

**MICHIGAN STATE**  

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**UNIVERSITY**

# Project Plan Presentation

## Audit Management System

### The Capstone Experience

### Team United Airlines Quality Assurance

Jack Baldwin

Gigi Padalec

Daniel Lee

Zihan Yang

Mary MacLachlan

Department of Computer Science and Engineering

Michigan State University

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*From Students...  
...to Professionals*

# Functional Specifications

- Current audit process is hand-documented and time-consuming
- Modernize the audit process through an iOS application
- Allow managers to
  - Assign audits to their auditors
  - Choose specific checklists to be completed
- Allow auditors to
  - Complete their assigned audits
  - Upload audit-related images
  - Generate audit documents based on the audit data

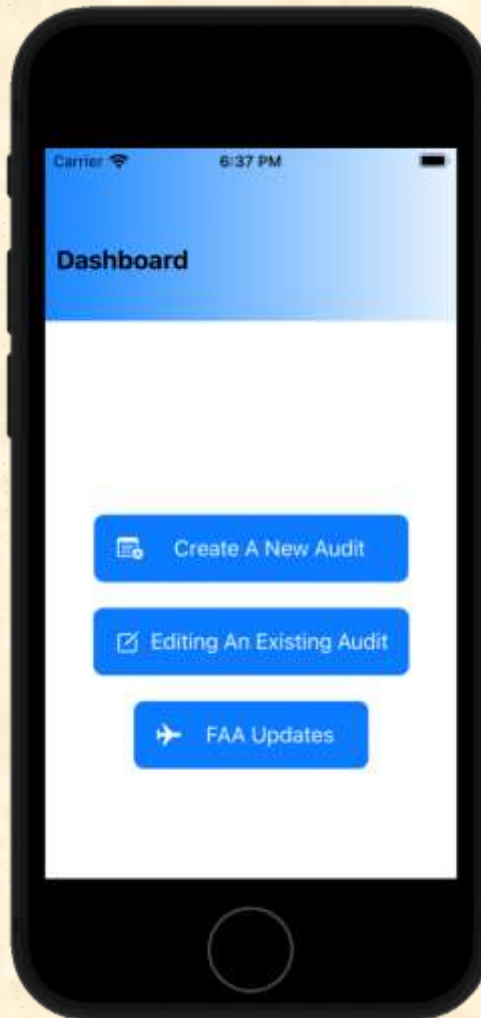


# Design Specifications

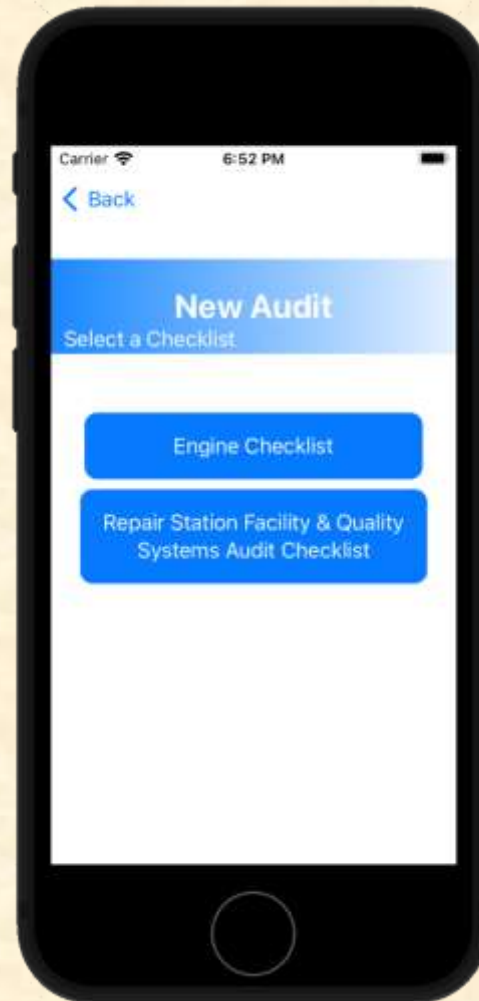
- User greeted with two sign-in options, Manager and Auditor
- Manager
  - Assign Audit
  - Assigned Audits
  - Completed Audits
  - Auditors
- Auditor
  - Assigned Audits
  - In-progress Audits
  - Completed Audits
- When the manager assigns a new audit, they will be prompted to select a checklist. Once a checklist is selected, the manager can assign the audit. The auditor will see the audit in their “Assigned audits” section, and can select and edit it.
- In the audit editing menu, the auditor can upload photos
- In the Completed Audits menu, the manager and user can generate a PDF document



# Screen Mockup: Dashboard



# Screen Mockup: Select Checklist



# Screen Mockup: Engine Checklist

Carrier [signal] 4:25 PM

## Engine Checklist

**UNITED**  
International Operations Quality Assurance

Repair Station Facility & Quality System Audit Checklist

Facility Name: \_\_\_\_\_ QIAXIS # \_\_\_\_\_  
Address: \_\_\_\_\_ Check/Revision # \_\_\_\_\_  
R# \_\_\_\_\_ State/Country \_\_\_\_\_ City \_\_\_\_\_ # of Employees \_\_\_\_\_  
IA Reg. \_\_\_\_\_ Accountable Manager \_\_\_\_\_  
Phone Number \_\_\_\_\_ Phone Number \_\_\_\_\_  
M/I Number \_\_\_\_\_ E-mail \_\_\_\_\_  
E-mail \_\_\_\_\_  
Company website: \_\_\_\_\_

Certificate/Program Information:	Audit Type:
AA Repair Station Number: _____	CAE Allocation <input type="checkbox"/> Follow-up <input type="checkbox"/>
AA Cert Exp. Date (foreign visitors): _____	Pre-Flight <input type="checkbox"/> Surveillance <input type="checkbox"/>
AA/AAO Cert Issue Number: _____	Essential Maintenance <input type="checkbox"/> U/L Requirements <input type="checkbox"/>
AAO Certificate Number: _____	Pre-Approval <input type="checkbox"/> Capability Check <input type="checkbox"/>
Reg/Insulated Test Program #: _____	Reliability/Unscheduled Removal/Event Driven (R)

**Audit Summary Detail**

Audit Interval in Years \_\_\_\_\_ Quality System Approval \_\_\_\_\_ Follow-up Audit Required \_\_\_\_\_  
CAPA Required by \_\_\_\_\_ Prior to Approval \_\_\_\_\_  
CAPA Required by \_\_\_\_\_ for Continued Service \_\_\_\_\_  
in QIAXIS for final report \_\_\_\_\_

Inspector Acknowledgment	Auditor Acknowledgment
Signature _____	Signature _____
Print Name _____	Print Name _____
Title _____	Title _____
Date _____	Date _____

**CAPABILITIES CODES "99-XXXX"**  
Enter the letter code for each capability in a box below.

Code	Code	Code	Code	Code	Code

Inspector/Observer Review \_\_\_\_\_ Date \_\_\_\_\_

U.S.E. Register: (Circle One) Add Delete Update No Action



# Screen Mockup: Web Scraping



The image shows a smartphone screen displaying a table with two columns: 'Operator Name (Select an operator for more information)' and 'DBA Name'. The table lists various airline operators and their corresponding DBA names.

Operator Name (Select an operator for more information)	DBA Name
<a href="#">0869234 B.C. LTD.</a>	STREAK AIR
<a href="#">102662 CANADA INC</a>	EXPRESS AIR
<a href="#">1263343 ALBERTA INC</a>	ENERJET
<a href="#">126700 AIRCRAFT CANADA LTD</a>	LAKE CENTRAL AIRWAYS
<a href="#">138883 CANADA INC</a>	BRUCELANDAIR INTERNATIONAL
<a href="#">1682195 ALBERTA LTD</a>	LONACH GLOBAL CHARTER
<a href="#">2080061 ONTARIO INC</a>	SKY CARE AIR AMBULANCE
<a href="#">21 AIR, LLC</a>	N/A
<a href="#">2106701 ONTARIO INC</a>	NOVAJET
<a href="#">2746904 ONTARIO INC</a>	PIVOT AIRLINES
<a href="#">40 MILE AIR LTD</a>	N/A
<a href="#">650584 ALBERTA INC</a>	LATITUDE AIR AMBULANCE
<a href="#">7506406 CANADA INC</a>	N/A



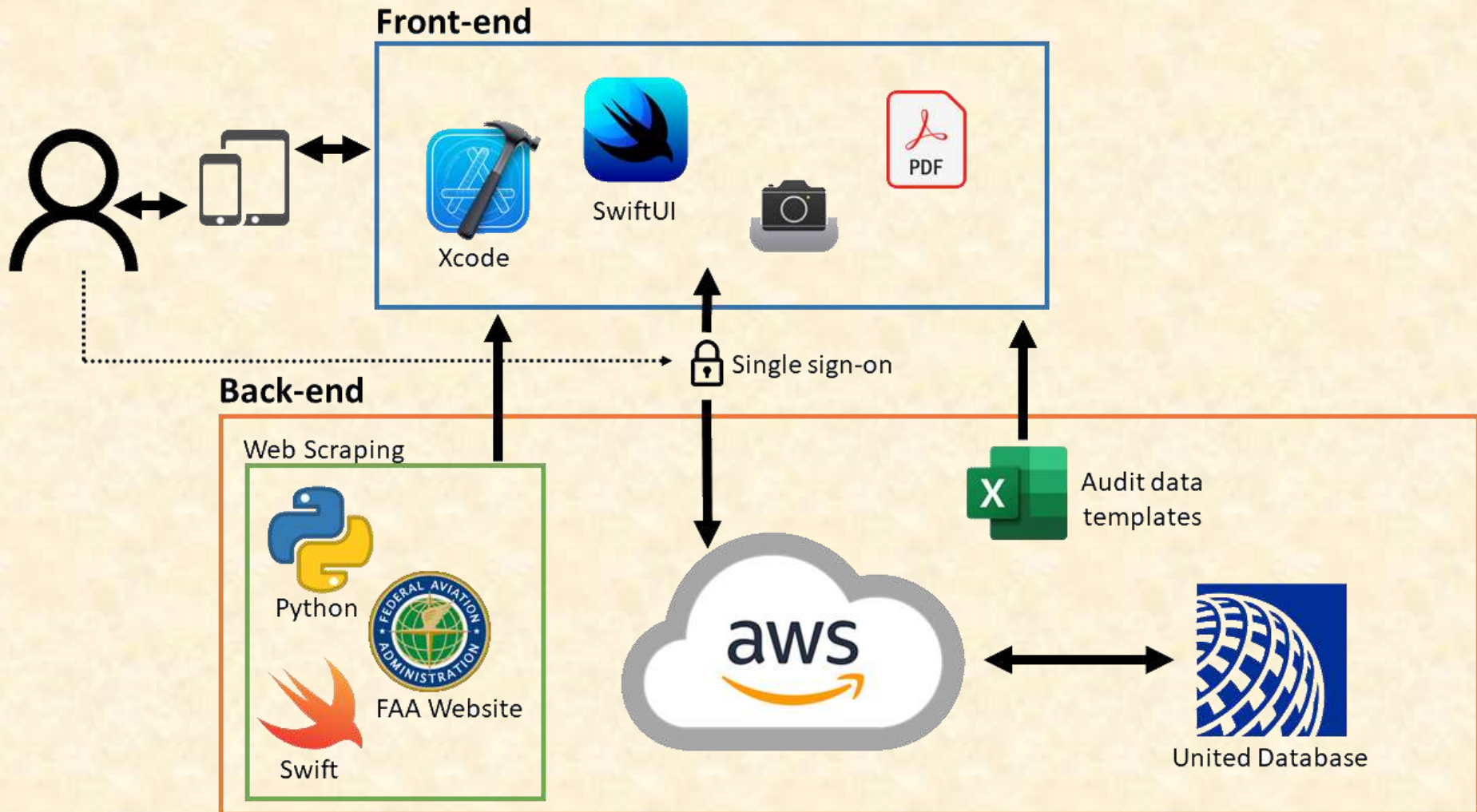
# Technical Specifications

- Development Environment
  - Xcode, SwiftUI
- iOS Mobile Devices
  - iPhone, iPad
- AWS Amplify
  - Single Sign-On (SSO)
    - Amazon Cognito + United's identity provider
  - Cloud Storage (photos, PDFs, Word docs, etc.)
    - Amazon S3
  - Database
    - Amazon Aurora (MySQL)
    - AppSync API
      - ❖ DataStore (on-device storage)
      - ❖ AppSync
      - ❖ Lambda
- PDF Generation
  - PDFKit framework





# System Architecture



# System Components

- Hardware Platforms
  - iPhone
  - iPad
- Software Platforms / Technologies
  - Xcode
  - SwiftUI
  - Python
  - Swift
  - AWS Amplify
  - SQL



# Risks

- Backend configuration to allow for integration with United’s database
  - We want to configure our AppSync API in a way that allows for a smooth integration with United’s SQL database
  - Research AWS AppSync, Lambda, and RDS, as well as discuss with our sponsors to develop a backend configuration that is compatible with their database
- Creating an app similar to the existing “United Airlines” app
  - Our teammates are not familiar with many of the techniques used to develop the layout of the existing application
  - We have the existing application downloaded, and we will be referencing the layout and menus, completing research, and discovering solutions to make our application as similar as possible
- Implementing single sign-on (SSO) feature
  - While we know to use Amazon Cognito for authentication, we need to determine how to link United’s identity provider to our system
  - We will discuss with our sponsors about retrieving access to this identity provider and completing research on how to integrate it with our system



# Questions?

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