ECE496
Project Proposal

Interactive Touch Table

Project Number: 2013146
Supervisor: Nazir Kherani
Administrator: Belinda Wang
Names of Students:
Ching Chang, Dai-Jung Lee, Kuang-Ping Niu, Shee-An Wang

Submission Date: Oct 15th, 2013

Executive Summary

The growth of smart device ownerships along with the increasing shipment units of touch screen panels in recent years indicate their high demands in global market. Touch tables are one of the many consumer products that adopt multi-touch technology. The lack in number and variety of software applications, however, makes such devices less popular. To investigate its potential, the design team has explored many possible applications using a digital table as the platform in different circumstances. The team will select an operating system (OS) on a touch panel with LCD screen and create several applications that look to enhance touch table functionality in practical scenarios.

The basic function of the touch table applications is to support simultaneous touch points and different screen sizes. The selected OS has to provide a third-party application development environment. The applications should also meet a number of objectives: accessible to general public, flexible in number of users, promoting direct user-to-user interaction, featuring inter-device communication, and easy to present for demonstration purpose. The constraint that cannot be violated is that the applications must not be already available on the chosen OS platform.

Android is selected. For the applications, the team decides on three categories: provider-to-client (P2C), meeting table, and social media. Due to the explorational nature of our project and time constraint, we will be implementing 6 features extracted from the design alternatives into independent usable Android application. These features will later be integrated together to demonstrate various applications specifically for different use cases.

In order to examine the feasibility of the proposed applications, we have assessed our knowledge, skills, and possible risks that might emerge over the process. To overcome these obstacles, we list all the available and unavailable resources in both software and hardware aspects and discover promising solutions to the identified risks in the feasibility assessment section.

Following this report, the design team will contact the manufacturer and purchase the hardware part of the design: touch panel and display. We will also acquire an Android stick to be ported onto the table screen. The preliminary budget for this project is estimated to be $1200. In the meantime, the design team will conduct more detailed and specific research on the technical requirements in the proposed applications. We expect to accomplish this by mid November 2013.

Table of Content

Project Background

Background and Motivation

Since Apple introduced iPod touch in 2007, different electronic devices have been broadly developed to incorporate the touch screen technology and penetrated into the consumer market [1]. In 2013, a total of 1.8 billion units of touch screen panels are expected to be shipped as the multi-touch user interface in a variety of digital products [2]. With their benefits and increasing demand, these devices significantly improved interaction between humans and computers [3]. Among all, it is estimated that more than 70% of the population in most countries now own a smart phone with a 30% growth since last year [4].

However, while they bring convenience to the world, there are also some drawbacks in the social context. One of them is the alienation of people interactions [5]. The root cause is that most digital products on the current market are mostly designed towards personal usage on a single device. Thus, the general interaction we experience with them, from televisions to smartphones, is linear. People send commands to the machine, and the machine acts as a medium that sends information back to us or to other participants. There is no direct interaction between participants themselves, because most designs do not allow multi-users to operate face-to-face on the same machine simultaneously.

There are already some existing products that may be the answer to this problem: digital tablets, for example. Yet, their screen size (average 8 inch [6]) still poses the limitation on the number of users that can operate on such device. The PixelSense digital table introduced by the cooperation between Microsoft and Samsung resolved the physical issue [7], but it is not cost-friendly to general consumers and it lacks applications which dwell on the benefits of a multi-user touch platform [8]. There are still rooms for further improvement in various aspects.

Consequently, we believe that there are many possibilities to explore within this area for our design project. We want to take advantage of the rising multi-touch technology, and build applications that allow multi-user operation on one single display of a tabletop. Our vision is to enhance human interaction through the use of our applications in real scenarios where a table is the most suitable medium.

ECE496
Project Proposal

Interactive Touch Table

Project Number: 2013146
Supervisor: Nazir Kherani
Administrator: Belinda Wang
Names of Students:
Ching Chang, Dai-Jung Lee, Kuang-Ping Niu, Shee-An Wang

Submission Date: Oct 15th, 2013

Test Document

Project goal

In this project we will be creating software applications for multi-touch tables on a selected operating system. The goal of the applications is to explore the potential of a touch table as a multi-user platform.

Project Requirements

The requirements of our project target primarily towards the support for multiple users. Finally, the objectives focus on what we can do to better showcase the potential of the touch table.

Functional Requirements

1. The applications must be able to support different screen sizes
2. The applications must not be personal applications for individual use only
3. The number of supported simultaneous touch points must be at least two per user
4. The selected operating system must offer an application development environment for third party application development

Constraints

1. The applications developed must not be already available on the selected operating system

Objectives

1. The selected operating system should be familiar to people
2. The applications should be flexible in supporting various numbers of users
3. The applications should promote direct interaction of users
4. The applications should be accessible and useful to most people
5. The applications should feature communication between the table and other popular personal devices
6. The applications should feature content sharing between users easily [9]
7. The applications can interact with real-world object

Validation and Acceptance Tests

To verify and validate the project requirements and objectives, we will employ individual testing methods, listed in Table 1: Testing Method.

Table 1: Requirement and Testing Methods

Requirement	Testing Method
Correctness of the applications	Use a testing framework and write test code during development phase; manually test the functionalities of the applications at the end of the development cycle
Support for different screen size	Simulate different screen sizes by limiting usage area of our display
Support for multiple touch points	Manually test if the applications remain functionally correct with different numbers of touches until the designed limit
Fast content sharing (if applicable)	Manually test content sharing between users with the designed touch sequence or gesture
Communication with other devices (if applicable)	Manually test the designed functionality between the table and personal devices owned by the team

Technical Design

Possible Solutions and Design Alternatives

The design can be separated into two sub parts, the computing device operating system (OS) and the applications to be demonstrated. There are alternatives for both subparts to achieve the same functional requirement but with different trade-offs. The subsystems are independent and can be cross-combined.

Sub Part 1: Operating Systems (OS)

The choices of OSs are codependent with computer hardware selection, but we are bounded to two options of hardware, which are a general purpose computer and an Android stick; hence there are three general alternatives for OS, which are Android, Ubuntu, and Windows.

Android is a publicly available OS. There is standard software development kit (SDK) for Android application development. User base are wide as many commercially hand-held electronics are pre-loaded with Android OS. There are massive amount of existing applications for Android. The OS and SDK are both free.

Ubuntu is also a publicly available OS, and it is one of the most well-known Linux distributions. The OS is available for wide range of hardware selection, from full-fledged general purpose computer to embedded computers. There is no standard SDK for application development purposes, the choice is entirely up to the developers, which offers high flexibility, but at the same time massively decreases the straight-forwardness on application development. The user base is significantly less than the well-known, commercialized OSs such as Microsoft Windows, Apple Mac OS. There are collections of applications available on Ubuntu's website, but the count is not to be compared with Android's Google Play or iOS's App. Store. The OS and software development environment are free.

Windows OS is private and commercialized. The OS is available to most general purpose computers in most combinations. The Microsoft Surface 2.0 is the SDK specifically used to develop touch applications. User base on Microsoft touch platform is small; hence existing applications are also of small numbers. The OS is for sale, but the SDK is free.

Sub Part 2: Applications to Demonstrate

There are various types of multi-user applications which the team thinks they would be critical for demonstrating and exposing the "multi-user-specific" touch table environment. The list of possibilities follows:

1. Game applications: games involving 2+ players for entertainment purposes.
2. Provider to Client (P2C) applications: applications which can be used at any sales locations of various businesses, service agencies with documents and signature based communication such as banks and properties dealers, whole sale electronic catalogs and directory, etc.
3. Elementary school educational applications: targeted to enhance graphic-based education.
4. Negotiation applications: specifically used for privacy purposes upon scenarios such as property transaction.
5. Idea integration meeting table: a media that offers participants to load and share their findings or ideas, which was stored on their own cloud account, on the shared region of the table, and allowing independent operation on their assigned workspace.
6. New Social Media: a new form of social media which would encourage friends' sharing while being physically next to each other.

Table 2: Comparison table of application alternatives

	Distinctiveness	Interactiveness	# of simultaneous users	Inter-device	User group	Demonstration
Games	1	5	5	4	5	5
P2C	4	3	2	1	4	2
Education	4	4	3	1	2	4
Negotiation	4	4	4	5	2	1
Meeting Table	4	5	5	5	3	5
Social Media	4	5	5	1	5	4

(notes: the "Inter-device" refers to the inter-device capability between laptops or smartphones)

Assessment of Proposed Design

The proposed combination of OS and applications would be Android OS along with P2C, Meeting Table, and Social Media applications. Android is selected due to its wide user base and having a standard SDK; the implementation process would be simpler and faster, as there would be many resources available. The P2C application is selected for the instant solution to various scenario with paper based official agreements, as well as an improvement to various advertising process. The meeting table is selected due to the potential audiences will be mostly engineering students and professors, who would heavily require a sharing-friendly media. The social media is selected for exposing a new possible form of social interaction, and lead audiences to think more about the possibilities of such multi-user experience on a single table.

Initial Technical Design

Even though we have chosen three application alternatives, P2C, meeting table and social media, we will not be building these individual applications as is. Rather, we will be building features extracted from these applications, or in other words, basic functional blocks which can be integrated to become applications of specific usage. The reasons behind this decision are the explorational nature of our project and time constraint.

The goal of our project is to explore the potential of a touch table, which leads to various applications with different aspects. However, it is unrealistic to actually implement all of them with the time given. If we were to choose one specific application, time would be dedicated in tailoring the interface and underlying functionality to the use case, and there would be two negative consequences. Firstly, we would not be able to implement and showcase other features that do not fit with the specific application. Secondly, many real-world use cases are similar and can utilize the same type of applications with little deviation in features. If we only had an application specifically built for one use case, it would be difficult for us to demonstrate other suitable real-world use cases where the application can also be employed in. On the other hand, we will still be able to integrate these independent features in some form to demonstrate how they can work together as an application for specific use cases. In short, the implementation will be divided into features taken from different application alternatives. These features will be independent applications runnable and usable on the Android platform.

System-level overview

The features extracted from the design alternatives are object fitting, browsing, inter-device communication and independent workspace. Object fitting refers to the ability to maneuver and edit objects in a given space. Browsing refers to an interface to display a sizable amount of information in different forms. Inter-device communication is the interaction between the table and other popular devices. Independent workspace refers to small areas on the table's touch screen designated to work independently and to be operated by individual users. How these features can be integrated together to serve in specific usages is outlined in table 3: Application features, and will also be described later in the module-level descriptions section. A system block diagram is also provided in Diagram 1: System block diagram.

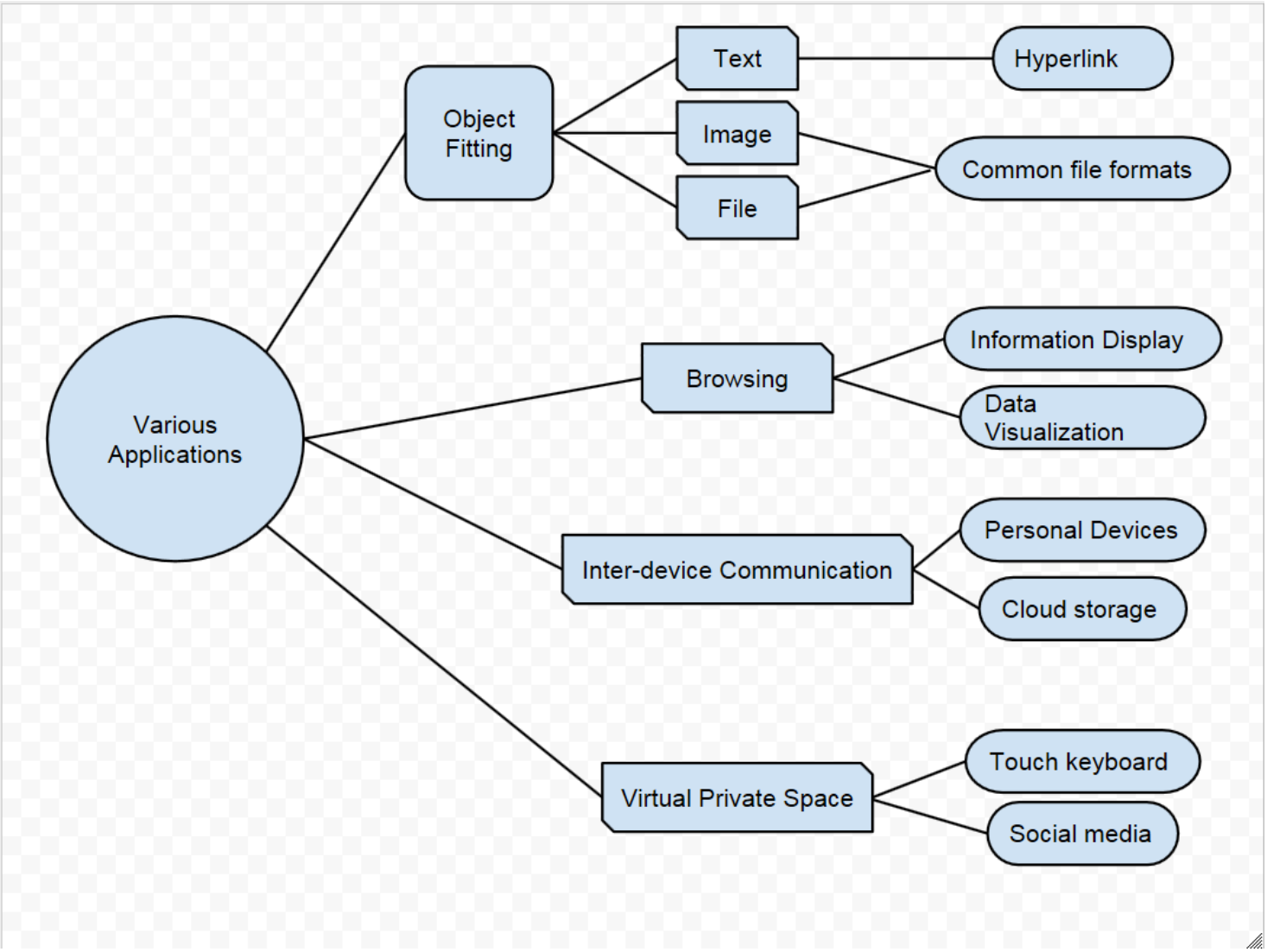
Table 3: Application Features

This table outlines how individual features can be integrated together to become a specific application.

	Object fitting	Browsing	Inter-device communication	Independent workspace
Banks/sales	Documents/forms	Service plans, documents	Non-disclosable and disclosable content separation	-
Furniture stores	Virtual floor plan	Catalog, documents	Item order retrieval	-
Children's Education	collaborated creation	-	-	Independent creation
Meeting Table	Text, images, documents, links	-	-	Independent workspace
Social Media	-	Shared area	-	Personal space

Diagram 1: System Block Diagram

The system block diagram outlines the overall system. The third column indicates the modules and the last column indicates elements contained by the modules.



Module-level Descriptions

Text Fitting

This module treats text as objects in order to move words, sentences or paragraphs freely in a given workspace. Sometimes people use text in a way that it is not a part of a larger body of text, but rather indepent notes or ideas. Such use of text is often difficult to maintain and organize in conventional text editor software, and even more difficult to do so on a physical medium. This module provides a way to both move and modify text freely

on the touch table. Additional functionalities includes creating lists or tables, adding tags to text objects for the software to automatically sort into lists or organize into tables. Specific usage of this includes meeting table application for idea brainstorming sessions, where text comes from multiple users and requires reorganization and comparison utilities; a certain P2C application such as furniture placement for annotations; children's educational applications such as vocabulary games; and social media to display posts or messages in the central shared area on the table.

Image Fitting

Image fitting would make images of any compression type shrink into various sizes, and will be treated as an object with various object attributes. This functional module would be heavily used by the meeting table app, as well as the social media app, as well as some use cases of P2C applications. In the meeting table app, as idea and research results sharing will many times involve image sharing, image fitting would allow easy and flexible interface for zooming in or out the image. While loading news feeds in the social media app, news feeds are treated as individual objects, and there would be frequent occurrence on image based news feeds, the image fitting would allow users to select which image news feed to surface to top. P2C application such as house furnishing planner application for furniture fitting would require automated size fitting of floor plan image object to the right size as well as each furniture element to the same scale.

File Fitting

File fitting would convert recognized formats of files into fixed size icon-like objects, and allow different operations on the selected file object. File fitting would come handy in use cases such as the P2C app, meeting table app, etc. In the meeting table app, information of various formats may be present; if a component datasheet of "pdf" format is on the table, and would be one of the topics to be discussed, it would be convenient if the person in control can make few taps on the object to activate or to minimize. P2C application under the bank or sales agent use case would allow service providers to swap between different electronic template forms for the client to sign.

Browsing

This module is responsible for the display and visualization of data. It allows the user to display sizable amount of information and it could also transform these data into different forms such as statistical table and block diagram. If there are more data than the template of the touch table can display, the module should hide the visible data and show the data that is not yet visible in a first-in-first-out manner. In this way, the user will be

able to overlook all the data available. The module will take the data as input and output the data in a human readable format on the touch table. P2C app for bank can utilize this module to analyze business data and generate relevant graph or report for business analysts to study business case better. Also, P2C app for point of sale could use this module to generate statistical table and usage diagram to show the customer the popularity of the product and how it is use. The meeting table app can also use this module to categorize different ideas.

Inter-device Communication

This particular module is responsible for the interaction between the touch table and other devices such as smart phone, laptop, and tablet. The interaction between touch table and other devices should allow transferring data such as a word document or an image on to the touch table or the other way around. This module plays an important role for other modules such as text and image fitting because it import the text and image file for manipulation from other devices. The input of the module is a file on the inter-devices and the output of the module is the same file on the touch table. This module can be used by a various applications. The P2C Application that involves negotiation such as house closing and banking could potentially use this module to pass around the business document between two parties. Moreover, P2C application for furniture providers could use this module to download the floor plan of the resident of clients from their smartphones and fit the furniture into the floor plan using the image fitting module; this can provide a better visualization of what the house will look like with the furniture. Interactive game such as air hockey can incorporate this module to play the game between touch table and other devices.

Independent Workspace

The independent workspace functional module would distribute portion of the table touch surface to each user for their independent operations. General purposes such as single or dual touch operations, and independent touch keyboard on each designated workspace should be allowed. This feature would be used in applications in various categories. In a meeting where the meeting table application is used, each user are allowed to make text input to their own independent workspace for note taking purposes; while participant intend to present his/her findings, participant may simply drag objects of any form from his/her own workspace to the shared workspace region; users can also duplicate information from the shared workspace to their own workspace, which may support cloud feature, allowing post-meeting review at personal time. The social media application will require the independent workspace functional module as well; chances are there are going to be interesting news feeds that would not appear on the shared area on the table due to not all users on the same table have direct permission to the person of interest of the news feed, but if one of the participant seated does have the access,

he/she may voluntarily share the news feed with the friends on the same table; each table participant should be able to make independent posts and comments, which is where individual touch keyboards comes into place. Various uses can be explored with this multi-user general interface functional module.

Feasibility Assessment

Skills and resource

This section describes the knowledge, skills and resource necessary for the project. They will be divided into two categories, already available to us and the other not available.

- *Available*
    1. Knowledge of hardware specification (LCD screen and touch screen relay)
    2. Knowledge of running an operating system (Android stick specification) on customized hardware
    3. Software programming skills (Object oriented programming language) on the environment
    4. Open source application development tools
    5. Discussion forum and website for building a touch table
    6. Hardware and platform (LCD screen, touch screen relay, and Android operating system provided by Android stick)
- *Not Available*
    1. The specific API for the development of multi-touch-point application

Risk Assessment

- *Risk identification*

There are two potential risks for the project. There are the risk of the sudden growth in requirement and the risk of compromising the technical design. As a project progresses, the design can sometimes be imperfect and lead to the implementation of new requirement to the software. Issues that are not identified in the early stage can be hard to implement which could seriously delay the project. Also, due to the budget and resource available, the functionalities of the software may have to be reduced to compensate the overruns pertaining to high budgets and scheduling. These are the two most hazardous risks that could result to the delay or failure of the project.

- *Risk mitigation*

The first risk can be mitigated by designing the software with more alternatives. Anticipate the worst scenario and come up with more than one alternative design for the same functionality. Therefore, when issues occur, we will have more available options to compensate the flaws instead coming up with new design for the software. In addition, the alternative design for the same functionality can also be obtained

through pre-existing open source software functionality. The second risk can be mitigated by identifying the necessary software feature for the requirement. Therefore, when the project overruns, the unnecessary feature can be eliminated without impacting the core functionalities of the software project.

Work Plan

The following is overviews of how we will proceed with the project and how much funding we will need in order to implement our proposed design. A contingency arrangement is also proposed should we fail to obtain the required amount of fund.

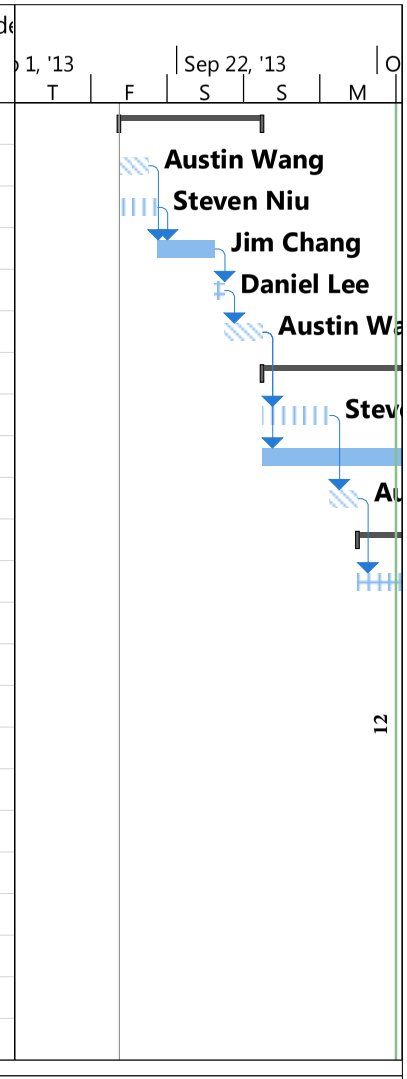
Work Breakdown Structure and Gantt Chart

Work Breakdown Structure on next page, followed by Gantt Chart

Task	Daniel Lee	Austin Wang	Steven Niu	Jim Chang
Design				
- Identify the requirement and constraint	A	R	A	A
- Identify possible solution and design alternatives	A	A	R	A
- Identify potential risk of the design alternatives	A	A	A	R
- Finalize proposed design	R	A	A	A
Software Design				
- Configure and setup the application development environment			R	
- Identify the necessary component		R		
- Research on Application Development Tool	R			
- Component/Software Design		R		
Build				
- Software module 1 development	A	A	A	R
- Software module 2 development	R	A	A	A
- Software module 3 development	A	R	A	A
- Software module 4 development	A	A	R	A
- Software module 5 development	A	R	A	A
- Software module 6 development	A	A	A	R
Test				
- Work as expected	R			
- Satisfy the needs of stakeholder			R	
- Correction	A	A	A	R

R = Responsible, A = Assisting

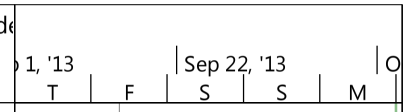
ID	Task Mode	Task Name	Duration	Start	Finish	Prede
1		**Design**	**12 days**	**Mon 9/16/13**	**Mon 9/30/13**	
2		Identify the requirement and constraint	3 days	Mon 9/16/13	Wed 9/18/13	
3		Identify possible solution and design alternatives	4 days	Mon 9/16/13	Thu 9/19/13	
4		Identify potential risk of the design alternatives	4 days	Fri 9/20/13	Wed 9/25/13	2,3
5		Check with the supervisor for the feasibility of	1 day	Thu 9/26/13	Thu 9/26/13	4
6		Finalized the proposed design	3 days	Fri 9/27/13	Mon 9/30/13	5
7		**Software Research**	**16 days**	**Tue 10/1/13**	**Tue 10/22/13**	
8		Android stick and glass relay shippment	5 days	Tue 10/1/13	Mon 10/7/13	6
9		Research on the Application Development Tool	16 days	Tue 10/1/13	Tue 10/22/13	6
10		Configure and setup the application development	3 days	Tue 10/8/13	Thu 10/10/13	8
11		**Build**	**123 days?**	**Fri 10/11/13**	**Tue 4/1/14**	
12		Requirement specification	6 days	Fri 10/11/13	Fri 10/18/13	10
13		Identify the necessary component	5 days	Mon	Fri 10/25/13	12
14		Component/Software design	16 days?	Mon	Mon 11/18/13	13
15		Software Module 1 Development + Unit Testing	10 days?	Tue 11/19/13	Mon 12/2/13	14
16		Software Module 2 Development + Unit Testing	10 days?	Tue 12/3/13	Mon 12/16/13	15
17		Software Module 3 Development + Unit Testing	10 days?	Tue 12/17/13	Mon 12/30/13	16
18		Software Module 4 Development + Unit Testing	10 days?	Tue 12/31/13	Mon 1/13/14	17
19		Software Module 5 Development + Unit Testing	10 days?	Tue 1/14/14	Mon 1/27/14	18
20		Software Module 6 Development + Unit Testing	10 days?	Tue 1/28/14	Mon 2/10/14	19
21		**Test**	**36 days?**	**Tue 2/11/14**	**Tue 4/1/14**	
22		Meets the requirement specified	3 days	Tue 2/11/14	Thu 2/13/14	20
23		Work as expected	11 days	Fri 2/14/14	Fri 2/28/14	22



Project: Proposed Design Ver B
Date: Tue 10/15/13

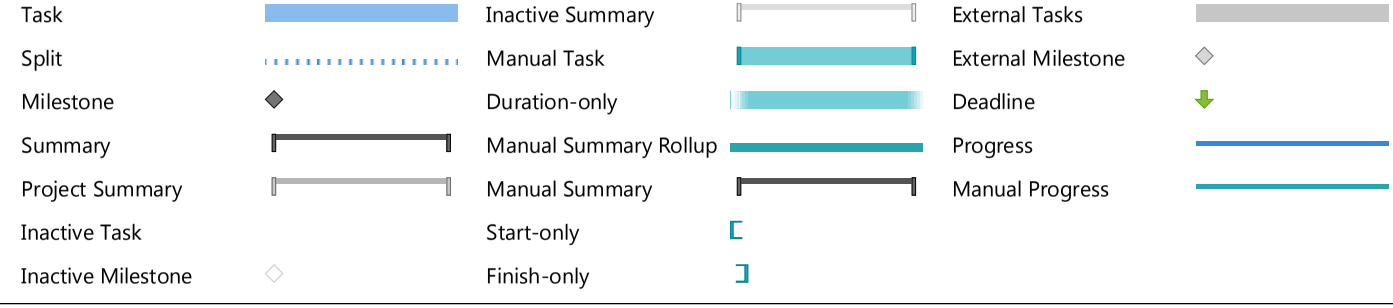
Task	Inactive Summary	External Tasks
Split	Manual Task	External Milestone
Milestone	Duration-only	Deadline
Summary	Manual Summary Rollup	Progress
Project Summary	Manual Summary	Manual Progress
Inactive Task	Start-only	
Inactive Milestone	Finish-only	

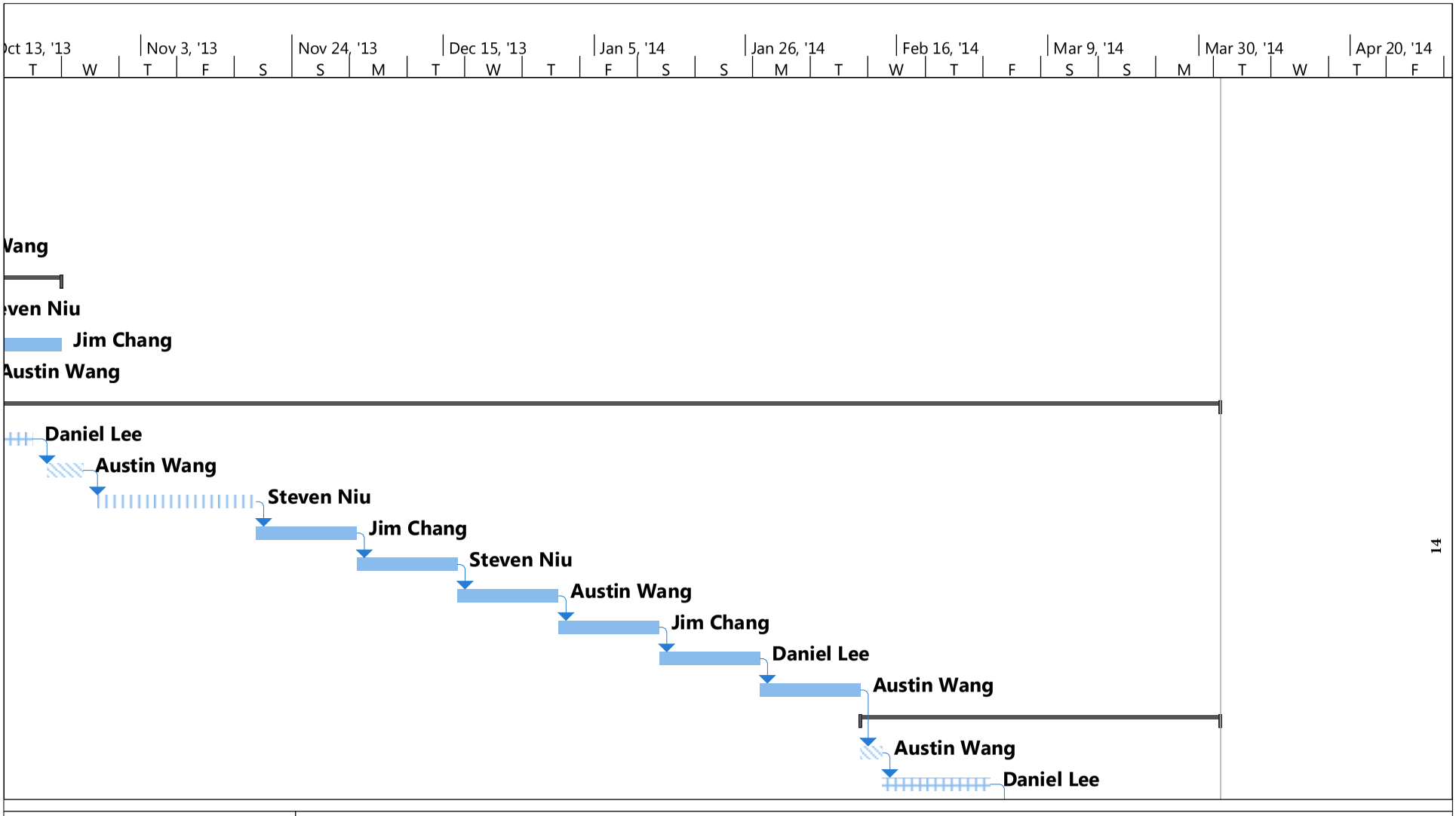
ID	Task Mode	Task Name	Duration	Start	Finish	Prede
24		Satisfies the needs of stakeholder	11 days	Mon 3/3/14	Mon 3/17/14	23
25		Correction	11 days?	Tue 3/18/14	Tue 4/1/14	24



13

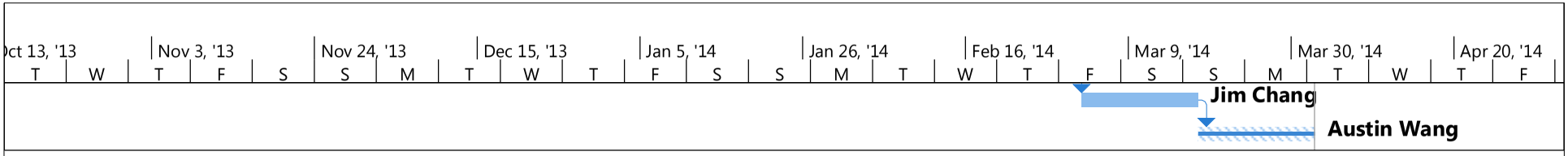
Project: Proposed Design Ver B
Date: Tue 10/15/13





Project: Proposed Design Ver B
Date: Tue 10/15/13

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Progress	
Project Summary		Manual Summary		Manual Progress	
Inactive Task		Start-only			
Inactive Milestone		Finish-only			



15

Project: Proposed Design Ver B
Date: Tue 10/15/13

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Progress	
Project Summary		Manual Summary		Manual Progress	
Inactive Task		Start-only			
Inactive Milestone		Finish-only			

Financial Plan

Table 4: Budget Table
This table outlines the contribution of each resource to the overall budget.

Item	Priority	Cost per Unit	Free?	Quantity	Total Cost
Touch Panel	1	$700	n	1	$700
LCD Screen	1	$400	n	1	$400
Android stick	1	$100	n	1	$100
Android OS	1	$0	y	1	$0
Android SDK	1	$0	y	1	$0
Total cost	-	-	-	-	$1200
Total Contribution for 4 students	NA	-$100	n	4	-$400
Net	-	-	-	-	$800

Explanation of contingency arrangement

Priority 1) Touch Panel and LCD Screen: we have two contingency plans in case we are unable to achieve the targeted funds for the commercialized touch panel and LCD screen. First, we can implement the touch screen using an alternative touch screen design (camera and projector) which should cut the cost down to less than $300. Second, we can cut down the screen size to a more affordable option but still retain the ability to showcase the applications.

Conclusion

The main goal in this project is to discover the possibilities and potential of a touch table with our applications. Thus, a better established OS platform underneath will make the design process simpler and more efficient compared to lesser ones. Android system with its more available SDK serves this need. It has also been widely developed in mobile devices and accepted by the general public, so the end product of our application designs will be delivered on a more familiar and accessible environment to the audience. Besides, based on the research, we see the portability advantage of an Android Stick to a touch panel. The ease of hardware integration will allow us to focus more on the essential part of our design - the software applications.

References

[1] Chelsi Halstead, “Touch Screen Technology Grows Popular” Artesian Herald, [online] Issue 6, pp. 12, December 2009, Available: http://msdadmin.scican.net/mhs/mhs_area_artesian%20herald/Artesian%20Herald%20Volumes/20092010/issue_6/MHSA12-BW-1217.pdf

[2] Rodney Chan, “Touch-Screen Shipments Expected to Reach 833 Million by 2013” [Online] May 2008, Available: http://www.digitimes.com/news/a20080521PR201.html

[3] “iPhone drives up popularity of touchscreen phones” The Canadian Press, [Online] September 2011, Available: http://www.ctvnews.ca/iphone-drives-up-popularity-of-touchscreen-phones-1.696869

[4] “Device Ownership” Pew Research Center, [online] [cited September 29, 2013], Available: http://www.pewresearch.org/data-trend/media-and-technology/device-ownership/

[5] ecoke (internet alias) “The effect of smart phones on social interaction” [online] June 2013, Availablehttp://ecoke.hubpages.com/hub/The-effect-of-smart-phones-on-social-interaction

[6] Wikipedia “Tablet PC dimensions and cases sizes” [online] [cited September 29, 2013], Available: http://en.wikipedia.org/wiki/Tablet_PC_dimensions_and_cases_sizes

[7] “Microsoft PixelSense” Microsoft, [online product page], Available: http://www.microsoft.com/en-us/pixelsense/Press.aspx

[8] Eliot Van Buskirk “Beyond the iPad: Massive MultiTouch Displays Have Big Social Potential” [online] April 2010, Available: http://www.wired.com/business/2010/04/beyond-the-ipad-massive-multitouch-displays-have-big-social-potential/

[9] Uta Hinrichs and Sheelagh Carpendale. (2011, May) “Gestures in the Wild: Studying Multi-Touch Gesture Sequences on Interactive Tabletop Exhibits”, [online]. pp. 3-5. Available: http://innovis.cpsc.ucalgary.ca/innovis/uploads/Publications/Publications/Hinrichs2011CHI.pdf

ECE496 Design Project

Student – Supervisor Agreement

Our signatures below indicate that we have read and understood the following agreement, and that all parties will do their best to live up to the word as well as the spirit of it.

We agree to meet at least once every two weeks for at least half an hour to discuss progress, plans, and problems that have arisen. Before each meeting, the group will prepare a brief progress report that will form the basis for the discussions at the meeting.

If a meeting has to be cancelled by the supervisor, she/he should advise the group as early as possible. If a student cannot attend a meeting, she/he should advise members of the group as well as the supervisor as early as possible.

Both the supervisor and the students will:

- Inform themselves of the course expectations and grading procedure.

The supervisor will:

- Provide regular guidance, mentoring, and support for his/her design project group(s),
- Take an active role in evaluating the work and performance of the students' by completing the supervisor's portion of the grading forms for each course deliverable expediently.
- Return a photocopy of the completed grading evaluation forms to the appropriate section administrator in a timely fashion.
- Be aware of the aims and processes of the course as outlined in the Supervisor's Almanac.

We have read and understood this agreement. Date: _____

Signature of supervisor: _____

Signature of student: _____

Signature of student: _____

Signature of student: _____

Signature of student: _____

Last revision: 7/08

Project Proposal Document Attribution Table

This table should be filled out to accurately reflect who contributed to each section of the report and what they contributed. Insert rows as needed. The original completed and signed form must be included in the hardcopies of the final Project Proposal draft.

Section	***Student Initials***			
	1.	*2.*	*3.*	*4.*
All				

Abbreviation Codes:
Fill in abbreviations for roles for each of the required content elements. You do not have to fill in every cell. The "**All**" row refers to the complete document and should indicate who was responsible for the final compilation and final read through of the completed document.

RS – responsible for research of information
RD – wrote the first draft
MR – responsible for major revision
ET – edited for grammar, spelling, and expression
OR – other
"All" row abbreviations:
FP – final read through of complete document for flow and consistency
CM – responsible for compiling the elements into the complete document
OR - other
If you put OR (other) in a cell please put it in as OR1, OR2, etc. Explain briefly below the role referred to:
OR1: enter brief description here
OR2: enter brief description here

Signatures
By signing below, you verify that you have read the attribution table and agree that it accurately reflects your contribution to this document.

Name _____ ***Signature*** _____ ***Date:***
Name _____ ***Signature*** _____ ***Date:***
Name _____ ***Signature*** _____ ***Date:***
Name _____ ***Signature*** _____ ***Date:***