**Museum Experience Survey**

**Updated Project Plan For Spring Semester**

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| Revision Number | Description | Date |
| 1.0 | Initial Document | (Not Recoreded) |
| 1.1 | Modified Cycles.  Moved Children survey to  lower priority | 2/20/2015 |

Index

[Overview](#h.3mqvvhl11dym)

[Goals and Scope](#h.w08zv65ye140)

[In Scope](#h.i1zj3weygpbr)

[Out of Scope](#h.7i4euom56voy)

[Goals](#h.xote0wkz274d)

[Deliverables](#h.3dbho57pfsm3)

[Risk Management](#h.6b6bzg7nu6cr)

[Technical Process](#h.o3g7ulh9tumq)

[Scheduling and Estimates](#h.9r01p2k5yk3q)

[Measurement and Metrics](#h.hkwmn3m23qjx)

# Overview

Lockheed Martin has a number of volunteer members involved with The Discovery Center of the Southern Tier, a non-profit museum, where Lockheed Martin has sponsored the addition of a number of new exhibits highlighting engineering. In order to improve the Discovery Center, Lockheed Martin wishes to implement a system for tracking user engagement and feedback on the exhibits. The purpose of this project is to create that system.

The Museum Experience Survey will provide an electronic system for visitors of the museum to provide feedback and demographic statistics with as little manual entry as possible. The Museum Experience Survey will ask visitors basic demographic questions such as the ages of the children visiting, whether or not it’s a first-time visit, as well as allow the visitor to rate and provide feedback on the exhibits. Volunteers working at the museum will be able to see the data and statistics received from the Museum Experience Survey and use that data to better the museum.

There are only three users of the system: child visitors, adult visitors, and admins. Child visitors are generally in the 4-12 year range, but vary slightly from this. The children will take the survey on a windows tablet via the chrome browser in the lobby of the museum. The adults will have a similar survey environment, but the tablets will be placed in the gift shop of the museum. Admins will be volunteers at the museum who are technologically-proficient and have the responsibility to create new exhibit questionnaires and view data, statistics, graphs, and more information collected from the system.

Software development work will be done by Team MESSE starting the week of

November 3, 2014, and working through April of 2015. Team MESSE is responsible for all software portions of the project, and hardware will be provided by the Discovery Center and Lockheed Martin, including tablets, web servers, and networking hardware.

# Goals and Scope

The scope defines everything that the project will (in scope) and will not (out of scope) be. Scope is not a requirements listing; requirements will be stated in a separate document. The goals are not specific and instead will be given more precise definitions of success in the requirements document.

The main focus of the “museum survey” is to gather personal and demographic information in order to recruit volunteers. The secondary focus is to make a modifiable survey that can collect data such as exhibit ratings to determine which exhibits are liked most.

## In Scope

1. Web based application shall
   1. Be fully functional on Google Chrome.
   2. Be hosted on a windows 8 laptop.
   3. Be restricted to local access only.
   4. Run on a Windows 8 tablet.
   5. Collect data
      1. On demographic and personal information (Age, Gender, Email).
      2. Of ratings for each exhibit on a scale of 1-5 where 5 indicates a favorite exhibit.
      3. Through a page that doesn’t require authentication.
      4. Using multiple question types (multiple choice single select, multiple choice multi select, short answer, slider)
   6. Report data
      1. Of exhibit rankings in order from highest to lowest.
      2. Of average ranking for all exhibits.
      3. Of min and max rankings
      4. Through a page only accessible with admin privileges.
      5. By exporting
         1. As a csv dump
         2. As a jpeg
   7. Allow administrators to modify and add questions
   8. Allow administrators to edit the list of exhibits for visitors to rate
2. Installer shall install all necessary components for the web application server.

## Out of Scope

* Supporting cell phone access.
* RFID tag tracking for visitors.
* Limiting the number of concurrent users for the website

## Goals

Goals are listed in order of priority.

* Usability - The application should be easy to use since it will be used by the general public and museum administrators who have little computer knowledge.
* Security - Keep museum visitor information secure, so that it isn’t accessed by unauthorized personnel.

# Deliverables

RIT Software Engineering Department Deliverables

1. Project website holding all work products and project artifacts maintained in the project account on the se.rit.edu web server
2. Project plan, schedule, and process methodology definition prepared by the end of week 3 of the first semester, and updated by the end of week 2 of the second semester.
3. Tracking report for time/effort worked on the project, and at least two other product/process metrics appropriate to the project and development methodology. Tracking reports updated on the project website at least every two weeks.
4. Interim status and final project presentations
5. Project poster and presentation at “SE Senior Project Day”
6. Project technical report

Sponsor Deliverables

1. Team information and resumes
2. Individual informal work reports

# Risk Management

Please see the Risk Assessment document.

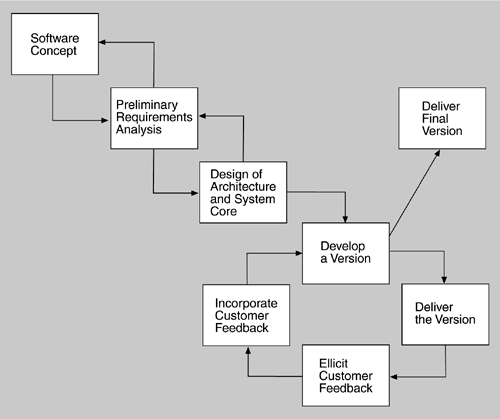
# Technical Process

The team has decided to go with an Evolutionary Delivery methodology for this project. This process works similar to traditional waterfall with upfront requirements analysis and architectural decisions, but breaks down the development phase into cycles which are similar to iterations. This allows us to get customer feedback during development so that we can incorporate their feedback as we go, instead of waiting until the end. This helps reduce risk and ensure that the final product is what the customer is looking for.

Requirements should be defined as concretely as possible during the requirements phase through communication with both the project sponsor and the end customer (the museum and its staff). During this time, any architecturally significant requirements should be identified. A better solution can be designed when requirements are defined up front, and lowers the chances of misinterpretations that can cause major setbacks during development.

Though the customer has a good understanding of what they want, there still is a chance that requirements could change slightly over time. In this case, visibility is critical so that actions can be taken early based on customer feedback. Due to the importance of visibility, the focus will be on vertical slices of the end solution (model, control, and view for part of the functionality). The requirements and architecture will be captured in a living document that we may choose to update as customer feedback is received.

Here is a graphical representation of the Evolutionary delivery model:



# Scheduling and Estimates

With concept, requirements, and Architecture done during Fall Semester, Spring Semester focuses on development cycles. Cycles will be identified by number and listed here in order they should be completed. The estimates are inherently loose due to the difficulty of estimation and the risk of added development based on customer feedback.

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| --- | --- | --- |
| Week(s)\* | Phase | Description |
| 1 | Setup | Setup the development environments on everyone’s machine. Including having the models implemented and the database seeded |
| 1-2 | Cycle 1 | Get basic flow of surveys working. Get Adult style questions working. |
| 2-4 | Cycle 2 | Get basics of survey configuration done (CRUD of surveys/questions)  Add exhibit addition functionality. |
| 4-7 | Cycle 3 | Data reporting |
| 7-10 | Cycle 4 | Create Child version of questions for children survey.  Create functionality to export Survey Data to a Excel compatible spreadsheet. |
| 10-12 | Cycle 5 | Finish testing,installation, and deployment |

\*Week(s) refers to the numbered weeks into the semester in which that phase will be worked on.

# Measurement and Metrics

Measurement and metrics will be broken down into two broad categories. These categories are aptly named maintainability and efficiency. Maintainability refers to metrics that are designed to capture information that will serve to increase the quality and lifespan of the product. Efficiency deals with the fact that most, if not all, users will be non technical. Each task the system performs must be efficient and easily understandable.

**Maintainability**

1. **Bug Fix Velocity-** An indirect measure of the program’s complexity may be determined by the Bug Fix Velocity. This is a measure of the time since a bug is proven and recorded in the tracker to the time the bug fixed or deferred. Each member of the team shall calculate his own Bug Fix Velocity for bugs assigned to him.
2. **Cyclomatic Complexity**- Cyclomatic Complexity measure the number of independent linear paths through the software to an endpoint for a similar tasks. An example of this would be branching paths for a user deciding “Yes” or “No” on a dialog. Increased Cyclomatic Complexity leads to user confusion and therefore must be measured and minimized accordingly.

**Efficiency**

1. **Time to completion -** Given a group of sample users of the system, indicate specific tasks they must perform. With no assistance from the observers, calculate the time it takes for the user to perform the operation. This may be performed several times over the course of a session to simulate increased knowledge of the user.
2. **Error Rate -** Calculated during a “Time to completion” session, record the number of mistakes a user makes while attempting to complete the task. Also, record any error messages and help screens the user employs to attempt to finish the task. In general, no fatal errors or mistakes should occur. The following are definitions of what will be recorded.
   1. Corrected Mistakes - Mistakes the user committed that they corrected themselves within 10 seconds.
   2. Mistakes - Mistakes the user committed that were only corrected after a single hint from the observer after the ten second mark. These hints will be recorded along with the mistake.
   3. Fatal Mistake - Mistakes that the user committed that remained uncorrected, causing the task to not get completed.
   4. Error - Any error messages brought up by the system or any incorrect behavior that does not include core functionality. Record what actions the user attempted to bring about the error.
   5. Fatal Error - A user action caused the system to malfunction. A fatal malfunction includes crashing, incorrect functionality of core behavior, or security breaches.
3. **Page Views/Clicks**- With efficiency in mind, the number of clicks and navigations to accomplish a task should be minimized. Also, like tasks should be grouped in pages and therefore decrease the number of pages that must be viewed. For each task, calculate number of clicks required and record each page viewed along the happy path (the shortest path to complete the task). Since this is a “happy path” only metric, this may be calculated without an actual user performing the task.