

The Maturing Airport People Mover Field—Four Rounds of Experience at Tampa International

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In the late 1950s the first pedestrian conveyor device was installed in Love Field in Dallas, Texas. Airport planners wanted to eliminate the long walk. A decade passed and a small people mover system was installed at Houston Intercontinental Airport in 1969. The system connected the unit terminals and eventually the airport hotel in a small underground loop and was an attractive passenger convenience. In 1971 Tampa International Airport incorporated four people mover shuttles as a "must ride" feature of the landside-airside hub-and-spoke layout. The instant success was quickly translated into a series of similar installations, all provided by Westinghouse—the only vendor with a proved technology at that time. In the mid-1980s a fifth shuttle was added. Currently a smaller, non-Westinghouse system to link a new parking garage is being built, and a sixth shuttle is planned. Facts and impressions on the basis of experience with four rounds of procuring and operating people movers are presented.

The "must ride" concept implies that the airport user must ride the people mover conveyance because there is no other means of access between stations, except during emergencies. The shuttle cars travel the station-to-station distance much faster than any passengers can walk or run.

The title "must ride" may convey a negative meaning. However, it had more to do with the fact that we did not intend or desire to build covered corridors paralleling the trackways. We have eliminated the costs associated with building that structure and the continuing operating and maintenance cost of air-conditioning, lighting, heating, cleaning, and maintaining a superfluous corridor. The space alongside the people mover guideway is accessible and usable as an emergency walkway only during rare emergency conditions. During occasional stoppages of cars in the trackway, passengers are given an audible message to remain in the car because maintenance is on the way. The maintenance technician usually reaches the car and drives it into the station in a few minutes without undue passenger distress.

As the decade of the 1990s begins, 10 automated airport people movers exist—7 from the dominant supplier and 3 from others. Eight new systems are under construction—at Singapore, Orlando (new leg), Tampa (new loop), Chicago, Pittsburgh, Tokyo-Narita, Frankfurt, and Newark. Work is about to begin at Osaka-Kansai and Denver. Serious planning continues at New York's JFK and LaGuardia. The airport people mover is no longer a novelty and will be as common as loading bridges, baggage carousels, escalators, and magnetometers in the large airports built or expanded after 2000.

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In the early days of people mover experimentation and trials, government agencies and trade associations conducted studies of feasibility, cost, reliability, energy, and accidents. Library references have proliferated faster than installations. Publications more than a few years old are obsolete or in need of major updating.

The airport people mover business is now a fledgling industry and boasts its own privately sponsored bimonthly trade journal (*Transit Pulse*, founded in 1983 in Boston, Massachusetts). There are other indicators of maturity—the recently formed Monorail Society listed the "I rode the ALWEG at the 1962 World's Fair" button selling for \$8.00 in good-to-fair condition.

The maturing of this new industry brings with it conventional dilemmas and new problems. The crisp daring of the inventors, ground breakers, and risk takers and their collective can-do, must-do diligence have mellowed into today's routine business environment.

START-UP EXPERIENCE AND MATURATION

As owners and operators of one of the earliest airport systems, we too have learned a lot about our end of the business. The early traumas of troubleshooting, debugging, and fear of failure produced a winning effort that brought our system to a standard of reliability within the first year of operation that has persisted for the past 19 years.

Our original venture in this unproven but promising technology was not without the usual owner protection clauses in the procurement contract. We included penalties for downtime and precise means of notification and timekeeping. Damages were to be assessed at \$10.00/hr for every hour over 12 accumulated in a month. Unless otherwise agreed, notification of an outage and back in service was to be by full-rate telegram. Hard-copy delivery of the telegram within 4 hr was guaranteed; the cost in 1971 was \$5.00 for the first 15 words (\$15.00 today).

We never sent or received a telegram, nor did we ever collect a \$10.00 charge. The 12-hr grace period is equivalent to approximately 98.3 percent contract service availability. In 1976 we renegotiated the 5-year maintenance contract. By mutual consent we deleted the damage assessment clause for the 1971 cars and added specific language that availability must be maintained to the standards established during the first 5 years as shown in the statistical history of the day-by-day performance of the system.

Third and fourth 5-year maintenance contracts followed in 1981 and 1986. The old cars are now "senior citizens"—almost 20 years old—and are still operating, on the average, above 98 percent contract service availability. The old cars received 2-week interior renovations in 1985 at a cost of about \$50,000 per car. We expect to get about 10 more years of service from the old cars. However, we believe that this will require some expensive renewals and replacements to completely rehabilitate essential electronic systems.

START-UP EXPERIENCE—THE SECOND TIME AROUND

The troubleshooting and debugging phase of the 1988 models to serve a fifth airside terminal was twice as long as that of the pioneer models. Although the supplier was the same company, its attitude was characterized by typical new car dealer arrogance at the warranty counter. The can-do spirit of the pioneer troubleshooter was replaced by the "why me" attitude of endless legal interpretations. Nonetheless, the newer system's performance improved.

Figures 1 and 2 show the steadily declining penalty assessments and the related steadily increasing contract service availability. In the first 6 months after inception of service, the system averaged \$4,000 per month in penalties and 96 percent availability. In the next 6 months penalties dropped to an average of \$2,900 per month, and availability climbed to 97 percent. Penalties for the next 6 months dropped to \$2,300 per month, and availability increased to 98 percent.

The system performed for the first time without penalty and above the 99 percent availability benchmark during the 20th month. After 2 years of debugging, we now have a near "constant-state" condition, with availability hovering around 99 percent for 1990.

The penalty calculations and acceptance criteria for the new system are far more precise and definable in the contract, and that is a direct result of our experience as owners. The new cars are also an improvement over the old cars, and that is a direct result of the dealer's experience with its product line. The sophistication of the industry now includes standard practices for product modification, component testing, recall, and precise definitions of outages and verifiable accounting of downtime.

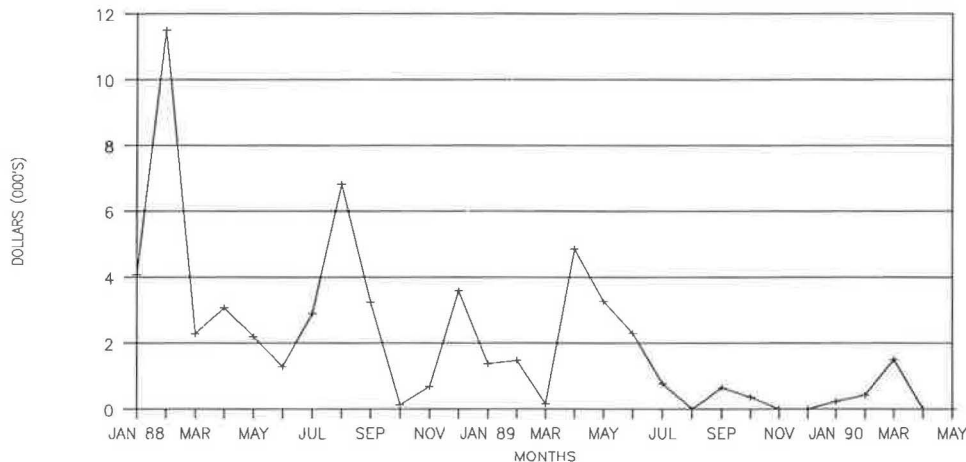


FIGURE 1 Tampa International Airport passenger transport system, Leg F—monthly penalties.

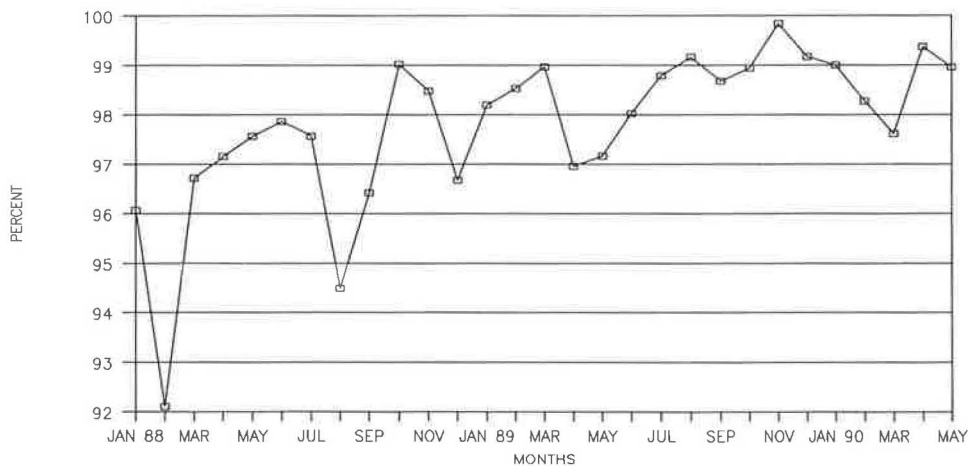


FIGURE 2 Tampa International Airport passenger transport system, Leg F—contract service availability.

The telegraph message has been replaced by facsimile machines and computerized data retrieval to the nearest minute, and the penalty rate has been changed to \$5.00/min. The contract service start-up availability goal is 99 percent, and the exceptions and definitions of downtime have become more standard as owners share their wisdom and experiences.

CURRENT PROCUREMENT

The people mover marketplace today presents buyers with a selection of makes and models, end-of-year sales, and cars to fit their style and taste. Tampa International Airport has again stepped into the marketplace and recently procured a sporty, little compact people mover that will be just right for moving passengers from a massive new parking garage to our existing terminal building.

The new parking garage is enormous on a world scale. Each floor covers 11 acres and will accommodate 1,000 vehicles. The first phase of construction will produce five floors. The scale of the new facility presents the same problem as the 1970 challenge of minimizing passenger walking. Our original parking capacity was 2,600. When the new garage opens, we will have 8,800 parking spaces stacked on the same land area as the original layout.

We adopted the same passenger convenience philosophy and built the garage structure in its best location and maximized its utility and economies of scale. The walking distances, this time with luggage, would be horrific and similar to the endless hikes and dreaded shuttle buses at the typical sprawling airport parking facility.

The automated people mover was easily the most passenger-friendly device to circulate through one floor of the 11 acres of new structure and tie into the fifth floor of our existing terminal rooftop garage. Twelve elevators (spaced three per quadrant) will transport passengers to the shuttle lobbies.

The new system will have six minicars, each holding about 17 passengers and revolving in a 2,800-ft pinched loop configuration serving four stations in the new garage and three stations in the existing terminal building. With five cars in the loop, the system will manage a 70-sec headway and provide for a spare car in the maintenance facility. Tampa International Airport never had the luxury of a spare car on its airside people movers. This evolution is akin to the first spare tire strapped to the running board.

The new system was procured after 1½ years of evaluation of vendor products had narrowed the field to three serious vendors that offered models of airport people movers that fit this application. The contract was awarded to Transportation Group, Inc., for system installation, 5 years of maintenance, and an owner training option, for a total of \$13.2 million. AEG/Westinghouse offered a system for \$25.5 million, and Von Roll offered a system for \$29.9 million.

We believe that this transportation device will be more successful than our original landside-airside people mover and more attractive to the public because they are carrying luggage. The earlier "must ride" system was not challenged with handling luggage, because luggage is checked in the main terminal building and transported by airline equipment to the airplane.

The south parking garage is scheduled to open in late 1991. We believe that this concept will be an early success. We expect that other planners will reconsider the intangible value of passenger convenience and repeat the concept in new applications for airport people movers. The market will further grow as planners see the value of linking other people collectors: airport hotels, garages, rental car facilities, limousine and taxi stands, and other pedestrian destinations.

Another wave of airport planners working on the latest all-new airport project has descended on Tampa to visit the cradle of airport people mover technology. A delegation from Hong Kong's Chek Lap Kok Airport is considering far greater people mover applications than we did 20 years ago. There is no longer a question of whether the system will work, but rather how can it be linked to the mass transit systems in the surrounding community. It appears possible that Chek Lap Kok will pass a new milestone—the airport people mover as boundary interface with the outside community.

DEALER SERVICE IN 1990 (THE FINE PRINT)

Maintenance of people movers continues to be primarily by outside contractors. However, we have not seen much progress in standardizing the pricing of these services. For example, the procurement contract, not including the 5 years of maintenance, for the garage system produced construction cost submissions for equipment from the three vendors of \$10 million, \$16 million, and \$24 million. The companion bids for operations and maintenance costs were \$2 million, \$8 million, and \$4 million, respectively. The variation from low to high is seriously distorted and leads one to wonder what is so mysterious about maintenance contract pricing. The three vendors all priced their maintenance against the same operations and maintenance staffing minimums and reliability criteria, and we cannot explain why the variability among the three vendors ranges from the low bid to the low bid raised to the third power.

The overwhelming caution is "don't buy without a 5-year/500,000-mi warranty" or some suitable equivalent for your application. Also beware of specialty components, such as switches, controls, and radio systems. You may want extended warranties on these items, especially on innovative concepts.

The best, most carefully written warranty can be voided with improper maintenance. Few owners have sufficient expertise to protect themselves from claims of maintenance neglect in the event of system component failure. Therefore, it behooves the new system owner to procure the system with full service and maintenance during the initial 3- to 5-year warranty period. The owner can specify that system training be conducted throughout the warranty period and in this way prepare for in-house maintenance. The pros and cons of contract versus in-house maintenance are unique to each site, as are many of the terms and conditions of an appropriate procurement, maintenance, and extended warranty contract.

In today's marketplace there are many experienced system suppliers with a decided advantage over the novice system buyer. The prudent first-time buyer should visit operators of similar systems and carefully select a specialized consultant. The consultant should have knowledge of recent dealings with

the contending vendors and be prepared to assist throughout preliminary system planning, procurement, specifications, acceptance testing, and start-up of the maintenance warranty and operations phase.

PROPHECIES

What does the future hold for the people mover marketplace? I offer a handful of predictions.

- This fledgling industry will soon boast having its own Big Three.
- The market shares will gradually solidify.

- Procurement and maintenance contracts will evolve into boilerplate formats similar to the elevator and escalator types.

- The world's shortest moving walkway will be commissioned in the 1990s, and it will be less than 75 ft long.

- Radio frequency controls will give way to hard wire or other forms of induced signals on stable carriers.

- Traction motors and cables will fill a small niche overshadowed by the new technology.

- The new technology will burst on the scene, ushered in and groomed by a new breed of pioneers—but it is unclear who they will be and what language they will speak.

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