OBD Reading

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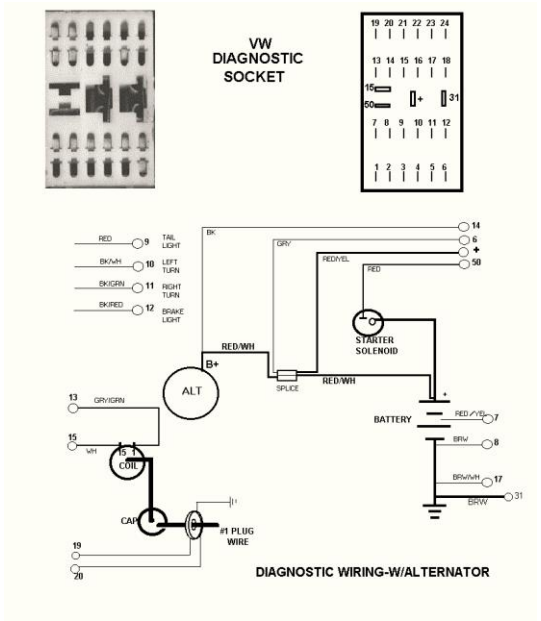


OBD History

- Rear lights: (Tail, Brake, Turn) The taillight connection was dropped later.
- Rear window defogger.
- Battery condition and charging circuit.
- Engine compression.
- Ignition Timing.

OBD History II

1988 California – Legal requirement

Exhaust

1989 – USA – OBD I

1996 — OBD-II mandatory - all cars manufactured in the United States.

2001 — EOBD (European version of OBD) - mandatory for all gasoline vehicles in the European Union (EU).

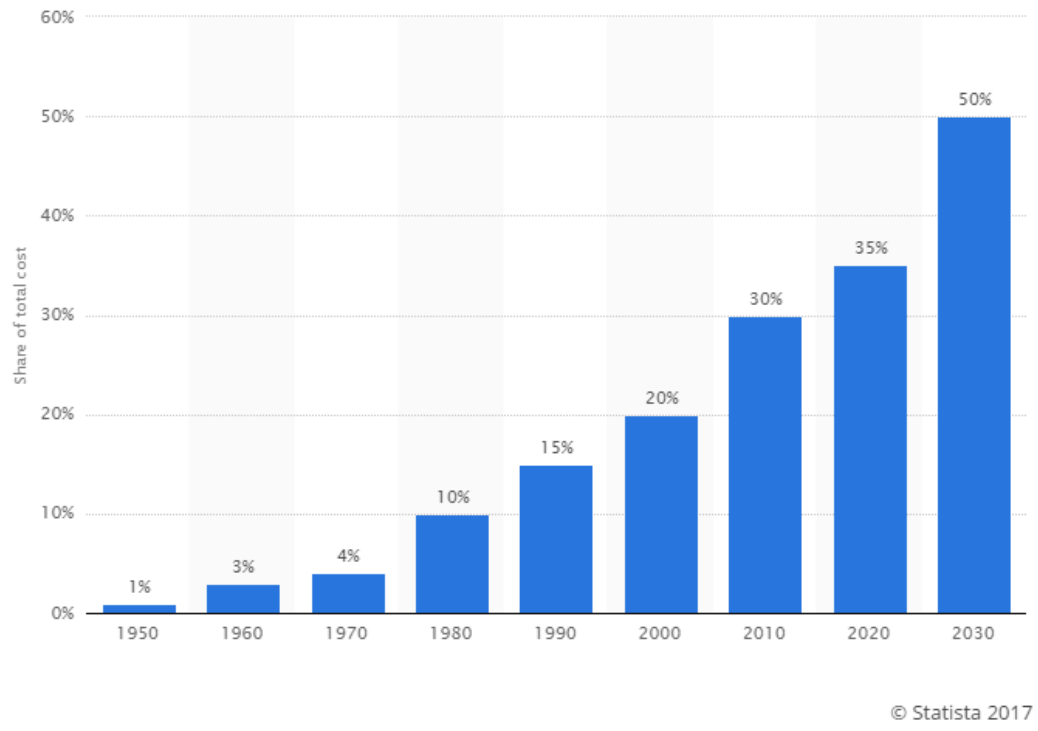
2003 — EOBD becomes mandatory for all diesel vehicles in the EU.

2008 — Starting in 2008, all vehicles in the US are required to implement OBDII through a Controller Area Network as specified by ISO 15765-4.

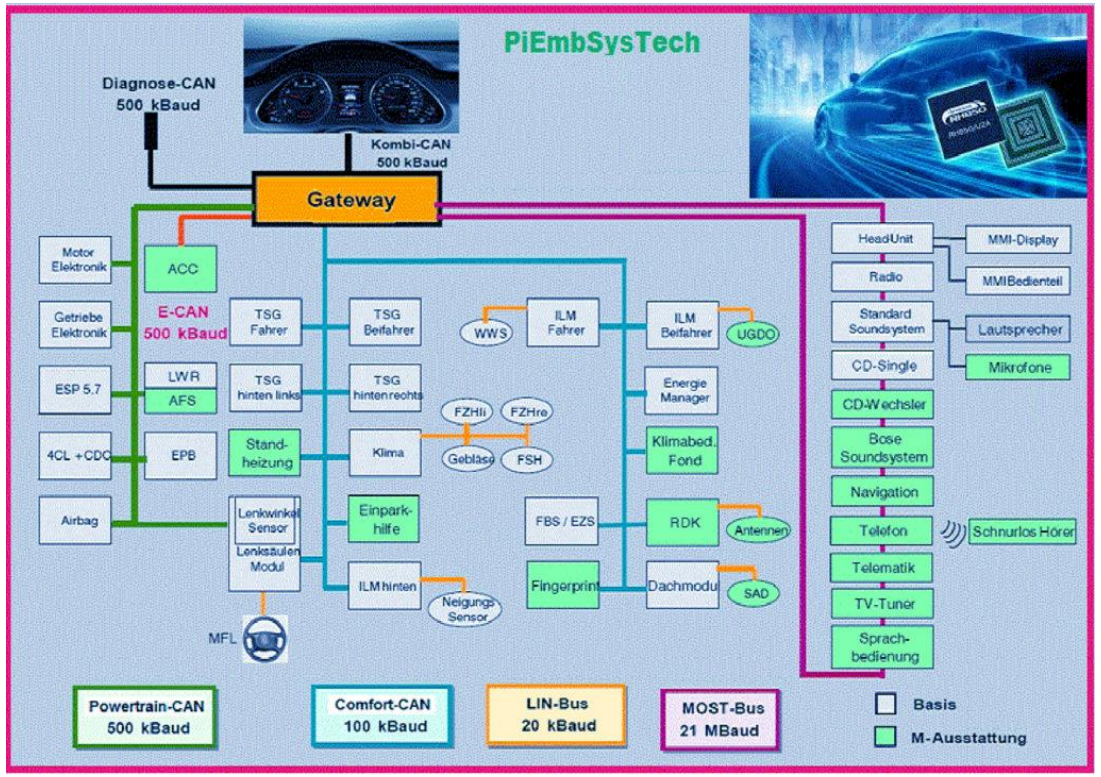
OBD II – more stringent – manufacturers

Would OBD exist anyway?

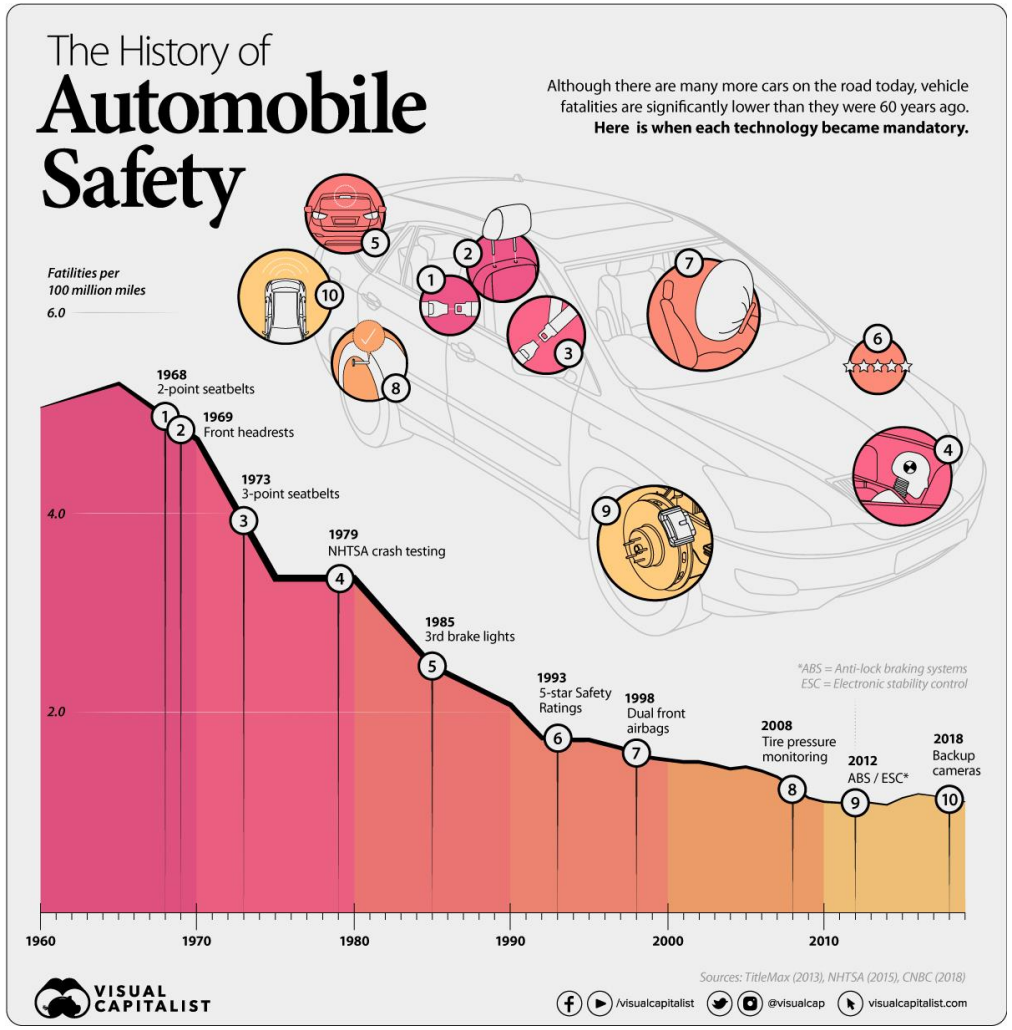
Cost share of automotive ECU with respect to the overall cost of the car



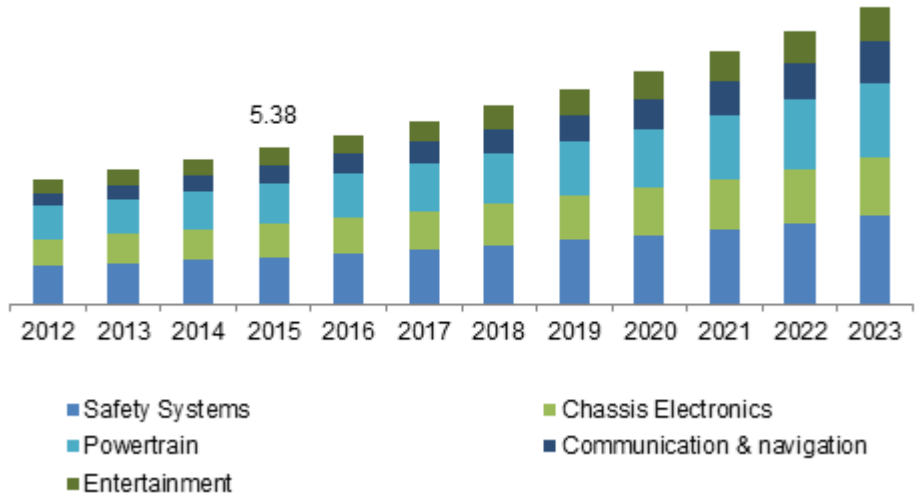
Car Networks



Importance of OBD utilization



China Automotive ECU Market size, by application, 2012-2023 (USD Billion)



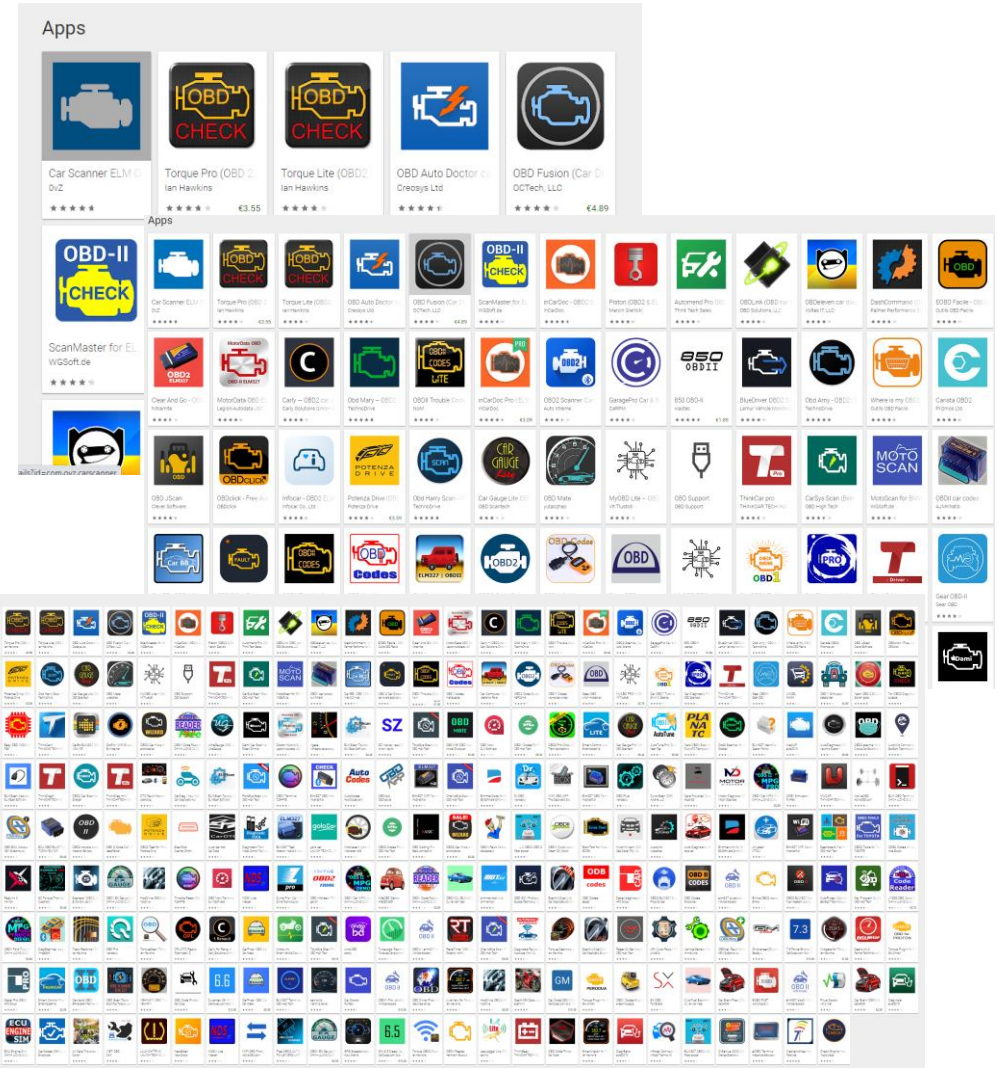
OBD readers

MP69033
Data Stream
01/19
1)Read Codes
2)Erase Codes
3)View Freeze Frame
4)I/M Readiness
MOTOPOWER
VIN
DTC
OK

2022 NEWEST VERSION
ANCEL
Datastream
FX2000 OBDII / EOBD + CAN
Engine
SRS
ABS
Transmission

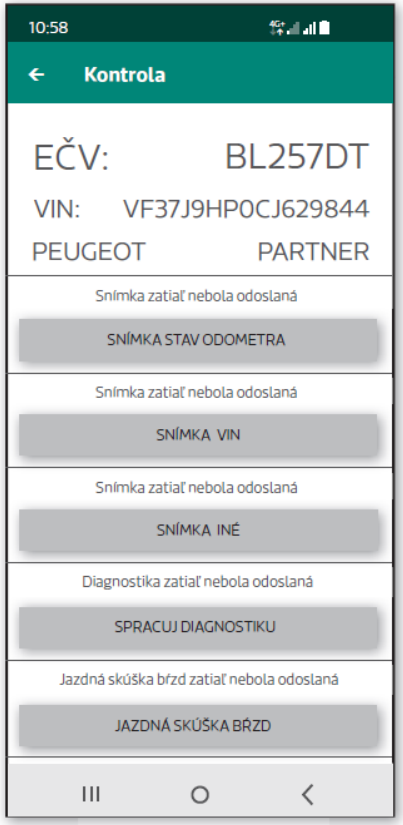
autocom CDP+

OBD - bluetooth



Smart

10:58
Kontrola
Kód protokolu: 19098836
EČV: BL257DT
VIN: VF37J9HP0CJ629844
PEUGEOT PARTNER
Snímka zatiaľ nebola odoslaná
SNÍMKA STAV ODOMETRA
Snímka zatiaľ nebola odoslaná
SNÍMKA VIN
Snímka zatiaľ nebola odoslaná
SNÍMKA INÉ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SNÍMKA INÉ
Diagnostika zatiaľ nebola odoslaná
SPRACUJ DIAGNOSTIKU
Jazdná skúška bŕzd zatiaľ nebola odoslaná
JAZDNÁ SKÚŠKA BŔZD

PID (hex)	PID (Dec)	Data bytes returned	Description	Min value	Max value	Units	Formula[a]
00	0	4	PIDs supported [01 - 20]				Bit encoded [A7..D0] == [PID $01..PID $20] See below
01	1	4	Monitor status since DTCs cleared. (Includes malfunction indicator lamp (MIL) status and number of DTCs.)				Bit encoded. See below
02	2	2	Freeze DTC				
03	3	2	Fuel system status				Bit encoded. See below
04	4	1	Calculated engine load	0	100	%	$\frac{100}{255}A$ (or $\frac{A}{2.55}$)
05	5	1	Engine coolant temperature	-40	215	°C	$A - 40$
06	6	1	Short term fuel trim—Bank 1	-100 (Reduce Fuel: Too Rich)	99.2 (Add Fuel: Too Lean)	%	$\frac{100}{128}A - 100$ (or $\frac{A}{1.28} - 100$)
07	7	1	Long term fuel trim—Bank 1				
08	8	1	Short term fuel trim—Bank 2				
09	9	1	Long term fuel trim—Bank 2				
0A	10	1	Fuel pressure (gauge pressure)	0	765	kPa	$3A$
0B	11	1	Intake manifold absolute pressure	0	255	kPa	
0C	12	2	Engine RPM	0	16,383.75	r	

OBD PIDs

OBD PIDs

98	152	9	Exhaust Gas Temperature Sensor				
99	153	9	Exhaust Gas Temperature Sensor				
9A	154	6	Hybrid/EV Vehicle System Data, Battery, Voltage				
9B	155	4	Diesel Exhaust Fluid Sensor Data				
9C	156	17	O2 Sensor Data				
9D	157	4	Engine Fuel Rate			g/s	
9E	158	2	Engine Exhaust Flow Rate			kg/h	
9F	159	9	Fuel System Percentage Use				
A0	160	4	PIDs supported [A1 - C0]				Bit encoded [A7..D0] == [PID $A1..PID $C0] See below
A1	161	9	NOx Sensor Corrected Data			ppm	
A2	162	2	Cylinder Fuel Rate			mg/stroke	
A3	163	9	Evap System Vapor Pressure			Pa	
A4	164	4	Transmission Actual Gear				
A5	165	4	Diesel Exhaust Fluid Dosing				
A6	166	4	Odometer			hm	
C0	192	4	PIDs supported [C1 - E0]				Bit encoded [A7..D0] == [PID $C1..PID $E0] See below
C3	195	?	?	?	?	?	Returns numerous data, including Drive Condition ID and Engine Speed*
C4	196	?	?	?	?	?	B5 is Engine Idle Request B6 is Engine Stop Request*

PID (hex)	PID (Dec)	Data bytes returned	Description	Min value	Max value	Units	Formula[a]

Smart …… Phone

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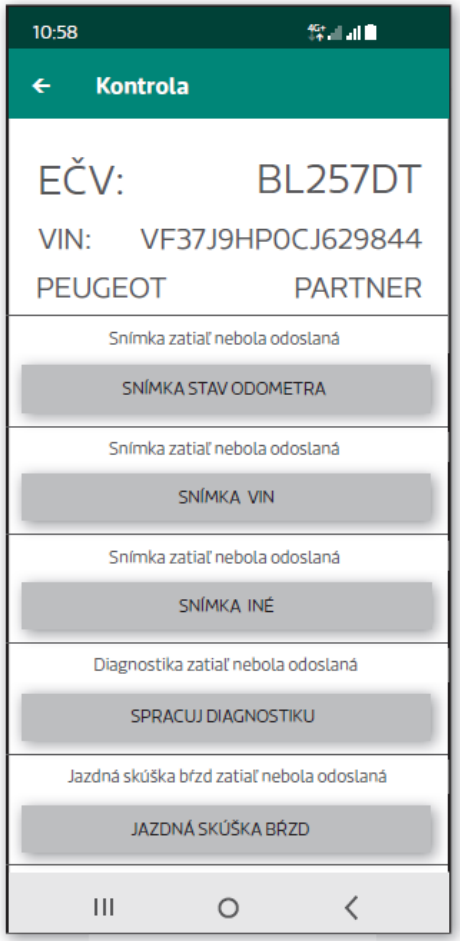
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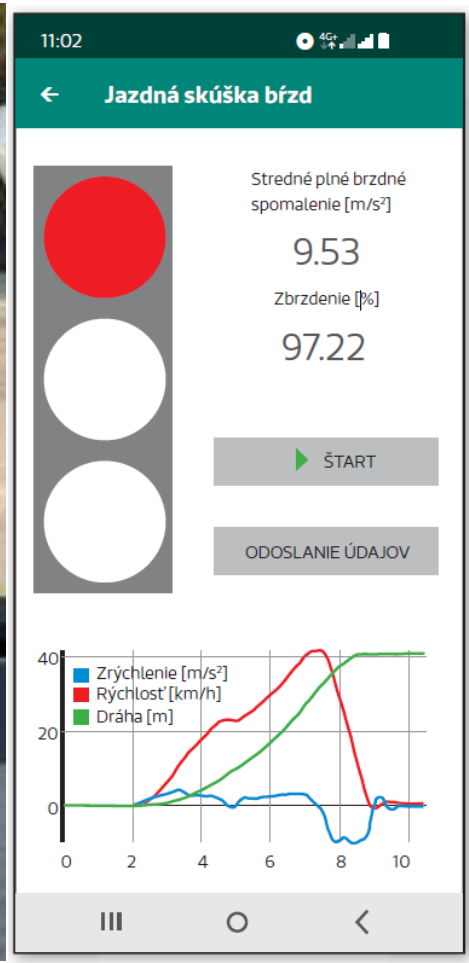
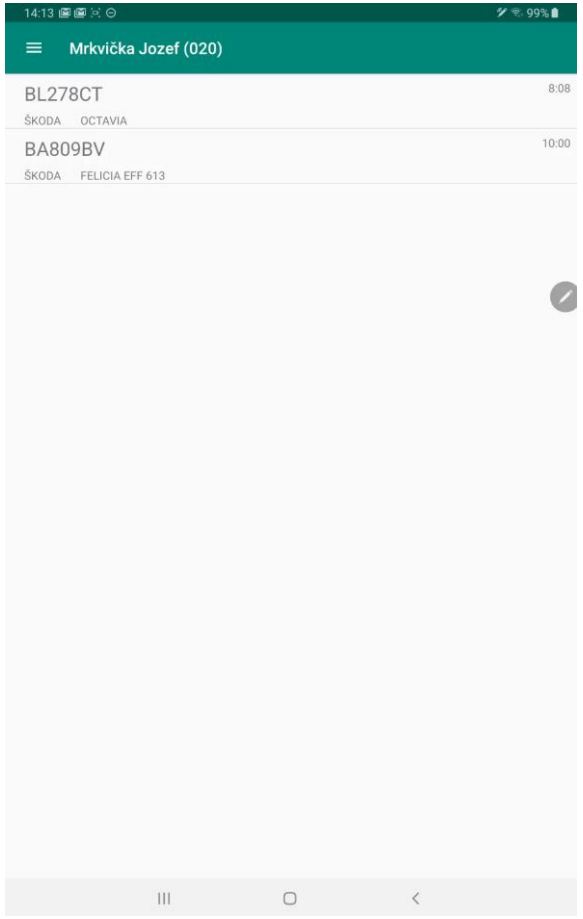
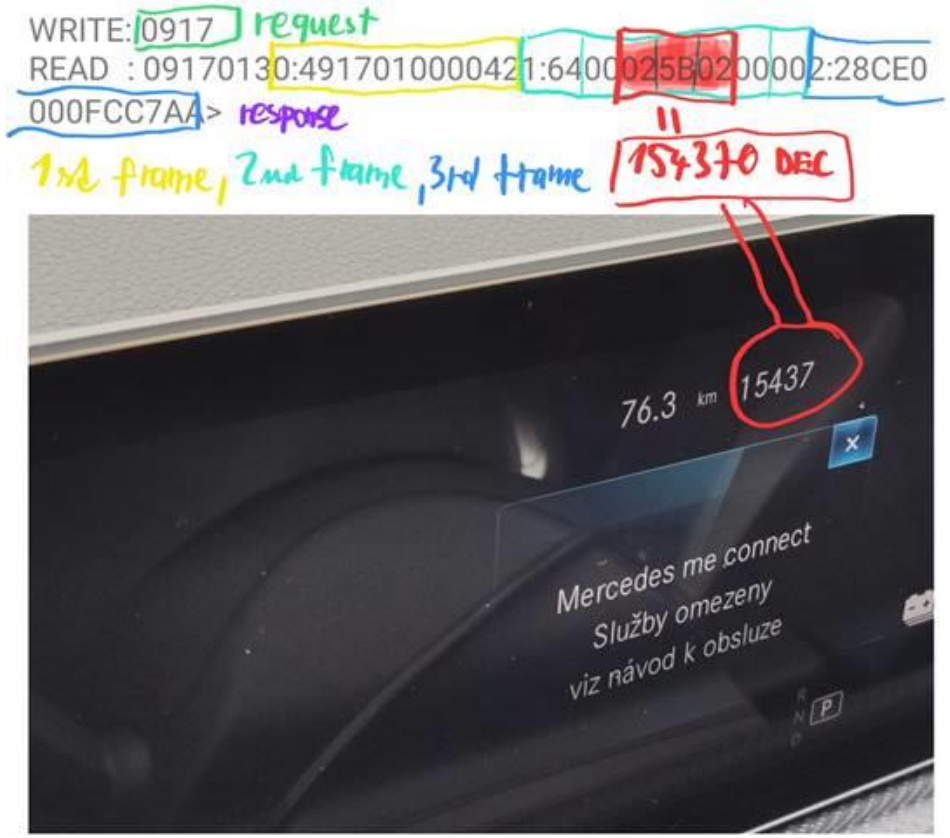

11:02
Jazdná skúška bŕzd
Stredné plné brzdné spomalenie [m/s²]
9.53
Zbrzdenie [%]
97.22
ŠTART
ODOSLANIE ÚDAJOV
40
20
0
0
2
4
6
8
10
Zrýchlenie [m/s²]
Rýchlosť [km/h]
Dráha [m]

PTI OBD reading - 2021

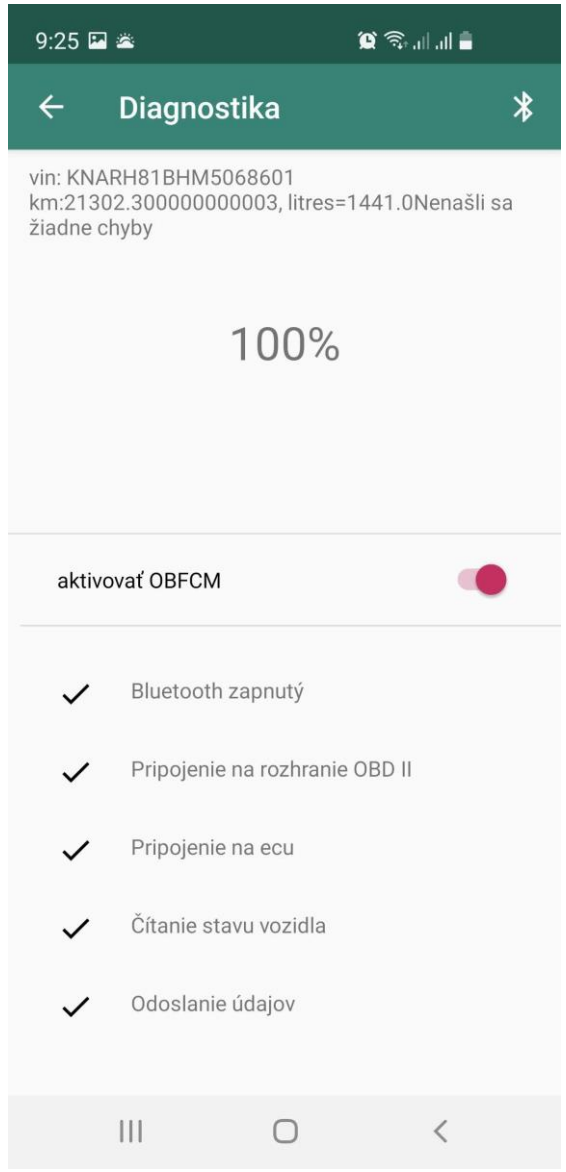


DTC	Total (10587)
B0075	1
C0020	1
C0040	1
C0048	1
P0504	9
P0555	9
P0572	1
P2299	1
U0121	31
U0128	3
U0151	2
U0241	1
U0415	14
U0418	2

OBFCM – annex G



:8	0x17	0xF817	Data - Distance/Fuel	16 bytes
:9	0x17	0xF817	Total Distance Traveled (Recent)	4 bytes 0.1 km per bit Min value: 0 km Max value:429,496,729.5 km
:0	0x17	0xF817	Total Distance Traveled (Lifetime)	4 bytes 0.1 km per bit Min value: 0 km Max value:429,496,729.5 km
:1	0x17	0xF817	Total Fuel Consumed (Recent)	4 bytes 0.01 liters per bit Min value: 0 liters Max value:42,949,672.95 liters
:2	0x17	0xF817	Total Fuel Consumed (Lifetime)	4 bytes 0.01 liters per bit Min value: 0 liters Max value:42,949,672.95 liters



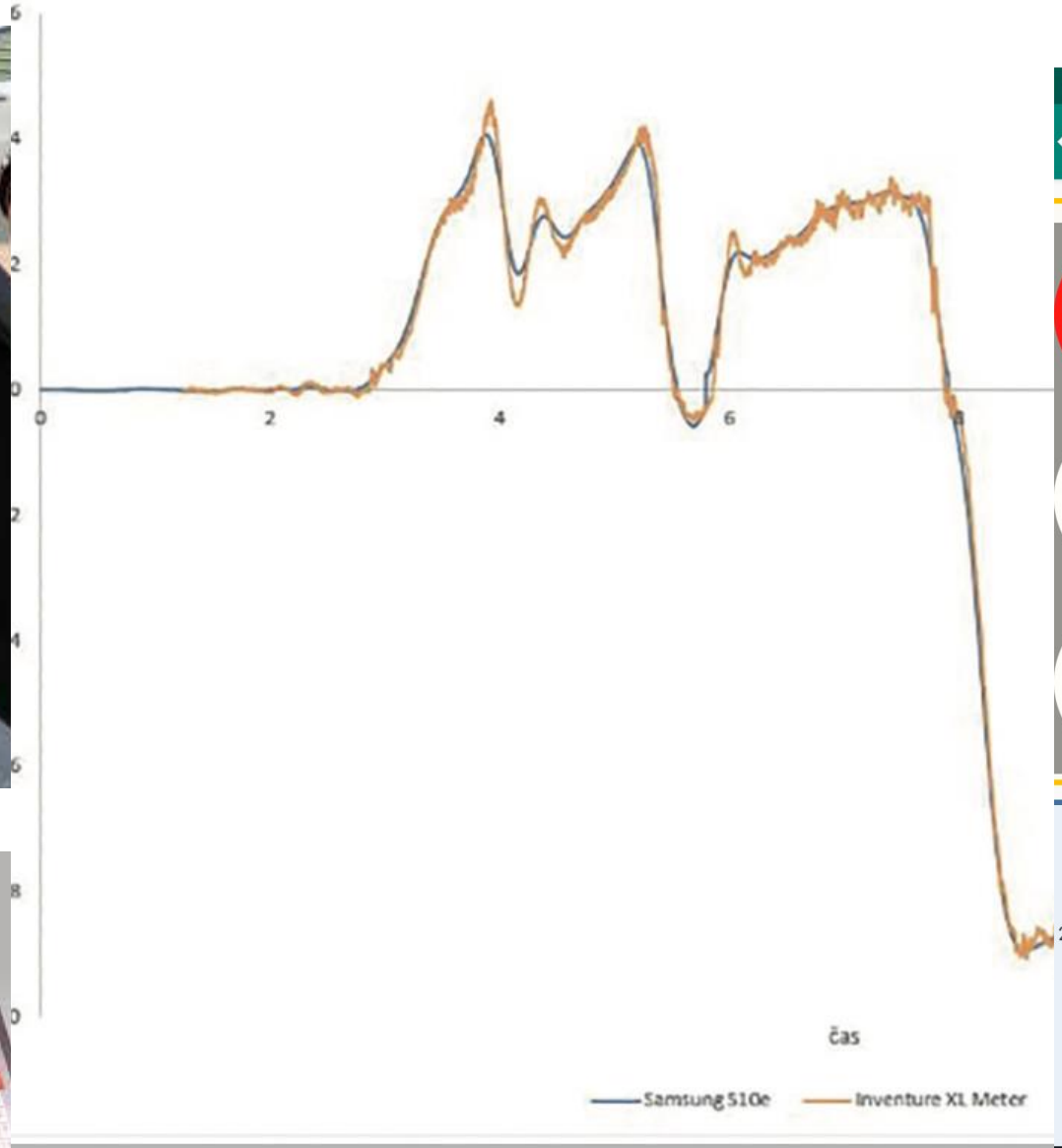
OBFCM – example 02

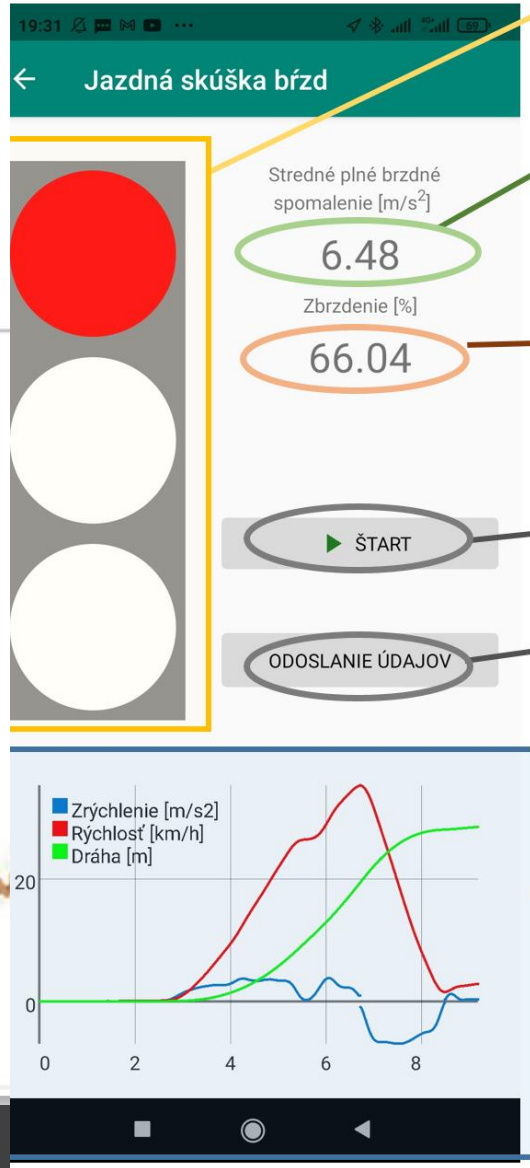
OBFC

Protokol
Fotky
Mobilné fotky
VSB fotky
Výstup brzdovej stolice
Správy OBD
OBFCM
Tlač protokolu
História kontrol
Údaje o vozidle

Obfcm správa:

{raw:'013 0: 49 17 01 00 03 CB 1: 75 00 03 CB 75 00 02 2: 9A 51 00 02 9A 51 AA ',
obfcm:km:24869.300000000003, litres=1705.77'}





Traffic light

The mean fully developed deceleration

Brake efficiency

Start/Stop button

Data submission button

Graph of:

Acceleration (blue)

Speed (red)

Distance(green)

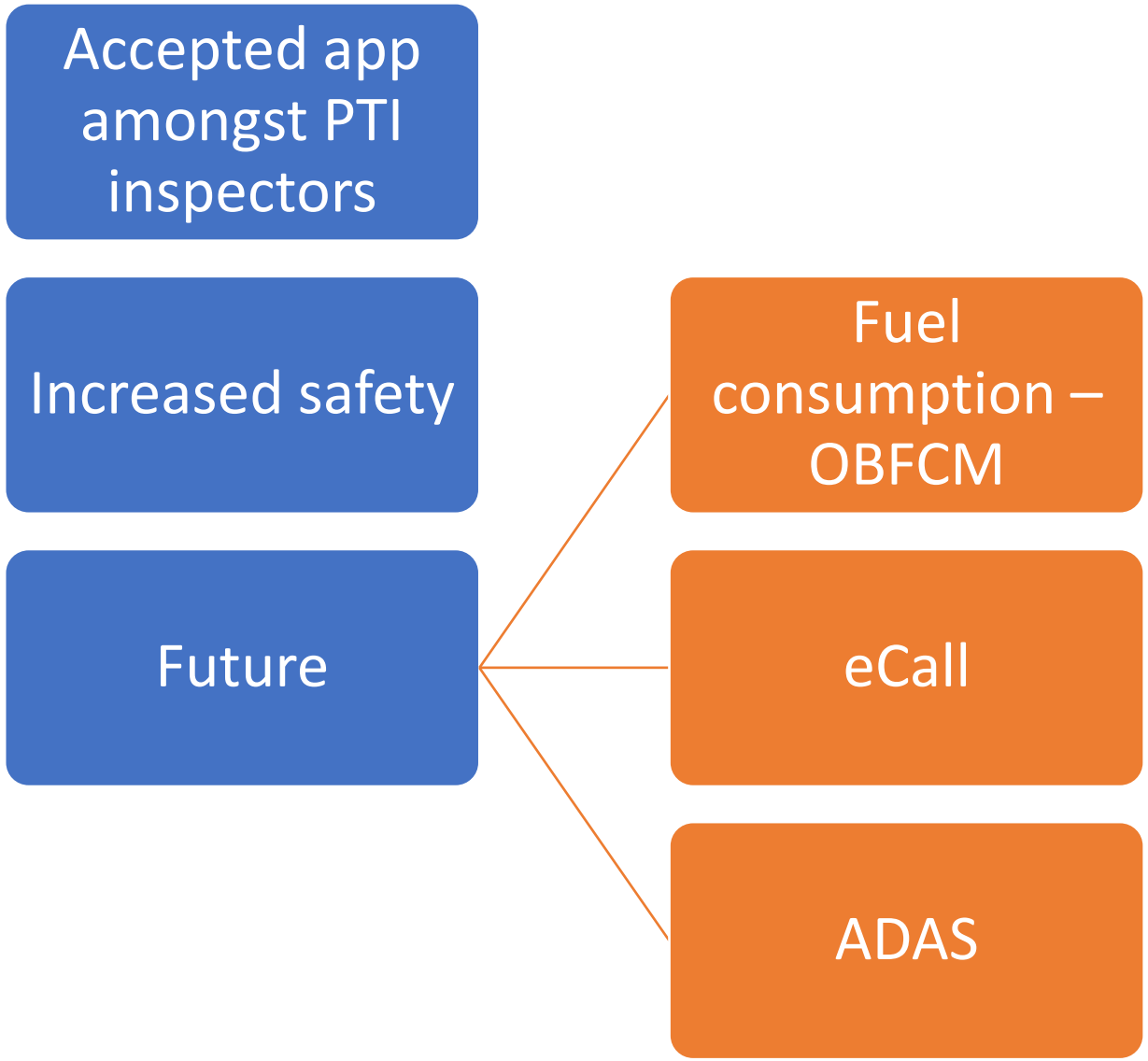
Brake testing videos

https://tvnoviny.sk/videa/91-televizne-noviny/73144-29-3-2022

Number of brake drive test performed by mobile app in 2021 in the Slovak Republic

Total Number of tests	Number of major defects	Number of dangerous defects
135 913	195	36

Conclusion


Accepted app amongst PTI inspectors
Increased safety
Future
Fuel consumption – OBFCM
eCall
ADAS