

BACKGROUND

A potentially catastrophic problem for boat owners is an unknown leak.

Automatic bilge pumps and local alarms are a common line of defense, but they can fail or may require power to operate.

When left unattended, boats are subjected to many of the same environmental stresses and equipment failures that could cause it to sink while underway.

Boats are four times more likely to sink while at the pier than at sea¹.

This usually happens when a boat has been left unattended for an extended time.

SOLUTION

The Maritime Vessel Alert System (MVAS) is a battery-powered device that will alert the user remotely via SMS and email if water is detected in the bilge of their boat.

It consists of a float switch, CPU, battery, and transceiver module ruggedly mounted in a bright orange, waterproof and heat resistant enclosure.

A cloud application forwards alerts from the transceiver to the user via SMS and email.

The MVAS has low idle power consumption, which allows it to provide protection for up to two months on a single charge.



Maritime Vessel Alert System

“A small leak will sink a great ship.”

- Benjamin Franklin

“...but not if I detect it first!”

- Maritime Vessel Alert System

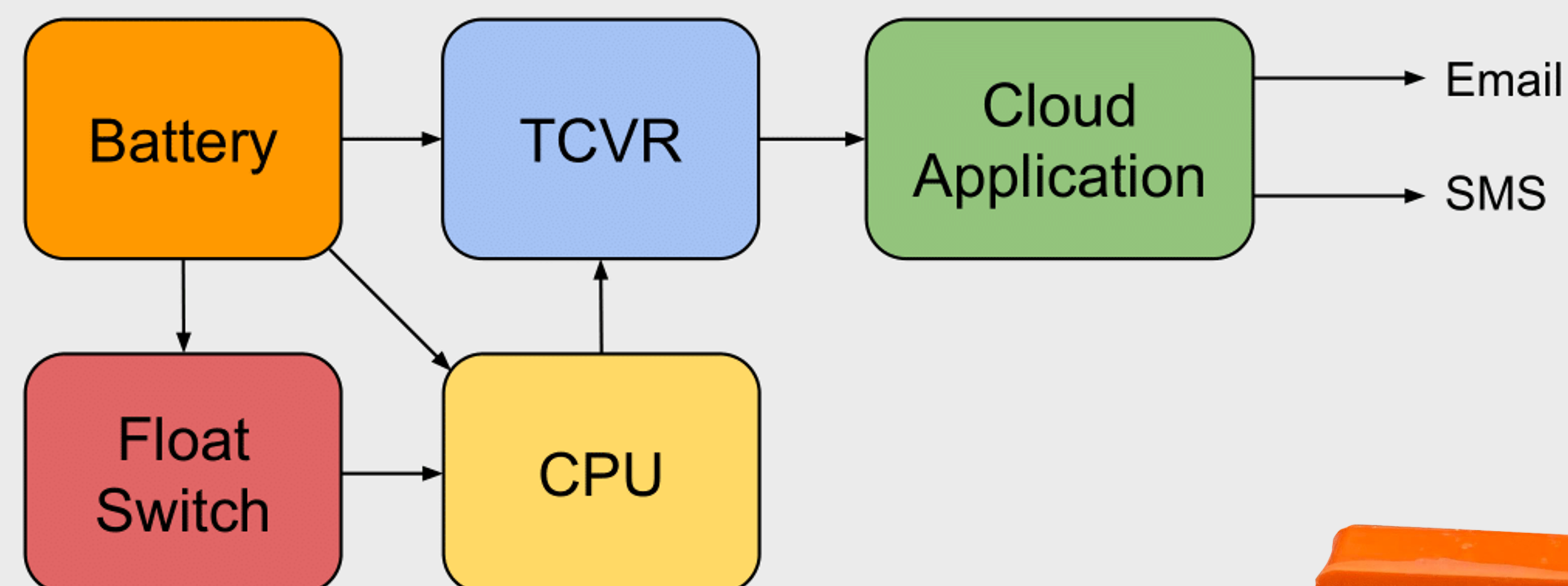


Figure 1: Simplified Block Diagram

ENGINEERING REQUIREMENTS

- **Long battery life**
The battery should operate for at least 48 hours before it needs to be recharged.
- **Easy and versatile mountability**
The user should be able to ruggedly mount the enclosure in their boat in less than 5 minutes.
- **Waterproof and heat resistant enclosure**
The enclosure must meet IP67 requirements (submerged in 1 meter of water for 30 minutes) and be heat resistant up to 50°C for ten minutes.
- **SMS alerts**
The system must send an alert via SMS when water is detected.
- **Low cost**
The device must not cost more than \$200 to produce.
- **Accurate**
The system must alert the user with 95% accuracy.
- **Small size**
The enclosure must not be more than 800 cubic centimeters in volume.



Figure 2: PCB Mounted in Enclosure

GIVE IT A TRY!

1. Scan the QR code below.
2. Login using the following:
username: test
password: pass111
1. Enter your information.
2. Flood the boat!



Oregon State University
Hatfield

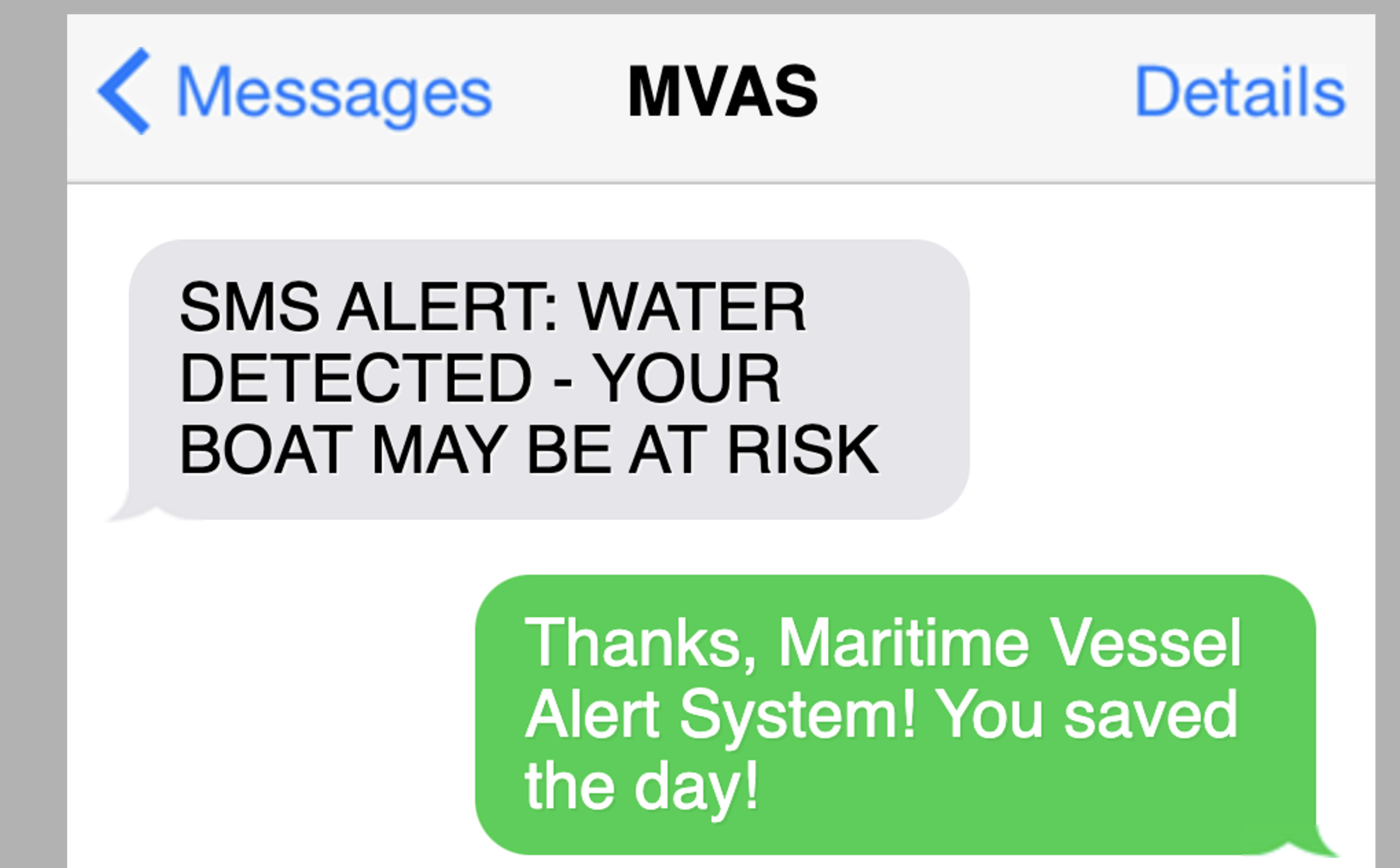


Figure 3: Example User Experience

TEAM MEMBERS



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1) Linskey, A. (2006, September 6). *Docked boats in most peril of sinking*. Baltimore Sun. <https://www.baltimoresun.com/news/bs-xpm-2006-09-10-0609090184-story.html>