

SCIENTIFIC AND TECHNICAL VISUALIZATION (SCIVIS)



OVERVIEW

Scientific and Technical Visualization (SciVis) is the representation of complex scientific and/or technical concepts in a visual form. Participants use either 2D or 3D computer graphics tools and design processes to communicate, inform, analyze, and/or illustrate a STEM topic, idea, subject, or concept.

ELIGIBILITY

Three (3) teams per state may participate, one (1) entry per team; a team of one (1) individual is allowed.

NOTE: Collaborative work as a team is strongly encouraged.

TIME LIMITS

PRELIMINARY ROUND

1. The visualization is to be two to four (2-4) minutes in length. There will be a five (5)-point deduction for each fifteen (15) seconds under two (2) minutes or over four (4) minutes.
2. The visualization time length is calculated from the start of the first image or sound to the end of the last image or sound.

SEMIFINAL ROUND

1. Semifinalists will be interviewed by the judges about their entry for a maximum of ten (10) minutes.
2. The semifinalist LEAP interview will be conducted immediately following the event-specific interview and will last a maximum of five (5) additional minutes.

LEAP

An individual or team LEAP Report is required for this event and must be submitted at event check-in (see LEAP Program).

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRELIMINARY ROUND

1. Participants check in their entries and submit a LEAP Report at the time and place stated in the conference program.
2. Entries are reviewed by judges. Neither students nor advisors are present at this time.
3. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

1. No more than two (2) representatives from each semifinalist team may report to the event area for the interview at the time and place stated in the conference program.
2. Each semifinalist team answers questions about their portfolio from the judges, discussing the purpose, value, research and design, and development process of its work.
3. The semifinalist LEAP interview will be conducted immediately following the event-specific interview.
4. The top ten (10) finalists will be announced at the awards ceremony.

REGULATIONS

PRELIMINARY ROUND

- A. All entries must be the original work of the participant or team.
 1. Where applicable, all ideas, text, images, and sound from other sources must be cited.
 2. If copyrighted material is used, proper written permission must be included.
 3. Failure to follow this procedure results in disqualification.
- B. All entries become the property of TSA and will not be returned after judging.
- C. Documentation:
 1. A USB flash drive must be submitted with the documentation materials at check-in.

2. Documentation materials (comprising a “portfolio”) are required and must be secured in a [clear front report cover](#). The report cover must include the following single-sided, 8½" x 11" pages, in this order:
 - a. USB flash drive (containing the visualization) in a secure holder or sealed sleeve at the front of the portfolio.
 - b. LEAP Report
 - c. Title page with the event title, the conference city and state, and the year; one (1) page
 - d. Table of contents; pages as needed
 - e. Purpose of visualization; one (1) page
 - f. Hand-sketches storyboard that documents the flow and progression of the visualization with written notes; special effects, audio cues, dialogue, transitions, and scene duration should be incorporated into the storyboard; pages as needed
 - g. Written description of what the visualization illustrates or demonstrates; one (1) page
 - h. List of references that includes sources for materials, copyrighted and otherwise; pages as needed. (The term “Fair Use” and similar terms are not acceptable citations when creating the list of references.)
 - i. Permission letters for copyrighted material; pages as needed
 - j. List of software and hardware used in the development of the visualization; one (1) page
 - k. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, the initials of the team member(s) responsible, and comments (see Forms Appendix or TSA website); pages as needed
 - l. Completed and signed Student Copyright Checklist (see Forms Appendix or TSA website); one (1) page

D. Visualization:

1. Visualizations must be turned in on a USB flash drive in either an MPEG or Quick Time file format.
2. A PowerPoint presentation or PowerPoint slide show are not acceptable formats for this event.
3. Each visualization must advance automatically once it has been opened and started by the judges. A splash screen is acceptable, provided the “PLAY” command is easily visible.
4. The visualization may be an animation, such as a biological cell dividing or a group of static images that explain the concept.
5. No posters or models will be accepted.
6. Live action video is not allowed, including “whiteboard” style entries.
7. All work must be included in the portfolio and on a USB flash drive.
8. The visualization is not to be under two (2) or over four (4) minutes in length.
9. There will be a five (5)-point deduction for each fifteen (15) seconds under the minimum time or for each fifteen (15) seconds over the maximum time.
10. Sound may accompany the visualization.
11. Absolutely no purchased content may be used in any part of the visualization. (Purchased content includes, but is not limited to, texture, models, and royalty free music.)

SEMIFINAL ROUND

- A. The semifinalist team may involve no more than two (2) members in the event-specific and LEAP interview.
- B. The LEAP Report
 1. Participants document the leadership skills they have developed and demonstrated while working on this event, and on a non-competitive event leadership experience.
 2. Participants will respond to questions about the content of the LEAP Report as part of the LEAP interview.
 3. Specific LEAP Report regulations can be found in the LEAP Program section of this guide and on the TSA website.

EVALUATION

PRELIMINARY ROUND

1. The portfolio
2. The visualization

SEMIFINAL ROUND

1. The event-specific interview
2. The content and quality of the LEAP Report and interview

STEM INTEGRATION

This event aligns with the STEM educational standards of Science, Technology, Engineering, and Mathematics.

CAREERS RELATED TO THIS EVENT

- Computer animator
- Game designer
- Instructional technologist
- Software engineer

SCIENTIFIC AND TECHNICAL VISUALIZATION (SCIVIS) 2019 & 2020 OFFICIAL RATING FORM HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.

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 next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- The portfolio is present.
- The USB flash drive is present.
- The visualization is playable.
- Completed LEAP Report is present.
- ENTRY NOT EVALUATED

DOCUMENTATION (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio components (X1)	The portfolio is unorganized and/or missing three or more components.	The portfolio has most components and is adequately organized.	All components are present, and content and organization are clearly evident.	
Purpose and description (X1)	The purpose and description of the visualization idea generation are unclear.	The purpose and description are explained appropriately and adequately.	The purpose and description of the visualization are clear and concisely written, and compelling.	
Storyboard (X2)	The storyboard is sloppy, seems to have been thrown together after the creation of the visualization, and/or it does not correlate with the visualization.	The storyboard is drawn appropriately and largely correlates with the completed visualization.	The storyboard is of exceptional aesthetic and artistic quality and clearly correlates with the visualization, including timings.	
DOCUMENTATION SUBTOTAL (40 points)				

Record scores
in the column
spaces below.

VISUALIZATION (70 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Communication of visualization (X2)	It is difficult to understand the concept being communicated; an illogical explanation is presented.	The concept is communicated generally adequately.	The concept is communicated in an organized, clear, and concise manner.
Creativity (X2)	The visualization lacks creativity; no, or very few, design principles are integrated in the visualization.	Some elements of creativity are expressed, with most design principles integrated.	The visualization exudes creativity; essential design principles and elements are integrated.
Aesthetics and artisanship (X1)	Unorganized, sloppy work is evident; the visualization seems to be an afterthought and/or thrown together.	A largely organized presentation of layout and design principles is evident.	An exemplary use of layout and design principles to logically communicate important data is evident.
Graphical representations (X1)	Graphical representations do not help to clarify visualization, or they are of little significance to the project.	Graphical representations are appropriate and help supplement the visualization by providing clarity to the project.	Graphical representations are of excellent quality; and clarify abstract concepts.
Originality (X1)	The visualization lacks imagination, originality, and artistic detail.	The visualization is somewhat effective, inventive, and inspiring.	The visualization is inspiring, inventive, resourceful, and motivating.
VISUALIZATION SUBTOTAL (70 points)			

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

Indicate the rule violated: _____

TIME DEDUCTIONS	
There will be a five (5) point deduction for each fifteen (15) seconds under the minimum time or each fifteen (15) seconds over the maximum time allowed for the visualization.	
Total time for visualization	
Visualization time deduction	
TOTAL TIME DEDUCTION	

PRELIMINARY SUBTOTAL (110 points)

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SEMIFINAL INTERVIEW (66 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	The team/individual seems unprepared and unorganized for the interview.	The team/individual is somewhat prepared and organized in its interview.	The team is well-prepared and any questions asked by judges are answered concisely.	
Knowledge (X2)	The team/individual seems to have little understanding of its chosen topic.	The team/individual has a generalized understanding of its chosen topic.	There is clear evidence of a thorough understanding of the chosen topic.	
Articulation (X1)	The interview is full of illogical thoughts that lack clarity.	The interview is somewhat logical, and/or clear, and concise.	A concise, logical, clear explanation of the entry is given.	
Delivery (X1)	The team/individual is verbose and/or uncertain in the interview; posture, gestures, and lack of eye contact diminish the delivery.	The team/individual is somewhat well-spoken and clear in the interview; posture, gestures, and eye contact result in an acceptable delivery.	The team/individual is well-spoken and distinct in the interview; posture, gestures, and eye contact result in a polished, natural, and effective delivery.	
LEAP Report/ Interview (16 points; 10% of total event points)	The individual's or team's efforts are not clearly communicated, lack detail, and/or are unconvincing; few, if any, attempts are made to identify and/or incorporate the SLC Practices and Behaviors.	The individual's or team's efforts are adequately communicated, include some detail, are clear, and/or are generally convincing; identification and/or incorporation of the SLC Practices and Behaviors is adequate.	The individual's or team's efforts are clearly communicated, fully-detailed, and convincing; identification and/or incorporation of the SLC Practices and Behaviors is excellent.	
SEMIFINAL INTERVIEW SUBTOTAL (66 points)				
Time violation (a deduction of five (5) points total will be incurred for exceeding the semifinalist presentation time limit). Record the deduction in the space to the right.				
SEMIFINAL SUBTOTAL (66 points)				
To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.				
			TOTAL (176 points)	

Comments:

I certify these results to be true and accurate to the best of my knowledge.

JUDGE

Printed name: _____ Signature: _____

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EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistant for check-in, one (1)
- C. Judges:
 1. Preliminary round, two (2) or more for initial review of entries. If more than 20 entries, provide 2 additional evaluators to conduct heats.
 2. Semifinal round, two (2) or more for interviews

MATERIALS

- A. Coordinator's packet, containing:
 1. Event guidelines, one (1) copy for the coordinator and for each judge
 2. TSA Event Coordinator Report
 3. List of judge/assistants
 4. Pre-populated flash drives for judges
 5. Results envelope
 6. Envelope for LEAP Reports
 7. LEAP Interview Judging Protocol
- B. Tables for entries
- C. Tables and chairs for initial judges
- D. Tables and chairs for semifinalist judges and participants
- E. Extension cords and power-bars with protection for judges, as needed

RESPONSIBILITIES

AT THE CONFERENCE

1. Attend the mandatory coordinator's meeting at the designated time and location.
2. Report to the CRC room and obtain the coordinator's packet; check the contents.
3. Review the event guidelines and check to see that enough judges and assistants have been scheduled.
4. Inspect the area in which the portfolios are being placed for appropriate set-up including sufficient number and size of tables.

5. At least one (1) 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.

EVENT CHECK-IN

1. Check in the entries at the time stated in the conference program.
2. Notify the event manager immediately of any team that is not on the coordinator's report.
3. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC.
4. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.

PRELIMINARY ROUND

1. The number of judges depends upon the number of entries. Heats of 20 entries may be used at the coordinator's discretion.
2. Judges independently assess the entries.
3. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and a CRC manager to determine either:
 - a. To deduct twenty percent (20%) of the total possible points in this round or
 - b. To disqualify the entry
 - c. The event coordinator, judges, and CRC manager must all initial either of these actions on the rating form.
4. Judges determine the twelve (12) semifinalist teams.
5. Review and submit the semifinalist results and all related items/forms in the results envelope to the CRC room for posting.
6. Create semifinalist sign-up sheet for each team's presentation.

SEMIFINAL ROUND

1. Inspect the area in which the interviews are to take place. Ensure that there is a table and seating for the interviews.
2. At least one (1) 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.
3. Semifinalists report to the event area at the time and place stated in the conference program.
4. Each semifinalist team signs up for an interview time about its visualization.
5. During the interview, the semifinalist team representatives will explain their work and answer any questions the judges may ask.
6. As part of the semifinalist interview, semifinalists will participate in a LEAP interview that will last a maximum of five (5) additional minutes.
7. Judges independently assess the twelve (12) semifinalists.
8. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and a CRC manager to determine either:
 - a. To deduct twenty percent (20%) of the total possible points in this round or
 - b. To disqualify the entry
 - c. The event coordinator, judges, and CRC manager must all initial either of these actions on the rating form.
9. Judges determine the ten (10) finalists and their ranking, and discuss and break any ties. (Determine the procedure for breaking ties before the onsite competition begins.)
10. Review and submit the finalist results and all items/forms in the results envelope to the CRC room.
11. Collect all USB flash drives and portfolios and give them to the event manager.
12. If necessary, manage security and the removal of equipment and materials from the area.