

# INTELLIGENT TRANSPORTATION SYSTEMS IN SLOVENIA (TMS and C-ITS)



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**Slovenian ITS Association**



# Some facts about Slovenia



- 2 million inhabitants, size approximately 5% Germany
- More than half of the country is covered with forests, making Slovenia one of the greenest countries in the world
- **Slove**nia is the only country in the world that has the word love in its name
- Member of EU since 2004
- On the crossing of V. and X. Pan European traffic corridor
- 39.000 km of public roads, 625 km of motorways





# Slovenian ITS Association



- National ITS Association, member of ITS Nationals
- Founded in 2006
- 16 Slovenian companies and institutions on board
- Promoting the use and harmonized development of ITS
- Exchange of ideas among ITS professionals, excursions
- Education of members and informing general public
- Participation in European research projects

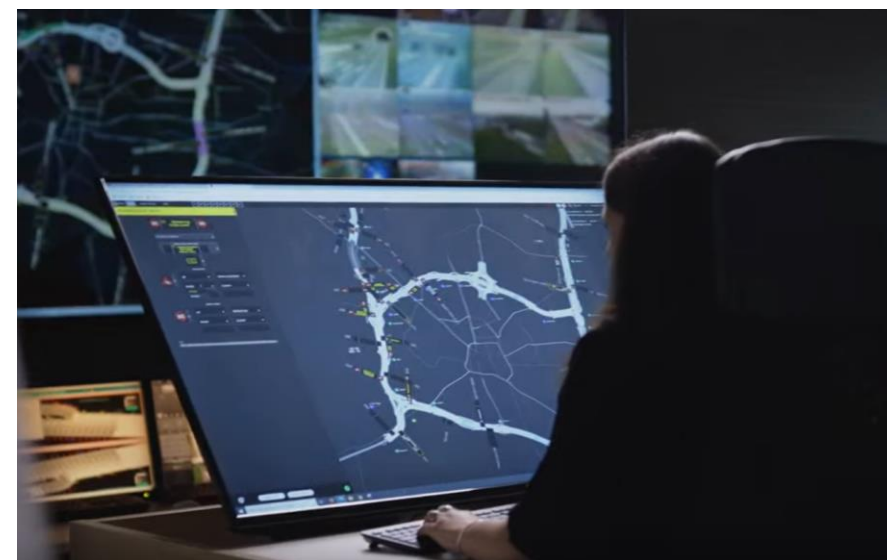






# Traffic Management System on motorways

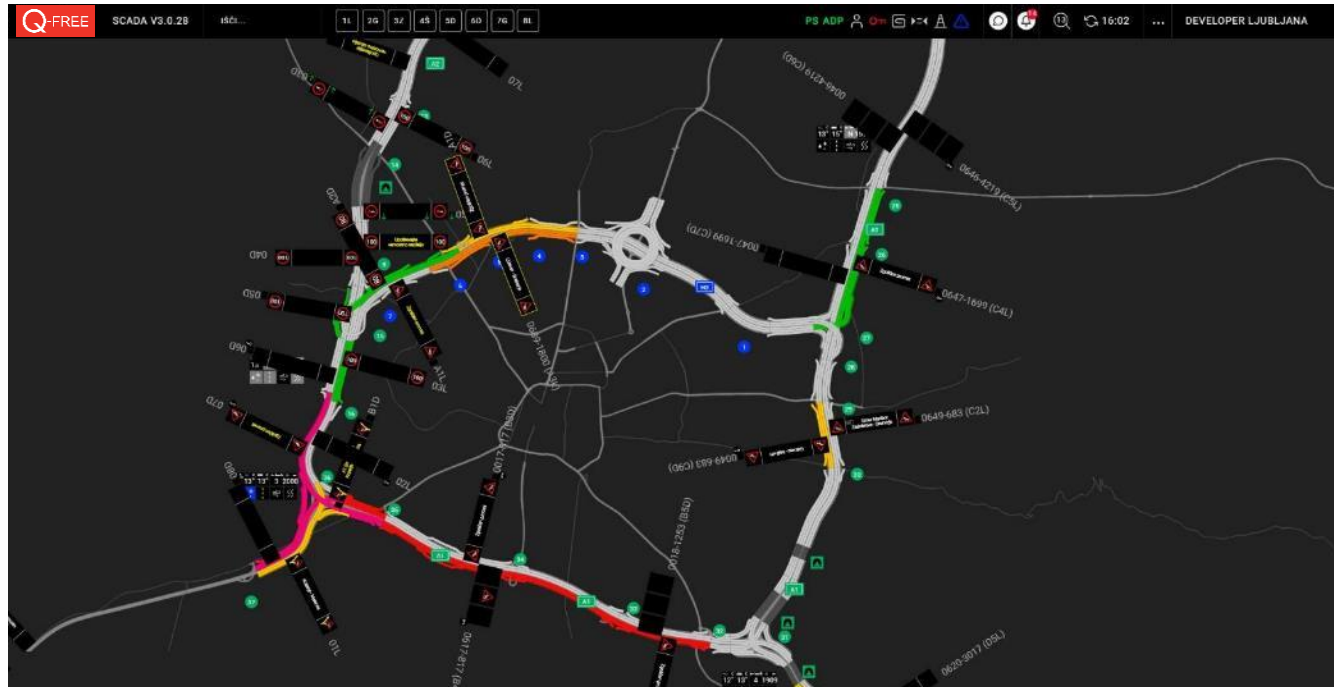
Traffic Management Systems implemented on Slovenian motorways since 2004





# Traffic Management System on motorways

5 regional Traffic Control Centers

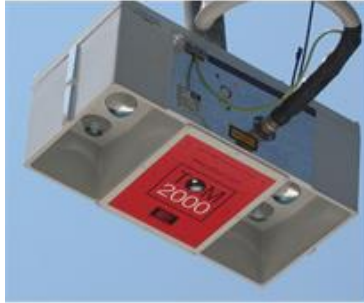






# Traffic Management System on motorways

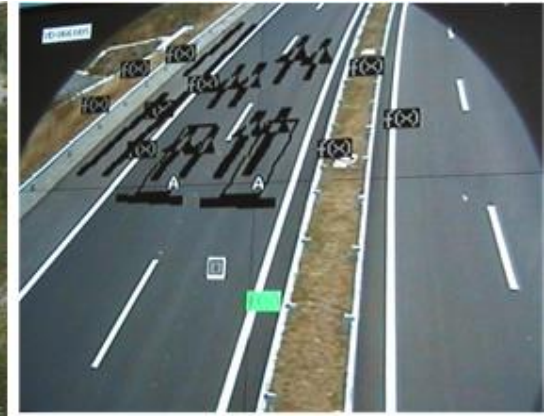
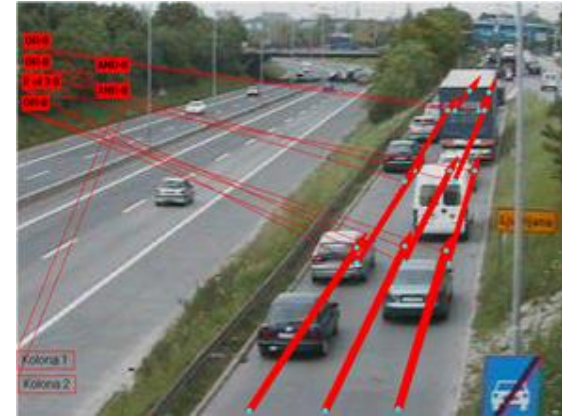
## Traffic data



PODATKI PO PASOVIH		MD-0056-2017-1
Osebna vozila - števec prevozov	5 voz/min	
Tovorna vozila - števec prevozov	6 voz/min	
Vsa vozila - števec prevozov	11 voz/min	
Osebna vozila - povprečna hitrost	100 km/h	
Tovorna vozila - povprečna hitrost	85 km/h	
Vsa vozila - povprečna hitrost	92 km/h	
Hitrost zadnjega prevoza	128 km/h	



## Video detection



## Video surveillance



## Travel time





# Traffic Management System on motorways

## Road weather stations



CVP IZVOZ POSTOJNA (10.14.40.8)	BCP 0055-11064
Smer A1, smer Koper	Pododsek 0055-07
<b>LASTNOSTI</b>	
Status komunikacije s CVIS	Komunikacija OK
Čas zadnjega statusa	8. 3. 2024, 10:30:00
Status delovanja CVP	V redu
Temperatura zraka	4,5 C
Temperatura cestišča	9,4 C
Povprečna hitrost vetra	16 km/h
Max. hitrost vetra - sunki	17 km/h
Vidljivost	2000 m
Vrsta in jakost padavin - CVIS	Rahel dež
Stanje vozišča - CVIS	Vlažno
Alarmi - CVIS	Ni alarma

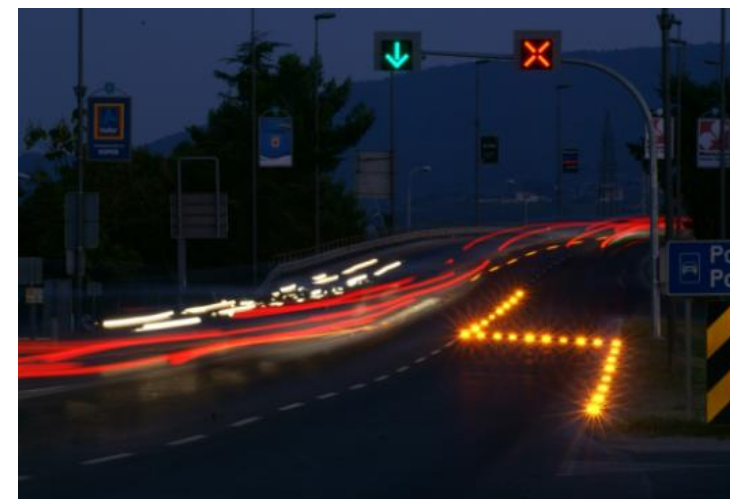
## Height control



## Ghost driver detection



## Lane management







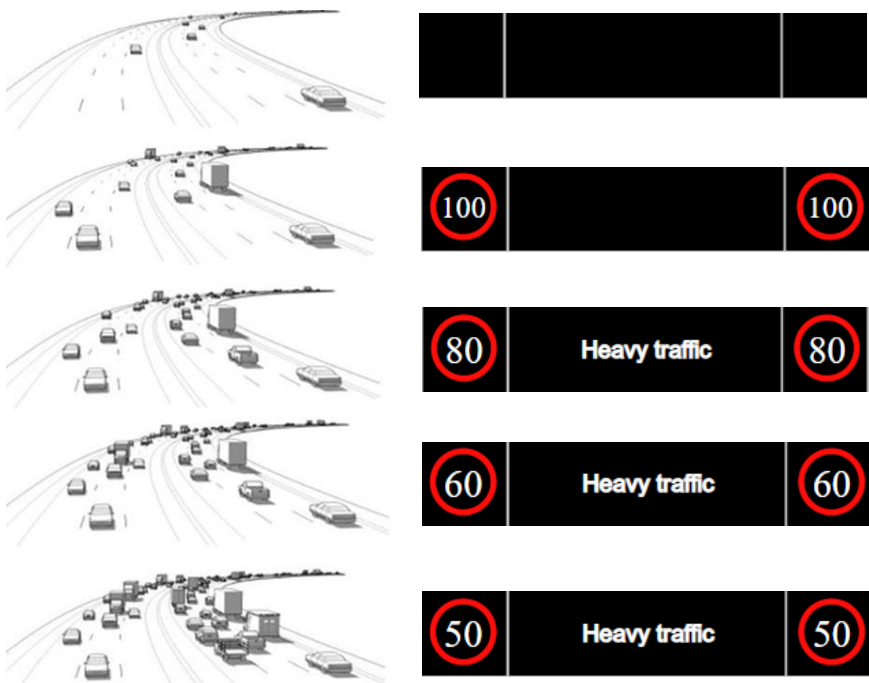
# Traffic Management System on motorways





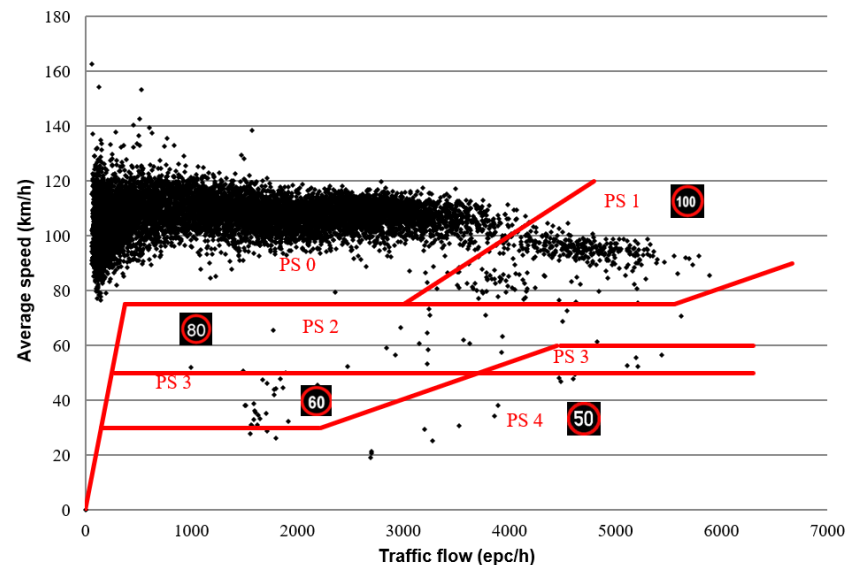
# Traffic Management System on motorways

- Traffic and weather data acquisition,
- Real-time traffic management and control,
- Traffic management and guidance via Variable Message Signs (VMS),
- Communication with tunnel systems,
- Data exchange with external organisations.



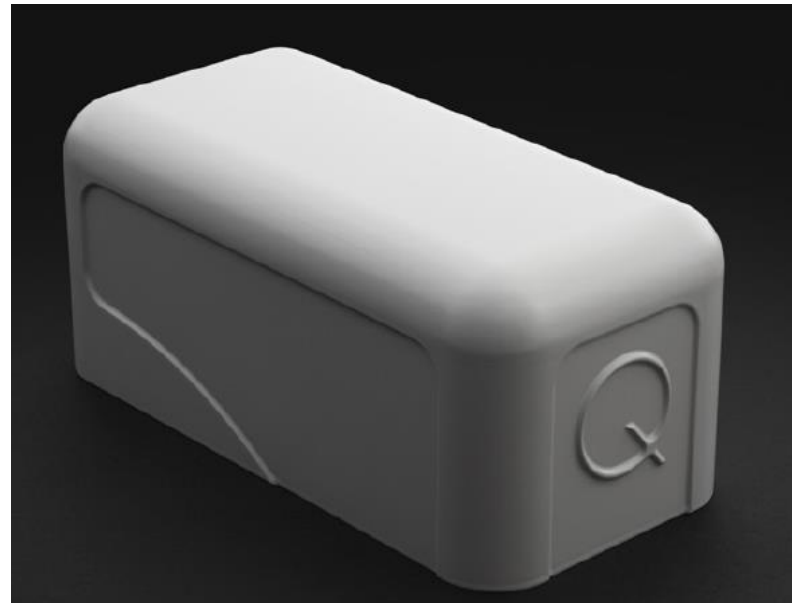
Traffic state determination =  $f(\text{speed, density})$

Traffic State determination and the corresponding speed limits



## C-ITS on motorways

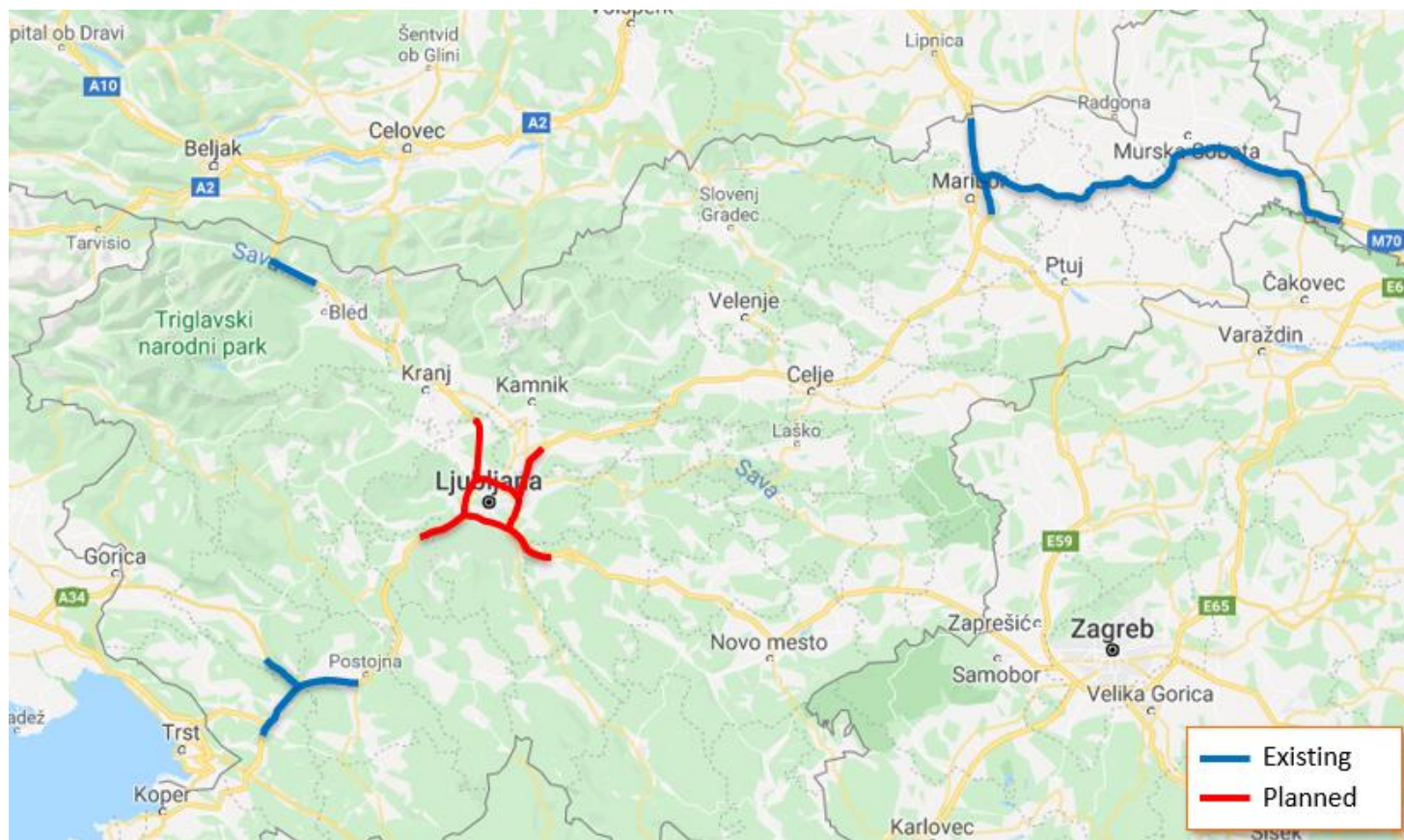
- C-ITS pilot projects deployed and operated by national motorway operator DARS
- Hybrid ETSI ITS-G5 and 3G/4G/5G solutions deployed according to C-roads specifications
- C-ITS basic interface successfully tested with Austria, Italy, Czech Republic, Spain and France





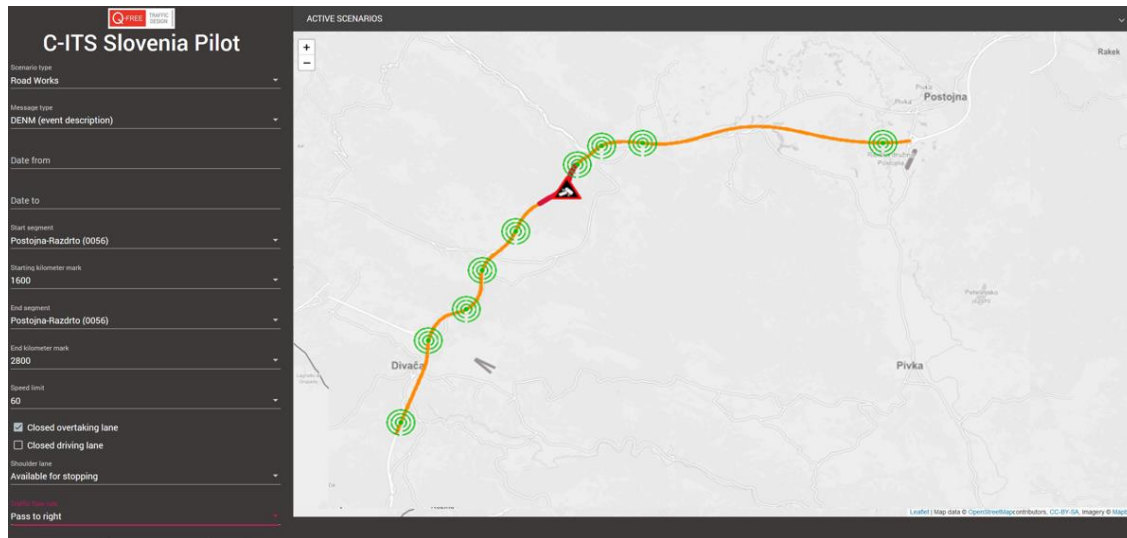
## C-ITS on motorways

- Currently 31 fixed and 1 mobile RSU installed on 150 km of motorways
- Plan for 2024: 25 fixed and 5 mobile RSU on 70 km of motorways



# C-ITS on motorways

- Dispatch of manually and automatically triggered scenarios



- Probe vehicle data collection (anonymous data collection, emergency vehicles)





**Thank you!**



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