UMTRI

# Research Review

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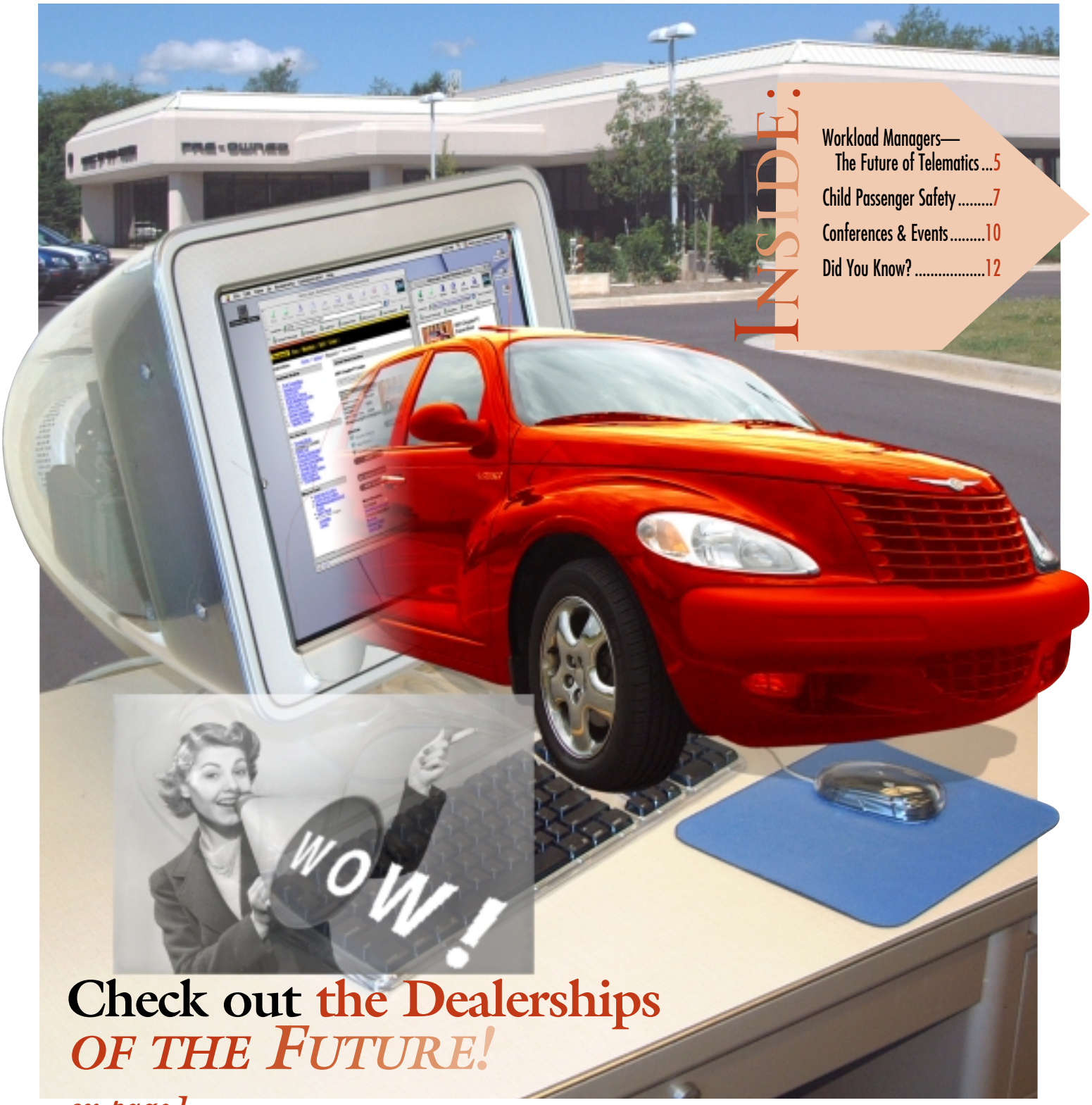


## Inside:



## Check out the Dealerships *of the Future!*

*on page 1*

UMTRI
# RESEARCH REVIEW

• UNIVERSITY OF MICHIGAN TRANSPORTATION RESEARCH INSTITUTE • APRIL–JUNE 2001 • VOLUME 32, NUMBER 2 •

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# UMTRI News Briefs

In addition to the feature articles inside, here are staff news highlights.

## *Kathleen Weber Retires*

**Kathleen Weber**, founder of the Child Passenger Protection Research Program, retired from the University this summer after over thirty years of service. She will continue to be active in the field, serving on panels and editorial boards, and offering advice to industry, research, and advocacy groups. UMTRI senior research associate **Miriam Manary** will be taking over many of Weber's roles. [For a related story, see the article on page 7.]

## *UMTRI 2001 Best Publication Awards*

This summer, several UMTRI researchers were honored for their work. The Best Paper citation went to coauthors from UMTRI's Engineering Research Division: **Bob Ervin**, department head; **Scott Bogard**, senior engineer in research; and **Paul Fancher**, senior research scientist emeritus for their report "Considering Radar Detection of Vehicles in a String for Gaining Situation Awareness of a Propagating Conflict."

**In addition, Research Incentive Awards were presented to:**

• **Pat Hammet**, assistant research scientist; **Shannon M. Wahl**, student research assistant; and **Jay S. Baron**, manager of manufacturing systems, all from UMTRI's Office for the Study of Automotive Transportation, for "Using Flexible Criteria to Improve Manufacturing Validation During Product Development"

• **Lidia Kostyniuk**, associate research scientist; **Jean Shope**, department head; and **Lisa Molnar**, senior research associate, all of UMTRI's Social and Behavioral Analysis Division, for "Driving Reduction/Cessation Among Older Drivers: Toward a Behavioral Framework"

• **Mark Spicknall**, assistant research scientist in UMTRI's Marine Systems Division; Matt Williamson of Project Solutions; and Richard Storch of the University of Washington's Industrial Engineering Program for "Technology Value Analysis"

**You can access these papers online at http://www.umtri.umich.edu/library/reports.html.** RR

PHOTOS THROUGHOUT FEATURE ARTICLE: UMTRI / SHEKINAH ERRINGTON

# E-Commerce and the Dealership of the Future

## *Better Customer Communication Through Technology*

Dealerships around the country are taking advantage of e-commerce tools such as the Internet and information technology (IT) to help build and improve their customer communications and to integrate various standalone systems within their dealerships. (E-commerce is a catch-all phrase meaning to conduct business communications and transactions by using computers and both Internet and IT software tools.)

Automotive dealerships are in the process of deciding how to invest in e-commerce tools to better run their businesses and improve their bottom line. Bruce Belzowski, a senior research associate at UMTRI, says, "Although dealers face specialized issues, like franchise regulations, when it comes to applying e-commerce solutions to their means of doing business, they are very similar to other businesses. Dealers make these decisions based on issues such as cost, skill level, knowledge, and return on investment. Other decision factors include evaluating existing applications, integrating them with the Internet, and connecting dealerships to the manufacturers' information systems."

In a project funded by Hewlett-Packard and Oracle, Belzowski and his colleagues—Michael Flynn, research scientist, Kara Alkire, social science research associate, and Gina Kang, research assistant of UMTRI, as well as Neal Elgersma and Mark Rahrig of Hewlett-Packard and Paul Hebeler and Jay Houghton of Oracle—selected and interviewed representatives from twenty-six leading dealers, representing five urban U.S. regions (Los Angeles, San Francisco, Florida, New York/New Jersey, and Detroit/Chicago). All dealerships selected are technically sophisticated with a fairly high comfort level in technology, have money to spend on resources, and have taken the lead in using the Internet to communicate with current and potential customers.

Belzowski explains, "Our study focused on where dealerships want to go from here, how they'd like to use e-commerce, and how they envision the dealership of the future."

### *From Tried and True to Something New*

Although many of the decision factors involved in applying e-commerce solutions to improve business are universal, dealers do face a unique circumstance in that they have traditionally relied on proprietary dealership systems, available from only two vendors. These closed systems do not easily integrate with other software products or with Web technology. Despite dealers' large financial investment in these systems, they generally only use a fraction of their

*continued...*

capability—basically as a storehouse for key information. Yet dealers were happy with this level of functionality, as they, by and large, were not aware of the software's full potential.

One survey respondent explains how technology has been used in dealerships, "Other industries pave the way for dealerships—other industries are eighteen months ahead of us, continuously, and we will come in when the technology is proven. We wait as other industries progress. The Internet is seven years old. Data mining is twenty-five years old. Business-to-business commerce allows everyone to be more efficient. But it's all new to us."

In the last few years, however, more options have become available and dealers are now bombarded with software choices—including competing products as well as tools made available through the Internet—and with thinking about different ways in which to run their dealerships. On average, over the last three years, these dealerships have a median investment of about $200,000 in Internet systems and a median investment of about $800,000 in IT systems.

Software providers are also beginning to create open architecture systems that more easily integrate with other software systems, and customer relationship management (CRM) tools that will integrate easily with dealer management systems.

## The Dealership of the Future

**Belzowski summarizes what the respondents envision for the future of their dealerships:**

- Free flow of information throughout the dealership—sales, management, and service—and between stores
- Free flow of information from manufacturers to dealers
- Coordinated communication from manufacturers and dealers to consumers (on recalls, rebates, incentive programs, etc.)
- Internet connectivity to current/potential customers (e.g., quick responses on vehicle availability, pricing, incentives, and loans; and online services such as scheduling service appointments, checking on repair progress, paying for service, getting service reminders, etc.)
- Increased speed and efficiency in accessing and utilizing information throughout the dealership
- Integration of various internal business systems
- Improved sales process and lower cost per sale

## *Caution:*
## *New Challenges Ahead*

The study found that the two biggest challenges facing automotive retailers over the next five years are adapting the Internet into their business and adapting to a changing customer and sales process. Additional challenges include competition from dot coms and third party sales, IT integration within the dealership, and possible OEM attempts to sell directly to customers.

The Internet is a consumer communication channel, providing the ability to research, transact, and schedule with as little or as much human contact as the customer chooses. There has been a major change in the way automotive business is conducted since customers began accessing information online. How auto retailers deal with informed consumers, and how much customer information they can gather, will also greatly determine their success. Dealers who embrace these changes proactively, and incorporate them into their own businesses, will gain market share.

The main way in which dealers think that the Internet will help them respond to these challenges is by allowing them to provide new services for customers, and by helping them to streamline target marketing and CRM activities. They also plan to use IT solutions to better distribute information inside the dealership; integrate, upgrade, or phase out their legacy programs; and export data from their proprietary dealer information systems.

Dealers feel that the Internet will help them develop relationships with customers and deliver less expensive training to dealership employees. On the other hand, dealers cite the disadvantages of adopting new technology as lower profit on sales, growing pains in using the new tools, and the

possibility of consumers gathering inaccurate information from various online sources. One dealer puts it succinctly, "The business has fundamentally changed. The main profit center has changed from new sales to used sales and fixed operations (service, etc.). The Internet has changed the industry. It has opened it up through spreading information to customers so dealers can't profit from selling new cars. We must make the deal advantageous to the customer so we have to settle on a low price. But we still have to make money for the dealership. Then the dealer needs to finance the deal so we can have the possibility of the up-sale and after-sale benefits. The IT piece fits in here through data mining and personal pages (personal/customer websites). If the dealer can't make a net profit from the sale, we must rely on a profitable relationship compared to the one-shot model of ten years ago. The profit up-front may be smaller, but the channel of contact and relationship can still be profitable through data mining and email using demographics and psychographics."


In general, dealers feel the pros outweigh the cons, even as they sail on uncharted waters. Belzowski says, "It's a big experiment—an evolutionary change from how dealers and manufacturers have traditionally done business."

## *E-Commerce to the Rescue*

Dealers find the main advantages of e-commerce solutions are cost effectiveness, increased business opportunities, and better communication with customers. The main goals dealerships would like to meet with their e-commerce systems include integration of different systems, specific task capabilities (e.g., viewing customer history, handling excess inventory, running financial analyses, and tracking parts), easier customer communication, and faster, more stable systems.

In two years, dealers expect to see e-commerce tools improving their after sales process, new vehicle sales process, and internal dealership processes (such as overall productivity in running the business). Yet they also see competition from third-party Internet providers, and an erosion of trust in the dealer because of conflicting vehicle prices between the dealer and the Internet, as future disadvantages.

Dealers cite their electronic link to customers as their current weakest link, but understand the potential for building relationships with customers and delivering services to them online. Advantages of a closer customer linkages include creation of an electronic communications channel (for convenient access to automotive, scheduling, and contact information), plus cost and time savings.

Dealers rate sharing information within and among stores (many dealers have multiple stores and franchises) and with OEMs as the major advantage to being more closely linked electronically. Closer links within the dealership or between stores would allow better information sharing among departments or stores, as well as increased efficiency. Closer links to OEMs would provide better access to information, better communication and connectivity to the OEM, and overall increased efficiency. The advantages of closer links to ancillary services, such as insurance companies and banks, include time savings, a less complicated financing process, and overall cost reductions.

Dealers also plan to use information technology in target marketing and CRM activities, as well as for distributing information inside the dealership. Advances in e-commerce technology will have advantages for both the dealership and the consumer:

- Dealership Advantages—It will be easier to locate vehicles on-site or at another dealer's lot, as well as provide better communication with and among related dealers. It will also give dealers transparency of information across all their departments and dealerships, which should allow them to make better decisions on vehicle orders and marketing plans.
- Consumer Advantages—CRM software will electronically keep track of individuals, and allow them to perform tasks online such as scheduling a service appointment, checking the status of and paying for repairs, arranging to talk with a sales rep, getting price quotes, and configuring the vehicle of their choice.

## *The Bottom Line: Better Customer Communication*

The aspect of e-commerce that will have the most impact on dealers' businesses over the next two years is the enhanced ability to gather customer information and use it to provide better customer service. Dealers are excited about the opportunity to know their customers better, create meaningful target markets, and develop one-on-one communications.

As an example of better customer targeting and communication, a respondent explains, "We can use IT and data mining to see each client as

an individual based on their characteristics. This helps you identify purchase characteristics and market to their specific needs. For example, you would know when their kids are at the point of needing transportation. Based on a four-year buying cycle, you would know when people are getting ready to repurchase and you could initiate a four-to-five month marketing strategy before that time. You would understand their four-to-five year cycle of needs. You could amplify existing OEM marketing strategies or programs and optimize the benefits for people."

Dealers also see the Internet as a way to provide new services to, and build relationships with, customers. For example, customers could view new and used vehicle inventory, check on repair status, purchase vehicles, pay for services, view dealer and vehicle costs, and buy parts and insurance—all online. Based on service or sales activity, dealers could create promotions that are well aimed and quick to market.

Accordingly, dealers see the Internet as providing them a better way to use customer data. One dealer envisioned these benefits, "We could know more about customers' habits and have automated systems to prompt us about the customer's information—like when you call for pizza and they have a record of your last order and your topping preferences. We could track service records and remind customers to schedule an appointment, knowing ahead of time what time of day they prefer and whether they want to wait for the service or drop off the vehicle."

Dealers are quite enthusiastic about the advantages that e-commerce tools can provide their businesses, while realistic about the process of implementing these tools. How much these changes will affect dealers and buyers will be played out in dealerships throughout the country over the next few years. RR

# Workload Managers—*The Future of Telematics*

Cars equipped with cellular phones, navigation systems, video players, and Internet access offer drivers more information than ever before, making driving more convenient and automobiles more functional—and fun. But such systems can also distract drivers enough to be hazardous. Setting safety standards and regulations is one way of protecting motorists, but there may be a better solution, says Paul Green, a senior research scientist who also heads the UMTRI Driver Interface Group.

Green, who regularly speaks at conferences, is championing the development of "workload managers"—computer systems that assess driving demands and driver capabilities on a moment-by-moment basis and adjust the flow of information to the driver accordingly. For example, during complex maneuvers such as merging onto a highway, drivers would be presented with very little data. But during "down time" like waiting at a traffic light or railway crossing, they could be given extra information.

Drivers are accustomed to operating some devices while driving—headlights and windshield wipers, for example. But the products known as telematics—navigation, entertainment, communications, safety, security, and other computer- and communication-based systems and services—can be much more distracting for drivers to use, says Green.

Much of the evidence comes from Japan, where police have kept track of accidents caused by the use of navigation systems or cellular phones. Since the end of 1999, when Japan banned the use of handheld phones while driving, cell phone-related crashes have plummeted by 75 percent. It is unclear how much of the decline reflects an actual reduction in crash rate and how much is due to underreporting of phone-related crashes (since the use of phones while driving is now illegal). But police reports of accidents prior to the ban clearly indicate that cell phone use played a significant role in causing crashes.

Using a hands-free phone doesn't necessarily reduce risk, Green adds. "Requiring the use of hands-free phones may reduce the risk associated with retrieving and holding the phone, but the main problem is that the act of answering the phone can happen at an

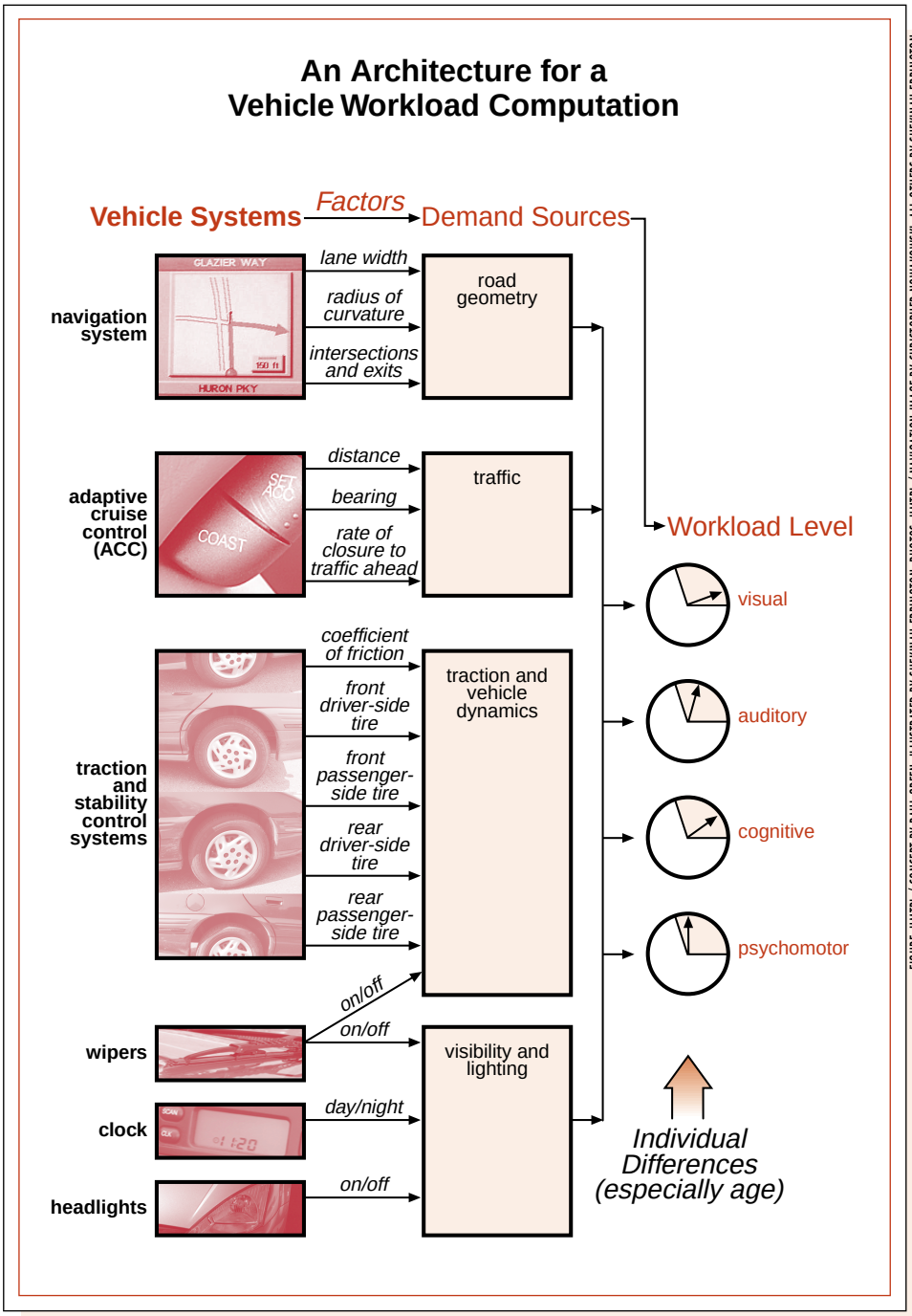



FIGURE: UMTRI / CONCEPT BY PAUL GREEN, ILLUSTRATED BY SHEKINAH ERRINGTON. PHOTOS: UMTRI / NAVIGATION IMAGE BY CHRISTOPHER NOWAKOWSKI, ALL OTHERS BY SHEKINAH ERRINGTON

**Workload managers assess information from vehicle systems and demand sources to decide the workload level—and what information to display when.**

inopportune time—in heavy traffic, for example," he says. What's more, talking on the phone isn't the same as talking to a passenger while driving. Passengers usually keep an eye on the road, often pointing out traffic problems before the driver notices them. In a phone conversation, the person on the other end of the line chatters away, oblivious to what's happening on the road. Hands-on or hands-off, the risk of a crash is about four times greater when a driver is talking on the phone than when the phone is not in use, one study showed.

Experiments also have shown that the greater a driver's workload (a measure that takes into account everything a driver needs to look at, listen to, think about, and remember and how immediate the demands are), the greater the potential for telematics to interfere with driving. But while a number of organizations and agencies are hashing out safety standards for more concrete and measurable factors such as fuel efficiency or airbags, it is difficult to make standards flexible enough to factor in workload.

That's where workload managers could shine, says Green. "For example, incoming cell phone calls might be automatically routed to an answering machine in heavy traffic, but permitted to go through on a straight road with no traffic." The concept may sound futuristic, but most of the sensors and other equipment needed to inform a workload manager are already available, or soon will be, in luxury vehicles. Navigation systems know where the vehicle is and can compute the demands of driving related to twists and turns in the road. Adaptive cruise control can sense nearby vehicles and provide information on traffic. Input from the clock and headlight and wiper switches gives hints about visibility. The traction control system provides data on the condition of the road surface, and the speedometer knows how fast the vehicle is moving. And it's not just the vehicle that can be monitored—steering wheel and throttle sensors, along with a "driver personality module" in the ignition key, can offer information about the driver's age and driving habits.

**Stop by**
**http://www.umich.edu/~driving**
**for information on the**
**UMTRI Driver Interface Group.**

All that's lacking are the instructions telling the workload manager how to put all the information together and how to react in various situations. And that, Green says, is a void that will not be filled quickly or easily. "Many years of research will need to be completed before such software could be developed, and unfortunately the research needed for that purpose is not being conducted," he says. "There are no signs that the funding necessary—an order of magnitude increase over current funding—will become available, and this should be a significant concern to organizations that see a future in telematics." RR

# Child Passenger Safety

## *UMTRI Researcher Involved with Local SAFE KIDS Campaign*

The SAFE KIDS Campaign is a national organization dedicated to preventing unintentional childhood injury, chaired by former U.S. Surgeon General C. Everett Koop. SAFE KIDS has about 300 local chapters that implement the national organization's programs at the community level by creating educational opportunities, leading advocacy programs, and providing safety services and resources.

Miriam Manary, a senior research associate in UMTRI's Biosciences Division and principal investigator of the Child Passenger Safety Research Program, has been involved with her local Washtenaw County SAFE KIDS Coalition for about two years. Manary conducts research on child protection systems and is a certified instructor for NHTSA's thirty-two-hour child passenger safety curriculum. She gives presentations on the topic to numerous professional, public, and private groups.

Manary says, "SAFE KIDS is concerned with preventing many kinds of childhood injuries and since motor vehicle collisions are a leading cause of death for kids, child passenger safety is one of the major focus areas." Unrestrained or improperly restrained children are far more likely to be injured, to suffer more severe injuries, or to die in the event of a car crash. Lori Brinkey, a physical therapist at the University of Michigan C.S. Mott Children's Hospital and co-coordinator of the Washtenaw SAFE KIDS Coalition, says, "Motor vehicle crashes are the leading cause of unintentional injury-related death in children age fourteen and under. Therefore, it's very important for families to select the correct car seat for their children, and to learn how to use it appropriately." Proper child restraint selection and usage involves considering many variables including the child's age, weight and maturity, vehicle interior characteristics, various types of seatbelt systems, correct use of all the child restraint features, etc.

UMTRI / SHEKINAH ERRINGTON

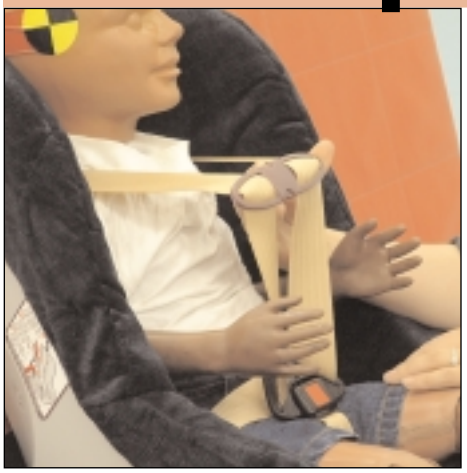
**Miriam Manary properly secures an infant crash dummy into a child seat before performing a sled impact test.**

The coalition's biggest project, the SAFE KIDS Buckle Up campaign, addresses this problem. Its main goal is educating parents and caregivers about the proper type and use of child car seats, both online (**http://www.safekids.org/buckleup**) and through child seat safety clinics throughout the country. Several times a year, Washtenaw County SAFE KIDS provides a one-day NHTSA training program on proper child seat installation for firefighters, police officers, nurses, and other child passenger safety advocates. In addition, the full NHTSA thirty-two-hour child passenger safety curriculum has been taught twice in the past calendar year.

An eight-hour training event occurred in February, at the Ann Arbor Fire Department, as part of National Child Passenger Safety Week, and Manary served as one of the instructors. She says, "The public views health care professionals, firefighters, EMS personnel, and police officers as safety leaders in the community and they are also regularly involved in transporting children. They need to know how to safely transport kids as part of their job as well as to educate the public." Also, police officers can use child passenger safety information to facilitate enforcement of Michigan Public Act 29, which requires child restraint use for children under four years old.

These programs also train attendees to participate in car seat checks in their local communities. The course includes the basics of injury prevention, vehicle crash dynamics, and hands-on exercises. Participants have to be able to identify vehicle restraints and understand how a child's age, size, and physical limitations affect car seat use, as well as actually install each major type of

# Buckle Up "DON'Ts"



**The harness is too loose.** **In order to prevent ejection, the harness should be tightened snugly on the child's body.**

**The car seat is too loose.** **When properly installed, there should be only one inch of side-to-side movement of the child restraints, relative to the vehicle.**

**The buckle is too low.** **To help keep the harness straps on the shoulders, the harness clip should be positioned at armpit height.**

ALL PHOTOS THIS SPREAD: UMTRI / CHARLES R. BRADLEY

restraint into a variety of vehicles. After the participant demonstrates these skills, he or she is better prepared to help with community car seat check programs. At a car seat check-up event, each participant is teamed with an expert to learn about communication skills, the types of questions most frequently asked, and the proper responses to these queries. Manary says new trainees' first instincts may be to install the child restraints themselves, but they learn that it important to educate parents or caregivers to do it on their own. The sessions emphasize the attitude of education and teamwork with parents, letting them feel empowered and secure in their abilities to install the car seats properly and independently.

Manary helps with many car seat check-up events in Washtenaw County and the greater southeastern Michigan area. The events take place primarily on evenings and weekends during the spring, summer, and fall and allow people to get free car seat check-ups, child passenger safety information, and free or low-cost child seats, if needed.

Manary also recently organized "Child Passenger Safety University" at UMTRI, which was hosted by the Washtenaw County and Metro Detroit SAFE KIDS coalitions. Other UMTRI participants and presenters included David Eby, an associate research scientist in UMTRI's Social and Behavioral Analysis division, who presented statistics on misuse patterns of child restraint systems; Larry Schneider, head of UMTRI's Biosciences division, and Joel MacWilliams, coordinator of accident investigations in the Biosciences division, both of whom presented information on car crash investigation; and Kathleen D. Klinich, a research assistant in the Biosciences division, who discussed data on seat belt usage of pregnant drivers. Experts from automotive companies in the Detroit metropolitan area also presented their findings from studies on side-impact airbags.

### Michigan Public Act 29

Under the new law, drivers and front seat passengers are required to be buckled up, or face a citation that could lead to a fine of $25 plus court costs. The new law also requires all children under the age of four to be placed in child restraint seats in all seating positions. All other passengers under sixteen must be buckled up, regardless of seating position.

Manary says that UMTRI data suggests that in Michigan, as many as 80 percent of children are restrained improperly in motor vehicles, and 51 percent of kids who are injured or killed in crashes are completely unrestrained. Data on improper child restraint usage also comes from the car seat check-up clinics—instances where parents already have demonstrated a high level of safety concern by attending—and yet these events commonly record misuse rates of over 90 percent. Manary used sled impact test data to illustrate common misuse modes and their possible outcomes for a session at the recent International Child Passenger Safety Technical Conference in Indianapolis. The presentation emphasized that there are different levels of misuse—some render the child restraint virtually useless, while others may only reduce its effectiveness. Common misuse modes include installing restraints or occupant harnesses too loosely, incorrectly routing the vehicle belt through the child

**Do read the instructions! On most convertible child restraints, the harness must be routed through the top harness slots (not the lower slots as shown) for forward-facing use.**

**Infants should not face forward. Children should ride facing the rear of the vehicle, at least until they have reached one year *and* 20 pounds.**

restraint, turning infants forward facing too soon, routing the harness through the lower unreinforced slots of a convertible child restraint, and transferring children to an adult vehicle belt before it fits the child.

Brinkey says she often hears from parents who are confused and frustrated about which kind of restraint devices to use as their children grow, how to install the equipment in their cars, vans and SUVs, and how to position and keep their children in the restraints.

"It's very difficult to install the seats at times because there's a wide variety of them out there, plus vehicles themselves have a variety of seat shapes and seat belt designs," Brinkey acknowledges. "On top of that, manufacturers' instructions can be missing or difficult for parents to understand."

Manary says she enjoys working with the SAFE KIDS program because, "You can see the research we perform at UMTRI have a positive effect in the real world. It brings a personal element to the work when you see the benefits of reducing child injuries in your local community." RR

For more information about the National SAFE KIDS Campaign, stop by http://www.safekids.org. To check child passenger safety ratings by state, go to http://www.safekids.org/tier3_cd.cfm?folder_id=183&content_item_id=835.

### Federal Motor Vehicle Standard 213—Child Restraint Systems Law Mandate

FMVSS 213 became effective in 1971 and was amended in 1981 and 1996. This standard specifies requirements for child restraint systems (e.g., infant seats, forward-facing child safety seats, and booster seats) as they are used in motor vehicles. Its purpose is to reduce the number of children killed or injured in motor vehicles crashes. FMVSS 213 governs the performance standards for child restraint systems for children up to 50 pounds, including:

- the crashworthiness of the seats
- the labeling on the seats including air bag warnings
- the instructions that come with the seat
- the flammability of the cloth material that comes with the seat.

## Airbag injury: Don't place your infant in the front seat!

**Never place a rear-facing child restraint in front of an active airbag. The safest place for children twelve and under is in the back seat.**

# Conferences & Events

**Transportation Research Board 28th Annual Summer Ports, Waterways, Freight & International Trade Conference**
June 24–27, Galveston, Texas
http://www4.trb.org/trb/calendar.nsf

**31st International Conference on Environmental Systems (ICES)**
July 9–12, Orlando, Florida
http://www.sae.org/calendar/ice/index.htm

**Advanced Topics in Seat Suspension Design and Human Body Vibration Control**
July 17–18, Chicago, Illinois
http://www.sae.org/contedu/

**National Symposia on Transportation: Enabling Technologies and Transportation Innovation**
August 7–8, U.S. DOT Volpe Center, Cambridge, Massachusetts
http://www.volpe.dot.gov/outreach/symposia01/three.html

**Driving Assessment 2001: International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design**
August 14–17, Aspen, Colorado
http://www.driving-symposium.org

**2001: A Transportation Odyssey—Institute of Transportation Engineers' Annual Meeting and Exhibit**
August 19–21, Chicago, Illinois
http://www.ite.org/annualmeeting/sixdays.asp

**International Future Transportation Technology Conference**
August 20–22, Costa Mesa, California
http://www.sae.org/calendar/ftt/index.htm

**Braking Performance of Heavy Commercial Vehicles**
Sept. 10–11, Troy, MI
http://www.sae.org/contedu

**Transportation Association of Canada's Annual Conference and Exhibition**
Sept. 16–19, Halifax, Canada
http://tac-atc.ca/events.htm

**Traffic Safety on Three Continents: 12th International Conference**
Sept. 19–21, Moscow, Russia
http://www.vti.se/

**Vehicle Dynamics for Passenger Cars and Light Trucks**
Sept. 19–21, Troy, Michigan
http://www.sae.org/calendar/semdyn.htm#dynamics

**International Conference on Ecology and Transportation**
Sept. 24–28, Keystone, CO
www.itre.ncsu.edu/cte/icoet2001.html

**Fundamentals of Sensor Design for Automotive Air Bag Systems**
Sept. 25, Detroit, Michigan
http://www.sae.org/contedu/

**2001 PAL: Fourth International Symposium on Progress in Automobile Lighting**
Sept. 25–26, Darmstadt, Germany
http://fgltweb.lt.e-technik.tu-darmstadt.de/PAL_info.htm

**International Fuels & Lubricants Meeting & Exhibition**
Sept. 24–27, San Antonio, Texas
http://www.sae.org

# Conferences & Events

**8th World Congress on Intelligent Transport Systems**
Sept. 30–Oct. 4, Sydney, Australia
http://www.itsworldcongress.org

**The Automotive & Transportation Technology Congress & Exhibition**
October 1–4, Barcelona, Spain
http://www.attce.com/

**7th International Congress: Driver Improvement**
October 8–10, Salzburg, Austria
http://www.kfv.at/DI2001/eng/index.php3

**Southern Automotive Manufacturing Conference and Exhibition**
October 8–10, Greenville, South Carolina
http://www.sae.org/calendar/sam/

**45th Annual Meeting of the Human Factors and Ergonomics Society**
October 8–12, Minneapolis, Minnesota
http://hfes.org/meetings/am-2001.html

**International Body Engineering Conference & Exhibition (co-located with Digital Car Conference)**
October 16–18, Detroit, Michigan
http://www.sae.org/calendar/ibe/

**Digital Car Conference & Exhibition**
October 16–18, Detroit, Michigan
http://www.digitalcar.sae.org/digitalcar/

**19th Annual Brake Colloquium & Exhibition**
October 28–31, New Orleans, Louisiana
http://www.sae.org/calendar/bce00/
RR

DID YOU KNOW?

# Transportation Tidbits

• In 1899, Mrs. John Phillips of Chicago was the first woman in the U.S. to receive a driver's license.

• In 1909, *Colliers* magazine called the automobile the greatest social force in America, greater than rural free mail delivery or the telephone.

• In 1915, placing the spare tire in the trunk was introduced by the American Franklin car.

• The first pedestrian crossing was designated in England at Parliament Square, London, in 1926. The London Traffic Advisory Committee painted two parallel white lines across the road and erected a square white sign on a post that read "Please cross here."

• The first car antifreeze was introduced in 1926 by Union Carbide and Carbo Company. It was called Prestone, consisted of ethylene glycol, and sold for $5 a gallon.

• Electric fuel gauges were developed in 1929 to determine how much gas was left in the vehicle's fuel tank.

• In 1936, the Cord Model 810 offered the first pop-up headlights.

• In 1938, the first automobile air conditioning system was offered by Nash Motors.

• In 1963, the British Triumph is the first car to offer windshield washers.

• The first automobile airbag patent was registered by John Hetrick of Pennsylvania in 1953.

• In 1964, seatbelts were made standard equipment on cars produced by the Studebaker-Packard Corporation.

• The first car to have a headlight windshield-wiper system was the Saab 99, in Sweden in 1971.

• In 1990, General Motors introduced an electrically-powered test car, the Impact. It accelerated from 0 to 60 mph in eight seconds and traveled 120 miles before needing to be recharged. RR

Source: *On the Move: A Chronology of Advances in Transportation* by Leonard C. Bruno.

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