



21st International Technical Conference
on the Enhanced Safety of Vehicles

ESV marching ahead with technologies -
Be a part of the growing excitement



June 15-18, 2009
International Congress Center Stuttgart, Germany

Judging Criteria for the 3rd International
Collegiate Student Safety Technology
Design Competition

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COMPETITION OBJECTIVES

The Enhanced Safety of Vehicles (ESV) International Collegiate Student Safety Technology Design Competition consists of the following:

- Identifying an important safety problem and developing the concept for an original vehicle-based technology to address this safety problem.
- Creating a functional, scale, or life size model of this vehicle-based technology.
- Documenting the development of the functional, scaled, or life size model by presenting the results via a report and demonstration. Teams selected to participate in the final international judging will present their work orally at the regions and discuss the potential safety impact of the technology to the judges at the ESV Conference. They will also exhibit their safety inventions and devices during the ESV Conference in Stuttgart, Germany, in a special booth set up for the purpose.
- The participants in the final round will be required to make a 15-minute oral technical presentation at a special session set up for the purpose at the ESV Conference. The presentation will include a discussion of the safety problem being addressed, description of the countermeasures envisioned and potential safety benefits.

The student design must address a real-world vehicle safety problem from one of the following ten competition categories:

- 1. Crash Avoidance / Driver Assistance Technologies:** Driver assistance in critical situations (e.g., sensors to detect and communicate the location and speed of other vehicles, Global Positioning System applications, video applications, tire pressure monitoring systems, etc.) to improve their effectiveness in solving real-world safety problems and increase their usage rates.
- 2. Restraint System Enhancement:** Systems to minimize injuries to vehicle occupants during a crash (e.g., vehicle interior design, enhancements to seat belts, air bags, head restraints, pre-crash sensors for seat belt pre-tensioners, adaptive restraints, etc.) to improve safety in real-world crashes.
- 3. Post-Crash Safety:** Vehicle enhancements that improve post-crash injury reduction and treatment (e.g., automated crash notification, minimizing fuel leakage, fire prevention, advanced bystander care, etc.).

4. **Impaired Driving Countermeasures:** Systems to reduce impaired driving (e.g., ignition interlocks, passive drug and alcohol sensors, etc.) to prevent impairment-related crashes.
5. **Crash Compatibility:** Improved protection for occupants in vehicle-to-vehicle collisions, where disparities in mass, geometry, and stiffness in vehicles cause safety problems.
6. **Distraction Mitigation:** New display technologies to lessen driver distraction and minimize workload. New ways to prioritize and present data to drivers (e.g., head-up displays, etc.).
7. **Vision Systems:** Innovative vision systems to improve visibility, conspicuity, and detection of other vehicles, people, objects, and other hazards in the traffic environment, etc.
8. **Dummy Design and Instrumentation:** Tools having improved biofidelity and greatly expanded injury assessment capabilities for all body regions, improved data acquisition capabilities and tools suitable for many different crash modes.
9. **Pedestrian Detection, Collision, and Injury Mitigation:** Redesign of passenger vehicles to minimize pedestrian / pedalcyclist / motorcycle crashes and injuries (e.g., vehicle sensors and design, impact-absorbing body panels, etc.).
10. **Test Devices and Test and Evaluation Procedures:** Innovative full-system test and evaluation procedures by which effectiveness of safety countermeasures and full system benefits could be assessed.

STUDENT TEAM COMPOSITION

- A team of undergraduate seniors and/or graduate students from an accredited four-year engineering college/university may submit entries. Teams must consist of at least two, but no more than five students. There is no limit to the number of teams that may compete from any given university. Each team must have one faculty advisor and a designated student team leader.
- If selected as an international finalist, team members should consider their availability to travel to the 21st ESV Conference, June 15-18, 2009, in Stuttgart, Germany, and to meet the other commitments of participation, e.g. availability for presentations, exhibiting

COMPETITION REGIONS, COORDINATORS, AND JUDGING

Competition regions

There are three competition regions: Because of the logistics involved and the difficulty in having a single regional coordinator for the 3 regions (Asia Pacific, Europe, and North America), a slightly different arrangement for coordination from previous years of the competition is being implemented. The European region will have a single coordinator. The North America region will have two coordinators, and the Asia-Pacific region will have three coordinators. The list of the coordinators and their addresses are given below:

Regional Competition Coordinators (RCC)

ASIA-PACIFIC, REGION 1	EUROPE, REGION 2	NORTH AMERICA, REGION 3
<p>Coordinator for Australia Manny Stamatopoulos Executive Director Society of Automotive Engineers, Australasia Suite 3, 21 Vale Street North Melbourne, VIC, 3051 Phone: +613 9326 7166 Mobile: 040 326 7166 Fax: +613 9326 7244 Web site: www.sae-a.com.au E-mail: manny@sae-a.com.au</p> <p>Coordinator for Japan Kazuro Iwata Society of Automotive Engineering of Japan, Inc. (JSAE) Group Leader: Professional Development & Publishing Group 10-2 Gobancho Chiyudaku Tokyo 102-0076, Japan E-mail: iwata-sstcdc@jsae.or.jp</p> <p>Coordinator for Republic of Korea Younghan Youn, Ph.D. Professor School of Mechatronics Engineering Korea University of Technology and Education 307 Gajun-ri, Byungchun-myun Cheonan, Chungnam, Korea, 330-708 Phone: +82-(0)41-560-1136 Mobile: +82-(0)16-428-4410 Fax: +82-(0)-41-560-1253 E-mail: yhyoun@kut.ac.kr</p>	<p>Coordinator for Europe Dominique Cesari INRETS European Enhanced Vehicle-Safety Committee 24 Avenue Francois Mitterand Bron Cedex, F-69675 France Phone: 33-1-4721-42570 E-mail: Dominique.cesari@inrets.fr</p>	<p>Coordinator for the United States Arthur Carter U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Research 1200 New Jersey Avenue SE., W46-316 Washington, DC 20590 Phone: 202-366-9836 E-mail: Arthur.Carter@dot.gov</p> <p>Coordinator for Canada Suzanne Tylko 330 Vue Sparks, 8th etage Ottawa, Ontario Canada, KIA ON5 Phone: 613-998-1951 E-mail: Tylkos@tc.gc.ca</p>



JUDGING

By October 31, 2008, the six competition coordinators will each select a panel of three judges to review the team entries from each of their respective regions or countries. On or before November 14, 2008, selected teams who will participate in the regional design evaluation will be notified by their Regional Coordinator. Based on your Region's school calendar, a panel of judges will visit the selected teams' universities to evaluate the developed safety concept and functional design model. The panel of judges may consist of both government and industry automotive safety experts who will select the finalists from their respective jurisdictions. From among the winners from each regional jurisdiction participating in the final competition at the ESV Conference in Stuttgart, Germany, international 1st place winner and runner up will be selected.

Thus, the final competitors will be from the following:

USA: Top 2 winners from the regional competition in USA

Canada: Top winner from the regional competition in Canada

Europe: Top 3 winners from the regional competition in Europe

Australia: Top winner from the regional competition in Australia

Japan: Top winner from the regional competition in Japan

Republic of Korea: Top winner from the regional competition in Korea

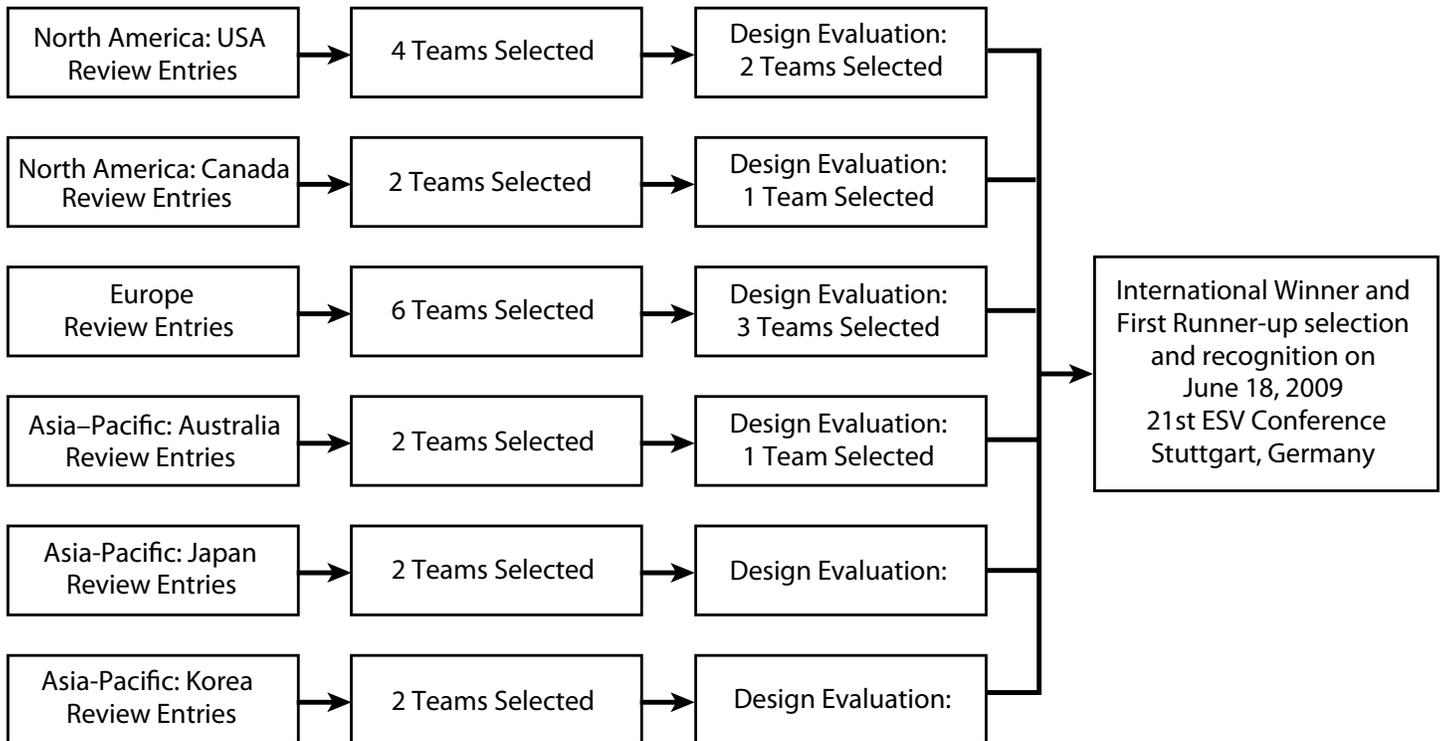
In Stuttgart, Germany, an international panel of nine judges will select a first-place winner and one runner-up. The international panel will consist of three judges from each geographical region (Asia-Pacific, Europe, and North America). The six competition coordinators will select as international judges leaders in the field of automotive safety in their respective regions from both government and industry organizations who will be attending the 21st ESV Conference.

IMPORTANT DATES

Entry Submission Opening:	May 15, 2008
Entry Submission Deadline:	October 31, 2008
Notification of Selected Applicants:	On or before November 14, 2008
Regional Design Evaluation:	^{1*} March 16-27, 2009
Notification of International Finalists:	On or before April 3, 2009
Oral Presentation by International Finalists:	June 16, 2009
First-place winner and runner-up selection and recognition:	June 18, 2009

¹ Regional Design Evaluation date is for North America ONLY. Regional Design Evaluation for Asia-Pacific and Europe depend on each region's school calendar

COMPETITION FLOW



ENTERING THE COMPETITION

- The entry must contain a title, competition category, and a 300-word (maximum) abstract.
- The abstract must outline the vehicle safety problem being addressed by the countermeasure.
- The abstract must clearly identify the device or system that the team will build to address the safety problem outlined. It must also explain briefly how adoption of such a device or system could reduce the number of crashes, mitigate injuries, and/or prevent fatalities and injuries if deployed in vehicles and put into real-world operation in the fleet.
- Entries should include projected development costs of a life size or functional scale-model.
- To be considered, the entry must be submitted electronically via the ESV Web site by **October 31, 2008**.

OVERALL SCORING CRITERIA FOR REGIONAL AND INTERNATIONAL COMPETITION

Scoring Criteria for Abstracts:

• Potential impact on safety problem being addressed	30 points
• Originality	25 points
• Practicability of creating a functional scale model	25 points
• Supporting details, quality, technical depth, and functionality	20 points

	100 points

Status of Abstract Submission

Regional Competition Coordinators will notify all teams in their respective regions whether their abstract was accepted or not accepted to continue in the next phase of the competition for regional finalists.

Scoring Criteria for Regional Finalists:

Judging of each team's project, including their functional models and reports, will take place at each team's respective college or university no later than April 3, 2009.

Judges will view a presentation of the functional models and review the written reports. The following criteria, for both the regional and final competitions, will be considered, and judges will award points based on the following:

• Potential impact on safety problem being addressed	40 points
Did the team address a safety problem?	
How did the team test and evaluate its system?	
What metrics did the team use?	
What are the results of the testing?	
Are conclusions presented clearly?	
What potential or expected impact will the system have on traffic safety?	
Is the system practicable?	
• Originality	20 points
• Functional scale model, physical presentation	20 points
• Oral presentation	10 points
• Supporting details, quality, thoroughness, technical depth, and functionality	10 points

	100 points



Team reports must be submitted in English and no more than 3,000 words (approximately six pages) in length.

Students are encouraged to include the following in their report:

- Estimated safety benefits in terms of lives saved or crashes prevented and the method by which the estimate was developed.
- The percentage of the passenger fleet covered and the percentage of the problem being addressed by the proposed countermeasures.
- The cost/benefit relationship for the system if it were produced and in-use fleet wide.
- Teams shall include in their written report a breakout of the funds expended during the competition to include the equivalent of 2,000 euros awarded by its respective ESV regions to offset the costs involved in its design efforts as well as the 3,000 euros from their region, corporate sponsorship, and any other funds obtained from their university.

Based on the competition criteria, a maximum of three teams per region will be invited to compete in the final competition at the 21st ESV Conference in Stuttgart, Germany. Teams will be notified of the judging results on or before April 3, 2009.

INTERNATIONAL COMPETITION

Final judging for this competition will take place during the 21st ESV Conference, June 15-18, 2009, in Stuttgart, Germany.

The nine finalist teams will be required to present a 15-minute oral PowerPoint presentation during a special technical session for students at the conference. Each team's presentation should be a stand-alone detailed description that clearly shows the team's knowledge of the subject, the data they may have collected and their analysis if any, and should give the judges a positive overall impression.

During the exhibition the international panel of judges will evaluate each team's entry. Each team will have 10-minutes (maximum) to present and demonstrate the functional model. The same criterion that was used to judge the regional competition will be used to judge the finalists.

Winning teams will be presented with a plaque by a representative from the U.S. Department of Transportation / NHTSA and a representative from the 21st ESV Conference Organizing Committee in Germany.

FINANCIAL ASSISTANCE AND CORPORATE SPONSORSHIP

Based on the competition criteria, a maximum of six teams will be invited to participate in their regional competitions. Each team will be awarded the equivalent of 2,000 euros by its respective ESV region to help offset the costs involved in its design efforts.

Teams are encouraged to seek corporate sponsors. Corporate sponsorship, to include funds to offset the costs of the design efforts is limited to the equivalent of 3,000 euros per team, but corporate sponsorship is not a requirement. Total project costs must not exceed the equivalent of 5,000 euros funding ceiling that includes any contributions from sponsors. The nine international finalist teams are permitted to seek additional funding beyond the 3,000 euros to offset travel costs to and from the conference. Conference registration fees will be waived for a maximum of two team members from each of the nine international finalists.

ESV CONFERENCE WEEK STUDENT SCHEDULE

Monday June 15, 2009	8:30 a.m. – 10 a.m.	Teams set up displays in exhibition area and have their photographs taken.
	10 a.m. – 5 p.m.	Finalists are encouraged to have team members available to demonstrate functional scale models
Tuesday June 16, 2009	9 a.m. – 6 p.m.	a.m.: Judges and others will attend student special technical session for students and listen to 15 minute oral presentations. p.m.: Judges will all congregate in the exhibition area for final judging and demonstration of functional scale models. Finalists must be present and each team will have 10 minutes to present and demonstrate functional scale models.
Wednesday June 17, 2009	9 a.m. – 5 p.m.	Student displays must remain in the exhibition area; however, students are not required to be present.
Thursday June 18, 2009	1 p.m.	All Students and Teams must be present. International winner and runner up recognized at the ESV closing ceremony.

21ST ESV CONFERENCE GOVERNMENT FOCAL POINTS



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