

# Shark Bytes

# The Team

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Team Shark Bytes

**Colorado River Area Biologists Computer Aided Knowledge Entry System  
(CRAB CAKES)**

Team Mentor: Scott LaRocca

# Intro

We are working with multiple agencies, The Arizona Game and Fish Department, U.S. Geological Survey, and U.S. Fish and Wildlife Service

Clients: David Rogowski (AGFD), Maria Dzul (USGS), Pilar Rinker (USFWS)



USGS



# Problem Statement

Monitoring efforts are crucial for protecting the wildlife around the Colorado River and supporting the more than 40 million people that depend on those resources.

⇒ Our clients are at the frontlines of this endeavor.

## Current Workflow:



Catch fish from the Colorado River



Scan/Tag Fish and measure new data



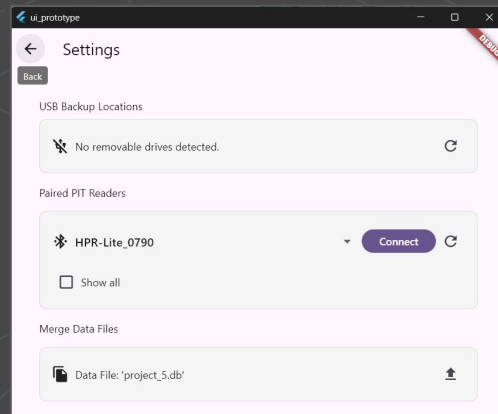
Record data using SHOALS, and upload to Database



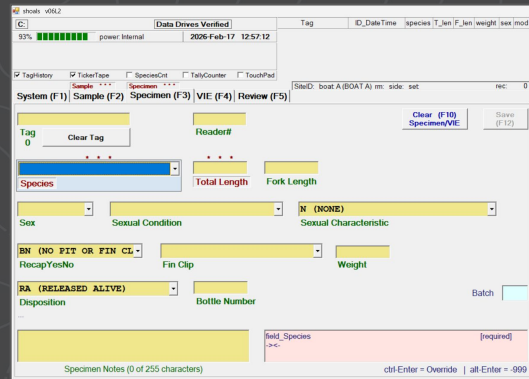
# Solution Overview

- A customizable set of fields so users can adapt it to their use case
- A robust backup system that saves to local storage and multiple USB drives
- Bluetooth compatibility with PIT Tag Readers
- A modernized UI
- Quality of life updates

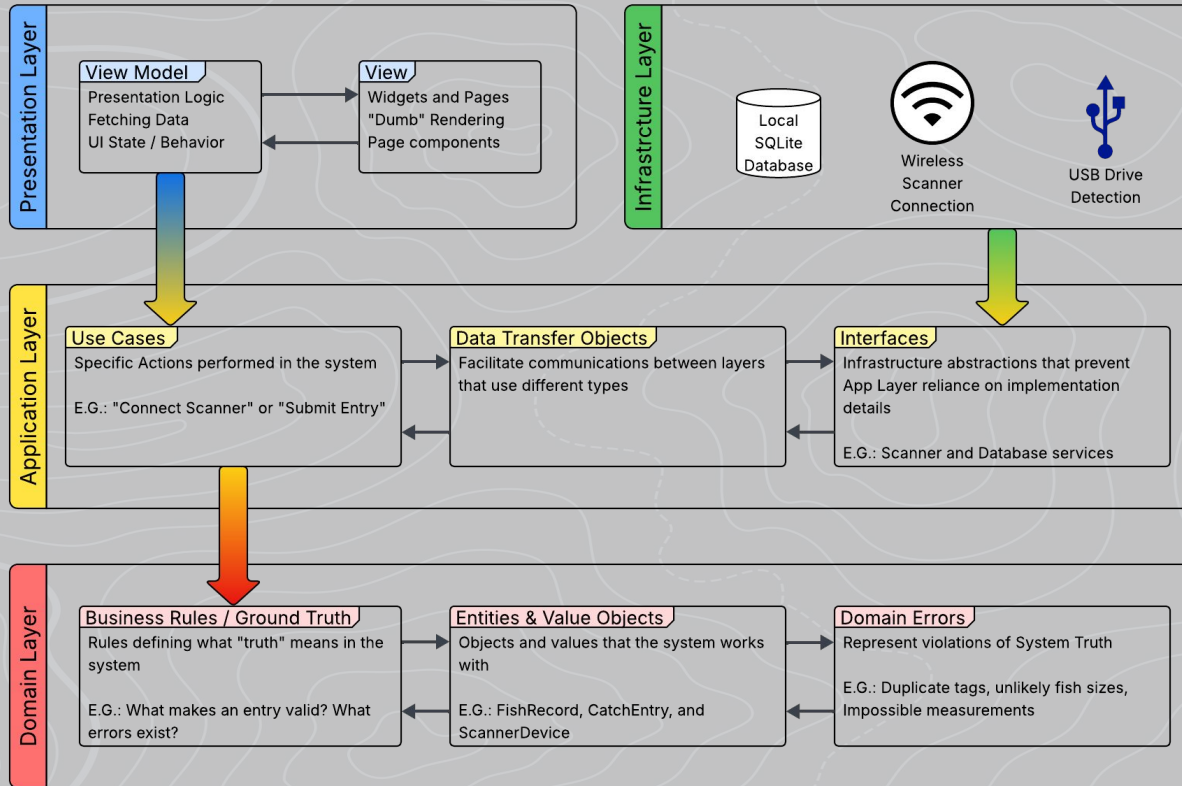
## CRAB CAKES



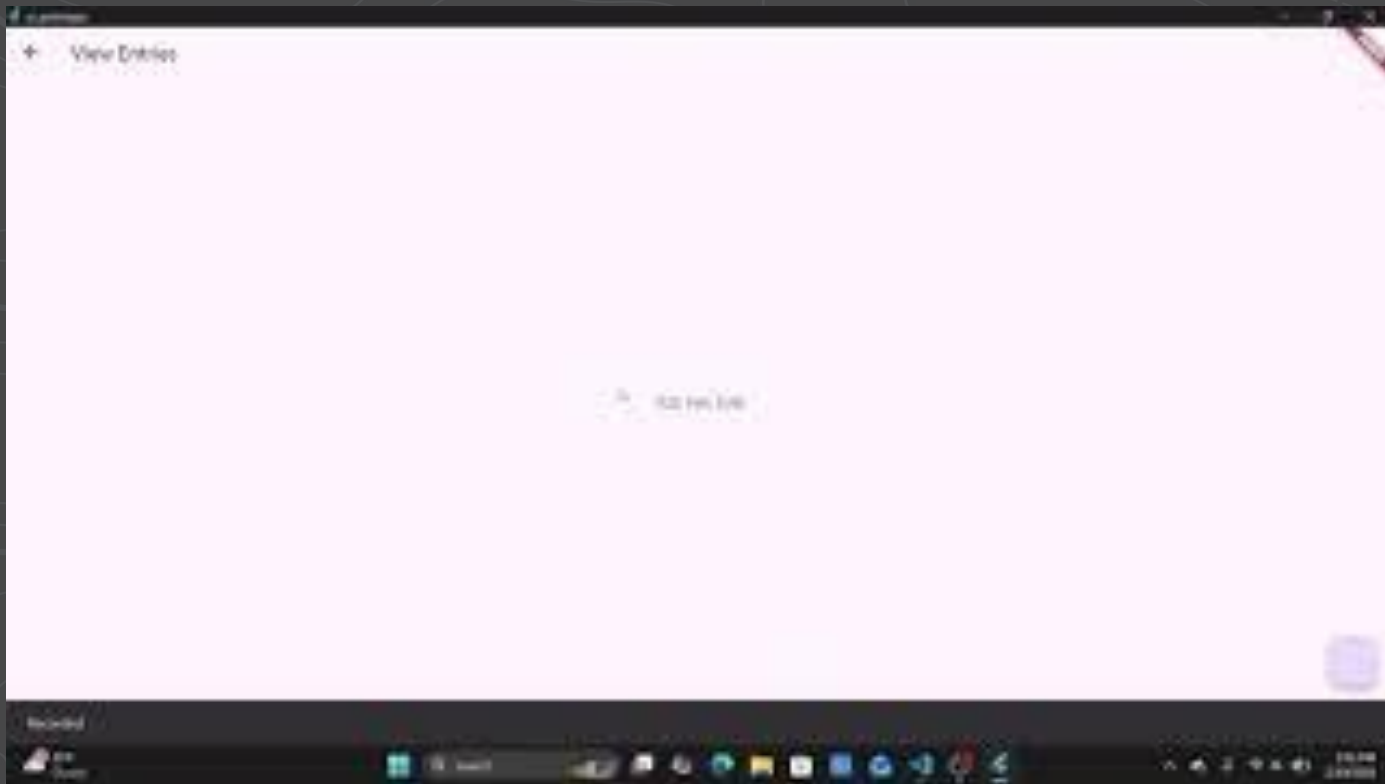
## Shoals



# Software Design Overview



# Alpha 1 Demonstration



# Challenges & Resolution

## Challenge:

Learning and correctly implementing Riverpod Providers which separates the state from the presentation layer

## Resolution:

Studied Riverpod documentation, learning where to use providers vs notifiers

## Challenge:

Understanding and applying Clean Architecture principles

## Resolution:

Separating layers into Domain, Application, Infrastructure, and Presentation

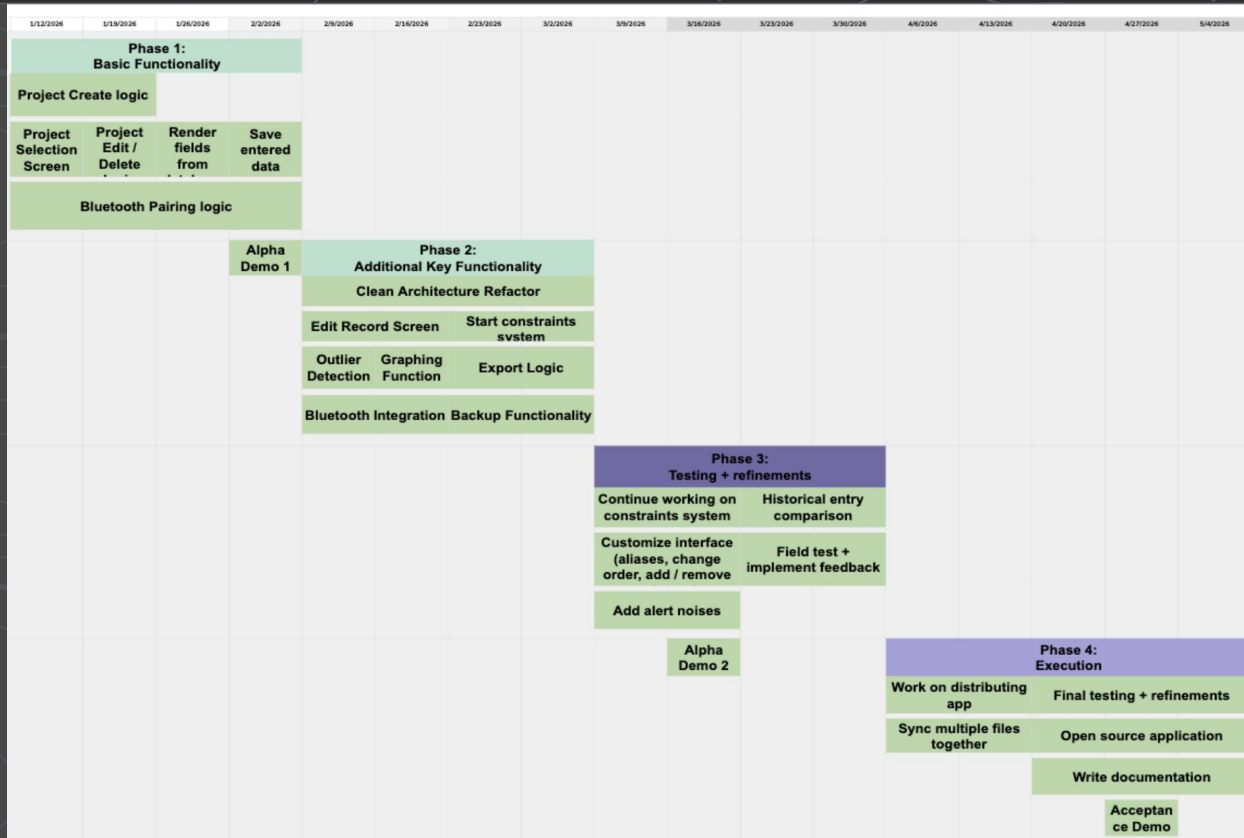
## Challenge:

Handling OS-level hardware dependencies that require external data structures

## Resolution:

Manual allocating memory in dart to match structures expected by OS dependencies

# Schedule



# Conclusion

- Our Alpha 1 Demonstration was a success, and we are now preparing for Alpha 2 Demonstration. We are confident we will be able to deliver all promised functionality to the clients by the end of the semester.





**Questions**  
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