ANDAMAN MARINE SURVEYORS

# MAKING A **SMART BOAT**

## ON A BUDGET

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**What if I told you that I've have created a cost-effective, and highly functional remote vessel monitoring system!**

In doing so, I've managed to integrate a range of technologies that make the boat smarter, safer, and more efficient.

The fact that I've achieved all of this without breaking the bank is really compelling.

Let's break down the elements and explore how they contribute to the "smart boat" concept.

# 1. WIFI CONNECTION

Having a solid internet connection is the backbone of my smart boat.

The use of a 2.4 GHz (or dual-band) WiFi router with a SIM card slot and an unlimited local data plan was a smart move.

Since I'm not relying on satellite communication (like Starlink), this can significantly reduce costs, while still providing good coverage, especially if I'm near shore or in areas with decent mobile coverage.

The ability to use a router that runs on 12VDC also means I don't need to use the inverter, keeping things more energy-efficient and cost-effective.

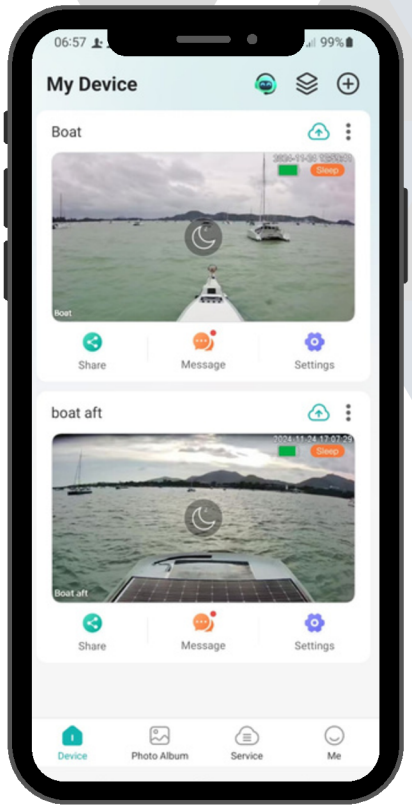
# 2. SECURITY CAMERAS

Using cheap domestic WiFi cameras with solar power was another great hack.

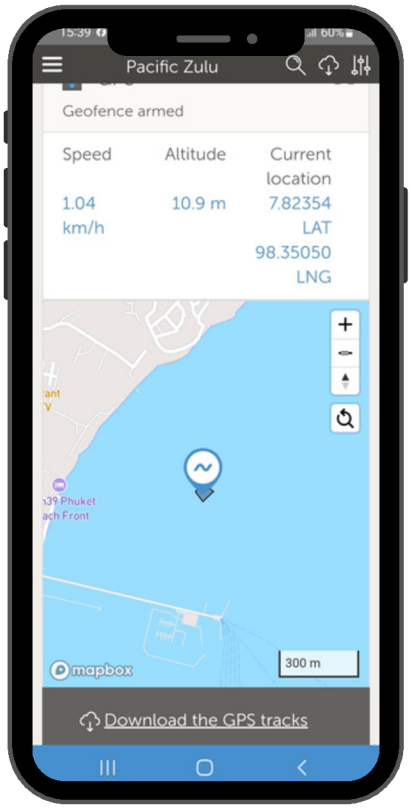
By avoiding the need for extensive wiring, I've made the system scalable and easy to deploy.

With the cameras linked to my WiFi and integrated AI, I'm able to monitor the boat's surroundings for security, weather changes, and even animal activity, all remotely.

The integration of an alarm system adds an extra layer of security, making it even easier to deter unwanted guests.



# 3. SYSTEMS MONITORING & CONTROL




Integrating Zigbee smart home technology into my boat was brilliant. This is something that's often overlooked for boats, but applying the same principles as a smart home makes perfect sense.

From smoke and water sensors to automated lighting and air conditioning, I've taken full advantage of what's possible with affordable and scalable smart technology.

The idea of linking manual controls (like the bilge pump) to remote monitoring adds a level of redundancy, ensuring that my systems are fully functional even when I'm not around.

The automation for temperature and humidity control is especially valuable for maintaining food storage or even just controlling comfort levels onboard without having to manually check everything.

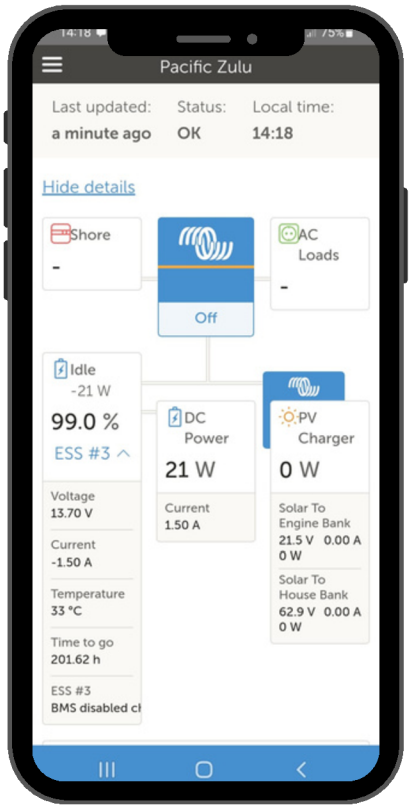
The smart features, such as the automated anchor light and setting action triggers based on predefined parameters, are a nice touch for both convenience and safety.

# 4. ELECTRICAL, BATTERY, AND CHARGING MONITORING

The integration with Victron's solar charging system and VRM (Victron Remote Monitoring) is another great example of utilizing off-the-shelf solutions to achieve advanced monitoring without spending a fortune.

This system allows me to monitor everything from solar panel output to battery health in real-time. The ability to track the solar yield, battery voltage, and temperatures remotely ensures that I can act quickly in case of any issues, preventing costly failures.

The ability to set up geofencing is also a clever way to monitor the movement of my boat, ensuring it stays anchored or notifying me if it drags anchor or moves unexpectedly.



## 5. NAVIGATION INSTRUMENTS AND AUTOPILOT

This is a particularly clever approach to make the most out of the chartplotter and autopilot systems.

By connecting a mobile device to the WiFi network of the chartplotter, I can control and monitor navigation data remotely.

This is especially useful if there's a screen failure with the primary chartplotter, as I can still operate and monitor all systems via my mobile device.

## 6. WHAT'S NEXT?

I'm currently diving into some even more advanced integration with Raspberry Pi and NMEA networks, which will bring a whole new level of control and monitoring to the system. With the ability to connect engine displays and alarms it will provide further redundancy along with diagnostic information and alerts in real time.

## THE "SMART BOAT" FUTURE

I'm proving that a boat doesn't need to be an expensive, high-tech yacht to be smart. With just a few key devices and some creativity, I've built a system that's both affordable and functional.

This makes it clear that smart boats aren't just for the ultra-wealthy or commercial fleets—they're accessible to everyday smart boat owners who want to enhance their experience and streamline maintenance, security, and energy management.