

Personal Rapid Transit (PRT)

This July 2011 description has been prepared by the Advanced Transit Association Industry Group

PRT is an energy-efficient, electric, (typically) elevated transit system with many four-person vehicles. Working as circulator transit for job centers, airports, and universities, PRT has a higher average speed than a car. In these applications, PRT makes carpooling, light rail, commuter rail, and bus more effective, by solving the "last mile problem."

The three established PRT manufacturers (with customers) are 2getthere, ULTra PRT, and Vectus. 2getthere has a system at Masdar City in Abu Dhabi featuring 1.1 miles of guideway, five stations, and 13 vehicles. ULTra PRT's system at London Heathrow Airport has 2.4 miles of guideway, three stations, and 21 vehicles. 2getthere and ULTra PRT began passenger operation in late 2010. Vectus is implementing a system at Suncheon Bay, South Korea. This system is expected to open in 2013 with six miles of guideway and 40 vehicles. 2getthere and Vectus also offer automated transit with larger vehicles. Additionally, there are several startups working on promising PRT concepts.

After decades of inflated PRT claims and missteps, the operational PRT systems have sparked a renewed interest in PRT. The focus for new applications is no longer on the potential that the concept might have in the long run, but on the transit service it can provide now. Additional systems being procured include a two-mile, seven-station system for Amritsar's Golden Temple tourist center in North India. PRT studies are underway in locations worldwide including San Jose, Raleigh, Minneapolis, Fort Carson Army Base, 18 locations in India, and multiple locations in Sweden.

PRT combines low-cost infrastructure with compelling fare box and real-estate economics, to the point where Heathrow and Amritsar systems are financed solely by private sector sources. For PRT systems, a rule of thumb is "PRT infrastructure costs less than two percent of the value of land and buildings that are served."

Summary

Personal Rapid Transit (PRT), sometimes known as "podcars", is an emerging premium transit concept for local areas. PRT employs automated, four-person vehicles traveling at a maximum speed of approximately 25 MPH on dedicated, narrow, one-way, elevated guideways that go over or under streets. PRT offers the promise of on-demand, express, non-stop, point-to-point travel. PRT excels where short walks to transit - and short waits for transit - are desirable. PRT systems can use very short stop spacing and much tighter turns than are possible with traditional rail transit, and these characteristics may allow for more stations and more transit-oriented development opportunities.

Overall

- Automated, four-person vehicles, that travel at about 25 MPH
- Dedicated, narrow, one-way guideways that go over/under streets
- On-demand, nonstop express travel between any two stations
- Provides premium circulator service for small areas

Travel service

- No schedules to learn -- vehicles travel nonstop directly from origin to desired station
- You don't wait for PRT, PRT waits for you
- Personal service -- you only share your vehicle if you want to
- Congestion free: ride above the clogged streets below

Safe, Quiet

- Vehicles are separated from pedestrians
- Lightweight vehicles are silent and vibration free



2getthere: Masdar vehicle



Vectus: vehicle at test track in Uppsala, Sweden

Costs and implementation

- Infrastructure capital cost: \$10-\$25m per mile ("all-in:" stations, vehicles, guideway, control system, commissioning). Much less expensive than other rail transit technology, but serves a complementary purpose
- Low operating costs (no drivers)
- Rapid erection: one mile of guideway per week

Land use/development

- Guideway provides a sense of permanence
- Stops can be as close as 250 yards apart
- Creates opportunity for "mesh" or network Transit Oriented Development (TOD)
- Guideway can be moved and redeployed as an area evolves

Context sensitivity

- Guideway can be colored/textured to blend visually with trees, buildings, and the pedestrian streetscape
- Narrow guideway, 7' wide
- Much smaller turn radius allows vehicles to enter areas that rail cannot
- Stops can be placed inside buildings

Environmental

- "On-demand" operation -- vehicles run only to service actual demand
- Environmentally-friendly
- No point-of-use emissions



ULTra PRT: London Heathrow vehicle



2getthere: Masdar station



ULTra PRT: London Heathrow station destination selection



Vectus demonstrates robust operation in snow

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