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CIMEC: C-ITS FOR EUROPEAN CITIES

URBAN PERSPECTIVE ON USE CASES

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OBJECTIVES

“Numerous R&D projects have shown cooperative systems to work at a technical level, but that have yet to prove how they can contribute to policy objectives and/or cost-effectiveness in urban environments... [CIMEC] aims at contributing to bridging this gap”

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CITIES AND TRANSPORT

- Cities are highly diverse: politically, financially, and organisationally
- However many transport goals are common:
  - To reduce congestion
  - To improve the environment – specifically pollution
  - To maintain safety on the network
  - To promote excellent public transport
- Technology is not itself a goal – it is a cost!

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CITY PRIORITIES – TRANSPORT

- Pedestrians
- Emergency service vehicles
- Local public transport: buses, trams etc
  - School buses
  - Other buses
- Strategic connectivity: highways, heavy rail, air
- Cyclists
- Urban freight
- Taxis
- Cars

TYPICAL, NOT DEFINITIVE!

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URBAN C-ITS USE CASES

Information to road users

UC1: Individual routing of vehicles
UC2: In-vehicle signs
UC3: In-vehicle signal information
UC12: Inform about incidents in the road network and access control to these areas
UC13: Inform about emergencies in the road network and access control to these areas

Traffic light management

UC8: Traffic light management
UC7: Green lights for police and emergency vehicles
UC9: Green lights for public transport vehicles
UC10: Green lights for cyclists

Access control

UC5: Access control for heavy goods vehicles with dangerous goods
UC6: Regulation of access to free lanes for electrical vehicles
UC14: Dynamic access control for air quality management

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URBAN C-ITS USE CASES

Vulnerable road users (VRUs)

UC10: Green lights for cyclists
UC15: Speed enforcement around schools
UC16: C-ITS services for vulnerable road users
UC17: Pedestrians crossing in front of bus/tram
UC18: Bike lane change and unusual crossing

Parking management

UC11: Parking management

Emergency vehicles

UC7: Green lights for police and emergency vehicles

Freight vehicles

UC4: Management of loading and unloading areas for freight vehicles
UC5: Access control for heavy goods vehicles with dangerous goods

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USE CASE EVALUATION I

USE CASE	PRIORITY	COMMENTS
UC1: Individual routing of vehicles	**	Varying views: some cities regard it as high priority, others regard this as a matter for fleet managers or commercial services
UC2: In-vehicle signs	**	
UC3: In-vehicle signal information	***	GLOSA/time to green is the second most popular use case, especially for freight vehicles (it is recognised that it depends critical on in-vehicle systems and driver response)
UC4: Management of loading and unloading areas for freight vehicles	*	
UC5: Access control for heavy goods vehicles with dangerous goods	**	Considered important but predominantly of interest to very specific points on the network (tunnels, bridges)

From CIMEC Roadmap: "Overview of City Benefits"

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USE CASE EVALUATION II

USE CASE	PRIORITY	COMMENTS
UC6: Regulation of access to free lanes for electrical vehicles	*	
UC7: Green lights for police and emergency vehicles	**	Popular (but it is noted that emergency vehicles can go through red lights anyway)
UC8: Traffic light management	**	Fairly popular, although cities have doubts whether sufficient high-quality floating vehicle data will be available
UC9: Green lights for public transport vehicles	***	The most popular single use case
UC10: Green lights for cyclists	**	Popular but there is no clear understanding of the best system approach
UC11: Parking management	**	Fairly popular for on-street parking

From CIMEC Roadmap: "Overview of City Benefits"

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USE CASE EVALUATION III

USE CASE	PRIORITY	COMMENTS
UC12: Inform about incidents in the road network and access control to these areas	**	Road works warnings are fairly popular, although it is recognised that this will be much less easy to benefit from in cities than on the highway
UC13: Inform about emergencies in the road network and access control to these areas	*	
UC14: Dynamic access control for air quality management	*	
UC15: Speed enforcement around schools	*	
UC16: C-ITS services for vulnerable road users (including UC17 and UC18)	**	Generally popular for policy reasons, although cities have no clear idea about what specific C-ITS services might be deployed or what systems could be used

From CIMEC Roadmap: "Overview of City Benefits"

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LESSONS FROM CIMEC

- For cities:
  - The absence of a mature supply market
  - The lack of good evidence of benefit
  - The perceived focus on benefits for cars
  - Their potential liability in case of incidents
  - The emphasis on roadside equipment, and ITS G5
- Urban implementation still slow
  - Highly dependent on external project funding (EC, MS...)
  - Link to other developments (eg automation, ride sharing) is still unclear
  - Exploring options of implementation through partners

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URBAN PRIORITY USE CASES

- Public transport priority at signals
  - Widespread already, in many forms
  - Secondarily: signal priority for other key user groups
- GLOSA
  - A relatively clear use case, though benefits unclear
  - Details of design, deployment still fuzzy
- Parking management
  - As for GLOSA, with added commercial complexity
- Floating vehicle data
  - Especially if it can help reduce loop costs

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NEXT STEPS

Should use case development be aligned?

- For the urban context, it's not clear
  - Still early in the innovation phase of C-ITS: important to explore creatively
  - However knowledge sharing on trials and evaluations is very important
  - Crucial to get public-private cooperation!

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