International Telecommunication Union

On- and Off-Board Diagnostics

The role of legislation and standardisation

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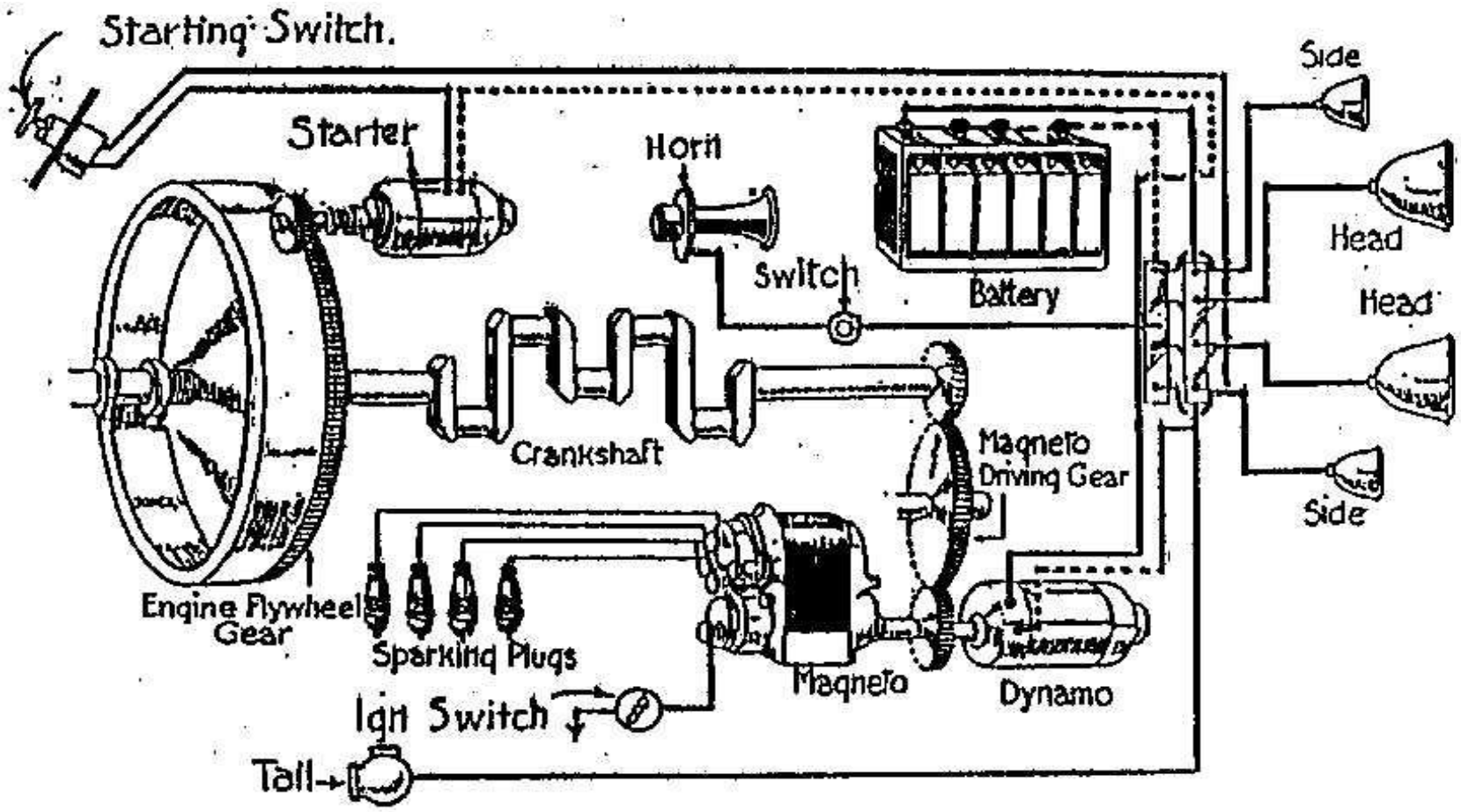
"The Fully Networked Car, A Workshop on ICT in Vehicles"
ITU-T Geneva, 2-4 March 2005

Diagnostics 1895 ??

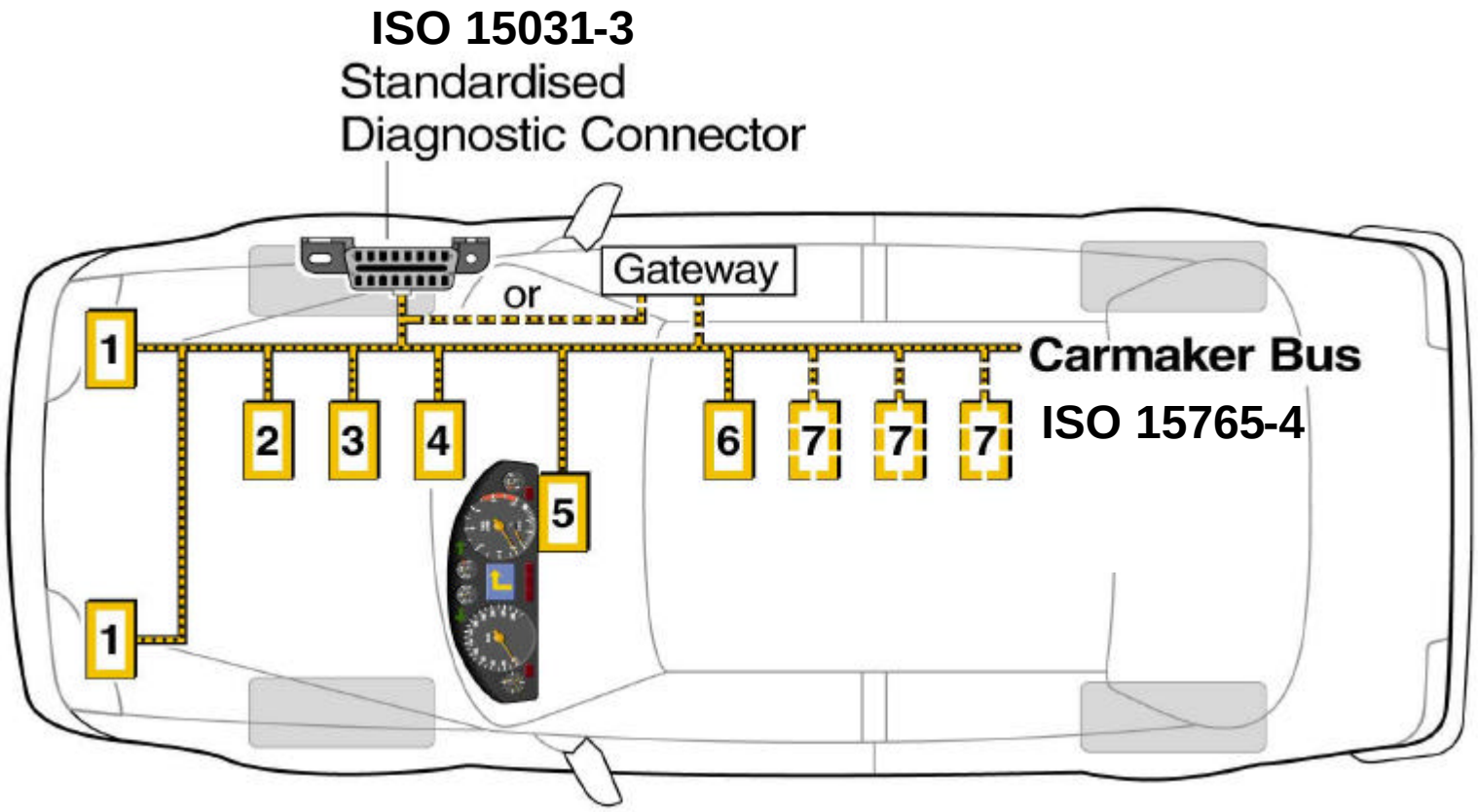
Diagnostics 1925



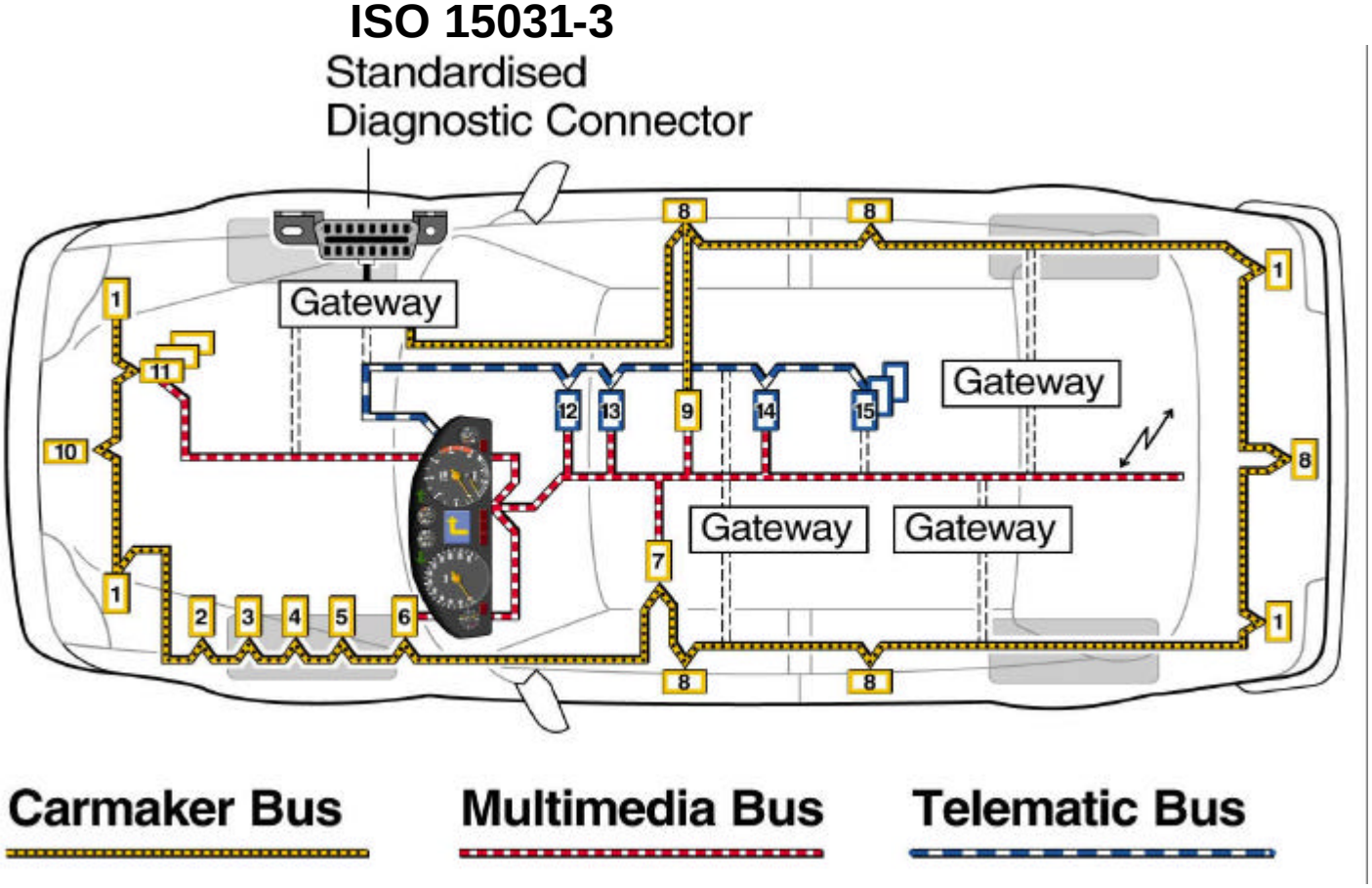
Technological Electronic Advances

- Ever-increasing levels of vehicle comfort
- Improvements in active and passive safety
- Prevention of accidents
- The optimal utilisation, and conservation, of natural energy resources
- Compliance with increasing environmental awareness worldwide
- Considerably improved protection against theft
- Optimal operator and display strategies

Basic diagnostic communication



Extended Diagnostic Communication



ISO / TC22 / SC3 / WG1

Standardisation in the field of

- data communication
- diagnostic communication
  - Observation of worldwide OBD regulation
  - Propose standardisation where necessary and appropriate
  - Harmonisation of national and international OBD standards
- related data access and transmission security issues
- data transmission between road vehicles and off-board diagnostic devices.

ISO / TC22 / SC3 / WG1

ISO 15031 Road vehicles - Communication between vehicle and external (test) equipment for emissions-related diagnostics –

Part 1: General information
Part 2: Abbreviations, terms, definitions, and acronyms
Part 3: *) Diagnostic connector
Part 4: *) External test equipment
Part 5: *) Emissions-related diagnostic services
Part 6: *) Diagnostic trouble codes
Part 7: *) Data link security

*) Mandated by worldwide OBD legislation (Pas-Car)

ISO / TC22 / SC3 / WG1

ISO 15765 Road vehicles – Diagnostics on controller area network (CAN) -

Part 1: General information

Part 2: Network layer services

Part 3: Implementation of unified diagnostic services

Part 4: *) Requirements for emission related systems

ISO 14299 Road vehicles - Unified diagnostic services (UDS) -

Part 1: Specification and requirements

*) Mandated by worldwide OBD legislation (Pas-Car)

GTR*
OBD for HDV

Single OBD protocol for HDV (Heavy Duty Vehicles)

- Common Message set
- Common Data set
- Physical layer
  - CAN** for wired communication
  - DSCR*** for wireless communication (5.8 GHz in Japan, 5.9 GHz in USA

* GTR Global Technical Regulation (WP29)
** CAN Controller Area Network
*** DSCR Dedicated Short Range Communication

GTR
OBD for HDV

Common message set
ISO 14229-1 UDS (Unified Diagnostic Services)

- Reading DTCs
- Reading freeze frame information
- Clearing DTCs
- Reading permanent DTCs
- Reading extended data parameters
  - Hierarchy of fault
  - Lamp status
  - Aging count
  - Occurrence count

GTR
OBD for HDV

Common data set

- Today data sets utilised on SAE J1939, ISO 14229-1 UDS and ISO 15031-5.
- Single ‘master’ data set available through a single ‘VOBD’ (Vehicle On Board Diagnostic) system.
- VOBD - a single access point for legislated data. Provision of data from any system - today or in the future (e.g Emissions systems, safety systems etc.).
- Single data set scalable for three use case scenarios
  - Roadside, in motion or stationary
  - Periodic inspection data,
  - Diagnostic servicing of the vehicle

Scan-Tools supporting ISO 15031-5 (2)

Vetronix Corp.
Mastertech

GM/Adam Opel AG
Tech 2

Vetronix Corp.
Tech 1A

Scan-Tools supporting ISO 15031-5 (1)

Robert BOSCH GmbH
KTS 300 Handheld

Robert BOSCH GmbH
KTS 500 Potable

Robert BOSCH GmbH
PCMCIA card

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On- and Off-Board Diagnostics = ISO/TC22/SC3/WG1

Thank you for your attention