



INVENTIONS AND INNOVATIONS

OVERVIEW

Teams investigate and determine the need for an invention or innovation of a device, system, or process and then brainstorm ideas for a possible solution. Team entries must include documentation of the team's work, a display, and a model/prototype. Semifinalists make an oral presentation to a panel of judges (who act as venture capital investors) to persuade the panel to invest in their invention/innovation. Judges interview the participants.

ELIGIBILITY

Preliminary round:

- One (1) team per chapter may participate.
- A team consists of a minimum of three (3) and a maximum of six (6) members.
- One (1) entry per team is permitted.

Semifinal round: Three (3) team members may participate from a qualifying team.

TIME LIMITS

Semifinalists will be allowed:

1. Two (2) minutes for set up
2. Five (5)-minutes for an oral presentation
3. Two (2) minutes for a question and answer session
4. One (1) minute for the removal of presentation items

LEAP

A team LEAP Response is required for this event and must be submitted at event check-in (see LEAP Program).

ATTIRE

TSA competition attire is required.

PROCEDURE

Pre-conference

1. Teams identify a need that has the potential for the invention/innovation of a device, system, or process.
2. Team members research issues and gather information about the identified need. They should review the publication, *Standards for Technological Literacy* (and topics in this document regarding design and invention), so that relevant information can be included in the display.
3. Teams brainstorm ideas for possible inventions/innovations relative to the identified need, choose a final idea, and work on the design and details.
4. To feature the invention/innovation, teams develop documentation of their work, a display, and a model/prototype.



5. Teams design and construct the model/prototype and any visual aid(s) to enhance the display. The model/prototype can be scaled and, therefore is more of a conceptual model—versus a working model—of a device, system, or process.
6. Teams prepare an oral presentation that will further explain the invention/innovation to a panel of judges acting as venture capitalists on site at the conference.

Preliminary Round

1. Participants check in their entry and LEAP Response at the time and place stated in the conference program.
2. No more than two (2) team members may check in the entry.
3. The entry requirements at check-in are the documentation, the promotional display, and the LEAP Response.
4. Entries are reviewed by judges. Neither students nor advisors are present at this time.
5. A list of twelve (12) semifinalists (in random order) will be posted.

Semifinal Round

1. Semifinalists will sign up for an oral presentation at the time and place stated in the conference program.
2. All entry materials must be picked up by no more than two (2) team members at the time and place stated in the conference program.
3. The LEAP Response will be judged for semifinalist teams.
4. Ten (10) finalists will be announced at the awards ceremony.

REGULATIONS

Preliminary Round

- A. The invention/innovation entry (of a device, system, or process) must be the result of an identified need.
- B. Documentation
 1. Documentation materials (comprising “a portfolio”) are required and should be secured in a clear front report cover. (Click [here](#) for a sample.)
 2. The report cover must include the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the event title, conference city and state, the year, and the team/chapter ID# number; one (1) page
 - b. Need and invention/innovation description; two (2) pages
 - c. Description of brainstorming process; one (1) page
 - d. Photos of the model/prototype, and drawings, or illustrations of the invention/innovation; maximum two (2) pages
 - e. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible, and comments; up to to three (3) pages (see Forms Appendix)
- C. Display
 1. The size of the display (the portfolio and the model/prototype) for the invention/innovation may not exceed 15" deep x 3' wide x 4' high.
 2. The display must be self-standing on a table top (small easels are permitted).
 3. The display must promote the invention/innovation and include:
 - a. a logo
 - b. an original product name



- c. the intended use of the invention/innovation
 4. A/C electricity may not be used.
 5. Dry cell or photo-voltaic cells may be used for power, if desired. Any power source used must fit within the maximum display area.
 6. If operating instructions are necessary, they must be clearly displayed.
 7. **No viruses, live plants, or animals may be used as a part of the display.**
 8. **No harmful or illegal substances may be displayed.**
 9. **Violation of regulations 7 or 8 above will result in disqualification.**
- D. Once the display set-up time frame has closed, participants may not re-enter the event area.
- E. Model/Prototype
1. The model/prototype may be a scaled version of the invention/innovation idea.
 2. A working model/prototype is not required.
 3. It is the invention/innovation idea that will be evaluated, however, the idea should be realistic and have the potential to be workable.
 4. The following options may be used to provide direct current electrical power for the model/prototype when it is demonstrated during the semifinalist presentation. *No other electrical source may be used.*
 - a. up to 4 “C” or “D” batteries, OR
 - b. up to 8 “AA” or “AAA” batteries

Semifinal Round

- A. Semifinalist presentation (oral)
1. Time limits
 - a. Two (2) minutes for set-up
 - b. Five (5) minutes for the presentation
 - c. Two (2) minutes for a question/answer session
 - d. One (1) minute for removal of presentation items
 2. The presentation is limited to three (3) team members. Each member should be an active participant in the presentation.
 3. An audience may be in attendance.
 4. The use of visual aid material is encouraged; however, no electronic or electrically-run equipment may be used. The exception is the team’s model/prototype, should it require electricity; restrictions apply, as described in regulation E.4.
 5. The goal of the team is to convince the judges that the invention/innovation is needed and has real-world potential.
- B. The LEAP Response:
1. Teams document the leadership skills the team has developed and demonstrated while working on this event, and on a non-competitive event leadership experience.
 2. Find the specific LEAP Response regulations in the LEAP Program section of this guide, and on the [TSA website](#).



EVALUATION

Evaluation is based on:

1. Preliminary round: The effectiveness of the documentation, the display, and the model/prototype.
2. Semifinal round:
 - a. The effectiveness of the participants to convince the judges that the invention/innovation is needed and workable, and that it has the potential for a return on an investment
 - b. The content and quality of the LEAP Response

Refer to the official rating form for more information.

STEM INTEGRATION

This event has connections to the STEM areas of Science, Technology, Engineering, and Mathematics.

CAREERS RELATED TO THIS EVENT

This competition connects to one or more of the careers below:

- Engineer
- Multimedia designer
- Product designer
- Small business owner



INVENTIONS AND INNOVATIONS EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round:, two (2) or more
 - 2. Semifinal round, two (2) or more
- C. Assistants, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one copy for the coordinator and each judge/assistant
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for identifying entries
 - 5. Results envelope with coordinator forms
- B. Display tables for entries
- C. Table and chairs for team presentations, as needed
- D. Stopwatch
- E. Table and chairs for event coordinator and judges

RESPONSIBILITIES

- A. At the conference:
 - 1. Attend the mandatory coordinator's meeting at the designated time and location.
 - 2. Report to the CRC room and check the contents of the coordinator's packet.
 - 3. Review the event guidelines and check to see that enough judges/assistants have been scheduled.
 - 4. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
 - 5. At least one hour before the event is scheduled to begin, meet with judges/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- B. Preliminary Round:
 - 1. Check-in the entries at the time stated in the conference program.
 - 2. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC.
 - 3. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
 - 4. Requirements for attire do NOT apply during check-in only on the first day of the conference.



5. Each entry must include the team's identification number in the upper right-hand corner of the entry (portfolio and display).
 6. Judges independently review the entries.
 7. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either
 - to deduct twenty percent (20%) of the total possible points in this round or
 - to disqualify the entry
 - The event coordinator, judges and CRC manager must all initial either of these actions on the rating form.
 8. Judges determine the twelve (12) semifinalists and discuss and break any ties.
 9. Submit semifinalist results and all related forms in the results envelope to the CRC room.
 10. In the designated area, post a time sign-up list for semifinalist presentations and any instructions for the semifinalist participants.
 11. Manage the pick-up of non-semifinalist entries.
- C. Semifinal Round:
1. Prepare a list of standard interview questions (five to ten [5-10]) to be asked of all participants.
 2. At least one (1) hour before the semifinalist presentations are scheduled to begin, meet with judges/assistants to review time limits, procedures, standard questions for the semifinalist presentations, and regulations.
 3. Check the area or room in which the presentations will take place for appropriate set up. Notify the event manager of any potential problems.
 4. Check in semifinalists at the time stated in the conference program. Confirm with the teams their order of presentation and the procedure.
 5. Assist judges in completing the evaluation process.
 6. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either
 - to deduct twenty percent (20%) of the total possible points in this round or
 - to disqualify the entry
 - The event coordinator, judges and CRC manager must all initial either of these actions on the rating form.
 7. Judges determine the ten (10) finalists, and break any ties for the top three (3) entries, as necessary.
 8. Submit the finalist results and all related forms in the results envelope to the CRC room.
 9. Manage security for viewing and the removal of materials from the event area.



Participant/Team ID# _____

INVENTIONS AND INNOVATIONS

2018 & 2019 OFFICIAL RATING FORM

MIDDLE SCHOOL

Go/No Go Specifications

Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box. If an item is missing, leave the box blank and place a check mark in the box labeled ENTRY NOT EVALUATED. This will disqualify the entry and it will not be judged.

- Portfolio documentation is present
- Display is present
- Completed LEAP Response is present
- ENTRY NOT EVALUATED

Criterion Performance Levels

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
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Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Static Entry (70 points)

Portfolio <small>See Regulations (X1)</small>	The portfolio is missing several components, and/or it is unorganized; it is messy and lacking quality.	Most portfolio sections are included, generally organized, and exhibit some quality.	All sections of the portfolio are included; there is clear evidence of quality and organization.
Need and description <small>(X2)</small>	Description of need for invention/innovation is provided, but it is unclear and unconvincing; there is not enough detail; invention/innovation is not sensible, practical, or rational in nature.	Description of need for invention/innovation is generally convincing, with some detail; invention/innovation is realistic and generally meets the need as defined.	Description of need for invention/innovation is fully explained, defined, and detailed precisely; invention/innovation accurately and convincingly meets the need as defined.
Model/prototype photographs /drawings <small>(X1)</small>	Only one or two photographs/sketches of the model/prototype are displayed, with little or no evidence that a model/prototype was well-developed or utilized.	Adequate photographs/sketches of the model/prototype are included and are generally representative of the concept.	High quality photographs/sketches of the model/prototype are provided and documented completely.
Display <small>(X2)</small>	Display is not complete; the information is irrelevant to the invention/innovation, and the display is lacking in aesthetic quality.	Display includes most components; the idea featured is adequately described.	Display is complete; information presented promotes the invention/innovation exceptionally well, and the quality is aesthetically pleasing.
Brainstorming process <small>(X1)</small>	Description of the brainstorming process includes little or no details.	Description of the brainstorming process is provided, with sufficient detail about the process.	There is clear evidence that brainstorming served as a key component of the process.

STATIC ENTRY SUBTOTAL (70 points)

Rules violations (a deduction of 20% of the total possible points for the above section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

PRELIMINARY SUBTOTAL (70 points)

Record scores in the column spaces below.



Semifinal Presentation/Interview (95 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Organization (X1)	Participants seem unorganized and unprepared for the presentation/interview; illogical explanation of the need and solution is presented.	Participants are generally prepared for the presentation/interview; explanation of the need and solution are communicated and generally organized.	The presentation/interview is logical, well organized, and easy to follow; the need and solution are communicated in a concise manner.
Knowledge (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the concepts in their project.
Articulation (X1)	The presentation/interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The presentation/interview is somewhat logical, easy-to-follow, and/or there is sufficient information provided describing the project.	The presentation/interview is clear, concise, and there is ample information provided describing the project.
Delivery (X1)	The team is verbose and/or uncertain in its interview; participants' posture, gestures, and lack of eye contact diminish the presentation/interview.	The team is somewhat well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact are acceptable.	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation/interview.
Creativity of presentation; use of audio/visual skills (X2)	Presentation lacks imagination, originality, and detail; there is limited use of audio/visual materials.	Presentation is generally effective, innovative, and convincing; use of audio/video materials provides information about the invention/innovation.	Presentation is inspiring, inventive, resourceful, and completely convincing; use of audio/visual materials is exceptional in providing information about the invention/innovation.
Team participation (X1)	The majority of the delivery is made by one member of the team; the partner(s) may be disengaged from the presentation.	Team members generally are engaged in the process, though one member may take on more responsibility than the other(s).	Team members are actively involved in the presentation and responses to interview questions; there is shared responsibility among the team members.
LEAP Response (10% of the total event points)	The team's efforts are not clearly communicated, lack detail, and are unconvincing; few, if any, attempts are made to identify and incorporate the SLC Practices.	The team's efforts are adequately communicated, include some detail, are clear, and are generally convincing; identification and incorporation of the SLC Practices are satisfactory.	The team's efforts are clearly communicated, fully-detailed, and convincing; identification and incorporation of the SLC Practices are excellent.
SEMIFINAL PRESENTATION/INTERVIEW SUBTOTAL (95 points)			
Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.			
Indicate the rule violated: _____			
Time Deductions			
A five-(5) point deduction will be incurred for any time infraction.			
SEMIFINAL SUBTOTAL (95 points)			
(To arrive at the TOTAL score, add the PRELIMINARY SUBTOTAL and the SEMIFINAL SUBTOTAL.)			TOTAL (165 points)
Comments:			
I certify these results to be true and accurate to the best of my knowledge.			
<u>Evaluator</u>			
Printed name: _____		Signature: _____	