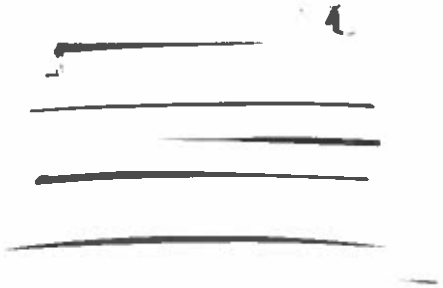
Design Project / Client Charter

Prepared for: Justin Filoseta

In support of project: IT equipment inventory tracking system

Date: January 20th, 2017



Contact Information

Customer Name and Email: Justin Filoseta - filoseta@gatech.edu

Student Team Leader / Project Manager and Ema[redacted]

Authorization

Customer Signature: _____

Student Team Leader Signat[redacted]

Course Instructor Signature/s: _____

Purpose

This client charter documents and tracks the necessary information to establish a shared understanding between the customer and the students for the IT equipment inventory tracking project. This charter includes information about the students' responsibilities to the customer and the limits of their participation, as well as the customer's responsibilities during the course of the project.

The intended audience of the client charter is the customer, course instructors and the student team.

Customer Responsibilities

The customer agrees to review students' work at various stages in the semester and provide the team with feedback on their requirements and other deliverables as well as their communication with the team. The instructors will request feedback on student performance twice during each semester; this feedback will be factored into part of the students' course grade.

There is no charge to participate as a customer; however, any special requirements for development, equipment, and web hosting costs, for example, will be borne by the customer. Most projects do not incur a cost.

Student Responsibilities

The students are responsible for working with the customer to establish the requirements for the project and to scope the project appropriately for two semesters. Table 1 presents the deliverables for the project.

Students will be evaluated on their performance as a team according to the following categories: professionalism, communication, timeliness, quality of deliverables, assessment of prototypes (first semester), and assessment of final product (second semester).

Table 1. Project Deliverables

Deliverable Item	Approximate Delivery Date
Product Vision	
Prioritized User Stories (Initial Set. These will be refined with the customer throughout the project).	
Preliminary User Interface Mockups	
Usability Evaluation	
Initial Prototype	
Iteration Plan	
Sprint 1 Functions	
Sprint 2 Functions	
Detailed Design	
Sprint 3 Functions	
Sprint 4 Functions	
Final Source Code Delivery (GitHub)	
Customer Release Notes (GitHub Readme)	
Final Product Handoff	

Limitations

The software is delivered as-is at the end of the semester. There is no warranty or guarantee provided. The students make a best-effort scope the customer requirements within the limitations of available time. The students, Georgia Institute of Technology and the University System of Georgia are not responsible for software failures or misuse of the delivered system.

There is no maintenance or service provided after software delivery. The customer may request the project be continued by a new team.

Intellectual property (IP) regulations are set by Georgia Institute of Technology and are detailed in section 5.4 of the faculty handbook. Customers and students can refer to the full policy at:
http://www.policylibrary.gatech.edu/faculty-handbook/5.4-intellectual-property-policy.

Briefly, the IP for software developed by students remains with the students. Also, Georgia Institute of Technology may use student-developed software royalty-free. All other IP, such as customer provided code, business ideas and processes, remains with the customer.

Iteration Plan

The following iteration plan (Table 3) is finalized by students and customers during the first two weeks of the **second** semester. The iteration plan prioritizes user stories that the students will complete in each sprint. Customers should be aware that this plan is a living document, and may be subject to change as the sprints follow a time-boxed strategy.

Table 3. Iteration Plan

Sprint	Weeks	Sprint Goal	User Stories / Features to be completed:
1	1-3	IT administrators can perform basic equipment tracking on the website.	As an IT administrator, I want to add new equipment to the system so that it can be tracked by the system. (IT admin #3) As an IT administrator, I want to mark exisiting equipment in the system as 'surplused' or 'trash' so that it is no longer seen by default search parameters (but can still be located) (IT admin #4) As an IT administrator, I want to modify existing equipment data so that I can fix or update existing equipment status. (IT admin #5) As an IT administrator, I want to add an equipment log entry so that I can update the equipment history. (IT admin #6) As an IT administrator, (with appropriate permissions), I want to be able to delete entries. (IT admin #18)
2	4-6	Renters can receive	As an IT administrator, I want to search for exisiting equipment in the system by any AND/OR collection of

		confirmation emails and IT administrators can use advanced functions.	attribute values, and for each of the values to be able to specify '<,>,<=,>=,==,!=,contains,before,on,after' as appropriate for the attribute type. (IT admin #1) As an IT administrator, I want to define some attribute values which will be default (but overridable) for new searches I run. (IT admin #2) As an IT administrator, I want to view the equipment log so that I can audit the equipment history. (IT admin #7) As an IT administrator, I want to view a summary of the current equipment information as well as a complete history of every change over time by date and with the actor making the change. (IT admin #8) As an IT administrator (with appropriate permissions), I want to be able to add single and multiple value attribute fields to be included in one or more types of equipment, with those fields being one of: a boolean, a string (with optional regex validator), and enumerated set of options, an integer, a dollar value, a date, or a text box. (IT admin #13) As an IT administrator (with appropriate permissions), I want to be able to designate an attribute field to be 'required', 'suggested', or 'optional' for each type of equipment. (IT admin #14) As an IT administrator (with appropriate permissions), I want to define help text for an attribute field to display in a suitable manner on the view and update pages for equipment. (IT admin #16) As an IT administrator, I want to be able to preform a bulk change to a set of entries identified by search (re: RT bulk update). (IT admin #17) As an IT administrator, I want to be able to designate loans for which renewals are automatically granted. Refer to Renters #4. (IT admin #20)

			As a renter, I want to receive an email when equipment I had on loan is returned in the system. (Renters #3)
3	7-9	IT administrators can configure their views. Property coordinators can view equipements of their concern. Systems administrators can add attributes to users, full access to data, and configure security policy.	As an IT administrator (with appropriate permissions), I want to be able to configure an attribute field to display based on a substitution of the stored value. For example, changing a ticket number into a linked URL to open the ticket in its web interface, or the same for a PO number. (IT admin #15) As an IT administrator, I want to configure a preference of the order in which attributes should be displayed for my views. (IT admin #19) As a property coordinator, I want to see the list of equipment that I am responsible for by their type, renter, department, and other categories so that I can check their status and location. (Property Coordinator #1) As a property coordinator, I want to see detail information and status of the equipment so that I can use that data to do my job. (Property Coordinator #2) As a system administrator, I want to define available attributes for a user similar to how attributes for equipement can be defined. (System Admin #8) As a system administrator, I want to add security policy so that I can control system access by central IDM entitlements/ACLs. (System Admin #9) As a system administrator, I want to have full permission to the system data so that I can add, remove, modify, and view any data in the system. (System Admin #13)
4	10-12	System administrators can use plugins.	As a system administrator, I want to add plugins so that I can integrate the system with a third-party software, pulling attributes of equipment into the inventory from external data sources. (System admin #3) As a system administrator, I want to add plugins/hooks so that the inventory system can take action on thrid party

			services when changes are made to a piece of equipment in the inventory. (System admin #4) As a system administrator, I want to be able to configure plugins/hooks with regard to attribute values to which they apply, attribute values it can provide, the frequency of automated refreshes, if it support a "get all" and the attribute value range it does so over, if the IT admin can preform an on demand refresh, and call information (executable + params OR URL + auth). (System admin #5) As a system administrator, I want both inbound and outbound plugins/hooks to be able to log to the inventory system in general and into the change log for the relevant piece of equipment such that the latter can be visible to IT administrators. (System admin #6) As a system administrator, I want to define a plugins/hooks so the inventory system can query user attribute values. (System admin #7)
5	13-15	IT administrators and Renters can use annual certification feature. Property coordinator can generate reports from the website.	As an IT administrator, I want to request a user to validate his/her equipment posession by providing instructions so that I can make sure loaned equipment is still with the user. (IT admin #9) As an IT administrator, I want to generate a report of equipment so that I can use it as an official record. (IT admin #10) As an IT administrator, I want to generate a report of user so that I can use it as an official record. (IT admin #11) As an IT administrator, I want to be able to automatically send out reminders about loan due dates. (IT admin #12) As a renter, I want to be able to request an extension of a loaned equipment individual and in bulk after acknowledging agreement with a policy. (Renters #4)

			As a renter, I want to be able to complete my annual certification that my loaned equipment is in my posession. (Renters #5) As a renter, I want to be able to upload proof that GT-Tagged loaned equipment is in my posession for my annual certification. (Renters #6) As a property coordinator, I want to generate a report of equipment by various categories so that I can use it as an official record. (Property Coordinator #3)

Table 4. Stretch Goals

User Stories/Features to be completed	Probability of Completion (High, Medium, Low)
As a renter, I want to report lost equipment to the system so that it can be replaced or proper action can be taken.	Low
As a renter, I want to report damaged or malfunctioning equipment to the system so that it can be replaced or fixed.	Low

Customer Feedback

Twice per semester, the instructors will request feedback from the customer on the student team's progress. The midterm assessment allows the instructors and customers to monitor student participation, and if needed, provide corrective action. If the customer is concerned about the team's performance, the customer may contact the instructors at any time. The final assessment each semester is treated as official feedback which factors into the students' final grades.

The customer's feedback on the team's performance will address the following areas:

- Professionalism
- Communication
- Timeliness
- Quality of deliverables

- Assessment of prototype (first semester only)
- Assessment of final product (second semester only)

User Stories
IT Equipment Inventory Tracking System

IT administrators (Primary User)

1. As an IT administrator, I want to search for exisiting equipment in the system by any AND/OR collection of attribute values, and for each of the values to be able to specify '<,>,<=,>=,==,!=,contains,before,on,after' as appropriate for the attribute type.
2. As an IT administrator, I want to define some attribute values which will be default (but overridable) for new searches I run.
3. As an IT administrator, I want to add new equipment to the system so that it can be tracked by the system.
4. As an IT administrator, I want to mark exisiting equipment in the system as 'surplused' or 'trash' so that it is no longer seen by default search parameters (but can still be located).
5. As an IT administrator, I want to modify existing equipment data so that I can fix or update existing equipment status.
6. As an IT administrator, I want to add an equipment log entry so that I can update the equipment history.
7. As an IT administrator, I want to view the equipment log so that I can audit the equipment history.
8. As an IT administrator, I want to view a summary of the current equipment information as well as a complete history of every change over time by date and with the actor making the change.
9. As an IT administrator, I want to request a user to validate his/her equipment posession by providing instructions so that I can make sure loaned equipment is still with the user.
10. As an IT administrator, I want to generate a report of equipment so that I can use it as an official record.
11. As an IT administrator, I want to generate a report of user so that I can use it as an official record.
12. As an IT administrator, I want to be able to automatically send out reminders about loan due dates.
13. As an IT administrator (with appropriate permissions), I want to be able to add single and multiple value attribute fields to be included in one or more types of equipment, with those fields being one of: a boolean, a string (with optional regex validator), and enumerated set of options, an integer, a dollar value, a date, or a text box.
14. As an IT administrator (with appropriate permissions), I want to be able to designate an attribute field to be 'required', 'suggested', or 'optional' for each type of equipment.
15. As an IT administrator (with appropriate permissions), I want to be able to configure an attribute field to display based on a substitution of the stored value. For example, changing a ticket number into a linked URL to open the ticket in its web interface, or the same for a PO number.
16. As an IT administrator (with appropriate permissions), I want to define help text for an attribute field to display in a suitable manner on the view and update pages for equipment.

17. As an IT administrator, I want to be able to preform a bulk change to a set of entries identified by search (re: RT bulk update).
18. As an IT administrator (with appropriate permissions), I want to be able to delete entries.
19. As an IT administrator, I want to configure a preference of the order in which attributes should be displayed for my views.
20. As an IT administrator, I want to be able to designate loans for which renewals are automatically granted. Refer to Renters #4.

Renters (Secondary User)

1. Nice to have (as a link or form which initiates an email or RT ticket): As a renter, I want to report lost equipment to the system so that it can be replaced or proper action can be taken.
2. Nice to have (as a link or form which initiates an email or RT ticket): As a renter, I want to report damaged or malfunctioning equipment to the system so that it can be replaced or fixed.
3. As a renter, I want to receive an email when equipment I had on loan is returned in the system.
4. As a renter, I want to be able to request an extension of a loaned equipment individual and in bulk after acknowledging agreement with a policy.
5. As a renter, I want to be able to complete my annual certification that my loaned equipment is in my posession.
6. As a renter, I want to be able to upload proof that GT-Tagged loaned equipment is in my posession for my annual certification.

Property Coordinator (Secondary User)

1. As a property coordinator, I want to see the list of equipment that I am responsible for by their type, renter, department, and other categories so that I can check their status and location.
2. As a property coordinator, I want to see detail information and status of the equipment so that I can use that data to do my job.
3. As a property coordinator, I want to generate a report of equipment by various categories so that I can use it as an official record.

System Administrators (Secondary User)

1. As a system administrator, I want to see a system wide log so that I can audit the system.
2. As a system administrator, I want to generate a system report so that I can use it as an official record.
3. As a system administrator, I want to add plugins so that I can integrate the system with a third-party software, pulling attributes of equipment into the inventory from external data sources.

4. As a system administrator, I want to add plugins/hooks so that the inventory system can take action on thrid party services when changes are made to a piece of equipment in the inventory.
5. As a system administrator, I want to be able to configure plugins/hooks with regard to attribute values to which they apply, attribute values it can provide, the frequency of automated refreshes, if it support a "get all" and the attribute value range it does so over, if the IT admin can preform an on demand refresh, and call information (executable + params OR URL + auth).
6. As a system administrator, I want both inbound and outbound plugins/hooks to be able to log to the inventory system in general and into the change log for the relevant piece of equipment such that the latter can be visible to IT administrators.
7. As a system administrator, I want to define a plugins/hooks so the inventory system can query user attribute values.
8. As a system administrator, I want to define available attributes for a user similar to how attributes for equipement can be defined.
9. As a system administrator, I want to add security policy so that I can control system access by central IDM entitlements/ACLs.
10. As a system administrator, I want to see system status so that I can monitor the system.
11. As a system administrator, I want to perform system backup so that I can restore system later.
12. As a system administrator, I want to perform system restoration so that I can recover the system.
13. As a system administrator, I want to have full permission to the system data so that I can add, remove, modify, and view any data in the system.
14. As a system administrator, I want to be alerted when a system error occurs so that I can take appropriate actions.

IT Admin #X: an additional type of field "link to another inventory item"
    (so for instance, a hard drive inventory item could be
    linked to the server it is inside, or a monitor
    could be show as attached to a particular system)
    The existing IT Admin #15 will allow us to convert an
    attribute value to a link, so in the worst case we could
    just use a text field type and put in the inventory tag #,
    that would leave the view UI working using a rewrite.

IT Admin #X, add: and define a group to which the attribute belongs.
    (so for instance the attributes for physical properties could be
     visually separated from the attributes with purchase details,
     rather than having everything intermixed in the equipment view)

User Personas

Persona 1

Persona Group:	IT Administrators
Photo:	
Fictional Name:	Kory Walker
Job title and major responsibilities:	Associate IT Administrator, College of Sciences, Georgia Institute of Technology • Loans various IT equipment to professors and researchers at College of Sciences. • Accepts the return of loaned IT equipment from renters. • Manages various issues of loaned IT equipment.
Demographics:	• 25 years old • White male • Single • Has a B.S. in Computer Science
Goals and tasks for using the application:	His main goal is to assist IT related issues of professors and researchers at College of Sciences in a timely manner. He daily tasks includes: • Reviewing and processing loan requests, • Accepting returned IT equipment, • Resolving various issues of loaned IT equipment.
Physical, social, and technological environment:	He is young, friendly, smart, and passionate about his career. He is an IT expert and works with IT expert colleagues. He uses email and internal IT management website extensively to accomplish his daily tasks. He has a good amount of software development experiences. He also understands general

	workflow and needs of professors and researchers at College of Sciences.

Persona 2

Persona Group:	System Administrator
Photo:	
Fictional Name:	Jack Johnson
Job title and major responsibilities:	Senior System Administrator, College of Sciences, Georgia Institute of Technology • Makes sure servers are still running and fixes them if they stop • Updating the system operating system and apply patches when necessary • Watches for security threats • Installs new hooks when a need to interface with a new system is required.
Demographics:	• 43 years old • White male • Married • Has a B.S. in Computer Science
Goals and tasks for using the application:	His main goal is to oversee the health of the system as a whole and update when necessary. He daily tasks includes: • Reviewing system logs and checking for errors • Respond and resolve any reported problems from the users or IT admins. • Keep the system documentation up to date
Physical, social, and technological environment:	He is a middle-aged man with two kids in elementary school. He has had various jobs in the software engineering and development industry but chose to stick to system admin

	because he enjoys broad level system architecture. He has a solid understanding of system architecture and network so he is able to handle daily maintenance.

Persona 3

Persona Group:	IT Administrators
Photo:	
Fictional Name:	Franklin Hertzog
Job title and major responsibilities:	Senior IT Administrator, College of Sciences, Georgia Institute of Technology • Facilitates the loaning and returning of IT equipment • Ensures that information about equipment is correct and up to date • Handles issues reported by renters
Demographics:	• 40 years old • African American male • Married with two children • Has an M.S. in Information Management
Goals and tasks for using the application:	His main goal is to assist IT related issues of professors and researchers at College of Sciences in a timely manner. He daily tasks include: • Managing the daily tasks of junior IT administrators • Resolving large scale issues relating to IT equipment

Physical, social, and technological environment:	He is a seasoned IT manager who is experienced in resolving client issues and pride himself in his ability to do so quickly. He leads a small team of IT professionals and maintains a friendly professional relationship with them. He has experience with all manner of IT related technology which allows him to quickly identify the source of issues that arise within his department. He also has a good understanding the internal operations of the College of Sciences and the IT demands precipitated by these operations.

Persona 4

Persona Group:	Renters
Photo:	
Fictional Name:	Dreyfus R. Kriegstadt
Job title and major responsibilities:	Professor, School of Physics, Georgia Institute of Technology • Teaches graduate students and conducts research. • Composes assignments and oversees Teaching Assistants • Uses technology (namely his laptop computer) for all of the aforementioned tasks
Demographics:	• 67 years old • White male • Single • Has a B.S. and Ph. D in Physics
Goals and tasks for using the application:	He needs to be able to use the system to find and requisition a loaned laptop. It must be capable of running fairly complex modeling software while also being useful for communicating with TAs, students, and colleagues via email. He must also be able to log into the system and see which items he has currently loaned out.

Physical, social, and technological environment:	He is older and impatient. He is competent in his use of technology but is generally unwilling to approach a system or user interface with too "modern" or "abstract" of a design. He wants to simply enter his (familiar, the department issued) credentials, rent equipment or check a list of rented equipment, view any information associated with these items, and be on his way. He is familiar with traditional window-based UI and navigation as well as typical office applications.

Persona 5

Persona Group:	Property Coordinator
Photo:	
Fictional Name:	Jeneice Soultanian
Job title and major responsibilities:	Secretary, College of Mathematics • Maintains records on request for various equipment • Organizes and gets info from logs on Microsoft Excel • Answers calls and schedules meetings between faculty
Demographics:	• 27 years old • Black Female • Single • Has a B.S. in Marketing
Goals and tasks for using the application:	To meet a request, Jeneice needs to access the system as a property coordinator and create a report an item's use over the past year.
Physical, social, and technological environment:	She is young and good with computers because she grew up with them. She doesn't have a formal Computer Science background. A lot of her time on the computer is spent in

	Microsoft Office and browsing the web. She does not know the purpose of her task, just simply that a report on a certain piece of equipment is needed.

Scenarios

Kory Walker - IT administrator - Adding new laptop into the system.

Scenario Description	Kory received a new laptop that the IT department ordered a week ago from the vendor and would like to put it in the system so that he can loan it to a new researcher in Biology Lab.
Step 1:	Kory accesses to the IT equipment inventory tracking system web page. Question: Will Kory know the domain name of the system?
Step 2:	Kory login to the system. Question: Where Kory can get his credentials? How can he recover his credentials if he forgets? Idea: We could provide a link to retrieve his credential if he forgot.
Step 3:	Kory selects "Equipment" menu. Comment: We want our UI to be simple and intuitive so that Kory does not need to spend time finding the feature he wants.
Step 4:	Kory selects "Add equipment" submenu. Question: Will add equipment menu be visible if Kory does not have proper permissions to the system? Idea: We could gray out the add equipment menu if a user does not have permission to do so. Grayouting menu is the way to let users know that they do not have permissions to perform specific functions to the system but the function exists. We could also have user's permissions displayed on the screen.
Step 5:	Kory chooses "laptops" in the "Add equipment" screen. Comment: He can also choose "Other" to add special equipment.
Step 6:	Kory fills in empty fields in the "Add equipment" screen. Comment: Appropriate attributes will show up and they may be prefilled with default values. He can either keep the default value or enter the new value. Attribute fields may be a text field, checkboxes, radio buttons, or drop-down menus. He can also add and define new attributes specific to the equipment.

	Idea: We should have a duplicate menu on the form or let the user input number of devices so that IT admins can add multiple devices at once.
Step 7:	Kory clicks "Submit" button to finish adding equipment to the system. Comment: He can also click save button to save the work or click cancel button to leave the menu.
Step 8:	Kory gets feedback from the system that adding new equipment was successful along with system-generated unique ID. Comment: He can download system generated unique ID in .csv or .pdf file. Question: Should we send a confirmation email to Kory?

Franklin Hertzog - IT Administrator - Changing incorrect information about an item.

Scenario Description	Franklin receives an email from a Professor informing him that he requested a laptop that runs on Window's OS but received a computer that runs on Ubuntu. Franklin wants to update the inventory system to show the proper OS for the laptop and find out how and when the incorrect information was entered into the system.
Step 1:	Franklin accesses to the IT equipment inventory tracking system web page.
Step 2:	Franklin logs into his IT admin account
Step 3:	Franklin navigates to the "Find Equipment" page of the website
Step 4:	Franklin sets the equipment type to laptop and enters the identification number of the laptop into the identification number text field and selects the search option QUESTION: Should the filter process be separated into separate pages? There will be different attributes for different types of equipment, so listing all possible attributes for all types of equipment might be confusing.
Step 5:	Franklin selects the laptop he is searching for from a list of equipment generated by his search QUESTION: In this case, there would only be one item listed as only one item would have the identification number. If there is only one possible option available, should the system just go directly to the page that lists the information for the item?

Step 6:	Franklin selects the edit option on the laptops information page
Step 7:	Franklin enters the correct information about the laptops operating system and selects the save changes option on the edit page and is redirected to the information page.
Step 8:	Franklin selects view log option on the information page and is directed to the log page of the laptop.
Step 9:	Franklin finds when and how the laptop's operating system attribute was changed to the incorrect value QUESTION: Should the user be able to filter the log entries for a specific piece of equipment?

Dreyfus Kriegstadt - Renter - Renting a laptop from the system

Scenario Description	
Step 1:	Professor Kriegstadt accesses the equipment rental interface.
Step 2:	Professor Kriegstadt logs in with his School of Physics or Georgia Tech issued LDAP. Comment: The professor does not enjoy keeping track of all of his different logins for different services, especially one that is only seldom used (like when he needs equipment). He and his colleagues prefer to use the same login information that they use to login elsewhere as it is both quick and familiar).
Step 3:	He chooses search criteria for a laptop from available dropdowns. His criteria for the search are: • The laptop must be available to rent (system handles this) • The laptop must run Windows (for modeling software & email client) • The laptop must have at least 8gb of RAM (to run modeling software)
Step 4:	He sees a list of equipment matching his specified criteria.
Step 5:	He chooses to "Rent" a laptop by clicking the appropriate button on the item of his choosing. If applicable (department specific), he enters the room number where the equipment will largely reside.

Step 6:	He receives an email with the terms of his rental to the email address associated with his login information in the LDAP system. The email also contains instructions regarding when and where his laptop will be able to be picked up.
Step 7:	He logs out of the system and proceeds to pick up his computer.

Jack Johnson - System Administrator - See the system log

Scenario Description	Jack gets a notification that it is time for his weekly system audit. This is so that Jack can check the status of the system and make any updates or modifications to get the server to run optimally.
Step 1:	Jack logs into his system admin account (the login credentials determines he is a system admin and redirects him to a secure page reserved only for the sysadmins.) QUESTION: Should the sysadmin have their own backend login page? Does that reduce security threats? Is there a way we can have a hidden domain for only the sysadmin to have access to?
Step 2:	Jack navigates to "System Logs" on the task bar. This redirects him to the system logs page.
Step 3:	Here, Jack clicks the previous week which opens up the system log for the past 7 days.

Jeneice - Property Coordinator - Generate a report

Scenario Description	Jeneice is asked to generate a report of a certain Lenovo laptop acquired by the College of Mathematics in 2015. A full history of this item is needed
Step 1:	Jeneice navigates to the IT inventory tracking system's home page Question: Does Jeneice know the domain name of the system?
Step 2:	Jeneice logs in to the system Question: Where did Jeneice get her credentials? What if she hasn't been assigned credentials? Idea: We could provide a number to call/person to email to request credentials.

Step 3:	Jeneice selects "Report" menu. Comment: Have a 'Report' adds to the ease of use for Janeice and other Property Coordinators who will only generally be using this system to generate reports.
Step 4:	Janeice searches by the serial number of the laptop she needs the report on next to the field "Add equipment item(s) to report:" Comment: What is she doesn't have the serial number? Idea: Can search for item based on other feature as well like acquisition date, last returned, etc.
Step 5:	Jeneice finds the specific laptop she wants to report on from her search.
Step 6:	The next report requirement is "Add Feature(s) to Reports:" and include check boxes such as "rental history","rental reasons", "last used", etc. The last field says "Generate report begining on MM/DD/YYYY" Jeneice is told to get a full history report on the item. Under these two fields she sees a circle check box stating "Geneate Full History Report". When she clicks this, the 'Add feature(s)' and 'Generate report beginning…' turn grey and are filled in automatically. Comment: Having the option for a full history report adds to the ease of use for Jeneice and others who will be using the system mainly for this reason.
Step 7:	Jeneice clicks "Submit" button to generate her report Comment: We should present a print preview that will show what the report looks like to the user and allow them to manipulate and customize their template.
Step 8:	Jeneice views the Print Preview page and is fine with how the report looks. She sets the amount of copies to 2 and proceeds to print out the report. Question: Could we have an option to receive the report via email as well?

IT Equipment Inventory Tracking System Test

November 13, 2016

Table of Contents

Introduction

Information technology equipment has a critical role in day-to-day operations of large organizations, especially universities. Every department has the technological equipment required for daily operation. All of the equipment must be organized and managed in a way such that it does not impede the day-to-day function of the department. This requires keeping inventory and processing maintenance requests in a timely manner. Currently, there are many commercial IT infrastructure tracking and management services available, but none that fits the needs of a College. Our product, IT Equipment Inventory Tracking System, solves this problem by providing a simple and unique software system to the IT department at College of Sciences.

A usability test is intended to determine the extent an interface facilitates a user's ability to complete routine tasks. Typically the test is conducted with a group of potential users either in a usability lab, remotely (using e-meeting software and telephone connection), or on-site with portable equipment. Users are asked to complete a series of routine tasks. Sessions are recorded and analyzed to identify potential areas for improvement to the website.

The IT Equipment Inventory Tracking System developers conducted usability test using a Balsamiq user interface mock-ups on the test moderator's laptop. Test sessions are captured by QuickTime screen capture feature. Each capture includes an audio conversation between the moderator and the participant. The session captured each participant's navigational choices, comments, questions, and feedback.

Executive Summary

The IT Equipment Inventory Tracking System developers conducted usability test at The Garage at Tech Square in Atlanta, Georgia from October 26, 2016, to October 28, 2016. The Garage at Tech Square is private collaborative workspace at Tech Square. The purpose of the test was to assess the usability of the web interface design, information flow, and information architecture.

Four participants participated in Test Scenario 1 - IT administrator, Three participants participated in Test Scenario 2 - Renter and Test Scenario 3 - Property Coordinator, and Two

participants participated in Test Scenario 4 - System administrator. Each individual session lasted approximately thirty minutes.

In general, most participants found the IT Equipment Inventory Tracking System's web interface to be clear, straightforward, and easy to use. However, even though the web interface for system administrator received good feedback, participants commented that system administrator requires minimal web interface.

This document contains the participant feedback, satisfactions ratings, task completion rates, ease or difficulty of completion ratings, time of the task, errors, and recommendations for improvements. A copy of the scenarios is included in the Attachments' section.

Methodology

Sessions

Our target audience are IT coordinators that work in the IT department in the 6 colleges in the College of Sciences. Considering that, our testers are the IT administrators themselves. We contacted our client who put us in touch with the directors for three other colleges in the College of Sciences with the client being the fourth tester. The fifth user was a non-IT program coordinator at The Garage (the location we used for this usability test).

The sessions lasted about 10-15 minutes and each user played the role of 2 or 3 user groups depending on who was being tested.The user was asked to perform a task and verbally go through his thought process while performing each task. We used Quicktime's screen capture feature to record the screen as the tester was clicking through the mockup. After the tasks were completed, the users were asked how they liked or disliked the UI and if they had any suggestions for improvement.

Participants

The participants were IT directors who were also our clients. Four of the five participants were IT coordinators while the fifth was a non-IT person with no professional computer experience. The testing schedule was split across three days depending on the availability of the group members and the testers as well. All of the testers were male. We did not record any other demographics.

The roles were assigned based on who was being tested. In other words, the IT coordinators were mainly assigned "IT Administrator", "System Administrator", but they also

performed the other roles so we could get more data and so they can see the other user group's UI (because they are also our clients). The non-IT fifth tester was assigned the "Renter" and "Property Coordinator" user groups since no IT background is needed to perform those roles.

Evaluation Tasks

The users were asked to perform a series of tasks based on which role the user was playing.
IT Administrator tasks:

- Add a new laptop to the system.
- Mark the item created in task one as "Surplus" rather than "Available".
- Loan the item created in task one to Karthik Rao

System Administrator tasks:

- Register your email address to the system and indicate that you only want to receive error reports in real-time.
- Create a backup of the system database and save it as "major-update-10-25-2016".
- User the system to identify an error that occured at 3:00am on 10/26/2016.
- Restore the system database using the backup file created in task 2.

Property Coordinator tasks:

- Find Professor X's contact information and location.

Renter tasks

- Find the number of items you currently have checked out.
- Check the specification of the laptop you currently have checked out.
- Request an extension for the laptop you currently have checked out.
- Upload a certification image to verify you are still in possession of your laptop.

Results

IT Administrator Tasks

Task	Description
1	Add a new laptop to the system.
2	Mark the item created in task one as "Surplus" rather than "Available".
3	Loan the item created in task one to Karthik Rao.

Property Coordinator Tasks

Task	Description
4	Find Professor X's contact information and location.

Renter Tasks

Task	Description
5	Find the number of items you currently have checked out.
6	Check the specification of the laptop you currently have checked out.
7	Request an extension for the laptop you currently have checked out.
8	Upload a certification image to verify you are still in possession of your laptop

System Administrator Tasks

Task	Description
9	Register your email address to the system and indicate that you only want to receive error reports in real-time.
10	Create a backup of the system data base and save it as "major-update-10-25-2016".
11	Use the system to identify an error that occurred at 3:00am on 10/26/2016.

12	Restore the system database using the backup file created in task 2.

Task Completion Rates

Tasks one, two, three, five, six, seven, eight, nine, eleven, and twelve had 100% completion rates. Only two task failures occurred during the course of our testing. The first failure occurred when participant 2 attempted to create a backup of the system data base. Our current design implements a general "Manage Backup" screen, which contains the functionality for backing up the system as well as restoring it. Because the link to the page is displayed as "Manage Backup", participant 2 assumed that all fields were relevant for the task. However, only the left hand side of the screen contained fields necessary for backing up the database. This confused the participant. Ultimately, the had to explain the design before the participant was able to continue. The second failure occurred when participant 3 was prompted to find the location and contact information of a renter. The participant indicated that he saw the field that contained the relevant information but did not think it matched the description given by the moderator.

Participant	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
1	√	√	√						√	√	√	√
2	√	√	√						√	X	√	√
3	√	√	√	X	√	√	√	√				
4				√	√	√	√	√				
5	√	√	√	√	√	√	√	√				
Success	4	4	4	2	3	3	3	3	2	1	2	2
Completion Rate	100 %	100 %	100 %	66 %	100 %	100 %	100 %	100%	100 %	50 %	100 %	100 %

Time Taken

Task 1 took an average of 1:11 for participant to complete. The times ranged from 0:32 to 1:38. Task 2 took an average of 0:21 for participant to complete. The times ranged from 0:15 to 0:30. Task 3 took an average of 1:24 for participant to complete. The times ranged from 0:33 to 2:13. Task 4 took an average of 0:27 for participant to complete. The times ranged from 0:10 to 1:00. Task 5 took an average of 0:13 for participant to complete. The times ranged from 0:04 to 0:21. Task 6 took an average of 0:12 for participant to complete. The times ranged from 0:10 to 0:15. Task 7 took an average of 0:15 for participant to complete. The times ranged from 0:11 to 0:17. Task 8 took an average of 0:39 for participant to complete. The times ranged from 0:14 to 0:41. Task 9 took an average of 0:39 for participant to complete. The times ranged from 0:19 to 0:58. Task 10 took an average of 1:10 for participant to complete. The times ranged from 0:45 to 1:35. Task 11 took an average of 0:52 for participant to complete. The times ranged from 0:45 to 0:58. Task 12 took an average of 0:18 for participant to complete. The times ranged from 0:16 to 0:20.

Participant	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
1	1:32	0:21	0:53						0:19	0:45	0:58	0:20
2	0:32	0:15	2:13						0:58	1:35	0:45	0:16
3	1:00	0:18	0:33	1:00	0:14	0:12	0:11	0:14				
4				0:12	0:21	0:15	0:17	0:41				
5	1:38	0:30	0:33	0:10	0:04	0:10	0:16	1:01				
Average	1:11	0:21	1:24	0:27	0:13	0:12	0:15	0:39	0:39	1:10	0:52	0:18

Errors

Participant 1
T1: Clicked the icon instead of the text on first try

Participant 2
T3: Wanted to leave end date blank
T9: clicked the icon instead of text for manage email alerts
T9: didn't want to click cancel to return after completion
T10: Got lost in the restore section while trying to back up, needed to be notified that he was in the wrong section
T10: didn't want to click cancel to return
T11: Clicked on the search bar

Participant 3
T3: Wanted to leave end date blank
T4: Didn't realize that what he was looking for was on the screen (not enough information)

Participant 4
T5: Was unsure if the items he was seeing were the one that the task was asking for. Eventually concluded that they were without prompting

Participant 5
T1: Error with the prototyping software had to reboot
T1: Clicked on the icon, then quickly clicked on the text after realizing the icon was not clickable

Recommendations

IT Administrator

- User Test 1
    - Allow UI buttons to be clickable by icons as well as their corresponding text identifiers.
    - Add more emphasis to the 'Edit Item Information' icon.
- User Test 2
    - Allow more information to be recorded when marking a surplus.

    - On the Loan Item page, implement a check to make sure any item on loan is renewed every year.
    - Users should be searchable by more than just their name, possibly by a unique username, since multiple people may have the same name.
    - Instead of emailing a Loan Confirmation, email a clickable link to confirm the loan to verify that the loanee actually received the physical item.
    - In general, the IT Administrator UI should show more information than in our prototype and be very polished.
- User Test 3
    - Include an automatic field for the ID number.
    - Allow more input for an item's location (Building, Room, etc.).
    - Allow bulk items to be marked as surplus instead of only allowing it one by one.
    - On the Loan Item page, don't include an end date since it is varied and many users keep items until they break or the user is no longer here.
    - Include a box in the top right of the page showing a list of common actions the user can select on pages that are present once a task is completed.
- User Test 5
    - The IP or MAC address included for an item must be static and only made editable by proper Admins.
    - When marking item(s) as surplus, items are often cannibalized so there needs to be an option and indicator for that.
    - Include the following information for an item:
        - Model Number
        - Catalog Number
        - Marketing Number
        - Hard drive Size
        - Current User
        - Notes Section
        - Location
    - An item's history should be shown along with the freedom to sort through it.
    - Allow a custom log to be submitted.

System Administrator

- User Test 1
    - The 'Manage Users and Roles' option and button need to be more visible.
    - The top left of the home screen is a bit cluttered and could be redesigned.
    - Allow System Reports to be exported into a pdf file.

    - In regards to the main table on the bottom of the page, err on the side of more information and less white space than the opposite.
    - Make actions less prominent and keep them in a dropdown menu instead of taking up space on the screen when more useful information could be shown.
    - Have an indicator to show the current CPU usage of our system.
- User Test 2
    - When registering one's email to be alerted by the system, use a config file instead of a UI.
    - The 'cancel' button should not be the only option for going back to a previous page.
    - Many of the tasks a system administrator does, such as create a database backup, should be executable from the terminal instead of having a UI for it.
    - At the bare minimum, the UI should be able to log to a syslog application and log to a central log system archived offsite.
    - When restoring backup, there needs to be sanity checks during potentially unrestorable moves such as overwriting an inventory operation.
    - If a UI is eventually implemented for a System Administrator, provide real time feedback so that the users are phenomenally aware of what they are doing.
    - Instead of a UI, maybe create an initialization script that sets up table or sets permissions. The UI is a bonus that may not be used.

Property Coordinator

- User Test 3
    - Provide more information such as location and contact information for an item and the loanee of the item.
    - A report should be in excel format and include the following attributes: Description, Serial Number, Cost, Loaned To, and Date Loaned.
- User Test 4
    - Put the User Information next to the Item Information.
    - Allow rental location to be clickable and viewable in some sort of Google Maps interface (this may be excessive).
- User Test 5
    - Have the ability to search through items based on their return date.
    - Store numbers as strings instead of integers or other data types.
    - In a potential Smart Search function, differentiate between partial inputs.
    - Be aware of the different types of tags items may have (ie. GT tages, Math dept. tags, Unit tags).

Renter

- User Test 3
    - The table on the left side of the screen should contain more pertinent information.
- User Test 4
    - Make the highlighting of the listed item more obvious.
    - Break the item information as a header of the item name and have the various attributes for that item located directly under the header.
    - Put buttons below the inventory list to make it more intuitive.
    - Maybe provide more guidance for this UI since the users may or may not be experienced with similar systems.
- User Test 5
    - Loaned items could be organized into various item types (ie. Computer, Printer, Router, etc.).
    - Allow items to be sortable by their various attributes.
    - When a particular button is not applicable to the user's current instance, do not remove this button but instead alert the user that the button is not applicable.

Summary of Data

Our experiences conducting testing with our users yielded fairly consistent results, and we found that users felt our screens were largely well laid-out and navigable. The screens where we encountered the most neutral to negative feedback were screens related to administrative tasks.

Errors in interface design often arise where models for functionality fail to match the features that a user expects. In our particular use cases, there were lots of tasks that needed to be accounted for (and that the system should be able to handle) that did *not* require a UI. Our subjects indicated that they'd rather accomplish the tasks outlined for them using a series of command line tools and their own preferred methods for browsing databases. This was an important revelation with respect to design, because we realized that not all user stories (that were discussed with and agreed upon by our customers) necessarily needed to be represented in the UI.

Additional issues were encountered as a result of our prototyping software. We had the ability to link between different screens and views, but not the ability to type and have text update in the UI. This made it somewhat difficult to test search functionality, as a key component of that sort of design is whether the search responds appropriately to whatever search criteria that the user provides. It is undisputed, however, that using this software was vastly superior to our initial attempts at paper prototyping.

Recommendations

Aside from recommendations to omit certain unnecessary parts of the UI, our designs were largely well received. A couple recommendations were made to give the user a different option for "backing out" of a task or scenario other than the "Cancel" button, as "Cancel" can have a negative or destructive connotation. More suggestions were made regarding specific data fields or data attributes, which were all populated with dummy data for the purpose of UI testing. There will be more (and numerous) suggestions like that as we gain more understanding of the system and it specificities. Like any design process, we are starting from a general overview and working towards a specifically architected system.

Conclusion

Our team gained many useful insights into how our system needs to function through these usability tests. One major factor to the usefulness of this process is the fact the the majority of our volunteers are IT Administrators themselves, including our client, and will be eventually using our system.

In terms of the methods we chose for our Usability Testing to work well. The Balsamiq wireframing software was ideal for our testing since it could be interacted via a computer, which is how our eventual system will be used through. We believe this was a more useful choice than our initial idea of drawing mockups on paper. The Quicktime screen capture also fit our needs and didn't require any hassle in setting up. The only thing it did not capture was the user's body language throughout the testing.

In general, we found that our system needs to include more information than our prototype included in the usability tests. This is sort of expected since we are not familiar with the attributes that experienced IT Admins deem the most useful. The general structure of our UI was complemented, although minor recommendations, such as clickable texts and drop down menus, were recommended to make the interface more intuitive. Another major insight we learned is that we may not need to implement a UI for System Administrators since their actions are mostly completed through the terminal. If we do end up implemented a UI for System Administrators it will be minimal.

Attachments

Test Script (IT Administrator - Moderator Copy)

User Test Scenario:

You are an IT Admin. It is your job to add new loanable equipment to the system, loan equipment to users, mark equipment as surplussed, request verification of the possession of an item, update attributes of items, and view log information about items.

Task 1:

You would like to add a new laptop to the system. You are comfortable with the attribute information as it appears (text input is not handled by the prototype).

(Once participant gets to input screen, ask them what would they do)
(If they have idea about correct input, allow them to go to next screen/step)
(Ask them that what they see is expected)

Task 2:

You are viewing the item you created in Task 1. You would like to mark this item as "Surplussed" rather an "Available".

(Once participant get to input screen, ask them what would they do)
(If they have idea about correct input, allow them to go to next screen/step)
(Ask them that what they see is expected)

Task 3:

You are viewing the item you created in Task 1. You would like to loan this item to Karthik Rao.
(wait for user to click "Loan Item")
(hope they click the "Search" bar, which will simulate filtering to attempt to find Karthik's user entry)
(They must then click the row to be taken to the next screen).

(Once participant get to input screen, ask them what would they do)
(If they have idea about correct input, allow them to go to next screen/step)
(Ask them that what they see is expected)

Follow up question

1. What do you think of the flow of actions you experienced while trying to complete the above tasks? Did you have to spend a lot of time deciding what to click, or what to do to accomplish your goal?
2. Do you have any suggestions to system administrator interface?

You have completed usability test for our product.
Thank you for your time and your help improving our product.
(Below is tester copy)

Task:

You would like to add a new laptop to the system. You are comfortable with the attribute information as it appears (text input is not handled by the prototype).

Task:

You are viewing the item you created in Task 1. You would like to mark this item as "Surplussed" rather an "Available".

Task :

You are viewing the item you created in Task 1. You would like to loan this item to Karthik Rao.

Test Script (System Administrator - Moderator Copy)

User Test Scenario:

You are a system administrator of IT equipment tracking system. Your responsibility is to maintain the system.

Task 1:

You would like to register your email (sysadmin@physics.gatech.edu) to the system so that you can receive various alerts from the system. Among all the alerts, you are interested in receiving error alerts only in real-time. Use the system interface to achieve this.

(Once participant get to input screen, ask them what would they do)
(If they have idea about correct input, allow them to go to next screen/step)
(Ask them that what they see is expected)

Task 2:

There was a major update in the system database and you would like to create a backup to avoid risk of losing the data the IT office just added into system. Create a backup in .tar.gz format name it "major-update-10-25-2016" and save it to local network storage.

(Once participant get to input screen, ask them what would they do)
(If they have idea about correct input, allow them to go to next screen/step)
(Ask them that what they see is expected)

Task 3:

You received an email from the system that an error was occurred at 3:00 AM on 10/26/2016. You would like to know what was the error about. Use the system to identify the error.

(Once participant get to input screen, ask them what would they do)
(If they have idea about correct input, allow them to go to next screen/step)
(Ask them that what they see is expected)

Task 4:

Identified error was related to hard drive failure in database server. Failed hard drive was replaced but all the data is lost. System does not have database right now and IT administrators

cannot use the system. Restore the database from previously created backup file "major-update-10-25-2016" that is in local network storage.

(Once participant get to input screen, ask them what would they do)
(If they have idea about correct input, allow them to go to next screen/step)
(Ask them that what they see is expected)

Follow up question

1. What do you think of the system administrator interface? Do you find it to be clearly labeled and easily understandable?
2. Do you have any suggestions to system administrator interface?

You have completed usability test for our product.
Thank you for your time and your help improving our product.
(Below is tester copy)

Task:

You would like to register your email (sysadmin@physics.gatech.edu) to the system so that you can receive various alerts from the system. Among all the alerts, you are interested in receiving error alerts only in real-time. Use the system interface to achieve this.

Task:

There was a major update in the system database and you would like to create a backup to avoid risk of losing the data the IT office just added into system. Create a backup in .tar.gz format name it "major-update-10-25-2016" and save it to local network storage.

Task :

You received an email from the system that an error was occurred at 3:00 AM on 10/26/2016. You would like to know what was the error about. Use the system to identify the error.

Task :

Identified error was related to hard drive failure in database server. Failed hard drive was replaced but all the data is lost. System does not have database right now and IT administrators cannot use the system. Restore the database from previously created backup file "major-update-10-25-2016" that is in local network storage.

Test Script (Renter - Moderator Copy)

User Test Scenario:

You are a renter. You want to check and see how many items you have checked out and when each are due. You would also like to get more information about the item's specs. Your project is running late and you need to request an extension on the item. Since the item you are renting is a long-term loan, you need to upload a certification of the item to show that you still have the item.

Task 1:

You want to see how many loaned items you have checked out. You can assume you have logged in using your buzzport login (LDAP).

(Ask where they look first when the screen is displayed)

Task 2:

You have a laptop checked out. You want to check if that laptop meets the specifications for your next project.

Task 3:

You realize your project is going to take more time and you need an extension on the laptop. How would you request an extension?

Task 4:

Your item is on loan for more than a year so you need to upload a certification image to verify you still have the item. How would you do this?

(See if they go back to the home page)

Follow up questions:

1. How intuitive do you think the button placement was?
2. Were you able to find each task easily or did you have to think more than you wanted to?

3. Are there any suggestions you may have about improvements to this interface?

You have completed the usability test for our product.
Thank you for your time and your help in improving our product.
(Below is tester copy)
Task :

You want to see how many loaned items you have checked out. You can assume you have logged in using your buzzport login (LDAP).

Task :

You have a laptop checked out. You want to check if that laptop meets the specifications for your next project.

Task :

You realize your project is going to take more time and you need an extension on the laptop. How would you request an extension?

Task:

Your item is on loan for more than a year so you need to upload a certification image to verify you still have the item. How would you do this?

Test Script (Property Coordinator - Moderator Copy)

User Test Scenario:

You are a property coordinator and you are responsible for equipments that professors and researchers loaned. You main responsibility is to verifying the possession of equipments that professors and researchers loaned to complete annual certification process.

Task 1:

You got a email notification that Professor X completed his part of annual certification process. As a property coordinator you are required to physically verify his possession of Lenovo ThinkPad laptop. Find out professor X's contact information and location.

Follow up question

1. What do you think of the property coordinator interface? Do you find it to be clearly labeled and easily understandable?
2. Do you have any suggestions to property coordinator interface?

You have completed usability test for our product.
Thank you for your time and your help improving our product.
(Below is tester copy)

Task :

You got a email notification that Professor X completed his part of annual certification process. As a property coordinator you are required to physically verify his possession of Lenovo ThinkPad laptop. Find out professor X's contact information and location.

Moderator Script (instructions)

Hello,

I'm **MODERATOR_NAME** and I'm the moderator for today's usability testing. Let me tell you a little bit about usability study so that you fully understand what's going to take place today and how valuable your input is to us.

In a nutshell, usability testing is the evaluation of a product or website based on how real users of the product or website are able to easily and successfully perform a task. This usability evaluation will be for our product, IT equipment inventory tracking system.

The session will last about 30 minutes and we have a few tasks we would like you to complete and a few questions we would like you to answer. Please be assured that you are not being evaluated--we're evaluating our product. There are no wrong answers.

You may have noticed the video camera. With your permission, we're going to record what happens on the screen and our conversation. The recording will only be used to help us figure out how to improve our product, and it won't be seen by anyone except the people working on this project.

Your identity will stay anonymous. We are only reporting results, without identifying users. As you fit the profile of the target audience for our product, you are going to help us learn how users like yourself interact with our product, and identify what kind of additional information will be helpful to users like yourself. We encourage you to talk as you are browsing and tell us what you are thinking. It will really help us find ways to recommend improvements to the current user interface design of our product. Once again, we are not testing you, we're testing our product.

Do you give us your consent to participate in this usability test?

Again, we encourage you to think aloud and tell us your reasoning behind your actions!

Any questions before we begin?

Ready? Okay, let's begin.