Kansas Rural Transit ITS Evaluation

Update on Resolving Problems

Leslie Fowler
KDOT
Topics

• Project Background
• Summary of Initial Evaluation Results
• In-depth Evaluation Results
Background

- Kansas - 105 Counties
- 15 Coordinated Transit Districts
- Need for Dispatch Support
- Centralized ITS for Rural Transit
The Concept: A Central ITS System

• Support Dispatch Throughout State

• Centralized Operations of Servers etc.

• Efficient Operations & Maintenance
Hutchinson, KS
-Operator Display
-Communication

Hays, KS
-Operator Display
-Communications

800 Mhz
(2-Way)
KSDOT Central Facility (Topeka)

- Operator Display
- Communication

Hutchinson, KS

- Operator Display
- Communication

Hays, KS

800 Mhz (2-Way)

Remote Desktop

KSDOT Central Facility (Topeka)

AVL Server

CAD Server
Focus of Evaluation

• Benefits Recognized by ITS Systems
  – Benefits to Drivers, Dispatchers, Managers
  – Outside challenges of software, what are the rural benefits of this solution

• KDOT Software Characteristics
  – Is Migration to Internet Based Solution an Option
  – Costs, Timeframe, Impacts of Migration
Locations of Deployment

- 2 Rural Communities
- Central Kansas
Reno County Area Transit

- 3 Fixed Transit Routes
- Para-transit Service
- 6-10 Vehicles in Operation

- 1-2 Dispatchers on Duty
Hays, KS

- Primary Para-transit
- Limited Fixed Route
- 6-10 Vehicles
Summary of Evaluation Results
Benefits

• Hutchinson:
  – On-time Performance is Better
  – Pressure is off the Dispatchers
  – More consistent routing (less dispatcher deviations)
  – To Riders: More Reliable
  – Training is Quicker and Easier
  – Dispatchers more likely to succeed
Benefits

• Hays :
  – Overall the users like the system
    • When it works!
  – Feeling that the Riders receive better service
    • At times (automated routing can impact this)
  – System has helped allow additional services
    • Safe Rides (evening free service)
    • Fixed routes serving University
  – Additional Details in Record-keeping
Concerns (Technology or Training)

• Hutchinson:
  – More Layers when troubleshooting problems (CAD Vendor, MDT Vendor, KDOT (Topeka), Local)
  – Would have liked to host server
  – When System is down, it is Down!
Concerns (Technology or Training)

• Hays:
  – Reliability is major concern
  – There needs to be a trust in the system
  – No (or little) reduction in paperwork
    • Unreliable System Requires Backup paperwork
  – Estimated 90% of problems are with data communications
Conclusion on Concerns

• 5 Outages per week
• Hurts credibility
• Paper backups done 100% of the time
• Reliability is critical
Progress in the Last 12 Months
Follow-on Evaluation

• Document Details of Outages
  – On-line issue entry tool for dispatchers
  – Paper logs from dispatchers
  – Conference calls with dispatchers, maintenance personnel, drivers

• About 75 outages in 2 ½ months of data collection
What We Found

1. Connectivity Issues with Central Server –
   – Firewall Issues
   – Internet Connectivity Issues
   – Terminal services/remote desktop issues

   – Central Servers in Topeka controlled CAD and Mobile Data Communications
What We Found

2. Non-Internet Based Central System –
   – Not Designed for Internet Use
   – No Redundancy for Outages
   – When it’s down, it’s down

   – This caused the 100% Duplicate Entry of all activities
3. Different Hours of Operation
   - Transit Dispatch is often 4:00am - Midnight
   - KDOT Central Office is 6:00am – 7:00pm Weekdays
   - Not a Fault of Central Office, Understood from the Beginning

   - This caused small problems to last hours or days!
What We Found

4. Technical Challenges
   - Minor compared to the others
   - Hard to assess given frequency of other problems
   - Communication ‘dead spots’ in town
   - Individual equipment failures

   - Acceptable technical challenges
Next Steps - Options

• Do Nothing – Leave Systems ‘as is’
• Increase KDOT Hosting Support
• Explore Alternate Technologies
• Explore Off-site hosting