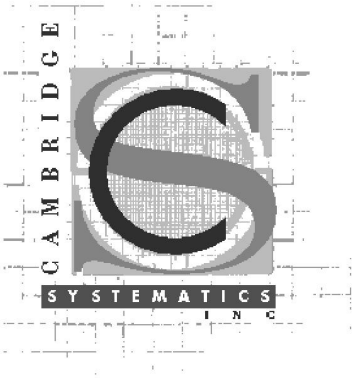

FleetForward Evaluation

final report

prepared for

I-95 Corridor Coalition
U.S. DOT ITS Program Assessment Support Contract

prepared by

Cambridge Systematics, Inc.

in association with

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Table of Contents

1.0 Introduction 1-1

2.0 Project Background 2-1

3.0 Overview of the Evaluation 3-1

4.0 Evaluation Findings 4-1
- 4.1 Impact on Operations 4-1
- 4.2 Access to Useful and Reliable Real-Time Data 4-5
- 4.3 Effectiveness of the FleetForward Public/Private Partnership 4-8
- 4.4 Case Studies of Carrier Experience 4-12

5.0 Conclusions and Recommendations 5-1
- 5.1 Conclusions 5-1
- 5.2 Recommendations 5-2

Appendix A
Data Collection Tools

Appendix B
Motor Carrier Interviews

List of Tables

3.1 Impact on Operations 3-2
3.2 Access to Useful and Reliable Real-Time Data..... 3-3
3.3 Effectiveness of the Public-Private Partnership 3-4
4.1 Impact on Operations – Results..... 4-2
4.2 Access to Useful and Reliable Real-Time Data – Results..... 4-6
4.3 Public-Private Partnership Effectiveness – Results 4-9

List of Figures

2.1 Schematic of the FleetForward Architecture 2-2
3.1 Typical Motor Carrier Operations 3-6
3.2 Use of FleetForward for Motor Carrier Operations..... 3-7
3.3 Use of FleetForward and PC Miler for Motor Carrier Operations 3-8

1.0 Introduction

This document is the final report for the evaluation of the I-95 Corridor Coalition's FleetForward Operational test. The objective of this test was to evaluate the usefulness of traffic flow data to motor carrier operations. Cambridge Systematics (CS), in association with Science Applications International Corporation (SAIC), conducted an objective evaluation of this test. The purpose of this document is to present a summary of the operational test, to review the evaluation activities, and to present the findings of the evaluation. The following reports are available for detailed descriptions of the work completed over the course of this project:

- For an overview of the FleetForward operational test completed by the American Trucking Associations Foundation (ATAF) and its partners, readers are referred to the ***FleetForward Real-Time Traffic Information for Commercial Vehicle Operations, Final Report***, prepared by the ATAF, April 2000; the ***Technical Memorandum 2: FleetForward System Architecture and Participant Recruitment and Support***, prepared by the ATAF, January 2000; and the ***Technical Memorandum 1: Phase I Data Collection and Analysis, Phase II Preliminary Architecture***, prepared by the ATAF, December 1998.

- For an overview of the evaluation activities undertaken by the CS team, readers are referred to the ***Individual Test Plans for the FleetForward Evaluation***, prepared by CS and SAIC, September 1999, and the ***Strategic Plan for the FleetForward Evaluation***, prepared by CS and SAIC, April 1999.

The FleetForward evaluation was dependent on effective communication among the key participants. As the evaluation was conducted, an effort was made to follow certain guidelines. They consisted of:

- Close coordination among the I-95 Corridor Coalition, the ATAF, and the evaluation team was important to ensure that the evaluation provided stakeholders with useful results.

- The evaluation team assisted the ATAF with its data collection activities. This included reviewing the ATAF's planned data collection tools; supporting the interview process; and auditing parts of the quantitative data collected by the ATAF to ensure objectivity. This close coordination ensured that all necessary data was collected.

- Data collected from individual stakeholders/participants are reported in an aggregated form to ensure confidentiality. It is standard practice to provide confidentiality to interviewees. This helps ensure that the responses given are accurate and honest. In addition, the participants consider some of the data collected to be competitive.

- The evaluation team remained flexible in its approach to the evaluation to ensure that modifications to the program over the course of the pilot test were incorporated into the evaluation, as appropriate. This was especially true in regard to the goals, objectives, and measures of effectiveness used to evaluate the test.

In addition to these guidelines, the evaluation team worked to make effective and efficient use of the available resources. For example, the evaluation team was the primary entity responsible for conducting and documenting the evaluation of the FleetForward test. It made use of the available expertise and industry contacts of the other participants. The ATAF played three important roles to the evaluation effort. First, as the architect of this project, it was a key participant in the development and deployment activities, including being part of the public/private partnership (PPP). Second, the ATAF was the focal point for access to the motor carriers participating is this test. Third, the ATAF was responsible for documenting the impact of FleetForward on the operations of the participating motor carriers. The I-95 Corridor Coalition is the client for which the evaluation was conducted. As such, it had an overview role. In addition, it provided the evaluation team with access to public sector participants.

This document is organized as follows:

- **Section 1.0, Introduction.** This section provides a summary of the FleetForward Evaluation. It describes the general approach used to conduct the evaluation, identifies project reference documents, describes the collaborative working environment, and presents the organizational layout for the final report.

- **Section 2.0, Project Background.** This section presents an overview of the FleetForward Field Operational Test.

- **Section 3.0, Overview of the Evaluation.** This section provides an overview of the evaluation.

- **Section 4.0, Evaluation Findings.** This section presents the findings of the evaluation activities for each of the three tests identified in the ***Individual Test Plans*** document.

- **Section 5.0, Conclusions and Recommendations.** This section summarizes the key conclusions and recommendations of the FleetForward evaluation.

2.0 Project Background

The I-95 Corridor, which extends from Maine to Virginia, dominates freight movement in the Northeast and suffers from severe congestion. Therefore, it was an ideal corridor to test the use of information technology to move goods more efficiently and safely. As a result, the I-95 Corridor Coalition undertook FleetForward, an operational test of an Advanced Traveler Information System (ATIS) for commercial vehicle operators. The FleetForward operational test coupled real-time traffic information with motor carriers' routing and dispatch decisions.

FleetForward was based on two principal sources of traffic information:

1. The first data source was the set of ATIS systems that SmartRoute Systems has deployed in Boston, Philadelphia, and Washington D.C. These SmarTraveler systems provide daily traffic information for the metropolitan areas, primarily for the commuting public.

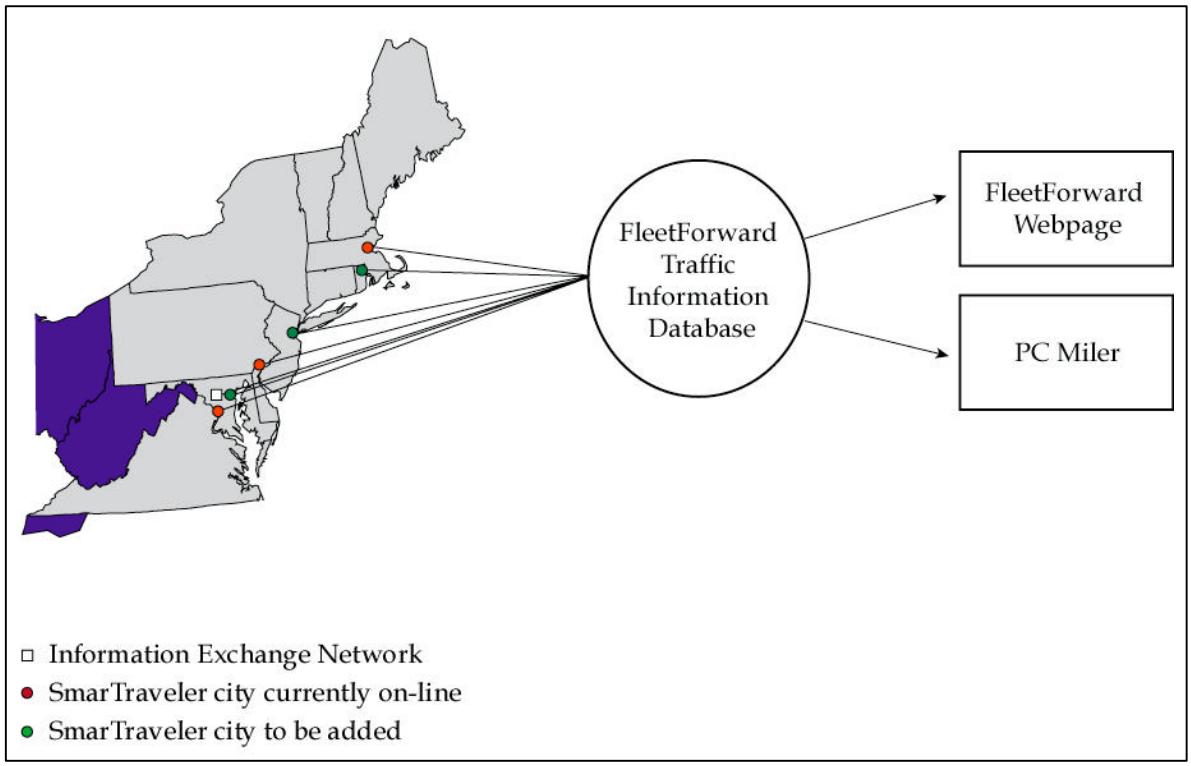
2. The second data source was the Information Exchange Network (IEN) of the I-95 Corridor Coalition. This is a regionally-based information system that facilitates the centralization and dissemination of real-time traffic information. It contains exception-based data, such as construction schedules, road closures, and major incidents, that are significant enough to impact traffic flows in multiple states. The database is maintained by the public agencies in the Corridor that are responsible for traffic operations. This typically consists of traffic operations centers.

FleetForward used the data provided by both the IEN and SmartRoute Systems to provide motor carriers with information on congestion, incidents, and highway construction and maintenance activities. The information required by motor carriers for routing decisions is more complex than that required by commuters. Commuters typically travel from a suburban area to an urban area. Some trucks pass through an entire metropolitan area, while others make numerous local deliveries. The information provided by these two data sources was customized to meet the needs of commercial vehicle operators.

The shippers and receivers that are served by the motor carrier industry are continuing to become increasingly dependent on reliable, predictable transportation service. This is critical for minimizing inventory costs and operating "just-in-time" systems. Dispatchers are expected to be able to better predict pickup and delivery times and to better manage their fleets. These expectations were addressed through FleetForward by providing dispatchers with information on the traffic conditions on local and regional highways.

Figure 2.1 illustrates FleetForward's flow of information. Data was gathered from the IEN and the various SmarTraveler systems, processed by the FleetForward system, and then distributed through two different mechanisms to the motor carriers. These consisted of the World Wide Web, and carrier routing and dispatching software, specifically ALK's PC Miler. The first mechanism was a FleetForward World Wide Web page that participating

Figure 2.1 Schematic of the FleetForward Architecture



Source: ATAF, March 1999.

motor carriers logged onto to access the available information for a given highway link or route. The web-based system developed for FleetForward was an improvement over the standard display provided by SmarTraveler for general commuting traffic, as it was customized to support motor carrier operations. Specifically, the FleetForward operational test developed and deployed a system with color-coded route segments representing incident areas (corridor-wide) and severity of traffic congestion (metropolitan areas).

The second mechanism consisted of incorporating the traffic information into the PC Miler routing software. These two mechanisms provided the traffic information to the carriers' dispatchers. The dispatchers then evaluated the data within their normal operating procedures and communicated the appropriate instructions to their drivers. This integration of public/private data streams with a trucking decision support system (PC Miler) was a pioneering effort.

The overall FleetForward concept consisted of data collection, data fusion, and data distribution. Data collection occurred as various transportation agencies (e.g., NJDOT, CTDOT, MHD, and SmartRoute Systems) collected and exchanged traffic-related information. Data fusion consisted of filtering and packaging incident, construction, and congestion information for distribution to the motor carriers. Data distribution involved the dissemination by various means to motor carriers. As the data was reported, FleetForward processed the data and the new incident points were automatically added to the map and cleared incidents were deleted from the map. The distribution mechanisms were then able to provide up-to-date information on a given highway system. For example, if an

incident was reported to either SmarTraveler or the IEN, the FleetForward system would be able to distribute that information in a timely manner, allowing motor carriers to alter their travel routes as determined appropriate.

The FleetForward operational test consisted of two main stages.[1] Stage 1 consisted of developing the deployment plan, collecting initial industry data, and developing the preliminary system architecture. This included establishing the public/private partnership; recruiting motor carriers and service providers to participate in the operational test; determining data and hardware/software requirements; and beginning deployment using existing information sources and dissemination technologies.

Stage 2 consisted of finalizing the architecture, recruiting additional motor carriers, and deploying the complete system. This included further development and testing of data fusion and packaging procedures and of information delivery channels. It also included deploying a fully operational FleetForward system, within the pilot's parameters, to the participating motor carriers and determining the potential carrier acceptance of the service.

This independent evaluation was conducted for the I-95 Corridor Coalition by CS, in association with SAIC. This evaluation was based on joint data collection activities undertaken by the ATAF and CS. This consisted of data collected from motor carriers prior to the deployment of FleetForward, data collected from motor carriers that participated in the FleetForward operational test, and data collected from other members of the public/private partnership. The evaluation team and the ATAF coordinated efforts to ensure that the data collected was objective and complete, without overburdening the voluntary participants.

[1] The FleetForward operational test originally consisted of three phases. These phases distinguished between the planning, testing, and deploying activities. In addition, the testing phase (Phase II) prioritized use of the IEN. However, due to the limited number of data records in this database, the architecture was modified and was based on the SmarTraveler system operated and maintained by SmartRoute Systems. The deployment of this metropolitan traffic data was originally planned for Phase III. In addition, the I-95 Corridor Coalition requested that some level of service be deployed as early in the pilot as possible. These two factors resulted in the combination of the original Phase II and III activities into Stage 2 described above. Therefore, the reference to phases was eliminated.

3.0 Overview of the Evaluation

This section provides an overview of the FleetForward evaluation. It describes the purpose of the evaluation and presents the approach and methodology, and identifies the goals, objectives, and measures of effectiveness used. In addition, it discusses the obstacles and data issues that impacted the actual measures of effectiveness versus those identified in the evaluation planning process. As with any evaluation, the actual deployment of the system and available data varied somewhat from the initial project plans. In this case, it resulted in a greater amount of qualitative data compared to quantitative data. This occurred for several reasons that are identified and discussed below.

The FleetForward stakeholders agreed that the primary goal of this project was to improve the operational efficiency of the participating motor carriers and that improvements in efficiency, or lack thereof, would directly affect the secondary goals identified. If the participating carriers found the FleetForward system was useful for fleet management, this would result in the incorporation of this system into their daily operations. Only with this adoption of the system could the other goals be achieved. As a result, the evaluation focused on measuring the change in the efficiency of motor carrier operations, followed by its ability to provide access to useful and reliable real-time data, and finally documenting the effectiveness of the public private partnership. Tables 3.1 through 3.3 summarize the goals, objectives, and measures of effectiveness for each of the test plans that the evaluation team proposed to use to evaluate FleetForward.

Many of the proposed measures of effectiveness were dependent on the operations and tracking practices of the motor carriers recruited to participate in the test. The recruitment process undertaken by the ATAF involved several activities. The first activity consisted of conducting market research to identify the types of carrier operations in the I-95 Corridor. The ATAF documented the findings of this research in its first technical memorandum. This included operational characteristics (less-then-truck-load (LTL) versus truckload (TL), fleet size, geographic coverage, etc.), use of existing traffic information, use of computers, etc. This data collection activity was highlighted by focus groups which were undertaken with a small number of carriers. The data collected from these activities then was used to finalize the system architecture and focus the recruitment process.

As carriers were recruited, the possible data collection elements were realized. Each carrier had different capabilities of collecting and tracking data resulting from their participation in the FleetForward operational test, and the ATAF was careful not to request data collection activities that would significantly disrupt the carriers' normal operations. As a result, data in support of the planned measures of effectiveness recommended by the evaluation team were not collected from all carriers, and some were not collected at all, at least from a quantitative perspective. This resulted in a reliance on qualitative data, focusing primarily on the perceptions of the participants regarding specific measures. For example, one measure proposed by the evaluation team was to track changes in fuel consumption. Given the participants' abilities to track costs related to FleetForward, this measure was not quantifiable, and in most instances there also was no qualitative data for this measure.

Table 3.1 Impact on Operations

Goals, Objectives, and Planned Measures of Effectiveness

Goal/Objective	Planned Measures of Effectiveness
G1. Improve operational efficiency of motor carriers	
Improve customer satisfaction	• On-time delivery • Carrier provides accurate ETA
Reduce operating costs	• Late delivery penalties • Fuel consumption • Vehicle maintenance costs • Employee turnover (driver retention) • Turn time (transit time)
Increase Revenues	• Equipment utilization • Driver utilization
Improve safety from the standpoint of motor carriers	• Effect of FleetForward on the number of accidents involving motor carriers
G2. Increase the efficiency of the overall highway system	
Reduce congestion	• Perceived impact of FleetForward based on public sector interviews
Improve highway safety	• Perceived impact of FleetForward based on public sector interviews
Increase highway capacity	• Perceived impact of FleetForward based on public sector interviews
Improve highway service to the traveling public	• Perceptions of public agency operations managers regarding their traffic management capabilities
Improve highway service to motor carriers	• Perceptions of motor carriers on the use and value of the service
G3. Gain motor carrier acceptance of the highway and traffic information service	
Motor carriers become willing to use new traffic information products and services	• Perspective of motor carriers on traffic information pre- and post-FleetForward • Incorporation of FleetForward information into routing decisions

Table 3.2 Access to Useful and Reliable Real-Time Data

Goals, Objectives, and Planned Measures of Effectiveness

Goal/Objective	Planned Measures of Effectiveness
G4. Develop motor carrier usage of highway and traffic information	
Increase the awareness and use of free traffic information by motor carriers in the I-95 Corridor (including SmarTraveler and the IEN)	• Carrier perceptions of the availability, utility, and value of traffic information before and after the deployment of FleetForward. • Number of inquiries of available free highway and traffic info in the I-95 Corridor
Provide one-stop shopping to motor carriers for basic (i.e., free) traffic-related information	• Ability of FleetForward to coordinate regional and metropolitan highway and traffic information into a single source and distribute it to motor carriers
G5. Make better use of available highway and traffic information	
Leverage the IEN to meet the needs of motor carriers	• Define and document the use of the IEN in the FleetForward test • Compare FleetForward's use of the data to previous uses
Increase the use of metropolitan traffic data	• Define and document the use of the SmarTraveler information by motor carriers in the FleetForward test • Compare FleetForward's use of the data to previous uses of the data

Table 3.3 Effectiveness of the Public-Private Partnership

Goals, Objectives, and Planned Measures of Effectiveness

Goal/Objective	Planned Measures of Effectiveness
G6. Use a public-private partnership to facilitate the development and deployment of the FleetForward	
Develop a cooperative team that draws on the strengths of each member	• Perspective of the public-private partnership representatives • Compare the overall FleetForward stated work plan to the actual deployment • Analyze of the various public-private partnership interactions

In order to understand the impact of the FleetForward system on carrier operations, the evaluation team developed three diagrams to illustrate the typical carrier operations for: 1) pre-FleetForward operations; 2) FleetForward operations using the Internet; and 3) FleetForward operations using PC Miler. Figure 3.1 shows the existing carrier operation. This system relies on standard communication technologies and the independent operation of the driver following release of the load. Figure 3.2 shows a typical carrier operation using the FleetForward system through the Internet. This schematic shows the incorporation of FleetForward into the initial set of driver instructions, as well as the opportunity to update/modify the instructions as the driver picks up the load. Figure 3.3 shows a typical carrier operation using the FleetForward system through ALK's PC Miler software package. This system allows the carrier to identify a preferred route based on shortest distance or shortest time and simultaneously query the FleetForward system to check the traffic conditions on the identified route. If there is a significant incident, the PC Miler/FleetForward system provides the option of selecting an alternate route.

The ATAF was required to recruit 36 motor carriers to test the FleetForward system. This number was exceeded (with the successful recruitment of more than 50 carriers). However, as the operational test proceeded a significant number of carriers dropped out. They dropped out for several reasons, including Y2K issues (the operational test ran from July 1 through December 31, 1999), employee turnover, technical barriers (dispatchers did not have Internet access), and lack of usefulness of FleetForward for a specific carrier's operation (short trips, lack of geographic coverage, etc.).

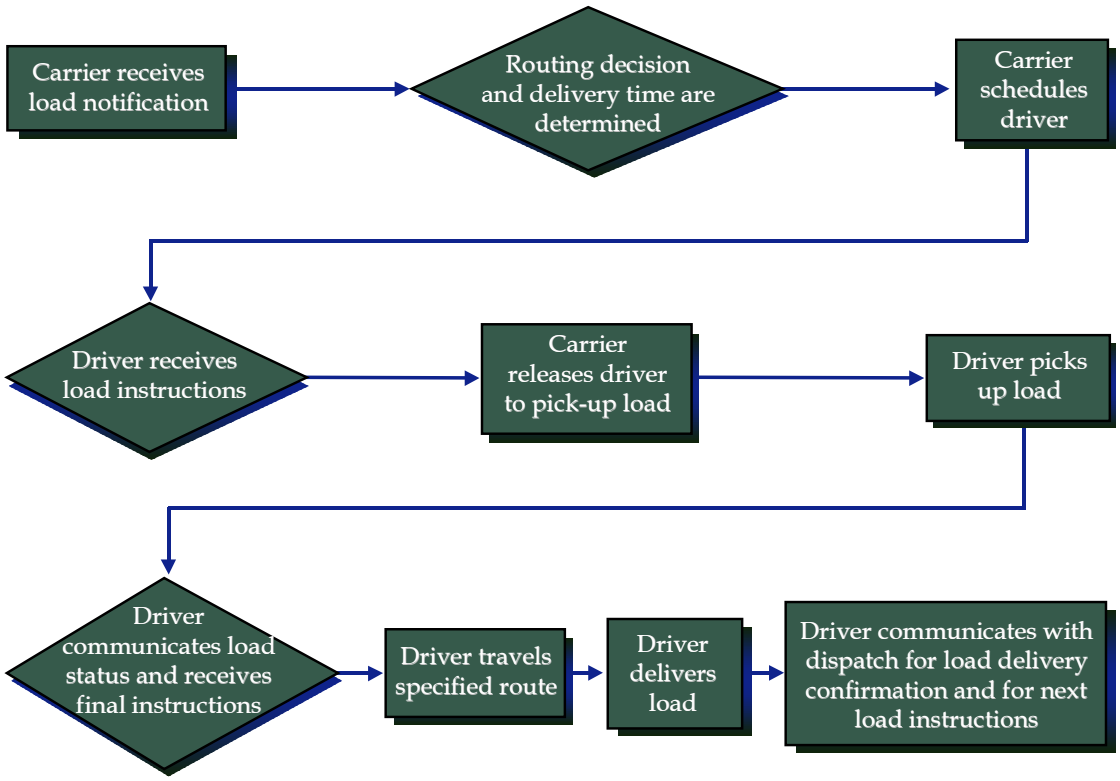
There were several different activities that were undertaken to support the evaluation of FleetForward. They primarily consisted of interviews conducted with key stakeholders. These stakeholders included the motor carriers participating in the deployment, the actual deployers (ATAF and SmartRoute Systems), the public agencies that potentially were affected by FleetForward (traffic operations centers), and the public/private partnership members. These interviews collected qualitative information and quantitative data where available and applicable. In addition, bi-weekly Likert scale surveys were distributed to the participating carriers by the ATAF. The following lists the specific interview activities:

- Interviews were conducted with the participating motor carriers by the ATAF and the evaluation team. Data collected only by the ATAF was verified through follow-up interviews by the evaluation team with a subset of the participants.

- Motor carrier interviews were conducted both pre-and post-FleetForward. A key component of the pre-test interviews was to identify key factors that could be monitored and measured in the same way by each of the participating motor carriers.

- Interviews were conducted by the evaluation team with the members of the public/private partnership, including public agencies involved with traffic operations, to document how the partnership worked for the FleetForward program, and to identify key perceptions on the overall impact of FleetForward on the I-95 Corridor's highways.

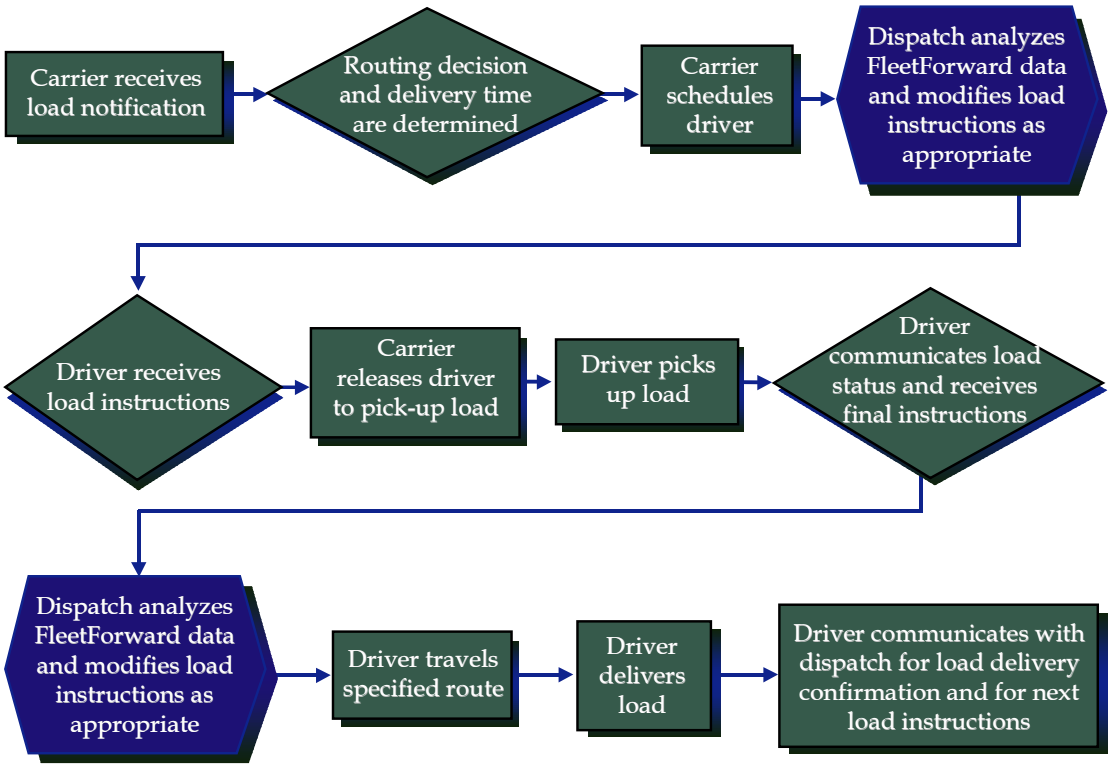
Figure 3.1 Typical Motor Carrier Operations



Typical Motor Carrier Operation

- Carrier communicates with shipper via telephone.
- Carrier communicates with driver via radio, telephone, and/or cell phone.
- Driver monitors traffic conditions via radio communications with other drivers.
- Driver operates independently once load is picked up.
- Driver may function as a traffic probe for remainder fleet

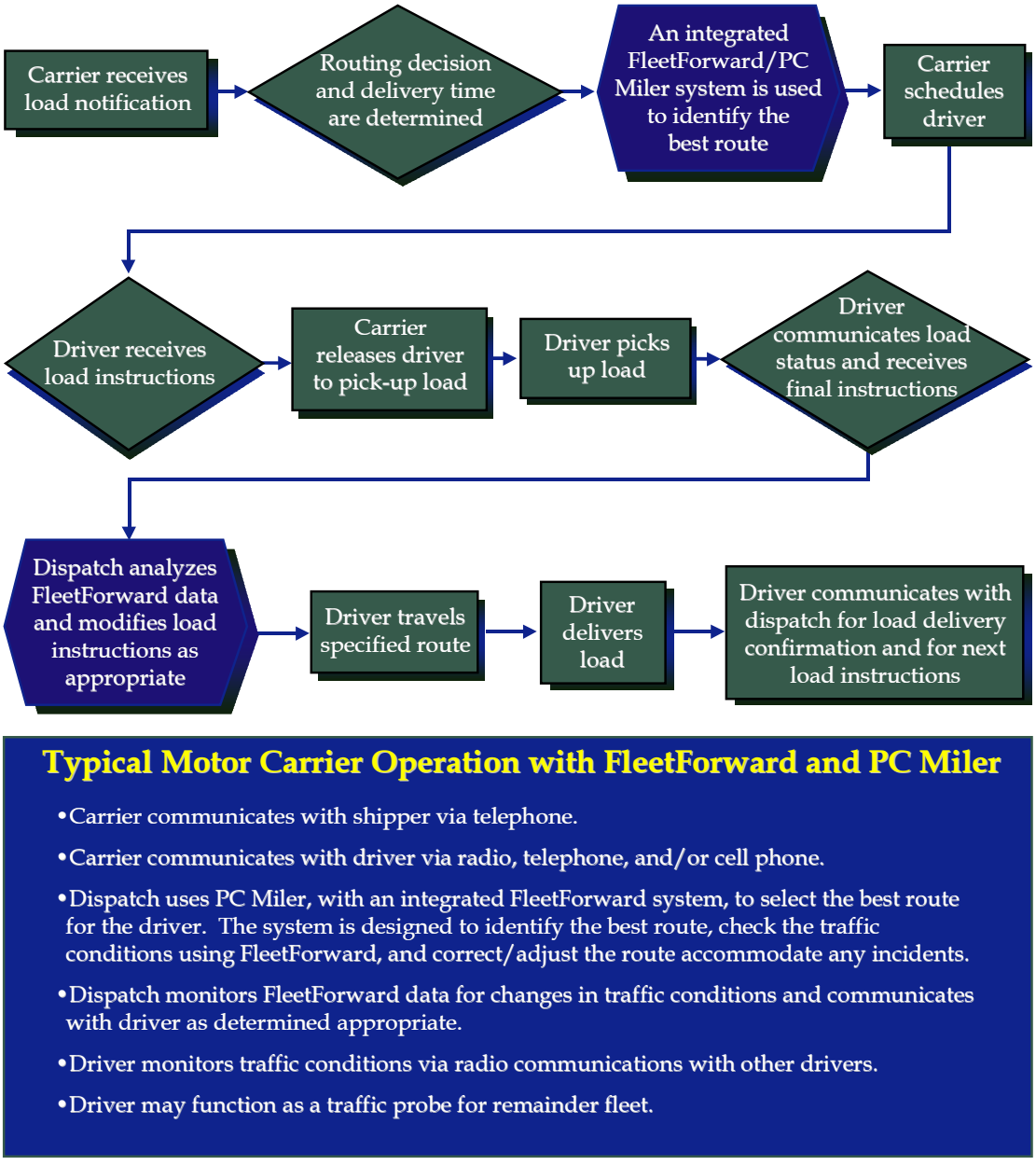
Figure 3.2 Use of FleetForward for Motor Carrier Operations



Typical Motor Carrier Operation with FleetForward

- Carrier communicates with shipper via telephone.
- Carrier communicates with driver via radio, telephone, and/or cell phone.
- Dispatch monitors FleetForward data for changes in traffic conditions and communicates with driver as determined appropriate.
- Driver operates independently once load is picked up.
- Driver may function as a traffic probe for remainder fleet.

Figure 3.3 Use of FleetForward and PC Miler for Motor Carrier Operations



Given the size of the I-95 Corridor, the evaluation team did not expect to be able to evaluate the secondary goals quantitatively because it was unlikely that the small number of participating carriers would impact the overall highway system significantly. Therefore, the impact of the program on the overall highway system was measured qualitatively based on discussions with key public sector representatives. The proof-of-concept component of the evaluation was addressed by documenting the accessibility of the information through the FleetForward architecture. Finally, the effectiveness of the established public/private partnership was measured based on the fulfillment of the project's goals and interviews with representative partners.

The evaluation team interviewed eight carriers after completion of the FleetForward Operation test. As summarized in the ATAF FleetForward Final Report (March 2000), ATAF conducted interviews with 12 carriers. Where suitable, results from both interview efforts are included to fully illustrate the range of experiences. Additionally, the evaluation team conducted interviews with 10 members of the public/private partnership.

4.0 Evaluation Findings

The evaluation findings are organized around the three key areas defined in the ***Individual Test Plans for the FleetForward Evaluation***, prepared by CS and SAIC, September 1999. These three areas consist of the impact on operations, access to useful and reliable real-time data, and the effectiveness of the public/private partnership. This section presents the evaluation team's findings from the context of these three areas. In addition, three examples are provided of carrier experiences with FleetForward to illustrate the ranges of deployment and satisfaction with the system.

4.1 Impact on Operations

The objectives of this evaluation component were to measure the impact of the FleetForward system on the operational efficiencies of the participating carriers, and to document any realized or anticipated changes in the overall highway traffic flows resulting from the deployment of FleetForward. In order to evaluate the impact of the FleetForward project on the operations of the participating motor carriers and the public sector traffic and transportation managers, it was necessary to define a set of measures that could be used to document the change resulting from participation in FleetForward. The primary goal of this project was to positively impact the efficiency of motor carriers operating in the I-95 Corridor. Therefore, the collection of carrier-specific data was the key activity. Secondary goals were to increase the efficiency of the overall highway system, and gain motor carrier acceptance of the highway and traffic information service.

Results pertaining to Impact on Operations are shown in Table 4.1 and are summarized by each of the three goals.

Goal 1 – Improve Operational Efficiency of Carriers

To understand the impact on the operational efficiency of carriers, questions were asked relating to on-time delivery, estimated time of arrivals, delivery penalties, fuel consumption, maintenance costs, employee turnover, turn time, equipment utilization, driver utilization, and number of accidents.

Two-thirds of carriers interviewed by the evaluation team stated that they did not experience any change in measures relating to on-time delivery and the accuracy of estimated time of arrival. One-third believed that these measures were improved, but had no supporting data. In general, the results indicate that operating costs were not impacted by use of FleetForward, although half the carriers believed that turn time was reduced. These reductions could not be quantified. The potential impact on revenues was measured by inquiring about equipment utilization and driver utilization. Three-fourths

Table 4.1 Impact on Operations – Results

Goal/Objective	Planned Measures of Effectiveness	Result
G1. Improve operational efficiency of motor carriers		
Improve customer satisfaction	• On-time delivery • Carrier provides accurate ETA	• 33% of carriers believe that on-time delivery improved, although this was not tangibly measured. 33% believe that ETA estimates were improved because customers could be notified of delays. 67% said there was no impact on either of these measures. • ATAF – 16% indicated increased on-time performance.
Reduce operating costs	• Late delivery penalties • Fuel consumption • Vehicle maintenance costs • Employee turnover (driver retention) • Turn time (transit time)	• In general, the responses indicate that Fleet Forward did not affect operating costs. For the first four measures, all carriers indicate that either they were not affected or they did not know the impact. A perceived reduction in Turn Time was noticed by 50% of the carriers.
Increase Revenues	• Equipment utilization • Driver utilization	• 75% indicated that there was no impact on revenues. 25% of carriers did have a perceived improvement in both equipment and driver utilization. • ATAF – 11% indicated an increased number of pick-ups and deliveries.
Improve safety from the standpoint of motor carriers	• Effect of FleetForward on the number of accidents involving motor carriers	• All responses indicate that there was no impact on motor carrier safety. • ATAF – 16% indicated a decreased number in accidents.

Table 4.1 Impact on Operations – Results (continued)

Goal/Objective	Planned Measures of Effectiveness	Result
G2. Increase the efficiency of the overall highway system		
Reduce congestion	• Perceived impact of FleetForward based on public sector interviews	• It was difficult for public sector respondents to comment on these issues because they were not familiar with the day-to-day operations of the Fleet Forward system. • Although one comment was that the operational test did not impact the highway operations and even universal use would not impact operations. FleetForward is a system for the benefit of individual truckers not for the traveling public as a whole.
Improve highway safety	• Perceived impact of FleetForward based on public sector interviews	
Increase highway capacity	• Perceived impact of FleetForward based on public sector interviews	
Improve highway service to the traveling public	• Perceptions of public agency operations managers regarding their traffic management capabilities	
Improve highway service to motor carriers	• Perceptions of motor carriers on the use and value of the service	• 75% of the carriers believe that Fleet Forward is a valuable tool to identify congestion. 25% do not consider the system valuable.
G3. Gain motor carrier acceptance of the highway and traffic information service.		
Motor carriers become willing to use new traffic information products and services	• Perspective of motor carriers on traffic information pre- and post-FleetForward	• 75% of the carriers experienced an improved perception of traffic information. Many commented that they now see the benefit from such a system.
	• Incorporation of FleetForward information into routing decisions	• 50% of carriers indicated that they did not want to use the system for routing decisions. The other 50% did use the system occasionally or routinely for such decisions.

indicated that there was no change in either of these measures. Safety impacts were assessed by asking about changes in the number of accidents. All carriers interviewed by the evaluation team stated that they experienced no change in accident rates. This response differs from ATAF interviews, which show that 16 percent of carriers believed that the number of accidents had been reduced.

Based on the above responses, it is concluded that most carriers did not experience a major impact to their operational efficiency from the operational test. Wider deployment and more consistent use of FleetForward, however, would likely result in improved operational efficiency.

Goal 2 – Increase the Efficiency of the Overall Highway System

To assess impacts to the efficiency of the overall highway system, public sector members of the public/private partnership were interviewed. Questions regarding congestion, highway safety, highway capacity, and highway service were asked. Carriers were also asked about highway service.

It was difficult for public sector respondents to comment on these issues because they were not familiar enough with the day-to-day operations of the FleetForward operational test system. Although one comment was that the operational test did not impact the highway operations and even universal FleetForward use would not impact operations because FleetForward is a system for the benefit of individual truckers not for the traveling public as a whole.

Three quarters of the carriers believe that FleetForward is a valuable tool to identify congestion, while 25 percent do not consider the system valuable.

Based on responses from both public sector participants and carriers, it is difficult to quantify any changes in the efficiency of the highway system. However, given the limited scope of FleetForward participants relative to the traveling public, it is improbable that the FleetForward operational test had any perceptible impact on highway operations.

Goal 3 – Gain Motor Carrier Acceptance of the Highway and Traffic Information Service

To assess any change in attitude toward traffic information services, carriers were asked about their perceptions of traffic pre and post FleetForward and whether they incorporated FleetForward into their routing decisions.

Half the carriers used FleetForward to influence routing decisions and half did not. However, a majority of carriers believe that they now have a better perception of traffic information systems and are more willing to use this type of information than prior to the operational test. The importance of this finding should not be underestimated. Carriers who have had a positive experience with FleetForward will more easily accept and implement the next generation of the system. These carriers will require less training and be more

willing to integrate future systems into their operations. A representative from the private/public partnership stated that the most useful aspect of the FleetForward test was to promote and advocate for new ATIS tools among carriers.

4.2 Access to Useful and Reliable Real-Time Data

The objectives of this component were to measure the increased or stimulated usage of traffic information by the motor carrier industry, and to document the increased demand for and use of the traffic data collected and maintained by public sector agencies. Such data were already being collected for various reasons. The metropolitan traffic data were already provided by SmartRoute Systems to commuters; the I-95 Corridor Coalition states have been reporting key data to the IEN on an ongoing basis. The FleetForward project provided carriers with access to this real-time traffic data via customized formats and distribution mechanisms.

Two stated goals of this component were to develop motor carrier usage of highway and traffic information and to make better use of available highway and traffic information.

Results pertaining to access to useful and reliable data are shown in Table 4.2.

Goal 4 – Develop Motor Carrier Usage of Highway and Traffic Information

To understand carriers' awareness of traffic information, they were asked about their perceptions of the availability and value of traffic information pre and post FleetForward. Carriers were asked whether they used FleetForward for local and/or regional information.

Three quarters of carriers experienced an improved perception of traffic information. Many carriers commented that they see the benefit from such a system. An important finding is that 90 percent of carriers felt that the FleetForward information was accurate. If carriers have confidence in the information, they will be more receptive to using the system in the future.

Results indicate that 25 percent of carriers accessed FleetForward at least once a day and 25 percent used it a few times a week. The remaining 50 percent of carriers, however, used it only occasionally for specific inquiries, such as an irregular trip along the I-95 corridor.

Carriers used FleetForward for both local and regional traffic information as suitable for their specific routes. Half the carriers indicated that they typically used both local and regional information. From this information, it appears that carriers logically used only that part of the FleetForward data that was useful to them.

Table 4.2 Access to Useful and Reliable Real-Time Data – Results

Goal/Objective	Planned Measures of Effectiveness	Results
G4. Develop motor carrier usage of highway and traffic information		
Increase the awareness and use of free traffic information by motor carriers in the I-95 Corridor (including SmarTraveler and the IEN)	• Carrier perceptions of the availability, utility, and value of traffic information before and after the deployment of FleetForward.	• 75% of the carriers experienced an improved perception of traffic information. Many commented that they now see the benefit from such a system.
	• Number of inquiries of available free highway and traffic info in the I-95 Corridor	• Carriers use of FleetForward varied greatly. Some accessed it everyday, some only intermittently for specific truck trips.
Provide one-stop shopping to motor carriers for basic (i.e., free) traffic-related information	• Ability of FleetForward to coordinate regional and metropolitan highway and traffic information into a single source and distribute it to motor carriers	• Carriers were able to access local and regional data consistently; the data was found to be accurate and useful. • Additional data needs were identified, such as weather and expanded geographic coverage.

Table 4.2 Access to Useful and Reliable Real-Time Data – Results (continued)

G5. Make better use of available highway and traffic information		
Leverage the IEN to meet the needs of motor carriers	• Define and document the use of the IEN in the FleetForward test • Compare FleetForward's use of the data to previous uses	• The IEN was successfully combined with SmarTraveler's metropolitan area data and made accessible to the participating carriers. • There were some technical issues initially in gaining access to the complete IEN system, but they were overcome. • Participants' use of FleetForward represented a new use for the IEN system. Prior to FleetForward, this data was not directly accessible to motor carriers nor widely used for traffic management in general.
Increase the use of metropolitan traffic data	• Define and document the use of the SmarTraveler information by motor carriers in the FleetForward test	• In Boston, Philadelphia, and DC, FleetForward was provided with SmarTraveler information for the SmarTraveler hours of operations. Generally 6:00 a.m. to 8:00 or 10:00 p.m. on weekdays. Some weekend and event information. Some carriers commented that these times are not in line with their operating hours – therefore traffic data is not available to them.
	• Compare FleetForward's use of the data to previous uses of the data	• Metropolitan traffic data is traditionally geared toward the commuting public not the trucking industry. Incorporating metro data on the FleetForward system supplemented the IEN data and expanded the coverage area available to carriers. • Prior to FleetForward, this data was only accessible via the traditional public dissemination mechanisms (radio, television, etc.)

Goal 5 – Make Better Use of Available Highway and Traffic Information

To understand the use of available highway and traffic information, the use of the IEN and SmarTraveler data was assessed. Both carriers and members of the private/public partnership were interviewed.

The FleetForward operational test combined regional (IEN) and local (SmarTraveler) traffic data into one package. During the test period, there were times when IEN data was not available to SmartRoute Systems. It is not clear where the technical problem existed, but the result was that regional data was sometimes not available to carriers. Carriers did not comment on this, either because they did not notice or were not affected.

Some carriers only accessed FleetForward for I-95 travel conditions, while others use it for both local and regional traffic data. SmartRoute Systems' traffic information is generally available from 6:00 a.m. to 8:00 or 10:00 p.m. on weekdays, with some weekend and event information. Some carriers commented that these times do not correspond with their operating hours – therefore traffic data is not available to them.

The increased distribution of both the IEN and SmarTraveler data through the FleetForward system has the potential to improve carrier efficiency.

4.3 Effectiveness of the FleetForward Public/Private Partnership

The objective of this evaluation component was to measure the effectiveness of the public/private partnership that was established to develop and deploy FleetForward. The FleetForward public/private partnership consisted of the I-95 Corridor Coalition, private industry representatives, including the motor carrier industry, software developers, and traffic reporting companies. The goal was to successfully develop and deploy the FleetForward program by efficiently using the strengths of each partner. Public/private partnerships are created because a project is considered mutually beneficial to multiple parties from both the public and private sectors.

This component documented the reasons that the FleetForward public/private partnership was formed, specifically, what the various partners brought to the partnership. The lessons learned throughout the FleetForward test have been documented. The overall measure of the effectiveness of the public/private partnership is the verification of the successful deployment of FleetForward. The role of the public/private partnership was to deploy the FleetForward system in the most efficient manner so as to ensure the best chance for success. Therefore, the evaluation focused on the partners' observations on how well the team worked together and how well the development and deployment activities were accomplished.

Results pertaining the effectiveness of the FleetForward Partnership are shown in Table 4.3.

Table 4.3 Public-Private Partnership Effectiveness – Results

Goal/Objective	Planned Measures of Effectiveness	Results
G6. Use a public-private partnership to facilitate the development and deployment of the FleetForward		
Develop a cooperative team that draws on the strengths of each member	• Perspective of the public-private partnership representatives • Analyze of the various public-private partnership interactions • Compare the overall FleetForward stated work plan to the actual deployment	• All commented that the interactions among and communication between representatives was effective. Everyone knew his or her role. One comment was that ATAF was the "glue" that held the process together. • FleetForward was a successful operational test; it was developed, deployed, and tested; the lessons learned will benefit future ATIS initiatives for CVO application. • All commented that the expertise of the partners was abundant and used effectively. • FleetForward was a very successful combination of I-95 CC and industry resources. • All parties remained flexible throughout the pilot test. • There was a high level of trust among the three key deployment partners (ATAF, ALK, and SmartRoute Systems). • There was limited resistance by those responsible for updating the IEN.

Goal 6 – Use a Public Private Partnership to Facilitate the Development and Deployment of FleetForward

To understand how the team viewed the public/private relationships, members of the partnership were interviewed. These discussions indicated overwhelmingly that the team worked effectively together.

One member commented that ATAF was the "glue" that held the process together. Another member commented that this was the most successful pilot program he had been involved with. Many members commented that the strengths of the team were well utilized and that everyone knew their role within the project. One example of how the team worked effectively occurred early in the test phase. As a result of carrier and member input, the focus of the operational test shifted away from telephone/dial-up connection to an Internet-based connection.

The following summarizes the comments received from the partners interviewed by the evaluation team. They reflect the views of those interviewed and cover general observations and the identification of strengths, issues, and lessons learned from the FleetForward pilot test.

- FleetForward was a successful operational test. It was developed, deployed, and tested. The public and private participants gained insights which will be valuable during future ATIS for commercial vehicle operators.

- FleetForward showed that there is a demand for CVO ATIS services.

- The expertise of the participants was effectively utilized.

- The working relationship of the key deployers was excellent (ATAF, ALK, and SmartRoutes).

- The FleetForward system worked well and was easy to use.

- FleetForward users can produce little measurable data on the impact of the system. Therefore, quantitative analyses could not be performed.

- It must be recognized that operational tests rarely provide enough data for quantitative analyses. By definition, the deployment is limited. The critical information came from the participant's opinions and experiences. Their observations determine whether the deployment was a success or failure and highlights which components worked and which ones did not.

- Perhaps more emphasis should have been on the business model before developing and deploying the system.

- It was very important to keep the technical solutions as simple as possible.

- There needs to be more work done regarding the market size and in determining the appropriate business model for CVO ATIS services. This should be the focus of future work, not the expansion of the system.

- The I-95 CC is now left with the question of what its role should be regarding CVO-based ATIS in the Corridor.

- Some felt FleetForward was two or three years a head of its time, technologically. Recent growth in Internet use would now facilitate carriers' abilities to use the system.

- FleetForward was an excellent example of the combination of I-95 CC and industry resources.

- The FleetForward architecture, and its developers, remained flexible throughout the course of the pilot; this included a significant fundamental change early in the project.

- The IEN matured over the course of the project. However, access to it early on was an obstacle. Note that FleetForward was the first "outside" customer for this system, which itself is a pilot test. The ATAF expected the system to be able to support FleetForward providing high-quality data. It was not ready for this yet. For example, each state has its own ranking criteria for the severity of an incident.

- FleetForward illustrated the importance of the IEN and provided it with feedback for improvements if it is to be used as a real-time data provider in the future.

- Participating carriers deployed FleetForward at different levels, with many stopping short of making it available to operations staff (dispatch). In many instances, only management personnel tested the system.

- The lack of technology available to many carriers limited the use of FleetForward. Many participants did not deploy the system to their operations staff because dispatch did not have access to the Internet. In addition, some carriers currently rely on automated systems and were not able to integrate FleetForward into these legacy systems.

- Acceptance and incorporation of FleetForward into the daily operations of carriers is a challenge.

- The recruitment process could have been more focused on selecting carriers whose operations would be more apt to benefit from FleetForward, and whose management would ensure deployment to the operations staff.

- Carriers were pleased with the data FleetForward provided, however, they identified additional data they would like to see, such as weather, parking, rest areas, etc.

- Staff turnover and the subsequent transition periods impacted FleetForward. Within the deployment team, the turnover was effectively managed. However, for the participating motor carriers, turnover often resulted in the carrier dropping out of the test. This occurred as a result of new hires focusing on learning their new job. In addition,

in many instances the original participant left the company on a relatively short notice without providing a smooth hand-off of responsibilities to the replacement.

- Y2K was another major concern for several participants. In fact, one of the more technologically sophisticated carriers dropped out of the pilot for this reason.

- The carriers that drop out and do not use the system provide as much value as those that participated throughout the entire pilot.

- FleetForward showed that the traffic information needs of commercial vehicle operations are different from those of the general traveling public. For example, carriers require data 24 hours a day, seven days per week.

4.4 Case Studies of Carrier Experience

The motor carriers that participated in the FleetForward operational test represented a diverse mix of trucking operations. This provided the ATAF with the opportunity to evaluate the usefulness of a commercial vehicle-based ATIS for various types of operations. A key component of this evaluation is to identify the type of operations that were able to benefit from the use of FleetForward, and to understand why it was not useful to others. Three examples have been selected from the motor carrier interviews conducted by the evaluation team to illustrate the way in which FleetForward was used, and to document the carriers' perceptions of the system. These examples include a carrier that found the system very useful, a carrier that found it somewhat useful, and a carrier that discontinued participation due to lack of usefulness. These examples provide valuable insights to the strengths and weaknesses of the FleetForward system.

Example 1. Strong Proponent of FleetForward

Description of Operation

- Participant is a private fleet operation serving a supermarket chain, using less-than-truckload shipments. Carrier operates in the I-95 Corridor, based in the Washington, D.C. area, and uses I-495/Beltway, I-95, and the New Jersey Turnpike. The fleet consists of approximately 230 power units and 1,700 trailers. Almost all of the carrier's trips involve the I-95 Corridor, amounting to 3,500 per week or 550 per day. On-time delivery is an integral part of its operation. Drivers are paid hourly. Prior to FleetForward, the use of traffic information was limited to traffic reports distributed via radio.

Deployment and Use of FleetForward

- Carrier used FleetForward occasionally to test the system and to identify potential delays. The system was deployed to the entire operation (all vehicles). However, only

management had access to the system. Training/instructions were provide on-site by the ATAF and the carrier found the training to be adequate.

- FleetForward was brought on-line in mid-June 1999 and it worked as planned. Management used FleetForward two or three times a day to check traffic conditions on routes. Carrier thought it would have been used more frequently if dispatch had had access to the system. FleetForward was not used for specific routing decisions, but it was used to delay the departures of loads that would sit in traffic. The system was unavailable a couple of times throughout the pilot. Carrier was not sure whose fault this was.

Description of the Impact of FleetForward

- There was no improvement in on-time delivery performance. There was no improvement in the carrier's ability to give an accurate ETA. However, if the dispatch had been able to use the system the results may have been different. There was no change in fuel consumption, total miles traveled, turn time, equipment utilization, driver utilization, vehicle maintenance costs, driver or office employee turnover, or in the frequency/number of accidents.

- Carrier's perception of the availability, utility, and value of traffic information has improved, as the benefit of timely traffic information has been realized. Carrier is now more willing to make use of traffic information and wishes FleetForward had been accessible to dispatch. FleetForward successfully provided the carrier with both regional and local traffic information.

Summary of the FleetForward Experience

- Having access to FleetForward reduced the reliance and wait time involved in a radio-based traffic report. FleetForward was accessible whenever an update was needed. The system was easy to use and the information was valuable, especially in delaying the departure of trips that would experience heavy congestion. This was important to the carrier because drivers are paid by the hour and reduced time in traffic made the operation more efficient. As far as the carrier knows, the information was always accurate.

- The system would be more valuable if it contained information on the weather conditions. The carrier would use FleetForward, or a similar commercial vehicle ATIS, and would be willing to pay for it if the price was reasonable.

Analysis of the Experience

- FleetForward was useful for delaying trip departure times to avoid heavy congestion and incidents. However, lack of deployment of the system to the dispatch function limited its use. Management acknowledged that it believes the benefits from participation would have been greater if dispatch had had access to the system. Even so, the system received positive feedback, and the carrier is interested in future ATIS for commercial vehicle operations. The overall experience has resulted in increased use of traffic information.

Example 2. Favorable Proponent of FleetForward

Description of Operation

- Participant is a truckload carrier serving markets east of the Mississippi River with about 90 percent of its operations within Virginia and its contiguous states (MD, WV, PA, NC, TN, KY). It typically operates on I-81, I-95, I-64, I-77, I-70, and I-76. Its fleet consists of approximately 40 power units and 38 trailers. The number of daily trips in the I-95 Corridor ranges from 12 to 24 based on the season. On-time delivery is an integral part of its operation. Drivers are paid both by the hour and by the trip. Prior to FleetForward the carrier did not use any commercial traffic service. However, it has used television and radio traffic reports, as well as the National Weather Service forecasts.

Deployment and Use of FleetForward

- When the pilot started, the carrier planned on checking FleetForward once in the morning and once in the afternoon. In reality, though, it was often difficult to make the Internet connection, most likely as a result of the company's Internet service provider and hardware. FleetForward was the only reason for regularly connecting to the Internet. Therefore, it was not worth investing in a high-speed connection for a pilot test. This limited Internet connection made checking FleetForward less attractive over time, even though the limitation was not a reflection of the FleetForward system.

- FleetForward was tested with a sample of the overall fleet. It was accessible to both management and dispatch. The system became operational in July 1999 and the training/instructions provided were adequate. The system worked as expected. However, it really did not provide any different information than that available from other sources (television and radio traffic reports).

- Carrier did not use FleetForward regularly. It was used for specific areas, specifically, it was used for trips using the Beltway and bridges in Washington, DC and the highways accessing the airport in Philadelphia. These are high-congestion corridors and FleetForward was used to help plan the route. Typically, it was used during the middle of the day.

Description of the Impact of FleetForward

- For those times when FleetForward was used effectively, delivery time was decreased. Although there was no measurable decrease in late delivery penalties, it was the carrier's perception that more accurate ETAs were provided when FleetForward was used. There was no measurable change in fuel consumption, total miles traveled, driver or office employee turnover, the frequency/number of accidents, or vehicle maintenance costs. There was a perceived improvement in turn time, equipment utilization, and driver utilization.

- Carrier's perception of the availability, utility, and value of traffic information has changed. Prior to FleetForward the carrier would not have considered using the Internet for real-time traffic conditions. Now it sees the advantage of this type of service.

As a result, the carrier is more likely to make use of traffic information now than before participation in this pilot. Over the course of the pilot, it is estimated that the carrier accessed FleetForward about 100 times. FleetForward successfully provided both regional and local traffic information.

Summary of the FleetForward Experience

- The information provided by FleetForward was always good/reliable. The only limitation was the carrier's Internet connection, which limited the usefulness. The system was easy to use, the information was valuable, and there were no instances where the carrier believed the information to be inaccurate.

- The carrier would like to have known when the data was last updated. The interviewee could not remember if this information was provided, but believes it to be very important. FleetForward was most useful for checking conditions ahead of time before releasing a truck into a known problem area. The carrier would use FleetForward or another commercial vehicle ATIS in the future, and would be willing to pay for it, depending on the cost and other conditions.

Analysis of the Experience

- FleetForward was used successfully for targeted service areas. Use of the system was limited by the carrier's Internet infrastructure, which hindered connection to the web site, and ultimately discouraged frequent use of the system. The participant was not willing to upgrade this system for a pilot test, as this was its only real use of the Internet. The carrier already made use of traffic and weather reports available from radio and television, and did not believe that FleetForward offered anything truly new or original. However, the overall experience was positive, and the carrier recognizes the value of real time traffic information via the Internet, and would consider using an ATIS for commercial vehicle operations in the future.

Example 3. Non-Proponent of FleetForward

Description of Operation

- Participant is both a truckload and less-then-truckload carrier providing service to New England. Primary routes consist of I-84, I-95/Rt. 128, I-495, and I-90. The fleet consists of approximately 20 power units and 50 trailers. Carrier operates seven or eight trips per day in the I-95 Corridor, with heavy reliance on I-95/Rt. 128. On-time delivery is an integral part of its service. Drivers are paid hourly. No traffic information service was used prior to FleetForward.

Deployment and Use of FleetForward

- The carrier occasionally tested the FleetForward system, using it to check for any trip involving the I-95 Corridor. Only management had access to the system. The

training/instructions provided were adequate and the system was easy to use. The system was not up and running for three months due to trouble with the password. The carrier stopped using the system before the end of the pilot because it had insufficient coverage for its geographic region. Specifically, there was no information for Western Massachusetts and I-84 in Connecticut. In addition, the carrier does not make long-haul trips along the east coast. The system was reliably accessible and easy to use; it just did not provide the right geographic coverage for the carrier's area of operation.

Description of the Impact of FleetForward

- The carrier did not experience improvements in on-time delivery performance, decreases in late delivery penalties, or improvements in providing accurate ETAs. It did not experience changes in fuel consumption, total miles traveled, turn time, equipment utilization, driver utilization, vehicle maintenance costs, driver or office employee turnover, or the frequency/number of accidents.

- The carrier has not experienced any significant change in its perception of the availability, utility, and value of traffic information. Willingness to make use of traffic information in the future would require a system that better covered the carrier's area of operation.

Summary of the FleetForward Experience

- Aside from the initial problem with the password, the system was easy to use. However, the carrier did not feel that FleetForward helped its operation, so use was discontinued. Currently, the carrier relies on CB radio for communication of traffic incidents. Drivers usually know first about trouble on the highways and have enough known alternate routes within New England to adjust their trip. The were no instances where FleetForward information was found to be inaccurate.

- Without additional geographic coverage, specifically in New England and the Massachusetts Turnpike, the system was not really useful to the carrier. The carrier is not interested in a system of this type for its operation because the longest trips it has are still day trips (300 miles or less in each direction) and I-95 is not heavily used.

Analysis of the Experience

- FleetForward did not provide the geographic coverage required by this carrier. In addition, the participant believes that drivers usually know about incidents first and given the carrier's service area, the drivers are equipped with the ability and experience to modify their routes to avoid major congestion points and incidents. No significant benefit was realized and the carrier ended its participation prior to the end of the pilot test period. There is no strong interest in future use of a system of this type given the typical length of haul. And to even consider future testing, the geographic region would need to be expanded.

5.0 Conclusions and Recommendations

The evaluation team has developed several conclusions based on the evaluation activities conducted and reported in Section 4.0, and has developed several recommendations to assist in defining next steps for this project and/or future ATIS for commercial vehicle operations.

5.1 Conclusions

- **FleetForward was an overall success.** The opinions of the public/private partnership indicate that the FleetForward operational test was successful. Carriers opinions were more varied – some found it useful, some did not. For various reasons, some carriers dropped out of the operational test. As with any product, the users who find merit will want to continue using it. And perhaps most important, the I-95 Corridor Coalition learned more about the development and value of ATIS for commercial vehicle operations.

- **FleetForward was a technically sound product.** From a technical standpoint, the system generally worked. Carriers could access the system when they needed, found the system easy to use, and found the information accurate.

- **Additional data elements would increase the value of the FleetForward system.** Carriers would like to see additional data, such as weather, historical traffic reports, parking information, rest areas, etc.

- **Limited deployment by the participants restricted the benefits experienced.** Many of the participating carriers kept access to FleetForward at the management level. This significantly limited the possibility that the dispatch departments would integrate the system into the normal daily operations.

- **Motor carrier staff turnover impacted the level of participation in FleetForward.** The normal turnover of staff among motor carriers resulted in some participants dropping out of the pilot test. This was the result of new staff not having time to participate while they were learning their new job responsibilities. In addition, there often was no formalized hand-off from the previous staff person to the replacement.

- **The level of deployment and data tracking by carriers did not support a quantitative evaluation.** The number of carriers testing the system did not represent a significant percent of the traffic, or even the commercial traffic in the I-95 Corridor. This limited the ability to quantify systemwide benefits resulting from FleetFoward. In addition, no

elaborate, automated data collection processes were available within individual carrier operations. This greatly limited the availability of quantitative data.

- **FleetForward was heavily used by many participants to manage extraordinary situations.** For example, there was a huge increase in use of the web page during Hurricane Floyd as well as during severe winter storms.

- **FleetForward had unanticipated benefits to motor carriers.** Several carriers reported using the FleetForward system to monitor their drivers.

5.2 Recommendations

- **Determine the appropriate business model for ATIS for commercial vehicle operations in the I-95 Corridor.** Before the FleetForward program can be expanded and improved upon, the I-95 Corridor Coalition must decide what its long-term stake in this type of program should be. A fully deployed ATIS/CVO system in the Corridor would likely improve motor carrier operations as well as the overall efficiency of the highway system. Thus, there would exist a public benefit worthy of some public investment. The question remains, what is the appropriate business model (private, public, public/private partnership) for a system of this type?

- **Conduct market research to identify the additional service characteristics required by carriers and quantify potential pricing options for a FleetForward-type service.** The participating carriers identified some additional data components (e.g., weather) they would like to have access to. Therefore, future market research should expand on this topic. In addition, carriers satisfied with the system expressed a willingness to pay for FleetForward access. Understanding the price elasticity and the type of service and information that would be required for carriers to be willing to pay a price for this system is an important next step.

- **Improve the quality of the data reported by FleetForward.** Several issues were raised throughout the evaluation that specified the need for improved traffic data. The IEN was typically associated with these issues. For example, this included the need for more uniform definitions of types of incidents, such as "severe." It also included the updating procedures. The timeliness of the updates, whether adding in a new incident or removing an existing incident, were seen as key components for a sustainable system.

- **Expand the FleetForward service.** FleetForward is based on data sources historically used for general traffic operations. Participating carriers identified a few additional data elements that would make the system more useful for commercial vehicle operations. These consisted of weather data, expanded hours of operation of the monitoring systems so as to provide 24/7 service, and historical data (past few hours) so that carriers can identify traffic patterns as well as verify driver claims of traffic delays.

- **Develop a more thorough carrier recruitment program prior to a future operational test.** A more thorough screening of test carriers should be conducted as part of a future

test. During FleetForward, many carriers dropped out. It is important to keep these carriers engaged in the process. Perhaps some incentive system should be developed to maintain their interest and enthusiasm about the project over the course of a pilot test. Results of the carrier interviews indicated that smaller carriers generally did not see a benefit from the FleetForward system. A future pilot test should focus on larger carriers who may realize a larger net benefit from the system, as well as work to encourage all participants to test the system thoroughly for the specified timeframe regardless of personal usefulness.

- **Develop a more quantitative data collection plan in coordination with the participants prior to a future operational test.** It is important to explicitly define "before" and "after" conditions and maintain consistency to ensure the data compatibility in the "before" and "after" data sets. The same interview team should be responsible for before and after interviews to establish a good relationship with the carriers and create a cooperative environment for expressing opinions and exchanging information. In addition, future tests should ensure the collection of quantitative data even if it results in an increased burden for the participants.

Appendix A

Data Collection Tools

FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas.

- Discuss the general charactertistics of your operation
- Discuss your deployment activities
- Discuss your use of FleetForward
- Discuss the impact of FleetForward on your operation
- Discuss your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. **LTL or TL?**
2. **Geographic coverage and key highways used:**
3. **Number of power units:**
4. **Number of trailers:**
5. **Daily number of trips in I-95 Corridor:**
6. **Is on-time delivery an integral part of your operation?**
7. **Are drivers paid by mile or by trip?**
8. **Prior to FleetForward, did you use any traffic information service?**

B. Please describe your deployment of FleetForward:

1. **Philosophy (extent of use planned): screening tool, routing tool, occassional testing?**
2. **Did you deploy to your entire fleet, a sample of your fleet, or none?**
3. **Who was involved in the use of FleetForward? Management? Dispatch? Drivers?**
4. **What instruction were you provided with? Was it adequate?**

C. Please describe your use of FleetForward:

1. **When did FleetForward become operational for you?**
2. **Did it work as planned? If not, how was it different than expected?**
3. **If you dropped out, why?**
4. **Did you use FleetForward regularly? Why or why not?**
5. **Did you use FleetForward for specific routing decisions?**
6. **Was the system reliable in the sense that you could access it every time you tried?**

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

2. **Did late delivery penalties decrease?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

3. **Did your ability to give an accurate ETA improve?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

4. **Did you experience a change in fuel consumption?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

5. **Did you experience a change in total miles traveled?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

7. **Did you experience a change in vehicle maintenance costs?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

8. **Did you experience a change in driver or office employee turnover?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

9. **Did you experience a change in the frequency/number of accidents?**

   Yes No Don't Know If yes, please describe the change. (Note if perceived)

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?**

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**

    Yes No Don't Know Explain.

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?**

    Provided by ATAF?

13. **Did FleetForward provide you with both regional and local traffic information?**

    Yes No Don't Know Explain.

E. Describe your experience:

1. **What worked well?**
2. **What did not work?**
3. **Was the system easy to use?**
4. **Was the information valuable?**
5. **Was the data always accurate? Were there times when the data was wrong or times when there was no data when there should have been?**
6. **What additional information would have increased the value of this system?**
7. **How was FleetForward most useful?**
8. **Would you use this system or a system like it in the future? If yes, would you pay for it?**
9. **Additional comments?**

FleetForward Operational Test Evaluation
Public-Private-Partnership Interview Guide

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover the following areas: what was your involvement with FleetForward; why were you selected to participate; were you involved in the actual deployment activities; and what has your experience been (general perceptions, views, etc.).

1. **Describe your job responsibilities**
2. **Describe your role in the FleetForward operational test**

- **Role in program development**
- **Role in deployment**
- **Role in daily operation**

3. **Do you feel the partnership functioned effectively? Why or why not?**
4. **Were there any barriers/obstacles to FleetForward (systems, data, protocols)?**
5. **What worked well? What did not work?**
6. **What lessons were learned? What would you do differently?**
7. **Do you feel the expertise of the various partners was effectively utilized?**
8. **Did the partners work well together?**
9. **Describe the mechanisms put in place to facilitate communication among the partners.**
10. **Did FleetForward make better use of available traffic data?**
11. **Did FleetForward stimulate better maintenance of the public data sources (more timely updating and data entry to the Information Exchange Network)?**
12. **How was FleetForward most useful?**
13. **Did FleetForward increase the efficiency of the overall highway system?**

- **Reduced congestion?** **Yes** **No** **DKN**
- **Improved highway safety?** **Yes** **No** **DKN**
- **Increased highway capacity?** **Yes** **No** **DKN**
- **Improved highway service to motor carriers?** **Yes** **No** **DKN**

14. **Do you feel that FleetForward should be advanced to the next phase? Why or why not?**
15. **Additional comments?**

Appendix B

Motor Carrier Interviews

Carrier #1
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. LTL or TL?
TL

2. Geographic coverage and key highways used:
Loosely cover east of the Mississippi. But 90% of operations are within Virginia and contiguous states (MD, WV, PA, NC, TN, KY). Key highways include I-81, I-95, I-64, I-77, I-70, and I-76.

3. Number of power units:
40

4. Number of trailers:
38

5. Daily number of trips in I-95 Corridor:
It changes seasonally, but right now he estimates a dozen daily trips. In April, he estimates this will increase to about two dozen trips.

6. Is on-time delivery an integral part of your operation?
Yes

7. Are drivers paid by mile or by trip?
Both

8. Prior to FleetForward, did you use any traffic information service?
No commercial traffic service. But he has used TV and radio traffic reports, plus National Weather Service forecasts.

Carrier #1 (continued)

B. Please describe your deployment of FleetForward:

1. Philosophy (extent of use planned): screening tool, routing tool, occasional testing?
When the pilot started, he planned on checking once in the morning and once in the afternoon. In reality, though, it was often difficult for him to make the Internet connection (probably his AOL service). Since this was his only real need to connect to the Internet, it's not worth it for him to have high speed connection. He said there were times he wanted to connect to FleetForward but he could not get a connection. Obviously not a FleetForward problem, but over time it became less attractive to connect.

2. Did you deploy to your entire fleet, a sample of your fleet, or none?
Sample

3. Who was involved in the use of FleetForward? Management? Dispatch? Drivers?
Management and dispatch.

4. What instruction were you provided with? Was it adequate?
The instructions were adequate.

Carrier #1 (continued)

C. Please describe your use of FleetForward:

1. When did FleetForward become operational for you?
July 1999

2. Did it work as planned? If not, how was it different than expected?
Yes. But it really provided no different information than that available from other sources (TV and radio traffic reports).

3. If you dropped out, why?
N/A

4. Did you use FleetForward regularly? Why or why not?
No – he ended up using it when he had trips using Beltway in DC, bridges in DC, and also Philadelphia airport. Because these are high congestion corridors, he used FleetForward to help plan the route. Typically, he used it during the middle of the day.

5. Did you use FleetForward for specific routing decisions?
Yes.

6. Was the system reliable in the sense that you could access it every time you tried?
Yes – the problems he had with access were related to his Internet connection.

Carrier #1 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**
   Yes. For those times when FleetForward was used effectively, delivery time was decreased.

2. **Did late delivery penalties decrease?**
   No

3. **Did your ability to give an accurate ETA improve?**
   Yes – Perceived

4. **Did you experience a change in fuel consumption?**
   No.

5. **Did you experience a change in total miles traveled?**
   No.

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**
   Yes to each – Perceived.

7. **Did you experience a change in vehicle maintenance costs?**
   No.

8. **Did you experience a change in driver or office employee turnover?**
   No.

9. **Did you experience a change in the frequency/number of accidents?**
   No.

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?**
    Yes – prior to Fleet Forward he would not have considered using Internet for real-time traffic conditions. He now sees the advantage of it.

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**
    Yes

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?**
    He estimates 100 over the course of the pilot.

13. **Did FleetForward provide you with both regional and local traffic information?**
    Yes

Carrier #1 (continued)

E. Describe your experience:

1. What worked well?
Information was always good/reliable.

2. What did not work?
His Internet connection limited the usefulness to him.

3. Was the system easy to use?
Yes

4. Was the information valuable?
Yes

5. Was the data always accurate?
Yes

6. Were there times when the data was wrong or times when there was no data when there should have been?
His impression is that the data was always accurate.

7. What additional information would have increased the value of this system?
He would like to know when the data was last updated. He couldn't remember whether it was shown, but he thinks it very important.

8. How was FleetForward most useful?
When he was sending trucks into known problem areas (Beltway, etc.) – he could check ahead of time on conditions.

9. Would you use this system or a system like it in the future? If yes, would you pay for it?
Yes – He would pay depending on cost and other conditions.

10. Additional comments?
No.

Carrier #2
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. **LTL or TL?** *Private fleet for supermarket, LTL*
2. **Geographic coverage and key highways used:** *Wash DC, 495 Beltway, 95, NJ Tpke*
3. **Number of power units:** *231*
4. **Number of trailers:** *Roughly 1700*
5. **Daily number of trips in I-95 Corridor:** *almost all, 3500/week, 550/day*
6. **Is on-time delivery an integral part of your operation?** *Yes*
7. **Are drivers paid by mile or by trip?** *Hourly*
8. **Prior to FleetForward, did you use any traffic information service?** *Just radio traffic*

Carrier #2 (continued)

B. Please describe your deployment of FleetForward:

1. **Philosophy (extent of use planned): screening tool, routing tool, occasional testing?** *Occasional testing, some trip delay*

2. **Did you deploy to your entire fleet, a sample of your fleet, or none?** *Entire*

3. **Who was involved in the use of FleetForward? Management? Dispatch? Drivers?** *Only management*

4. **What instruction were you provided with? Was it adequate?** *On-site training; yes, adequate*

Carrier #2 (continued)

C. Please describe your use of FleetForward:

1. **When did FleetForward become operational for you?** *Mid-June*

2. **Did it work as planned? If not, how was it different than expected?** *Yes, as planned*

3. **If you dropped out, why?**

4. **Did you use FleetForward regularly? Why or why not?** 2-*3 times a day. Thinks dispatch would use more frequently if had access.*

5. **Did you use FleetForward for specific routing decisions?** *No, but did use to delay trips that would simply sit in traffic.*

6. **Was the system reliable in the sense that you could access it every time you tried?** *A couple of times couldn't access it; not sure who's fault.*

Carrier #2 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**

   No

2. **Did late delivery penalties decrease?**

   N/A

3. **Did your ability to give an accurate ETA improve?**

   No, but might have if dispatchers used it.

4. **Did you experience a change in fuel consumption?**

   No

5. **Did you experience a change in total miles traveled?**

   No

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**

   No

7. **Did you experience a change in vehicle maintenance costs?**

   No

8. **Did you experience a change in driver or office employee turnover?**

   No

9. **Did you experience a change in the frequency/number of accidents?**

   No

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?** *Perception has improved, now sees benefit to timely traffic info.*

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**

    Yes, also wishes dispatch had used it.

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?**

    Provided by ATAF?

Carrier #2 (continued)

13. Did FleetForward provide you with both regional and local traffic information?

Yes

E. Describe your experience:

1. **What worked well?** *Don't have to wait for radio traffic report, just use FleetForward.*

2. **What did not work?** *Nothing*

3. **Was the system easy to use?** *Yes*

4. **Was the information valuable?** *Yes, especially in delaying trips.*

5. **Was the data always accurate? Were there times when the data was wrong or times when there was no data when there should have been?** *Yes.*

6. **What additional information would have increased the value of this system?** *Weather.*

7. **How was FleetForward most useful?** *Important to hold off inefficient trips because pays drivers by hour, so helps sound out only non-heavy traffic trips.*

8. **Would you use this system or a system like it in the future? If yes, would you pay for it?** *Yes, would use it; yes, if price reasonable.*

9. **Additional comments?**

Carrier #3
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. **LTL or TL?** *LTL*
2. **Geographic coverage and key highways used:** *Every state east of MS; Lots Of I-95*
3. **Number of power units:** *3500*
4. **Number of trailers:** *10,000*
5. **Daily number of trips in I-95 Corridor:** *Roughly 300*
6. **Is on-time delivery an integral part of your operation?** *Yes*
7. **Are drivers paid by mile or by trip?** *Long haul drivers by mile (Relevant Group)*
8. **Prior to FleetForward, did you use any traffic information service?** *No*

Carrier #3 (continued)

B. Please describe your deployment of FleetForward:

1. **Philosophy (extent of use planned): screening tool, routing tool, occasional testing?** *Occasional*

2. **Did you deploy to your entire fleet, a sample of your fleet, or none?** *Entire long haul fleet*

3. **Who was involved in the use of FleetForward? Management? Dispatch? Drivers?** *Management & Dispatch*

4. **What instruction were you provided with? Was it adequate?** *Yes, Adequate*

Carrier #3 (continued)

C. Please describe your use of FleetForward:

1. **When did FleetForward become operational for you?** *Not sure, a few months after start (August ?) B/C dispatch didn't have web access at first.*

2. **Did it work as planned? If not, how was it different than expected?** *Yes*

3. **If you dropped out, why?**

4. **Did you use FleetForward regularly? Why or why not?** *Few times a week*

5. **Did you use FleetForward for specific routing decisions?** *Occasionally*

6. **Was the system reliable in the sense that you could access it every time you tried?** *Yes*

Carrier #3 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**

   No

2. **Did late delivery penalties decrease?**

   N/A

3. **Did your ability to give an accurate ETA improve?**

   Yes, could notify terminals of freight shipments coming in late

4. **Did you experience a change in fuel consumption?**

   No

5. **Did you experience a change in total miles traveled?**

   No

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**

   No

7. **Did you experience a change in vehicle maintenance costs?**

   No

8. **Did you experience a change in driver or office employee turnover?**

   No

9. **Did you experience a change in the frequency/number of accidents?**

   No

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?** *Yes, improved, because now really see the benefits of the technology.*

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**

    Yes, had a good experience.

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?**

    Provided by ATAF?

Carrier #3 (continued)

13. Did FleetForward provide you with both regional and local traffic information?

Didn't use local traffic, only used regional traffic info.

E. Describe your experience:

1. **What worked well?** *Overall positive, nothing in particular*

2. **What did not work?** *Nothing, Don't Know*

3. **Was the system easy to use?** *Yes*

4. **Was the information valuable?** *Yes*

5. **Was the data always accurate? Were there times when the data was wrong or times when there was no data when there should have been?** *Yes, always accurate*

6. **What additional information would have increased the value of this system?** *Nothing*

7. **How was FleetForward most useful?** *Scheduling of local operations, eta for freight shipments*

8. **Would you use this system or a system like it in the future? If yes, would you pay for it?** *Yes and Yes*

9. **Additional comments?** *None*

Carrier #4
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. LTL or TL?
LTL

2. Geographic coverage and key highways used:
Draw an arc from eastern seaboard out to Chicago, St. Louis and North Carolina. Much is concentrated along the eastcoast and I-95 corridor.

3. Number of power units:
12

4. Number of trailers:
17

5. Daily number of trips in I-95 Corridor:
Estimates 3/day.

6. Is on-time delivery an integral part of your operation?
Yes

7. Are drivers paid by mile or by trip?
Both

8. Prior to FleetForward, did you use any traffic information service?
No.

Carrier #4 (continued)

B. Please describe your deployment of FleetForward:

1. Philosophy (extent of use planned): screening tool, routing tool, occasional testing?
When the pilot started, he planned on using it as necessary. He wasn't sure how it would work.

2. Did you deploy to your entire fleet, a sample of your fleet, or none?
Sample

3. Who was involved in the use of FleetForward? Management? Dispatch? Drivers?
Dispatch got Fleet Forward info and communicated it to drivers. When drivers would radio in traffic problems, dispatch would use Fleet Forward to confirm and identify problem.

4. What instruction were you provided with? Was it adequate?
Got a package from Rolf Heidtman. The instructions were adequate.

Carrier #4 (continued)

C. Please describe your use of FleetForward:

1. When did FleetForward become operational for you?
Probably June 1999

2. Did it work as planned? If not, how was it different than expected?
Yes.

3. If you dropped out, why?
N/A

4. Did you use FleetForward regularly? Why or why not?
No – maybe 3 days a week. Would use it when planning trips to the Baltimore/Philadelphia area and through Boston.

5. Did you use FleetForward for specific routing decisions?
Yes.

6. Was the system reliable in the sense that you could access it every time you tried?
Yes.

Carrier #4 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**
   No.

2. **Did late delivery penalties decrease?**
   Don't know.

3. **Did your ability to give an accurate ETA improve?**
   Yes – Perceived

4. **Did you experience a change in fuel consumption?**
   No.

5. **Did you experience a change in total miles traveled?**
   Yes – Perceived. Because trucks were rerouted around congestion.

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**
   Yes to each – Perceived.

7. **Did you experience a change in vehicle maintenance costs?**
   No.

8. **Did you experience a change in driver or office employee turnover?**
   No.

9. **Did you experience a change in the frequency/number of accidents?**
   No.

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?**
    Yes – his perception is better.

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**
    Yes

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?**
    He estimates 3 per week.

13. **Did FleetForward provide you with both regional and local traffic information?**
    Yes

Carrier #4 (continued)

E. Describe your experience:

1. What worked well?
All aspects worked well – he thought that the information was updated frequently.

2. What did not work?
n/a

3. Was the system easy to use?
Yes

4. Was the information valuable?
Yes

5. Was the data always accurate?
Yes

6. Were there times when the data was wrong or times when there was no data when there should have been?
No – he thought it was always good.

7. What additional information would have increased the value of this system?
He would like a better picture. He would like to zoom in and out and would like to see, for example, both Connecticut and Boston area on same map.

8. How was FleetForward most useful?
He could check on I-95 congestion ahead of time.

9. Would you use this system or a system like it in the future? If yes, would you pay for it?
Yes – Depends on cost.

10. Additional comments?
They recently started using Next Tel celluar two-way radios. This is for Eastern Massachusetts area. Drivers can call in and report traffic problems and other drivers can be alerted to conditions. He thinks this system will be very useful.

Carrier #5
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. **LTL or TL?** *Mostly TL*

2. **Geographic coverage and key highways used:** *NE, Mid Atlantic, a lot of I-95*

3. **Number of power units:** *22*

4. **Number of trailers:** *65*

5. **Daily number of trips in I-95 Corridor:** *22*

6. **Is on-time delivery an integral part of your operation?** *90% of business*

7. **Are drivers paid by mile or by trip?** *Combination of both*

8. **Prior to FleetForward, did you use any traffic information service?** *No, did use PCmiler*

Carrier #5 (continued)

B. Please describe your deployment of FleetForward:

1. **Philosophy (extent of use planned): screening tool, routing tool, occassional testing?** *In between screening tool and routing tool (occasional)*

2. **Did you deploy to your entire fleet, a sample of your fleet, or none?** *Entire*

3. **Who was involved in the use of FleetForward? Management? Dispatch? Drivers?** *Mostly management but also dispatch*

4. **What instruction were you provided with? Was it adequate?** *It was adequate*

Carrier #5 (continued)

C. Please describe your use of FleetForward:

1. **When did FleetForward become operational for you?** *Right away*

2. **Did it work as planned? If not, how was it different than expected?** *Yes, worked great*

3. **If you dropped out, why?**

4. **Did you use FleetForward regularly? Why or why not?** *Yes, 5-10 times/week*

5. **Did you use FleetForward for specific routing decisions?** *Occasionally, especially during bad weather (hurricane)*

6. **Was the system reliable in the sense that you could access it every time you tried?** *Yes*

Carrier #5 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**

   Yes - improved but not much

2. **Did late delivery penalties decrease?**

   N/A

3. **Did your ability to give an accurate ETA improve?**

   Yes - this was the major impact, alert customer of delays, improve customer satisfaction from 80 to 95 percent

4. **Did you experience a change in fuel consumption?**

   No

5. **Did you experience a change in total miles traveled?**

   Yes- perceived a slight increase

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**

   No

7. **Did you experience a change in vehicle maintenance costs?**

   No

8. **Did you experience a change in driver or office employee turnover?**

   No

9. **Did you experience a change in the frequency/number of accidents?**

   No

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?** *Improved slightly; always knew this type of information important.*

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**

    Yes, thought it was good, accurate information

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?** *Provided by ATAF?*

Carrier #5 (continued)

13. Did FleetForward provide you with both regional and local traffic information?

Yes

E. Describe your experience:

1. **What worked well?** *Easy access to local traffic info; used in combination w/ PCmiler*
2. **What did not work?** *Nothing*
3. **Was the system easy to use?** *Yes*
4. **Was the information valuable?** *Yes*
5. **Was the data always accurate? Were there times when the data was wrong or times when there was no data when there should have been?** *Yes, data always accurate*
6. **What additional information would have increased the value of this system?** *1. Weather info 2. Historical info so could go back 3 hours to check validity of a driver's claim that traffic bad and resulted in late delivery*
7. **How was FleetForward most useful?** *Improved ETA, customer satisfaction*
8. **Would you use this system or a system like it in the future? If yes, would you pay for it?** *Yes and Yes*
9. **Additional comments?** *None*

Carrier #6
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. **LTL or TL?** *Both*

2. **Geographic coverage and key highways used:** *New England, I-84, Route 128, I-495, Mass Pike*

3. **Number of power units:** *20*

4. **Number of trailers:** *50*

5. **Daily number of trips in I-95 Corridor:** *2-3, if include Route 128 then 7-8*

6. **Is on-time delivery an integral part of your operation?** *Yes*

7. **Are drivers paid by mile or by trip?** *Hourly*

8. **Prior to FleetForward, did you use any traffic information service?** *No*

Carrier #6 (continued)

B. Please describe your deployment of FleetForward:

1. **Philosophy (extent of use planned): screening tool, routing tool, occasional testing?** *Occasional testing*

2. **Did you deploy to your entire fleet, a sample of your fleet, or none?** *Occasionally checked for any trip involving I-95*

3. **Who was involved in the use of FleetForward? Management? Dispatch? Drivers?** *Management*

4. **What instruction were you provided with? Was it adequate?** *Adequate and easy to use*

Carrier #6 (continued)

C. Please describe your use of FleetForward:

1. **When did FleetForward become operational for you?** *3 months after program started because trouble w/password*

2. **Did it work as planned? If not, how was it different than expected?**

3. **If you dropped out, why?** *Stopped using b/c geographic coverage not good for his operation, didn't have info for western MA, CT (I-84)*

4. **Did you use FleetForward regularly? Why or why not?** *Occasionally checked but operation doesn't make long haul trips along east coast (I-95)*

5. **Did you use FleetForward for specific routing decisions?**

6. **Was the system reliable in the sense that you could access it every time you tried?** *Yes, easy to use, just not right geographic coverage*

Carrier #6 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**

   No

2. **Did late delivery penalties decrease?**

   No

3. **Did your ability to give an accurate ETA improve?**

   No

4. **Did you experience a change in fuel consumption?**

   No

5. **Did you experience a change in total miles traveled?**

   No

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**

   No

7. **Did you experience a change in vehicle maintenance costs?**

   No

8. **Did you experience a change in driver or office employee turnover?**

   No

9. **Did you experience a change in the frequency/number of accidents?**

   No

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?** *No significant change*

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**

    About the same, would require didn't geographic coverage info for his NE operation

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?**

    Provided by ATAF?

Carrier #6 (continued)

13. **Did FleetForward provide you with both regional and local traffic information?** n/a

E. Describe your experience:

1. **What worked well?**

2. **What did not work?** *Password problem at first, then easy to use, but didn't feel it helped his operation, so stopped using, now relies on cb's*

3. **Was the system easy to use?** *Yes*

4. **Was the information valuable?** *Not usually, drivers usually know first about trouble and have enough known re-routing options in NE*

5. **Was the data always accurate? Were there times when the data was wrong or times when there was no data when there should have been?** *Yes, accurate*

6. **What additional information would have increased the value of this system?** *Cover New England, Mass Pike, etc*

7. **How was FleetForward most useful?** *Really wasn't useful*

8. **Would you use this system or a system like it in the future? If yes, would you pay for it?** *Not interested in the system for his operation, longest trips are still day trips (300 miles each way), don't use I-95 corridor that much*

9. **Additional comments?**

Carrier #7
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. **LTL or TL?** *Petroleum Transporter (liquid asphalt)*

2. **Geographic coverage and key highways used:** *25 mile radius all in Rhode Island*

3. **Number of power units:** *50*

4. **Number of trailers:** *45*

5. **Daily number of trips in I-95 Corridor:** *on I-95 50% of the time*

6. **Is on-time delivery an integral part of your operation?**

7. **Are drivers paid by mile or by trip?**

8. **Prior to FleetForward, did you use any traffic information service?** *No*

Carrier #7 (continued)

B. Please describe your deployment of FleetForward:

1. **Philosophy (extent of use planned): screening tool, routing tool, occassional testing?** *Occasional testing*

2. **Did you deploy to your entire fleet, a sample of your fleet, or none?**

3. **Who was involved in the use of FleetForward? Management? Dispatch? Drivers?**

4. **What instruction were you provided with? Was it adequate?**

Carrier #7 (continued)

C. Please describe your use of FleetForward:

1. **When did FleetForward become operational for you?**

2. **Did it work as planned? If not, how was it different than expected?**

3. **If you dropped out, why?** *Not applicable system for them because only using roads in Rhode Island; one time tried to check local traffic in RI for an accident they knew about, didn't show up in FleetForward*

4. **Did you use FleetForward regularly? Why or why not?**

5. **Did you use FleetForward for specific routing decisions?**

6. **Was the system reliable in the sense that you could access it every time you tried?**

Carrier #7 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**

   No

2. **Did late delivery penalties decrease?**

   No

3. **Did your ability to give an accurate ETA improve?**

   No

4. **Did you experience a change in fuel consumption?**

   No

5. **Did you experience a change in total miles traveled?**

   No

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**

   No

7. **Did you experience a change in vehicle maintenance costs?**

   No

8. **Did you experience a change in driver or office employee turnover?**

   No

9. **Did you experience a change in the frequency/number of accidents?**

   No

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?** *Doesn't want to use web-based traffic information*

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**

    No, less willing

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?***Provided by ATAF?*

Carrier #7 (continued)

13. Did FleetForward provide you with both regional and local traffic information?

Only local traffic info applicable

E. Describe your experience:

1. **What worked well?**

2. **What did not work?**

3. **Was the system easy to use?**

4. **Was the information valuable?**

5. **Was the data always accurate? Were there times when the data was wrong or times when there was no data when there should have been?** *No, one time tried to use it b/c knew of an accident, FleetForward showed nothing*

6. **What additional information would have increased the value of this system?**

7. **How was FleetForward most useful?**

8. **Would you use this system or a system like it in the future? If yes, would you pay for it?** *No and no*

9. **Additional comments?** *Seasonal business (Mar-Dec), small fleet only in Rhode Island; can't envision a useful system for his operation; he is going back to simply using constant phone communication*

Carrier #8
FleetForward Operational Test Evaluation
Motor Carrier Interview Guide

Overview

As part of the FleetForward Operational Test, the I-95 Corridor Coalition has contracted with Cambridge Systematics to provide an objective evaluation of the program. Today, I would like to briefly cover five areas including: the general characteristics of your operation, your deployment activities, your use of FleetForward, the impact of FleetForward on your operation, your experience in this pilot (general perceptions, views, etc.)

A. Please describe your operation:

1. LTL or TL?
TL

2. Geographic coverage and key highways used:
90% of operations are within Virginia. Key highways include I-460, Route 29, I-81, I-95. They are located about 50 miles from I-95.

3. Number of power units:
100

4. Number of trailers:
150

5. **Daily number of trips in I-95 Corridor:**
About 6.

6. Is on-time delivery an integral part of your operation?
Not really. They do not have strict schedule, but do want to deliver on time.

7. Are drivers paid by mile or by trip?
Paid by the hour.

8. Prior to FleetForward, did you use any traffic information service?
No.

Carrier #8 (continued)

B. Please describe your deployment of FleetForward:

1. Philosophy (extent of use planned): screening tool, routing tool, occasional testing?
Basically they wanted to use it to verify reports they were getting from drivers in the field.

2. Did you deploy to your entire fleet, a sample of your fleet, or none?
Sample

3. Who was involved in the use of FleetForward? Management? Dispatch? Drivers?
Dispatch actually got on the FleetForward site – management and drivers were also involved.

4. What instruction were you provided with? Was it adequate?
He got a handbook. The instructions were adequate.

Carrier #8 (continued)

C. Please describe your use of FleetForward:

1. When did FleetForward become operational for you?
Wasn't sure.

2. Did it work as planned? If not, how was it different than expected?
Yes.

3. If you dropped out, why?
N/A

4. Did you use FleetForward regularly? Why or why not?
No – Probably used it once a week. Did not have a real need for it.

5. Did you use FleetForward for specific routing decisions?
No.

6. Was the system reliable in the sense that you could access it every time you tried?
Yes.

Carrier #8 (continued)

D. Describe the impact of FleetForward:

1. **Did your on-time delivery performance improve?**
   Yes – perceived.

2. **Did late delivery penalties decrease?**
   No

3. **Did your ability to give an accurate ETA improve?**
   No.

4. **Did you experience a change in fuel consumption?**
   No.

5. **Did you experience a change in total miles traveled?**
   No.

6. **Did you experience a change in turn time? Equipment utilization? Driver Utilization?**
   No to each.

7. **Did you experience a change in vehicle maintenance costs?**
   No.

8. **Did you experience a change in driver or office employee turnover?**
   No.

9. **Did you experience a change in the frequency/number of accidents?**
   No.

10. **Has your perception of the availability, utility, and value of traffic information changed? What was it before FleetForward? What is it now?**
    Yes – He can see the benefits of system.

11. **Are you more willing to make use of traffic information now than before your participation in this pilot?**
    Yes

12. **How many inquiries were made to the FleetForward web site (per day, per month, total)?**
    Once a week, maybe couple dozen in total.

13. **Did FleetForward provide you with both regional and local traffic information?**
    More regional. They are located about 60 miles from I-95 corridor.

Carrier #8 (continued)

E. Describe your experience:

1. What worked well?
Dial in connection always worked.

2. What did not work?
The usefulness of the information was limited, since his operations is far from I-95.

3. Was the system easy to use?
Yes

4. Was the information valuable?
Yes

5. Was the data always accurate?
Yes

6. Were there times when the data was wrong or times when there was no data when there should have been?
No.

7. What additional information would have increased the value of this system?
When there is a congestion/delay problem, he would like to see a list of recommended alternative routes.

8. How was FleetForward most useful?
To check on I-95 conditions.

9. Would you use this system or a system like it in the future? If yes, would you pay for it?
Yes – Possibly.

10. Additional comments?
None.