

*Florida International University
School of Computing and Information Sciences*

Software Engineering Focus

Final Deliverable

Project Title: BOLO. Be on The Look Out v.12.0

Team Members:

**Jacqueline Castro
Yevanis Garcia**

Product Owner(s):

**Jason Cohen
Frank Alvarado**

Mentor & Instructor:

Dr. Masoud Sadjadi

The MIT License (MIT)
Copyright (c) 2016 *Florida International University*

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Abstract

FIU's College of Engineering and Computer Science is working with the Pinecrest Police Department (PPD) to create a web application that replaces the current process to manually fill and distribute Be On the Look Out (BOLO) reports. The BOLO web application is currently on a new development process that replaces the old version with new software requirements.

This new system is contained within a clean Three Tier RESTful architecture using SpringBoot and SQL Database for the backend. Angular 6 and Angular Material are the technologies used for the frontend. This technology requirements were set by product owners.

Throughout this document you will encounter the Scrum Software Development followed by the team to develop this 12.0 version of the BOLO app. Implemented Users Stories are described, explained with use cases and sequence diagrams, and tested with unit and system test cases. This document also contains information such as: User Stories, Project Plan, System Design, among other things that were present in the project development. We implemented new, and fixed existing functionalities that were left behind by the last team. But due to time constraints, the team was unable to complete with all requirements to finalize the app, therefore, there is a section dedicated to non-implemented features that will serve as a stand point for future teams to continuing the development of the BOLO web application.

We have also deployed the application in a P.P.D. remote server, so the Product Owners (P.O.) can review and help the next team in the process of finishing the BOLO application.

Table of Contents

INTRODUCTION	5
CURRENT SYSTEM	6
PURPOSE OF NEW SYSTEM	7
USER STORIES	12
IMPLEMENTED USER STORIES	15
PENDING USER STORIES	18
PROJECT PLAN	20
HARDWARE AND SOFTWARE RESOURCES	20
SPRINTS PLAN	22
<i>Sprint 1</i>	22
<i>Sprint 2</i>	22
<i>Sprint 3</i>	23
<i>Sprint 4</i>	23
<i>Sprint 5</i>	24
<i>Sprint 6</i>	25
<i>Sprint 7</i>	25
SYSTEM DESIGN	26
ARCHITECTURAL PATTERNS	26
SYSTEM AND SUBSYSTEM DECOMPOSITION	27
DEPLOYMENT DIAGRAM	29
DESIGN PATTERNS	30
SYSTEM VALIDATION	31
GLOSSARY	38
APPENDIX	39
APPENDIX A - UML DIAGRAMS	40
APPENDIX B - USER INTERFACE DESIGN	50
APPENDIX C - SPRINT REVIEW REPORTS	60
APPENDIX D - USER MANUALS, INSTALLATION/MAINTENANCE DOCUMENT, SHORTCOMINGS/WISHLIST DOCUMENT AND OTHER DOCUMENTS	71
REFERENCES	72

Introduction

Pinecrest Police Department and Miami Police Department aims the automation of a manual system that creates and distributes BOLO (Be On the Look Out) flyers. The system in place consists of police officers manually filling out BOLO (Be on the Lookout) reports and then sending them out to law-enforcement agencies. This procedure has a costly long-time frame to distribute significant information pertaining to a crime, and lacks features like searching or filtering, among other efficient functionalities.

There is an automated system in place that has been developed by FIU, but this one does not suffice with new requirements provided by stakeholders. Therefore, a new version for the web application is being implemented. The BOLO 12.0 web application will securely disperse BOLOs via the web by distributing notifications automatically to appropriate entities. Also, the application will allow officers to renovate the paradigm of solving criminal cases.

Current System

The current BOLO system relies on manual paperwork. A police officer may be called to a crime scene, and then a paper report is filled with information pertaining to the crime. Later, this report may become a BOLO flier. After the officer finishes the report, a copy is given to the supervisor in charge for review. Upon completion of the review and the report's approval, the supervisor sends the file to be bookkeeping where it is handed to detectives, officers, and even other police agencies.

FIU in conjunction with Pinecrest Police Department has been developing a web application that responds to such needs. The BOLO 11.0 iteration was implemented using Angular 6 as frontend, SpringBoot and Java as backend and SQL server for managing the database. We inherited the project in an advanced stage, with more than 50% of the functionalities completed and a strong foundation for this product iteration. After implementing new/missing features, as well as fixing existing features, the application is well over 80% completed and in its final stage.

Purpose of New System

BOLO 12.0 has a renovated User Interface using trending technologies like Angular 6 and Angular Material for the frontend. The application has a Three Tier - Rest API architecture, refer to Figure 2, that runs on SpringBoot and SQLServer for the backend. After a user is authenticated and authorized into the system, he/she can navigate according to his/her authorization levels. The authorization for the system is defined in 4 Tiers. If a user is an agent, he/she belongs to Tier 1. This authorization level is able to create, edit, archive, and unArchive their own BOLOs, receive a notification when a new BOLO is posted, and search information for all BOLOs pertaining to his/her subscriptions. Tier 2 is related to the Agency Supervisor. This type of user has the same authorization level as Tier 1, but he/she can edit, delete, archive, and unArchive BOLOs within his/her agency for all agents. Tier 3 is a System Administrator for the Agency. She/he will have the same access level as Tier 2, and also will be able to create, edit, delete, deactivate, and reactivate Tier 1, Tier 2, and Tier 3 users within the agency. Tier 4 users will be named Superusers or Root. He/she will have the same access level as Tier 3, but they will also be able to create and manage all users, bolos, agencies, and, categories.

The notification system will be based on the agent's preferences. After a new BOLO is created, the system will send a notification to the agent of that BOLO, the agency of that BOLO, and all agents that are subscribed to that specific agency/category about the creation of this new BOLO. By default, an agent will belong to an agency, but eventually she/he can subscribe to other agencies to receive notifications. Future considerations to implement will be a system that will locate the bolos on a map by zip code, and the agents will be able to see all BOLOs on a map.

Functional Requirements

- The system shall be able to define access level for the app according to a specific Tier.
 - TIER 4: Super User
 - The system shall allow all Tier 3 requirements
 - The system shall allow the Super User to create and manage all agencies
 - The system shall allow the Super User to create and manage all users
 - The system shall allow the Super User to create and manage all bolos
 - The system shall allow the Super User to create and manage all categories
 - The system shall allow the Super user to provide access to TIER 3
 - TIER 3: System Administrator:
 - The system shall allow all Tier 2 requirements
 - The system shall allow the System Admin to create and manage Tier 1, Tier 2, and Tier 3 users within the agency
 - The system shall allow the System Admin to create and manage all BOLOs within the agency
 - TIER 2: Shift Supervisor
 - The system shall allow the Tier1 requirements
 - The system shall allow the Supervisor to manage all BOLOs created by his/her agency

- TIER 1: Shift Officer:
 - The system shall allow the user to create a BOLO
 - The system shall allow the user to edit their own BOLO
 - The system shall allow an agent to Receive Notifications about a BOLO by the selected preferences.
 - The system shall allow the user to search for a BOLO.
 - The system shall allow an agent to subscribe to other agencies/categories
- The system shall allow a notification email to be sent to the user, agency, and subscribers after a BOLO has been created/modified.
- The system shall allow a confirmation email to be sent to the user after a user has been created.
- The system shall allow the user to add pictures to a BOLO when creating it.
- The system shall allow the admin user to add pictures when creating an agency.
- The system shall allow the management of users, agencies, and categories to include creation, editing, deleting, deactivating, and reactivating.

Non-Functional Requirements

As per requested by Product Owner: Jason Cohen and Frank Alvarado from Pinecrest Police Department and Miami Dade County regulations application will:

- Respond to RESTFUL API architecture
- Developed using SpringBoot framework for the backend
- Developed with html5, bootstrap, Angular Material, and Angular 6 for the frontend

- Source code must be uploaded on BitBucket
- The application should store images outside the database to a file share structure to avoid performance issues
- The version to which the application is compiled must be equal or less than the version on which WebSphere Application Server is running at ITD (County Requirements) By August 2018: 8.5.5.12
- As per Miami Dade County Request no personal accounts to 3rd party tools should be used within the app, all accounts should be created as service accounts, which the MDC County may access
- Students should generate a .war file using either Ant or Maven, which contains the entire web application, including Java libraries

Usability:

- The system shall require no training
- It should take no more than 2 minutes to create a BOLO

Reliability:

- The system shall inform its users of scheduled maintenance at least a week before

Performance:

- The system shall load any page in less than five seconds
- A message will only be presented once on the same page

Supportability:

- After the system is deployed, it should be subject to change

Implementation:

- Every page presented to the users should look the same in the supported browsers

Security:

- The system will authenticate each user, and depending on his credential, the system will provide the proper user rights, thus no user will access anything beyond his/her limits

USER STORIES

- **BOLO-26:** As a user, I can filter BOLOs by agency and category.
- **BOLO-28:** As a basic user (Tier 1), I can create, view, edit, and remove my own BOLOs.
- **BOLO-30:** As an agency admin (Tier 3), I can perform the same functions as a Tier 1 or Tier 2 user, in addition to being able to add/remove Tier 1, Tier 2, and Tier 3 users within my agency.
- **BOLO-31:** As an agency supervisor (Tier 2), I can create, view, edit, and remove my own BOLOs, as well as any BOLOs from my agency.
- **BOLO-57:** As a root admin (Tier 4), I can perform the same functions as a Tier 1, Tier 2, or Tier 3 user, in addition to being able to add/remove agency accounts, add/remove Tier 3 users, add/remove Tier 4 users, and add/remove BOLO categories.
- **BOLO-61:** As a user, I can perform a free search to find BOLOs that contain a certain keyword(s).
- **BOLO-62:** As a developer, I want to remove the BOLO confirmation step in the BOLO creation process.
- **BOLO-63:** As a user, I can receive notifications of changes/additions in BOLOs that I am subscribed to by email.
- **BOLO-66:** As a developer I want to fix the Agency directory counter (fixed to 3), so I can see the proper agency counter.
- **BOLO-67:** As a developer I want to fix that Home screen is refreshed when a new BOLO is created, so I can see it in Home screen when BOLO is saved.
- **BOLO-68:** As a developer I want to add the No picture thumbnail when BOLO is created without picture, so UI is more intuitive.

- **BOLO-69:** As a developer, I want to be able to fix Edit, Details, Archive, and Delete functionalities in the BOLOs on Home screen, so the users can use these functionalities.
- **BOLO-71:** As a developer I want to be able to fix the Edit About Us page in Admin dashboard, so the proper Tier can create/modify the About us info.
- **BOLO-72:** As a developer I want to be able to fix the Edit User guide page on Admin dashboard, so the proper Tier can create/modify that info.
- **BOLO-73:** As a developer I want to be able to fix the Edit Login page on Admin dashboard, so the proper Tier can create/modify that info.
- **BOLO-74:** As a developer I want to be able to fix the Edit, Delete/Disable functionality on Category Management on Admin dashboard, so the proper Tier can create/modify that info.
- **BOLO-75:** As a developer I want to be able to fix the Delete/Disable functionality on Agency Management on Admin dashboard, so the proper Tier can Delete/Disable an agency.
- **BOLO-76:** As a developer I want to be able to fix the Filter By functionality on Home screen, so the users can filter the BOLOs.
- **BOLO-77:** As a developer, I will add form validation to the BOLO creation form, so that a BOLO cannot be create without required information filled out.
- **BOLO-78:** As a developer I want to be able to implement the Forgot Password functionality on Login screen, so that users can reset password.
- **BOLO-79:** As a developer I want to fix the Generate PDF button on BOLOs detail page, so that a proper pdf is generated.
- **BOLO-81:** As a user, the time I input for time reported should be saved in database and displayed properly.

- **BOLO-82:** Fix Edit functionality.
- **BOLO-83:** Fix Archive functionality.
- **BOLO-84:** Fix Delete functionality.
- **BOLO-85:** As a developer, I will remove the Search link from the navigation bar, as it is unnecessary and redundant.
- **BOLO-87:** Implement unArchive.
- **BOLO-88:** As an admin, I want to be able to RECOVER the "soft" deleted BOLOs or DELETE them completely, so the BOLOs can be back in BOLOs screen or deleted forever.
- **BOLO-89:** As an admin, I should be able to permanently delete users from the system.
- **BOLO-90:** As a developer I want to be able to change the mail server configuration to MS Exchange Server, so the BOLOs email notifications can be handled by the customer mail server.
- **BOLO-91:** As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies.
- **BOLO-92:** As a developer I want to be able to deploy the app in a remote server, so the PO can test it in a production environment.
- **BOLO-93:** As an admin, I should be able to deactivate users and reactivate them.
- **BOLO-94:** As a developer, I want to fix how information is pre-populated when editing a BOLO, user, or agency.

Implemented User Stories

- **BOLO-28:** As a basic user (Tier 1), I can create, view, edit, and remove my own BOLOs.
- **BOLO-30:** As an agency admin (Tier 3), I can perform the same functions as a Tier 1 or Tier 2 user, in addition to being able to add/remove Tier 1, Tier 2, and Tier 3 users within my agency.
- **BOLO-31:** As an agency supervisor (Tier 2), I can create, view, edit, and remove my own BOLOs, as well as any BOLOs from my agency.
- **BOLO-57:** As a root admin (Tier 4), I can perform the same functions as a Tier 1, Tier 2, or Tier 3 user, in addition to being able to add/remove agency accounts, add/remove Tier 3 users, add/remove Tier 4 users, and add/remove BOLO categories.
- **BOLO-61:** As a user, I can perform a free search to find BOLOs that contain a certain keyword(s).
- **BOLO-62:** As a developer, I want to remove the BOLO confirmation step in the BOLO creation process.
- **BOLO-63:** As a user, I can receive notifications of changes/additions in BOLOs that I am subscribed to by email.
- **BOLO-66:** As a developer I want to fix the Agency directory counter (fixed to 3), so I can see the proper agency counter.
- **BOLO-67:** As a developer I want to fix that Home screen is refreshed when a new BOLO is created, so I can see it in Home screen when BOLO is saved.
- **BOLO-68:** As a developer I want to add the No picture thumbnail when BOLO is created without picture, so UI is more intuitive.
- **BOLO-69:** As a developer I want to be to fix Edit, Details, Archive, and Delete functionalities in the BOLOs on Home screen, so the users can use these functionalities.

- **BOLO-74:** As a developer I want to be able to fix the Edit, Delete/Disable functionality on Category Management on Admin dashboard, so the proper Tier can create/modify that info.
- **BOLO-75:** As a developer I want to be able to fix the Delete/Disable functionality on Agency Management on Admin dashboard, so the proper Tier can Delete/Disable an agency.
- **BOLO-77:** As a developer, I will add form validation to the BOLO creation form, so that a BOLO cannot be create without required information filled out.
- **BOLO-79:** As a developer I want to fix the Generate PDF button on BOLOs detail page, so that a proper pdf is generated.
- **BOLO-81:** As a user, the time I input for time reported should be saved in database and displayed properly.
- **BOLO-82:** Fix Edit functionality.
- **BOLO-83:** Fix Archive functionality.
- **BOLO-84:** Fix Delete functionality.
- **BOLO-85:** As a developer, I will remove the Search link from the navigation bar, as it is unnecessary and redundant.
- **BOLO-87:** Implement unArchive.
- **BOLO-88:** As an admin, I want to be able to RECOVER the "soft" deleted BOLOs or DELETE them completely, so the BOLOs can be back in BOLOs screen or deleted forever.
- **BOLO-89:** As an admin, I should be able to permanently delete users from the system.
- **BOLO-91:** As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies.

- **BOLO-92:** As a developer I want to be able to deploy the app in a remote server, so the PO can test it in a production environment.
- **BOLO-93:** As an admin, I should be able to deactivate users and reactivate them.

Pending User Stories

- **BOLO-26:** As a user, I can filter BOLOs by agency and category.
- **BOLO-71:** As a developer I want to be able to fix the Edit About Us page in Admin dashboard, so the proper Tier can create/modify the About us info.
- **BOLO-72:** As a developer I want to be able to fix the Edit User guide page on Admin dashboard, so the proper Tier can create/modify that info.
- **BOLO-73:** As a developer I want to be able to fix the Edit Login page on Admin dashboard, so the proper Tier can create/modify that info.
- **BOLO-76:** As a developer I want to be able to fix the Filter By functionality on Home screen, so the users can filter the BOLOs.
- **BOLO-78:** As a developer I want to be able to implement the Forgot Password functionality on Login screen, so that users can reset password.
- **BOLO-90:** As a developer I want to be able to change the mail server configuration to MS Exchange Server, so the BOLOs email notifications can be handled by the customer mail server.
- **BOLO-94:** As a developer, I want to fix how information is pre-populated when editing a BOLO, user, or agency.

Possible future functionalities:

- **Bulk user creation with Excel/CSV upload:** As an Administrator I would like to upload an Excel or CSV file in so that I can create multiple Users on bulk mode.
- **Edit SMTP server information:** As an Administrator, I would like to be able to edit the SMTP server information, so a developer is not needed whenever a server change is made
- **BOLO owner inactivity Reminder:** As a BOLO owner, I would like to be reminded to update a BOLO so that BOLO's are kept up-to-date.
- **BOLO Reminder custom message:** as an Administrator, I would like to create a custom message for the 30 days of inactivity so that we don't need a developer to change this message down the line.

PROJECT PLAN

This section describes the planning that went into the realization of this project. This project incorporated the agile development techniques and as such required the sprints to be planned. These sprint planning are detailed in the section. This section also describes the components, both software and hardware, chosen for this project.

Hardware and Software Resources

The following is a list of all hardware and software resources that were used in this project:

Hardware:

- Laptops with the following specifications:

SPECS	MACBOOK PRO	ACER ASPIRE 5
PROCESSOR	2.6 GHz Intel Core I7	1.6 GHz Intel Core I5
CAPACITY	500 GB Flash Storage	1 TB HDD
MEMORY	32 GB RAM	6 GB RAM

Software and Technologies Used:

- Windows 10 OS & Mac OS Mojave
- Visual Studio Code (for Windows and Mac)
- Eclipse and IntelliJ IDEA CE (for Windows and Mac)
- SQL Server (Windows and over Docker in Mac)
- SQL Server Management Studio

- DBeaver. Universal Database Manager (Mac)
- BitBucket (Sourcetree client)
- GitBash
- Angular 6
- Angular Material+Icons
- SpringBoot 2
- HTML5
- CSS 3
- Bootstrap 4
- NPM 6.4.1
- Angular CLI: 7.2.2

Sprints Plan

Sprint 1

- **BOLO-26:** As a user, I can filter BOLOs by agency and category.
- **BOLO-61:** As a user, I can perform a free search to find BOLOs that contain a certain keyword(s).
- **BOLO-62:** As a developer, I want to remove the BOLO confirmation step in the BOLO creation process.
- **BOLO-63:** As a user, I can receive notifications of changes/additions in BOLOs that I am subscribed to by email.
- **BOLO-77:** As a developer, I will add form validation to the BOLO creation form, so that a BOLO cannot be create without required information filled out.
- **BOLO-82:** Fix Edit functionality.

Sprint 2

- **BOLO-28:** As a basic user (Tier 1), I can create, view, edit, and remove my own BOLOs.
- **BOLO-63:** As a user, I can receive notifications of changes/additions in BOLOs that I am subscribed to by email.
- **BOLO-69:** As a developer I want to be to fix Edit, Details, Archive, and Delete functionalities in the BOLOs on Home screen, so the users can use these functionalities.
- **BOLO-85:** As a developer, I will remove the Search link from the navigation bar, as it is unnecessary and redundant.
- **BOLO-82:** Fix Edit functionality.

- **BOLO-83:** Fix Archive functionality.
- **BOLO-84:** Fix Delete functionality.
- **BOLO-87:** Implement unArchive.

Sprint 3

- **BOLO-31:** As an agency supervisor (Tier 2), I can create, view, edit, and remove my own BOLOs, as well as any BOLOs from my agency.
- **BOLO-79:** As a developer I want to fix the Generate PDF button on BOLOs detail page, so that a proper pdf is generated.
- **BOLO-81:** As a user, the time I input for time reported should be saved in database and displayed properly.
- **BOLO-88:** As an admin, I want to be able to RECOVER the "soft" deleted BOLOs or DELETE them completely, so the BOLOs can be back in BOLOs screen or deleted forever.
- **BOLO-89:** As an admin, I should be able to permanently delete users from the system.
- **BOLO-90:** As a developer I want to be able to change the mail server configuration to MS Exchange Server, so the BOLOs email notifications can be handled by the customer mail server.

Sprint 4

- **BOLO-30:** As an agency admin (Tier 3), I can perform the same functions as a Tier 1 or Tier 2 user, in addition to being able to add/remove Tier 1, Tier 2, and Tier 3 users within my agency.

- **BOLO-67:** As a developer I want to fix that Home screen is refreshed when a new BOLO is created, so I can see it in Home screen when BOLO is saved.
- **BOLO-68:** As a developer I want to add the No picture thumbnail when BOLO is created without picture, so UI is more intuitive.
- **BOLO-91:** As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies.
- **BOLO-92:** As a developer I want to be able to deploy the app in a remote server, so the PO can test it in a production environment.

Sprint 5

- **BOLO-26:** As a user, I can filter BOLOs by agency and category.
- **BOLO-57:** As a root admin (Tier 4), I can perform the same functions as a Tier 1, Tier 2, or Tier 3 user, in addition to being able to add/remove agency accounts, add/remove Tier 3 users, add/remove Tier 4 users, and add/remove BOLO categories.
- **BOLO-66:** As a developer I want to fix the Agency directory counter (fixed to 3), so I can see the proper agency counter.
- **BOLO-74:** As a developer I want to be able to fix the Edit, Delete/Disable functionality on Category Management on Admin dashboard, so the proper Tier can create/modify that info.
- **BOLO-75:** As a developer I want to be able to fix the Delete/Disable functionality on Agency Management on Admin dashboard, so the proper Tier can Delete/Disable an agency
- **BOLO-76:** As a developer I want to be able to fix the Filter By functionality on Home screen, so the users can filter the BOLOs.

- **BOLO-78:** As a developer I want to be able to implement the Forgot Password functionality on Login screen, so that users can reset password.
- **BOLO-91:** As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies.

Sprint 6

- **BOLO-78:** As a developer I want to be able to implement the Forgot Password functionality on Login screen, so that users can reset password.
- **BOLO-91:** As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies.
- **BOLO-93:** As an admin, I should be able to deactivate users and reactivate them.
- **BOLO-94:** As a developer, I want to fix how information is pre-populated when editing a BOLO, user, or agency.

Sprint 7

- Work on final document.
- Work on presentation.
- Prepare for senior expo.
- Make sure application is in good condition to be demoed and deployed.
- Finish feature documentation and videos.
- Finish user manuals, installation/maintenance video, shortcomings/wishlist video, introduction video, etc.
- Researched deployment with Maven for remote server.

SYSTEM DESIGN

This section contains information on the design decisions that went into this project. The architecture patterns are outlined and explained. The entire system is shown in a package diagram and the subsystems are explained. Finally, the design patterns used in the project are discussed.

Architectural Patterns

BOLO 12.0 is following a three-tier architecture RESTful API. First, Angular6 and Angular Material are used on the presentation layer (or first tier). Second, the application layer (or second tier) is performed with SpringBoot. Finally, the data layer (or third tier) is contained within an SQLServer, and it is accessed through the repositories. The main purpose to this architectural pattern is to decouple subsystems, to make it easy when some changes in the application needs to be made.

Each layer is isolated from one another. Presentation layer and Application layer are connected by using services on the Presentation layer. These services are a set of http requests to the controllers that are hosted on SpringBoot. In order to access the data, the controllers use repositories that query the data layer and send back a JSON object as a response. The goal of Spring Data repository abstraction is to significantly reduce the amount of boilerplate code required to implement data access layers for various persistence stores. ^[2]

System and Subsystem Decomposition

Front-end:

As we mentioned above, the front-end or Presentation layer is currently built using Angular 6. Angular architecture is made by Modules, Components, Services and Dependency Injections and Routing.

Some of the main components or set of components that we can find are:

- Set of components on bolo folder:
 - **bolo:** which handles the BOLO's presentation, via cards, on **Home** screen
 - **view:** which handles the detailed view of the selected BOLO
 - **add:** which handles the BOLO creation
 - **edit:** which handles the editing of the selected BOLO
 - **archive:** which handles the archiving of the selected BOLO
 - **archived:** which handles the BOLO's presentation, via cards, on **Archived** screen
 - **delete:** which handles the deletion of the selected BOLO
- Agency component inside agency folder: handles the agency's presentation on Agencies screen
- Set of components on folder admin:
 - **admin-user:** which handles the management of users
 - **admin-deleted-bolo:** which handles recover/delete forever of the deleted BOLOs
 - **admin-categories:** which handles the management of categories
 - **admin-agencies:** which handles the management of agencies

Other important components:

- **GenericService:** handles the http requests that the front-end makes to back-end.
- There also are modules and routing components that register the modules and routes on the application.

Back-end:

In the backend we have:

- **Controllers:** For defining the entry point of the http requests made from front-end
- **Models:** For defining the object model from SQL data and JSON objects. One way it can be used is for table creation on SQL database.
- **Repositories:** Interfaces that extend **JpaRepository** and **CrudRepository** for handling the Create, Read, Update and Delete (C.R.U.D. [4]) queries in the SQL database
- **Services:** For handling some common services such as email notification sent, PDF generation, etc.

Controllers:

BOLO v12.0 currently has 5 implemented subsystems: **agencies**, **authentication**, **user management**, **bolos**, and **categories**. All subsystems are composed by **views**, a **router**, a **service**, and a **repository**. The proper functionality of the system relies on the interaction among all 5 subsystems:

Agency Controller: manages agency creation, updating, deactivation, reactivation and deletion. An agency must exist before any user can be created.

Authentication Controller: manages login authentication of all users and all calls to the server to verify that a user is logged in.

Bolo Controller: manages BOLO creation, editing, previewing, PDF, email, deletion, archiving, unarchiving and others.

Category Controller: manages the creation, updating, deactivation, reactivation and deletion of different categories and form data for new/existing bolos.

Edit Users Controller: manages user creation, updating, deactivation, reactivation and deletion.

Models:

The Agency, Bolo, Category and User models have the properties and requirements needed for to translate database data into objects that can be handled and manipulated in the application and presentation layer.

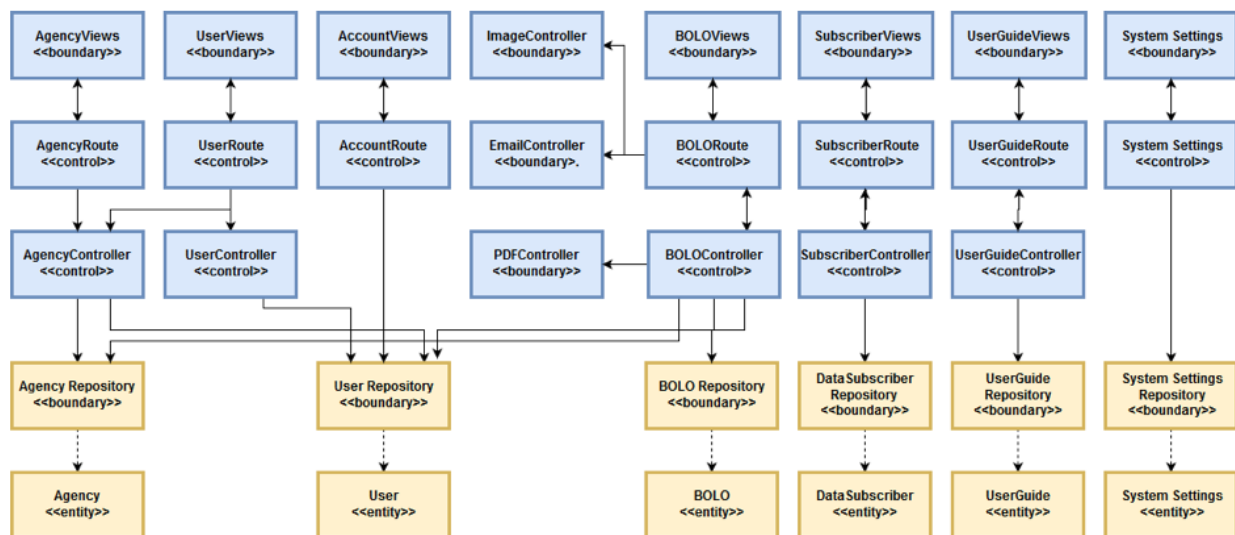
Repositories:

The Agency, Bolo, Category and User repositories are used as interfaces that extend either the **CrudRepository** or the **JpaRepository**. In these interfaces, querying of the database is implemented, and the results are then used in various ways in the application and presentation layer.

Deployment Diagram



Design Patterns



SYSTEM VALIDATION

The application was tested manually, as we went implementing the features. In the frontend, validation was done by Karma while you add or change code. In the backend, validation was done by SpringBoot. Any invalid requests or exceptions are caught and return an error response.

System testing was implemented with various sequences of Sunny Day and Rainy Day Test Cases Scenarios. The objective of our System Tests was to make sure that the system was behaving appropriately, as defined by the requirements provided by our clients.

<i>Test Case ID</i>	<i>BOLO 001 Sunny</i>
<i>Purpose</i>	To validate user deactivation
<i>Preconditions</i>	The user has logged into the system as an admin or root The user is in User Management in Admin tab The user selects the user to be deactivated The user deactivates the user “Officer Lastname”
<i>Input</i>	“Officer Lastname” enters valid credentials to log in Username: officer Password: 54321
<i>Expected results</i>	“Officer Lastname” is not able to log in.

Test Case ID **BOLO 002 Sunny**

Purpose	To validate user reactivation
Preconditions	The user has logged into the system as an admin or root The user is in User Management in Admin tab The user selects the user to be reactivated The user reactivates the user “Officer Lastname”
Input	“Officer Lastname” enters valid credentials to log in Username: officer Password: 54321
Expected results	“Officer Lastname” is able to log in.

Test Case ID **BOLO 003 Sunny**

Purpose	To validate agency deactivation
Preconditions	The user has logged into the system as an admin or root The user is in Agency Management in Admin tab The user selects the agency to be deactivated The user deactivates the agency “New Agency”, which deactivates all users under the agency
Input	“Officer Lastname” is under the agency “New Agency” “Officer Lastname” enters valid credentials to log in Username: officer Password: 54321
Expected results	“Officer Lastname” is not able to log in.

<i>Test Case ID</i> <i>BOLO 004 Sunny</i>	
<i>Purpose</i>	To validate agency reactivation
<i>Preconditions</i>	The user has logged into the system as an admin or root The user is in Agency Management in Admin tab The user selects the agency to be reactivated The user reactivates the agency “New Agency”, which reactivates all users under the agency
<i>Input</i>	“Officer Lastname” is under the agency “New Agency” “Officer Lastname” enters valid credentials to log in Username: officer Password: 54321
<i>Expected results</i>	“Officer Lastname” is able to log in.
<i>Test Case ID</i> <i>BOLO 005 Rainy</i>	
<i>Purpose</i>	To validate data population in edit user form
<i>Preconditions</i>	The user has logged into the system as an admin or root The admin is in User Management in Admin tab The admin selects the user to be edited
<i>Input</i>	The admin chooses to edit the user
<i>Expected results</i>	The editing form should display all of the chosen user’s information: Username, Email, First name, Last name, Phone, Badge, Unit, Rank, Tier, Agency

Test Case ID *BOLO 006 Sunny*

<i>Purpose</i>	To validate full-text search of BOLOs
<i>Preconditions</i>	The user has logged into the system The user is in the home page
<i>Input</i>	The user types in “stolen” in the search bar
<i>Expected results</i>	The page displays only the BOLOs that contain the search term “stolen” in one of their fields (officer name, agency name, summary, category, additional information, etc.)

Test Case ID *BOLO 007 Sunny*

<i>Purpose</i>	To validate “soft” delete a BOLO
<i>Preconditions</i>	The user has logged into system as admin or root The user is in home page
<i>Input</i>	The user clicks on Delete button on BOLO card
<i>Expected results</i>	The system displays screen confirmation of BOLO selected for deletion The user confirms deletion The BOLO is “soft” deleted and can be “hard” deleted/recovered on Admin > Bolo Deleted Management

Test Case ID *BOLO 008 Sunny*

<i>Purpose</i>	To validate Archive a BOLO
<i>Preconditions</i>	The user has logged into system as admin or root The user is in home page
<i>Input</i>	The user clicks the Archive button on BOLO card
<i>Expected results</i>	The system displays screen confirmation of BOLO selected for archiving The user confirms archiving The BOLO is now displayed on Archived screen

Test Case ID *BOLO 009 Sunny*

<i>Purpose</i>	To validate Subscribe to Agency
<i>Preconditions</i>	The user has to be logged into the system
<i>Input</i>	The user clicks About Us > My Account The user clicks on Subscribe by Agency The user check on one of the Agencies
<i>Expected results</i>	The user email is subscribed to the Agency checked

Test Case ID **BOLO 010 Sunny**

Purpose	To validate recover of deleted BOLO
Preconditions	The user has logged into system as root The user is in Admin > BOLO deleted Management page
Input	The user clicks on Restore/Delete icon next to the BOLO deleted Then the user clicks on Recover button
Expected results	The BOLO is recovered and in consequence is back in Home screen

Test Case ID **BOLO 011 Sunny**

Purpose	To validate “hard” delete of BOLO
Preconditions	The user has logged into system as root The user is in Admin > BOLO deleted Management page
Input	The user clicks on Restore/Delete icon next to the BOLO deleted Then the user clicks on Delete button
Expected results	The BOLO is deleted from SQL database forever

<i>Test Case ID</i>	<i>BOLO 012 Sunny</i>
<i>Purpose</i>	To validate unArchive of BOLO
<i>Preconditions</i>	The user has logged into system as supervisor, admin or root The user is in Archived page
<i>Input</i>	The user clicks on unArchive button on BOLO card
<i>Expected results</i>	The BOLO is unArchived and in consequence is back in Home screen

GLOSSARY

- **B.O.L.O.:** Acronyms for Be On the Look Out. This term refers to the form used by police agencies department to document information pertaining to a crime.
- **C.R.U.D.:** In computer programming, create, read, update, and delete [4] (CRUD) are the four basic functions of persistent storage.
- **CrudRepository:** provides CRUD functions
- **JpaRepository:** provides CRUD functions, provides methods to do pagination and sort records, and provides JPA related methods such as flushing the persistence context and delete records in a batch.

APPENDIX

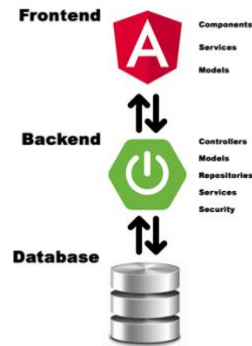


Figure 1: System architecture

Appendix A - UML Diagrams

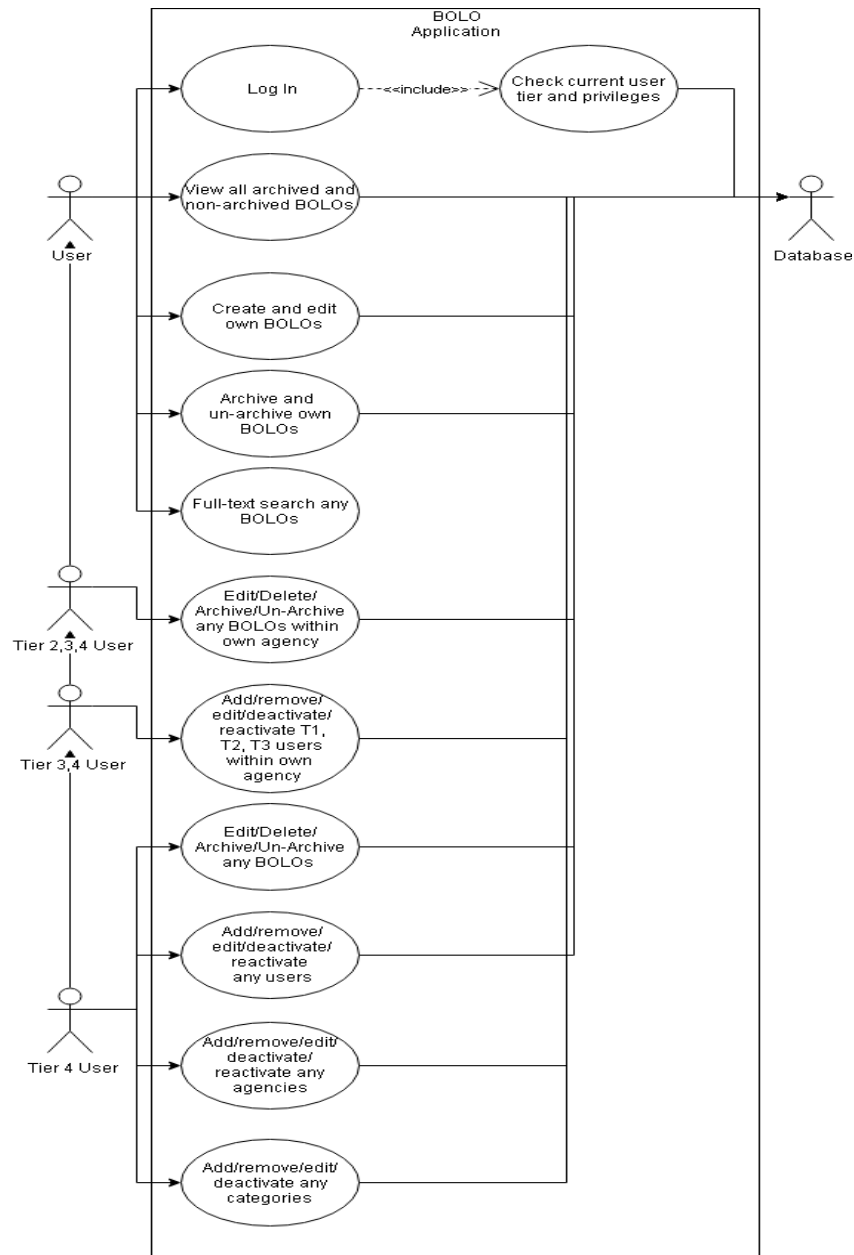


Figure 1: BOLO Use Case Diagram

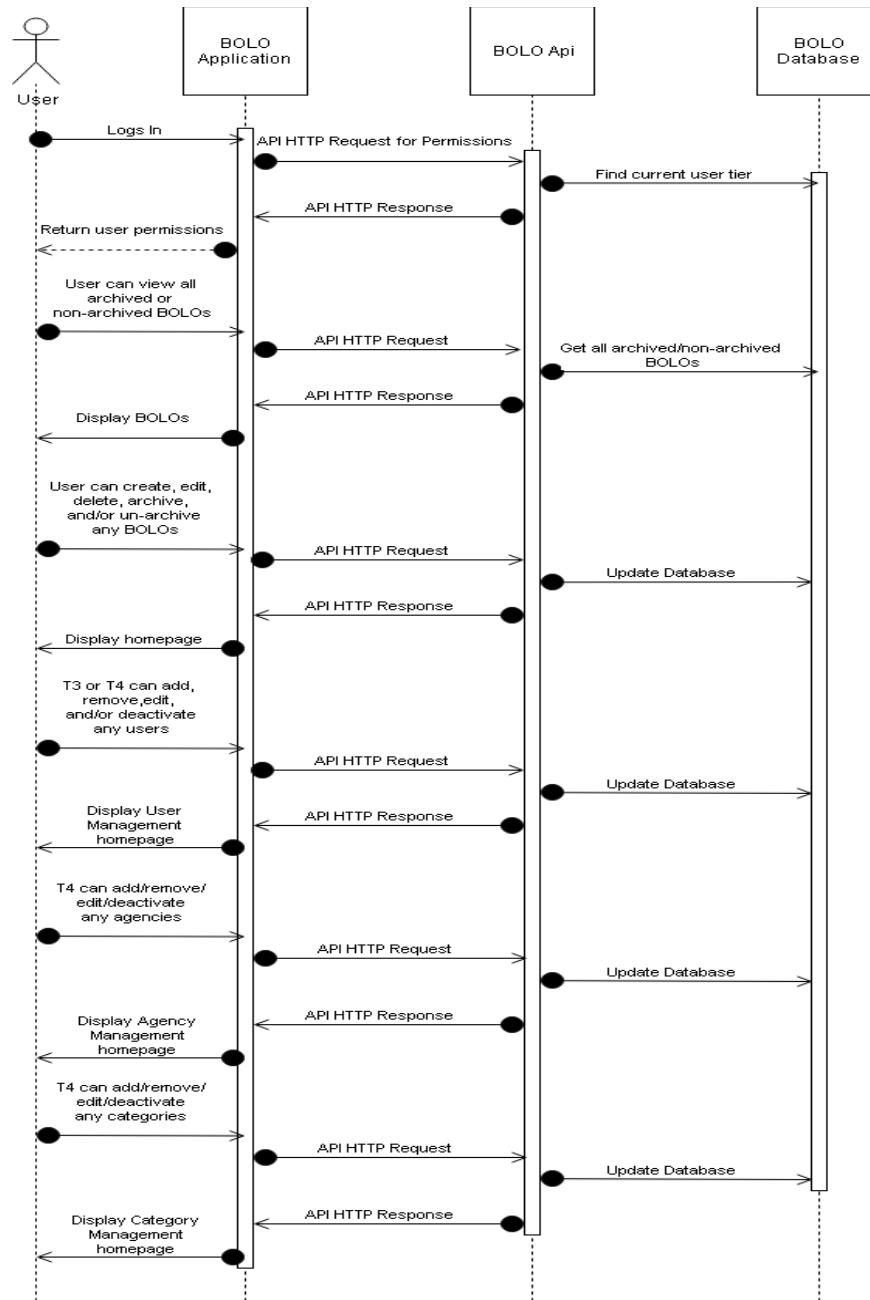
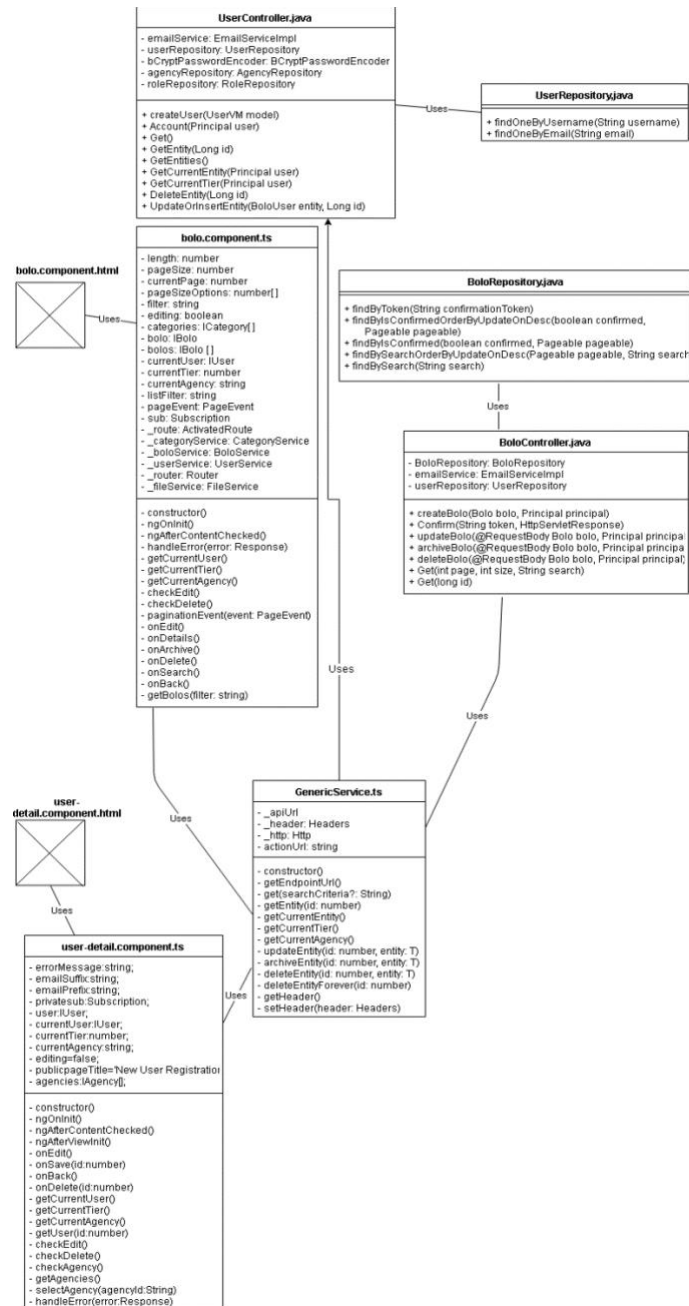


Figure 2: BOLO Sequence Diagram



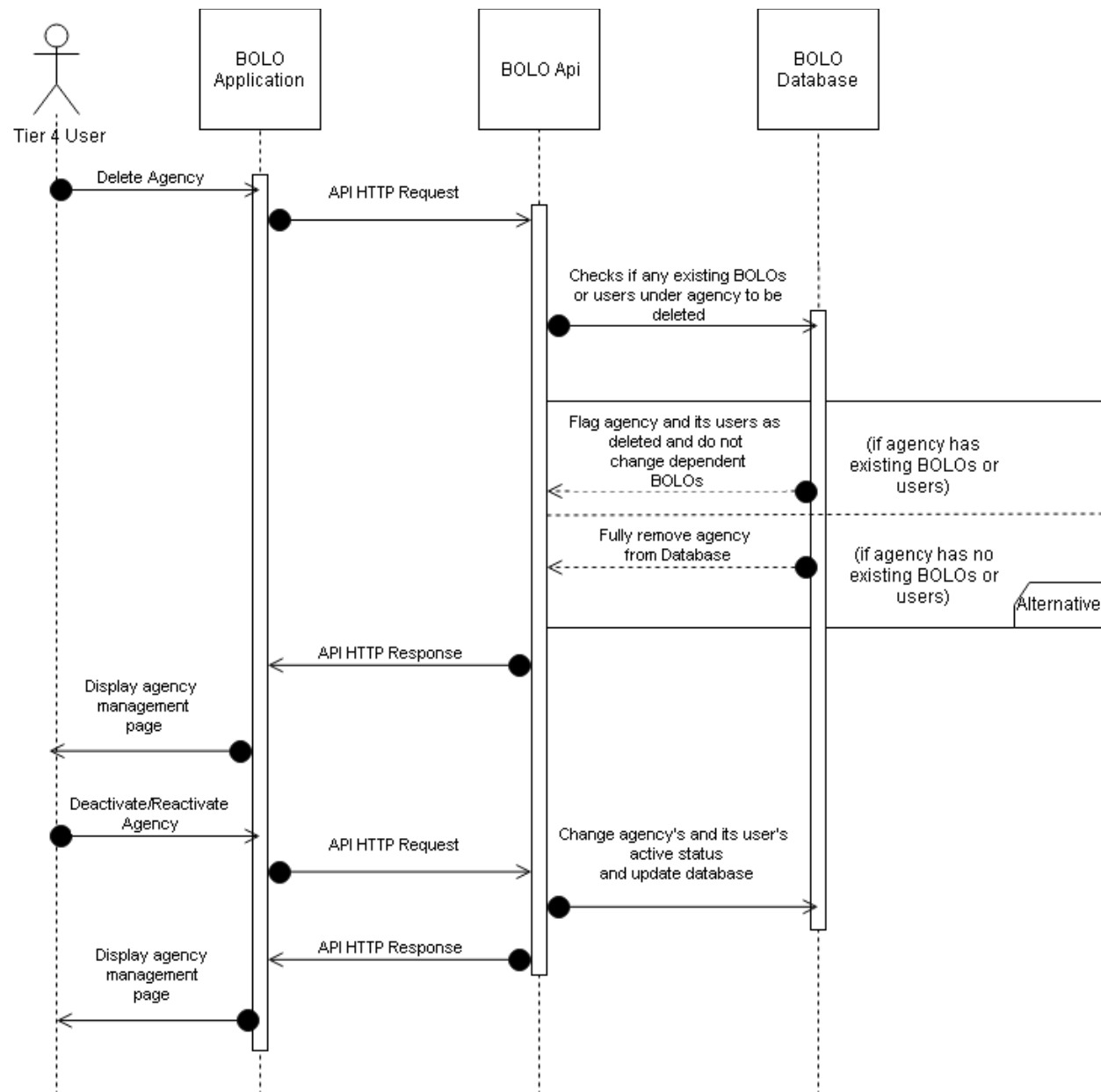


Figure 4: Sequence Diagram for Agency Deletion/Deactivation

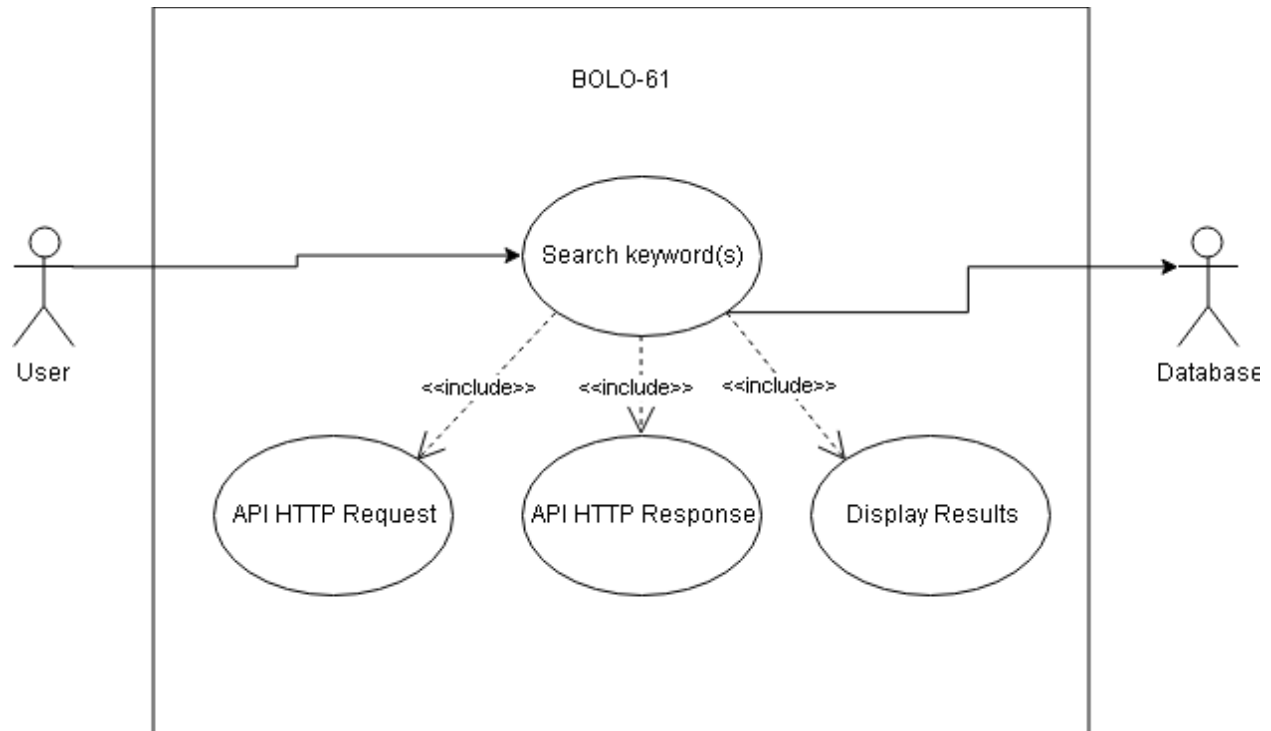


Figure 5: Use Case Diagram for BOLO Full-Text Search

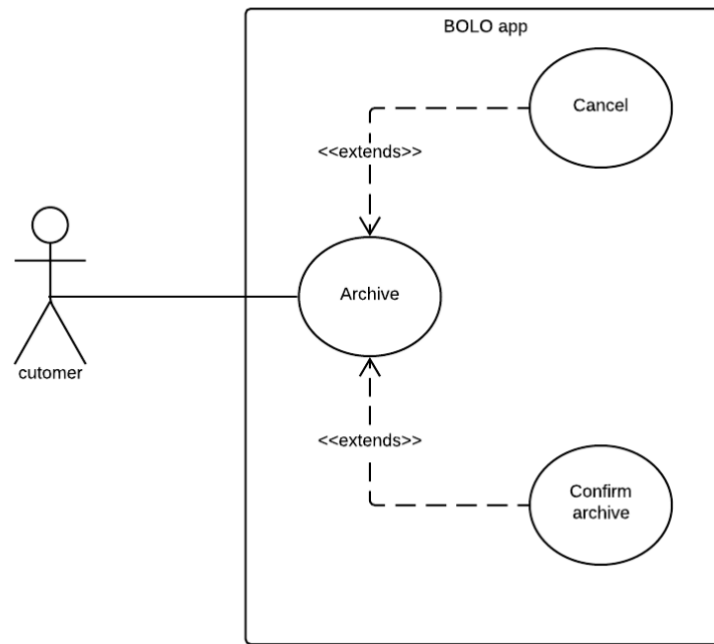


Figure 6: Use Case Diagram for BOLO archive

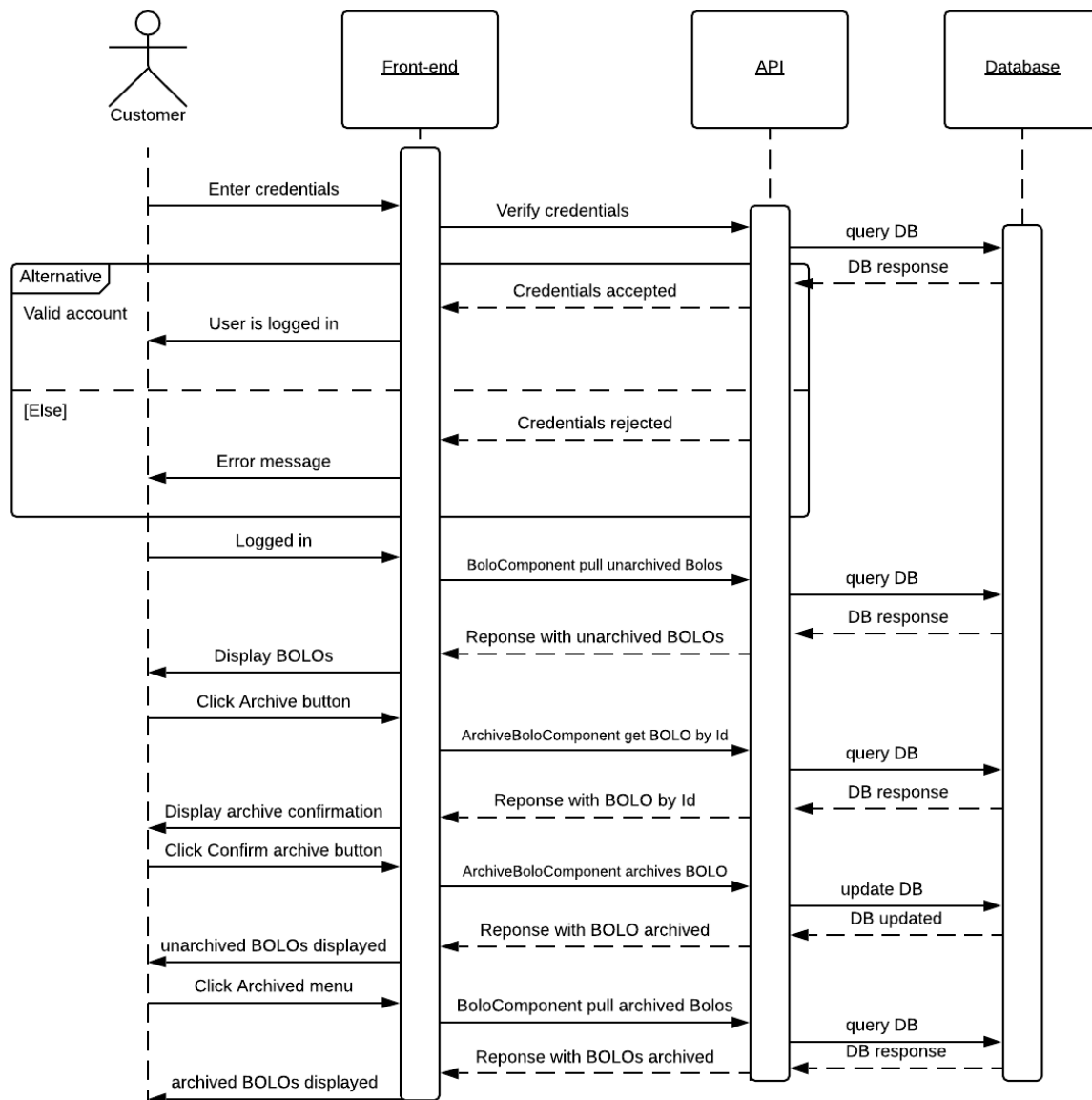


Figure 7: Sequence Diagram for BOLO archive

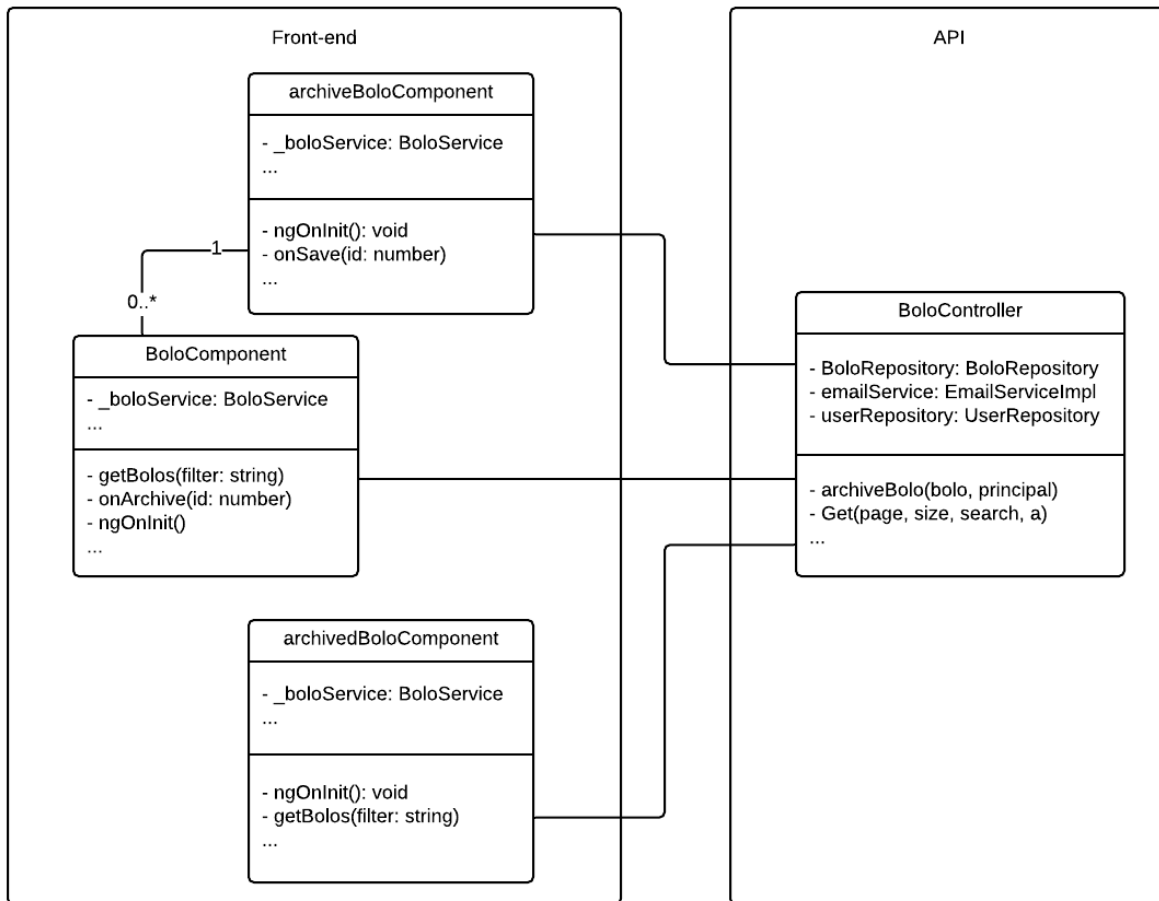


Figure 8: Class Diagram for BOLO archive

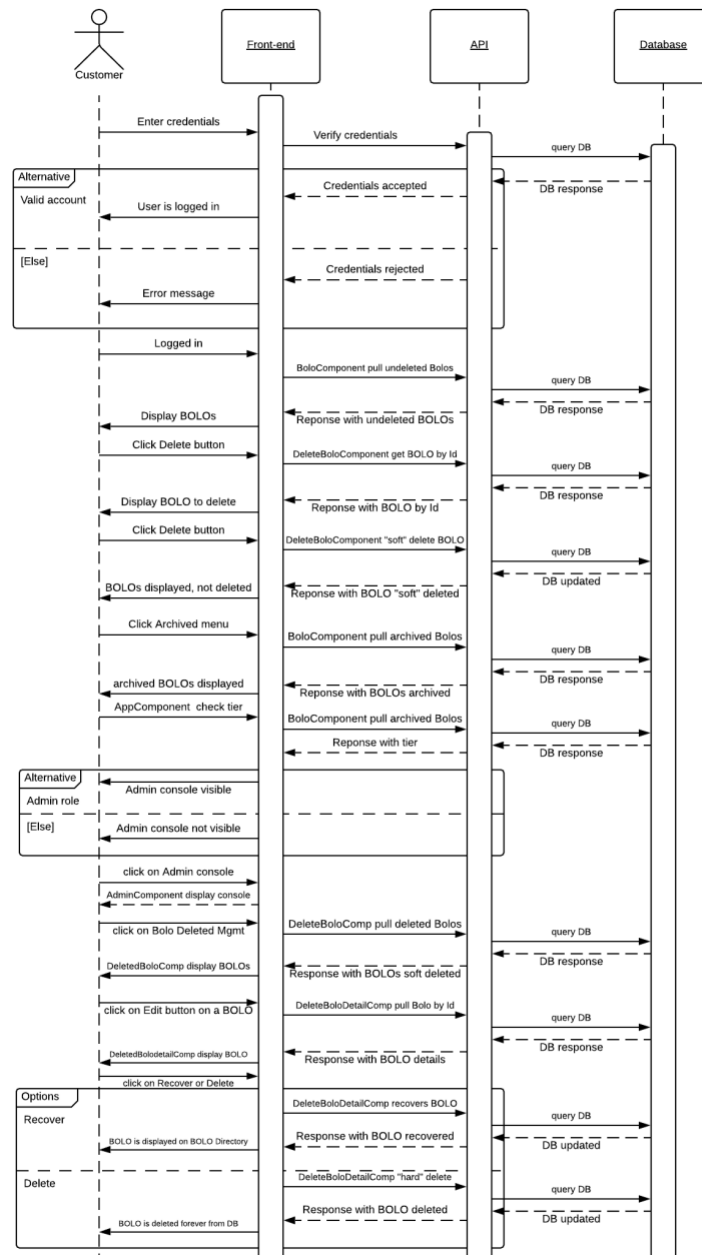


Figure 9: Sequence Diagram for "soft"/"hard" delete of BOLO

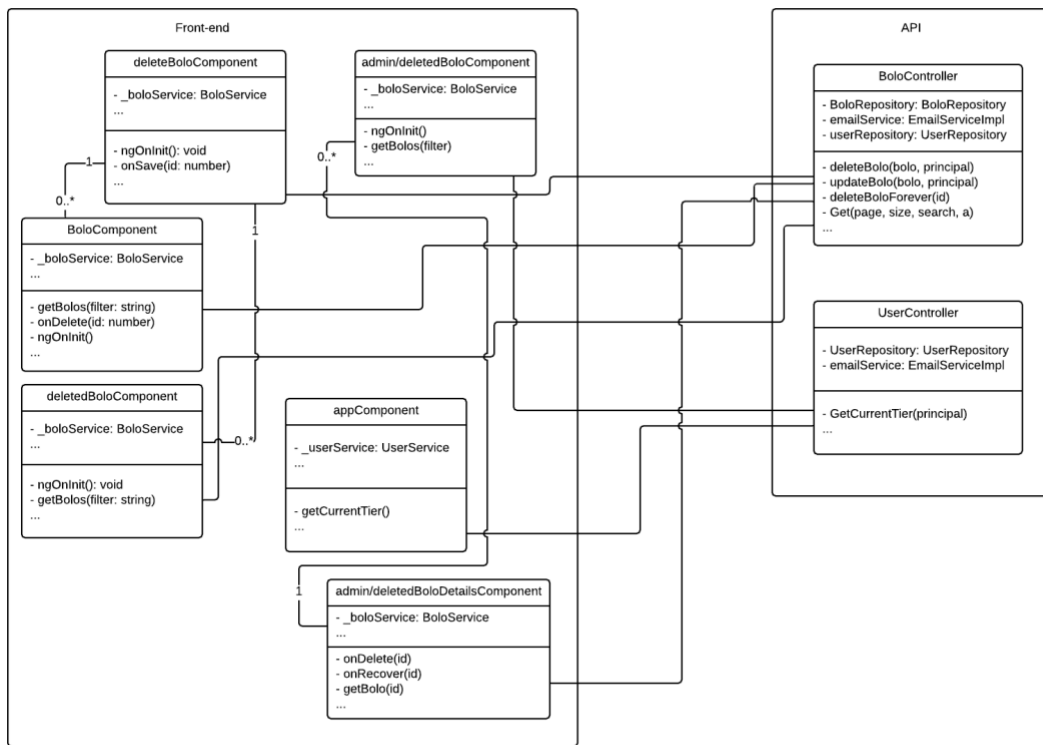
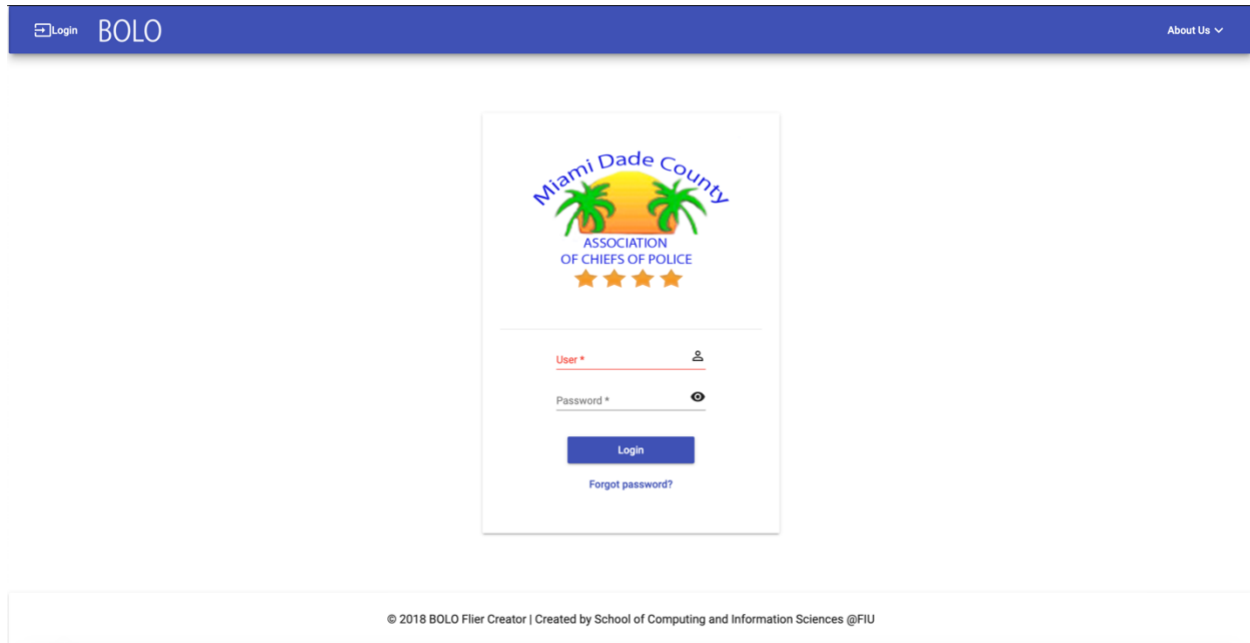


Figure 10: Class Diagram for "soft"/"hard" delete of BOLO

Appendix B - User Interface Design



The login screen features a dark blue header bar with a 'Login' button and the text 'BOLO' on the left, and an 'About Us' dropdown menu on the right. The main content area is white and contains a central login form. The form includes the Miami Dade County Association of Chiefs of Police logo, which consists of a yellow sun with two green palm trees on either side, and the text 'Miami Dade County', 'ASSOCIATION OF CHIEFS OF POLICE', and five yellow stars. Below the logo are two input fields: 'User *' with a user icon and 'Password *' with an eye icon. A blue 'Login' button is positioned below the password field, and a 'Forgot password?' link is located directly beneath the button. At the bottom of the page, a white footer bar contains the copyright notice: '© 2018 BOLO Flier Creator | Created by School of Computing and Information Sciences @FIU'.

Figure 11: Login screen

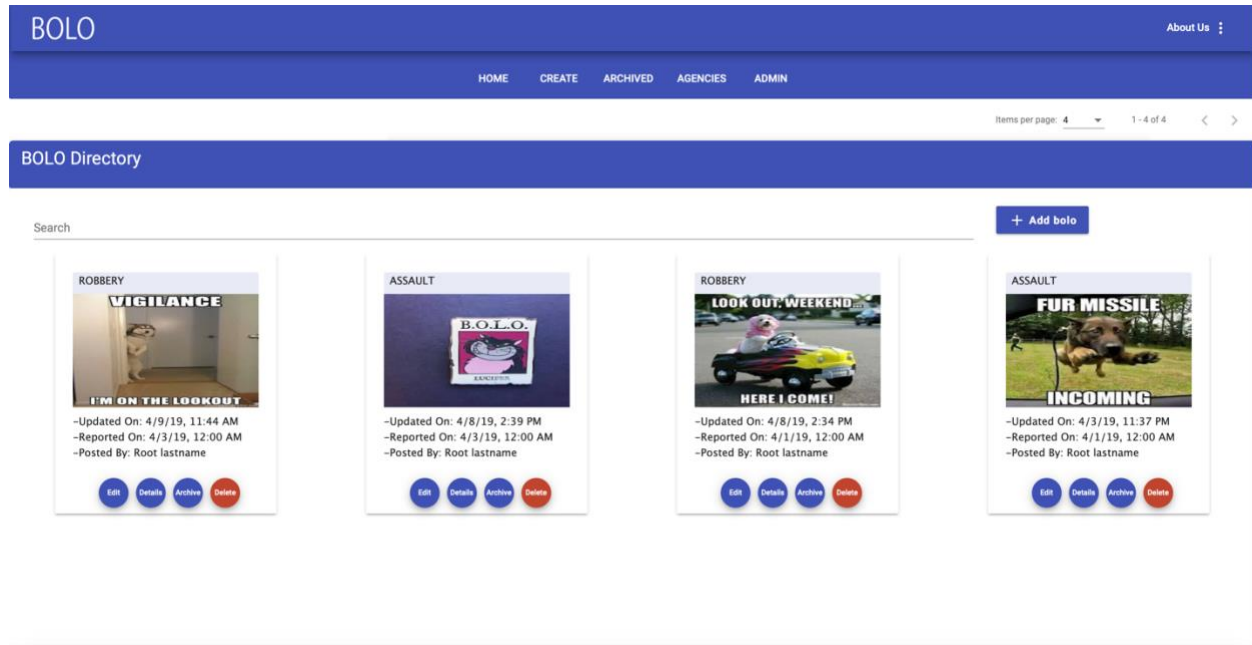


Figure 12: Home BOLO screen

The screenshot displays the BOLO Admin dashboard. The top navigation bar includes the BOLO logo and links for HOME, CREATE, ARCHIVED, AGENCIES, and ADMIN. The left sidebar lists various management options: Dashboard, Agency Management, User Management, Bolo Category Management, Bolo Deleted Management (highlighted), Data Analysis, Edit Login Page, Edit User Guide Page, and Edit About Us Page. The main content area is titled 'Deleted BOLOs Management' and features a table with four rows of deleted BOLOs. Each row includes a 'Restore/Delete' link, an 'Id', 'Created by', 'Category', 'Reported on' date, and a 'Summary'.

Restore/Delete	Id	Created by	Category	Reported on	Summary
✎	8	Root	Robbery	4/2/19, 12:00 AM	qweq
✎	7	Root	Assault	4/1/19, 12:00 AM	asasasas
✎	3	Root	Assault	3/8/19, 12:00 AM	test
✎	2	Root	Assault	3/7/19, 12:00 AM	sdad

© 2018 BOLO Flier Creator | Created by School of Computing and Information Sciences @FIU

Figure 13: Deleted BOLO management on Admin dashboard

The screenshot displays the BOLO Admin dashboard. At the top, a blue header bar contains the 'BOLO' logo on the left and 'About Us' with a dropdown arrow on the right. Below this, a navigation bar lists 'HOME', 'CREATE', 'ARCHIVED', 'AGENCIES', and 'ADMIN'. The main content area is titled 'Admin' and features a sidebar on the left with links to 'Dashboard', 'Agency Management', 'User Management', 'Bolo Category Management', 'Bolo Deleted Management', 'Data Analysis', 'Edit Login Page', 'Edit User Guide Page', and 'Edit About Us Page'. The 'Agency Management' section is highlighted, showing a table with one agency listed. The table has columns for 'Edit', 'Name', 'Address', 'City', 'Zip Code', 'State', and 'Phone'. A '+ Add Agency' button is located in the top right corner of the table area. The footer of the dashboard includes the copyright notice: '© 2018 BOLO Flier Creator | Created by School of Computing and Information Sciences @FIU'.

BOLO

About Us

HOME CREATE ARCHIVED AGENCIES ADMIN

Admin

Dashboard
Agency Management
User Management
Bolo Category Management
Bolo Deleted Management
Data Analysis
Edit Login Page
Edit User Guide Page
Edit About Us Page

Agency Management

Total Agencies: 1

+ Add Agency

Edit	Name	Address	City	Zip Code	State	Phone
	New Agency	11200 SW 8th St	Miami	33199	FL	3053482000

© 2018 BOLO Flier Creator | Created by School of Computing and Information Sciences @FIU

Figure 14: Agency management on Admin dashboard

The screenshot displays the BOLO Admin dashboard. At the top, a blue header bar contains the 'BOLO' logo on the left and 'About Us' with a dropdown arrow on the right. Below this, a navigation bar lists 'HOME', 'CREATE', 'ARCHIVED', 'AGENCIES', and 'ADMIN'. The 'Admin' section is highlighted in a darker blue bar. On the left side of the dashboard, a sidebar menu lists various administrative functions: Dashboard, Agency Management, User Management, Bolo Category Management (which is the active page), Bolo Deleted Management, Data Analysis, Edit Login Page, Edit User Guide Page, and Edit About Us Page. The main content area is titled 'Category Management' in a blue header. Below this header, there is a 'Category By' search bar and a '+ Add New Category' button. A table lists existing categories with columns for 'Edit' (with a pencil icon), 'Name', 'Create On', and 'Last Update'. The table contains two entries: 'Assault' created on Mar 28, 2019, and 'Robbery' created on Apr 3, 2019. Both were last updated on Apr 7, 2019. At the bottom of the dashboard, a footer line reads '© 2018 BOLO Flier Creator | Created by School of Computing and Information Sciences @FIU'.

BOLO

About Us

HOME CREATE ARCHIVED AGENCIES ADMIN

Admin

Dashboard
Agency Management
User Management
Bolo Category Management
Bolo Deleted Management
Data Analysis
Edit Login Page
Edit User Guide Page
Edit About Us Page

Category Management

Category By

+ Add New Category

Edit	Name	Create On	Last Update
	Assault	Mar 28, 2019, 8:58:40 PM	Apr 7, 2019, 11:12:58 AM
	Robbery	Apr 3, 2019, 11:38:54 PM	Apr 7, 2019, 11:12:49 AM

© 2018 BOLO Flier Creator | Created by School of Computing and Information Sciences @FIU

Figure 15: Category management on Admin dashboard

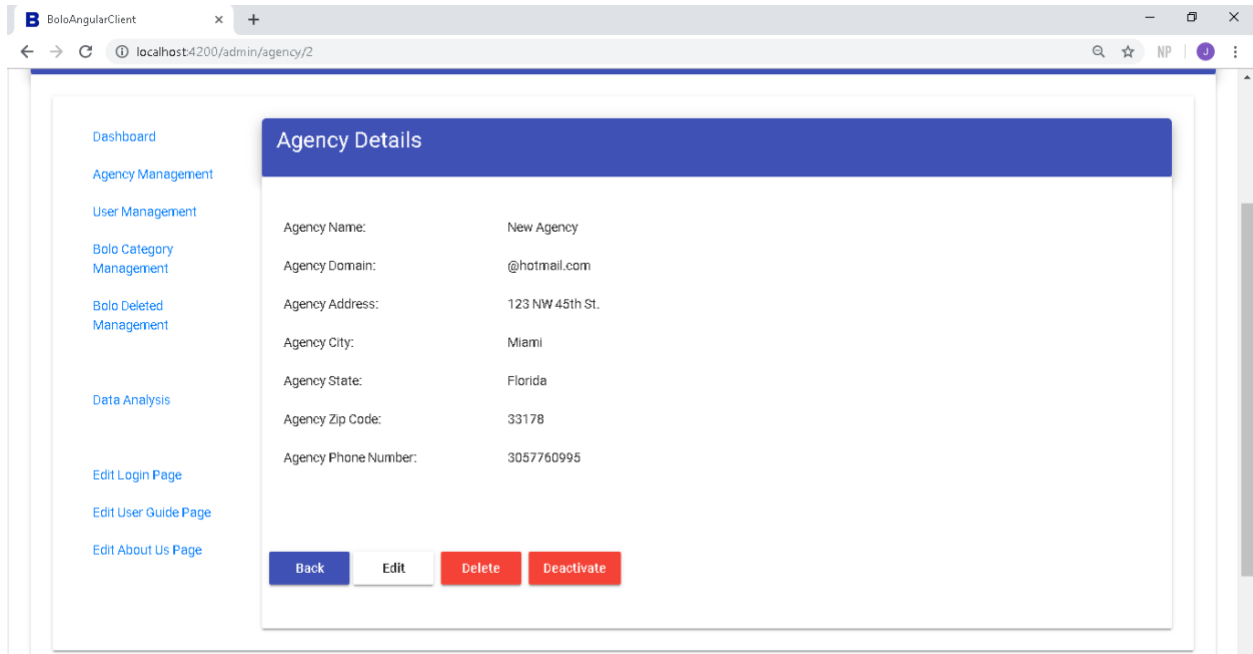


Figure 16: Agency management details on Admin dashboard

The screenshot shows a web browser window with the URL `localhost:4200/admin/category/6`. The application is titled "BoloAngularClient". On the left is a sidebar menu with the following items: Dashboard, Agency Management, User Management, Bolo Category Management (highlighted), Bolo Deleted Management, Data Analysis, Edit Login Page, Edit User Guide Page, and Edit About Us Page. The main content area is titled "Category Details" and contains the following form fields:

- Category Name: Auto Theft
- Edit Field: Vehicle Make (Required, with a delete icon)
- Edit Field: Vehicle Model (Required, with a delete icon)
- Enter Title for new Field: (Not Required)

At the bottom of the form are two buttons: "Back" and "Save".

Figure 17: Category editing in Category Management

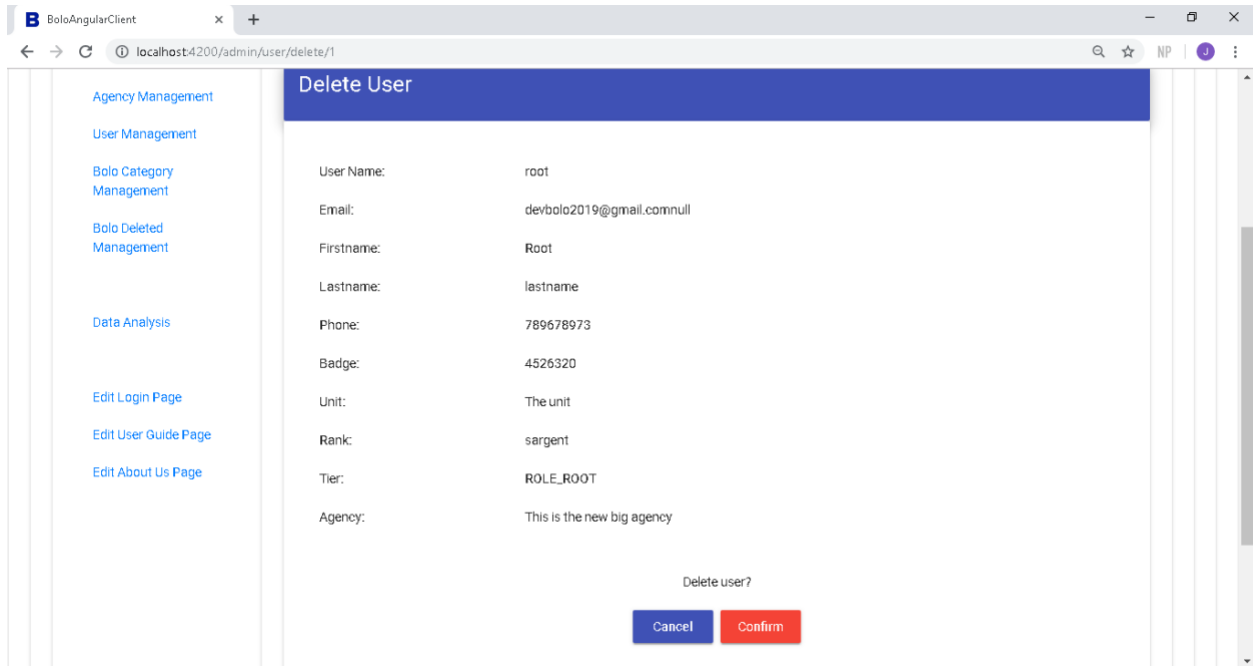


Figure 18: User Deletion in User Management

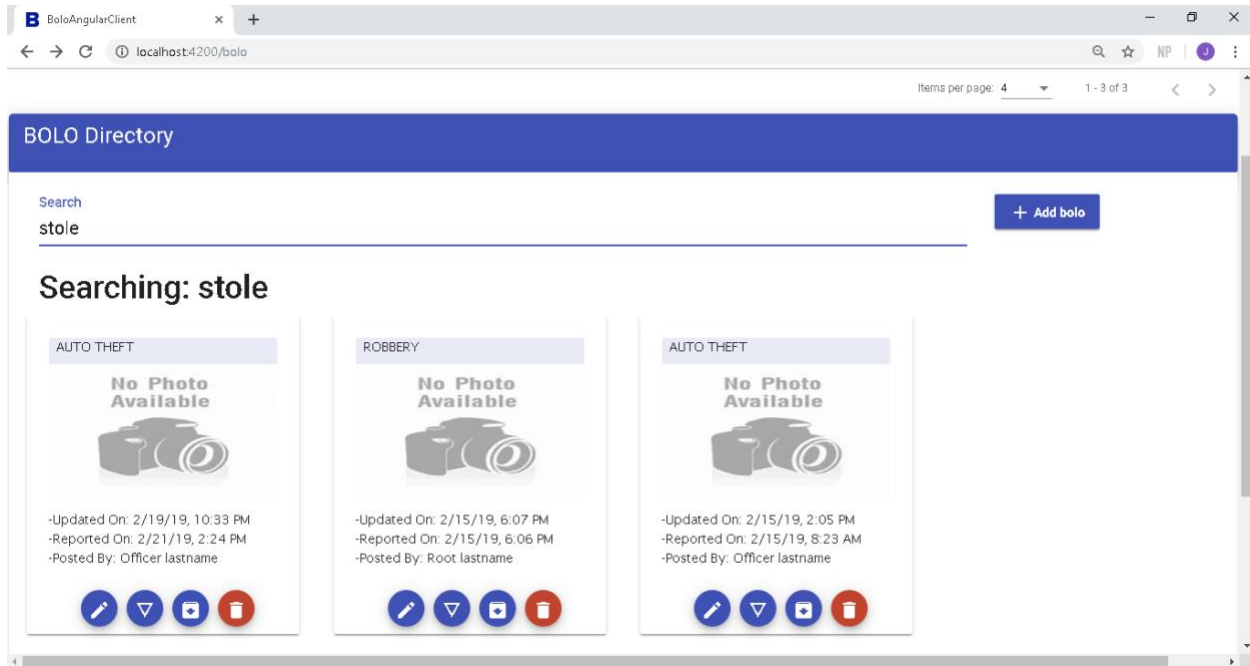


Figure 19: BOLO Full-text Search

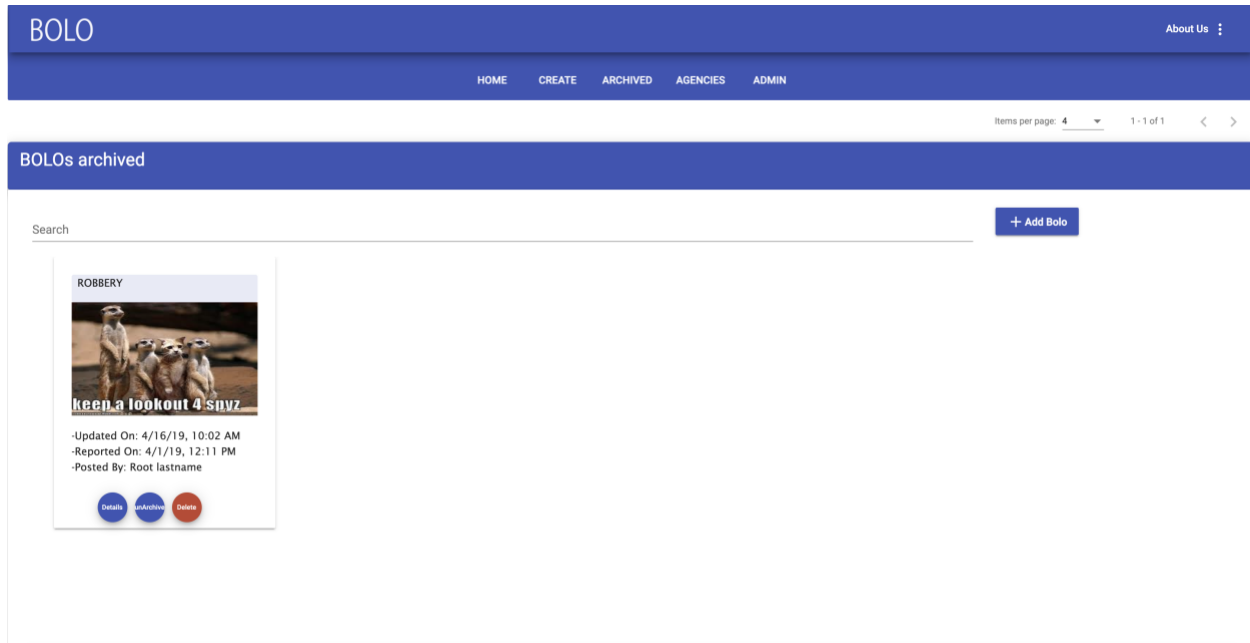


Figure 20: Archived screen

Appendix C - Sprint Review Reports

20190204 - Sprint 1 - Review

Date: February 4, 2019

Start time: 2:00 pm

End time: 3:00 pm

Attendees:

- Jacqueline Castro
- Yevanis Garcia
- Frank Alvarado

After a show and tell presentation, the implementation of the following user stories was accepted by the product owners:

- **User Story** <**BOLO-61: Full Text BOLO Search**> ~~BOLO-61~~ - As a user, I can perform a free search to find BOLOs that contain a certain keyword(s). **Done**
- **User Story** <**BOLO-62: Remove BOLO Confirmation Email**> ~~BOLO-62~~ - As a developer, I want to remove the BOLO confirmation step in the BOLO creation process. **Done**
- **User Story** <**BOLO-77: BOLO Creation Form Validation**> ~~BOLO-77~~ - As a developer, I will add form validation to the BOLO creation form, so that a BOLO cannot be create without required information filled out. **Done**

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting:

- **User Story** <**BOLO-63**: Email Notification of BOLO Changes> ~~**BOLO-63**~~ - As a user, I can receive notifications of changes/additions in BOLOs that I am subscribed to by email. **Done**

The following ones were completely removed from the product backlog and will not be assigned to a future sprint:

- **User Story** <**BOLO-26**: Filter BOLOs By Category and Agency > ~~**BOLO-26**~~ - As a user, I can filter BOLOs by agency and category. **To Do**

20190218 - Sprint 2 Review

Date: February 18, 2019

Start time: 2:00 pm

End time: 2:30 pm

Attendees:

- Jacqueline Castro
- Yevanis Garcia

- Jason Cohen
- Frank Alvarado

After a show and tell presentation, the implementation of the following user stories was accepted by the product owners: All.

- **User Story** <**BOLO-28**: Basic User (Tier 1) Permissions> ~~BOLO-28~~ - As a basic user (Tier 1), I can create, view, edit, and remove my own BOLOs. **Done**
- **Task** <**BOLO-85**: Remove Search Link in Navigation Bar> ~~BOLO-85~~ - As a developer, I will remove the Search link from the navigation bar, as it is unnecessary and redundant. **Done**
- **User Story** <**BOLO-63**: Receive notifications of changes/additions in BOLOs> ~~BOLO-63~~ - As a user, I can receive notifications of changes/additions in BOLOs that I am subscribed to by email. **Done**
- **User Story** <**BOLO-69**: As a developer I want to be to fix Edit, Details, Archive, and Delete functionalities> ~~BOLO-69~~ - As a developer I want to be to fix Edit, Details, Archive, and Delete functionalities in the BOLOs on Home screen, so the users can use these functionalities. **Done**

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting: **None**.

20190304 - SPRINT 3 REVIEW

Date: March 4, 2019

Start time: 2:00 pm

End time: 3:00 pm

Attendees:

- Jacqueline Castro
- Yevanis Garcia
- Jason Cohen
- Frank Alvarado

After a show and tell presentation, the implementation of the following user stories was accepted by the product owners:

- **User Story** <**BOLO-31**: Supervisor (Tier 2) Permissions> ~~BOLO-31~~ - As an agency supervisor (Tier 2), I can create, view, edit, and remove my own BOLOs, as well as any BOLOs from my agency. **Done**
- **User Story** <**BOLO-89**: User Deletion> ~~BOLO-89~~ - As an admin, I should be able to permanently delete users from the system. **Done**
- **Bug** <**BOLO-81**: Link Reported On Date and Time together> ~~BOLO-81~~ - As a user, the time I input for time reported should be saved in database and displayed properly. **Done**

- **UI: Archive functionality:** ~~BOLO-65~~ - As a developer I want to fix Archive functionality on UI, so I can see BOLOs archived. **Done**
- **Fix generate PDF button:** ~~BOLO-79~~ - As a developer I want to fix the Generate PDF button on BOLOs detail page, so that a proper pdf is generated. **Done**

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

- All stories for this Sprint were completed and accepted.

20190318 - SPRINT 4 REVIEW

Date: March 18, 2019

Start time: 2:00 pm

End time: 3:00 pm

Attendees:

- Jacqueline Castro
- Yevanis Garcia

April 8, 2019

Page 64 of 72

- Jason Cohen
- Frank Alvarado

After a show and tell presentation, the implementation of the following user stories was accepted by the product owners:

- **User Story** <**BOLO-30: Administrator (Tier 3) Permissions**> ~~BOLO-30~~ - As an agency admin (Tier 3), I can perform the same functions as a Tier 1 or Tier 2 user, in addition to being able to add/remove Tier 1, Tier 2, and Tier 3 users within my agency. **Done**
- **User Story** <**BOLO-67: Fix BOLO refreshed after creation in Home screen**> ~~BOLO-67~~ - As a developer I want to fix that Home screen is refreshed when a new BOLO is created, so I can see it in Home screen when BOLO is saved. **Done**
- **User Story** <**BOLO-68: No picture thumbnail on BOLOs**> ~~BOLO-68~~ - As a developer I want to add the No picture thumbnail when BOLO is created without picture, so UI is more intuitive. **Done**

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

- **User Story** <**BOLO-91: Bolo subscriber by Category and by Agency**> ~~BOLO-91~~ - As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies. **In Progress**

20190401 - SPRINT 5 REVIEW

Date: April 1, 2019

Start time: 2:00 pm

End time: 2:30 pm

Attendees:

- Jacqueline Castro
- Yevanis Garcia
- Jason Cohen
- Frank Alvarado

After a show and tell presentation, the implementation of the following user stories was accepted by the product owners:

- **User Story** <BOLO-66: Fix Agency Counter> ~~BOLO-66~~ - As a developer I want to fix the Agency directory counter (fixed to 3), so I can see the proper agency counter. **Done**
- **User Story** <BOLO-57: Root (Tier 4) Permissions> ~~BOLO-57~~ - As a root admin (Tier 4), I can perform the same functions as a Tier 1, Tier 2, or Tier 3 user, in addition to being able to add/remove agency accounts, add/remove Tier 3 users, add/remove Tier 4 users, and add/remove BOLO categories. **Done**

- **User Story Sub-Task** <**BOLO-74: Delete/Deactivate/Edit Category**> ~~BOLO-74~~ - As a developer I want to be able to fix the Edit, Delete/Disable functionality on Category Management on Admin dashboard, so the proper Tier can create/modify that info. **Done**
- **User Story Sub-Taks** <**BOLO-75: Delete/Deactivate Agency**> ~~BOLO-75~~ - As a developer I want to be able to fix the Delete/Disable functionality on Agency Management on Admin dashboard, so the proper Tier can Delete/Disable an agency. **Done**

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

- **User Story** <**BOLO-91: Subscription by Agency**> ~~BOLO-91~~ - As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies. **In Progress**
- **User Story** <**BOLO-26: Filter by Agency and Category**> ~~BOLO-26~~ - As a user, I can filter BOLOs by agency and category. **To Do**
- **User Story** <**BOLO-76: Filter by Functionality on Home Screen**> ~~BOLO-76~~ - As a developer I want to be able to fix the Filter By functionality on Home screen, so the users can filter the BOLOs. **To Do**
- **User Story** <**BOLO-78: Forget Password functionality on Login Screen**> ~~BOLO-78~~ - As a developer I want to be able to implement the Forgot Password functionality on Login screen, so that users can reset password. **In Progress**

20190415 - SPRINT 6 REVIEW

Date: April 15, 2019

Start time: 2:00 pm

End time: 2:30 pm

Attendees:

- Jacqueline Castro
- Yevanis Garcia
- Jason Cohen
- Frank Alvarado

After a show and tell presentation, the implementation of the following user stories was accepted by the product owners:

- **User Story** <BOLO-93: User Deactivation/Reactivation> ~~BOLO-93~~ – As an admin, I should be able to deactivate users and reactivate them. **Done**
- **User Story** <BOLO-91: Subscribe By Agency and Category> ~~BOLO-91~~ – As a developer I want to implement the Bolo subscribers in My Account screen, so the users can subscribe to Agencies. **Done**

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

- **User Story <BOLO-94: Populating Data in Editing Forms> [BOLO-94](#)** – As a developer, I want to fix how information is pre-populated when editing a BOLO, user, or agency. **In Progress**
- **User Story <BOLO-78: Forgot password functionality> [BOLO-78](#)** – As a developer I want to be able to implement the Forgot Password functionality on Login screen, so that users can reset password. **In Progress**

20190426 - SPRINT 7 REVIEW

Date: April 26, 2019

Start time: 11:00 pm

End time: 11:30 pm

Attendees:

- Jacqueline Castro
- Yevanis Garcia
- Jason Cohen
- Frank Alvarado

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- Work on final document.
- Work on presentation.
- Prepare for senior expo.
- Make sure application is in good condition to be demoed and deployed.
- Finish feature documentation and videos.
- Finish user manuals, installation/maintenance video, shortcomings/wishlist video, introduction video, etc.
- Researched deployment with Maven for remote server.

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting:

- Work on deploying on remote server

Appendix D - User Manuals, Installation/Maintenance Document, Shortcomings/Wishlist Document and other documents

Installation of developer environment can be found on Senior Project FIU YouTube. Also, a video for creating the deployment in Maven^[5] has been created.

- FIU SCIS-2019 Spring-BOLO-InstallMaintenanceGuide
<https://youtu.be/DpZ4a1R67bw>
- FIU SCIS-2019 Spring-BOLO-Tier 1 UserGuide
<https://youtu.be/rXGvOjx74xM>
- FIU SCIS-2019 Spring-BOLO-Tier 2 UserGuide
<https://youtu.be/IXIijrJYro>
- FIU SCIS-2019 Spring-BOLO-Tier 3 UserGuide
<https://youtu.be/53vA6v82xos>
- FIU SCIS-2019 Spring-BOLO-Tier 4 UserGuide
<https://youtu.be/4qd52Nlytm4>
- FIU SCIS-2019 Spring-BOLO-ShortcomingsWishlist
https://youtu.be/7y9geNMC_ak

REFERENCES

- [1] https://en.wikipedia.org/wiki/Multitier_architecture
- [2] <https://material.io/tools/icons/?icon=details&style=baseline>
- [3] <https://material.angular.io>
- [4] https://en.wikipedia.org/wiki/Create,_read,_update_and_delete
- [5] <https://www.devglan.com/spring-boot/spring-boot-angular-deployment>
- [6] <https://www.devglan.com/spring-boot/spring-boot-angular-example>