutions

Reminder from AEBS-HDV-07-11

R152 / GRVA

- 5.4.1.3. It shall not be possible to manually deactivate the AEBS at a speed above [10] km/h.

ETSC

- 5.4.1.3. It shall not be possible to manually deactivate the AEBS at a speed above [50] km/h. The AEBS shall automatically be reinstated after a cumulated time of 10 minutes above [60km/h].

JPN

“after a cumulated time of 10 minutes.”
(unclear on what type of wording: ETSC or industry)

Industry

- 5.4.1.3. Once manually deactivated, the AEBS shall be automatically reinstated after a cumulated time of 10 minutes above [60km/h].

Norway:

[need for a “permanent / long enough” deactivation]

Reminder from AEBS-HDV-07-05

(industry original proposal)

- [5.4.1.4. It shall not be possible to manually deactivate the AEBS at a speed above 10 km/h. **However this requirement does not apply when the AEBS is automatically reinstated after a cumulated time of 10 minutes above 70km/h.]**



Industry new proposal (AEBS-HDV-08)

- 5.4.1.4. **A manual deactivation for the whole ignition cycle shall only be possible at speeds below [10km/h or 15km/h]. Any manual deactivation at a speed above [10km/h or 15km/h] shall be terminated latest after a cumulated driving time of 10 minutes above 60km/h.**



Sensor performance impairment

- Justification to mention sensing capabilities in 5.2.1.4.



(c) there are no external influences affecting the physical sensing capabilities, in particular

- the illumination conditions are ambient of at least 1000 Lux without blinding of the sensors (e.g. direct blinding sunlight);
- there are no weather conditions affecting the sensing capabilities of the vehicle (e.g. no rain, fog, snow, dirt);
- there are no overhead obstructions close to the vehicle

- ISO 23150:2021 (Data communication between sensors and data fusion unit for automated driving functions — Logical interface) acknowledges that the sensors on an AD vehicle can be **affected** by an external parameter



ISO 23150:2021(E)

Table 43 — Brief overview over the differences and boundaries between the SSIs

Sensor performance		Sensor health information
Impairment on observed field	Impairment on sensor surface	Sensor internal
— rain, fog	— dirt, dust	— operation
— snow	— condensation	— diagnosis
— particles (air)	— scratch	— defects
— and so forth	— and so forth	— cleaning
		— position calibration
		— and so forth
Classification into several measurement ranges		Global information for the complete sensor
Relevant for safety concept		Misalignment: hardware and software calibration
		Relevant E/E information



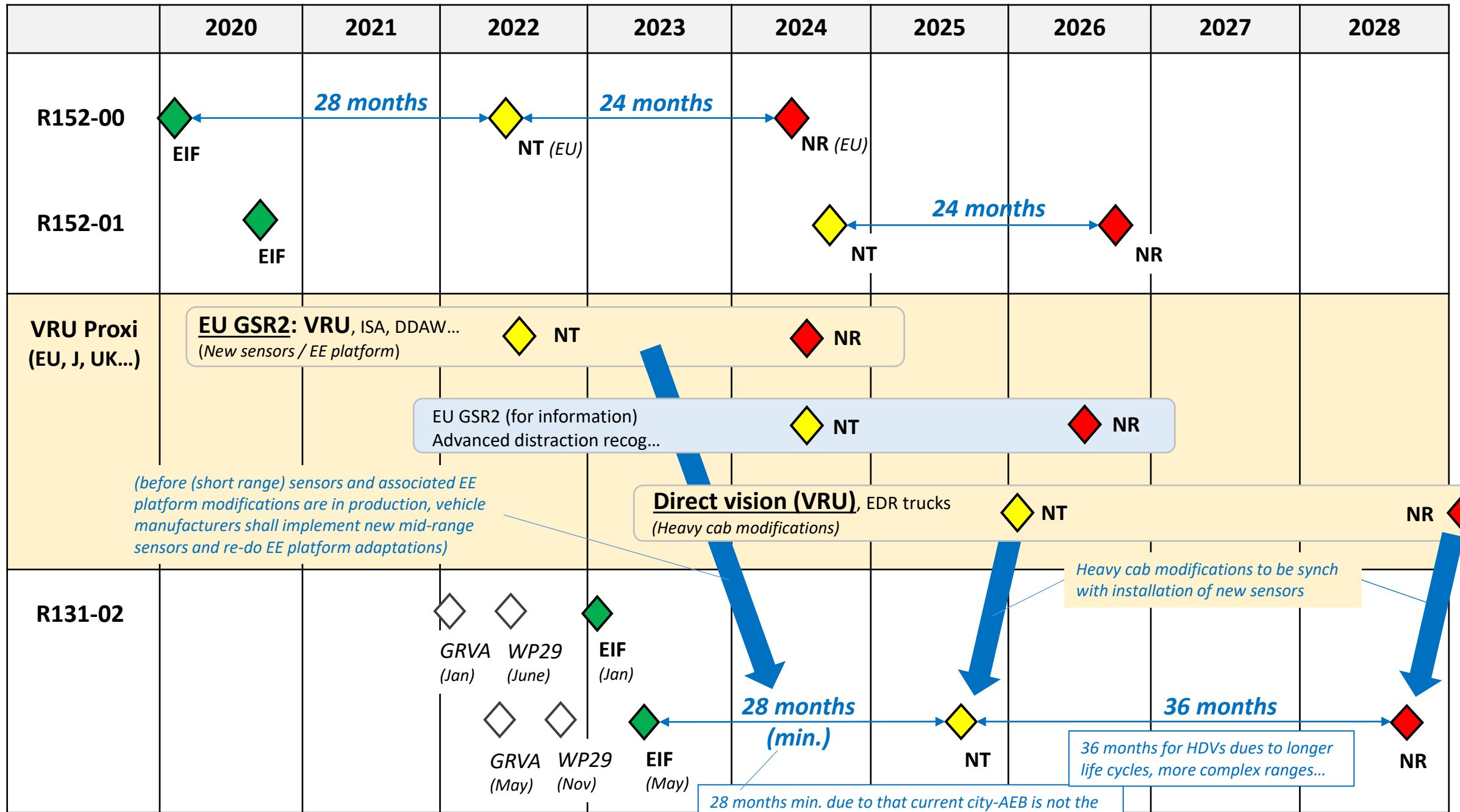
- This can lead to an **impairment** of the sensor performance

The following supportive sensor interfaces are available:

- sensor performance interface (10.3);
- sensor health information interface (10.4).

→ Impairment of the sensor performance must therefore also be considered for an assistance system

References



Proposal

Rationales

- City-AEB is the standard on passenger cars
- Highway-AEB is the standard on HDVs
 - **City-AEB implementation on HDVs should get at least the same lead-time as for passenger cars (28 months in EU)**
- Life cycle of HDV product is longer than for passenger cars (e.g. 10/15 years for a cab)
- Range complexity of HDVs is higher than passenger cars' (vehicle weight, braking system type, wheel sizes, number and type of axles, variety of cab, vehicle shape –trucks and coaches- etc.)
 - **24 months between NT and NR dates is definitively not enough; 36 months is a minimum**
- UN VRU Proxi already addresses VRUs, with technical measures interacting with AEBS R131 update:
 - sensors and EE platform has to be updated twice within a couple of years (for MOIS/BSIS, then for AEBS);
 - AEB sensors update will be impacted by the heavy cab modifications for direct vision
- **There is a need for some synchronization (e.g. align AEBS on direct vision EU)**



NT Sept 2025



NR Sept 2028