



Implementation of the Digital Infrastructure

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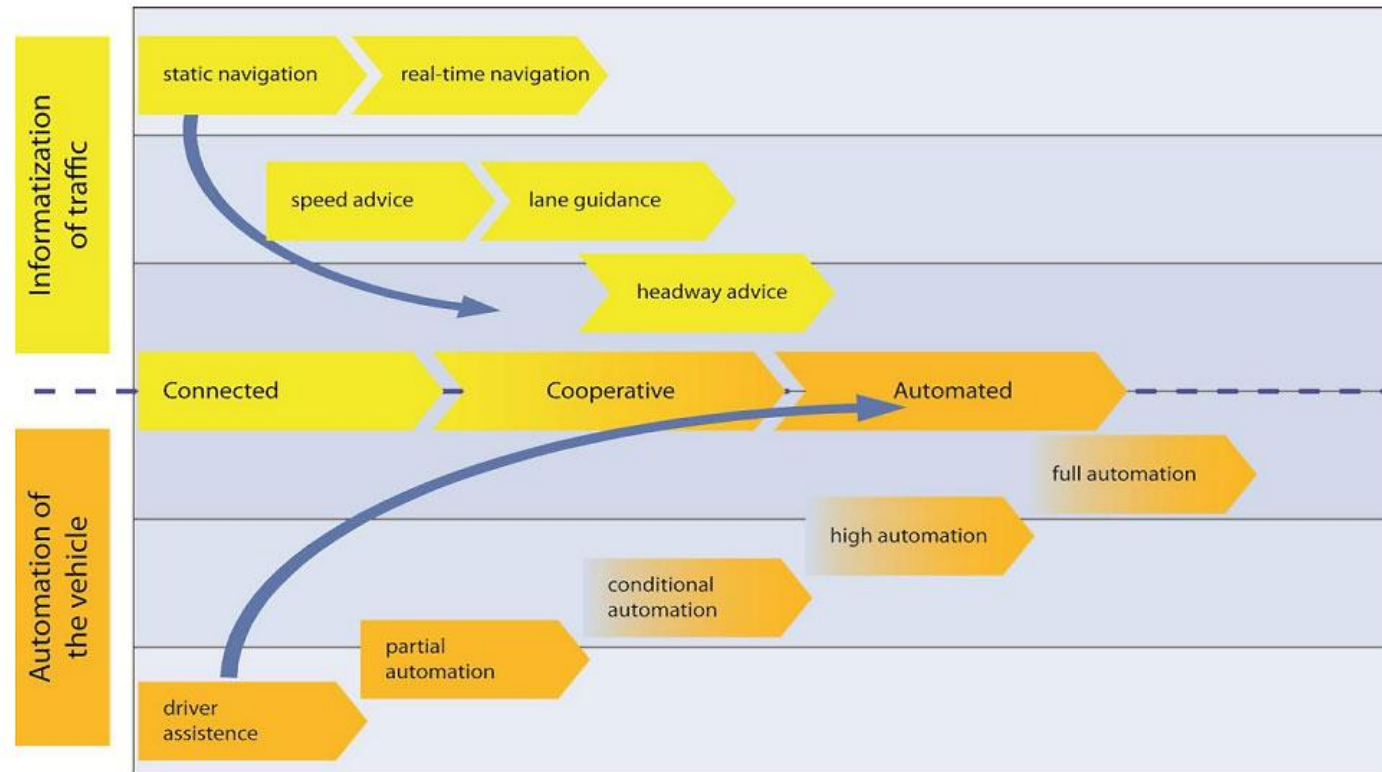
Hungarian Public Roads / Magyar Közút Nonprofit Zrt.

Mobility Data Days

Budapest, 7-9 November 2023

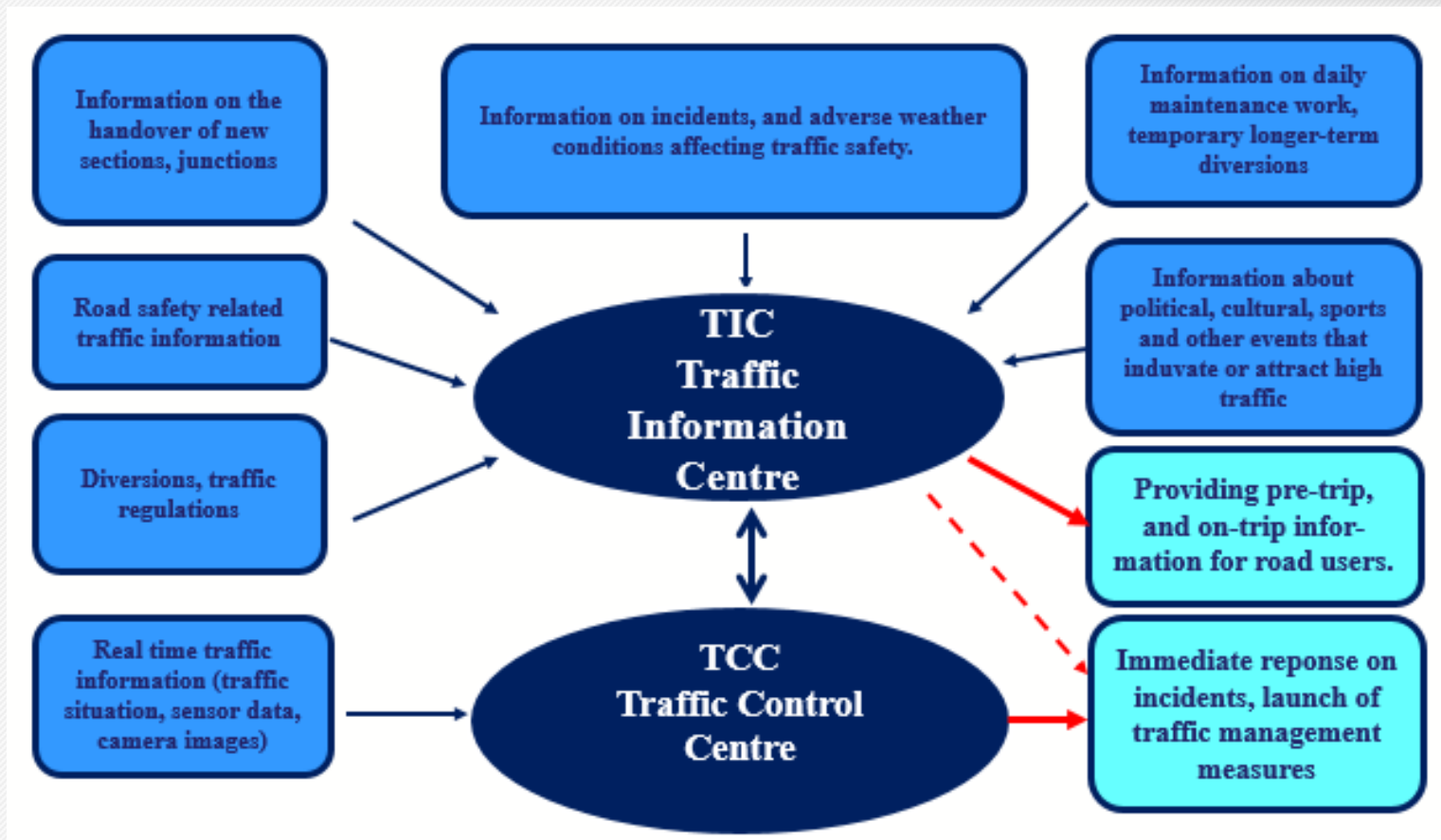


Future trends

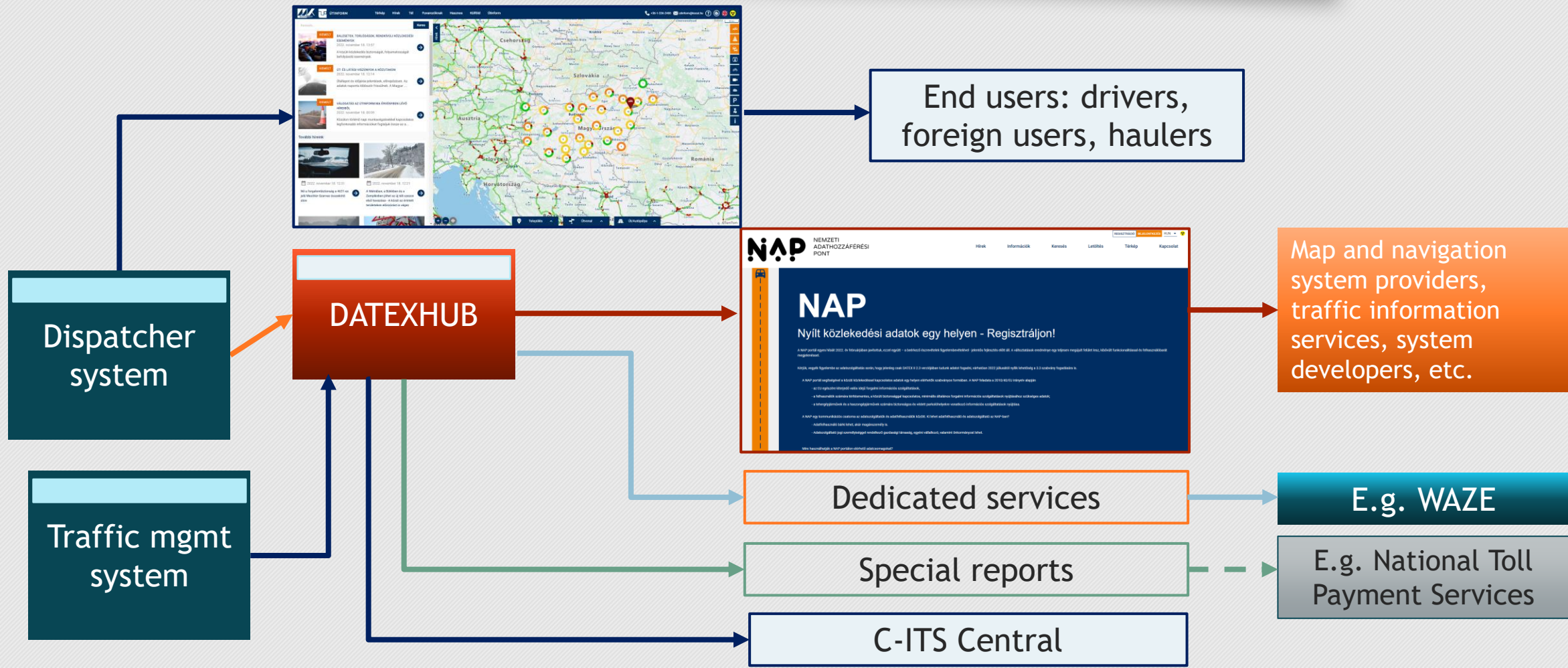


Connected, cooperative and automated driving developments should come together to harvest societal benefits.

Traffic Information/Control Centre



Information flow



National Access Points

BENEFITS FOR DATA PROVIDERS

- Easier data sharing
- Data users in one place
- Data exchange based on standards
- A single interface

- Improving the quality of services based on real-time road traffic data
- More efficient passenger information
- Decreasing administrative and operational costs
- Cross-border data exchange
- Improvement of road safety

- Easier data access
- Multiple data hosts in one place
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- A single interface

BENEFITS FOR DATA USERS

Major goal:

Establish communication channel between data providers and users

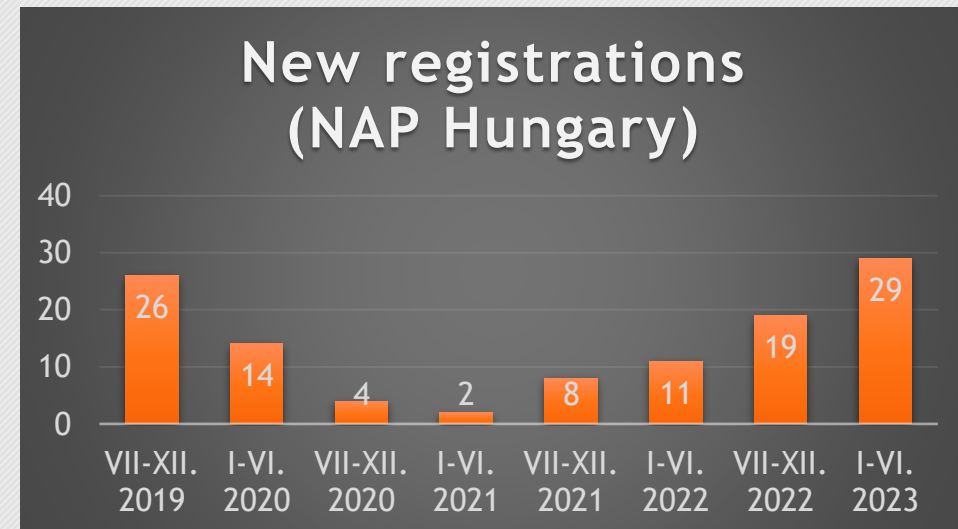


Registered users

Types of organisations:

- road and traffic authorities,
- map and navigation system providers,
- road/traffic planning companies and consultancies,
- universities and research institutions,
- individuals, students,
- municipalities and other authorities.

<https://napportal.kozut.hu/>



Available datasets

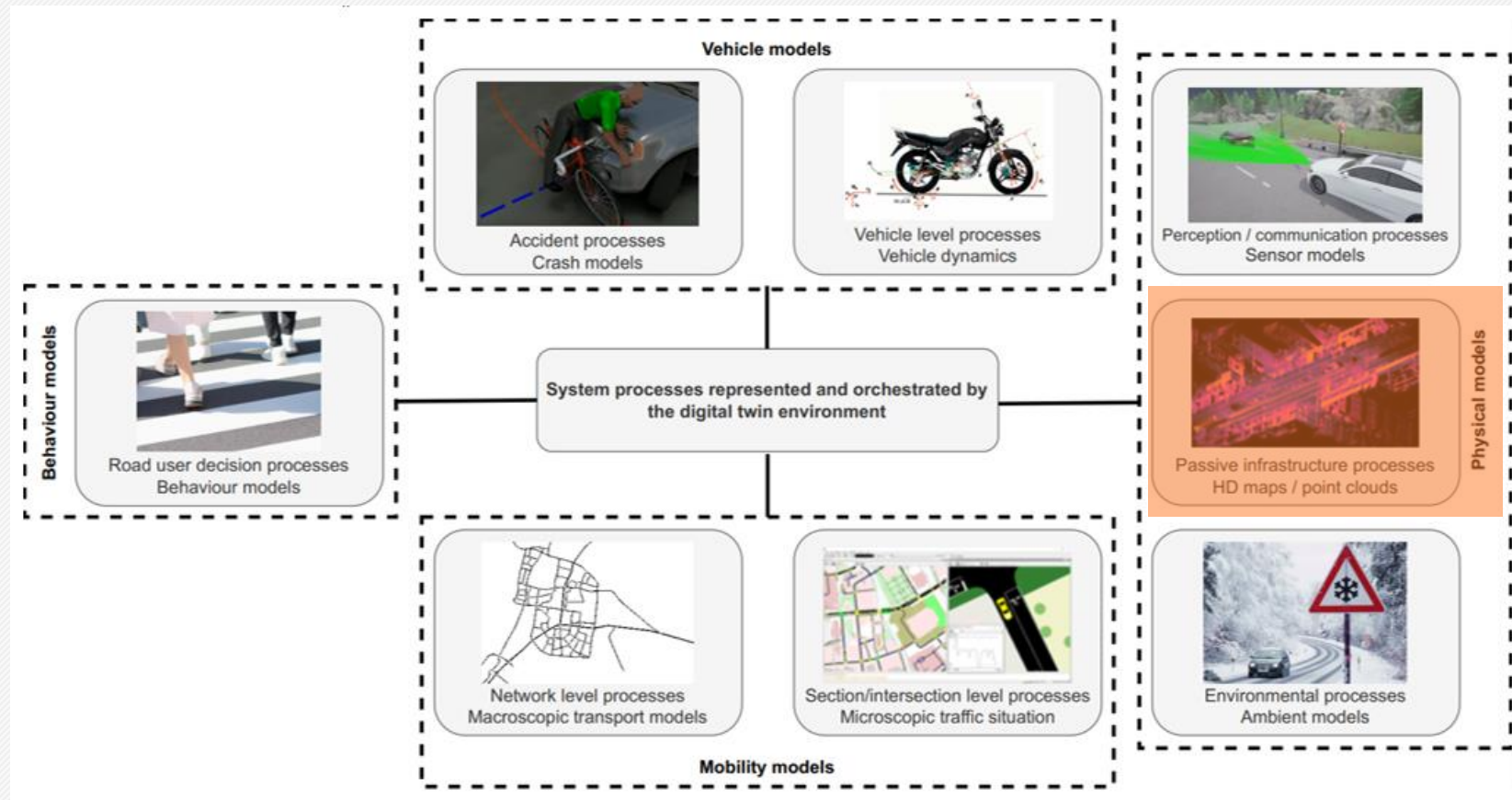


Data category, description	Type of the data	Localization of data	Format
<p>Static road network data</p> <p>Current, up-to-date, comprehensive map database of the national road network, regularly updated with OKA content.</p> <p>A current, up-to-date, complete map database of Budapest's road network, regularly updated by Budapest Közút.</p>	National road network data (express road, main- and secondary road, cycle path network)	nationwide	shape-zip; gml2; gml3; json; kml; gpkg
	Annual cross-sectional traffic data	nationwide	
	Road segmentation	nationwide	
	Speed limits	nationwide	
	Total number of vehicle lanes	nationwide	
	Static data for rest and P+R parking	local/ nationwide	shape-zip; gml2; gml3; json; kml; gpkg; DATEX
	Bridge usage conditions (e.g., restrictions)	nationwide	shape-zip; gml2; gml3; json; kml; gpkg
	Road name and category	nationwide	
	Road identification points	nationwide	
	Type and width of enclosure	nationwide	
Bus stops	nationwide		
Refuelling station and e-station data	local	shape-zip; gml2; gml3; json; kml; gpkg; DATEX	
Budapest roads data (geometry, road junctions, road classification, freight zones, destination restrictions)	local	shape-zip; gml2; gml3; json; kml; gpkg	
Dynamic parking information	Truck dynamic parking data	nationwide	DATEX
	Dynamic data of P+R parking	local	
Information on traffic signs (e.g. bridge conditions, permanent traffic restrictions: height restrictions, weight and speed restrictions).	TN-ITS data	local/ nationwide	via TN-ITS link
	Location and availability of transport areas	local	shape-zip; gml2; gml3; json; kml; gpkg
XML link to MK ÚTINFORM news, fresh, complete, regularly updated news file.	Roadworks	nationwide	DATEX
	Dynamic data of road status	nationwide	
	Traffic management measures	nationwide	
	Temporary traffic management measures	nationwide	
	Real-time traffic data	nationwide	
	Traffic safety information	nationwide	
Unforeseen events and circumstances	nationwide		
Multimodal information	Timetables and information on multi-modal transport		In preparation

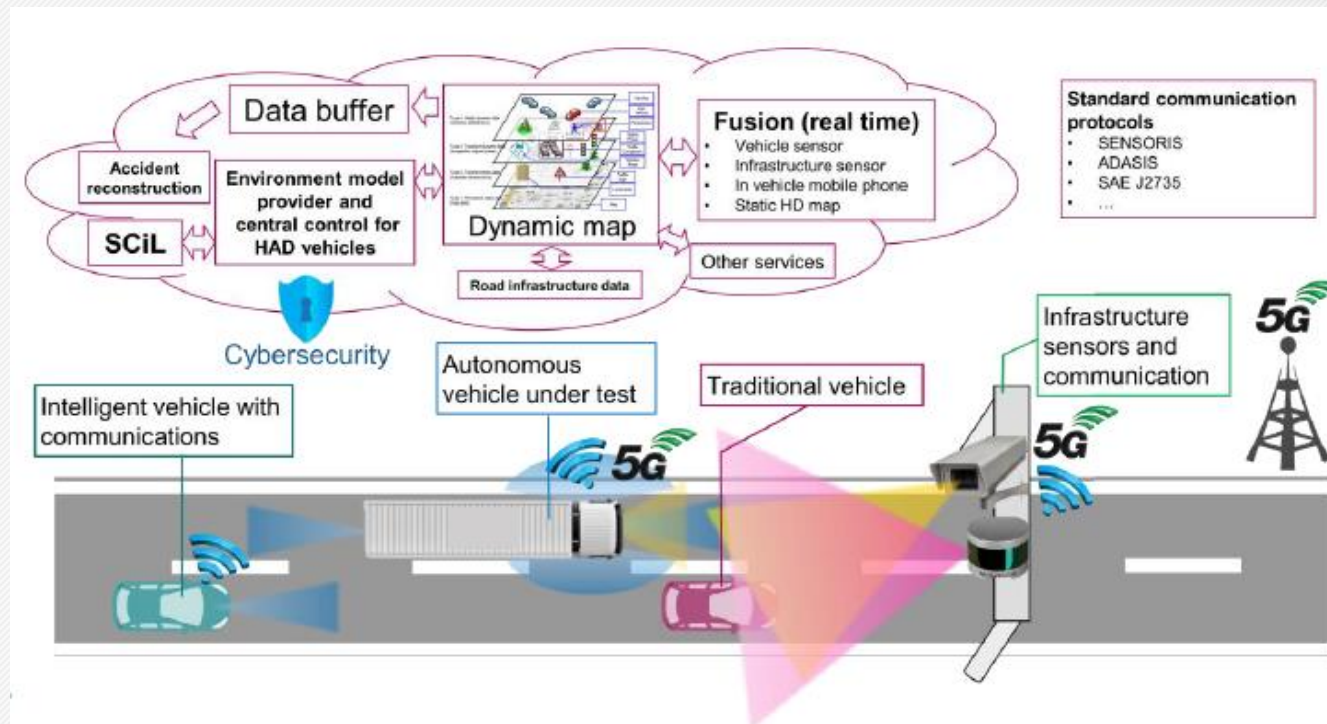
Infrastructure Supporting Connected and Automated Driving

	Level	Name	Description	Digital information provided to AVs			
				Digital map with static road signs	VMS, warnings, incidents, weather	Microscopic traffic situation	Guidance: speed, gap, lane advice
Digital infrastructure	A	Cooperative driving	Based on the real-time information on vehicles movements, the infrastructure is able to guide AVs (groups of vehicles or single vehicles) in order to optimize the overall traffic flow	X	X	X	X
	B	Cooperative perception	Infrastructure is capable of perceiving microscopic traffic situations and providing this data to AVs in real-time	X	X	X	
	C	Dynamic digital information	All dynamic and static infrastructure information is available in digital form and can be provided to AVs	X	X		
Conventional infrastructure	D	Static digital information / Map support	Digital map data is available with static road signs. Map data could be complemented by physical reference points (landmarks signs). Traffic lights, short term road works and VMS need to be recognized by AVs	X			
	E	Conventional infrastructure / no AV support	Conventional infrastructure without digital information. AVs need to recognise road geometry and road signs				

Digital Twins



Central System Project





Thank you for your kind attention!

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