

# Software Design Document

For

## The Arqive

Version 2.0

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# Revision History

Name	Date	Reason For Changes	Version
First Rough Draft	11/11/2022	First document with template from previous versions	1.0
Second Draft	11/14/2022	Minor document changes	1.1
Third Draft	11/17/2022	Added final changes and final diagrams	1.2
Final Draft	5/8/2023	Minor changes and added diagrams	2.0

# 1. Introduction

## 1.1 Purpose

This document will provide the Software Design Specifications as part of the design plan for improving functionality and adding on features to The arqive. This document will expand on the functionality and features as described in the Software Requirements Specification (SRS). Each functionality that has been improved will be described in detail as well as additional features to be implemented. Overall, this document will expand on features the SRS presents along with design issues encountered.

For reference, the arqive is an LGBTQ+ website and mobile application where anyone can post stories that either happened in history or stories that have happened to them. Users can mark the location of their story using pins pointing to where it took place. The arqive gives people the ability to mark their place in the world and share their stories!

## 1.2 Document Conventions

SDD	Software Design Document
SRS	Software Requirements Specification
User	The individual using The arqive website and/or mobile app
Administrator	Users with permission to other functions of the website and/or mobile app, not available to regular users

## 1.3 Intended Audience and Reading Suggestions

This document is intended for Software Developers to have an understanding of the design behind the basic functionalities and implemented features that the SRS describes.

## 1.4 System Overview

The arqive is a digital online storytelling map for LGBTQ+ stories that seeks to provide the full range of queer stories and geolocates them to digitally preserve the posts. Users have a safe platform where they can share personal, historical, and community stories, as well as have access to information about safe spaces. It is currently available as a web and mobile application.



## **2. Design Considerations**

### **2.1 Assumptions and Dependencies**

- OpenStreetMap
- ReactJS Framework
- User must be sharing their location
- Mobile device or Computer with a web browser
- iOS and/or Android device

### **2.2 General Constraints**

- Privacy for users is not always guaranteed
- Too many story pins on the map may cause a slower load in for the user
- Javascript must be enabled in the user's web browser
- Slow internet connection may affect the users experience.

### **2.3 Goals and Guidelines**

- Provide a platform for the LGBTQ+ community to post and share stories, experiences and have access to resources.
- Security and protection from malevolent agents that might cause harm to the archive's users
- Implement gamification to encourage and reward users for their activity on the app and/or web application. Have no ranking or

competitive system that other social media platforms reward users for.

- Highlight and display local stories
- Ability for administrators and moderators to moderate flagged posts with the help of integrated content moderation.
- The mobile apps should implement additional functionality and be created with the established style of the archive website, according to the guidelines provided.

## **2.4 Development Methods**

The agile development method was used in the design of this project. Members of the team handled bug fixes and deployed the changes after resolving them. To implement new features to The archive, we take a waterfall development method by merging and refactoring the front-end and back-end code to 1 database. After multiple changes and implementations to the applications, the team then demonstrates the new changes to the sponsors to provide feedback and approval.

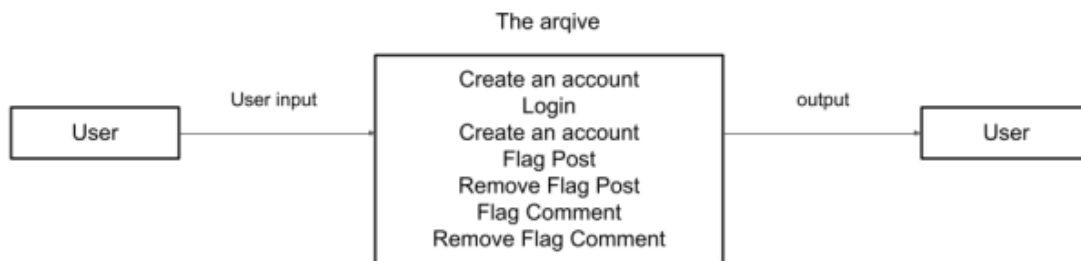
### **3. Architectural Strategies**

The applications of The arqive were built using Python, JavaScript, Django and React which resulted in having a flexible and responsive website. In addition, Django and React are libraries that are able to provide a more enhanced functionality to the website. The mobile app was built prior using React Native which helps to focus on one code base for both iOS and Android devices. Additionally, a new app will be created while the old one exists to ensure that all updates are seamless. As a bonus, the autocomplete feature for the location search bar was created from scratch to perfectly match the needs of the website.

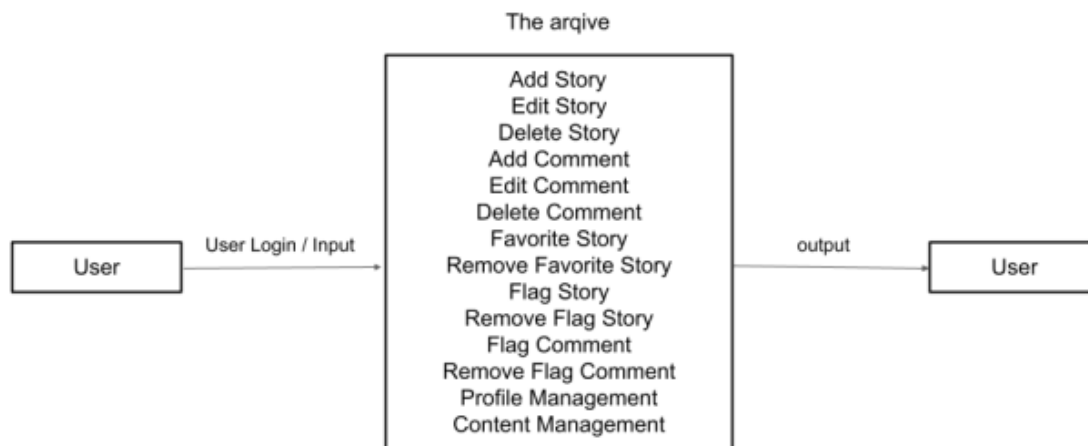
## 4. System Architecture

### DFD Level 0

#### User Not Logged In



#### User Logged In



# DFD LEVEL 1



## **5. Policies and Tactics**

### **5.1 Choice of which specific products used**

PostgreSQL, Digital Ocean, ReactJS, React Native, Django REST, OpenstreetMap, Python, Scikit-learn, Ubuntu, AR.js, Docker, Expo, Yarn

### **5.2 Plans for ensuring requirements traceability**

Each developer will create test cases that will map to requirements on any effort they are working on. Additionally, teammates are encouraged to create complete documentation of features added as well as apply their changes via commits to git.

### **5.3 Plans for testing the software**

Testing the website and mobile app will be done by the developers, sponsors and third-party users asked to use the program to identify potential bugs or UI improvements. Testing the software may occur throughout the developmental process of both the website and mobile app.

## **6. Detailed System Design**

### **6.1 User Account Requirements**

#### **6.1.1 Responsibilities**

Separate the users into regular users, anonymous users, moderators, and administrators with unique roles.

#### **6.1.2 Constraints**

We must assume that the roles with more power do not abuse others with their status. We must also make sure that actions other than reading a post are restricted to registered users.

#### **6.1.3 Composition**

No current subcomponents.

#### **6.1.4 Uses/Interactions**

The user's role allows them to create, modify, or relinquish posts based on their role. Admin's have the same basic functions that users have but can moderate and delete any posts, comments and/or users that may have violated the code of conduct. Users who are not logged in may also interact with the app but have limited functionality as opposed to users

who are logged in and registered. These users may still view posts, flag and unflag posts and comments. All other basic functions require a login.

#### **6.1.5 Resources**

Modification of the database of pins is dependent on the user's role.

#### **6.1.6 Interface/Exports**

No current exports

### **6.2 Gamification Requirements**

#### **6.2.1 Responsibilities**

To encourage users to be active on the app.

#### **6.2.2 Constraints**

No constraints

#### **6.2.3 Composition**

No current subcomponents

#### **6.2.4 Uses/Interactions**

The gamification feature will encourage users in using the app by utilizing a reward system. Interacting with the app will provide the

user account with points that can accumulate into rewards in the form of badges or tokens.

#### **6.2.5 Resources**

No current resources

#### **6.2.6 Interface/Exports**

No current exports.

### **6.3 AR/VR Requirements**

#### **6.3.1 Responsibilities**

To encourage users to be interactive on the app.

#### **6.3.2 Constraints**

We must assume that users have a phone capable of using AR features and know to look around with a camera to view posts.

#### **6.3.3 Composition**

No current subcomponents

#### **6.3.4 Uses/Interactions**

The user's experience with AR will encourage users to interact with stories by walking around the places where they were posted. Especially for resource and historical posts.

#### **6.3.5 Resources**

No current resources

### **6.3.6 Interface/Exports**

No current exports.

## **6.4 Map Requirements**

### **6.4.1 Responsibilities**

The map is able to show all pins from the database.

### **6.4.2 Constraints**

The size of the map is set to be 100% of the viewing screen's size.

### **6.3.3 Composition**

No current subcomponents.

### **6.4.4 Uses/Interactions**

The map will interact with the database in order to show and store location based pins via form submission.

### **6.4.5 Resources**

Digital Ocean PostgreSQL Database OpenStreetMap

### **6.4.6 Interface/Exports**

No current exports.

## **6.5 Story Requirements**

### **6.5.1 Responsibilities**

The story page shows all the data of the pin. It allows users to favorite, report, or comment on the post. Users can create anonymous posts to hide their identity.

### **6.5.2 Constraints**

Content containing explicit material will be flagged for moderation. Moderators will then decide on the appropriate action for flagged content.

### **6.5.3 Composition**

Favoriting a post

### **6.5.4 Uses/Interactions**

Registered and logged in users will be able to view, favorite, bookmark or report the stories posted. Users not registered or logged in will only be able to view posts, flag comments and flag posts.

### **6.5.5 Resources**

Digital Ocean PostgreSQL Development Database.

### **6.5.6 Interface/Exports**

No current exports

## **6.6 Platform Requirements**

### **6.6.1 Responsibilities**

This allows the user to access the site with different browsers like Microsoft Edge, Firefox, Chrome, etc.

### **6.6.2 Constraints**

Not all available browsers will be covered.

### **6.6.3 Composition**

No current composition.

### **6.6.4 Uses/Interactions**

Users will be able to access and use the platform via the web and on mobile.

### **6.6.5 Resources**

No specific resources.

### **6.6.6 Interface/Exports**

No current exports.

## **6.7 Multimedia Requirements**

### **6.7.1 Responsibilities**

Allows users to embed pictures, videos, and other media onto their posts.

### **6.7.2 Constraints**

The file size must be reasonable.

### **6.7.3 Composition**

No current composition.

### **6.7.4 Uses/Interactions**

Users can upload media about the pin to let other people view it.

### **6.7.5 Resources**

No specific resources.

### **6.7.6 Interface/Exports**

It is part of the pin creation process.

## **6.8 Security Requirements**

### **6.8.1 Responsibilities**

Protect the site, its data and users.

### **6.8.2 Constraints**

Security can not be fully guaranteed but the security implemented will still offer safety.

### **6.8.3 Composition**

No current composition.

#### **6.8.4 Uses/Interactions**

Ideally, the security would not be used for anything major. The users will not interact with the security unless the user causes acts in a malicious manner.

#### **6.8.5 Resources**

No specific resources.

#### **6.8.6 Interface/Exports**

No current exports.

### **6.9 User Role Requirements**

#### **6.9.1 Responsibilities**

User roles will give people a sense of membership and provide moderation of content.

#### **6.9.2 Constraints**

Currently, user roles only include registered users, administrators, and moderators.

#### **6.9.3 Composition**

No current composition.

#### **6.9.4 Uses/Interactions**

Allows users to have specific privileges within the application.

### **6.9.5 Resources**

Database

### **6.9.6 Interface/Exports**

No current exports

## **6.10 FAQ Requirements**

### **6.10.1 Responsibilities**

Provide information regarding the site. This also includes informing the user of the terms and service.

### **6.10.2 Constraints**

Limited to what administrators post.

### **6.10.3 Composition**

No current composition.

### **6.10.4 Uses/Interactions**

Allows Administrators to post FAQs and users to read them.

### **6.10.5 Resources**

Database

### **6.10.6 Interface/Exports**

No current exports.

## **6.11 About Requirements**

### **6.11.1 Responsibilities**

Provide users with information on the mission of the archive and the teams that helped create it.

### **6.11.2 Constraints**

Administrators are the only ones allowed to post in the “About Us” section.

### **6.11.3 Composition**

No current composition.

### **6.11.4 Uses/Interactions**

Allows administrators to edit the “About Us” and users to read them.

### **6.11.5 Resources**

Database

### **6.11.6 Interface/Exports**

No current exports.

## **6.12 Resources Requirements**

### **6.12.1 Responsibilities**

Provides users with access to various valuable resources.

### **6.12.2 Constraints**

We may not provide all available hotlines and websites are not enough.

### **6.12.3 Composition**

No current composition.

### **6.12.4 Uses/Interactions**

Hotlines and Websites that mainly aid LGBTQ+ individuals will be posted for users to use.

### **6.12.5 Resources**

No current resources.

### **6.12.6 Interface/Exports**

No current exports.

## **6.13 Accessibility Requirements**

### **6.13.1 Responsibilities**

Allow users with disabilities to use the web app to its full potential.

### **6.13.2 Constraints**

We are using UserWay Widget, so we do not have control over their functionalities.

### **6.13.3 Composition**

No current composition.

### **6.13.4 Uses/Interactions**

Users will be able to use the UserWay Widget which allows them to have text spoken aloud among other things.

### **6.13.5 Resources**

UserWay Widget

### **6.13.6 Interface/Exports**

No current exports.

## **6.14 About us Requirements**

### **6.14.1 Responsibilities**

Allows users to contact us directly through email.

### **6.14.2 Constraints**

No current constraints.

### **6.14.3 Composition**

No current composition.

#### **6.14.4 Uses/Interactions**

The user will input a message, and if they want a response, they could provide an email (optional).

#### **6.14.5 Resources**

SMTP, Django Documentation

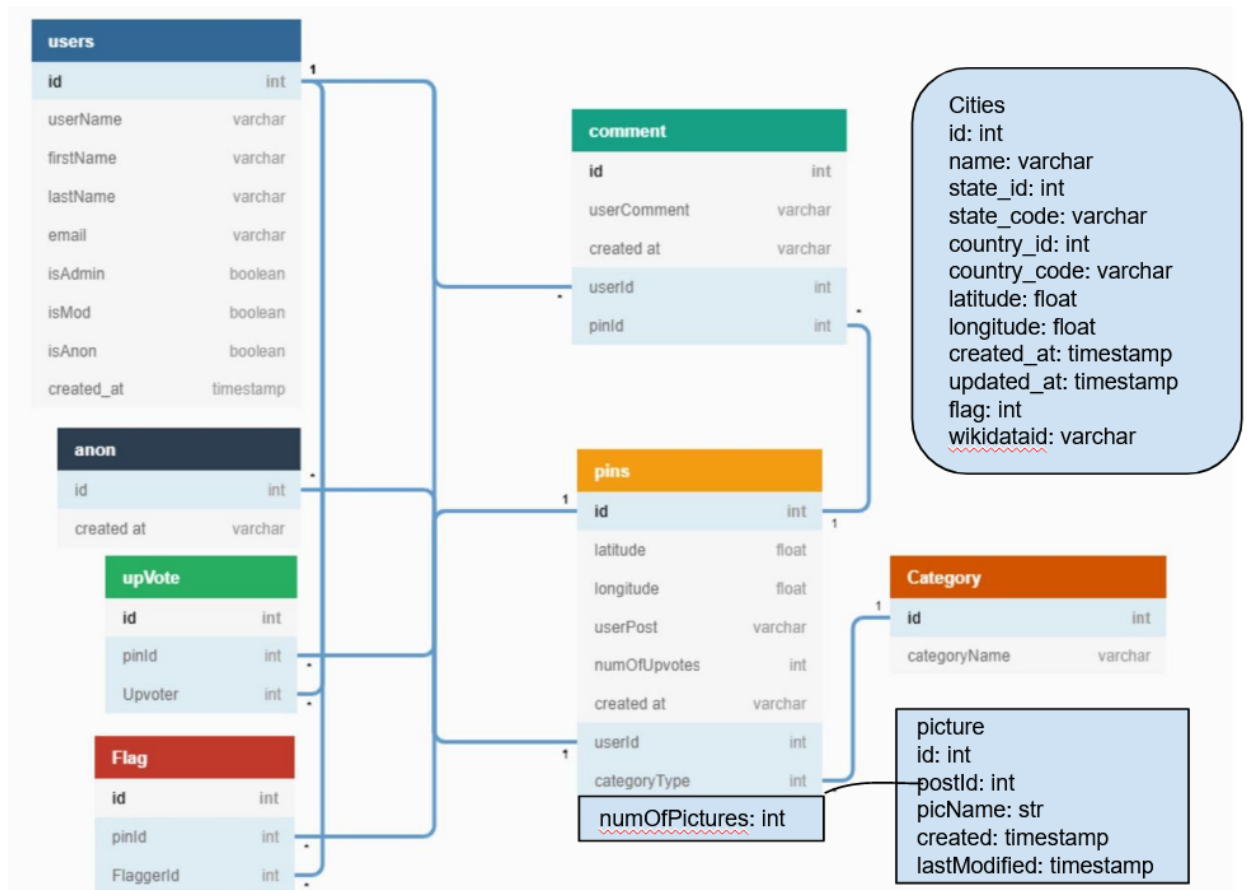
#### **6.14.6 Interface/Exports**

A simple and secure way to contact us

## **7. Detailed Lower level Component Design**

Refer to Section 4 of this Document.

## 8. Database Design



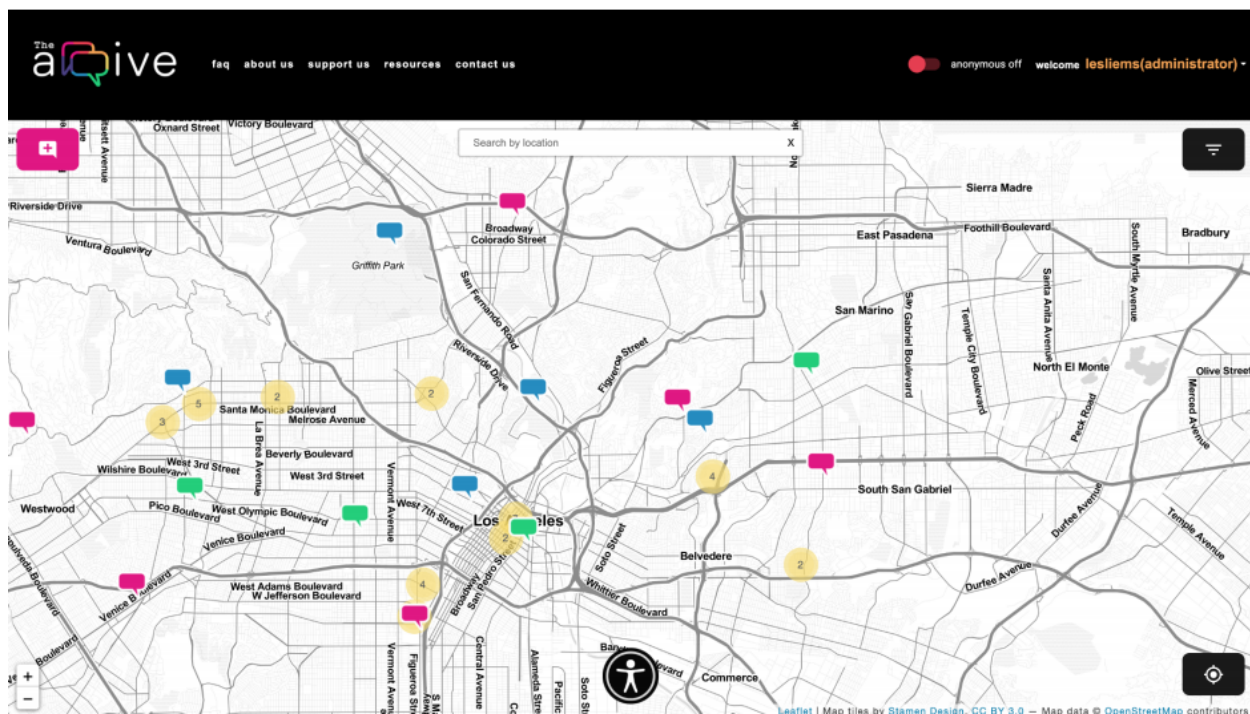
## 9. User Interface

### 9.1 Overview of User Interface

The user will access the main content of the site by navigating to the homepage (<https://thearqive.com>). Within this page, users can post pins on the map by category (personal, historical, or community). Users can also access other stories by navigating around the map and clicking on pins, which will direct them to the individualized story page of the selected pin. Inside this individualized story page, users can read more detailed information about the pin, i.e., the story author. If clicked, the author's name leads to their user profile which displays their profile picture, name, biography, and all previous stories created. In the site header, users have the ability to click the site logo to navigate back to the homepage, click the search button to search the website, click the login/logout button to login or logout, or click the Register button to sign up on the site. Also located in the site header are links that take users to the About Us, FAQs, Help, Contact Us, or Support Us pages. In the About Us page, users can read about the arqive and its

mission. In the FAQs page, users can read frequently asked questions and their respective answers. Within the Help page, users can access useful information and resources that help support the LGBTQ+ community. In the Contact Us page, users can submit a message directly to the arqive email. Lastly, within the Support Us page, users can support the website by sharing the #thearque on other social media.

## 9.2 Screen Frameworks or Images



**add a story**

address

locality (city, township, etc.)

region (state, province, etc.)

country

postcode

title  
\*please enter a story title

category

description  
\*please enter a story description

File Edit View Insert Format

**"The Princess" and "The Duchess"**

griffith park los angeles ca

Posted by: Anonymous

03/17/1968 - no end date

Two drag queens known as "The Princess" and "The Duchess" held a St. Patrick's Day party at Griffith Park, a popular cruising spot and a frequent target of police activity. More than 200 gay men socialized through the day.

Originally a place to protest police entrapment, this event led to a "gay-in" which took place on May 30, 1968.

## 9.3 User Interface Flow Model

Homepage → Story Page

Story Page → Story Page

Story Page → User Profile

Site Header → Login

Login → Register

Login → Homepage

Site Header → Register

Register → Login

Register → Homepage

Site Header → Registration

Site Header → FAQ

Site Header → About Us

Site Header → Contact Us

Site Header → Help

Site Header → Support Us

Site Header → Homepage

Site Header → Profile

Profile → Settings

# **10. Requirements Validation and Verification**

Not applicable at this time.

# 11. Glossary

AR	Augmented Reality
DFD	Data Flow Diagram
Digital Ocean	Cloud infrastructure provider
Django REST	Toolkit for building Web APIs in Python
LGBTQ+	Lesbian, Gay, Bisexual, Transgender, Queer, and more
Openstreetmap	An editable geographic database of the world
React JS	An Open source front end framework for developing websites
React Native	Open source mobile application framework for iOS and Android devices
SciKit-learn	A Machine learning framework
SRS	Software Requirement Specification

## 12. References

Brad Appleton

<http://www.bradapp.net>

[https://www.cs.purdue.edu/homes/cs307/ExampleDocs/DesignTemplate\\_Fall08.doc](https://www.cs.purdue.edu/homes/cs307/ExampleDocs/DesignTemplate_Fall08.doc)

**The archive's 2022 Development Team (SRS)**

<https://csns.cysun.org/department/cs/project/resource/view?projectId=7913655&resourceId=7928311>