Journal Template 2018

Goals
- Identify technologies and infrastructure available in various settings
- Summarize diseases prevalent to the population and current technologies used in treatment/diagnosis/prevention
- Design interviews for information gathering
- Translate observations into design opportunities
- Analyze a market plan for customer value proposition, resource sources, and stakeholder incentives

Template for each tour:
Name of space
List of people you encountered (roles or names)
Problems you saw/heard about:
Current solutions:
Potential solutions:
Possible markets:
Pitfalls/problems:
Resources used in research:

Example Findings from previous years:
1) **Apparatus for Filling Injectable Syringes**
Cath Lab: Christopher Williams (Surg. Tech, Cardiology - Cath Lab)

Problem:
- Certain drugs, e.g. heparin, need to be filled in the procedure room, and the current procedure poses repeated procedure injuries to personnel, takes a small, but significant amount of time, and is a skill that needs to be trained. A bottle holding the drug is held upside down by a nurse in the non-sterile field, while a technician in the sterile field inserts an injectable syringe into the bottle to draw the drug.
- The syringe needs to be verified by the nurse or the physician for the appropriate dosage.
- Certain drugs needs to be prepared tableside. Either to be administered via IV or in different doses throughout procedures.
- How the hospital/patient is affected by the gap→ Patient under anesthesia for the few seconds to minutes longer, risk of injury to personnel, can be exacerbated in case of actual injury
- Sometimes, instead of using this method they will empty whole bottle into basin/container and discard surplus after procedure.

Solution: What is currently out there or what is the current work around?
• Current solution: Empty whole bottles into labelled containers, discard remainder after finishing the procedure
• Products on the market
• IP: Auto-Draw Oral Syringe Filling System
• Market Research: Users would be technicians, nurses, physicians in procedure rooms, operating rooms, outpatient clinics, and maybe ED
• Include any standing patents → patent for Liquid Medicine Extractor utilizing valves for bulk extraction

Potential Solution:
• Clinical immersion suggestion: Box to hold drug vial, hold it upside down (to conform to existing procedure and remove air from interface), space for needle to draw, cheap, sterilizable
• locking mechanism to keep bottle in place (e.g.: spring-loaded grip), sterilizable material
• Physician/nurse suggestions: remove the need for 2 people to do it in procedure room, remove risk of injury, speed up process
• This reduces needed personnel, removes risk of injury, and speeds up the procedure
• A 'box' to hold and secure the bottle (thereby removing user's hand from procedural area and removing risk), drawing the drug will be similar to existing procedure
• Functional requirements: reduction of user risk, reduction of personnel need, quick to use, low difficulty

Possible Markets:
• Technicians, nurses, clinicians in Cath Labs, Operating Rooms, EDs, Outpatient Clinics
• This would hopefully be a broader market than OSF
• This item could be sold department wide, i.e.: cardiology cath labs
• Benefits: Removal of user risk, especially for trainees

Problems:
• After meeting with sterile procedure individuals, the risk is too minimal
• Puncture is not a great risk in any way
• There is no real benefit
• Will not be saving time, so doesn't improve procedure room
• None- there is no market for this device
• Will not have any foreseeable benefits in sterile procedure rooms
• Risk does not outweigh the possible benefit

https://www.google.com/patents/CN201999250U?cl=en

2) Automatic Pill Dispenser
Dr. Ramirez, geriatric medicine
Also talked to Dr. Julia Biernot- Neurology, works with Alzheimer's patients

Problem: What is the clinical gap?
  - Currently people usually use MTWTF thing and separate the pills per day by hand
  - Alzheimer's, and Dementia, and geriatric patients struggle remember to take their medication, and they may not have the ability to easily fill each individual day with all of their necessary pills
  - This will make the process of taking medication much easier for patients, and it can ensure that patients remember to take their medications
  - This product will help the patients at home

Solution: What is currently out there or what is the current work around?
  - Products on the market/coming to the market
    - Hero (https://herohealth.com)
    - Pillo (https://www.indiegogo.com/projects/pillo-your-personal-home-health-robot-family-technology#)
  - Existing solutions do not have all of the functional requirements

Potential Solution:
  - A device where you can dump a bottle of pills and it will dispense the pills as needed
  - Within this device the pills will be separate and can dispense once a day, twice a day, three times a day, or can be customized as needed
  - It should also be able to dispense 2 (or more) pills at once depending on the dosage
  - This device will be multiple devices placed together. There will be a different system for each prescription. That way, if a patient only has 1 prescription they only need one, but if they have 5 they can get 5
  - This will allow for the customization for different pills since they are all different sizes and they all have different dosing intervals
  - This will also make it so the patient does not have to separate all of their pills by hand
  - This device also needs to have a loud enough alarm and blinking light in order to remind patients to take their pills since some might be hard of hearing
  - This alarm needs to go off until the patient takes the necessary medication out of the device so there needs to be a sensor of some sort for that purpose
  - This device would either be clear so you can see the medication is getting low, or it needs to have a low medication warning
  - Possibly an app in the future that will notify caretakers when the patient takes the medication, or warns the caretaker if it is low

Possible Markets:
  - Geriatric patients with memory loss to any extent
  - This will also help their caretakers because the caretaker will know that the medicine is being taken, and maybe they don't have to check up on the patient as often
  - Patients that have a large number of medications to keep tract of
• Any patient that struggles to remember medication
• Any patient that doesn't like having to separate their medication themselves

Problems:
• If the device malfunctions, the patients with memory loss might not take the correct medications because they may not realize it malfunctioned
• This device is most likely going to be expensive
• Patients without caretakers may struggle working the device themselves
• Devices already exist, but they do not have all of the functional requirements necessary
• They are targeted more towards people who want to manage their pills easier, not geriatric patients who cannot remember medications