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Personal Rapid Transit (PRT)

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Outline

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- PRT and other automated transport systems
- The CityMobil project
- Potential for city-wide application of PRT
  - Strategic modelling to estimate demand
  - Business case
- Real-life applications: Heathrow Airport

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What is PRT?

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- Four to six seat automated taxi
- Light weight to reduce infrastructure costs and power requirements
- Separate light weight guideway with little or no interaction with other traffic or pedestrians
- High manoeuvrability permits integration into current buildings and infrastructure
- Available on demand ("public transport that waits for you")
- Station to station routeing; no intermediate stops; off-line stations
- Operating speeds of around 40 km/h
- Automated guidance, merging and diverging
- Electric propulsion (battery, linear motor)
- User target: alternative to taxis, buses, walking

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Other automated transport systems

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- Cybercars
  - Driverless vehicles, electronic guideways

- High tech buses
  - Electronic guideways
  - Driven on city streets

- Dual mode vehicles
  - Automated following
  - Driven on city streets

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The CityMobil project

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- Funded by EC DG Research
- €11m funding; 40% on demonstrators, 60% research
- Led by TNO (Netherlands)
  - With 28 partners from 12 countries
- Five years from May 2006
- www.citymobil-project.eu

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The role of the predictive tests

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- To assess the likely contribution to urban transport policy objectives of each of the four technologies
  - If applied at a significant scale
  - In representative European cities
- To contribute to an *ex ante* evaluation of these technologies
- To complement *ex post* evaluations of specific applications
  - Cybercars in the new Rome exhibition centre
  - PRT in London Heathrow
  - High tech buses on a corridor in Castellon, Spain
  - A series of smaller showcase applications

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The approach of the predictive tests

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- Modelled using a sketch planning model, MARS
- Compared five applications
  - Cybercar and PRT in the city centre
  - Cybercar (or PRT) as a feeder service
  - High Tech Buses on radial corridors
  - Dual Mode Vehicles throughout the city
  - With and without supporting policies
- In four case study cities
- 2005 base year
- 30 year modelling period

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The four case study cities

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- Four cities
  - Selected to be reasonably representative of different city types in Europe
  - With commonly specified policy tests and appraisal in all four to permit comparison of the potential for each technology in each city
- The four cities
  - Tyne and Wear (UK) (1,100k)
  - Madrid (ES) (3,200k)
  - Trondheim (NO) (200k)
  - Vienna (AT) (1,600k)

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Tyne and Wear PRT scheme

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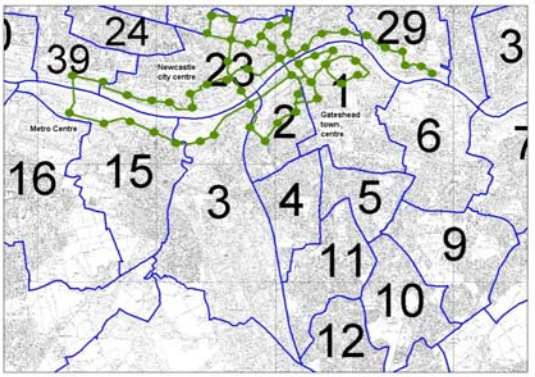
- 54 MARS zones in total
- PRT network:
  - 8 MARS zones
  - 56 stops
  - 21km route length
  - Inner city network



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PRT in the city centre: local impact on trips

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Index for PRT local effects in 2010 peak (M0 2005 = 100)

2010 peak	Gateshead	Madrid	Trondheim	Vienna
Car	95.8	98.3	98.7	91.9
Total PT	146.9	102.6	126.1	102.7
Slow	91.4	90.6	92.5	99.8

Index for PRT local effects in 2010 off peak (M0 2005 = 100)

2010 peak	Gateshead	Madrid	Trondheim	Vienna
Car	83.8	97.9	99.8	94.3
Total PT	241.8	114.2	216.2	117.5
Slow	75.3	90.2	92.3	94.9

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Tyne and Wear cybercar (or PRT) PT feeder scheme

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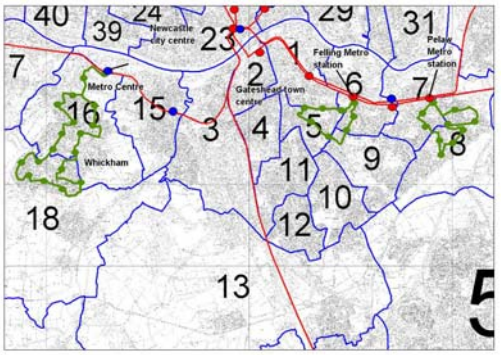

Cybercar feeder scheme	Track length km	Stops	Typical distance between stops km	MARS zones
6	12.7	18	0.5	2
7	4	8	0.4	3
8	5.5	10	0.4	2

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Cybercar feeder results: local impact on trips

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Index for cybercar feeder local effects in 2010 peak
(M0 2005 = 100)

2010 peak	Gateshead	Madrid	Trondheim	Vienna
Car	91.7	91.9	99.6	98.1
Total PT	111.8	129.7	111.7	103.8
Slow	78.3	55.1	97.4	95.5

Index for cybercar feeder local effects in 2010 off peak
(M0 2005 = 100)

2010 peak	Gateshead	Madrid	Trondheim	Vienna
Car	69.9	90.6	100.1	101.1
Total PT	105.3	114.9	100.1	116.1
Slow	52.3	67.6	100.1	99

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Conclusion of PRT modelling work

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- An inner city PRT network can be viable in most types of cities, but less so in the largest cities
- A PRT network can attract trips that would be otherwise made by car
- PRT also attracts walking trips and those made by other PT modes
- PRT could feasibly act as a suburban feeder to existing public transport nodes
- Other opportunities were not tested
  - Small towns (e.g. Daventry new town in England)
  - PRT within major facilities (e.g. universities, airports)

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Heathrow Airport PRT system

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- Pilot PRT system being introduced by BAA
  - With evaluation support from CityMobil
  - Using ULTra system developed by ATS Ltd
- To connect car parks to Terminal 5 as a replacement for a shuttle bus service
- If successful, the future network will connect all terminals, car parks and nearby hotels and offices

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Heathrow Airport PRT system

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Heathrow PRT: Current schedule

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March 2009	Shuttle bus survey
Spring 2009	System complete
Spring-autumn 2009	Commissioning
Spring 2009	CM GA & EurATRA @ Heathrow
Autumn 2009	Public operation begins
March 2010	PRT survey
Summer 2010	Evaluation Reports (Deliverables 1.2.4.1/3)

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