VIRTUAL MUSEUM **INCUBATORS** FOR EXHIBITION DEVELOPMENT

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THANK YOU

To Julian, whose love and support made this possible.

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INTRODUCTION

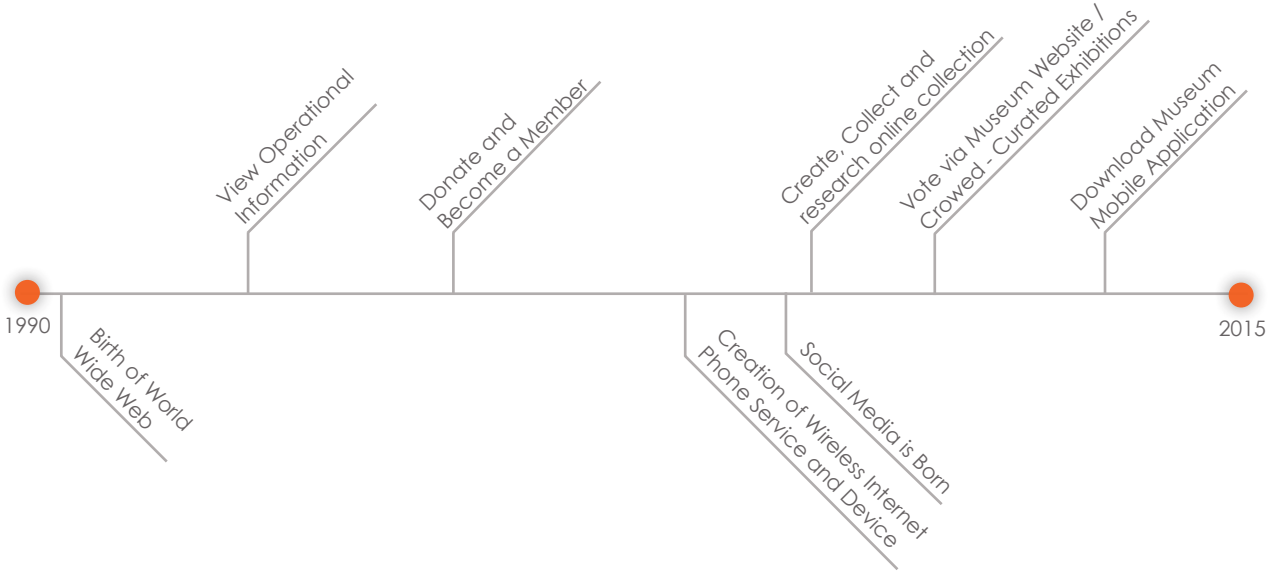
In our increasingly connected world, most museums remain cognizant that their audiences are constantly evolving, generally seeking more impactful and innovative experiences, both inside and outside of the physical space.[1] The distinction between virtual and physical museum space is becoming increasingly blurred, and thus museum professionals continue to redefine what visitor engagement means. By utilizing a virtual incubator space, museum professionals can practice better and more nimble design and development processes while creating invested partnerships with their twenty-first century audience.

Many museum websites currently provide information and gather feedback regarding interpretation and retention of museum content, such as voting, surveys, and the creation of online personalized galleries from the museum's collection. Although progressive, museums may soon realize that their twenty-first century audiences are seeking a deeper virtual connection. Collaboration between the audience and museum experts in an online medium could lead to innovative content with an invested audience. Because of its Internet-based nature, virtual museum incubators can be successfully created and managed by any museum with a web presence.[1] This thesis will evaluate the evolutionary role of the museum's online space as a medium for visitor collaboration, and propose process considerations for online museum incubators for co-developing innovative exhibition elements.

1 Polly McKenna-Cress and Janet A. Kamien, *Creating Exhibitions Collaboration in the Planning, Development, and Design of Innovative Experiences* (Hoboken, New Jersey: John Wiley & Sons, Inc.), 7.

1 Web presence: website, Facebook, Twitter, ext.

Broad Conceptual Timeline for Online Museum Interaction



WHY NOW?

In a November 2014 study done at Chicago's Field Museum, entitled *What Makes a Great Museum and How Can Technology Help?* attention is called to a growing desire from museum visitors to be more connected to the museum through their virtual presence. The report summarized:

"This research also points the museum toward opportunities to extend visitors' experiences beyond the four walls of the museum through online or mobile app-based tools that encourage exploration of collections objects or exhibition themes. Currently, about one in five visitors go to the Field website before or after their visit to explore the natural history content there … The museum's new technology initiatives present a significant opportunity to enhance the online experience and extend the on-site experience by digitizing its collection and offering compelling "on-demand" experience for both physical and virtual audiences."[1]

1 Karlene Hanko, Sarah Lee, Nnenna Okeke and Slover Linett Audience Research Inc. "What Makes a Great Museum Experience and How Can Technology Help?" Slover Linette Audience Research(2014): 9

Findings support arguments for increased attention to museum's growing online communities. Additionally, it has been reported that a museum website can get approximately eight times the amount of annual visits as the physical location regardless of the size of institution, a number that continues to grow.[1] The Metropolitan Museum of Art in New York City has six million visits to the physical location and 29 million visits to the website annually.[2] Statistics regarding increased visitation and reliability on museum websites highlights the need for more impactful resources when assisting in the virtual relationship between museums and contemporary audiences.

1 Melissa Terra "The Ratio of Physical versus Website Visitors to Museums," Melissa Terras' Blog, March 2012. http://melissaterras.blogspot.com/2012/03/physical-versus-website-visitors-to.html

2 Anand Giridharadas, "Museums See Different Virtues in Virtual Worlds," New York Times, August 7, 2014, accessed February 20, 2015, http://www.nytimes.com/2014/08/08/arts/design/museums-see-different-virtues-in-virtual-worlds.html?_r=1.

Museums recognize that often a visitor's initial encounter with the institution is online, and the encounter continues after the physical visit via its virtual presence. As online collaborative tools progress, virtual museum visits can move beyond marketing and online collections into a more dynamic and exploratory museum-visitor relationship. Thus, institutions have begun to make internal changes to support this increased consideration by developing robust media teams and hiring in-house programmers and information technology specialists. Some museums now have digital department teams of sixty or more.[1]

Museums are increasing opportunities to connect with the audience within virtual and physical visits. For example, the Cooper Hewitt design museum in New York has launched a progressive tool called *the pen*. During a visit to the museum, visitors are invited to use *the pen* to "collect" objects throughout their visit. Once at home, the visitors can log on to the museum website and access their individual webpage located on their museum ticket, where they can view the items collected and designed during their visit. This type of interaction has been steadily increasing in many museums and highlights the fact that a visit is no longer limited to the physical museum location.

1 Giridharadas, "Museums See Different Virtues in Virtual Worlds."

Additionally, some museums have taken their digital work to the visitors and opted for transparency around their process. One of the strongest examples is the Indianapolis Museum of Art's IMALab. The online lab gives an overview on new digital projects that have been developed, highlighting "What We Did" and gives a contact link for working with them.[1] Projects such as the IMALab are priming museums to rethink their relationship with their virtual visitor community, and what actions can best foster development.

In 2009, in a study done to inform website redesigns, The Museum of Modern Art in New York and the San Francisco Museum of Modern Art received feedback that their visitors "felt an absence of emotional engagement and connection" to the museum.[2] An increased virtual interaction was beyond the capability of what was possible with their online presence at that time. These two museums have subsequently created more robust online programming and related staff in an effort to give contemporary audiences the more intimate connection they desired on the virtual level.

1IMALab. http://lab.imamuseum.org/

2 Allegra Burnette, Joanna Champagne, Charlotte Sexton, Dana Mitroff Silvers, "Redesigning Your Museum's Web site: A Survivors' Guide" Museums and the Web, accessed February, 28th 2015.

In addition to the increasing museum web presence and digital support staff, there is an opportunity to engage with a broader audience via mobile interaction. Mobile devices are a medium that is projected to transcend the digital divide. By developing mobile collaboration via an Internet-based incubator, the museum can co-develop exhibition elements with a broader and more diverse audience. A recent study done by the Pew Research Center reported the following in relation to bridging the digital divide with the mobile platform:

• Currently, 88% of American adults have a cell phone, 57% have a laptop, 19% own an e-book reader, and 19% have a tablet computer; about six in ten adults (63%) go online wirelessly with one of those devices. Gadget ownership is generally correlated with age, education, and household income, although some devices—notably e-book readers and tablets—are as popular or even more popular with adults in their thirties and forties than young adults ages 18-29.

• The rise of mobile is changing the story. Groups that have traditionally been on the other side of the digital divide in basic internet access are using wireless connections to go online. Among smartphone owners, young adults, minorities, those with no college experience, and those with lower household income levels are more likely than other groups to say that their phone is their main source of internet access.

• Even beyond smartphones, both African Americans and English-speaking Latinos are as likely as whites to own any sort of mobile phone, and are more likely to use their phones for a wider range of activities.[1]

This mobile connectivity could be the answer to closing the museum demographic gap, opening the museum up for collaboration with new audience members via their mobile phones.

1 Kathryn Zickuhr and Aaron Smith, "Digital Differences" accesses April 26, 2015. http://www.pewinternet.org/2012/04/13/digital-differences/

WHY VIRTUAL COLLABORATION?

Museums are evolving deeper into collaborative relationships with their audiences, and their virtual presence can be developed as a tool for exhibition development and design. Additionally, museums are entering a time where a large number of visitors will comprise of "digital natives," a generation born into the Internet and technology, that rarely sees distinctions between the digital world and the physical.[1] By treating technology and the Internet as inherent realities for a vast number of their audience members, museums can begin to explore new meaning and usage of their virtual space, enter: online museum incubators.

Getting visitors to collaborate has been studied and utilized by the museum field, and is shown to positively influence visitor interaction. Collaborative efforts with visitors have started to become common practice in many institutions, although there have been only limited explorations into virtual collaboration.[2]

For virtual community-building, a collaborative-type relationship (as in the following figure) allows for the appropriate time commitment and governing structure, more so than Contributory or Co-Creative projects. However, depending on the desired degree of participation and relationship goals other relationship types could be more suitable. Nimble environments that foster collaborative partnerships with visitors continue to be sought after in museum spaces and are growing in use. The next space to hold this type of encounter can be a virtual platform via the museum's incubator.

1 Stacey Mann, Jennifer Moses, and Mathew Fisher, "Catching Our Breath: Assessing Digital Technologies for Meaningful Visitor Engagement," The Exhibitionist (2013): 16
2 Nina Simon, *The Participatory Museum* (Santa Cruz, California: Museum2.0), 231- 245.

The following figure examines the various levels of visitor participation, according to author Nina Simon :[1]

	Contributory	Collaborative	Co-Creative	Hosted
What kind of commitment does your institution have to community engagement?	We're commited to helping our visitors and members feel like participants with the institution.	We're commited to deep partnerships with some target communities.	We're commited to supporting the needs of target communities whose goals align with the institutional mission.	We're committed to inviting community members to feel comfortable using the institution for their own purposes.
How much control do you want over the participatory process and product?	A lot - we want participants to follow our rules of engagement and give us what we request.	Staff will control the process, but participants' actions will steer the direction and content of the final product.	Some, but participants' goals and preferred working styles are just as important as those of the staff.	Not much - as long as participants follow our rules, they can produce what they want.
How do you see the institution's relationship with participants during the project?	The institution requests content and the participants supply it, subject to institutional rules.	The institution sets the project concept and plan, and then staff members work closely with participants to make it happen.	The institution gives participants the tools to lead the project and then supports their activities and helps them move forward successfully.	The institution gives the participants rules and resources and then lets the participants do their own thing.
Who do you want to participate and what kind of commitment will you seek from participants?	We want to engage as many visitors as possible, engaging them briefly in the context of a museum or online visit.	We expect some people will opt in casually, but most will come with the explicit intention to participate.	We seek participants who are intentionally engaged and are dedicated to seeing the project all the way through.	We'd like to empower people who are ready to manage and implement their project on their own.

1 Simon, *The Participatory Museum*, 190 -191.

	Contributory	Collaborative	Co-Creative	Hosted
How much staff time will you commit to managing the project and working with participants?	We can manage it lightly, the way we'd maintain an interactive exhibit. But we ideally want to set it up and let it run.	We will manage the process, but we're going to set the rules of engagement based on our goals and capacity.	We will give much time as it takes to make sure participants are able to accomplish their goals.	As little as possible - we want to set it up and let it run on its own.
What kinds of skills do you want participants to gain from their activities during the project?	Creation of content, collection of data, or sharing of personal expression. Use of technological tools to support content creation and sharing.	Everything supported by contributory projects, plus the ability to analyze, curate, design, and deliver completed products.	Everything supported by collaborative projects, plus project conceptualization, goal-setting, and evaluation skills.	None that the institution will specifically impart, except perhaps around program promotion and audience engagement.
What goals do you have for how non-participating visitors will perceive the project?	The project will help visitors see themselves as potential participants and see the institution as interested in their active involvement.	The project will help visitors see the institution as a place dedicated to supporting and connecting with community.	The project will help visitors see the institution as a community-driven place. It will also bring in new audiences connected to the participants.	The project will attract new audiences who might not see the institution as a comfortable or appealing place for them.

In their book *Creating Exhibitions Collaboration in the Planning, Development, and Design of Innovative Experiences* authors Polly McKenna-Cress and Janet A. Kamien remark on the importance of collaboration stating "Museums have also taken up the collaboration charge, from how institutions are run to how exhibitions are developed, taking advantage of contributions from multiple sources to shape rich exhibitions for visitors."[1]

The concepts expressed in *Creating Exhibitions* can be easily applied to virtual visitor collaboration. McKenna-Cress and Kamien go on to state that "Visitors are our most important collaborators, and their opinions, needs and input must be considered in the creation of experience."[2] Involving visitors in the "creation of experience" is necessary in developing a deepened relationship with them and in designing the best possible exhibition experience for them.

1 Polly McKenna-Cress and Janet A. Kamien, *Creating Exhibitions Collaboration in the Planning, Development, and Design of Innovative Experiences* (Hoboken, New Jersey: John Wiley & Sons, Inc.), 1 collaboration.
2 McKenna-Cress and Kamien, *Creating Exhibitions,* 5.

Collaboration with users has also been explored outside the museum field, mainly by industrial designers. In his book Change By Design author Tim Brown addresses the need for collaboration when attempting new designs and solutions stating:

"The designer must not be imagined as an intrepid anthropologist, venturing into an alien culture to observe the natives with the utmost objectivity. Instead we need to invent a new and radical form of collaboration that blurs the boundaries between creators and consumers. It's not about "us versus them" or even "us on behalf of them." For the design thinker, it has to be "us with them."[1]

Forms of virtual interaction are already developing naturally via web forums and social media both hosted and independent of museum institutions. The majority of museums have Facebook accounts, Tweeting staff members, and online forums for discussions, but whether these platforms can be leveraged to grow and refine the museum content remains to be seen.

1 Tim Brown and Barry Katz, *Change By Design,* (New York: HarperCollins, 2009), 58.

WHY AN INCUBATOR?

Virtual museum incubators are online environments that function as collaborative project pages to be shared with museum staff and virtual participants. Not all museums will have the physical space or resources to dedicate to experimental projects; however, most museums today have a web presence where a virtual environment could be easily created and shared. Virtual incubators provide a dynamic space for authentic online museum visitor experiences. Virtual visitors will be able to access their projects, connect to team members, participate in video sessions, track the progress of a project and edit documents together in real time.

The functionality and possibilities of this type of collaboration will grow as programming support for remote working options are perfected. Many museums today internally use online tools for project development. Expanding the opportunity to connect with virtual visitors can mean an action as simple as inviting them to the already existing web chats and shared documents.

The spring 2015 edition of the Exhibitionist magazine focused on agile and responsive museum spaces. In her article *Learning to Be Nimble: Museum Incubators for Exhibition Practice* author Kathleen McLean discusses the concept of incubators within museums; she comments "Museum incubators provide a controlled environment in which exhibition professionals can experiment with nimble processes and responsive ideas and practice creating exhibitions and programs in new ways."[1] In her article McLean is referring to incubators in the physical realm, however this idea could also be applied to a virtual environment fluidly and effectively.

Later in her article, McLean describes some of the resistance to physical incubators, stating

"This has not been an easy process for some staff and docents at the museum (the Folk Art's Gallery of Conscience, in Santa Fe, New Mexico) who feel that this work is below 'museum standards' of production and 'professionalism.' And a group of exhibition design students on a recent visit expressed concerns that the prototyping aesthetic 'devalued' the artwork.'"[2]

The museum website or mobile application may prove to be a more adaptable and exploratory environment for a museum incubator and could avoid resistance from more traditional museum stakeholders. Incubators are in large part created for the museum professional: they provide a space where mistakes and failure are integral to the design process, and innovative but risky ideas can produce progressive visitor experiences. It is also an easily customizable space based on the project being produced.

In addition to virtual museum incubators being nimble and supportive of failure they also provide an environment for an authentic virtual visitor experience. Often, online interaction via a museum website consists of virtual tours or videos of lectures and performances. Although significant in sharing the museum with the online audience, it fails to give an authentic museum experience to the online visitor.

1 Kathleen McLean, *"Learning to Be Nimble: Museum Incubators for Exhibition Practice,"* Exhibitionist vol. 34 (Spring 2015): 8.

2 McLean, "Museum Incubators for Exhibition Practice," 12.

In her article *The Museum as Distributed Network*, author Nancy Proctor, head of mobile strategy and initiatives for the Smithsonian, comments on the need for authentic online interactions for museum visitors by dissecting the multi-platform model.[1]

"But like any wholesale export of culture without sensitivity to the 'native' context and its communities, multi-platform publishing results at best in forcing square pegs into round holes, at worst in a sort of colonizing effort; either way, it ultimately fails to be faithful either to the message or the target audiences' needs. Content designed for one use, context or platform rarely ports directly and easily onto another. Brochures do not make good websites."[2]

Virtual visitors are less likely to connect emotionally with a virtual museum experience if it simply replicates the physical visit, as opposed to augmenting it. For visitors who may never be able to physically visit the museum, the online experience may not have the lasting impact desired.

1 Multi-platform model is creating one draft of content and publishing it in physical documents and online platforms.
2 Nancy Proctor *"The Museum as Distributed Network,"* accessed 4/27/15. http://www.museum-id.com/idea-detail.asp?id=337

For example, the online gallery *DotDash3* is a three-dimensional gallery space that allows artists to place their work on virtual gallery walls.[1] It is in many ways artificial in its interaction.

The site fails to showcase the artwork successfully because it chooses to display the work in a virtual setting that replicates a physical gallery display, trying to "force a square peg into a round hole." Instead, museum staff should interact directly with the virtual visitor on real and evolving content in a truly native online medium.

Proctor goes on to advocate for shifting away from a "multi-platform museum model" to a "distributed network" where "The constituent platforms work together to create a whole that is greater than the sum of its parts." This is the concept of synergy.

1 "About" DotDash3 http://www.blouinartinfo.com/news/story/864141/dot-dash-3-lets-artists-build-virtual-galleries-to-sell-real#

She suggests "As we begin to design interpretation and information systems for the museum in the age of social media, the distributed network can serve as an inspirational metaphor and a practical model to suggest new ways of authoring and supporting museum experiences that are:

• conversational rather than uni-directional

• engaging and relevant, rather than simply didactic

• generative of content and open-ended rather than finite and closed

• sustainable across platforms, communities, and time

• and that become 'smarter', more effective and useful the more they are used: rather like Pandora or the Amazon recommendations system – increasing the quality of both the visitor experience and the online museum itself "[1]

Virtual museum incubators provide institutions with the opportunity to do all of these things while providing an authentic museum interaction. A wide variety of museums will be able to utilize and embrace museum incubators in various ways. By nature, the online platform allows museums to individually target the interaction based on their mission and capacity.

1 Proctor *"Distributed Network"* http://www.museum-id.com/idea-detail.asp?id=337

WHO BENEFITS?

Virtual museum incubators can benefit the museum, the community, and the individual. First, this type of relationship and interaction allows the museum to make human-centered design decisions, testing early and often while reaching a broader audience. Secondly, virtual collaborations allow for individuals to become advocates for their own communities. Lastly, it provides the opportunity to individually recognize visitors and staff as collaborators, thus giving them a deeper sense of ownership and connection with the museum, while increasing digital literacy.

HUMAN-CENTERED DESIGN DECISIONS FEEDBACK EARLY AND OFTEN

An essential element to this collaborative relationship is feedback on experiences being developed. Visitor evaluation and feedback is vital to exhibition success and can strengthen visitor relationships. In her article *The Evaluation of Museum Multimedia Applications: Lessons from Research* (part of Museums in a Digital Age) author Maria Economou describes the Euesperides project, a detailed study of the effect of evaluation and testing on a multimedia interactive.[1]

" Closer collaboration between content specialist, program designers and educators can play an important role in this direction (collaboration in a project). Furthermore, systematic testing and rigorous investigation, as the Euesperides research study has shown, can help make interactive multimedia effective interpretation tools which enrich the experience of museum audiences, both real and 'virtual.'" [2]

Early and frequent feedback from visitors, in addition to multidisciplinary collaboration between the museum and testers resulted in more effective interactives. Virtual visitor collaboration for exhibition development describes a spectrum of participation and personal investment from the visitor and museum. A virtual museum incubator page could be: "We're thinking about doing an exhibition about Pop Art, and we wanted to know how you feel about seeing (a specific artist) in it?" compared to a personal invitation: "Dear Mr. Smith, we are conducting a test of a mobile app and would like your input on it. Please download the app, use it, then Skype us with your comments and feedback, particularly in the areas of navigation." The second is a stronger interaction because it demands greater museum and visitor collaboration, both parties are asked to give feedback and suggestions and are given specific areas to focus on with instructions.

1 Ross Parry, Editor, Museums in a Digital Age (New York, New York, Routledge), 391- 405.
2 Maria Economou, "The Evaluation of Museum Multimedia Applications," in Museums in a Digital Age, edited by Ross Parry, (New York, New York, Routledge), 404.

Designer and author Tim Brown advocates for collaboration as a step towards better design practices stating:

"For the moment, the greatest opportunity lies in the middle space between the twentieth-century idea that companies create new products and customers passively consume them and the futuristic vision in which consumers will design everything they need for themselves. What lies in the middle is and enhanced level of collaboration between creators and consumers, a blurring of the boundaries at the level of both companies and individuals. Individuals, rather than allowing themselves to be stereotyped as "consumers," "customers," or "users," can now think of themselves as active participants in the process of creation; organizations by the same token, must become more comfortable with the erosion of the boundary between the proprietary and the public, between themselves and the people whose happiness, comfort, and welfare allow them to succeed."[1]

1 Tim Brown and Barry Katz, Change By Design, (New York: HarperCollins, 2009), 99-100.

Brown highlights the need for institutions/museums to let go of the invisible dividing line between museum expert and visitor for the sake of good collaboration, thereby making it possible to embark on a collaborative quest for further information and discovery, where the museum can improve its personal relationship with collaborators and strengthen their online community.

REPRESENTING A LARGER GROUP - CREATING ADVOCATES THROUGH VIRTUAL VISITOR COLLABORATION

Virtual collaborations allow for individuals to become advocates for their own communities. Museum exhibitions that currently attempt a crowd-sourced element recognize the individual contributor as vital to creating a larger community. Physical talkback walls were an early strategy, which has given way to crowd-curated exhibitions. An example is the Brooklyn Museum's *Click*, which asked the virtual community to vote on photos representing "Changing Faces of Brooklyn." The hypothesis suggested "a diverse crowd is often wiser at making decisions than expert individuals."[1] In this exhibition, both the artists were advocates for their community, as well as the voters, often voting for photos for which they felt a personal relation to in their community. Virtual collaboration could be seen as an appropriate solution for visitors to be individually recognized while representing a collective group in a neutral environment, uninhibited by the "museum" and other participants within that setting.

1 The Brooklyn Museum "About" accessed March 29, 2015 http://www.brooklynmuseum.org/exhibitions/click/

Creating advocates is a powerful way to connect with targeted groups. One strong partner at the museum can recruit more group members. The Walker Art Center's *Teen Art Council* (WACTAC) in Minneapolis is composed of teens and museum staff. The council markets, designs and organizes teen events in addition to running the website (http://teens.walkerart.org). The teens work alongside museum professionals to create content, events, and marketing strategies that appeal to their specific age group. This interaction allows for the lines between expert and visitor to become blurred allowing for open communication and collaboration. By unifying the museum experts and teen advocates under the common goal of increasing teen activity, the Walker Art Center has developed a progressive and successful collaborative relationship. Author and museum professional Susana Smith Bautista comments on the interaction stating "[the website] is remarkable for the sense of community that it generates for teens based on digital features such as a blog, links, calendar, and gallery of uploaded artwork." The Teen Art Council "is significant because of the particular demographics of the museum: 22 percent of its visitors are teens and youth."[1]

1 Susana Smith Bautista, Museums in the Digital Age: Changing Meanings of Place, Community, and Culture. (Lanham, MD:AltaMira Press, 2013).

Although this is an example of collaboration that is local, it is applicable to less accessible groups as well. The National Constitution Center created an exhibition titled *Being We The People*. Starting in 2009 the project was an online collaboration between students from America and Afghanistan where they were asked to document "what their lives were like living in a democracy through photography." The project used Shutterfly.com and had the students participating in online curatorial conversations which were compiled into an online exhibition. The "About" page of the site lists community partners, students, teachers and museum staff as the creators of the project. Since its launch, *Being We The People* has generated increased content which now includes video. Additionally, any visitors to the online exhibition are asked to contribute comments and feedback on the works selected.[1] This project is seminal to understanding the opportunities presented when using the Internet as a medium for collaboration. By utilizing an online format, two groups of students living oceans apart were able to collaboratively express themselves in relation to each other in a public forum.

1 National Constitution Center website, accessed April 14, 2015. http://beingwe.constitutioncenter.org/

3 IMPORTANCE OF INDIVIDUAL RECOGNITION OF MUSEUM PROFESSIONAL AND VISITOR

Virtual museum incubators provide an opportunity to individually recognize visitors as collaborators, thus giving them a deeper sense of ownership and connection with the museum. In an effort to explain why individual recognition is important to contemporary participants, author and philosopher Alain Touraine comments, "We do not want to limit our rich and diversified experience to the participation in a social category or even to a universalistic principle. On the contrary, we want to be recognized by others and by ourselves in all aspects of our individuality."[1] The online experience is a very personalized one, especially in social media circles, where a person can contribute their perspective and opinion. Their contribution in a virtual collaboration allows the visitor to express their individuality through the development and iterations of exhibition elements. Visitors online may also share more about themselves and be less inhibited than in a physical museum setting.

By targeting visitors, the museum is addressing specific personal attribute that makes them desirable to collaborate with, thus creating increased importance to that particular participant's contribution.

1 Alain Touraine, "The Subject Is Coming Back," International Journal of Politics, Culture and Society (Spring – Summer, 2005) : 5

However, while a participant's voice is heard and appreciated, it may not be reflected verbatim in the larger evolution of the project. In creating targeted collaborations with chosen individuals, the museum is allowing the audience's ideas to be molded and formed to fit the larger goals of the project.

In addition to individually recognizing virtual museum visitors, online incubators create an environment to support individual staff ideas and explorations, while helping to improve digital literacy. Museum professionals, like visitors, need to be recognized and provided with a space to expand their own ideas and interests. Incubators function as spaces for exploration that commend the process failure and experimentation. By supporting online visitor and museum professional collaboration, museums are empowering their staff to innovate and co-develop outside their department alongside their target audience. This type of interaction is not isolated to exhibition design. Marketing, development, graphics departments among others can use the virtual museum incubator space to test ideas and gain feedback with fellow staff members and visitors.

By facilitating and supporting staff interaction with virtual incubators the museum creates a safe space for learning digital tools.

In a recent report by the Royal Ontario Museum in Canada, the topic of digital tool usage by museum staff members was addressed:

"Digital engagement can be tricky to encourage among museum staff, especially since so much of the work that goes on in museums occurs offline: preservation, conservation, hands-on research, and so forth. But promoting digital inclusivity in a museum can be as simple as having a project team develop a digital plan alongside their non-digital strategy. It is easier to move from print or gallery space to the digital world if the project planners have been strategizing for both from the beginning…Museums are both physical and digital spaces, and our work should reflect that duality."[1]

In implementing and supporting virtual visitor collaboration through their web-based incubators, museum professionals can now grow their technological engagement and familiarity alongside their visitors, dispelling logistical issues and fear of technology, co-creating in real time.

1 Alyssa McLeod "Mapping the way to a more digitally inclusive museum," accessed April 27, 2015. http://mw2015.museumsandtheweb.com/paper/mapping-the-way-to-a-more-digitally-inclusive-museum/

IN SUMMARY

In summary, online museum incubators provide museums with the opportunity to co-develop innovative exhibition elements with a targeted and dedicated audience. They allow more human-centered design decisions, increase feedback tempo without limitations of physical distance, create community advocates while recognizing individual collaborator's strengths and provide a safe space for improving digital literacy among staff. By the end of 2015 over 27 million people are projected to be working from home or telecommuting.[1] Additionally, new virtual reality tools are growing in accessibility and may be the next frontier for work environments. It is with these growing statistics in mind that museums have the opportunity to be at the forefront of virtual visitor collaboration.

1 Telecommute : : to work at home by using a computer connection to a company's main office
Telecommuting surge: 5 million new home-based offices by 2015, author Joe McKendrick, accessed March 20, 2015 http://www.zdnet.com/article/telecommuting-surge-5-million-new-home-based-offices-by-2015/

DESIGN THINKING FOR VIRTUAL MUSEUM INCUBATOR PROJECTS

Design thinking is an established project tool that assists in dynamic problem solving while igniting creative solutions,[1] and has a strong history of creating ownership and investment from participants (see *case study two*). For these reasons it provides a strong structure for virtual museum incubator projects and is demonstrated in the following project diagram. The museum incubator space acts as a project hub, for all design-thinking stages to be active at any given time in a project. In addition, live video chats are strongly suggested for every phase of the encounter; the ability to see others and interact with them visually deepens participant investment (see recommendations section Synchronous Virtual Visitor Activity.)

Possible projects for virtual museum incubators can include, but are not limited to:

- Exhibition schematic development and design
- Website development and design
- Mobile application development and design
- Interactive (physical and digital) development and design
- Graphic development
- Event development and design
- Long term museum strategic planning

1 D. Mitroff Silvers, M. Wilson and M. Rogers, "Design Thinking for Visitor Engagement: Tackling One Museum's Big Challenge through Human-centered Design. In Museums and the Web 2013, N. Proctor & R. Cherry (eds). Silver Spring, MD: Museums and the Web. Published February 1, 2013. Consulted November 21, 2014 .http://mw2013.museumsandtheweb.com/paper/design-thinking/

EMPATHIZE

Build empathy for the target audience to produce a superior product
This formative stage of the process tends to be less structured and presents the opportunity to gain a deeper understanding of the target audience for which the project is addressing.

Action - During the start of project development, send an electronic invitation to members of the target audience and applicable staff members asking for their participation in a video discussion. Along with the invitation send questions and/or topics that might be addressed.

DEFINE

Co-create the mission, goals, and direction of the project

Action - Hold a second video discussion with reference notes from previous sessions highlighting key elements to focus on. Provide executive summary of key elements to keep the discussion on target.

Note: In this phase it is suggested to continue to use the same group members as the "empathy" stage to remain consistent in project direction, however if the first group did not supply appropriate amount of insight and feedback revisit Empathy stage with new audience to yield better results.

IDEATE

Brainstorming and thinking big

Action- Hold a virtual brainstorming session with the goal of co-developing creative solutions and products. While working with the original team allows for consistency in vision, the session might benefit from an outside perspective at this time to bring new ideas and insights. In this stage a live document editing program is suggested.
By working collaboratively, online members have an opportunity to live brainstorm together, building momentum.

PROTOTYPE

Testing and feedback at this stage can reveal hidden problems and content gaps.
By prototyping virtually the team is lessening obstacles of transportation, staffing and timing while almost completely eliminating overhead cost. This is the moment where outside voices will significantly strengthen the project.

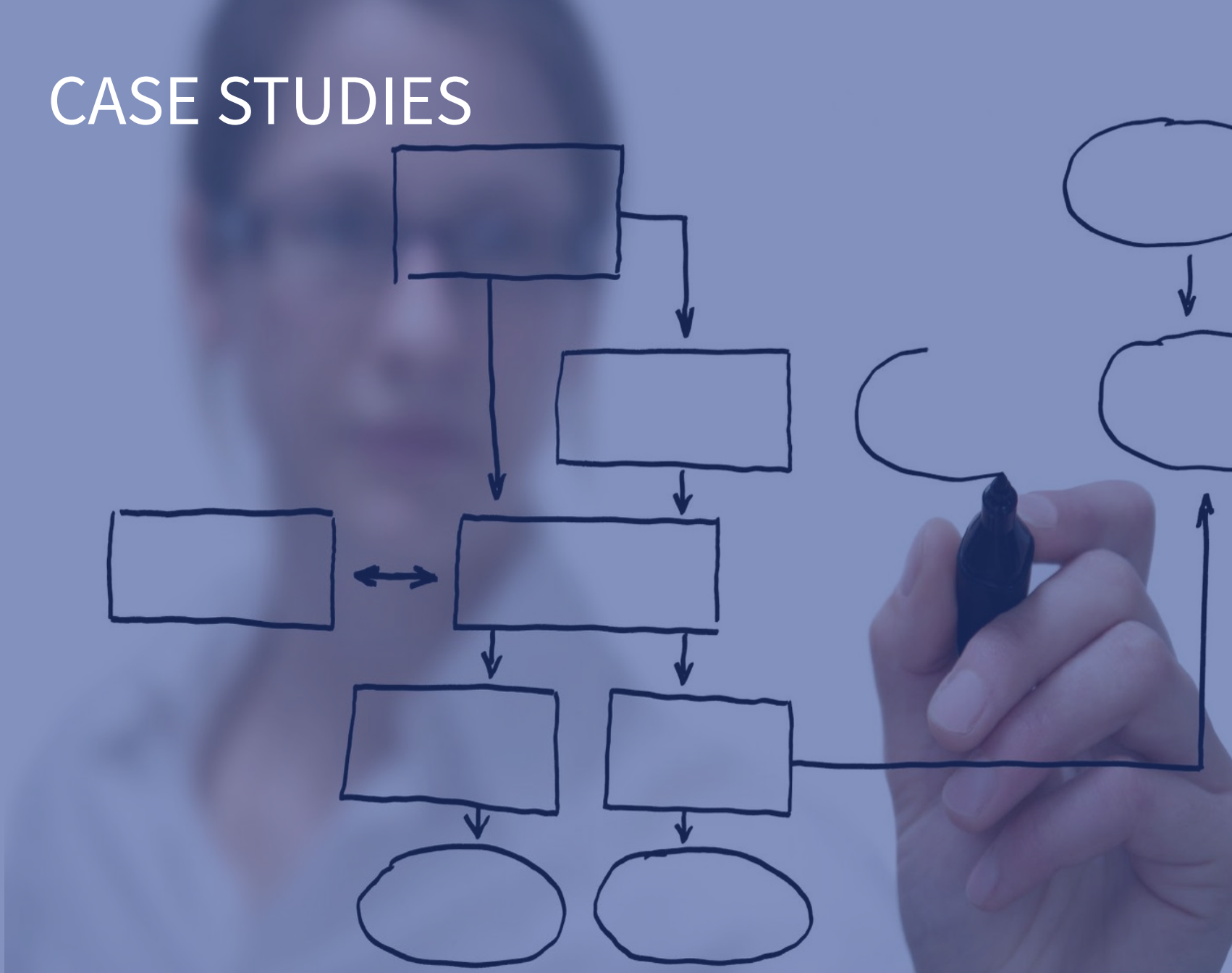
Action - Create a tangible product for user testing and ask for feedback and suggestions.
The prototype could be in the form of an online wireframe, downloadable mobile application or simply a paper prototype the online users can print at home and interact with. Testing with both tech-minded and physical prototypers can yield innovative results depending on the project. Feel open to customizing the experience as needed (see recommendations section.)

TEST

Wrapping up the project and/or outlining future next steps

Action - Bring the original group of testers back together and test the end application. Have a discussion about project goals and mission as well as future ideas on evolution and iteration. At this moment the team can hear feedback on the project collaboration while making next steps or edits for future projects.

CASE STUDIES



Case Study One

Virtual Space As Collaborative Museum Environments

Case Study Two

Museums Stay Relevant Through Online Initiatives

CASE STUDY ONE: Virtual Spaces As Collaborative Museum Environments

In her book *Museums in the Digital Age: Changing Meanings of Place, Community and Culture* author Susana Smith Bautista remarks on the changing definition of place and space in modern museums. Bautista expands on the changing ideas surrounding "place" commenting,

"And even more so today with synchronous digital communications technologies such as Skype, chat, Web conferencing, and the latest, telepresence videoconferencing where place becomes that indeterminate point of intersection within a global network of users; what Casey (Edward S. Casey, American philosopher) refers to as the 'omnilocality' of place. Finally, we can ask if place implies permanence?"[1]

In this passage, Bautista suggests that the notion of place is changing for contemporary audiences, further reinforcing the need to expand the environment in which museums connect and collaborate with their visitors.

1 Susana Smith Bautista, *Museums in the Digital Age: Changing Meanings of Place, Community, and Culture.* (Lanham, MD:AltaMira Press, 2013).

Testing these types of activities in virtual spaces has been explored before, using avatar tools in online environments. Authors and designers Nina Simon and Tim Brown are two of the many people that have utilized virtual reality[1] to collaborate. Both used an online game called *Second Life*, where users create avatars and move in 3D virtual spaces, interacting with one another and the game.[2] By examining these past projects, considerations can be developed about the pros and cons of this type of encounter.

1 Virtual reality as defended by Merriam-Webster is "an artificial world that consists of images and sounds created by a computer and that is affected by the actions of a person who is experiencing it."
2 Second Life, accessed March 2, 2015 http://secondlife.com/.

Nina Simon implemented and managed The Tech Virtual Test Zone in 2007 at The Tech Museum in San Jose, CA.

"The design challenge was clear: to crowd source exhibit development by collaborating with participants all over the world via online platforms. By inviting creative amateurs and content experts to share and prototype many exhibit ideas in parallel, we believed we could design and deploy more diverse, high-quality exhibits faster than had previously been possible. The goals for the pilot were to launch the collaborative platform, recruit participants, and build a prototype gallery in The Tech Museum based on their ideas within seven months. "[1]

In her book, *The Participatory Museum*, Simon provides a history of this endeavor that clearly outlines the obstacles and opportunities of this type of interaction. These are some of Simon's suggestions for embarking on an endeavor of this kind:

1 Nina Simon, *The Participatory Museum*, 245.

• Find activities for participants that are meaningful and useful both for them and for the institution.

• Let participants use the tools that they know, not just the ones that staff develops for them.

• Don't rely solely on words to communicate with participants.

• A strong collaboration requires both structure and mutual trust.[1]

Nina Simon is a vocal supporter of participation in museums; thus, her interest in exploring this environment in 2007 could be seen as the formative stage of museums investigation into virtual collaboration.

1 Nina Simon, *The Participatory Museum*, 252-253.

This is not the only online design encounter utilizing *Second Life* as a development space; Tim Brown describes a project where alternative reality was utilized in his book Change By Design. Brown is the CEO and president of IDEO "an award-winning global design firm that takes a human-centered, design-based approach to helping organizations in the public and private sectors innovate and grow."[1] In his book *Change By Design*, Tim Brown not only advocates for prototyping early and often in the collaborative design process, but also gives an example of when the virtual reality space of *Second Life* was used in the development of a project.

"One successful example is the Starwood hotel chain, which launched a 3-D, computer-generated prototype of its planned Aloft brand inside the virtual world of *Second Life* in October 2006. Over the next nine months virtual guests inundated Starwood with suggestions on everything from the overall layout down to putting radios in the showers and repainting the lobby in earth tone…

1 " About IDEO," accessed 2/9/15. http://www.ideo.com/about/

Virtual prototyping allows companies to reach prospective customers quickly and get feedback from people in numerous locations. Iterations are easy, and as more of them begin to explore the prototyping potential of online social networking, we will become increasingly adept at evaluating them."[1]

Like The Tech Virtual Test Zone, Starwood gave a sense that this was just the start of online prototyping. Brown's book was written in 2009 and Simons' project took place in 2007, both projects were in the midst of a major change in online participation. Facebook was launched in 2004, and was increasing its numbers and momentum significantly during the time of these two projects. Brown alludes to the looming social media explosion and its potential effects by stating "Iterations are easy, and as more of them begin to explore the prototyping potential of online social networking, we will become increasingly adept at evaluating them."

1 Tim Brown and Barry Katz, *Change By Design*, (New York: HarperCollins, 2009), 99-100.

Social media greatly affected how individuals use the Internet as well as how they build and maintain relationships. Emerging online collaborations are fusions of social media platforms and more involved interactions such as *Second Life*. One such as example is OpenIDEO:

"OpenIDEO is part of IDEO, a design and innovation firm that uses a human-centered, collaborative approach to solving complex issues – a methodology we call design thinking. Modeled on this approach, OpenIDEO enables people everywhere to collaborate in developing innovative solutions to pressing social and environmental challenges."[1]

Figure 1 is example "Challenge" page from OpenIDEO

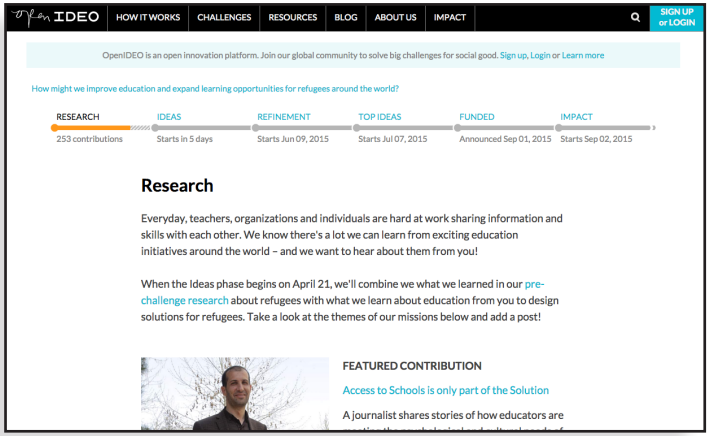


Figure 1

Given that Brown was a founder of IDEO, one can assume he had a hand in the development of OpenIDEO. The site invites any virtual visitor to contribute ideas and solutions to a variety of world issues; it then tracks the progression of the project. The evolution from a complex and more demanding online platform such as *Second Life*, to a more familiar and simplified platform, for example a social media site, seems like a natural progression in the design of virtual collaborative spaces. The drive to collaborate virtually still exists and tools to facilitate this interaction are constantly evolving and being refined to maximize user familiarity and participation.

1 About OpenIDEO, accessed February 20, 2015, https://openideo.com/about-us.

CASE STUDY TWO: MUSEUMS STAY RELEVANT THROUGH ONLINE INITIATIVES

The San Francisco Museum of Modern Art (SFMOMA) has closed its doors for three years while it constructs its new building. In an effort to retain visitor interaction, collaboration and participation, SFMOMA has refocused its direction and expanded its existence beyond the physical building. Located on the top right hand side of its home page, a message reads, "*We've temporarily moved……everywhere.*"[1] This is just one of many steps the SFMOMA has taken to stay active while closed. The museum has attempted to capitalize on that closure as a moment for exploration and expansion of what it means to be SFMOMA. By looking at the museum's attempts to stay alive and active by offering online interactivity and satellite exhibitions, a real life example can be made of museums redefining their online presence and visitor interaction.

1"SFMOMA," accessed 1/28/15. http://www.sfmoma.org/

Collaboration can be facilitated many different ways; one of the strongest structures that is growing in use and familiarity is design thinking (as mentioned in prior sections.) This case study looks to explore the use of design thinking as a major tool for collaboration.

As a key part of this multi-year, multi-step revision, the SFMOMA hosted a boot camp which utilized design thinking to reimagine ways in which the website could perform the tasks needed for the museum while closed. Headed by Dana Mitroff Silvers, the SFMOMA worked with Stanford's Hasso Plattner Institute of Design (d.school)[1] to use design thinking to uncover some possible plans for activating the museum web environment while closed. Silvers is the former head of web at the San Francisco Museum of Modern Art and is a top facilitator of web strategies and design thinking.

1 D. Mitroff Silvers, M. Wilson and M. Rogers, "Design Thinking for Visitor Engagement: Tackling One Museum's Big Challenge through Human-centered Design. In Museums and the Web 2013, N. Proctor & R. Cherry (eds). Silver Spring, MD: Museums and the Web. Published February 1, 2013. Consulted November 21, 2014 .

In collaboration with Molly Wilson and Maryanna Rogers, Silvers wrote a paper describing the experience and the process employed during this session for the SFMOMA, she describes the challenge as follows:

"Instead of relocating to a temporary home during the construction, SFMOMA will go directly into the community through collaborative and traveling museum exhibitions, site-specific installations, and neighborhood festivals. During this period, SFMOMA's off-site and virtual presence will be critically important. The upcoming closure offered a unique opportunity to address the challenge of capturing and sustaining public engagement without a building. Reaching outside their circle of expertise and comfort zone, SFMOMA staff teamed up with a class at the d.school to attempt to wrestle with the challenge through the design thinking process."

The San Francisco Museum of Modern Art was not the only museum that turned towards its online presence for support while closed. The Walker Art Center in Minnesota described their virtual initiative during their closure: "During the two years of construction, the museum conducted its "Museum without Walls" exhibitions and activities off-site around the region, collaboration with local organizations and institutions."[1] Both of these museums understood the importance of their online communities as being necessary to continued momentum while closed.

1 Bautista, *Museums in the Digital Age: Changing Meanings of Place, Community, and Culture.*

The Indianapolis Museum of Art also understands and uses the power of the online community in remaining relevant. Maxwell Anderson, former Director of the IMA remarked on the museums use of technology stating "Technology is a vehicle for making the museum relevant to the world, which then makes the local audience pay attention." Indianapolis is a city for sports.

When attempting to explain what the IMA is competing with within its city, author Susana Smith Bautista states

"Indianapolis's national and international reputation is built on sports…Traditionally the city has relied on sports tourism to attract the majority of its visitors. Generating an estimated $336.8 million in economic impact just from the Indy 500 and its ancillary events, the city admits it's hard to turn its back on sports."[1]

1 Bautista, *Museums in the Digital Age: Changing Meanings of Place, Community, and Culture.* Kindle location 844 of 5509.

The museum has leveraged their online presence to become a relevant staple in an Indianapolis visit. Bautista goes on to explain the museum's robust online presence:

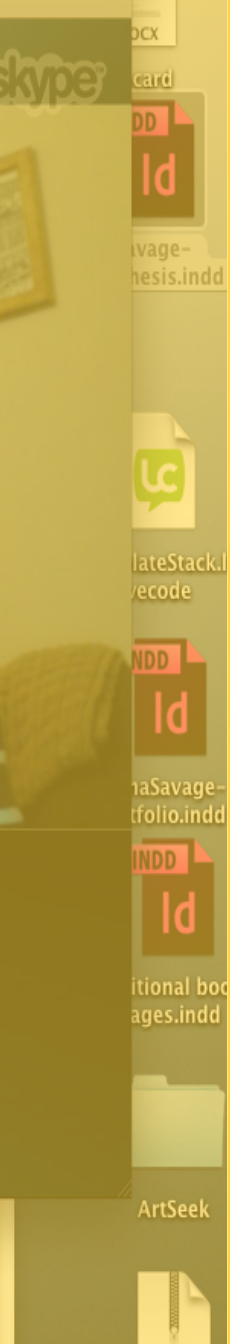
"The museum website is the hub of its online activity, reaching out to its different communities, providing dynamic experiences for those nearly one million visitors from around the world. The Internet is the main medium by which the museum gets noticed at a global level and consequently at the national and local levels."[1]

1 Bautista, *Museums in the Digital Age: Changing Meanings of Place, Community, and Culture.* Kindle location 1080 of 5509.

Both of these museums utilized their online presence to aid in remaining relevant, either by continued community connection while closed or by gaining attention on an international level. By focusing on the importance of their continued virtual existence, the San Francisco Museum of Modern Art and the Indianapolis Museum of Art have provided strong examples of the type of change that can be initiated by giving significant attention to a museum's online space.

APPLICATION - *ArtSeek*

Like 0 Tweet 0



Phase One

Development

Phase Two

Online Collaboration

Findings And Discussion

Understanding the Needs of the Target Audience

Experts and Visitors Test Together

Limitations

PHASE ONE: DEVELOPMENT

ArtSeek started as a joint project between this thesis work and that of fellow Museum Exhibition Planning and Design graduate student, Ashley Scrivener and course work of Museum Education graduate student, Nicole Hewitt. Ms. Scrivener's thesis focuses on using interactive elements to ignite social engagement in a gallery setting. In preliminary brainstorming sessions, ideas surfaced around designing a mobile gallery game to foster social interaction. The team also decided that collaboration was going to be crucial to the game's development and thus built in time for multiple prototyping and product testing sessions from the onset of the project. From these conversations two gallery games were developed, one that utilizes the framework of the mobile app *Heads Up!* named *ArtSeek* and a second was loosely based off of the game *madlibs* titled *ArtStory*. Although virtual visitor collaboration would have been preferable in the initial development of *ArtSeek,* limited time made it a difficulty, but it was utilized later.

During the formative stages a partnership developed with InLiquid Studios, a Philadelphia based artist collective. After pitching both games to InLiquid's Exhibition Manager Mat Tomezsko, a prototyping session was planned to choose one of the games for digital development. After receiving the approval from InLiquid and its artist, the first paper prototyping session was held at the opening of the exhibition Reflections.

Figure 2 is the paper mock up of *ArtSeek* used in the physical prototyping session:

Reflection 9
Gina Michaels

Step 1:
Without telling your partner, list four words that you feel best describe this work:

_____

_____

_____

_____

Step 2:
Without using this list of words as well as the **colors, shape and label information** describe the piece to your partner.

Did they get it?

Mix Media Cityscape
Lisa Imperiale

Step 1:
Without telling your partner, list four words that you feel best describe this work:

_____

_____

_____

_____

Step 2:
Without using this list of words as well as the **colors, shape and label information** describe the piece to your partner.

Did they get it?

Farmer's Market
Mary Henderson

Step 1:
Without telling your partner, list four words that you feel best describe this work:

_____

_____

_____

_____

Step 2:
Without using this list of words as well as the **colors, shape and label information** describe the piece to your partner.

Did they get it?

Happy New Year
Alexandra Coultas

Step 1:
Without telling your partner, list four words that you feel best describe this work:

_____

_____

_____

_____

Step 2:
Without using this list of words as well as the **colors, shape and label information** describe the piece to your partner.

Did they get it?

Figure 2

During the session it was concluded that people enjoyed playing *ArtSeek,* which asked the visitor to describe the artwork to their partner, over the *madlibs* game, which is mainly fill-in the blank. *ArtSeek* was described to InLiquid and participants at the gallery as follows: "This in-gallery game asks visitors to describe works of art to other visitors who try to find them in the gallery. But it won't be too easy! There are certain descriptors you cannot say, prompting the visitor to think more deeply about how to describe the artwork to their teammate." Based on this and visitor feedback and interaction with the game, the team decided to move forward with a digital version of *ArtSeek*, goals for which are as follows:

• Visitors will interact with each other by using personal stories to describe art works in the gallery

• Visitors will enjoy playing the game *ArtSeek* and will feel more relaxed in an art gallery setting

• Visitors will feel greater ease when accessing the art work by having a less academic entry point

After evaluating the results from a survey administered after the session, the team concluded that *ArtSeek* had potential to be played remotely. For example, with one person in California playing with a friend at the MoMA. Additionally, the team noticed that the initial opening had failed to gather one of their target audiences, visitors who worked in the technology field. The physical prototyping session prompted a virtual collaborative session to develop the next iteration of ArtSeek, which tested the remote application of the game, basic functionality of the first digital version and captured feedback from the tech audience.

PHASE TWO: ONLINE COLLABORATION

In an effort to display and test virtual visitor collaboration as well as evolve the gallery game, an online prototyping session for *ArtSeek* was conducted. Although imperfect, the session stands as a useful example of utilizing digital tools to expand community and create invested partners in a project even if the participants are not geographically close. In addition to testing the basic function and design of the game, the session sought to assess the games ability to be played remotely.

Goals for the online collaboration session

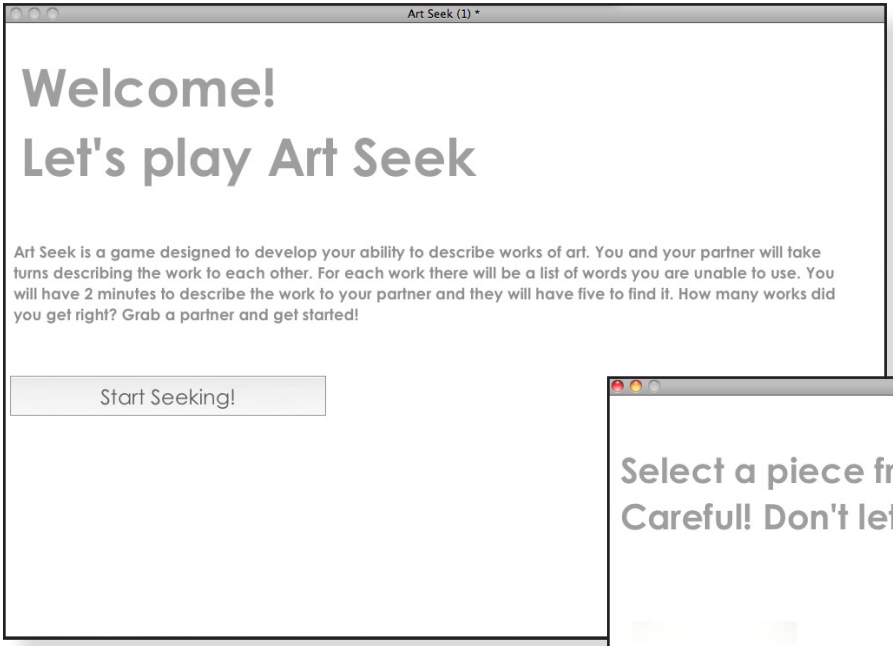
• The participants will feel intrigued and invested in giving open and honest feedback

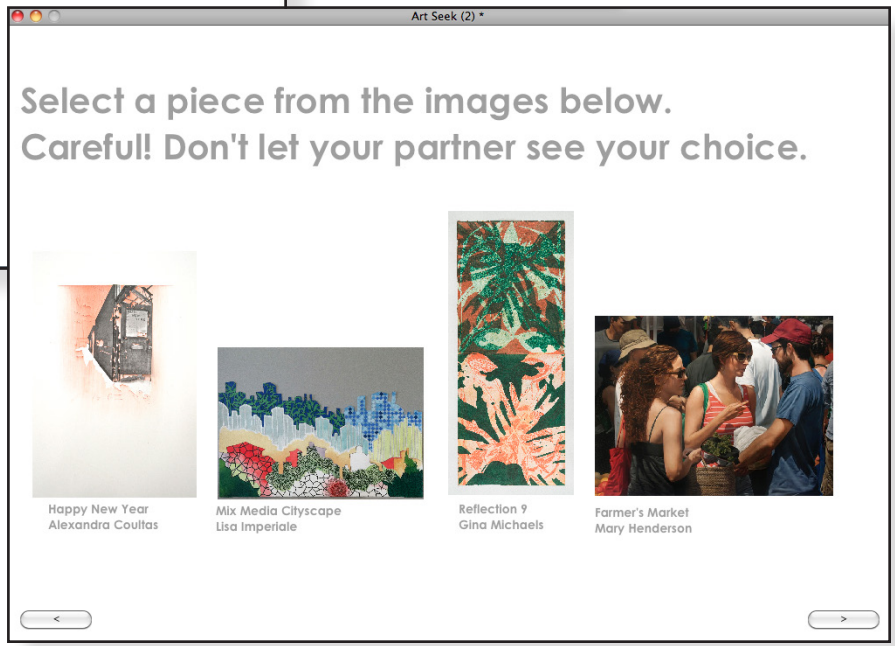
• The encounter will create a diverse community with shared goals that successfully improve the project

• The museum (or in this case the team) will receive rich and useful feedback that will push their limits, but remain within their capacity

The virtual session was held using *Skype* as a communication tool and tested the simple computer-based app created in *LiveCode*. These programs in conjunction with a blog which was created to addressed the interaction and supplied information, acted as incubator space for the project.

VERSION OF ArtSeek USED IN ONLINE SESSION





Art Seek (6) *

Step 2:

Without using the words you listed as well as the colors, shape and label information describe the piece to your partner.

Try using a shared experience to get your partner to guess correctly.

Did they get it?

city

patterns

layer

colorful

Mix Media Cityscape
Lisa Imperiale

Art Seek (5) *

Step 1:

Without telling your partner, list four words that you feel best describe this work

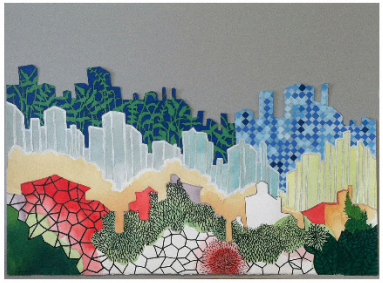
city

patterns

layer

colorful

Go to Step 2



Mix Media Cityscape
Lisa Imperiale

Select Another Work

ARTSEEKDESIGNLAB.WEEBLY.COM FUNCTIONED AS AN INCUBATOR SPACE HOLDING DOCUMENTS AS WELL AS PROJECT AND CONTACT INFO

The virtual prototyping session was held on Tuesday, March 31st with three remote users: Lucas Blair, game designer for Little Bird Games located in Raleigh, North Carolina, Omid Majdi, Product Manager for mobile application DogVacay located in Los Angeles, California and Phillip Spina, Chief of Staff for the retail interactive design firm BrightLine located in New York, New York. Once confirmed for a time the testers were sent the following email in preparation for the session:

Savage, Jenna <jsavage@uarts.edu> Mar 30 (10 days ago)
to Phillip

Hi Phil,

Thank you again for agreeing to be part of our ***ArtSeek* testing session tomorrow night at 9:00 pm**. In preparation for tomorrow you will need you to **download the free LiveCode program** (follow link below) **and game file** that will be emailed to you.

LiveCode - https://livecode.com/download/

Additionally, **we need your Skype name** so we can find and befriend you. We will be contacting you using the Skype name art.seek. To assist in the session we have created a website with the project information which can be found at :

http://artseekdesignlab.weebly.com/help-us-develop-artseek.html

The site contains information about the development of Art Seek as well as the galleries needed to play the game.

Thank you again for agreeing to be part of this testing session. We know that *ArtSeek* will be greatly improved with your feedback and suggestions. Please feel free to contact us with any questions.

We look forward to playing *ArtSeek* with you tomorrow!

Deepest thanks,

Jenna Savage, Ashley Scrivener, Nicole Hewitt
The *ArtSeek* Team

Jenna Savage served as the facilitator, Ashley Scrivener as documenter and Nicole Hewitt as observer.

The sessions loosely followed the below agenda/ script:

"Hello, and thank you for joining us. We are going to cover the following things…"

1. Introductions: first team then participants, names and locations

2. Introduction of *ArtSeek*: Development and Goals

3. Things to keep in mind while playing:

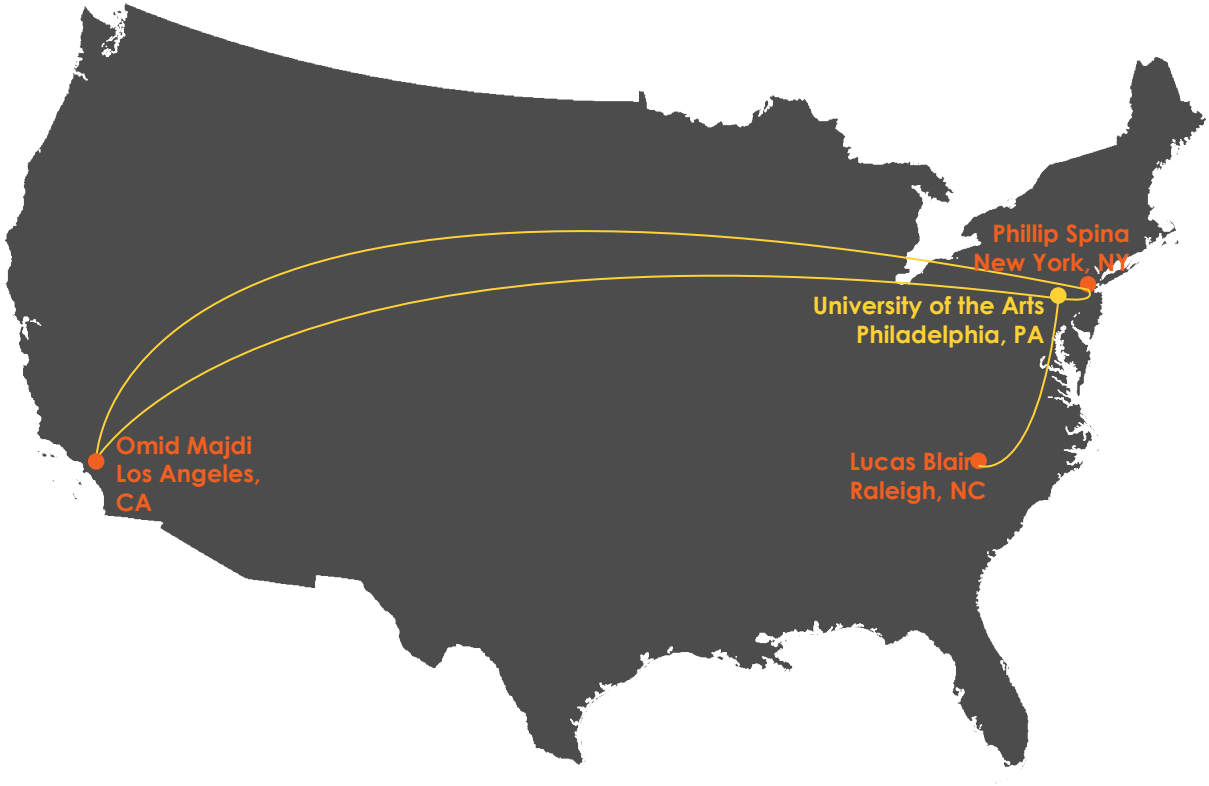
How is the basic usability of the game?
Can you gain as much from it when playing remotely?
What is the next level of engagement?
What else would you like to see happen?

4. Who is playing first and in what role:

DESCRIBER	SEEKER
SESSION 1 **7:45 pm est**	
Mariah and Jon	Lucas
Lucas	Mariah and Jon
SESSION 2 **9:00 pm est**	
Omid	Phillip
Phillip	Omid

5. Brief discussion

"Thank you so much for playing *ArtSeek*, you will be emailed a short survey to assess your experience here today, please take few moments to fill it out. We appreciate your time and value your comments and suggestions."


Phillip Spina
New York, NY
University of the Arts
Philadelphia, PA
Omid Majdi
Los Angeles,
CA
Lucas Blair
Raleigh, NC

The first online collaboration was set to have Lucas Blair play the game virtually with New York based artists Mariah and Jon Corrigan. Although the Corrigan's were enthusiastic about participating and had successfully downloaded both the game and *LiveCode* program, they experienced technical difficulties when using *Skype*. After spending sometime attempting to solve the problem over the phone they were rescheduled for another testing session. Lucas Blair however tested the game virtually playing a user located in the Terra building of the University of the Arts. After this session was over the team made adjustments, one being having both participants pull up the online gallery before playing. Lucas proved to be a very informative tester and seemed to be extremely enthusiastic about the game and the session.

The second session went very smoothly and was played bi-coastally. Both Omid Majdi and Phillip Spina were able to play the game successfully with one another. The game had little to no user bugs and initiated interest and conversations in the artwork presented. Participants gave useful feedback on further development and provided support for future additional modes in the application such as "act" where one participant would act out the piece without using words. Another game mode idea was "photo share or match" where a user could select personal photos from their mobile device as a clue to the selected art piece based on shared similarities. Once the session was completed, the users were given a brief survey where they were asked to reflect on the virtual session as a whole and their interest in *ArtSeek*.

In addition to virtual collaboration being a timely and appropriate interaction for contemporary society, it holds tangible positives for museums, as discussed in the earlier sections. Virtual testing of media elements, such as *ArtSeek* can contribute to rapid evolution and positive iterations for exhibition elements.

FINDINGS AND DISCUSSION

The time spent in preparation for the *ArtSeek* virtual collaborative session, plus the actual testing time did not exceed six hours (excluding the time spent making the game) and cost the team and the participants only their time. This interaction stands as an example of how basic free computer tools such as *Skype,LiveCode* and *Weebly* can supply a free and low commitment encounter for virtual visitor collaboration.

During the sessions the team and participants were able to discuss future options for the game and give open feedback on its remote capabilities. When all three participants were asked if they would rather play *ArtSeek* virtually or in a real gallery in the survey, all three responded with "real gallery." This desire could promote physical museum attendance following a relevant virtual experience. Based on this and comments given during the session, *ArtSeek* is currently being developed for play for a physical space, but will have remote play as an option for later development. Making this decision early in the development process saved the team resources that could have otherwise been wasted.

Overall the team was able to have a lively and rich encounter with all three virtual participants, and successfully demonstrated a virtual collaboration while building a community around the project. Based on session feedback, the next iteration of the has been greatly improved, with the addition of two further game modes and a timer for a greater level of difficulty.

Although the virtual collaboration was successful overall in meeting its goals, there were some process issues that require solutions to streamline and expand future virtual collaborations.

UNDERSTANDING THE NEEDS OF THE TARGET AUDIENCE

In this testing session there was one tester who was unable to participate due to unfamiliarity with the *Skype* program, however they were the most enthusiastic and excited surrounding the game and session. After greater than twenty minutes attempting to solve the problem, the team had to move on with the other online user and reschedule this particular participant for a later time. Going forward, more preparation time with participants is required, especially if they are less familiar with the software used. When asked in the survey what the most challenging part of the virtual collaboration session was, even the advanced technology user stated "getting the tech set up."

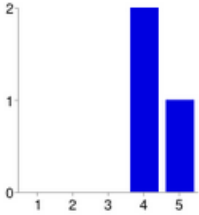
EXPERTS AND VISITORS TEST TOGETHER

In the two testing sessions for *ArtSeek* the expert target audience with a background in technology, art and design were involved in a separate testing session from more general visitors. This was the best solution for the particular needs of this interactive, however in the future, testing both audiences together, like a tech expert playing with a layperson would yield more dynamic results. Greater diversity in audience backgrounds might allow for deeper conversations and more interaction from participants.

LIMITATIONS

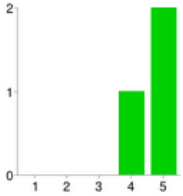
Due to the web-based focus of this collaborative session, this type of encounter could only have been applied to participants with an Internet connection and computer access. The current global digital divide will limit the type of participants that this type of collaboration can reach. Additionally, this collaborative session was done as part of student graduate work with three grad students creating the game and holding the testing sessions in the time span of three months. The session and game could have included a greater number of participants and materials if done with greater resources.

On a scale from 1 to 5 (one being the not at all and five being very much) how much did you enjoy playing this game?



1	0	0%
2	0	0%
3	0	0%
4	2	66.7%
5	1	33.3%

On a scale from 1 to 5 (one being the not at all and five being very much) how much did you enjoy collaborating with the development of ArtSeek virtually?



1	0	0%
2	0	0%
3	0	0%
4	1	33.3%
5	2	66.7%

RECOMMENDED PROCESS BEST PRACTICES

Recommended Process

Museum website wireframes

Best Practices

1. Clearly Outline Visitor Roles and Expectations
2. Create a Museum Environment for Synchronous Virtual Visitor Activity
3. Customize the Experience
4. Leverage Existing Trust
5. Generate Strong Staff Buy In
6. Borrow from Existing Successful Virtual Communities
7. Embracing Failure Creates Improvement of Digital Literacy
8. Keep Momentum Going

RECOMMENDED PROCESS

Based on the development of *ArtSeek* and findings from its virtual collaboration sessions, this thesis proposes a process guide and best practices for online museum incubators for exhibition development.

1. Be transparent, this work can be messy and frustrating at times be open about that with everyone involved.

2. Set target audience and keep it to a manageable number.

3. Assess the project and make goals and objectives.

4. Select clear roles for participants and team.

5. Select tools and set up a basecamp workspace where things can be shared and documented. Ideally, the incubator space would gather current online collaborative tools under one seamless project page located on the museum website and mobile pages (see Fig4.)

6. Gather feedback and do evaluations early and often throughout the process.

7. Bring the group back together for project, team and visitor reviews as many times as needed.

8. Evolve and change as often as needed.

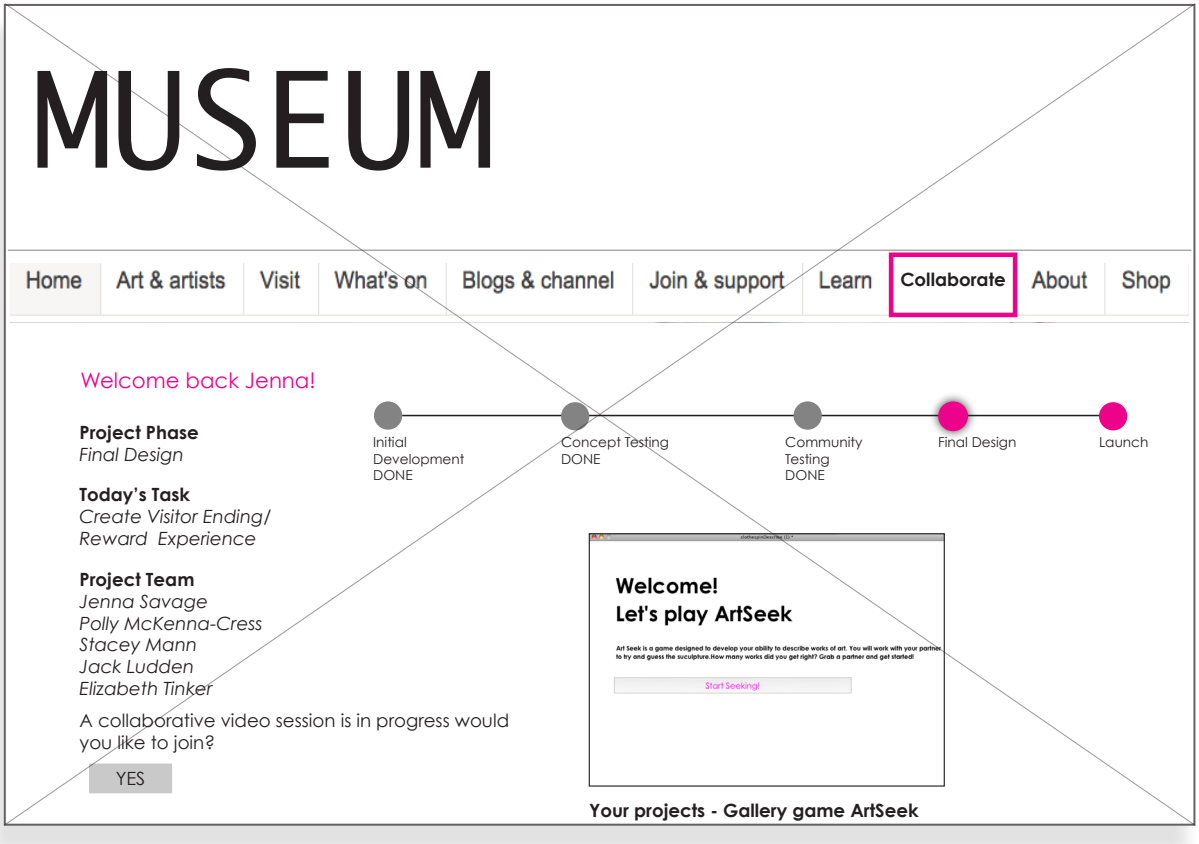


Figure 3

The initial page has a login system, today's tasks, phase, team and project progression as well as an easy link to in progress video sessions.

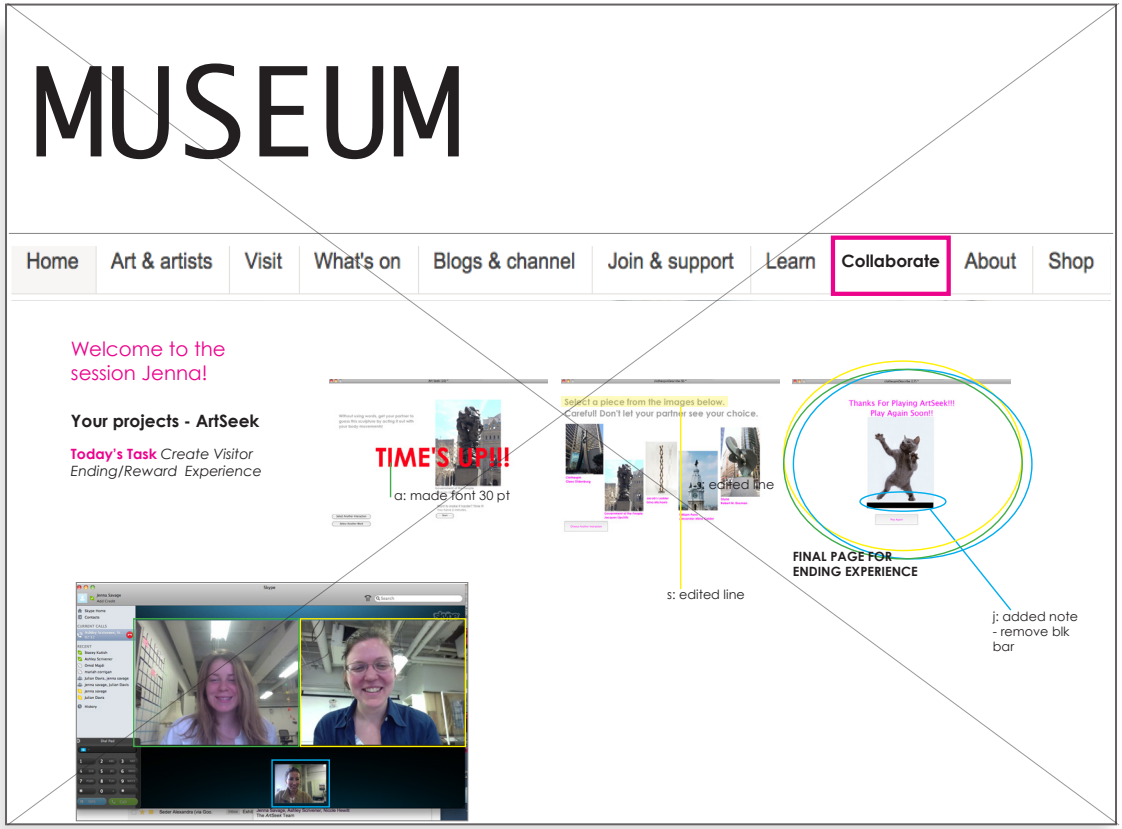


Figure 4

This is a live project page where participants can video conference while making live edits and comments. All online programs live in page within museum website.

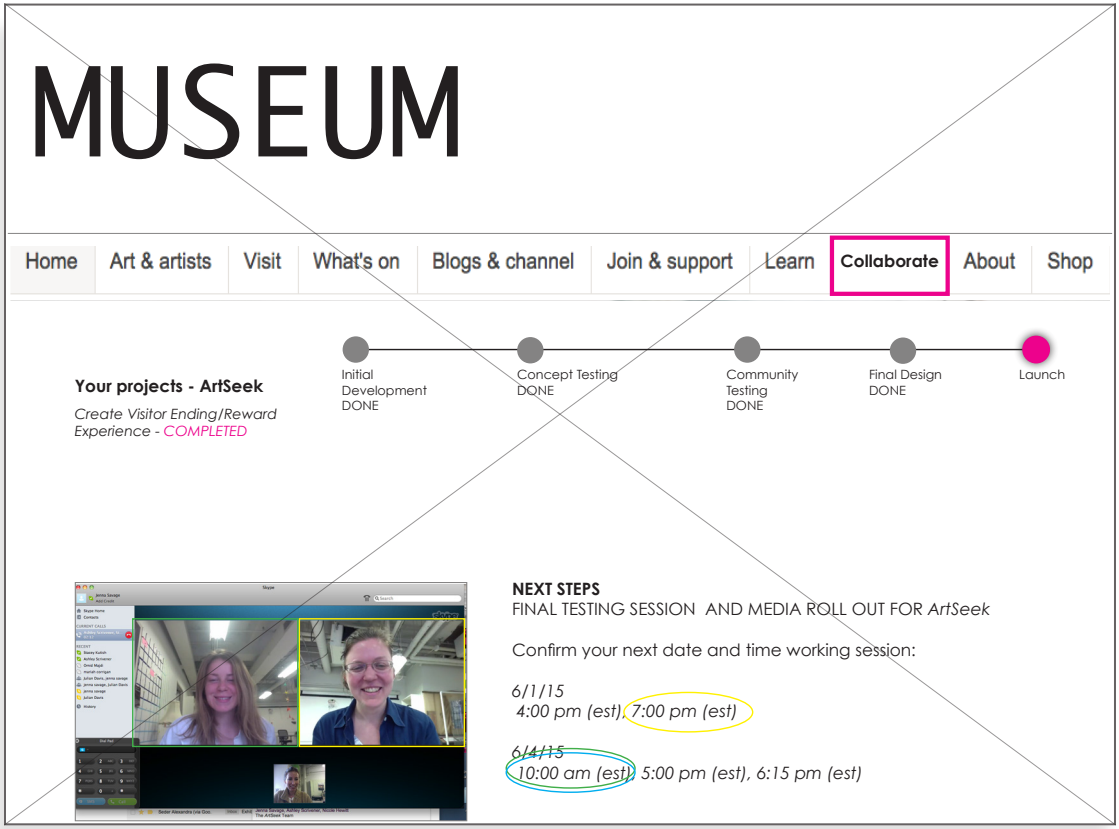


Figure 5

The closing page gives the progress of the project and sets up next steps for the team.

The design of these pages allows for clear team communication and streamlines the progress of the project.

BEST PRACTICES

1 *Clearly Outline Visitor Roles and Expectations*

Outlining clear roles for the visitor and staff in a project provides support, not divisions. Participants should understand their ideas will be modified and molded to create an end product within the museum's limitations. This transparency is essential to creating and maintaining both trust and excitement in the project. In the survey administered after the virtual collaborative session for *ArtSeek*, one user stated, "You were all so organized! The email instructions beforehand were super clear and I wasn't lost or confused prior." This answer was in response to the survey question "What did you like best about virtually collaborating?" It speaks to the natural desire by participants to be organized, and to know their role prior to participating. By developing structured collaborative environments via their online incubator spaces, museums can create vibrant and compelling exhibition elements, accessing virtual visitor voices and allowing for the content expert, museum staff and visitor to nimbly co-create.

2 *Create a Museum Environment for Synchronous Virtual Visitor Activity*

In her book *100 Things Every Designer Needs to Know About* author Susan M. Weinschenk outlines the need for synchronous activity[1] in order for people to feel bonded together while collaborating. Weinscheck recounts a study done on behavioral patterns dealing with synchronous activity, stating "people who engaged in synchronous activities were/are more cooperative in completing subsequent tasks, and more willing to make personal sacrifices in order to benefit the group."[2] Weinschenk goes on to advocate for increased synchronous activities in virtual environments in her takeaways section:

• Many of our online interactions are asynchronous, including most social media (Twitter, Facebook, LinkedIn). Although asynchronous social activity fulfills other social needs, it does not fulfill our desire and pleasure from synchronous activity. connection.

1 "Synchronous activities are actions you take together with others, where everyone is doing the same thing at the same time in physical proximity to one another. Dancing, tai chi, yoga, singing, and chanting in time as a group are all examples of synchronous activity." As defined by author Susan M. Weinschenk

2 Susan M. Weinschenk, 100 Things Every Designer Needs to Know About (Berkeley: New Riders, 2011), 162.

• Because most online interactions don't take place with others in physical proximity, there are limited opportunities for designers to build in synchronous activity.

• Look for opportunities to build synchronous activity into your product, using live video streaming, or a live video or audio connection.

Weinschenk is making a case for increased connection on a virtual platform, stating that people by nature find deeper connectivity with each other when performing similar tasks together. One aspect that made the *ArtSeek* session successful was that users were asked to play the game with one another via video chat. Being able to see one another and participate live yielded more robust comments and interaction. By increasing their virtual collaboration tactics, museums now have the opportunity to deepen virtual visitor investment.

Customize the Experience

One of the best attributes of museum incubators existing on an Internet based platform is that they can be customized to fit the needs of a specific encounter. Time and location tend to be large barriers on continued collaboration, but in the virtual environment both of these elements can be suspended. Participants can connect and work on a project at a time that is convenient for their individual schedules. Additionally, the logistics of travel and location for testing and meeting are drastically simplified when only an Internet connection and computer are needed.

ArtSeek was played remotely after working hours on a weekend night; this was not an expressed inconvenience. All three users were in different cities and would not have been able to play with one another had it not been for the virtual setting. The *ArtSeek* team was able to customize the interaction for their virtual users and obtain results that they otherwise would have been unable to gather.

Additionally, customizing the experience pertains to the methods used. Physical prototyping can be strong in its ability to get visitors and staff participating in a tactile way, and can be use when appropriate. Mixed-media approaches can be very successful. Asking visitors to 3D print a plan and play with it or cut up a paper prototype template and give feedback via a video session can be a rich encounter. By holding the session virtually it does not limit it to computer-based prototyping but rather functions as a mode of communication for any project being asked.

Leverage Existing Trust

Museums have established histories and support systems, and act as beacons of information. From the moment visitors access information through a museum website, their level of trust in that information changes. Thus any collaboration they encounter within that space is infused with that trust. This is extremely important for the success of the collaboration. Many companies spend time and money establishing the trust of their client before moving into a collaborative project with them. In the case of the online collaboration for *ArtSeek*, the team was able to use the University of the Arts as leverage to position the interaction in the field of higher education. Museums have the rare privilege of pre-established trust and can utilize it to more easily attract collaborators.

Generate Strong Staff Buy In

No project of this nature can be successful without strong staff buy in. Invested, enthusiastic museum staff are crucial for a collaboration to commence, continue and succeed. As stated by Nina Simon " The best place to start introducing participatory techniques in a cultural institution is internally with staff members and volunteers. If staff members do not feel comfortable supporting or leading participatory projects, these initiatives are unlikely to go far."[1] The virtual collaborative session for *ArtSeek* was in large part a success because of the dedication of the team and their attitude towards collaborative development in service to the game. With the new and growing internal interactive teams, museums have the opportunity to instill collaborative work habits from the onset of the employee's start date, thus making leaders for these types of encounters within the museum.

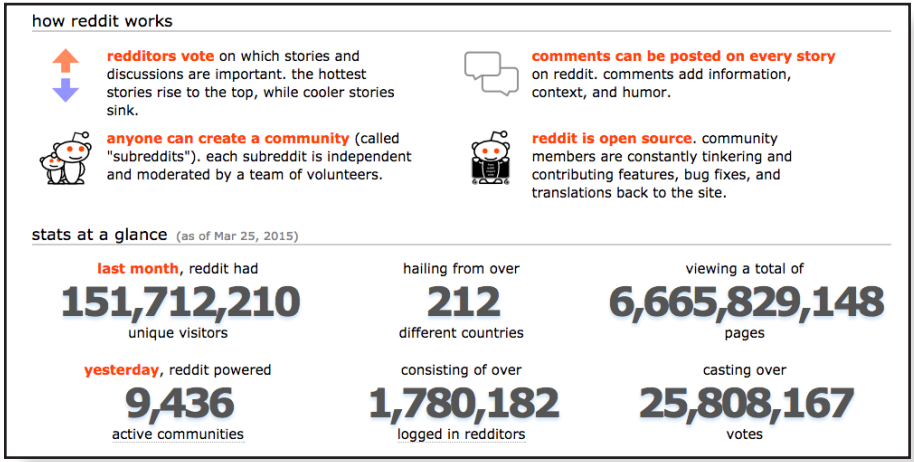
1Nina Simon, *The Participatory Museum*, 327.

6

Borrow From Existing Successful Virtual Communities

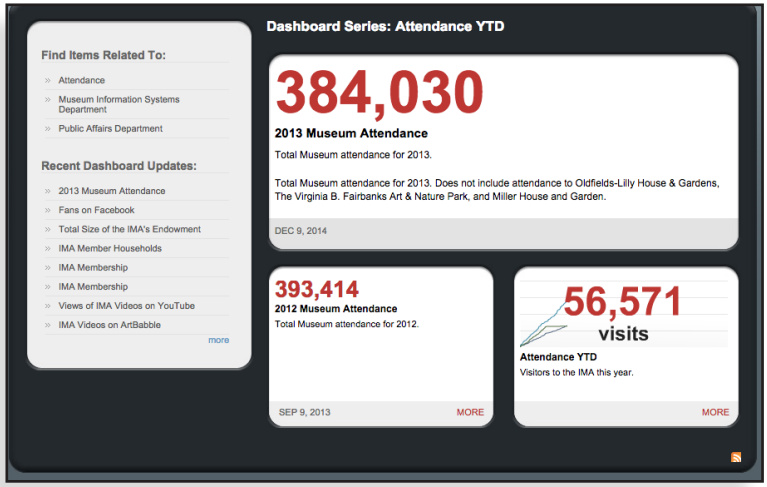
Facebook is arguably the strongest online community in existence and could be given the credit of getting many users online. Today's most successful online communities and forums structure the encounter from individual contribution to a larger group discussion. One strong example of a powerful online community is Reddit. Below is a screen shot from the "about Reddit" page, which gives an overview of the structure of the site and the user statistics.

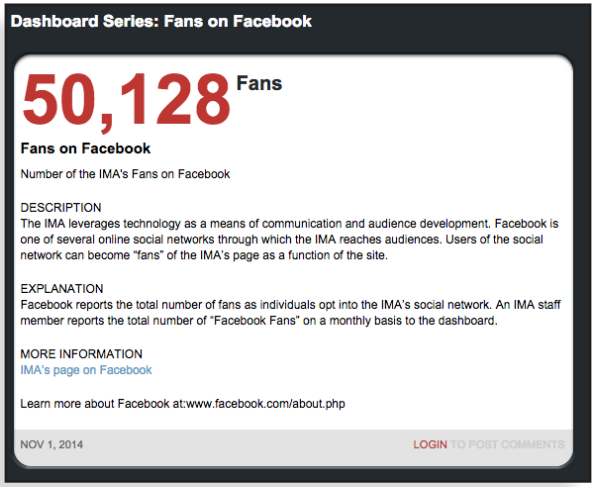
The Indianapolis Museum of Arts Dashboard is one of the best examples of museum transparency around numbers. Most museums hesitate to be open about aspects of their financial state and desire secrecy around planned projects. The Dashboard displays statistics about the museum's physical visits, annual earning and Facebook fans, just to name a few, and in doing so it has opened the door of transparency for museums.



There are many variables that make this an unfair comparison between the Reddit and Indianapolis sites, but simple questions arise from looking at the basic data shown. Why doesn't the Indianapolis Museum of Art post its website visit numbers like Reddit? Why don't they post where their online visitors hail from? Many institutions might blame lack of staff or time for not addressing questions like these, but letting the museum's virtual visitors know that their numbers matter as much as the physical ones could empower the online community.

Virtual visitors can create powerful global participants and advocates for the museum regardless of whether they have ever visited the physical location. Wikipedia, for example, is an entire site generated by users that have a vested interest in the content. The *ArtSeek* project started as a study of mobile applications and specifically which apps ignited the most social interaction by users. The success of online forum structures such as Reddit and Wikipedia could be applied to increase participation in virtual visitor collaboration and should be referenced for engaging and supporting the virtual museum visitor.





Embracing Failure Creates Improvement of Digital Literacy

One of the strongest positives for participating in virtual museum incubators is the opportunity for collective failure by staff and visitor in a low-risk environment. Prototyping is a successful interaction because it is based on the goal of improvement and feedback. The 2015 *New Media Consortium Horizon Report* commented on the challenge of digital literacy in museums today.

"With the proliferation of the Internet, mobile devices, and other technologies that are now pervasive, the traditional view of the museum professional as possessing the ability to develop exhibitions and educate patrons has expanded to encompass the understanding of a variety of digital tools. This recent category of competence is affecting how quickly museums evolve and the skills they expect in new hires. Some thought leaders believe there are not enough official best practices guidelines for technology training for current and pre-service museum staff, and the most progressive examples are taking place outside of their education departments. Professional development around how emerging technologies can be leveraged to further museums' interpretation goals and enhance their visitor experiences is needed at all levels of museum education."[1]

By creating a space where creative failure is encouraged, museum staff members may feel greater ease experimenting with unfamiliar digital tools, thus improving their digital literacy in the process. The *ArtSeek* team clearly expressed they are not programmers and could only produce a game that was coded in a very basic way, and were looking for feedback and suggestions for improvement. In being transparent about their background, the creative team was more comfortable with tech experts playing the game. Virtual museum incubators can provide a safe and rewarding environment for staff exploration which improves digital literacy.

1 The NMC Horizon Report: 2015 Museum Edition, The New Media Consortium, 2015: 28.

Keep the Momentum Going

Online and digital initiatives can sometimes take years to complete: it is important to keep the staff and participants invested and active throughout the life of the project, otherwise it may lose its drive and recede into the desert of flat virtual encounters. Too often, online projects get forgotten or abandoned. Dead sites can be found everywhere and can cause confusion and distress in users. During both the physical and virtual prototyping sessions for *ArtSeek,* testers wanted to know the next steps for the game. The team could feel the momentum for the game growing with every interaction. Keeping the collaboration important and innovative, makes virtual visitor collaboration just another step in exhibition development. By making virtual collaboration an inherent tendency, museums can become experts for the future.

CONCLUSION


THE PARTICIPATORY MUSEUM
Nina Simon
The Psychology of the Internet
CHANGE BY DESIGN
MUSEUMS AND COMMUNITIES
CREATING EXHIBITIONS
Strong Staff Buy In,
No project of this nature can be successful without strong staff buy in. The museum staff will be able to make the collaboration happen, continue and be successful. [will elaborate further]
Virtual Museum Visitor, Just as Valued as the Physical,

In her recent article, *The Museum as Distributed Network*, author Nancy Proctor comments on pressing questions pertaining to the new online museum audience and addresses the needs for virtual museum visitor engagement stating:

"This expanding landscape for museum audience engagement lends a new urgency to the questions: What is the museum's responsibility to those who may never be able to visit the physical museum in person? And, how can museums engage online audiences on all the platforms they now use with the same degree of impact, if not the same kind of experience, as the "real world" museum encounter?"[1]

Virtual museum incubators could be the answer. They provide a space where the virtual museum visitor can receive the attention and recognition they desire while creating a unique online interaction that is of significant impact. Additionally, these environments provide an agile space for museum professionals to experiment and relish in glorious failures, all the while increasing their digital literacy. Online platforms provide a neutral space where visitors can openly give suggestions and feedback in a thoughtful and insightful way alongside and in partnership with museum professionals.

1 Nancy Proctor "The Museum as Distributed Network," accessed 4/27/15. http://www.museum-id.com/idea-detail.asp?id=337

Although many museums perform a variety of AB testing[1] they hesitate to commit to virtual collaboration with their online museum visitors, possibly due to limited resources, fear of loss of control in the design process, and unease with publicly showing works in progress. Ironically, many museum professionals are simultaneously concerned with repetition and lack of diverse creative voices, fearing stagnant museum interactions. As online tools for collaboration continue to progress, museum professionals may find new ease in facilitating and participating in deeper virtual visitor testing and collaboration.

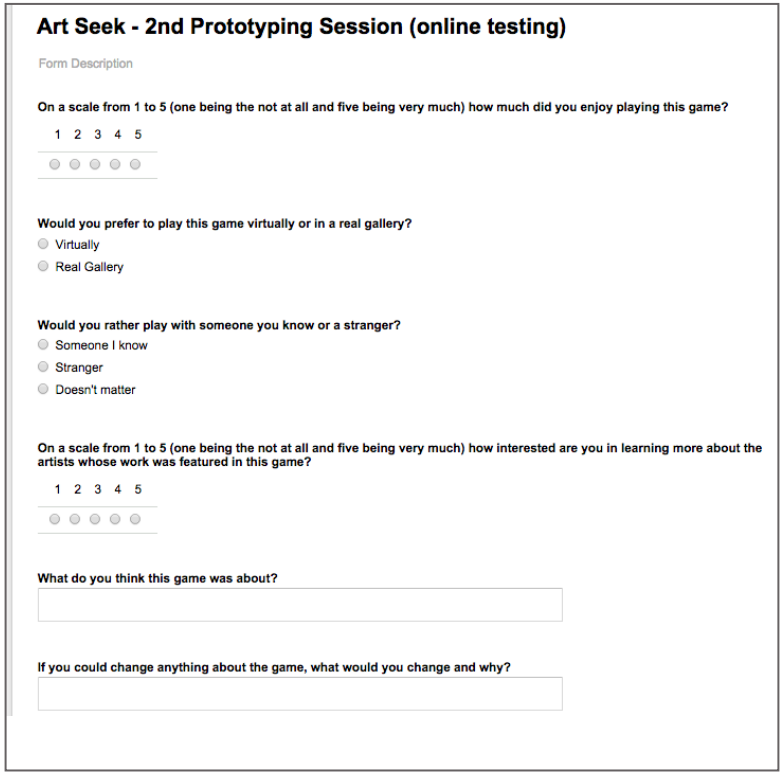
If museum experts can work in a collaborative way with online visitors in a virtual incubator space, dynamic exhibit elements can be created and a variety of voices can be represented. Thus, by utilizing virtual incubators, museum professionals can practice better and more nimble design and development processes while creating invested partnerships with their twenty-first century audience.

1 AB testing as defined by vwo.com "A/B testing (sometimes called split testing) is comparing two versions of a web page to see which one performs better."

SURVEY INSTRUMENT + RESULTS
GLOSSARY
BIBLIOGRAPHY

SURVEY INSTRUMENT

The instrument was administered using *Google Survey* and was emailed to participants after completing the virtual collaboration.



Art Seek - 2nd Prototyping Session (online testing)

Form Description

On a scale from 1 to 5 (one being the not at all and five being very much) how much did you enjoy playing this game?

1 2 3 4 5

Would you prefer to play this game virtually or in a real gallery?

- Virtually
- Real Gallery

Would you rather play with someone you know or a stranger?

- Someone I know
- Stranger
- Doesn't matter

On a scale from 1 to 5 (one being the not at all and five being very much) how interested are you in learning more about the artists whose work was featured in this game?

1 2 3 4 5

What do you think this game was about?

If you could change anything about the game, what would you change and why?

What else would you like to see included in this game?

Did playing the game allow you to discover or consider the artwork in a way you might not have before? If yes, how?

On a scale from 1 to 5 (one being the not at all and five being very much) how much did you enjoy collaborating with the development of ArtSeek virtually?

1 2 3 4 5

What did you like best about virtually collaborating?

What was the most challenging part of the virtual collaboration?

How many exhibitions do you visit in any given month?

- 0
- 1-5
- 6 -10
- 10 +

Do you download mobile apps before attending exhibitions?

- Yes
- No

What is your age?

- Under 12 years old
- 12-17 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75 years or older

Ethnicity origin (or Race): Please specify your ethnicity.

- Hispanic or Latino
- Black or African American
- Native American or American Indian
- White
- Asian / Pacific Islander
- Other

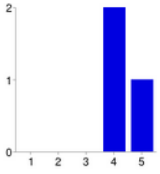
Do you currently work in any of the below fields?

- Design
- Technology
- Museum
- Art
- None of the above

RESULTS

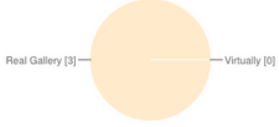
Although there were only three participants their answers to the survey proved to be deeply influential on the evolution of *ArtSeek*.

On a scale from 1 to 5 (one being the not at all and five being very much) how much did you enjoy playing this game?



1	0	0%
2	0	0%
3	0	0%
4	2	66.7%
5	1	33.3%

Would you prefer to play this game virtually or in a real gallery?

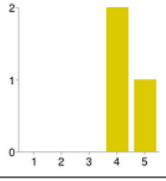


Virtually	0	0%
Real Gallery	3	100%

Would you rather play with someone you know or a stranger?

Someone I know	1	33.3%
Stranger	1	33.3%
Doesn't matter	1	33.3%

On a scale from 1 to 5 (one being the not at all and five being very much) how interested are you in learning more about the artists whose work was featured in this game?



1	0	0%
2	0	0%
3	0	0%
4	2	66.7%
5	1	33.3%

What do you think this game was about?

Being able to describe works of art at a deeper level than people normally do Seeing interesting art Sharing an experience with another museum patron

I think the game triggered a deeper look at the artwork selected. I chose 2nd and knew I was going to describe the work, so I chose a piece with a lot of distinctive visual characteristics. Even so, once I couldn't use the first 4 words and the physical attributes, I was struggling for additional descriptors. Very tough but fun! I can it would get more difficult if the gallery collection had very similar pieces with only minor differences

I think it was about learning the different perspectives and angles at which art can be seen other than your own.

If you could change anything about the game, what would you change and why?

Maybe the different galleries of art that were used. Obviously this was more of a prototype than anything, but having a larger selection of works to choose from on both ends would be great.

I think having a time would create a bit more urgency in my actions during the game. Not sure if that is good or bad. I wish that I had already thought of 4 additional clues when it was time for me to describe the work to the other player. Maybe describe 8 characteristics and you can't use 4?

Compare my answers to answers given by other patrons and visualize it.

What else would you like to see included in this game?

Perhaps if the game existed in a real gallery, it would be a nice addition to exclude the use of describing the medium used to create the work in all cases. So one could not use "oil on canvas" as a method to describing the work.

I really liked that I had to look very closely at the 3 reflection prints. Even though I got it wrong, when he would say a clue I really had to look closely. I liked that!

Asynchronous play

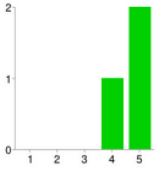
Did playing the game allow you to discover or consider the artwork in a way you might not have before? If yes, how?

Yes. I forced me to REALLY look at the art.

Absolutely. Limiting myself to exclude the initial descriptions I thought of for the piece made me try to think more critically about how other might perceive the piece. And on the other end, hearing descriptions that are not my own made me think about how a piece might be described by others.

Not particularly. I became competitive and wanted to choose a piece that was visually distinctive. I think if the images were presented individually with details, I would have looked deeper. That's why I said I would prefer a real gallery experience. I wanted to see the work larger and closer so I could discuss texture and medium but I couldn't do that in the app.

On a scale from 1 to 5 (one being the not at all and five being very much) how much did you enjoy collaborating with the development of ArtSeek virtually?



1	0	0%
2	0	0%
3	0	0%
4	1	33.3%
5	2	66.7%

What did you like best about virtually collaborating?

You were all so organized! The email instructions beforehand were super clear and I wasn't lost or confused prior.

Convenience

It is always nice to be able to utilize technology for collaboration in an effective way. Being able to play the game in the comfort of my own home also provided a more relaxed environment for the way I thought about the works I was describing and viewing.

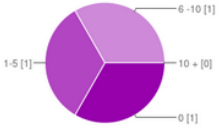
What was the most challenging part of the virtual collaboration?

Getting the tech set up

Nothing, really, except for the fact that I was viewing digital versions of art instead of the real thing.

Trying to figure out my Skype log in! Everything went smooth!

How many exhibitions do you visit in any given month?

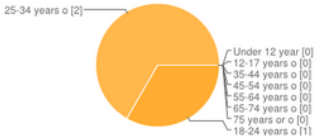


0	1	33.3%
1-5	1	33.3%
6 -10	1	33.3%
10 +	0	0%

Do you download mobile apps before attending exhibitions?

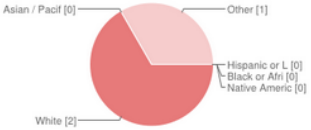
Yes	1	33.3%
No	2	66.7%

What is your age?



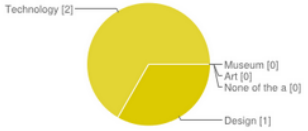
Under 12 years old	0	0%
12-17 years old	0	0%
18-24 years old	1	33.3%
25-34 years old	2	66.7%
35-44 years old	0	0%
45-54 years old	0	0%
55-64 years old	0	0%
65-74 years old	0	0%
75 years or older	0	0%

Ethnicity origin (or Race): Please specify your ethnicity.



Hispanic or Latino	0	0%
Black or African American	0	0%
Native American or American Indian	0	0%
White	2	66.7%
Asian / Pacific Islander	0	0%
Other	1	33.3%

Do you currently work in any of the below fields?



Design	1	33.3%
Technology	2	66.7%
Museum	0	0%
Art	0	0%
None of the above	0	0%

GLOSSARY

• Digital Native: A person born after the invention of the Internet, who utilizes digital technology as part of their daily functions.

• Prototyping: Is testing elements of a physical or virtual interaction with its proposed users.

• Space/Environment: For the purpose of this thesis, any mention of space or environment will exclusively explore the virtual space, thus any reference to space or environment will not be referencing the physical space of the museum or a testing shop, but rather will refer to the Internet, website or online space.

• Online Space: Any reference to "online space" will include all virtual aspects of a museum, from social media to the website.

• Synchronous Activities: Activities that are performed together by visitors.

• Digital Tools: These can include but are not limited to any Internet based and/ or computer generated tools such as Skype or Google docs.

• Crowd Curated: The content was voted on and selected by the general public.

• Telecommute: Working from home via a computer.

• Incubator: A virtual or physical space for the formation and testing of ideas and products.

• Multi-platform model: Publishing a single draft of content to several different physical documents and online platforms.

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