Capstone Overview

Chance to apply what we have learned in Human Centered Design & Engineering in one comprehensive project

Working with HTC to research and design wearable technlogy that is not fitness related

Design Question

How can wearable technology help people stay safe while doing adventurous outdoor activities?

Motivation

We often hear on the news about hikers getting lost and injured. Hiking is common in this area and we want to provide technology that can help.

Project Breakdown

- Planning Phase (Winter Quarter)

- Milestone 1: Background Research

- Milestone 2: Ideation and Design

- Milestone 3: Prototype and Evaluation

- Final Deliverable: Video, Poster, Process Book

Background Web Research

Case Studies & Statistics
            Types of injuries
            Causes
            Stories of people getting lost

Search and Rescue
            Methods and procedures
            Activity Timeline

Hiking Tips & Guidelines
            List of essentials

Comparative Analysis

Considerations:

Location: GPS, Radar, RFID signals
Portable size & weight
Battery life (varies)
Measures a variety of things (pressure, elevation, wind speed, tides, etc...)

Survey

Effort to understand hikers' levels of concern and preparedness

140+ Responses

Approximately 40% don't think about safety often

Approximately 50% do not rate themselves as "well prepared"

Most only bring a backpack with food, water, and a cellphone

Interview

REI Ranger Station Seattle, WA

Diane | National Park Services SAR Expert

"must be prepared and understand..."

"self-triggering is crucial..."

"we rely too much on technology..."

"series of small decisions can lead to a major issue..."

Insight

Emergencies happen when explorers are unaware, unalert, or uneducated with their surroundings

Search and rescue operations can be effective with assistance, but are often costly and lengthy

Constraints

First ideas were "too simple"

Designing for 5-10 years in the future…

    Battery Life
    Bendable Screens
    GPS Accuracy

Scope

Increase Contextual Awareness

Inform users with information to make mindful decisions

Assist Search and Rescue

Incorporate beacons and material technology

Features: Notification System

Large icons represent alerts pushed to the band based on location and time

Notifications include information on weather, time, conditions, tides, elevation changes, etc.

Features: Trailhead Network

Infrastructure of kiosks built into trailhead, posts, etc.

Syncing the band to the kiosks load preset notifications that are tailored to position, time of day, and current conditions

Network of these kiosks will help the hiking community stay alert and safe no matter where they are

Features: Emergency Assistant

Built in locator beacon within the device can be activated to alert search and rescue teams

Band is constructed of electronic signal reflective material that aids SAR teams in pinging the user's precise location
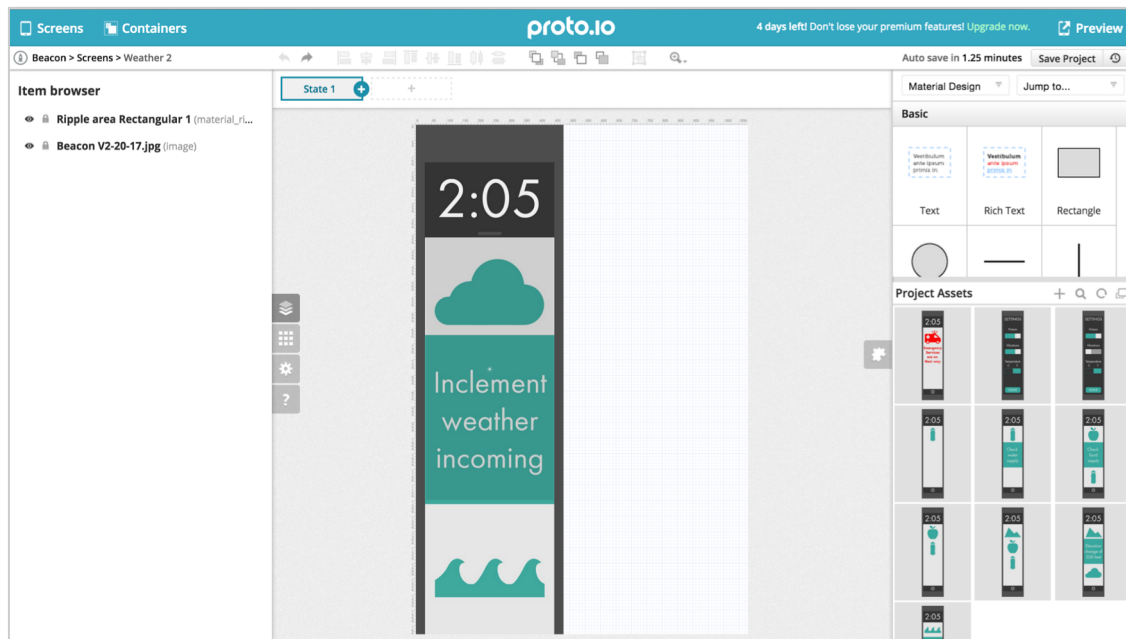
Sketches
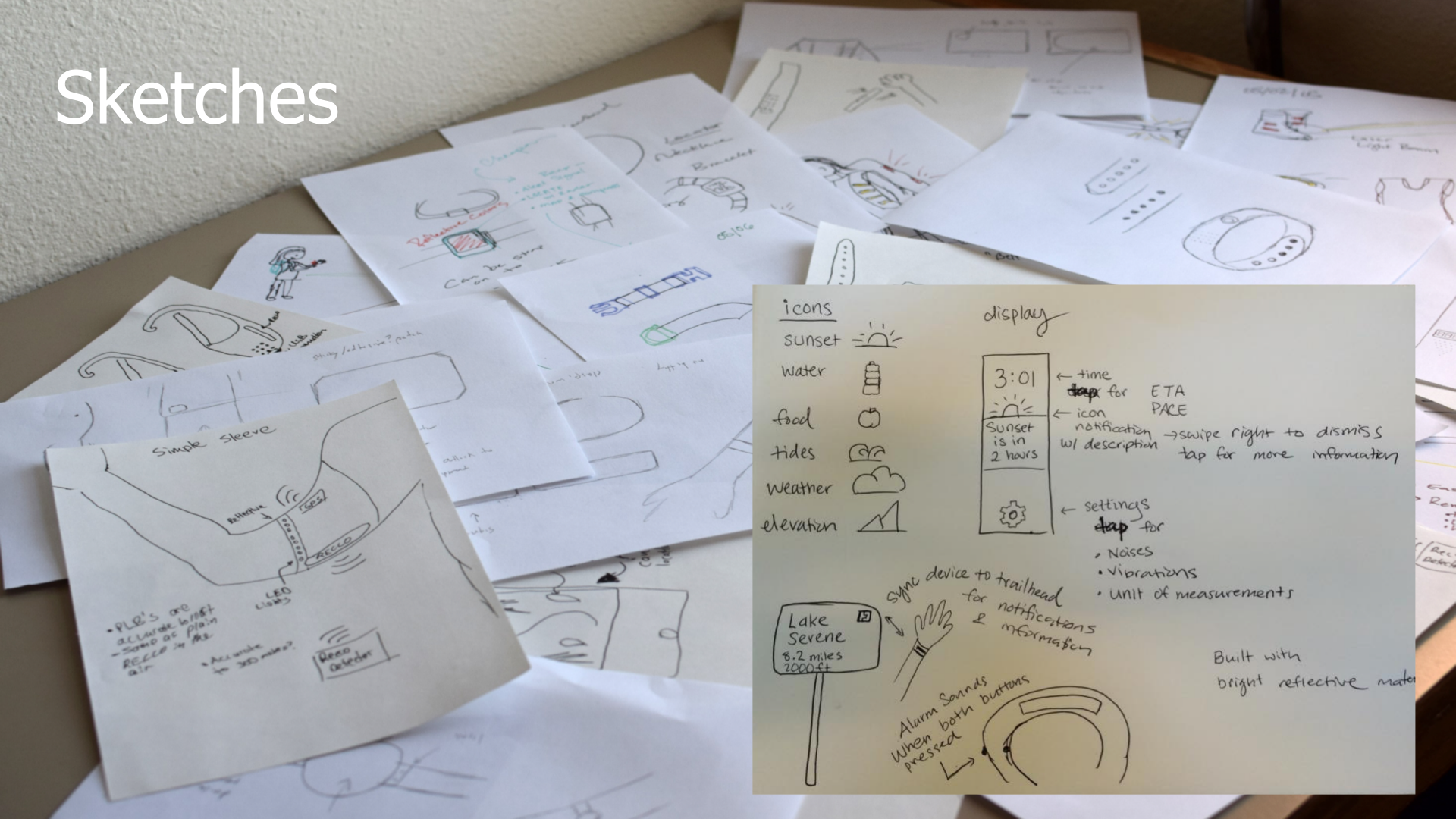
Visual Designs
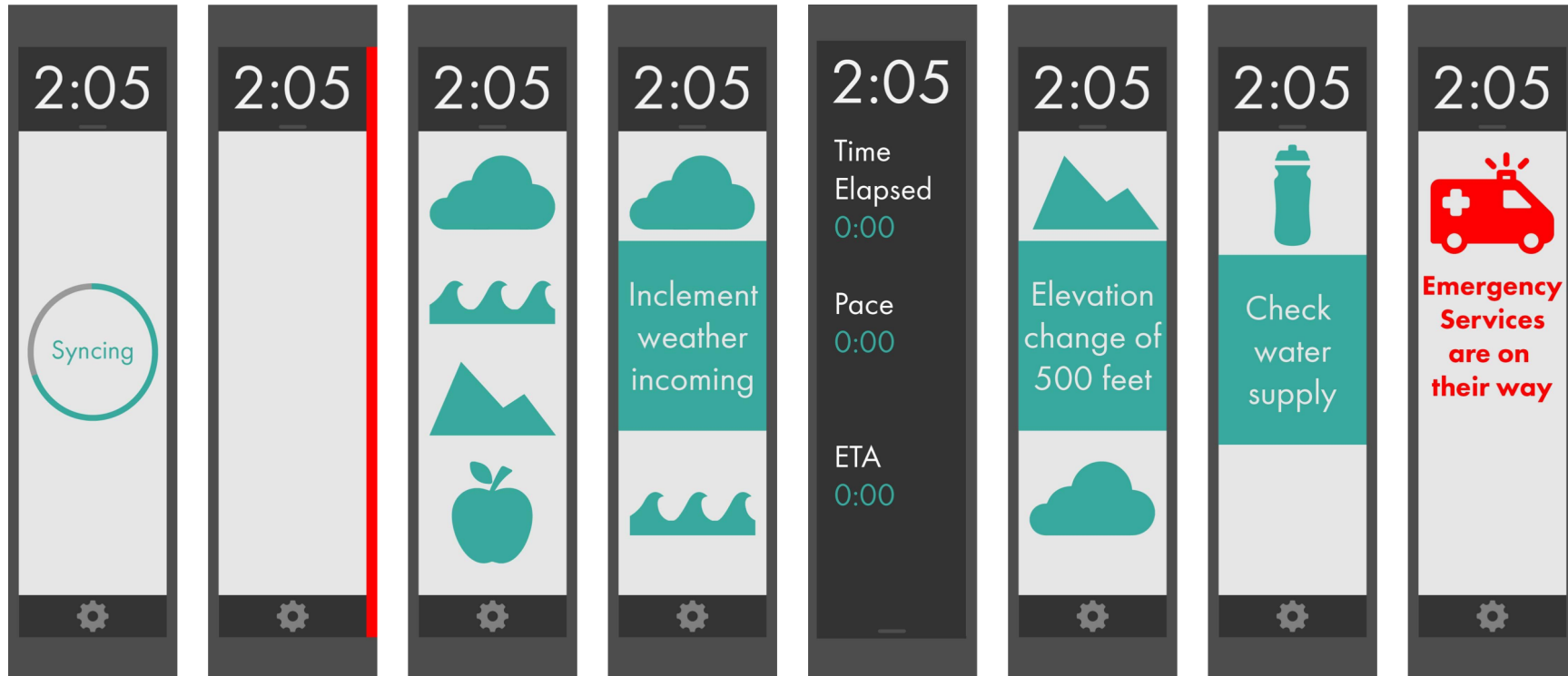
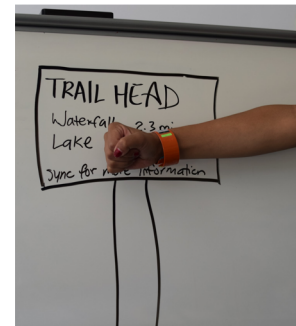# Low & Medium Fidelity Prototypes
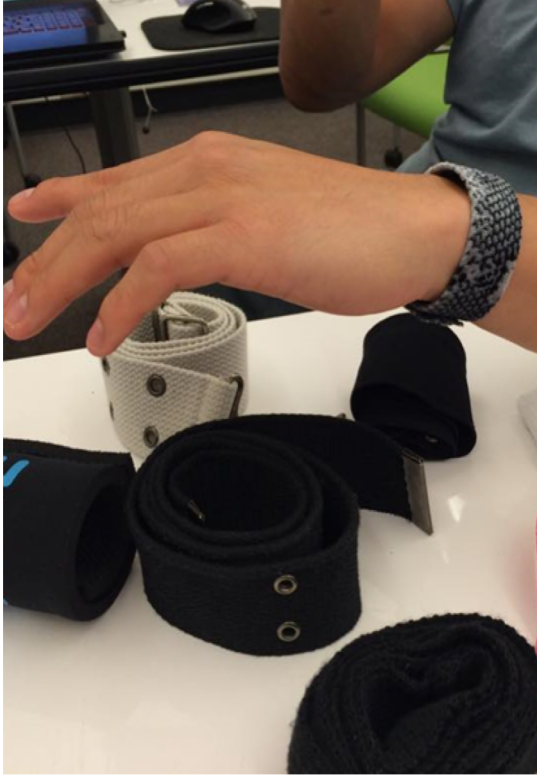
Interactive Prototype

User Testing

Evaluated our system using a test kit, interactive prototype, and physical prototype with four particpants

Tasks related to:
- Power on the device
- Sync with kiosk
- Viewing notifications
- Dismissing notifications
- Accessing other information
- Change settings

Recommendations & Feedback

Voice commands

Notification for poisonous plants

Projections of screen

"Sync complete" / feedback for kiosk interactions

Not noticeable to pull down for pace / ETA

Focus on the Hiking Guidance feature

Payment/Distribution System - Private or Public

HCDE Open House - Feedback

"Awesome device, I could see myself using this band daily for everyday activity, like a reminder to drink water, medicine"

"We had friends that lost their lives in the Nepal Earthquake while hiking, this band would have been very userful"

"What differentiates this band from just making an app for our phone?"

"Does this mean every national parks and hiking trails will have the technology embedded in their trailheads? How will this be maintained?"

"Would each individual buy this product or will it be provided by hiking associations for people to use during the hike?"