INTRODUCTION

The ESV Program originated over forty years ago under the North Atlantic Treaty Organization (NATO) Committee on the Challenges of Modern Society, and was implemented through a mutual agreement 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 safety 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 23rd 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. The opinions, findings, and conclusions expressed in the publications 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 written work of the author(s). To enhance the technical content, fifteen papers were accepted for peer-review and are to be published in a special edition of *Traffic Injury Prevention* 14(S1), by Taylor and Francis Group. These papers will be available to the public on the *Traffic Injury Prevention* and [www.NHTSA.gov](http://www.nhtsa.gov) websites in July 2013.

The Conference Organizers thank our international participants for their dedication and support of the 23rd ESV Conference and look forward to your future participation.

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ESV Technical Coordinator  
DOT/NHTSA
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Ministry of Land, Infrastructure and Transport

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Korea Transportation Safety Authority
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<th>COUNTRY</th>
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Associate Administrator for Vehicle Safety Research                | National Highway Traffic Safety Administration                               |
### 23rd ESV TECHNICAL SESSION CHAIRPERSONS/CO-CHAIRPERSONS

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ESV 2013 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

Klaus Kompass, Germany
Ryoichi Yoshida, Japan
Younghan Youn, Ph.D., Korea
Oul-Seog Koo, Korea
Rikard Fredriksson, Ph.D., Sweden

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

Dr. Wilfried Klanner, Germany
Jongsoo Kim, Korea
Dongseok Kim, Ph.D., Korea
Anders L. Eugensson, Sweden
Douglas P. Campbell, United States
ESV 2013 INTERNATIONAL STUDENT SAFETY TECHNOLOGY DESIGN COMPETITION FINALISTS

ASIA PACIFIC – JAPAN, REGION 1
REGIONAL COORDINATOR: MR. KAZURO IWATA, JSAE, JAPAN
The University of Tokyo
“Parachute Braking System Proposal”

Tokyo City University
“Development of Side-Impact Test Method for CRS”

Nihon University, College of Engineering, Koriyama city, Fukushima
“Development of advanced helmet for personal mobility”

ASIA PACIFIC – KOREA, REGION 1
REGIONAL COORDINATOR: PROF. YOUNG HAN YOON
Korea University of Technology and Education, KOREA
Seoul National University, Korea
“Development of a Smart Co-driver System”

Korea University of Technology and Education
“Rear Seat Old Child Protection with Automatic Re-directing Side Curtain Airbag deployment”

NORTH AMERICA, REGION 3
REGIONAL COORDINATOR: ARTHUR CARTER, NHTSA UNITED STATES

University of Maryland
“Flexible Incident Notification System”

California Polytechnic State University
“Automatic Crash Avoidance Sensor Development and Scale Vehicle Demonstration”