ABSTRACT

Digital Fabrication in the Museum Space

Presenter:
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Since 2010 the Smithsonian Institution Air and Space Museum has increasingly used digital fabrication to solve our most complex challenges in display, preservation, restoration and study of our collection. During this time we have utilized CT/MRI imaging, Structured light 3d scanning, Advanced 3d CAD modeling, Multi-Axis machining and 3d Printing as part of this ongoing research of the benefits of digital fabrication in the museum field. The following presentation will highlight the work that NASM has been doing using these techniques as well as discuss the benefits and downsides to utilizing digital fabrication.

Areas of discussion and examples shown:

- Digital fabrication: A methodology that utilizes data gathered information for design and analysis along with computer controlled machinery for manufacturing and fabrication. It allows for precise creation of elements in a variety of materials-wood, plastic, metal, foam as well as can be used for small batch, one of and mass production. It is most often used in rapid prototyping situations where a design approach will need to be evaluated, changed and retested within a short time frame.
- Medical imaging and 3d scanning: Use of CT/MRI imaging for reverse engineering mounts and display structures. Structured light 3d scanning for object mount creation, object facsimile creation, research, collaboration of study.
    - Examples: Neil Armstrong space suit display.
- 3d Design: CAD/CAM functions in digital fabrication workflow, discussion of software suites available, intended use and application.
    - Examples: Flak-Bait B-26, Heinkel HE-177, Mercury Primate Capsule mount, Henson Aerial Steam Carriage mount
- CNC Machines and 3d Printing: Rapid prototyping, one off, small batch and mass production as final step in digital fabrication system.
    - Examples: Ethafoam carving mannequin parts on CNC router, Laser cutting for Flak-Bait restoration, Multi-Axis machining of Satellite mount, 3d printing tools.
- Benefits to Digital Fabrication workflow
- Disadvantages
- Summary and Contact information

BIO

Since 2006, Adam Bradshaw has worked for small and large cultural institutions around the country including the North Dakota State Historical Society, the United States Holocaust Memorial Museum, The Smithsonian American Art Museum and the Smithsonian National Air and Space Museum. His principle focus has been on combining traditional techniques of mount making with advances in the world of CNC, 3D printing, and 3D scanning.