Report No. K-TRAN:KSU-97-2
Final Report

FEASIBILITY STUDY OF AN AUTOMATED MOTOR VEHICLE ACCIDENT REPORTING SYSTEM FOR THE STATE

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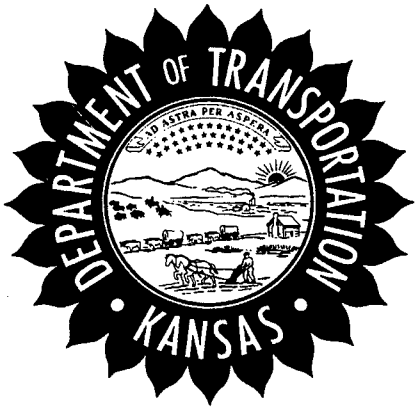

April 1998

K-TRAN

A COOPERATIVE TRANSPORTATION RESEARCH PROGRAM BETWEEN:
KANSAS DEPARTMENT OF TRANSPORTATION
THE KANSAS STATE UNIVERSITY
THE UNIVERSITY OF KANSAS

1. Report No. K-TRAN: KSU-97-2	2.  PB99-109589		3. Recipient Catalog No.
4 Title and Subtitle FEASIBILITY STUDY OF AN AUTOMATED MOTOR VEHICLE ACCIDENT REPORTING SYSTEM FOR THE STATE			5 Report Date April 1998 6 Performing Organization Code
7. Author(s) Robert W. Stokes and Eugene R. Russell			8 Performing Organization Report No.
9 Performing Organization Name and Address Kansas State University Department of Civil Engineering Manhattan, Kansas 66506			10 Work Unit No. (TRAIS) 11 Contract or Grant No. C-970
12 Sponsoring Agency Name and Address Kansas Department of Transportation Docking State Office Bldg. Topeka, Kansas 66612			13 Type of Report and Period Covered Final Report Aug. 1996 to Apr 1998 14 Sponsoring Agency Code 106-RE-0099-01

15 Supplementary Notes

16 Abstract

The objective of this study was to assess the need for, and feasibility of, a standardized automated/electronic motor vehicle accident data capture and reporting system for the state of Kansas. Based on the results of a survey of law enforcement agencies in Kansas, there appears to be a need and support for the development of a statewide electronic accident data reporting and management system. Based on the experiences of other states in the region, it appears that such systems are politically and technically feasible and economically justifiable.

This report outlines the many issues that must be dealt with in developing a statewide electronic accident data reporting and management system that meets the needs of all parties involved. The findings of this study indicate that additional expertise will be needed to design, develop, test, implement and maintain the software packages required for a state-of-the-art electronic traffic accident data collection system for Kansas.

While the long term benefits of statewide electronic accident data management systems exceed their costs, the planning, design, and implementation of these systems require a significant investment of time, energy, and money, as well as close and continuing cooperation among the stakeholders in the process.

17 Key Words Accident, motor vehicle, automated reporting, electronic, highway, software.		18 Distribution Statement No restrictions. This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161	
19 Security Classification (of this report) Unclassified	20 Security Classification (of this page) Unclassified	21 No. of pages 60	22 Price

Form DOT F 1700.7 (8-72)

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Kansas Department of Transportation
K-TRAN Project Number KSU-97-2
Project Monitor: Rosalie Thornburgh

Final Report

April, 1998

PREFACE

This research project was funded by the Kansas Department of Transportation K-TRAN research program. The Kansas Transportation Research and New-Developments (K-TRAN) Research Program is an ongoing, cooperative and comprehensive research program addressing transportation needs of the State of Kansas utilizing academic and research resources from the Kansas Department of Transportation, Kansas State University and the University of Kansas. The projects included in the research program are jointly developed by professionals in KDOT and the universities.

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The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the views or the policies of the State of Kansas. This report does not constitute a standard, specification or regulation.

ACKNOWLEDGMENTS

The authors wish to thank the following individuals and agencies for their contributions to this study.

Rosalie Thornburgh, Bureau of Traffic Safety, Kansas Department of Transportation.

Jim Schaller, Bureau of Traffic Safety, Kansas Department of Transportation.

Jim Tobaben, Bureau of Transportation Planning, Kansas Department of Transportation.

Sheriff Bob Odell, Cowley County Sheriff's Office.

Captain Tim Lynch, Overland Park Police Department.

Trooper Steve McKinzie, Kansas Highway Patrol.

Walt Darling, Kansas Highway Patrol.

Nancy Mattson, Bureau of Transportation Planning, Kansas Department of Transportation.

Brian Logan, Bureau of Transportation Planning, Kansas Department of Transportation.

Paul Bodner, Bureau of Local Projects, Kansas Department of Transportation.

Officer Andy Surmeier, Emporia Police Department.

Officer Willie Turner, Emporia Police Department.

Deputy Chief Terri Moses, Wichita Police Department.

Ron Rohrer, Kansas Bureau of Investigation.

Mike Crow, Bureau of Traffic Engineering, Kansas Department of Transportation.

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EXECUTIVE SUMMARY

The basic objective of this study was to assess the feasibility of developing a standardized automated/electronic motor vehicle accident data capture and reporting system for the state of Kansas. If such a system appears feasible, the study will identify the steps needed to make the transition to a standardized electronic data capture and reporting format successful and beneficial to the agencies involved.

Work undertaken to accomplish the study objective included the establishment of an advisory committee to develop the study work plan and to guide the overall study, the completion of a survey of local law enforcement agencies in the state to assess current practices in motor vehicle accident data collection and reporting, a review of several well known motor vehicle accident data collection and reporting systems in the region, and the identification of the key issues and problems that must be resolved in developing a statewide electronic motor vehicle accident data capture and reporting system.

Based on the results of a survey of law enforcement agencies in Kansas, there appears to be a need and support for the development of a statewide electronic accident data reporting and management system. Based on the experiences of other states in the region, it appears that such systems are politically and technically feasible and economically justifiable. While the long term benefits of statewide electronic accident data management systems exceed their costs, the planning, design and implementation of these management systems require a significant investment in time, energy and money, as well as close and continuing cooperation among the various stakeholders in the process.

This report outlines the many issues that must be dealt with in developing a statewide electronic accident data reporting and management system that meets the needs of all parties involved. The findings of this initial feasibility study clearly indicate that additional expertise will be needed to design, develop, test, implement and maintain the software packages required for a state-of-the-art electronic traffic accident data collection system for Kansas.

The identification and discussion of the relevant issues presented in this report is intended to serve as a basis for developing a work plan to guide subsequent efforts in designing and implementing a statewide electronic accident data management system. Specifically, it is the recommendation of this study that KDOT should begin working with other interested state agencies to develop a Request for Proposals (RFP) to solicit bids for the development of an electronic traffic accident data collection and reporting program that addresses the issues and general specifications outlined in this report. A basic work plan for developing the recommended RFP is outlined below. The basic Tasks and specific recommendations are presented in detail in the Conclusions and Recommendations section of this report.

Task 1. Establish an expanded Project Advisory/Steering Committee. Much of this study has focused on issues of concern to KDOT. If other state agencies are interested in participating in

the development of an electronic traffic accident data collection and reporting, then the project advisory committee should be expanded to represent these interests. In any event, an active, broad based, statewide coordinating committee will be needed to champion the system and to oversee its planning, design, implementation and evaluation.

*Task 2. **Develop a set of standards and system specifications for implementing a statewide electronic accident data reporting and management system for Kansas.*** As noted in Task 1, this report has focused primarily on issues of concern to KDOT. The expanded Advisory Committee should schedule a series of meetings to review, revise, and if necessary, expand the list of issues presented in this report to reflect the issues and problems confronting other state and local agencies that might wish to participate in the system design and implementation effort.

*Task 3. **Define the preferred media and repository for traffic safety data.*** It is recommended that the collection of traffic accident data in the field be accomplished via mobile computers capable of pen-based, mouse and key board data entry. The Kansas Highway Patrol (KHP) is currently testing mobile, notebook computer-based electronic traffic accident reporting forms for use by officers in the field. It is recommended that KDOT and other interested agencies consider the KHP program as the basic model for the development of electronic traffic accident reporting forms.

The media currently available for submitting accident data to KDOT and other agencies include the internet (or other statewide networks), conventional telephone lines, cellular telephone, via diskette, or conventional (paper) media. The ultimate goal of the system should be to provide the capability to electronically submit data to a centralized, secure, electronic mailbox from which authorized state and local officials may extract the data they require.

The current efforts of the KBI to develop a central, electronic repository for the state's criminal records offer a timely opportunity to pursue this option. It is recommended that KDOT and other state agencies interested in developing statewide electronic traffic safety data management systems investigate the possibilities of using the KBI site as the central repository for the state's traffic accident-related data.

*Task 4. **Define agency responsibilities for system implementation.*** Assuming that the KBI site could be made available, KDOT and other agencies wishing to use the site as a central repository for traffic accident-related data should assume the responsibility for designing, implementing and funding the development of the various software interfaces that will be needed for local agencies to transmit the required data to the KBI site, and for the individual state agencies to extract and transfer the appropriate information to their files. The intent of this Task should be to clearly define the agency-specific software development needs of the individual participating agencies.

If the KBI site will not be available for use as a central repository for traffic accident-related data, the feasibility of establishing a central repository for the state's traffic accident-related data should be investigated.

Task 5. Develop Request for Proposals (RFP). The findings of this initial feasibility study clearly indicate that additional expertise will be needed to design, develop, test and implement a state-of-the-art electronic traffic accident data collection system for Kansas. Therefore, KDOT, in close cooperation with other interested state agencies, should develop a Request for Proposals (RFP) to solicit bids for the design, development, testing, implementation and maintenance of an electronic traffic accident data collection program that addresses the issues and general specifications outlined in this report and any additional requirements that may be identified upon completion of Tasks 2-4. In addition, it is suggested that the RFP incorporate and build upon the results of the KHP accident reporting form automation program. To accomplish this, it will be necessary to delay development of the RFP until the KHP program has been completed and evaluated.

The RFP should require the consultant to provide cost estimates to design, develop and test the necessary software (accident reporting forms, software interfaces, custom programming, etc.), design and conduct initial field tests of the system, design and test an ongoing system training program, and provide annual system support. To the extent possible, the traffic accident data management system should build upon existing software platforms.

In addition, the consultant should be required to specify state and local hardware system requirements and estimated costs. The consultant's proposal also should include a detailed plan for involving local law enforcement agency representatives in the development and implementation phases of the project.

It is recommended that a consultant be hired to assist and advise KDOT and the Advisory Committee in completing the five Tasks outlined in this report, including the preparation of the RFP.

STUDY OBJECTIVES

The basic objective of this study was to assess the feasibility of developing a standardized automated/electronic motor vehicle accident data capture and reporting system for the state of Kansas. If such a system appears feasible, the study will identify the steps needed to make the transition to a standardized electronic data capture and reporting format successful and beneficial to the agencies involved.

PROJECT STATUS

Work undertaken to accomplish the study objective included the establishment of an advisory committee to develop the study work plan and to guide the overall study, the completion of a survey of local law enforcement agencies in the state to assess current practices in motor vehicle accident data collection and reporting, a review of several well known motor vehicle accident data collection and reporting systems in the region, and the identification of the key issues and problems that must be resolved in developing a statewide electronic motor vehicle accident data capture and reporting system.

Summary of Current Practices in Kansas

The objective of this phase of the study was to survey local law enforcement agencies in Kansas to assess the need for, and feasibility of, a standardized motor vehicle accident data software package for Kansas. The results of the survey are summarized below. A detailed statistical summary of the survey results is presented in the Appendix of this report.

The preliminary survey results indicate that the "need" for such a software package exists. For example, nearly 60 percent of the city and county law enforcement agencies that responded to the survey indicated that there was a need for a standardized Kansas Automated Motor Vehicle Accident Reporting System (KAMVARS). Nearly 65 percent of the respondents indicated that

there was a need to develop the capability for local law enforcement agencies to submit accident data to state agencies by electronic means. In addition, approximately one-half of the respondents indicated that they would be willing to participate in a pilot study to evaluate the feasibility of electronic capture and submittal of motor vehicle accident data.

The "feasibility" of the KAMVARS is difficult to assess solely on the basis of the survey results. Only about one-fourth of the agencies that responded to the survey currently have computerized motor vehicle accident data bases. However, roughly 60 percent of those agencies who do not currently have a computerized motor vehicle accident data base reported that they would be interested in converting to one. In addition, over 20 percent of the agencies that currently do not have computers indicated that they plan to purchase computers to handle motor vehicle accident data in the next 2-3 years. Not surprisingly, the primary obstacle to implementing computerized motor vehicle accident data systems is cost (hardware and software). Likewise, the features deemed most desirable in a standardized accident data software package are ease of use and low costs.

Efforts in Other States in the Region

The status of automated motor vehicle accident data collection and reporting systems in the region was assessed through a review of the literature and telephone conversations with selected state agencies and regional FHWA representatives. Two of the systems in the region, the Mobile Accident Reporting System (MARS) in Iowa and the Advanced Law Enforcement Response Technology (ALERT) system in Texas, are being touted as national models for the development and implementation of automated motor vehicle accident data collection and reporting systems. Two other states in the region (Missouri and Oklahoma) are in the early stages of developing automated motor vehicle accident data collection and reporting systems.

The MARS program allows police officers to collect accident data at the scene using pen-based mobile computers. All necessary data reporting forms are in electronic format with roll down

menus, touch icons and common data items (e.g., names and addresses) that can be carried throughout the report. Upon completion, the report is submitted to an internal validation process where the MARS software performs 95 edit checks to ensure that the data is consistent and meets state reporting requirements. A validated report is then electronically submitted to the officer's supervisor. The supervisor reviews the report and either sends it back to the officer for corrections or approves it. The approved data is then electronically forwarded to the local agency database and sent to a remote database to be accessed by the Iowa DOT. MARS stores information on the American Association of Motor Vehicle Administrators Network (AAMVAnet) for downloading to the Iowa DOT.

The Iowa DOT pulls the individual accident reports from the AAMVAnet, assigns an appropriate case number and creates an electronic folder. The report is then sent to the accident evaluation queue where additional edit/verification checks are performed. At the same time, the accident location is determined from the state link-node location referencing system. Finally, the report is entered into two databases for further reporting and analysis: the Statistical Analysis System (SAS) and the Personal Computer Accident Location Analysis System (PC-ALAS).

The Iowa MARS program has demonstrated that the development and implementation of a cost effective, standardized, statewide motor vehicle accident data software package is technically, economically and politically feasible. At the present time, only about 10 percent of the state's accidents are reported through the MARS program. However, Iowa DOT estimates that the time and costs associated with the collection and transfer of data to State Police, State DOT and other agencies have been reduced by up to 50 percent with the MARS program.

Since 1991, Iowa DOT has spent approximately $4.5 million on its program. However, it should be noted that the actual software development and annual support fees for the program accounted for only $550,000 ($500,000 for software development and $50,000 annual support fees). Now that the basic platform has been developed and tested, the costs to other prospective agencies to built upon that platform should be somewhat lower.

The Iowa DOT's experiences with the MARS program indicate that the primary obstacles to be overcome in implementing electronic data collection and submittal programs are more political/institutional than technical in nature. These obstacles and issues are discussed in the following sections of this report.

PROBLEMS/ISSUES TO BE RESOLVED

This study has identified numerous issues that must be resolved to successfully develop and implement the KAMVARS. These issues can be broadly categorized as either technical, administrative/legal/economic, or "other" in nature. The key issues within each of these categories are presented and discussed below. The intent of the discussion is to identify the key issues. In most cases, the development of firm recommendations concerning the resolution of the various issues is beyond the scope of this study. However, by clearly enumerating the issues and identifying the potential alternatives that could be pursued to resolve them, the discussion provides a basic work plan to guide subsequent efforts directed at the implementation of KAMVARS.

Technical Issues

In terms of electronic data collection and submittal, the technical issues center around the following questions. How should crash data be collected? What data should be collected? What data should be submitted? How should the data be submitted?

How should crash data be collected?

The review of practices in other states indicates that accident data must be captured in an electronic format in the field if an automated motor vehicle accident data collection and reporting system is to be feasible and acceptable to the agencies involved. If the data are not captured electronically at the accident site, then agencies must subsequently convert the data to an electronic format for transmittal to state agencies. This requires additional time and effort and

introduces the possibility of transcription errors.

Past efforts by the Kansas Bureau of Investigation (KBI) to institute an electronic crime incident data reporting system illustrate the problems that can result when the data are not captured in an electronic format in the field. The KBI project involved the development of a dBase program which was provided to local agencies so they could submit incident data to KBI via a phone modem. KBI reports that 200 copies of the program were distributed statewide. At the present time only 8 agencies are using the KBI software. The primary reason for not using the software is the time and effort required to transcribe the data from the hardcopy incident reports taken in the field to the dBase program. In short the conversion of data collected in the field in a non-electronic format (e.g., on a "paper" report form) to a spreadsheet or other program for electronic submittal simply creates more work for the local agencies. While it can be argued that this conversion to an electronic format should benefit local agencies as well as state agencies, the equipment and time required for data conversion in the short term appear to outweigh the potential long term benefits of electronic databases.

It is recommended that data collection be via mobile computers capable of pen-based, mouse or key board data entry. The computers should have all necessary forms in an electronic format with pull down menus, touch icons and the capability to carry common data items (e.g., names and addresses) through the report. The data should be captured on electronic forms and written to an appropriate database. The software should have internal validation capabilities to ensure data consistency.

What data should be collected?

This issue centers around the need for standardization and cooperation between those agencies that collect and/or use motor vehicle accident data. KDOT and KBI, for example, do not require the same data elements in the reports required from local law enforcement agencies. Therefore, the question becomes should separate electronic forms be provided for each state agency or should

a single "universal" form be created?

A standard, electronic accident reporting form from which various state agencies could extract the data they require places a burden on state agencies to develop programs for extracting the data elements they need from the standard electronic data reporting form submitted by the local agencies. Because all state accident reporting forms already follow the basic conventions established by KDOT, and because the basic forms required by various state agencies are already available in electronic form, the creation of a new, single form does not appear necessary or appropriate at this time.

It is recommended that all of the reporting forms currently in use be transferred to an electronic format. The software behind the forms should have the capability to automatically carry duplicate information (e.g., names and addresses) from one form to another. The software should also have the capabilities to capture the narrative portions of the accident report and to create and capture the officer's sketch of the accident scene.

The Kansas Highway Patrol (KHP) is currently developing mobile, notebook computer-based electronic traffic accident reporting forms for use by officers in the field. The results of this pilot project should provide valuable insights into the problems and prospects associated with implementing such a program on a statewide basis.

What data should be submitted?

At the present time, KDOT does not store in its accident database all of the accident data elements submitted to it by local law enforcement agencies. Local agencies submit the standard accident reporting forms and KDOT manually extracts the data elements it requires. Software could be developed to electronically extract the data elements KDOT requires. This data "sifting" could occur either at the point of transmission or after the data have been received by KDOT. Preferably, this data sifting should occur at the local level.

How should the data be submitted?

The media currently available for submitting accident data to KDOT and other agencies include the internet (or other statewide networks, such as the Information Network of Kansas), conventional telephone lines, cellular telephone, or via diskette. In the case of electronic submittal (internet, etc.) the data could be sent to an electronic mailbox from which KDOT could periodically download the information into the appropriate database(s). Alternatively, the data could be sent to KDOT's mainframe computer or a server. Electronic submittal of the accident data would appear to be the most desirable means of transmission. If electronic means are used, programs will be needed to protect the confidentially of the data and to validate the consistency of the data.

Another issue related to "how should the data be transmitted?" is determining the appropriate point of transmission. To ensure accuracy and completeness, the accident report should not be submitted to KDOT until it has been reviewed and approved by supervisory personnel. Therefore, the reports should be submitted to KDOT from the local law enforcement agency's headquarters.

Ideally, officers in the field should be able to electronically transmit an accident report from the accident scene to his/her headquarters. However, in some cases it may be preferable for the field officer to store the accident report(s) on a diskette and download the file(s) on the headquarter's computer at a later time.

Other related issues that must be resolved include the following.

- determination of a standard data file format (ASCII, dBase, etc.),

- development of a report numbering/identification system (this could be accomplished as part of the software that generates the report forms),

- development of procedures for submitting amended reports and supplemental information (driver statements, witness statements, narrative, etc.) and

- determination of an efficient and economical means of transmitting the accident diagram (sending graphics across the network is expensive and time consuming).

Administrative/Legal/Economic Issues

Experiences with the development and implementation of electronic data collection, retrieval and transmission programs have demonstrated that such systems are technically, politically and economically feasible. The basic technology for such programs already exists. The obstacles that must be overcome in developing and implementing electronic accident data management systems are largely administrative in nature.

The administrative/legal/economic questions that must be addressed and resolved include: Are there legal barriers to electronic accident data programs? Who should be involved in planning, designing, implementing and testing electronic accident data collection systems? Who should assume the overall responsibility for managing, monitoring and maintaining the program? How will the program be funded?

Are there legal barriers to electronic accident data programs?

KDOT is currently required by law to supply written (microfilmed) accident reports to the Kansas Department of Revenue (KDOR). Therefore, shifting to an entirely paperless accident record system would require changes in current statutes. However, if the entire accident report form is submitted in electronic form to KDOT (see Technical Issues), paper and/or microfilm copies could be made to satisfy current state laws.

Other legal issues concern the confidentiality and security of electronic data files. The design and

implementation of the appropriate security measures should be given high priority in the system design phases of any subsequent efforts to develop an electronic accident data management program.

Who should be involved in developing electronic accident data collection systems?

Efforts in other states have shown that user participation and support are essential ingredients in developing a successful electronic traffic accident data collection system. This involves cooperation and active participation from those who collect the data as well as those who use the data. Field officers can provide valuable input concerning the appropriate hardware, design of the data collection forms and training needs. An active, broad based, statewide coordinating committee will be needed to champion the system and to oversee its planning, design, implementation and evaluation. The Advisory Committee established as part of the current study represents many of the appropriate stakeholders in the process and should be maintained in any subsequent efforts to develop an electronic traffic accident data management system for Kansas. It may be necessary to consider adding representatives from KDHE, KDOR, KDOT legal services, the attorney generals office, emergency medical services (EMS) and the KDOT Bureau of Computer Services to the Advisory Committee.

Who should assume the overall responsibility for managing and monitoring the program?

The current feasibility study is sponsored by KDOT. Therefore, it would seem reasonable to assume that KDOT should take the initial lead in moving the study to its next level. The initial findings of this feasibility study clearly indicate that additional expertise will be needed to design, develop, test and implement the software packages required for a state-of-the-art electronic traffic accident data collection system for Kansas. Specifically, KDOT, in close cooperation with other interested state agencies, should consider developing a Request for Proposals (RFP) to solicit bids for the development of a prototype electronic traffic accident data collection program that addresses the issues and general specifications outlined in this Report.

How will the program be funded?

The costs associated with the development and implementation of KAMVARS include the following components: software development, hardware (notebook computers), and training. The initial implementation phase should be in the form of a pilot study consisting of software development and field testing at several representative law enforcement agencies.

KDOT should actively pursue the development of partnerships with other interested agencies for the purpose of funding the initial (and subsequent) phase(s) of the program. This funding partnership could consist of hiring a consultant to develop the necessary software (accident reporting forms, software interfaces, custom programming, etc.), purchasing notebook computers for the initial field tests, and developing and implementing a system training program. A preliminary break down of the estimated costs for the initial phase of the program is shown below.

Software development	$120,000
Hardware (40-50 notebook computers and peripherals)	260,000
Training	20,000
Total	$400,000

In addition to these initial costs, the software developer is likely to require an annual support fee of $40,000 to $50,000 per year.

As the program expands beyond the initial test sites, subsequent hardware acquisitions could be funded by local agencies and/or a combination of local, state and federal funds.

Other Issues

Other issues that need to be resolved in the planning and design phases of the system are discussed below.

- *Should all law enforcement agencies be required to submit accident reports in electronic format?* For small agencies that do not have computers and who work very few accidents per year, it may be desirable for KDOT to retain the capability to process paper accident reports. Likewise, in the initial phases of the implementation of KAMVARS, provisions to accept and process a range of report media and transmission modes (network, cell phone, etc.) will be needed.

- *How will improvements in accident location referencing be incorporated into the system?* A statewide electronic accident data management system must have the flexibility to tie into KDOT's State System Geometrics and, ultimately, into the Department's GIS Location Referencing System. Statewide GPS standards need to be developed to ensure accuracy in accident location referencing.

- *Should the KAMVARS have the capability to generate and file traffic citations electronically?* Initially, the system should focus on the collection and submittal of traffic accident reports. However, the system should be designed with the capacity to incorporate electronic citation and other (e.g., bar code reader) capabilities in the future.

- *How can non-reportable accidents be identified and kept out of the system?* KDOT receives information on 5,000 to 7,000 non-reportable accidents (accidents that do not meet state reportability criteria) per year. At present, these accidents are manually extracted and excluded from further processing. The system software should have the capability to identify and reject non-reportable accidents as part of the internal validation process.

- *What programming, procedural and/or operational changes will be needed to ensure that KDOT can continue to provide quality service to its clients?* KDOT submits copies of accident reports for specific types of accidents to various KDOT Bureaus and to other state agencies. For example, fatal accidents are reported to the Kansas Department of Health

and Environment (KDHE). Fatal accidents that were not worked by the KHP are reported to the KHP. Property (structural) damage accidents and construction zone accidents are reported to the appropriate KDOT Bureaus. The system software should have the capability to generate these specialized reports.

- *How will updates to data formats, data reporting forms, and software be handled?* Assuming that KDOT takes the lead in funding the design and development of KAMVARS, the responsibility for disseminating information concerning system changes should rest with KDOT.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the results of the survey of law enforcement agencies in Kansas (see Appendix), there appears to be a need and support for the development of a statewide electronic accident data reporting and management system. Based on the experiences of other states in the region, it appears that such systems are politically and technically feasible and economically justifiable. While the long term benefits of statewide electronic accident data management systems exceed their costs, the planning, design and implementation of these management systems require a significant investment in time, energy and money, as well as close and continuing cooperation among the various stakeholders in the process.

This report has outlined the many issues that must be dealt with in developing a statewide electronic accident data reporting and management system that meets the needs of all parties involved. The findings of this initial feasibility study clearly indicate that additional expertise will be needed to design, develop, test, implement and maintain the software packages required for a state-of-the-art electronic traffic accident data collection system for Kansas. The identification and discussion of the relevant issues presented in this report is intended to serve as a basis for

developing a work plan to guide subsequent efforts in designing and implementing a statewide electronic accident data management system. Specifically, it is the recommendation of this study that KDOT should begin working with other interested state agencies to develop a Request for Proposals (RFP) to solicit bids for the development of an electronic traffic accident data collection and reporting program that addresses the issues and general specifications outlined in this report. In addition, it is the recommendation of this study that the RFP incorporate and build upon the results of the KHP accident reporting form automation program. To accomplish this, it will be necessary to delay development of the RFP until the KHP program has been completed and evaluated.

Recommended Work Plan for Development of RFP

A basic work plan for developing the recommended RFP is outlined below.

Task 1. Establish an expanded Project Advisory/Steering Committee. Much of this study has focused on issues of concern to KDOT. If other state agencies are interested in participating in the development of an electronic traffic accident data collection and reporting, then the project advisory committee should be expanded to represent these interests. In any event, an active, broad based, statewide coordinating committee will be needed to champion the system and to oversee its planning, design, implementation and evaluation. The Advisory Committee established as part of the current study represents a good cross section of the appropriate stakeholders in the process and should be maintained in any subsequent efforts to develop an electronic traffic accident data management system for Kansas. It may be desirable to consider adding representatives from KDHE, KDOR, KDOT legal services, the attorney generals office, emergency medical services (EMS) and the KDOT Bureau of Computer Services to the Advisory Committee. The expanded Advisory Committee should also include representatives from the appropriate "technical" divisions of the respective agencies. With this in mind, the initial task in any subsequent efforts should be the creation of an expanded Project Advisory Committee. KDOT should assume the lead role in this Task.

*Task 2. **Develop a set of standards and system specifications for implementing a statewide electronic accident data reporting and management system for Kansas.*** As noted in Task 1, this report has focused primarily on issues of concern to KDOT. The expanded Advisory Committee should schedule a series of meetings to review, revise, and if necessary, expand the list of issues presented in this report to reflect the issues and problems confronting other state and local agencies that might wish to participate in the system design and implementation effort.

*Task 3. **Define the preferred media and repository for traffic safety data.*** It is recommended that the collection of traffic accident data in the field be accomplished via mobile computers capable of pen-based, mouse and key board data entry. The Kansas Highway Patrol (KHP) is currently testing mobile, notebook computer-based electronic traffic accident reporting forms for use by officers in the field. The results of this pilot project should provide valuable insights into the problems and prospects associated with implementing such a program on a statewide basis.

It is recommended that the KHP program be used as the statewide model for the development of electronic traffic accident reporting forms. KDOT and the Advisory Committee should work closely with the KHP to insure that the reporting forms and the underlying software and hardware requirements are compatible with the needs and capabilities of other state and local law enforcement agencies.

The media currently available for submitting accident data to KDOT and other agencies include the internet (or other statewide networks), conventional telephone lines, cellular telephone, or conventional (paper) media. The ultimate goal of the system should be to provide the capability to electronically submit data to a centralized, secure, electronic mailbox from which authorized state and local officials may extract the data they require. However, in the initial phases of the implementation of KAMVARS, provisions to accept and process a range of report media and transmission modes (network, cell phone, etc.) will be needed.

The current efforts of the KBI to develop a central, electronic repository for the state's criminal

records offer a timely opportunity to pursue this option. It is recommended that KDOT and other state agencies interested in developing statewide electronic traffic safety data management systems investigate the possibilities of using the KBI site as the central repository for traffic accident-related data. The KBI central repository offers the following significant advantages over other sites that might be developed independently by various state agencies: 1) the site is currently under development, 2) the site will be available to all local and state law enforcement agencies, and 3) due to the nature of the data available at the central repository (i.e., criminal records) the security of the site will be assured.

If the KBI site will not be available for use as a central repository for traffic accident-related data, the feasibility of establishing a central repository for the state's traffic accident-related data should be investigated.

Task 4. Define agency responsibilities for system implementation. Assuming that the KBI site could be made available, KDOT and other agencies wishing to use the site as a central repository for traffic accident-related data should assume the responsibility for designing, implementing and funding the development of the various software interfaces that will be needed for local agencies to transmit the required data to the KBI site, and for the individual state agencies to extract and transfer the appropriate information to their files. The intent of this Task should be to clearly define the agency-specific software development needs of the individual participating agencies. While it is recognized that the needs and practices of individual state agencies vary, every effort should be made to standardize database formats, software packages and hardware requirements of the system. Local agencies have repeatedly emphasized the importance of being able to use a standardized format when reporting to various state agencies. The Advisory Committee should assume the lead role in coordinating the system design and implementation activities of the various state agencies involved.

Task 5. Develop Request for Proposals (RFP). The findings of this feasibility study clearly indicate that additional expertise will be needed to design, develop, test and implement a state-of-

the-art electronic traffic accident data collection system for Kansas. Therefore, KDOT, in close cooperation with other interested state agencies, should develop a Request for Proposals (RFP) to solicit bids for the design, development, testing, implementation and maintenance of an electronic traffic accident data collection program that addresses the issues and general specifications outlined in this report and any additional requirements identified in Tasks 2-4. In addition, it is suggested that the RFP incorporate and build upon the results of the KHP accident reporting form automation program. To accomplish this, it will be necessary to delay development of the RFP until the KHP program has been completed and evaluated.

The RFP should require the consultant to provide cost estimates to design, develop and test the necessary software (accident reporting forms, software interfaces, custom programming, etc.), design and conduct initial field tests of the system, design and test an ongoing system training program, and provide annual system support. To the extent possible, the traffic accident data management system should build upon existing software platforms.

In addition, the consultant should be required to specify state and local hardware system requirements and estimated costs. The consultant's proposal also should include a detailed plan for involving local law enforcement agency representatives in the development and implementation phases of the process.

The RFP development process could follow one of three basic approaches. In the first approach, KDOT and the Advisory Committee (and/or the appropriate state agency) could write the RFP "in-house". The issues and system specifications identified in this report, along with any additional requirements identified in Tasks 2-4 should be sufficient to develop the RFP.

In the second approach, KDOT and the Advisory Committee could document the results of the five Tasks outlined in this report and hire a consultant to prepare the RFP from that documentation. In this approach, KDOT and an Advisory Committee would provide the consultant with a basic description of system requirements and features and ask the consultant to

write an RFP to solicit bids to deliver the desired product/service.

The third approach is a variation on the second approach. In the third approach, a consultant would be hired to assist and advise KDOT and the Advisory Committee in completing the five Tasks outlined in this report, including the preparation of the RFP.

The first approach would require a substantial commitment of time and resources on the part of KDOT, the Advisory Committee and other state agencies. In the second approach, the consultant would probably solicit input beyond that provided in the Advisory Committee's documentation of Tasks 1-4. In practice, the second approach to developing the RFP would probably become very similar to the third approach. Therefore, the third approach to developing the RFP is recommended.

APPENDIX

MOTOR VEHICLE ACCIDENT DATA COLLECTION AND REPORTING IN KANSAS

Survey of Current Practices

by

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K-TRAN Project Number KSU-97-2
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December 9, 1996

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SUMMARY AND RECOMMENDATIONS

The objective of this phase of the study was to assess the need for, and feasibility of, a standardized motor vehicle accident data software package for Kansas. The preliminary survey results reported in the previous section of this report indicate that the "need" for such a software package exists. For example, nearly 60 percent of the city and county law enforcement agencies that responded to the survey indicated that there was a need for a standardized motor vehicle accident data software package for Kansas (Question 15). Nearly 65 percent of the respondents indicated that there was a need to develop the capability for local law enforcement agencies to submit accident data to state agencies by electronic means (Question 19). In addition, approximately one-half of the respondents indicated that they would be willing to participate in a pilot study to evaluate the feasibility of electronic capture and submittal of motor vehicle accident data (Question 20).

The "feasibility" of a standardized motor vehicle accident data software package for Kansas is difficult to assess solely on the basis of the survey results. Only about one-fourth of the agencies that responded to the survey currently have computerized motor vehicle accident data bases (Question 7). However, roughly 60 percent of those agencies who do not currently have a computerized motor vehicle accident data base reported that they would be interested in converting to one (Question 8). In addition, over 20 percent of the agencies that currently do not have computers indicated that they plan to purchase computers to handle motor vehicle accident data in the next 2-3 years (Question 10). Not surprisingly, the primary obstacle to implementing computerized motor vehicle accident data systems is cost (hardware and software) (Questions 9 and 18). Likewise, the features deemed most desirable in a standardized accident data software package are ease of use and low costs (Question 16).

The preliminary survey results indicate that there is sufficient support for the study objectives to pursue a pilot study to more fully assess the feasibility of a standardized motor vehicle accident data software package for Kansas. The pilot study should be designed to identify 1) the basic contents and features of the software package and 2) the costs and benefits of implementing the software package.

Potential pilot study sites can be identified from the list provided on page A-22. One approach might be to identify two pilot study sites. The first site should be an agency with a "good" computerized accident data collection and reporting system already in place. This prototype system could then be implemented at a second study site that currently does not have a computerized accident data collection and reporting system. This approach should provide a reasonable frame of reference for quantifying the feasibility of implementing such a system on a statewide basis.

INTRODUCTION

This report presents preliminary results of a survey of current practices in motor vehicle accident data collection and reporting in Kansas (local and state level). The intent of the survey was to identify current and planned data capture, storage and reporting procedures, hardware, operating systems, platforms, configurations, workflow, database integration, plausible interfacing, retrofit solutions, potential barriers, associated costs and end users of the data. The information from the survey will be used to assess the need for, and feasibility of, a standardized motor vehicle accident data software package for Kansas.

The survey was conducted in two phases. The first phase consisted of a mail-out questionnaire (see Appendix A) that was distributed to 360 city police departments and county sheriff's departments in Kansas. In the second phase of the study, the same questionnaire was mailed to 96 small town police departments in Kansas.

This report presents the preliminary results from the first phase of the study. The results reflect su rvey responses received as of 11/22/96. The preliminary survey response rates are shown in Table 1.

Table 1. Preliminary Survey Response Rates.

Jurisdiction	No. Mailed	No. Undeliverable	No. Returned	Response Rate (%)
City	243	3	113	47.1
County	110	--	57	51.8
KS Hwy Patrol	1	--	1	100.0
Univ. PD	6	--	6	100.0
Total	360	3	177	49.6

SURVEY RESULTS

The preliminary survey results for the cities and counties that responded to the survey are summarized below.

Question 1: Does your agency have a unit dedicated to managing motor vehicle accident reports?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Yes	17	14.9	5	8.8	22	12.9
No	96	84.2	52	91.2	148	87.1
Total	113	100.0	57	100.0	170	100.0

Question 2: What forms do you currently use to record motor vehicle accident data? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
KDOT	111	98.2	55	96.5	166	97.7
KBI	8	7.1	6	10.5	14	8.2
KDOR	55	48.7	24	42.1	79	46.5
Other	11	9.7	5	8.8	16	9.4

Question 3: To what agencies do you submit motor vehicle accident reports? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
KDOT	104	92.0	54	94.7	158	92.9
KBI	4	3.5	4	7.0	8	4.7
KDOR	27	23.9	12	21.1	39	22.9
Other	8	7.1	5	8.8	13	7.7

Question 4: How many times does your agency review a motor vehicle accident report for accuracy and completeness before submitting it to the appropriate state agency(ies)?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
0	2	1.8	3	5.2	5	2.9
1	62	54.9	25	43.9	87	51.2
2	45	39.8	25	43.9	70	41.2
3+	4	3.5	4	7.0	8	4.7
Total	113	100.0	57	100.0	170	100.0

Question 5: How do you reference the location of motor vehicle accidents? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Milepost	31	27.4	54	94.7	85	50.0
Intersection	110	97.4	57	100.0	167	98.2
Lat/Long	4	3.5	1	1.8	5	2.9
Other	28	24.8	18	31.6	46	27.1

Question 6. Does your agency use or provide motor vehicle accident data for any of the following purposes? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Gen. Stat. Repts.	68	60.2	31	54.4	99	58.2
Trend Anal.	31	27.4	7	12.3	38	22.4
Decision Mapping	8	7.1	2	3.5	10	5.9
Traffic Studies	49	43.4	8	14.0	57	33.5
High Acc. Loc. Anal.	48	42.5	11	19.3	59	34.7
None of the above	29	25.7	25	43.9	54	31.8

Question 7. Does your agency currently have a computerized motor vehicle accident data base?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Yes	30	26.6	19	33.3	49	28.8
No	80	70.8	38	66.7	118	69.4
No Response	3	2.6	--	--	3	1.8
Total	113	100.0	57	100.0	170	100.0

Question 8. If you currently do not have a computerized motor vehicle accident data base, would your agency be interested in converting to one?

Response	City (n = 80)		County (n = 38)		Total	
	No.	%	No.	%	No.	%
Yes	40	50.0	26	68.4	66	55.9
No	28	35.0	7	18.4	35	29.7
No Response	12	15.0	5	13.2	17	14.4
Total*	80	100.0	38	100.0	118	100.0

* Total represents number of respondents from Question 7 who indicated that they do not have a computerized accident data base.

Question 9: What obstacles are preventing your agency from implementing a computerized motor vehicle accident data base? Check all that apply.

Response	City (n = 80)*		County (n = 38)*		Total	
	No.	%	No.	%	No.	%
No need	30	37.5	4	10.5	34	28.8
Shortage of staff	33	41.3	16	42.1	49	41.5
Hardware costs	48	60.0	29	76.3	77	65.3
Software costs	66	82.5	32	84.2	98	83.1
Lack of expertise	32	40.0	15	39.5	47	39.8
Other	7	8.8	5	13.2	12	10.2

* Total represents number of respondents from Question 7 who indicated that they do not have a computerized accident data base.

Question 10: If your agency currently does not have computers to handle motor vehicle accident data, do you plan to purchase computers for this purpose in the next 2-3 years?

Response	City (n = 80)		County (n = 38)		Total	
	No.	%	No.	%	No.	%
Yes	17	21.2	9	23.7	26	22.0
No	47	58.8	18	47.4	65	55.1
No Response	16	20.0	11	28.9	27	22.9
Total*	80	100.0	38	100.0	118	100.0

* Total represents number of respondents from Question 7 who indicated that they do not have a computerized accident data base.

Question 11: How many computers are used by your agency to handle motor vehicle accident data?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
None	73	64.6	32	56.2	105	61.8
1-5	34	30.1	21	36.8	55	32.4
5+	5	4.4	2	3.5	7	4.1
No Response	1	0.9	2	3.5	3	1.7
Total	113	100.0	57	100.0	170	100.0

Question 12: How many years of motor vehicle accident data are stored in your computer data base?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
None	76	67.3	35	61.4	111	65.3
1	10	8.8	5	8.8	15	8.8
2	6	5.3	4	7.0	10	5.9
3 or more	16	14.2	11	19.3	27	15.9
No Response	5	4.4	2	3.5	7	4.1
Total	113	100.0	57	100.0	170	100.0

Question 13: Do your traffic division police carry on-board computers?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Yes	7	6.2	1	1.8	8	4.7
No	106	93.8	55	96.4	161	94.7
No Response	--	--	1	1.8	1	0.6
Total	113	100.0	57	100.0	170	100.0

Question 14: Does your agency have or have access to the following equipment? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Fax	107	94.7	57	100.0	164	96.5
Cell Phones	81	71.7	50	87.7	131	77.1
Modem	64	56.6	37	64.9	101	59.4
Digital Camera	8	7.1	4	7.0	12	7.1
Optical Scanner	19	16.8	7	12.3	16	9.4
GPS	1	0.9	1	1.8	2	1.2

Question 15: Do you think there is a need for a standardized motor vehicle accident data software package to be used by all traffic law enforcement and traffic safety agencies in Kansas?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Yes	66	58.4	34	59.6	100	58.8
No	13	11.5	6	10.5	19	11.2
Not Sure	33	29.2	16	28.1	49	28.8
No Response	1	0.9	1	1.8	2	1.2
Total	113	100.0	57	100.0	170	100.0

Question 16: What features would a standardized motor vehicle accident data software package need to have before your agency would consider adopting it? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Compatible w/existing	68	60.2	39	68.4	107	62.9
Ease of use	87	77.0	48	84.2	135	79.4
Training provided	71	62.8	39	68.4	110	64.7
Field data entry	58	51.3	34	59.6	92	54.1
Mapping	41	36.3	28	49.1	69	40.6
Electronic transmit	48	42.5	25	43.9	73	42.9
Inexpensive	84	74.3	47	82.5	131	77.1
Generate Reports	73	64.6	39	68.4	112	65.9
Enhanced Graphics	34	30.1	22	38.6	56	32.9
NA	19	16.8	5	8.8	24	14.1
Other	8	7.1	2	3.5	10	5.9

Question 17: What benefits would a standardized motor vehicle accident data software package need to have before your agency would consider adopting it? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Reduced Paperwork	71	62.8	41	71.9	112	65.9
Monetary savings	60	53.1	32	56.1	92	54.1
Improved accuracy	61	54.0	34	59.6	95	55.9
Increased speed	53	46.9	30	52.6	83	48.8
Uniformity	64	56.6	36	63.2	100	58.8
Time savings	60	53.1	37	64.9	97	57.1
Improved access	61	54.0	37	64.9	98	57.6
Data sharing	53	46.9	28	49.1	81	47.6
NA	11	9.7	4	7.0	15	8.8
Other	6	5.3	2	3.5	8	4.7

Question 18: What obstacles do you foresee in the implementation of a standardized motor vehicle accident data software package for Kansas? Check all that apply.

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Lack of tech. support	49	43.4	30	52.6	79	46.5
Software maint.	53	46.9	20	35.1	73	42.9
Costs	87	77.0	43	75.4	130	76.5
Lack of uniformity	38	33.6	12	21.1	50	29.4
Cost to convert existing data	53	46.9	20	35.1	73	42.9
Cost to convert historical data	53	46.9	32	56.1	85	50.0
None	4	3.5	4	7.0	8	4.7
Other	9	8.0	2	3.5	11	6.5

Question 19: Do you think there is a need to develop the capability for local law enforcement agencies to submit accident data to state agencies in a non-paper format (i.e., electronically)?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Yes	75	66.4	36	63.2	111	65.3
No	26	23.0	17	29.8	43	25.3
Not sure	5	4.4	--	--	5	2.9
No Response	7	6.2	4	7.0	11	6.5
Total	113	100.0	57	100.0	170	100.0

Question 20: Would your agency be willing to participate in a pilot project to evaluate the feasibility of electronic capture and submittal of motor vehicle accident data?

Response	City (n = 113)		County (n = 57)		Total	
	No.	%	No.	%	No.	%
Yes	57	50.4	24	42.1	81	47.7
No	48	42.5	28	49.1	76	44.7
Not sure	6	5.3	--	--	6	3.5
No Response	2	1.8	5	8.8	7	4.1
Total	113	100.0	57	100.0	170	100.0

COMPUTER INVENTORY

1. HARDWARE

Hardware	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Apple PC	2		1		1		0		3		1	
DEC	5		0		0		0		5		0	
HP	9		0		2		0		11		0	
IBM PC	77	68.1	10		37	64.9	6	10.5	114	67.1	16	
INTERGRAPH	0		0		0		0		0		0	
SUN	1		0		0		0		1		0	
UNIX	3		1		5		1		8		2	
VAX	2		0		0		0		2		0	
Laptop/Notebook	20	17.7	9		5		3		25	14.7	12	
None	15	13.3	1		3		0		18	10.6	1	
Other												
Hyundai	0		0		1		0		1		0	
Prime	2		0		1		0		3		0	
IBM	2		0		1		0		3		0	
IBM AS 400	0		0		2		0		2		0	
L.E.I.R.S.	0		0		1		0		1		0	
RS 6000	0		0		1		0		1		0	
Memorex	0		0		1		0		1		0	
Gateway 2000	2		0		1		0		3		0	
ACG	0		0		1		0		1		0	
Canon NX	2		0		0		0		2		0	
Ultra	1		0		0		0		1		0	
Magnabox	1		0		0		0		1		0	


Less than 10%

COMPUTER INVENTORY

2. OPERATING SYSTEM

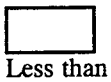
Operating System	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
HP/SUN	1		0		0		0		0		0	
HP/UNIX	2		0		2		1		4		1	
MS DOS	50	44.3	3		26	45.6	1		76	44.7	4	
MVS/TSO	0		0		1		0		1		0	
MVS/XA	0		0		0		0		0		0	
OS	0		0		0		0		0		0	
VM/CMS	0		0		1		0		1		0	
WINDOWS	60	53.1	7		35	61.4	2		95	55.9	9	
WINDOWS NT	8		0		4		1		12		1	
None	15	13.3	0		3		0		18	10.6	0	
Other												
Primos	2		0		1		0		3		0	
AIX	0		0		2		0		2		0	
LANTASTIC	0		0		1		0		1		0	
NOVELLE	1		0		1		1		2		1	
WIN 95	0		0		1		0		1		0	
OS 400	1		0		1		0		2		0	
RPG	2		0		0		0		2		0	
Mentor	1		0		0		0		1		0	

Less than 10%

COMPUTER INVENTORY

3. SPREADSHEETS

Spreadsheets	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ENABLE	1		0		1		0		2		0	
EXCEL	29	25.7	3		10	17.5	2		39	22.9	5	
LOTUS	15	13.3	1		8	14.0	0		23	13.5	1	
QUATTRO PRO	13	11.5	0		8	14.0	0		21	12.4	0	
None	36	31.9	3		14	24.6	0		50	29.4	3	
Other												
MS Works	5		0		2		1		7		1	
PRS 1st Choice	0		0		1		0		1		0	
ProPlan	0		0		1		0		1		0	
Claris Works	0		0		1		0		1		0	
Financial Connection	1		0		1		0		2		0	
20/20	1		0		0		0		1		0	
Q&A	1		0		0		0		1		0	
Smart II	1		0		0		0		1		0	
Wings	1		0		0		0		1		0	


Less than 10%

COMPUTER INVENTORY

4. WORD PROCESSING

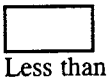
Word Processing	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ENABLE	0		0		1		0		1		0	
MS WORD	35	31.0	5		16	28.1	1		51	30.0	6	
Volkswriter	0		0		0		0		0		0	
WP DOS	22	19.5	2		11	19.3	0		33	19.4	2	
WP WIN	29	25.7	4		19	33.3	2		48	28.2	6	
None	21	18.6	0		3		0		24	14.1	0	
Other												
Q&A	1		0		2		0		3		0	
Word Connection	0		0		1		0		1		0	
MS Works	7		1		4		1		11		2	
1st Choice	2		1		1		0		3		1	
Smart	1		0		1		0		2		0	
WP AIX	0		0		1		0		1		0	
Claris Works	1		0		1		0		2		0	
PFS Prof. Write	0		0		1		0		1		0	
Office Vision	1		0		1		0		2		0	
Lyrix 5.0.4	1		0		0		0		1		0	
Display Write	1		0		0		0		1		0	
Quark XPass	1		0		0		0		1		0	
AMI Pro	2		1		0		0		2		1	

Less than 10%

COMPUTER INVENTORY

5. GRAPHICS SOFTWARE

Software	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
AutoCad	2		2		1		1		3		3	
Brandt Drafting	11	9.7	3		5		1		16		4	
Del Rina FormFlow	15	13.3	5		11	19.3	0		26	15.3	5	
Harvard Graphics	4		1		1		0		5		1	
LOTUS	9		1		3		0		12		1	
PowerPoint	13	11.5	1		4		0		17	10.0	1	
VISIO	4		1		1		0		5		1	
None	48	42.5	0		15	26.3	0		63	37.1	0	
Other												
Freelance	0		0		1		0		1		0	
Claris Works	0		0		1		0		1		0	
FloorPlan Plus	0		0		1		0		1		0	
Design Cad	1		0		0		0		1		0	
Easy Cad	1		0		0		0		1		0	
First Cad	1		0		0		0		1		0	
Presentations	2		1		0		0		2		1	
Corel Draw	1		0		0		0		1		0	
Home Plan	1		0		0		0		1		0	
30 Eyewitness	1		0		0		0		1		0	
Print Shop	1		0		0		0		1		0	


Less than 10%

COMPUTER INVENTORY

6. DATABASE SOFTWARE

Software	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Access	21	18.6	2		6	10.5	1		27	15.9	3	
adabas	0		0		0		0		0		0	
dBase	25	22.1	1		7	12.3	0		32	18.8	1	
ENABLE	1		0		1		0		2		0	
Paradox	7		1		4		0		11		1	
None	30	26.6	2		10	17.5	0		40	23.5	2	
Other												
CIS	0		0		1		0		1		0	
MS Works	2		0		3		0		5		0	
FOCUS	0		0		1		0		1		0	
Claris Works	0		0		1		0		1		0	
Q&A	1		0		4		0		5		0	
PI/Open	0		0		1		0		1		0	
CTREE	0		0		1		0		1		0	
OS 400	0		0		1		0		1		0	
ITI-CAD	0		0		1		0		1		0	
Prime Info	0		0		1		0		1		0	
Unidata	2		0		1		1		3		1	
Chiefs	0		0		1		0		1		0	
Data Flex	1		0		2		0		3		0	
MS Office	0		0		1		1		1		1	
Jail Mgmt.	0		0		1		0		1		0	
FoxPro	2		0		0		0		2		0	
Argus	2		0		0		0		2		0	
Rbase	2		0		0		0		2		0	
Smart II	2		0		0		0		2		0	
Approach	1		0		0		0		1		0	
SCT Police	1		0		0		0		1		0	
PC Zile	1		0		0		0		1		0	
DB 400	1		0		0		0		1		0	
Prism Records	1		0		0		0		1		0	
First Choice	2		0		0		0		2		0	
Oracle	1		0		0		0		1		0	

COMPUTER INVENTORY

7. MAPPING SOFTWARE

Software	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ARCINFO	2		0		3		0		5		0	
ArcView	6		1		1		2		7		3	
Atlas GIS	1		0		0		1		1		1	
DigiMap	0		0		0		0		0		0	
GDS	0		0		0		0		0		0	
GIS Plus	0		0		0		2		0		2	
MapInfo	1		1		0		2		1		3	
MapPub	0		0		0		1		0		1	
MGE	0		0		0		0		0		0	
MicroGIS	0		1		0		0		0		1	
Transcad	0		0		0		0		0		0	
None	74	65.5	2		38	66.7	0		112	65.9	2	
Other												
PC Exit	1		0		0		0		1		0	
AutoMap	0		0		1		0		1		0	
Unknown*	0		0		0		3		0		3	

* Specific package not known at this time.

Less than 10%

COMPUTER INVENTORY

8. LINKS TO OTHER SYSTEMS

Links	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Internet	17	15.0	14	12.4	7	12.3	5		24	14.1	19	11.2
INK	. 3		6		2		4		5		10	
None	60	53.1	0		18	31.6	0		78	45.9	0	
Other												
Astra Link	2		0		2		0		4		0	
NCIC	1		0		0		0		1		0	
KBI BBS	1		1		1		0		2		1	
Novel	1		0		1		0		2		0	
WAN	1		0		0		0		1		0	

Less than 10%

COMPUTER INVENTORY

9. ACCIDENT DATA ANALYSIS SOFTWARE

Software	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Access	1		4		0		0		1		4	
adabas	. 0		0		0		0		0		0	
dBase	1		0		0		0		1		0	
EBCDIC	0		0		0		0		0		0	
ENABLE	0		0		0		0		0		0	
Paradox	0		0		0		0		0		0	
SAS	0		0		0		0		0		0	
None	57	50.4	2		18	31.6	0		75	44.1	2	
Other												
Del Rina Forms	1		0		3		0		4		0	
Prime Info	0		0		1		0		1		0	
Unidata	0		0		0		1		0		1	
CIS	0		0		1		0		1		0	
MS Works	0		0		1		0		1		0	
FOCUS	0		0		1		0		1		0	
Brandt Drafting	5		0		1		0		6		0	
Smart II	1		0		0		0		1		0	
DB 400	1		0		0		0		1		0	
DataFlex	1		0		0		0		1		0	
Oracle	1		0		0		0		1		0	
HTE	1		0		0		0		1		0	
KARS	1		0		0		0		1		0	
New World	1		0		0		0		1		0	
Versadex	1		0		0		0		1		0	
SMFELP	1		0		0		0		1		0	
Info Select 3.0	1		1		0		0		1		1	
ALPHA 4	1		0		0		0		1		0	
Argus	1		0		0		0		1		0	
COPS	1		0		0		0		1		0	

COMPUTER INVENTORY

10. LINKS TO OTHER SYSTEMS CONCERNING ACCIDENT DATA

Links	City (n = 113)				County (n = 57)				Total			
	Now		2-3 Years		Now		2-3 Years		Now		2-3 Years	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Driver's Licensing	24	21.2	4		14	24.6	2		38	22.4	6	
Emer. Med. Serv.	3		1		1		0		4		1	
Insurance Co.	1		1		0		0		1		1	
Trauma Registries	1		1		0		0		1		1	
Veh. Reg.	23	20.4	4		15	26.3	2		38	22.4	6	
None	59	52.2	2		15	26.3	0		74	43.5	2	
Other												
JUCO GIS	1		0		0		0		1		0	
Kemo Alert	1		1		0		0		1		1	
NCIC	0		0		1		0		1		0	
911	0		0		1		0		1		0	


Less than 10%

POTENTIAL PILOT STUDY SITES

The following agencies responded "yes" to the question "Would your agency be willing to participate in a pilot project to evaluate the feasibility of electronic capture and submittal of motor vehicle accident data?"

Agency	No. of Employees	Computer Data Base	Years of Accident Data
Marshall Co. Sheriff Dept. (SD)	15	no	0
Reno Co. SD	63	yes	10
Miami Co. SD	35	no	0
Crawford Co. SD	55	no	5(?)
Ellsworth Co. SD	13	yes	1
McPherson Co. SD	31	no	0
Sedgwick Co. SD	361	yes	10
Scott Co. SD	16	no	0
Anderson Co. SD	13	no	0
Pottawatomie Co. SD	NR	yes	1
Osborne Co. SD	15	yes	3
Jefferson Co. SD	37	yes	3
Neosho Co. SD	18	no	0
Bourbon Co. SD	8	no	0
Linn Co. SD	15	no	0
Hodgeman Co. SD	9	no	0
Cowley Co. SD	29	no	0
Dickinson Co. SD	26	yes	9
Cloud Co. SD	11	no	0
Labette Co. SD	14	yes	10
Greenwood Co. SD	20	no	0
Riley Co. SD	89	yes	2
Barber Co. SD	10	no	0
Edwards Co. SD	9	no	0
Highland PD	2	no	0
Burlingame PD	NR	no	0
Coffeyville PD	35	no	1(?)
Lyndon PD	3	no	0
Independence PD	29	yes	11
Elwood PD	2	no	0

POTENTIAL PILOT STUDY SITES

Agency	No. of Employees	Computer Data Base	Years of Accident Data
Rose Hill PD	6	no	0
Burlington PD	9	yes	NR
Pleasanton PD	2	no	0
Herington PD	11	no	0
Girard PD	5	no	0
Augusta PD	21	no	0
Hoisington	13	no	0
Oberlin PD	4	no	0
Marion PD	3	no	0
Chase PD	1	no	0
Hiawatha PD	7	no	0
Salina PD	95	yes	10
Topeka PD	367	no	10(?)
Andover PD	14	yes	7
Overland Park PD	200	yes	2
Kiowa PD	1	no	0
Wichita PD	771	yes	2.5
Stafford PD	4	no	0
Newton PD	30	yes	NR
Merriam PD	28	yes	2
Enterprise PD	1	no	0
Iola PD	26	no	0
Gardner PD	16	yes	1
Hays PD	40	yes	2
El Dorado PD	29	yes	1
Lenexa PD	100	yes	NR
Baxter Springs PD	9	yes	1
Lawrence PD	113	no	0
Roeland Park PD	15	yes	1
Shawnee PD	66	no	0
McPherson PD	26	no	0
Junction City PD	72	yes	5
Kansas City PD	470	yes	10
Paola PD	18	no	0

POTENTIAL PILOT STUDY SITES

Agency	No. of Employees	Computer Data Base	Years of Accident Data
Bonner Springs PD	18	NR	11
Fort Scott PD	20	no	0
Leawood PD	77	yes	2
Stockton PD	5	no	0
Parsons PD	33	no	0
Clay Center PD	7	no	0
Hoxie PD	2	no	0
Mission PD	26	yes	4
Wakefield PD	1	yes	1
Sedgwick PD	3	no	0
Norton PD	5	no	0
Oxford PD	2	no	0
Hutchinson PD	64	yes	3
Ellis PD	4	no	0
Emporia PD	56	yes	1
Arkansas City PD	30	yes	5
Osage City PD	6	yes	1

SAMPLE QUESTIONNAIRE

STATE OF KANSAS

KANSAS DEPARTMENT OF TRANSPORTATION
Docking State Office Building
Topeka 66612-1568
(913) 296-3566
TTY (913) 296-3585
FAX (913) 296-1095

E. Dean Carlson
Secretary of Transportation

Bill Graves
Governor of Kansas

November 4, 1996

To Local Law Enforcement Agencies:

I request your assistance in completing the enclosed questionnaire. As I wrote to you in my letter of July 26, 1996, Kansas State University, through the Kansas Transportation Research and New Developments (K-TRAN) Program, is conducting a feasibility study for the Kansas Department of Transportation. The feasibility study will focus on the implementation of a statewide automated motor vehicle accident data capture and reporting system, emphasizing field reporting and data collection procedures.

The initial phase of the study consists of a survey of current practices in motor vehicle accident data collection and reporting in Kansas. The intent of the survey is to identify current and planned data capture, storage and reporting procedures, hardware, operating systems, potential barriers, associated costs and end users of the data. We realize that some agencies may wish to transition to electronic data capture and reporting very soon, while others may wish to stay with hard copy forms. We are willing to deal with both modes of operation. One of the objectives of this survey is to assess your preferences regarding these two modes of operation.

It would be greatly appreciated if you would assist us in this effort by completing and returning the attached questionnaire by November 22. A self addressed stamped envelope is enclosed for your convenience. If your prefer, you may fax the completed questionnaire to Robert Stokes at the number listed on the next page. Information you provide will be kept confidential. Only a summary of the results will be available for review.

Pages 1, 2 and 3 of the questionnaire contain questions directed at identifying current practices and procedures in collecting, analyzing, reporting and distributing motor vehicle accident data. The first three pages of the questionnaire also contain several questions intended to assess the perceived need for a standardized, statewide motor vehicle accident data software package. Pages 4 and 5 have been designed to compile an inventory of current and planned computer systems in the state's traffic law enforcement agencies.

More than one person in your agency may contribute to the completion of the questionnaire. For example, in larger agencies, the motor vehicle accident division manager is probably the most appropriate person to complete the first three pages of the questionnaire. This person may also contribute to completing the computer inventory on pages 4 and 5 of the questionnaire. The manager of your agency's computer services division and/or other persons with a working knowledge of your agency's computer hardware and software should be asked to complete pages 4 and 5 of the questionnaire. In smaller agencies, the person(s) responsible for the day-to-day operations of your motor vehicle accident division could probably complete the entire questionnaire.

Your time and effort in completing the questionnaire is greatly appreciated. If you have any questions concerning the questionnaire and/or the overall study, please do not hesitate to contact either of the individuals listed below.

Robert Stokes
K-State Project Manager
Phone: 913-532-1595
Fax: 913-532-7717

Rosalie Thornburgh, Chief
Bureau of Traffic Safety
KDOT Study Monitor
Kansas Department of Transportation
Phone: 913-296-3756

Sincerely,

E. Dean Carlson
Secretary of Transportation

MOTOR VEHICLE ACCIDENT DATA COLLECTION AND REPORTING SURVEY

Name of Respondent _____

Title of Respondent _____

Name of Agency _____

Address _____

_____

Phone ( ) _____

Fax ( ) _____

Agency Size (Number of full time employees) _____

Jurisdiction (City, County, etc.) _____

Number of Motor Vehicle Accidents Your Agency Reported to KDOT in 1995 _____

---

1. Does your agency have a unit dedicated to managing motor vehicle accident reports?

   _____ No _____ Yes. Approximately how many individuals are assigned to that unit? _____

2. What forms do you currently use to record motor vehicle accident data? CHECK ALL THAT APPLY.

   ____ KDOT Forms
   ____ KBI Form
   ____ KDOR DC-66
   ____ Other forms (please specify) _____

3. To what agencies do you submit motor vehicle accident reports? CHECK ALL THAT APPLY.

   ____ KDOT
   ____ KBI
   ____ KDOR
   ____ Other (please specify) _____

4. How many times does your agency review a motor vehicle accident report for accuracy and completeness before submitting it to the appropriate state agency(ies)?

   ____ 0
   ____ 1
   ____ 2
   ____ 3 or more

5. How do you reference the location of motor vehicle accidents? CHECK ALL THAT APPLY.

   ____ Milepost
   ____ Intersection
   ____ Latitude/longitude
   ____ Other (please specify) _____

6. Does your agency use or provide motor vehicle accident data for any of the following purposes? CHECK ALL THAT APPLY.

___ General statistical reports
___ Accident trend analysis
___ Decision mapping
___ Traffic studies
___ High accident location analysis
___ None of the above

7. Does your agency currently have a computerized motor vehicle accident data base?

___ Yes **(If YES, Please attach a copy of your motor vehicle accident data base record layout and SKIP TO QUESTION #11)**
___ No

8. If you currently do not have a computerized motor vehicle accident data base, would your agency be interested in converting to one?

___ Yes ___ No

9. What obstacles are-preventing your agency from implementing a computerized motor vehicle accident data base? CHECK ALL THAT APPLY.

___ No need for a computerized traffic accident data base
___ Shortage of staff to implement a computerized traffic accident data base
___ Hardware costs
___ Software costs
___ Lack of on-site expertise
___ Other (please specify) _____

10. If your agency currently does not have computers to handle motor vehicle accident data, do you plan to purchase computers for this purpose in the next 2-3 years?

___ Yes (specify anticipated year of purchase) _____
___ No

11. How many computers are used by your agency to handle motor vehicle accident data? (Enter "none" if no computers are used to handle motor vehicle accident data) _____

12. How many years of motor vehicle accident data are stored in your computer data base? (Enter "none" if no computers are used to handle motor vehicle accident data) _____

13. Do your traffic division police units carry on-board computers?

___ No ___ Yes. Are these used for recording vehicle accident data in the field? ___ No ___ Yes

14. Does your agency have or have access to the following equipment? CHECK ALL THAT APPLY.

___ Fax machine
___ Cellular phone
___ Computer modem
___ Digital camera
___ Optical scanner
___ Global positioning system (specify equipment brand name and reported accuracy) _____
_____

15. Do you think there is a need for a standardized motor vehicle accident data software package to be used by all traffic law enforcement and traffic safety agencies in Kansas?

___ Yes ___ No ___ Not Sure

16. What features would a standardized motor vehicle accident data software package need to have before your agency would consider adopting it? CHECK ALL THAT APPLY.

____ Compatibility with existing software/hardware
____ Ease of use
____ On-Site training provided
____ Field data entry/retrieval capabilities
____ Mapping capabilities
____ Other (specify) _____
____ Electronic data transmission capabilities
____ Software should be inexpensive
____ Report generating capabilities
____ Enhanced graphics
____ Not applicable (want to keep existing system)

17. What benefits would a standardized motor vehicle accident data software package need to have before your agency would consider adopting it? CHECK ALL THAT APPLY.

____ Reduced paperwork
____ Monetary savings
____ Improved accuracy of traffic accident data
____ Increased speed in data submittal/retrieval
____ Not applicable (want to keep existing system)
____ Other (please specify) _____
____ Uniformity in reporting formats
____ Time savings
____ Improved accessibility to accident data
____ Data sharing with other agencies

18. What obstacles do you foresee in the implementation of a standardized motor vehicle accident data software package for Kansas? CHECK ALL THAT APPLY.

____ Lack of technical support
____ Software maintenance
____ Costs (hardware and software)
____ Lack of uniformity in current reporting procedures and requirements
____ Time and cost to convert existing data entry software
____ Time and cost to convert historical data to new format
____ None
____ Other (please specify) _____

19. Do you think there is a need to develop the capability for local law enforcement agencies to submit accident data to state agencies in a non-paper format (i.e., electronically)?

____ Yes ____ No

20. Would your agency be willing to participate in a pilot project to evaluate the feasibility of electronic capture and submittal of motor vehicle accident data? [The anticipated duration of the pilot project is approximately 6 months (January - June 1997). Your commitment would consist of designating an individual in your agency who could familiarize the project team with your procedures for collecting and processing traffic accident data and assist in identifying the essential components of a computerized motor vehicle accident reporting system. Your agency may also be requested to provide a traffic accident database that could be used in the pilot study.]

____ Yes ____ No

COMMENTS (Please feel free to attach additional sheets)

_____

_____

_____

_____

_____

_____

_____

COMPUTER INVENTORY

Instructions: The following tables have been designed to compile an inventory of current and planned computer systems in the state's traffic law enforcement agencies. Note that the inventory addresses ALL COMPUTERS IN YOUR AGENCY - INCLUDING THOSE NOT CURRENTLY USED TO HANDLE TRAFFIC ACCIDENT DATA. For each of the categories (hardware, operating systems, etc.) in the following tables please indicate 1) the hardware, software, etc. currently in use by your agency, and 2) the hardware, software, etc. your agency plans to acquire in the next 2-3 years. CHECK ALL THAT APPLY (including "None").

*	HARDWARE	**
	APPLE PC	
	DEC	
	HP	
	IBM Compatible PC	
	INTERGRAPH	
	SUN	
	UNIX	
	VAX	
	Laptop/Notebooks	
	NONE	
	OTHER (list below)	

*	OPERATING SYSTEM	**
	HP/SUN	
	HP/UNIX	
	MS DOS	
	MVS/TSO	
	MVS/XA	
	OS	
	VM/CMS	
	WINDOWS	
	WINDOWS NT	
	NONE	
	OTHER (list below)	

*	SPREADSHEETS	**
	ENABLE	
	EXCEL	
	LOTUS	
	QUATTRO PRO	
	NONE	
	OTHER (list below)	

*	WORD PROCESSING	**
	ENABLE	
	MS WORD	
	Volkswriter	
	WordPerfect DOS	
	WordPerfect Win	
	NONE	
	OTHER (list below)	

*	GRAPHICS SOFTWARE	**
	AutoCad	
	Brandt Drafting	
	Del Rina FormFlow	
	Harvard Graphics	
	LOTUS	
	Powerpoint	
	VISIO	
	NONE	
	OTHER (list below)	

*	DATABASE SOFTWARE	**
	Access	
	adabas	
	dBase	
	ENABLE	
	Paradox	
	NONE	
	OTHER (list below)	

* Check here if presently used.

** Check here if there are plans to acquire/use in next 2-3 years.

*	MAPPING SOFTWARE	**
	ARCINFO	
	ArcView	
	Atlas GIS	
	DigiMap	
	GDS	
	GIS PLUS	
	MapInfo	
	MapPub	
	MGE	
	MicroGIS	
	TransCad	
	NONE	
	OTHER (list below)	

*	LINKS TO OTHER SYSTEMS	**
	Internet	
	Info Network of KS	
	NONE	
	OTHER (list below)	

*	ACCIDENT DATA BASE SOFTWARE	**
	Access	
	adabas	
	dBase	
	EBCDIC	
	ENABLE	
	Paradox	
	SAS	
	NONE	
	OTHER (list below)	

*	LINKS TO OTHER SYSTEMS CONCERNING ACCIDENT DATA	**
	Driver's Licensing	
	Emer. Med. Services	
	Insurance Companies	
	Trauma Registries	
	Vehicle Registration	
	NONE	
	OTHER (list below)	

PLEASE PROVIDE NAME, TITLE AND PHONE NUMBER FOR PERSON(S) COMPLETING THE "COMPUTER INVENTORY" PORTIONS OF THIS QUESTIONNAIRE.

Name(s) _____
Title(s) _____
Phone Number(s) _____

COMMENTS/SUGGESTIONS? _____

_____

_____

_____

Please return completed questionnaire to:

Robert W. Stokes
Dept. of Civil Engg.
Seaton Hall 119
Kansas State Univ.
Manhattan, KS 66506-2905

THANK YOU FOR YOUR ASSISTANCE.

* Check here if presently used.
** Check here if there are plans to acquire/use in next 2-3 years.