Evaluation and Demonstration
of Innovative City Transport

Project Findings, January 2005

In the framework of the European Commission’s “City of Tomorrow” Key Action, a number of projects have examined the scope to develop new transport concepts to complement existing modes of transport and help solve the well-known problem of how to organise urban mobility in a sustainable way.

Personal Rapid Transit (PRT) is an automated transport mode that can potentially meet the requirements. PRT is both personal and public. It is a system of automatic cabs travelling on their own guideway network. In contrast to conventional public transport, PRT can be available when the traveller wants it, can take them non stop to their destination, is low cost (both to install and to operate), and can significantly reduce energy use and emissions. It can be seen as an extension to the existing transport system rather than a substitute for it.

The 3-year EDICT project has carried out very detailed studies of PRT in 5 urban environments:

- In Huddinge (Sweden), Ciampino (Italy) and Eindhoven (Netherlands), the possibilities of using PRT to connect a large retail park, an airport and a university campus to the main public transport network have been examined.
- In Almelo (Netherlands), PRT would provide a new transport service inside the city.
- In Cardiff (UK), PRT would provide new links between the city centre and a major redevelopment area, and might ultimately be extended throughout the city.

Each EDICT case study has looked at system design and at how PRT would actually operate to serve the local market. In Cardiff the project benefited from being able to use the ULTra PRT test track for operational and user trials. The EDICT team also developed a comprehensive evaluation and assessment methodology to meet the special problems of forecasting the impact of an innovative transport system; the methodology has then been applied to each case.

Some common messages emerge from the assessment:

1. There is strong user acceptance of PRT; this includes disabled people and others with mobility difficulties.

2. In the right circumstances there is strong support for PRT from stakeholders - especially the local business community.

3. In the right circumstances the economic case for PRT is outstanding compared to conventional transport modes.
KEY FINDINGS OF THE CITY EVALUATIONS

Cardiff - the “sustainable city” case

Location: New regeneration development area on former dockland adjacent to city centre

Objective: To provide sustainable, flexible access to regeneration site from city centre.

System tested: Phased implementation of an ULTra network. EDICT assessed the “Stage 1” network of 7.7kms of guideway and 12 stations.

Key findings:
- The ULTra system in Cardiff would easily cover its operating costs and most of its capital costs;
- Including social costs and benefits, the Cardiff PRT system would provide a highly positive rate of return from the investment;
- The safety case is accepted by the HMRI, the body responsible for certifying transport safety in the UK.
- ULTra is regarded by disabled and older people as more accessible and convenient than other forms of public transport.
- There are substantial savings in emissions and energy use, equivalent to 2.5million litres of petrol per year.
- The system complements various local transport policies by encouraging modal shift, and improving the vitality of the city by making facilities and jobs more accessible.
- Many potential technical risks are minimised by the ULTra design. There are legal risks because as yet, there are no European regulations nor a regulatory body for such an innovative transport system.

Expected Implementation: Plans for Phase 0 in 2005 delayed due to temporary withdrawal of national funding in 2003. Political support continues, but timescale is uncertain.

Eindhoven – the “innovation policy” case

Location: Link from University Campus to public transport systems.

Objective: To improve image and create new opportunities through launching an innovation process.

System evaluated: 2.93km route. Each building at the university has its own station thus limiting walking distances to 200m.

Initial support faded. Process slowed down by tendering regulations. The study was transferred to Almelo.
Ciampino-Rome

**Location:** Link from sub-regional centre and transport system to Rome’s second airport.

**Objective:** To improve access to the airport; increase social inclusion and economic development.

**System evaluated:** Single scheme. 10.9km guideway. 61% at grade, 23% elevated, 16% underground.

**Key findings suggest PRT will:**
- attract almost 2 million passengers per annum.
- reduce car traffic by 57 million veh-km and increase use of public transport by 11 million per km.
- provide a much needed link to the airport and ease of transfer with rail services.

**Expected Implementation:** Depends on financial support from airport operator. PRT will require public funding.

Almelo

**Location:** Link railway station, city centre and hospital.

**Objective:** To improve accessibility and integration of the public transport network; increase land value and inward investment.

**System evaluated:** Single scheme. 3km. 35-40 vehicles.

**Key findings:**
- PRT should attract 6151 passenger trips per day.
- It will improve access to the hospital, shops and services, and also enable older and disabled people to use.
- There are predicted reductions in energy usage compared with cars of over 75%. In peak periods when journeys by car (and buses) are delayed by congestion this benefit rises to 90%.
- No visual impact or threat to habitat.
- PRT is expected to increase land values, attract outward investment, in addition to contributing to sustainable mobility objectives.

**Expected Implementation:** Phased PRT implementation. The first phase was evaluated in EDICT. Preparation for a pilot scheme is planned after EDICT but timescale is uncertain.

Huddinge

**Location:** Links within out of town retail and leisure development (largest in Scandinavia).

**Objective:** To link low-density retail and leisure facilities to public transport and car parks.

**System evaluated:** Multiple lines. Phase 0: 1 loop: 3 km, 5 stations 8 vehicles; Phase 1: 2 loops, 5 km, 11 stations, 45 vehicles; Phase 2: 3 loops, 8.3km, 15 stations, 85 vehicles

**Key findings on PRT:**
- A total energy saving of 9 % of 162 GJ per day can be achieved.
- Access between stores is significantly improved with PRT.
- PRT will attract 17% more visitors to the area, rising to 52% over time.
- 8% of car users will switch to PRT. Light rail transit patronage rises by 20%. Significant improvements to traffic flow.
- Only political factors present a barrier to implementation.

**Expected implementation:** Potential full network in 2015 if PRT becomes part of the local and regional development plan to obtain funding.
CONCLUSIONS AND KEY MESSAGES

The EDICT project demonstrates that PRT:

- can provide significant benefits and meet a wide range of needs and policy objectives within different urban environments;
- can be cheaper to build and operate than conventional forms of guided public transport;
- provides a level of service which is superior to that available from conventional public transport, because there is very little waiting time, travel is essentially private and is non-stop direct from origin station to destination;
- integrates well with other forms of public transport;
- is well received by the public;
- promotes the social inclusion of certain groups especially disabled and elderly persons;
- is regarded as a quiet, safe, convenient and efficient means of public transport with potential to replace car trips;
- can enhance the image of cities, attract inward investment, and increase the economic value of land and premises.

The EDICT researchers in the Netherlands concluded that “PRT is the most interesting new technology, but the key question is: how can we arrange things so that this highly innovative mode of transport can be implemented?” The question was debated at an international conference held in Cardiff in October 2004, which was attended by city politicians and officials, researchers, industrialists and the European Commission.

In fact the main stumbling block to PRT implementation is the risk of failure by being the first. The conclusion of EDICT is that:

**the potential advantages of PRT are so great that it is to be hoped that one or more cities will soon emerge which are willing to take the risk - perhaps in partnership with the private sector - to support the construction of a public demonstration system.**

FURTHER INFORMATION

Further deliverables and a video of PRT can be found at [www.edict.info](http://www.edict.info)

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