



NEW YORK CITY TAXI & LIMOUSINE COMMISSION

City of New York Taxi and Limousine Commission (TLC) Passenger Focus Group Report

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1 SUMMARY

Four focus groups with New York City medallion taxicab users were held in mid-November 2004 to gain an in-depth understanding of taxi passengers' needs, perspectives and likely reactions to TLC's planned technology enhancements. The research was designed specifically to identify and understand base requirements that when incorporated into the Request for Proposal (RFP) process are likely to significantly improve the overall success of the project.

Key findings from the passenger focus groups are:

1.1 Overall Passenger Experience

- Many passengers treat their time riding in cabs as an opportunity to take a "time out," collect their thoughts, and perhaps watch the city go by. Taxi rides provide a valued break from respondents' fast-paced lives. Passengers want to maintain control of the in-cab environment and maintain their ability to "zone out." The passenger information monitors must not negatively affect this experience or remove control of the in-cab environment from the passenger.
- Passengers often have a feeling of unease with drivers due to uncertainty as to whether the driver knows the most direct route to the destination and will drive safely to get there. Enhancements that address this issue are thus highly valued.
- Passengers want good customer service in the cab ride and want to feel treated as a customer. They are very receptive to enhancements that would improve their sense of being treated as a customer, such as credit/debit card acceptance and enhanced means to return lost property.

1.2 Credit/Debit Card Acceptance

- The ability to pay by credit or debit card is a highly valued enhancement.
- An additional payment method that was popular and caused visible excitement to the respondents was the use of a prepaid card, modeled on the MetroCard, available in retail outlets and refillable in taxicabs using a credit card. The big selling points of prepaid cards is the speed and reliability of the transaction, reduced worry about fraud and a means to control their personal spending on cab fares.
- Surcharges for credit/debit card use are viewed as unfair and unreasonable, particularly on the heels of the recent fare increase. Respondents expect the business to pay credit/debit card transaction costs.
- Speed and reliability of transactions are essential. Acceptance, satisfaction and usage rates will be highly dependent on quick transaction times and very high reliability of the credit/debit card validation process.
- Respondents are highly concerned with the security of credit cards. They need to feel that card security is guaranteed.

- Passengers want to maintain control of the transaction. This means that they want to swipe their credit/debit card themselves and add the tip to the fare amount without the driver's involvement.
- Passengers envision that signing a small screen, or the PIN, would be the quickest and easiest way to sign for credit card transactions or input the PIN number. Signing a paper receipt is also acceptable to most respondents, provided that it is quick and easy.
- Some respondents are receptive to pre-authorization of credit and debit cards for longer trips, to prevent situations from arising where they were planning to pay using non-cash methods but are not able to do so at the end of the trip. Other respondents do not accept the idea of pre-authorization.
- Findings indicated that the taxi medallion number or a tracking number is highly desired on the credit card or bank statement.
- Findings indicated that cash, prepaid cards or debit cards are seen as the best fit for short trips (under \$10).
- Findings indicated that for business travel, credit cards and prepaid cards are preferred.
- Respondents would tend to pay for longer trips with credit, debit or prepaid cards.
- Respondents need to experience the level of convenience, speed and reliability of non-cash payment methods before they can determine how frequently they want to use credit, debit and prepaid cards.
- Whether credit/debit card acceptance in taxicabs will result in increased ridership and/or increased tipping are vexing questions. Arguments can be made pro and con on both issues. Further experience will be required to determine the impact on ridership and tipping.

1.3 Passenger Information Monitors

- Acceptance and enthusiasm of the Passenger Information Monitors (PIM) concept is highly dependent on PIM capabilities, advertising issues and passenger control.
- Properly configured, the PIMs appear to have the potential to generate substantial customer enthusiasm, although less value based on this concept-level discussion, than credit/debit card acceptance.
- Mediocre content, too much or the wrong kind of advertising, or lack of passenger control of the PIM audio and video could easily turn the PIM into an annoying and resented intrusion.
- Because of its practical utility, the map is attractive to most respondents and a primary selling point to some.

- Desired content is news, weather, sports scores, stock prices, restaurant and movie listings, airline flight information, a flight check-in feature, ability to purchase or reserve movie or Broadway tickets, and Internet access.
- Passengers want to choose among a range of content. Choice of content ensures that content is tailored to passengers' interests and needs and provides a sense of control.
- Respondents see themselves as a captive audience and strongly resist having advertising forced on them. Acceptable forms of advertising were those that the customers perceived as valuable, such as sponsorships and movie previews.
- Passenger control of audio and video levels is essential to acceptance of the PIM.

1.4 Text Messaging and Automatic Vehicle Location Tracking

- Overall reaction to both text messaging and automatic vehicle location tracking is positive, although neither has the intensity of interest as credit/debit card acceptance or passenger information monitors.
- Benefits include finding lost property, more accurate trip sheets, and enhanced safety.
- The primary concern expressed is driver distraction from text messaging screens. Respondents suggest that messages should be displayed only when the cab is stopped.
- Some comments were raised regarding AVL possibly creating privacy issues, although respondents generally dismiss this as a concern for them personally. Concerns in this area are allayed if respondents are assured that the information is properly safeguarded.

1.5 Conclusions

Based on the information gathered during the passenger focus groups, the following conclusions can be made:

1.5.1 Credit/Debit Card Acceptance

- Passengers should swipe the credit, debit and prepaid cards themselves.
- Passengers should add the tip amount using the PIM or similar screen. The screen should display tip amounts for a 15 percent tip and a 20 percent tip, and provide capability for passengers to select one of these choices, to enter a different amount or to enter no tip.
- Tolls should be added automatically to the fare where possible.
- The PIN number should be entered on the PIM or similar screen.

- Alternative methods for obtaining signatures for credit card transactions should be evaluated based on speed, ease of use and cost. These methods should include electronic signatures on the PIM or similar screen; signatures on a paper receipt; and no signature required, at least for relatively small transactions.
- The card processing and communication equipment should be very highly reliable.
- The speed of card processing should be as fast as possible.
- Pre-authorization for long trips, or possibly for out-of-city trips, should be considered based on time required for pre-authorization, cost, convenience and driver and passenger acceptance.
- Credit card and bank statements should include clear indication of the purpose of the charge (taxi ride), the date of the transaction and a tracking number, which may be the medallion number or other tracking number.
- All major credit cards should be accepted in all taxicabs.
- The use of prepaid cards should be considered for use in taxicabs. Credit/debit card equipment should be capable of accepting prepaid cards. Prepaid cards should be accepted in all taxicabs. The use of the MetroCard prepaid model that requires the manual adding of value to the card is more desirable than the E-ZPass model of automatic replenishment of value.
- There should be no passenger surcharges for using credit, debit or prepaid cards.
- Passengers should be educated on the security of credit card information in a taxi environment.

1.5.2 Passenger Information Monitors

- Passenger acceptance and satisfaction with PIM content and controls is very important.
- The map should be featured as a key aspect of the PIM. The addition of a capability for showing the route to the destination on the PIM map is desirable, in addition this information could potentially be used by the driver if there was a driver based PIM.
- The PIM should provide news, weather, sports scores, stock prices, restaurant directory, movie directory, Broadway show directory, traffic information and the ability to look up cross-streets of an address. This information should be updated regularly. Passengers should be able to choose the type of information they view.
- Providing enhanced information services such as Internet connections and pre-flight check-in should be considered.
- Advertising on the PIM should have value to the viewer.
- Passengers should be able to turn off the PIM audio. Whether the audio starts at “normal” or “low” requires further evaluation.

- Passengers should be able to dim the video to eliminate glare effects, particularly at night. Whether the monitor should be capable of being turned off requires further evaluation.

1.5.3 Text Messaging and Vehicle Location Tracking

- Text messaging screens and message delivery should be designed to minimize driver distraction. (Detailed recommendations will be made based on results of the driver focus groups.)
- TLC should ensure that AVL data is safeguarded to maintain appropriate passenger privacy.

2 PURPOSE

In March 2004, the Taxi and Limousine Commission (TLC) adopted a series of technological enhancements to be installed in New York City medallion taxicabs by November 2005. With the assistance of CTGi, Inc., TLC is currently drafting a Request for Proposals (RFP) to be issued to potential vendors who will supply equipment and services to taxicab owners, to implement the enhancement program and meet TLC requirements. The RFP will include equipment and service specifications and evaluation criteria for a pilot implementation of the new technologies.

Taxicab passengers and drivers are the two groups most directly and immediately affected by these initiatives. The success of project implementation is dependent, in large part, on passenger and driver acceptance and satisfaction with the new technologies. Acceptance and satisfaction are dependent, in turn, on understanding and meeting the needs and taking into account the likely reaction of these groups to each of the technology enhancements.

Focus groups were held with taxicab passengers and drivers to gain an in-depth understanding of each group's needs, perspectives and likely reactions to the new technologies, and in particular, to identify and understand base requirements that are likely to significantly improve the overall success of the project. Focus groups are structured group processes used to obtain detailed information about a particular topic. Focus groups are particularly useful for exploring attitudes and feelings and to draw out precise issues that may be unknown to the researcher.

The objectives of the passenger and driver focus groups are:

- To gain specific highly qualified feedback, ideas, recommendations and draw out valid concerns regarding usability, practicality, implementation, cost, support, and ongoing issues that must be assessed in selecting specific technologies and processes.
- Gather highly qualified input on specific issues of how recommended technologies would be perceived, used, and valued by passengers and drivers.
- Gather input for formulation of pilot assessment criteria.
- Identify topics and provide question wording and response categories for quantitative in-cab passenger surveys.

This report summarizes the results of the passenger focus groups. A separate report summarizes results from the driver focus groups.

3 METHODOLOGY

Four passenger focus groups were held on November 17 and 18, 2004 at 5:30 p.m. and 7:30 p.m. at a focus group facility in Midtown Manhattan. Participants were recruited in Midtown Manhattan and Greenwich Village in order to include both business-oriented and leisure-oriented taxi users. Participants included residents of all five boroughs, frequent and occasional taxi users, riders who tend to take relatively long and relatively short trips and a mix of age, gender and race/ethnicity.

Participants were segmented based on age, frequency of taxi usage and typical trip length on the expectation that these factors may influence reaction to the service enhancements:

- Group A: Frequent taxi users under age 35.
- Group B: Taxi users with primarily longer trips (e.g., over 20 minutes), including both airport and non-airport trips.
- Group C: Occasional taxi users over age 35.
- Group D: Mix of age and ridership frequency.

Focus group discussions covered respondents' overall experience with riding in taxicabs and reaction to the four technological enhancements: credit/debit card acceptance, passenger information monitors, location tracking and electronic trip sheets. Respondents were also asked to complete one-page questionnaires on credit/debit card acceptance and passenger information monitors. The discussion guide and questionnaires are in Appendix A.

Discussions were captured on audio tape and reviewed in detail for the preparation of this report. Following the structure of the discussions, findings are presented for:

- Overall passenger experience
- Credit/debit card acceptance
- Passenger information monitors, and
- Location tracking and electronic trip sheets.

Enhancements were discussed at the concept level without use of sample screens or similar stimuli. The focus group discussions were designed primarily to provide insights into customer perceptions of the enhancements, to define customer needs and to serve as a guide for RFP development and a basis for developing evaluation criteria for vendor proposals and the pilot testing. As such, the discussions were exploratory in nature. Because of the exploratory nature of this research, quantitative verification of the results and customer testing based on reaction to actual products may be needed.

Bruce Schaller, Principal of Schaller Consulting, moderated the focus groups. Mr. Schaller is an experienced focus group moderator with extensive experience on taxicab and other transportation issues in New York and other major U.S. cities. He has

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moderated focus groups on taxicab, for-hire vehicle and transit issues in New York, Chicago, Los Angeles, San Diego, the Washington DC area and other U.S. cities.

4 OVERALL PASSENGER EXPERIENCE

The purpose of this segment was to identify current feelings about the passenger experience as a context for how the planned service enhancements might change the experience. Prior to the discussion of the four service enhancements, respondents were asked about their taxicab riding experience.

Participants were given a sheet with four diagrams (see the “Emot” graphs in Appendix B) and asked to choose which diagram best represents to them the experience of riding in the back seat of a New York City yellow medallion taxicab. Participants were asked to describe the diagram that they chose. The diagrams do not have any predefined meaning although each diagram tends to be associated with certain types of feelings. The exercise is a vehicle for participants to describe their most important feelings about the taxi riding experience.

Various diagrams were chosen by different respondents. Respondents who chose “A” describe the experience of riding in a cab as jerky or inconsistent. Those choosing “B” associate the square with the Manhattan street grid and see riding in a cab as straightforward, albeit with an occasional trip around the block. The “C” diagram is associated with going in circles but finally reaching a destination. Respondents choosing “D” described their experiences as “horrible,” “hideous,” a “carnival ride” and involving roundabout routes.

4.1 Common Themes Relating to the Passenger Experience

Reaction to the four diagrams led to a more general discussion of the passenger experience. Several major themes can be identified from the discussions.

First, many passengers treat a cab ride as an opportunity to “zone out,” take a “time out,” collect their thoughts, and perhaps watch the city go by. Respondents lead hectic, fast-paced lives and the ride, even short rides, provides a break. The ride can also be a break from the stress and uncertainty of trying to hail a cab during rush hour, or trying to find a driver willing to go to the Bronx.

Within the Manhattan grid, cab-riding tends to be reasonably relaxing. Both driver and passenger know the appropriate route to the destination, the cab’s location is easily tracked, and the trip is “simple” and “easy.”

For some, however, even “simple” trips within the Manhattan street grid are “frightening” and “jerky” because drivers drive very fast. Passengers worry about being in an accident, which could result in personal injury or the injury of a pedestrian. Some respondents reported feeling car sick, as well.

There is also often a feeling of unease between passenger and driver. Respondents report not knowing whether the driver knows the route to the destination. Respondents fear that the driver will waste time and (probably inadvertently) run up the fare. This may lead to a negotiation or conflict at the end of the ride. Passengers wait uncomfortably, not knowing what may happen. Some passengers respond to this situation by taking control

and instructing the driver on the desired route. Others give over control to the driver and hope for the best.

Running throughout these specific comments is a clear definition of what passengers want in the ride. They want to have confidence in the driver's abilities – both safe driving and knowing the route. They want to feel that the driver is attending to their needs in a safe, smooth ride. They want to be able to relax, “zone out” and watch the city go by during the ride. These needs are sometimes met and sometimes not met.

Respondents repeatedly mention driver cell phone use as annoying and irritating. Driver cell phone use is emblematic of drivers not being sensitive to passengers' needs, of their not paying attention to driving and not paying attention to reaching the passenger's destination quickly, directly and smoothly.

Respondents were a well-traveled group and compared the New York cab riding experience with taking cabs in London, Germany, Australia, New Zealand and Malaysia. Whenever respondents made a comparison, the New York experience came up short – although it should be noted that comparisons were not the objective of the discussions. The point is that respondents would like to see New York live up to their favorable experiences in other world-class cities.

4.2 Implications for Service Enhancements

The implications of respondents' feelings about their current cab-riding experiences are four fold.

First, passengers want to feel that the cabs provide good customer service. They are very receptive to enhancements that may improve their sense of being treated as a customer. For example, respondents suggested displaying the map for the driver rather than for passengers as an aid for drivers to find the shortest or quickest route. Respondents' desire to be treated as a customer also means that passengers expect “the business” to pay the cost of credit card processing, analogous to their experience with other providers of goods and services.

Second, passengers want to maintain control of the credit card acceptance process and the PIM. They want to control the credit card process because they do not trust drivers to handle the cards and carry through with the transaction quickly and properly. They want to control volume and video on the PIM so that, if they choose, they can ride in silence and without distraction.

Third, the PIM will need to provide a very attractive, high-quality experience to be preferred over simply “zoning out.” As discussed below, for some passengers being left alone in the cab is preferable than watching the PIM, as they understood the PIM from the discussions. Many others are receptive to the PIM, however, provided that that it provides useful, interesting content.

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Finally, passengers are concerned about text messaging distracting drivers and decreasing traffic safety. Passengers already view riding in a cab as an unsafe experience and are concerned about the potential of text messaging to aggravate the situation.

5 CREDIT AND DEBIT CARD ACCEPTANCE

5.1 Overall Reaction

Respondent's overall reaction to credit and debit card acceptance in taxicabs is overwhelmingly positive. They view it as a convenience, a substantial improvement in the cab-riding experience and a sign of being treated more as a customer. They also view credit/debit card acceptance as "keeping up" with the transit system, which accepts credit and debit cards for MetroCard purchases.

At the end of each focus group, respondents were asked to identify the two things among the enhancements discussed that provide the most value to them, and the two things that cause concern or are issues to them. Credit, debit and prepaid card acceptance was overwhelmingly the most-named improvement, cited by 29 of the 39 focus group participants. Two credit/debit card features were also highlighted as concerns or issues: security of the credit card numbers and surcharges on card transactions. Both are discussed below.

5.1.1 Value of Credit/Debit Card Acceptance

Credit/debit cards are viewed as a convenience. If cabs accept credit and debit cards, respondents would not need to worry about having enough cash for the cab fare. Even if short of cash, they would not need to stop at an ATM machine before they hail a cab. Business users would not need to lay out cash for the fare and then be reimbursed, saving paperwork. These are viewed as key benefits.

Respondents expect that credit/debit card users would be people who have no cash, passengers taking longer trips where having enough cash is an issue, business travelers, tourists, and people who typically put everything on credit cards.

The least likely situations for credit/debit card usage are short trips. Cash availability is less critical for short trips. Respondents expect that the credit/debit card transaction will take more time than cash – where they often have the cash ready at the end of the trip – and so card use does not fit with the desire for a short, quick trip and payment process.

5.2 Processing Credit/Debit Card Transactions

The focus groups spent a considerable amount of time discussing particular aspects of the credit and debit card transaction: who swipes the card, how to add tips and tolls, signature and verification issues and desired information on their bank statements. Respondents first discussed these issues in some detail, and then completed a written questionnaire that included these topics and then discussed specific points not previously covered.

Three overall objectives for the credit/debit card acceptance process emerged from the discussions. First, passengers want to maintain control of the transaction. The desire for control affects who handles the credit/debit cards, how the tip is applied, and concerns about security of their card information.

Second and related to the issue of control, passengers want to minimize the amount of communications with drivers in the transaction process in light of the communications difficulties that they now experience with drivers. One respondent commented, “The less you have to communicate with certain cab drivers, the better off you are. Because as soon as you get into a discussion, you have to hope they understand you, number one, [but] half the time they don’t.” Maintaining control of the transaction serves to minimize the amount of passenger/driver interaction.

Third, passengers want the transaction to be quick and simple. They do not want to waste time and they know the driver does not want to waste time. Respondents are sensitive to delaying the next passenger or to be delayed as they wait for someone to exit a cab. The MetroCard vending machines provide an example of a quick, simple transaction process, one respondent stated, “Whatever you’re going to institute, it should be really simple. The best example is how the metro system works here. I don’t want to be standing around waiting for a taxi while somebody’s fumbling with a credit card and making choices and options and all that stuff.”

5.2.1 Swiping

Respondents almost universally prefer to swipe the card themselves. Most respondents consider the driver swiping their card to be not acceptable. On the credit/debit card questionnaire, 32 of the 39 respondents indicated that “passenger swipes credit/debit card” is “ideal.” Conversely, 27 said the driver swiping the card is “not acceptable.” (See Table 1.)

The basic issue with drivers swiping the card is trust. Separated from the driver by the partition and seatback, passengers can’t see the driver, so they can’t see what they are doing with their card. Respondents have less trust in a cab than in a restaurant environment; they fear that drivers may write down card information. Unlike in a restaurant (i.e., the one other setting in which credit/debit cards are removed from sight of customers), cabs do not have an “infrastructure” in the form of a manager. One respondent said “[There are no] other waiters there, so if something happens, you scream” and are able to obtain assistance.

5.2.2 Adding Tips and Tolls

Respondents emphasized the importance of passenger control over the tip amount. They did not want a standard percentage tip added to the fare automatically. Respondents felt strongly that tips should reflect the quality of service provided. For good service, they wanted to be able to give a bigger tip as a type of reward. Respondents also want to reduce or withhold the tip for a driver “with a nasty personality.” Thus, neither the tip nor the amount should be mandatory but up to the discretion of the passenger.

Control is maximized by passengers keying in the tip amount on the PIM or other handheld device themselves. Large majorities of respondents indicated in the questionnaire that “passenger keys in tip using keypad” is “ideal.” Large majorities feel

that having drivers entering the tip amount into the taximeter after passengers write the tip on the receipt is “not acceptable.” (See Table 1.)

Table 1 - Responses to Credit/Debit Card Questionnaire

(# Respondents answering in each response category)

SWIPING CARD		Ideal	Acceptable	Not Acceptable
1	Driver swipes credit/debit card	1	10	27
2	Passenger swipes credit/debit card	32	6	1
ADDING TIPS AND TOLLS				
3	Passenger writes tip on receipt and hands to driver, who enters tip amount into taximeter	1	9	29
4	Passenger tells driver the tip amount to add to fare	1	13	25
5	Passenger keys in tip using keypad	29	9	0
6	Tolls added automatically	16	16	7
7	Driver enters tolls into taximeter	1	19	19
SIGNATURES				
8	Passenger signs paper receipt	3	25	11
9	Passenger signs a screen on handheld device	30	8	1
PRE-AUTHORIZATION (WHEN TRIP BEGINS)				
10	Pre-authorize card for trips over specified length	8	18	12
SURCHARGES				
11	5% surcharge to passengers for credit/debit card use	0	7	32
12	Notice in cab that driver pays 5% fee for credit/debit transactions	6	13	19
NUMBER OF CREDIT CARDS ACCEPTED				
13	Same credit cards accepted in all cabs	33	4	2
14	Some variation in which credit cards are accepted	0	14	24
HOW CHARGE APPEARS ON CREDIT CARD OR BANK STATEMENT				
15	“NYC taxicab” and date of transaction	26	13	0
16	Merchant name and date of transaction	2	20	15

Respondents are enthusiastic about the enhanced sense of control and accuracy they can gain in the credit/debit card transaction process. In paying with cash it can be difficult to calculate the tip. In addition, some passengers are unsure of how much to tip.

Both issues can be addressed with the new technology. Passengers would like the PIM to include a display showing amount of the tip from alternative percentages. They suggest listing the dollar amount of a 15 percent and 20 percent tip, or of a 10 percent, 15 percent and 20 percent tip. The menu saves passengers from needing to multiply the fare by the desired tip percentage and from possible mistakes in making the computation. One

respondent stated, “There are times I don’t want to do the calculations in my mind, and yet, I don’t want to under tip or overpay.” The respondents felt that the PIM should display these alternatives and also a way to key in a different tip amount. Passengers could thus select one of the pre-determined alternatives or indicate a different amount. Having the choices displayed provides choice and makes the process quick, accurate and simple.

Some passengers would appreciate guidance on the appropriate tip amount. Some respondents have taken cabs for years but are still unsure if fifteen percent is an appropriate or a different amount. Thus, the PIM should show a “suggested” amount and let passengers select that amount or a different amount for the tip. Fifteen percent, or 15 to 20 percent, is the most-cited amount or range for the expected tip.

5.2.3 Signature and PIN

Respondents envision signing a small screen, as in many stores, or signing on the PIM as the quickest and easiest way to sign for credit card transactions. Electronic signatures are preferred to avoid needing a pen (i.e., the electronic pen would be attached to the PIM) and to provide a flat surface. On the questionnaire, 30 respondents said that “passenger signs on a screen” is “ideal,” 8 said “acceptable” and one said “not acceptable.”

Signing a paper credit card receipt is also acceptable to most respondents. In the questionnaire, only 3 said that paper signatures are “ideal,” but 25 said they are “acceptable” while 11 said “not acceptable.”

The primary point is that passengers prefer whichever method is quickest and simplest. They are familiar with both paper-based and screen-based methods and can accept either method, provided it works well.

Some respondents prefer not to sign at all. They cite gas stations and MetroCard vending machines as examples of locales where no signature is required. They expect that taxicabs would adopt the same protocol. On the other hand, the signature requirement has the advantage of providing additional security.

For PIN-based debit transactions, respondents view the PIM as the simplest and most obvious place to enter their PIN number.

Respondents generally prefer that tolls be added automatically, although there needs to be a provision for tolls on out-of-state facilities that do not take E-ZPass.

5.2.4 Card Verification Failures

Passengers recognize that there may be situations where a credit card company declines a card, or where communication failures in the wireless network (e.g., “dead zones”) prevent the card from being processed. Respondents do not want to be placed in the uncomfortable position of not being able to pay the fare at the end of the trip.

How to address this problem is a knotty issue. The focus groups explored several options that would address situations in which their card is declined or there is a communication failure.

The simplest solution is for the passenger to pay in cash, or lacking cash, drive to a nearby ATM. Passengers accept that the meter would run while they get cash, at least if the problem involved their card being declined since the cab and driver would not be to blame.

If the card is declined, passengers assume that they will try other credit or debit cards and that another card will likely be authorized.

For possible communication failures, respondents want an indicator that shows whether the communications link is working, analogous to the bars on a cell phone. They do not want to be surprised by non-working communications equipment at the end of the trip.

If there is a communications failure, however, one option is that cabs have a “manual backup,” so the driver could accept the card and verify it later. Another solution is for passengers to use prepaid cards (discussed in more detail below) that would carry value and thus not need to be verified.

A few respondents felt that the equipment should work in virtually all cases. In the event the equipment does not work, one respondent stated, “I think it’s a free ride for you, because [they] should have thought about that before they installed the [equipment].”

5.2.5 Pre-Authorization

Another option to deal with card verification failures is for cards to be pre-authorized at the start of the trip. This option was discussed in the context of trips over a specified length. Respondents had a mixed reaction to this idea. On the questionnaire, 8 respondents said pre-authorization for trips over a specified length is “ideal,” 18 said “acceptable” and 12 said “not acceptable.”

Comments in the groups reflected this split. Many respondents recognize that drivers and passengers would both benefit by knowing at the start of the trip if there is a problem with the card.

The opposing view is that pre-authorization is too complex and too time-consuming to be practical or desirable. Passengers do not want to delay the driver from immediately heading toward their destination once they are in the cab. Some respondents are also concerned about having a hold placed on their account for a certain dollar amount, which they might never use if they get out of the cab earlier than expected.

Discussion in one group developed a procedure for prepayment that would be acceptable to at least some of the respondents. These respondents envision swiping once at the beginning of the trip as the cab driver gets underway. They envision the meter being turned on and the driver commencing the trip while the card is approved. Respondents

envision having an “open ticket” during the ride, to be closed at the end of the trip once the actual fare, tip and tolls are determined.

5.2.6 Bank Statement Content

Passengers want some way to trace charges on their credit card in case of a problem with the charge. The questionnaire offered two choices for discussion. The first choice, ‘NYC Taxicab’ and date of transaction” was considered “ideal” for two-thirds of respondents and “acceptable” for the remaining one-third. This option provides the information needed to identify the purpose of the charge. Respondents also want the medallion number, an I.D. number or transaction number in order to trace the transaction back to the specific cab. The identification number provides the opportunity to follow-up as necessary.

5.2.7 Processing Time

To obtain a sense of the desired speed of the card transaction process, respondents were asked to indicate the “ideal processing time” and “maximum acceptable time” during a short exercise. The moderator wrote sequential letters, A, B, C, etc., on a flip chart at 2½ second intervals. Respondents were asked to write down the letter showing on the flip-chart for the “ideal” and “maximum acceptable” processing time.

The median of the responses shows the average interval that met each standard. The median “ideal” time was 8 seconds, and the median “maximum acceptable” time was 25 seconds.

Perhaps more useful than the median is the interval that was acceptable to the large majority of respondents. Using 80 percent as a cutoff, 5 seconds was “ideal” (i.e., 80 percent cited an interval of 5 seconds or greater) and 18 seconds was the “maximum acceptable” (i.e., 80 percent cited an interval of 18 seconds or greater as the maximum acceptable processing time).

It should be noted that this was a somewhat artificial experiment, as respondents were in the relaxed environment of a focus group facility and not in the rushed, sometimes harried environment of a cab double-parked on a Manhattan avenue. Nevertheless, the results provide an indication of the desired processing time for credit and debit card approval.

5.3 Other Issues

This section summarizes the discussion of two other issues for credit/debit card processing in cabs:

- Should passengers be surcharged?
- Should there be a minimum transaction size?

5.3.1 Surcharges

Not surprisingly, respondents reacted negatively to the idea of a surcharge for credit/debit card use. In the questionnaire distributed to focus group participants, 32 marked that a 5 percent surcharge is “not acceptable,” 7 said a surcharge is “acceptable” and none said it would be “ideal.” (See Table 1)

Those most strongly opposed to a surcharge would not use credit/debit cards at all, or only in “emergencies,” if a surcharge applies. Respondents who would accept a surcharge noted that banks charge \$1.50 to take cash out at another bank’s ATM and those passengers who do not wish to pay the surcharge have the option of paying cash.

Most respondents view surcharges as unacceptable on the basis of not being fair to the customer. Respondents feel that acceptance of credit/debit cards benefits taxi owners in the form of more trips (for those who expect an increase in ridership), and benefits drivers who do not need to carry as much cash with its attendant safety risks. More fundamentally, respondents view credit/debit card charges as the type of expense that should be paid by “the company.” They recognize that in the case of owner-drivers, “the company” is the driver himself. They cite gas stations and retail outlets as comparable businesses that absorb the cost of card transactions. Asking passengers to pay a surcharge is also not treating passengers as valued customers – a key overall complaint about cab service.

The timing and amount of the surcharge was also a target for criticism. A 5 percent surcharge appears to be too high to respondents who are aware that credit card companies charge a smaller percentage as a transaction fee. They infer that a 5 percent surcharge would yield cab owners a profit.

Respondents also feel that a surcharge is unfair on the heels of the recent taxicab fare increase. Respondent comments included that the fare hike was “crazy” and that, “The cost of the taxi is really at the ceiling as far as I’m concerned. Instead of paying \$16 to get home at night, I’m paying like \$21.”

Respondents are also against drivers being charged a fee for each transaction (with the exception of owner-drivers). The “company” should pay, not the driver or passenger. Fees are not fair to either party. Furthermore, respondents fear that if drivers are forced to pay a fee, they will refuse to accept credit and debit cards. One respondent noted that drivers were charged a fee in certain cities in Germany and the respondent stated, “They hated you, they hated you if you used the card. If you pulled out the card, they’d curse you out.”

Surcharges on the fare would become, in practice, a fee on the driver if customers reduce their tips. Some respondents feel that a surcharge would be taken out of the tip, so the driver pays with either surcharges on passengers or fees to drivers, with adverse consequences either way.

5.3.2 Minimum Transaction Size

The possibility of having a minimum transaction size arose during one of the focus groups. Participants in that group felt that a minimum of around \$10 would be appropriate. They felt that many establishments make you buy a minimum dollar value when you use your credit cards and that a minimum might be appropriate in the taxicab context.

5.4 Payment Media

Respondents extensively discussed the advantages and disadvantages of alternative payment methods. Credit cards, debit cards, prepaid cards and cash each have tangible benefits as well as clear downsides.

Respondents' perspective on the advantages and disadvantages of different payment media cluster around five key attributes:

1. **Speed of processing** - Cash is viewed as fastest. Prepaid cards are viewed as faster than credit or debit cards.
2. **Having enough funds to pay the fare** - Worries about running out of cash, or wanting to preserve cash for later in the day, are prime reasons that respondents are attracted to credit and debit cards and to prepaid cards that would automatically reload value as necessary (e.g., like E-ZPass accounts). Like cash, prepaid cards that must be refilled (e.g., like MetroCards) create the risk of insufficient funds.
3. **Controlling personal spending** - Cash, debit cards and refillable prepaid cards do not allow consumers to spend more money than they have. The need to control their spending is a major factor for some taxi users.
4. **Avoiding paying interest on credit card balances** - Respondents who carry a balance on their credit cards may want to avoid using a credit card for taxi rides so that they will not end up paying interest on the credit card charges.
5. **Creating a record of expenses** – One of the major benefits of credit cards is the transaction records they create. The expense record is particularly valued for reimbursable business trips. Conversely, not needing to deal with credit card bills for smaller taxi fares is a benefit to prepaid cards, debit cards and cash.

Table 2 summarizes the strengths of each payment media on each of these attributes.

Table 2 - Summary of Main Strengths of Each Payment Method

Attribute	Credit card	Debit card	Pre-paid card	Cash
Speed of processing			✓	✓
Having enough funds to pay the fare	✓	✓		

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Controlling personal spending		✓	✓	✓
Avoid paying interest on credit card balances		✓	✓	✓
Creating a record of expenses	✓		✓	

Respondents assign varying degrees of importance to each fare payment attribute. As a result, some respondents would prefer to use credit cards, some prefer debit cards, some are keenly attracted to the idea of prepaid cards and some expect to stick with cash. Many respondents expect to use non-cash payments for some trips (e.g., longer trips) and in some situations (e.g., when out of cash late in the day) while using cash at other times.

Overall, to a degree, preferences tended toward the following pattern:

- Short trips (under \$10): Use cash or use either prepaid cards or debit cards. Prepaid and debit cards are seen as being close to cash equivalents. Passengers wanted to pay shorter fares out of current funds, had less of a need to track each expenditure and wanted to minimize transaction-processing time.
- Business trips of all lengths: Credit cards or prepaid cards. Some respondents needed to track each trip, in which case credit cards provided the most convenience. Prepaid cards are useful when the overall amount of money being spent on taxicabs is deductible from taxes.
- Long trips (including airport trips): Credit, debit and prepaid cards.

It was difficult for respondents to gauge their likely usage of non-cash payment methods. Individual responses ranged from “all the time” to “only for long trips”. Respondents often changed their estimate as the discussion proceeded. It appears that respondents need to experience the level of convenience, speed and reliability actually provided for non-cash payment methods before they can determine how frequently they want to use these payment methods.

The following sub-sections summarize discussions about each payment method.

5.4.1 Credit Cards

Credit cards are seen as most appropriate for longer trips and higher fares. Airport trips are commonly mentioned as an occasion to use a credit card. Another occasion is when the passenger is out of cash, or simply “broke.”

Credit cards are also useful for business trips, particularly for respondents who have business credit card accounts. The fare would be charged directly to their business account and they would not need to deal with paperwork for reimbursement. Year-end credit card statements were cited as a big convenience. One respondent said, “With my American Express card, it itemizes everything and it puts it into those categories for me, and so all I have to do is take that statement to the person who does my taxes at the end

of the year and say, here you go. I don't have to have all the receipts and everything, and they can just go off my statement.”

Some respondents are highly concerned about possible fraud from using a credit card in a cab. They have a concern that somehow the driver will get their credit card number. One respondent said, “Let's say someone is operating a phony cab or something like that or someone has stolen a cab and they're just stealing people's numbers. ... If a story like that got out that it did happen to a couple of people, then people would cut down their usage of the card.” Another respondent felt that security concerns could be allayed said, “Once you could guarantee some type of security, then it would entice more people to use it because they'll feel more safe.”

The other negatives to credit card usage are that card users who carry a balance may then pay interest on taxi fare charges, they may be tempted to overspend, and they fear losing the card in the cab.

Respondents want cabs to take all major credit cards. Respondents also feel that cab owners would be doing themselves a “disservice” by not taking all major cards since, for example, corporate users tend to have American Express rather than Visa or MasterCard, and foreign tourists may use Diners Club cards.

5.4.2 Debit Cards

Debit cards combine attractive attributes of cash and credit cards. Like cash, users do not pay interest on debit card expenditures and cannot overspend. Like credit cards, debit cards do not deplete the cash in one's pocket, nor does the passenger need to replenish their cash with a trip to an ATM machine.

A disadvantage to debit cards is that they offer less protection from fraud than credit cards.

5.4.3 Prepaid Cards

In several of the focus groups, respondents spontaneously brought up the idea of prepaid cards in taxicabs. A substantial number of respondents were highly enthusiastic about the idea of prepaid cards.

The big selling points of prepaid cards are the speed and reliability of the transaction, reduced worry about fraud and spending controls. Prepaid cards would not need to be verified like credit cards, eliminating the risk of the card not being accepted at the end of the trip. Prepaid cards also solved respondents' worries about security of the card number and the hassle associated with canceling a lost card. To many respondents prepaid cards appear to be a better fit with the taxicab environment and a good way to avoid problems with payment by credit card at the end of the trip. Prepaid cards also prevent the user from overspending on cab rides. Commented one respondent: “[I would] put \$100 on the prepaid card and once that runs out, I'm walking or taking the subway.”

Respondents are very familiar with other prepaid cards, primarily the MetroCard. They would like to import the positive attributes of the MetroCard to a taxi prepaid card. These include quick payment of fares and ease of adding value to the card. Respondents envision taxi prepaid cards being available through retail outlets, and also being refillable in the cab. Passengers could use a credit card to refill their prepaid card during the trip, and then quickly pay and exit at the end of the trip without the need for credit card processing and verification.

Another major advantage to some is getting one receipt that covers a number of trips. One respondent said, “The record keeping would be great if you could buy a cab card, and then you swipe it, but you don’t have to itemize each thing; you just have a record that you’ve spent ten dollars on a cab, and that’s what the IRS really wants, they want to see a record.”

Prepaid cards are not for everyone. One problem is that, like cash, prepaid cards may have insufficient value for a given trip. This is a major reason that some respondents shied away from embracing prepaid cards. One respondent commented, “It’s very organized and I’m not so organized.” Another problem is that prepaid cards would presumably not be replaceable if lost.

Some respondents prefer a prepaid card on the model of the E-ZPass, which automatically replenishes the account. The advantage, of course, is that the user never runs out of money. The balance of preference in the focus groups, however, appeared to be toward a MetroCard-type card, because the automatic replenishment makes respondents feel uneasy about overspending. The paperwork involved with an E-ZPass approach is another negative.

5.4.4 Effect on Ridership

Focus group respondents evidenced a range of views as to whether the universal availability of credit/debt card payment in taxicabs will lead to more taxi usage. This proved to be a difficult question without a clear answer.

On one side, there were strong feelings that card usage would increase cab patronage. The convenience of paying by credit/debit card, removing the worry of having enough cash, and not having to think about having money to pay the fare are strong arguments behind this view.

On the other side, a respondent commented, “There are not enough cabs right now and I don’t know that [credit/debit cards] would make much of a difference.” If one cannot find a cab now regardless of payment method, ridership cannot increase. Discussion of this point in one group led to a consensus that there will not be increased ridership during peak times but ridership may increase as a result of card usage at other times. This conclusion fit with some respondent’s view that they would use non-cash payment when they are out of cash after a night on the town.

5.4.5 Effect on Tips

Another vexing question was whether tips will increase for credit/debit card transactions. Each group split on this question. Respondents made strong arguments on all possible sides of the issue: increased tips, decreased tips, no change in tipping amount, and any of the above depending on the situation.

Some expect that overall, tipping would increase with non-cash payment options. Passengers would not run out of cash, in which case they may forego giving any tip or may leave a small tip. Also, respondents felt that people tend to be more carefree with their credit/debit cards thereby leading to larger tips.

Some respondents expect that credit/debit card use lends itself to “more accurate” tipping, which could mean a higher or lower tip depending on circumstances. A respondent commented that, “I’ve been in cabs with people where it says 5.35 and they leave six dollars. If you use your credit [card], you’re going to give the guy \$6.50.” Thus, use of a credit card produces a larger tip in this situation.

On the other hand, for fares under \$10 many respondents add a dollar and round up. Thus, on a \$6.30 fare they might give the driver \$8, which is more than a 20 percent tip. With a credit card, they would be “more accurate” and give a smaller tip.

Some feel that tips will decline because the driver will be less involved in determining the size of the tip. Some passengers report that drivers increase the tip by saying that they do not have any change. Some respondents view credit card processing as more impersonal than the way tipping works now, since the driver will not see the tip amount until after the passenger has exited the cab. Outside the watchful eye of the driver, passengers may cut back on tipping.

6 PASSENGER INFORMATION MONITORS

6.1 Overall Reaction

Acceptance and enthusiasm of the Passenger Information Monitors (PIM) concept is highly dependent on PIM capabilities, advertising issues and passenger control. Properly configured, the PIMs appear to have the potential to generate substantial customer enthusiasm. Mediocre content, too much or the wrong kind of advertising, or lack of passenger control of the PIM audio and video, however, could easily turn the PIM into an annoying intrusion.

With preferred content, such as headline news, and the “right” kind of advertising and controls, respondents hailed the idea of a PIM. One respondent stated “I think it’s cool, I think it’s ideal. I want to be able to see news and stuff like that going on in there, if I have the option to turn it on and off. I want to see what’s going on around me, you know, entertainment, what movie to catch.”

Nevertheless, even an ideal PIM offers less value to passengers than credit/debit card acceptance. When asked at the end the focus group to identify the two enhancements with the most value to them, 10 respondents listed the PIM, map or GPS features. Notably, four cited the ability to turn off the monitor and/or audio as valuable features but not the PIM or map itself. Asked about their primary concerns or issues, three respondents named controlling PIM audio and/or video and three named PIM advertising.

6.2 Initial Reaction

Reaction to PIMs started out fairly negative and then became more positive as the concept was defined in ways that met the needs and interests of the respondents.

The initial negative reaction was due in part to past experiences. Many respondents recall the “celebrity announcements” that reminded passengers to buckle their seat belts and take their possessions. Most respondents who mentioned these announcements had negative feelings about them. Respondents felt “tortured” by celebrities with “squawkish voices” and felt sympathy for drivers who had “to listen to that 5,000 times a night.”

Some respondents recall the previous in-taxi video screen pilot program. Respondents are aware that the pilot program was canceled and infer that the screens were removed because they were deemed a failure. One respondent recalled “loud advertising” that led to passengers breaking the screens “and I think that’s why they stopped doing it.” Respondents are puzzled to hear that the TLC is planning to reintroduce video screens after canceling the earlier program.

More generally, respondents envision the PIMs as being a crass, garish intrusion on a captive audience that would prefer a peaceful ride, as illustrated in the following comments from respondents:

“You don’t really want something flashing up with commercials or news or whatever, having something loud.”

“We are already bombarded by enough commercial stuff. You’re sitting in the cab and you just want to get home and you’re hearing, buy this, buy this, buy this, this is better than that one. I mean, I wouldn’t want to hear it at all.”

“I say no because the fact that the brightness of that and sometimes you get in a cab late at night, eyes hurt, you don’t want to see all that bright light. You want to be able to turn off that light. ... You’re on the computer all day, you look at computer all day and the glare from that computer all day, you get in a yellow cab, it’s the same glare.”

“I just personally don’t want a television for the 30 seconds or five minutes that I’m in the car.... I don’t need to be entertained in the back seat of a car.”

“I’m a captive audience and I [don’t want] advertising glaring at me, I want peace and quiet.”

6.3 Content Preferences

Respondents warmed considerably to the idea of PIMs that would provide useful, informative content with immediate relevance to them. Desired content includes the map, showing the route of the cab since the start of the trip. In addition to the map, the most-desired PIM features and content are:

- Headline news
- Weather
- Sports scores
- Stock prices
- Restaurant directory
- Movie directory
- Broadway show directory
- Flight checker
- Traffic information
- Look-up to find cross streets from an address
- Pre-flight check-in

6.3.1 Map

Because of its practical utility, the map is attractive to most respondents and a primary selling point to some. Respondents said that the map was “absolutely beneficial” and expect it would “raise the comfort level of people who are thinking of taking a cab ride, because they feel they’re not going to be jerked around.” They felt that the map would show that the driver is not “going in circles.”

The map would be enhanced by adding the capability for the map to show the route to the destination. This information would be useful to both driver and passenger. Many respondents think that the driver needs the map more than the passenger does, or that it should be provided to both.

Some respondents expressed a concern that due to one-way streets and the “crazy” street layout in some parts of the city, display of a seemingly roundabout route could cause unwarranted arguments between passengers and drivers. This concern would be allayed if the map showed the most direct route to the destination.

6.3.2 News and Local Entertainment Listings

News, weather, sports scores and stock prices were considered by the respondents to be informative and immediately useful. Respondents felt that watching the news in the cab would save them time later, as they would not need to watch the news after arriving at home. They felt that stock quotes would be important for investors.

Restaurant, movie and other entertainment information also have immediacy and usefulness because the information helps them plan their day, pertains to running around town, and shows the passenger ways to spend their money.

Another advantage of news and entertainment listings is that they are not static and thus will not become repetitive. During a long trip, the PIM would also provide information or entertainment to “take your mind off the cab ride.”

6.3.3 Additional Suggested PIM Information

Respondents also suggested adding airline flight information, a flight check-in feature, ability to purchase or reserve movie or Broadway tickets, and Internet access to the PIM.

Another suggestion was to supply traffic information, although respondents have mixed feelings about this idea. Traffic information could be helpful to deciding on what route to take. But many respondents prefer that drivers receive the traffic information. Drivers should then ask the passenger whether or not to detour around the traffic. They would “like to trust” the driver to manage the route-choosing task. Some feel that drivers are unlikely to manage this task well, however, and thus both driver and passenger should receive traffic information. Respondents also worried that traffic information would be out of date by the time they received it, or by the time they reached the traffic tie-up.

6.4 Advertising

Respondents see themselves as a captive audience and strongly resist having advertising forced on them. The presence of advertising on the PIM is a significant reason to want to be able to turn off the PIM.

In the course of the first focus group, some participants suggested that certain types of advertising would be more acceptable, and the other groups embraced the same point of view. One acceptable type of advertising is sponsorships. “Time Out” magazine, for example, might sponsor movie or restaurant listings. Respondents like sponsorships because they are not “in your face.”

Another acceptable type of advertising is movie previews. Respondents see themselves as happily passing the time in the cab watching movie previews. These are considered as much entertainment as advertising, and thus have value to passengers.

In sum, respondents strongly prefer advertising that is “useful” and offers value to the viewer.

6.5 PIM Controls

Another requirement for PIM acceptance and satisfaction is control of the audio and video. Respondents feel that audio and video controls are essential to acceptance of the PIM. On the PIM questionnaire, 32 out of 39 respondents said that audio that cannot be turned off is “unacceptable.” In addition, 30 out of 38 respondents answering the question said that a monitor that cannot be turned off is “unacceptable.” Respondents felt that the PIM is a good idea “as long as you can shut this off;” otherwise, it would be “annoying” and make you “kind of trapped in there with it.” On a practical note, an always-on audio would interfere with passengers’ cell phone conversations. (See Table 3)

Respondents are mixed as to whether the audio should start at a “normal” volume or should start at a “low” volume. (In either case, passengers could adjust it up or down.) On the questionnaire, about one-third of respondents said that starting the audio in the normal range is “unacceptable.” They feel more in control of the audio if it starts low. Hearing it would remind passengers of its presence but it would not be intrusive. Some respondents point out that displays in elevators “don’t talk” and feel this should be the model for the PIM.

Most respondents said that starting the audio “low” was either ideal (16) or acceptable (13); although 9 said it was unacceptable. The latter group felt that it may be overlooked if it starts on too low a volume setting.

In describing the different options for content, respondents assumed that they would be able to choose among content options. They envisioned the screen showing buttons for news, weather, movie listings, etc. These choices would ensure that the content was tailored to their interests and needs, and provides a sense of control.

The questionnaire queried respondents about whether the map should remain on the screen at all times, or at least as a window with other information displayed in a separate window. Respondents were accepting of either arrangement – map on the screen at all times, or passengers being able to choose full-screen maps or full-screen displays of other content. There was a slight preference for the latter. (See Table 3)

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Table 3 - Responses to PIM Questionnaire

(# Respondents answering in each response category)

PASSENGER INFORMATION MONITOR CONTENT		Ideal	Acceptable	Not Acceptable
1	Only map & TLC information	6	26	6
2	Map & TLC info and news, entertainment & advertising	20	16	3
AUDIO SETTINGS AND CONTROLS				
3	Audio starts in normal range and passenger can adjust up/down	10	15	14
4	Audio starts low and passenger can adjust up/down	16	13	9
5	Audio can be turned off completely	33	5	1
6	Audio can be turned to low but can not be turned off completely	1	6	32
VIDEO SETTINGS AND CONTROLS				
7	Monitor can be turned off	30	5	3
8	Monitor can not be turned off	2	6	30
9	Map remains on part of screen at all times (unless monitor is turned off)	17	16	6
10	Passenger can choose to display full-screen map or choose full-screen display of information, news, entertainment, advertising	22	15	2

7 TEXT MESSAGING AND VEHICLE LOCATION TRACKING

7.1 Overall Reaction

The final two technological enhancements are text messaging for drivers and automatic vehicle location (AVL). These were briefly discussed together in each focus group. Neither technology touches passengers directly in the way that the credit/debit card and PIM affect them, although location tracking is obviously used in the PIM map. The purpose of the discussion was to identify features that passengers see as benefits to them and to ascertain any particular concerns that passengers might have about either technology.

Overall reaction to both concepts was positive, although neither has the intensity of interest as credit/debit card acceptance or passenger information monitors.

7.2 Benefits

The moderator's description of text messaging noted that messages can alert drivers to look for lost property of a recent passenger. Respondents reacted favorably to this feature. One respondent said, "[The ability to track down lost property would be the] biggest thing.... If you lose something, that's the only thing you're thinking about. You're not thinking about how bad the ride was or what you were watching, you're thinking about what you lost."

Similarly, some respondents reacted favorably to electronic trip sheets because they would be "more factual" than the manually completed trip sheets currently used.

Another comment was that AVL systems would enhance the safety of drivers, who could obtain assistance more quickly in the case of a robbery.

7.3 Concerns

The primary concern about text messaging or AVL was the possibility that a driver may be distracted by a text messaging screen. Passengers are intensely interested in drivers keeping their focus on the task of driving. Respondents see obvious solutions to this issue. Messages should be in-bound only, and should be displayed only while the cab is stopped, or only when the transmission is in park.

AVL raised several comments on possible privacy issues, but respondents generally dismissed this as a concern for them personally. One view is that location tracking is good for passenger safety as well as driver safety. Another view is that everyone is tracked in numerous ways already, so AVL in cabs does not represent any significant change. A third view, expressed somewhat laughingly, is that if one is concerned about credit card transactions being paired with location data, "those are the days you pay cash." Thus, passengers have options that would maintain their privacy.

Respondents suggest that privacy concerns of others can be addressed by making sure that AVL data is properly safeguarded.

8 CONCLUSIONS

Results of the passenger focus groups are useful in setting base requirements for the technology enhancements and for identifying evaluation criteria and foci of evaluations in the pilot phase of the project. Results are also useful for identifying capabilities that might be added now or in the future.

8.1.1 Credit/Debit Card Acceptance

- Passengers should swipe credit, debit and prepaid cards themselves using a swipe device in the back seat area.
- Passengers should add the tip amount using the PIM or similar screen. The screen should display tip amounts for a 15 percent tip and a 20 percent tip, and provide capability for passengers to select one of these choices, to enter a different amount or to enter no tip. Presenting these two choices (15 and 20 percent) will provide guidance to passengers as to a “standard” tip without limiting their discretion.
- Tolls should be added automatically to the fare where possible.
- The PIN number should be entered on the PIM or similar screen.
- Alternative methods for obtaining signatures for credit card transactions should be evaluated based on speed, ease of use and cost. These methods should include electronic signatures on the PIM or similar screen; signatures on a paper receipt; and no signature required, at least for relatively small transactions. The alternatives should be evaluated for driver and passenger acceptance. So long as speed and convenience is achieved, paper receipts appear to be able to gain customer acceptance.
- The card processing and communication equipment should be very highly reliable.
- The speed of card processing should be as fast as possible. Based on preliminary analysis it appears that 5 to 10 second processing times would be highly satisfactory.
- Pre-authorization for long trips, or possibly for out-of-city trips, should be considered based on time required for pre-authorization, cost, convenience and driver and passenger acceptance. Reliability of card processing will affect the need for pre-authorization. (One option – discussed in driver groups – is pre-authorization for trips outside New York City, Nassau and Westchester counties. TLC rules provide that passengers and drivers agree on a flat fare for these trips prior to the start of the trip.)
- Credit card and bank statements should include clear indication of the purpose of the charge (taxi ride), the date of the transaction and a tracking number, which may be the medallion number or other tracking number.

- All major credit cards should be accepted in all taxicabs.
- Prepaid cards should be developed for use in taxicabs. Credit/debit card equipment should be capable of accepting prepaid cards. Prepaid cards should be accepted in all taxicabs. Most likely, prepaid cards should operate in the MetroCard model that requires manual adding of value, as opposed to the E-ZPass model of automatic replenishment of value.
- There should be no passenger surcharges for using credit, debit or prepaid cards.
- The merits of mandating acceptance of credit and debit cards for relatively small fares (e.g., under \$10) should be evaluated.
- Passengers should be educated on the security of credit card information in a taxi environment.

8.1.2 Passenger Information Monitors

- Passenger acceptance and satisfaction with PIM content and controls is very important.
- The map should be featured as a key aspect of the PIM. The addition of a capability for showing the route to the destination on the PIM map is desirable; in addition this information could potentially be used by the driver if there was a driver based PIM.
- The PIM should provide news, weather, sports scores, stock prices, restaurant directory, movie directory, Broadway show directory, traffic information and the ability to look up cross-streets of an address. This information should be updated regularly. Passengers should be able to choose the type of information they view.
- Providing enhanced information services such as Internet connections and pre-flight check-in should be considered.
- Advertising on the PIM should have value to the viewer.
- Passengers should be able to turn off the PIM audio. Whether the audio starts at “normal” or “low” level requires further evaluation.
- Passengers should be able to dim the video to eliminate glare effects, particularly at night. Whether the monitor should be capable of being turned off requires further evaluation.

8.1.3 Text Messaging and Vehicle Location Tracking

- Text messaging screens and message delivery should be designed to minimize driver distraction. (Detailed recommendations will be made based on results of the driver focus groups.)
- TLC should ensure that AVL data is safeguarded to maintain appropriate passenger privacy.

APPENDIX A - PASSENGER FOCUS GROUP DISCUSSION GUIDE

Passenger Focus Group Discussion Guide

I. INTRODUCTION (10 minutes)

Purpose...Sponsored by TLC to explore technology-based service enhancements for yellow medallion taxicabs in NYC

Mechanics...audio taping, one way mirror

For a productive group...relax and in a good mood, everyone participate, one at a time, participate about equally, no right or wrong answers, talk to one another

Introductions...Name, where live, how often use medallion cabs, and for what types of trips.

II. OVERALL PASSENGER EXPERIENCE (10 MINUTES)

1. I want to show you something interesting and fun. There are no right or wrong answers here. Here are four diagrams. (DISTRIBUTE EMOT GRAPHS—SEE ATTACHED SHEET WITH GRAPHS) Take a look at them and then circle the one that you think most represents the experience of being in the back seat of a cab in New York City.
 - Describe why you picked that one.
 - What words describe the experience?

2. Now we are going to talk about each of four new technologies that are going to be introduced into taxicabs in the next year or so. We'll talk about each one and get your reactions to them. They are:
 - a) Capability to pay the fare using credit cards and debit cards. Debit cards include ATM cards as well as the debit option on some credit cards.
 - b) Passenger information monitors, mounted in the partition in the back seat area, with a map showing where your trip started and your current location, and possibly local information, news, entertainment and advertising.
 - c) Text messaging for drivers, so they can be alerted to look for lost property of a recent passenger and can receive information about current traffic conditions or other information
 - d) Automatic vehicle location technology, such as GPS, to show the cab's location on the passenger information monitor, and also to replace the trip sheet that drivers keep and determine the current location of cabs.

(REPEAT DESCRIPTION AS NECESSARY)

Are you familiar with any of these four technologies in taxicabs, in New York or other cities?

(IF YES:) What was your reaction to them?

What if anything did you like about them?

What if anything did you dislike about them?

III. CREDIT AND DEBIT CARD ACCEPTANCE (30 MINUTES)

1. Let's talk first about credit and debit card acceptance. What is your general reaction to the idea of cabs accepting credit and debit cards?

PROBE FOR:

- Overall positive/negative reaction
- Strength of reaction

2. What is the value to being able to pay cab fares by credit or debit card?

PROBE FOR:

- Convenience
- Not worry about having cash
- Charge to business card so don't need reimbursement
- Get receipt that includes tip and tolls
- Makes cabs up to date

3. What type of person is credit/debit card payment of the taxi fare best suited for? That is, tell me about the typical user of credit or debit cards in taxicabs. What type of person would not use credit/debit cards?

PROBE FOR:

- In a hurry/not in a hurry
- Business/leisure trips
- Young/older
- NYC resident/visitor

4. What type of situation are credit/debit cards best suited? Tell me about the situations in which you would expect credit/debit cards to be used. When would credit/debit cards not be used?

PROBE FOR:

- Length of trip/amount of fare
- Routinely or only in particular circumstances (e.g., no cash, charge to business credit card, only for airport trips)

5. Thinking about these types of persons and types of situations, would you expect that the amount of taxi usage would be the same once cabs accept credit/debit cards, or be more or less?

PROBE FOR:

- More/less/same
- Possible impact on black car, FHV, transit use

Thinking about these types of persons and types of situations, would you expect that the amount of the tip would be the same for credit/debit card transactions than cash transactions, or be more or less?

PROBE FOR:

- More/less/same
- What is leading to higher/lower tips?

6. Imagine that all cabs have credit/debit card payment capability, and now you've just gotten into one of these cabs and that you are going to pay the fare by credit or debit card. Ideally, how would you want paying by credit or debit card to work in the cab?

PROBE FOR:

- What cards accepted?
- What kinds of cards – pre-paid like Starbucks and MetroCard?
- When begin process (e.g., during trip, near end, once meter is off)
- Swipe it yourself or driver swipe
- Length of wait for processing
- Signature on paper receipt or device with screen
- Entering PIN for debit cards
- Adding tip and tolls
- Minimum transaction size
- Surcharge
- Card verification failure:
 - Travel to another location
 - Use another card
 - Pre-authorization
- Info on credit card or bank statement
- Being able to identify the car and driver from the receipt

7. There are different ways that the credit/debit card equipment could be installed and different ways it could work. I have a short questionnaire I'd like you to fill out. For each aspect of the process, indicate whether what is written on the questionnaire is, for you:
- a) Ideal
 - b) Acceptable
 - c) Not acceptable for you personally.

We'll talk about these once you've completed the questionnaire. Save the last question and we'll complete it together.

For the last question, imagine that the driver has just pushed the button to begin the card verification process. I'm going to write down letters starting with "A." Write down the letter that is on the flip chart that you feel is the ideal amount of time to wait for the credit/debit card to be processed. Then write down the letter that is on the flip chart when you've waited what you feel is the maximum acceptable amount of time to wait.

(BRIEFLY SIMULATE START OF TRANSACTION, THEN WRITE DOWN LETTERS ON FLIP CHART IN 5 SECOND INTERVALS TO SIMULATE THE TIME THAT CARD IS PROCESSING)

8. Which items on the questionnaire constitute the ideal for you?

What is not ideal but is acceptable?

What is not acceptable?

- What makes them not acceptable?
- Is there a way to make it acceptable?

• Re tip and processing, discuss:

- Swipe card, indicate tip on receipt, sign receipt, then driver puts in tip and transaction is processed and customer receipt is printed (VERSUS)
- Card is swiped, then unit asks passenger if tip amount, then confirms the complete and final total, authorizes and prints fully complete and itemized receipts

9. After the equipment for credit/debit card acceptance is in the cabs, what form of payment would you use – credit cards, debit cards or cash?

- What are advantages of each?
- What are disadvantages of each?
- What situations would you use credit cards?
- What situations would you use debit cards?
- What situations would you use cash?
- How does the equipment set-up and process affect your decision?
- How does which cards the cab accepts affect your use of cards vs. cash?
 - If the taxi didn't accept the brand of card that is your primary card, would you use a secondary card or pay with cash?
 - Would you start using a secondary card more often if it were accepted in NYC taxis and your primary wasn't?
 - Would you get a brand of card just because it was accepted in taxis?

10. Now think about different places that you use a credit card – retail stores, at a gas station, or at MetroCard vending machines.

Is the experience of using your credit card in these different venues about the same or are there some differences? What differences do you experience?

Talk to me about whether it's important for the credit/debit card equipment to look and work the same in all cabs? How you would feel about their being some differences in the equipment and process?

PROBE FOR:

- Degree of acceptable variation
- What aspects must be the same
- What aspects can be different

IV. PASSENGER INFORMATION MONITOR (20 MINUTES)

1. Now let's talk about the passenger information monitors. I will read a description of the passenger information monitors and then ask for your reaction.

Passenger information monitors are screens similar to laptop computer screens. They will be mounted in the partition and visible to passengers in the back seat. The passenger information monitors will have a map showing where your trip started and your current location. They will also have the information that is currently on the TLC stickers about the taxi fare and the passenger bill of rights. Passenger information monitors may also have news, information, entertainment and advertising.

What is your overall reaction to passenger information monitors?

2. a) Where else do you see screens like this?

PROBE FOR:

- Aircraft (JetBlue, Song, others?)
- Airport terminals (e.g., CNN)
- [elsewhere?]

- b) What is your reaction to the screens you see in those places?

PROBE FOR:

- Likes
- Dislikes
- Whether watch the screens
- Types of content that are valuable
- Value of interactivity/choice of content
- Audio levels
- Ability to control audio and content

3. a) Now let's talk about the passenger information screens in taxicabs. Which type of screen would be best suited for taxicabs?

PROBE FOR:

- TV channels like CNBC
- PC screen – interactive, look up info, weather, stocks, sports

- b) What content would you like?

- Overall types of content (rider info, consumer info, entertainment, news)
- Choice of content
- Advertising acceptability
- Traffic and emergency alerts
- Value of map
 - How often use?

- Zoom in and zoom out feature on map?
 - Value of taximeter on the PIM?
 - Position in the cab
- c) How would you like the screens to work?
- PROBE FOR:
- Audio control
 - Value of interactivity/choice of content
 - Turning off the device
4. I have another short questionnaire that lists different ways that the passenger information monitors might work. For each aspect of the process, indicate whether what is written on the questionnaire is, for you:
- a) Ideal
 - b) Acceptable
 - c) Not acceptable for you personally.

We'll talk about these once you've completed the questionnaire.

5. Which of these features have the most value to you?
- Describe what makes this valuable?
 -
6. Which of these features are not acceptable?
- What makes them not acceptable?
 - Is there a way to make it acceptable?

V. TEXT MESSAGING AND LOCATION TRACKING (15 MINUTES)

1. Now let's talk about text messaging. I will read a description of text messaging in cabs and then ask for your reaction.

Text messages can be sent by TLC to drivers. Messages will be displayed on a small screen. Messages can include alerts for drivers to look for lost property of a recent passenger. Drivers can also receive information about current traffic conditions, areas where cabs are needed, and other information.

What is your general reaction to the idea of drivers receiving text messages in the cab?

PROBE FOR:

- Usefulness of traffic information
- Driver distraction vs. latest info
- Only receive messages if meter is disengaged

2. Imagine that you are in a cab and the driver receives, or has received, a message about traffic delays up ahead.

- What would you want the driver to do?
- Would you want to re-route around the obstruction?
- Would you want to approve any route deviation?

3. I mentioned earlier that cabs will have automatic vehicle location devices such as GPS. Vehicle location will be used to show the cab's location on the passenger information monitor, and also to replace the trip sheet that drivers keep and determine the current location of cabs.

What is your reaction to having this technology in cabs?

PROBE FOR ANY CONCERNS MENTIONED:

- What is concern?
- Any safeguards to alleviate concern?
- Any information need to know to alleviate concern?

VI. WRAP-UP (10 MINUTES)

1. Turn over the questionnaire on passenger information monitors and draw a line down the middle of the page. On the left side of the page, list which of the new features in cabs that we've discussed is of most value to you personally. On the right side of the page, list any concerns or issues that you have with any of the features we've discussed.

(WHILE RESPONDENTS MAKE THEIR LISTS, CHECK FOR ADDITIONAL QUESTIONS FROM OBSERVERS)

- What did you list as being most valuable?
 - What makes this valuable?
 - What are your concerns or issues with any of these features?
 - What would alleviate your concerns?
2. These four service enhancements are scheduled to be installed in cabs starting late next year. They might be installed all at once or they might be phased in.
 - a) What would be your reaction to the enhancements being phased in?
 - b) If they were phased in, is it important to you which features are installed first?

PROBE FOR:

- Importance of order
- Which should be installed first
- Benefit to the order of installation
- Relative attractiveness of different enhancements

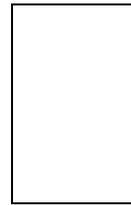
(ASK ADDITIONAL QUESTIONS FROM OBSERVERS)

(THANK RESPONDENTS AND CLOSE SESSION)

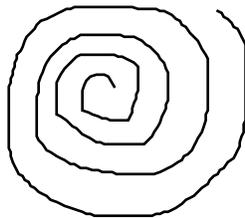
APPENDIX B - "EMOT" GRAPHS



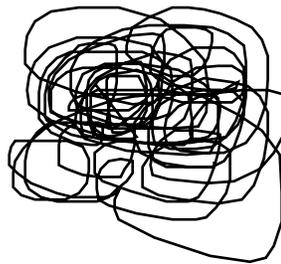
A



B



C



D

**APPENDIX C – CREDIT AND DEBIT CARD ACCEPTANCE
QUESTIONNAIRE**

Credit and debit card acceptance in yellow taxicabs

	Ideal	Acceptable	Not Acceptable
Swiping card			
1. Driver swipes credit/debit card.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Passenger swipes credit/debit card.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adding tips and tolls			
3. Passenger writes tip on receipt and hands to driver, who enters tip amount into taximeter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Passenger tells driver the tip amount to add to fare.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Passenger keys in tip using keypad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Tolls added automatically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Driver enters tolls into taximeter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Signatures			
8. Passenger signs paper receipt.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Passenger signs a screen on handheld device.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pre-authorization (when trip begins)			
10. Pre-authorize card for trips over specified length.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surcharges			
11. 5% surcharge to passengers for credit/debit card use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Notice in cab that driver pays 5% fee for credit/debit transactions.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of credit cards accepted			
13. Same credit cards accepted in all cabs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Some variation in which credit cards are accepted.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How charge appears on credit card or bank statement			
15. "NYC taxicab" and date of transaction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Merchant name and date of transaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. <i>Wait for instructions</i> Ideal processing time: _____ Maximum acceptable time:_____			

**APPENDIX D – PASSENGER INFORMATION MONITOR
QUESTIONNAIRE**

Passenger information monitors

	Ideal	Acceptable	Not Acceptable
Content on passenger information monitor			
1. <i>Only</i> map & TLC information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Map & TLC info <u>and</u> news, entertainment & advertising .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Audio settings and controls			
3. Audio starts in normal range and passenger can adjust up/down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Audio starts low and passenger can adjust up/down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Audio can be turned off completely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Audio can be turned to low but can <u>not</u> be turned off completely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video settings and controls			
7. Monitor can be turned off.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Monitor can <u>not</u> be turned off.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Map remains on part of screen at all times (unless monitor is turned off)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Passenger can choose to display full-screen map <u>or</u> choose full-screen display of information/news/entertainment/advertising	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>