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SEND TO Company name NHTSA	From Tom Kowalick
Attention John Hinch	Date 12/14/98
Office location	Office location
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- Urgent
 Reply ASAP
 Please comment
 Please review
 For your information

Total pages, including cover: 3

COMMENTS

DEAR JOHN,

AS PER ASSIGNMENT FROM THE 10/2/98 EDR MEETING I PREPARED A POSITION PAPER ENTITLED "INFORMATION PRIVACY PRINCIPLES FOR EVENT DATA Recorder Technologies"

THIS PAPER WAS REVIEWED BY

- 1) JBYA PADMANABAN
- 2) GREG SHAW

GREG SHAW MADE EDITS. I ALSO SPOKE WITH JOHN CARNEY WHO WAS UNABLE TO GET INVOLVED DUE TO INTERNATIONAL TRAVEL.

P.S. I AM FORWARDING HARD COPIES TO YOUR MAILING ADDRESS.

Cheers, Tom Kowalick

Information Privacy Principles for Event Data Recorder (EDR's) Technologies

By Thomas Michael Kowalick
December 12, 1998

Information is defined as pre-crash, crash and post crash data elements derived **from** a vehicle **in** motion.

Privacy assures individual protection regarding **access to** and use of personal information in pre-crash, crash and post-crash scenarios derived **from** a vehicle in motion.

Event Data Recorders (EDR's) are defined as devices capable of gathering, **storing**, and displaying data elements **from** a vehicle in motion as per pre-crash, crash **and** post-crash.

Event Data Elements include but are not limited to active suspension measurements, advanced systems, air bag inflation time, air bag status, **airbag** on/off switch position, automatic collision notification, battery voltage, belt status of each passenger, brake status-service, brake status-ABS, collision avoidance, braking, steering, etc., crash pulse-longitudinal, crash pulse-lateral, CSS presence indicator, **Delta-V**-longitudinal, Delta-V-lateral, electronic compass heading,

engine throttle status, engine RPM, environment as ice, wet, temperature, lamination & other, **fuel** level, lamp status, **location** via **GPS** data, number of occupants, principle direction of force, **PRNDL** 'position, roll angle, seat position, stability control, steering wheel angle, steering wheel tilt position, steering wheel rate, time and date, traction control, traction coefficient **estimated from ABS computer**, transmission selection, turn **signal operation**, vehicle mileage, vehicle **speed**, **VIN**, wheel speeds, windshield wiper status, **yaw** rate, turn-key start time, vehicle **movement time**, **location at start**, **velocity at crash**, trip time at collision or crash, fire in cabin, smoke in cabin, blood in cabin, broken glass in cabin, water in cabin, audio-clip **at** air bag deployment, etc.

The objective of this paper is to propose fair information **principles** in recognition of protecting individual privacy while implementing Event Data Recorder (**EDR**) Technologies.

These principles are advisory, intended to educate **and** stimulate the **NHTSA EDR Working Group** in developing fair information and **privacy guidelines for future EDR technologies**. They **are not intended** to supersede existing statutes of regulations

Individual **motorists or others within** motor vehicles have an explicit right to privacy. Although this right to **privacy is not** explicitly granted in the Constitution, it has been recognized that individual privacy is a basic prerequisite for the functioning **of a democratic society**. Indeed an individual's **sense of freedom and identity depends a great deal on governmental respect for privacy**. Therefore all efforts

associated with introducing **future** EDR technologies must **recognize** and respect the individuals interests in privacy and information use.

Thus, it is imperative to respect the individual's expectation of privacy and the opportunity to express choice. This requires **disclosure** and the opportunity for individuals to express choice, especially in regards to after-market products. OEM EDR technology limits an individual's expression of **both** privacy and choice. After-market value added EDR products permit **free** market competition and sense of **ownership**. Several stand-alone **after** market technologies can easily be combined to produce an after-market EDR virtually independent of the vehicle architecture thereby readily **permitting a common** standard for retrofitting to a vehicle **fleet**.

Who owns the data?

Since individuals will operate and occupy vehicles equipped with **EDR's** that record data elements, subsequently it follows that information is created regarding both individuals and vehicles. Individuals should have the means of discovering how the data flows. A visible means of the type of data collected, how it is collected, what its uses are, and how it will be distributed is basic to consumer acceptance. Consumers should also have a choice in making this data available for post-crash analysis. Numerous studies **cite** the number **one** central concern of the public as understanding the reason they are being subjected to technology **up-front**, candidly and directly. Responsibility **for** disclosure should be high priority **and** may be achieved through numerous methodologies via

print-material **formats, etc.** Disclosure must be constant and consistent. Any data collected via EDR technologies should **comply with state and** federal laws governing privacy and information use. All data collected and stored should make use of data security technology and audit procedures appropriate to **the** sensitivity of the information. EDR technology data storage should include **protocols that call for** the purging of individual identifier information **respectful** of the individual's interest in privacy. Information collected should be **relevant** to the purpose and mission statement associated with the EDR disclosure statement. Consumers should have the reasonable assumption **that they will not be ambushed by information they are providing.** Information derived **from** EDR technologies absent personal identifiers may be **used** for other purposes clearly stated in the disclosure statement. Information including personal identifiers may be permissible if individuals receive effective disclosure and have a **friendly** means of opting out. Personal information should only be provided to organizations that agree to abide by the privacy principles stipulated in the disclosure statement. Should EDR technologies be maintained in a government database Federal and State Freedom of Information Act (FOIA) obligations require disclosure. **Such** databases should balance the individual's interest in privacy and the public's right to know.

Applicable Standards for Archived Data

Permanent or temporary storage of data should preclude the possibility of identifying or tracking either individual citizens or private firms and should follow the principles suggested to

the EDR Working Group. As recommended by the ITS Archived Data User Service addendum to the ITS Program Plan (dated 18 **September**, 1998) archived data should be standardized to at least a minimum level by following all existing data standards. When unprocessed **data (i.e. data** received directly **from** collection sources) are archived, **privacy** principles should be strictly followed. Identifiers of **individual** citizens or private firms should be stripped **from all data** before archiving **unless full** disclosure of the intended use is made and informed consent is obtained. Data standards include, but are not limited to:

- American National Standards Institute (ANSI) **16**
ANSI **20**
- Model Medical Services (EMS) Standards
- National Crime Information **Center** (NCIC) 2000
- National Incident-Based Reporting System (**NIBRS**) and
State Standards
- National Law Enforcement Telecommunications System
(**NLETS**)
- Highway Performance Monitoring System (**HPMS**)
Traffic Monitoring Guide (TMG)
- American Association of State Highway and Transportation
Officials' (AASHTO) Guide for Traffic Data Programs
- Institute** of Electrical and Electronics Engineers (IEEE)
Standard for Data Dictionaries for ITS (**P1489**)
- Institute of Transportation Engineers **Traffic** Management Data
Dictionary
- National Transportation Communications for ITS Protocol
(**NTCIP**)
- Transit Communications for ITS Protocol (TCIP)

Applicable electronic data interchange standards (e.g. ANSI's
ASCX.

In summary, the principles cited above are privacy, integrity of the data, quality of the data, minimization of data storage and usage, accountability, **visibility to the consumer**, anonymity of personal indicators, data design incorporating **encryption** security and overall consumer acceptance of new technology. These **principles** are common throughout the transportation industry and not necessarily new or novel to the technology being evaluated by the NTHSA EDR Working Group.

For additional data see:

Background Information about Crash Data
(<http://www.nhtsa.gov/people/ncsa/codes/Mindata/Background.html>)

For additional studies see the following at
(<http://www.wss.princeton.edu/~ota/disk1>)

Automobile Collision Data: An Assessment of Needs and Methods of Acquisition, **Office** of Technology Assessment, 1975.

Electronic Record Systems and Individual Privacy, **Office** of Technology Assessment, 1986.

Electronic Surveillance in a Digital Age, **Office** of Technology Assessment, I 995.

Wireless Technologies and the National Information Infrastructure, Office of Technology Assessment, 1995.

Advanced Automotive Technology, Office of Technology Assessment, 1995.

GM Response

Summary data

- ⇒ Does not include VIN, accident names, location, or other data to tie data to a specific accident
- ⇒ Data made available to organizations with a reasonable need for it (e.g., use it for studies aimed at improving safety of the public at large, auto industry, GM. In response GM requires requesting group to provide:
 - 0 copy of analysis done which includes the data
 - 0 that the data is proprietary and not to be disseminated to 3rd parties
 - 0 recognition of GM's contribution in any published report
- ⇒ To merge this data with other recognized databases (FARS, NASS) some additional accident data may be required. IF GM does cooperate with these requests, arrangements must be confirmed in writing.

Accident-specific data

Considered GM confidential and not distributed outside GM except where good reason is shown. Examples

- ⇒ Request of state/federal authorities with accident investigation responsibilities. Requests must be made in writing, on official stationery describing the official nature of the request
- ⇒ Request by vehicle owner. All inquiries may be not satisfied due to time and effort to reasonably respond and must show a demonstrated need for such data.
- ⇒ Request by owner's insurance company, the media, or other interested parties will be denied unless approved by the vehicle owner.
- ⇒ GM's response should generally be sent in writing accompanied by a letter on official stationery which contains the VIN.

GM Response

Further Privacy Considerations

- The data recorded such as seat belt use information is no different than the “monitoring” function already routinely performed from the car such as stretch in the seat belt webbing. The belt status recorded makes this information more readily available and easily retrievable. This also applies to brake status (tire tracks on road), vehicle speed (estimated by witnesses and accident reconstructionists), and other parameters.
- The recording of this data is not unlike other monitoring done today such as:
 - ⇒ ATMs now routinely photograph all transactions.
 - ⇒ Cameras used in retail stores located in the store’s ceiling.
 - ⇒ Exit detectors routinely located in, for example, book stores and libraries.
 - ⇒ Providing a driver’s license when cashing checks or showing a credit card when checking into hotels.

The public accepts these forms of oversight without concern because the public understands their value.

- Most automobile trips are uneventful, and most ATM transactions are accurate. Yet the photographic records gain information in the rare event of a problem. The public readily accepts this.
- Vehicle owners must understand the “monitoring” function and benefits it offers via open communications through owner’s manuals and other media.
- Recording this data will be accepted when the “monitored” data is used to improve the product or improve the general cause of public safety.

EDR Validation

February 17, 1999



People Saving People
[Http://www.nhtsa.dot.gov](http://www.nhtsa.dot.gov)

John Hinch
Research & Development
National Highway Traffic Safety Administration

Method

- **Selected GM vehicles tested in NHTSA test programs**
- **Sent EDR's to GM for downloading**
- **Using NHTSA crash files, obtained crash longitudinal acceleration**
- **Compared results**

Selected Vehicles



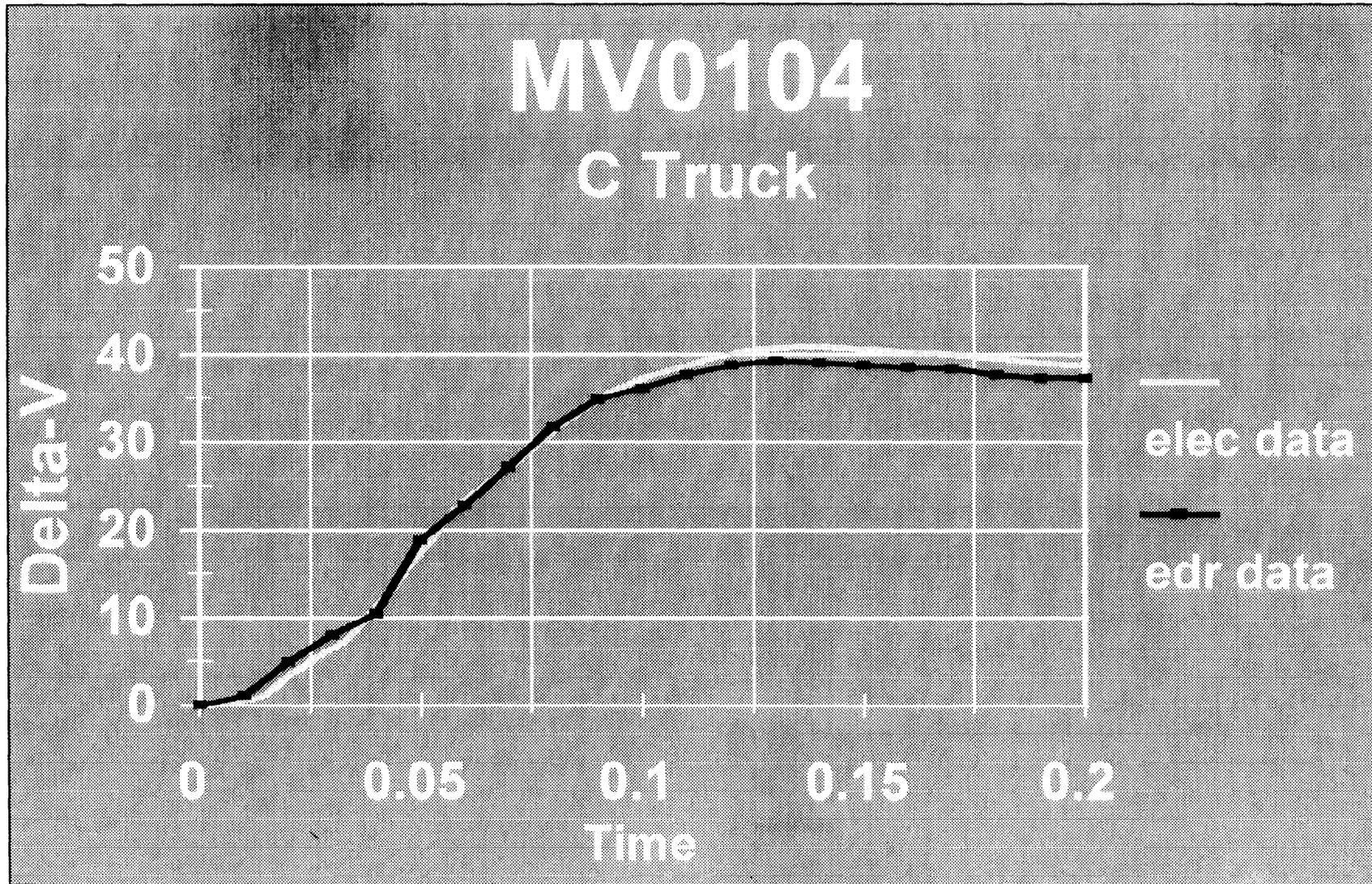
-     **model year**
- **21 vehicles**
 - **15 cars**
 - **2 vans**
 - **2 suvs**
 - **2 pickups**

Test Types



- **3 - 208 Sled tests**
- **13 - Frontal NCAP tests**
- **5 - Side NCAP tests**

Typical Comparison



Completed to Date



- **Most of the tests have been reviewed**
- **Generally, the EDR data appears to be slightly lower than the electronic data (needs final verification)**
- **Some vehicles have incomplete or missing data**

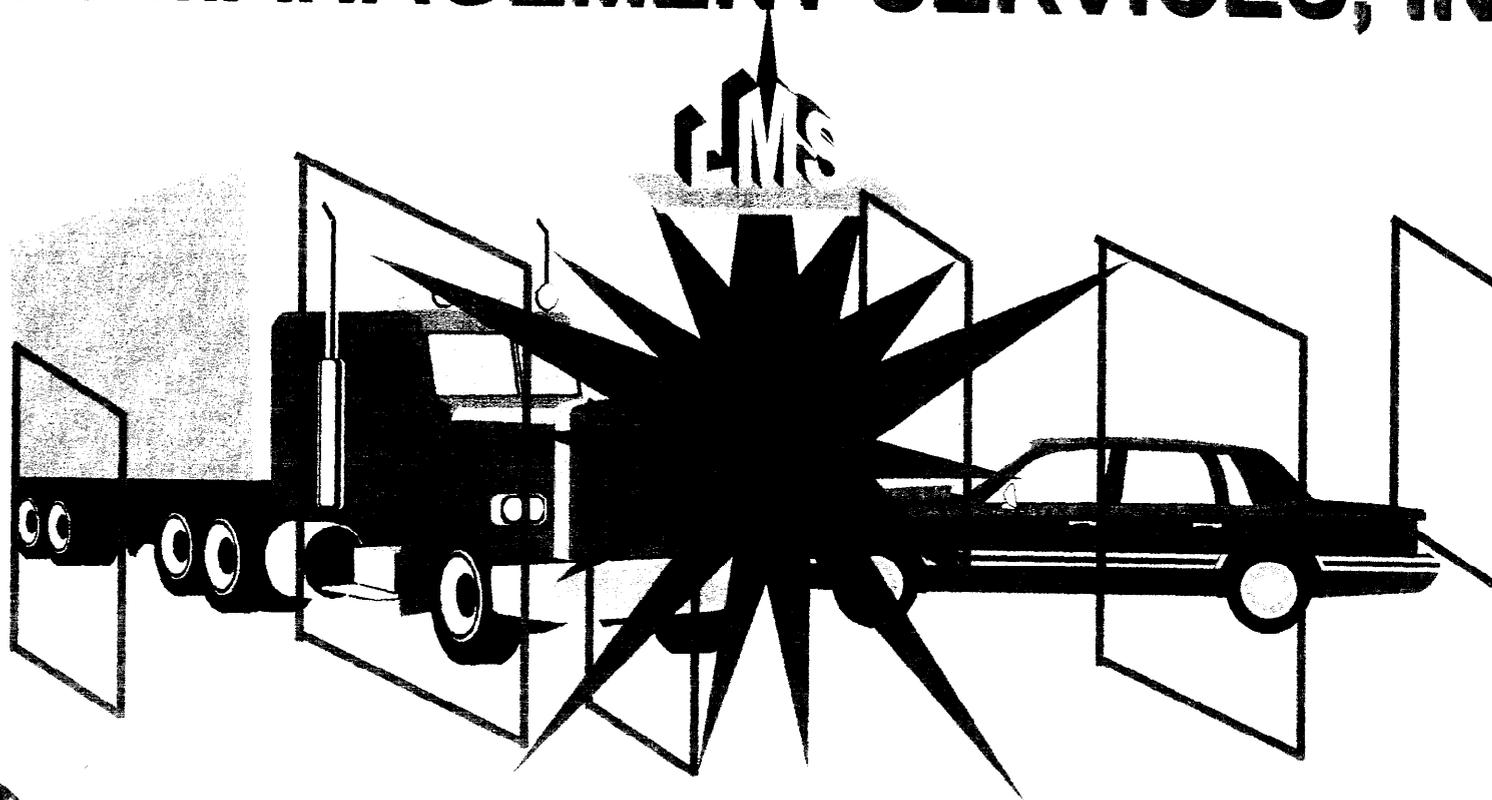
Analysis to be Completed



- **Complete comparisons**
 - **Determine EDR validation metric**
 - **Document in report for the NTSB Data Recorder Symposium in May 1999**
 - **Present at next EDR WG meeting**
-

The Future is Now...

LOSS MANAGEMENT SERVICES, INC.



Loss Management Services, Inc.
36 Surf Road, Lindenhurst, New York 11757

Introduction

- **For over three years, LMS has been involved in field investigation, adjusting and managing transportation insurance claims.**
- **LMS is dedicated in developing cost effective ways to service the insurance claims industry's investigation and litigation procedures through 21st century technology.**
- **By combining high-tech sensors and digital imaging, LMS could solve the most vexing question today involving automobile accidents....**

Who is at fault?



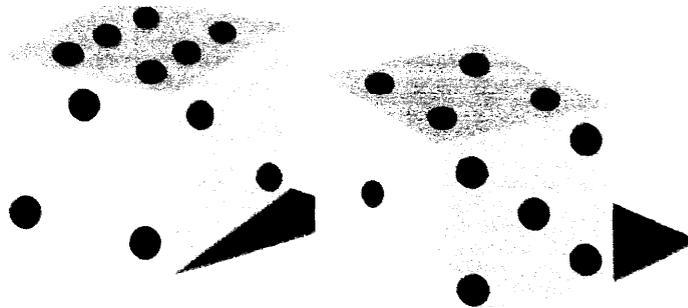
Management Services, Inc.

36 Surf Road, Lindenhurst, New York 11757

Introduction

Costs involved in discovering what happens before an accident involving bodily injury usually involve very extensive and expensive research. And, if there is no guarantee of who will be found at fault!!

Sometimes, it a roll of the dice!

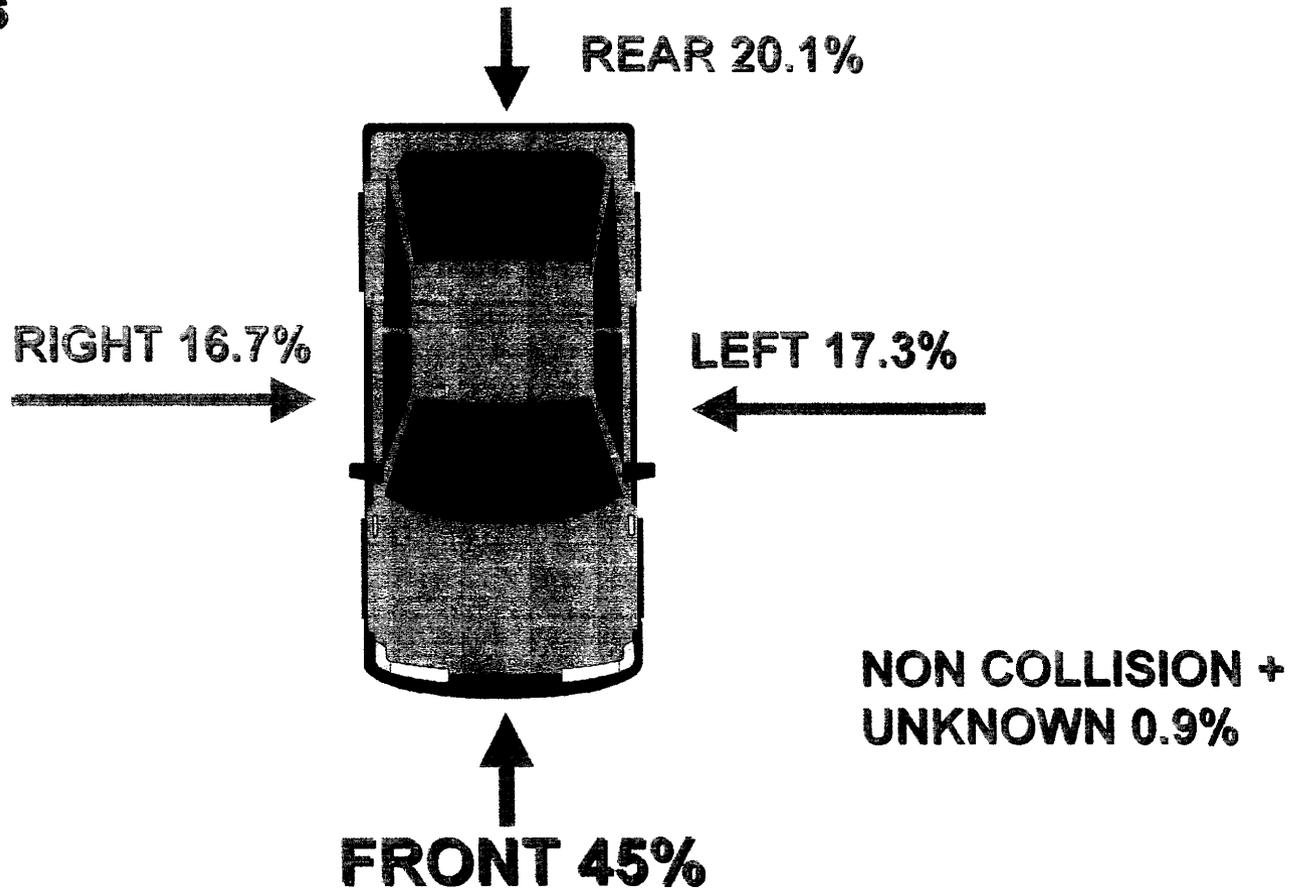


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Accident Statistics

Collision point of contact percentages



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Statistics

Total Economic loss associated with automobile accidents in the U.S. ...

\$153.2 Billion

Source: NHTSA Survey 1996

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Statistics

60% Allocated Claim Payments Total

\$91,980 Billion

12% Legal Expenses

\$18,040 Billion

Actual settlement pay-out for claimant not included



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Solution

The Mobile Accident Camera, “MACbox™” will:

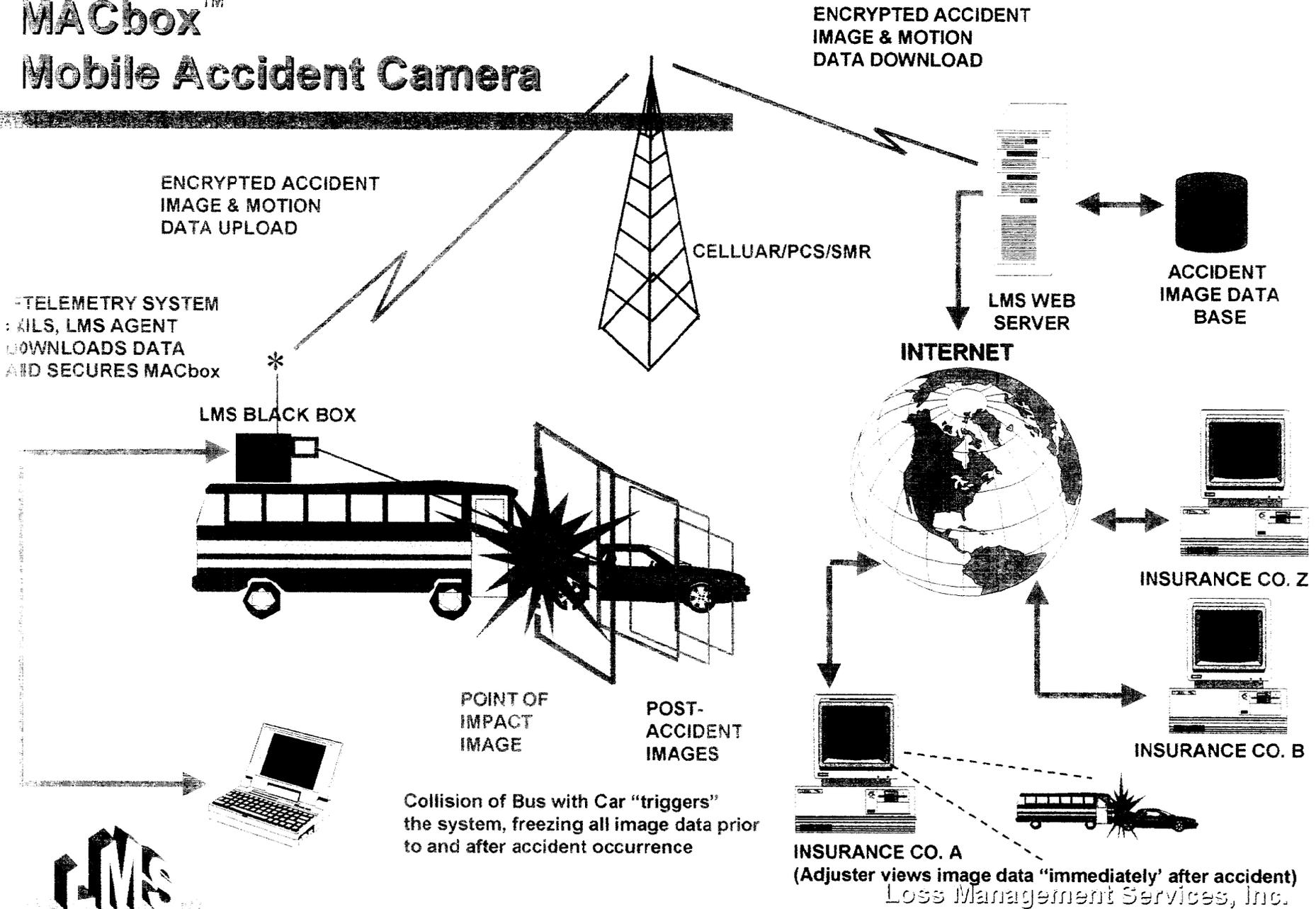
- **Secure a “driver’s eye view” of valuable digital imagery.**
- **Provide a repository of information for customers, insurance carriers, government agencies, and auto manufactures**
- **Provide telemetry data.**
- **Better control and manage claim expenses and pay outs.**



Loss Management Services, Inc.

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MACbox™ Mobile Accident Camera



TELEMETRY SYSTEM
: KILLS, LMS AGENT
DOWNLOADS DATA
AND SECURES MACbox

ENCRYPTED ACCIDENT
IMAGE & MOTION
DATA UPLOAD

ENCRYPTED ACCIDENT
IMAGE & MOTION
DATA DOWNLOAD

CELLUAR/PCS/SMR

LMS WEB
SERVER

ACCIDENT
IMAGE DATA
BASE

INTERNET

LMS BLACK BOX

POINT OF
IMPACT
IMAGE

POST-
ACCIDENT
IMAGES

INSURANCE CO. Z

INSURANCE CO. B

INSURANCE CO. A

(Adjuster views image data "immediately" after accident)

Loss Management Services, Inc.

Collision of Bus with Car "triggers"
the system, freezing all image data prior
to and after accident occurrence



Benefits

- **Accurate Assessment of Liability**
- **Reduce the Cost of Litigation**
- **Reduce the Need for Expert Witnesses**
- **Reduce Costs Associated with Claims Investigations**
- **Assist with Accurate Claim Reserving**
- **Deter "ROAD RAGE"**
- **"G-Force" Comparison to the Extent of the Injury**



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Applications

■ **Municipal Transportation Environment (Buses -
Emergency Vehicles)**

■ **Long Haul / Short Haul Trucking**

■ **Taxi / Livery Services**

■ **Commercial Passenger Transportation Fleets**



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National Interest

- **National Highway Transportation Safety Administration (NHTSA) is seeking a crash recording device for possible regulation within the transportation industry.**

- **The National Transportation Safety Board (NTSB) has made a similar plea and are pushing for immediate consideration for a “Black Box” in the busing environment.**



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Business Partners

Phoenix Group Inc. (PGI), Hauppauge, NY, is a designer and manufacturer of ADVANCED RUGGED MOBILE COMPUTERS for industrial and government field applications.

PGI has designed a roster of impressive portables that feature innovative use of today's technology components. PGI products are presently used by industrial and military customers.

Instrumented Sensor Technology (IST), a world leader in portable PC-programmable, high speed data recorders, supplies recording systems and data analysis software for numerous applications including transportation monitoring, flight testing, crash recording, industrial package testing and accident reconstruction.



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Business Affiliates

By having the PGI and IST manufacturing partnerships, LMS possesses the development and manufacturing capability that can deliver a system that addresses the needs of the insurance related risks.



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Future Applications

- **“Trucker’s Log” Book**
- **Impact Generated “911” Signal**
- **Digital Monitoring of Retail Stores, Commercial Buildings and Homes (Security)**
- **Not Unlike the Air Bag and Seat Belt, if Regulated, the MACbox™ can be Utilized in Private Passenger Vehicles**
- **Trains and Airplane MACboxes™**
- **Elevators**



Loss Management Services, Inc.

36 Surf Road, Lindenhurst, New York 11757

EDR MEETING # 2; February 17, 1999; Washington DC

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HDS " " "

PHOENIX GROUP

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February 2, 1999**

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