# Site Locking and Alerting Mechanism for Doors (SLAM-Doors)

## Team Portcullis


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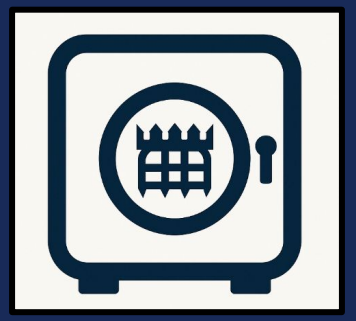
**Sponsor:** General Dynamics Mission Systems

**Client:** Benjamin Walker



**Mentor:** Bailey Hall

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# Project Context

**Client**


## General Dynamics Missions Systems (GDMS)

- U.S. defense contractor
- Tasked with developing secure mission-critical systems for military and government clients (Focus: U.S. Coast Guard)

**Project Domain:** Remote **Access Control** Systems

**Core Need** **Security**, **Resiliency**, and **Reliability**

→ Replace **unreliable** commercial access control systems

# Problem Statement

Currently reliant on **commercial** off-the-shelf (COTS) **access control systems**

**Problems:**

- Updates to the system are difficult
- High latency due to weather interference
- Potential physical break-ins

**Downtime Compromises Mission Readiness**

# Solution Vision

**Solution:** A **secure** and **resilient** access control system designed for degraded **environments**.

1. Door controls making local decisions
2. Secure communication
3. Web-based admin portal

**Impact:**

- Maintains operation **during high latency** and **outages**
- Provides **real-time visibility** to administrators
- Increases mission readiness

# Software Design Overview

**Frameworks:**

- Amazon Web Services (AWS) - Main Architecture
- PERN Stack


Amazon
ECS

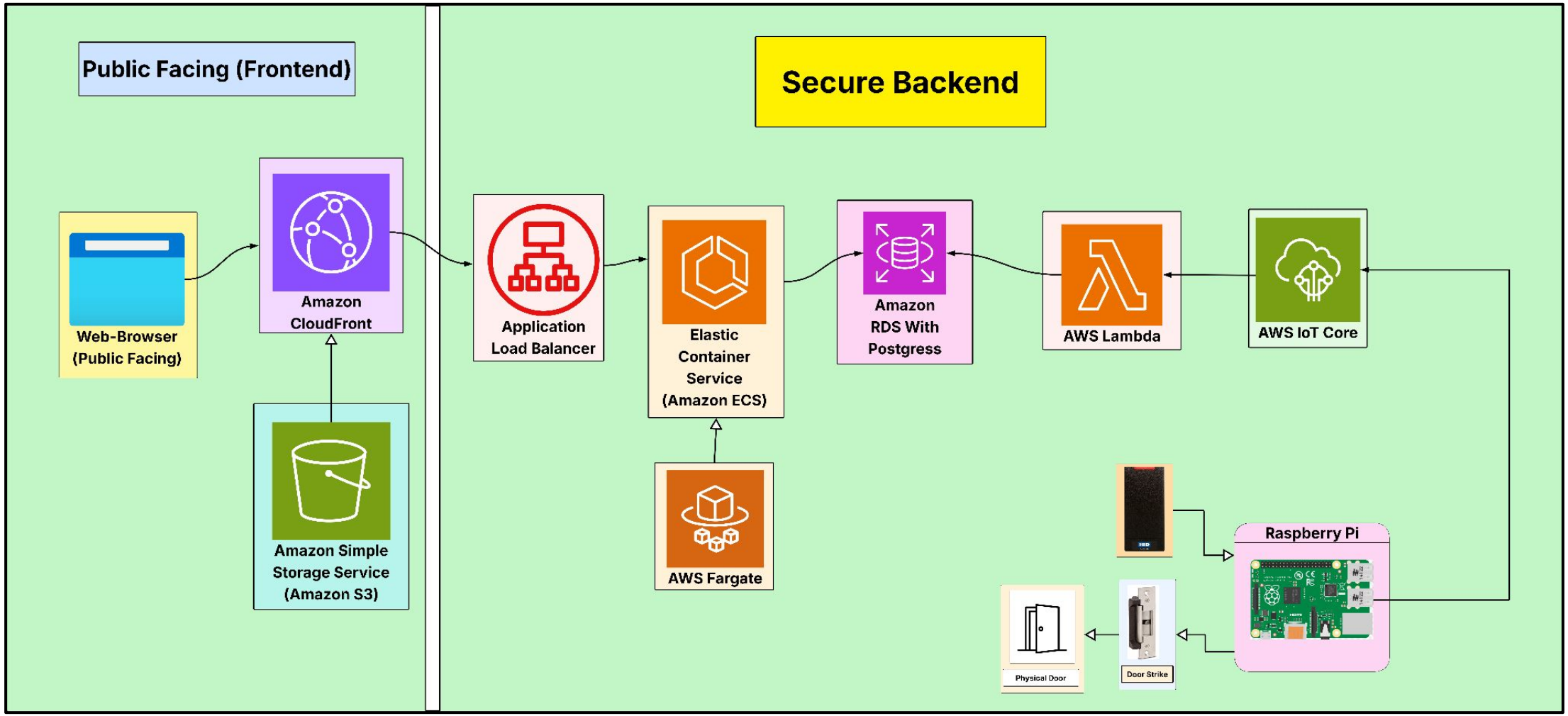
## Key Design Highlights:

- *Elastic Container Service* (ECS):

  → Scalable while reducing operational overhead

- *AWS Lambda* - Dynamic scaling based on server load

# Software Design Diagram



# Testing Plan

## Unit Testing

- Back-end
  - Event handling
  - Authentication
- Lambda
  - Input/Output validation
- Hardware
  - Intrusion Detection

## Integration Testing

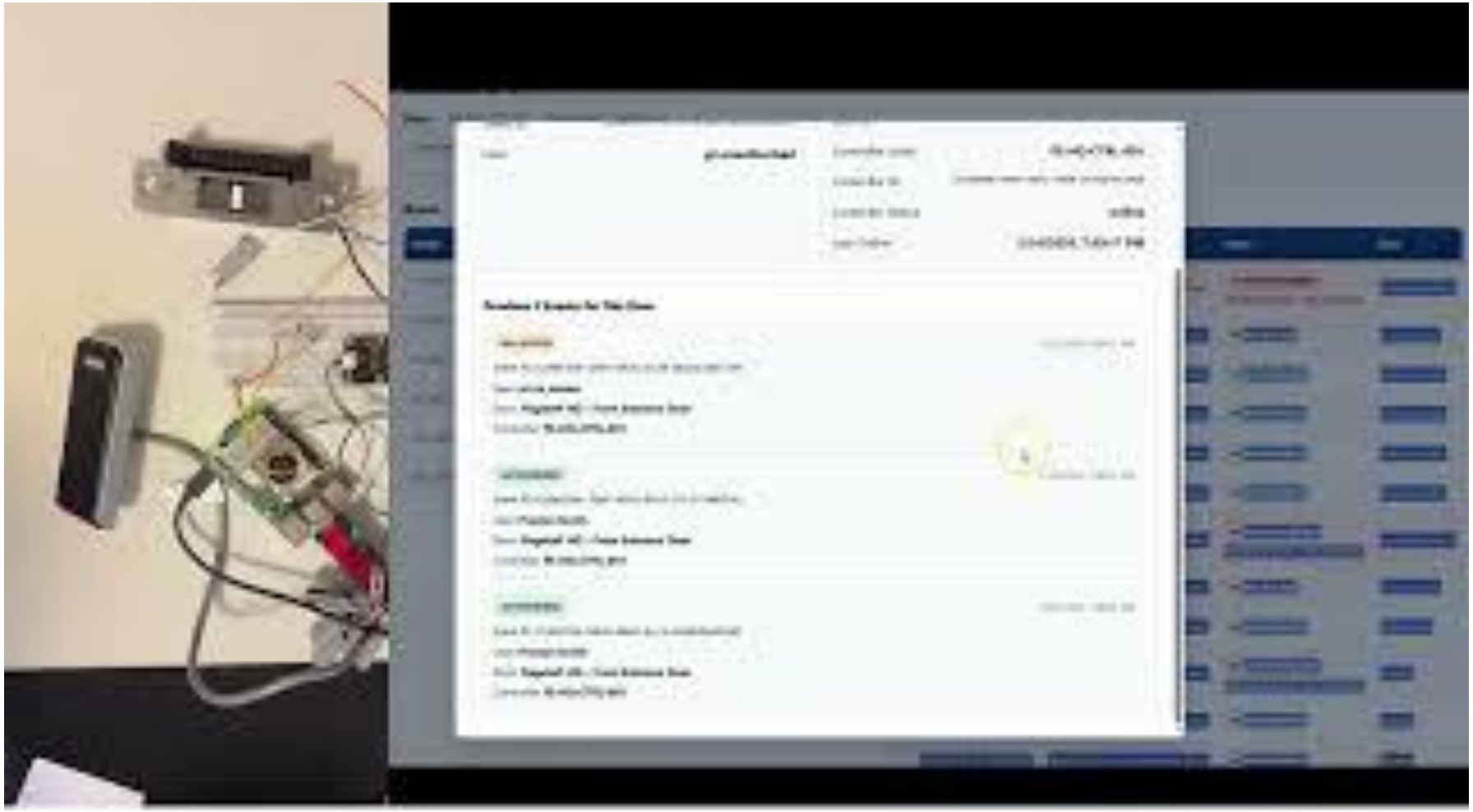
- Front-end (web client)
- Back-end
- Database
- Raspberry Pi

## Usability Testing

Usage viability scenario:

- Log in & log out
- Interpret access logs
- Identify intrusion alerts
- Access door

# Alpha II Demonstration - Video



# Challenges and Resolutions

**Challenges:**

- Connecting door controller to Admin Webpage.
- AWS Secrets Manager and Virtual Private Network configuration.

**Resolutions:**

- Incremental testing between AWS IoT Core and AWS Lambda
- Researching AWS documentation and applying integration strategies into the system

# Tentative Schedule & Conclusion

| March 22nd - 28th | March 29th - April 4th | April 5th - 11th | April 12th - 18th | April 19th - 24th |
|---|---|---|---|---|
| • Intrusion Reporting & Alert Cleanup<br>• Poor condition assurance | • RFID scanning tests<br>• Intrusion Tests<br>• UI Testing<br>• Poor Network Testing | • Full Intrusion Tests<br>• Eletrical Outage Tests<br>• Seamless Updates (door controller) | • Total System Assurance<br>• Final Client Review | • Gather documentation for final acceptance and delivery<br>• UGRADS Presentation |

# Thank you!

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