Group Project: Designing a Mobile Application

Group 3 – The Design of Google Tasks Mobile Application for iPhone OS

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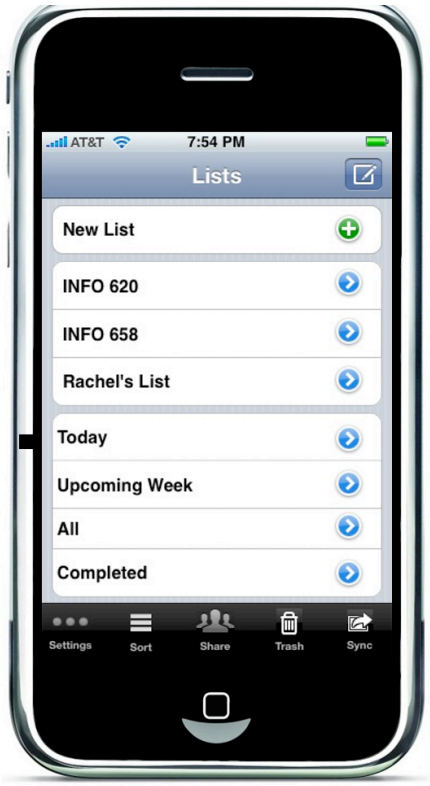

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Executive Summary

Mobile computing is more and more prevalent, and among young adults mobile use is growing particularly quickly. College students are increasingly using their mobile devices (particularly web-enabled cell phones) instead of desktop or laptop computers for communication, Internet access, note taking, collaboration, games, school related work and managing their tasks, assignments and schedules. Google has taken advantage of this opportunity to engage young adults by offering their services to and partnering with universities throughout the United States to provide a free bundle of applications (Google Mail, Google Calendar, Google Docs and Google Talk), Google Apps for Education (Google, 2012). Several of these applications are pulled together in Google Tasks, Google's task management application.

Google has already established that they are trying, as a company, to capture the loyalty of young adult users. If the company were to improve upon the somewhat lacking Google Tasks application, they would be well positioned to further root young adults through multiple inter-connected Google applications. Focusing their efforts on developing a Google Tasks application targeted to college students would not only help to capture young adult users, but could also help strengthen ties with universities via Google Apps for Education. This new mobile application would provide another service to universities, and could perhaps help guide schools as they develop mobile apps for their own student resources.

Our research shows that a significant percentage of students have web-enabled phones and that student users are interested in mobile task management applications which would allow collaboration, calendar integration, and sharing via social media. Our Google Tasks iPhone app supports all of these features and allows Google to further connect with young adult/student users by improving on and centralizing applications already available.

Problem Statement & Design Goal

A quick look around any college campus will quickly demonstrate that college students are enthusiastic users of their mobile phones. More than any other user group college students rely on mobile devices to communicate (Ransford, 2010). Many college students use their web-enabled cell phones more than desktop or laptop computers to communicate, access the Internet, play games, take notes, share information and manage their calendars (Smith, Rainie, & Zickuhr, 2011)

Like most companies Google recognizes the importance of targeting their business and services to the young, particularly college students. Google's Apps for Education was designed specifically for this user group and many United States universities have already implemented Google's Education Apps. Universities appreciate the easy integration and collaborative nature of Google services as well as cloud storage of information as well as the zero cost price tag. (Santigate, 2012). Universites have also found that their students are already familiar and integrated with many Google applications particularly Gmail (Kumar & Weinburg, 2011)

College students have unique task management needs such as organizing of tasks by course, document sharing, and social networking, and they rely on their mobile device to accomplish them. Google's current task management application is Google Tasks and a mobile version can also be accessed through a mobile browser. Our group has found that Google Tasks falls short in comparison to many popular task management resources with native mobile apps. Google Tasks can only be accessed through a mobile browser making it inconvenient for users without Internet access, and it is not integrated with other Google applications. Additionally the task management features are highly limited with several usability issues. Yet we believe Google is opportunely poised to enhance Google Tasks into a student-centered task management mobile application building on the popular usage of its other applications and ever-growing integration within universities. It would allow students to manage their tasks on their

mobile device, seamlessly sync with other applications, and share with other students. For Google it would further root users within multiple Google applications. Also by targeting college students, Google can establish habits in customers at a young age ensuring they rely on Google services in their future professional and personal lives.

Business Analysis

Google products are fast becoming the go-to, life-management tools for students in today's world. Google now manages email for over 2,000 colleges and universities, including more than 60% of top-100 universities in the United States (Google, 2012). The switch to Gmail-driven school accounts has increased storage capacities up to 70 times the amount of normal .edu accounts, giving students the much needed space to receive, access, and work with emails oriented to their personal and academic pursuits all in one place (Caplan, 2009). Additionally, "School Mail" by Google has seamlessly connected students to the other Google products that manage all of their other information and communication, such as Google Groups, Google Docs, Google Calendar, and Google Tasks.

The interoperability of Google's products creates a competitive advantage for Google because users already trust the company's name and appreciate that all of their information and needs can be met from within one suite of tools. While Google has released mobile apps for its other productivity tools such as Mail, Docs, and Calendar, the company's mobile solution for task management remains a bare-bones stand-alone mobile site with no connectivity to other Google mobile sites or apps.

As Houston (2010) points out, Google Tasks is the most efficient tool for Google users for managing lists of action items and other listed information. This is because Google users prefer to have all their information as easily accessible as possible via links between all the Google product's pages. Having all of their information linked like this encourages the user to

review his or her to-do lists more frequently, while also creating a path of least effort to other information that will inform and determine when a user can complete a task--such as calendar events, unfinished assignments in Google Docs, or last minute obligations being communicated in an email. The problem is that current mobile users of Google Tasks cannot enjoy the same seamless integration that users of the Google websites do. Google Task's mobile site stands on its own with only the most basic functionality of a task list creator and no links to other Google mobile sites or apps.

As the popularity of Google products begins to grow across campuses, so too does the popularity of smartphones and mobile visitation. More than 60% of students now report that they own smartphones (PRWEB, 2012), and with the vast majority of them using these phones to access Google applications Google needs to stay current with trends in students' mobile activity to continue creating apps that users will want to choose over competing applications. Google Tasks is a tool that provides particular benefits to students keeping track of endless assignments and personal tasks. If Google intends to keep its users' loyalties, the company needs to provide its mobile users with the same level of efficiency and seamlessness as it provides its websites' visitors.

Though Google smartphones would seem to be the clear choice for beginning this move toward greater mobile functionality, leading manufacturers of Google phones have seen declines in sales as great as 18% from the beginning of 2011. iPhones sales have yet to reach past 25% of the smartphones market; however, their growth has remained consistent, increasing 4% from the beginning to the end of 2011 (Reuters, 2012). With recent additions to the iPhone such as a Gmail application, Google Contacts syncing, and Google Calendar syncing, a Google Tasks application could be integrated very easily and successfully onto the iOS platform.

Competitive Analysis

There are many popular task management mobile applications geared towards students currently on the market. Some of these competitors include GroupTable, Soshiku, iStudiez, and iHomework. GroupTable is a software program specifically aimed towards students trying to coordinate group project collaboration. Professors can implement GroupTable to coordinate and supervise group projects among their students (GroupTable, 2011). Soshiku is a task management website directly targeted towards high school and college students. It organizes assignments based on course. With each assignment users can save notes, manage tasks, attach files, and share messages and tasks with partners. Chatting among partners is a capability as well as email updates (Soshiku, 2011).

iStudiez Pro and iHomework are both task management applications for students available on Apple devices. iStudiez Pro is mostly focused on task management and schedule planning capabilities but includes features such as grade tracking, cloud sync, an interactive calendar, and notifications. Tasks may be organized by course, date, and priority. It also allows for the storage of professors' contact information and has holiday schedule options for winter or summer breaks (iStudiez, 2011). The main function of iHomework is as a schedule planner to allow students to keep track of all their courses days and times. It also helps organize homework and other important tasks. Users can track their grades and sync the information with other Apple devices (Pilone, n.d.).

Strengths/Weakness:

The main limitations of GroupTable are that it is not geared toward individual student task management, it is not mobile, and it is expensive. Yet it is a high-powered collaboration tool that has meaningful application for students and teachers within the classroom. Its most important functionality is the sharing and tracking of documents, notes, conversations, and group tasks.

Unlike the others Soshiku is a free application, however it does not have a mobile application. Instead it provides a mobile optimized website which eliminates the need to sync information between devices. Like GroupTable, Soshiku's main strength is project collaboration and sharing among users. Its main disadvantage is the isolation of the website; information is not easily integrated with other applications such as iCal or Gmail.

iStudiez Pro is not a free application, and it is only available for the Mac, iPhone, and iPad though information is conveniently updated on all devices through iCloud. Though it provides significant task management and schedule planning functionalities, it is not geared towards group projects collaboration or sharing.

iHomework is also not a free application and is only available for Apple devices. Its main disadvantage is its lack of iCloud support. Devices must be plugged in to sync. Like iStudiez Pro it has easy to use task and schedule managing capabilities, and its main advantage is that tasks can determined by type of assignment (test, paper, homework), which eliminates the need for excessive typing on a mobile device.

While there are many successful student-centered task management applications on the market, Google has the capabilities to improve upon both the strengths and weakness of many of them. The main problem with all of these task management and schedule planning apps is that users must have the time and will to constantly update (Rodriguez, 2011). Google has a strategic advantage in this case because students are already integrated within many other Google applications thus eliminating the need for multiple resources to update and refer to. Google can seamlessly integrate and sync all of these resources promoting interoperability and facilitating productivity. Additionally the more students using multiple Google applications the easier it would be for them to collaborate and share on group projects through Google Tasks. A

final competitive advantage is that a mobile Google Tasks application, like Google's other application, would be freely available for all users.

User Research

We decided to design a brief 8-question survey that would be administered online and in person. We felt that this would be the most effective way to reach a wide cross-section of our target audience: students. 30% of respondents took the survey online, and 70% were administered paper copies of the survey. Of the 70% that completed paper copies of the survey, 65% were briefly interviewed regarding their responses. The full description of the survey methodology and an in depth analysis of the results can be found in Appendix B. 75% of respondents currently use a smart phone, with 41% of respondents reporting use of iPhones, and 30% reporting use of phones with the Android operating system. This definitely supported our findings that the iPhone is the prevalent smart phone used by students and confirmed our decision to design for Apple's iOS.

Respondents may not have initially understood what task management applications are. 66% reported that they do not use task management applications, but further inquiry of 70% of those respondents led to clarification of the fact that they did in fact use an online calendar, notes, reminder system or "actual" task management application (ie. Todoist or Remember the Milk) to help them manage their schedule and assignments.

Our group decided that since features and users rankings of said features would play such a large role in our design decisions, we would ask respondents to rate the importance of key task management application features. Two of the features we considered for our original design were not present in any other task management applications: access to/integration with Blackboard and student portal. 54% of respondents reported accessing Blackboard and/or their campus's student portal from their smart phones, and a further 61% of respondents ranked

integration with Blackboard as somewhat important or very important, and 57% ranked integration with the a student portal as somewhat or very important (see Chart 1).

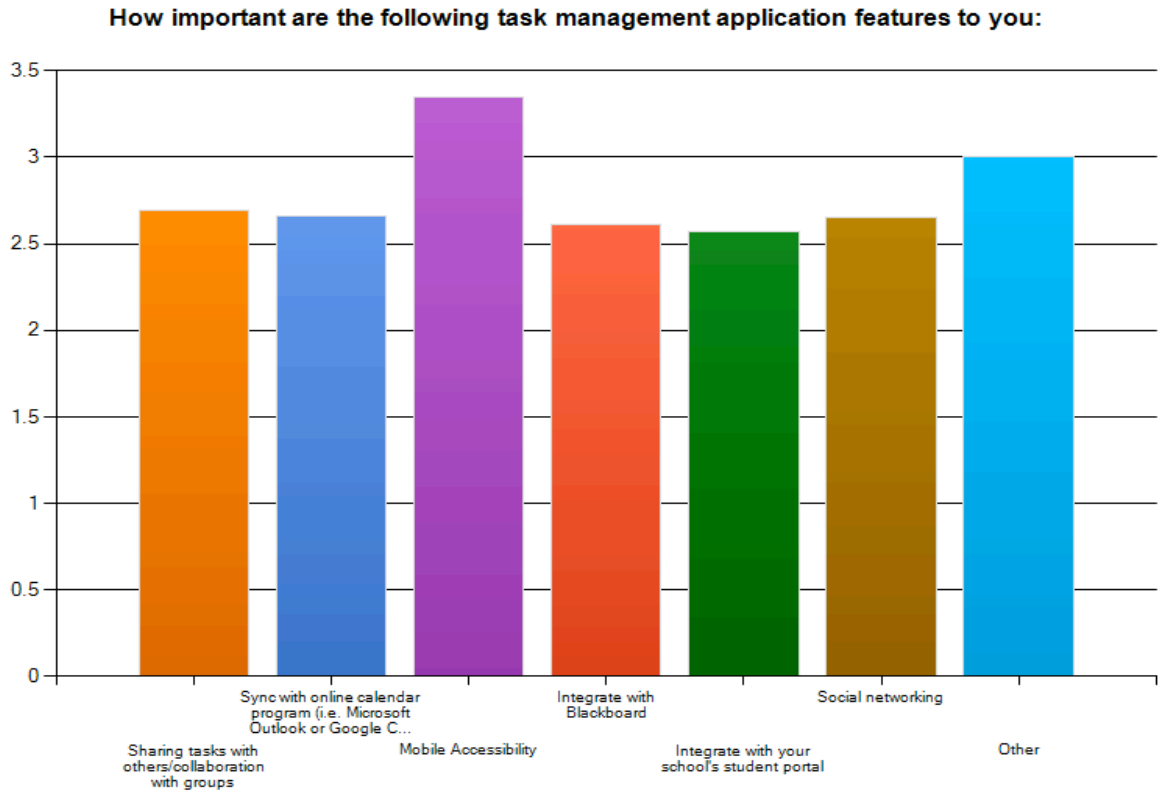


Chart 1

It is clear from the responses to this final question that while the most important feature of a task management system is mobile accessibility (86%), other features such as calendar syncing, Blackboard and student portal integration and sharing tasks with groups are all fairly close in importance, with at least 57% of respondents ranking each of those four features as being somewhat or very important (see Chart 1). The results of this survey were very instrumental in informing and supporting our design decisions.

IA & Design Strategy & Approach

Our design strategy and approach was based on 4 key factors: 1) The findings derived from our competitive, business, and user research 2) Best practices in information architecture

and design 3) Analysis and criticism of the current Google Task mobile site and 4) Our desire to integrate Google Tasks with other services and tools that help students to manage their daily lives.

The current Google Tasks mobile site is a bare-bones task management tool that makes creating new lists and tasks an unnecessarily long chore for users. After navigating to the site a screen comes up which defaults to the task list that was first created by the user (i.e. the least recent list). If a user would like to work with a different list, that user must press the "All lists" button to do so. Opening up to this interior page is disorienting and time-consuming for users who want to view or locate a different list. To improve the original site, we designed a "logical organization" (Ding & Lin, 2010, p. 41) system of hierarchy with our application opening directly to the lists page (shown below in Fig. 1) to avoid confusion and unnecessary clicks.

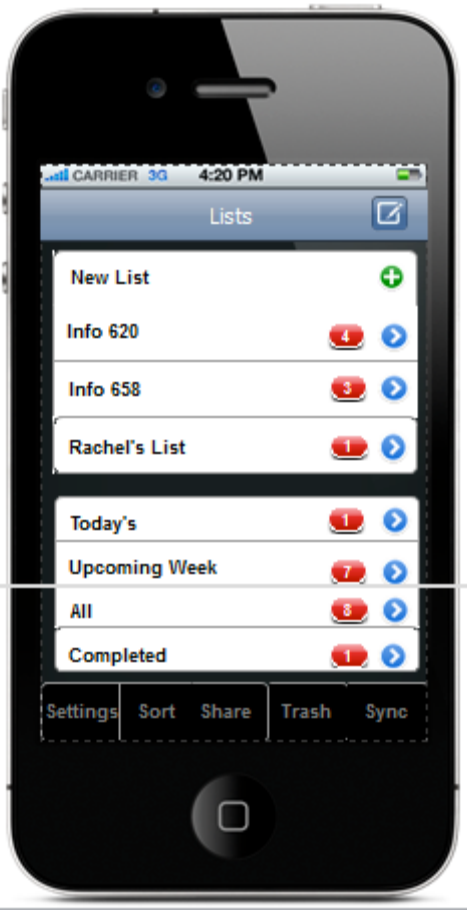


Figure 1

Our design is more intuitive and requires less effort on the part of the user because all the user must do is click on the list the task needs to be added to. In the current mobile site, if a user wants to add a task to a specific list that is not the list that first loads, that user needs to perform the extra step of navigating back to all lists first, then choose the correct list.

Our mobile application seeks also improves the pace with which a user can complete the task of adding a new action item to a to-do list. In the current Google Tasks mobile site after clicking the "+ New task," a text field drops down from the button's row for the user to start typing out the new task. Pressing "enter" automatically enters the new task into the list of already existing tasks below, and it is only after the task has been entered into the list that a user can then click in to edit that task requiring multiple steps to create a task and include task details. In comparison we sought to "design for efficiency" (Ding & Lin, 2010, p. 76) and considered Zipf's Law on user behavior (Ding & Lin, 2010, p.58) identifying that if it requires an extra step to include task details, users will not bother. As a result in our mobile application when a user presses the "+ New task" button a new page loads that allows that user to assign and manage all details of a task all in one place at the same time. Unlike the current mobile site, which only allows users to add notes and due dates to tasks, our application adds features such as emailing tasks, attaching documents to tasks, sharing tasks to social networking sites, and setting reminders. Once the user is done adding these details to the new task, he or she can navigate back to a task's list or the list of all task lists by pressing the "Lists" button that remains stationary, in the global navigation bar along the bottom of the screen.

The global navigation bar consists of five features that can be applied to lists and tasks throughout of the app. We limited the navigation bar to five components to achieve our goal of efficiency and productivity. Our analysis of other task management applications revealed that providing users with too many functions can actually lead to decreased productivity. We also limited the global navigation to no more than five to adhere to Fitt's Law on the ideal size and

location of a target area (Ding & Lin, 2010, p. 73). This is particularly important in the touch interface of the iPhone. Well-known iPhone symbols of affordance represent each navigational element with added text labels for new user comprehension. Other affordance symbols applied consistently throughout the application are plus buttons to add lists and tasks, blue arrows buttons to continue to a hierarchically interior page, and red edit symbols placed next to elements that can be edited (shown below in Fig. 2).

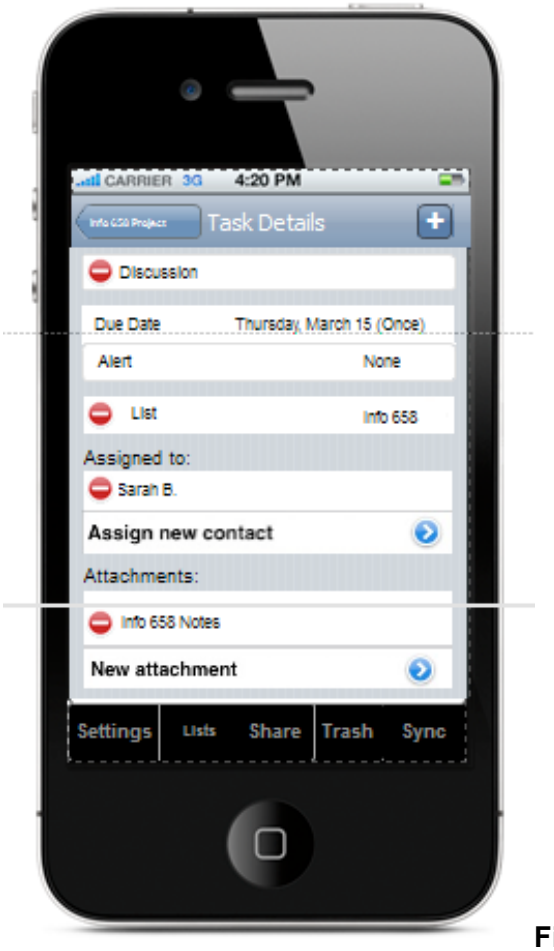


Figure 2

The design also accounts for error prevention or easy reversal of user mistakes (Ding & Lin, 2010, p, 77). When tapping the red edit symbol a notice rises from the button giving users the option to edit, delete, or cancel. This added step ensures users cannot accidentally delete or edit important information. Additionally the option to cancel is always provided in the upper right

hand corner when creating new elements such as lists or tasks or adding contacts and documents (shown below in Fig. 3).

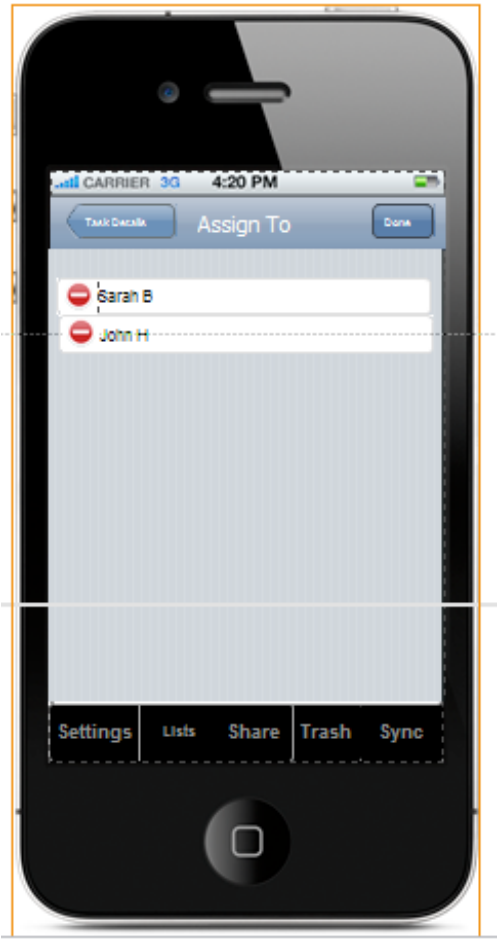


Figure 3

This is complemented by a consistent local navigation system located in the header throughout the application, which communicates to users where they are and where they can go from each page (shown above in Fig. 2).

Key Features, Capabilities and Business Functionalities

Going into the development of a Google Tasks mobile application for the iPhone our team had many hopes. We wanted to bring the functionalities of Google Tasks that Google users have come to expect of the Internet application to the mobile experience, and which the Google Tasks mobile site has yet to include. Targeting the student population specifically, we

also wanted to begin by creating a native application for an operating system, which has proven largely popular among students, which is the iPhone's iOS operating system. With the recent addition of a native Gmail application to the iPhone App Store's ever-growing portfolio of mobile applications, now was the best time to create a native Google Tasks application because integration between these and other preexisting Google applications is easier than ever.

The current Google Tasks mobile site remains very limited in order to serve the needs of users on all types of phones with varying screen sizes and capabilities. Through this site users are only able to perform the most basic of tasks. Our application widens the scope of what the user can do by syncing and integrating with the other Google applications on the users' smartphones, allowing users to email tasks, save emails as tasks, join Google Groups to work on tasks together or share tasks, and upload documents as attachments to tasks from Google Docs. In addition to the ease of synchronicity with other Google applications on one's iPhone, users can also share tasks to social networking sites such as Twitter and Facebook with our application (shown below in Fig. 4).

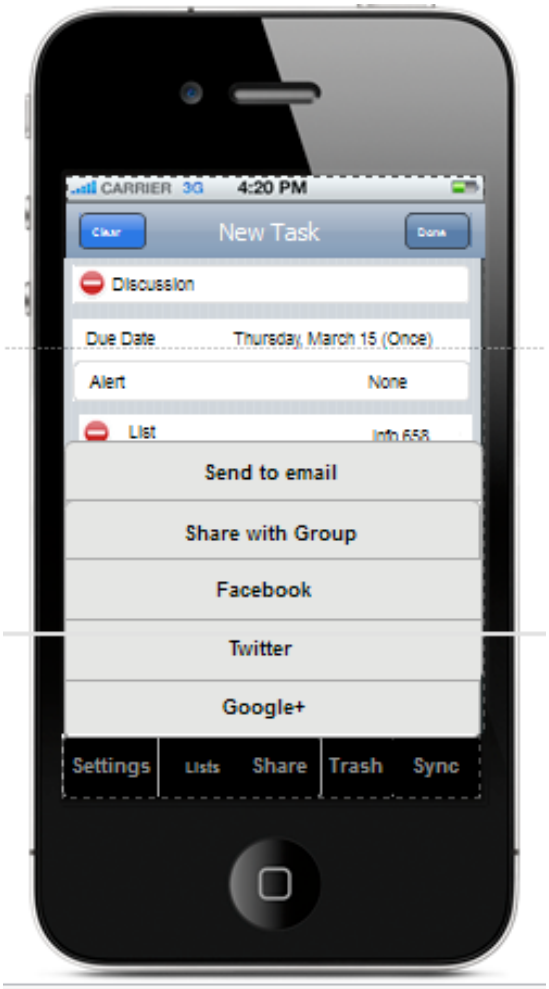


Figure 4

The communication the iOS software provides between the Google Tasks app and the Twitter or Facebook app enhances process efficiency by eliminating the need to open new tabs in a mobile browser, copy and paste, or login between sites. Our application also allows users to assign their tasks to other contacts who may be working together to complete a task or list of tasks. Users can choose contacts from their Gmail application or the Contacts application built into the iPhone.

The basic functions of the mobile and Internet Google Tasks sites still exist on our application. Users are able to create, edit, and classify their to-do lists and the tasks on those lists with due dates or category labels; however additional features, such as push notifications (reminders) and sortable list views, have been added to our application for increased

productivity on the part of the user. Like all Google tools, our application is free. Users must have a Google email account to access and use the application; however anyone is able to create a Google email account from the Gmail website, which our application will link them to if they are not already members.

Visual Illustrations

Our visual illustrations are the product of the user-centered, iterative, and creative efforts of all of our team members. Our user research was the main influence on our designs, which seek to bring the functionalities of Google Tasks' online, desktop application to the mobile experience. As avid Google users, ourselves, we were able to create deliverables for a mobile application that resembles what Google users have come to expect of Google products and that will be intuitive for them. With the development of each wireframe, we were able to visualize and capture the next step to creating the following wireframes (Appendix G), and through multiple revisions of these wireframes we were able to focus more and more on how a user will interact with this application, further improving our concept and replicating these ideas in our design.

Following the completion of our wireframes, we were able to make the final revisions to our blueprint (Appendix D) and workflow diagram (Appendix E), which until then had only been rough drafts of how we envisioned our mobile application to work. Our pixel perfect designs (Appendix H) are also the result of the revised concepts of our wireframes. These screens exhibit how our application successfully integrates the look and feel of a Google application with the look and feel of the iPhone's iOS software.

What we learned practicing UCD

In developing our Google Tasks mobile app, we sought to apply a user centered design process by researching how students implement task management with mobile devices,

identifying our users' requirements and business goals, and applying IA design principles to create an ideal design solution for both users and the organization. Our business analysis helped us to define how students are using mobile devices and how universities are incorporating Google services within their applications. We also researched the features and user-reviews of other student-centered task management apps and analyzed the current Google Tasks mobile website for existing design strengths and weaknesses.

While our background research gave us underlying goals and structure, our user research really fueled our design strategy. We created a user survey and distributed it among Drexel students to generate data on users' preferred mobile devices, task management behavior, and task management needs. Our research helped us learn what our users really wanted not want we thought they might want or what our competitors were including such as schedule planning features. We were also able to combine user research with our business analysis to further support and guide our decisions. For example our business research showed and user research confirmed that students' are highly reliant on their mobile device preferring the iPhone to others. This strengthened our decision to design for the iPhone. The research also demonstrated that students want to sync and share their task information. This further supported our research that Google has an advantage over other tasks apps because of the seamless incorporation among its multiple services. However we also encountered conflicts between user needs and business needs. Our survey indicated that students would like a task management app that integrated with Blackboard features however many users also expressed their current frustration with Blackboard's lack of or poor mobile functionality. We realized that integrating a notoriously problematic outside party could negatively impact the usability and reputation of our application. We decided that Blackboard integration could be a feature we reserved for future re-evaluation and possible inclusion in a later iteration. With this experience we learned the importance of integrating business needs into user-centered principles. This

research helped us to identify the boundaries of system allowing us to define the key app features.

Once we had identified our key app features we created use cases. Creating and writing use cases helped us to understand the mindset and workflow of our users encouraging us to focus on the user while we designed our blueprints and wireframes. Implementing key user-centered principles such as Fitt's Law, the Principle of Least Effort, affordance design, and error prevention also allowed us to construct a design that was continually focused on usability.

The final stage in our UCD learning experience was our multiple iteration and feedback process. Sharing our designs among each other simulated further user testing and provided all of us the opportunity to evaluate what worked and what we lacked in our designs. While it was challenging conducting this process in an online group environment, we developed an open and consistent method of communication throughout the project that facilitated our collaborative work. Through this project we gained first-hand experience in the user-centered design process learning and witnessing the vital role it plays in directing the development of a mobile application.

References

Caplan, J. (2009, August 14). Google and Microsoft: the battle over college e-mail. *TIME*. Retrieved from http://www.time.com/time/business/article/0,8599,1915112,00.html

Ding, W., & Lin, X. (2010). *Information architecture: The design and integration of information spaces.* San Rafael, Calif.: Morgan & Claypool Publishers.

Google. (2012) Google apps for education. Retrieved from http://www.google.com/apps/intl/en/edu/

GroupTable. (2011). GroupTable. Retrieved from https://www.grouptable.com/

Houston, N. (2010, April 1). All things Google Tasks. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/blogs/profhacker/all-things-google-tasks/23081

iStudiez. (2011). iStudiezPro. Retrieved from http://istudentpro.com/index.html

Kumar, G.S., & Weinburg, Z.A.Y. (2011, June 19). Harvard college to switch email provider to Gmail. *The Harvard Crimson.* Retrieved from http://www.thecrimson.com/article/2011/7/19/email-gmail-harvard-students/

Pilone, P. (N.D.) iHomework. Retrieved from http://ihomework.pilone.org/iOS.html

Ransford, M. (2010, June 15). Smart phones displace computers for more college students. Retrieved from http://www.bsu.edu/news/article/0,1370,7273-850-%0964351,00.html

Reuters. (2012, February 15). Forecaster sees iPhone market share slipping. *Chicago Tribune*. Retrieved from http://www.chicagotribune.com/business/breaking/chi-forecaster-sees-iphone-market-share-slipping-20120215,0,5926479.story

Rodriguez, J. (2011, June 22). iHomework: A task manager for students. Appstorm. Retrieved from http://mac.appstorm.net/reviews/productivity-review/ihomework-a-task-manager-for-students

PRWEB (2012, February 21). Students want more value from textbooks and at lower prices, says new research from BISG. Retrieved from http://www.prweb.com/releases/prweb2012/2/prweb9212511.htm

Santigate, A. (2012, January 30). University to switch to Gmail. *The Statesman.* Retrieved from http://www.sbstatesman.com/university-to-switch-to-gmail786

Smith, A., Rainie, L. & Zickuhr, K. (2011, Jul 19). College students and technology. Retrieved from http://pewinternet.org/Reports/2011/College-students-and-technology.aspx

Soshiku. (2011). Soshiku. Retrieved from http://soshiku.com/

Appendix A - Use Cases

Organizing/Labeling lists, tasks, and subtasks

A user is currently working a part-time job, completing an internship, and taking three graduate classes. She is also planning her wedding. She has a lot of tasks on her to-do list and needs a way to organize them into job specific-categories. She relies on the Google Tasks app on her iPhone to help organize her personal, professional, and school activities. She finds it convenient to have her tasks on her mobile device because it is always with her. She can refer to it and update it at anytime. She creates multiple lists with tasks. It is easy for her to do because it is the same folder naming system she uses to sort her email in Gmail. For further organization she even creates some sub-tasks by tapping the blue plus button on the Task Details page. On the list with subtasks it is easy for her to identify which are main and which are sub tasks because of the indented display. Google Tasks mobile app is also useful for her because she can label her tasks with a due date, Gmail contact, or Google document. This user finds it easier to manage and complete her tasks when they are organized with her personal naming system, linked to her other Google applications, and can be accessed immediately on her iPhone.

Reminders

A user is constantly forgetting to begin and submit his class assignments on time. He inputs the due dates on his calendar but then forgets to look at it consistently. Like many students, he uses an iPhone and spends a lot of time on it particularly playing games. He then began using Google tasks on his iPhone. By tapping the Alert button on the task's details page and choosing a date and time from the calendar wheel, he was able to add reminders to all of his tasks alerting him to assignment due dates. Now when he is busy playing games on his iPhone, he receives a push notification from Google Tasks reminding him that his paper is due tomorrow and his rent should be paid today. The reminders function on Google Tasks mobile app helps this user stay more organized.

Sharing a task on a social networking site:

A user is getting ready to graduate from an undergraduate university. On top of final exams and papers she also has a lot of miscellaneous errands to run to make sure everything is in order for her family's arrival, as well as the ceremony itself. For years she has relied on her Google Tasks application on her iPhone to organize her tasks by priority and by date. She makes especially effective use of the reminders feature in the app, because she knows how easy it is to forget everything she needs to get done. Three days before her graduation ceremony she hears her reminder tone going off in her purse. Getting her phone out, she sees a push notification on her home screen saying she needs to pick up her graduation cap and gown by 5pm. She can't believe that she forgot this important task, and she wonders if any of her friends have forgotten too. Unlocking her home screen with the notification still up, her iPhone takes her directly into the Google Tasks application, where the task and its all features are waiting for her to review. Hitting the "Share" button located in the navigation bar below the task's other details, a list of options rises from the button of the screen. The user hits the Facebook, Twitter, and Google+ labels each is highlighted after she presses it. She then hits the "Share" button again, and her task is posted to all her social sites' timelines. Google Tasks' social media sharing feature is an effective way for this user to share important tasks that might be beneficial for others to remember as well.

Syncing Tasks with Google Calendar:

A user works as a teaching assistant as a requirement of his PhD program. His job entails both writing lectures and running research-related errands for his professors. He uses Google Calendar to keep track of the course and lecture dates and times, etc., but he uses Google Tasks to make lists of all the chores and errands he has to complete for his professors. He likes that he can work in Google Tasks separately from Google Calendar because all of the additional

Calendar details such as location, time, guest list, status, privacy, and description do not get in the way of him reviewing his to-do lists. When he is working in Google Calendar, however, he likes to be able to see his tasks alongside his event information, because it gives him an added sense of security to be able to visually reference the completed tasks (which show up with a line through them) with the impending Calendar event. Next week he has a lecture to plan, and he needs to remember to print 35 copies of an article to hand out. Opening his Tasks app he clicks on "+" to create a new task which is located prominently in the upper right-hand corner. A new page opens with the cursor already blinking in the text field at the top of the page. He types out "Print 35 copies of Derrida PDF" then uses his finger to minimize his phone's keypad and reveal the "set date" button. Clicking the "set date" button the usual iOS date menu comes up. After inputting the date, he looks to the lower right corner of the application page where a sync button labeled with the universal "sync" symbol is located. He clicks this button and his task is sent directly to his Google Calendar. The sync feature in his Google Tasks application enables him to feel secure that he is doing his job to the best of his ability.

Sharing with members of a group

Michael is working on a group project for his systems analysis and design class. There are 3 other students in the group (Jen and Dave) and they are using Google Tasks to sync their meeting times and the tracking of their project deliverables. Michael is responsible for the working on the case diagram for the project and has developed a list of tasks and sub tasks that he needs to accomplish. He wants to assign a new task he has just created (creating the Vizio diagram) to Jen. He taps on the link for the TCM chart and a new screen with the CM task information. He taps on the "Share" button located in the navigation bar directly below the task's other details. A list of options rises from the bottom of the page. Michael taps on the option to "Share with Group." He is lead to a page with a list of group members. Michael selects Jen and her Google Tasks list is updated with the new task. Jennifer receives a pop up

message on her iPhone screen (because she allows push notifications) that Michael has shared a new task with her. She then opens up her Google Tasks app and can view/edit the new task and its associated information. Any changes that Jen makes to the task information will also be synced with Michael's task list the next time his Google Tasks app syncs.

Appendix B – User Survey

We decided that in order to better understand our target groups' (students) user preferences it was most effective to develop a survey. The assessment tool consisted of 8 questions addressing demographic (three questions), current usage of mobile devices and task management applications (four questions), and user preferences (one question). Data was collected over a period of 7 days and the survey was distributed several ways. The survey was shared on Facebook, posted to the team's Info 658 class discussion board, and distributed in person to randomly selected Drexel students in the university library and student center (over the course of 3 days). In total 73 responses were collected 25 online and 48 from students on Drexel's campus. Demographic information was recorded as follows:

- 60% of respondents were ages 18-25; 25% ages 26 – 34, 12% ages 35 – 49 and 3% ages 50 – 64.
- 42% of respondents were male; 51% female (6% did not respond). Gender and age represent the general population (of students).
- 66% of respondents were undergraduate students; 33% were undergraduate students

The first current usage question addressed which smart phone operating system respondents were using (Fig. 1):

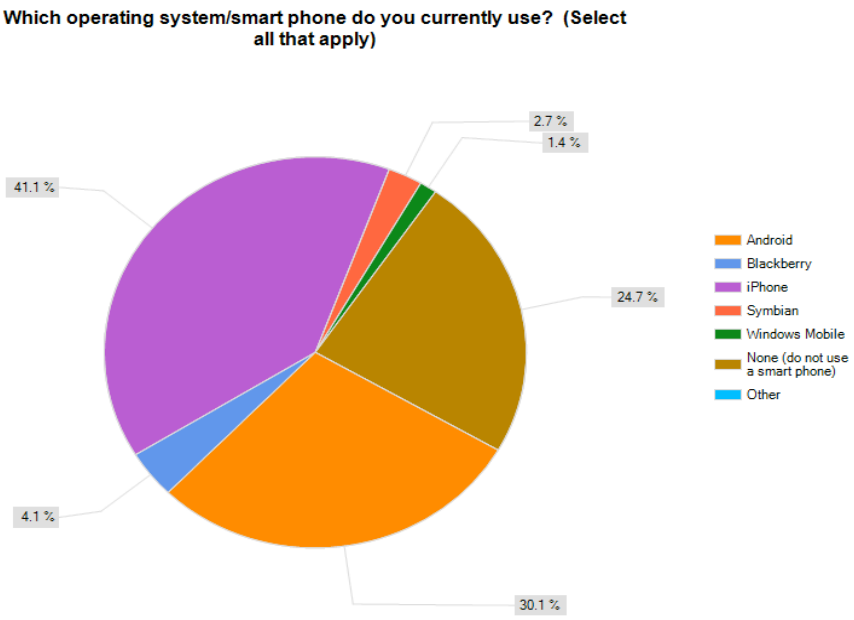


Figure 1

The most commonly used OS was iPhone's iOS with Android the second most used operating system. 25% of respondents reported not using a smart phone and 8% reported using either Symbian, Windows mobile or another operating system. From these results, it is clear that the iPhone iOS is the most used operating system, however, Android continues to gain in popularity and there are still several other mobile operating systems. In order to be competitive, companies must develop applications for a variety of devices. We chose to develop our application for the iPhone, given its predominant usage among our target group.

We also asked respondents about their use of task management applications to support their school-related tasks, projects and schedules (Fig. 2):

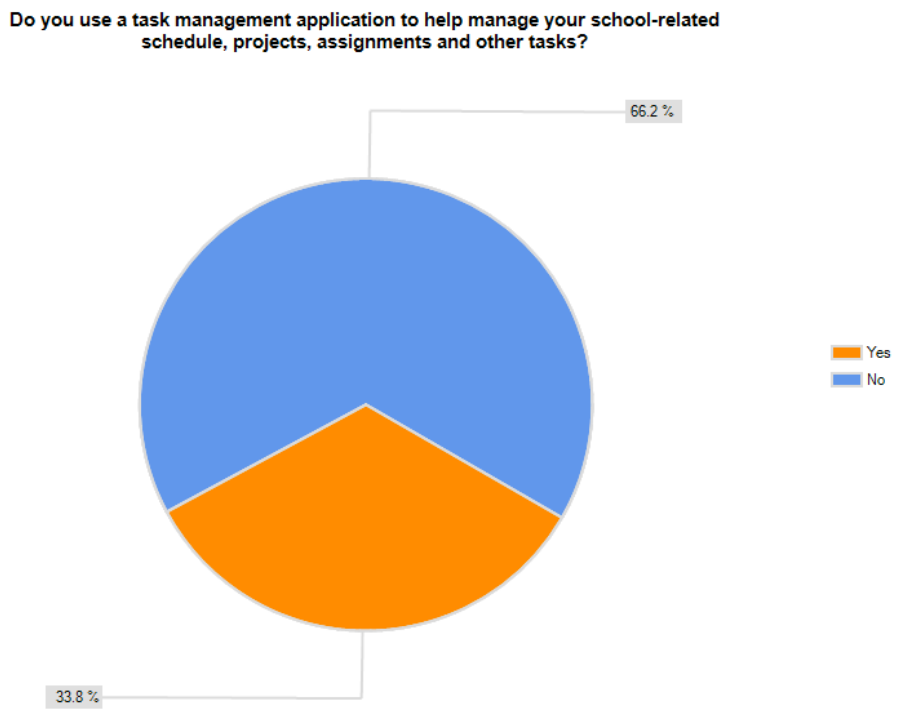


Figure 2

34% of respondents reported using some sort of a task management application for school. As previously noted, respondents may not have initially understood what task management applications are, and it was decided that the group member distributing surveys to students on campus would conduct further (informal) inquiry of respondents to probe for further information. As a result of this further probing, 70% of on campus respondents clarification the fact that they did in fact use an online calendar, note taking or reminder application, or “formal” task management application (ie. Todoist or Remember the Milk) to help them manage their schedule and assignments. The team feels, that as a result of this finding, combined with our business and competitive research, that the addition of a Google Tasks application for the Apple App Store would increase mobile use of Google Tasks and provide further support for students.

When the team initially discussed and evaluated possible features for the Google Tasks application, we considered features that would allow students to either sync with or collaborate

with Blackboard and their campus' student portal. Our question about student use of Blackboard and the student portal via their smartphones provided the following results (Fig. 3):

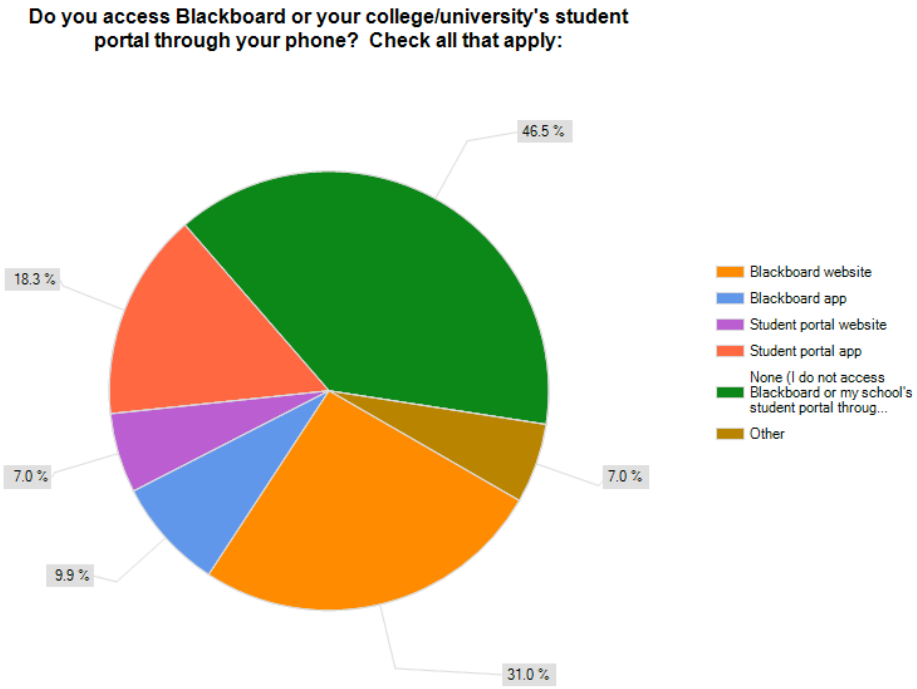


Figure 3

While more than 50% of respondents reported accessing the Blackboard website or app and/or the student portal website or app, most students also verbally expressed frustration with accessing both sites and applications via their phone. Our respondents were, for the most part, Drexel students and their expressed frustration had to do with lack of (mobile) functionality of both websites and applications. This finding caused us to revisit the inclusion of student portal and Blackboard access features in the Google Tasks App. These features would rely too heavily on an outside party's application/mobile site (in this case, a university's student portal mobile site or native app and Blackboard's mobile site and native application). If the outside party does not maintain a useful mobile site or application, this could lead to frustration on the part of Google Tasks users (as an example, Drexel does not appear to support the Blackboard app for on campus students – only online students). We also considered that given Google's

increasingly close ties with the higher education community, it might not be prudent to introduce a potentially volatile (disappointing and frustrating for users) feature. Our group decided that there was too much variance to attempt to include this feature in our design. This might be a feature to explore including in future iterations of the application. Perhaps Google's ties to universities could help foster improvements and advances in students' mobile access to university/academic resources.

The final question addressed was users preferences for task management features. Respondents were asked to rank the importance of: sharing tasks with other users, syncing with online calendars, mobile accessibility, integration with Blackboard and student portal and, finally, social networking (Fig. 4).

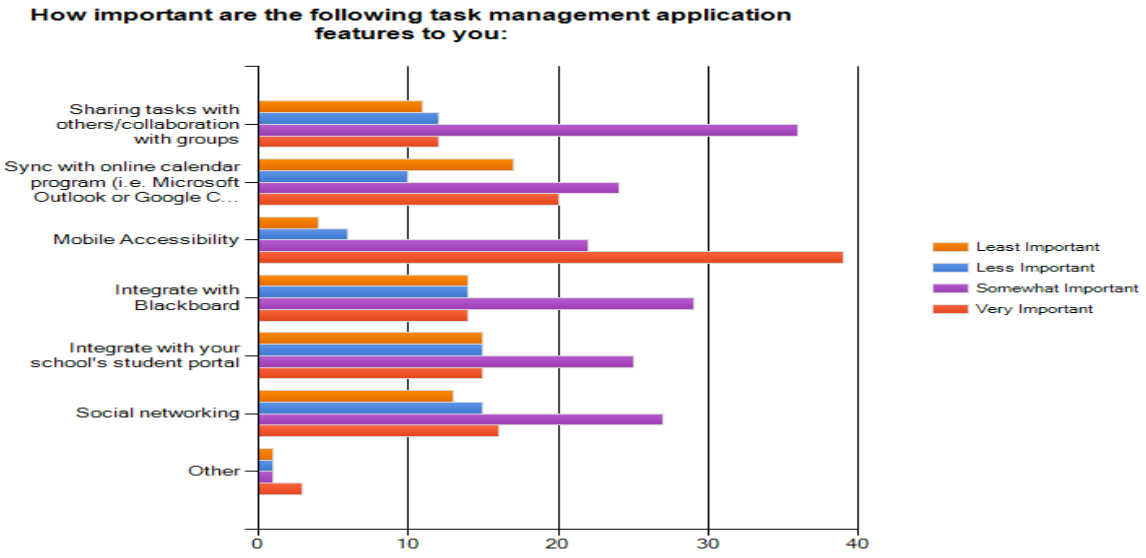


Figure 4

While responses varied, there were clear preferences for several features. The mobile feature, unsurprisingly, was the most preferred feature followed by sharing tasks with others/group collaboration, Blackboard integration, social networking and finally integration with a student portal. Our reasons for not including the Blackboard and student portal feature(s) in our design have already been discussed, but the respondents' ranking of preferences was very

instrumental in determining our design. Our initial design put more emphasis on the calendar/scheduling feature but as a result of student's ranking of this feature we decided to simply include a sync button in the horizontal menu bar (syncing will also occur up sign in to the application).

Appendix C - Current Google Tasks Mobile Site Analysis:

The current Google Tasks mobile site falls short of exhibiting many basic IA and design principles, especially involving Fitt's Law and the Principle of Least Effort. After logging into the site, the user is brought to a default list, which is normally the first list the user ever created (Fig. 1). If a user would like to work with a different list, that user must press the "All lists" button to do so. This will take the user to the page with all the lists (Fig. 2), where the only feature available for editing lists is deleting them (Fig. 3).

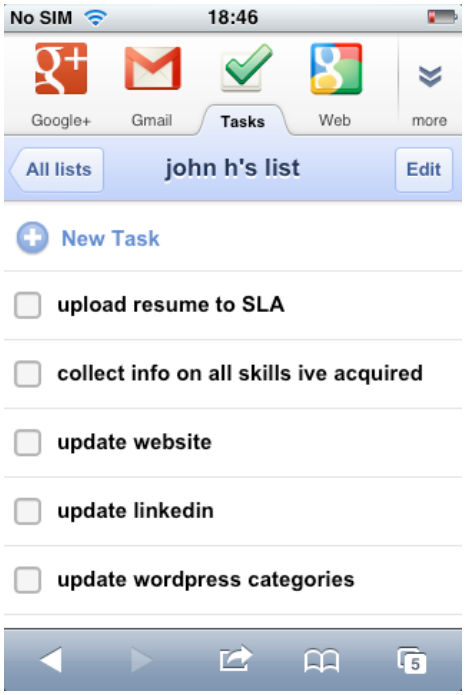


Figure 1

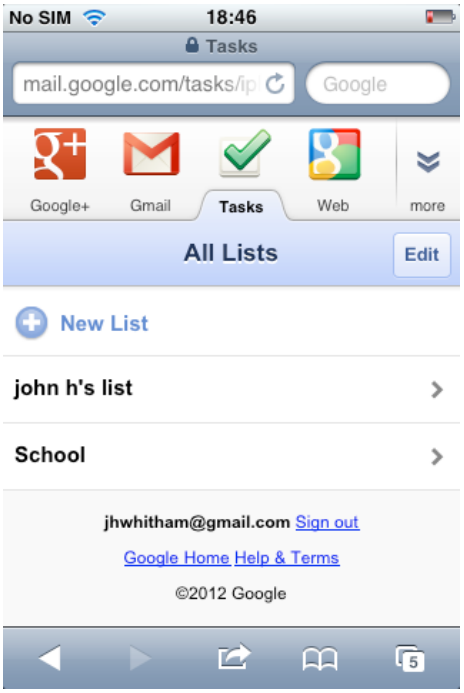


Figure 2

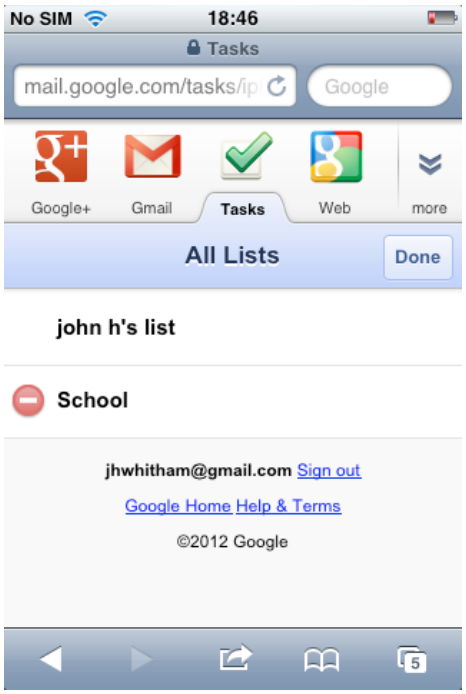


Figure 3

Once the correct list is chosen, the next most commonly executed user action is to create a new task. Just below the top panel with the "All lists" button and the name of the current list is a row with a "+" symbol and the text "New task" all in blue font (Fig. 1). While this button is labeled well with both symbolic and textual indicators and a different font color than the rest of the text that follows it, both the row size and text size of the button is equal to the row sizes and font sizes of all the other text on the page. Because adding a new task is the primary action any user would want to perform when visiting this site, this button should really be larger. According to Fitt's Law this would decrease the time it takes for the user to recognize and utilize the button, which, though seemingly minimal, can make a big difference for busy users writing new tasks on the go.

After clicking the "+ New task" button, a text field drops down from the button's row, allowing the user to start typing out the new task immediately (Fig. 4). Pressing "enter" automatically enters the new task into the list of already existing tasks below, and it is only after

the task has been entered into the list that a user can then click in to edit that task, adding a due date or notes (Fig. 5).

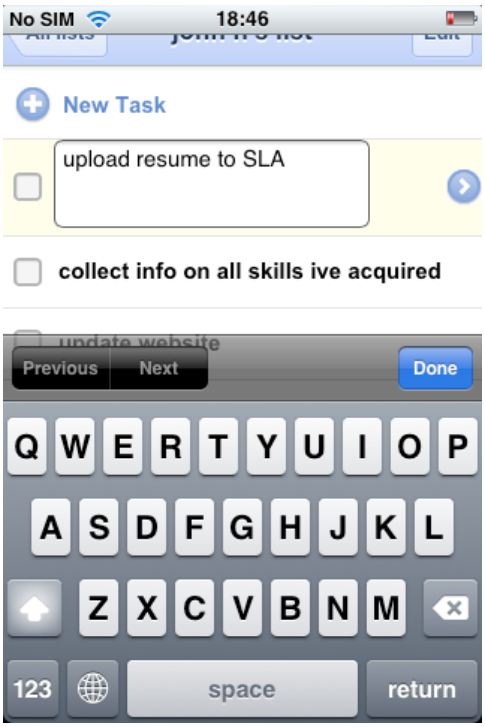


Figure 4

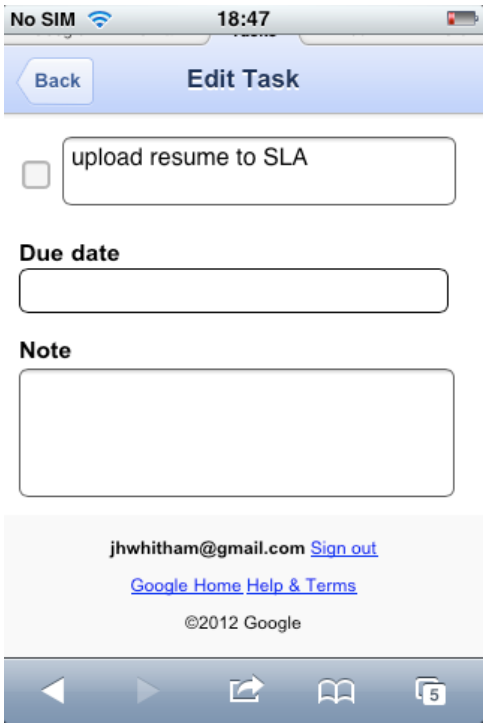
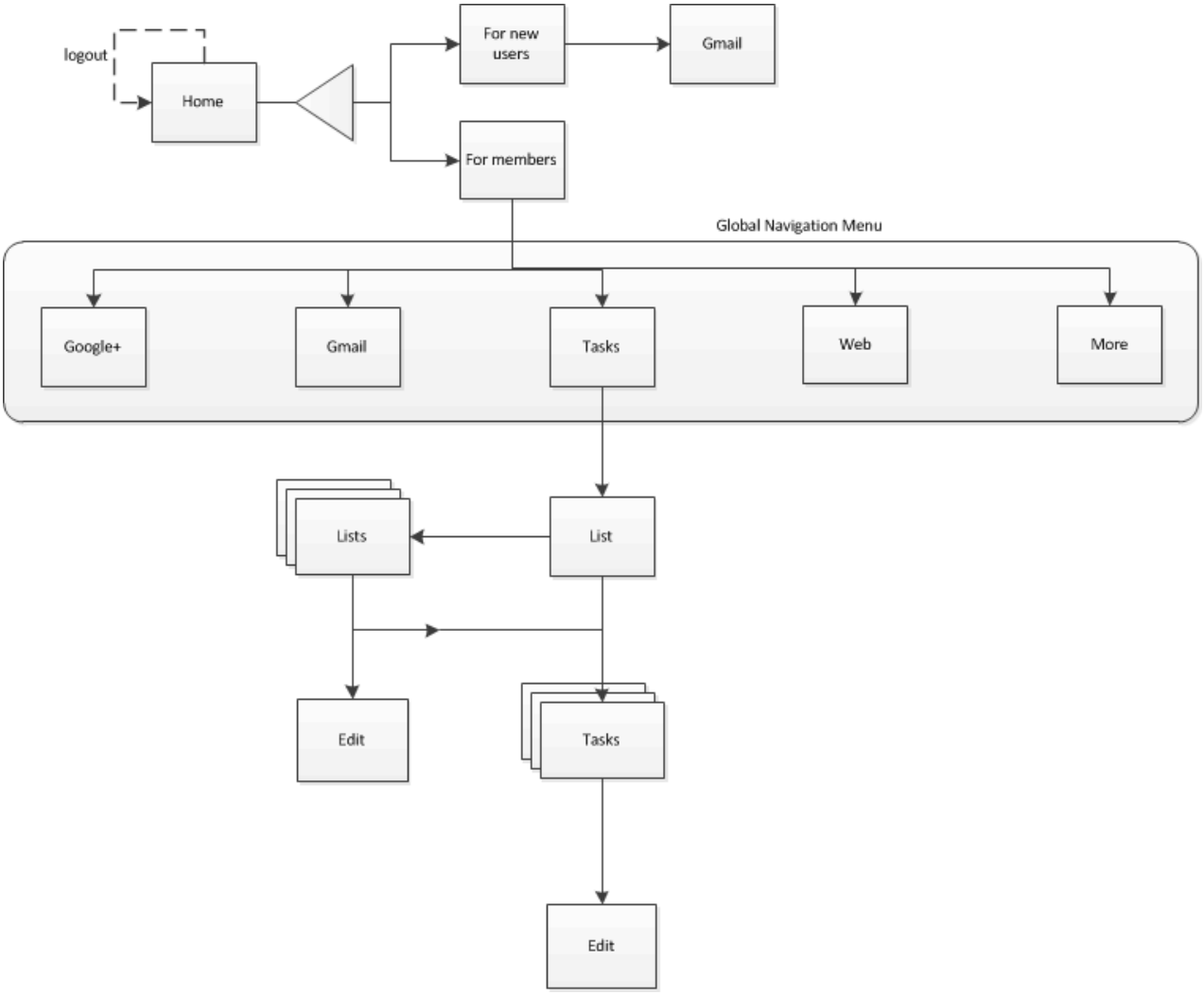


Figure 5

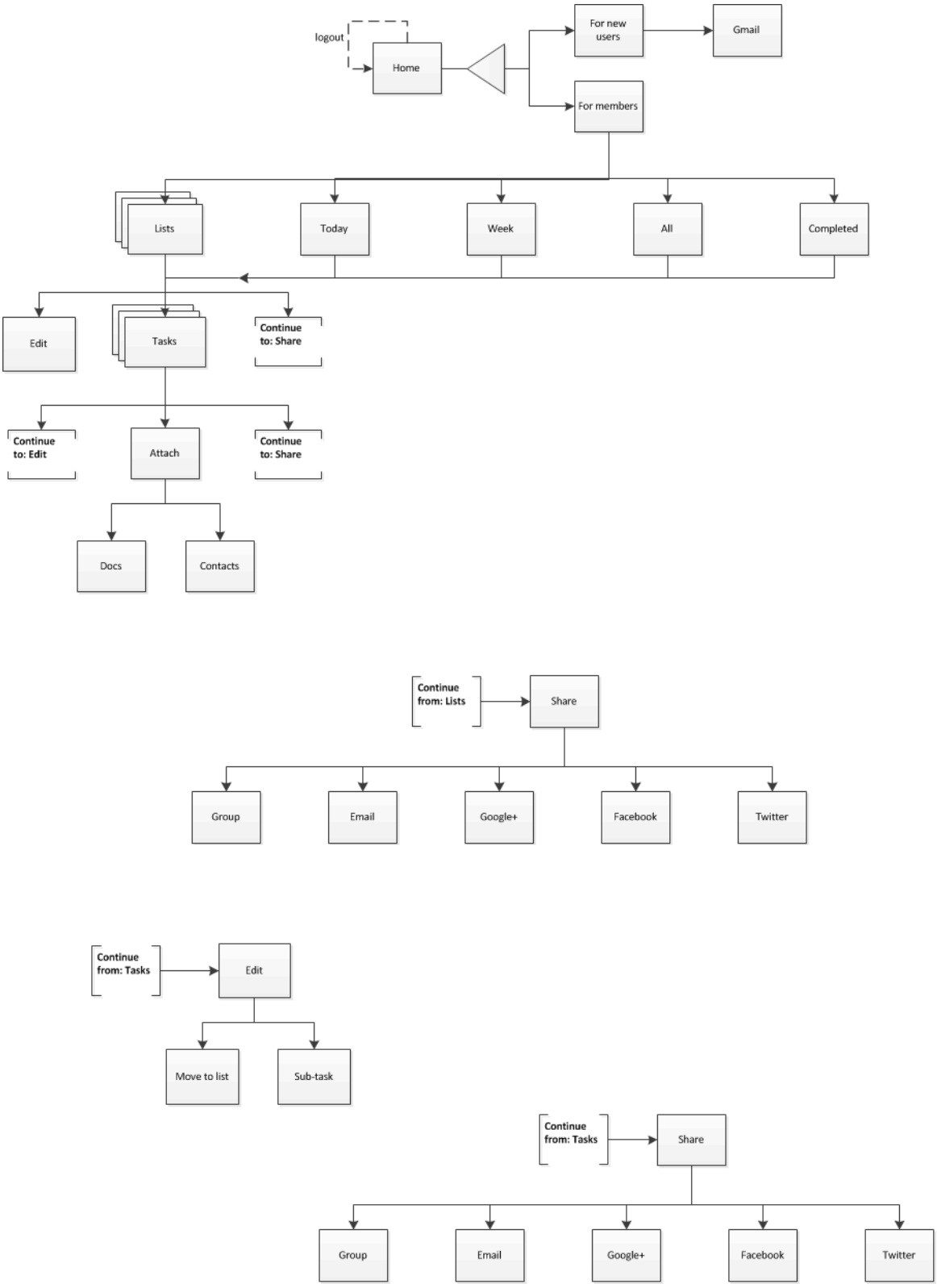
This path is ridden with unnecessary effort on the part of the user. Considering the great lack of features offered by the mobile site, one would think that there would be a more straightforward way to go about utilizing those features. This site does not benefit from many of the features of the Internet application either, which is integrated directly into Google Calendar and syncs with a user's calendar events. Lists and Tasks that are entered into the mobile site will show up in the Calendar view; however users must sign into their laptops or desktops to access this view.

Appendix D - Blueprints

Blueprint of Current Google Tasks Mobile Site:

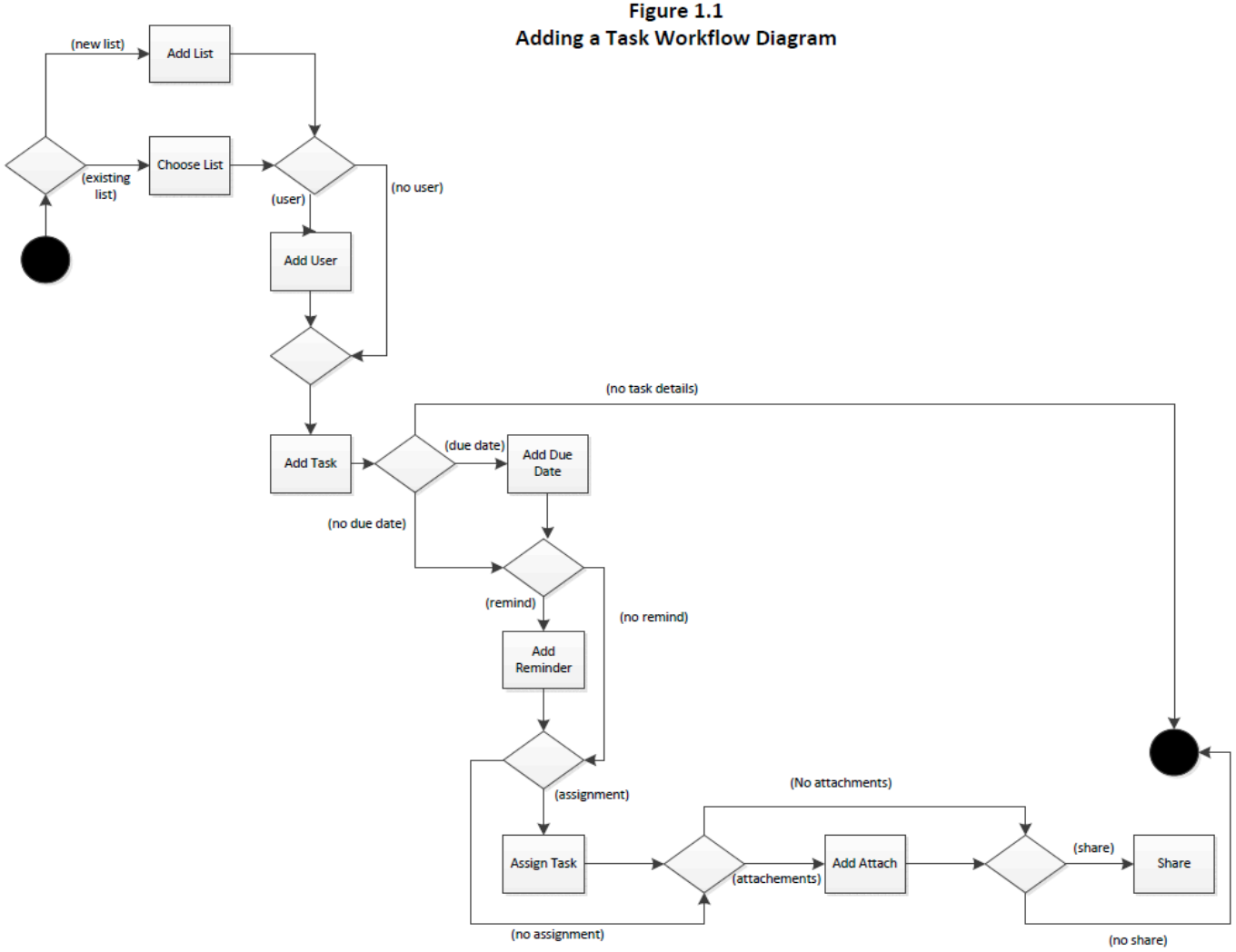


Blueprint of Our Native Google Tasks Application:

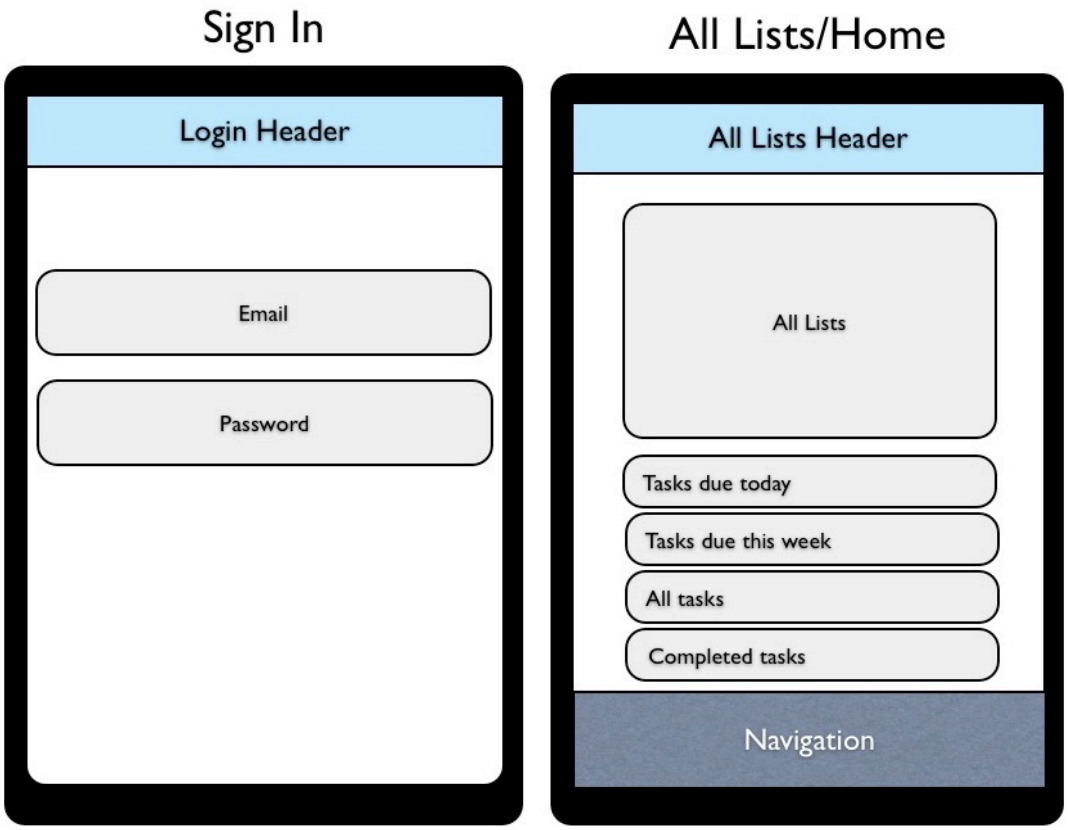


Appendix E – User Workflow Diagram

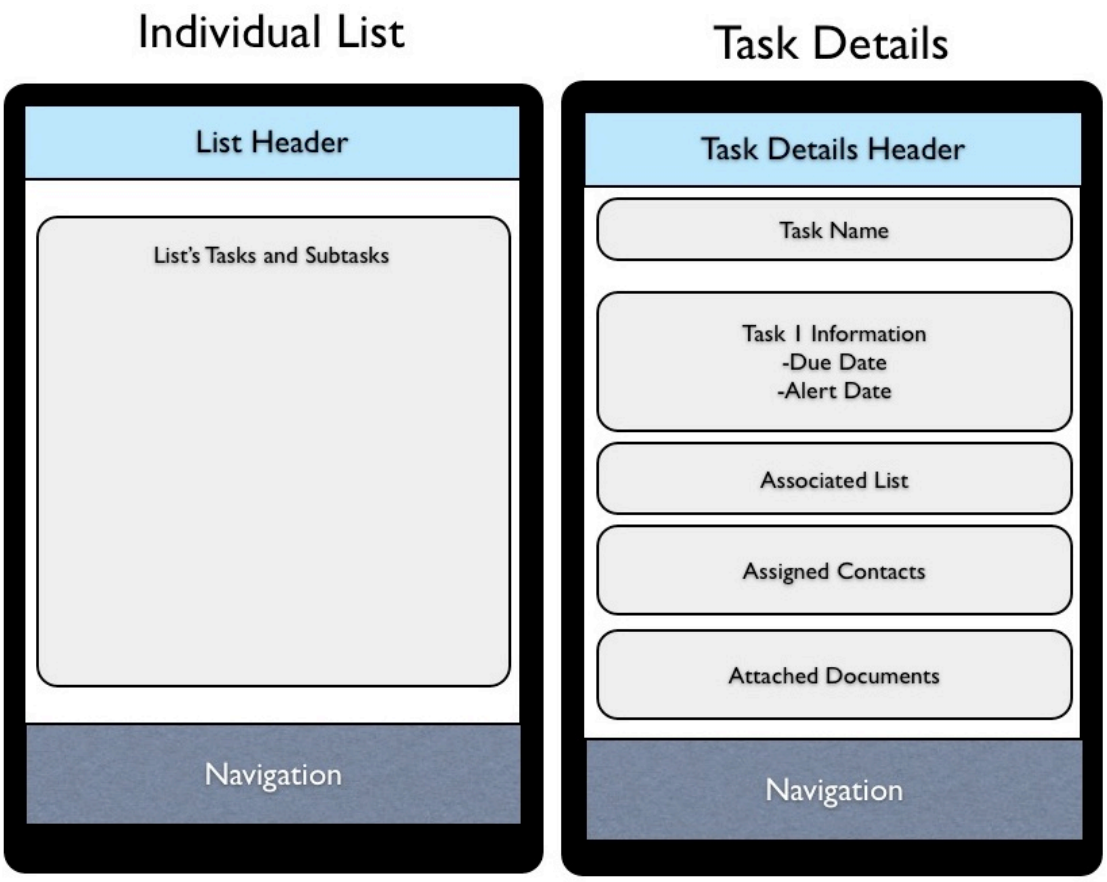
Figure 1.1
Adding a Task Workflow Diagram



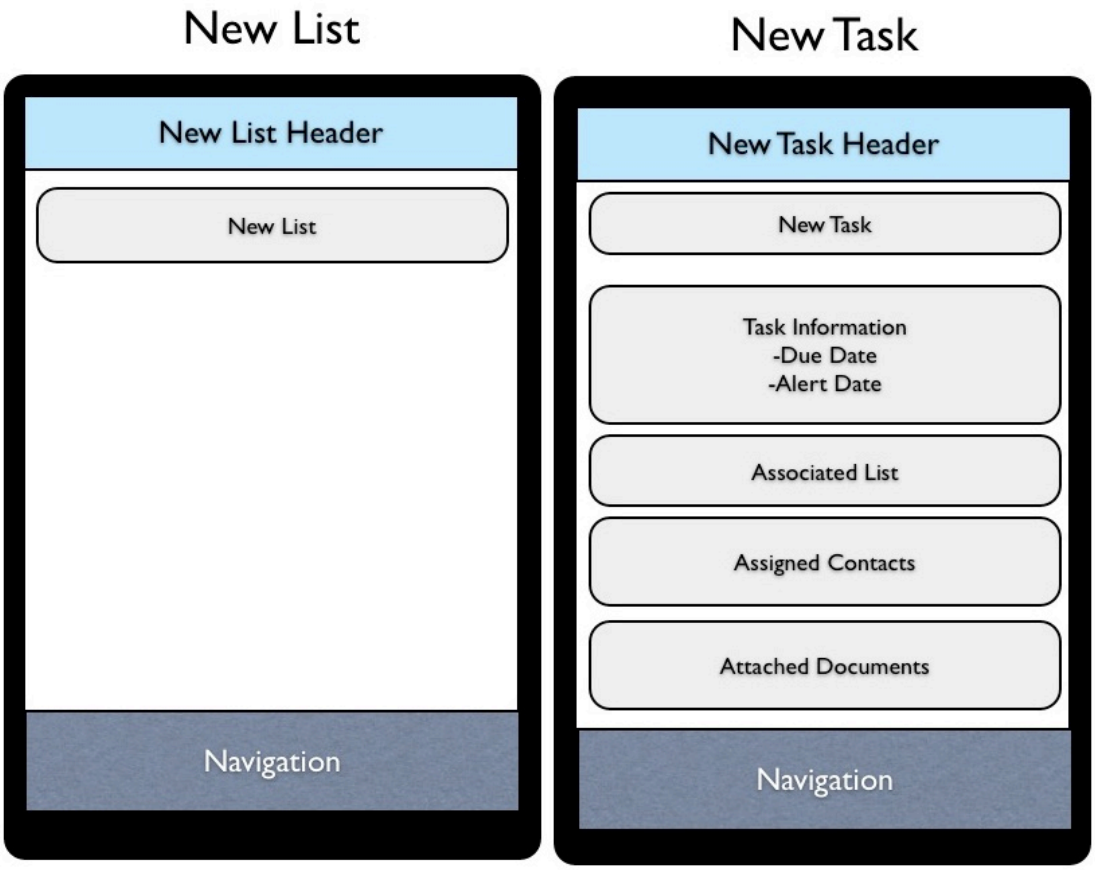
Appendix F - Content Zone Maps



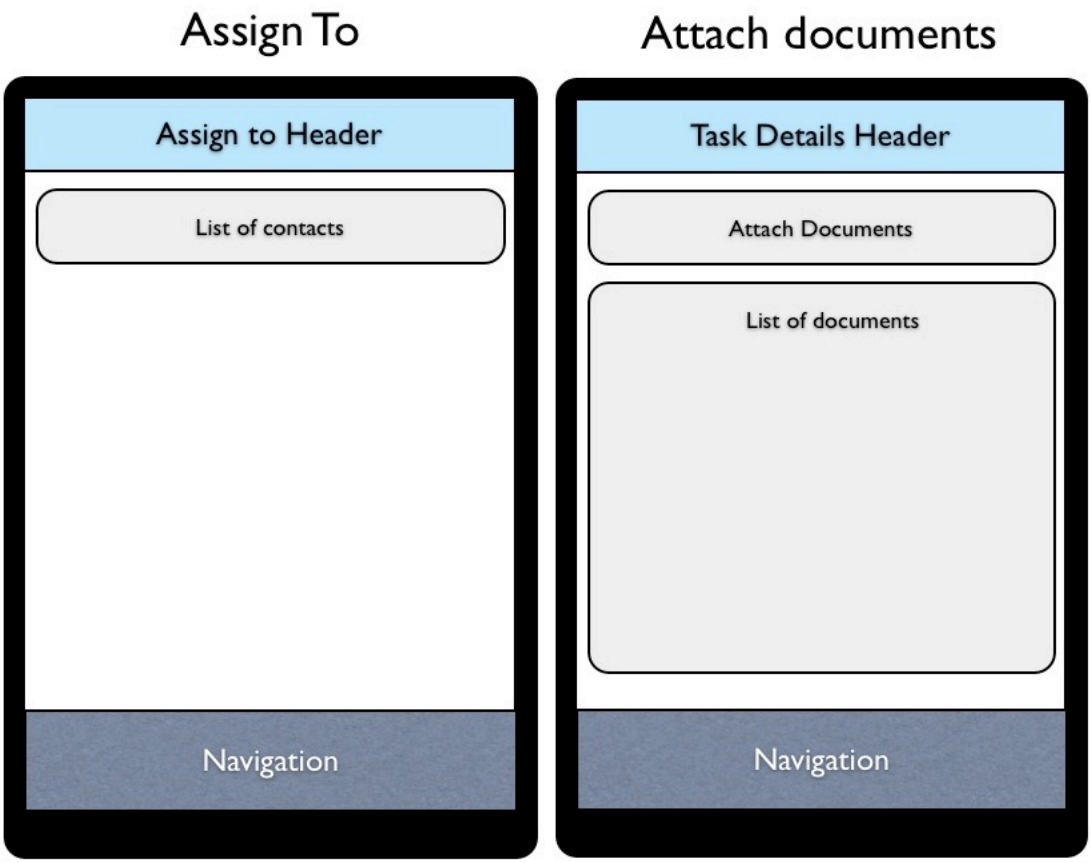
(*Correspond to Wireframe Figures 1.1 and 1.2)*



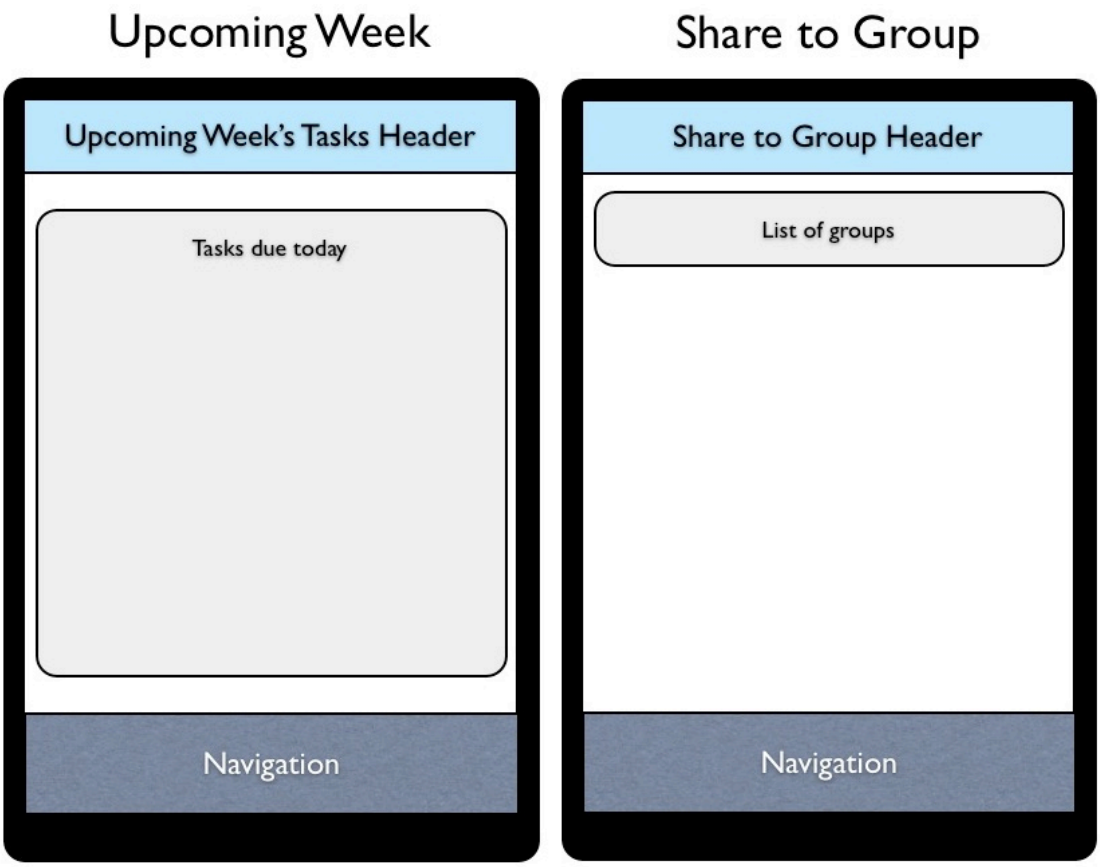
(Correspond to Wireframe Figures 2.2 and 3.1)



(Correspond to Wireframe Figures 2.1 and 3.2)

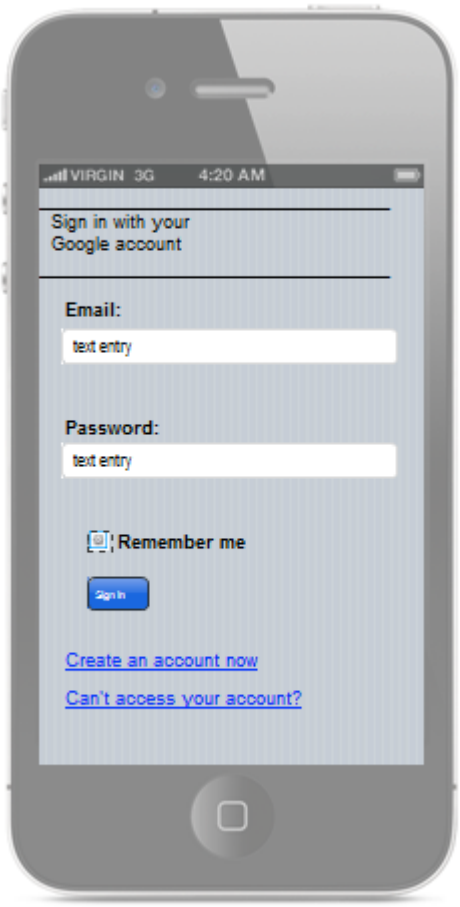


(Correspond to Wireframe Figures 3.5 and 3.6)



(Correspond to Wireframe Figures 2.4 and 6.1)

Appendix G - Conceptual Design Wireframes



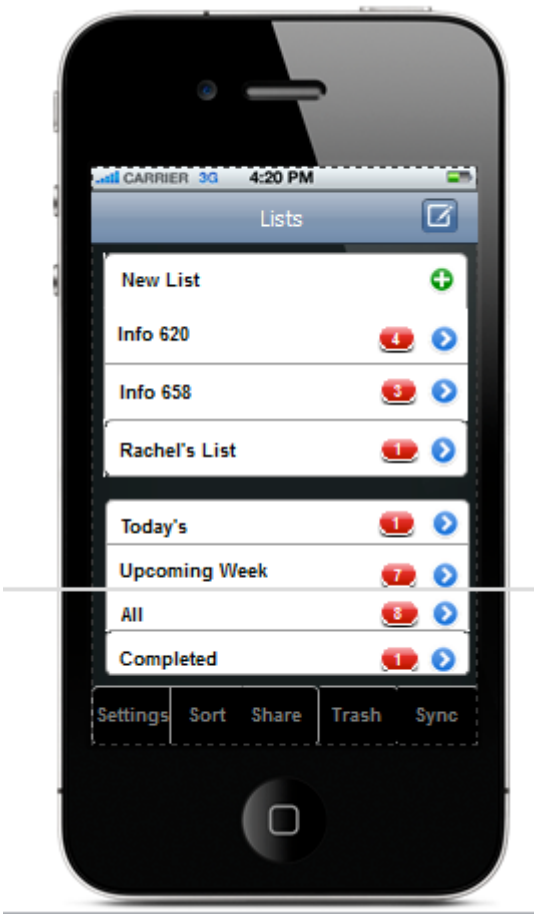


Figure 1.1 **Figure 1.2**

Figure 1.1 is the opening page when users are not logged in to the app. Users use their Google account to log into the app. If they do not already have a Google account they will be directed to Gmail to create one. Signing in with a Google account, the user will have access to multiple Google applications within the app.

Users who are already logged will proceed directly to the “Lists” page (Fig. 1.2). On this page users have the ability to view their tasks in multiple ways: by personally created lists, by due date, or by completion. A tap on the blue arrow button next to each list will lead the user to the

selected list's page (see Fig. 2.2). Lists can be edited by tapping the edit button in upper right hand corner (see Fig. 1.3). Tapping the green plus button can create a new list (see Fig. 2.1).

The global navigation bar at the bottom allows users to perform further actions on their lists including sort all the lists alphabetically, share a list (see Fig. 5.1), delete a list or task, or sync with their other Google accounts. Our user research indicated that being able to share and sync tasks were a high priority for users.

Figure 1.3 **Figure 2.1**

After tapping the “Edit” button on the Lists page (see Fig. 1.2), red edit buttons will appear next to the lists (Fig. 1.3) to edit or delete lists.

If users tap the blue arrow next to the list, they will be lead to that specific list and it’s tasks (see Fig. 2.2).

Numbers in red circles to the right of the list indicate how many tasks are in each list.

When users tap the green plus button on the List page (Fig. 1.2, 1.3), they will be lead to a page to create a new list (Fig. 2.1). A keyboard will rise up from the bottom to input the new list name in the already highlighted box.

Figure 2.2 **Figure 2.3**

Users have the ability to create lists to organize their individual tasks. On a specific user created list page (Fig. 2.2) all the associated tasks will be listed.

Tapping the blue arrows next to a task will lead to the task's details page (see Fig. 3.1).

Users can tap the plus button in the upper right hand corner to add new task. These symbols are common to iPhone users and are consistent throughout the app.

Users can also invite others with Google accounts to join a group associated with the list. Tapping the Invite button in the upper right hand corner will open an email page with an invitation to join the group (Fig. 2.3). A keyboard will pop up from the bottom. Users can add

recipients by tapping to section or the blue plus button. As they input user names their similar Gmail contacts and/or iPhone contacts will appear in a drop down list. When they are finished they hit Send or have the option to Cancel.

All the navigation buttons: settings, sort, share, trash, sync can also be applied to the individual list page (Fig. 2.2).

Figure 2.4

Figure 2.4 displays all tasks due in the upcoming week. Tasks are sorted by list and are highlighted in red if overdue.

Tasks can be edited by tapping the edit button. An “edit,” “delete,” or “cancel” message will rise from the bottom for users to choose. This extra step will serve as error prevention for possible user mistakes.

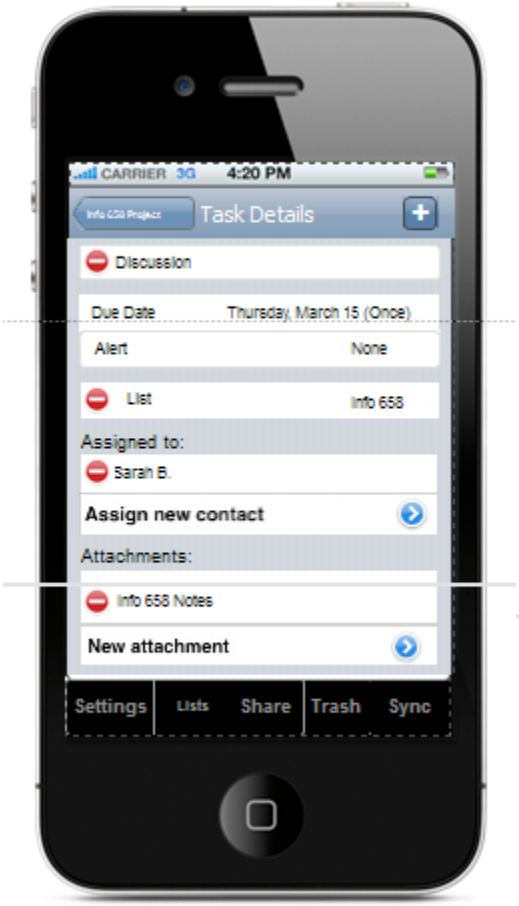


Figure 3.1

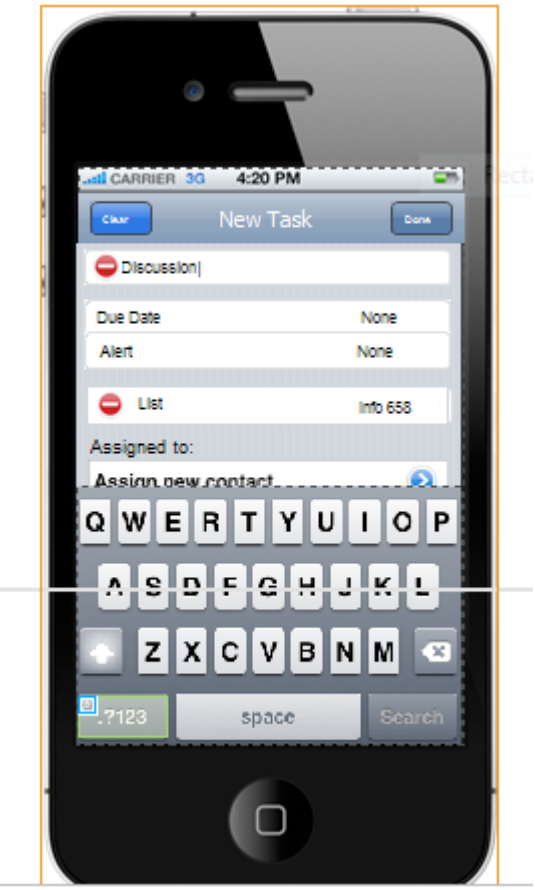


Figure 3.2

Users can edit a task (Fig. 3.1) or create a new task (Fig. 3.2). A keyboard will rise from the bottom. They can also add a due date and/or alert date to a task through a calendar wheel that rises from the bottom.

Tasks can be assigned to group users by tapping “Assign new contact” with the blue arrow button (Fig. 3.1). It will lead to a page to choose from possible users (see Fig. 3.5). Existing

users can be edited by tapping the red edit button to the left of the user's name (Fig. 3.1). Users can edit the list associated with the task by clicking the edit button.

Google documents that have been synced with the app can be added by tapping "New attachment" or edited by tapping the red edit button (see Fig. 3.6).

Tapping the plus sign in the top right hand corner will create a subtask. This provides users an additional task structuring capability (see Fig. 3.3).

All navigation bar options can be applied, but the option "Sort" (on Lists pages) changes to "Lists" on Tasks page. Tapping lists will return users to the home screen (see Fig. 1.2).

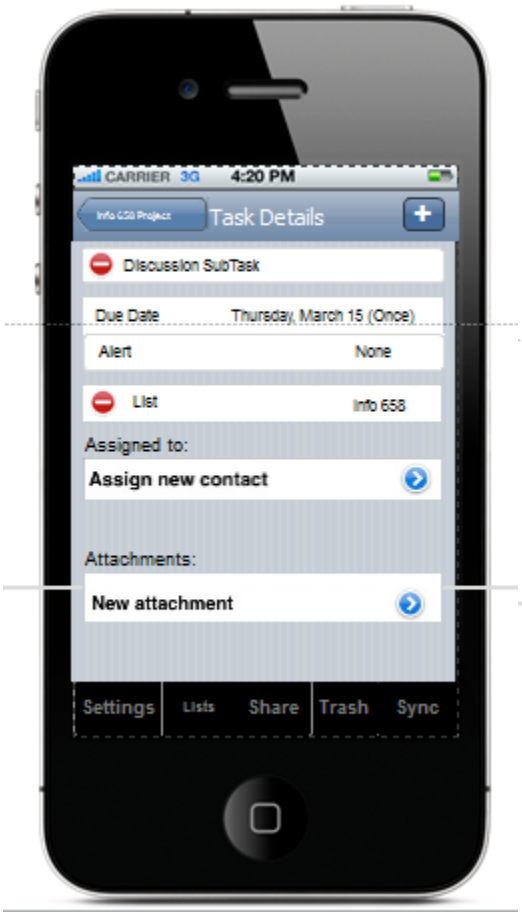


Figure 3.3

Figure 3.4

Figure 3.3 is an example of a sub-task to the main task: Discussion. Due dates, alert dates, users, and documents can also be added to and edited on a sub-task

When a list consists of tasks and subtasks (Fig. 3.4), the subtask will be indented within the list to clearly indicate its status to users.

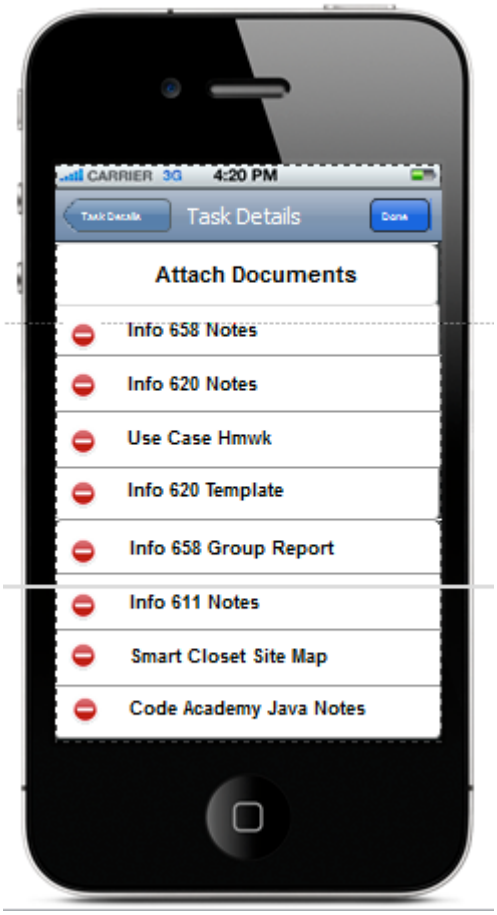


Figure 3.5

Figure 3.6

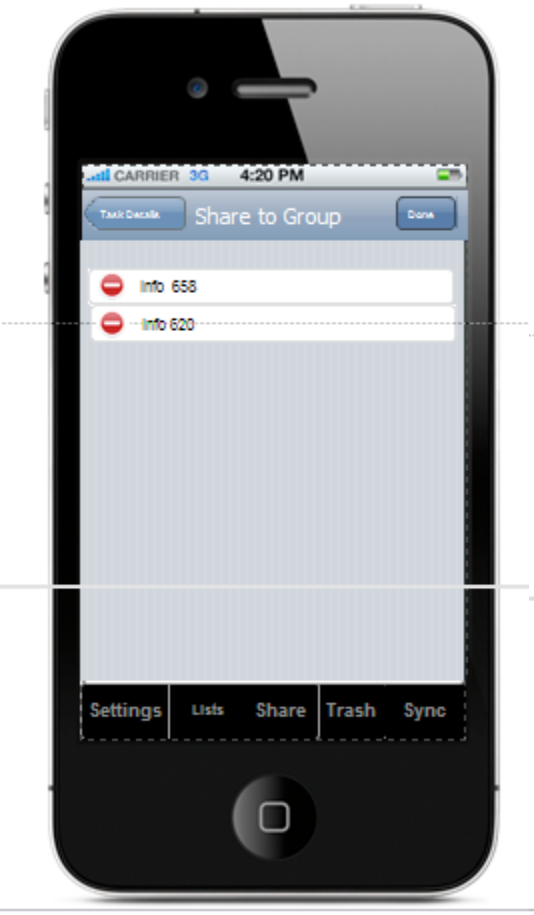
Figure 3.5 shows the list of users that can be assigned to a task. Tap the listed name to include. Users can be edited by tapping the edit button to the left of the name, which is consistent with the rest of the app. When finished adding users, tap the Done button in the upper right.

Figure 3.6 shows the list of Google Documents associated with the user's Google account. They can be added to a task by tapping the document name and scrolled through by swiping up or down. Documents can be edited by tapping the edit button. When finished selecting documents, tap the Done button.

Figure 4.1 **Figure 5.1**

Both lists (Fig. 4.1) and tasks (Fig. 5.1) can be shared. To share users must tap the Share button in the navigation bar and a list of resources will rise from the bottom.

They can be shared with a group (see Fig. 6.1), emailed (see Fig. 6.2), or shared through Facebook, Twitter, and Google+.



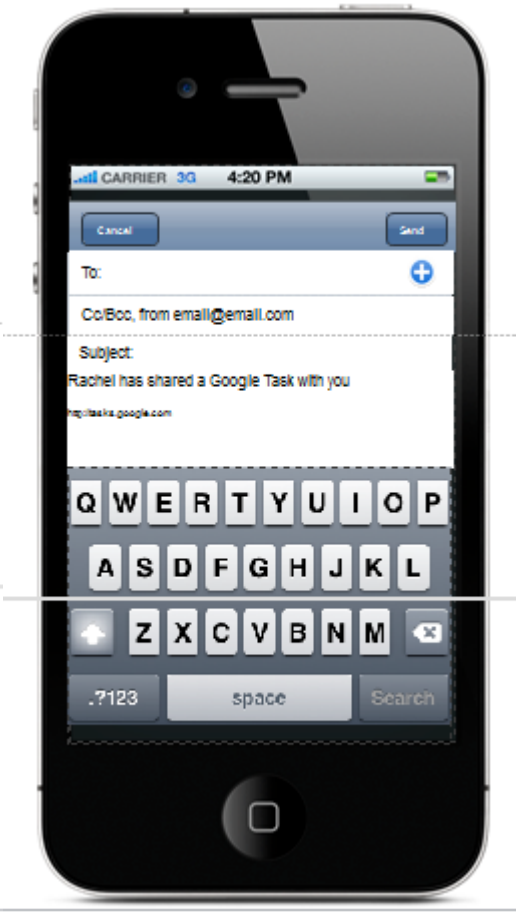
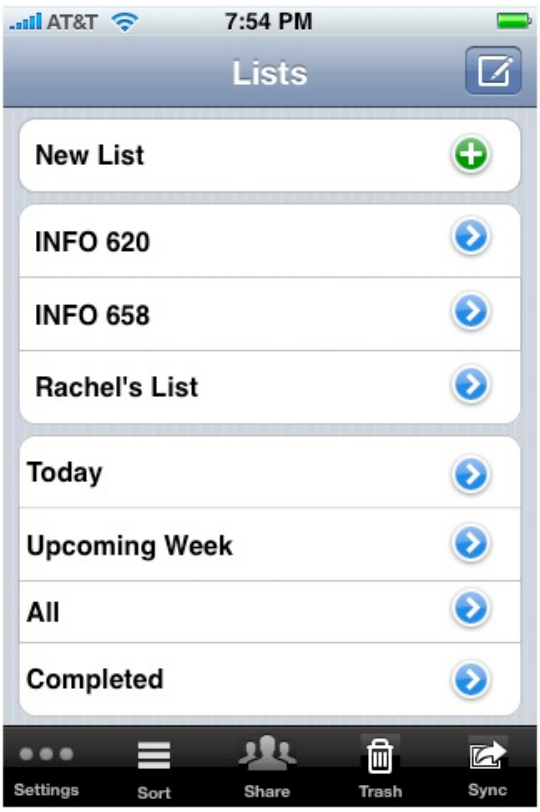


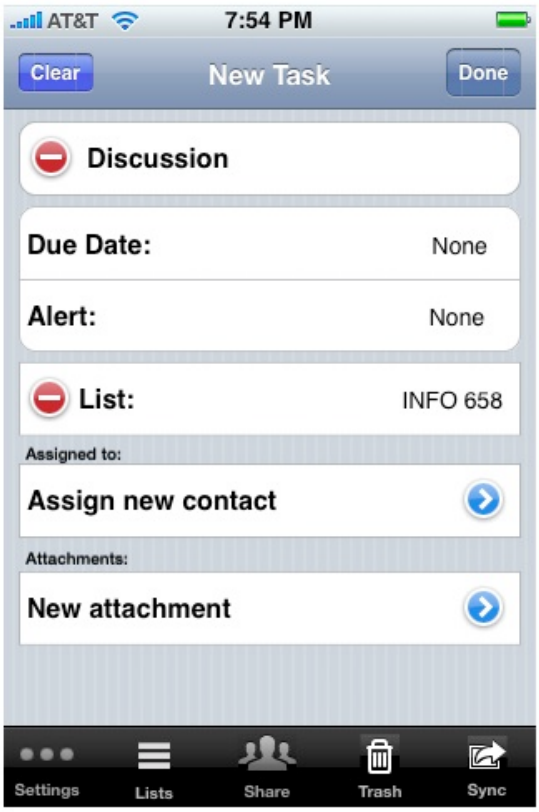
Figure 6.1 **Figure 6.2**

Figure 6.1 demonstrates the page that will appear when users choose “Share with Group” (see Fig. 4.1, 5.1). Users can choose and tap the group with whom they wish to share their task/list. Groups can be created and associated with tasks and lists through invitation (see Fig. 2.2).

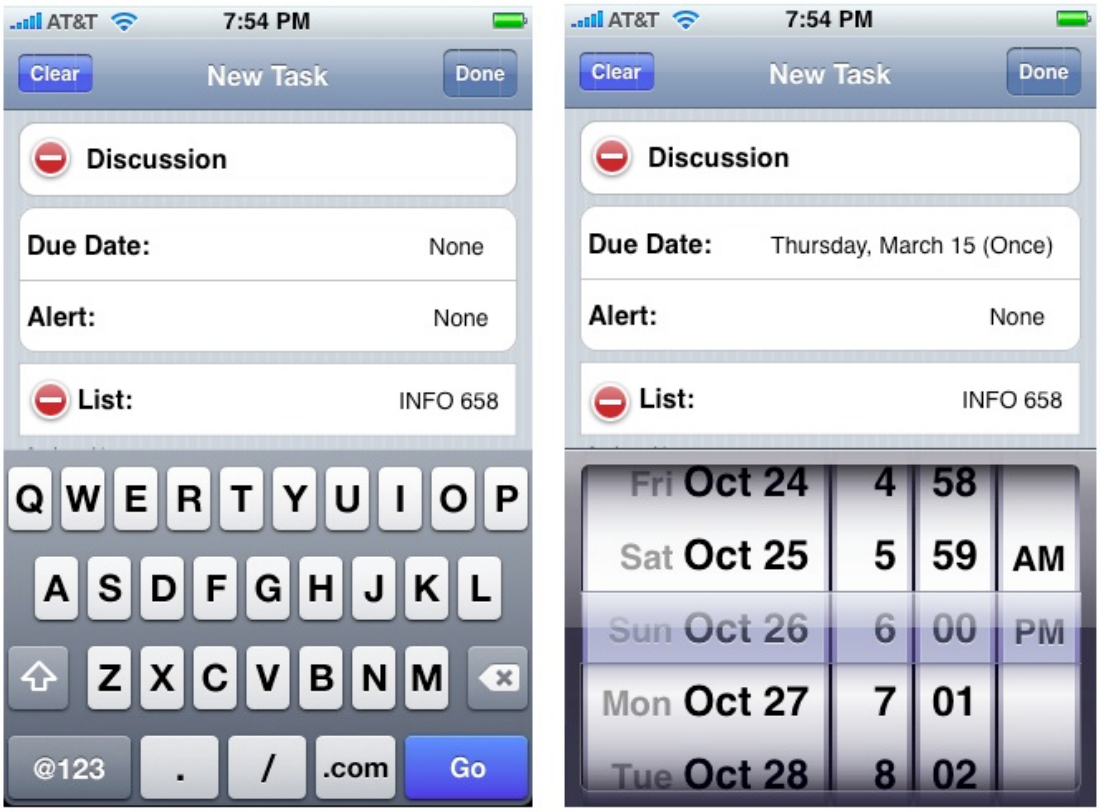
Figure 6.2 demonstrates the email message that will be displayed when users choose “Send to email” (see Fig. 4.1, 5.1). A keyboard will rise up from the bottom. Users can add recipients by tapping to section or the blue plus button. As they input user names their similar Gmail contacts will appear in a drop down list. When they are finished they hit Send or have the option to Cancel.

Appendix H - Pixel Perfect Screens

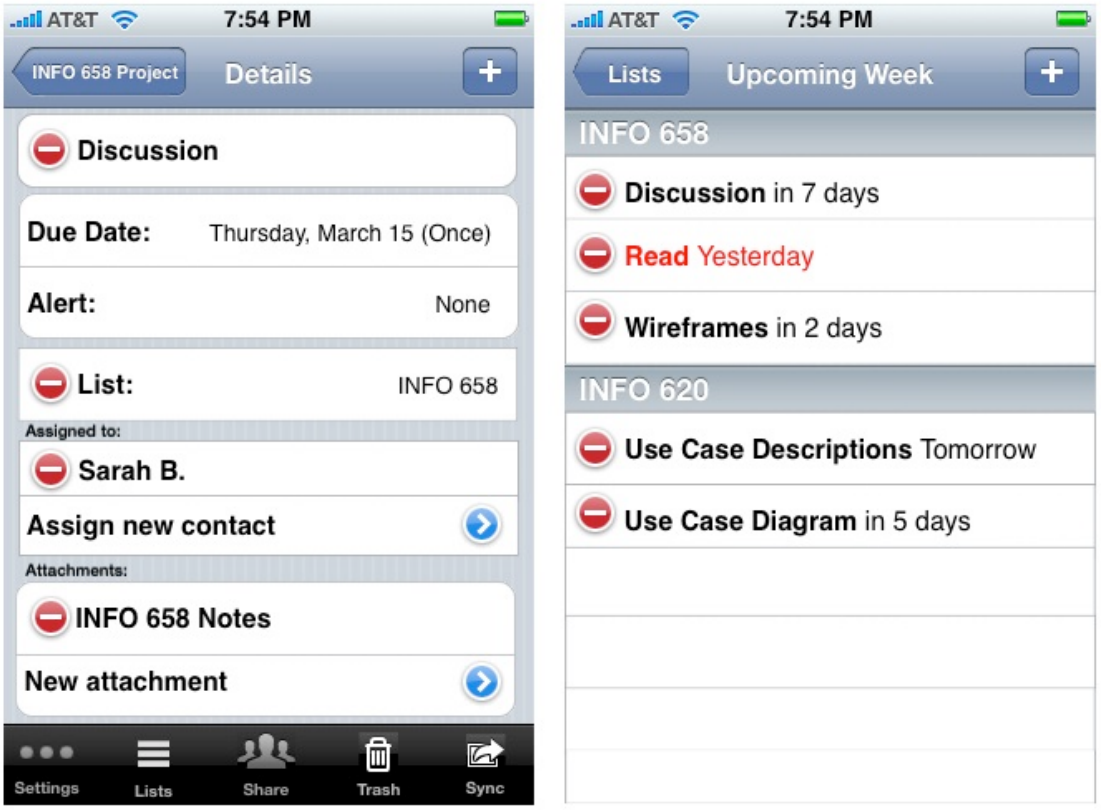




(*Correspond to Wireframe Figures 1.2 and 3.3*)



(*Correspond to Wireframe Figure 3.2*)



(*Correspond to Wireframe Figures 3.1 and 2.4*)