### POLIS CITIES AND REGIONS FOR TRANSPORT INNOVATION

### regio arnhem nijmegen

# Annual Conference 2020

**6A: Managing Urban Infrastructures** 

VIRTUAL EVENT | 30 NOVEMBER-3 DECEMBER 2020

### **Dynamic Space Management**

# - insights from the MORE project

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# **The Challenge**

- Demands on busier urban streets are increasing, due to:
  - > the emergence of new modal options (e.g. e-scooters)
  - > growing mobility-related sectors (e.g. home deliveries)
  - > a greater interest in pace-related activities
  - population/employment densification
- Kerb & carriageway space is largely fixed so pressures/ conflicts intensify
- How to address this conundrum:
  - > By using street-space more imaginatively, flexibly and dynamically
  - Using LED road signs and road markings



# <u>Multimodal Optimisation for Roadspace in Europe</u>

- Identifies existing and future pressures on the main roads in cities that connect the 'Urban Nodes' – and their major attractors (city centre, port, etc.)
  with the national/TEN-T: Trans-European Road Network
- Develops design tools and processes that will enable these key routes to be planned, designed, managed and operated in a way that make them responsive to future pressures, in a flexible manner:
  - Generating innovative design options
  - Engaging stakeholders in street re-design
  - Detailed micro-simulation of behaviour in different street layouts
  - Comprehensive evaluation of design options







### **Urban Feeder Routes: Mix of 'Roads' and 'Streets'**







Figure 173. Location of the accidents occurred between 2015 and 2018, by type of injury (Source: ANSR - Road Safety National Association)

## Street as an 'Eco-system'

 Looking at street space allocation holistically, from building to building – not by each use separately – as a comprehensive ecosystem



• Being sufficiently imaginative in considering options for the allocation of urban street space.....



### PRIORITIES

### Choose from the green dropdown menus the degree of priority of each type of road user or road use

- 0 Can be worse off than now, if needed
- 1 Should not be worse off than now
- 2 Should be better off than now

Choose a maximum of 3 road uses with level 1 Choose a maximum of 3 road uses with level 2

Road user	Road use			
Pedestrians		Walk	0	-
		Cross the road	0	-
		Stroll	0	•
		Sit (street furniture)	0	-
		Sit (outdoor cafe)	0	•
Pedestrians with restricted mobi	lity	Walk	0	•
		Cross the road	0	•
Cyclists		Move	0	•
		Park	0	•
		Rent (dock)	0	-
		Rent (dockless)	0	•
Micromobility users (scooters, sk	ates, etc.)	Move	0	•

Road user	Road use		
Bus drivers		Move	0 🔽
		Stop	0 🔻
Bus Passengers		Interchange	0 🔽
		Wait	0 💌
Rail/metro/bus passen	gers	Interchange	0 💌
Car drivers		Move	0 🔽
		Park	0 -
		Stop	0 🔻
Car share users		Move	0 💌
Motorcyclists		Move	0 💌
Taxi drivers (inc. ride-h	ailing)	Wait	0 -
Taxi passengers (inc. ri	de-hailing)	Wait	0 💌
Goods vehicles		Move	0 -
		Stop	0 💌
Emergency vehicles		Move	0 💌
Service vehicles		Move	0 -

Next

### OBJECTIVES

### Fill the checkboxes of the objectives the intervention aims to achieve Choose only the main objectives (Maximum of 5)

#### Movement

- Increase number of trips
- Reduce travel time
- Increase travel time reliability
- Reduce congestion
- Improve trip quality
- Achieve a more sustainable modal split

#### Place

- Facilitate place activities (e.g. people sitting)
- Facilitate kerbside activities
- Improve access to local buildings

#### **Road operation**

Improve resilience (to weather conditions)
Increase flexibility (to different road uses)

#### Wider objectives: economic

- Reduce costs of transport
- Promote local economy

#### Wider objectives: social

- Improve traffic safety
- Reduce community severance
- Increase personal security
- Promote physical activity/health
- Promote social interaction
- Promote social inclusion
- Increase wellbeing

#### Wider objectives: environmental

- Increase green space
- Improve air quality
- Reduce noise
- Improve visual environment
- Protect soil/water and reduce flood risk
- Improve local climate
- Reduce energy consumption
- Improve regional/global environment

## **COVID: Transforming Street-space Allocation**





POSSIBLE ROAD DESIGNS																		Ba	ck Re	start	Next							
City: Lisbon Season: Sprin	Road se	ection: L of week	.isbon_try c Weekday	/ / Tim	e of day:	Morning Pea	ık																		Check one o	r more te	isible opt	ions
Legend		Walking		) Mida	Place	ce activities	Green area	General purpose		Bus lane		Cycling		Bus + cycle Parking/ load		king/ loading Tram l		Tram line										
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Fill the ch	neckbox	xes of	f all opt	tions y	ou th	ink are fe	easible in	the r	road sub	sectio	on																	
											Total					vidth of	idth of Design Elements (m)					Capacity per 75m <sup>2</sup> of roadspace						
Left footwa Fe	y and kerb asible	side	Lef	t carriag	eway		Median	strip		Riq	ght carriagev	vay	Right	t footway ar	nd kerbside	road width (m)	Walkin	Place <sup>19</sup> activitie	Green es area	Genera purpos	al Bus e lane	Cyclin	Parking <sup>9</sup> loading	g/Tram g line	Movement (people)	Place activities (people)	Parking/ loading (vehicles)	Feasible
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# **VISSIM Modelling development (PTV)**

Parking and loading

- Kerbspace efficiency
- Ease of finding space
- Revenues



Pedestrians moving or not moving (place activities)

Dynamic roadspace reallocation

- $\bullet \text{ movement} \to \text{parking}$
- all vehicles  $\rightarrow$  bus only

# **Issue: Turning regulation on its head?**

- Current approach: regulate new mode as it becomes 'established' always 'on the back foot'
- Suggested approach: pro-active generic regulation of activities allowed on different parts of the street e.g.:
  - Footway: non-motorised plus electric modes; maximum speed of 8kph (??), audible warning if wheel-based; no lights or protective gear
  - 'Cycle' lane: Wheeled vehicles (motorised and non-motorised) between 8kph and 30kph (??); night time lighting, effective brakes; protective gear recommended; insurance for motorised vehicles
  - Carriageway: All motor vehicles capable of travelling at over 30kph; night lights and protective gear required, effective brakes, plus license, identification and insurance



# Issue: LED signing – some challenges

- Allowing for different uses of the same physical space (e.g. kerbside) at undefined times of day – not pre-specified. In some extreme cases, part of a footway might become part of the carriageway at certain times.
- Ensuring that the electronic signs and road markings are correctly operating and are fully visible at all times.
- Determining how to record the traffic regulations in operation at any particular point in time, in a way that is reliable and enforceable.
- Determining how to handle transition periods, from one set of regulations to another; (e.g. for parking switchover period would be set at the maximum allowed parking duration; but for the sudden introduction of a bus lane might find a driver in the 'wrong' lane for a short period of time.



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