Autonomous Snowplow Competition



ION North Star Section
Outreach Program

Autonomous Snowplow Committee



Final Presentation Information & Outline 2013-14 Competitors

December 2013

Final Presentation Rules

- Final Presentation slides must follow the provided outline
 - Standardize judging for all Teams
 - ASC Committee hint:
 - Teams will not score points if sections of the given outline are not addressed
- Final Presentation slides (initial draft) submission deadline
 - 20 January 2014
 - Time: 12 pm (noon) Central
 - Email submission: <u>vibhor.bageshwar@honeywell.com</u>
 - Please submit a PDF version of the presentation to minimize file size
- Final Presentation Day: 23 January 2014 (Thursday)
 - Final Presentation Venue: Science Museum, Saint Paul, MN
 - Final version of the Final Presentation slides must be delivered to Vibhor by 4:30pm on January 23 at the Final Presentation Venue
 - Final presentations will be hosted using the Science Center's A/V equipment and Vibhor's Laptop
 - Supported media: standard Microsoft applications or Adobe Acrobat format



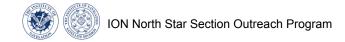
Final Presentation Rules

- Final Presentation time: each Team is allotted 20 minutes
 - Team Presentation order will be determined by random draw at 4:30 pm on 23 January 2014 at the Final Presentation Venue
 - First Team Presentation begins at 5:25pm on 23 January 2014
 - Presentation time: 15 minutes maximum
 - Q&A time: 5 minutes maximum
- Team scoring
 - Final Presentation scoring is independent of Final Reports
 - Team standings will be updated by 25 January 2014
 - Website <u>www.autosnowplow.com</u>
 - ASC Scoring Board at the Competition Venue

- Title Slide (1 slide)
 - Team university/name/logo
- Objectives (1 slide)
 - Team objectives
 - Team composition
- Snowplow Vehicle Program Top-Level Requirements (1 slide)
 - Table format
 - ASC Committee hint: a requirement is a metric that indicates when a design satisfies an objective
 - Ex: Heading angle accuracy: 0.25 deg
 - Snowplow vehicle plowing strategy (minimum 1 slide)
 - Single "I"
 - Triple "I"



- Snowplow Vehicle Description (please follow the given order)
 - Concept/Plowing strategy (1 slide)
 - ASC Committee hint: address how vehicle will satisfy plowing strategy from a top level
 - Snowplow vehicle design (minimum 1 slide)
 - Snowplow vehicle and blade design
 - Snowplow vehicle physical dimensions
 - Sensor + processor component housing
 - Navigation system design (minimum 1 slide)
 - Concept
 - Sensors
 - Navigation augmentation system
 - Placement of navigation aids in competition field
 - Guidance system design (minimum 1 slide)
 - Way-point selection concept
 - Control system design (minimum 1 slide)
 - Concept & available actuators
 - Bandwidth & actuator response speed
 - Processor & Software design (minimum 1 slide)
 - Timing and action sequence flowchart



- Safety System (minimum 1 slide)
 - System description
 - Emergency shut-off options
 - Physical and remote
 - Stopping distance from maximum speed
 - Identify surface
- Failure Modes and Recovery Actions (1 slide)
 - Identify failure mode and recovery actions
 - Table format
- Overall Risk Assessment Summary (1 slide)
 - Evaluate each subsystem
 - Identify known issues
 - Table format

- Vehicle Design Challenges (minimum 1 slide)
 - Highlight vehicle or system design changes from the existing snowplow vehicle design
 - Teams should indicate whether the vehicle or its systems are pre-existing or newly designed
 - Highlight the design challenges the Team faced while adapting the vehicle and its systems to this year's competition
- Commercialization and Implementation (2 slides)
 - Identify components and their cost
 - Identify snowplow vehicle and navigation aid cost for sale to the general consumer
 - ASC Committee hint: convey cost to a consumer buying the product at the local hardware store
 - Identify steps consumers would follow to set-up the snowplow vehicle and navigation aids in an operating environment
 - Operating environment example: garage and driveway
 - Identify time to set-up the snowplow vehicle and navigation aids in an operating environment
 - ASC Committee hint: convey the ease or difficulty the consumer would encounter setting up the snowplow vehicle and navigation aids
 - Table format



Final Presentation Schedule

Team	Presentation Time (central)
Case Western Reserve University: "Snow-Mower 7"	TBD: random draw at 4:30pm on 23 January 2013
Dunwoody College of Technology: "Snow Devil 0100_2"	
Iowa State University: "SnowClone"	
Miami University: "Red Blade"	
North Dakota State University: "THUNDAR Snowplow"	
University of Michigan-Dearborn: "Geili 3.0"	
University of Michigan-Dearborn: "Yeti"	
University of Michigan-Dearborn: "Zenith"	

Final Presentation Scoring

Final Presentation scoring: 10% of the total Competition score

Category	Scoring
Technical and Quality of Presentation	200
Ability to Engage Audience	50
Total Points	250