Viability of Modern Automated Rapid Transit Applications

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Some Definitions

Automated Rapid Transit (ART) similar to Personal Rapid Transit (PRT)

Primary Features of ART:
• Automation
• Fast service
• Transit advantage
• Not necessarily “personal,” but close
What ART Looks Like
Characteristics of ART Systems

- Separate guideway: elevated, underground, at grade
- Fully automated: electric-powered, electronic controls
- Non-stop O/D trip: off-line stations
- High-speed service: 25-30 mph
- Low wait time: less than 2 minutes
- Headways/frequency: about 30 seconds/120 veh/hr
- Small vehicles: 4-6 passengers, low weight
- Eco-friendly: no local emissions, low energy use/land space
ART Niche Applications

Within and between activity centers:
- Downtowns
- University and hospital campuses
- Airports
- Shopping centers

Activity centers characterized by:
- Lack of distribution system from transit stations & stops and from parking facilities
- Limited circulation system for medium to long trips
Why ART?

ART can overcome shortcomings of current transportation systems:

• Traditional transit: ART closes last-mile/first-mile service gap
  • Collection/feeder to stations/stops at beginning of trip
  • Distribution from stations/stops at end of trip
• Auto: Distributes trips from parking to jobs; reduce cost of parking and congestion/delay
• Walking: Accommodates trips over one-fourth of a mile
• Bicycling: Overcomes adverse weather/age impediments
Providing Comprehensive Mobility

[Diagram of Comprehensive Mobility showing various transportation modes such as First Mile, Train, PRT Station, Bus, Walk, Bike/Scooter, Short Carpool, Pickup, Long Carpool, First Mile, and ART System.]

Source: Ultra PRT Consulting, Inc.
Current and Planned ART/PRT Systems

Heathrow Airport ULTra PRT (UK)

- Initial stage: 4 km, 21 vehicles, two stations (parking and terminal)
- Open to public service Spring 2011, 22 hours per day
- Fare is part of parking fee
- Tested with 164 vehicles per hour (656 passengers/hour)
Current and Planned ART/PRT Systems

Masdar City, Abu Dhabi, 2getthere System (Dutch)

- Initial stage: 1.2 km, 5 stations (2 stations for freight)
- Open to public Fall 2010—Eco-friendly transportation
- Passengers: 18,000 per day in February (up from 10,000 in December)
- Average vehicle occupancy: 1.8
- Reliability: 99.7% vehicle availability; 99.2% system availability (U.S. transit: 97.5%)
Current and Planned ART/PRT Systems

Other systems being considered:

- Sweden (finalist city being selected) (VECTUS)
- Suncheon City Coastal Wetlands Park (VECTUS)
- Amristar, India (ULTra PRT)
- Mineta Airport, San Jose (Feasibility Study)
- Ithaca, New York (Feasibility Study)
- Minnesota (Exploratory Interest)
Major Concerns/Impediments to ART Implementation

- Negative Perceptions about system capacity, technology, safety and security
- Concerns about accuracy of estimated capital and operating costs
- Risk-aversion: tendency to continue to do what is “known and proven”
- Reluctance to invest public funds
- Feeling that private sector should invest
- Intrusion on the built environment—visual impact
What’s Next?

• Address concerns raised---with good data
• Demonstrate system benefits
• Concerns and benefits can be addressed, initially, by a feasibility study
• If ART proves feasible, build a real-world demonstration project that more fully addresses concerns and benefits
• Need for securing a combination of private and public funds for feasibility and demo project
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