

# **Life Cycle Plan (LCP)**

**Mission Science Information and Database System**

**Team 06**

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# Version History

Date	Author	Version	Changes made	Rationale
09/26/11	CK	1.0	<ul style="list-style-type: none"> <li>Updated section 3.3 with team members' skills</li> </ul>	<ul style="list-style-type: none"> <li>Initial draft for VC package</li> </ul>
10/07/11	CK	1.1	<ul style="list-style-type: none"> <li>Made changes to section 3.3 to reflect team members' skills rather than team members' tasks and responsibilities</li> <li>Updated section 1</li> <li>Started to update section 2.1</li> </ul>	<ul style="list-style-type: none"> <li>Minimum exit requirements for core FC package</li> </ul>
10/13/11	CK	1.2	<ul style="list-style-type: none"> <li>Included sections 2, 3.1, 3.2, 4</li> </ul>	<ul style="list-style-type: none"> <li>To complete document for the draft FC package</li> </ul>
10/17/11	CK	1.3	<ul style="list-style-type: none"> <li>Performed cost estimation using COCOMOII tool and appended results to "Resources" section</li> </ul>	<ul style="list-style-type: none"> <li>To complete document for DC package</li> </ul>
10/19/11	CK	1.4	<ul style="list-style-type: none"> <li>Modified Section 3 Responsibilities</li> <li>Performed cost estimation using COTIPMO and replaced COCOMO estimations in "Resources" section</li> </ul>	<ul style="list-style-type: none"> <li>To reflect the addition of a new team member and responsibilities/roles for development phase</li> <li>NDI projects should use COTIPMO</li> </ul>
11/19/11	CK	1.5	<ul style="list-style-type: none"> <li>Updated Section 1.2 Status of the LCP</li> <li>Modified Section 3.2 Responsibilities by Phase</li> <li>Updated Cost Estimation screen shots in "Resources" section</li> </ul>	<ul style="list-style-type: none"> <li>To reflect current status of LCP</li> <li>To specify specific responsibilities in Transition phases</li> <li>To complete document for Draft Transition Readiness Review (TRR) Package</li> </ul>
12/05/11	CK	1.6	<ul style="list-style-type: none"> <li>Updated Cost Estimation screen shots in "Resources" section</li> </ul>	<ul style="list-style-type: none"> <li>To complete document for Final Transition Readiness Review (TRR) Package</li> </ul>

# Table of Contents

Life Cycle Plan (LCP) .....	i
Version History .....	ii
Table of Contents.....	iii
Table of Tables.....	iv
Table of Figures .....	v
<b>1. Introduction .....</b>	<b>1</b>
<b>1.1 Purpose of the LCP.....</b>	<b>1</b>
<b>1.2 Status of the LCP .....</b>	<b>1</b>
<b>1.3 Assumptions .....</b>	<b>1</b>
<b>2. Milestones and Products .....</b>	<b>2</b>
<b>2.1 Overall Strategy .....</b>	<b>2</b>
<b>2.2 Project Deliverables.....</b>	<b>3</b>
<b>3. Responsibilities.....</b>	<b>8</b>
<b>3.1 Project-specific stakeholder’s responsibilities .....</b>	<b>8</b>
<b>3.2 Responsibilities by Phase .....</b>	<b>8</b>
<b>3.3 Skills .....</b>	<b>12</b>
<b>4. Approach .....</b>	<b>14</b>
<b>4.1 Monitoring and Control.....</b>	<b>14</b>
<b>4.2 Methods, Tools and Facilities .....</b>	<b>14</b>
<b>Resources.....</b>	<b>15</b>

# Table of Tables

<i>Table 1: Artifacts Deliverables in Exploration Phase .....</i>	<i>3</i>
<i>Table 2: Artifact Deliverables in Valuation Phase .....</i>	<i>3</i>
<i>Table 3: Artifact Deliverables in Foundations Phase.....</i>	<i>5</i>
<i>Table 4: Artifact Deliverables in Development Phase.....</i>	<i>6</i>
<i>Table 5: Stakeholder's Responsibilities in each phase.....</i>	<i>8</i>
<i>Table 6: Skills of Team Members by Role.....</i>	<i>12</i>
<i>Table 7: Methods, Tools, and Facilities Used in Project.....</i>	<i>14</i>

# Table of Figures

<i>Figure 1: Project estimation for Mission Science Information and Database System .....</i>	<i>15</i>
<i>Figure 2: Cost estimation for Iteration 1 .....</i>	<i>16</i>
<i>Figure 3: Project Progress Chart .....</i>	<i>16</i>

# 1. Introduction

## 1.1 Purpose of the LCP

The purpose of this Life Cycle Plan document is to describe the details of the Mission Science Information and Database System project in its entirety. This document will serve to answer questions related to the motivation for this project, the stakeholders involved, the time frame and longevity of the project and its benefits, and total cost to complete this project.

## 1.2 Status of the LCP

The status of the LCP is currently at the Transition Readiness Review Package, version number 1.6. This is the version that serves as a reference for the developers on the team, for now. The major changes from the LCP of the Development Commitment Package are:

- The COTIPMO estimate screen shots are up to date and include all 7 iterations

## 1.3 Assumptions

- The duration of the project is 12 weeks and can be completed in the Fall 2011 semester, which ends in December 2011, as this project is NDI-intensive and does not require major architecture design.
- The client will remove all duplicates from the existing student information database, so that the development team will not have to build a program that does this.
- The client will present the team with complete data in a specified input format so that the team can receive data in that format and store it into the new database system; this will save time with the data migration requirement.
- The database system can remain in Microsoft Access, and no major user interface changes or developments are necessary, as long as the MS Access interface is user-friendly
- The database system does not have to be accessible over the internet from different school sites

## 2. Milestones and Products

### 2.1 Overall Strategy

The Mission Science Information and Database System project is following a Single-NDI process because the requirements of this project only include database design and organization and data migration. There already exists a single Non-Developmental Item, Microsoft Access, which can fit most of the core functionalities desired.

#### Exploration phase

**Duration:** 09/09/2011- 10/07/2011

**Concept:** To assess who the success-critical stakeholders are, determine system capabilities, analyze the current system infrastructure, identify the operational concept, perform benefit analysis, assess the abilities of team software developers, identify any possible risks associated with the project, and plan the life cycle of the project.

**Deliverables:** Valuation Commitment Package – OCD, FED, LCP; Client Interaction Report

**Milestone:** Valuation Commitment Review

**Strategy:** One Incremental Commitment Cycle

#### Valuation phase

**Duration:** 10/07/11- 10/14/11

**Concept:** To identify the objectives, constraints, and priorities of the project based on negotiation of Win conditions amongst success-critical stakeholders, to explore NDI alternatives, reassess and plan the project life cycle, create a prototype of the system and its capabilities, and acquire and familiarize with NDI components.

**Deliverables:** Core Foundations Commitment Package – OCD, PRO, WWCP, SSAD, LCP, FED, SID

**Milestone:** Core Foundations Commitment Review

**Strategy:** One Incremental Commitment Cycle

#### Foundations phase

**Duration:** 10/14/11- 10/24/11

**Concept:** To detail the project plan, to assess and record project and individual progress, to assess feasibility, operational concept, system architecture, prototype, and life cycle, to prioritize capabilities included in prototype, and to acquire NDI components.

**Deliverables:** Development Commitment Package – OCD, PRO, SSRD, SSAD, LCP, FED, SID, QMP, ATPC, IP

**Milestone:** Development Commitment Review

**Strategy:** One Incremental Commitment Cycle

#### Development phase

**Duration:** 10/24/11- 12/05/11

**Concept:** To assess the development iteration, implement the system, perform testing, develop a support plan and transition plan, and continue to perform testing

**Deliverables:** Transition Readiness Review Package (TRR) – OCD, PRO, SSAD, LCP, FED, SID, QMP, IP, ATPC, IAR, TP, UM, TM, ATPR

**Milestone:** Re-Baselined Development Commitment Review

**Strategy:** One Incremental Commitment Cycle

## 2.2 Project Deliverables

### 2.2.1 Exploration Phase

**Table 1: Artifacts Deliverables in Exploration Phase**

Artifact	Due date	Format	Medium
Client Interaction Report	09/21/2011	.doc, .pdf	Soft copy
Valuation Commitment Package <ul style="list-style-type: none"> <li>• Operational Concept Description (OCD) Early Section</li> <li>• Life Cycle Plan (LCP) Early Section</li> <li>• Feasibility Evidence Description (FED) Early Section</li> </ul>	09/28/2011	.doc, .pdf	Soft copy
Evaluation of Valuation Commitment Package	10/03/2011	.xls	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy

### 2.2.2 Valuation Phase

**Table 2: Artifact Deliverables in Valuation Phase**

Artifact	Due date	Format	Medium
Core Foundations Commitment Package <ul style="list-style-type: none"> <li>• Operational Concept Description (OCD) All Sections</li> <li>• Prototype (PRO) Some Sections</li> <li>• WinWin Conditions</li> </ul>	10/07/2011	.doc, .pdf, .xls	Soft copy



Prioritization (WWCP) • System and Software Architecture Description (SSAD) Some Sections • Life Cycle Plan (LCP) Some Sections • Feasibility Evidence Description (FED) Some Sections • Supporting Information Document (SID) All Sections			
Evaluation of Core Foundations Commitment Package	10/10/2011	.xls	Soft copy
Draft Foundations Commitment Package • Operational Concept Description (OCD) All Sections • Prototype (PRO) All Sections • System and Software Architecture Description (SSAD) Some Sections • Life Cycle Plan (LCP) All Sections • Feasibility Evidence Description (FED) Some Sections • Supporting Information Document (SID) All Sections	10/14/2011	.doc, .pdf	Soft copy
Evaluation of Draft Foundations Commitment Package	10/17/2011	.xls	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy

## 2.2.3 Foundations Phase

**Table 3: Artifact Deliverables in Foundations Phase**

<b>Artifact</b>	<b>Due date</b>	<b>Format</b>	<b>Medium</b>
Quality Management Plan #1	10/24/2011	.doc, .pdf	Soft copy
Development Commitment Package <ul style="list-style-type: none"> <li>• Operational Concept Description (OCD) All Sections</li> <li>• Prototype (PRO) All Sections</li> <li>• System and Software Architecture Description (SSAD) All Sections</li> <li>• Life Cycle Plan (LCP) All Sections</li> <li>• Feasibility Evidence Description (FED) All Sections</li> <li>• Supporting Information Document (SID) All Sections</li> <li>• Quality Management Plan (QMP) All Sections</li> <li>• Acceptance Test Plan and Cases (ATPC) All Sections</li> <li>• Iteration Plan (IP) All Sections</li> </ul>	10/24/2011	.doc, .pdf	Soft copy
Evaluation of Foundations Commitment Package	10/31/2011	.xls	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy

## 2.2.4 Development Phase

**Table 4: Artifact Deliverables in Development Phase**

<b>Artifact</b>	<b>Due date</b>	<b>Format</b>	<b>Medium</b>
Quality Management Plan #2	11/14/2011	.doc, .pdf	Soft copy
Draft Transition Readiness Review Package <ul style="list-style-type: none"> <li>• Operational Concept Description (OCD) All Sections</li> <li>• Prototype (PRO) All Sections</li> <li>• System and Software Architecture Description (SSAD) All Sections</li> <li>• Life Cycle Plan (LCP) All Sections</li> <li>• Feasibility Evidence Description (FED) All Sections</li> <li>• Supporting Information Document (SID) All Sections</li> <li>• Quality Management Plan (QMP) All Sections</li> <li>• Acceptance Test Plan and Cases (ATPC) All Sections</li> <li>• Iteration Plan (IP) All Sections</li> <li>• Iteration Assessment Report (IAR) All Sections</li> <li>• Transition Plan (TP) All Sections</li> <li>• User Manual (UM) All Sections</li> <li>• Training Plan (TM) All Sections</li> </ul>	11/21/2011	.doc, .pdf	Soft copy

• Acceptance Test Procedures and Results (ATPR) All Sections			
Transition Readiness Review Package • Same artifacts as Draft Transition Readiness Review Package, but modified and updated	12/05/2011	.doc, .pdf	Soft copy
Evaluation of Development Commitment Package	12/12/2011	.xls	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy

## 3. Responsibilities

### 3.1 Project-specific stakeholder's responsibilities

Other than client, user, maintainer, developer, and IIV&V, the stakeholders are the students involved in the Mission Science program. The students are active participants in the lesson plans created by the Mission Science coordinator, and they are users of the materials in the inventory. The role of the student is simply to participate in science experiments and to sign the sign-in sheet for the particular lesson plans they complete.

### 3.2 Responsibilities by Phase

Table 5: Stakeholder's Responsibilities in each phase

Team Member / Role	Primary / Secondary Responsibility				
	Exploration	Valuation	Foundations	Development-Construction Iteration	Development-Transition Iteration
<b>Brian Anderson:</b> Operational Concept Engineer / Project Manager / Builder	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Analyze current system, observe current work process</li> <li>Assess operational concept</li> <li>Identify objectives, constraints, and priorities</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Develop project plan</li> <li>Arrange weekly group meetings to discuss project progress</li> <li>Discuss project with client and provide updates</li> <li>Collect stakeholders' win conditions</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Provide details of new operational concept of proposed system</li> <li>Identify stakeholders' shared goals and visions</li> <li>Identify organizational and operational transformation s needed to adopt new system</li> <li>Identify system transformation</li> <li>Explore alternatives</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Discuss project progress with client and provide updates</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Plan out how to develop MS Access user interface forms</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Discuss project progress with client and provide updates</li> <li>Arrange weekly group meetings to discuss project progress</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Implement MS Access user interface forms</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Discuss project progress with client and provide updates</li> <li>Arrange weekly group meetings to discuss project progress</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Integrate database and user interface components</li> <li>Implement MS Access user interface forms</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Discuss project progress with client and provide updates</li> <li>Arrange weekly group meetings to discuss project progress</li> </ul>

		<ul style="list-style-type: none"> <li>• Arrange weekly group meetings to discuss project progress</li> <li>• Detail project plan</li> </ul>			
<b>Kathleen Barrera:</b> IIV&V / Quality Focal Point / Tester	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Verify and validate work products using Bugzilla system</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Facilitate in WinWin negotiation</li> <li>• Verify and validate work products using Bugzilla system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Identify quality management strategy</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Verify and validate work products using Bugzilla system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Identify configuration management strategy</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Verify and validate work products using Bugzilla system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Assess quality management strategy</li> <li>• Identify test cases, plans, and procedures</li> <li>• Plan testing</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Verify and validate work products using Bugzilla system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Evaluate and assess system to provide feedback to developers</li> <li>• Perform testing and record results</li> <li>• Verify quality of the system and project</li> </ul>
<b>Yujie Chen:</b> Prototyper / System Architect / Builder	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Provide details of the new operational concept of the proposed system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Analyze interoperability between NDIs</li> <li>• Assess system architecture</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Develop prototype, project plan, and investment analysis</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Analyze proposed system</li> <li>• Assess and evaluate possible NDI alternatives</li> <li>• Establish new operational concept</li> <li>• Define technology-dependent architectures</li> <li>• Define technology-independent architectures</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Develop prototype, project plan, and investment analysis</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Provide evidence for architecture</li> <li>• Describe the architecture styles, patterns, and frameworks</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Develop MS Access database components</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Develop user interface components</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Migrate data from old database system to new system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>• Develop user interface components</li> <li>• Integrate database and user interface components</li> </ul>
<b>Celia Kung:</b> Project Manager / Planning and	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Develop project</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Discuss project</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Discuss project</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Discuss project</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>• Discuss project</li> </ul>

Control Engineer	<p>plan</p> <ul style="list-style-type: none"> <li>• Arrange weekly group meetings to discuss project progress</li> <li>• Discuss project with client and provide updates</li> <li>• Collect stakeholders' win conditions</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Assess life cycle content</li> <li>• Identify who is responsible for each task</li> <li>• Determine the most suitable process for project and provide evidence for decision</li> <li>• Determine developers' required skills</li> <li>• Define strategy, resources, and schedule to support system</li> </ul>	<p>progress with client and provide updates</p> <ul style="list-style-type: none"> <li>• Arrange weekly group meetings to discuss project progress</li> <li>• Detail project plan</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Identify milestones</li> <li>• Identify which functionalities to develop or test in each iteration</li> <li>• Assess end-of-iteration plans and discuss goals for next iteration with client</li> </ul>	<p>progress with client and provide updates</p> <ul style="list-style-type: none"> <li>• Arrange weekly group meetings to discuss project progress</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Assess end-of-iteration plans and discuss goals for next iteration with client</li> <li>• Use COCOMO II to create an effort and schedule estimate for project</li> </ul>	<p>progress with client and provide updates</p> <ul style="list-style-type: none"> <li>• Arrange weekly group meetings to discuss project progress</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Assess end-of-iteration plans and discuss goals for next iteration with client</li> <li>• Plan for transition of system to client</li> </ul>	<p>progress with client and provide updates</p> <ul style="list-style-type: none"> <li>• Arrange weekly group meetings to discuss project progress</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Assess end-of-iteration plans and discuss goals for next iteration with client</li> </ul>
<b>Hardik Shah:</b> Feasibility Analyst / Requirements Engineer / Builder	<p><b>Primary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Analyze business case, cost and benefit of project</li> <li>• Analyze interoperability between NDIs</li> <li>• Look for ready-to-use NDI services</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Develop requirements definition</li> <li>• Assess requirements definition</li> </ul>	<p><b>Primary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Assess and evaluate possible NDI alternatives</li> <li>• Analyze, prioritize, and provide plans for risk mitigation</li> <li>• Acquire NDI component</li> <li>• Provide feasibility evidence</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> </ul>	<p><b>Primary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Provide evidence for architecture</li> <li>• Business case analysis</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> </ul>	<p><b>Primary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Develop MS Access database components</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> </ul>	<p><b>Primary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Develop MS Access database components</li> <li>• Integrate database and user interface components</li> </ul> <p><b>Secondary Responsibility</b></p> <ul style="list-style-type: none"> <li>• Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> </ul>

<b>Zhenlu Sun:</b> Requirements Engineer / Operational Concept Engineer	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Develop requirements definition</li> <li>Assess requirements definition</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Analyze current system, observe current work process</li> <li>Assess operational concept</li> <li>Identify objectives, constraints, and priorities</li> <li>Identify stakeholders' shared goals and visions</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Provide details of new operational concept of proposed system</li> <li>Identify organizational and operational transformations needed to adopt new system</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Develop MS Access database components</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Reevaluate requirements as necessary if stakeholders modify or add win conditions</li> <li>Migrate data from old system to new system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Develop MS Access database components</li> <li>Integrate database and user interface components</li> </ul>
<b>Wei Tan:</b> System Architect / Prototyper	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Analyze interoperability between NDIs</li> <li>Assess system architecture</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Provide details of the new operational concept of the proposed system</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Analyze proposed system</li> <li>Assess and evaluate possible NDI alternatives</li> <li>Establish new operational concept</li> <li>Define technology-dependent architectures</li> <li>Define technology-independent architectures</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Develop prototype, project plan, and investment analysis</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Provide evidence for architecture</li> <li>Describe the architecture styles, patterns, and frameworks</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Develop prototype, project plan, and investment analysis</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Plan for migration of data to new system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Develop prototype, project plan, and investment analysis</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Migrate data from old system to new system</li> </ul> <b>Secondary Responsibility</b> <ul style="list-style-type: none"> <li>Develop prototype, project plan, and investment analysis</li> </ul>
<b>Darin Gray:</b> Client / Mission Science coordinator	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Analyze current system</li> <li>Establish new</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Assess development iteration</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Assess prototype and components</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Develop support plan</li> <li>Develop</li> </ul>	<b>Primary Responsibility</b> <ul style="list-style-type: none"> <li>Identify organizational and operational</li> </ul>



	operational concept • Identify shared vision	• Identify objectives, constraints, and priorities		transition plan • Perform core capabilities drive-through	transformation • Participate in training
<b>CSCI 577 Developers:</b> Implementation Team	<b>Primary Responsibility</b> • Analyze current system • Gather definitions • Identify the most appropriate process • Prepare documents • Record project individual effort	<b>Primary Responsibility</b> • Assess prototype and components • Explore alternatives • Prepare documents • Record project individual effort	<b>Primary Responsibility</b> • Assess traceability matrix • Construct traceability matrix • Prepare documents • Record project individual effort	<b>Primary Responsibility</b> • Perform core capabilities drive-through • Prepare documents • Record project individual effort	<b>Primary Responsibility</b> • Develop user manual • Provide conclusion and recommendation • Prepare documents • Record project individual effort • Train client in how to use system; provide how-to videos that demonstrate all capabilities

### 3.3 Skills

**Table 6: Skills of Team Members by Role**

Team members	Role	Skills
Brian Anderson	Operational Concept Engineer / Project Manager	Microsoft Project, project management, Microsoft Access
Kathleen Barrera	IIV&V	Evaluation, quality management, Microsoft Access, WinWin tool, configuration management
Yujie Chen	Prototyper / System Architect	Microsoft Access, database design, modeling, Access programming, UML modeling, RSM, Visual Basic
Celia Kung	Project Manager / Planning and Control Engineer	Project management, scheduling meetings, communicating with client, planning project life cycle, project coordination, COCOMO, goal awareness, Microsoft Access
Hardik Shah	Feasibility Analyst / Requirements Engineer	Research and information analysis, communication, technical writing, SQL, Microsoft Access

Zhenlu Sun	Requirements Engineer / Operational Concept Engineer	Analytical, observational, modeling, facilitation, Microsoft Access
Wei Tan	System Architect / Prototyper	Microsoft Access, database design, modeling, Access programming, UML modeling, RSM, Visual Basic

## 4. Approach

### 4.1 Monitoring and Control

In monitoring and tracking our project progress, we use the weekly progress reports and project plans. The team also maintains a shared Dropbox folder to hold the latest versions of all of the documented artifacts.

#### 4.1.1 Closed Loop Feedback Control

Within the team, feedback is typically shared through group e-mails, as we have created a Google group specifically for this project. We also post important feedback through shared spreadsheets on Google Documents. Before every milestone, the developers meet, and each member displays the artifact(s) that he/she was responsible for; the team then comments and provides possible suggestions.

#### 4.1.2 Reviews

The IIV&V member on our team reviews each of the artifacts after we submit them at each milestone and logs the bugs/defects through Bugzilla. The IIV&V member also posts a table on a shared Google document, noting the bug ID's and describing the issues. The rest of the developer team then makes necessary changes to the artifacts and closes the bugs.

## 4.2 Methods, Tools and Facilities

**Table 7: Methods, Tools, and Facilities Used in Project**

Tools	Usage	Provider
WinBook	Helps maintain a list of requirements and Win Conditions so that the client can view the statuses of the features, and the development team can raise issues/concerns and suggest options as necessary.	USC, CSCI 577
Shared Documents & Spreadsheets	Facilitates organization of team contact information, schedules, and other bookkeeping information.	Google
Break out rooms	Provides large monitor so that each developer on the team can display his/her artifacts for review and feedback by all other developers.	SAL

## Resources

Estimated CSCI 577a effort: 8 hours/week for 12 weeks.

Total estimated effort: 116 hours (initial COTIPMO estimate)

Budget: \$0, as client already has Microsoft Access and is a proficient user

Project duration: 1 semester (12 weeks)

Component modules:

- Database
- Data migration tools
- Microsoft Access user interface screens (~6 simple, 5 medium, and 1 difficult)

Programming language used: Microsoft Access, SQL, Visual Basic (VBA)

The following estimates are based on Single-NDI project, as we are only using Microsoft Access.

### COTIPMO Estimation:

Developers' experience and capability is rated as "High" because some, but not all of the team, are very familiar with Microsoft Access programming or SQL. The ICASE maturity and capability rating is "Very High" because Microsoft Access is a mature product that has been used for years. The % reuse is 0 because we are not reusing any code from the previous database system; we are designing and building a new database and migrating the entire data set over. The initial estimation was 10 simple screens, which turned out to be overly optimistic, as seen in Figure 3.

Initial Project Estimates <span>Edit</span>				
Description:	The proposed system is to provide role-based access to Mission Science coordinator and student workers to maintain lesson plans, inventory, and student information through a user-friendly interface, using Microsoft Access on a single PC.			
% Reuse:	0			
Developer's Experience and Capability	HI			
ICASE Maturity and Capability	VHI			
Productivity (PROD)	25			
New Application Point (NAP)	10			
Person-Months (PM)	0.4 (61 hrs)			
NDI/NCS Details:	Element Type	Simple	Medium	Difficult
	Screens	10		
	Reports			
	3GL Components			

**Figure 1: Initial project estimation for Mission Science Information and Database System**

Iteration List <span>Add</span>										
	#	Start Date	End Date	Description	% Reuse	PROD	NAP	PM Spent	PM Estimated	Actions
<input checked="" type="checkbox"/>	1	10/12/11	10/19/11	The team has participated in FCR ARB, so we have just transitioned into the Foundations Phase. We have not yet developed any screens, reports, and components as of right now. The % Reuse is not applicable to our project.	0	25	8	0.32 (49 hrs)	3.2 (486 hrs)	
<input checked="" type="checkbox"/>	2	10/19/11	10/26/11	We have polished up our prototype designs but have not yet started implementation.	0	25	8	0.32 (49 hrs)	1.6 (243 hrs)	
<input checked="" type="checkbox"/>	3	10/26/11	11/2/11	The team has designed the databases and produced comprehensive ER diagrams.	0	25	8	0.32 (49 hrs)	1.07 (163 hrs)	
<input checked="" type="checkbox"/>	4	11/2/11	11/16/11	We designed the database and confirmed and explained it to the clients. Also we have started developing of the databases in MS Access	0	25	8	0.32 (49 hrs)	0.71 (108 hrs)	
<input checked="" type="checkbox"/>	5	11/9/11	11/16/11	The team built the new database system according to the ER diagram, and also implemented the core functionalities on the Access user interface.	0	50	11	0.22 (33 hrs)	0.37 (56 hrs)	
<input checked="" type="checkbox"/>	6	11/16/11	11/23/11	The implementation team developed more user interface screens and has started and almost finished migration of data to new system.	0	50	19	0.38 (58 hrs)	0.48 (73 hrs)	
<input checked="" type="checkbox"/>	7	11/23/11	12/7/11	Aside from continuing to develop and add features to our system, the team has started testing the UI components.	0	50	32	0.64 (97 hrs)	0.71 (108 hrs)	

Figure 2: Cost estimation for Iterations 1-7

The project progress chart shows that our initial project estimate of 61 hours is drastically lower than the new estimate for iteration 7 of 108 hours. The accumulated effort currently reflects the amount of time spent on developing the user interface screens in Microsoft Access. More effort was spent in the most recent iterations because more features could be added once database system was built and finalized, whereas in the earlier development iterations, UI builder sometimes had to wait for database builders to finish building database.

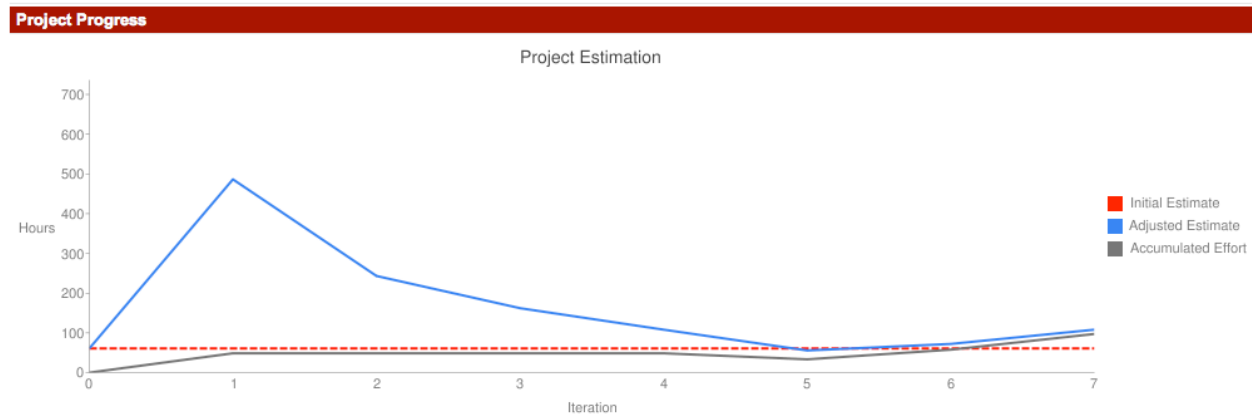


Figure 3: Project Progress Chart