NMAI App User Testing Project Plan

Unified Designs is Gloria Barron, Ying Wu, Tangier Bates, Katherine Phillips, and Heath Huff

This project management plan is a living document that will be updated throughout the semester as our project progresses and evolves. A history of the changes to this document can be found in the table on the last page.

Project Definition & Scope

This user testing project will include all planning, management, analysis, design, development, testing, communications, reporting, and risk management necessary to conduct two cycles of user testing for the prototype National Museum of the American Indian (NMAI) Personal Learning Application developed by *Unified Designs* and enhance and improve that prototype based on the results of that testing. The current prototype includes custom tours, a calendar of events, exhibit and artifact level information, café menus, social networking features, and augmented reality experiences.

Project Purpose

Unified Design will plan and execute two cycles of user testing using a prototype version of a personal learning application designed to address some opportunities to improve the user experience at NMAI. Specifically, the application offers users:

- Customized tours through the museum to address a perceived lack of linear flow or continuity through the exhibits
- Exhibit and artifact level information to address the desire for a depth of information not provided by the live exhibits
- A “Did you know?” feature to educate visitors on the purposeful design and layout of the facility
- Augmented reality experiences to showcase the museum’s strengths

The two cycles of user testing will inform Unified Design’s prototype development and enhancement process.

Project Goals & Objectives

The objectives of this project are:

- To plan, schedule, and execute two rounds of user testing on the NMAI prototype application
- To design, develop, demonstrate, and deliver a final prototype of the NMAI application

- To create and deliver a final user testing report
- To satisfy all stakeholders

Unified Design's ultimate goal is to design, develop, and demonstrate a prototype that will engage, inform, educate, and delight users, and by extension (potentially) enhance the NMAI visitor experience.

Success Criteria

1. Obtain quality feedback (qualitative) from at least 10 users across two rounds of user testing
2. Deliver a report on the results of Round 1 of user testing by 04/04/12
3. Deliver a revised (based on Round 1 of user testing) prototype by 04/04/12
4. Deliver a report on the results of Round 2 of user testing by 05/02/12
5. Deliver a finalized (based on Round 2 of user testing) prototype on 05/02/12
6. Deliver a final User Research Presentation by 05/09/12
7. Obtain sign off on the final products from all stakeholders

Project Context

Background

The usage context for our application informs the context for our project. Our application is designed to be used before, during, and after a visit to the National Museum of the American Indian (NMAI).

The museum's mission:

> "The National Museum of the American Indian is committed to advancing knowledge and understanding of the Native cultures of the Western Hemisphere, past, present, and future, through partnership with Native people and others. The museum works to support the continuance of culture, traditional values, and transitions in contemporary Native life."

Our goal is to enhance the visitor experience by using augmented reality and addressing some of the common opportunities identified by past visitors. The museum's designers purposefully designed the museum to provide an atmosphere and experience different than that of traditional western museums, from the grounds, to the architecture, to the layout, to the exhibits. NMAI is sixth out of the 19 museums within the Smithsonian community in attendance, but visitors rate the museum a full half star lower (3.6 out of 5) than the majority of the museums in the Smithsonian system. Many visitors are walking away from their NMAI visit ignorant of the purposeful design and the designers' intent. They cite many reasons for their ratings; among the most prevalent are the:

- Layout
- Apparent imbalance of exhibit space to total museum footprint

- Lack of flow, continuity, or a logical path from exhibit to exhibit
- Clumsy and infrequent touch-screens and flip books that provide (sometimes sparse) information about the exhibits

The general public still lacks accurate knowledge of Native culture and history and still relies on media and non-Native portrayals for cultural details. Unfortunately their experiences in the museum are not helping them make the connections between their own lives and the lives of American Indians.

Design and Prototype Development

To address these issues, we designed a mobile application for the iPhone with features designed to take advantage of the museum's strengths and educate visitors. We chose the iPhone to reach the widest audience on a single hardware platform, which will help us keep the development cost down for the museum, which is resource-limited.

We developed a set of personas to help us focus our research and design process:

- User Persona #1, Veronda Smith. Food blogger visiting with a friend.
- User Persona #2, Donna Price. Mother with teenage son.
- User Persona #3, Frank Annink. Tourist and History enthusiast.
- User Persona #4, Lingling Sung. International student doing research.
- Buyer Persona, Jake Lonetree, Exhibit designer and first line of defense at the museum

These personas were designed to accurately represent the demographic data the museum gathered on its visitors.

Thinking of use cases from the perspective of our personas, we prototyped the following core features for our application:

- Exhibit catalogue
- Custom Tours (Including AR tours)
- Augmented Reality Features
- Calendar of Events
- Café Showcase
- Social Networking Integration
- Education of the Museum's Design & Mission

For expediency and economy, we created our prototype as an interactive slide presentation using Microsoft PowerPoint.

User Testing

We conducted limited preliminary user testing of prototype, which revealed an interest and an enthusiasm for the applications features, but some deficiencies in the application's interface and the user's experience with the application. We have revised our prototype and converted it to a format (.HTML) that is accessible online (and thus on a mobile phone).

This project involves the planning, scheduling, and execution of two rounds of user testing, and the revision of our prototype based on the data collected during those tests.

User Testing Round 1

Based on the feedback from our preliminary user testing, we believe we have a usability issue, and we will conduct a more thorough, structured usability test (Round 1) in order to gather data to help us resolve our issues.

Purpose

Our primary purpose for this first round of evaluation is to improve the usability of our application based on user feedback. Our secondary purpose is to get feedback on the perceived value of prototyped features. We want to get users' reactions to the revised prototype and uncover additional enhancement opportunities in the areas of navigation and feature and content access. Ultimately, we want to find out if the application will enhance users' visitor experiences and their understanding of the museum's design and mission.

Audience

We're looking for 10 iPhone (or other smart phone, if necessary) owners. Ideally (based on our demographic data) three should be women and two men. Two should be under 35 years old, two should be 35-49 years old, and one should be over 50 years old. Two of them should have children, preferably teenage children. We're looking for five users with a special interest who would benefit from the custom tour feature, and who potentially align with the personas we developed to guide our design.

Issues

In conducting usability testing, we're looking to see how intuitive users find the navigational features of the app, whether they get lost, whether they find the navigation controls confusing or out of place, etc. We worked to translate these goals into a list of features to be tested and issues to gather data on.

From there we started formulating questions we could ask (in addition to observation) during and after testing. The more feedback we get from the user participants, the more valuable the test will be. The table below summarizes our initial analysis.

Usability		
Issues	**Features**	**Questions**
1. *Are users able to successfully create and launch a custom tour?* a. *What elements of that process did users find the hardest to understand or accomplish?* b. *Do learners feel like that feature would be of value to them?* 2. *Are users able to access café menus by region?* 3. *Are users able to access a calendar of events?* 4. *Are users able to share content on Facebook?*	• Objects catalogue • Custom tours • Café page • Calendar of events • Community integrations	• Did you know how to begin? • Was it obvious what to do? • Was it easy? • Was it easy to remember how to perform the tasks? • Did using the app give you more control of your visit? • Were the labels clear? • Were there places you felt like you needed additional instructions? • What, if anything, would you add to this feature? • Did you find anything cumbersome or frustrating? • Would you use this feature again? • Would you benefit from this feature? • Was there anything you encountered you would like to know more about?

Resources

For Round 1 we need:

- An online (if possible) prototype of the application
- A test script
- Five to seven users in our target audience with 30-60 minutes to test the app
- A post-test interview form

- An iPhone or iPod Touch (optional)
- A video camera (optional)

Evidence

To satisfy the issues raised, we need high-quality, qualitative observation and post-test interviews. Ideally, we would be able to video tape the tests to provide unbiased responses from testers regarding the usability of the prototype. The post-test interview will include the same core questions for all participants, but individual tests may involve additional questioning in the post-test interview to explore certain areas.

Planning

In addition to the preceding analysis, we have created a blog to help us recruit, inform, and screen candidates. We are also in the process of porting our prototype into an online accessible format (.HTML) that is viewable on a mobile phone.

User Testing Round 2

For Round 2, we anticipate focusing on the AR features of our application using two methods: focus groups and a survey. We are concerned about getting enough participants to field enough group discussions to draw any conclusions from the focus group analysis, and we are concerned about our ability to craft a sound survey instrument.

Purpose

We anticipate the primary purpose of our feature prioritization focus groups to be finding out which proposed AR features people perceive to be valuable. We'd like to find out what they want out of an augmented reality experience, and what would motivate them to use augmented reality applications.

We anticipate the primary purpose of our survey to be finding out what our participants attitudes are toward our augmented reality features, and what their overall satisfaction is toward our prototype.

Audience

The audience for our focus groups will be as narrowly homogenous a slice of our target demographics as we can reasonably get in one room—perhaps a group of students, or a group of educators. We are still searching for a suitable audience, but we know we need six to eight participants who are comfortable discussing our topics honestly in each other's presence.

With our survey, we intend to cast the widest net possible: the more respondents, the better. Our demographics are pretty broad, and very few respondents will fall outside of our groups of interest.

Issues

Feature Prioritization Focus Groups		
Issues	**Features**	**Questions**
1. *Do users perceive the AR features represented in our prototype to be of value to them?* 2. *Do users believe that the proposed AR features are beneficial?* 3. *Which of the following AR features would users like to see in an app for NMAI?*	• Object-level depth of information • Guided tours • Scavenger hunt • 3D model manipulation • Relive special events	• Have you ever used augmented reality? • What did you like best about your augmented reality experience? • On a scale of 1-5, how would you rate your experience? • On a scale from one to five, how valuable to you think feature "x" is? • On a scale from one to five, how likely would you be to use feature "x" on a visit to NMAI? • What AR feature or application are you most excited about? • What AR feature would you most like to see in an app for a museum?

Online Survey Instrument		
Issues	**Features**	**Questions**
1. *Users' attitudes toward AR* 2. *Users' satisfaction with the prototype*	• All	• Basic demographic data gathering questions • How many times have you used Augmented Reality? • How many times have you visited NMAI? • Rate the following AR features based on how interesting they are to you • On a scale from one to five, how satisfied are you with feature "x"? • Rank the following features in order based on how beneficial you believe they'd be to you

Resources

For Round 2's Focus Groups we need:

- 12 to 16 participants who are available for an hour or two for a focus group session
- Three to five solid topics to drive the discourse
- A facilitator preparation guide
- A facility in which to conduct the discussion
- Paper prototypes (if necessary)
- Informed consent forms
- A video camera (optional)

For Round 2's survey we need:

- An online survey instrument
- An online accessible version of the prototype
- A survey participant recruiting strategy

Evidence

To satisfy the issues raised, we anticipate conducting a thorough focus group analysis and performing a detailed analysis on the survey results.

Planning

Our planning for Round 2 is currently high-level. We have begun scouting facilities and participants, but we want to retain an element of agility and flexibility in case our situation and requirements change based on the results of Round 1 (usability testing).

Project Dependencies

This project has no external dependencies.

Scope Specification

The scope of work involves conducting two rounds of user testing on a previously developed prototype and refining that prototype based on the results.

In Scope

Unified Design will:

- Continue to design and develop a mobile application with augmented reality features for the iPhone platform

- Conduct at least two rounds of user testing and report the results to key stakeholders
- Refine an existing prototype (Microsoft PowerPoint wire frames) based on user feedback
- Present the results and final prototype to key stakeholders

Out of Scope

Unified Design will not:

- Add new features to the prototype
- Do any actual application development using a development kit or other resource
- Make plans to support any other hardware platform beyond the iPhone
- Provide authentic, museum-sanctioned content for the prototype

Assumptions

Unified Design assumes that no further contact will be made with NMAI stakeholders based on our previous conversations about their time and resource constraints. Unified Design further assumes that Dr. Brenda Bannan is our key stakeholder going forward, in lieu of further contact with NMAI personnel. Unified Design assumes that the application being prototyped will be available exclusively on the iPhone. Unified Design approves that the customer will provide all actual, authentic content (images, text, audio, video, etc.) at a later date. Unified Design assumes that no software development beyond basic HTML/CSSS will be required to successfully complete this project.

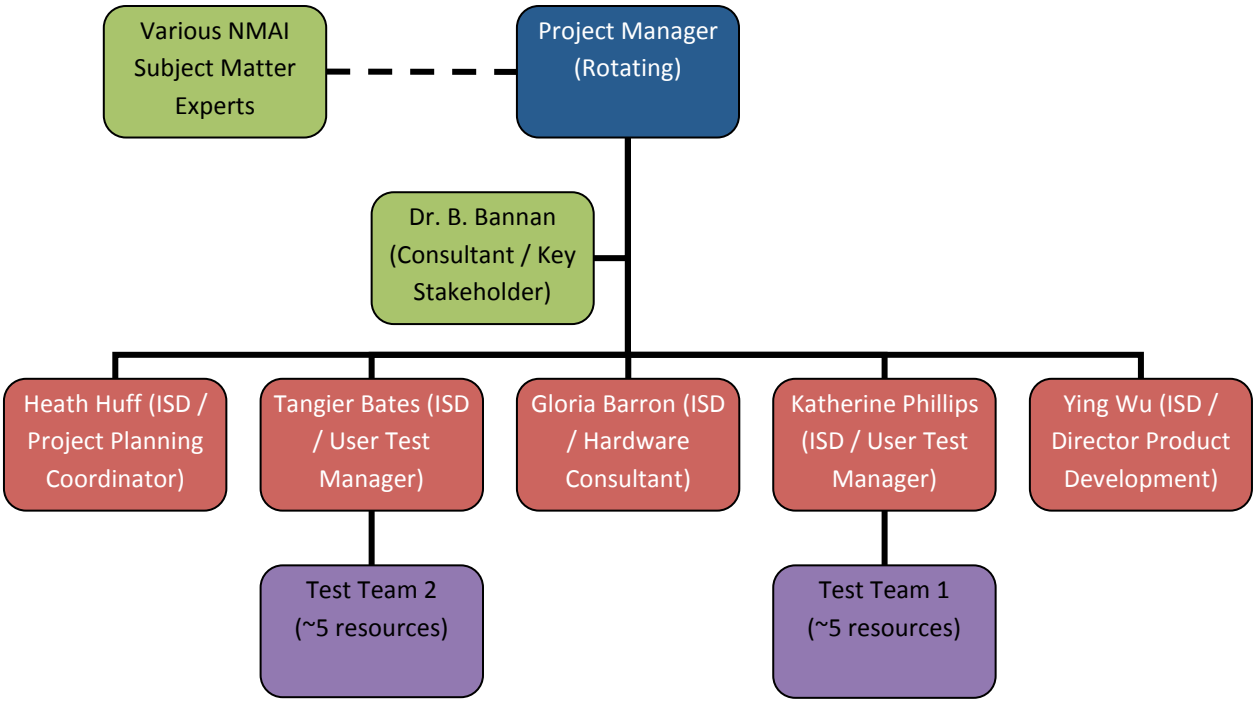
Constraints

NMAI will not provide any content or resources during this user testing project. NMAI will not provide any further time, effort, oversight, or expertise. No web development resources are available to the project team. Only one hardware system is available to the project team for developmental testing.

Risks

- If we are unable to secure sufficient test participants for either Round 1 or Round 2, then the schedule is likely to slip and/or the quality of our test results are likely to suffer.
- If we are unable to create sufficient content in time for Round 1 or Round 2, then the schedule is likely to slip and/or the number of features we will be able to test will have to be reduced.
- If we are unable to port our prototype cleanly to .html, then we will be less able to test the prototype in a realistic context.
- If we are unable to recruit a sufficiently diverse and qualified pool of test participants, it may be hard to generalize the results of our test to a wider audience.
- If we are unable to find a way to represent the more advanced features of our prototype to participants, the effectiveness of the test may be diminished.

Stakeholders



Recommended Project Approach

To accomplish our objectives methodically and keep ourselves grounded in sound Instructional Design strategies, we decided to blend Morrison, Ross, and Kemp's (MRK's) Formative Evaluation Technique with Kuniavsky's Typical Usability Testing Schedule.

The MRK technique involves eight phases:

1. Purpose (determine the evaluation purpose)
2. Audience (determine the type of information that needs to be collected and reported)
3. Issues (determine the issues to be addressed)
4. Resources (determine who and what your resources are going to be)
5. Evidence (determine what types of evidence are needed to address the issues—what does the evidence looks like?)
6. Data Gathering (determine the data gathering techniques)
7. Analysis (analyze the data to provide usable and useful information that will help to improve instruction)
8. Reporting (create the executive summary that outlines the major findings, conclusions, and recommendations)

This technique is heavy on preparation and analysis, but short on practical execution tips.

Kuniavsky, on the other hand, lays out a typical usability testing schedule that starts three weeks in advance of when the tester would like to have the data, and he has an entire chapter on the execution of usability testing.

Kuniavsky's Typical Usability Testing Schedule	
Timing	**Activity**
T – 2 weeks	Determine test audience; start recruiting immediately
T – 2 weeks	Determine feature set to be tested
T – 1 week	Write first version of script; construct test tasks; discuss with development team; check on recruiting
T – 3 days	Write second version of guide; review tasks; discuss with development test; recruiting should be completed
T – 2 days	Complete guide; schedule practice test; set up and check all equipment
T – 1 day	Do practice test in the morning; adjust guide and tasks as appropriate
T	Test (usually 1-2 days, depending on scheduling)
T + 1 day	Discuss with observers; collect copies of all notes
T + 2 days	Relax; take a day off and do something else
T + 3 days	Watch all tapes; take notes
T + 1 week	Combine notes; write analysis
T + 1 week	Present to development team; discuss and note directions for further research

To balance Kuniavsky's execution-focused schedule with MRK's preparation heavy technique, we have decided to execute phases one through five of the MRK technique as preparation for a three-week Kuniavsky-modeled testing cycle.

This approach will give us time to refine and enhance our test script, since we'll have done the majority of the preparation before the test cycle begins. It will also allow us to plan for Round 2 (execute the first five phases of the MRK technique) during Round 1, essentially conducting the two Rounds in parallel.

Work Breakdown Structure (WBS)

1. NMAI App
    1.1. Project Planning and Management
        1.1.1. Kick-off Meeting
        1.1.2. Defining Roles and Responsibilities
        1.1.3. Testing Needs Analysis
        1.1.4. Create Project Plan

- 1.1.5. Submit Project Plan for Review
- 1.1.6. Revise Project Plan as Necessary

1.2. Analysis
- 1.2.1. Define the Purpose of Testing (Round 1)
- 1.2.2. Audience Analysis (Round 1)
- 1.2.3. Define Testing Requirements & Issues (Round 1)
- 1.2.4. Identify Test Resources (Round 1)
- 1.2.5. Define Success Criteria (Round 1)
- 1.2.6. Define the Purpose of Testing (Round 2)
- 1.2.7. Audience Analysis (Round 2)
- 1.2.8. Define Testing Requirements & Issues (Round 2)
- 1.2.9. Identify Test Resources (Round 2)
- 1.2.10. Define Success Criteria (Round 2)

1.3. Design
- 1.3.1. Post-testing Application Redesign (Round 1)
- 1.3.2. Post-testing Application Redesign (Round 2)

1.4. Development
- 1.4.1. Pre-testing Development
- 1.4.2. Content Development
- 1.4.3. Post-testing Development (Round 1)
- 1.4.4. Post-testing Development (Round 2)
- 1.4.5. Review Final Prototype
- 1.4.6. Deliver Final Prototype

1.5. User Testing Round 1
- 1.5.1. Schedule Test Audience (Round 1)
- 1.5.2. Define Feature Set to be Tested (Round 1)
- 1.5.3. Create Test Script (Round 1)
- 1.5.4. Review and Revise Test Scrip (Round 1)
- 1.5.5. Practice Test (Round 1)
- 1.5.6. Execute Test (Round 1)
- 1.5.7. Gather Data (Round 1)
- 1.5.8. Analyze Data and Report the Results (Round 1)

1.6. User Testing Round 2
- 1.6.1. Schedule Test Audience (Round 2)
- 1.6.2. Define Feature Set to be Tested (Round 2)
- 1.6.3. Create Test Script (Round 2)
- 1.6.4. Review and Revise Test Script (Round 2)
- 1.6.5. Practice Test (Round 2)
- 1.6.6. Execute Test (Round 2)
- 1.6.7. Gather Data (Round 2)
- 1.6.8. Analyze Data and Report the Results (Round 2)

1.7. Communications and Reporting

1.7.1. User Testing Report (Round 1)
1.7.2. User Testing Report (Round 2)
1.7.3. Create Draft User Research Presentation
1.7.4. Review and Revise User Research Presentation
1.7.5. Submit Final User Research Presentation for Review
1.8. Risk Management
1.8.1. Identify Risks
1.8.2. Assess and Prioritize Risks
1.8.3. Respond to Risks
1.8.4. Track Risks

Network Diagram (Work Sequence)

See *Group 1 User Testing Project Network Diagram v1.pdf*.

Project Resource Requirements

The period of performance for this project is February 8, 2012 to May 9, 2012. A team of five resources will assigned to the project full time for the entire period of performance.

Resource	**Primary Role**
(Rotating)	Project Manager
Heath Huff	Instructional Designer
Katherine Phillips	User Test Manager
Ying Wu	Product Developer
Tangier Bates	User Test Manager
Gloria Barron	Instructional Designer

Project Schedule

See *Group 1 User Testing Project Schedule v1.pdf*.

Risk Management Plan

Risk	Likelihood	Potential Impact	Response	Description
Insufficient test participants	Moderate	• Schedule slippage • Lower quality test results	Mitigate	• Each team member will identify twice the number of participants as necessary to achieve the desired results • Each team member will identify friends & family as backup test participants
Insufficient content	Low	• Schedule slippage • Reduced number of features tested	Mitigate	Each team member will contribute 3-5 pages of representative (fictional) content
Unable to port prototype to .html	Moderate	• Unable to test app in context • Lower quality test results	Mitigate	Pursue multiple prototype formats: .PPT, .PDF (interactive), and .HTML
Insufficient diversity in the pool of test participants	High	Hard to generalize our results to a wider audience	Accept	N/A
Unable to accurately represent AR features for participants	High	Effectiveness of test will be diminished	Mitigate	Create alternate/back-up representations of the AR features

Change History

Change	Date	Author
Initial Draft Complete (v0.1)	03/01/12	Heath Huff
User test planning for Rounds 1 and 2 added; project approach fleshed out; additional details added. (v0.2)	03/05/12	Heath Huff
Incorporated feedback from internal review (v1)	03/07/12	Heath Huff