

Central technical register of roads in Slovakia/Road Databank





Slovak Republic

Capital city	Bratislava
Inhabitants	476 922
Surface area [km²]	49 034,55
Population	5 428 792
of which females [%]	51,1
Population density [popul. per km²]	110,67
Number of Regions	8
Number of Districts	79
Number of Municipalities	2 890
of which with City statute	141



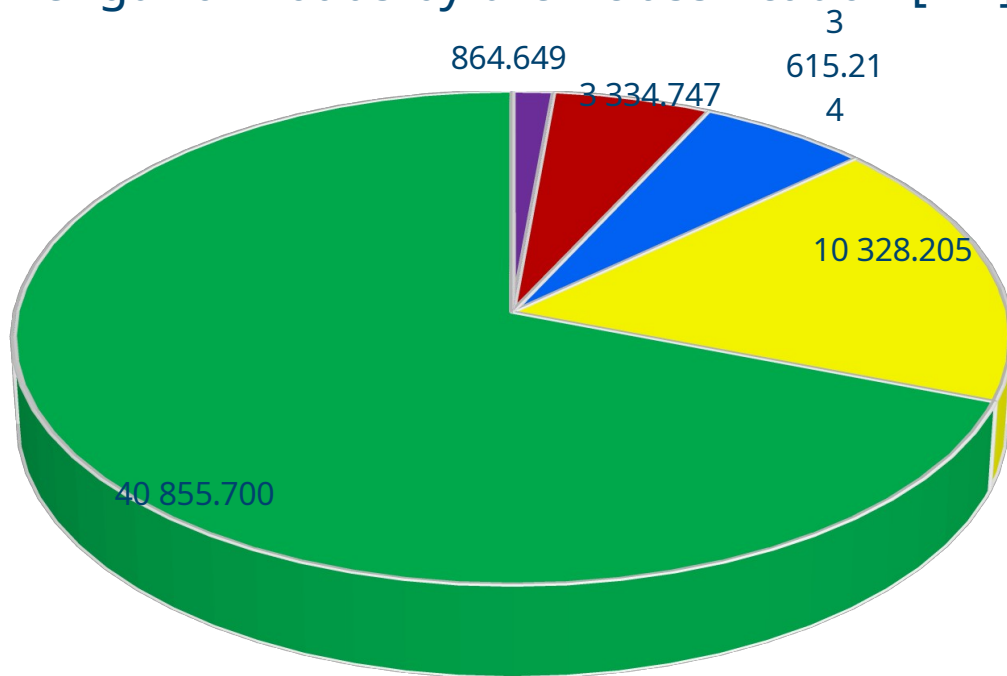
Road Network in Slovakia

- Classification of Roads by their traffic importance:
 - motorways (international, transit traffic)
 - roads:
 - 1 st class/state (transport among regions of Slovakia)
 - 2 nd class/regional (traffic within regions)
 - 3 rd class/local (connections among higher class roads and urban roads)
 - urban roads – within administration boundaries of towns and villages



Slovak road network

Length of Roads by their classification [km]



Roads classification	Length [km]
Motorways	864,649
State roads	3 334,747
Regional roads	3 615,214
Local roads	10 328,205
Urban roads	40 855,700
Total	58 998,515

- Motorways
- State roads
- Regional roads
- Local roads
- Urban roads



Ownership and administration of Roads

State

**Ministry of Transport
of the Slovak Republic**

**Slovak Road Administration
(state budget)**
State Roads

**National Motorway Company
(joint stock)**
Motorways

**Private Companies
(PPP projects)**
Motorways (some sections)

Regional

Regional Authorities (8x)

**Regional
Road Administrations**
Regional and Local Roads

Local

Local Authorities/Municipalities

**Municipal
Road Administrations**
Urban Roads



Central technical register of roads

- Central register of technical data which represents a road – its parts and equipment
act no. 135/1961 Zb. „Road act“/ duty for Ministry of transport of the Slovak republic

Slovak Road Administration realizes this agenda for the whole road network in Slovakia through team of specialists, technical equipment and support of information system of Road network model

IS – tool for data creating, data maintenance, data elaboration – data publishing

Data is the biggest benefit!



Main groups of data

Central technical register of roads

Reference network (line model)

Nodes

Sections

Technical data

Road structures

Road constructions

Roads

Inventory

Pavement

Bridges

Finished constructions

Routes

Parts of roads

Bearing capacity

Culverts

Road equipment

Unevenness

Underpasses

Skid resistance

Tunnels

Road surface conditions

Railway crossings



Central register of roads - workflow

Information system of Road network model

ESRI / ArcGIS server, desktop
RDBMS MS SQL

information sources
(MoT SR, road administrators, investors)

• data collection

new data to production
GDB, data updating,
data validation

• data elaboration

public GDB, data services, data outputs

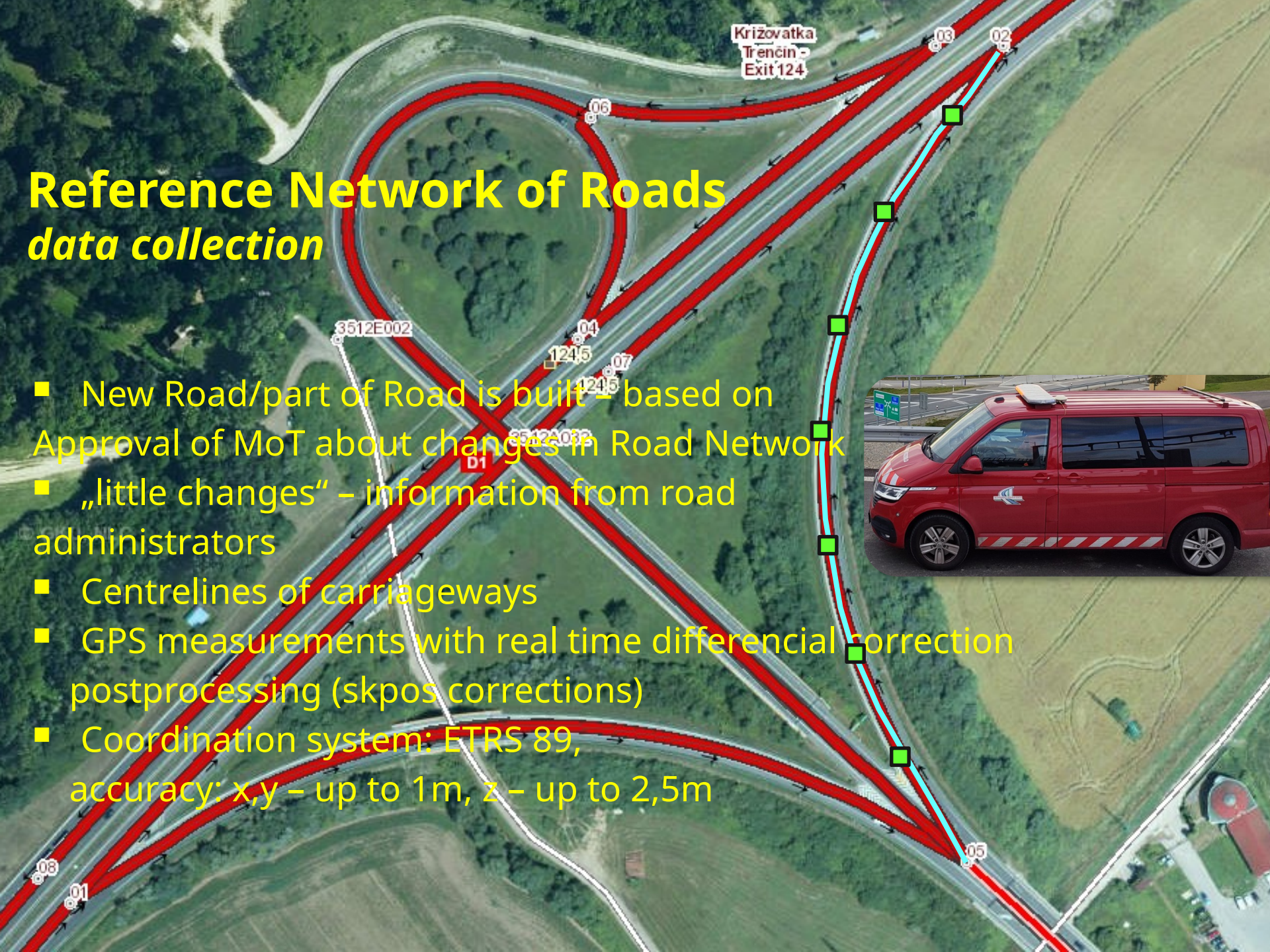
• data usage

Digital modelling of road network - Road network model



Reference Network of Roads *data collection*

- New Road/part of Road is built – based on Approval of MoT about changes in Road Network
- „little changes“ – information from road administrators
- Centrelines of carriageways
- GPS measurements with real time differential correction postprocessing (skpos corrections)
- Coordination system: ETRS 89, accuracy: x,y – up to 1m, z – up to 2,5m



Reference modelling/s

Úsek pozemnej komunikácie: D1

Trieda PK	diaľnica
Číslo PK	D1
Pôvodné číslo PK	
Legislatívny stav	neuvedený
Smer úseku	neaplikovateľný, nepoužiteľný
Dopravný smer	smer dopravy súhlasný s orientáciou úseku (jednosmerka)
Evidenčná dĺžka	248
Počiatkový uzol	3512A03205
Koncový uzol	3512A03202
Názov úseku	3512A03205_3512A03202
Vlastník	Národná diaľničná spoločnosť, a.s.
Správca	Národná diaľničná spoločnosť, a.s. - Stredisko správy a údržby diaľnic Trenčín
Typ úseku	vetva
Stavebná kategória	Diaľnica
Funkčná klasifikácia	diaľkový
Ulica	
ID úseku	6 895
Okres	Trenčín
Kraj	Trenčiansky kraj
Obec	
Rozhodnutie	
Prejazdová dĺžka	324,00
Peáž	nie

Križovatka
Trenčín -
Exit 124

■ standard:

STN EN ISO 20524-1, STN EN
ISO 20524-2

Intelligent Transport Systems

Geographic Data Files

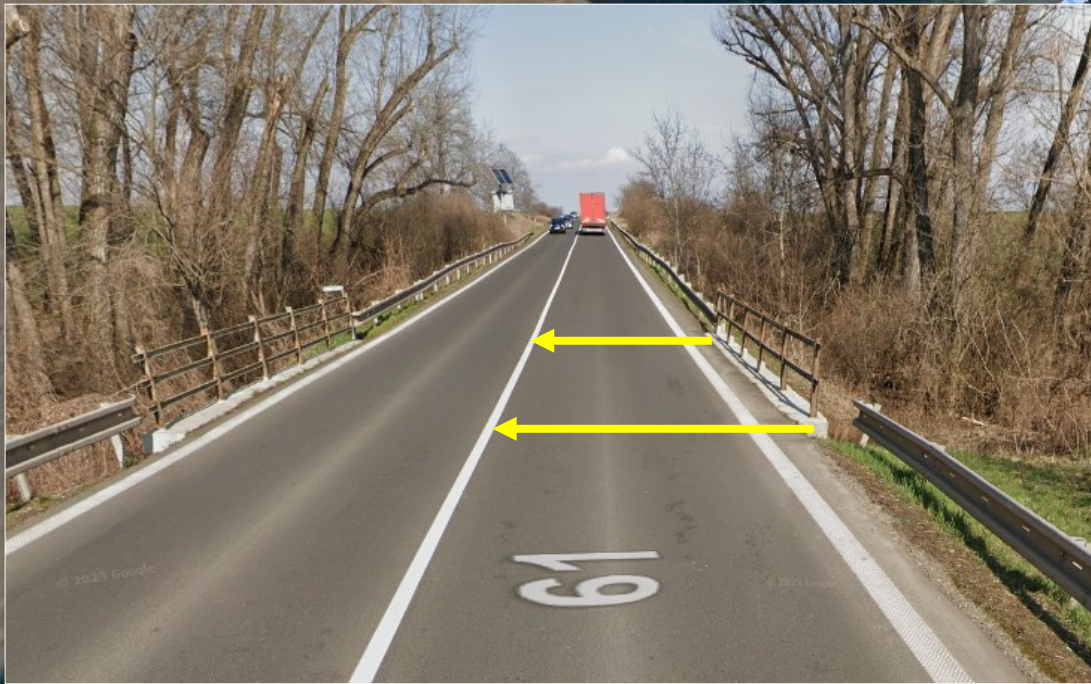
Inventory

- Data collection/point and line events – perpendicular projection to section/linear referencing to section (data collection directly on roads, information from road administrators, from roads design documentation)



Inventory

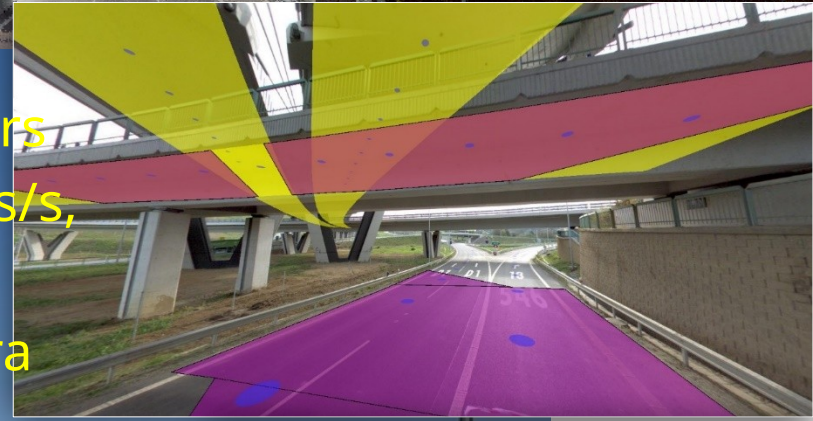
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New technology – Mobile mapping system

- LiDAR based technology (2 LiDAR sensors, RIEGL VMX-450-1HA, rotation 10 -250 turns/s, 1 mil.points/s, range: 150 m)
- 4 cameras, 1 ladybug/panoramic camera
- Odometer
- IMU, GNSS
- HW, SW

- accuracy: up to 10 cm



Pavement diagnostics



Profilograph:

laser based technology/16 lasers

beam width 2,5 m/measured width 2,7 m

unevenness/IRI, ruts

network level/motorways+state roads every year

regional roads every 2 years



Pavement diagnostics



KUAB FWD 50, 150:
falling weight deflektometer
range of load : 12 – 50 kN
deflection, bearing capacity
project level/requests via PMS



Pavement diagnostics



Skiddometer BV11 VI:

longitudinal skid resistance

skid: 17 %

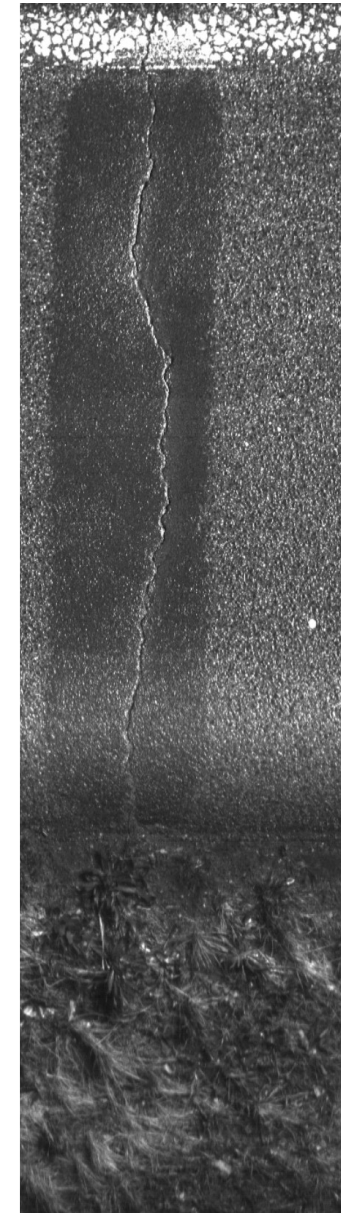
water film thickness: 0,5/1 mm

coefficient of longitudinal friction μ

project level/requests via PMS



Pavement diagnostics

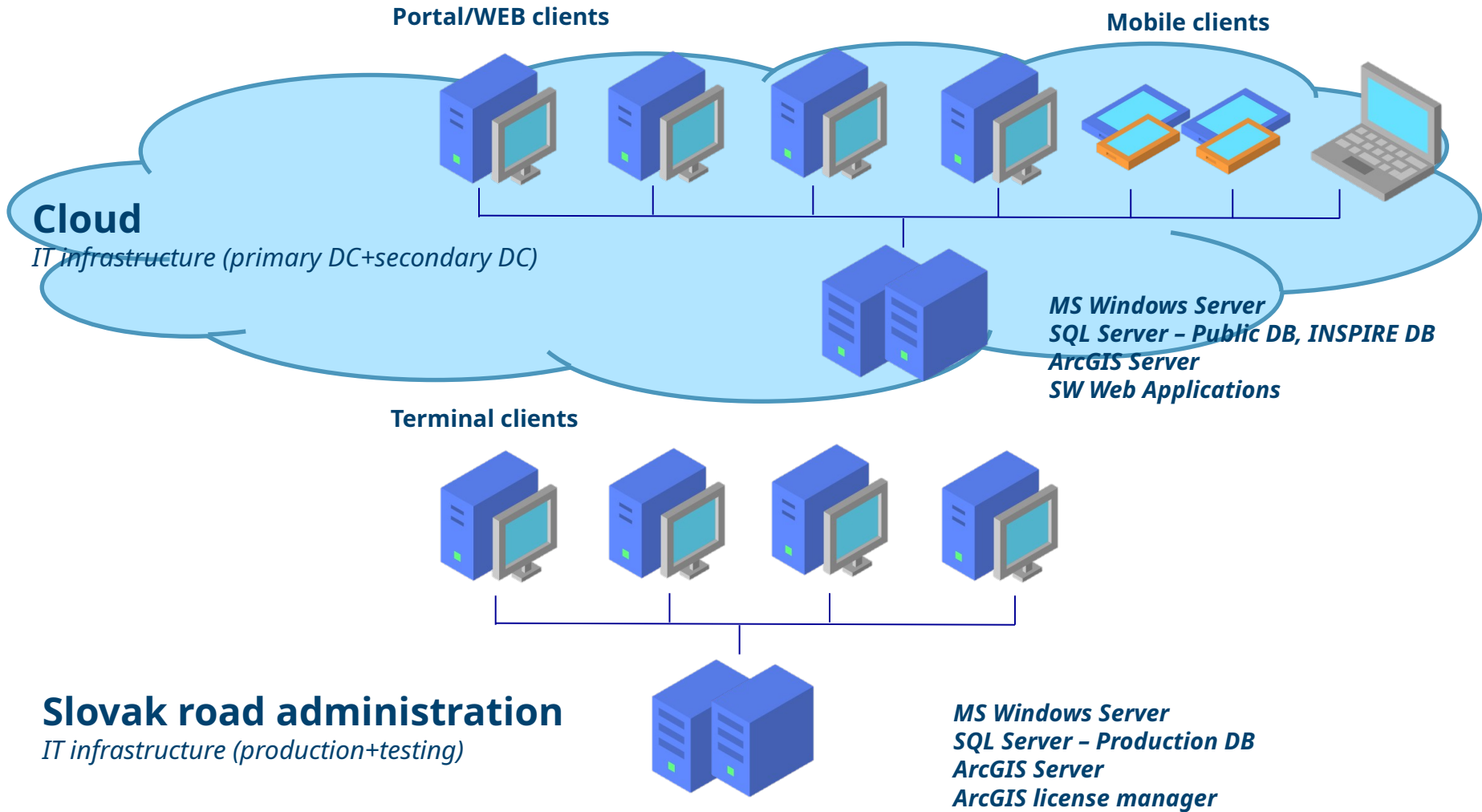


Linescan:

*continuous recording of the road surface
width of recording: 3,5 m
LED lightning system
pavement surface cracks - UCI
project level/requests via PMS*



Information system of the Road Network Model



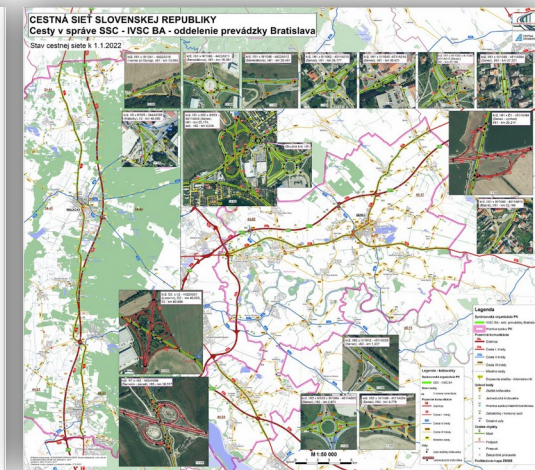
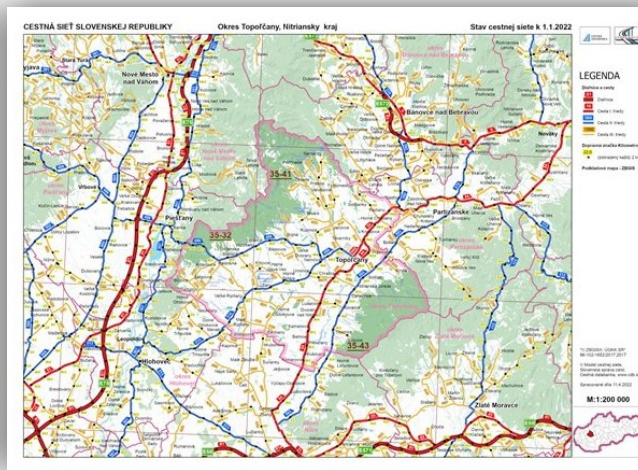
Data usage

- free of charge
- state level – support for decision processes of transport economy
- other central state administration bodies (MoI, MoD, MoE,...) – support for their

The screenshot displays the 'Portál IS MCS' web application interface. The top navigation bar includes links for 'Pohľady', 'Vyhľadanie trasy', 'Grafy', 'Nastavenia grafov', 'Reporty', 'História', 'Tlač', 'Hlásenia', 'Administrácia', and 'Informácie, príručky'. A search bar and a 'Mapy CDB' button are also present. The main content area shows an aerial map of a highway interchange with red lines and various traffic signs overlaid. The left sidebar contains a 'Mapové pohľady' section with a search bar and a list of map layers: 'Cestná sieť - základné údaje', 'Dopravné značky' (with sub-options for 'Dopravné značky informačné', 'Dopravné značky regulačné', 'Dopravné značky vodorovné', 'Dopravné značky výstražné', 'Dopravné značky zvislé', and 'Rýchlosť - maximálna povolená rýchlosť'), 'Šírkové usporiadanie', 'UAC', 'Vozovka', 'Všetky pohľady', and 'Vyhavenie a okolie PK'. At the bottom of the sidebar, there are buttons for '+ Pridať vlastný pohľad' and '+ Pridať vrstvu', along with a 'Zmazať vrstvu' button. The map itself shows a complex interchange with multiple lanes, roundabouts, and various traffic signs including speed limits, lane markings, and directional signs. A scale bar at the bottom left indicates 1:1,000 and 20m.

Data publishing

- www.cdb.sk – statistical outputs, data sets, map documents, vector data, data services / wms, wfs
- data.slovensko.sk - state open data platform: datasets
- rpi.gov.sk – register of spatial information in Slovakia (catalog of metadata)



Thank you for your attention

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