

# Convert an Industry Leading Native Mobile App to React Native

## Project Summary

Buildertrend came to us with an issue they are currently facing in the industry. Like many mobile platform companies, they are currently developing their construction management application in two separate teams: Android and iOS.

Our task was to replicate their existing application using React Native to develop a cross platform code base. React Native reduces the amount of resources needed to develop and maintain their code base. In addition, having a single code base keeps the application consistent for both Android and iOS users!

## Functional Requirements

- Cross platform application that is consistent on both iOS and Android
- Application must integrate into Buildertrend's existing backend
- Industry level testing that can be handed off to full-time developers

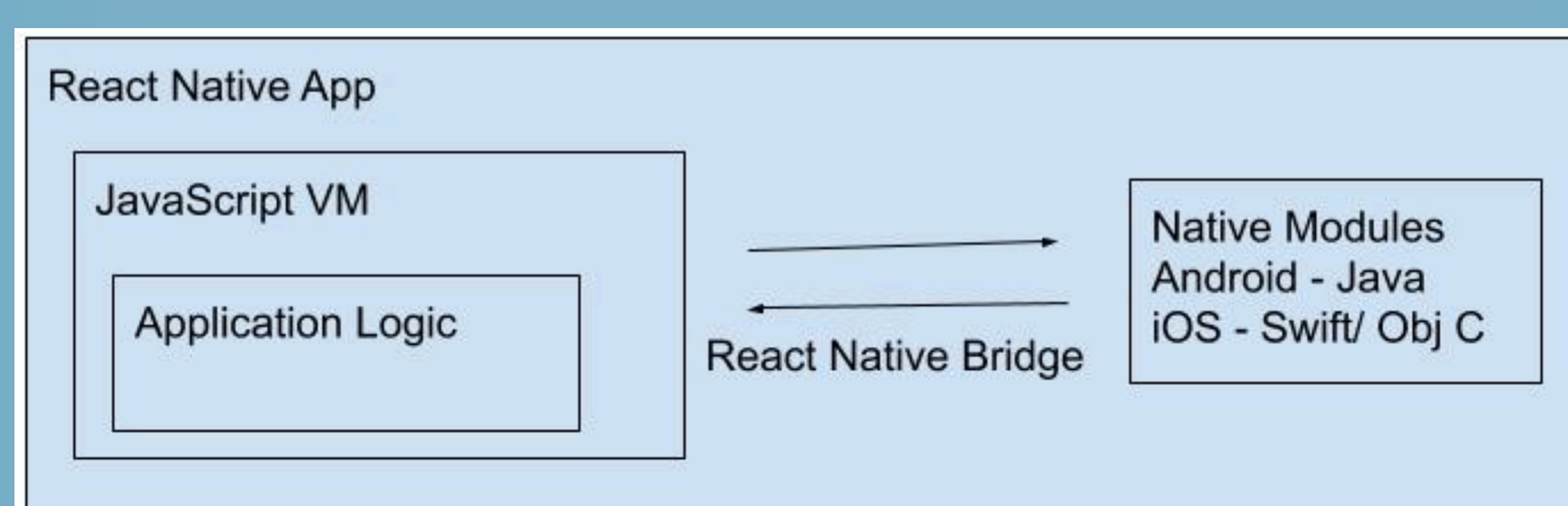
## Non-Functional Requirements

- Consistent user experience with existing application
- Sensitive data must be encrypted prior to sending it to Buildertrend's backend

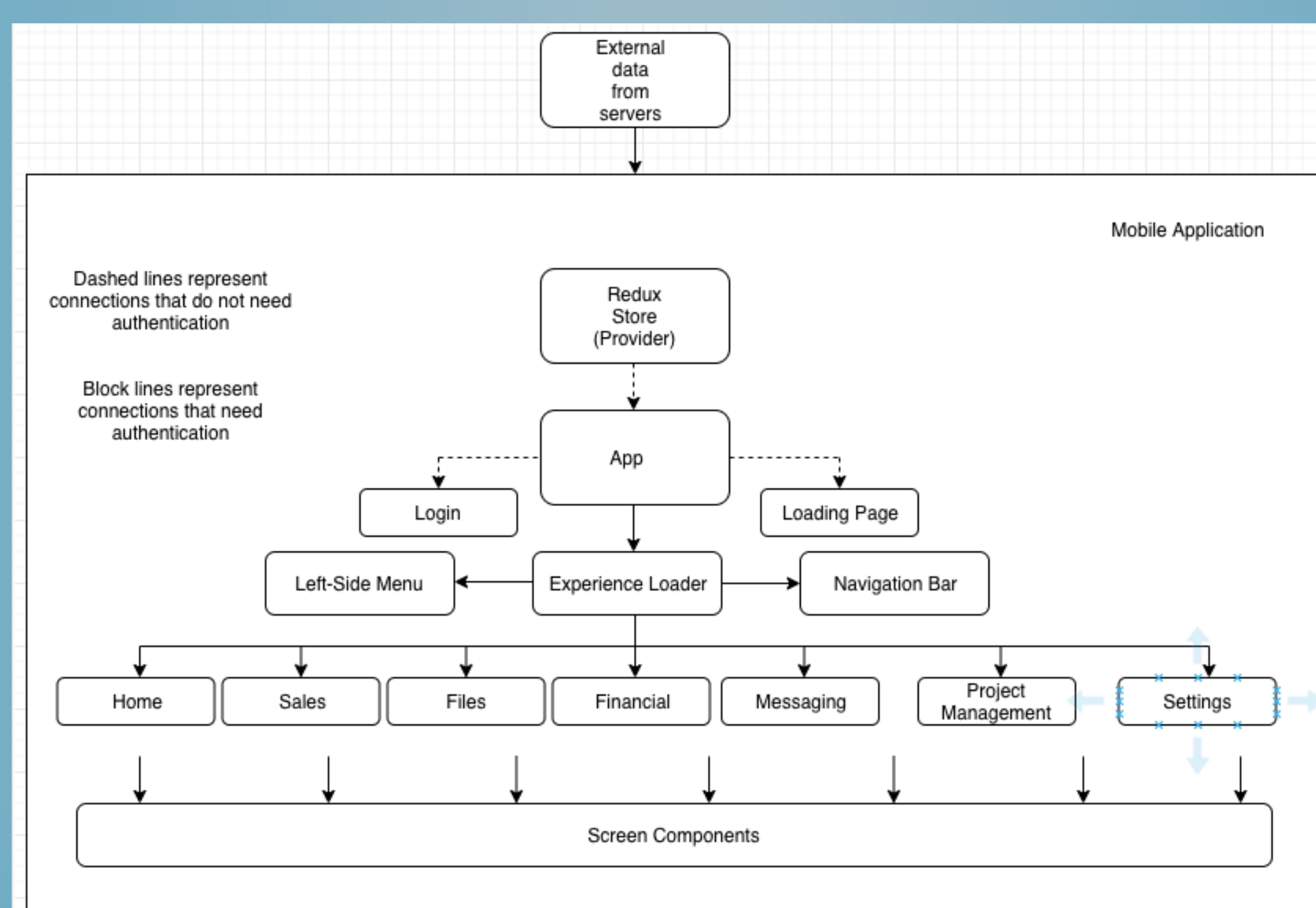
## Standards & Best Practices

- Majority of team approval for merge requests to ensure quality code
- Testing as we develop to keep our existing code from breaking
- IEEE code of ethics to ensure a quality product for end users

## Concept Diagram

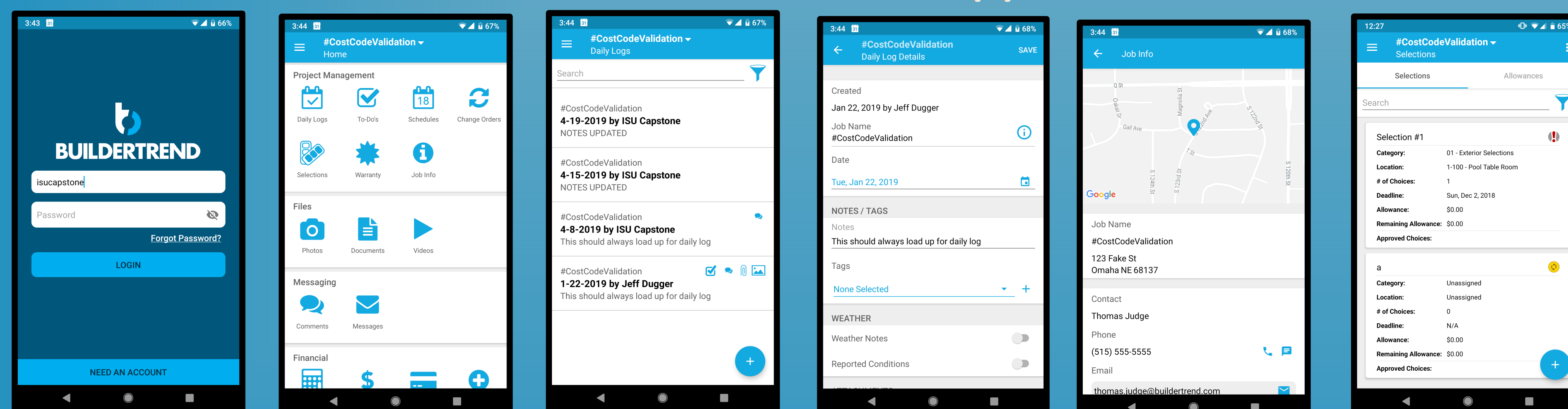


## System Design

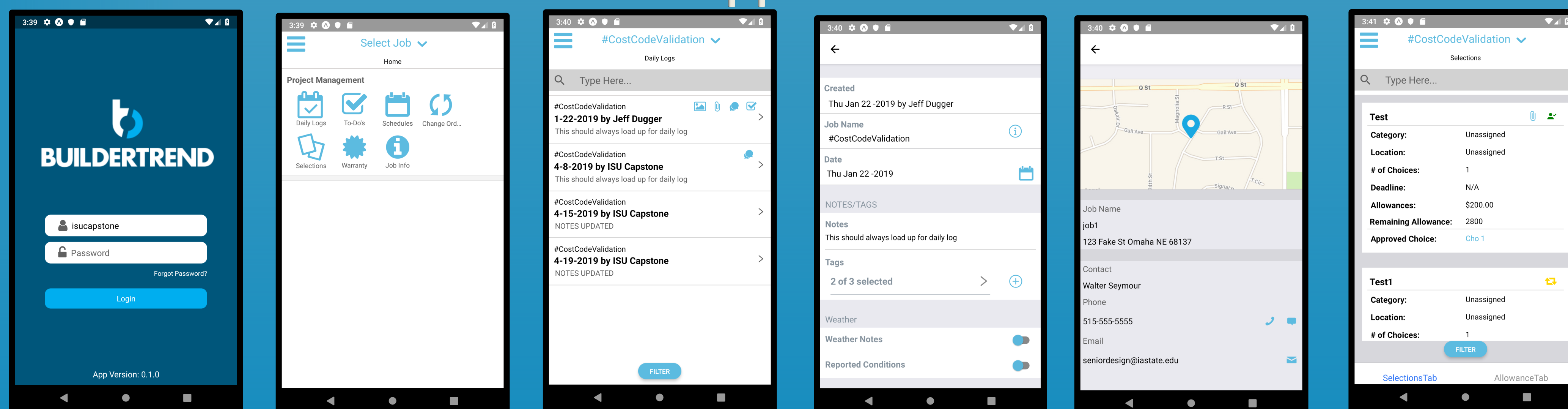


## User Experience

### Buildertrend's CURRENT Application



### OUR Application

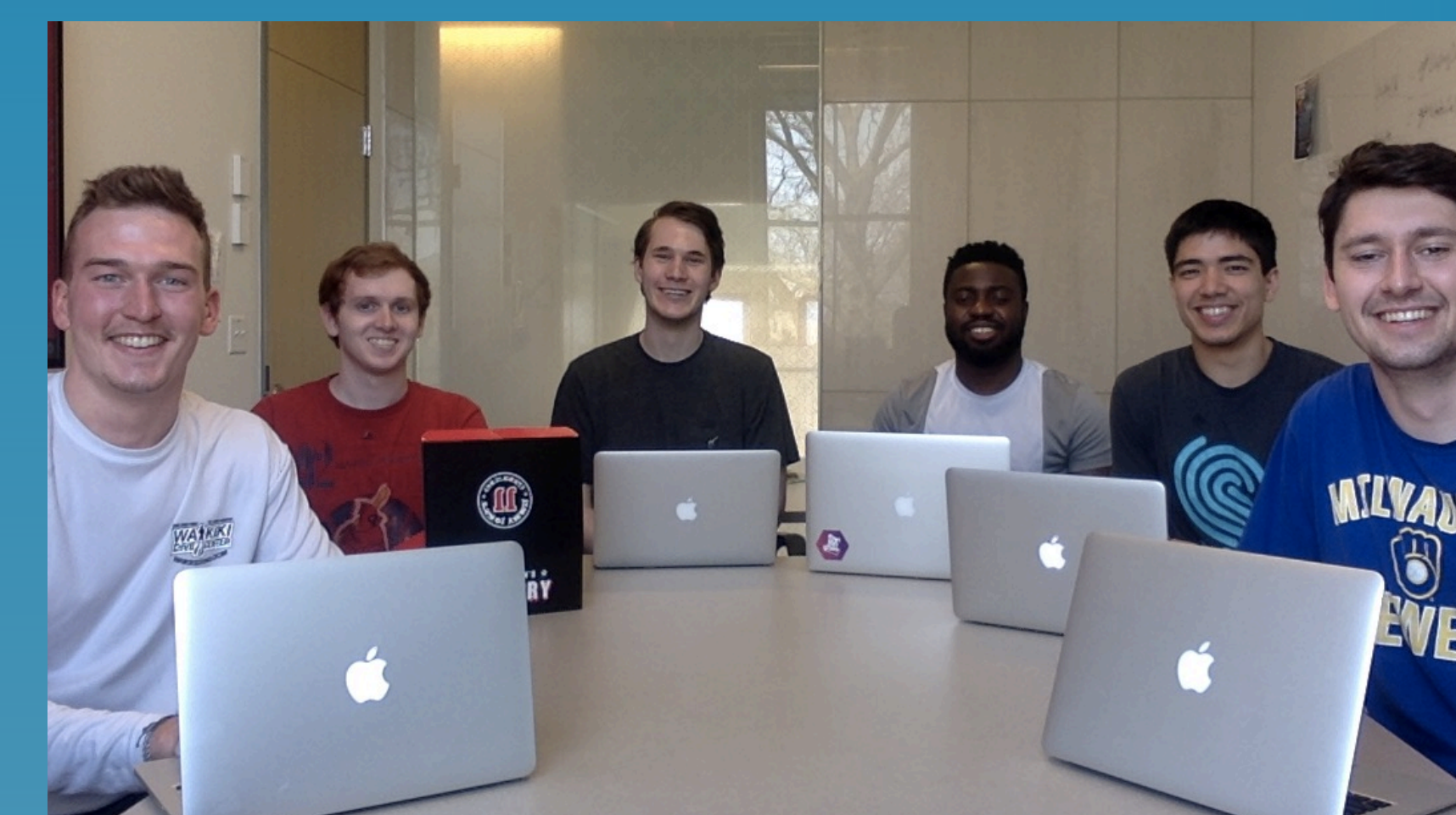


## Team Info

Team: sdmay19\_02  
Victor Amupitan  
Lucas Kern  
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Francis San Filippo  
Walter Seymour

Client: Buildertrend  
Rich Kalasky  
Daric Teske

Advisor: ISU Faculty  
Mai Zheng



## System Implementation

- React Native
- Typescript
- Expo
- Charles
- Redux
- Yarn
- Node
- Jest
- React Navigation
- Android AVD
- TS Lint
- Xcode Simulator

## Testing & Evaluation

- Structured testing is implemented with Jest. We test all of our major components, and it will be easy for Buildertrend to write more tests if needed.
- Buildertrend's QA will be able to manually and automatically test the code
- We implemented test cases for most components, including snapshots and unit testing

## System Design Specifications

- Layered design using components as building blocks
- Redux store keeps the state of application throughout
- Charles intercepts Buildertrend's API calls which were utilized within our application
- Fully structured application with functional components for future development

## Conclusion

Overall, Buildertrend has concluded that React Native is sufficient for recreating their existing application. This means that Buildertrend can confidently begin development on a new React Native code base. They will only have to maintain and develop one repository that serves both iOS and Android users!

Although our project is a prototype rather than a finalized product, Buildertrend will use our project as an outline during their product development cycle.