Jeremy Cooley

DragonCon Tech Ops Inventory - Requirements Elicitation

Functional Requirements  
 ***Process Oriented***

* **Asset Managers and Directors need to be able to continuously interact with a database  
  *in order to:*** continually update inventory counts and checklists during the Con.  
  ***priority:*** *Necessary*
* **The app needs to have a Login function   
  *in order to:*** allow Directors, Asset Managers, and Track/Room Leads to access the database and item request forms while filtering out regular volunteers.  
  ***priority:*** *Necessary*
* **Track leads need to be able to check off needed items on an Item Request Form and submit it with a Submitted Date/Time  
  *in order to:*** allow Asset Managers & Directors to store, update, access, and fulfill the requests, while tracking what items go where.  
  ***priority:*** *Necessary*
* **The Item Request Form needs to have the capability to report Extra or Unused Items  
  *in order to:*** return equipment to the Tech Ops HQ for the hotel so that Tech Ops can keep equipment assimilated and minimize theft.  
  ***priority:*** *High*
* **Asset Managers and Directors need a function to be able to create a new inventory Object and upload a photo/description *in order to:*** update the Master Item List with any new A/V equipment MMI might acquire  
  ***priority:*** *Med*

***Information Oriented***

* **The statuses of Inventory Items need to be kept up-to-date before, during, and after the Con  
  *in order to:*** keep a running record of where equipment is, and the last known location of an item if it does go missing  
  ***priority:*** *Necessary*
* **Forms that request Items or report Extras must store their requested date/time and fulfilled date/time in the database**  
  ***in order to:*** provide real-time feedback to Room and Track Leads on the status of their submissions  
  ***priority:*** *Necessary*
* **Items that are requested from Tech Ops HQ need to be able to be added to and removed from the database as Room/Item pairs.  
  *in order to:*** Properly keep track items relative to which room they’re in. Possible in a relational database using a Room-Item intersection table.  
  ***priority:*** *Necessary*
* **Inventory Items need to have an image, a written description, and any alternate names that pull up on a Quick-Reference “about” page upon tapping the item in the list.  
  *in order to:*** help visually and textually determine which Items are which and to make it faster and easier to train new volunteers.  
  ***priority:*** *Necessary*
* **Inventory Item Status should be able to be chosen from a drop-down list of quickly interpretable codes**  
  ***Ex:*** a check mark for present, or a letter like A for Absent, E for Extra, M for Moved (along with an 🡪 and Room #/name listed in the notes field)  
  ***in order to:*** quickly/efficiently record and find item statuses in the database.  
  ***priority:*** *High*
* **Tablets should be badge-specific and able to be registered to Asset Managers or Directors only. Tablets should be checked-out and checked back in if owned by TechOps or MMI.**  
  ***in order to:*** allow AM’s and Directors to check inventories around the convention with ease, whilst being held accountable for a wonderful piece of technology.  
  ***priority:*** *High*
* **The Database should store a link (in each Room instance) to a layout diagram of each Room, the picture data for which could be stored in the database or the server of the system, whichever would be faster.**  
  ***in order to:*** help with setting up the Room AND helping to teach new Asset Managers the layouts of A/V equipment.  
  ***priority:*** *Med*
* **Radios should be able to be registered to a Room, Track, Volunteer, Asset Manager, or Director. Radios should be room specific, badge specific, or track specific.**  
  ***in order to:*** keep records of the radios while keeping the radios themselves on specific people or in specific tracks/rooms   
  ***priority:*** *Optional; TechOps already has their own system for  
   checking out radios*  
  ***already complete*** *– can be generated & edited as needed in multiple SQL formats from Jeremy’s Lucidchart diagram & then edited as needed for the chosen database platform.*
* **Expected types of Objects/Schemas in the Database: Room, Track, Department, Volunteer, Radio, Tablet, MasterListItem, Room\_Item, EquipRequestForm, Form\_Item.**   
  ***in order to:*** minimize many-to-many relationships within the database.  
  ***priority:*** *Necessary*  
  ***already complete*** *– can be generated & edited as needed in multiple SQL formats from Jeremy’s Lucidchart diagram & then edited as needed for the chosen database platform.*
* **Each Volunteer object needs a First and Last Name, Badge #, Badge Name, Phone Number, an optional PhotoID, and booleans for isDirector, isAssetManager, isRoomLead, and isTrackLead  
  *in order to:*** store contact info for Volunteers if either party doesn’t have a radio   
  ***priority:*** *Optional; Tech Ops and Dragon Con already have   
   databases for their volunteers.*  
  ***already complete*** *– can be generated & edited as needed in multiple SQL formats from Jeremy’s Lucidchart diagram.*
* **All instances of the pairing between rooms and items from the Master List should store: the quantity of that type of Item in the room, notes, the Item’s status (see above), and a checkmark for each day from load-in to load-out.**   
  ***in order to:*** help communicate details easily to the Asset Manager   
  ***priority:*** *Necessary*  
  ***already complete*** *– can be generated & edited as needed in multiple SQL formats from Jeremy’s Lucidchart diagram.*
* **Some Items are considerably more important to keep track of and are assigned a number that should be stored in a Room\_Item pairing as well.**  
  ***in order to:*** help keep track of these Big Ticket Items   
  ***priority:*** *Necessary*  
  ***already complete*** *– can be generated & edited as needed in multiple SQL formats from Jeremy’s Lucidchart diagram.*

Nonfunctional Requirements

***Implementation***

* Kaiser Smith *found that* **FireBase seems to be the most feasible way to implement our database and app**   
  ***in order to:*** make them both scalable, consistently and securely available offline or online in the cloud, easy to log into, and able to be run on web, Android, iOS, and tablet devices.  
  ***priority:*** Necessary
* **The feasibility of connecting the Inventory Database to the existing Dragon Con app or Tech Ops website could be investigated**  
  ***in order to:*** possibly eliminate the need to purchase a web domain. Files/pages might be able to be hosted on Georgia Gwinnett College’s domain as well.  
  ***priority:*** *Med*

***Testing, QA, & QC***

* **QA: Coding Standards + Good Test Coverage**  
  ***in order to:*** Rely on Test Driven Development and Selenium (https://www.seleniumhq.org/) to automate our testing and prevent us from having to go back to write tests after the code is already written.  
  ***priority:*** *Necessary*
* **QC Document Test Cases & link to the GitHub repo’s README  
  *in order to:*** Easily show & communicate our running test coverage for the system. Selenium (https://www.seleniumhq.org/) will also help automate our testing.  
  ***priority:*** *Necessary*

***Interface***

* **The site/app should open with a Welcome + Login Screen**  
  ***in order to:*** provide a portal to access the database  
  ***priority:*** *Necessary*
* **The home page after the Login should display the separate Hotels and any active Equipment Requests**  
  ***in order to:*** provide a “jumping off point” for users and provide easily refreshable feedback to Room/Track Leads that submit ItemRequestForms and to the Asset Managers and Directors that receive them.  
  ***priority:*** *Necessary*
* **Elements of the App User Interface need to be scalable in size. (instead of fixed)**   
  ***in order to:*** allow users with different sized screens can have the same experience, verify that zooming in or out doesn’t cause problems to readability for users  
  ***priority:*** *Necessary*
* **After tapping/clicking a Hotel, the Hotel’s Tech Ops Headquarters Room info should be displayed at the top, with Rooms and corresponding Tracks for that Hotel shown below in alphanumeric order.**  
  ***in order to:*** cause less confusion about the disorderly ways the hotels name/number their rooms, and to let volunteers know where they need to go to get in contact with TechOps.  
  ***priority:*** *Necessary*
* **Data entries from days that have ended should be greyed out/unresponsive   
  *so that***: old information cannot be easily or mistakenly altered.  
  ***priority:*** *Necessary*
* **Each Room’s database page should be able to scroll vertically and horizontally (preferring Landscape view)**   
  ***in order to:*** fit the columns for item information comfortably and display them without becoming cluttered.  
  ***priority:*** *High*
* **Each Item on a Room’s database page needs to be listed in alphanumeric order and needs to be spaced out**   
  ***in order to:*** eliminate touch screen error determining which item’s Quick Reference page to pull up when tapping the link in an Item’s name.   
  ***priority:*** *High*
* **Each item on a Room’s database page, should contain the space for any notes to be entered and recorded, as well as the drop-down list for each Item’s Status signifying Absent, Extra, or Missing.  
  *so that***: old information cannot be easily or mistakenly altered.  
  ***priority:*** *Necessary*

***Performance***

* **Needs to have at least one backup server. Both can update real-time or have staggered downtime around 6 am each day of the con. FireBase might eliminate this problem for us by allowing us to store our system on both the cloud and a local server (like GGC’s)  
  *in order to:*** allow us to interact with the database while offline and update the database once we’re back online.  
  ***priority:*** *Necessary*
* **Needs to be able to accommodate >100 ppl on a server at a time**  
  ***for:*** Directors, Asset Managers, Track Leads, and Room Leads  
  ***priority:*** *Necessary*
* **Modified data in the database should be updated for all users accessing it within 5 seconds, and should provide feedback (a rotating Dragon Con logo?) to the user while the database updates.**   
  ***in order to:*** easily and clearly let the user to know the system is working.  
  ***priority:*** *High, testable once the database and app are built*
* **Item Request Forms need to store the Hotel, Room, requested Items, quantities, date/time requested, and date/time filled.**  
  ***in order to:*** record changes to/between multiple Room\_Item pairs and provide clear feedback on where in the process the request is.   
  In hindsight, my total volume estimations for the Database (0.3649 MB) seem really low, and there might be many more IRF’s stored than I expected, however; I did try to make all of the integers and date/times take up as little storage as possible because I figured we wouldn’t need times as precise as 23h : 59m : 59.9999999s.   
  ***priority:*** *High*  
  ***already complete*** *–Data estimates are in a file called “DC Tech Ops – Data Model” in my Google Drive here:*[*https://drive.google.com/drive/folders/143WsP1kBWuiB6jvacbqxYNIgW6gJ3RNA?usp=sharing*](https://drive.google.com/drive/folders/143WsP1kBWuiB6jvacbqxYNIgW6gJ3RNA?usp=sharing)

***Security***

* **The Tablets and WebApp require a login, and thus, a login screen and shareable link**  
  ***so that:*** only Asset Managers and Directors should be the only ones able to check out Tablets, edit inventories, and fulfill Item Request Forms  
  ***priority:*** *Necessary*
* **Track Leads and Room Leads need to be able to see the Equipment List, but only Asset Managers, and Directors should be able to edit the Equipment List.**  
  ***because:*** only Asset Managers and Directors should be the only ones able to check out Tablets, edit inventories, and fulfill Item Request Forms. Enables different ranges of access for Directors, Asset Managers, Room Leads, and Track Leads.  
  ***priority:*** *Necessary*
* **Only Directors should be able to access the list of Volunteers**  
  ***so that:*** Directors can easily contact volunteers. Enables different ranges of access for Directors, Asset Managers, Room Leads, and Track Leads.  
  ***priority:*** *Necessary*
* **Volunteers, Directors, Asset Managers, and Track Leads should be able to access the list of Track Leads**  
  ***so that:*** Track Leads can be easily contacted.  
  ***priority:*** *Necessary*
* **Directors should be able to promote Volunteers to Asset Manager, Track Lead, Room Lead, and/or Director. (& demote)**  
  ***so that:*** the constantly changing roster of Tech Ops Volunteers can be updated and allow Volunteers to be promoted/demoted. Enables different ranges of access for Directors, Asset Managers, Room Leads, and Track Leads.  
  ***priority:*** *Necessary*
* **Needs to allow accounts to be created, but require authorization from Directors/AMs to be promoted.**  
  ***in order to:*** Reject outsiders by default. Enables different ranges of access for Directors, Asset Managers, Room Leads, and Track Leads.  
  ***priority:*** *Necessary*
* **Needs to deny/reject any regular Volunteers, or point them to a blank "home" screen that gently reminds them that they need authorization to be promoted.**  
  ***in order to:*** Reject outsiders by default. Enables different ranges of access for Directors, Asset Managers, Room Leads, and Track Leads once promoted.  
  ***priority:*** *Necessary*
* **Blank accounts need to delete themselves after a short period of time.**  
  ***in order to:*** Protect against DDOS attacks, and prevent volunteers or intruders from gaining access to a superior’s functions to read & edit the database  
  ***priority:*** *Necessary*

***Usability***

* **Fonts and Backgrounds need to be easy to see/read, including larger text on a comfortable color background  
  *in order to:*** improve readability and interactivity  
  ***priority:*** *Necessary*
* **Inventory Items need to have an image, a textual description, and any alternate names that pull up on a quick-reference “about” window upon tapping the item in the list.**   
  ***in order to:*** be usable and easily understandable, cause less confusion about what Items are, and make it easier to train new Volunteers/Asset Managers.  
  ***priority:*** *Necessary*

***Reliability***

* **Database should list when it has last been updated**   
  ***in order to:*** ensure information is kept up-to-date  
  ***priority:*** *Necessary*
* **The database needs to eliminate redundancies and cascade on update.**   
  ***in order to:*** ensure information is accurate and kept up-to-date   
  ***priority:*** *Necessary*
* **The database, in order to be reliable, needs to failure-free, save every 10 minutes or upon completing an inventory for a room.**  
  ***in order to:*** ensure information is accurate and kept up-to-date  
  ***priority:*** *Necessary*
* **The Web App itself needs to drain as little power as possible**  
  ***because:*** Phone Battery is precious at Dragon Con! We need to keep tablets/phones/laptops running for as long as possible during the Con  
  ***priority:*** *High*

***Supportability***

* **As AM's or Directors with both Windows and Apple devices, we need to be able to access the Web App & display properly no matter what mobile/tablet/laptop we use.  
  *in order to:*** not prohibit or limit certain users from using the system  
  ***priority:*** *Necessary*

***Cultural*/*Political***

* **At least at first, English should be the only language for the system.   
  *because:*** Support for other languages will take a long time to perfect, especially for different Foreign names of equipment; it will have to come later in further updates.  
  ***priority:*** *Optional*

Domain Requirements

*As suggested by Dr. Cengiz Gunay*

* **As an AM or Director, I need a way to Backup the Database/System.**  
  ***so that:***  data does not get deleted in the event of an emergency  
  ***priority:*** *Necessary*
* **Check into encryption and Admin/Process tables for the system.  
  Test & Make (as) sure (as possible) the system can’t be hacked/edited by outsiders.  
  *in order to:*** check that data is not edited by non-directors  
  ***priority:*** *Necessary*
* **As an AM that forgets the layouts of the complex, confusing hotels every year, I want the Web App to contain a layout of each hotel.  
  *in order to:*** make sure no room is left out. Not required if building off of the current Dragon Con App, which already has maps.  
  ***priority:*** *High*