CITA Topic Area E meeting

EUROLAB Pristina, Kosovo, 7th and 8th March 2023

Data transmission during PTI in Slovakia and their usage for supervision

Jaroslav Olexa, head of supervision dpt.

CCTV cameras

Why CCTV cameras (since 2013)?

- until 2013 **common practice** – „inspection“ without vehicle

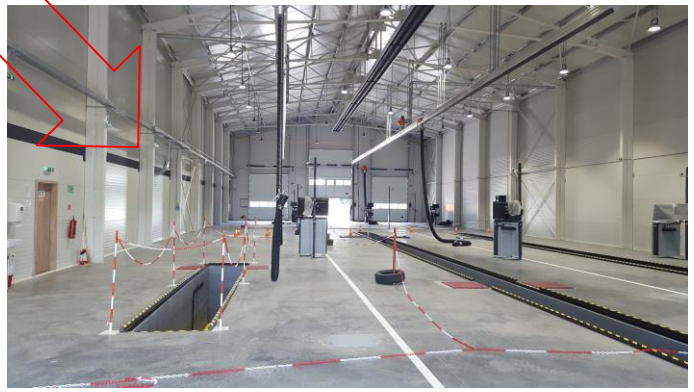
system (database), fake certificates...

Zoznam uzavretých protokolov

Filtrovať

Kód stanice	Stanica	Kód protokolu	Číslo protokolu	Dátum	EČV	Značka	Obch. názov	VIN	Spôsobilosť vozidla	Číslo motora (typ)	Kontroloval	Storno	
				od 17.02.2014 do 17.02.2014									
8116			5429		TV041CP	RENAULT	PREMIUM	VF624GPA000074125	Spôsobilé	DXI 11 460-EEV			Administratív
8116			5427		JDV0847	SKODA	FABIA	TMBGF65J9A3024184	Spôsobilé	BMS			Pravidelná
8116			5425		JDV0846	SKODA	OCTAVIA	TMBGP41U5Y2365759	Spôsobilé	AHF			Pravidelná
8116			5423		MI149BN	CITROEN	C3	VF7FCHFXC28530340	Spôsobilé	HFX			Pravidelná
8116			5421		TV481CB	SKODA	FABIA	TMBPH16Y323521242	Spôsobilé	AZF			Pravidelná
8116			5419		TV263CE	FORD	GALAXY	WF0GXXPSWGVR95685	Spôsobilé	Y5B			Pravidelná
8116			5417		JDV0844	SKODA	OCTAVIA	TMBHT61Z6A2079965	Spôsobilé	CAYC			Pravidelná
8116			5415		TV007CE	VOLKSWAGEN	PASSAT	WVWZZZ3CZ7P161922	Spôsobilé	BKP			Pravidelná
8116			5428		TV597CG	OPEL	ASTRA G	W0L000051V2289814	Spôsobilé	X 16 SZR			Pravidelná
8116			5426		MI586CT	AUDI	A6	WAUZZZ4AZSN109795	Spôsobilé	ABK			Pravidelná

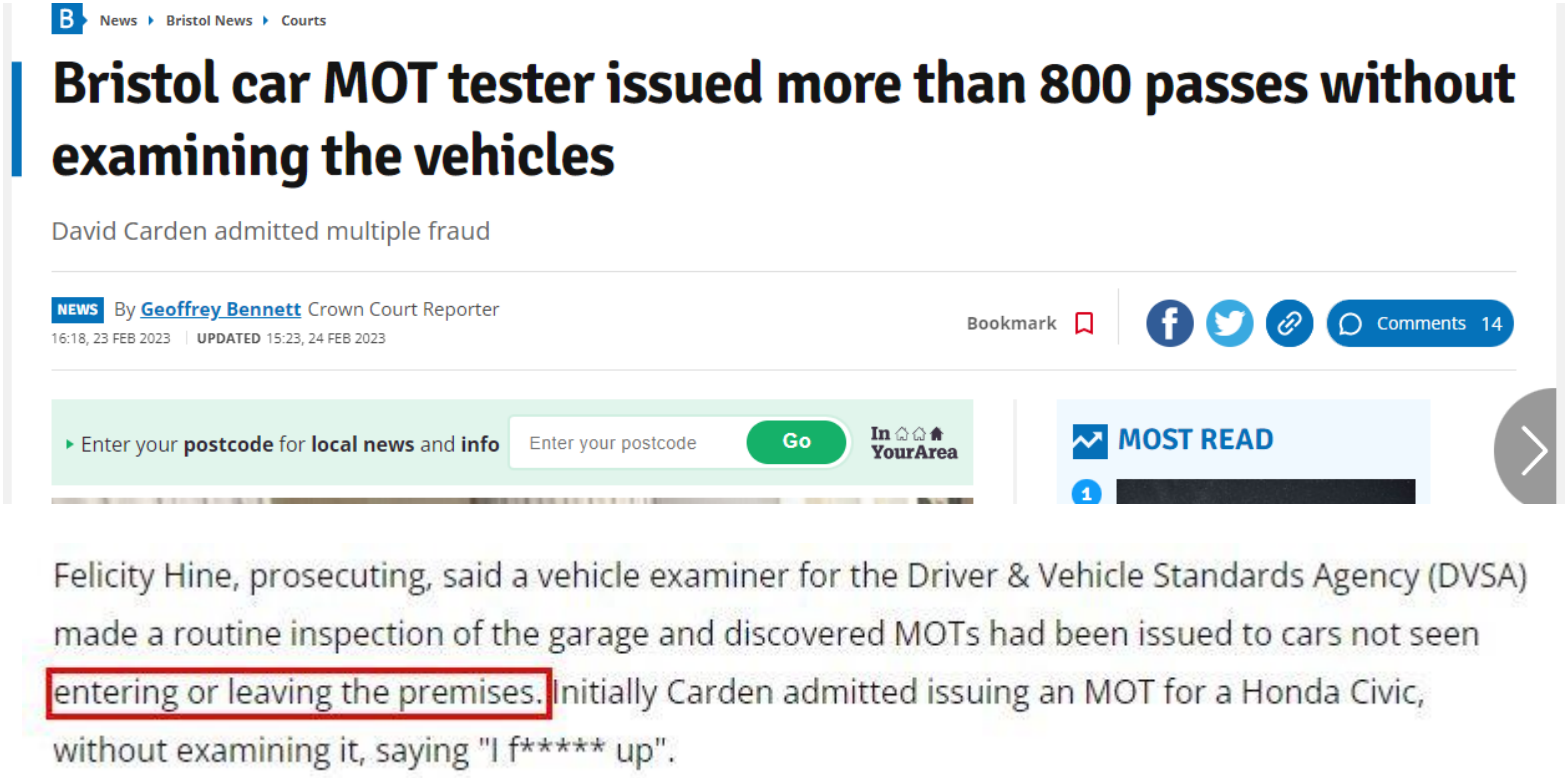
PTI lines



CCTV cameras

Was this common problem only in Slovakia?

UK: February 2023, newspaper headline



News › Bristol News › Courts

Bristol car MOT tester issued more than 800 passes without examining the vehicles

David Carden admitted multiple fraud

NEWS By Geoffrey Bennett Crown Court Reporter

16:18, 23 FEB 2023 | UPDATED 15:23, 24 FEB 2023

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1

Felicity Hine, prosecuting, said a vehicle examiner for the Driver & Vehicle Standards Agency (DVSA) made a routine inspection of the garage and discovered MOTs had been issued to cars not seen entering or leaving the premises. Initially Carden admitted issuing an MOT for a Honda Civic, without examining it, saying "I f***** up".

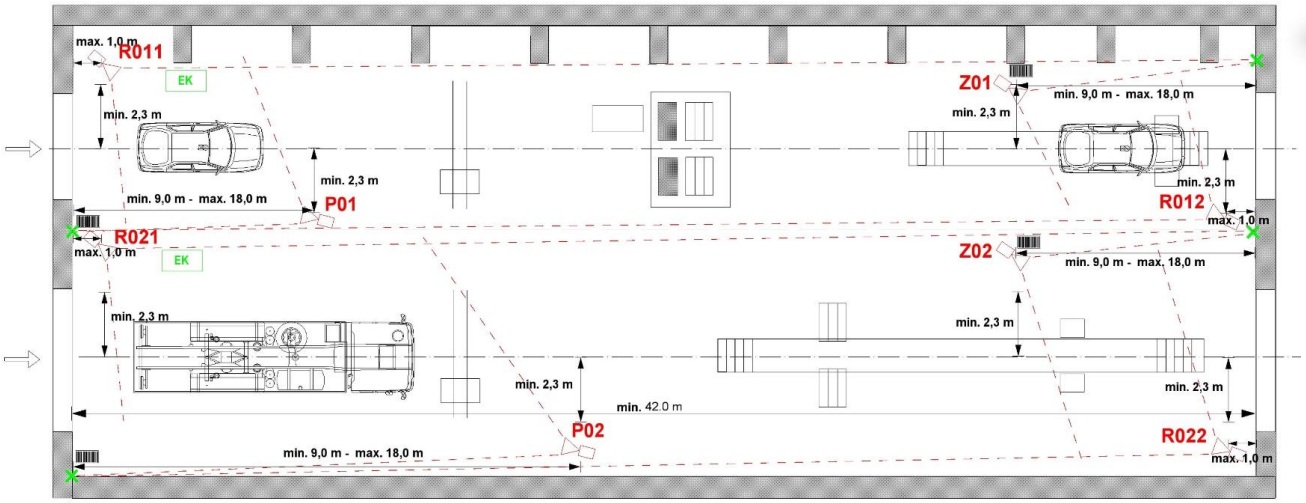
„Judge handed him eight months' prison, suspended for 12 months.„

https://www.bristolpost.co.uk/news/bristol-news/bristol-car-mot-tester-issued-8182000?fbclid=IwAR2q57h_osf5_wpkSz6KlrtOmcwfOqmccDeOGuBHbI0io9GkaBzoFHXV7dI

CCTV cameras

since 2019: significant changes in configuration

- **entry** and **exit** cameras with automated recognition of the licence plate
- two overview cameras /mandatory to cover 100 % of the PTI line/, pictures from all cameras automatically transferred to the PTI administration system
- example: **two** (and more) lines PTI station



- The whole inspection process is **covered** by cameras (necessary condition if the supervision should be done by video analysis).

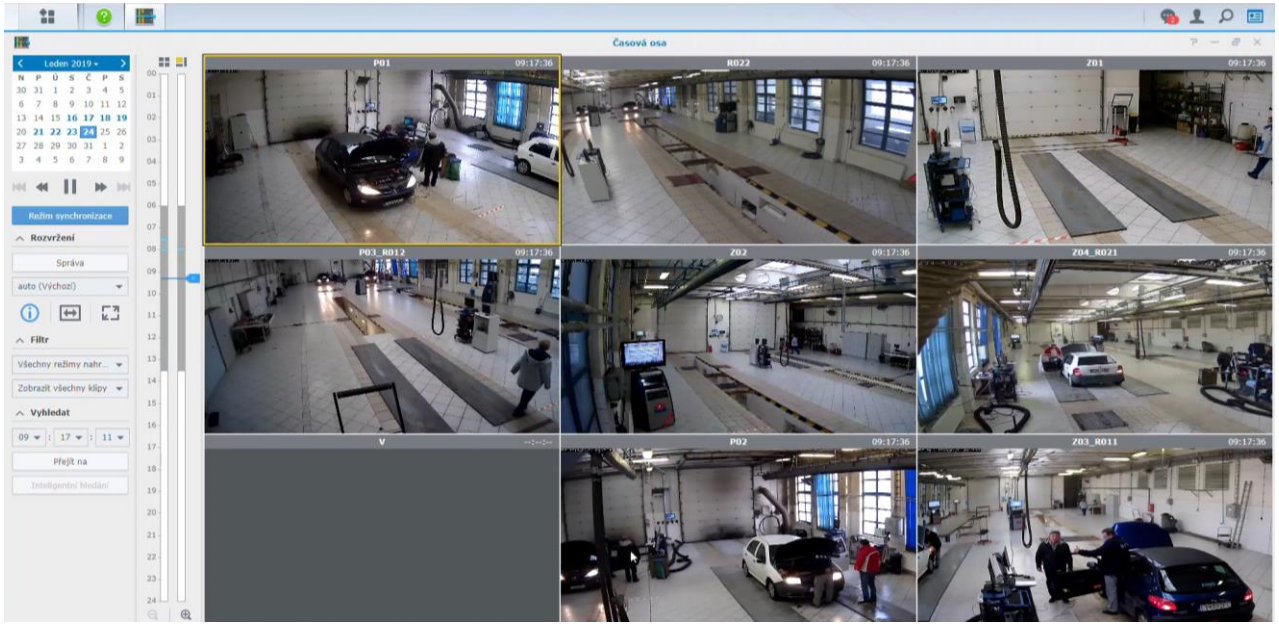
Duties of PTI station

Act No. 106/2018:

PTI station must:

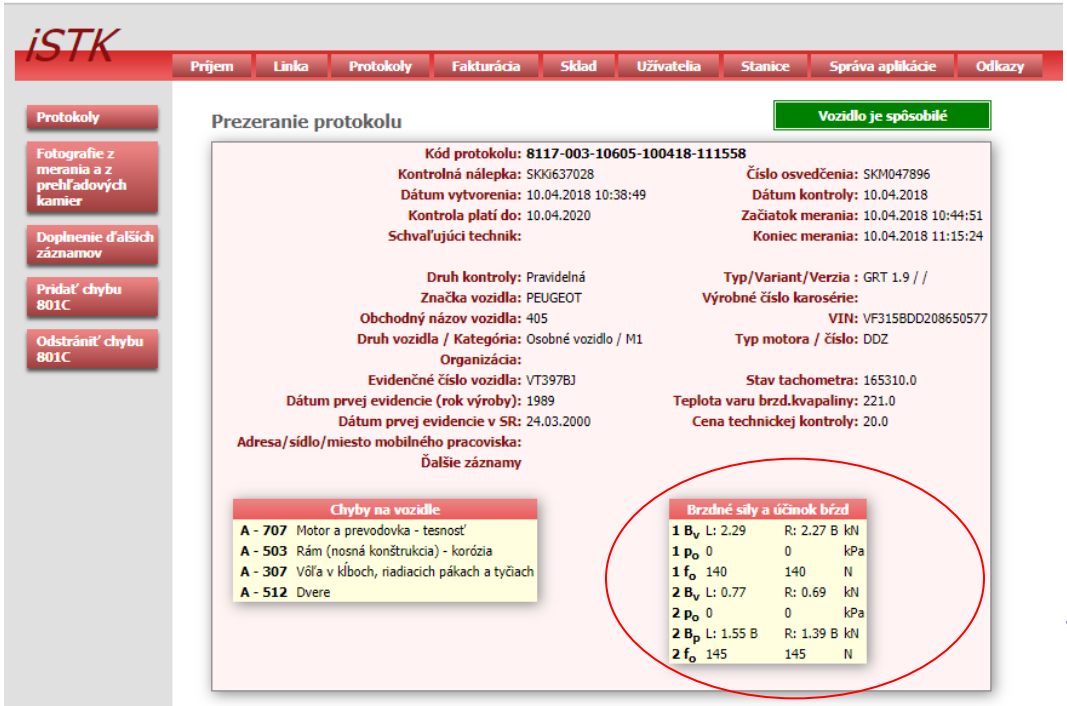
- allow the establishment of **permanent remote electronic access** to a video stored locally (**2 years backwards**) on the server of PTI station

example of remote access:



The information system

AIS TK – information system for the PTI station and supervision authorities (old version) – since **January 2009 automated recording and data transfer** of measured **breaking force**, **pedal force** and **air pressure**

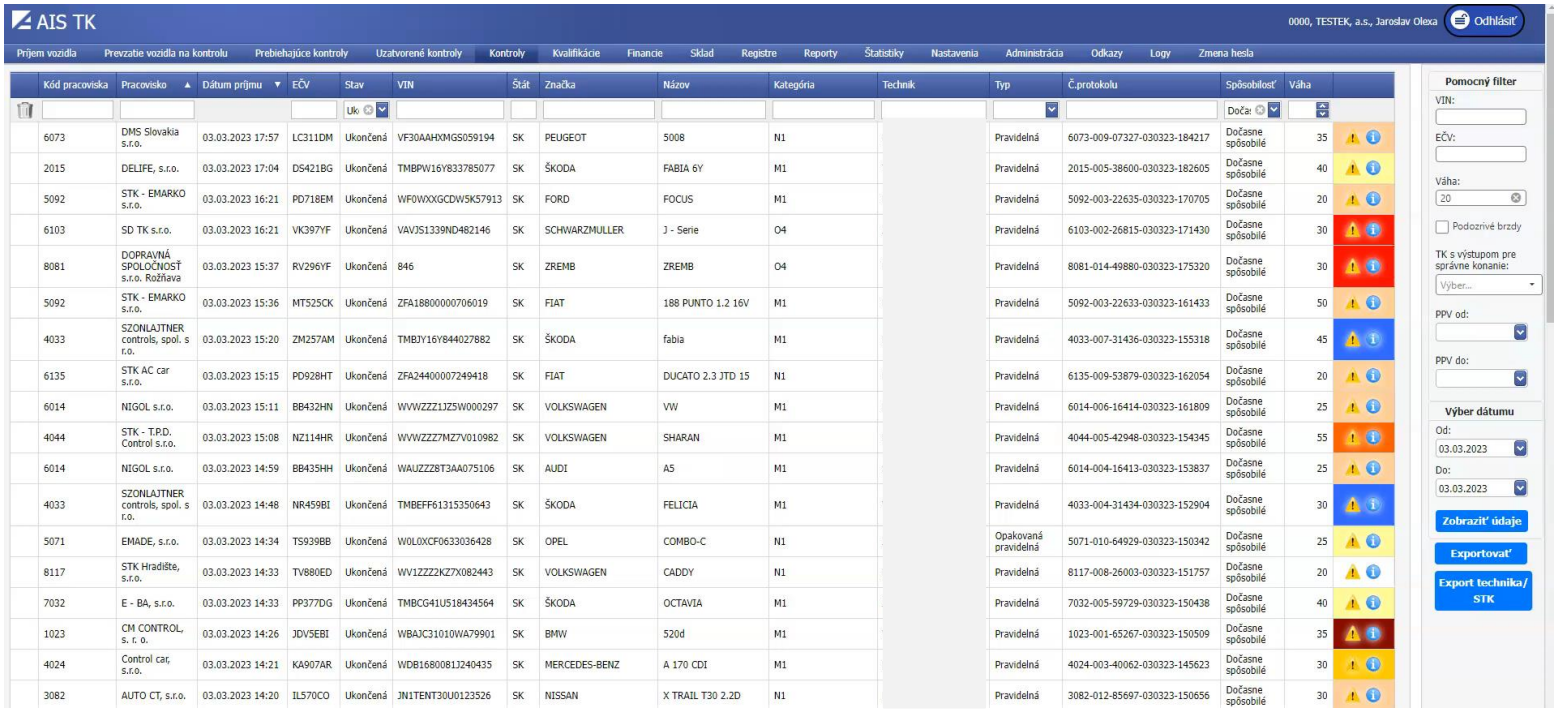


breaking data – only **final** values available (to 2016)

The information system

Since **April 2016 extended data transfer**, since **June 2018** new information system for PTI stations and supervision authorities

service brake parking brake final values brake force imbalance brake force fluctuation

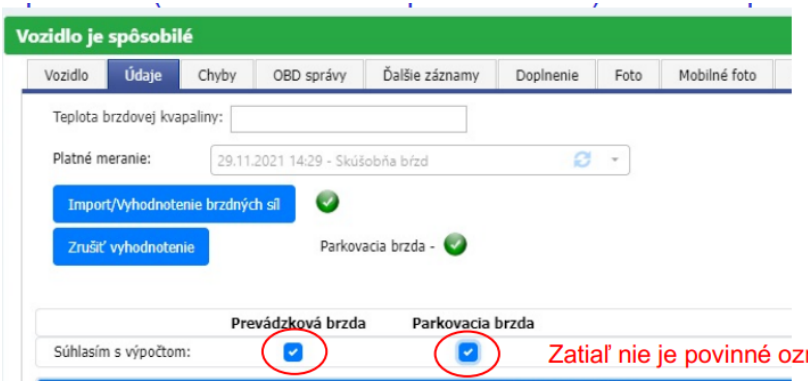


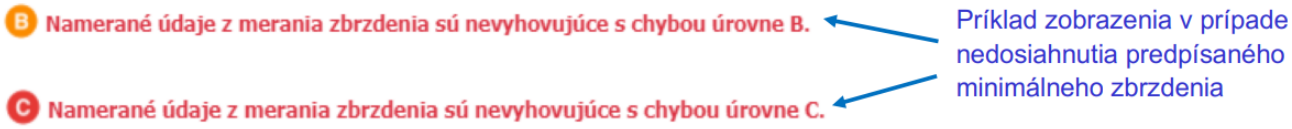
breaking data – **final** values plus **intermediate** values

Supervision of PTI in Slovakia

The information system

Automatic calculation of the **braking ratio** of the service and parking brake (**since 2022**)





B – major defect (1.2.2.1 or 1.4.2.1 according to directive No. 2014/45/EU)

C – dangerous defect (1.2.2.2 or 1.4.2.2 according to directive No 2014/45/EU)

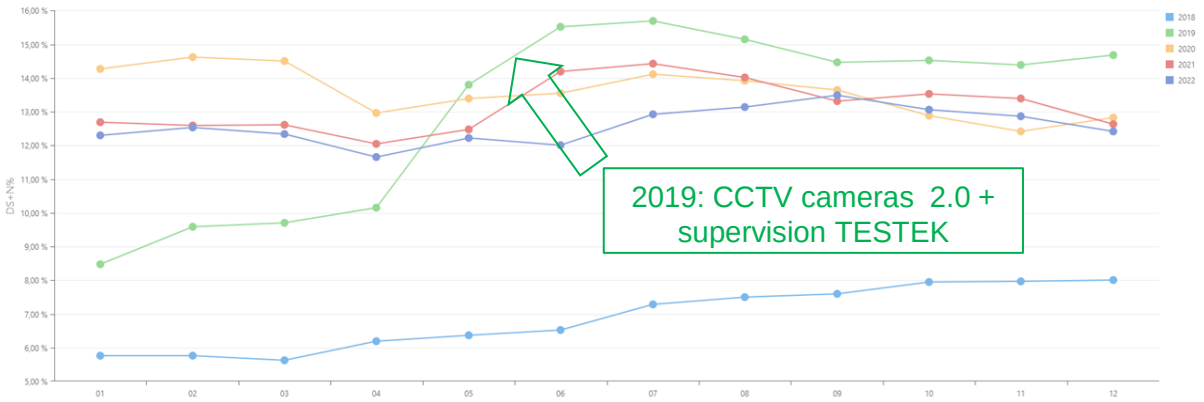
Based on the transferred data from the brake tester, automatic calculation of brake efficiency **for technicians** but also **for supervision department** (automatic indication of incorrect evaluation).

Data mining

Data analysis (since 2018): risk criteria (preparation phase for supervision)

- number of inspections per inspector
- number of inspections per PTI station
- percentage of temporary roadworthy and not roadworthy vehicles per PTI station/per technician
- average duration of inspection per PTI station/per technician
- percentage of not evaluated vehicles
- an increase/decrease of the observed criteria over time (time comparison)

rejection rate in Slovak PTIs has been raised from 5,70 % in 2017 to 13,22 % in 2021



Data mining

Suspicious checks module (since 2020): automatic indication of suspicious facts

based on data transmitted and stored in the IT system

Technical (data from brake tester) and **non-technical** (for instance length of inspection) parameters

Non- technical:

- the same technician as in the previous inspections
- repeated inspection shortly after the regular inspection
- inspection over the weekend
- early morning (evening) inspection
- quick inspection of light vehicles
- quick inspection of heavy vehicles
- long waiting time
- vehicle from another district
- technician with low roadworthiness

Technical

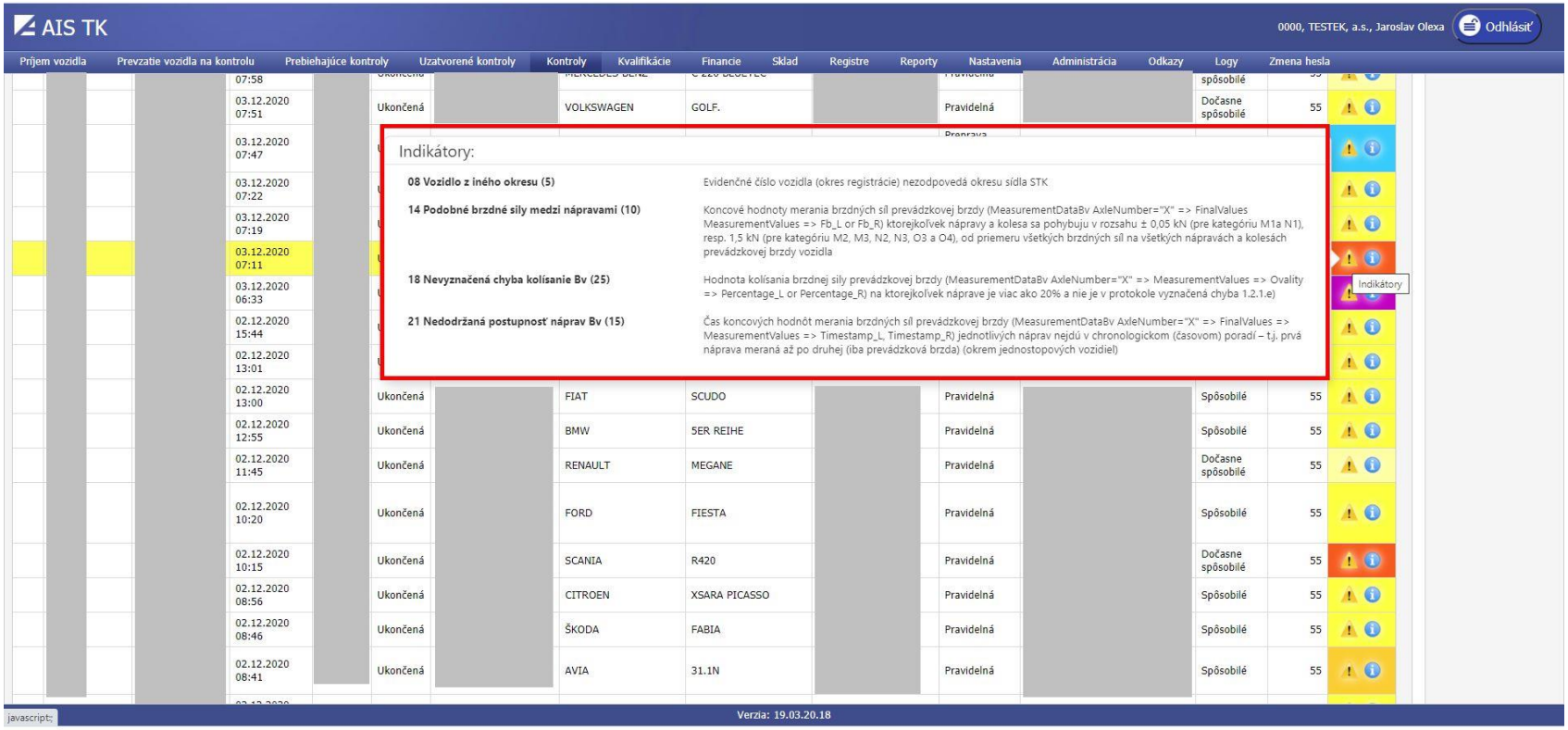
- long measurement time between axles - service brake
- short measurement time of service brake (under 10 s.)
- short parking brake measurement time (under 5 s.)
- long service brake measurement time (over 50 s.)
- similar braking forces between axles
- cut off service brake measurement – beginning of measurement
- cut off service brake measurement – end of measurement
- air pressure below 30% (air pressure brakes)
- unmarked deficiency asymmetry of brake force (item 1.2.1.b)
- unmarked deficiency fluctuation of brake force (item 1.2.1.e)
- unmeasured fluctuations of brake force
- parking brake measured simultaneously on both wheels
- axle measurement sequence not in order
- insufficient braking ratio - driving test
- long parking brake measurement time
- sharp increase in braking forces
- unjustified measurement procedure in 4WD mode
- insufficient force on the brake pedal (light vehicles)
- missing data from on-board diagnostics OBD
- insufficient braking ratio - service brake
- Insufficient braking ratio - parking brake

Data mining

Suspicious checks module: automatic indication of suspicious facts

Result seen in the IT system in form of „**traffic lights**“ and the „**risk score**“

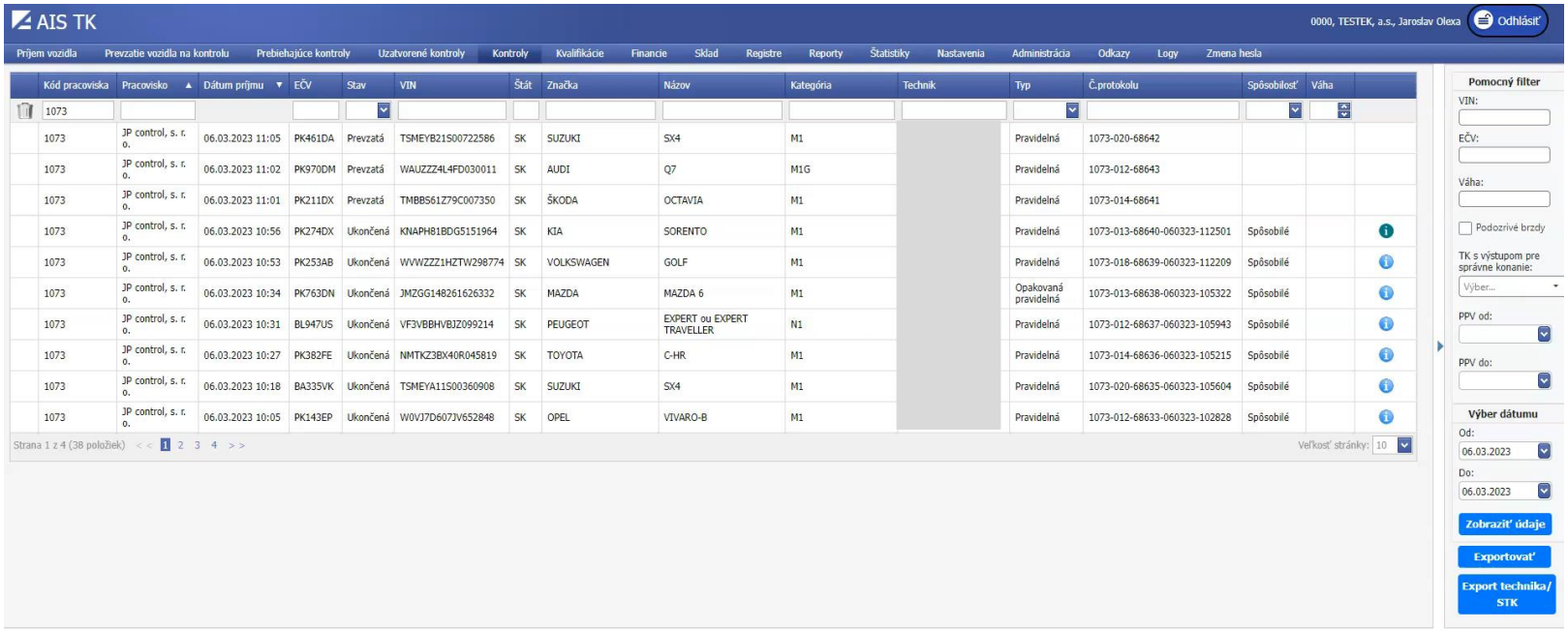
Possibility of filtering according to risk criteria and other data in the system (technician, PTI station, period, etc.)



The information system

since 2022: recording of the brake test monitor

video sample in the IT system



possibility to see also untransmitted measurements, higher possibilities of analysis

mSTK - a mobile application for PTI developed by TESTEK

- mSTK has been i**ntroduced** into PTI in Slovakia in **January 2020**
- mSTK is used for **taking photos** of **VIN** number, manufacturer's plate, **odometer (since 2020)** or other problematic parts of inspected vehicles; photos are being sent to the central information system via internet automatically
- mSTK **reads DTCs** via ELM 327 (Bluetooth OBD adaptor, **since 2020**); data are being sent to the central information system via internet automatically as well
- mSTK also includes the functionality for the **driving brake test (since 2021) evaluation** and fully replaces decelerometer (for this reason it is possible to calibrate the build-in accelerometer of the mobile device)
- mSTK's **OBFCM reading functionality** (using ELM 327, **since 2022**) is in field test these days

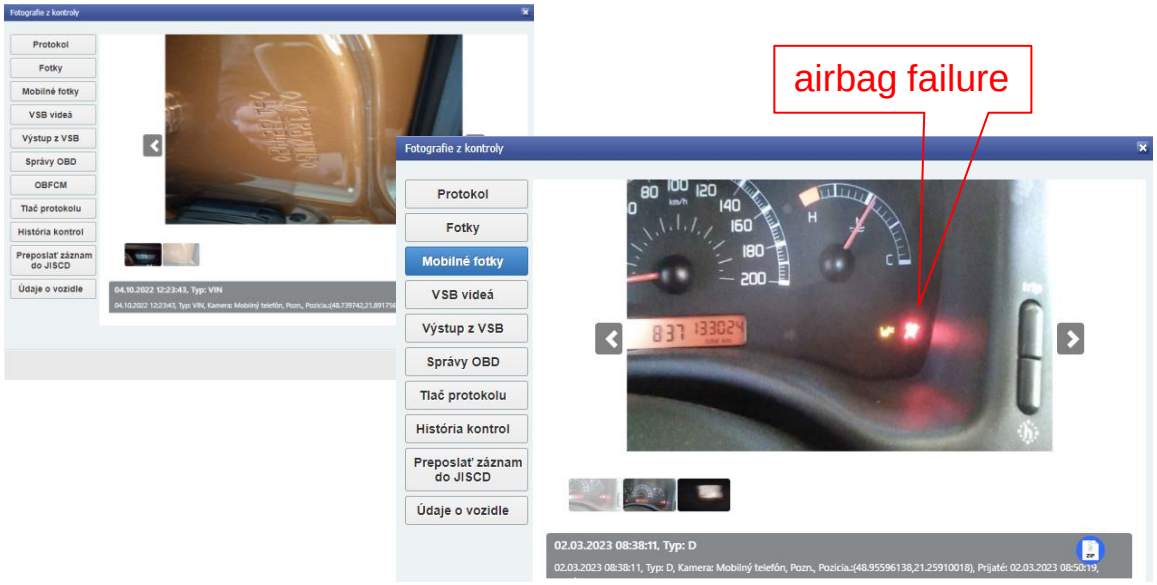
mSTK - a mobile application for PTI developed by TESTEK

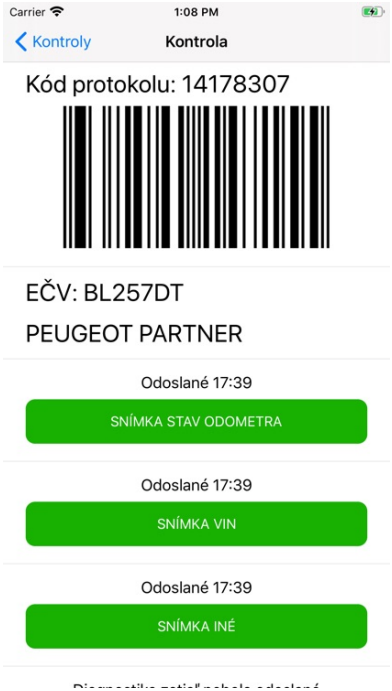
Smart devices in the process of PTI: since 2020

mSTK - a mobile application for PTI developed by TESTEK

Smart devices in the process of PTI: since 2020

- **scanning** and transferring data from OBD (vehicle with first reg. 2012 and futher)
- **mobile application** for deceleration measurement (mandatory)
- scan (shoot) the vehicle's **VIN + mileage** (to exclude bringing identical vehicles for PTI), **dashboard** (with indicators), **production label,** pictures **marked** with the GPS coordinates
- a set of mandatory slides

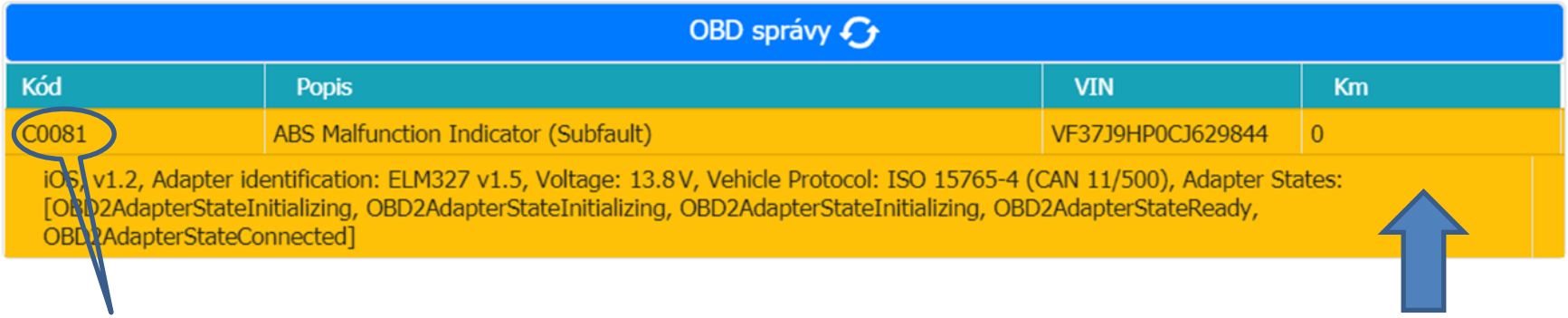




Diagnostic trouble codes (DTC) reading: since 2020

example:

- If the information system recognizes DTC for ABS, it **automatically assigns** this to a major failure according to the Directive 2014/45/EU 1.6.f - Anti-lock braking system (ABS) - system indicates failure via the electronic vehicle interface – **Major failure**.



DTC for ABS

Yellow colour indicates Major failure – visual information for inspector

OBFCM reading – range of data, testing since 2022

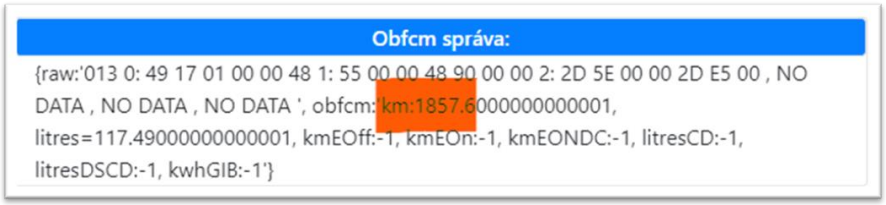
Combustion engine vehicle:

- Total fuel consumed (lifetime)
- Total distance travelled (lifetime)

Hybrid vehicle:

- Total fuel consumed (lifetime)
- Total distance travelled (lifetime)
- Total distance travelled in charge depleting operation with engine off (lifetime)
- Total distance travelled in charge depleting operation with engine running (lifetime)
- Total distance travelled in driver-selectable charge increasing operation (lifetime)
- Total fuel consumed in driver-selectable charge increasing operation (lifetime)
- Total fuel consumed in charge depleting operation (lifetime)
- Total grid energy into the battery (lifetime)

OBFCM electronic message:

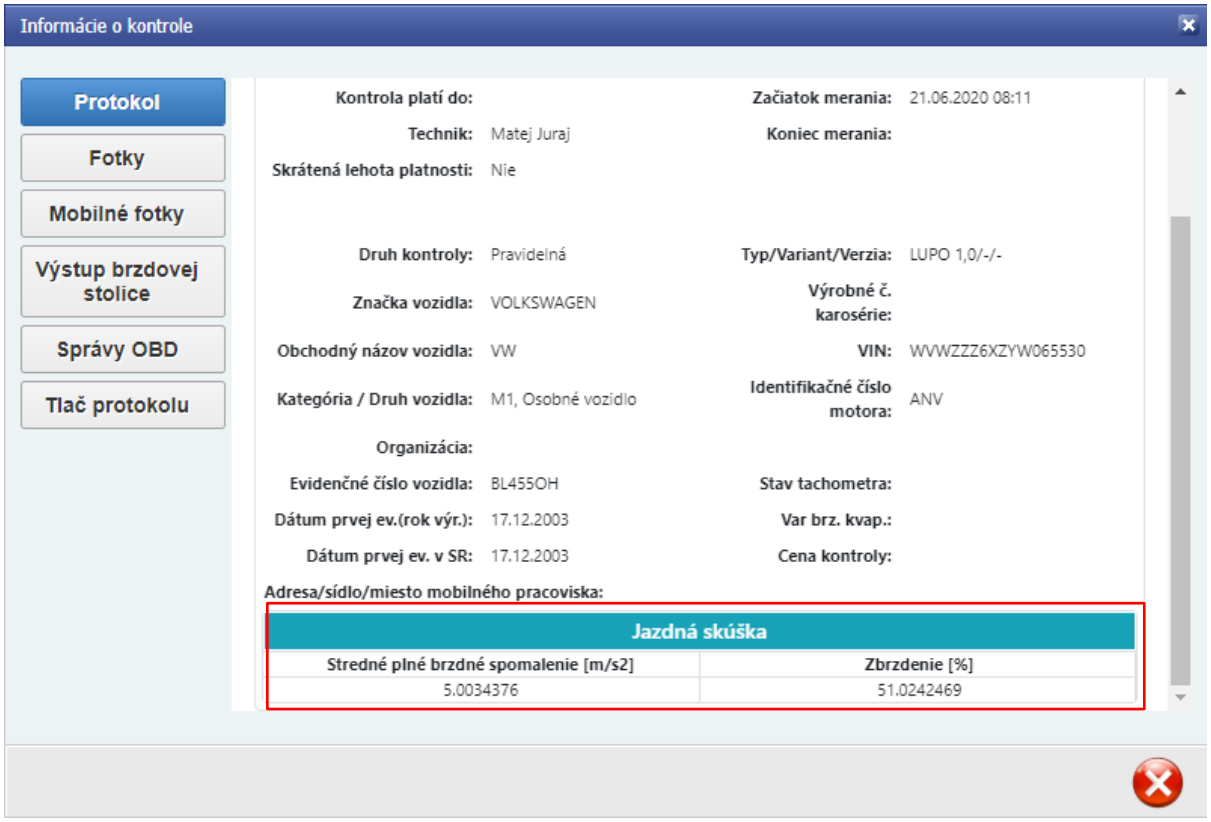


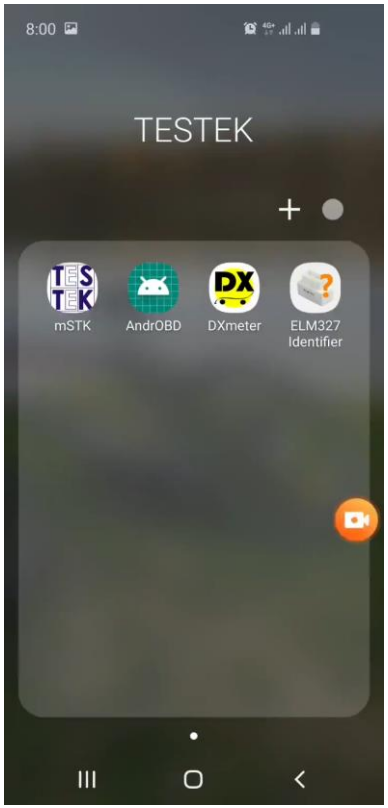
dashboard information:

mSTK - a mobile application for PTI developed by TESTEK

Driving test: for 4WD vehicles brake test

since 1th of January 2021: mobile application for measuring deceleration (DX meter)

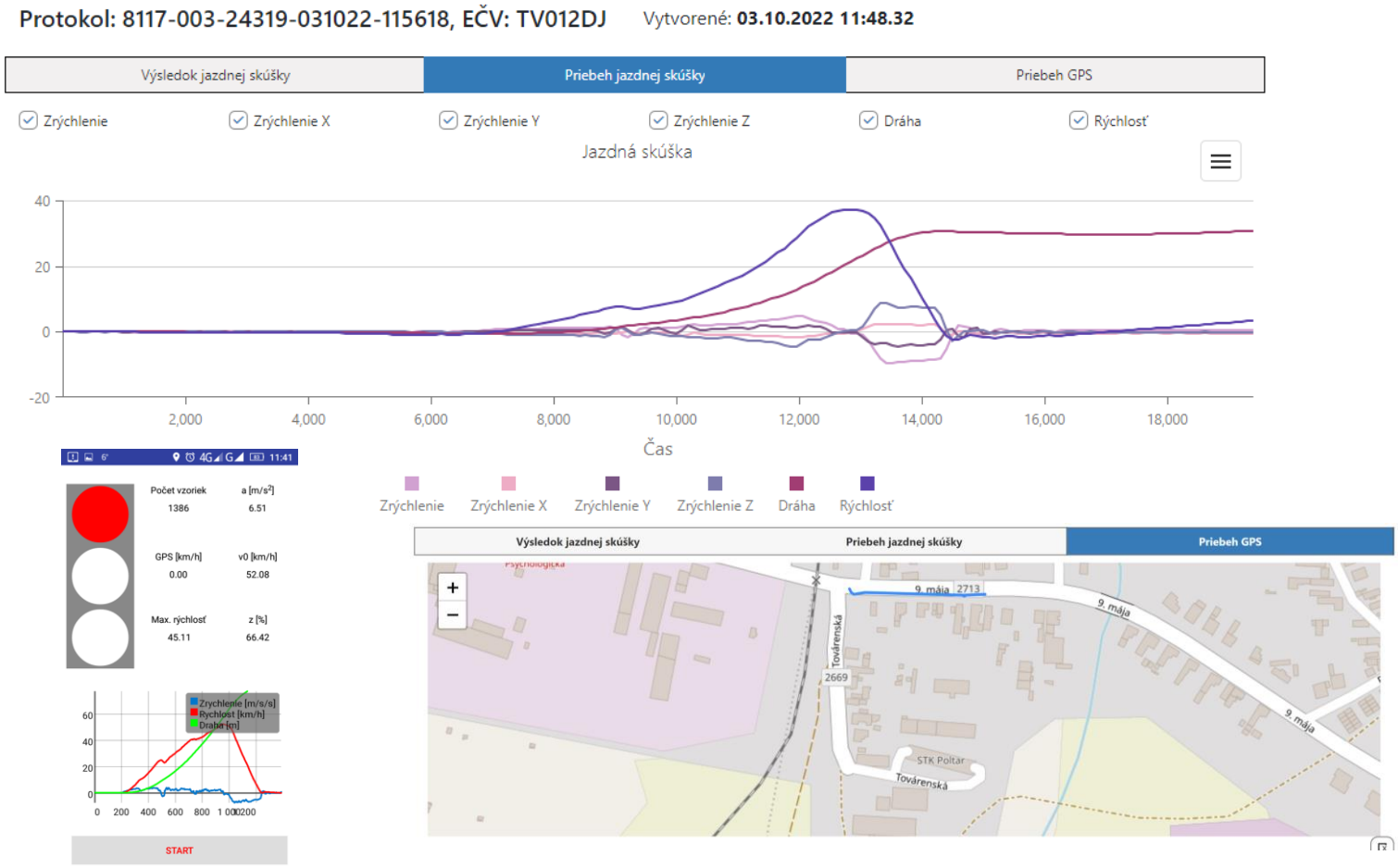




mSTK - a mobile application for PTI developed by TESTEK

Driving test: for 4WD vehicles brake test

Results in IT system: deceleration graphs, GPS map



THE END

Thanks for your attention

Questions?

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