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Definitions and Data Sources for the Driver Vehicle Interface (DVI)

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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INTRODUCTION

This information report provides a summary of the activities to-date of Task Force #1 - Research Foundations – of the SAE's Driver Vehicle Interface (DVI) committee. There are many promising technology-based solutions that address distracted driving by developing interfaces that mitigate, optimize, and minimize the attentional and physical demands of in-vehicle systems. However, an important key to their success is to integrate the technology properly - with both the driver and with the tasks that comprise driving (Angell, 2010). If this is done well, then technology can help the driver focus attention. If this is done poorly, then technology can further complicate, interfere with, and distract the driver.

The challenge of integrating the driver, the technology they use, and the task of driving is a difficult one – especially given that technologies may be carried into the vehicle (e.g., mobile phone, personal navigation device, etc.), transmitted into the vehicle (e.g., roadside unit, cloud-based server, etc.), or downloaded into an embedded vehicle module after the time of manufacture. A systems-level perspective and technology standards to ensure interoperability between subsystems should be used; for example, to preserve the manufacturer's ability to lock-out functions and features that would violate applicable driver distraction guidelines. It also requires a fundamental understanding of the part the driver plays in safe driving – with a priority on supporting the driver's ability to focus attention on the primary task of driving.

As technology progresses, there are some areas that are important for helping to prevent and mitigate distraction and high workload (see also Angell, 2010, 2012), for example:

1. Assuring that technologies are designed, developed, and integrated within the driver interface to minimize distraction and workload. This has to do with the need to assure that the basic technologies of the driver interface achieve this goal. It involves:
 - The application of good, basic DVI design practices
 - Harnessing techniques for: de-cluttering, lock-outs when demand is excessive, and perhaps safety-coaching and embedded training; maybe even very low-level dialog managers (e.g., delaying a phone call when the turn signal is on)
2. Developing and integrating new advanced technologies which can actively prevent and reduce distraction, as well as support the driver in managing attention and workload. This reflects the need to develop and apply technologies that actively support the driver in preventing distraction – or in preventing or mitigating safety conflicts or crashes should they arise. Such technologies/capabilities could include:
 - Active attention monitoring
 - Cueing the driver to return their attention to the road
 - Triggering of active safety and/or driver assistance systems (e.g., collision-imminent braking, lane-departure warning or prevention, etc.)

To support approaches such as these, this Information Report has been developed to provide information in each of these areas to aid the design and development of the driver-vehicle interface of in-vehicle technologies, systems, and applications. It does this by providing working definitions of key concepts and references to research in these areas.

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1. SCOPE

This document provides a summary of the activities to-date of Task Force #1 - Research Foundations – of the SAE's Driver Vehicle Interface (DVI) committee. More specifically, it establishes working definitions of key DVI concepts, as well as an extensive list of data sources relevant to DVI design and the larger topic of driver distraction.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1138	Design Criteria - Driver Hand Controls Location for Passenger Cars, Multipurpose Passenger Vehicles, and Trucks (10 000 GVW and Under)
SAE J2364	Navigation and Route Guidance Function Accessibility While Driving
SAE J2395	ITS In-Vehicle Message Priority
SAE J2396	Definitions and Experimental Measures Related to the Specification of Driver Visual Behavior Using Video Based Techniques
SAE J2400	Human Factors in Forward Collision Warning Systems: Operating Characteristics and User Interface Requirements
SAE J2802	Blind Spot Monitoring System (BSMS): Operating Characteristics and User Interface
SAE J2830	Process for Comprehension Testing of In-Vehicle Icons

2.1.2 Other Publications

Angell, L.S. (2010). *Using Technology to Prevent & Reduce Distraction*. Invited presentation to the USDOT National Distracted Driving Summit, September 21, 2010. Washington, DC.

Angell, L. S. (2012). *Driver Attention & Scanning: A Focus Area for Enhancing Safety in the Connected Vehicle Era*. Center for Automotive Research, Invited Talk, Breakfast Briefing Series. September 28th, 2012. Livonia, Michigan.

Foley, J. P., Young, R., Angell, L., & Domeyer, J. E. (2013). Towards operationalizing driver distraction. *Proceedings of the Seventh International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design*, 57-63.

Regan, M.A., Hallett, C., & Gordon, C. P. (2011). Driver distraction and driver inattention: Definition, relationship and taxonomy. *Accident Analysis & Prevention*, 43(5), 1771-1781.

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 ANSI Accredited Publications

Copies of these documents are available online at <http://webstore.ansi.org/>

ANSI/HFES 100-2007	Human Factors Engineering of Computer Workstations. Santa Monica, CA: Human Factors and Ergonomics Society.
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2.2.2 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>

ISO 15008	Road Vehicles - Ergonomic Aspects of Transport Information and Control Systems - Specifications and Test Procedures for In-Vehicle Visual Presentation. Geneva: International Organization for Standardization (ISO).
ISO 15623	Transport Information and Control Systems - Forward Vehicle Collision Warning Systems - Performance Requirements and Test Procedures. Geneva: International Organization for Standardization (ISO).
ISO 16673	Road Vehicles - Ergonomic Aspects of Transport Information and Control Systems - Occlusion Method to Assess Visual Demand Due to the use of In-Vehicle Systems. Geneva: International Organization for Standardization (ISO).
ISO 17361	Intelligent Transport Systems - Lane Departure Warning Systems - Performance Requirements and Test Procedures. Geneva: International Organization for Standardization (ISO).
ISO 17387	Intelligent Transport Systems - Lane Change Decision Aid Systems (LCDAS) - Performance Requirements and Test Procedures. Geneva: International Organization for Standardization (ISO).
ISO 2575	Road Vehicles - Symbols for Controls, Indicators and Tell-Tales. Geneva: International Organization for Standardization (ISO).
ISO 3461-1	General Principles for the Creation of Graphical Symbols, Part I: Graphical Symbols for use on Equipment. Geneva: International Organization for Standardization (ISO).
ISO 7731	Danger Signals for Public and Work Areas - Auditory Danger Signals. Geneva: International Organization for Standardization (ISO).

2.2.3 FMVSS Publications

Copies of this document are available online at <http://icsw.nhtsa.gov/cars/rules/standards/FMVSS-Regs/index.htm>.

Federal Motor Vehicle Safety Standard (FMVSS) No. 208, *Occupant crash protection [Docket No. 74-14; Notice 103]*, RIN 2127-AG14, to be codified at 49 C.F.R. pt. 571. 208. Retrieved from <http://www.nhtsa.dot.gov/cars/rules/rulings/Labels5.mlv.html>.

3. WORKING DEFINITIONS

3.1 DEFINITION OF DRIVER DISTRACTION

3.1.1 Driver Distraction

The diversion of attention away from activities critical for safe driving toward a competing activity, which may result in insufficient or no attention to activities critical for safe driving (Regan, et al., 2011, p. 1776).

3.1.2 Competing Activity

An activity or activities which place/s demands upon cognitive, auditory, vocal/verbal, visual, motoric, and other resources separately or in any combination-demands that are the same as or similar to the resources demanded by safe driving (hence giving rise to resource-competition), and which occur concurrently while driving (Foley et al., 2013, p. 61).

3.1.3 Subsidiary Definitions Relevant to “Competing Activity” (all from Foley et al., 2013, p. 62)

3.1.3.1 Visual Distraction

Any glance that competes with activities necessary for safe driving.

3.1.3.2 Manual Distraction

Any physical manipulation that competes with activities necessary for safe driving.

3.1.3.3 Auditory Distraction

Any period of aural stimulation that competes with activities necessary for safe driving.

3.1.3.4 Vocal Distraction

Any vocal utterance (or covert sub-vocal utterance) that competes with activities necessary for safe driving.

3.1.3.5 Cognitive Distraction

Any epoch of cognitive loading that competes with activities necessary for safe driving.

3.2 DEFINITIONS FOR RESOURCES

Resources are defined as (all from Foley et al., 2013, p. 61):

3.2.1 Cognitive

The alerting, executive, and orienting attentional networks singly or in combination, as well as the memory and representational systems (e.g., working and long-term) from which information may be retrieved and in which it may be held and operated upon.

3.2.2 Auditory

The sensory organs and associated neurological structures, pathways, and processes by which hearing and perceiving sound occurs.

3.2.3 Vocal/Verbal

The structures, pathways, and processes associated with speaking, verbalizing, or making utterances covertly or overtly.

3.2.4 Visual

The visual sensory organs and associated neurological structures, pathways, and processes.

3.2.5 Motoric

The motor/biomechanical system and associated structures of movement within the body.

3.2.6 Other

While not typically included in the discussion of resources in the context of driving, activation of "other" resources (for example, the structures, pathways, and processes associated with somatosensory/vestibular functions, smell, or taste) may also impact attention and result in distraction.

3.3 DEFINITION OF DRIVER WORKLOAD

3.3.1 Global definition of Driver Workload

The amount of physical and mental activity that is required to perform a particular task or set of tasks while driving.

3.3.1.1 Overall Driver Workload

The amount of physical and mental activity that is required to perform a particular task or set of tasks while driving.

3.3.1.2 Average Driver Workload

The amount of physical and mental activity that is required to perform a particular task or set of tasks while driving over the time it takes to complete them.

3.3.1.3 Instantaneous Driver Workload

The amount of physical and mental activity over a specified unit of time that is required to perform a particular task or set of tasks while driving.

3.4 DEFINITION OF DISTRACTION MITIGATION SYSTEMS RELEVANT TO DVI DESIGN

Driver distraction and mitigation systems are likely to consist of several, somewhat independent, subsystems. Therefore, working definitions of the overall system, as well as each of the major subsystems, are needed to facilitate discussions on the topic. Below are some terms and associated definitions related to driver distraction and workload mitigation systems.

3.4.1 Definition for the Complete System Used to Mitigate Driver Distraction and Workload

3.4.1.1 Driver distraction and workload mitigation system

A system, sometimes made up of several distributed subsystems with their own inputs and outputs, which helps a driver maintain situational awareness (or enhancing attentiveness) by drawing the driver's attention towards important roadway events and controlling the timing and format of communications with other objects (e.g., device and cloud-based applications, vehicle systems, etc.) based on the current roadway situation, driver abilities, and vehicle status.

3.4.2 Definitions for each of the Subsystems Used to Mitigate Driver Distraction and Workload

3.4.2.1 Situational Awareness (SA) management subsystem

A subsystem of a "driver distraction and workload mitigation system" that controls when and how communications is presented to the driver based on information received from other subsystems that are responsible for monitoring the current roadway situation, driver abilities, and vehicle status.

3.4.2.2 Roadway situation subsystem

A subsystem of a "driver distraction and workload mitigation system" that monitors the roadway situation via on-board sensors and communications with external objects (e.g., other vehicles, roadside infrastructure, cloud-based servers, etc.) to detect roadway hazards, predict escalating crash situations, and assess driver distraction and workload caused by the current roadway situation.

3.4.2.3 Driver abilities subsystem

A subsystem of a "driver distraction and workload mitigation system" that assesses the abilities of a driver to handle driving and non-driving tasks based on stored driver profile data (e.g., deaf driver, historical driving behavior, etc.) and monitoring the current driver state (e.g., driver-facing camera, vehicle control data, etc.).

3.4.2.4 Vehicle status subsystem

A subsystem of a "driver distraction and workload mitigation system" that monitors the status of vehicle controls and systems to assess driver distraction and workload caused by current interactions with the vehicle (e.g., adjusting climate control, etc.) and predict escalating crash situations (e.g., current speed, etc.).

4. SUMMARY OF DATA SOURCES RELEVANT TO DVI DESIGN AND CONCEPTUALIZING DRIVER DISTRACTION

4.1 Key Data Sources

Appendix A provides a list of search terms that can be used to identify literature relevant to specific issues or topics, and to generate candidate data sources/publications for use in DVI design.

Appendix B provides a list of publications that may be helpful for conceptualizing and developing DVIs for advanced automotive technologies and systems.

Appendix C provides a list of publications helpful for conceptualizing and defining driver distraction.

As noted above, the information provided in these appendices can help researchers and system developers discover and access prior work, thus facilitating scientific advancement in this area. In this regard, the references to existing research in this document are deliberately limited to published data sources. However, other relevant data sources are available, and the reader is encouraged to pursue discovery and review of additional information such as related patents, scholarly opinion, newer publications, internet discussions, and news media articles.

5. NOTES

5.1 Revision Indicator

A change bar (|) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

PREPARED BY THE SAE SAFETY AND HUMAN FACTORS STANDARDS STEERING COMMITTEE

APPENDIX A – PRELIMINARY SEARCH TERMS FOR DVI DESIGN

- Accuracy
- Arbitration of Crash Warning Messages
- Automation to Reduce Workload and Distraction
- Characteristics of Controls (control movement compatibility)
- Coding for Physical and Virtual Controls, and Labeling
- Compatibility
- Complexity
- Consistency
- Conspicuity
- Customization
- Driver Distraction
- Designing Messages for Driver Comprehension
- Display Glare
- Display Type
- Distinctiveness
- Driver Training
- False and Nuisance Warnings
- General DVI-Driver Interactions
- General Guidelines for Automated Systems
- General Support to the Driver
- Guidance for Active Control
- Guidance for Partial Automation
- Guidance for Promoting/Maintaining Driver Vigilance and Situation Awareness
- Integration of Nomadic and Aftermarket Devices
- Legibility of Icons and Text
- Location or Placement of a Visual Display
- Message Repetition
- Non-critical Information
- Obstruction
- Physical and Functional Aspects of Integration
- Prioritization of Messages to the Driver
- Procedures for Assessing Cognitive Load
- Procedures for Assessing Visual Load
- Providing Feedback to the Driver

- Selection of Sensory Modality (compatibility, use of hands-free interactions, use of redundant modalities)
- Signal Characteristics (distinctiveness, loudness, urgency, localization, use of speech)
- System Error Handling/Recovery
- System Status
- Use of Color
- Using Naturalistic Driving Data to Assess Crash Risk
- Using Secondary Tasks to Assess Driver Load
- Timeliness
- Virtual Controls
- Voice Recognition Inputs
- Workload

APPENDIX B

INITIAL LIST OF DATA SOURCES HELPFUL FOR CONCEPTUALIZING AND DEVELOPING DVIS

Reference	DVI Design Topic(s)
AAA Foundation for Traffic Safety. (2008). <i>Use of advanced in-vehicle technology by younger and older early adopters</i> . Washington, DC.	System Integration
Abbink, D. A., Mulder, M., van der Helm, F. C. T., Mulder, M., & Boer, E. R. (2011). Measuring neuromuscular control dynamics during car following with continuous haptic feedback. <i>IEEE Transactions on Systems, Man, and Cybernetics—Part B</i> , 41(5), 1239-1249.	Haptic Interfaces
Abbink, D., Mulder, M. & Boer, E. (2012). Haptic shared control: Smoothly shifting control authority? <i>Cognition, Technology, & Work</i> , 14(1), 19-28.	Automation
Abe, G. & Richardson, J. (2004). The effect of alarm timing on driver behaviour: an investigation of differences in driver trust and response to alarms according to alarm timing. <i>Transportation Research Part F: Traffic Psychology and Behaviour</i> , 7(4-5), 307-22.	Haptic Interfaces
Abe, G. & Richardson, J. (2005). The influence of alarm timing on braking response and driver trust in low speed driving. <i>Safety Science</i> , 43(9), 639-654.	Driver Needs, Safety Messages, Haptic Interfaces
Abe, G. & Richardson, J. (2006). Alarm timing, trust and driver expectation for forward collision warning systems. <i>Applied Ergonomics</i> , 37(5), 577-586.	Driver Needs, Message Characteristics, Safety Messages
Abe, G. & Richardson, J. (2006). The influence of alarm timing on driver response to collision warning systems following system failure. <i>Behaviour & Information Technology</i> , 25(5), 443-452.	Haptic Interfaces
Ablaßmeier, M., Poitschke, T., Wallhoff, F., Bengler, K., & Rigoll, G. (2007). Eye gaze studies comparing head-up and head-down displays in vehicles. <i>2007 IEEE International Conference</i> , 2250-2252.	Visual Interfaces
Adell, E., & Varhelyi, A. (2006). Development of HMI components for a driver assistance system for safe speed and safe distance. <i>Proceedings of the 13th ITS World Congress</i> .	Visual Interfaces, Auditory Interfaces
Adell, E., Varhelyi, A., Fontana, M. D., & Bruel, L. (2008). Test of HMI alternatives for driver support to keep safe speed and safe distance-A simulator study. <i>Open Transportation Journal</i> , 2, 53-64.	Driver Needs, Visual Interfaces, Auditory Interfaces, Haptic Interfaces, Safety Messages
Adrian, W., & Bhanji, A. (1991). Fundamentals of disability glare: A formula to describe stray light in the eye as a function of glare angle and age. <i>Proceedings of the First International Symposium on Glare</i> (pp. 185-193). New York: Lighting Research Institute.	Visual Interfaces
Advanced Systems Technology Branch. (1993). <i>Preliminary human factors design standards for airway facilities</i> (ACD-350). Atlantic City International Airport, NJ: Federal Aviation Administration Technical Center.	Auditory Interfaces
Ahlstrom, V., & Longo, K. (2003). <i>Human factors design standard</i> (HF-STD-001). Atlantic City International Airport, NJ: Federal Aviation Administration Williams J. Hughes Technical Center.	Message Characteristics, Visual Interfaces, Auditory Interfaces, Automation
Alders, M., van Hemert, J. M., Pauwelussen, J., Heffelaar, T., Happee R., & Pauwelussen, J. (2012, August). Managing driver workload using continuous driver workload assessment. In A. J. Spink, F. Grieco, O.E. Krips, L.W.S. Loijens, L.P.J.J. Noldus, & P.H. Zimmerman, <i>Proceedings of Measuring Behavior 2012</i> (pp. 38-29). Utrecht, The Netherlands.	Integration
Aldridge, L.C. & Lansdown, T.C. (1999). Driver preferences for speech based interaction with in-vehicle systems. <i>Proceedings of the Human Factors and Ergonomics Society Annual Meeting</i> , 977-981.	Driver Inputs

Reference	DVI Design Topic(s)
Allen, R. W. (1995). The driver's role in collision avoidance systems. <i>Workshop on Collision Avoidance Systems</i> , 33-57.	Driver Needs
Allen, R.W. & Howe, C. (2013). <i>Volume 4 - Scheduling of messages to maximize driver performance</i> (Unpublished Task 4 interim report prepared for National Highway Traffic Safety Administration under contract DTNH22-121R-00629).	Integration
Allen, R.W. (1994, March). The driver's role in collision avoidance systems. <i>Workshop on Collision Avoidance Systems sponsored by the IVHS America Safety & Human Factors Committee and the National Highway Traffic Safety Administration</i> (pp. 33-57), Reston, VA.	Driver Information
Alliance of Automobile Manufacturers (AAM). (2006). <i>Statement of principles, criteria and verification procedures on driver interactions with advanced in-vehicle information and communication systems, including 2006 updated sections</i> [Report of the Driver Focus-Telematics Working Group]. Washington, DC: Author. Retrieved from http://www.autoalliance.org/index.cfm?objectid=D6819130-B985-11E1-9E4C000C296BA163 .	General DVI Requirements, Driver Needs, Message Characteristics, Driver Inputs, Visual Interfaces, Assessing Driver Performance
Alm, H., & Nilsson, L. (2000). Incident warning systems and traffic safety: A comparison between the Portico and Melyssa test site systems. <i>Transportation Human Factors</i> , 2(1), 77-93.	General DVI Requirements, Driver Needs, Message Characteristics
Altmann, E. & Trafton, J. (2002). Memory for goals: An activation-based model. <i>Cognitive Science: A Multidisciplinary Journal</i> , 26(1), 39-83.	Integration
Amditis, A., Bekiaris, E., Montanari, R., Baligand, B., Perisse, J., Belotti, F., et al. (2001). An innovative in-vehicle multimedia HMI based on an intelligent information manager approach: The comunicar design process. <i>Proceedings of the 8th World Congress on Intelligent Transport Systems</i> .	System Integration
Amditis, A., Bertolazzi, E., Bimpas, M., Biral, F., Bosetti, P., Da Lio, M., et al. (2010). A holistic approach to the integration of safety applications: The INSAFES subproject within the European Framework Programme 6 Integrating Project PReVENT. <i>IEEE Transactions on Intelligent Transportation Systems</i> , 11(3), 554-566.	System Integration
Amditis, A., Pagle, K., Tsogas, M., Bekiaris, E., Panou, M., Veste, H. T., et al. (2007). A real time platform for estimating the driver – vehicle – environment state in AIDE integrated project. <i>Proceedings of the 14th World Congress on Intelligent Transport Systems</i> .	System Integration
Angell, L., Auflick, J., Austria, P.A., Kochhar, D., Tijerina, L., Biever, W., . . . Kiger, S. (2006). <i>Driver workload metrics. Task 2 final report</i> (DOT HS 810 635). Washington, DC: National Highway Traffic Safety Administration.	General DVI Requirements, Assessing Driver Performance
Angell, L., Cooper J.M., McGehee, D.V., & Chrysler S.T. (2010). <i>Test procedures for evaluating distraction potential in IntelliDrive systems – Task 1 literature review</i> (Unpublished report for the National Highway Traffic Safety Administration under contract DTNH22-05- D01002 TO20).	Integration
Angell, L.S. (2010a). A comparison of the modified Sternberg method, peripheral detection tasks, and other surrogate techniques. In G.L. Rupp, (Ed.), <i>Performance Metrics for Assessing Driver Distraction: The Quest for Improved Road Safety</i> . Warrendale, PA: SAE International.	Assessing Driver Performance
Angell, L.S. (2010b). Conceptualizing effects of secondary task demands on event detection during driving: Surrogate methods and issues. In G.L. Rupp, (Ed.), <i>Performance Metrics for Assessing Driver Distraction: The Quest for Improved Road Safety</i> . Warrendale, PA: SAE International.	Assessing Driver Performance
Angell, L.S. (2012, September). <i>Driver attention & scanning: A focus for enhancing safety in the connected vehicle era</i> [Presentation]. Retrieved from: http://www.cargroup.org/assets/files/bb120928/angell.pdf	Integration

Reference	DVI Design Topic(s)
Angell, L.S., McGehee, D.V., & Cooper, J. M. (2011). <i>Test procedures for evaluating distraction potential in connected vehicle systems: Task 5 performance metrics</i> (DTNH22-05-D01002 TO20). Washington, DC: National Highway Traffic Safety Administration.	Assessing Driver Performance
ANSI/HFES 100-2007 (2007). <i>Human factors engineering of computer workstations</i> . Santa Monica, CA: Human Factors and Ergonomics Society.	Visual Interfaces
Antoniou, C. (2002). Classification of driver-assistance systems according to their impact on road safety and transiency. <i>Transport Reviews</i> (22)2., pp. 179-196	System Integration
Arroyo, E., Sullivan, S., & Selker, T. (2006). CarCoach: A polite and effective driving coach. <i>Proceedings of CHI '06 Extended Abstracts on Human Factors in Computing Systems</i> , 357-362.	Automation
Auvray, M., Gallace, A., Tan, H. Z., & Spence, C. (2007). Crossmodal change blindness between vision and touch. <i>Acta Psychologica</i> , 126(2), 79-97.	Driver Needs
Baber, C., & Wankling, J. (1992). An experimental comparison of test and symbols for in-car reconfigurable displays. <i>Applied Ergonomics</i> , 23(4), 255-262.	Visual Interfaces
Bainbridge, L. (1983). Ironies of automation. <i>Automatica</i> , 19(6), 775-779.	Automation
Baldwin, C. L. & May, J. F. (2011). Loudness interacts with semantics in auditory warnings to impact rear-end collisions. <i>Transportation Research Part F: Traffic Psychology and Behaviour</i> , 14(1), 36-42.	Auditory Interfaces
Baldwin, C. L. (2011). Verbal collision avoidance messages during simulated driving: Perceived urgency, alerting effectiveness and annoyance. <i>Ergonomics</i> , 54(4), 328-337.	Auditory Interfaces
Baldwin, C. L., Reagan, I., Lawrence, J. H., & Turner, T. R. (2007). Auditory in-vehicle technologies to support older drivers. <i>Proceedings of the Fourth International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design</i> , 371-372.	Auditory Interfaces
Bar, T., Kohlhaas, R. Zollner, J. M., & Scholl, K. (2011). Anticipatory driving assistance for energy efficient driving. <i>Proceedings of the Integrated and Sustainable Transportation System (FISTS)</i> , Karlsruhe, Germany, 1-6.	System Integration
Barham, P., Oxley, P., Thompson, C., Fish, D., & Rio, A. (1999). Jaguar cars' near infrared night vision system-Overview of human factors research to date. <i>Vision in Vehicles (VII)</i> , 177-85.	Visual Interfaces
Barker, P. & Woodcock, A. (2011). Driver skills, education and in-vehicle technology. <i>International Journal of Vehicle Design</i> , 55(2-4), 189-207.	Driver Training, Driver Needs
Barrow, J. H. & Baldwin, C.L. (2009). Verbal-spatial cue conflict: Implications for the design of collision-avoidance warning systems. <i>Proceedings of the 5th International Driving Symposium on Human Factors in Driving Assessment, Training and Vehicle Design</i> , 405-411.	Auditory Interfaces
Barton, J. E., & Cohn, T. E. (2005). Towards a complete human driver model – The effect of vision on driving performance. <i>Proceedings of the 12th World Congress on Intelligent Transport Systems</i> .	Driver Needs
Battelle. <i>Safety pilot project report</i> . Forthcoming.	HV Design Considerations
Becic, E., Manser, M., Creaser, J., & Donath, M. (2012). <i>Cooperative intersection collision avoidance system – Stop sign assist: Experiments to validate use of an in-vehicle interface design</i> . (Report No. CTS 12-09). Minneapolis: University of Minnesota Center for Transportation Studies.	Driver Needs , Assessing Driver Performance
Begault, D. R., & Pittman, M. T. (1996). Three-dimensional audio versus head-down Traffic Alert and Collision Avoidance System displays. <i>International Journal of Aviation Psychology</i> , 6(1), 79-93.	Auditory Interfaces

Reference	DVI Design Topic(s)
Belz, S. M., Robinson, G. S., & Casali, J. G. (1999). A new class of auditory warning signals for complex systems: Auditory icons. <i>Human Factors</i> , 41(4), 608-618.	Auditory Interfaces, Sensory Modality for HVs, HV Auditory Displays
Belz, S.M., Robinson, G.S., & Casali, J.G. (1998). Auditory icons as impending collision system warning signals in commercial motor vehicles. <i>Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting</i> , 1127-1131.	Driver Needs, Auditory Interfaces, Safety Messages
Belz, S.M., Robinson, G.S., & Casali, J.G. (1999). A new class of auditory warning signals for complex systems: Auditory icons. <i>Human Factors</i> , 41(4), 608-618.	Auditory Interfaces, Sensory Modality for HVs
Benedict, D.R. & Angell, L.S. (2010). Modified Sternberg method for assessing event detection while driving. In G.L. Rupp, (Ed.), <i>Performance Metrics for Assessing Driver Distraction: The Quest for Improved Road Safety</i> . Warrendale, PA: SAE International.	Assessing Driver Performance
Ben-Yaacov, A., Maltz, M., & Shinar, D. (2000). Driver performance with a collision avoidance system. <i>Proceedings of the Human Factors and Ergonomics Society 44th Annual Meeting</i> , 3, 3-312-3-314.	Driver Needs
Beruscha, F., Augsburg, K., & Manstetten, D. (2011). Haptic warning signals at the steering wheel: A literature survey regarding lane departure warning systems. <i>Haptics-e, The Electronic Journal Of Haptic Research</i> , 4(5), 1-6.	Haptic Interfaces
Bhise, V.D. (2011). <i>Ergonomics in the automotive design process</i> . Boca Raton, FL: CRC Press.	Driver Inputs
Bian, Z., Kang, J. J., & Andersen, G. J. (2010). Changes in extent of spatial attention with increased workload in dual-task driving. <i>Transportation Research Record</i> , 2185, 8-14.	General DVI Requirements, Driver Needs, Assessing Driver Performance
Bielaczek, C., Barz, M., Breuer, B., Rohmert, W., & Breuer, J. (1996). Development of warning strategies and driver-vehicle interfaces. <i>Proceedings of the Fifteenth International Technical Conference on the Enhanced Safety of Vehicles</i> , 305-316.	Auditory Interfaces
Bisantz, A.M. & Pritchett, A.R. (2003). Measuring the fit between human judgments and automated alerting algorithms: A study of collision detection. <i>Human Factors</i> , 45(2), 266-280.	Automation
Bloomfield, J.R., Carroll, S.A., Papelis, Y.E., & Bartelme, M.J. (1996). <i>The driver's response to an automated highway system with reduced capacity</i> (FHWA-RD-96-067). McLean, VA: Federal Highway Administration.	Automation
Bloomfield, J.R., Grant, A.R., Levitan, L., Cumming, T.L., Maddhi, S., Brown, T.L. & Christensen, J.M. (1998). Using an automated speed, steering, and gap control system and a collision warning system when driving in clear visibility and in fog. (Report No. FHWA-RD-98-050). McLean, VA: Federal Highway Administration.	Automation
Boer, E. R., & Ward, N. J. (2003). Event-based driver performance assessment. <i>Proceedings of the Second International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design</i> , 119-124.	Assessing Driver Performance
Boff, K.R. & Lincoln, J.E. (Eds.). (1988). <i>Engineering data compendium: Human perception and performance</i> . Wright-Patterson Air Force Base, OH: Armstrong Aerospace Medical Research Laboratory.	Driver Inputs
Boot, W.R., Basak, C., Erickson, K.I., Neider, M., Simons, D.J., Fabiani, M., Kramer, A.F. (2010). Transfer of skill engendered by complex task training under conditions of variable priority. <i>Acta Psychologica</i> , 135, 349-357.	Driver Training, Automation
Brock, J.F., McFann, J., Inderbitzen, R.E., & Bergoffen, G. (2007). <i>Effectiveness of commercial motor vehicle driver training curricula and delivery methods</i> (CTBSSP Synthesis MC-13). Washington, DC: National Academy Press.	Driver Training, HV Haptic Displays, Automation

Reference	DVI Design Topic(s)
Brook-Carter, N., Stevens, A., Reed, N., & Thompson, S. (2008). Practical issues in the application of occlusion to measure visual demands imposed on drivers by in-vehicle tasks. <i>Ergonomics</i> , 52(2), 1-15.	Assessing Driver Performance
Brookhuis, K.A., van Driel, C.J.G., Hof, T., van Arem, B., & Hoedemaeker, M. (2008). Driving with a congestion assistant; mental workload and acceptance. <i>Applied Ergonomics</i> , 40, 1019-1025. doi: 10.1016/j.apergo.2008.06.010	General DVI Requirements, Automation
Brooks, C., & Rakotonirainy, A. (June, 2007). In-vehicle technologies: Advanced driver assistance systems and driver distraction: research challenges. In <i>International Conference on Driver Distraction</i> , Sydney, Australia. p. 471-486.	General DVI Requirements
Brown, C.M. & Noy, Y.I. (2004). Behavioral adaptation to in-vehicle safety measures: Past ideas and future directions. <i>Proceedings of the International Conference on Traffic and Transport Psychology</i> (pp. 25-46). Bern, Switzerland: Swiss Council for Accident Protection.	Automation
Brown, C.M. (2001). The concept of behavioural adaptation: Does it occur in response to land departure warnings? <i>Proceedings of the International Conference on Traffic and Transport Psychology</i> .	Automation
Brown, J. L., Reagle, G., Richard, C., Campbell, J. L, and Lichty, M. G. (2010). <i>Commercial vehicle driver-vehicle interface needs specification. Task 3 report: Conduct interviews</i> . (Report to Virginia Tech Transportation Institute for National Highway Traffic Safety Administration). Seattle, WA: Battelle.	Message Characteristics, Sensory Modality for HVs
Brown, J., McCallum, M., Campbell, J., & Richard, C. (2007). <i>Integrated Vehicle-Based Safety System (IVBSS) heavy truck driver vehicle interface (DVI) specifications (final version)</i> (UMTRI-2008-27). Ann Arbor: University of Michigan Transportation Research Institute.	HV Design Considerations
Brown, J.L., Reagle, G., Richard, C., Campbell, J. L., & Lichty, M. G. (2010). <i>Commercial vehicle driver-vehicle interface needs specification. Task 3 report: Conduct interviews</i> . Seattle, WA: Battelle.	Sensory Modality for HVs, HV Visual Display Location
Brown, J.L., Richard, C., Campbell, J.L., & Lichty, M.G. (2012). <i>Human factors support for safety pilot. Task 2: Interface criteria for safety pilot, model deployment</i> (Final report to Federal Highway Administration). Seattle, WA: Battelle Center for Human Performance & Safety.	System Integration
Brown, S.B., Lee, S.E., Perez, M.A., Doerzaph, Z.R., Neale, V.L., & Dingus, T.A. (2005). Effects of haptic brake pulse warnings on driver behavior during an intersection approach. <i>Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting</i> , 1892-1896.	Haptic Interfaces
Brown, T. L., Lee, J. D., & McGehee, D. V. (2000). Attention-based model of driver performance in rear-end collisions. <i>Transportation Research Record</i> , 1724, 14-20.	General DVI Requirements
Brown, T. L., Lee, J. D., & McGehee, D. V. (2001). Human performance models and rear-end collision avoidance algorithms. <i>Human Factors</i> , 43(3), 462-482.	Assessing Driver Performance
Bruyas, M.-P., Brusque, C., Tattégtrain, H., Auriault, A., Aillerie, I., & Duraz, M. (2008). Consistency and sensitivity of lane change test according to driving simulator characteristics. <i>IET Intelligent Transport Systems</i> , 2(4), 306-314.	Assessing Driver Performance
Burns, P.C., Bengler, K., & Weir, D.H. (2010). Driver metrics, an overview of user needs and uses. In G.L. Rupp, (Ed.), <i>Performance Metrics for Assessing Driver Distraction: The Quest for Improved Road Safety</i> . Warrendale, PA: SAE International.	Assessing Driver Performance
Butler, R. (2005). Safety with subtlety. <i>Professional Engineering</i> , 43-44.	Driver Inputs
Caird, J. K., Chisholm, S. L., & Lockhart, J. (2008). Do in-vehicle advanced signs enhance older and younger drivers' intersection performance? Driving simulation and eye movement results. <i>International Journal of Human-Computer Studies</i> , 66(3), 132-144.	General DVI Requirements, Visual Interfaces, Assessing Driver Performance
Caird, J. K., Chisholm, S. L., Lockhart, J., Vacha, N., Edwards, C. J., Creaser, J. I., & Hatch, K. (2006). <i>In-vehicle intelligent transportation system (ITS) countermeasures to improve older driver intersection performance</i> . (Report No. TP 14610E). Ontario: Transport Canada.	Message Characteristics, Visual Interfaces



Reference	DVI Design Topic(s)
Cairney, P. (2003). <i>Implications of intelligent transport systems for high risk road users and high risk situations</i> . Sydney, Australia: Austroads Inc.	General DVI Requirements
Campbell, J. L., Carney, C., and Kantowitz, B. H. (1998). <i>Human factors design guidelines for advanced traveler information systems (ATIS) and commercial vehicle operations (CVO)</i> (FHWA-RD-98-057). Washington, DC: Federal Highway Administration.	General DVI Requirements, Driver Needs, Message Characteristics
Campbell, J. L., Richard, C. M., Brown, J. L., & McCallum, M. (2007). <i>Crash warning system interfaces: Human factors insights and lessons learned</i> . (Report No. DOT HS 810 697). Washington, DC: National Highway Traffic Safety Administration.	Driver Needs, Visual Interfaces, Auditory Interfaces
Campbell, J. L., Richman, J. B., Carney, C., and Lee, J. D. (2004). <i>In-vehicle display icons and other information elements, Volume I: Guidelines</i> (FHWA-RD-03-065). McLean, VA: Federal Highway Administration.	Driver Needs, Message Characteristics, Driver Inputs, Visual Interfaces
Campbell, J.L., Bittner, A.C., Jr., Lloyd, M., Mitchell, E., & Everson, J.H. (1997). <i>Driver-vehicle interface (DVI) design guidelines for the intersection collision avoidance (ICA) system</i> (Final Report). Seattle, WA: Battelle Human Factors Transportation Center.	Auditory Interfaces
Campbell, J.L., Carney, C., and Kantowitz, B.H. (1998). <i>Human factors design guidelines for advanced traveler information systems (ATIS) and commercial vehicle operations (CVO)</i> (FHWA-RD-98-057). Washington, DC: Federal Highway Administration.	Visual Interfaces, Driver Inputs
Campbell, J.L., Hooey, B.H., Carney, C., Hanowski, R. J., Gore, B. F., Kantowitz, B. H., & Mitchell, E. (1996). <i>Investigation of alternative displays for side collision avoidance systems</i> (Final Report). Seattle, WA: Battelle Seattle Research Center.	Auditory Interfaces, Driver Inputs
Campbell, J.L., Richard, C.M., Brown, J.L., & McCallum, M. (2007). <i>Crash warning system interfaces: Human factors insights and lessons learned, final report</i> (DOT HS 810 697). Washington, DC: National Highway Traffic Safety Administration. Retrieved from http://www.nhtsa.gov/DOT/NHTSA/NRD/Multimedia/PDFs/Crash%20Avoidance/2007/CWS_HF_Insights_Task_5_Final_Rpt.pdf	Driver Information, Visual Interfaces, Auditory Interfaces, HV Visual Displays
Campbell, J.L., Richman, J.B., Carney, C., & Lee, J.D. (2004). <i>In-vehicle display icons and other information elements, Volume I: Guidelines</i> (FHWA-RD-03-065). McLean, VA: Federal Highway Administration. Retrieved from http://www.fhwa.dot.gov/publications/research/safety/03065/index.cfm	Message Characteristics, Auditory Interfaces, Driver Inputs
Carney, C., Campbell, J. L., & Mitchell, E. A. (1998). <i>In-vehicle display icons and other information elements: Literature review</i> (Report No. FHWA RD 98 164). Washington, DC: Federal Highway Administration.	Visual Interfaces
Carsten, O. (2001). Driver assistance systems: Safe or unsafe. <i>Proceedings of the International Conference on Traffic and Transport Psychology – ICTTP 2000</i> . Bern, Switzerland: Swiss Council for Accident Prevention.	Driver Inputs, Automation
Carsten, O., Lai, F.C.H., Barnard, Y., Jamson, A.H., & Merat, N. (2012). Control task substitution in semiautomated driving: Does it matter what aspects are automated? <i>Human Factors: The Journal of the Human Factors and Ergonomics Society</i> , 54(5), 747-761. doi: 10.1177/0018720812460246	Automation
Cassidy, A.M. (2009). Mental models, trust, and reliance: Exploring the effect of human perceptions on automation use. (Master's Thesis). Naval Postgraduate School, Monterey, CA.	Automation
Castro, C., & Horberry, T., (Eds.). (2004). <i>The Human Factors of Transport Signs</i> . Boca Raton, FL: CRC Press.	Visual Interfaces
Catchpole, K. R., KcKeown, J. D., & Withington, D. J. (2004). Localizable auditory warning pulses. <i>Ergonomics</i> , 47(7), 748-771.	Auditory Interfaces
Chan, A.H.S. & Ng, A.W.Y. (2009). Perceptions of implied hazard for visual and auditory alerting signals. <i>Safety Science</i> . 47, 346-352.	Visual Interfaces

Reference	DVI Design Topic(s)
Chang, S.-H., Lin, C.-Y., Fung, C.-P., Hwang, J.-R., & Doong, J.-L. (2008). Driving performance assessment: Effects of traffic accident location and alarm content. <i>Accident Analysis & Prevention</i> , 40(5), 1637-1643.	Auditory Interfaces
Chang, S.-H., Lin, C.-Y., Hsu, C.-C., Fung, C.-P., & Hwang, J.-R. (2009). The effect of a collision warning system on the driving performance of young drivers at intersections. <i>Transportation Research Part F: Traffic Psychology and Behaviour</i> , 12(5), 371-380.	Auditory Interfaces
Chapman, P., Underwood, G., & Roberts, K. (2002). Visual search patterns in trained and untrained novice drivers. <i>Transportation Research Part F: Traffic Psychology and Behaviour</i> , 5(2), 157-167.	Driver Needs
Charissis, V. & Papanastasiou, S. (2010). Human-machine collaboration through vehicle head up display interface. <i>Cognition, Technology and Work</i> , 12(1), 41-50.	Visual Interfaces
Charissis, V., & Naef, M. (2007). Evaluation of prototype automotive head-up display interface: Testing driver's focusing ability through a VR simulation. <i>2007 IEEE Intelligent Vehicles Symposium</i> (pp. 560-565).	Visual Interfaces
Charissis, V., Naef, M., Papanastasiou, S., & Vlachos, G. (2008). Investigation of users' age and driving performance with the use of prototype automotive HUD system. <i>Proceedings of the 15th World Congress on Intelligent Transport Systems and ITS America's 2008 Annual Meeting</i> .	Visual Interfaces
Charlton, S. (2006) Conspicuity, memorability, comprehension, and priming in road hazard warning signs. <i>Accident Analysis & Prevention</i> , 38(3), 496-506.	Driver Needs
Chen, W.-H., Lee, S.-W., Kao, K.-C., & Chiou, J.-M. (2007). Young driver preferences and experimental investigation of audio and visual interface designs for in-vehicle information systems. <i>Transportation Research Board 86th Annual Meeting Compendium of Papers [CD ROM]</i> .	Visual Interfaces
Chen, W.-H., Lin, C.-Y., & Doong, J.-L. (2005). Effects of interface workload of in-vehicle information systems on driving safety. <i>Transportation Research Record</i> , 1937, 73-78.	Auditory Interfaces, System Integration
Chiang, D., Brooks, A., & Llaneras, E. (2004). <i>Final task report: Investigation of multiple collision alarm interference driving simulator study</i> (Report for the National Highway Safety Administration). Torrance, CA: Dynamic Research.	Auditory Interfaces, System Integration
Chien, C. & Ioannou, P.A. (1992). Automatic vehicle following. <i>Proceedings of the 1992 American Control Conference</i> . (pp. 1748-1752). Chicago, IL: IEEE	Automation
Cholewiak, R.W. & Craig, J.C. (1984). Vibrotactile pattern recognition and discrimination at several body sites. <i>Perception and Psychophysics</i> , 35(6), 503-514.	Haptic Interfaces
Chun, J., Han, S.H., Park, G., Seo, J., Lee, I., & Choi, S. (2012). Evaluation of vibrotactile feedback for forward collision warning on the steering wheel and seatbelt. <i>International Journal of Industrial Ergonomics</i> , 42, 443-448.	Haptic Interfaces
CIE 146:2002. (2002). <i>CIE equations for disability glare</i> . Vienna, Austria: International Commission on Illumination.	Visual Interfaces
Cnossen, F., Brookhuis, K. A., & Meijman, T. (1997). The effects of in-car information on mental workload: A driving simulator study. <i>Simulators and Traffic Psychology. Proceedings of the Human Factors and Ergonomics Society HFES Europe Chapter Annual Meeting</i> (pp. 151-161). Groningen State University, The Netherlands.	General DVI Requirements
Cohn, T. E. (1995). Engineered visibility warning signals: An IDEA project. <i>Proceedings of Step Forward. Intelligent Transport Systems World Congress</i> , 452-457.	Visual Interfaces
Cole, B.L. & Hughes, P.K. (1984). A field trial of attention and search conspicuity. <i>Human Factors</i> , 26, 299-313.	Assessing Driver Performance
Commission of the European Communities (2007). <i>Commission recommendation on safe and efficient in-vehicle information and communication systems: Update of the European Statement of Principles on human machine interface</i> . Brussels, Belgium: European Union. Retrieved October 28, 2010 from http://www.umich.edu/~driving/safety/guidelines.html	Message Characteristics, Visual Interfaces

Reference	DVI Design Topic(s)
COMSIS Corporation. (1996). <i>Preliminary human factors guidelines for crash avoidance warning devices</i> (NHTSA Project No. DTNH22-91-07004). Silver Spring, MD: Author.	Safety Messages, Message Characteristics, Visual Interfaces, Auditory Interfaces, Driver Inputs, HV Design Considerations
Cullinane, B. & Kirn, C. (2012). Timely comprehension: A methodology for evaluating integration of in-vehicle warning systems. <i>Presented at SAE 2012 World Congress & Exhibition</i> . doi:10.4271/2012-01-0100	Message Characteristics
Cummings, M., Kilgore, R., Wang, E., Tijerina, L., & Kochhar, D. (2007). Effects of single versus multiple warnings on driver performance. <i>Human Factors</i> , 49(6), 1097-1106.	System Integration
Daimon, T., Kawashima, H., Yamada, S., & Iwasaki, Y. (2000). Study on human interface for multi-information environment of in-vehicle information systems-Integration of headway warning and blind-spot warning information. <i>Proceedings of the 7th World Congress on Intelligent Systems</i> .	System Integration
Danielsson, L., Lind, H., & Jonasson, S. (2007). INSAFES HCI principles for integrated ADAS applications. <i>Universal Access in Human-Computer Interaction, Ambient Interaction</i> , 4555.	System Integration
Davidse, R. J., Hagenzieker, M. P., van Wolffelaar, P. C., & Brouwer, W. H. (2009). Effects of In-Car Support on Mental Workload and Driving Performance of Older Drivers. <i>Human Factors</i> , 51(4), 463-476.	General DVI Requirements
Davis, G. A., Hourdos, J., Xiong, H., & Chatterjee, I. (2011). Outline for a causal model of traffic conflicts and crashes. <i>Accident Analysis & Prevention</i> , 43(6), 1907-1919.	Assessing Driver Performance
De Boer, J., Chaziris, A., Vreeswijk, J., Bie, J., & Van Arem, B. (2010). The accuracy and timing of pedestrian warnings at intersections: The acceptance from drivers and their preferences. <i>13th International IEEE Conference</i> , 1849-1854.	Message Characteristics
de Groot, S., de Winter, J. C. F., Garcia, J. M. L., Mulder, M., & Wieringa, P. A. (2011). The effect of concurrent bandwidth feedback on learning the lane-keeping task in a driving simulator. <i>Human Factors</i> , 53(1), 50-62	Haptic Interfaces
de Vos, A.P., Godthelp, J., & Kappler, W.D. (1999). Subjective and objective assessment of manual, supported, and automated vehicle control. In: J.P. Pauwelussen (Ed.), <i>Vehicle Performance</i> (pp. 97-120). Exton, PA: Swets and Zeitlinger, Lisse.	Assessing Driver Performance
Deatherage, B. H. (1972). Auditory and other sensory forms of information presentation. In H.P. Van Cott & R.G. Kinkade (Eds.), <i>Human engineering guide to equipment design</i> (rev. ed.) (pp. 123-160). Washington, DC: U.S. Government Printing Office.	Message Characteristics, Automation
DeLucia, P. R., & Tharanathan, A. (2009). Responses to deceleration during car following: Roles of optic flow, warnings, expectations, and interruptions. <i>Journal of Experimental Psychology: Applied</i> , 15(4), 334-350.	Driver Needs
Dementienko, V. V., & Markov, A. G. (2006). Alertron – Monitoring driver's vigilance based on electrodermal activity. <i>Proceedings of the 13th ITS World Congress</i> .	Automation
Desmond, P. A., & Hancock, P. A. (2001). Active and passive fatigue states. In P.A. Hancock & P.A. Desmond (Eds.) <i>Human factors in transportation: Stress, workload, and fatigue</i> (pp. 455-465). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers, Mahwah, N	General DVI Requirements
Di Stasi, L. L., Contreras, D., Canas, J. J., Candido, A., Maldonado, A., & Catena, A. (2010). The consequences of unexpected emotional sounds on driving behavior in risky situations. <i>Safety Science</i> , 48(10), 1463-1468.	Auditory Interfaces
Dick, V., Murray, D., and Houser, A. (2006). A synthesis of commercial motor vehicle safety technology surveys: What have we learned? <i>Transportation Research Board 2006 Annual Meeting Compendium of Papers</i> [CD ROM].	Driver Needs
Diederichs, J. P. F., Marberger, C., & Hinder, V. (2010). Iterative design and assessment of an audio visual warning concept for Car2x communication systems. <i>Proceedings of the 17th ITS World Congress</i> .	Auditory Interfaces