SOUTHWEST ELECTRONIC ONE-STOP SHOPPING MOTOR CARRIER TEST REPORT

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1 EXECUTIVE SUMMARY

The Electronic One-Stop System (EOSS) used in this credential test was designed to replace current normal credentialling procedures with a personal computer-based electronic method that allows users to prepare, apply for, and obtain certain types of vehicle credentials widely used in interstate motor carrier operations. The purpose of this credential test is to evaluate motor carrier electronic credentialling potential for future national deployment. The EOSS software is Windows-based and designed for personal computer models generally available in industry today. The three interstate credentials used for this test were the International Registration Plan (IRP), International Fuel Tax Agreement (IFTA), and Single State Registration Systems (SSRS). Fifteen companies composed of eight for-hire carrier, three private fleet operators, two equipment leasing offices, and two service agents participated in this test. All participants are interstate operators. Seven companies were based in Texas, five in Arkansas, and three in Colorado. Their activity throughout the test was observed and monitored by an independent evaluation team composed of representatives from the Transportation Management Program (Arkansas State University) in Jonesboro, Arkansas, and Booz-Allen & Hamilton in Washington, D.C.

For evaluation purposes, participants were asked to complete baseline surveys documenting opinions about current credentialling methods. Post-test surveys were collected that documented both their overall opinion of EOSS and its relative advantages or disadvantages over the current system. Finally, on-site interviews were conducted with each carrier to document opinions about their experience with the project and supplement the quantitative data collected in the surveys. This group of participants is a small and non-randomly selected population that provided good insight for the evaluation findings but did not provide sufficient quantifiable data to support a rigorous statistical analysis. The test participants did form some useful and reliable opinions'about the potential benefits of EOSS. Every carrier responded very positively to EOSS as a significant improvement in productivity and usefulness when compared to current methods. Carriers are extremely supportive and enthusiastic about the full deployment potential of EOSS on a nation-wide basis.

While multiple specific benefits such as increased accuracy, convenience, less redundancy, ease of learning, or ease of use were identified by carriers, overall time savings was far and away the most significant benefit and impact on carrier productivity – in both administrative duties and fleet operations. The very real potential of time-saving benefits drive the industry's strong support of EOSS. This test adequately demonstrated that existing computer and communications technology is not only capable of supporting national deployment of EOSS, but is already available in most motor carrier offices. All motor carriers owned personal computers that were both adequate and available for use in this test. This test revealed no significant technical barriers to EOSS.

Carriers did express some concern over the possible development of duplicate or multiple electronic credential systems and expressed a preference for uniformity among the states. In addition, carriers are somewhat concerned about the accuracy and reliability of electronic funds transfers that are required to support EOSS. Carriers generally feel they need to be able to instantly verify fee calculation charges and electronic funds transfers when errors beyond their control might invalidate credentials or impose late charges or penalties. Carriers indicated that their electronic payment concerns are the greatest single barrier to a nationally-deployed electronic credential system.

2 EOSS SYSTEM DESCRIPTION

The EOSS system provided a user-friendly, highly graphical electronic personal computer system that helped interstate carriers identify required commercial vehicle credentials and provided for their electronic application and issuance. Industry and state users could access the system from their own desk using a personal computer. The system included two functional modules -the Information and Credential modules. A user could determine what credentials were required from each state through the Information Module. Using the Credential Module, carriers potentially could:

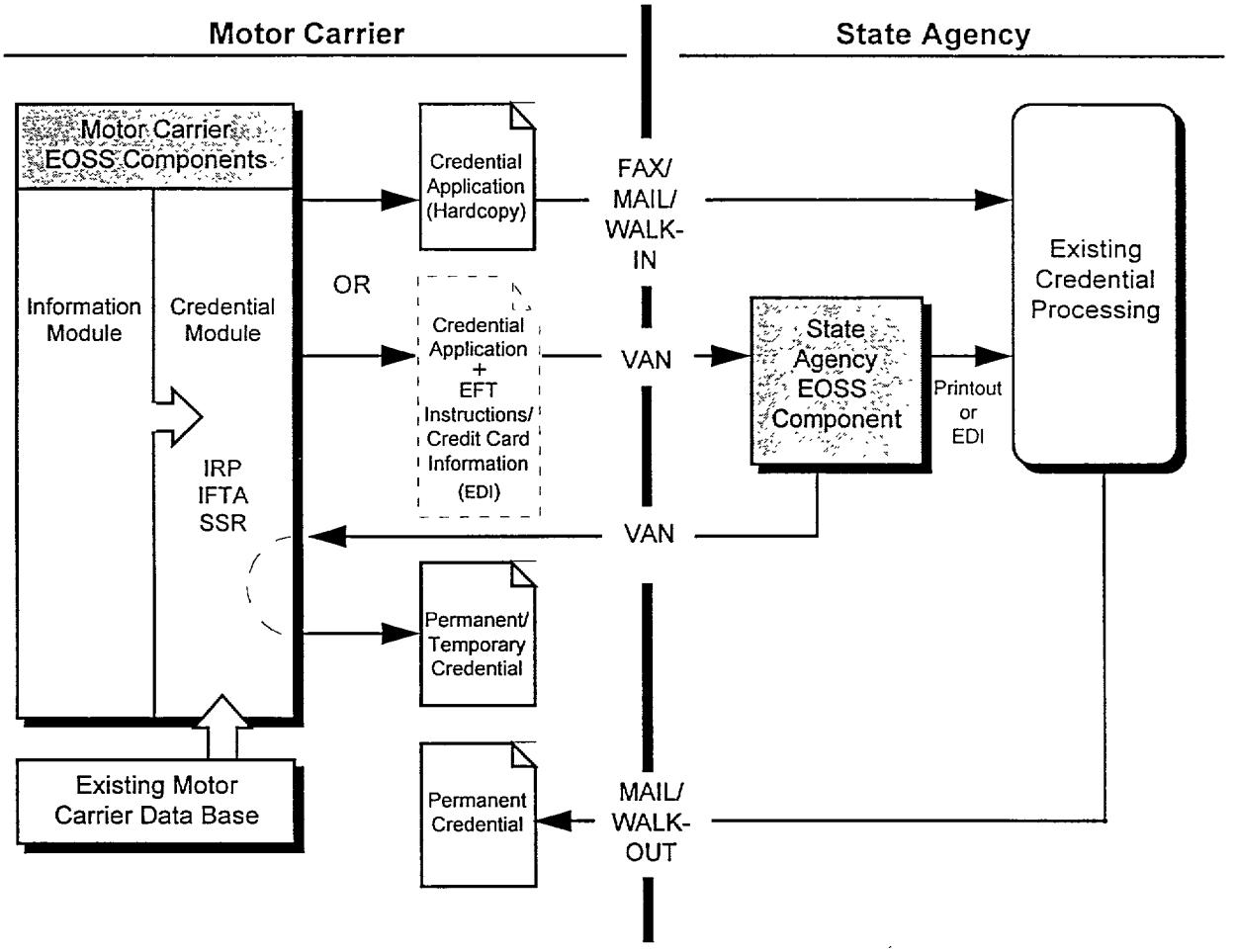
- Complete an application for International Fuel Tax Agreement (IFTA), International Registration Plan (IRP), or Single State Registration (SSRS) System credentials in New Mexico, Arkansas, Colorado, or Texas
- Identify associated fees for system issued credentials
- Arrange for electronic funds transfer to pay those fees
- Submit the completed application electronically, by fax, or print a copy for mailing
- Print out an IRP, IFTA, or SSRS credential for participating states

Exhibit 2.1 on the following page is a flow chart illustrating the EOSS process. A detailed description of the information and credential module follows.

The Information Module was designed for users who do not know what credentials are required in all or some of the states in which they travel. The system asked the user a series of questions regarding the states traveled in, the commodities hauled, the vehicles used, and current credential status. Based on this information, the system indicated which credentials were required and their general information requirements, as well as the supporting documentation needed. From this module, the user can then directly enter the Credential Module and apply for the credentials that are supported by the system.

The Credential Module was designed for the user who desires to apply for specific credentials. In this module, the user indicated the type of credential for which he wished to apply. During the operational test, the EOSS system supported applications for only IFTA, IRP and SSRS credentials. Upon indicating the desired credential type, the user was led through a series of screens which request the **base** state, fleet, vehicle, and company information required for the desired application type. The system calculated fees for temporary IRP credentials as well as permanent (annual) IFTA and SSRS credentials.

EXHIBIT 2.1
EOSS System Process



The user could complete the application in one sitting or could save the application after partial data entry for completion at a later time. Once completed, and application could be saved by the user, or submitted to the state (via a Value Added Network--VAN) with electronic funds transfer (EFT) instructions. If the latter submittal option was chosen, a credential was issued by the system instantly. The credential was printed at the carrier's printer or faxed to any fax number specified by the applicant. The credential could thus be sent to the carrier's desktop or to a remote site such as a truck stop or Port of Entry.

All applications submitted through the EOSS system were essentially applications for permanent (annual) credentials. However, the EOSS system will only issue permanent SSRS credentials. The EOSS system issued temporary credentials for those application types which currently issue temporary credentials prior to issuance of permanent credentials. This included IFTA in Colorado and Texas, and IRP in all three states. Permanent credential were processed and delivered through existing processes, with the exception of the SSRS credential.

The state agencies responsible for issuing permanent credentials downloaded the applications through the VAN interface, printed a copy of the application, and forwarded it for standard processing. The process was automated in Texas by allowing the state agency to

forward the credential application information from the agency EOSS dedicated computer directly to their databases via an electronic data interface (EDI).

Several guiding principles were established early in the system design to facilitate user data entry and interaction with the EOSS system. These included:

- Use of a Windows platform – The system is designed to operate in a Windows environment, using color screens and commercially available database software (Microsoft ACCESS). This was done for several reasons. First, use of a Windows platform ensures that the system will be supported by established and emerging hardware and software. Use of color and graphics simplifies user interaction with and understanding of the system. Use of the ACCESS database provides the functionality required, without requiring run-time licensing of the software to industry or state users. Commercial vehicle operators with existing databases will be able to input data into the EOSS system.

- A user need enter data only once – Where information is shared among applications or among company fleet screens, data already entered for one application w-ill appear as a default whenever the same data are requested again. For example, if a user has applied for an IRP credential and provided a mailing address. that mailing address will appear in the IFTA mailing address screen. The user will have the option of overriding this information.

- The system asks only for required data – The user is asked to provide only the information required for the specified credential and base state.

- Default data will be highlighted in a different color – Where a user has previously entered data that is repeated by the system in a later screen or where information is calculated by the system, the data entry blocks will appear in blue to alert the user to the fact that the data should be verified.

. Users can enter and save incomplete information – When the user chooses to submit the application, the system checks to ensure that all required application fields are completed. These checks are credential and state-specific. The system also runs the application through a series of rule checks to ensure that particular fields are filled out appropriately given the application type and base state selected.

3 EOSS EVALUATION DESCRIPTION

The independent evaluation for this test was conducted by Arkansas State University's Transportation Management Program under the direction of Dr. Joe Horsley. Booz-Allen & Hamilton was the FHWA evaluation support contractor with Mr. David Millar as the primary contact. An Evaluation Plan (Document 9510.EOSS.01) and Motor Carrier Individual Test Plan (Document # 9521.EOSS.0g) were prepared in June 1996 by Booz-Allen & Hamilton and describes in detail the evaluation approach and methodologies for this test. These documents recognize and describe the need for this test and evaluation to lend support to ITS national programs. The Motor Carrier Operational Test Plan describes in detail the evaluation analytical methodologies and technical aspects of the evaluation.

Due to the direct relationship between events that take place at the state agencies, and the effects of these events on motor carrier operations, data collected for the state agency test was needed for the motor carrier evaluation, and vice versa. The data collection instruments used during each of the motor carrier efforts were formulated in concert with those used in the state agency test, which was conducted in parallel with this test. The state agency test is described in detail in the State Agency Test Plan (Document 9522.EOSS.0c), prepared in June 1996.

3.1 Evaluation Structure

The broad nature of the motor carrier operational test required the segregation of test activities into four distinct focus areas:

- System Productivity Impacts
- User Acceptance
- System Deploy ability
- System Performance and Suitability

3.1.1 System Productivity Impacts

The system productivity impact study contained both quantitative and qualitative aspects. The quantitative portion of the study originally dealt primarily with the time savings realized by carriers through the use of the EOSS system, while the qualitative portion addressed the ease of use of the user-machine interface. **Log** data was originally planned to quantitatively measure and evaluate time savings, but this data was not generated by carriers. Therefore, surveys and interviews asking carriers for the opinions or estimates of time savings were used for the analysis. The main measures by which time savings, and hence, productivity, were characterized are: the average credential cycle time; the average time required to prepare the credential applications; and the frequency with which applications must be re-submitted. The specific measures and objectives used in this analysis are presented in detail in Objectives 1.2, 1.4, and 1.5 in Appendix D, Measures Data Summary.

3.1.2 User Acceptance

The assessment of the user-machine interface was also made based on responses to survey and interview questions received from motor carrier personnel regarding the ease of use

of the system. The assessment focused on the clarity and format of the information and instructions provided to the users, and the process logic and task sequencing used in guiding the users through the interactive information retrieval and extraction, and application preparation processes. The specific measures and objectives used in this analysis are presented in detail in Objectives 2.2 and 2.3 in Appendix E, Measures Data Summary.

3.1.3 System Deployability

The system deployability analysis required the collection and analysis of both quantitative and qualitative information regarding the technical, fiscal, and institutional requirements for, and impediments to, full, nationwide deployment of EOSS, or other similar systems, from the motor carrier perspective.

The minimum technical requirements were determined through research into the minimum specifications for the hardware and software motor carriers must have in order to utilize the EOSS software applications. The fiscal capital and operating requirements for full motor carrier deployment of EOSS were estimated based on research into the individual carrier costs incurred during the operational test implementation, and took into account training requirements for users and current market costs for hardware and software.

The assessment of the motor carrier position on the deployment of the EOSS system is a composite of responses to survey and interview questions, and a review of the institutional issues that arose during the operational test. The specific measures and objectives used in this analysis are presented in detail in Objectives 3.1, 3.5, 3.6, 3.8, 4.2, and 4.3 in Appendix E, Measures Data Summary.

3.1.4 System Performance and Suitability

The system performance and suitability study was very similar to other portions of the system study in that they all contain quantitative and qualitative aspects, and they all take into consideration system technical and user interface characteristics. In fact, the assessment of the credential application module performance relied on much of the same data collected under the productivity impacts study, namely the time required to prepare a credential application, and the rejection and re-application rates experienced by the motor carrier users and referenced in their survey and interview responses. The specific measures and objectives used in this analysis are presented in detail in Objectives 5.1, 5.2, 5.3, 6.1, and 6.2 in Appendix E, Measures Data summary.

3.2 EVALUATION DATA COLLECTION DOCUMENTS

Collection of data was accomplished through a combination of methods. Information regarding the specific data collection methods is presented below. Appendix D contains examples of each type of collection document used during this test.

- **Carrier Profiles –** Each participating carrier was asked to complete a company profile prior to actually using EOSS. Its purpose was to help estimate credentialling activity levels, data processing capabilities, carrier size and operational activity for stratification purposes, and EOSS training experience.

- **Baseline** Surveys – Baseline, or current activity, surveys were completed by all participating carriers prior to actually using EOSS. These questionnaires collected information about carrier perceptions, opinions, and attitudes about the existing credential processes.

- **Post-Test Surveys –** Post-test, or follow-up, surveys were completed after carriers had used EOSS and completed their participation in the operational test. This information was 'asked primarily for two purposes. First, carriers were asked to express their overall opinions about the EOSS process. Second, they were asked to compare EOSS to the current manual system and help identify any significant differences or improvements between the two methods.

- **Interviews –** On-site interviews were conducted with all carriers and state association representatives at the conclusion of the test. The purpose of these in-depth interviews (about one hour per participant) was to reinforce the findings of the surveys, supplement data from these sources that was lacking or indifferent, and identify any institutional issues or unforeseen results of the test.

- **Logs –** Carriers were asked to maintain detailed logs documenting each use of the system. For a number of reasons (see section 3.10.1 about test plan changes) log data was insufficient to provide any meaningful quantitative analysis. Where carriers did use logs to make comments or suggestions, the information was integrated into survey or interview data.

- **Simulation –** Simulation runs of various computer systems, or platforms, were originally planned, but never conducted, because it became apparent very early in the test that variances among computer systems used by carriers was a non-issue since practically all carriers already had computers exceeding the minimum configuration required for EOSS and were competent in their use.

3.3 KEY ASSUMPTIONS AND THEIR IMPACT

The results of this evaluation were dependent on several factors or conditions involving the expected levels of effort and timing of activities by the carriers participating in the operational test. This evaluation made several assumptions about each participating carrier's ability or willingness to collect and provide certain types and amounts of quantitative data by maintaining a set of activity logs provided by the test evaluators. These assumptions were:

- Participating carriers were originally expected to use logs to document application preparation and cycle times for their current process. In fact, carriers did form strong opinion about EOSS's ability to impact application preparation and cycle times and compare this experience to the current systems. But log usage was minimal **and** incomplete. Therefore, carrier opinions were anecdotal or qualitative in nature and not documented with any rigorous record of actual activity.

- The collective group of participating carriers was expected to be able to actually apply for all the credentials used in this test during the time selected to conduct the operational test. For various reasons, most often a lack of coincidence between

annual renewal date deadlines and test timing, not all carriers actually applied for credentials and not all carriers obtained all available credentials during the test. Therefore, training, experimenting, and other "on-line" exposure besides actual applications preparations played a significant role in forming carriers' opinions and attitudes about EOSS.

3.4 KEY LIMITATIONS

There were a number of test and evaluation limitations that restricted a completely objective and statistical evaluation of this test. Key limitations and their consequences are described below.

- Carriers were asked to divide their registration activity for each credential type equally among their current and new EOSS registration system. This was not operationally possible for many credential types, for example, single fleet renewals, and thus reduced the ability to obtain adequate baseline data.

- Participating carriers were carefully screened and recruited for participation in a manner that severely limits any generalizations about the overall motor carrier industry. For example, carriers were screened for financial responsibility, interviewed about their willingness to participate, asked to selectively volunteer, and be trained and coached in using the system by the system developers. The result was a non-random and rather specific class of actively involved carriers willing to cooperate and make extra efforts to support the test.

- Participating carriers had no definitive historical records that documented their experiences with existing credentialling systems, or their direct costs associated with credentialling activity by their company.

- Both the limited number of carriers, fifteen, and the limited types of credentials, three, limited the test's ability to generate a sufficient quantity of data adequate to establish any statistical levels of confidence in the test data and evaluation results.

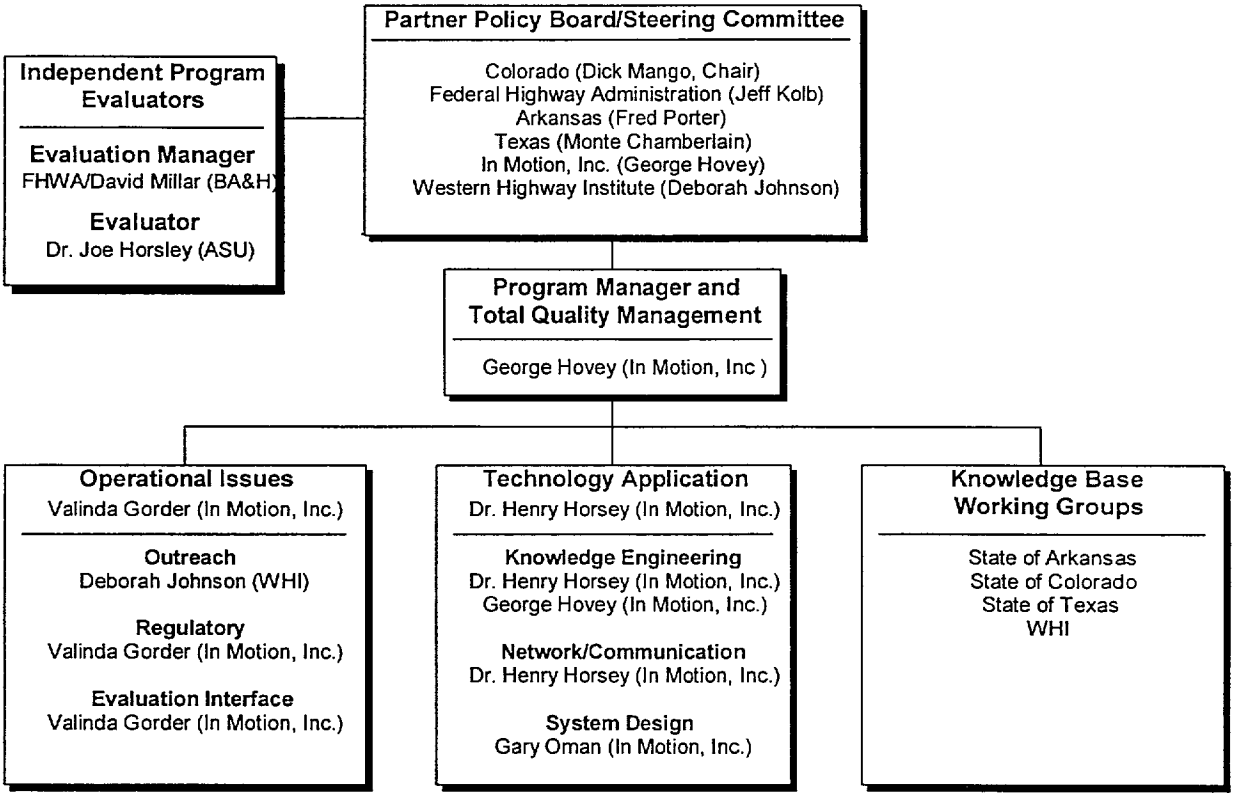
- EOSS carrier and agency hardware and operating cost estimates were difficult to quantify for several reasons. Many carriers already had hardware capacity in place. New hardware is most likely to be put to any number of uses, in addition to EOSS registrations. Registration personnel routinely perform other duties not related to credentialling.

3.5 EVALUATION PARTICIPANTS AND ROLES

The EOSS project Steering Committee functioned as an evaluation review team for all evaluation documents and provided executive review and input to the evaluator. FHWA is the evaluation manager and is assisted in this role by Booz-Allen & Hamilton. Arkansas State University conducted the evaluation analysis. A small core of the Steering Committee, including the Colorado Department of Transportation, In Motion, Inc., Arkansas State University, and Western Highway Institute, was assigned to a technical evaluation review team to aid the

evaluation efforts. Appendices A, B, and C lists the Steering Committee members, carrier and agency participants, respectively, in this test. Exhibit 2.2 is an organizational chart for the project. The following section lists the participating groups and defines the evaluation responsibilities and the primary points of contact.

EXHIBIT 2.2
Organizational Chart



Steering Committee – There were several general responsibilities of the Steering Committee. These include providing oversight for all evaluation activities in a proactive manner, reviewing all evaluation documents and providing comments in a timely matter, and monitoring the quality control procedures being used by the evaluators.

Colorado – The Colorado Department of Transportation, specifically Mr. Dick Mango, represented the state in the operational test. CDOTs primary responsibilities were project management and coordination with Colorado state agencies that were involved. They supported the evaluation through technical review. Carrier selection assistance in Colorado was provided by the Colorado Department of Revenue.

Texas – The Texas Department of Transportation (TxDot), specifically Mr. Monte Chamberlain, represented the state in the operational test, and was responsible for assisting carrier selection and coordination with Texas state agencies. He supported the evaluation through document review.

Federal Highway Administration (FHWA) – Mr. Jeff Kolb, Region 8 ITS Engineer, supported the operational test at the regional level. Mr. Jeff Loftus, Office of Motor Carriers

Safety and Technology, supported the operational test at the headquarters level. The FWHA is a special partner that has a national ITS perspective and is the primary sponsor of the effort. Additionally, the FWHA is responsible for approving the Evaluation Plan and providing support for evaluation activities.

Operational Test Evaluation Support Contractor – Booz-Allen & Hamilton is the evaluation support contractor for the FHWA and aided in the management of the evaluation. WHM Transportation Engineering Consultants, Inc. is a subcontractor supporting Booz-Allen in the evaluation support contract. Mr. David Millar is the primary point of contact and worked closely with Arkansas State University in the interest of FHWA. Booz-Allen prepared the data collection instruments and produced the Evaluation Plan and Individual Test Plans.

Arkansas State University (ASU) – Dr. Joe Horsley was the lead in the evaluation analysis. The primary responsibilities of ASU was to conduct the evaluation and prepare the individual test reports. ASU assisted in the preparation of the evaluation plan, individual evaluation test plans including preparation of log, survey, and interview forms, and the final Evaluation Report. ASU was responsible for collecting evaluation data, conducting interviews, performing analyses, and documenting results.

In Motion, Inc. (IMI) – Mr. George Hovey was the project lead for IMI. IMI is the system developer and integrator of the EOSS team. IMI had several evaluation responsibilities. Among the was providing technical review for the evaluation, provide copies of any written documentation prepared for the project regarding identification/ resolution of institutional issues, and support data collection efforts to the extent possible.

Western Highway Institute (WHI) – WHI is a research resource dedicated to pursuing improvements in the transportation industry, with emphasis on the commercial vehicle industry in Western North America. WHI was responsible for managing the recruitment of the individual carriers that participated in the operational test, acted as a liaison between the carriers and the test, and assisted in the pretest of data collection instruments. Ms. Deborah Johnson represented WHI on the Steering Committee and performed technical evaluation review.

State Motor Carrier Associations (MCA) – The various MCAs assisted WHI with their project and evaluation tasks. Appendix B lists the motor carrier associations and the participating carriers they represented during the test.

3.6 EOSS SYSTEM USE AND EVALUATION TRAINING

In Motion, Inc., in conjunction with WHI, held one day training sessions on the use of EOSS for participating carriers in each state motor carrier association office. In addition, separate trips were made by IMI to most carrier offices where EOSS software was installed and further training provided to carrier personnel. Continuous technical support was provided to all participants throughout the test. IMI maintained a help-line for technical association and made on-site trips to several carriers, when needed.

While all evaluation data documents were designed to be self-explanatory, with directions for use embodied'in the document, separate instruction sheets were prepared. IMI reviewed these documents in their training visits and explained the purpose and need for carriers to complete them.

3.7 PILOT TESTS

Pilot tests were conducted to verify that test participants were familiar with their roles and responsibilities, and understood the data collection documents, techniques, and methodology. Once the system hardware and software were set up and made operational, the evaluator and personnel at two motor carrier sites in Colorado conducted a one day data collection effort consistent with the procedures used for the full-scale data collection effort. Motor carrier personnel entered credential application data, submitted the applications through the system, and simulated completing transaction logs.

The surveys and questionnaires used for the collection of user perception and acceptance data were tested by administering them to the users involved in the pilot test. The data collected was analyzed and the users were interviewed to determine whether any changes of clarifications to the data collection instruments were necessary prior to the distribution for full testing, and the data collection instruments amended as required.

3.8 DATA ANALYSIS METHODOLOGY

The Evaluation Plan'was developed to provide an analysis consistent with the set of common goals and objectives recommended and used by three independent one-stop operational tests. These goals were identified in a joint meeting of participants of all three operational tests held April 21-23, 1995, in Denver, Colorado. These goals and objectives were subsequently adopted for this EOSS test on August 3, 1995. These goals and their relevant objectives are described in detail in Section 3.1 of this document.

The basic technique used to evaluate these goals and objectives began with the development of basic items of information specific to this operational test. These evaluation measures must be quantifiable or "measurable" and relevant to the expected behavior or activity of the actual test participants and relate directly to one or more specific objectives associated with each project goal.

Hypotheses were designed where appropriate, for each quantifiable measure. However, the test did not generate the critical mass of data required to statistically test the validity of these hypotheses. Therefore, the interpretations are strictly suggestive in nature and lack statistical validation.

All open-ended survey and interview question responses were compiled and sorted to match the relevant measure for that particular data cell or measure. Trends or patterns in these responses were then identified and interpreted in the analysis.

Measure Data Summaries tables were designed that allowed the collection and tabular presentation of all available data for each goal, objective, and measure used in this evaluation. These tables include all the survey opinion scores, interview and open-ended response comments and quantifiable information collected during the test for each measure to be evaluated. A finding section at the beginning of each table summarizes the supporting data for each measure. These measures Data Summaries are found in Appendix E and present a comprehensive and

detailed investigation of the step-by-step analytical process that forms the basis of this Motor Carrier Test report.

3.9 TEST AND EVALUATION SCHEDULE

Listed below in chronological order is a compilation of the significant meetings, trips, and events occurring during the operational test and evaluation.

EXHIBIT 2.3
Evaluation Timetable

DATE	LOCATION	ACTIVITY
1994		
Sept. 22-23	Denver	Attend first EOSS Operational Test Project meeting
Nov. **2-4**	Denver	Attend Colorado DOT EOSS Research Grant organizational meeting
Nov. 27-30	Little Rock	Attend Arkansas EOSS Test Project meeting
1995		
Apr. 21-23	Denver	Attend joint meeting of the three electronic credential operational test and develop common goals
Aug. 2-3	Santa Fe	Attend EOSS project Evaluation Team meeting and discuss project progress and status
Sept. 18-22	Little Rock	Attend meeting of Arkansas EOSS Task Force and project team members.
1996		
Jan. 10-11	Little Rock	Attend Project Managers and Evaluation Team pre-test meeting
April 23	Jonesboro	Mailed carrier profiles, logs and instructions to Colorado carriers
May 2	Jonesboro	Mailed Colorado and Arkansas agency logs and instructions
May 3	Jonesboro	Mailed Arkansas carrier profiles, logs and instructions to Arkansas carriers
June	Washington, D.C./ Jonesboro	Final version of the evaluation plan completed
July	Washington, D.C./	Final version of the evaluation plan and motor carrier

	Jonesboro	individual test plan completed.
June 3-14	Colo./Arkansas	EOSS installed by In Motion, Inc. at various carrier and agency locations.
Nov. 25-27	Texas	EOSS installed by In Motion, Inc. at various carrier and agency locations.
Aug. 15-16	Little Rock	Meet with Arkansas Evaluation Team and pre-test baseline surveys
Aug. 23	Jonesboro	Mailed baseline surveys to Arkansas and Colorado carriers and agencies
Nov. 16-22	Denver	Attend Colorado EOSS Project meeting and presented interim findings; conducted personal interview pre-tests with carriers and agencies
Nov. 25	Jonesboro	Mailed carrier profile, logs, instructions, and baseline surveys to Texas participants
1997		
Feb. 12-14	Denver	Conducted personal interviews with all Colorado participants
Feb. 19-21	Little Rock/Fort Smith/Harrison	Conducted personal interviews with all Arkansas participants
Feb. 26-28	Dallas/Houston/ Austin	Conducted personal interviews with all Texas participants
May 1	Jonesboro	Terminated data collection activities and began final evaluation analysis
Aug. 20	Jonesboro	Final evaluation draft forwarded to evaluation team members for review

3.10 TEST PLAN CHANGES AND DEVIATIONS

Several research and data collection activities were changed after the finalization of the Motor Carrier Test Plan. These changes were required principally due to unexpected events or features of EOSS not being available to users during the test. A brief discussion of these test variances and the effected measures and objectives follows.

3.10.1 Log Data Collection

The use of log data to evaluate measures was essentially eliminated due to the very low number of logs returned by carriers and agencies. A total of eight carrier logs and four agency logs were returned. Of these logs, none were completed and all were of little analytical value.

Where comments were included, these were transferred to the interview/comment sections of other portions of the test.

This low level of log-generated data occurred for several reasons. First, there are only approximately fifteen documented attempts by all carriers to actually obtain a credential. Some of these attempts were also duplicate efforts. But, just as importantly, maintaining logs was never a priority for carriers or agencies. Logs were lost, set aside for later completion, or never even initiated. These results are not entirely the fault of the carriers. Logs were rather complex, required several follow-ups to complete, and might have taken several weeks to complete. Therefore, this complex and lengthy process did not lend itself to casual participation and probably could have been more properly designed.

3.10.2 Simulation

The evaluation of EOSS deployment potential called for multiple simulation runs on various personal computer configurations or platforms in order to evaluate various hardware capabilities. Objective 5.3 (Determine the processing ability of EOSS system on various computer hardware and software platforms) in the Motor Carrier Test Plan was expected to be partially evaluated with this simulation technique. Very early in the evaluation it was determined through interviews and other carrier and agency comments that processing time **variances** were a non-issue since every test participant had existing personal computer capabilities that, except for two modem purchases, met or exceeded the minimum configuration required to operate EOSS. System or hardware speed was never documented as a participant concern.

3.10.3 Carrier Records Research

It was evident during interviews that carriers had no historical records that allowed an analysis of costs or labor efforts associated with obtaining credentials. These records simply were not of value to carriers and did not exist. Therefore, there were no records available to research. At best, carriers only had some intuitive notion of how much time it took to obtain credentials, and this amount of time was a very small portion of their total operations.

3.10.4 Evaluation Measures Modifications

In addition, several measures were eliminated or shifted during the evaluation. The Measures Data Summaries in Appendix G reflect these changes. These changes were:

- References to ED1 were eliminated in Measures 1.3.3 (Potential for reduced credential processing manpower requirements based on user responses) and 1.6.1 (Satisfactory ease of use based on state agency user responses) since ED1 was not available in Arkansas or Colorado.

- Measures 2.2.4 (user trends in frequency use) and 5.1.1 (Percentage of transactions initiated in the EOSS system for which the system provides an appropriate response) called for trend analysis and data was completely insufficient to provide any assessment.

- Measures 6.2.1 (User perception that the information module provided accurate information) and 6.2.2 (user perception that the information module provided useful information) were renumbered 6.1.4 and 6.1.5 and shifted to support Objective 6.1 (Assess the performance of the credential module). The relevant opinion statements were not specific about the Information Module and responses were more appropriate for Credential Module analysis.

4 GOAL ASSESSMENT AND CARRIER EVALUATION FINDINGS

Through a series of meetings with this project's steering committee and other one-stop project members in April and May 1995, the evaluation team was provided input and guidance that resulted in the establishment of six goals for this test and evaluation. These goals are generally common to the three current one-stop operational tests and directly support the ITS National Program goal to enhance transportation productivity. These six goals are:

Goal 1: Determine changes in productivity related to EOSS system.

Goal 2: Determine user impacts of EOSS system.

Goal 3: Assess the requirements and potential for EOSS deployment.

Goal 4: Document and assess the impacts and solutions of institutional issues,

Goal 5: Determine EOSS systems suitability.

Goal 6: Assess system component performance.

The EOSS Evaluation Plan identified four major evaluation focus areas that are generally consistent with the ITS goals listed above. A detailed discussion of the findings relating to each objective associated with these focus areas follows. Each discussion ends with an assessment for each relevant goal. Appendix D contains a more detailed compilation of the specific data obtained from the test that supports the analysis of every measure associated with each objective. Each objective discussion contains a list highlighting the most significant data supporting the findings for that objective. Survey opinion scores for specific measures are indicated in ( ) throughout the discussion and are based on the following opinion scale:

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
-2	**-1**	**0**	1	2

4.1 SYSTEM PRODUCTIVITY IMPACTS (Goal 1)

This portion of the evaluation determined the changes in productivity motor carriers may realize through the use of the EOSS system. Querying the users as to the ability of the system to effectively guide them through the application submittal process provided sufficient insights that enabled conclusions to be drawn regarding the EOSS productivity effects. There are three objectives associated with this portion of the test:

4.1.1 Objective 1.2 Compare credential application-to-issuance cycle times of the EOSS system to the current system.

Carriers were impressed with their actual time savings and expect to measure EOSS cycle times in minutes, when compared to the days or weeks experienced with current systems. While

carriers recognized that their time savings for application preparation and electronic transmission was significant, carriers generally focused on travel elimination and waiting time reduction in receiving credentials by EOSS over current systems. Carriers who typically hand-deliver applications especially appreciated eliminating a trip taking from an hour to a day per trip to visit agencies. Carriers normally mailing applications focused more on application preparation time and credential return waiting time. All carriers, and most state agencies, identified reduced cycle time as a significant carrier benefit of EOSS. Half the carriers indicated that lengthy cycle-times were their greatest dislike of the current system. Better equipment utilization was very important to many carriers because applications could be matched to equipment much quicker and more routinely with significantly less downtime or equipment rerouting to "catch-up" to credentials that needed to be on-board. The key findings supporting this conclusion are:

- Carriers indicated in baseline opinion statements that the time currently required to complete and deliver applications is not excessive (O.O), while the time state agencies take to return credentials is somewhat excessive (0.5). In written comments six of twelve carriers indicated that their greatest dislikes of the current system were time delays.

- Carriers strongly indicated in interviews and in post-test opinion statements that EOSS would substantially reduce all aspects of credential application-to-issuance cycle times, including application preparation and delivery and credential return.

a All fifteen carriers and most state agencies mentioned reduced cycle times as a significant carrier benefit of EOSS.

4.1.2 Objective 1.4 Determine motor carrier productivity improvements due to the use of EOSS.

Carriers identified noticeable productivity improvements resulting from a number of benefits: reduced application preparation time, fewer errors, better legibility, fewer follow-ups, better equipment use, etc. Most improvements could be categorized into either administrative or operational benefits. Very small, but noticeable, administrative gains are observed from faster preparation and completion of application forms. In fact, the current manual system is only marginally perceived to require excessive time for carriers to prepare applications (0.4), although EOSS certainly reduces this time (1.2). The majority of the carriers did mention improved accuracy in application preparation is significant. Accuracy was the second most mentioned carrier benefit, after time savings. Opinions do appear to vary among carriers. For example, larger carriers with regular routes and predictable equipment movements (radial routes, for example) focused more on administrative productivity than non-scheduled, non-radial route carriers with unpredictable equipment movements. These kinds of carriers seemed much more interested in better equipment use resulting from EOSS. The key findings supporting this conclusion are:

- On average, carriers were neutral in opinion statements that current application preparation time is excessive (O.O), and that EOSS application preparation time was not excessive (-0.4). Carriers strongly indicated that EOSS reduces credential application preparation time, typically reducing preparation time from hours to minutes.

- All carriers indicated in interviews and written comments that EOSS would certainly reduce preparation time, typically reducing preparation time from hours to minutes.

- All fifteen carriers interviewed indicated that total time savings was the most significant benefit of EOSS, with application preparation time a significant factor. Time savings was the most frequently and forcefully mentioned benefit among carriers.

- Carriers indicated in opinion statements that application follow-up actions are excessive neither with current methods (-0.3) nor with EOSS (-0.7), and that EOSS would reduce the number of applications requiring follow-ups (0.8).

- Seven out of fifteen carriers interviewed indicated that accuracy was a significant benefit of EOSS, which was the second most frequently mentioned benefit among carriers.

- Carriers indicated in baseline opinion statements that currently the time required to complete and deliver applications is not excessive (O.O), while the time state agencies take to return credentials is somewhat excessive (0.5). In written comments six of twelve carriers indicated that their greatest dislikes of the current system were time delays.

- Carriers strongly indicated in interviews and in post test opinion statements that EOSS would substantially reduce all aspects of credential application to issuance cycle times, including application preparation and delivery and credential return.

4.1.3. Objective 1.5 Assess EOSS user-friendliness (user interface) from a motor carrier perspective.

Carriers found EOSS very user-friendly (1.6) and intuitively understandable. Screen layouts and instructions were clear and logical. Nearly half the carriers mentioned that ease of use was something they particularly liked about EOSS. Using EOSS was enjoyable to many carriers and it received many favorable comments. The windows environment was well accepted and especially helpful to carriers. Nearly all carrier users were very comfortable and felt capable using Windows 3.1. The key findings supporting this conclusion are:

- Carriers strongly and consistently indicated in interviews and in opinion statements that EOSS is very easy to learn and use (1.6). Carriers considered on-screen instructions, screen formats, data entry, application preparation and submittal when assessing ease of use.

- Six of fifteen carriers mentioned ease of use as something they particularly liked about EOSS.

4.1.4 Goal 1 Assessment Summary

Carriers expect EOSS to yield significant productivity improvements from all phases of the credentialling process. These productivity gains vary in both amount of time savings and

relative importance of different activities to various types of carriers, but every carrier perceived some potential net gain in productivity resulting from EOSS. The primary gains resulted from reduced application-to-issuance cycle times and more accurate applications, but manifested themselves in the sometimes implicit, but often dramatic, overall productivity benefit from improved equipment utilization. Examples of such improved equipment utilization include more time to match credentials to specific units, less equipment down/waiting time for credentials to arrive, less out-of-route driving to pick up credentials, etc. With an adequate driver supply and sufficient freight, efficient equipment utilization may be the most important key to success in motor carrier operations, and carriers acknowledged that EOSS can significantly benefit this important activity

4.2 USER ACCEPTANCE (Goal 2)

This portion of the test determined the extent to which the EOSS system satisfies the requirements and suits the preferences of its individual motor carrier users. Surveys and interviews with motor carrier supervisory personnel responsible for credential submittal were used to collect the information necessary to address the following objectives:

4.2.1 **Objective** 2.2 Assess motor carrier acceptance of EOSS.

For many carriers, EOSS was their first opportunity for hands-on experience with a new system they fully expect to see developed in the near future. Carriers fully expect electronic credentialling. All participating carriers specifically prefer EOSS over the current system. Multiple benefits were mentioned in interviews and comments and include, in order of frequency of occurrence:

- Time savings (15 of 15 carriers)
- Improved accuracy (7/l 5)
- Ease of use **(6/15)**
- Less paperwork (5/l 5)
- Convenience **(3/l 5)**
- Ease of payment **(3/l 5)**

The time savings factor has a universal influence on carriers and cannot be overstated within the context of carrier expectations. One carrier representative summarized industry time savings expectations by stating “If that’s all EOSS does, it’s well worth it.”

The only patterns of concern about the long term use of EOSS had to do with questions about its cost to carriers, and what fee payment method will be used for deployment; for example, electronic funds transfer capability. There is some concern among carriers about how they will be expected to pay for EOSS, and how permanent credential fees will be paid by carriers without slowing down the EOSS process significantly. The key findings supporting this conclusion are:

- Carriers strongly’ and consistently indicated in interviews and in opinion statements that EOSS is preferable to current systems (1 .O). Every carrier was enthusiastically supportive of EOSS during the interviews. All fifteen carriers prefer EOSS to the current systems.

- Only four of fifteen carriers provided any reason why they might stop using EOSS (e.g., EFT issues).

- Carriers strongly and consistently indicated in interviews and in written comments that EOSS provided significant benefits to them, including: time savings, improved accuracy, ease of use, paperwork reduction, ease of payment, and convenience.

- Time savings manifests itself through reduced/eliminated travel, near instantaneous credential receipt, reduced/ eliminated equipment down time, faster application delivery, and reduced preparation time, among others.

- All fifteen carriers mentioned significant multiple benefits.

- Carriers indicated in interviews and in opinion statements that EOSS is compatible with existing operations and generally not disruptive to normal business activities (1.1).

- Fourteen of fifteen carriers indicated that EOSS is compatible with their overall activities.

4.2.2 Objective 2.3 Determine improvements in convenience due to the use of EOSS perceived by motor carriers.

Carriers found EOSS dramatically more convenient (1.4) than current systems. There appeared to be no real pattern of expectation differences among different types of carriers. In interviews, nearly 9 carriers in 10 indicated they expect EOSS to be "much more" convenient and had difficulty suggesting any way that using EOSS was in some way inconvenient for them. The key findings supporting this conclusion are:

- Carriers strongly indicated in interviews and in opinion statements that EOSS is very convenient for obtaining credentials (1.6) and more convenient than current methods (1.4). Carriers considered convenient times/availability, greater flexibility, and payment process convenience as significantly improved over current systems.

- Thirteen of fifteen carriers indicated in interviews that EOSS is much more convenient.

4.2.3 Goal 2 Assessment Summary

Carrier impacts involve carriers' propensity to adopt EOSS and find it useful. The overall conclusion is that EOSS is extremely easy for carriers to both learn and use. Carriers found EOSS user-friendly and logical. The participating carriers experienced very little difficulty in accepting and using EOSS. The technical capability of both carrier personnel and PC hardware more than matched EOSS requirements.

It must be noted that it is somewhat presumptive to expect this conclusion industry wide because the EOSS carrier recruiting process, by necessity, tended to seek out carriers expected to be familiar with PC-based activity. There is a very large population of small, and often new,

carriers without any PC experience or capacity. These kinds of carriers' acceptance is undocumented and likely to be less favorable than that of this test's carrier population.

4.3 SYSTEM DEPLOYABILITY (Goals 3 and 4)

The goal of this portion of the test assessed the degree to which the EOSS system provides a viable platform for deployment of a nationwide electronic one-stop credential system, and to estimate the capital and operating costs motor carriers can expect to encounter in becoming part of the system. Data gathered during research, and through observations and interviews of and with motor carrier personnel were used to address the following objectives:

4.3.1 **Objective 3.1** Determine minimum system configuration required to make EOSS available to all motor carrier operations.

The most significant hardware-related finding of the evaluation is that essentially all participating carriers already had Personal Computers that exceeded the minimum hardware capability needed to use EOSS. Practically all carriers had Personal Computer equipment in place and used it extensively for other activities. In fact, several carriers upgraded their hardware during the test for reasons unrelated to EOSS. It should be noted that modems are not essential for carriers wanting use EOSS strictly to prepare hard copies of applications and benefit only from the application preparation time saving, accuracy, and legibility aspects of EOSS.

Some potential hardware availability problems might exist for very small or new carriers, or very large carriers using mainframe systems with extensive networks. Using EOSS could present some programming or interface issues for carriers with non- IBM Personal Computer systems. The key findings supporting this conclusion are:

- Based on carrier interviews and written comments the minimum acceptable system includes:
    - 486 IBM compatible Personal Computer
    - 8 MB RAM
    - Windows 3.1 or higher
    - 9600 Baud modem
    - graphics-capable printer
    - EOSS software.
- Carriers without Personal Computer capabilities may use EOSS if an equivalent Personal Computer system were available at locations typically frequented by carriers (e.g., weigh stations, ports of entry, motor carrier association offices, etc.)

4.3.2 **Objective 3.5** Estimate motor carrier deployment capital cost requirements.

Deployment capital costs for carriers will be minimal. Only two carriers identified any test-related purchases (two modems averaging $145 each). In fact, administrative start-up costs and the time required to get EOSS operational may be the most significant investment required of carriers, other than any potential costs for acquiring EOSS software. An informal PC

shopping effort indicated that a carrier could probably purchase the minimum required system today for approximately $1,000. The key findings supporting this conclusion are:

- Carriers identified in interviews and written comments that they already have sufficient hardware capability (two carriers bought modems at an average price of $145).

- Carriers needing to purchase a minimum system should be able to obtain the needed hardware for less than $1,500.

- Carriers with non Personal Computer systems may have costs associated with system interface design and implementation.

- EOSS software cost, if any, has not been determined.

4.3.3 Objective 3.6 Estimate motor carrier deployment operating costs.

Carrier operating costs are expected to be minimal, also. Only one carrier representative (one of the largest) identified any recurring operational costs associated with EOSS. This cost was an estimated $400 interdepartmental charge for corporate computer support senices. Otherwise, carriers expect EOSS to be certainly no more costly than the current activities it would replace. No new work space or personnel will be required by EOSS. However, future recurring charges resulting from EOSS transaction fees are a possibility. The key findings supporting this conclusion are:

- Carriers in interviews and written comments generally identified no additional operating costs (one large carrier identified approximately $400 in operating expenses).

- EOSS subscription or transaction fees, if any, have'not been determined.

4.3.4 Objective 3.8 Estimate motor carrier training efforts required for deployment.

Training employees to use EOSS is not an issue and presents no significant barriers to deployment. Carriers found EOSS very simple and easy to learn, averaging only 2 hours to both install and learn the system. Once in place, the consensus among carriers is that employees new to EOSS could be trained in-house in about one hour. EOSS could most likely be purchased "off-the-shelf," installed and learned with no on-site technical support. The key finding supporting this conclusion is:

- Carriers indicated in interviews and opinion statements that training was very satisfactory (1.2) and averaged approximately 2.5 hours, including system installation and use. Carriers indicated employees could learn in-house to use the system in approximately one hour.

4.3.5 Objective 4.2 Assess motor carrier position on deployment of EOSS.

Every carrier interviewed fully expects an EOSS-type credential system to be developed and deployed in the near future. Industry spokespersons expect FHWA and the various states to

take the lead in its development, and they generally recommend and expect a system that is compatible and uniform for all states. It is reasonable to conclude that the carriers participating in this test consider EOSS a positive experience that enhanced their enthusiasm in supporting full deployment of electronic credentialling.

- Carriers clearly indicated in interviews and opinion statements that they strongly support state agency's adoption of EOSS (1.9), and that they would like to continue to use it (1.7).

- All fifteen carriers were adamant that an EOSS-type system should become fully operational as soon as possible. Eleven of fifteen carriers could suggest no reason for them to stop using EOSS.

- Motor carrier association representatives indicated strong support for states and FHWA to take the lead in deploying EOSS. They also indicated a desire for uniformity among electronic credentialling systems.

4.3.6 Objective 4.3 Maintain a library of contracts, agreements and documents which address successful and unsuccessful solutions to legal, societal, jurisdictional and privatization issues.

Although some carriers did indicate their concerns about certain regulatory or legal issues that might present possible impediments to deploying EOSS, many of their comments focused more on operational test accommodations, rather than deployment issues. The one central theme of carrier institutional concerns involves the manner of fee payment and potential use of EFT. Several companies currently do have existing policies restricting the use of EFT. Fee payment methodology is a very complex deployment issue and is addressed in a more detailed discussion of significant institutional issues associated with EOSS that appears in section 4.1 of this report.

4.3.7 Goal 3 Assessment Summary

From a carrier perspective, there are many incentives and few barriers to deployment. In fact, many carriers fully expect an EOSS type system to be deployed in the near future. Their expectation cuts across all types of carriers: large, small, mature, young, or operation type. Carriers do tend to look to state and federal agencies for development of a uniform, nationwide system. Any potential impediments to deployment, from a carrier perspective, tended to focus on the method of payment required to fully support electronic credentialling. Carriers, however, feel that the payment method is primarily an agency issue. A more rigorous discussion of payment issues is included in the State Agency Evaluation report, and carrier institutional issues goal in section 4.1 of this report.

4.3.8 Goal 4 Assessment Summary

From a strictly carrier perspective, very few institutional, or non-technical issues exist. All but **three** participants (one for-hire carrier and one leasing company and one private fleet operator) are family-owned and operated and showed little evidence of highly structured company policies and procedures. Just one carrier, the largest in the test, is a publicly traded corporation. Those few carriers with some concerns about company policy and procedures did, once again, mention payment concerns. For example, some companies are distrustful of

Electronic Fund Transfers (EFT). Their concerns, well founded or not, involve both the reliability and confidentiality of EFT. For example, large carriers with five-figure credential fees are likely to have internal review and approval procedures prior to authorizing payments involving large amounts of money. In addition, the accuracy of instantaneous credential billing and payment concerns some carriers. There is some concern about liability or penalties for errors discovered some time after the initial application. The confidentiality of electronic files and their relative ease of reproduction and sharing with other agencies is also a concern to carriers.

No obvious solutions to these concerns are evident, other than the continuing inevitable and evolutionary process that is moving all business activity toward more and more use of electronic communications techniques, and their more general acceptance by motor carriers.

4.4 SYSTEM SUITABILITY AND PERFORMANCE (Goals 5 and 6)

This portion of the test assessed the degree to which the EOSS system meets the performance, availability, compatibility, and applicability requirements of the participating motor carriers. Data was collected via surveys and interviews that addressed the following objectives:

4.4.1 **Objective 5.1** Determine compatibility of EOSS system with existing agency credential approval criteria.

Both carriers and agencies generally indicated in interviews that EOSS will be compatible with current credential approval criteria. While there is some variation by carrier type, the three credentials included in this test (IRP, IFTA, and SSRS) will account for the vast majority of all carrier application activity, according to carrier estimates. Process agents expect the least usage, about 50%, based on the high percentage of small carriers in their customer base and their hesitation to use for new accounts. Texas, Colorado and Arkansas carriers indicated that the three credentials currently account for over 90% of all their credentialling activity. The low estimate was “60%-75%” with several carriers estimating essentially 100%.

However, Texas carriers could apply for SSRS only. They indicated that SSRS is the least time consuming application and was a small part of overall effort, 5% - 30%. Two Texas carriers (oil rig haulers) emphasized the need to include over-dimensionals in order to increase EOSS potential for them and significantly improve their credentialling capability with EOSS. Key findings supporting this conclusion are:

- The number of EOSS transactions and resulting log information was insufficient to draw any conclusions concerning the percentage of appropriate responses to actual applications.

- Agencies indicated in interviews and in post test opinion statements that EOSS is compatible with other agency activities and generally not disruptive.

- All seven agencies indicated that EOSS is compatible with existing operations.

- Fourteen of fifteen carriers indicated that EOSS is compatible with their existing administrative operations.

By EOSS's very nature (installed in-house, on-line 24 hours), EOSS was always available. No carrier ever indicated discovering EOSS "down." Several carriers did indicate some access problems with lost or forgotten passwords and suggested relaxing password restrictions. But carriers did expect this benefit to be slightly more attractive than regular agency hours (0.5). Several carriers did mention the potential for using EOSS during after hours or emergencies, although no carrier actually used EOSS after hours. One carrier representative of a remotely located carrier did mention the attractiveness of being able to "take work home" and use EOSS on their personal hardware. The key findings supporting this conclusion are:

4.4.2 Objective 5.2 Determine the availability of EOSS from a motor carrier perspective.

- Carriers indicated in opinion statements that state agency availability was at times inconvenient (0.5), while EOSS was very convenient (1.5) and offered greater flexibility **(1.4).**

- No carrier indicated in interviews benefiting from actually using EOSS during agency off-hours. Six of fifteen carriers indicated that making use of off-hours availability was a potential benefit or convenience.

4.4.3 Objective 5.3 Determine the processing ability of EOSS system on various hardware and software platforms.

It became obviously apparent very early in the test that carrier hardware and operating systems were more than adequate to successfully and efficiently operate EOSS. Simulation on various hardware platforms was deemed unnecessary. Carriers never identified application processing time as a significant issue. Hardware requirements were documented through interview and written comments.

4.4.4 Objective 6.1 Assess the performance of the credential module.

Carriers indicated that the EOSS credential module performed exceedingly well and provided significant benefits to them as a result. EOSS reduces cycle times (1.2), provides accurate information (1.3), and is very helpful (1.2). The module was considered to perform exceptionally well, even with most carriers' very limited use. The key findings supporting this conclusion are:

- On average, carriers were neutral in baseline opinion statements that current application preparation time is excessive (O.O), and EOSS application preparation time was excessive (-0.4). Carriers strongly indicated that EOSS reduces credential application preparation time (1.2).

- All carriers indicated in interviews and written comments that EOSS would certainly reduce preparation time, typically reducing preparation time from hours to minutes.

- All fifteen carriers interviewed indicated that time savings was the most significant benefit of EOSS, with application preparation time as a significant factor. This was the most frequently mentioned benefit among carriers.

- Carriers indicated in opinion statements that application follow-up actions are excessive neither with current methods (-0.3) nor with EOSS (-0.7), and that EOSS would reduce the number of applications requiring follow-ups (0.8).

- Seven of fifteen carriers interviewed indicated that accuracy was a significant benefit of EOSS, which was the second most frequently mentioned benefit among carriers.

- Carriers generally indicated in opinion statements that credentials applied for through EOSS did not require follow-up actions (0.8). Follow-up actions which did occur were not a function of the credential module performance and were not EOSS related.

- On average, carriers indicated in baseline opinion statements that current state agency provided information is accurate (0.7), that EOSS provided information is very accurate (1.3) and somewhat more accurate than current state agency provided information (0.3).

4.4.5 Objective 6.2 Assess the ability of the information module to enhance decision-making effectiveness.

The information module was not used by carriers primarily because all participating carrier personnel were experienced and very familiar with application procedures. One carrier representative did indicate that he mistakenly thought that the Information Module was the equivalent of a Windows "Help" button about EOSS, and discovered his mistake while experimenting with EOSS. It was also mentioned that future first-time applicants would probably find the information module more useful while learning the application process. The key findings supporting this conclusion is:

- All but one carrier indicated they did not use the information module and were therefore unable to offer an opinion regarding its accuracy.

4.4.6 Goal 5 Assessment Summary

Suitability and availability from a carrier's perspective involves determining just how well EOSS blends in with existing office activities, specifically credentialling and generally all other administrative duties. While the test generated very little actual experience, or ongoing, regular use of EOSS, carriers did form rather positive opinions about EOSS's compatibility within their current procedures. Carriers found practically nothing in their existing activities that would impede incorporating EOSS into their current routine office duties.

It should be noted again, however, that there was repeated mention of wanting a single system available and suitable for all credentials and states. Multiple electronic systems requiring different procedures, **or** varying by agency or credential type could have a dramatic, negative impact on carriers willingness to adapt and use EOSS.

4.4.7 Goal 6 Assessment Summary

Of the two distinct modules (credential and information) contained in EOSS software, only the credential module was used by carriers. Participating carrier personnel were familiar and experienced with current credential processes and found no need to seek help from the information module, and therefore, had no basis for any opinions about it.

Carriers did, however, have strong, rather positive opinions about the credential module. Carriers found it reliable and beneficial to them. Carriers generally felt the credential module to be very capable of completing suitable applications in a time-effective manner. Carriers believe the test credential module performed very well.

It should be noted that the actual test duration was too short to allow multiple-year experience where there could be some potential for numerous changes in credential rules and regulations. EOSS's long-term performance potential will be dependent upon its ability to quickly and accurately incorporate such changes.

5 INSTITUTIONAL/LEGAL ISSUES

A number of significant institutional, or non-technical, barriers arose during both the design and test phases of the project. These issues typically took on two levels of concern. First, temporary operational test accommodations, or agreements, were used to allow the test to run for its duration. Second, these solutions were often agency- or carrier-specific, and may not offer optimal solutions for permanent EOSS deployment. There is an inherent danger in suggesting that any issue resolution developed for this test will have significant potential for national deployment.

The roots of many barriers or issues are found in various state legal/regulator) procedures, either statutory, administrative or even constitutional in nature. Eliminating many of these barriers will require states to legislatively or politically amend laws and procedures currently in place that affect many entities outside the motor carrier industry.

Institutional issues will probably take on a life of their own when critically evaluating national deployment potential. The limited experience in this test suggests that a much broader-based investigation of institutional barriers will be necessary before electronic credentialling can be successfully deployed.

The evaluation team compiled a list of institutional issues by interviewing and soliciting the opinions and experience of Steering Committee members, project partners in each state, and the various agency and carrier participants. Practically all institutional issues resulted from current state laws or agency'administrative procedures pertaining to individual identity assurances and methods for verification and payment of fees. Several larger carriers did mention there might be some internal policy or accounting problems involving funds control management or access to certain electronic financial records within their office. Otherwise, institutional issues and their resolutions are primarily state agency or other regulatory issues beyond the control of individual carriers. The major institutional issues arising during this test were:

- Guaranteed fee payment
- Support documents
- Original signatures
- Fee calculations
- Audit capabilities

A discussion of these issues and their resolution potential follows:

5.1 GUARANTEED FEE PAYMENT

States typically require guaranteed payment prior to issuing any credential or license. Accordingly, EOSS attempted to accommodate fees payment three different ways: Electronic Funds Transfer (EFT), credit cards, or debit cards. None of these methods could be immediately guaranteed and satisfy all state requirements. In no case could states guarantee that funds existed for transfer, and carriers could not guarantee that correct amounts, or correct accounts, were charged by agencies. Any verification activity delays EOSS application issuances. For EOSS to

achieve its optimum potential, some fee payment method must be established that does not materially impede the nearly instantaneous EOSS credential issuance capability.

To accommodate this test, participating carriers in Colorado and Arkansas signed temporary filing agreements that contractually guaranteed payment during the test. Texas, however, constitutionally prohibits extending any form of credit to any taxpayer. This prohibition has been interpreted to include all state licenses, including motor carrier credentials. To accommodate this test and the Texas constitution, Texas carriers either set up bank debit accounts or used guaranteed Visa or Master Charge accounts issued by one cooperating bank in Texas.

Temporary filing agreements in Colorado and Arkansas provided a very restrictive and selective temporary solution. Carriers were approved only if state agencies had a favorable opinion, based on past history. Many carriers, smaller or less financially sound ones especially, would be excluded from using permanent filing agreements. Carriers in Texas were dissatisfied with losing control of funds and interest earnings on debit accounts. Large carriers using approved bank cards had to make multiple applications due to a $10,000 per transaction limit placed on these cards.

The overall fee payment process is critical to any full deployment of electronic credentialling and may be the most significant institutional barrier to overcome. From this limited test experience, fee payment concerns of many types can be anticipated from other states, also. These barriers could require very complex legislative, or even constitutional, resolutions.

There are a number of potential methods currently available to facilitate fee payment: use of American Clearing House services, credit/debit systems, automated credit/debit card verification systems, wire transfers, or escrow accounts. But each will present a variety of concerns to both state agencies and carriers and will require analysis and planning beyond the scope of this study.

5.2 SUPPORT DOCUMENTS

A variety of “original” support documents or “original” signature documents are required to be submitted with many credential applications. For example, vehicle title documents, heavy vehicle use tax payment, and various state property tax payments are required for IRP applications. Insurance coverage verification and process agent contracts are required on SSRS forms, Electronic transmissions cannot currently satisfy these document requirements without delaying credential issuance.

During this test carriers were required to fax or mail hard copy support documents within 24-48 hours of application submittal. Colorado and Arkansas immediately issued credentials and then verified the support documents upon receipt. Texas waited until after receiving and verifying support documents, thereby delaying issuance of credentials for several days, at least.

Eliminating hard documents that legally attest to certain conditions is a complex issue for the states. Electronic databases must be created and shared by the various states, federal agencies, and insurance industries in order to accommodate an EOSS scheme. These data bases must be legally accepted as evidence of title, insurance, emissions testing, tax payments, etc.

5.3 ORIGINAL SIGNATURES

Many applications typically require the original signature of a principal in the company. Participating carriers signing an electronic filing agreement for this test were provided a unique Personal Identification Number (PIN) that served and was temporarily accepted as an original signature.

The same approach could be used for full deployment, but carrier eligibility will depend on the terms and conditions the various states include in their electronic filing agreements. New carriers, smaller carriers, or ones with unacceptable compliance or financial histories could possibly be precluded if they were found ineligible to qualify for electronic filing, and therefore not allowed a PIN identifier.

5.4 FEE CALCULATIONS

Prior to issuing many permanent annual credentials, states require evidence of accurate and timely payment of the annual vehicle registration fees. EOSS software could accurately calculate IFTA and SSRS fees for the test. However, IRP credentials are more complex and supporting fees change frequently. As a result, EOSS could issue only temporary IRP credentials. States subsequently issued permanent ones after verifying the accuracy of fees, and their payment. Carriers were then required to replace the temporary issue with the permanent one.

A functional system must be capable of calculating accurate permanent credential fees at the time of application. Such a system will require a full set of formulas for calculating fees for all weight classes of vehicles in all states. Because, this system will require constant updating with the distribution of any fee and administrative changes made available to all effected carriers or EOSS users, this system is likely to be expensive to create and externally maintain. Fee calculation must occur within the framework of EOSS's near-instantaneous ability to otherwise issue credentials if EOSS's optimum potential is to be realized.

5.5 AUDIT CAPABILITY

The legal status of electronic records, or hard copies printed from them, to satisfy various state and federal audit requirements is unclear. This issue is not addressed in EOSS, but several federal and state agencies must resolve the audit status requirements for all types of electronic records and electronic fee payment methods for all types of industries and fees before electronic credentialling can achieve optimum results.

5.6 ROADSIDE ACCEPTANCE

EOSS electronically-produced credentials may conflict with several states' regulations that were originally established to prevent fraudulent credentials from circulating. These regulations typically require original copies, sometimes embossed original signatures, notarized documents or other conditions that make reproducing credentials difficult. Full deployment of EOSS will require that some states modify such restrictions and that EOSS credentials be produced is a manner that prevents unauthorized duplication.

6 QUALITY ASSURANCE

Several quality assurance procedures activities were conducted during the test and evaluation. These activities insured the integrity and protection of the data used in the evaluation. Although the extremely low quantity of raw data and the relatively short duration of time in which it was collected did not require rigorous interim analysis and compilation, several activities were conducted throughout the test and evaluation to insure the data's accuracy and protect its existence. A description of these activities follows.

6.1 DATA COLLECTION AND DOCUMENT REVIEW

Each returned data collection document (carrier profiles, questionnaires, logs, etc.) was reviewed upon receipt for completeness, usefulness, and overall validation. Incomplete or questionable returns were followed up with phone calls or inquiries in order to clarify the data or improve its usefulness. Returned collection documents were entered into data bases only after validation of their usefulness. The primary purpose of this review was to insure that the respondents were thoughtful and knowledgeable in reporting and that they generally followed instructions. Given the very low number of participants (fifteen carriers), every effort was made to encourage all participants to complete and return data documents and avoid rejecting any response . Numerous phone calls were made and follow-up mailings of duplicate documents sent to replace lost or misplaced items.

6.2 RECORDS MAINTENANCE

Upon receipt, duplicate copies of all collection documents were made and maintained in separate and secure locations. All original data collection documents were maintained in a secured hard copy document file and working copies were used for all analysis activities. Electronic files and back-up copies of all data bases were created and maintained in two separate and secure locations. All these records and original data collection documents will be made available to the Project Manager as soon as they are no longer needed for evaluation purposes.

6.3 ACTIVITY JOURNAL AND CORRESPONDENCE FILE

Throughout this test and evaluation, a journal has been maintained that included all significant activities and reflected the status of the various data collection efforts. These records include the mailing or delivery dates of all data collection documents and the date of their return to the evaluator. Dates and method of receipt were placed on each individual return. Records include journals of follow-up phone calls and copies of fax or mail correspondence to test participants. These records will be retained until no longer needed to support this evaluation.

7 CONCLUSIONS AND RECOMMENDATIONS

Three general conclusions can be made from this evaluation that summarize the results of the operational test and provide significant executive, or policy making, insight into the potential of fully deployed electronic credential systems. These three general conclusions are summarized below.

7.1 CARRIER EXPECTATIONS

The motor carrier industry fully expects electronic credentialling systems to be developed and implemented in the near future. This conclusion is based on this test's participating carriers universal enthusiasm and strong support of electronic credentialling. Their experience with this EOSS operational test was very positive and reinforced these expectations. Carriers expect to achieve significant productivity gains in both administrative credential activities and fleet utilization aspects of their operations. Carriers expect to enjoy an array of benefits, time savings, improved clerical accuracy, 'convenience, etc. But overall time savings is far and away the most significant productivity benefit expected by carriers. While large to medium-sized carriers, rather than the very small ones, are likely to benefit the most from EOSS, this population of larger motor carriers, however, accounts for the vast majority vehicles of the nation's commercial truck fleets.

7.2 EOSS TECHNICAL CAPABILITY

Existing computer and communications technology is not only capable of providing and supporting a fully deployed electronic credentialling system, but is already in place in a significant number of both carrier offices and state agencies for selected credentials. All test participants owned personal computers that were both adequate and available for use in this test. This capability existed in a fifteen-carrier population averaging only 86 units per fleet with just three fleets exceeding 150 and none over 300. Carriers found this system easy to learn and use, very inexpensive to accommodate, and easy to incorporate in their overall activities. There are practically no technical barriers to EOSS deployment.

7.3 STATE REVENUE/FEE PAYMENT ISSUES

The greatest single barrier to a fully deployed electronic credential system is likely to be its impact on current credential payment methods. Credentials are required of carriers for numerous reasons such as insuring and protecting the safety of the traveling public, or protecting the environment. But the vast majority of credentialling activity involves collecting funds from highway users that support in some way highway construction and maintenance, typically the second largest expenditure item for state governments. The amounts of these funds and the efforts expended to collect them are significant.

Methods to collect these funds and strictly insure that all highway users do pay and are in compliance with state laws were developed long before today's electronic computer and communications technology was ever envisioned. And these systems were developed by the various states with little interest in nationwide uniformity. Many of these controls are inflexible

or difficult to change and mandated by state statutes or constitutions. These regulations exist primarily to guarantee that motor carriers pay all fees owed in a timely manner.

Unfortunately, most of the methods (such as obtaining or receiving original documents, receiving original signature, or, especially, receiving guaranteed, or certified, payment) used to insure these obligations or payments are time consuming, complex, and inconsistent with electronic communications. The length of time required of carriers to comply with these requirements greatly exceeds EOSS potential to receive, process, and issue electronic credentials. For EOSS to achieve its optimum potential, fee payment methods must conform to the more instantaneous cycle times possible with EOSS.

Participating carriers and agencies are aware of these conflicts and the complex issues involved in resolving them. A significant number of both carrier and state agency representatives suggested that the Federal Highway Administration should take the lead in resolving these issues and promoting the development of an electronic method of both obtaining and paying for commercial vehicle credentials.

7.4 RECOMMENDATIONS

The development of electronic credentialling is not a matter of if, but when and by whom. The primary objective of vehicle registration and credentialling - the collection of fees and various taxes - that support these activities are, and will continue to be, a significant matter of important public policy at both state and federal levels. Therefore, state and federal agencies are, and will continue to be, actively involved in determining equitable and efficient methods to register and license vehicles.

The findings of this evaluation strongly support the recommendation that the Federal Highway Administration, in conjunction with state agencies, continue to support and promote the development of electronic credential systems. This support should take into consideration:

- The public sector role in determining policy and setting guidelines and standards for full deployed electronic credential systems.
- The private sector role in the technological design, development and continuing administration of electronic credential systems that are consistent with public policy.
- Long term effect on the motor carrier industry, taking into consideration the industry benefits and its obligations to pay fair value for them.

8 LESSONS LEARNED

The most significant lesson learned from this evaluation involves the insight gained regarding the complexity of operational tests requiring the long term and very active participation of motor carrier industry representatives. The issues and problems associated with active participation are dramatically different than studies involving the passive observation of individual behavior where individuals are essentially unaware of their role and involvement in the data collection process.

The issues of active participant involvement extend far beyond the biases introduced by the non-random nature of selective carrier participation. Future operational tests requiring the active and complex participation of motor carriers must take in thoughtful consideration the nature of the industry and the normal behavior typical of individual carriers. These considerations should include, for example:

- The volatile nature of the industry. Large numbers of carriers enter the industry, and exit it, every day. In addition, carriers are very mobile and change locations – city and/or state – very easily and often. These characteristics did have an adverse impact on this test, Several participating carriers did cease to exist or change locations.

- Carrier ownership and management patterns. Many carriers are family-owned, first generation small businesses with very capable, but unstructured, management styles. Organizational structure is often informal, at best. Duties and responsibilities are informally shared among management members and owners. Ownership changes are common. Management and ownership changes did impact this test and evaluation.

- Carriers volunteering to assist the test tended to underestimate the effort required to support the evaluation or assign it any priority. These carriers were expected to significantly modify their behavior and routines in order to support the evaluation. They were asked, and expected to make, a considerable effort with logs, surveys, and interviews. Future tests may wish to consider a possible contractual arrangement between the project managers and participants. This arrangement would define the roles and activities expected of participants. As with any contractual arrangement, some method of compensation for carriers' time and effort should be considered.

APPENDIX A

Project Partners

Colorado Department of Transportation
1325 S. Colorado Blvd.
Denver, Colorado 80222
Contact: Richard Mango

In-Motion, Inc.
1444 Wazee Street, Ste. 350
Denver, Colorado 80202
Contact: George Hovey

Ark. Highway & Transportation Dept.
P.O. Box 2261
Little Rock, AR 72203
Contact: Alan Meadors

Texas Department of Transportation
125 E. 1 1th Street
Austin, Texas 7870 1
Contact: Monte Chamberlain

Western Highway Institute/American
Trucking Associations Foundation
4060 Elati Street
Denver, Colorado 802 16
Contact: Deborah Johnson

Texas Motor Transportation Association
700 E. 1 1th Street
Austin, Texas 78701
Contact: Bill Webb

Colorado Motor Carrier Association
4060 Elati St.
Denver, Colorado 80216
Contact: Greg Fulton

Arkansas Motor Carriers Association
P.O. Box 2798
Little Rock, Arkansas 72203-2798
Contact: Lane Kidd

Intelligent Decision Technologies. Ltd.
3308 Fourth Street
Boulder, Colorado 80304
Contact: Henry R. Horsey

Arkansas Office of Motor Vehicles
P.O. Box 1272
Little Rock, AR 72203
Contact: Fred Porter

Federal Highway Administration
Office of Motor Carriers
400 7th Street SW
Washington, D.C. 20590
Contact: Jeff Loftus

Federal Highway Administration Region 8
555 Zang Street Suite 400
Lakewood, CO 80228
Contact: Lloyd Rue

Arkansas State University
P.O. Box 59
State University, AR 72467
Contact: Dr. Joe Horsley

WHM Transportation Engineering
Consultants, Inc.
and
Booz-Allen & Hamilton, Inc.
8201 Greensboro Drive, Suite 609
McLean, VA 22102-3812
Contact: Mr. David Millar

APPENDIX B

Participating Carriers

Arkansas

Silica Transports, Inc.
232 West Market Street
Guion, AR 72540
Contact: Joe Knight

Arkansas Best Corporation
P.O. Box 10048
Fort Smith, AR 729 17
Contact: Don Christian

Hicks Trucking
P.O. Box 1316
Harrison, AR 72602
Contact: Kristen Eaton

Trux, Inc.
3223 East Broadway
North Little Rock, AR 72 114
Contact: Leon Prickett

Rollins Leasing Corp.
P.O. Box 1791
Wilmington, DE 19899
Contact: Tom George

Colorado

Empire Distribution and Warehouse
3901 Weld County Road 18
Erie, CO 80516
Contact: Tom Walker

Rollins Truck Leasing
P.O. Box 110489
Aurora, CO 80516
Contact: Judy Stoffel

JC Trucking, Inc.
5085 Harlan
Denver, CO 80212
Contact: Rosie Scanlon

Texas

Bilbo Transports, Inc.
2722 Singleton Blvd.
Dallas, TX 75212
Contact: Sue Kammeyer

Five Star Transportation, Inc.
P.O. Box 9670
Houston, TX 772 13
Contact: Chuck W. Huckabee

Galaxy Trucking Co.
10422 Vrana Road
P.O. Box 9632
Houston, TX 772 13-6302
Contact: Elouise Randall

HATS, Inc.
10000 Northwest Freeway, Ste. 101
Houston, TX 77092
Contact: Brenda Brown

Ramrod Trucking, Inc.
3009 Hohl Street
Houston, TX 77093
Contact: Neely Kimbrill

Trinity Industries
1358 Motor Street
Dallas, TX 75207
Contact: Chris Sepe

AMSCO Transportation, Inc.
6 100 Alameda-Genoa Road
Houston, TX 77048
Contact: Mack Smith

APPENDIX C

Participating Agencies

Arkansas
Department of Finance and Administration
Office of Motor Vehicles/IRP Unit
P.O. Box 8091
Little Rock, AR 72203
Contact: Christy Earnhart

Department of Finance and Administration
Motor Fuel Tax Section
P.O. Box 1752
Little Rock, AR 72203
Contact: Donnie Roberson

Arkansas Highway & Transportation Department
Single State Registration
P.O. Box 2261
Little Rock, AR 72203-2261
Contact: Hardin Steele

Colorado
Internal Registration Program
Colorado Department of Revenue
1881 Pierce Street
Lakewood, CO 80214
Contact: Jaki D. Berry, Manager

International Fuel Tax Agreement
Colorado Department of Revenue
188 1 Pierce Street
Lakewood, CO 802 14
Contact: Janet Swaney

Single State Registration System
Colorado Department of Regulatory Services
1580 Logan Street, Office Level 1
Denver, CO 80203
Contact: Ronald Jack

Texas
Texas Department of Transportation – Motor Carrier Division
125 E. 1 1th Street
Austin, TX 78701
Contact: Monte Chamberlain

APPENDIX D

Measures Data Summaries

APPENDIX E

Data Collection Documents

Motor Carrier Profile
Motor Carrier Activity Log
EOSS Motor Carrier Baseline Questionnaire
EOSS Motor Carrier Post Test Questionnaire
Motor Carrier Post Test Interview Questions

CARRIER PROFILE

Company Name and Address: _____

_____

_____

Phone: _____

FAX: _____

Primary Contact Person: _____

Operating States: _____

Type: _____

Operation: _____

Number of Units: _____

Please fill in the following table with your best estimates of the type and number of each credential you expect to apply for during this test. Leave blanks for no activity expected or needed.

	Renewals	Initials	Supplementals	TOTAL
IFTA				
IRP				
SSRS				

If EOSS was installed on one of your company's computers, please describe it:

TYPE AND MODEL: _____

MEMORY: _____

MODEM: _____

PRINTER: _____

List any new or additional hardware or software you had to obtain to install and operate EOSS:

_____ COST _____

_____ COST _____

_____ COST _____

_____ COST _____

Indicate approximate time that was required to install and set up EOSS in your computer:

HOURS_____

On the following scale (5=highest, 1=lowest) please rate the training or instructions you received to help you install and operate the EOSS system. Circle the number most representative of your opinion about this assistance.

5	4	3	2	1
(excellent)				**(poor)**

Comments: _____

_____

_____

_____

Please return this profile to the address below as soon as possible. Thank you.

Joe Horsley
Transportation Management Program
College of Business
P.O. Box 59
State University, AR 7246

Phone: (501) 972-2097
Fax: 501-972-3868

EOSS Carrier Baseline Questionnaire

Carrier_____ **Preparer**_____ **Date**_____

Please complete this questionnaire with your best available information. Promptly return the completed questionnaire in the envelope provided. If you have any questions about this questionnaire, please contact Joe Horsley at (501) 972-2097.

I In the table below, indicate the total number of each of the following types of credentials and permits that your company obtained in 1995. Consider both interstate and intrastate credentials. Where there is a space provided, indicate the state from which they were obtained.

Number of Credentials Obtained in 1995						
Annual Credentials	**Renewal**		**Initial**		**Supplemental**	
IRP	#	State	#	State	#	State
IFTA	#	State	#	State	#	State
SSRS	#	State	#	State	#	State
Other Annuals (All States)	#		#		#	
Other Credentials	**Single Trip**			**Other Than Single Trip**		
Oversize/Overweight	#			#		
Fuel Tax	#			#		
Registration	#			#		
Other	#			#		

II In the table below, circle the one method you most frequently use to submit applications for each of the following annual credentials.

	Method of Submittal								
Credentials	**Renewal**			**Initial**			**Supplemental**		
IRP	fax EDI	in-person parcel/postal	diskette agent	fax EDI	in-person parcel/postal	diskette agent	fax EDI	in-person parcel/postal	diskette agent
IFTA	fax EDI	in-person parcel/postal	diskette agent	fax EDI	in-person parcel/postal	diskette agent	fax EDI	in-person parcel/postal	diskette agent
SSRS	fax EDI	in-person parcel/postal	diskette agent	fax EDI	in-person parcel/postal	diskette agent	fax EDI	in-person parcel/postal	diskette agent

III In the table below, indicate the average person-hours required for you or your employees to fill out and complete an individual application form for each of the following annual credentials.

Person-Hours Required to Prepare Each Credential Application									
Credentials	**Renewal**			**Initial**			**Supplemental**		
IRP	days	hours	minutes	days	hours	minutes	days	hours	minutes
IFTA	days	hours	minutes	days	hours	minutes	days	hours	minutes
SSRS	days	hours	minutes	days	hours	minutes	days	hours	minutes

IV In the table below, indicate the average person-hours required for you or your employees to deliver an individual completed application to the proper state agency.

Person-Hours Required to Deliver Each Credential Application									
Credentials	**Renewal**			**Initial**			**Supplemental**		
IRP	days	hours	minutes	days	hours	minutes	days	hours	minutes
IFTA	days	hours	minutes	days	hours	minutes	days	hours	minutes
SSRS	days	hours	minutes	days	hours	minutes	days	hours	minutes

V In the table below, indicate the average length of time it takes to receive credentials once applications have been delivered to the issuing state agency.

Time Between Credential Submittal and Receipt									
Credentials	**Renewal**			**Initial**			**Supplemental**		
IRP	days	hours	minutes	days	hours	minutes	days	hours	minutes
IFTA	days	hours	minutes	days	hours	minutes	days	hours	minutes
SSRS	days	hours	minutes	days	hours	minutes	days	hours	minutes

VI Indicate how many hours your employees spent in 1995 obtaining all credentials and permits. _____

VII Indicate the percentage of applications submitted by your company which generate follow-up clarification/ correction requests by state agencies before credentials are issued. **IRP** _____% **IFTA** _____% **SSRS** _____%

VIII For each of the following opinion statements, circle an "X" for each credential type which most appropriately indicates your opinion about that statement. "Obtaining credentials" is used in these statements to include both applying for and receiving credentials.

Current Process Opinion Survey						
Opinion Statements	**Credential**	**Strongly Agree**	**Somewhat Agree**	**Neutral**	**Somewhat Disagree**	**Strongly Disagree**
1. The current procedure for obtaining credentials is convenient.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
2. State agencies are available for us to obtain credentials at convenient times.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
3. The current credential payment process is convenient.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
4. The current credential application forms are easy to use.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
5. The time required to complete application forms is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
6. The time required to deliver application forms is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X

Current Process Opinion Survey (Continued)						
Opinion Statements	**Credential**	**Strongly Agree**	**Somewhat Agree**	**Neutral**	**Somewhat Disagree**	**Strongly Disagree**
7. The time state agencies take to return credentials is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
8. Obtaining credentials requires significant travel to state agencies.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
9. The percent of applications requiring follow-up actions/ corrections is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
10. The information provided by state agencies that I need to obtain credentials is accurate.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
11. The information provided by state agencies that I need to obtain credentials is readily available.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
12. The information provided by state agencies is helpful.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
13. Our company's credentialling activities are highly automated.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
14. The current process of obtaining credentials is not disruptive to our normal business activities.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
15. The current state agency requirements allows our company to efficiently conduct credentialling activities.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
16. We are generally satisfied with the overall procedures for obtaining credentials.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X

IX Please list the three things you like most about the current credentialling processes.

_____

_____

_____

X Please list the three things you dislike most about the current credentialling processes.

_____

_____

_____

XI Provide additional comments below. Indicate if your comments are in response to a particular question. Use the back of this page if necessary.

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE! Please return it in the envelope provided.

EOSS Motor Carrier Post Test Questionnaire

Carrier_____ **Preparer**_____ **Date**_____

Please complete this questionnaire based on your use of the Electronic One-Stop Shopping System (EOSS). Promptly return the completed questionnaire in the envelope provided. If you have any questions about this questionnaire, please contact Joe Horsley at (501) 972-2097, or fax (501) 972-3678.

I Indicate how much training you received from In Motion, Inc. on the installation and use of EOSS. _____ Hours

II List capital costs spent for equipment hardware and software that were required for participation in the EOSS operational test. If those costs are only partially attributable to the use of EOSS, assign a percent of the cost to EOSS (e.g., A new modem costing $150 was required, but only 10% of the use of the modem is for EOSS).

Item _____ $ _____ % _____

Item _____ $ _____ % _____

Item _____ $ _____ % _____

III List direct operating costs spent for equipment hardware and software that were used for participation in the EOSS operational test. If those costs are only partially attributable to the use of EOSS, assign a percent of the cost to EOSS (e.g., A computer maintenance contract, costing $500, was existing but only 0.2% of the use of the computer is for EOSS).

Item _____ $ _____ % _____

Item _____ $ _____ % _____

Item _____ $ _____ % _____

IV For each of the following opinion statements, circle an "X" for each credential type which most appropriately indicates your opinion about that statement. "Obtaining credentials" is used in these statements to include both applying for and receiving credentials.

EOSS Opinion Survey

Opinion Statements	Credential	Strongly Agree	Somewhat Agree	Neutral	Somewhat Disagree	Strongly Disagree
1. The EOSS procedure for obtaining credentials is convenient.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
2. The EOSS procedure for obtaining credentials is more convenient than current methods.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
3. EOSS allows us to obtain credentials at convenient times.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
4. EOSS allows us greater flexibility in choosing the times when we obtain credentials.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
5. EOSS allows us to obtain credentials at times when the agency would have been closed.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
6. The EOSS credential payment process is convenient	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X

Opinion Statements	Credential	Strongly Agree	Somewhat Agree	Neutral	Somewhat Disagree	Strongly Disagree
7. The EOSS credential payment process is more convenient for me than current methods.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
8. The EOSS credential application forms are easy to use.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
9. The EOSS credential application forms are easier to use than current methods.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
10. When using EOSS, the time required to complete application forms is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
11. EOSS reduces the time required to complete application forms.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
12. When using EOSS, the time required to deliver application forms is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
13. EOSS reduces the time required to deliver application forms.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
14. When using EOSS, the time state agencies take to return credentials is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
15. EOSS reduces the time state agencies take to return credentials.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
16. Obtaining credentials with EOSS requires significant travel to state agencies.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
17. Obtaining credentials with EOSS requires less travel to state agencies than current methods.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
18. When using EOSS, the number of applications requiring follow-up actions/ corrections is excessive.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
19. Credentials applied for and issued through EOSS did not require follow-up actions or corrections.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
20. EOSS reduces the number of applications requiring follow-up actions/ corrections.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
21. EOSS provides all the information needed to obtain credentials.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
22. The information provided by EOSS is helpful.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X

Opinion Statements	Credential	Strongly Agree	Somewhat Agree	Neutral	Somewhat Disagree	Strongly Disagree
23. The information provided by EOSS is more helpful than that provided by state agencies.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
24. The information provided by EOSS needed to obtain credentials is accurate.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
25. The information provided by EOSS is more accurate than that provided by state agencies.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
26. The information provided by EOSS needed to obtain credentials is readily available.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
27. The information provided by EOSS is more readily available information than that provided by state agencies.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
28. EOSS is easy to use.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
29. EOSS on-screen instructions are easy to understand and follow.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
30. EOSS screen formats are clear and concise.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
31. Learning how to use EOSS is easy.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
32. We were satisfied with the training we received on the use of EOSS.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
33. It is easy to enter data into EOSS.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
34. Preparing applications is easy using EOSS.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
35. Submitting applications is easy using EOSS.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
36. The EOSS process of obtaining credentials is not disruptive to our normal business activities.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
37. The EOSS process of obtaining credentials is less disruptive to our normal business activities than current methods.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
38. Using EOSS allows our company to efficiently conduct credentialling activities.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X

Opinion Statements	Credential	Strongly Agree	Somewhat Agree	Neutral	Somewhat Disagree	Strongly Disagree
39. Greater efficiency is obtained by using EOSS to conduct credentialling activities.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
40. EOSS procedures for obtaining credentials is satisfactory.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
41. Using EOSS to obtain credentials is preferable to current methods.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
42. I want to use EOSS for future credentialling activities.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X
43. I strongly support state agencies' adoption of EOSS.	IRP	X	X	X	X	X
	IFTA	X	X	X	X	X
	SSRS	X	X	X	X	X

V Please explain how your opinions expressed in Item # **IV** above might differ if EOSS was implemented by all state agencies.

VI Please list the three things you like most about the EOSS credentialling processes.

VII Please list the three things you dislike most about the EOSS credentialling processes.

VIII Please list the three greatest advantages to EOSS.

IX Please list the three greatest disadvantages of EOSS.

X What problems did you encounter due to your participation in this project?

X I Provide additional comments below. Indicate if your comments are in response to a particular question.

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE! Please return it in the envelope provided or fax to Joe Horsley at (601) 972-3676

CARRIER INTERVIEW QUESTIONS

Carrier : _____ Interviewee: _____ Date: _____

Background

1. Are you the best person to interview about your company's participation in the EOSS project?
2. Do you think you understand the system well enough to be comfortable with this interview?
3. Are you basing your answers solely on your own experience with EOSS or are you projecting expectations based on your general knowledge of electronic capabilities?
4. Estimate how many times and how many hours you used the system (training, testing, using).
5. **How** "computer literate" do you feel you are?

Evaluation

1. Will EOSS reduce application to issuance time (cycle times)
2. Will EOSS reduce your application preparation times?
3. Did you find EOSS easy to use?
4. Do you prefer EOSS to the current system?
5. What are EOSS benefits for you?
6. Is EOSS compatible with your other activities?
7. Why would you either continue to use or stop using EOSS?
8. Was EOSS more or less convenient for you to use
9. Was the hardware you used satisfactory?
10. Was the training you received adequate?
11. Would you like to see EOSS fully operational?
12. What institutional/non-technical issues arose during this test?
13. What percentage of all the credentials you need can be furnished by EOSS?
14. Was using EOSS during off-hours any benefit to you?
15. Was the information module useful to you (accurate, helpful, available, etc.)
16. What did you like most about EOSS?
17. What did you like least about EOSS?
18. What are EOSS's greatest advantages?
19. What are EOSS's greatest disadvantages?
20. Comments?