**Poster Proposal for 2012 3D Digital Documentation Summit, San Francisco, California**

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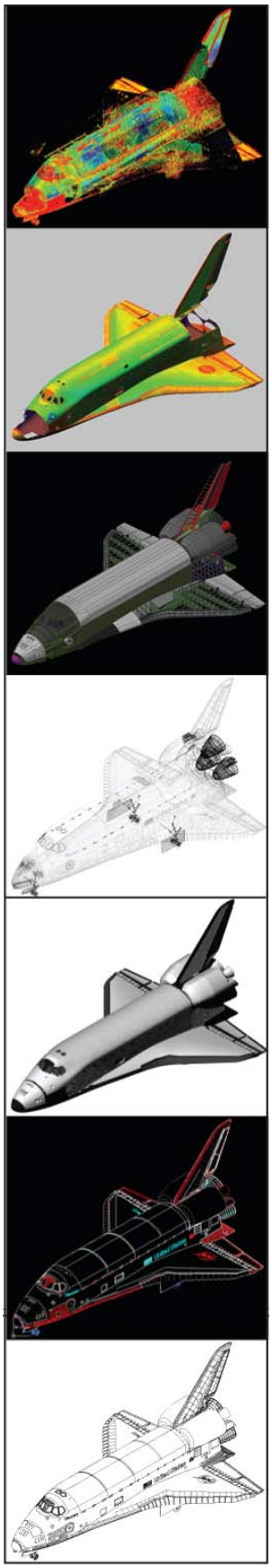
**Post-Processing Workflows: Identifying Hidden Costs in Converting Scan Data to Useable Information**

The Heritage Documentation Programs proposes to present five posters that speak to the oral presentation. The posters will describe the steps from data acquisition at the site to the various post-processing methods employed to generate models in CAD. Our data collection efforts are guided by our need to unearth not only dimensional data, but also interpretive data that reflect history, significance, and patterns of use and construction. In examining various projects from each of our three programs, (the Historic American Buildings Survey, the Historic American Engineering Record, and the Historic American Landscapes Survey), we intend to show several different approaches to incorporating laser scan data into the creation of an archival record that meets the Secretary of the Interior's Standards. These workflows vary based on the type and scale of historic resource being documented. In these processes it is often necessary to supplement point clouds with other data--some collected by hand, some derived from other resources and independent research. The post-processing of point clouds presents its own challenges. Software used may excel at certain tasks, while falling short at others. Sometimes this can be remedied by hardware upgrades, but often times the sheer size of the datasets (point clouds) is just too burdensome for the software itself. Educated choices must be made in both the collection and processing of laser scan data when producing documentation to the Secretary's standards.

This poster aims to demonstrate the unique challenges associated with scanning and documenting **OV-103** (Space Shuttle Discovery). In demonstrating the workflow and process used to get from laser scan to archival drawing, one should be able to determine the value of the product at any given stage of the process as well as assess the costs required to achieve those results.

In many scanning situations it is difficult to achieve total coverage. This can be remedied in some cases, but there are times when factors are out of your control. In the case of the Shuttle, several major parts of the vehicle had been removed for servicing and cleaning. These components would not be replaced in time for scanning. In these situations, it may be necessary to supplement the missing scan data with pre-existing documentation to fill the gaps. It may also be important to note on the final documentation the various ways in which data was collected in the field and in the office.

With these things in mind, the primary goal and challenge was to generate a cohesive set of interpretive and measureable drawings in a short period of time with limited access to the resource. Laser scanning addressed most of our time, accessibility, and precision concerns. In order to produce a cohesive drawing set in a limited time, several 3d modeling methods were chosen for the flexibility they could offer. Not only is a 3d model relatively easy to import and export between programs, but it offers a single entity which all drawings can refer to and draw from, producing a cohesive drawing language which help to better illustrate the site or structure from any point of view. Combining 3d models which were generated from scan data with 3d models which were generated based off of measurements obtained from pre-existing documentation forced us to utilize a variety of software.



Selecting the right group of software to achieve the task was difficult indeed. Balancing newer software which offered cutting edge advantages (often beta versions) with well established industry standard CAD programs allowed us to push the envelope of a typical project without risking the integrity of the core documentation. The decision was made to let various programs do what they each do best, be it solid modeling, mesh modeling, file conversion/exporting, or line drawing. Perhaps in the future a program will exist which possesses all of these qualities, however due to the relatively young age of the industry this is not currently the case. As you may expect, dividing the tasks among various software presents some issues. Getting newer programs to speak to older ones in a common language can be difficult when proprietary file formats are involved. Training may also be required in order to properly use the unique toolsets offered in different software.

Although 3d models are nice to look at on a computer screen, they must be converted into flat entities if you plan on generating them in an archivally stable manner. In this process the 3d model is primarily a tool which aides in the production of 2d line drawings or renderings. The 3d model can be used for a variety of other purposes but this assumes that the desire and ability exist to properly store and maintain the digital files in formats which are supported and maintained.