Lessons Learned in the Deployment of APTS Technologies in Rural North Central Pennsylvania

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Coletta Corioso, Chief Financial Officer
Area Transportation Authority of North Central PA
Johnsonburg, Pa
AREA TRANSPORTATION AUTHORITY
OF
NORTH CENTRAL PENNSYLVANIA
Historical Background of ATA

- Appalachia Regional Commission (ARC) awarded the first rural transportation demonstration project to North Central Pa Regional Planning and Development Commission (NCPRPDC) - 1970
- Pennsylvania Department of Transportation (PennDOT) provided a grant to develop a Rural Public Transportation Plan
- Pennsylvania Department of Agriculture advocated for needs of rural residents and provided the first operating grant for the services, for “Region 8”
Historical Background of ATA

• The Pennsylvania Secretary of Agriculture, James McHale, recommended to the Interdepartmental Advisory Committee, that “Region 8” be designated as the official model for rural transportation integration for the Commonwealth of Pennsylvania (1975)

• A Rural Division was established within the Bureau of Public Transportation of PennDOT

• ATA is formerly organized as a public transportation authority under the Municipal Authorities Act after a few years of operating under NCPRPDC (1976)
Service Delivery Development

• Initially provided fixed route services for commuter transportation

• Human service transportation programs in six counties were consolidated over a two year period.

• Local stake in public transportation (local cash investments)

• Cost effective model of rural transportation service delivery was developed that added fixed routes with deviation and a shared-ride demand response services
ATA Facts

• Six county service area covering 5091 square miles
• Six county population ~ 234,000
• Three operational divisions
• 133 Routes/Services
  – Fixed routes; fixed routes with deviation, demand response and non-scheduled
• Nearly 400,000 rides annually (~1600 trips/day)
• Approximately 1,800,000 annual miles
ATA Facts

• 2010 operating budget ~$9M
• 116 vehicles
• 155 employees
  – 108 drivers (20 FT; 88 PT/Casual)
  – 9 mechanics
  – 29 other operating (call center, customer service, hostlers, division support staff)
  – 9 other (accounting, IT, admin support & executive)
ATA Pre-Deployment

• Decentralized operations with three bi-county divisions
  – Bus operations
  – Call taking/reservations; scheduling & dispatching (no division of labor)
  – Complaints taken and dealt with at the division level
  – Rider Intake/Eligibility determinations
  – Inadequate staffing prevented dispatch support whenever buses were in operation
  – Vehicle maintenance
  – Dispersed bus storage locations (no single hub)
  – Incident management/coordination with maintenance
ATA Pre-Deployment

• Regional administration and support services
  – Accounting, Reporting and MIS
  – Planning
  – Marketing/Communications
  – Facilities management
Challenges

• Outdated and ineffective communications infrastructure (only 50% radio coverage)
• Inefficiencies in bus operations
• Knowledge of daily operations known to only a few people
• Stress levels of “dispatchers” significant because they “did it all” (intake, reservations, cancellations, dispatching, incident management & office reception)
Challenges

• Lack of redundancy
• Delays in gathering data/Information resulting in
  – Delays in preventive maintenance and non-safety related repairs
  – Invoicing & revenue collection delays
  – Untimely reporting
The ATA Regional GIS/ITS Initiative
ATA ITS Project in Phases

Phase 1 – Mapping, rural addressing (1997) (this project was initiated by the local counties and their 911 systems)

Phase 2 – Regional wireless data sharing network (point to point) (1999)


Project Partners

- USDOT (Transit & Highway)
- Pennsylvania Department of Transportation – Bureau of Public Transit
- Six Counties (Cameron, Clearfield, Elk, Jefferson, McKean and Potter)
- Six County 911 systems
- North Central Pennsylvania Regional Planning and Development Commission
- Pennsylvania Governor’s Radio Project Office
Project Funding

• 5208 ITS (Rural) funding
• 5309 Bus and Bus Facilities
• State Bond
• Local Cash Match
Major Goals

**Enhance safety**
- Locate vehicles quickly
- Reliable, comprehensive mobile communications
- Reduce vehicle breakdowns

**Enhance productivity**
- Speed schedule preparation
- Reduce invoicing time
- Reduce manual/paper processes
- Better respond to same-day trip changes
- Streamline trip reservation (call-taking)
- Reduce radio/cell phone chatter
- Speed reconciliation process
Major Goals

Maintain Customer Satisfaction

- Ease of trip reservation
- On-time performance
- Flexibility with same-day requests
Components

Digital Voice and Radio Communication System

– Point to Point Network
– Mobile voice/data network
– Mobile data computers/digital radios
Components

Computer Aided Bus Operations

- Automatic Vehicle Location
- Computer-Assisted Reservations, Scheduling, and Dispatch
- Incident Management
Components

Computer Aided Maintenance Management System

– Pre & post vehicle inspections
– Coordinated work flow
– Parts Inventory

Integration with Accounting Software
ATA Post-Deployment

State of the Art mobile voice/data digital communications system
  – Point to point
  – Mobile voice/data

Decentralized operations with three bi-county divisions
  – Bus operations
  – Vehicle maintenance
  – Dispersed bus storage locations (no single hub)
ATA Post-Deployment

Centralized Call Center

- Call taking/reservations/cancellations (other than same day)
- Scheduling
- Dispatching (fleet management and same day trip cancellations)
- Incident management/coordination with maintenance
ATA Post-Deployment

Centralized Customer Service Center
- Rider intake and eligibility determinations
  - Senior, disabled, medical assistance, agency transportation contracts
- Transportation programs management
- Complaints Management

Regional administration and support services
- Accounting & Reporting
- Information Systems and Technology
- Planning
- Marketing/Communications
- Facilities Management
ATA Today

- Centralized operations for reservations, scheduling, dispatching and customer service activities
- Decentralized bus operations & vehicle maintenance
- Planned redundancy
- 100% fleet support - call center is open for business when buses are in the field
- Regional administration includes a new Information Systems and Technology Department
Future Components

- Interactive Voice Recognition
- Web-based Trip Planning & Reservations/Scheduling
- Traveler Information
- Automated Fare Collection
- Electronic Time-Keeping using MDCs
An Independent Evaluation

conducted by

the Battelle Institute for the
US Department of Transportation
ITS Joint Program Office
Program objectives:

- Determine impacts on the transportation system.
- Inform public and private leadership and opinion influencers on the value of specific technologies.
- Inform those contemplating deployment on potential benefits and offer experience-based insights on deployment technologies.
- Inform the transportation community on the cost implications of deploying and maintaining technology-based systems.
USDOT ITS Field Evaluations

• ITS Program Assessment and Evaluation Program (IPAS)
  – Established in 1996
  – Battelle 1 of 2 contractors; have conducted 71 IPAS projects to date ($27.9M)

• TEA-21 ITS Program Earmarked Projects a major focus
  – 500+ earmarks
  – 33 projects selected for independent evaluation; ATA was one of these
APTS Evaluations

- Rural/regional USDOT evaluations:
  - ATA Regional GIS/ITS Initiative
  - Cape Cod (2003)
  - Santee-Wateree (2002)
  - Montachuesett, MA (2003)
  - Chittendon County, VT (2006)

- Self-evaluations:
  - Sweetwater County, Wyoming (CAD/AVL)
  - Arrowhead Transit, MN (CAD/AVL)
Safety Findings

Maintenance goals have been fully realized; maintenance process dramatically improved

– Monthly in-service breakdowns down 69%
– Average total monthly service downtime due to breakdowns down 70%
– Maintenance gets quality information much faster (daily vs. 2 weeks lag)
Before-After In-service Vehicle Breakdowns

Baseline Average
13 Breakdowns in a Month

Post-Deployment Average
4 Breakdowns
Productivity Findings

Major efficiency gains have been realized

- Call taking (shorter calls)
- Producing schedules faster
- Much reduced radio chatter
- Greatly reduced time associated with producing & distributing manifests
- Invoices generated much faster (43%) with fewer errors
Productivity Findings

- Improved ability to fill same-day cancellations and respond to same-day trip requests
- Improved overall work process: personnel focus on one area all day; less cross-chatter
  - “Everything you need is right on the computer.”
  - “We don’t ever want to go back—it’s a great system!”
Baseline versus Post-Deployment Invoicing times

Average Days (BASELINE) - 21 days
Average Days (Post-Deployment) - 12 days
Customer Satisfaction Findings

- Riders were, and are, highly satisfied and appreciative
- Riders were somewhat aware of technologies (trip reservation process, MDC’s)
- Some perception of improvements (weren’t dissatisfied before):
  - Fewer vehicle breakdowns
  - Improved radio coverage
- Were, and are, very satisfied with on-time performance, safety, scheduling trips
Website for Report issued to USDOT ITS Joint Office by Battelle

http://ntl.bts.gov/lib/31000/31500/31593/14493.htm
Project Planning/Deployment
Lessons Learned

ATA Perspective
Pre-Implementation Considerations

• Highest levels of organizational support (board and executive level) play an important role in determining success

• Be thorough in your planning and development. A strategic planning approach is essential

• Organize an implementation TEAM that is engaged from the earliest stages and is headed by a proficient Project Manager
Pre-Implementation Considerations

• Commit to develop the necessary knowledge and skill levels of users so as to dispel fears about “technology”. (Depending on knowledge and skill levels, this may be a significant period in the time-line)
  – Driver/mechanic
  – Line Supervisors
  – Middle Managers

• Plan on acquiring technical assistance from experienced consultants (Most agencies will not have the depth of technical knowledge on staff)
Pre-Implementation Considerations

• Be honest and thorough in assessing the condition of your situation
• Be clear about the expected outcomes of the project
• TEAM members should clearly understand what is expected of the TEAM and of each member
• Staff should expect their workload to increase in the short term (short term pain for long-term gain)
• The more you anticipate what needs to occur and when, and make adequate and proper staff and work assignments, the better control you will have of the implementation
Deployment Considerations

• Incremental successes build to project success (phase in)
• Budgets adequate to support pre-deployment training, deployment support, and go-live monitoring
• During go-live have daily TEAM meetings to address problems that may be developing so that you can respond quickly
• Technical advisors on-site
• Management support for line staff
• In-field support for end-users
Deployment Considerations

• Keep the deployment to a reasonable time-line. Long deployments wear staff down
• Staff and consultant turnover can impact time line
• Monitor and support line staff closely so they develop desirable skills
• Praise and coach well
• Intercede as soon as you notice a problem
Special Considerations for the End-User

- Involve end-users in the development stages
- Identify champions and super-users as “go-to” resources for other end-users
- Help users to perceive benefits for themselves in their jobs
- Prepare staff for what to expect when going live
- Provide in-field support when going live (this might require phasing, depending on size of operation)
Presented by

Coletta Corioso, Chief Financial Officer
Area Transportation Authority
of North Central PA
44 Transportation Center
Johnsonburg, Pa 15845
ccorioso@rideATA.com
814-965-2111, ext 1220