Driver and Dispatcher Perceptions of AATA's Advanced Operating System

Abstract

This report details results of focus groups and written surveys conducted with AATA motor coach operators. The drivers' early verdict on AOS is favorable overall; limitations in communication are generally unwelcome, but other services such as automated announcement and sign changing are enthusiastically accepted. Newer drivers were consistently more favorably inclined towards AOS than their more veteran colleagues. But regardless of an individual's enthusiasm or skepticism there seems to be a general acceptance that technologies like AOS are unavoidable in the transit industry.

In general, automation can be seen in two divergent ways, sometimes by the same individual. Automation can relieve the tedium of unwanted tasks (such as calling out stop names), and in this way free up the individual to concentrate on doing his or her job better. In contrast, automation can be seen as regimenting and eliminating driver's opportunities for delivering service in a creative fashion. The desire to be creative on the job – whether through personal interaction with customers, innovative and ad hoc transfers, or monitoring conditions that affect one's ability to drive the bus – was pervasive among drivers of all levels of experience. The drivers' verdict on AOS ultimately depends on their perception of its effect on their on-the-job control and creativity.

Overview of AATA's Advanced Operating System

In 1997, the Ann Arbor (Michigan) Transportation Authority began deploying advanced public transportation systems (APTS) technologies in its fixed route and paratransit operations. The project's concept is the integration of a range of such technologies into a comprehensive system, termed the "Advanced Operating System" (AOS) to "smart buses", "smart travelers," and a "smart operation center" to benefit from timely and coordinated information on critical aspects of transit operation and maintenance. The prime contractor for the project was Rockwell, and providers of other integrated subsystems included: Digital Recorders Research of Triangle Park, North Carolina; Trapeze Software of Mississauga, Ontario; Prima Facie of King of Prussia, Pennsylvania; REI of Omaha, Nebraska; Red Pines Instruments of Denbigh, Ontario; and Multisystems, Inc. Cambridge, Massachusetts. Evaluator for the project was a team from the Urban and Regional Planning Program of the College of Architecture and Urban Planning, University of Michigan.

"The Smart Bus"

Central to the system is the deployment of automatic vehicle location (AVL) technology in order to provide continuous real time data on the location of transit vehicles. Each bus determines its location using global positioning satellite (GPS) technology; differential corrections are broadcast to the vehicles so they can calculate their locations within one or two meters. A Mobile Data Terminal (MDT) in each vehicle stores complete route schedules on an insertable memory card. The GPS system provides accurate time to the vehicles. Buses compare scheduled times and locations with actual locations to determine their schedule adherence. If a bus determines that it is running late, the driver is advised, and if necessary, the onboard computer notifies the Operation Center. The AVL also triggers an outside destination announcement and the internal next-stop signs and announcement. It also integrates location data with fare collection, electronic controlled engine data and ultimately, automated passenger counters,

The AATA network makes use of extensive timed transfers at four major transfer points. When a bus is running behind schedule, AOS enables digital bus-to-bus communications to improve the transfer between buses; the driver of the first bus can send a digital request (that includes the bus' location) to hold the second bus to ensure that a passenger will not miss a desired transfer.

Video surveillance is provided on board vehicles for security, as well as to help resolve any claims that may arise.

On the paratransit side, drivers receive their entire schedules and mark their arrival and departure times with date, time and location information as well as all the features above.

"The Smart Operation Center"

The AATA Operation Center collects and acts upon information provided by the transit vehicle and drivers. Each AATA bus has an 800 MHZ radio and onboard computer. The system

minimizes voice transmissions by providing data messages that summarize vehicle status, operating condition, and location. Out-of-tolerance engine conditions such as oil pressure and temperature are reported in real time to the onboard computer, the Operations Center and the Maintenance Department.

Through the use of real time displays of vehicle location and schedule adherence reporting, dispatchers working at the Operation Center can manage the system and assist drivers by inserting overload vehicles in the system or recommending re-routing options. All changes to the route and schedule database are noted and automatically updated.

Onboard the vehicle, the driver has an onboard emergency system. When encountering a life-threatening situation, the driver covertly alerts the dispatcher, who immediately notes the vehicle's location on the system's center map and dials the appropriate agency. The system also allows the dispatcher to open up a central public address system inside the vehicle to monitor the situation. The system also supports responsive reporting of routine, non-life-threatening emergencies, such as passenger inconvenience.

For paratransit vehicles, reservations, scheduling, flexible integration with fixed-route, and after-trip information utilize Trapeze software. All of these elements are based on real-time information generated with the Rockwell TransitMasterTM software.

"The Smart Traveler"

The "smart travler" a person informed about his or her transportation options, as well as about current conditions relative to transit use. Inside the bus, next stop announcements, date, time and route are given to passengers utilizing the onboard public address system and a two line LED display. The driver also has the ability to trigger timed and periodic announcements for special events that can be made to support the system. Outside the bus, the current route information is announced to waiting passengers, and the destination signs are changed based upon the location. Kiosks provide real-time bus location information at selected locations; ultimately this information will be provided to travelers at their home or workplace via telephone, cable television or internet.

Driver and Dispatcher Responses to AOS

Success of a system like AOS is dependent in large measure on its effect on the individuals who come in closest contact with the technology, and their perceptions of its contribution to their ability to do the job. For this reason, this study examines perceptions of drivers and dispatcher regarding AOS. This was accomplished in two separate investgations: a series of focus groups, and a driver survey.

In late September 1997 a series of four focus groups was conducted with AATA drivers, driver/trainers and dispatchers regarding the AATA Advanced Operating System (AOS) at its early phases of deployment. The purpose of the focus groups was to assess perceptions regarding the hoped-for AOS benefits, any impediments to realizing those benefits, and any perceived disadvantages of AOS from the standpoint of the driver or dispatcher.

Focus groups were held in a structured discussion format; a guide (Appendix A) was used loosely to ensure that roughly the same areas were covered with each participating group. Discussions lasted about one and one half hours. The purpose of the focus group format -- as opposed to surveys, for example -- was to allow views to develop through interaction between individuals. Discussions were free flowing, giving individuals ample opportunity to respond to comments by other participants.

This report discusses findings from the focus groups, organizing them into themes of AOS benefits, AOS design, AOS disadvantages, and AOS and overall job satisfaction. Italicized text represents paraphrases and quotes from participating individuals.

Perceived Benefits of AOS

Customer-Related Benefits

Overall, the participating individuals saw considerable potential benefit emerging from the AOS. A regularly mentioned benefit was that of enhanced transferring; drivers are keenly interested in customer satisfaction, and see effective transferring between transit vehicles as a key element:

With the old system, the system got too busy sometimes to request transfers.

It may make it a little easier, as far as transfer messages are concerned, which means not having to go through the dispatchers which is frustrating with some dispatchers.

It helps in clearer communication and right interpretation of what you are saying. Sometimes when the dispatchers call you and you are not there, they quit and you have no idea they called. This way you will know since there will be a message waiting.

Another frequently mentioned benefit is that of removing the driver's burden of addressing passengers directly to announce stops or to put a stop to unwanted behavior, as well as the requirement to change and update signs. Apart from the potential for relief from repetitive tasks, drivers appeared eager to avoid injecting their personality into certain on-board situations.

One benefit is time point calling out. Messages to passengers, like "no smoking on bus." This way you give the message without getting involved.

It's good for passengers and us. Takes personality out of it. Calling late transfers is good.

Others were less tolerant of the constant presence of the recorded voice:

The voice coming up is nasty. We are trapped in a talking elevator. We have passengers that would say that they would not press the button because they do not want to hear the message.

The benefits of camera surveillance were also seen to be considerable. These ranged from providing evidence in case of disputes to enhancing on-board security.

The camera is for the customer, and works for solving accident claims.

The cameras helps in maintaining order. They're particularly helpful in controlling situation with the kids. I think we have cleaner buses because of them.

Others weren't sure that any absolute change had occurred because of the monitoring system but felt that it may increase comfort levels nonetheless:

As long as the customer feels more secure, even if the customer's behavior is not modified, but people want to feel better.

Pacing Information

A controversial feature of the AOS was that of the pacing information informing the driver of the bus' late or early status. A number of drivers felt that the information was unneeded:

We know where we are, even within timepoints. I always know.

Moreover, some drivers saw disadvantages to the pacing information. Since passengers are able to see the information, the "late" display might provoke some hostility:

They ask, "why are you late?"

They love it when you are on-time, but they hate it when you are late. They don't seem to notice the traffic conditions.

They say that safety comes first, but there is this obsession about being on time. You should be driving safely. There is a tradeoff.

Despite these hesitations about the pacing function, drivers allowed that there were potential benefits in certain situations:

If I have a new bid, knowing about the next timepoint is beneficial. You are still early/late even if it's on your face or not.

For a new driver it may help them with the pacing.

Service Planning and Supervision

For longer term service planning, drivers saw benefits to the comprehensive data collection of the AOS. Some felt that the system would help back up their claims regarding certain routes and schedules that are particularly difficulty to maintain:

White is receptive to hard data. You want to make sure it is not only you who is constantly running late. This can help clarify scheduling issues.

Dispatchers saw great potential benefit to the system, in many cases more than the benefit perceived by drivers. They indicated that without AOS they feel sometimes as if they are "working in the dark" and hence unable to do their job. By identifying locations of all vehicles in real time, AOS promises to allow them to act in a more proactive and professional dispatching capacity rather than in constant "firefighting" mode.

Without real-time information on bus location, our job has transformed from that of supervision to more of clerical work.

In addition, dispatchers anticipate the ability to provide accurate information about system delays. Snow days, for example, generate numerous inquiries regarding delays on particular lines, but only general information can be provided. AOS promises to afford dispatchers the ability to provide updated and specific information about travel conditions under such circumstances.

AOS Design

Drivers were asked about details of the design of the AOS that might facilitate or impede the hoped-for benefits described above. Drivers generally accepted the design and interface of the system, indicating that it fit in relatively well with their working style:

The menu system is self-explanatory, and pretty easy to operate.

Nonetheless, there were qualms about adjustments in working procedures required for effective system operation:

Since things are not being handled the same way as they used to be, there's lot of confusion around. For instance drivers forget to enter 1019 (button for logging off) when they are done for the day. So we need a lot of change of habits.

Dispatchers in particular felt that they would have benefitted from more formal training on the use of the system.

Dispatchers need a formal training. There are no manuals etc. Also I would like to know what other transit agencies are doing in such situations. Did the dispatchers in Cedar Rapids receive formal training?

During the focus groups, a number of operational details regarding system design were raised; drivers felt that resolution of these issues would yield significant benefits in system effectiveness. Issues ranged from those pertaining to the overall logic of the system to specific implementation details.

1. Voice Communications with Dispatchers: Many drivers felt that in certain circumstances

their ability to establish or maintain voice communications with dispatchers was impeded by the system.

> *I would push request to talk C it takes a lot of time. And get nothing. There is no way that I could switch to a fallback mode to voice.*
>
> *I do not like having to click that button to keep talking or listening after twenty seconds. Sometimes I miss part of the message.*
>
> *After three times (unsuccessful requests to talk), something should click to a fallback option. Or else I would be traveling around a bus for 5 hours without being able to talk.*
>
> *With the old system, you just yell out and step on someone else's radio transmission. We are on our own -- the captain of our ships --but when I call in, I want a response. We need more priority.*

2. Voice Communication with other Drivers: While the automated bus-to-bus transfer request was a greatly appreciated function, drivers felt that their inability to communicate directly with other drivers impeded their functioning in certain situations. For example, drivers may creatively facilitate transfers when they know that they are running too late to meet at the established transfer locations, and immediate driver-to-driver communication is seen as critical to this capability.

> *We lose immediate telephone access. I would also lose the names of drivers. For example, if I'm running really late and I can call up and say "Joe, I will hook up with you on Observatory" and then help my passengers. If I went to Blake, they would not have made it.*
>
> *There is a time factor of hitting "request to talk," the whole transaction, pushing the button. Which takes much more time. In that time, they are gone. Under the old system, the dispatcher could open the microphone all would hear what everyone said.*

Since these "on-the-fly" transfers are not preprogrammed, they require direct voice connections between buses, and drivers regret that the system does not afford them that opportunity.

3. Recall of Transfer Requests: Drivers occasionally find themselves in a situation in which a passenger has requested a transfer, but then changes his or her mind. Unlike the "save" and the "logout" function, a transfer request once issued cannot be recalled. Development of a recall capacity would alleviate these situations.

4. Screen Visibility: Some drivers complained that on sunny days the MDT screen is difficult to read.

5. Paratransit Concerns: Drivers of paratransit vehicles suggested modification of the system for the paratransit mode of operation. For example, flexibility and responsiveness in voice

communications is seen as important for dealing with passengers who fail to appear for a paratransit pickup.

> *Passengers have two minutes to come out before I can make it a no-show. The system took 20 minutes to respond to me, which ruined my whole day. Now, I have to wait for them to say that I can talk. Before, I could just scream out.*

> *We need a "no show" button for paratransit so that we can just register the no-show and move along. They could let us make the decision to call it a "no-show" as long as we reported it.*

A suggestion arose to use AOS to improve paratransit functioning beyond current capabilities. In order to save time, passenger trips that were canceled because of failure of the passenger to show up should be linked to the relevant return trip so that the latter can be canceled in advance.

> *Now that I'm thinking about it, a problem we have is no-shows. We get a no-show on paratransit, but the person picking up for the return trip does not know, so they waste their time, too. The system should notify the driver of the return trip.*

There was general acknowledgment that AOS led to efficiencies in paratransit pickup and dropoff:

> *We are serving more. We have more walk-ons now -- green card. More clientele.*

Yet there was concern that this may have come at the expense of some passengers being forced to ride around too long as others were picked up and dropped off:

> *The system keeps people on the bus too long. Passengers don't complain, but they are uncomfortable. It's a safety hazard.*

> *It's a liability to have a person on too long. Something could happen to them while they are on the bus.*

> *Some of those people are sick and use oxygen, etc. They should not be on long.*

Relatedly, there was some feeling that paratransit routing under AOS was particularly hectic for the driver:

> *You run around like a chicken with its head cut off.*

> *I would like to divide the city into paratransit zones.*

6. Messages: A practical suggestion for an additional preprogrammed message was brought up in one of the focus groups:

> *Lots of students get off the bus through the front door. Can we get a canned message to*

tell people to get off in the rear and cross in the rear? I have seen people get hit trying to cross in front of bus.

7. Backup Communications: The system was seen as vulnerable to failure, and in case of failure, would leave the driver without communications with the dispatcher. Several comments emphasized the desirability of backup voice communications, as well as a "failsafe" system to alert headquarters when communications from a given vehicle break down:

A small bus broke down on me, and its AOS too. I had to walk back to the garage. I was never able to communicate before it broke down. Shouldn't there be some emergency message that this happened?

8. Dispatcher Concerns: Dispatchers indicated the desire for an automatic display of the bus number with which they are communicating.

Perceived Disadvantages of AOS

Technological changes to existing modes of work can be perceived differently by different observers. For some, technology may remove the burden of tedious tasks, freeing users to concentrate on more creative aspects of their work. For others, superimposing technology on less formal modes of work is seen as imposing unnecessary structure and rigidity. Drivers' prognosis regarding the desirability of the AOS is largely determined by where their perceptions fall along this continuum.

For example, while video monitoring was welcomed by most drivers for its potential in safety and dispute resolution, one driver saw potential for crimping an interpersonal style:

I make acquaintances of regular passengers; with a monitoring system there is a negative effect on interaction with other passengers. As automation goes up, the human touch decreases. In some cities, Compton for example, drivers are shielded for safety; this is a community. A driver not only drives, but he is a sales person . . .I like to interact with people -- dispatchers and customers. I do not want to be a number, and not an accessory of the bus.

Similarly, concerns were expressed regarding the potential for technology to create dependency in drivers, and an inability to think on their own:

Are we substituting systems or really saving time? Kids started using calculators in school, and now they do not know how to multiply without a calculator. Are the answers that I am getting now better than what I got when I did the exercise manually? Are the savings of a system better than actually calling?

I do not want to see everyone getting to a mode of defaulting to the system. They should use their head in thinking about ways of solving problems. It fosters reliance on the system.

Some drivers felt they had been shortchanged compared to customers and management in the overall AOS deal:

> *Management will control equipment better. Customers can get some more information, at kiosks and the like. For the driver, we get the minimum benefits of the whole pie.*

AOS and Overall Job Satisfaction

Job satisfaction impacts were similarly affected by perceptions of technology's influence on one's individual working style. Some drivers anticipated rise in status associated with the technological skill level of the new job description:

> *AOS will make our jobs better. My job description will look much better because I can operate AOS. Maybe we'll get paid more.*

> *AOS is high tech, and the industry is low tech. So the computer interaction requirements would attract a different skilled labor pool.*

Others expressed concerns regarding potential intrusiveness of the system.

> *Every driver speeds. At some point you bend the rules, and then under AOS you have problems with liabilities. It is always against the driver.*

Others were more accepting of, or resigned to the inevitability of technological change in the workplace:

> *As technology progresses, you could be with it or without it, but you have to keep up. The system isn't very intrusive. This is the direction the job is going. There is no choice, you have to move on and adjust.*

Drivers indicated that their job satisfaction stems largely from their ability to interact with passengers in a positive fashion, to use their creativity to serve passenger needs and have autonomy and responsibility over their working day ("captain of our ship"). Where AOS is seen as serving these goals, it will engender satisfaction among drivers; where it interferes with them, drivers may be resentful of its use. The overall effect of AOS in these dimensions is still to be determined.

Driver Survey

In order to gauge the impacts referred to in this report in a quantitative fashion, a survey was conducted of AATA's motor coach operators. The purpose of the survey was to seek drivers' views on the various aspects of AOS, including the automatic vehicle location systems, the mobile data terminals (MDT) and the video cameras. Topics of the survey were classified into five categories: 1. AOS and Driver Communication; 2. AOS and Working Styles; 3. AOS and Safety; 4. AOS Reliability; and 5. AOS in General. In addition, the drivers were

asked to provide limited demographic, professional and personal information.

Methodology

The survey questionnaire was distributed to all 103 AATA Motor Coach Operators, with a request to respond anonymously. A number was attached to all survey forms to enable the surveyors to keep track of responses, and to resurvey people who did not respond to the initial request. Initially thirty eight drivers responded to the questionnaire; and 27 additional drivers responded to a followup survey. The overall response rate was 63 percent, or 65 responses out of 103 surveys distributed.

The demographics of the surveyed population are presented in Table 1:

Table 1: Survey Demographics

Gender	
Males	75%
Females	24%
Education	
Undeclared	38%
High School	16%
Some College	38%
Bachelor's Degree	6%
Post-graduate work	2%
Age	
<=30	7%
31-40	30%
41-50	40%
51 and above	23%
Length of Service with AATA	
0-4 years	61%
4.1-14 years	20%
More than 14 years	19%

Survey Findings

In AOS and Driver Communication, a large majority of AATA's motor coach operators indicated that is is important to be able to communicate directly with other drivers while driving, and felt that AOS impedes that communication. Nonetheless, a majority felt that messages that come over the MDT were easier to understand than those that come by radio.

Table 2: AOS and Driver Communication

Statement	Percent Agree	Percent Neutral or Undecided	Percent Disagree
Communicating directly with other drivers is important to me when I'm	82%	16%	2%

driving a bus.			
Messages the come over the MDT are easier to understand.	62%	20%	18%
AOS makes it easier to communicate with dispatchers.	23%	35%	42%
AOS makes it easier to communicate with other drivers.	17%	21%	62%

In AOS and Working Styles, an overwhelming majority of drivers reported a favorable response to automated announcements and sign changing.

Table 3: AOS and Working Styles

Statement	Percent Agree	Percent Neutral or Undecided	Percent Disagree
AOS' automated announcements are helpful to me.	97%	1.5%	1.5%
AOS' automated sign changing is helpful to me.	97%	1.5%	1.5%

The majority of drivers felt that they received enough training on how to use AOS. Only a small fraction of drivers liked driving without AOS better than with it; thus the overall verdict appears positive. Pacing information receives a moderately favorable rating overall.

Table 4: AOS in General

Statement	Percent Agree	Percent Neutral or Undecided	Percent Disagree
I received enough training on how to use AOS.	80%	14%	6%
I like driving without AOS better than with it.	14%	27%	59%
Pacing information helps keep me on schedule with a route I don't know well.	66%	26%	8%
Pacing information helps keep me on schedule with a route I know well.	63%	28%	9%

Analysis of Results by Sub-Groups

Analysis of subgroups reveals noticeable differences in views of AOS between men and women, and notably between veteran motor coach operators and more novice drivers. In general, drivers with fewer years of experience are more satisfied with AOS than more senior drivers. In the area of safety, female drivers perceptions are improved more than their male counterparts.

Table 5: Crosstabulation of Selected Variables by Years of Drivers' Service

Statement	Length of Service		
	4 years or fewer	4.1-14 years	Over 14 years
AOS makes it easier to communicate with dispatchers	80%	13%	7%
If I need more explanation about a message that comes over MDT, it is difficult to get that additional explanation	23%	27%	50%
AOS makes me feel safer when I'm driving	55%	25%	20%
AOS allows me to respond more effectively if my safety is threatened	50%	21%	28%
AOS allows me to respond more effectively if my passengers' safety is threatened	52%	21%	28%

Table 6: Crosstabulation of Safety Variables by Drivers' Gender

Statement	Female Drivers	Male Drivers
AOS makes me feel safer when I'm driving	70%	30%
AOS allows me to respond more effectively if my safety is threatened	58%	41%
AOS allows me to respond more effectively if my passengers' safety is threatened	56%	44%

Conclusion

The verdict on AOS is mixed overall; limitations in communication are generally unwelcome, but other services such as automated announcement and sign changing are enthusiastically accepted. But regardless of an individual's enthusiasm or skepticism there seems to be a general acceptance that technologies like AOS are unavoidable in the transit industry.

The driver survey found that a majority of drivers felt that is was important to be able to communicate directly with other drivers while they are driving. However, while a majority of drivers agreed that messages that come over the MDT were easier to understand than those that come by radio, few felt that AOS facilitated easier communication both with the dispatchers and with other drivers.

Further analysis of the responses found that drivers who have worked with AATA longer tend not to prefer AOS's communication or safety features. Newer drivers also held greater confidence in the system's safety features in situations threatening to themselves or their

passengers. In general, the survey found the length of a driver's service to be an influential factor on drivers' responses to AOS communication and safety features. In addition, survey results revealed that gender influenced a driver's views of AOS' safety systems; female motor coach operators felt more positively regarding the effectiveness of the safety system in threatening situations.

A large majority of drivers found the automated announcements and sign changing features of AOS helpful in their operation of the bus. The surveyed drivers also responded favorably to the pacing information that AOS provides.

In general, automation can be seen in two divergent ways, sometimes by the same individual. Automation can relieve the tedium of unwanted tasks (such as calling out stop names), and in this way free up the individual to concentrate on doing his or her job better. In contrast, automation can be seen as regimenting and eliminating driver's opportunities for delivering service in a creative fashion. The desire to be creative on the job – whether through personal interaction with customers, innovative and ad hoc transfers, or monitoring conditions that affect one's ability to drive the bus – was pervasive among drivers of all levels of experience. The drivers' verdict on AOS ultimately depends on their perception of its effect on their on-the-job control and creativity.

Appendix A: Interview Format for Focus Groups

Who Are We

University of Michigan team contracted to evaluate Ann Arbor Transportation Authority's Advanced Operating System. Evaluation includes assessing effects on:

Service Delivery
Operations and Administration
Customers
Employees

Ask all UM and AATA participants to introduce themselves

What do we Hope to Accomplish

Find out, informally, about

Important issues pertaining your ability to do your job that you hope AOS will help in
Ability of AOS to help in those areas/Limitations or barriers reducing AOS's help in those areas
Concerns you may have about AOS

Thank you for your participation!

Ground Rules for Focus Group Discussion

1. Allow everybody to participate, nobody dominates
2. If you agree with something that has been said: indicate your agreement, but don't spend time repeating it
3. Disagreeing with statements is fine, criticizing them isn't
4. Stay on topic
5. Moderator stays out of the way as much as possible, but will help guide conversation
6. What you say here may end up in a report, but everything will be reported anonymously
7. We'll finish no later than __:__.
8. Ask clarifying questions if we use an unfamiliar term
9. Help yourself to snacks

From what you know, what's your view -- or the view of other drivers -- of the design of AOS:

User interface
How clear or unclear is the appropriate use of AOS, e.g., which kind of messages in which situations? (If unclear, can you give specific situations that are ambiguous)
Do you feel you had or didn't have input to the design of the system?
Are there any ways that you hope the AOS will help you do your job C either by making your work easier or by improving the service you're able to give to AATA passengers? What are the most important of these ways?

Are you confident or not confident that AOS will help you in the ways you hope? If not confident, are there particular reasons why you think might not get out of AOS what you hope?

Are there any ways that you're concerned that AOS will make your job more difficult, less enjoyable, or will reduce the quality of service that you're able to give AATA passengers?

For each of the following issues, what are the areas in which you have hopes or concerns for AOS?

Safety, security and disputes on board buses or at stops or terminals
Service that the AATA traveler will receive
How AATA functions as an organization, relations between different individuals and groups within AATA
Drivers' training in general, and training in use of AOS in particular
How AOS will affect your working with AATAs rules and procedures
Your ability to be creative on your job.
Your ability to influence decisions, both day-to-day and longer term

What are the most important elements influencing how satisfied or dissatisfied you are on your job? Do you see AOS influencing those elements? How?

Appendix B: Survey Questionnaire with Proportion Agreeing or Strongly Agreeing

AATA -- AOS Driver Survey: Proportion of Drivers / Agree & Strongly Agree
(Frequency and Percentage)

AOS and Driver Communication

1. AOS makes it easier to communicate with dispatchers. **15 23.0%**

2. AOS makes it easier to communicate with other drivers. **11 16.7%**

3. Communicating directly with other drivers is important to me when I'm driving a bus. **54 81.8%**

4. AOS lets me communicate messages to the dispatcher faster than by radio. **16 24.2%**

5. It is easier to understand messages that come over the mobile data terminal (MDT) than those that come by radio. **41 62.1%**

6. If I need more explanation about a message that comes over the MDT, it is difficult to get that additional explanation. **22 33.4%**

7. The mobile data terminal (MDT) menu system is difficult to use while I'm driving the bus. **22 33.3%**

8. AOS has increased the number of transfers that my passengers are able to make successfully. **27 40.9%**

AOS and Working Styles

9. AOS helps me help the passenger. **29 44.0%**

10. AOS gets in the way of my creativity on the job. **8 12.1%**

11. AOS takes burdensome details off of my shoulders so I can concentrate on my work. **34 51.5%**

12. AOS: automated announcements are helpful to me. **62 93.9%**

13. AOS automated sign changing is helpful to me. **64 96.9%**

14. Working with AOS reduces the amount of control I have over my working day. **7 10.7%**

15. AOS gets in the way of my relations with my passengers. **9 13.7%**

16. With AOS I hear less voice traffic on the bus: radio system. **59 89.4%**

17. I prefer to hear a lot of voice traffic over the bus: radio system. **22 33.3%**

AOS and Safety

18. AOS allows me to respond more effectively if my safety is threatened. **28 42.5%**

19. AOS allows me to respond more effectively if my passengers' safety is threatened. **29 44.0%**

20. AOS makes me feel safer when I:m driving. **20 30.3%**

21. AOS helps me with disruptive passengers.
25 38.5%

22. Knowing that they're being taped has improved the behavior of some passengers.
37 56.0%

AOS Reliability

23. I have adequate backup systems available to me for those times that AOS is not working properly.
21 31.8%

24. Currently, AOS breaks down too often.
37 57.0%

25. In the future I think that AOS will be a dependable system.
44 66.7%

26. I'm concerned that over the long run, AATA might not have the resources to keep AOS working properly.
28 42.4%

AOS in General

27. I received enough training on how to use AOS.
53 80.3%

28. I like driving without AOS better than with it.
9 13.6%

29. Outside of my job, I feel pretty comfortable with computers.
37 56.0%

Please answer the following questions only if you are an MCO:

30. Pacing information helps me keep on schedule if I'm driving a route that I don't know well.
43 66.2%

31. Pacing information helps me keep on schedule even if I'm driving a route I know well.
41 63.1%

How long have you been driving for AATA?

_____ _____
Years Months

Did you train drivers in the use of AOS?

_____ _____
Yes No

In what year were you born?
19___

Are you:

_____ _____
Male Female

Do you work for AATA:

_____ _____
Full-time Part-time

Which do you drive:

_____ _____ _____
Regular Bus Paratransit Both

How many years of school did you complete:

_____ Less than high school
_____ High school graduate
_____ Some college
_____ Bachelor's degree
_____ Post-graduate study