Rural Transit Planning: On-Demand & Demand-Response Solutions

Transit Planning 4 All
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“Technology” in Rural Transit

- Fixed Route Scheduling & Dispatch
- Demand-Response Scheduling & Dispatch
- Client Management
- Cameras
- Websites
- GPS equipment
- GIS tool
- GTFS feeds
- Radios/Cellular Comm.
- Reporting
- Service Planning
- Reminder Calls
- Asset Management
- Stop Amenities
- Rider Apps
- Driver Apps
- E-fare
- Point-of-sale Systems
- Passenger Counters
- Electric Vehicles
Not “Technology”
Two Working Definitions for Technology

● “Everything that doesn’t work yet”
  — Danny Hillis

● Where expertise heavily influences success
An Rough Framework for Analysis

- Coordinated Scheduling and Dispatching
- NFC E-fare
- Asset Management
- Cameras
- DR Sched & Disp

Required Specialization vs. Immaturity
Expertise — The Longer View

Effort to Implement

Effort to Use, Maintain, and Replace
A Core Challenge

Rural transit agencies rarely have IT departments.

How to get expertise from “over there” to “over here”?
Strategies for Acquiring Expertise

- Training
- Hiring
- Project-based contracting
- Long-term contracting
- Aggregating
- Merging
- Privatization
Think in Terms of Trade-Offs

- Cost
- Simplicity
- Robustness
- Scalability
- Speed
- Business Model Alignment
Think in Terms of Systems

• Become a “Noticer”
• Curiosity is your best asset
• How do things connect?
• How do things not connect?
Think in Terms of Non-Technical Supports

- Planning and Design
- Documentation
- Training
- Procurement
- Grant Management
- Vendor Relationships
- Evaluation of Outcomes
- Culture of Security
- Testing Resources
An example: RideSheet

- Developed with AARP
- Scheduling and reporting system for small providers of demand-responsive transportation
- Built entirely in Google Workspace
- Business logic in Google Apps Script/GAS (Javascript), open-sourced
- Primary tool is Google Sheets
- Integration with Google Docs, Calendar
RideSheet Key Benefits

- Low licensing cost (free to non-profits)
- HIPAA compliance (shared responsibility model)
- Rapid application development
- Easy collaboration
- All the benefits of spreadsheets:
  - Easy to understand
  - Easy to export
  - Field-serviceable
RideSheet Key Challenges

• All the downsides of spreadsheets:
  ○ Maintaining data integrity
  ○ Querying (compared to relational database)
  ○ Scaling
Where Things Get Cool: API Capable

- Connect to external APIs
  - Geolocating
  - Travel time & distance estimates
- Expose its own API
  - Exchange data for trip capacity and requests
Recommendations

• Get crystal clear on the problems you are solving
• Focus on institutional barriers first
• Think in phases: establish your minimum viable product (MVP)
  • Know what’s most important
  • Prioritize ruthlessly
• Plan for what resources you’ll need to sustain your systems — vendor support and internal staffing/training
Thank You

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