International Telecommunication Union

European Diesel Heavy-Duty OBD

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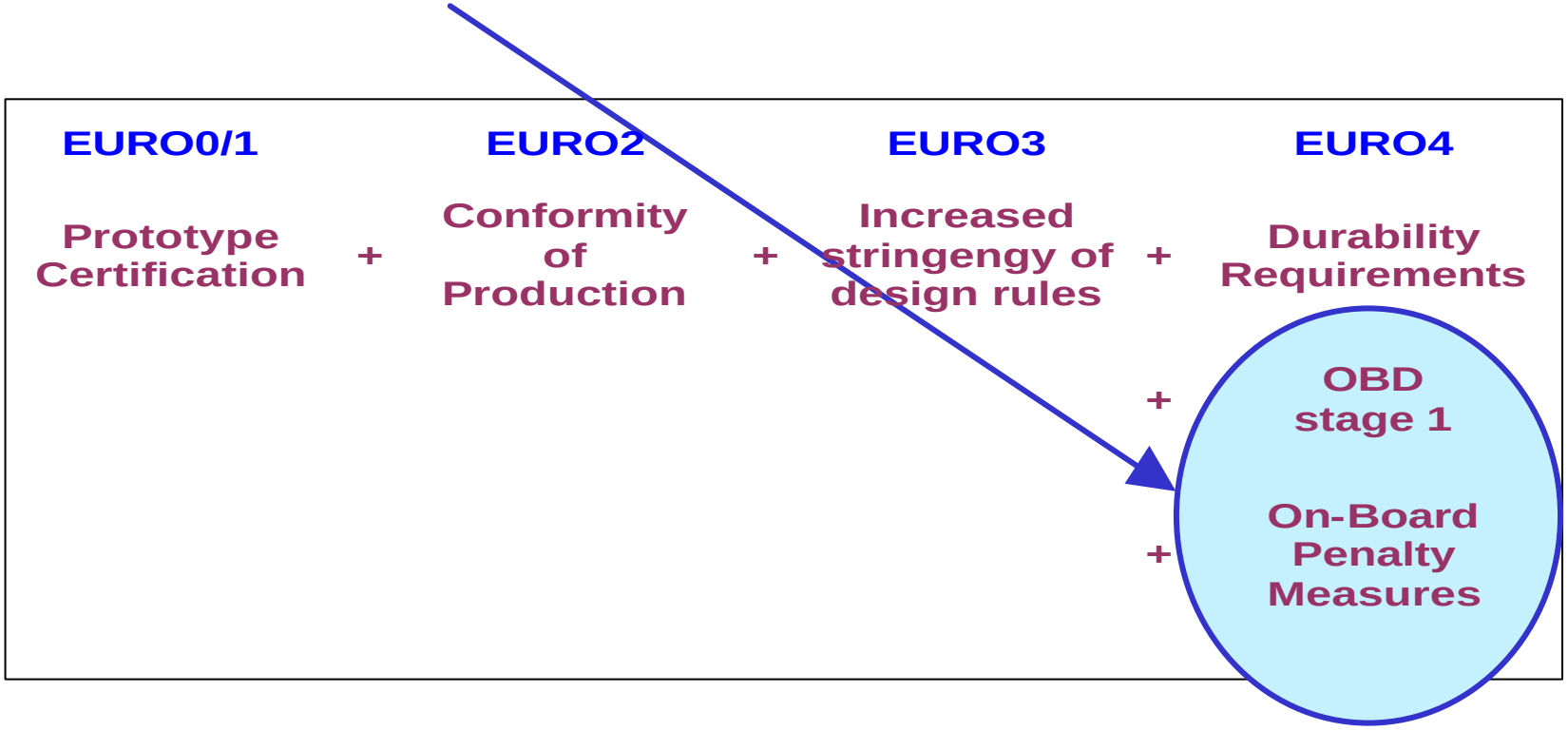
OBD rules in the EU legislation

- As from EURO4, the truck operator is involved in the emission performance of his vehicle



Evolution of the diagnosis consequences

- OBD was initially introduced on LDVs as **a customer oriented system** aimed at promoting prompt repair of failures and at helping mechanics in performing the correct repair operations.

- As from EURO4, a truck driver will be alerted and/or a torque reduction activated as soon as incorrect operations of the NOx control system, due to intentional or unintentional causes, are detected

The OBD concept Diagnosing, Recording, Communicating

"On Board Diagnostic system (OBD)" means a system on-board a vehicle or engine which has the capability of

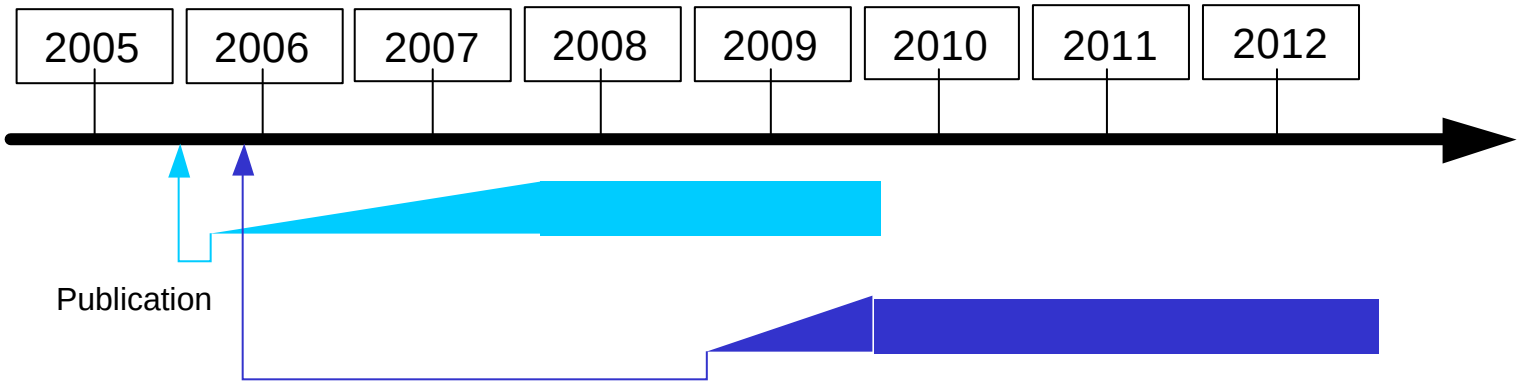
- detecting malfunctions,
- indicating their occurrence by means of a malfunction indicator,
- identifying the likely area of these malfunctions by means of diagnostic elements
- storing that information in computer memory
- communicating that information off-board.

HDV-OBD: malfunction indicator

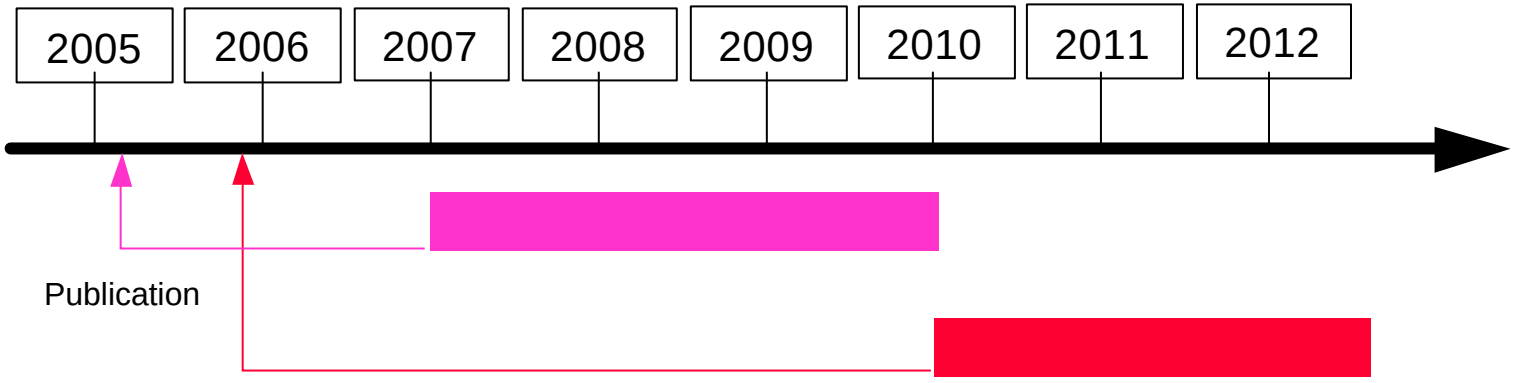
- In case of a malfunction of the emission control system, the driver is informed by means of an indicator on the dash-board
- Both the ISO symbols F01 (used in LDV-OBD) and F22 (" *Road vehicle engine emission system failure")* are allowed

HD-OBD EU & US legislation steps

EU



US

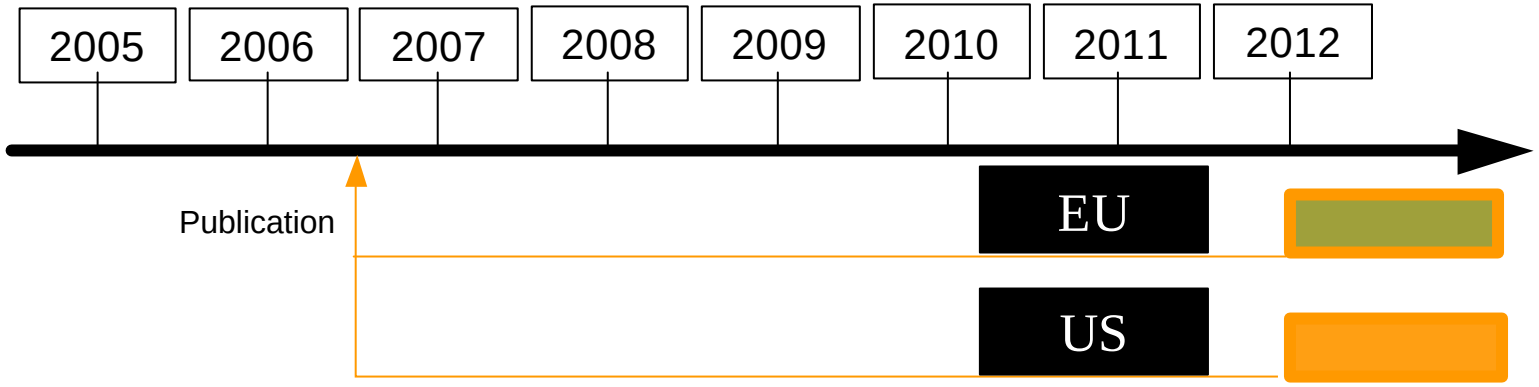


dates

HD-OBD becomes World-Harmonized

- ***WP29 decided in November 2001 a GTR will be developed, dealing with "On Board emission Diagnostic systems for Heavy duty vehicles and engines".***

  It will concern Diesel fuelled compression ignition engines



The communication protocol is World Harmonized (ISO)

- ISO/TC22/SC3 is given the task to develop an international standard to communicate OBD data via off-board scan-tools
  - Harmonised Message set
  - Harmonised Data set

- In 2005-2006 only a wired solution is considered (CAN).
  A wireless solution may be considered upon request of the legislator in a later stage.

WWH-OBD: harmonized message set

- The experts are working to update ISO 14229-1 UDS to support the message set and data communication required
- A common message set is under consideration to achieve the requirements understood from the WWH OBD drafting group.
  - Reading / Clearing Fault codes
  - Reading Engine/Vehicle information.
  - Reading extended data parameters.
    - Class of the failure (4 levels).
    - Status of the Malfunction Indicator
    - Malfunction duration.

WWH-OBD: harmonized data set

- Currently several experts have been tasked to review the data sets utilised on SAE J1939, ISO 14229-1 UDS and ISO 15031-5.

- The harmonised data set will be scalable to provide relevant data for three following use case scenarios
  - Simple check of the OBD status
  - Complete check of the recorded faults
  - Repair

OBD and road-worthiness

- Emission regulations contain design specifications.
  OBD alert the driver of failures of the emission control system, and enables control by the authorities of the proper maintenance of the vehicle.
  OBD specification will be World-Harmonised

- Road-worthiness regulations specify the minimum set of controls during road-side checks of the vehicle and during the (annual) periodic inspections.
  Road/worthiness specifications are partially EU-Harmonised

- Police measures (forcing repair, giving penalties, etc) are decided by national authorities.
  They are not necessarily harmonized.