INFO 310
Human-Centered Design Process & Methods
Final Presentation
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Verbawise

Fully Automated Medical Translation Application

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Problem Space

- **Research Question**: How do medical personnel communicate with patients that don't speak English?
- How can this problem be solved with technology?

- Design an application for a tablet or similar device
- Used by emergency medical responders, hospital staff, and patients
- Allow for effective communication between all involved parties
- Allow patients to communicate symptoms that might not easily translate from their native language to English
- Focus on non-English speakers quickly and accurately verbalizing symptoms and critical medical information
- Used by medics to communicate back to patients procedures of tests and diagnosis

Initial Research

- Jerrit Tan from Canopy Apps
  - medical application that translates prompt to 15 languages
  - application reads prompts, however still connects to a human translator
- MediBabble by UCSF
  - common medical phrases pre-translated and focuses on medical history
  - only translates to 5 different languages
- Starling Health
  - application designed more specifically for the patient and not the medical personnel

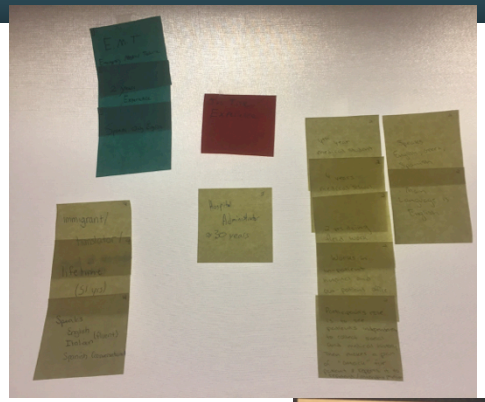
- **Problems to Solve**
  - Usability focusing on speed
  - Complete coverage of medical scenarios to fully replace a human interpreter
  - Allow patients to input medical history
  - Translation of all major languages
  - Focused UI either for the patient or medical staff

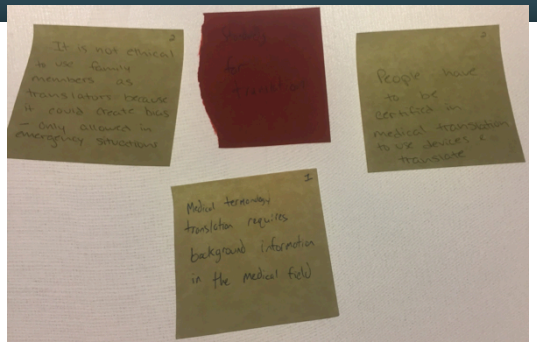
Primary Resources

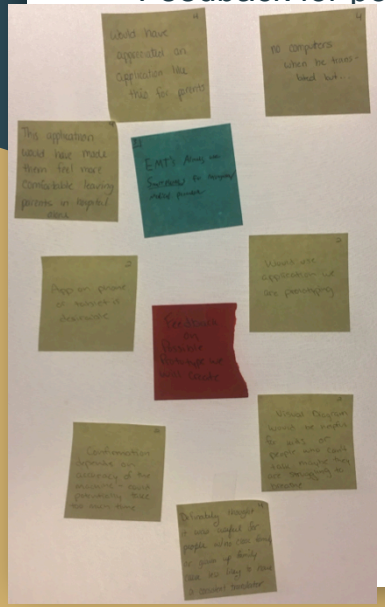
- Data Gathering Methods
  - Conducted semistructured interviews either in person or over the phone
  - Prepared and asked 13 questions, continued with follow-up questions
  - Questions were focused on asking medics
    - about existing protocols and translation methods
    - where fast and accurate translation is needed
    - specific frustrations or efficiencies
- Participants
  - Emergency Medical Technician
  - Non-native English speaker/immigrant
  - Hospital Administrator
  - Medical student
  - Hospital Resident

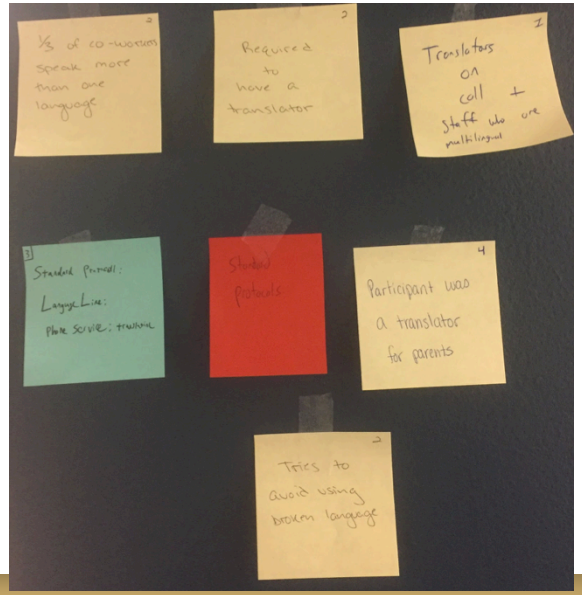
Affinity Diagram

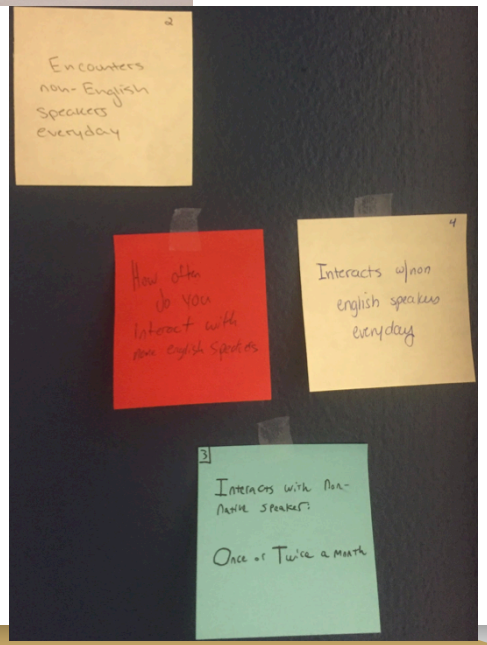
- Standard Protocols
- Frequency of Interaction with non-english speakers
- Standards for translation
- Existing systems
- Professional Experience
- Feedback for possible

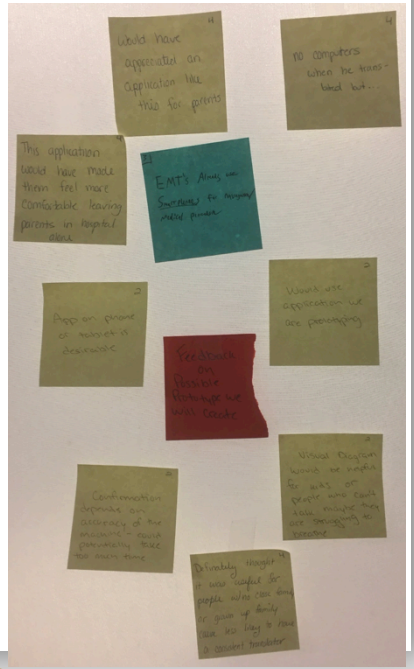












Identifying User Needs

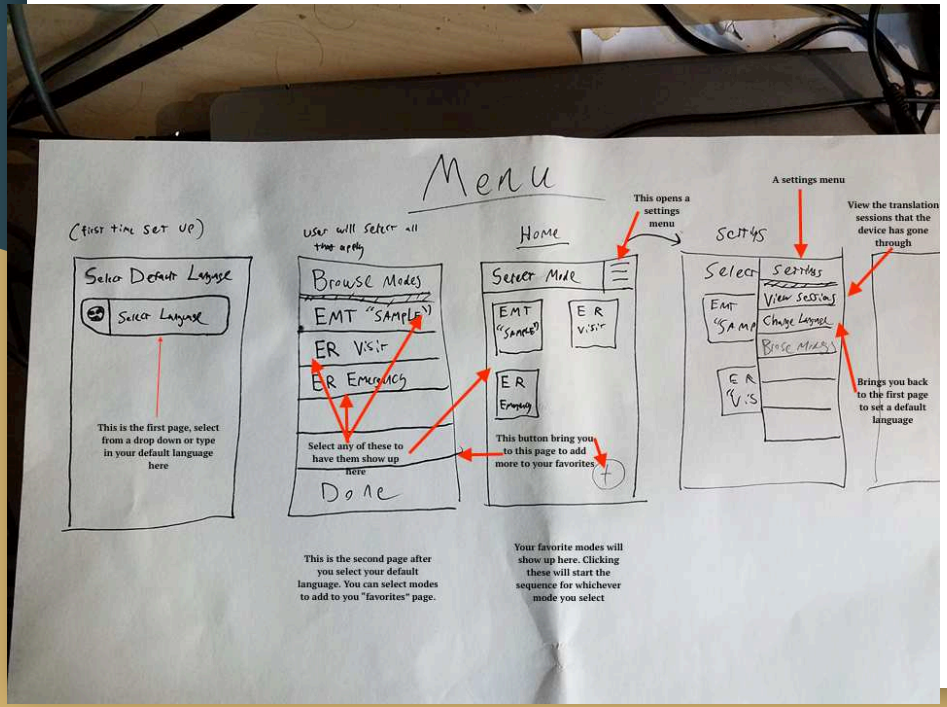
- Existing methods require certified human translators
  - very costly
  - time inefficient due to setup and availability
  - bad connectivity
- Therefore we need to create an application that
  - is inexpensive
  - readily available - used on a tablet
  - good connectivity
- Non-english speaking patients want to make sure they are receiving quality care
  - translations are accurate
  - medical database so foreign medical terms are understood

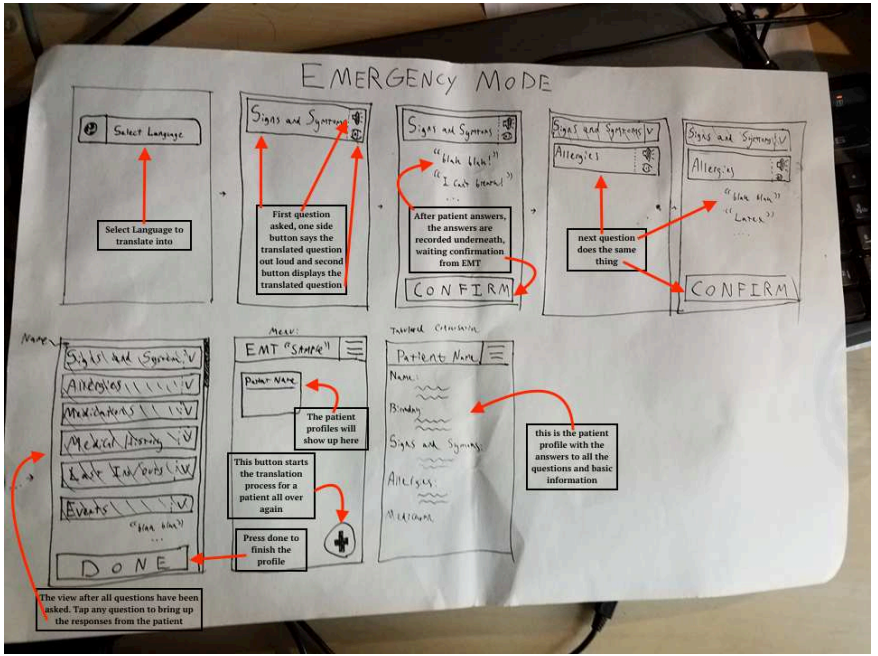
Focused Idea

- Scenario: Patient is being rushed to the hospital in an ambulance
- To be used by an EMT
- EMT “SAMPLE”
  - Name
  - Signs & Symptoms
  - Allergies
  - Medications
  - Past Medical History
  - Last Oral Intake
  - Events leading up to injury

Prototyping

- Low Fidelity
- High Fidelity
  - Tools: Photoshop and Invision





Design Iteration 1

- Feedback
  - Better indicate skipped questions to let users know they need to revisit it
  - Navigate to specific questions within SAMPLE, instead of using just the “skip” to move through questions sequentially
  - Create a signifier for users to know they can set a default language
  - Signify that languages can be autodetected if they cannot determine what language the non-English patient is speaking
  - Use callouts to help guide users through the audio portion of the application so usability is more streamline

User Testing

Tasks

1. Add EMT "SAMPLE" to "your modes".
2. Skip a question within the SAMPLE questioning.
3. Refer back to a question you skipped within
4. Make sure to complete the SAMPLE questioning.

Questions

1. What was your overall experience using this application?
2. If you had a magic wand, how would you improve this application?
3. Have you ever used an application like this before? If so, do you still use it?

User Testing

Participant Profile	User 1	User 2	User 3
Gender	male	male	male
Age	36	27	24
Income	>=$100,000	<=$40,000	$40,000-$100,000
Country	United States	Netherlands	Italy

- Conclusions
  - Be more specific with tasks
  - Explain the timed functions
- We have to keep in mind that medical staff will know how to use this application, but we want good design principles so medical staff can learn how to use *Verbawise* without an instruction manual

Final Design Improvements

- Easier to navigate
- Made sure buttons had a clear purpose
- Shortened the timer

Final Design

- https://invis.io/ADERX7VKG
- Implementation of best design practices
  - Discoverability
  - Affordances
  - Signifiers
  - Mapping
  - Constraints
  - Feedback
  - Conceptual Model

Resources

https://www.ucsf.edu/news/2011/06/10099/ucsf-students-create-medical-translation-app-conquer-language-barriers
http://www.modernhealthcare.com/article/20150124/MAGAZINE/301249980
http://www.languageconnections.com/blog/5-new-medical-interpreting-apps/
www.usertesting.com

Any Questions?

Thank you!