INTRODUCTION

The ESV Program originated four decades ago under the North Atlantic Treaty Organization (NATO) Committee on the Challenges of Modern Society, and was implemented through bilateral agreements between the Governments of the United States, France, the Federal Republic of Germany, Italy, the United Kingdom, Japan, and Sweden. The participating nations agreed to develop experimental safety vehicles to advance the state-of-the-art technology in automotive engineering and to meet periodically to exchange information on their progress. Since its inception the number of international partners has grown to include the Governments of Canada, Australia, The Netherlands, Hungary, Poland, Republic of Korea, and two international organizations the European Enhanced Vehicle-safety Committee, and the European Commission. A representative from each country/organization serves as a Government Focal Point in support of the Program.

In the interest of information exchange, The National Highway Traffic Safety Administration, U.S. Department of Transportation, distributes this USB drive which contains the Proceedings of the 22nd International Technical Conference on the Enhanced Safety of Vehicles (ESV). The technical papers included in this publication detail safety research efforts underway worldwide, and share the common interest of reducing motor vehicle related fatalities and injuries globally. The opinions, findings, and conclusions expressed in the publication are those of the author(s) and not necessarily those of the U.S. Department of Transportation, National Highway Traffic Safety Administration. Final papers are accepted after the corresponding abstracts undergo technical review. The technical papers contained on this USB drive are the unmodified written work of the author(s).

The Conference Organizers thank our international participants for their dedication and support of the 22nd ESV Conference and look forward to your future participation.

Donna E. Gilmore
ESV Technical Coordinator
DOT/NHTSA

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National Highway Traffic Safety Administration

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National Highway Traffic Safety Administration

ARTHUR CARTER

Student Safety Technology Design Competition Coordinator

National Highway Traffic Safety Administration

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22nd ESV TECHNICAL SESSION CHAIRPERSONS/CO-CHAIRPERSONS

Technical Session Topics	Chair	Country	Co-Chair	Country
Biomechanics #1: Crash Injury Analysis: Test and Computer Methods	Stephen Ridella	United States	Philippe Vezin	France
Side Impact and Rollover Crashes: Prevention and Occupant Protection	Bernd Lorenz	Germany	Riley Garrott	United States
Assessment of Strategies for Integrated Improvements in Fuel Economy and Safety, Including Use of Alternate Fuels and Batteries	Jac Wismans	The Netherlands	Antonio Erario	Italy
Biomechanics #2: Development of Crash Test Dummies Related Instrumentation and Analysis Techniques	Koshiro Ono	Japan	Bruce Donnelly	United States
Assessment of Performance of Occupant Protection Systems for Children, Older Adults, and Other Vulnerable Occupants	Bernie Frost	United Kingdom	David Adams	United Kingdom
Advanced Technology #1: Safety Performance and Effectiveness of Driver Assistance Technologies, Test & Evaluation Procedures, Benefits Assessment	Raymond Resendes	United States	Anders Lie	Sweden
Panel Discussion: Vehicle Safety: Regulatory Compliance & Enforcement and Defects Investigations	Claude Harris	United States		
Advanced Technology #2: Human Performance and Driver Behavior	Tim Johnson	United States	Andre Seeck	Germany
Restraint System Design and Performance Challenges: Effects of Future Fleet Changes	Stephen Summers	United States	Lex van Rooij	The Netherlands
Advancements in Pedestrian and Other Vulnerable Non-Occupant Road User-Safety	Rikard Fredriksson	Sweden	Robert Anderson	Australia
NCAP and Other Non-Regulatory Strategies for Improving Safety	Mark Terrell	Australia	Jenny Dang	United States
Vehicle Structural Design Changes: Implications for Frontal Impact Protection and Compatibility	Bernie Frost	United Kingdom	Suzanne Tylko	Canada
Advances in Driver Assistance Systems for Heavy Trucks and Buses and All Aspects of Motorcycle Safety	Devin Elsasser	United States	Younghan Youn	Republic of Korea
Assessments of New and Improved Field Data Collection & Analysis Methods	Andre Seeck	Germany	Augustus (Chip) Chidester	United States

ESV 2011 U.S. GOVERNMENT AWARD RECIPIENTS

SAFETY ENGINEERING EXCELLENCE
In recognition of and appreciation for exceptional scientific contributions in the field of motor vehicle safety engineering and for distinguished service to the motoring public

Erik Coelingh, Sweden

Hideki Yonezawa (Awarded Posthumously), Japan

Wassim Najm, United States

SPECIAL AWARD OF APPRECIATION
In recognition of and appreciation for outstanding leadership and special contributions in the field of motor vehicle safety

Gyu Hyun Kim, Korea

Thomas Broberg, Sweden

Matthew Avery, United Kingdom

Guy S. Nusholtz, United States

Tony R. Laituri, United States

ESV 2011 INTERNATIONAL STUDENT SAFETY TECHNOLOGY DESIGN COMPETITION FINALISTS

ASIA PACIFIC – JAPAN, REGION 1

REGIONAL COORDINATOR: MR. KAZURO IWATA, JSAE, JAPAN

College of Engineering, Nihon University
"Development of New Type Dummy with Ca2+ Increase in Cell Injury"

ASIA PACIFIC – KOREA, REGION 1

REGIONAL COORDINATOR: MR. YOUNGHAN YOUN, KUT, KOREA

Korea University of Technology and Education/Seoul National University of Science and Technology
"Development of the Smart Whiplash Protectable Seating System on Non-Symmetrical Rear Impact Crashes"

EUROPE, REGION 2

REGIONAL COORDINATOR: DOMINIQUE CESARI, INRETS, FRANCE

Hochschule für Technik und Wirtschaft des Saarlandes (HTWdS), University of Applied Sciences, Germany
"Investigation into the Application of an Active Bracing Device for Improved Vehicle Crash Compatibility"

Universidad Politécnica de Madrid (UPM Madrid, Spain)
"Child Restraint System with Pre-Tensionera and Load Limiter Functionality"

NORTH AMERICA, REGION 3

REGIONAL COORDINATOR: ARTHUR CARTER, NHTSA UNITED STATES

University of Central Florida (UCF), United States
"Driveid: Individualized Risk Mitigation for Diverse High-Risk Drivers"

University of Michigan Transportation Institute (UMTRI), United States
"The Design and Testing of a Low-Cost Child Restraint for use In Developing Countries"

Virginia Polytechnic Institute and State University (VT) – Wake Forest University (WFU) Center for Injury Biomechanics, United States
"Deflection Measurement System fort the Hybrid III Six-Year-Old Biofidelic Abdomen"