Coordinated Transportation
August 2009
Agenda

- Transportation Coordination Technology Issues
- Coordinated Transportation Models
- Transportation Brokerages
- Open Discussion/Questions
The Transit Cooperative Research Project defined coordination as:

Coordination is a technique for better resource management. It means working together with people from different agencies and backgrounds. It requires shared power: shared responsibility, management, and funding. Many transportation functions, including planning, purchasing, vehicle operations, maintenance, and marketing, can be coordinated…
Transportation coordination is a process where human service agencies, transportation providers, consumer groups, and public officials work together to develop and improve services for transportation disadvantaged individuals, by ensuring that transportation resources funded by different programs are coordinated. Coordination demands communication, trust, flexibility, and the willingness to focus on client needs. It will:

- Develop and improve transportation options,
- Improve access,
- Minimize service duplication, and
- Facilitate appropriate, cost-effective transportation with available resources.
Coordination Technology Issues

- What are the goals of the agencies?
- State, Regional, or local coordination?
- Things to think about when agencies want to coordinate service:
  - Different models of coordination
    - Developing questionnaires for you to survey your clients or potential client to identify which model will fit,
Agenda

- Transportation Coordination Technology Issues
- Coordinated Transportation Models
- Transportation Brokerages
- Open Discussion/Questions
All modes of transportation at an agency are coordinated through a single database
Intermodal Coordination

- Only local/Interdepartment coordination
- Typically needed for ADA or Feeder service.
- Single Integrated Database
Multi-Agency Single Database

Server Cluster - Controlled by Lead Agency

All agency data is kept on a central server controlled by the lead agency or DOT

Agency 1

Agency 2

Agency 3

Internet

Routers

Workstations
Multi-Agency with Single Database

- How to deal with technology issues for this model
  - GIS Engine – All agencies share same map data on single database.
    - What data sources are being used
    - How often will the maps be updated? At the same time?
    - Who is going to merge new map data with old?
    - Who will be allowed to make map data changes?
    - Who determines and controls polygons?

- Data Exchange – Occurs using a single database
  - What interfaces are needed?
  - Rider eligibility systems?
Multi-Agency with Single Database

- How to deal with technology issues for this model
  - Data Control
  - Security – Who do you want to see the data?
  - Internet Connectivity – Need fast internet to connect to database housed by lead agency
  - Contingency Plans
Multi-Agency with Single Database

- How to deal with technology issues for this model
  - Politics
    - Different operational requirements
    - Data control issues
    - Data Liabilities
    - Operational Liabilities (i.e. accidents, missed transfers, driver training)
    - Revenue/cost sharing
    - Faring Differences
    - IOA
    - Unions
  - Reporting Needs
    - How do they differ?
    - Billing Needs
    - Statistic Calculation
Multi-Agency with Single Database

Pros and Cons of this model

- **Pros**
  - Improved operational efficiencies
  - Improved Mobility for riders
  - Shared software costs
  - Shared Hardware Costs
  - Shared IT Cost
  - Single Database
  - Fairly easy to do real-time coordination

- **Cons**
  - Give up some control
  - Compromise
  - Hard to customize
  - Increased operational costs?
  - Less security
  - Single database
  - GIS data coordination
All agency data is kept on separate servers individually controlled with access to other agency’s data
Multi-Agency with Multiple Databases

- How to deal with technology issues for this model
  - GIS Engine – All agencies have their own map database.
    - What data sources are being used?
    - How often will the maps be updated?
    - Each agency can make map data changes
    - What happens when Geocodes don’t match between datasets?

- Data Exchange –
  - How do you send and merge data
  - Rider eligibility systems and issues
  - How if different sites are using different systems?
  - Paratransit & Flex trip exchange
Multi-Agency with Multiple Databases

- How to deal with technology issues for this model
  - Data Control
    - Each agency controls own data?
    - What if there are conflicts between agencies? Many more possibly and issues
  - Security – Who do you want to see the data?
    - Can agencies see each others routes, trips, etc?
    - What about sensitive client data?
  - Internet Connectivity – Speed of internet connectivity depends upon data exchange needs.
    - What will bandwidth issues be fore each agency?
    - What will bandwidth cost? – operations expense/budget
    - What of future bandwidth needs?
  - Contingency Plans
    - Each agency deals with Data Backup and Redundancy issues
    - Disaster Recovery Plans
Multi-Agency with Multiple Databases

- How to deal with technology issues for this model
  - Politics
    - Different operational requirements - Less
    - Data control issues - Less
    - Data Liabilities - Less
    - Operational Liabilities (i.e. accidents, transfers, driver training) - Less
    - Revenue/cost sharing - Same
    - Faring Differences - Same
    - IOA - Same
    - Unions - Same
  - Reporting Needs – While still issues, less then Single Database option
    - How do they differ?
    - Billing Needs
    - Statistic Calculation
Multi-Agency with Multiple Databases

Pros and Cons of this model

- **Pros**
  - Improved operational efficiencies
  - Improved Mobility for riders
  - More Local Control
  - Easier to customize
  - Less Compromises

- **Cons**
  - No longer shared Software/Hardware/ITS Cost
  - Multiple Databases
  - Increased operational cost?
  - Less security
  - Difficult for real-time coordination
  - More potential for data and map conflicts
Multi-Agency with Multiple Databases in Real-time

Communications Server System at each agency

Central Server Facility (Host Agency)

Transportation Software Server AVL Server

Agency Site Dispatch

Transportation Software

AVL

One system in each vehicle

Mobile Unit System

Vehicle Tracking Device

800 MHz Radio

MDC
Multi-Agency with Multiple Databases in Real-time

- How to deal with technology issues for this model
  - ITS Hardware –
    - Are MDCs in each vehicle, even providers?
    - What happens if they are not?
    - Are the same MDCs being used? Same protocols?
    - Are GPS accuracies the same between fleets?
  - Communications
    - Are fleets sharing same MDC communications backbone?
    - Y – how does system know which database/site to send messages?
    - N – How do you deal with different protocols?
    - N – how do you deal with different system timings?
    - B – What happens went there are dead spots/down time?
    - B – What happens when there is an emergency?
  - GIS Engine – Same as above, except add real-time vehicle position issues
  - Data Exchange – Updating Real-Time AVL information between sites
    - Has never been done by anyone
    - Greatly increases bandwidth needs
    - How do you know if updates were received and acted upon?
  - Security – Who do you want to see the data? What gets published to General Public?
  - Internet Connectivity – Need fast internet to connect to other agency’s databases
Multi-Agency with Multiple Databases in Real-time

- Pros and Cons
  - Pros
    - All the normal advantages of implementing MDC/AVL
    - Much more accurate info for coordinating
    - Can create predictive capabilities
  - Cons
    - Very complex communications issues
    - Very difficult to do proper data exchange
    - Higher communications & systems costs
    - Very difficult for players to understand issues involved in setup and operations
Agenda

- Transportation Coordination Technology Issues
- Coordinated Transportation Models
- Transportation Brokerages
- Open Discussion/Questions
What Does a Transportation Brokerage Do?

A transportation broker does not *typically* operate any vehicles. As a result, they don't make decisions based on enhancing revenue at service level. Brokers then base their decisions on the most appropriate service for the client/recipient.
Transportation Brokerages

- Created to reduce overall costs and provide clients with most efficient and appropriate mode of transportation
- Call centers are established for a point of contact for clients
- Better control of the data, billing and reporting - to compensate the transportation providers and confirming that invoices match the provided trips, before issuing payment.
- Provides a “responsible” party for the state/contracting agency, less fraud
- Offload provider contracting, processing, and policing from agency
Basic Brokerage

CALL CENTER

Brokerage Transportation Server

Agency 1
Agency 2
Agency 3
Questions?
Answers?