

3-D VISUALIZATION AND ANIMATION

PURPOSE

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of 3-D visualization and animation.

First, refer to General Regulations, Page 9.

CLOTHING REQUIREMENT

For men: Official white polo shirt with black dress slacks, black socks and black leather shoes.

For women: Official white polo shirt with black dress slacks or skirt, black socks or black or clear seamless hose and black leather shoes. To purchase the polo shirt, contact Midwest Trophy Manufacturing Co. Inc. by calling 800-324-5996 or order online at www.mtmrecognition.com/skillsusa/.

Note: Contestants must wear their official contest clothing to the contest orientation meeting.

ELIGIBILITY

Open to active SkillsUSA members enrolled in programs utilizing 3-D imaging and animation as an occupational objective.

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:

- a. Workstation with table space for two personal computers, two chairs and space for developing
- b. Storyboard
- c. 110-volt electrical outlet
- d. Two 24"x36" poster boards for storyboard layout and presentation

2. Supplied by the contestants:

- a. Two complete graphics stations including personal computers, monitors and input devices. Contestants may use any brand or type of personal computer from any source (a hometown computer dealer may be willing to serve as a team sponsor). Software must be pre-loaded and configured. Test the system carefully prior to competition. Make sure your ZIP drive has been set up and tested. Limited on-site technical assistance will be available on contest day. The computer hardware must meet or exceed the minimum recommended system requirements from the manufacturer of the software of choice. We strongly recommend that the

minimum requirements are exceeded when possible. For example, Kinetix 3D Studio MAX R2 minimum requirements are:

- Pentium® computer running at 90MHZ or faster
 - 32MB of RAM
 - Display with minimum of 800x600x256 colors
 - 100MB of free hard disk space
- b. Contestants may bring the software of their choice. Software package(s) must be capable of producing both 2-D and 3-D renderings and animation.

Note: Proof of licensing for every software program installed on the contestant's computers must be provided to the technical committee at the pre-contest meeting.

c. Two ZIP drives and three 100MB ZIP disks for sharing information between team members during the contest and for submission to the judges at the end of the contest. USB drives are acceptable if they have the capacity to hold the stills and images which are to be turned in for judging

d. Two 8' multiple-outlet surge protectors

e. Paper and art supplies for storyboard development to include colored pencils, two 11"x17" tablets, chalk, glue stick, charcoal and regular pencils. These supplies are subject to approval of the technical committee.

f. Contestants may bring published reference books and software manuals. Reference materials may not take up more than 1/2 cubic foot of space per team member (total of 1 cubic foot).

SCOPE OF THE CONTEST

The contest is defined by industry standards as set by the current technical standards within the industry. The contest is a two-person team event and tests technical knowledge, production skills, creative/artistic abilities and storyboarding.

Knowledge Performance

The contest will include a written exam assessing technical knowledge, production skills and creative/artistic abilities.

Skill Performance

The contest is a two-person event assessing the ability of the team to produce high quality images and an animated short

subject using 3-D computerized images. A practical visual design problem will be given, the scope of which should be viable within the seven-hour practical competition period. The problem will consist of a topic to communicate, its context and target audience, a rough script to follow, and an emotion or graphical effect that should be illuminated in the still and animated output.

Contest Guidelines

1. Preparation of the animation must include the development of a storyboard. However, in the real world the final output is of paramount importance and the storyboard only a means to that end. So, the storyboarding process will be used to judge:

- a. teamwork skills
- b. ability to creatively reach consensus on a design solution
- c. ability to organize their efforts
- d. ability to verbally and visually express ideas between team members and to the client (in this case, the judges)

2. Three to five still images from varied scenes and perspectives must be rendered in medium resolution (640x480 pixels to 1024x768 pixels) and true color (24, 32 or 64 bits per pixel) and submitted to the judges' station on a ZIP disk at the completion of the practical competition. Still images must be output to Tagged Image File Format (TIF), Targa (TGA) or Graphic Image File (GIF) formats. These images should clearly show superiority in modeling, material mapping, lighting and composition.

3. Render animation at low resolution (approximately 320x200 pixels) and medium color depth (16 bit) for playback (with a minimum length of 10-second/300 frames). Animation must be output to either Microsoft Movie (AVI) or Macintosh Quicktime (MOV) files and submitted to the judges station on ZIP disk at the completion of the practical competition. The animation should clearly show superiority in composition, staging and the use of motion and object manipulation (morphing) over time. Anticipation and scene transitions, object stretching and squashing and/or other techniques should be employed to create a sense of realism or graphic impact as defined by the visual design problem.

4. During the contest, the contestants will work as a team. No assistance will be given by other teams, instructors or observers. Limited technical assistance for computer or

software malfunction may be given by appropriate manufacturers' representatives.

5. Teams will each be given the same amount of time to accomplish the problem. Everyone will begin at the same time and take a required lunch break, and no one will be allowed to work past the contest conclusion.

6. The technical committee reserves the right to videotape the animation.

7. The technical committee will be responsible for not only developing the problem for the competition, but also for developing the evaluation tool by which to objectively measure competitors' performance. Judging criteria will be general in nature and will be done from the completed storyboard, still images and animation. Specific criteria will be based on the demonstration of competency in those elements of design, animation and clearly depicting the theme. Emphasis in judging will be placed on the graphical impact and effectiveness in addressing the design problem. Some areas for consideration include:

a. Planning: The storyboarding process, the degree to which the output images/animation clearly and creatively communicates the solution to the problem without the benefit of support materials.

b. Modeling: Creation of 3-D objects. The degree to which the animation realistically and accurately portrays something about the problem.

c. Animating: Defined motion of objects

d. Rendering: Final rendered output. A quality measured in terms of how well directions are followed in telling the "story," the visual impact of the problem solution and the judges assessment of the design, revision, final editing and presentation of the design problem's solution.

e. Originality: Creative techniques

f. Illustration of the theme: An overall measurement of the distinctiveness of submitted output, including the degree to which the use of technology, aesthetics, lighting and composition demonstrates development of a superior product.

8. The setup, configuration and tear-down of all contestant-provided equipment will be the responsibility of the team.

Standards and Competencies

VA 1.0 — Solve a problem or tell a story in a twodimensional format

1.1 Identify pre-visualization and/or storyboard design techniques

1.1.1 Define how a problem will be solved or how a story will be told without the benefit of support materials

1.1.2 Describe the concept with enough artistic depth visually and verbally to allow the viewer to accurately visualize the final 3-D output

VA 2.0 — Model a computer generated object

2.1 Create three-dimensional objects using the appropriate technology

2.1.1 Apply geometry-deforming methods to create computer generated models that possess shape, color, materials and surface maps

2.1.2 Create models that are photorealistic, artistic and /or graphically pleasing

VA 3.0 — Create a three-dimensional scene

3.1 Light, animate and render a scene, including created model(s)

3.1.1 Apply appropriate light and shadow to models and surfaces in a scene to convey the proper level of realism

3.1.2 Assign motion to objects and/or cameras in a scene

3.1.3 Use bones, links and other forward and inverse kinematics to create complex animation of created objects

3.1.4 Create cameras, with or without motion attached, to properly view a scene

3.1.5 Create the final rendered output of a high quality scene to a still image or animation using appropriate rendering technology

VA 4.0 — Demonstrate originality and creativity in telling the story

4.1 Create a final product that emotionally impacts the viewer

4.1.1 Select aesthetically pleasing elements

4.1.2 Select elements that will evoke an appropriate emotional response

from the viewer

VA 5.0 — Demonstrate the ability to work in a team environment

5.1 Cooperate with others to achieve the solution to a problem or convey a story

5.1.1 Demonstrate consensus-building skills

5.1.2 Apply verbal and visual communication skills to convey ideas between team members and to a client

Committee Identified Academic Skills

The technical committee has identified that the following academic skills are embedded in this contest.

Math Skills

- Use fractions to solve practical problems
- Use proportions and ratios to solve practical problems
- Solve practical problems involving percents
- Measure angles
- Apply transformations (rotate or turn, reflect or flip, translate or slide and dilate or scale) to geometric figures

- Construct three-dimensional models
- Make predictions using knowledge of probability

- Solve problems involving symmetry and transformation

Science Skills

- Use knowledge of physical properties (shape, density, solubility, odor, melting point, boiling point, color)
- Use knowledge of chemical properties (acidity, basicity, combustibility, reactivity)
- Use knowledge of potential and kinetic energy
- Use knowledge of mechanical, chemical and electrical energy
- Use knowledge of heat, light and sound energy
- Use knowledge of the nature and technological applications of light
- Use knowledge of speed, velocity and acceleration

Language Arts Skills

- Provide information in conversations and in group discussions
- Provide information in oral presentations
- Demonstrate use of verbal communication skills: word choice, pitch, feeling, tone and voice
- Demonstrate comprehension of a variety of informational texts

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- Organize and synthesize information for use in written and oral presentations
- Demonstrate knowledge of appropriate reference materials
- Demonstrate narrative writing

Connections to National Standards

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards

- Geometry
- Measurement
- Problem Solving
- Communication
- Connections
- Representation

Source: NCTM Principles and Standards for School Mathematics.

To view high school standards, visit: standards.nctm.org/document/chapter7/index.htm .

Select "Standards" from menu.

Science Standards

- Understands forces and motion
- Understands the nature of scientific inquiry

Source: McREL compendium of national science standards. To view and search the compendium, visit: www.mcrel.org/standards-benchmarks/ .

Language Arts Standards

- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes
- Students use a variety of technological and information resources (e.g., libraries,

databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge

- Students participate as knowledgeable, reflective, creative and critical members of a variety of literacy communities
- Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information)

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.readwritethink.org/standards/index.html .

CONTEST SCORECARD

Items Evaluated Possible Points

Planning.....	100
Overall Quality	150
Textures.....	150
Visual Clarity.....	150
Visual Accuracy	150
Animation Quality	150
Written Test	150

Sub Total 1,000

Résumé Penalty _____

Clothing Penalty _____

TOTAL _____

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