Deployment Strategies for Paratransit CASD Systems

Results from a Focus Group in Illinois

Paul Metaxatos
Anthony M. Pagano

Urban Transportation Center
University of Illinois at Chicago

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Overview

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- Why Focus Groups?
- CASD Implementation Alternatives
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Introduction

- CASD systems have shown to improve:
  - dispatching, scheduling, on-time performance, and passenger satisfaction
  - efficiency, effectiveness and quality of service

- However, potential benefits depend on the specifics of CASD system implementation plan and deployment strategy

- The feedback from paratransit providers in developing successful statewide CASD system deployments is a necessary condition

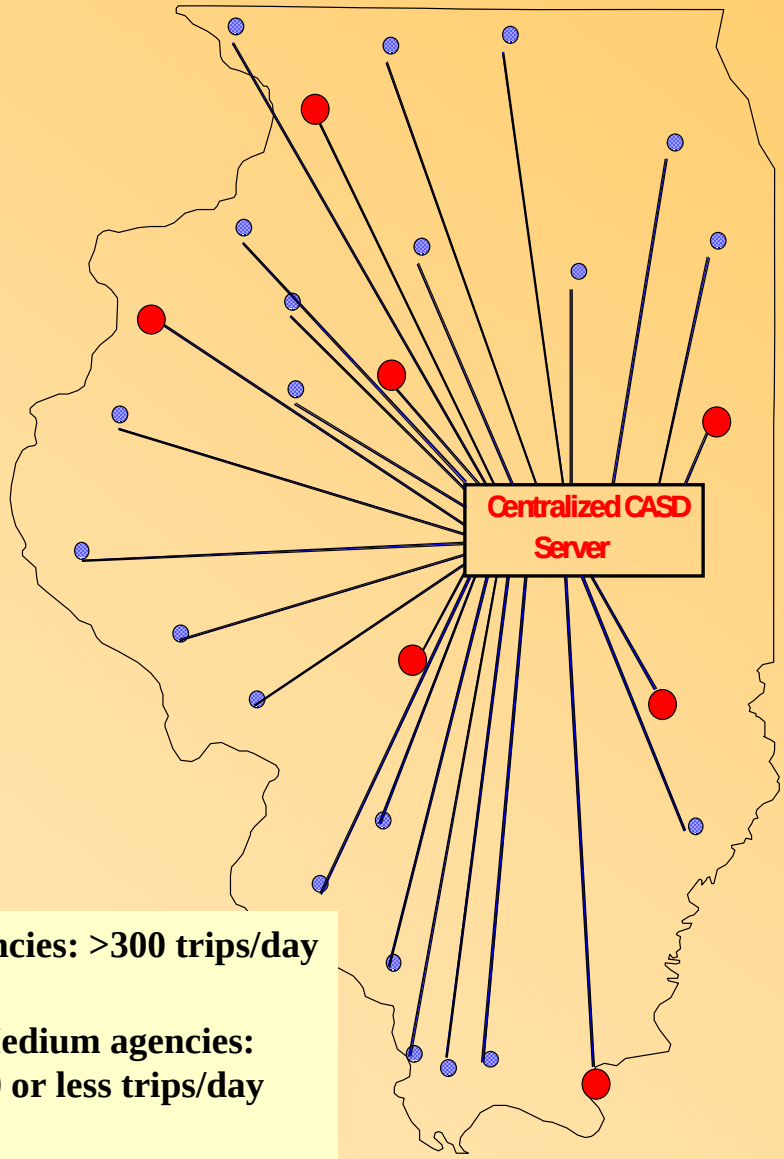
Why Focus Groups?

- Focus groups provide qualitative data that are difficult to quantify
- Focus group dynamics approximate participant interactions in real life

CASD Systems Implementation Alternatives Presented to Focus Group

CASD Scenario	Hardware	Software
Centralized	One central server serves all operators	One statewide system
Decentralized	One server per operator	One or more different systems
Regional	One server per region	One or more different systems

Centralized Approach



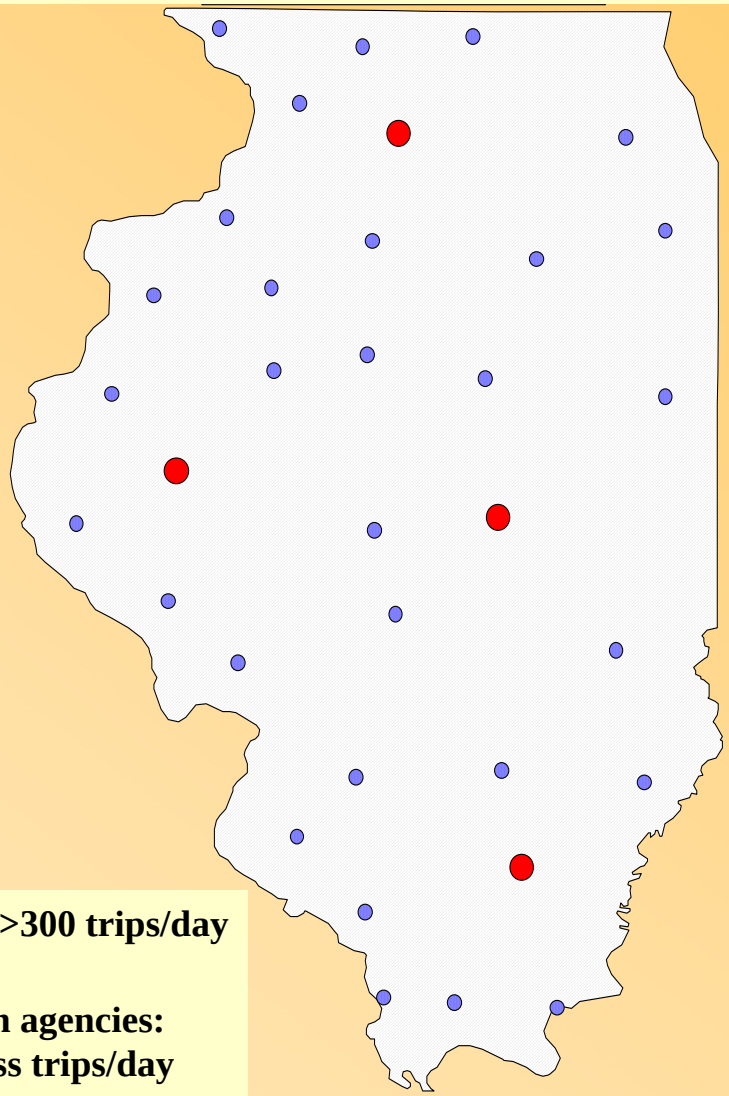
- Large agencies: >300 trips/day
- Small & Medium agencies: 300 or less trips/day

Centralized Approach (cont.)

- Advantages
  - Facilitates centralized coordination at the state level
  - Lower software costs

- Disadvantages
  - Need for reliable Internet connections
  - Fear of loosing control of services and operations
  - Absence of such statewide implementation (at the time)

Decentralized Approach



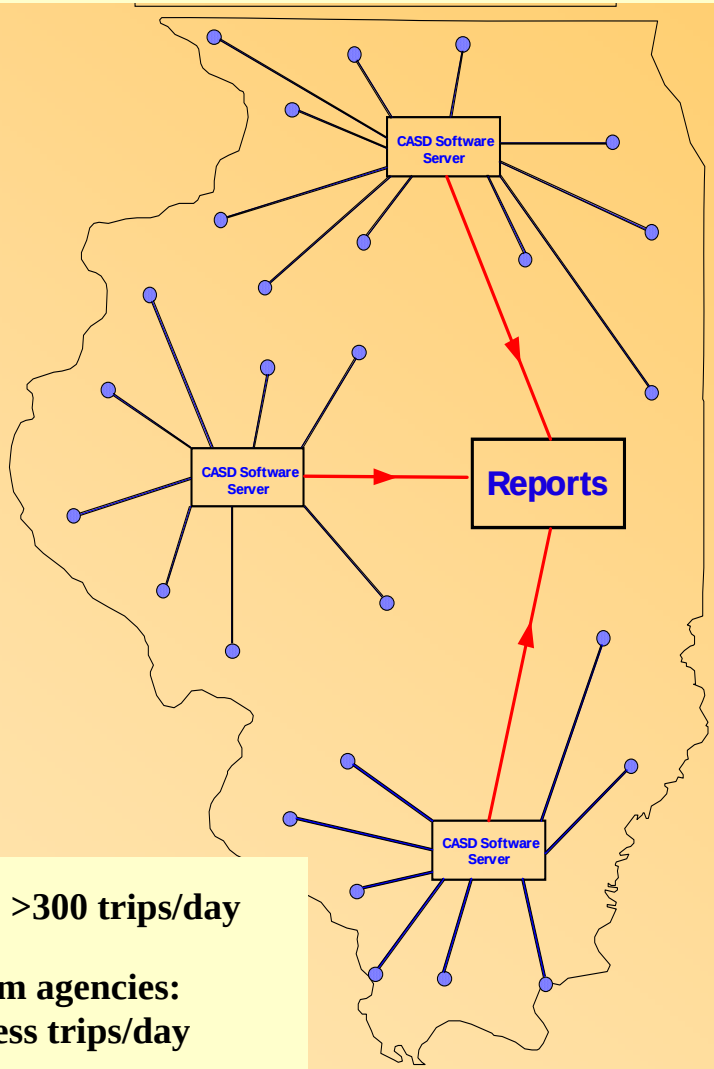
- Large agencies: >300 trips/day
- Small & Medium agencies: 300 or less trips/day

Decentralized Approach (cont.)

- Advantages
  - Offers strong local control
  - No need for high speed Internet connections

- Disadvantages
  - Need for more on-site technical support
  - Possibility of multiple standards
  - Difficulty to coordinate among multiple providers
  - Increased ownership costs

Regional Approach



CASD Software Server

Large agencies: >300 trips/day

Small & Medium agencies: 300 or less trips/day

Internet connection (operations)

Internet connection (reporting)

Regional Approach (cont.)

- Advantages
  - Little worry about maintaining and updating software and hardware
  - Facilitates monitoring of contract performance by State DOT
  - Facilitates implementation of brokerage
  - Proximity to client facilitates maintenance, training and service of client software

- Disadvantages

  Communication needs less than centralized but more than decentralized approaches

Focus Group Findings

- CASD systems functionalities in use or desired:
  - scheduling and dispatching rides (manual/automated)
  - additional software (AVL and MTD)
  - useful functionalities (client registration, scheduling, billing, trip booking, dispatching, and reporting)
  - coordination
  - willingness to act as a brokerage (software and perception barriers)

- Comments on centralized approach:
  - perception (insensitive to local needs)
  - concerns (implementation difficulties in rural areas)
  - willingness to participate (low)

Focus Group Findings (cont.)

- Comments on decentralized approach:
  - perception (difficult to customize, problematic technical support)
  - concerns (costs and expertise)
  - willingness to participate (strong from smaller operators)

- Comments on regional approach:
  - perception (positive reaction, uncertainty about costs)
  - concerns (funding, sustainability, implementation details, software issues)
  - willingness to participate (strong)

Focus Group Overall Findings

- Centralized approach too difficult for smaller agencies
- Fear of loosing control triggers desire to as much decentralization as possible
- Decentralized approach is most desired but with standardization
- Fear of half-way implementation
- State DOT should pay for software, hardware, implementation, technical support, contractual support with vendor

Implementation Issues

- Carefully plan and execute entire process
- Support robust technology and transition process
- Agencies need full financial support by State DOT to participate in a statewide CASD deployment
- Favor a less centralized approach
- Provide continuous training
- Explore additional technology (MDT, AVL, PDA, etc.)

Cost Analysis – Initial Costs

Decentralized

					Data Conversion				Training		
	Trips / Day	Software Type	Hardware Price	Software Price	Person/ Month	Cost	Support Person (On-site)	Maintenance Price	Windows / Internet	CASD software	**Total Cost of Ownership**
Large 1	600	Fully Automated	3,000	75,000	4	7,680	65,280	1,500		10,500	
Large 2	500	Fully Automated	3,000	75,000	4	7,680	65,280	1,500			
Medium 1	200	Semi Automated	2,500	25,000	2	3,840	11,520	500			
Medium 2	300	Semi Automated	2,500	25,000	2	3,840	11,520	500			
Medium 3	30	Semi Automated	2,500	25,000	2	3,840	11,520	500			
Medium 4	60	Semi Automated	2,500	25,000	2	3,840	11,520	500			
Small 1	90	Custom database	1,500	10,000	1	1,920	0	200	300		
Small 2	30	Custom database	1,500	10,000	1	1,920	0	200	300		
Total			**19,000**	**270,000**		**34,560**	**176,640**	**5,400**	**600**	**10,500**	**516,700**

Regional

					Data Conversion				Training		
	Trips / Day	Software Type	Hardware Price	Software Price	Person/ Month	Cost	Support Person (On-site)	Maintenance Price	Windows / Internet	CASD software	**Total Cost of Ownrship**
Large 1	600	Fully Automated	4,000	135,000	4	7,680	65,280	2,700		10,500	
Large 2	500	Fully Automated	4,000	135,000	4	7,680	65,280	2,700			
Medium 1	200	Browser	1,500		2	3,840					
Medium 2	300	Browser	1,500		2	3,840					
Medium 3	30	Browser	1,500		2	3,840					
Medium 4	60	Browser	1,500		2	3,840					
Small 1	90	Browser	1,500		1	1,920			300		
Small 2	30	Browser	1,500		1	1,920			300		
Total			**17,000**	**270,000**		**34,560**	**130,560**	**5,400**	**600**	**10,500**	**468,620**

Cost Analysis – Recurrent Costs

Decentralized

	Trips / Day	Support Person (On-site)	Maintenance Price	Training: Windows/ Internet	Training: CASD software	**Total Cost of Ownership**
Large 1	600	65,280	1,500		10,500	
Large 2	500	65,280	1,500			
Medium 1	200	11,520	500			
Medium 2	300	11,520	500			
Medium 3	30	11,520	500			
Medium 4	60	11,520	500			
Small 1	90	0	200	300		
Small 2	30	0	200	300		
Total		**176,640**	**5,400**	**600**	**10,500**	**193,140**

Regional

	Trips / Day	Support Person (On-site)	Maintenance Price	Training: Windows /Internet	Training: CASD software	**Total Cost of Ownership**
Large 1	600	65,280	1,500		10,500	
Large 2	500	65,280	1,500			
Medium 1	200	0	0			
Medium 2	300	0	0			
Medium 3	30	0	0			
Medium 4	60	0	0			
Small 1	90	0	0	300		
Small 2	30	0	0	300		
Total		**130,560**	**3,000**	**600**	**10,500**	**144,660**

Cost Analysis for Statewide CASD Implementation for Decentralized and Regional Approaches

Summary of Findings

- Several assumptions regarding training, staffing, hardware and software costs
- The cost of a decentralized implementation for a typical agency (not too large, not too small) was found to be about $65,000 initially (first year) and $25,000 annually thereafter (2000 dollars).
- The respective costs for the regional approach were about $60,000 initially and $18,000 annually.
- Regional approach could potentially save more than $10,000 per agency per year on average. This amounts to more than $300,000 savings per year for the 30 5311 providers in Illinois.

Conclusions

- Overcoming perceptions and fears is critical for a statewide CASD system implementation in Illinois
- A hybrid (regional) implementation seems to be favored by agencies
- Implementation costs could be substantial
- Selecting a more cost-effective implementation strategy could offer substantial savings