Background:

Initial Project

We have developed our project for quite a bit since we first ideate it in September. Our first ambition was to create an interactive bulletin board where the user can quickly update events on this board online. The online features allow individuals who subscribe to this board to have quick online access and rapid updates through an email or cell-phone notification system. However the problem arise where this ambition does not solve a 'usability problem' since it was an interface rather than a task. After realizing this issue, the team began to brainstorm other project possibilities until the thought of an email suite came to us.

The Email Suite

The thought of having a way to organize our current email system seems great and innovative. However, as we developed the project further, we realized that the existing system has the same interface design as it was first invented (with some added feature, but mostly the same) because it has been proven that the system and the organization works for people the same the way it does for several years now because it makes sense to its users. We started questioning what desktop really means and what it is in our digital life. We found that there is a disconnection between the physical and the digital, where desktop in digital world is the place where the user puts icons and shortcuts to their favorite folders and programs. Although the concept of the idea is the same, but the physical desktop features a more tangible objects and it is not a representation, but rather a medium that holds.

What will they use it for?

1. To View Data
2. Manage Data (Emails, RSS Posts, iCalendar events, Social Network events)
   1. Create Data
      1. based off of existing data (email reply)
      2. from scratch
   2. Send Data
   3. Edit Data
   4. Organize Data
      1. Manually Organize
         1. Add/Remove Grouping
         2. Edit Grouping
         3. Run Grouping
      2. By Conversation
   5. Hide/Erase Data
3. Managing Sources of Data
   1. Adding/Removing Data Source
   2. Organizing Data Source
4. Managing Contacts
   1. Add/Remove Contacts
   2. Edit Contact
   3. Organize Contacts
5. Managing Plugins
   1. Add/Remove Plugins
6. Manage Macros (Key/Button Shortcuts)
   1. Create/Delete macro
   2. Edit Macro
      1. Set Macro to Key Combo
      2. Change what the macro does
7. Get Help
   1. Browse Help
   2. Search Help

Figure 1: User Task List

Designs and Alternatives

After several interpretation of the same project that our group came up with, starting with XMB suite that featured three different views/screens home, bulletin, and archive. It has the advantage of giving its users a quick access to utilize the features of the system, but it has several disadvantages that does not allow its users to move the post-its (the format of which we gave to each email/RSS feed/calendar event). Then, we modified XMB into what we called Maximizing the Minimized. With this design, we kept in mind Nelson's 10 Design Heuristics and create the design on top. Again, there are several limitations that this design possesses. Most of them are re-developed and solved with the next design we came up with, which was called the Window Design V2. This became the integral part of our paper prototype. The paper prototype was a great way of testing our system and how our targeted users think of it and what are the ways we can do to make it better. After conducting a paper prototype in class, we soon realized that messages from email are usually long and therefore cannot be put into the post-it format that would only allow up to 300-400 characters. Another point that was given in the paper prototype is that our Window Design V2 was too complicated to use and does not allow a user to define the system so it works for the user. With this new insight to our design, we quickly shifted gears to other ideas that would work better given the constraint (and the challenge) of providing a medium to send and receive email that are often longer than 400 characters long. We then looked at Gmail and why it is successful and what makes it

different from other email servers (hotmail, yahoo, etc). We studied how the conversation look to Gmail plays a role in its success because now it is easier to track down the previous conversations and therefore, makes it easier for the user to reply to a message, without them having to go back and forth. The other precedent we studied was Microsoft Word's Notebook view where the user can create a file to host several different chapters, divided and identified by tabs. Looking at these applications, we aimed to incorporate all the important design features that made each application unique in to one system.
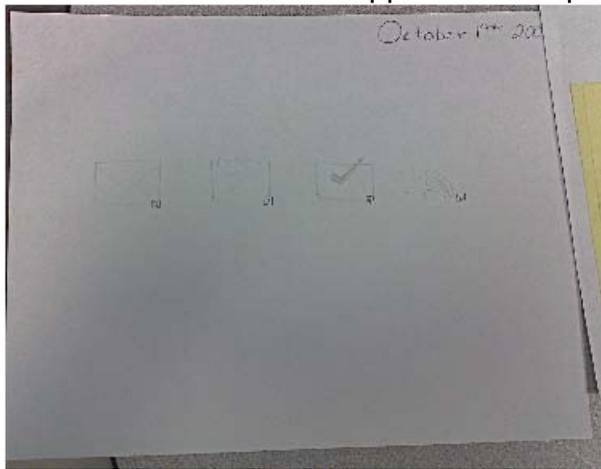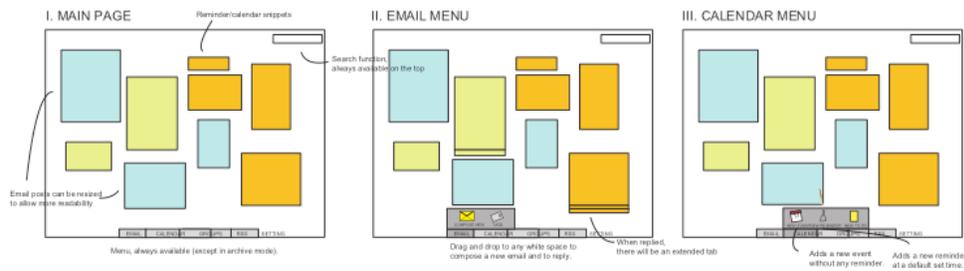

Figure 2 XMB concept

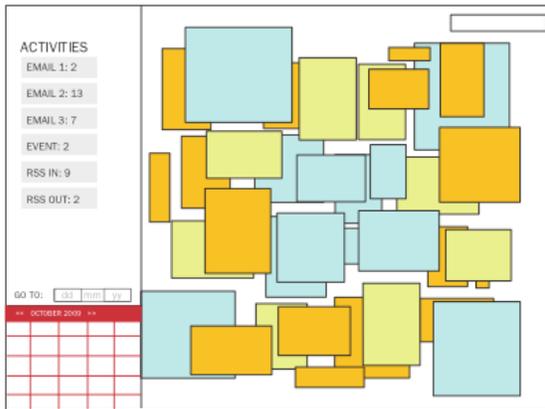Figure 3. Maximizing the minimized concept

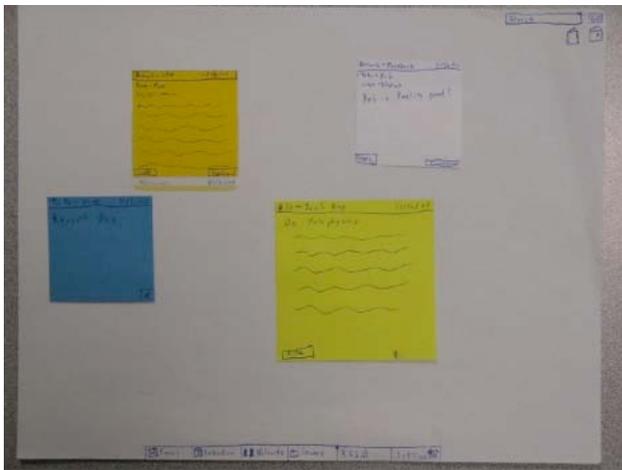**Figure 4. Calendar for Maximizing the minimized concept**

Figure 5. Windows Design V2 concept

The final iteration:

As we incorporated the precedents into our final prototype, the aspect of designing a user-defined system became clear. The Book system allows a direct metaphor that allows the user to understand the email application with ease, as well as having everything in one place (Email, RSS & Calendar) in addition to an easy maintenance of an archive program. The concept of the Book design system is that messages that have been tagged by the user will classify themselves into a pre-classified book. In that book, the user can organize the messages further by putting them into appropriate tab dividers. We found out that there are still some flaws in our final design through our own usability testing and from our tested users. However, the advantages of having this system is:

- Simplified organization by using a metaphor (books & pages)
- Easy to maintain archive through the "layer" concept
- All web resources are now in one place (the browser)
- Users can now work on multiple things at once
- Allows for a user-defined system

Due to the time concern, we would not be able to adjust and solve the problems in time of which this project is due, but we are planning to fix the problems before we publish them into our own portfolios.
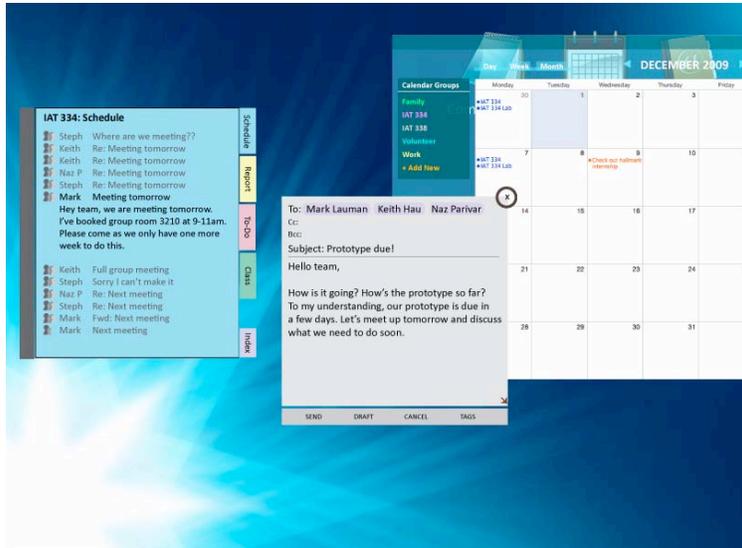

Figure 6. The Book system

The Evaluation:

Introduction

In the evaluation phase of the project, the team was divided into two sub-groups: the prototype team and the evaluation team. The prototype team was responsible to completing the prototype so it is fit for testing, and the evaluation team was responsible for constructing and orchestrating the evaluation. The methods of evaluation for the prototype consist of questionnaires and usability study.

Questionnaire:

The questionnaire is composed of two parts, the pre-test questionnaire and the post-test questionnaire. The pre-test question was set to construct a general profile of the participants in the study. The questions selected thus aimed at what type of user they are (for email applications), how often they receive emails and how much interaction they have with other interfaces and the type of devices they interact with. Assessing how often they interact with the interfaces and the type of devices they interact with allows the evaluators to see if the users are familiar with other interface design systems so they can draw adequate feed back to our design. The types of questions chosen in the pre-test questionnaire are a combination of directed question where the respondent checks a list of

what applies to them. The purpose of the directed questions allows for a quick assessment of the users.

The post-test questionnaire is composed of mostly open question where users are encourage to express their thoughts and feelings about the system that was presented to them. Even though it is more difficult to assess these questions, the number of post-test questionnaires is reasonably small and it provides a valuable feedback from the users so that the team can quickly make changes to the system. In of open-ended questions, there is a rating scale, which users are asked to rate the overall "ease of use" of the system. This rating scale allows a numeric value of what the user thinks of the system, which the evaluator can use for statistical analysis for the report.

Task list:

Two members orchestrating the usability study put the task list together. The purpose was to emphasis the Email and Book feature of the system. For task 1, the user was given a choice in various method of composing email due to the similarities between each of the sub-tasks in the list. Task 2 draws on the user's interaction with the book feature. These tasks allow the user to look through the different 'tabs' to retrieve the relevant content to accomplish the task. This demonstrates the level of organization that the book and tab feature would allow the user to use on their emails in the application. Thus it was important to observe how the user would respond when given a variety of content retrieval tasks.

Lastly, task 3 focuses on the user's interaction with the calendar feature of the system. The task selected incorporates all the capabilities the calendar feature would support such as the different views and filtering.

Task 1: Compose an email
1.1 tag an email to work and then save to draft
1.2 tag an email to IAT 334 and send email
1.3 write an email and then cancel it

Task 2:
        2.0.   Go to the Iat 334 Book
        2.1.   Look at IAT 334 schedule and find out when mark wants to meet
        2.2.   Under to do – find out how mark wants to split up the group work
        2.3.   Find out the "top 4" most recent activities in the IAT 334 book

Task 3
        3.1.   Go to Nov and Day view, find out the times for IAT 334 and location
        3.2.   In Nov, go to week view and find out the events happening on the weekend
        3.3.   Go to Oct under month view, enable the following:
                a.   Family filter
                b.   Iat 334 Filter

Testing results:

The usability testing results show an overall high completion rating for most of the tasks in the task list. Task 1 of composing email was performed successfully as well Task 3 of interacting with the calendar. Observations drawn from Task 1 and 3 was that on one occasion the user would attempt to activate filters first to then switch to month view in task 3.3, as well as the color combination and the size of the calendar created visibility issues for the user when performing the tasks. User performance on task 2 was satisfactory where task 2.1 and 2.2 achieved success or partial success in all of the users. Partial success in tasks 2.1 and 2.2 were due to the lack amount of system interactivity. such as when User 2 needed to retrieve information on about meeting time, the user was confused there were inactive links in the system and proceeded to clicking through the screen but was unable to attain the information needed to complete the task even though the user was at the correct tab. The user felt that if there was more interactivity of the system such as the user was able to expand on email links in the book, and then the user would of performed the task successfully. Task 2.3 was performed poorly in the testing. Only one user managed to achieve a "partial success" while all other users failed in performing the task. All user commented that the terminology "index" used by the system to convey the most recent activities performed by the system was misleading and the content within the "index" tab was not explicit enough to conclude it was the "recent activities" of the system.

Upon completing the testing, the user was then asked to complete the post-test questionnaire to address their thoughts about the system. The general comments concerning the improvements that could be made to the system were:
- Most of the users had difficulties with the transparency of the calendar view.
- The font was too small and the font color was not chosen correctly (darker color recommended)
- The scale was too small which makes hard to read
- Wording is not explicit enough. eg. "index", replace index by something more common

The users were also asked to give an "ease of use" rating of the system. Even from the visibility and content issues present in the system, the users gave on average a "ease of use" score of 7.4/10. The user found that the system was "fairly easy to find your way around" and liked the "appealing graphics". When the user was informed about the functionality goals that the system was set to achieve, one of the user "liked how it is customizable to the user, and sorting features of the system".

Changes and Limitations

Drawing on from the feed-backs given from the users during the testing and in the questionnaire, it appears that the Book system is a valid alternative to the present email applications and suites available on the internet. The users demonstrated ease during information retrieval tasks, viewing tasks and composing data tasks. However, the extent of which the project team can implement changes to the system is limited. The visibility issues can be solved by simple size readjustments and a different color selection. Another change can be the term that we used for the tab to represent the recent activities from "Index" to "recent activities". But the extent of functionality implications such as web-based data retrieval, customizations, sorting functionality and integration of the system are out the time frame and programming abilities present in the team members. The system is programmed by Processing due to the familiarity the team members have with the program. This programming methodology already poses limitations to the functionality of this project as it has no complex object, no ability to place a button and the programmer would have to code from a bottom level up to create something simple as a button. In the future, AJAX would be a preferred programming language to use for this project.

In conclusion, the usability test helped us to found out that our system needs some modification. For example, it seemed like most of the users had similar problem and misunderstanding about some of the task. When users were asked to find the most recent activities in the system, most of them seemed confused and took them more than usual time to complete the task; even in some cases the users gave up and were not able to complete the required task at all.

Appendix:

Testing notes:

User 1:
Task 1
1.3 (*write email and then cancel*)
   Task time - 8 seconds
   task completed with ease
   Success

Task 2:
2.1 Task time - 5 seconds
      Success
2.2 Task time 3 seconds
- User had a little stumble with trying to find 334 book. Even though user was operating in the iat 334 book, he thought he had to locate the IAT 334 book elsewhere on the screen.
  Success!
2.3) Task time - 30 seconds
- User didn't understand what "index" mean. User looked through all the tabs to find "most recent activity". However he asked if "index" was correct.

Partial success

Task 3:
        3.1.   Success,
        3.2.   **Success**
        3.3.   **Success**
        Subject completed task with ease, however the size of the window and the color patterns enables it hard for the user to specifically see what is on the screen and where to click on

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User 2:
Task 1 (3)
   Task completed 5 seconds
   Success

Task 2
2.1
- user was confused when clicked on inactive link, procceded to click through the items but did not found the correct hotlink to show the email. however the user was in the correct tab, but gave up and asked for help shortly. User felt if all the email shortcut links where activated, the user would of performed the task successfully.

partial success
2.2

    successs

2.3
- user was initially looking out of the iat 334 book. Resorted to looking back at the contents inside the Iat 334 book, clicked around the tabs gave up shortly

    Task fail

Task 3

3.1
- user was initially interacting with the small calendar on the botoom left hand side. When it was inactive, proceeded to interacting with directional buttons on top of the calendar to scroll to correct month and activated the corresponding view.
- **Success**

3.2 **success**

3.3
- user clicked on month view to go to escape from the nov week view

Success

User 3:

Task 1

1.2
- User was looking at the top of the new email windiow initially to find the 'tags'
-     the lack of feed back got the user a lttle confused when the user finished tagging

Success

Task 2

2.1
- user was looking at the calendar & address icons to find scheduling
- resorted to iat 334 book and found the schedule

Success

2.2 **Success**

2.3
- subject was confused with the wording with "index", clicked through the contents of the book, unable to complete task.

Fail

Task 3

3.1
- subject wanted to initiate the filter initially however misread "day" vew and was looking around. And eventually found it

Success

3.2. **Success**
3.3. **Success**

User 4:
Task 1
1.1
   User filled up email and clicked "X" to close
   Success

Task 2
2.1
- User is reading through the list of text under iat 334 schedule, unable to find content was in the correct tab. User felt if all the email shortcut links where activated, the user would of performed the task successfully.

   Partial success
2.2
- User found the correct tab, however didn't not think the text were interactive but indicated the correct hot link that he would proceed to click on.
- **Partial successs**

2.3
- **Fail**

Task 3
3.1
- user found the calendar to be small, had problem looking at the screen, however was trying to look with the calendar itself find information about the certain day. Resorted to activating the 'day' view.
- **Success**

3.2.
- user found the week view and completed view **Success**

3.3. **success**

User 5:
Task 1
1.1 **Success!**
1.2 **Success!**
1.3 **Success!**(thought fail was kind of bold)

Task 2
2.1
- found the meeting time right away
- **Success**

2.2
   Success
2.3

- was in "index" however went to 'schedule' to find recent activity. Index was misleading **Fail**

task 3

3.1

- user initially went to filter 334 right away, however it was not implemented so he resorted to the day view
- **Success**

3.2.

- **Success**

3.3.

- **Success**

Rating parameters:

Task success:

- User performed all the correct steps to achieve task goal

Partial success:

- User performed most of the steps, however is uncertain about the final steps and asks help, or the lack of system functionality the user was unable to perform the steps to complete task.

Task Fail:

- User was unable to perform the task, or user retires from task completion.