

Recommendations for Transit Scheduling and Data Integration Needs

What We Did ...

Paratransit services are demand-responsive public transportation services for people who meet special eligibility requirements, such as the disabled and/or the elderly. The ability of transit service providers in small urban areas and rural communities to meet increasing

demands generated by welfare-to-work customers and other social agencies depends on their ability to make the best use of available resources through efficient scheduling and service delivery. Scheduling trips and dispatching vehicles are critical functions in any transit system operation.

Scheduling, in general public and special paratransit systems, refers to the matching of vehicles and trip requests. Collecting and managing rapidly changing data is essential for the efficiency and effectiveness of these functions, as are the decisions involved in vehicle assignment and routing.



Figure 1: Paratransit services address disabilities and/or elderly transportation needs

CARTS

Capital Area Rural Transportation System



tripnet

Online Account
Management

Pay Your Bill - Get Your Balance
Checks or Credit Cards - Quick & Easy!



R **TRANSIT**
ural Public Transportation



Your source for transportation in North Texas.



Click on
your county,
and start
your trip!

Figure 2: Texas Paratransit Operations



Effective use of modern information technology can help address these issues. In these systems, data management is complicated by the fact that clients of several external agencies contribute to system demand.

The primary objectives of this project were to observe the operations of paratransit operations in the state of Texas, especially those situated in small urban and rural communities, and to determine appropriate software capabilities to support the dispatching and scheduling functions. The project team worked with transit managers and clients to ascertain their goals, customer demands, resources, processes, and future plans.

What We Found ...

The project team investigated the technical and operational problems faced by selected small paratransit providers in Texas with the primary objective of identifying and recommending improvements. To that end, the team studied software used for planning and scheduling daily operations and made assessments. The most widely used paratransit software in Texas is the Trapeze system, of which the most current available version is TRAPEZE PASS 4.0. Some operators have purchased such new hardware as mobile data terminals to make communication easier.

While software and data processing automation are both integral elements in achieving such integration, important changes in the agencies' operational procedures could greatly contribute to this objective.

The Researchers Recommend ...

The team's review of available software options revealed several critical limitations of off-the-shelf software targeted at the paratransit market. Most available software tends to be direct descendants of software created for an earlier era of hardware platforms and software models. As a result, off-the-shelf software lacks many desirable features for this type of operation; more importantly, such software seems to lack the desired flexibility and ease of use in this context. Furthermore, vendors tend to be very "possessive" of the software and reluctant to reveal much about its internals, forcing the users to accept a de-facto "black box" product for an application need that requires the utmost transparency. For these reasons, the research team neither recommends nor endorses any of the currently available packages identified and reviewed in this report. In particular, user experience with deployed packages in Texas was not positive, suggesting that a different approach should be

sought. The research team believes that a more flexible, web-enabled, less expensive software solution could be customized for paratransit applications, offering the users greater ease of use and flexibility.

Furthermore, in the course of the research team's in-depth interaction with selected agencies, several potential procedural improvements were identified. These are summarized in the project final report as an indication of the types of changes that could improve operational efficiency. The specific agencies addressed included Capital Metro's STS services, CARTS, and Temple Transit. The research team's recommendation is to conduct similar procedural audits at the other paratransit agencies, and to identify improvements in current processes that could increase the service effectiveness and operational efficiency of these organizations. These improvements are mostly low-cost solutions that could be introduced without major disruption to existing operations. However, in some instances, more extensive reengineering might be called for, especially when major technological and software introduction is contemplated, as the latter would provide a good catalyst for doing things better. In any case, each agency is different, and one-size-fits-all solutions would not be appropriate.



For More Details...

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The research is documented in the following reports:

- 1884-1 *Transit Scheduling Data Integration: Paratransit Operations Review and Analysis*, October 2001
- 1884-2 *Evaluation of Software Solutions for Transit Scheduling and Data Integration Needs*,
December 2002

To obtain copies of a report: CTR Library, Center for Transportation Research,
(512) 232-3138, email: ctrlib@uts.cc.utexas.edu

TxDOT Implementation Status October 2001

Two products were identified for this project:

1. A functional process list for transit agencies in defining their software needs and interfaces.
2. An implementation plan for integrating functional process specifications (and ITS technologies) statewide.

Product 1 will be useful to transit agencies in defining their software needs and in identifying which package best meets their needs.

Product 2 is not suitably developed for statewide implementation.

Public Transportation Division (PTN) of TxDOT will use this project to assist transit operators in purchasing scheduling/dispatch software.

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Your Involvement Is Welcome!

Disclaimer

This research was performed in cooperation with the Texas Department of Transportation and the U.S. Department of Transportation, Federal Highway Administration. The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation, nor is it intended for construction, bidding, or permit purposes. Trade names were used solely for information and not for product endorsement. The engineer in charge was Hani S. Mahmassani, P.E. (Texas No. 57545).



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