# Digital Thermometer App

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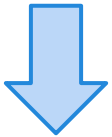
# Domain Problem

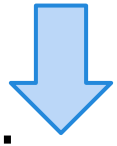
What problem is our application addressing?

# Sequence of Audiences

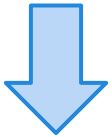
Hospital Buyers



Doctors



Nurses/Caregivers/Technicians



Patient

# Audience: Hospital Buyers

**What do they care about?**

- Cost effectiveness
- Reusability
- Desirability

# Audience: Doctors

**What do they care about?**

- Easy to teach
- Accuracy/Reliability
- Comfort

# Audience: Nurses/Caregivers/Technicians

**What do they care about?**

- Visual & Audio Cues
- Intuitive interface (allows multitasking)
- Clean GUI
- Accuracy
- Device easy to put on patient

# Audience: Patient

**What do they care about?**

- Comfort
- Minimal interaction with device
- Mobility (only limited by WiFi range)

# Purpose of Design

**Three Temperature Readings:**

- 10 second average provides reliability over longer time periods
- 1 second average adjusts possible fluctuations within a second
- Instantaneous temperature provides the most up-to-date reading

# Purpose of Design

**Wireless Capability/Armband:**

- Only healthcare providers interact with actual iPad application
  - Alarm system not in the room with the patient
  - Less physical contact between patient and nurse (higher sanitation)
- Armband remains on patient without aid while temp being monitored
  - Patient mobility
  - Health provider can be multitasking
    - I.e. during initial calibration, long-term temp monitoring, etc.
- Armband is reusable, adjustable, only touches patient with thermistor

# A Nurse Station

# Purpose of Design

**Visual and Audible Alarm:**

- Hospital environment is loud
  - Audible should be loud enough, if not, visual can be seen
- If multiple devices/iPads are being used, audible alarm is not immediately matched to iPad (visual cue is)
- Dismiss button leads to “Attending to Patient” status instead of returning to temp monitoring
- Is only reset once the current temperature drops below the threshold

# Purpose of Design

**“Attending to Patient” Signal:**

- Intuitive design for easy navigation
- Feedback to all nurses who pass by/look at the status of the iPad
- Persistent reminder to nurse who dismisses alarm to address patient

# Future Implementations & Problems

What would we add?

- Battery life indicator
- WiFi loss indicator
- Patient identifiers
- Armband room locator

Problems with device

- 1:1 iPad:Patient
  - Cost
- Arduino/Wifi Shield
- EECS
- Inefficient energy source

# Costs

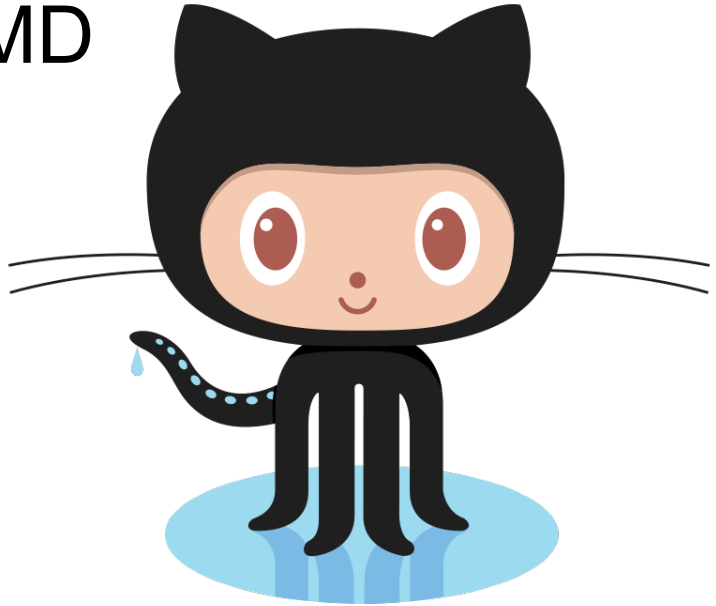
| Cost of Goods | |
|---|---|
| Arduino Mega 2560 | $49.15 |
| Wifi Shield | $86.96 |
| Thermistor | $0.10 |
| Toggle Switch | $0.10 |
| Armband | $19.79 |
| iPad app | $0.00 |

| Revenue | $300.00 |
|---|---|
| Total Cost | $156.10 |
| Gross Profit | $143.90 |
| Profit Margin | 92.1% |

# Availability

Freely available on GitHub at

https://github.com/ifried01/MMD



# Available Features

- Comfortable and adjustable arm strap
- Integration to hospital / home WiFi network
- Battery powered
- Portable, Monitor on the go, no bed restrictions
- Remote alarm alerts caretaker about rise in temperature
- Visual and Audible alarm
- Persistent notification on nurse’s response
- Adjustable Temperature scale (°C/°F)