The Art Institute of Chicago
PROJECT NARRATIVE
Engaging Collections in 3D
February 2013

Introduction

With this proposal, the Art Institute of Chicago requests a grant of $25,000 from the Institute of Museum and Library Services' Sparks! Ignition Grants for Libraries and Museums program. If approved, funds would support experimentation in innovative approaches to audience engagement with the museum's renowned encyclopedic collection using 3D technologies. The project would offer immediate benefit to four core museum audiences—adults, families, teens, and tweens—through their participation in this testing phase and potential benefit to others in the field who seek creative ways to harness technology in their engagement efforts.

Institutional Overview

Founded in 1879, the Art Institute of Chicago collects, preserves, and interprets works of art of the highest quality, representing the world's diverse artistic traditions, for the inspiration and education of the public and in accordance with the museum profession's highest ethical standards and practices. In 2012, the museum welcomed roughly 1.4 million local, national, and international visitors and enthusiastically supported by more than 93,000 member households. Through its education and outreach activities—encompassing programs for students, teachers, adult, and families—the museum proudly promotes lifelong learning and engagement with the visual arts among more than 300,000 community members. Its permanent collection boasts more than 270,000 works representing 50 centuries of human creative achievement; a full program of special exhibitions, the majority realized by the museum's11 curatorial departments, bring important artworks to Chicago and propel the vitally important art historical and conservation research conducted by the museum, benefitting fellow scholars, students, and the interested public.

The museum is currently involved in the most extensive audience research project in its history in order to expand its audience and better serve its visitors. Consultants from UK-based Morris Hargreaves McIntyre are capturing concrete data about access, levels of engagement, and areas in need of improvement. Once complete (by September 2013), this project will help the museum to implement positive changes that will improve the visitor experience. Concurrently, the museum has placed essential focus on improving access to the collection—both on view and storage—respecting the range of backgrounds and perspectives of visitors and taking full advantage of the technology, tools, and methods that people use in their everyday lives. Finally, in the next five years, the museum will undertake an extensive and vision-led reshaping of its Department of Museum Education, forging a future-oriented and holistic approach to education, outreach, programs, and partnerships, including the use of 21st century technologies.

Project Justification

In the past year there has been an explosion in the hype cycle surrounding 3D printing. The September 2012 design issue of *Wired* magazine features the new Makerbot 3D printer on its cover, with the headline "This Machine will Change the World." Every day seems to deliver a new story touting the power of 3D printing to revolutionize manufacturing, medicine, fashion and food. Despite the coverage

and intrigue, this technology and its specific museum applications are compelling, but as yet unevaluated. From conservation to education, collections access to exhibition planning, a 3D production ecosystem that is broadly accessible both in cost and ease of use makes this technology of particular and immediate interest to museums.

Collections Engagement with 3D

Though the use of 3D technologies can be applicable to museums in a variety of areas such as exhibition planning, conservation and scholarly access, this project proposal is specifically interested in evaluating the potential impact of 3D technologies in terms of broader audience engagement with museum collections. The 3D production ecosystem can be broadly divided into five functional categories—scanning, designing, manipulating, printing, and sharing. Each of these categories allows for different types of engagement with a museum's collection. The dialogue inspired by this high-level interaction increases a visitor's dwell time with the object—whether at the museum, online, or through a replicated model—but also hopefully stimulates a deeper engagement through the quality of the interaction. It is this hypothesis that the museum intends to explore and evaluate.

In 1999, Peter Samis, Associate Curator of Interpretive Media at SFMOMA published a paper entitled "Artwork as Interface," which discussed how artworks act as conversation prompts to promote social participation in the gallery and online.[1] In a different study by Jennifer Trant and Bruce Wyman that focused on the steve.museum tagging project, the researchers found that when visitors participated in interacting with museum objects through artwork tagging, they "interpreted the works of art by placing them in their personal narrative. Built on constructivist educational theory that emphasizes personal meaning-making and a user-centered focus in the development of on-line and in-gallery experiences, these projects strive to provide a unique and compelling engagement with works of art."[2] Research from the steve.museum tagging project can be applicable in developing frameworks for exploring how interface of collection objects with 3D technologies can provide effective engagement and learning opportunities for audiences.

The Art Institute of Chicago has begun to explore the potential for using 3D scanning and printing technology to engage with the collection. Several undergraduate classes have visited the museum galleries to create models using the photogrammetry process; a day-long showcase presentation was held for internal departments and a summer camp of 7-9 year olds; the museum has created a presence on the 3D model sharing site called Thingiverse; artists have 'remixed' artworks from the collection; and personnel from the museum have led several professional development workshops on the topic.

Challenge to be evaluated

Though the Art Institute has been experimenting with 3D technologies, deeper questions of interest to the broader museum community remain regarding how these technologies meaningfully fit into museum public programs.

[1] Samis, P. (1999). Artwork as Interface. (David Bearman, Trant, Jennifer, Ed.). Cultural Heritage Informatics: Selected papers from ichim99: the International Cultural Heritage Informatics Meeting.

[2] Trant, Jennifer, and Wyman, Bruce. (2006) "Investigating social tagging and folksonomy in art museums with steve.museum." http://www.ra.ethz.ch/cdstore/www2006/www.rawsugar.com/www2006/4.pdf

Can cutting edge technology such as 3D printing be used to encourage a deeper, more meaningful, engagement with museum collections?

- How can public programs use 3D printing and scanning to stimulate a richer visitor experience, both onsite and online, with 3D object our collections?
- Does the process of this kind of collection access, capture, reproduction, design thinking, remixing and sharing allow for a deeper understanding of the artwork and the world?
- How does this kind of engagement with the collection affect broader outcomes with our audiences, i.e. learning, interdisciplinary literacies, participatory communities, etc.?

Significance of challenge to be addressed

At this moment in time, 3D printing remains a bit of a novelty and source of wonderment—seeing the technology generally inspires a sense of excitement and possibility. Though far more sophisticated versions of this technology have existed in industrial design studios for decades, the recent popularity is due to a convergence of tools and trends that democratize access for an average consumer, and museums, both in terms of price points and learning curves.

The Art Institute will design and host a series of public programs incorporating 3D technologies. These programs will be evaluated and outcomes shared in terms of their effectiveness in engaging the collection. From these results, we will develop guidelines and modular program 'recipes' to be shared with museums and educators. This will provide tools to allow museums of different types, with varied resources to meaningfully incorporate these new technologies.

Primary Stakeholders

This proposal is a joint effort of the Digital Information and Access (DIA) and Museum Education departments at the Art Institute of Chicago. The program advisory board will include staff from DIA and Museum Education, as well as artist instructors from the School of the Art Institute of Chicago (SAIC) and the director of the 'Fab Lab' at the Museum and Science and Industry. Additionally, an evaluation consultant, Elory Rozner of Uncommon Classrooms, will join the advisory committee to help the team develop evaluation strategies for each program. Programs will target different audiences based on the Art Institute's current public programs audience structure i.e. family, adult, teen, and educator. This project has the full and enthusiastic support of Douglas Druick, the museum's President and Eloise W. Martin Director, as part of his larger institutional plans to foster an environment of educational and technological flexibility and responsiveness in support of the permanent collection and special exhibitions.

Project Work Plan

Summary

Digital Information and Access (DIA) and Museum Education will develop five public programs focused on aspects of collection engagement incorporating aspects of 3D printing and scanning technologies. Programs will target different audiences (i.e. family, adult, teen, teachers), vary in duration and be evaluated for distinct engagement-focused outcomes. Some of these programs may be incorporated into already-existing events such as the Family Festivals, held at six times throughout the year.

For the duration of the grant period, an advisory team will be assembled comprised of the key stakeholders developing the programs, Rabiah M. Mayas, Ph.D. Director of Science and Integrated Strategies at the Museum of Science and Industry, evaluation consultant Elory Rozner and partners from the School of the Art Institute of Chicago (SAIC) including 3D printing artist/instructor Tom Burtonwood. The advisory team will collaboratively discuss the incorporation of these technologies and address associated challenges. Aided by the evaluation consultant, the advisory committee determines what outcomes will be measured for each program and designs an evaluation strategy. Following each program, the advisory committee discusses and documents findings associated with the stated challenges. A 3D initiatives work-study student will support the project each semester under the guidance of the DIA department.

The evaluation consultant will be involved in all of the front-end planning and development, will attend all of the advisory committee meetings, and generally oversee the evaluation strategy. The Art Institute will take on the bulk of data collection and transcription during the programs, though the evaluator will attend one instance of each different program. The evaluator will analyze the data and identify implications for broader discussion with the advisory committee.

Program Details

Though the advisory committee will hone each proposed program, preliminary outlines have been sketched out for the purposes of developing a project budget. Further details are available in the supplemental information section.

Program 1: Hands On! (Adults)

This program would allow enhanced access to works of art for adult museum visitors of all abilities. Many of the works in our collection were intended to be handled and used by their original owners; using 3D technology a series of works would be reproduced to allow visitors to explore the texture, scale, and sensory elements of proxy objects. While allowing visitors with low-vision, developmental disabilities, and Alzheimer's primary access to works of art, these experiences would enhance the experience of all AIC visitors by engaging their curiosity, allowing them a unique tactile experience not otherwise possible in the galleries, and fostering greater understanding of form and function. This experiment needs to grapple with the effectiveness of tactile engagement considering difference in material translation between the object and the proxy object.

Program 2: Pose like a Statue (Families)

In this drop-in program that will run as part of the Diwali Family Festival (a day of programs and activities celebrating India's fall festival of lights), families will take a tour of sculptures throughout the museum, focusing on our collection of Hindu art. Tour texts will discuss the differences and similarities in the sculptures from different cultures and epochs. In addition, families will create pencil drawings of sculptures, to help them see the physical gestures and poses of the sculptures. Returning from their tour, children will be asked to imitate their favorite sculpture. This imitation will be captured with a 3D scan allowing for a 3D print of the child as the museum sculpture. This program is designed to guide visitors to consider collections in a playful manner and place themselves into the museum through the personalized creation of their own 3D sculpture.

Program 3: Cutting Edge—3D Printing and Arts Education (Educators)
This workshop, taking place on three different Saturdays in the spring of 2014, introduces art, architecture, and design teachers to newly available 3D printer technologies and concepts of additive manufacturing. A selection of objects from the Art Institute's Architecture and Design collection will be used to consider the conceptual shift involved in designing using 3D printing. Participants will use Google SketchUp and work collaboratively to create new designs or modify existing objects in ways that optimize the opportunities available through 3D printing.

The workshop approach is modeled on 21st Century Skills and promotes real-world applications along with cooperative and integrated learning approaches.

Program 4: Teen Lab (Teens)
The Art Institute has a successful after-school program for teenagers called Teen Lab. This project would incorporate a 3D printing project into the broader Teen Lab creative program, likely as one aspect of a larger project embracing many media techniques. Teens would learn new art-making techniques, explore how 3D scanning and printing might allow us to engage with the collection/museum in new ways and be introduced to a larger community of users through Thingiverse or other online communities to share work outside of the program.

Program 5: Objects: Remixed, Reconfigured (Tweens)
The museum will visit the museum galleries to explore the world of the re-mixed such as Chinese tomb guardian figures, African masks, mythological beasts, surrealist paintings, and contemporary collages. In the studios, each participant will create a portfolio of drawings, digital photos, and prints that they will use as source material for a final project created with a 3D printer. The objectives for this program are to encourage a playful exploration of Art Institute collection objects through "looking" exercises and studio experiences, with a special focus on developing 21st century technology-based skills.

Staff, Project Partners and Financial Resources
This project will be overseen by Elizabeth (Liz) Neely, Director of Digital Information and Access and implemented with four core Museum Education staff: David Stark, Interim Woman's Board Executive Director and Director of Adult Programs; Susan Kuliak, Interim Trott Family Director of Interpretive Exhibitions and Family Programs; Robin Schnur, Director of Student Programs; Sarah Alvarez, Director of Teacher Programs. Additional support will come from Carolina Kaufman, Education Technology Manager. Project partners Rabiah M. Mayas, PhD, from the Museum of Science and Industry, and artist Tom Burtonwood will serve on the project's advisory panel, and Elory Rozner of Uncommon Classrooms will serve as the independent evaluator. The total project cost stands at $TK with the proposed grant of $25,000 covering direct service expenses and the balance to be covered by the museum's annual operating funds.

Project Results
A project blog will be developed to track the discussions of the advisory committee, program preparation, our evaluation strategies, the programs in action and our outcomes. Documenting the project in-progress

throughout the year leads to better iterative access to the dialogue and the opportunity for feedback from the community. Project blog posts will be shared with the museum community using social media such as Twitter, LinkedIn and Facebook.

Summarized outcomes will be developed into guidelines and program recipes for use by other museums of varying types, sizes and with different resources. These resources will be posted on the project blog and be submitted for presentation at professional conferences such as the Museum Computer Network, Museums and the Web, the American Alliance of Museums, the National Art Education Association and several regional conferences. Finally, the advisory committee will host a capstone event at the Art Institute of Chicago inviting everyone involved in the programs as well as other museum and community stakeholders during which we will present the outcomes of the project and talk about next steps for 3D technologies in museum public programs.

Conclusion

The Art Institute of Chicago is keenly interested in exploring the capabilities of 3D printing in its audience engagement practices; through a one-year effort of workshops for a range of learners, the museum will engage its visitors with the collection and forge a new path for such technology that can be replicated by other museums including but not limited to visual arts and cultural heritage institutions. The museum is grateful for the opportunity to present this request for a grant of $25,000 from the Institute of Museum and Library Services' Spark! Ignition program. Thank you for your consideration.