EDUCATION ABROAD PROSPECT AND APPLICATION
POST-IMPLEMENTATION REPORT

Project Name: Education Abroad Prospect and Application

Business Unit / Program Area (Customer) / Performing Organization:

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Project Start Date: November 2007

Project End Date: November 2009

Project Managers: David Whiting, Renee Fawcett, Phyllis Mohrlant

Project Director: Garfield Bowen

Report Prepared by: Phyllis Mohrlant

Project Team:

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Business Process Owner – Crookston
Kimberly Gillette

Business Process Owners – Duluth
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Business Process Owners – Morris
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Analysts – Office of Information Technology
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Background and Scope

In November 2007 approval was received to define a scope and develop a plan for implementation of an Education Abroad solution. After a tremendous effort, the new application went into production on November 30, 2009. This is the first project to which the Project Management and System Development Life Cycle methodology was applied after the Enterprise Financial System project.

The Education Abroad system will help students connect with the University about their education abroad interests, apply for a program, and track all of the steps they need to manage before their departure. The system also includes PeopleSoft pages and UM reports for staff and administrators. Students interested in programs for fall 2010 and later will find the Education Abroad profile and application on their campus’ education abroad Web sites.

Prior to November, 2007, the project had a long history, experiencing several changes in priority that caused significant delays. The project had its genesis over 5 years ago. Over such a lengthy course, many changes in
direction, approach, goals, and staffing occurred. Many responses to the Lessons Learned survey indicate the differences between the early phases and the final phase of the project.

Executive Summary

The Education Abroad system is a success! Values in the table below show that the system is being used across the University of Minnesota system. The road to achieving the success was lengthy and, at times, quite bumpy. Detailed responses to the Lessons Learned survey begin on subsequent pages in this report. A few of the highlights from the survey are:

- Changes in staffing, particularly the project manager, during the course of the project created delays in the schedule and frustrations for team members.
- Usage of structured methodology in the system development life cycle and project metrics for monitoring project progress were key factors in achieving success.
- Collaborative work and open communications allowed for sharing of ideas across the team to attain the best results.
- Although exclusion of the “guest account” functionality from scope was a difficult decision, it allowed the project to meet deadlines and go live.

In addition to creating the Education Abroad system, the project provided many learning opportunities for improving the management of projects. These “lessons learned” will be shared with others and will help guide future projects to successful outcomes.

Usage of the Education Abroad System (as of 4/16/2010):

The Education Abroad system is being used by 5 centers across 4 campuses. Current utilization of Prospect, Profile, and Application by Center is shown in the table below.

<table>
<thead>
<tr>
<th>Learning Abroad Center (Twin Cities)</th>
<th>Carlson School of Management (Twin Cities)</th>
<th>Duluth</th>
<th>Morris</th>
<th>Crookston</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prospect</td>
<td>2969</td>
<td>706</td>
<td>110</td>
<td>107</td>
<td>62</td>
</tr>
<tr>
<td>Profile</td>
<td>2341</td>
<td>264</td>
<td>110</td>
<td>106</td>
<td>59</td>
</tr>
<tr>
<td>Application</td>
<td>781</td>
<td>232</td>
<td>137</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Categories: Categories of the report correspond to the categories in the Project Post-Implementation Survey.

Ratings Summary by Category

Details about the questions and responses in each category are shown below in sections A through F.

<table>
<thead>
<tr>
<th>Category</th>
<th>Overall Survey Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Planning</td>
<td>1.8</td>
</tr>
<tr>
<td>Project Execution and Delivery</td>
<td>2.0</td>
</tr>
<tr>
<td>Human Factors</td>
<td>1.8</td>
</tr>
<tr>
<td>Overall</td>
<td>1.8</td>
</tr>
</tbody>
</table>

(1 - Strongly Agree, 2 – Agree, 3 - Neither Agree nor Disagree, 4 – Disagree, 5 - Strongly Disagree)

For each category, the Overall Rating is the average of the ratings provided on completed survey forms for that category.
Supporting Details
The sections below contain supporting details from the Lessons Learned Survey, key project metrics, and project management lessons learned.

A. Project Planning

<table>
<thead>
<tr>
<th>Questions for the Project Planning category were:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Business Objectives were specific, measurable, attainable, results-focused, and time-limited.</td>
</tr>
<tr>
<td>• Product concept was appropriate to Business Objectives.</td>
</tr>
<tr>
<td>• Tasks were defined adequately.</td>
</tr>
<tr>
<td>• Stakeholders (e.g., Sponsor, Customer) had appropriate input into the project planning process.</td>
</tr>
<tr>
<td>• Requirements were gathered to sufficient detail.</td>
</tr>
<tr>
<td>• Requirements were documented clearly.</td>
</tr>
<tr>
<td>• Specifications were clear and well-documented.</td>
</tr>
<tr>
<td>• Test Plan was adequate, understandable, and well-documented.</td>
</tr>
</tbody>
</table>

Overall Survey Rating: 1.8
(1 - Strongly Agree, 2 – Agree, 3 - Neither Agree nor Disagree, 4 – Disagree, 5 - Strongly Disagree)

Summarize effectiveness of the project planning:
It is difficult to assess the impression of overall project planning due to the length of the project and the many changes experienced. Some respondents indicated that the project was well run while others clearly expressed frustration with variability in project planning that resulted from the extended timeline and multiple changes in project managers.

Identify and discuss specific issues and recommendations.

Methodology
Initial phases of the project did not utilize the structured methodology that is now in place. As a result, several of the respondents mentioned incomplete requirements and a lack of understanding of business requirements. Many respondents mentioned that all aspects of the project ran more smoothly after the methodology was implemented and standards for document review and acceptance were established. Some suggestions related to methodology were:

- Require that to-be process flow diagrams and functional design documents meet standards by following a standard review process; keep documents updated as the project progresses.
- Business users should review functional design documents to ensure that they represent the business process correctly and to validate that they are a correct representation of the desired outcome.

Testing
Since this section included a question about test planning, a few respondents entered comments about testing. They included the observation that users from coordinate campuses were only minimally involved in User Acceptance Testing due to other work activities that took higher priority. In addition, it was commented that testing should take place on converted data rather than doing the conversion after completion of testing.

Suggestions for improvement in testing include:

- Users from all locations should be encouraged to be active participants in User
Acceptance Testing.
- When a project contains a data conversion element, the full conversion should be complete before User Acceptance Testing is performed.

B. Project Execution and Delivery

Questions for the Project Execution and Delivery category were:
- Project stuck to its original goals.
- Changes in direction that did occur were of manageable frequency and magnitude.
- Projected baselines (e.g., Scope, Time, Cost, Quality) were well-managed (e.g. changed through a formal Change Control Process.
- Design changes were well controlled.
- Basic project management processes (e.g., Risk Management, Issue Management) were adequate.
- Stakeholders were satisfied with the information they received.
- The project had adequate Quality Control.
- The requirements, specifications, and test plan were well-managed.
- Risks were manageable.

Overall Survey Rating: 2.0
(1 - Strongly Agree, 2 – Agree, 3 - Neither Agree nor Disagree, 4 – Disagree, 5 - Strongly Disagree)

Summarize effectiveness of Project Execution and Delivery throughout the project.
As with Project Planning, an overall assessment of Project Execution and Delivery is difficult to discern. While respondents were pleased with the end result, many of them expressed frustration with the number of changes experienced.

Identify and discuss specific issues and recommendations.

Goals
While the high-level goals of the project remained consistent, the direction for achieving the goals changed many times. Suggestions for improvement include:
- Thorough analysis of project goals and assumptions is critical to achieve success.
- Clearly identify the “owner” and “decision-maker” for all aspects of the project.
- Carefully evaluate situations in which the business process owner is not the same as the business application support unit.

C. Human Factors

Questions for the Human Factors category were:
- Project Manager reported to the appropriate part of the organization.
- Project Manager was effective.
- Project Team was properly organized and staffed.
- Project Team's talent and experience were adequate.
- Project Team worked effectively on project goals.
- Project Team worked effectively with outside entities.
- There was good communication within the Project Team.
Management gave this project adequate attention and time.
Project Team members were not over-committed.
Conflicting departmental goals did not cause problems.
Authority and Accountability were well defined and public.

Overall Survey Rating: 1.8
(1 - Strongly Agree, 2 – Agree, 3 - Neither Agree nor Disagree, 4 – Disagree, 5 - Strongly Disagree)

Summarize effectiveness of Project Team and other stakeholders throughout the project.
Staffing levels and effectiveness of assigned staff varied greatly over the course of the project. Comments in the Human Factors area indicate that keeping the project team properly organized and staffed was a challenge.

Identify and discuss specific issues and recommendations.
Staffing level from business area
As the project progressed, it seemed that staff in the business area were overwhelmed at times with the challenge of responding to project needs in addition to their regular tasks. Suggestion for improvement:
- Evaluate staffing level at specified times during the project to ensure appropriate staffing for a successful outcome.

D. Overall

Questions for the Overall category were:
- Initial schedule estimates were accurate.
- Product was delivered within amended schedule.
- Overall Change Control was effective.
- Technology chosen was appropriate.
- The project was a technological success.
- Customer's needs/requirements were met.
- Customer was satisfied with the product.
- Project Objectives were met.
- Business Objectives were met.

Overall Survey Rating: 1.8
(1 - Strongly Agree, 2 – Agree, 3 - Neither Agree nor Disagree, 4 – Disagree, 5 - Strongly Disagree)

Summarize Overall responses.
Comments in the Overall section cover a wide range of topics. They include:
- Although exclusion of the “guest account” functionality from scope was a difficult decision, it allowed the project to meet deadlines and go live.
- Technologically the project was a huge success.

Identify and discuss specific issue and recommendations.
Enhancements after go-live
As with many projects, potential enhancements were discovered near launch time. Of course, they could not be incorporated without jeopardizing the implementation. Suggestion:
- Retain staff members on the project for continuity in prioritizing enhancements.
E. What went well with the project?

**Summarize responses to the “What went well with the project?” section**

- Collaboration to define requirements was excellent.
- Open communication and sharing of information was key to project success.
- Team members were committed to defining and documenting requirements and business rules.
- Appropriate team members were selected for the project and coordination between them went very well.
- Exceptional team members who were committed to the success of the project.
- Collaborative approach with working sessions helped to identify business requirements and technical solutions.
- Business owners were engaged and available.
- Reporting was involved relatively early which helped identify potential issues with the designs.

F. Looking back in hindsight, what could have been improved?

**Summarize responses to the “Looking back in hindsight, what could have been improved?” section**

- Consultant should have been involved with a team and his work should have been reviewed.
- More complete and accurate functional designs were needed initially.
- Having developers write functional designs is not optimal.
- Needed definition related to supported browsers and testing using those browsers.
- Needed more buy-in and commitment from coordinate campuses.
- Additional staffing from business units could have helped with stress levels.

G. Project Implementation and Transition

**Summarize effectiveness of the Project Implementation and Transition.**

Many steps were taken and processes were created to facilitate the implementation and to support the transition from project mode to maintenance mode.

1. Training
   Training on the new Education Abroad system was performed by the ASR trainers. They began regular participation in team meetings during the build phase in order to gain a solid understand of system functionality. As a result, they were able to provide a great deal of value by bringing the users’ perspective to discussions about system functionality and business process. In addition to providing this insight, the trainers scheduled and executed multiple training sessions on all the campuses.

2. Communication
   The communication plan and delivery of the communication was handled by ASR. They identified
appropriate communication channels on the Twin Cities campus, prepared individual communications items, and scheduled time at appropriate meetings for sharing the information. In addition, they prepared a tool kit of sample communications for coordinate campus use.

3. ASR Help Line
The ASR help line was established as the first tier of support for Education Abroad. Messages to the help line are handled by the ASR trainers. If they are unable to answer questions, they consult the ASR business analysts.

4. 1-HELP
Since University system users are accustomed to contacting the technology helpline, 1-HELP, for assistance, the staff was prepared to receive questions from users. Their function was simply to route questions appropriately, not to try and resolve problems. Questions from students were directed to their education abroad center; questions from staff were directed to the ASR help line.

5. Documentation
All documentation created during the project was stored on NetFiles. This documentation includes design documents and entity relationship diagrams.

6. Transfer of enhancement requests
Scope change requests that were deferred until after implementation and non-critical fixes that were discovered during testing were added to the list of enhancements. Immediately prior to implementation, the list was transferred to ASR for assessment and prioritization.

7. Technical support by Administrative Applications and Support (AAS)
Technical support will be performed by AAS. To prepare the group, a knowledge transfer session was held during which the system was explained and previewed.

H. Performance of performing organization

Summarize effectiveness of the performing organization within the context of this project

Two important factors were critical to the success of the project. They were:

Structured methodology
In recent years, OIT has adopted structured system development methodology consisting of Analysis, Functional Design, Technical Design, Build, Test, and Deployment phases. This methodology was employed during the final 2 years of the project. Deliverables from each phase were reviewed and approved before progressing to the next phase. Using this methodology allowed all participants to have the same understanding of the goals and approaches with each phase. In addition, each phase then formed a solid foundation for the next.

Metrics for monitoring and controlling
In conjunction with structured methodology, OIT is also utilizing a standard set of earned value metrics for assessing progress towards goals. These metrics were used during the final 2 years of the project. Consistent monitoring of the metrics provided a clear picture of project status at a glance.
Earned value metrics at project end:

<table>
<thead>
<tr>
<th>Education Abroad Project</th>
<th>Earn/ Burn Ratio</th>
<th>Earned</th>
<th>Actual</th>
<th>Plan to Date</th>
<th>Budg. Var.</th>
<th>Budget</th>
<th>EAC</th>
<th>VAC</th>
<th>Actual - Plan to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Summary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(excluding IMS)</td>
<td>1.19</td>
<td>2188.00</td>
<td>1845.71</td>
<td>2188.00</td>
<td>342.29</td>
<td>2188.00</td>
<td>1845.71</td>
<td>342.29</td>
<td>-342.29</td>
</tr>
<tr>
<td><strong>Project Management</strong></td>
<td>1.01</td>
<td>229.50</td>
<td>227.63</td>
<td>229.50</td>
<td>1.88</td>
<td>229.50</td>
<td>227.63</td>
<td>1.88</td>
<td>-1.88</td>
</tr>
<tr>
<td><strong>Deliverable Based Summary</strong></td>
<td>1.21</td>
<td>1958.50</td>
<td>1618.09</td>
<td>1958.50</td>
<td>340.41</td>
<td>1958.50</td>
<td>1618.09</td>
<td>340.41</td>
<td>-340.41</td>
</tr>
<tr>
<td>Analyze</td>
<td>1.51</td>
<td>114.00</td>
<td>75.59</td>
<td>114.00</td>
<td>38.41</td>
<td>114.00</td>
<td>75.59</td>
<td>38.41</td>
<td>-38.41</td>
</tr>
<tr>
<td>Functional Design</td>
<td>0.92</td>
<td>200.00</td>
<td>216.56</td>
<td>200.00</td>
<td>-16.56</td>
<td>200.00</td>
<td>216.56</td>
<td>-16.56</td>
<td>16.56</td>
</tr>
<tr>
<td>Technical Design</td>
<td>0.82</td>
<td>328.00</td>
<td>401.24</td>
<td>328.00</td>
<td>-73.24</td>
<td>328.00</td>
<td>401.24</td>
<td>-73.24</td>
<td>73.24</td>
</tr>
<tr>
<td>Build</td>
<td>1.43</td>
<td>424.50</td>
<td>297.06</td>
<td>424.50</td>
<td>127.44</td>
<td>424.50</td>
<td>297.06</td>
<td>127.44</td>
<td>-127.44</td>
</tr>
<tr>
<td>Test</td>
<td>1.41</td>
<td>867.00</td>
<td>616.63</td>
<td>867.00</td>
<td>250.38</td>
<td>867.00</td>
<td>616.63</td>
<td>250.38</td>
<td>-250.38</td>
</tr>
<tr>
<td>Deploy</td>
<td>2.27</td>
<td>25.00</td>
<td>11.00</td>
<td>25.00</td>
<td>14.00</td>
<td>25.00</td>
<td>11.00</td>
<td>14.00</td>
<td>-14.00</td>
</tr>
</tbody>
</table>

**Explanation of metrics:**

Overall project metrics reflect the following for the 257 distinct tasks on the workplan.

<table>
<thead>
<tr>
<th>Effort comparison with Budget</th>
<th>Number</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effort = 0</td>
<td>23</td>
<td>Tasks were planned but not needed</td>
</tr>
<tr>
<td>Effort less than budget</td>
<td>158</td>
<td>Tasks were not fully understood when the plan was created and took less time than budgeted.</td>
</tr>
<tr>
<td>Effort greater than budget</td>
<td>76</td>
<td>Tasks were more complex than originally thought</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>257</td>
<td></td>
</tr>
</tbody>
</table>

**QUALITY**

**Number of defects identified during testing**

Three passes of system were performed before User Acceptance Testing. The total number of defects for all three passes is shown below. All defects were resolved or converted to enhancement requests at implementation.

<table>
<thead>
<tr>
<th>Testing Defects by Severity:</th>
<th>Number of Defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical</td>
<td>10</td>
</tr>
<tr>
<td>Major</td>
<td>48</td>
</tr>
</tbody>
</table>
### J. Specific Project Management Lessons Learned

#### Strategies and processes that led to success:

- Technical Designs for PeopleSoft functionality were reviewed by web developers and vice versa. Adding this additional review step caused additional discussion between the developer groups during which potential inconsistencies were prevented.
- A document tracker was used to track the status of the Functional Designs, Technical Designs, and Build documents. The tracker provided a single-source view of document status.
- The defect management plan and process flow were fully defined before the beginning of system testing. In addition, the Quality Center project was prepared for defect processing before system test began.
- The defect manager was an analyst who had been on the project for quite a while and, as a result, was very familiar with the planned functionality.
- Trackers for test script creation and test execution provided a clear view of the status of these tasks.
- Testing tasks were switched among testers between test passes. A fresh set of eyes may see issues that are easily overlooked when the tester has testing the same functionality for a long time.

#### Areas for potential improvement:

- Functional Design documents contained too much technical detail. Completing the technical information proved to be a distraction from obtaining clear and complete functional requirements. As a result, many of the approved Functional Design documents did not contain enough information for the creation of a Technical Design which caused a significant delay in creating the Technical Design.
- Functional Design documents should be reviewed by a developer during the approval process. Adding this step will ensure that the documents contain sufficient information for creation of the Technical Design.
- Initial estimates for Technical Designs and Builds were frequently impossible to achieve. In order to create a realistic workplan, developers should be involved in providing task estimates for Technical Designs and Builds.
- The project contained both PeopleSoft and web functionality. In this case, the web Technical Design and Build were dependent upon related PeopleSoft objects but the tasks were scheduled concurrently. Carefully consider dependencies between tasks when creating the workplan. When both PS and web are involved, consider dependencies between both sides of the system when creating the workplan.
- When creating the workplan and scheduling tasks, allow sufficient time for document review before the next step begins. For example, after an FD is complete, allow time for review before the TD task begins.
- Keep the To-Be process flow documents current as changes in future business processes are discovered during the project.
- Separate the Technical Design and Build phases into separate phases.
- Functional Design documents should be reviewed by the business representatives during the approval process. Adding this step will ensure that the needs of the business are captured correctly in the documents.
- For each meeting, meeting notes should be produced and distributed. Since it is difficult to lead the meeting and take notes, a scribe should be named for each meeting.
- Start and maintain a decision log to prevent revisiting decisions that were already made.
- Since testing should be based on the Functional Designs, allow time in the schedule for updating the FDs during the TD phase. Creation of the TD will prompt questions that should have been addressed in the FD. These new findings must be documented in the FD to provide a solid basis for testing.
- Analysts should not be loaded as fully as developers to allow them time for additional analysis that will be needed as the project progresses.
- Configuration and conversion tasks do not fit well within the methodology phases. Additional thought needs to be given to placement of these tasks within the workplan.
- Utilize deliverables from the methodology in the same way regardless of the technology being used – PeopleSoft or web.
- Since test scripts were written by many people, they lacked consistency in structure and methods for testing. Allow time in the schedule for regular reviews of the scripts by one person to gain consistency.
- When security configuration will be complex, allow sufficient time for Data Security to complete it.
- Involve report analyst/developer early in the design process. Business process and database structure decisions may make it difficult to produce necessary reports.
- When designing web applications, always consider the effect of going back to a page that was previously populated.
- Involve 1-HELP early in the development phase.