

Personal Rapid Transit.

REMEMBER MORGANTOWN AND THE WVU PRT SYSTEM.

The Phase I system began operations in 1975, with a final cost of \$62 million. In 2012, the University Board of Governors approved \$15 million as part of the renewal and modernization project. Over the years, software and vehicle systems have been upgraded – consider the evolution of technology since the mid-1970s. From its inception, the system has proven a reliable solution to the multi-campus arrangement at West Virginia University.

“WVU’s Personal Rapid Transit (PRT) System is an automated people mover system that connects the three areas of the WVU Morgantown Campus and the Morgantown Central Business District. The PRT consists of a fleet of 69 electronically powered, rubber-tired vehicles operating on 8.7 miles of dedicated guideway. Since opening in 1975, it has provided over 83 million passenger trips without injury and taken countless vehicles off the highly congested roads in Morgantown.”

LINK: <https://prt.wvu.edu/about-the-prt/modernization>

The WVU System has cars that hold some 16 people. The cars run on a fixed guideway. Future plans call for smaller, lighter cars that will reduce operating and structure costs. The Lake Nona [FL] AV system has vehicles that hold some 10 people and travel on public streets with fixed locations for stops. Neither has been designed for the flexible pick-up and drop-off locations offered by rideshare and taxi services.

CONSIDER CURRENT COUNTERPARTS FOR INDIVIDUAL TRAVEL.

Personalized mass transit has an oxymoronic sound to it. Perhaps personalized public transit is better although in the future it may actually be a public-private collaboration. Personal transportation today relies on:

1. Taxi service,
2. Ridesharing like Uber and Lyft,
3. Special transit services for the elderly and infirmed, and
4. Rental personal vehicles available by the day from car rental companies or by the hour with services like Zipcar.
5. Private personal vehicles.

The lesson is that we have known for some time how to provide personal transportation service for individuals.



CURRENT MASS TRANSIT ALTERNATIVES.

Today, in many cities, fixed rail transit and traditional bus service is available. Express service is offered in some larger cities. Transit services, like public streets and roads, are usually subsidized by local government with total costs only partially covered by the fare box.

The lesson is that we have already decided, as a society, that transit service is a necessary component of public infrastructure even in communities that are only marginally committed to this proposition.

TECHNOLOGICAL DISRUPTERS, DISRUPTERS IN A GOOD WAY.

Today, early in the 21st century, technology is providing systems and vehicles that will lead to greater options for personalized transportation. Today we have:

1. Automated vehicles [AVs] with the programming capability to respond to individual requests for pick-up and drop-off. AVs are being used to deliver people, manufactured goods and foods.
2. Electric vehicles [EVs] that in and of themselves do not enhance personalized travel, but they are a great enhancement to conventional and automated vehicles with reduced atmospheric and noise pollution. Almost every major automobile manufacturing company around the globe is converting its fleet to electric.
3. Ridesharing has created a personalized system to transport a single person from any one point to any other point. Rideshare services, and their software systems have expanded the community's mobility. The software innovations may be as important as the service itself.

The lesson is that we now know how to give personal transportation service to individuals using autonomous vehicles. The technical systems are known; the business models are still evolving.

PROTECTED, SPECIAL-PURPOSE TRAVEL LANES.

Bikeways and pedestrianways have established the fact that lands and lanes can be used for exclusive travel modes. Bus Rapid Transit [BRT] systems in Cleveland and a growing list of other American cities is proving the worth of dedicated lands for mass transit in the form of rubber-tired buses. Sidewalks are under-utilized special-purpose travel ways; their use will be expanded to include designated robot lanes.

The lesson is that we understand the value of protected, special-purpose travel lanes in or alongside standard roadways and have committed to provide them in special places.

SOCIETY HAS ACCEPTED "TRANSPORTATION AS A SERVICE".

While the vast majority of people travel in privately owned vehicles, there is general acceptance to the idea that one can travel in leased or rented cars, taxis, rideshare vehicles, buses, trains, planes and ferry boats. People and businesses with leased vehicles are actually using a "service".

The lesson is that society already makes many trips through a "service" using vehicles owned by others.

PUBLIC TRANSIT SERVICE IS NOT ALWAYS PROVIDED BY THE PUBLIC.

Bus systems are owned or operated through contract by private companies. Rideshare and taxi service is privately owned. Special purpose authorities own and operate many systems with quasi-public or private-public business models. Much like electric utility systems, transit systems can be owned and operated by private businesses with rates, access and the quality of service control by the public.

The lesson is that the public transportation system will depend on private business for operations and capital.

SO WHAT DO WE KNOW, A SUMMATION.

The lessons we have learned, or should have learned, are:

1. We have known for some time how to provide personal transportation service for individuals.
2. We have already decided, as a society, that transit service is a necessary component of public infrastructure even in communities that are only marginally committed to this proposition.
3. We now know how to give personal transportation service to individuals using autonomous vehicles. The technical systems are known; the business models are still evolving.
4. We understand the value of protected, special-purpose travel lanes in or alongside standard roadways and have committed to provide them in special places.
5. The lesson is that society already makes many trips through a “service” using vehicles owned by others.
6. The lesson is that the public transportation system will depend on private business for operations and capital.

SUMMARY.

We have the experience, the technology, the systemic knowhow and the social acceptance for a personalized public transportation system using vehicles owned by others. We have accepted and benefitted from the role played by private business and capital. The pieces parts have yet to be assembled, at scale, as a mass personal “public” transit system.

A MASS PERSONALIZED TRANSPORT SYSTEM PROVIDING A PUBLIC SERVICE TO INDIVIDUALS.

Given what we know, we could have a public transportation system that provides service to individuals travelling to and from destinations throughout the metro area.

1. Automated vehicles, preferably electric, and associated software systems form the foundation for the entire system.
2. Dedicated travel lanes, especially in areas of congestion, offer many advantages to the travelling public and the host communities.
3. Electric automated vehicles generate fewer pollutants, require less land dedicated to parking and solve the mobility issues of the elderly, the young, the impoverished and the infirmed.
4. Public surface parking can be reduced with AV storage provided in parking decks located in secondary sites since public pedestrian access is not required.

5. The business models will require a combination of:
 - a. Public funding [subsidies is a word we do not apply to streets that are paid for and maintained at public expense].
 - b. Private investment to be recaptured through advertising, food and beverage services, peak-hour pricing and other methods to incentivize investment.
 - c. Private investment can also be incentivized through linkage of transit investments with other real estate or business relationships the private company may have in the metro area.
 - d. City, state and federal taxation policies may be designed to encourage private investment in public transit.

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