SIEMENS

SIREN (**Si**emens **R**echargeable **E**mergency **N**otifier) **Wristband**

Team 5:
Chris Cortes   Baur Krykpayev
Alex Nobles   Hieu Nguyen
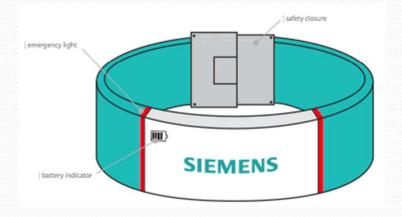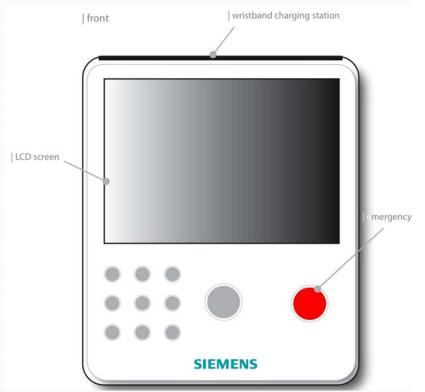Steve Spinn   Steph Shinohara

Agenda

- Key Functions
  - Monitor LCD & Keypad Interface
  - Wristband LCD Interface
  - Water Sensor & Alarm
  - Synchronization
  - Locate Wristband
  - Wristband Battery Level Detector
- Marketing/Art Influence
- Schematics
- Cost Analysis
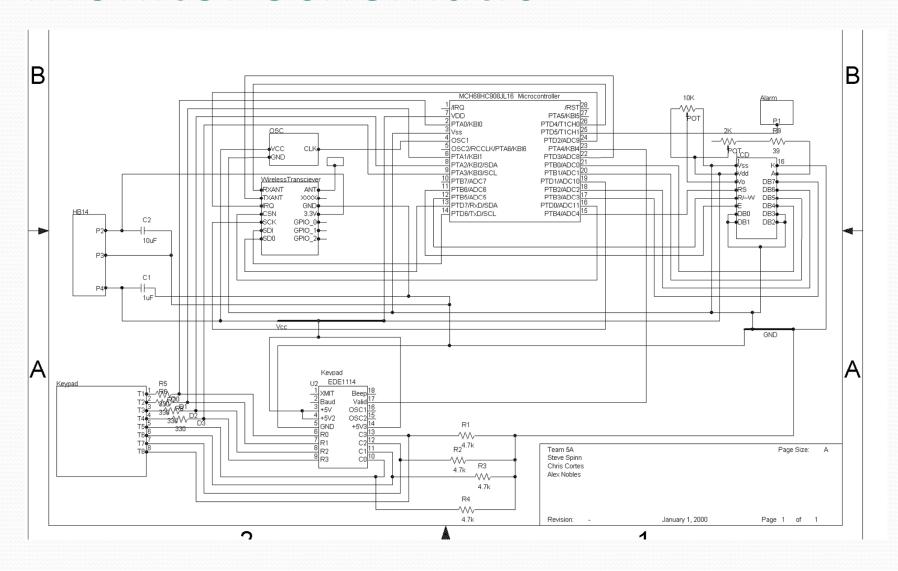- Future Features

Marketing/Art Influence

- Based parts choices on Marketing plan
  - Chose cheaper, more reliable design

- Art students had idea to include graphic LCD to entertain child
  - Added more functionality to this idea and displayed status on screen
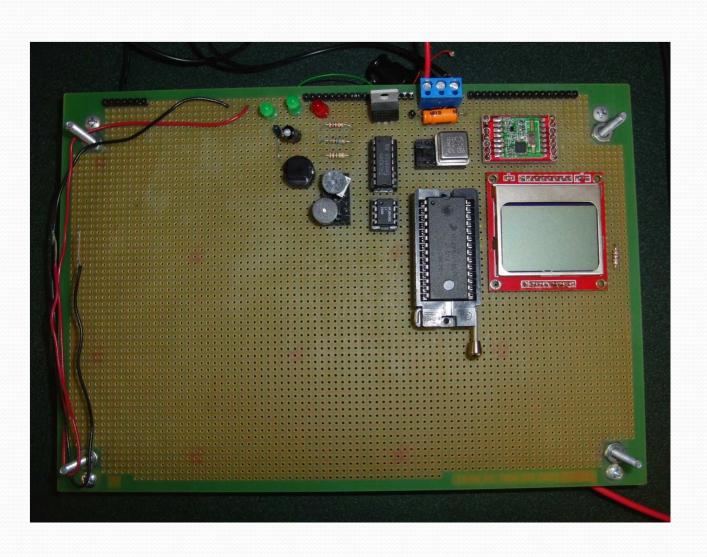
Monitor LCD & Keypad Interface

- LCD: 24 x 2 character screen

- User input: 4 x 4 keypad

- Security: 4-digit password

- Power Source: 5V Wall Adapter
  - Configurable for rechargeable battery

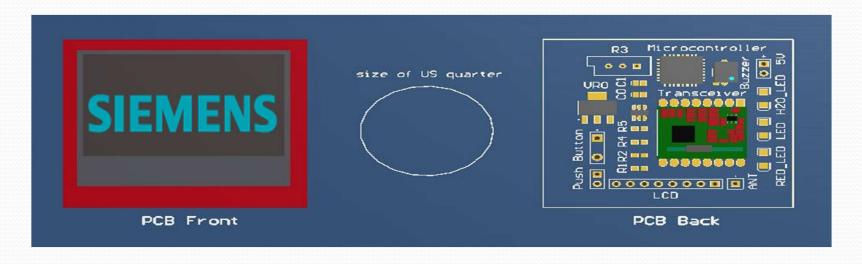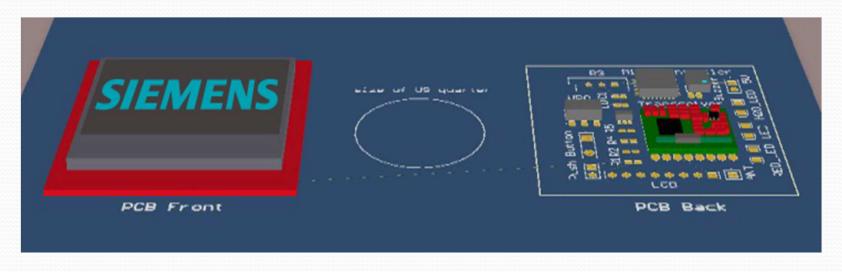- Audio: alert buzzer, keypad feedback
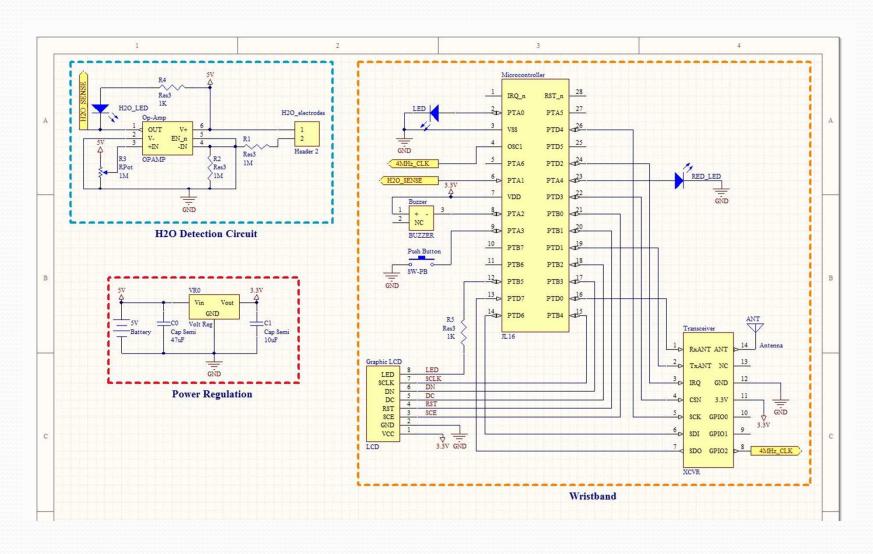
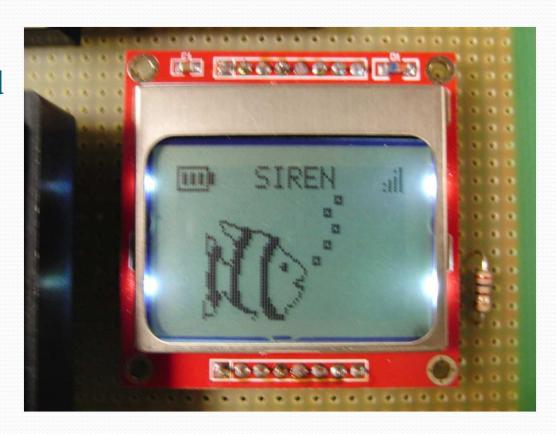# Monitor Schematic

Wristband Components
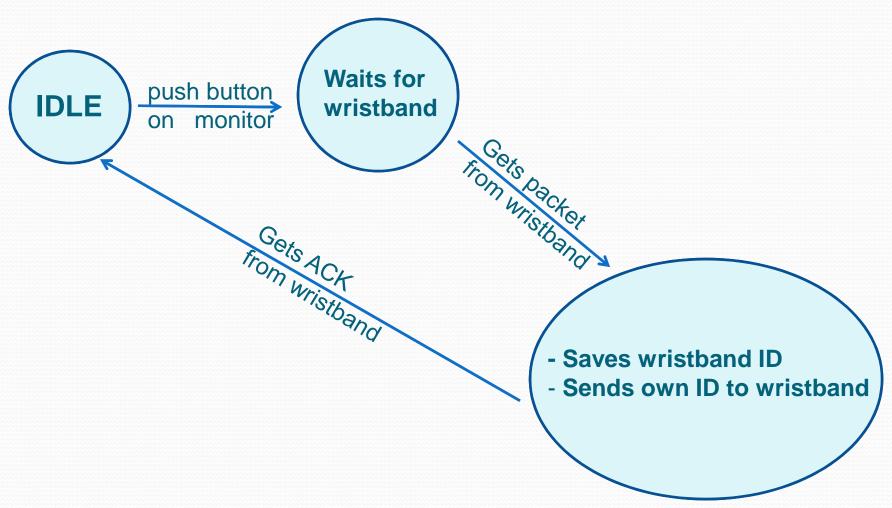
Printed Circuit Board

Wristband Schematic

Wristband LCD Interface

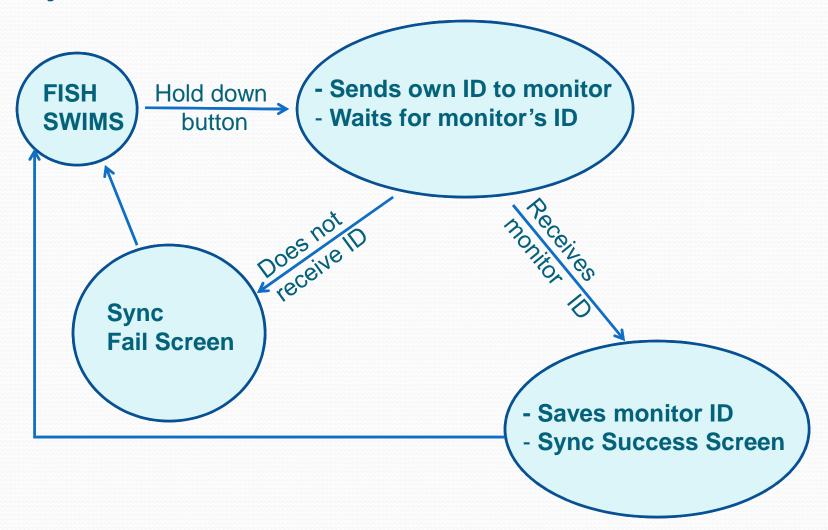- On startup/recharge: Siemens logo displayed

- Fish Animation for certain period of time

- If inactive, goes into idle state (LCD off)
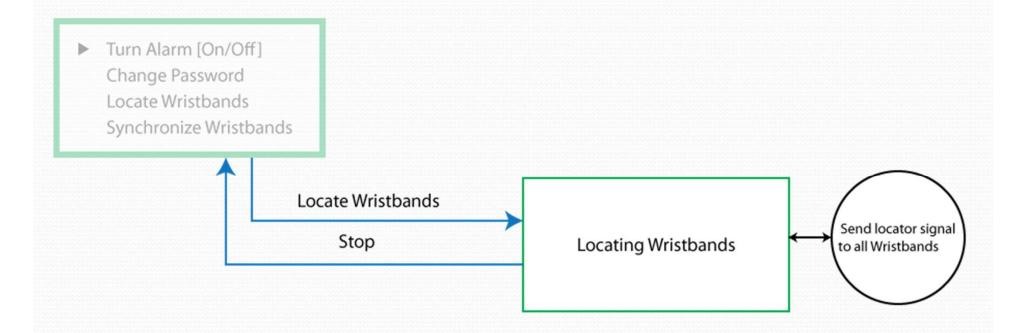
Synchronization - Monitor
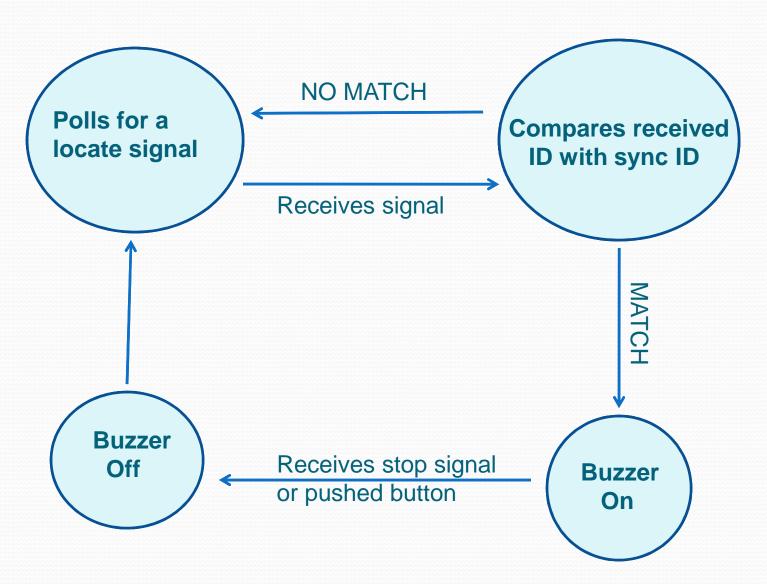
Synchronization - Wristband

FISH SWIMS

Hold down button →

- **Sends own ID to monitor**
- **Waits for monitor's ID**

Does not receive ID

Receives monitor ID

Sync Fail Screen

- **Saves monitor ID**
- **Sync Success Screen**

Locate Wristband

Turn Alarm [On/Off]
Change Password
Locate Wristbands
Synchronize Wristbands

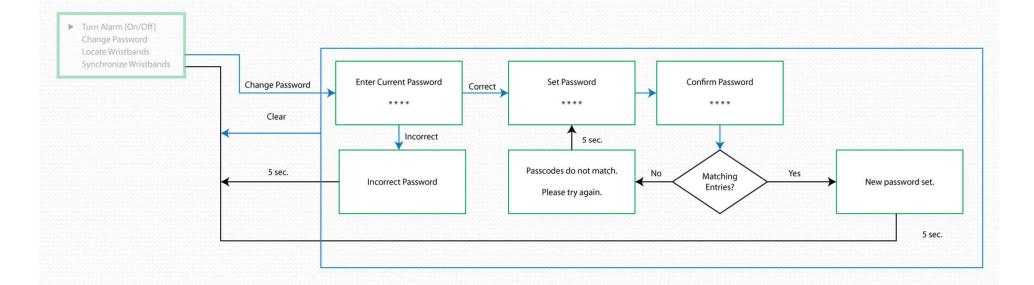Locate Wristbands

Stop

Locating Wristbands

Send locator signal to all Wristbands

Locate Wristband

Set/Change Password
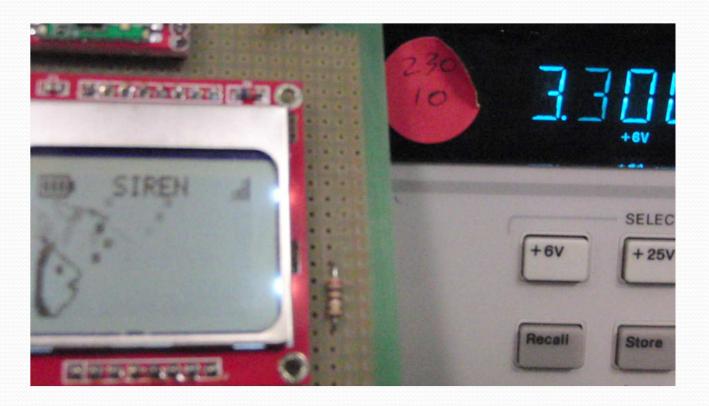
Water Sensor & Alarm

- Wristband:
  - Presence of water completes circuit
  - Triggers interrupt to transmit alert to monitor

- If monitor is armed:
  - Waits to receive alert from wristband
  - Checks to see that synced wristband ID is sending alert
  - Buzzer sounds until correct password is entered

Wristband Battery Level Detector

- Uses transceiver to monitor the current battery voltage
- Updates LCD to indicate battery level

Monitor Cost Analysis

Part	Quantity	Bulk Unit Cost
Microcontroller	1	$ 1.74
Transceiver	1	$ 9.56
Buzzer	1	$ 3.49
24x2 LCD	1	$ 6.96
4x4 Keypad	1	$ 14.34
Miscellaneous (resistors, LEDs, voltage regulator, etc.)		$ 1.00
TOTAL:		**$ 37.09**

Wristband Cost Analysis

Part	Quantity	Bulk Unit Cost
Microcontroller	1	$ 1.74
Transceiver	1	$ 9.56
Buzzer	1	$ 0.25
Nokia Graphic LCD (84x48)	1	$ 7.96
Battery	2	$ 0.28
Miscellaneous (resistors, LEDs, voltage regulator, etc.)		$ 1.00
TOTAL:		**$ 21.03**

Future Features

- Rechargeable batteries

- Interactive wristband functions

- Display wireless signal strength

- Verify functionality of transceiver underwater

THANKS FOR YOUR ATTENTION!!

DEMONSTRATION NOW!!!