



Department of Computer Engineering

Senior Design Project Analysis Report

Supervisor:

Asst. Prof. Mustafa Özdal

Jury Members:

Asst. Prof. Ercüment Çiçek

Asst. Prof. Hamdi Dibekliolu

Innovation Expert:

Ahmet Kocamaz

Presented by:

Erkam Berker Şenol

Mert Aytöre

Gökhan Şimşek

Dias Alymbekov

Figali Taho

This report is submitted to the Department of Computer Engineering of Bilkent University in partial fulfillment of the requirements of the Senior Design Project course CS491/2.

Contents

1	Introduction	3
2	Current System	4
2.1	Aggregated news apps and platforms	4
2.1.1	Flipboard	4
2.1.2	Google News	5
2.1.3	Apple News	5
2.2	Broadcasting apps and platforms	6
2.2.1	Periscope	6
2.2.2	Facebook Live	7
2.2.3	Instagram Live	7
2.2.4	stre.am	8
2.3	Citizen journalism apps and platforms	8
2.3.1	Twitter	8
2.3.2	Reddit	9
2.3.3	News stations - e.g. The Guardian, CNN	9
2.4	Diafano	10
3	Proposed System	11
3.1	Overview	11
3.2	Functional Requirements	12
3.2.1	User Profile	12
3.2.2	Platform Data	12

3.2.3	Storage	13
3.3	Non-functional Requirements	14
3.3.1	Usability	14
3.3.2	Security	14
3.3.3	Reliability	14
3.3.4	Supportability	14
3.3.5	Efficiency	14
3.4	Pseudo Requirements	15
3.5	System Models	15
3.5.1	Scenarios	15
3.5.2	Use Case Model	17
3.5.3	Object and Class Model	29
3.5.4	Dynamic Models	30
3.5.5	User Interface	36
	References	40

1. Introduction

With the rise of social media platforms mainly in the last decade, the face of journalism and reporting has experienced a dramatic change from the traditional media sources and traditional reporting methods, to a more digital landscape, with the proliferation of Twitter and Facebook usage. According to a research by Pew Research Center, about four in ten Americans get their news online, and this number is expected to rise with the younger audience shifting to web sources [1]. This digitalization has not only made it more possible for media companies to find and reach a wider audience, but has also enabled non-professional civilians to partake in the news creation cycle. This has led to the rise of concepts such as citizen journalism and collaborative journalism.

Collaborative journalism is where multiple sources act together in order to create a news story, and not only professionals but also citizens can collaborate in this form of journalism. What we consume as news is usually a result of collaborative journalism, and the part citizen journalism plays in this collaboration is rising.

While there are numerous news outlets that provide collaborative journalism, and social media platforms that showcase these news pieces, there does not exist a popular platform focused exclusively on news that displays information on events not only via professional news outlets but also from the citizens' point of view. Furthermore, it often happens that we have to search extensively to be able to see beyond what algorithms choose as "appropriate/personalized" material, or to be able to escape filter bubbles we often find ourselves in nowadays on the web [2]. With Diafano, we propose to fill this void and create a platform that combines citizen stories with professional news, and provides multi-perspective, transparent journalism.

2. Current System

In this chapter, existing apps and systems that might be considered similar to the proposed system are presented. Towards the end of the chapter, the qualities that set the proposed system apart from these existing apps will be explained.

2.1 Aggregated news apps and platforms

2.1.1 Flipboard

Flipboard is one of the most popular and successful news aggregation apps in the field.

- Available on mobile, for iPhone, Android, and Windows Phones. Flipboard also has a web platform.
- Personalized news feed, known as "Smart Magazines". Users can select interests and create magazines that are updated frequently and improved by learning users' preferences.
- "Cover Stories" feature lets users find an overview of news in topics that they are interested in.
- Users can opt out of seeing content from certain news outlets. This feature grants users the chance to limit the sources that they see.

2.1.2 Google News

Google News is a computer-generated news site that aggregates headlines from news sources worldwide, groups similar stories together and displays them according to each reader's personalized interests. [3]

- Google News is offered both as mobile apps and as a web platform.
- Google News collects news from over 50000 sources and utilizes a ranking algorithm to show the users only the relevant news. [4]
- Users can see news on the topic that they choose, and Google learns from these choices to make personalized suggestions in its "For You" tab. Google also utilizes information about users that they have collected previously, such as their search history. This results in a more personalized experience compared to other products.
- Users can view local news from the "Local" tab. Users can also change locations to view news from different parts of the world, and add new locations to be shown on their tab.
- Users can see news via default sections that focus on broad fields, such as business, technology, and politics. Furthermore, they can create personal sections by defining search terms.
- Users can search for news articles by keyword and date.

2.1.3 Apple News

Apple's official News app, formally known as Newsstand before iOS9. Current features and limitations:

- This app is available only in the US, UK, and Australia.[5] Also, it is not offered as a web platform.
- Personalized news stories. Users can follow channels and topics to get more relevant stories on their dashboard.

- Spotlight. This feature is Apple's version of story of the day.
- A trending topic feature that is similar to that of Twitter.
- Users can save stories for consuming them at a later time.
- Users can see their story history.

2.2 Broadcasting apps and platforms

2.2.1 Periscope

Periscope is a popular live video streaming app acquired and owned by Twitter.

- Periscope is available for iOS and Android, and has a web platform as well. Streaming on Periscope can only be done on mobile devices such as smart phones and tablets.
- Users can sign up with their Twitter, Facebook or Google accounts.
- Users can watch live videos from any person that is broadcasting.
- Users can search channels by hashtag, and see how many people are broadcasting about the said topic or hashtag.
- Users can comment and like broadcasts as they are happening.
- Broadcaster can disable comments, and has the option to make their video public or private.
- Broadcasters can save their videos.
- Users can broadcast whatever they want, as long as it conforms with the policy of Periscope. Thus, Periscope is not focused on news only.

2.2.2 Facebook Live

Facebook Live was introduced as a feature of Facebook gradually over the years of 2016 and 2017. Its features include:

- Facebook Live is available on mobile apps of Facebook and on PCs.
- Users can broadcast live streams, with features such as filters, drawing and doodling on the video.
- Users can interact, react to and comment on live streams.
- Users can get notified when a person they follow starts streaming, granted they have set their notification settings accordingly.
- Maximum time for a stream is four hours.
- Facebook Live Map allows users to see a world map with people currently live streaming represented as dots. Thus, people can find live streams from all over the world.
- Users can search keywords to find live streams.
- Broadcasters can share their screens while streaming.

2.2.3 Instagram Live

Popular photo sharing platform Instagram, owned by Facebook, rolled out its live-video functionality in November 2016. Its features include:

- Users can stream using their mobile devices on Instagram app.
- Viewers can comment and react on a live video.
- Users are notified, if their settings allow it, when a person they follow is live streaming.
- Broadcasters have the option to preserve their live stream as an Instagram story for 24 hours.

- With a current functionality, rolled out in October 2017, two users can broadcast using the same stream.
- "Explore" tab shows personalized live stream suggestions to users.

2.2.4 stre.am

Stream - Live Video Community is an application offered for iPhone and Android smartphones.

- Users can view streams even if they're not logged into the application.
- Users can register with their Google+, Facebook or email accounts.
- Users can follow other users and can't thus miss notifications from the live streams of those they follow.
- While users are following a stream, they can share, tweet or re-stream this content. They can also react to the stream, and also comment.

2.3 Citizen journalism apps and platforms

2.3.1 Twitter

While not aimed only at citizen journalism, Twitter has become a milestone for numerous protests and movements across the globe, influencing events such as Gezi Protests and the Arab Spring. [6] [7] With its concise style and broad user base, Twitter has become the main platform for collaborative journalism. Some of Twitter's features include:

- Twitter is available on mobile devices as well as PCs.
- Users can share Tweets with at most 140 characters, although this cap is planned to be 280 in the future. Users can also share media such as photos and videos with the tweets.
- Users can follow other users, and send direct messages if the people they follow allow direct messaging.

- Users can see trending topics by specifying a region, e.g. their local city, such as Ankara, or a country, or worldwide.
- Users can search for content using hashtags and other well developed search options.

2.3.2 Reddit

Reddit is one of the most popular discussion websites in the world. Every post on Reddit is created by a user, and Reddit allows users to write their own posts. This, along with commenting on news articles in a forum style, has made Reddit a powerful news source with both official and citizen journalism. Some of Reddit's features include:

- Reddit is available on mobile as well as a web platform.
- Users can subscribe to different subreddits depending on their interests.
- Users can navigate through their personalized Front Page with posts from their subscribed subreddits.
- Users can post links, or write posts of their own.
- Users can upvote and downvote posts and comments, altering the visibility and popularity of the said post or comment if enough upvotes or downvotes are accumulated.
- During a major event happening worldwide, Reddit provides live coverage with links to tweets and articles posted by users. This allows for a smooth consuming of information and opinions from different perspectives during crises.

2.3.3 News stations - e.g. The Guardian, CNN

Multiple official news outlets have started allowing users to submit information, in various forms of text and media. Some examples include CNN iReport [8], BBC's Have Your Say [9] and ABC's World News Story Contribution [10]. The biggest downside of these contributions is that the submission undergo an election process by the people working at the news outlets. A submitted story might not be published on numerous grounds, including censorship. This

option provides an indirect platform for users, and is less powerful compared to social media platforms.

2.4 Diafano

The app that is proposed aims to gather together the best parts of the services that are mentioned above. The main difference of Diafano compared to other social media platforms is its sole focus on news. Diafano aims to offer its users a variety of views on the news that are happening around the world. It aims to make away with long chain of comments, and the tiresome job of scrolling through sub-content for information, by introducing cleaner and more concise ways of sharing information.

3. Proposed System

3.1 Overview

Diafano is a platform where users can find combined and encompassing information on current news from anywhere in the world, and get views from both professional journalists and citizens, all in one place. Similarly, users can use Diafano to publish stories, broadcast live events, and contribute to events happening currently anywhere. Diafano will be offered both as an application and as a web service, allowing it to reach a broader audience and get the best overall information and experience. While Diafano makes use of formal news agencies and platforms, its main goal is incorporating people's views of events. It aims to provide a more trustworthy view on events worldwide.

What makes Diafano different from platforms such as Twitter or Facebook is its focus on news stories, its focus to provide well-rounded information on news, and the inclusion it provides by making the voice of the public as relevant as the news outlets. By allowing user contribution, Diafano also differs from news aggregation applications like Flipboard.

Diafano will have numerous features for users, such as the options of viewing local and global content, getting live notifications on starred events, and broadcasting live videos from news scenes. The main challenge of Diafano is judging the truthfulness and transparency of content, and filtering out the irrelevant, fake news that might be uploaded by users.

3.2 Functional Requirements

3.2.1 User Profile

- Anyone with a valid/legitimate email address will be able to sign up for Diafano platform.
- There will be two step verification for registering and logging into the platform. This is to avoid spam accounts, and match a user to a phone number and an email, which are unique for every user.
- We don't aim to create a social network, but merely a way for sharing information that aims to collectively make the stories real and more transparent. We won't therefore support possibility of following/adding users or being followed. There will however exist some statistical information estimating users in a specific area, if they choose to share their location information.
- Each user will have a minimalistic profile with information they choose to share, which might come handy in emergency cases. This is the designated "direct window of communication" we expect users of our system to have. Additionally, there will exist an opportunity to request chatting with a user, to which that user will have to confirm in order for this communication to happen.
- Everyone viewing certain content will be able to see the author behind some shared content, specifically, the author's username. Additionally they will be able to click on this profile and view the profile information that that user has chosen to display.
- Must exist user information: username, password, email address, phone number (not public for authentication - can opt in to share it).
- Optional information: name, surname, date of birth, description/bio, city.

3.2.2 Platform Data

- Anyone with a user account will be able to provide data.

- Popularity of official news agencies will be subjected to an algorithm that assesses their trustworthiness and relevance, similar to TrustRank. The articles that are most relevant and trustworthy will be higher up for a certain event.
- Sensitive data will be filtered out. Grotesque-looking videos and photos will be detected by pre-modeled and pre-trained computer vision algorithms. Additionally, users will be warned about type of sensitive content, and they will be able to report some such content. Possible categories are: violence, nudity, fake, profane, spam.
- News feed data will be sourced from local and global news providers and their liability will be rated by the users/user analytics.
- There will be a map, which the user can interact with for checking events going on in the world. There will be a heat-map like property for easily detecting regions where there are active events and streams.
- Faces in sensitive imagery will be blurred out. As the platform grows, stored video content including faces will be blurred out as well in those areas.

3.2.3 Storage

- Once some big event or a collection of news and platform data regarding this specific event becomes outdated it will still be stored indefinitely to our servers. However, accessing it will require some searching. The user will be able to specify time frame or relevant information regarding that event, and even add some more content and information in case it might help "resolve" the case to provide better quality for future reference to the event.

3.3 Non-functional Requirements

3.3.1 Usability

- The system should be user-friendly and clearly understandable with a minimalistic approach towards complicated interactions.
- The system should be accessible to people from a range of cultures and capabilities.
- The content presented in the application should follow the same standard.

3.3.2 Security

- The system should ensure security of personal data of the users.
- No information the user hasn't already opted in on providing shouldn't be provided.

3.3.3 Reliability

- The system must be stable to avoid interruptions in the use.
- The accuracy of geolocation data linked to shared content should be maximized.
- The system should provide reliable tools for streaming of videos.

3.3.4 Supportability

- Dependencies in the design of the system should be minimized to allow quick updates in the future.

3.3.5 Efficiency

- The response time of the system should be less than 100 milliseconds.
- The rendering of the central map with content should not take more than 5 seconds.

3.4 Pseudo Requirements

Tentative pseudo requirements are provided as follows:

- The application will have a server and mobile and web applications.
- Machine learning and Computer Vision models will be developed in Python using popular libraries like Scikit-learn.

3.5 System Models

3.5.1 Scenarios

3.5.1.1 Scenario 1: First Time User

Emily has heard of Diafano but has never actually used it. She wants to give it a try. She downloads the app on her phone. She's given an option to login or sign up. Since she doesn't have an account, she opts to sign up. She is presented with 4 options: Signing up from Facebook, from Twitter, from Google, and using an email address. She decides to join using an email address. She fills in her email, selects a password, and picks a username. She is required to verify her account via her mobile number. She receives an SMS from the system, and enters the code to the prompted field. She successfully creates her account and starts using the app.

3.5.1.2 Scenario 2: Broadcasting

Emily wants to broadcast a stream. She clicks on the broadcast icon on the main bar. She is prompted whether she wants to do it in anonymous mode or normal mode. She decides to publish it in anonymous mode. She stops the stream when she finishes broadcasting. The broadcast is recorded in the servers of Diafano.

3.5.1.3 Scenario 3: Finding News from Map

Emily wants to see the news of a particular location. She clicks on the map icon on the main bar. She can use the search bar at the top, or she can manually find the location from the

map. Once she finds the location, she checks whether there are any live streams or important news from the area, from the heatmap. She then clicks on a location, and this brings up the news page for that place. She is then redirected to the news page, with the relevant news being displayed.

3.5.1.4 Scenario 4: Writing News

Emily wants to contribute to the app and its audience by writing a news piece. She clicks on the Write News icon on the news tab. She writes a news piece, with a minimum character limit of 200 (tentative). She then clicks on post. She is prompted to find out the location she wants to post the news for. If she wants to use her current location, Diafano tries to access her location data. If she has given access to Diafano, the system adds the news to the news feed of Emily's location. Emily is then redirected to the news piece she has written.

3.5.2 Use Case Model

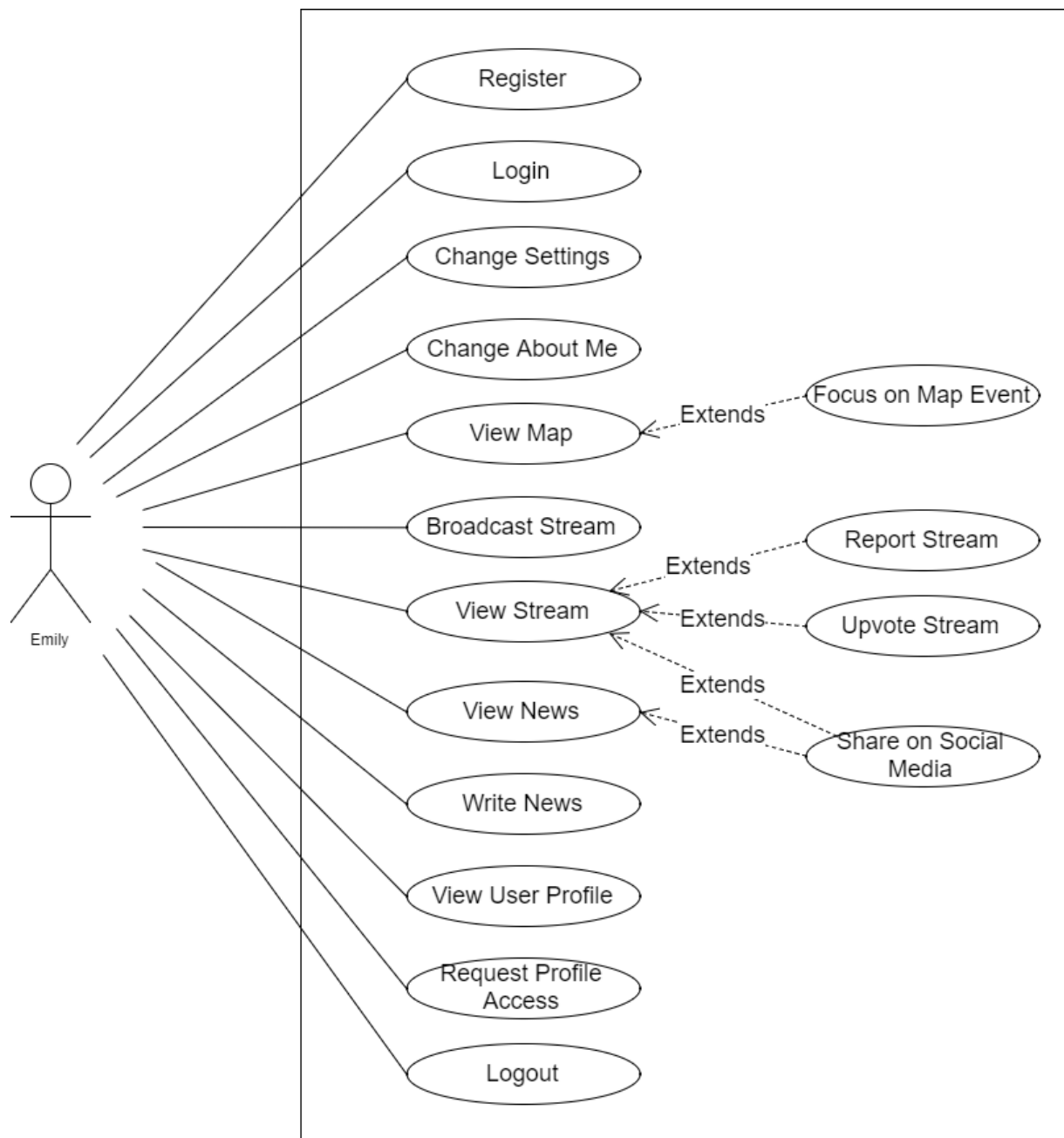


Figure 3.1: Figure 1 - Use Case Diagram

3.5.2.1 Log in

Actors: Emily

Entry Conditions:

- Emily is on the login screen.

Exit Conditions:

- Emily is successfully logged in and viewing her homepage.
- Emily could not login and quit the app.

Main Flow of Events:

1. Emily selects one of the options to login, via Facebook, Twitter, Google, or email.
2. Emily is prompted to her login in one of the platforms.
3. Diafano confirms the login.
4. Emily is redirected to her homepage.

Alternative Flow of Events:

1. Emily selects one of the options to login, via Facebook, Twitter or Google.
2. Emily is prompted to her login in one of the platforms.
3. Emily cannot login. Diafano displays the error and asks her to login again.
4. Emily is kept on the login page.

3.5.2.2 Register

Actors: Emily

Entry Conditions:

- Emily is on the New Account screen.

Exit Conditions:

- Emily successfully created an account.
- Emily could not create an account.
- Emily canceled during the account creation process.

Main Flow of Events:

1. Emily selects one of the options to create an account, via Facebook, Twitter, Google, or email.
2. Emily is prompted to her login in one of the platforms.
3. Emily logs in with the correct email and password to her account in the chosen platform, and accepts the conditions.
4. Diafano confirms the platform login.
5. Diafano prompts Emily for her phone number.
6. Emily enters her phone number.
7. Diafano sends an SMS to confirm the owner of the telephone number is Emily.
8. Emily enters the code on the sent SMS.
9. Diafano creates an account for Emily.
10. Emily is redirected to her homepage.

Alternative Flow of Events 1:

1. Emily selects the option to register through an email.
2. Emily enters her email, picks a password and a username.
3. Diafano prompts Emily for her phone number.
4. Emily enters her phone number.
5. Diafano sends an SMS to confirm the owner of the telephone number is Emily.

6. Emily enters the code on the sent SMS.
7. Diafano creates an account for Emily.
8. Emily is redirected to her homepage.

Alternative Flow of Events 2:

1. Emily selects one of the options to create an account, via Facebook, Twitter or Google.
2. Emily is prompted to her login in one of the platforms.
3. Emily cannot login. The platform displays the error and asks her to login again.
4. Emily is kept on the login page.

Alternative Flow of Events 3:

1. Emily selects one of the options to create an account, via Facebook, Twitter or Google.
2. Emily is prompted to her login in one of the platforms.
3. Emily logs in to one of the platforms.
4. Emily does not authorize Diafano and does not accept the conditions.
5. Account creation for Emily is unsuccessful.

3.5.2.3 Change Settings

Actors: Emily

Entry Conditions:

- Emily is on the Settings screen.

Exit Conditions:

- Emily successfully changed her settings.

Main Flow of Events:

1. Emily selects one of the settings.
2. Emily changes the corresponding setting.
3. Emily selects more settings that she wants to change.
4. Emily clicks on Save Settings button.
5. Emily's setting changes are saved by Diafano.

3.5.2.4 Change About Me

Actors: Emily

Entry Conditions:

- Emily is on the About Me screen.

Exit Conditions:

- Emily successfully changed her About Me section.
- Emily canceled the process.

Main Flow of Events:

1. Emily clicks on Change button on the About Me screen.
2. Emily writes her new About Me section.
3. Emily clicks on Save.
4. Emily's About Me is saved by Diafano.
5. Emily is redirected to her updated About Me screen.

Alternative Flow of Events:

1. Emily clicks on Change button on the About Me screen.
2. Emily writes her new About Me section.
3. Emily cancels and does not save the changes.
4. Emily is redirected to her About Me screen.

3.5.2.5 View Map

Actors: Emily

Entry Conditions:

- Emily is on her homepage screen.

Exit Conditions:

- Emily is successfully viewing the map tab.

Main Flow of Events:

1. Emily clicks on the map tab.
2. Diafano displays the map screen as a heatmap of current events around the area Emily scrolls to.

3.5.2.6 Focus on Map Event

Actors: Emily

Entry Conditions:

- Emily is on the map screen.

Exit Conditions:

- Emily is viewing news from a map location.

Main Flow of Events:

1. Emily views the map.
2. Emily zooms in or out and swipes to find the location she's interested in.
3. Emily clicks the bubbles on the heatmap of the location she's interested in.
4. Emily is redirected to the news page for that location.

3.5.2.7 View Stream

Actors: Emily

Entry Conditions:

- Emily is on the news tab.

Exit Conditions:

- Emily successfully starts viewing the stream.

Main Flow of Events:

1. Emily selects one of the live streams on the news tab.
2. Emily starts viewing the broadcast.

3.5.2.8 Report stream

Actors: Emily

Entry Conditions:

- Emily viewing a broadcast.

Exit Conditions:

- Emily successfully reported the stream she was watching.

Main Flow of Events:

1. Emily is viewing a broadcast.
2. Emily clicks on the report button on the corner of the broadcast screen.
3. Emily is prompted with a pop-up to specify the reason she is reporting the stream.
4. Emily selects one of the reasons.
5. Diafano receives the report from Emily.
6. Emily is redirected to the news page.

3.5.2.9 Write news

Actors: Emily

Entry Conditions:

- Emily is on the news tab.

Exit Conditions:

- Emily has successfully posted her news piece.
- Emily has cancelled while writing.

Main Flow of Events:

1. Emily clicks on the Write News icon on the news tab.
2. Emily writes her news piece.
3. Emily clicks on post.
4. Diafano asks if Emily wants to post the news piece for her current location, or for another location.
5. Emily opts to post using her current location.
6. Diafano asks Emily's permission to access her location, if she hasn't given access to it.
7. Emily provides access to her location to Diafano.
8. Diafano adds the news piece to the news feed of the specified location.
9. Emily is directed to the news piece she has created.

Alternative Flow of Events:

1. Emily opts to post using a specified location.
2. Emily selects the location she wants to post at.
3. Diafano adds the news piece to the news feed of the specified location.
4. Emily is directed to the news piece she has created.

3.5.2.10 Broadcast stream

Actors: Emily

Exit Conditions:

- Emily starts broadcasting.

Main Flow of Events:

1. Emily clicks on the Broadcast icon in the main tab.
2. Emily is prompted to learn whether she wants to broadcast in anonymous mode or normal mode.
3. Emily selects the anonymous mode.
4. Emily's personal information is not made available to the viewers of the stream.
5. Diafano doesn't display the streaming user icon.

Alternative Flow of Events:

1. Emily selects the normal mode.
2. Emily starts broadcasting and her information is made available to the viewers of the stream.
3. Diafano displays the streaming user icon.

3.5.2.11 View news on news feed

Actors: Emily

Entry Conditions:

- Emily is on news feed.

Exit Conditions:

- Emily successfully views the news.

Main Flow of Events:

1. Emily selects one of the articles or posts that she is interested in.
2. Emily clicks on the corresponding article.
3. Emily views the article.
4. Emily goes back to the news feed with the back button.

3.5.2.12 Share on Social Media

Actors: Emily

Entry Conditions:

- Emily is viewing a news article or a stream.

Exit Conditions:

- Emily successfully shares the article or the stream on the specified social media platform.
- Emily cannot share the item on the specified social media platform.

Main Flow of Events:

1. Emily clicks on the share button for an article or a stream.
2. Emily is prompted to choose a social media platform to share the item in.
3. Emily chooses a social media platform.
4. Emily is prompted to login to her account on the specified social media platform.
5. Emily successfully logs in.
6. Emily shares the article or the stream.
7. Emily is redirected to the article or the stream she was viewing.

Alternative Flow of Events:

1. Emily chooses a social media platform.
2. Emily is prompted to login to her account on the specified social media platform.
3. Emily cannot login to her account.
4. Emily is shown an error message.
5. Emily is redirected to the article or the stream she was viewing.

3.5.2.13 Upvote Stream

Actors: Emily

Entry Conditions:

- Emily is viewing a broadcast.

Exit Conditions:

- Emily upvotes the broadcast she's viewing.

Main Flow of Events:

1. Emily is viewing a broadcast.
2. Emily clicks on the upvote button on the corner of the broadcast.
3. Diafano confirms the upvote and increases the popularity of the stream.

3.5.2.14 View Open User Profile

Actors: Emily

Entry Conditions:

- Emily is viewing a news article or a stream.
- The user has made their profile open for other users to see.

Exit Conditions:

- Emily successfully viewed the user's profile.

Main Flow of Events:

1. Emily clicks on the icon for the author or the streamer.
2. Emily is directed to the author's or the streamer's profile.

3.5.2.15 Log Out

Actors: Emily

Entry Conditions:

- Emily is on the Settings screen.

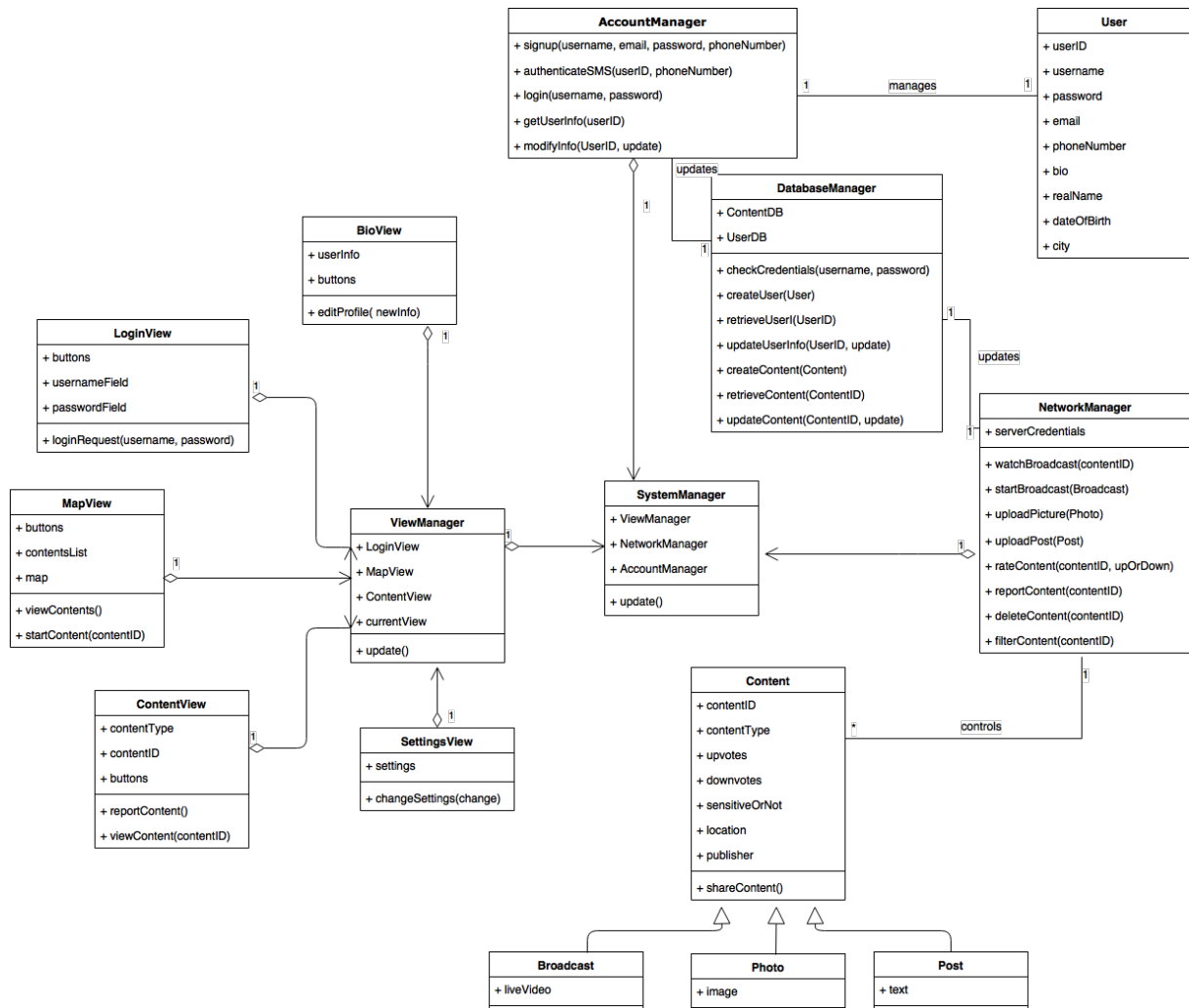
Exit Conditions:

- Emily is successfully logged out.

Main Flow of Events:

1. Emily selects the option to log out.
2. Diafano prompts to ask if she is sure.
3. Emily confirms that she wants to log out.
4. Emily is redirected to the login screen.

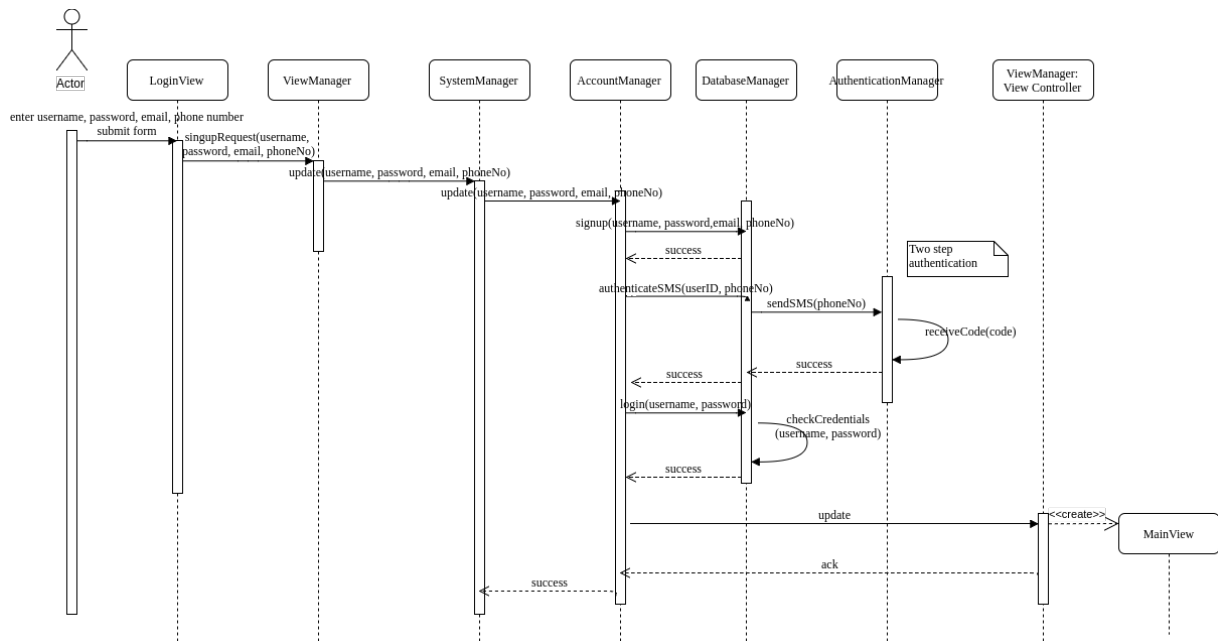
3.5.3 Object and Class Model



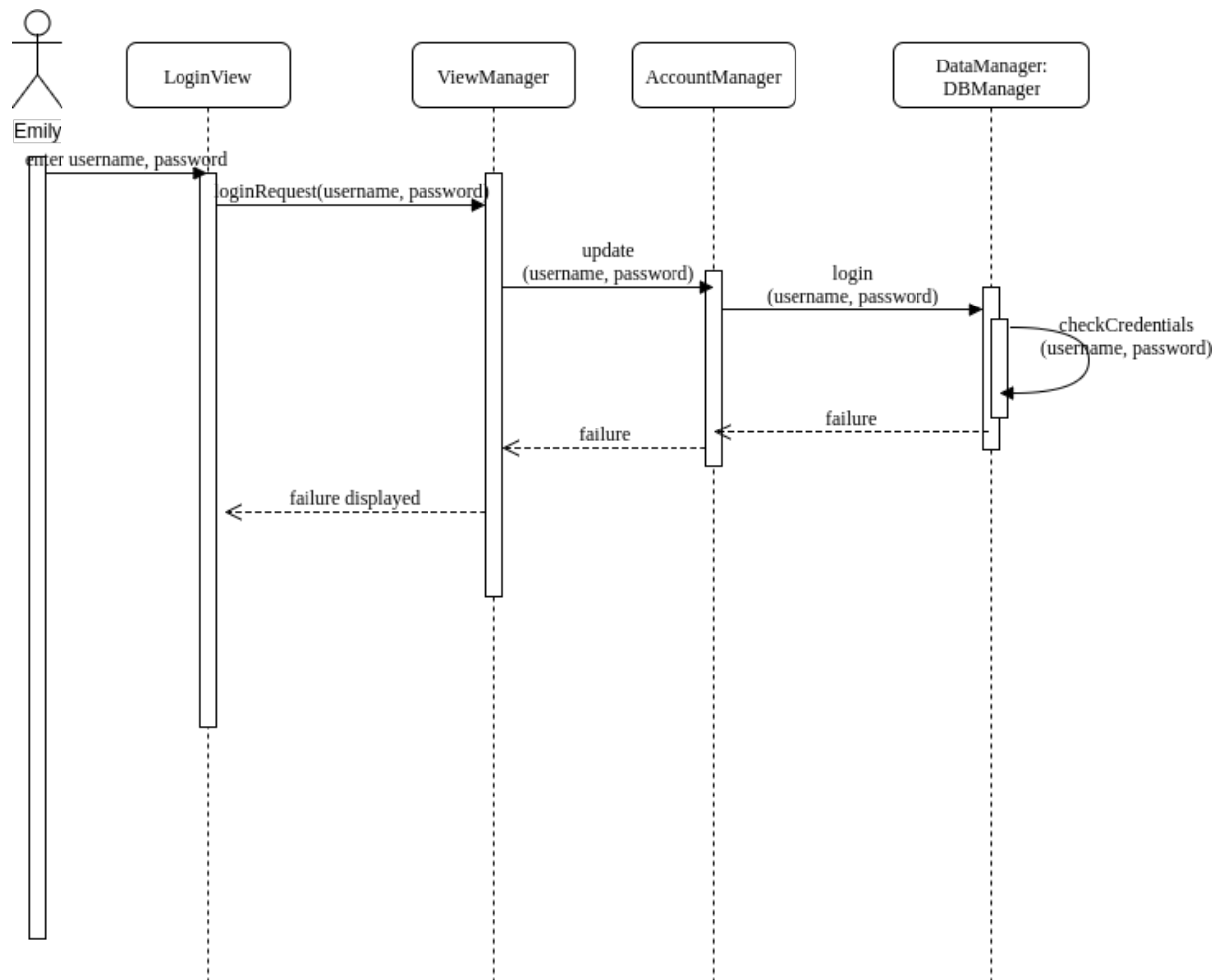
3.5.4 Dynamic Models

We describe a series of sequence diagrams for common activities in the proposed system.

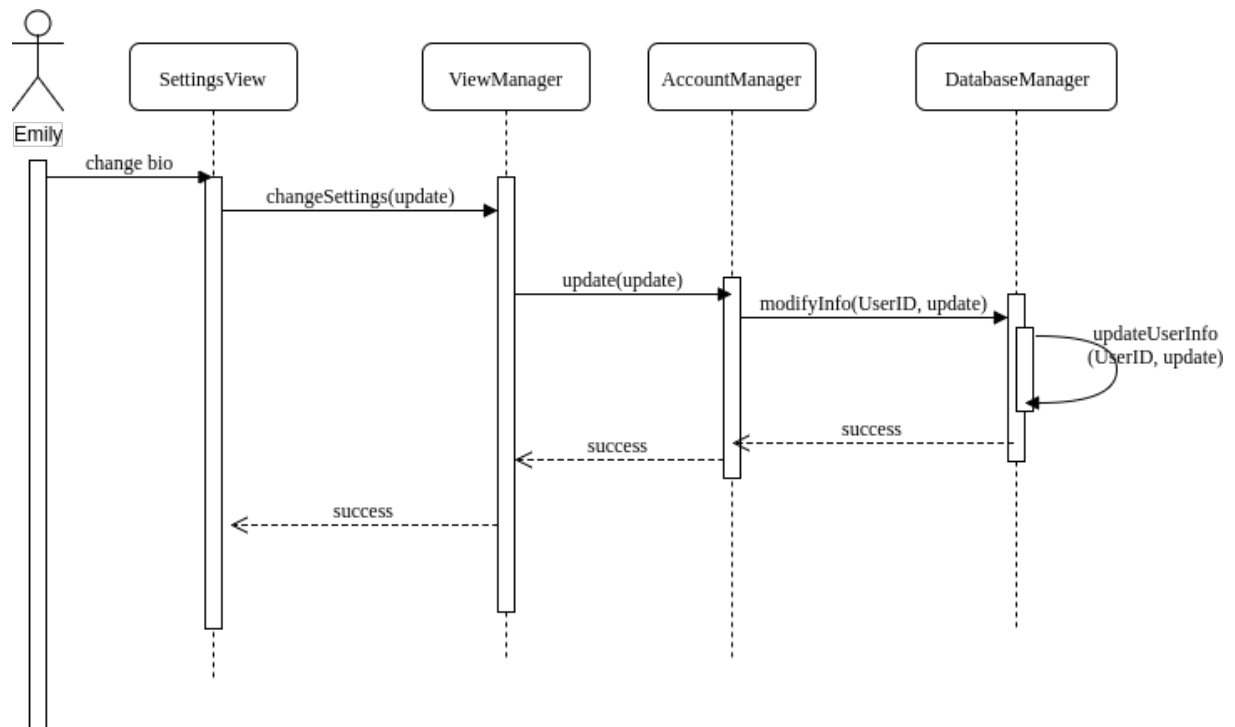
3.5.4.1 Create Account Sequence Diagram



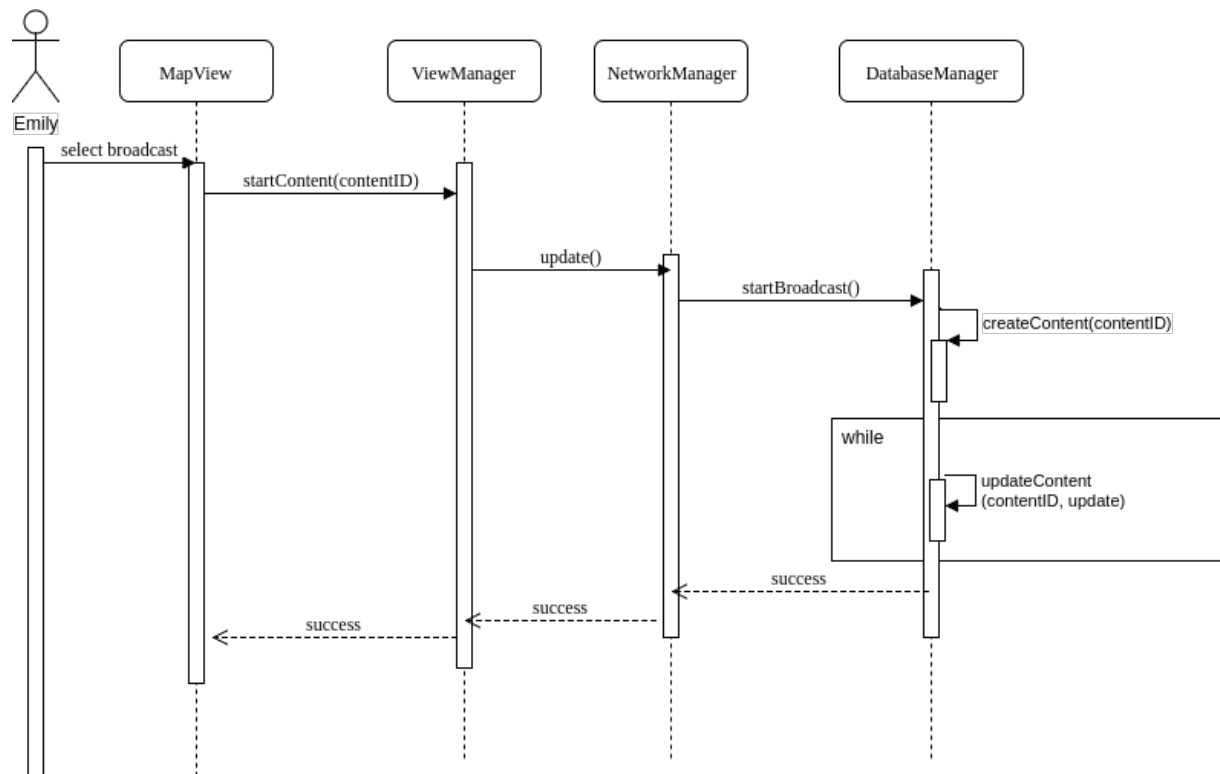
3.5.4.2 Failed Login Sequence Diagram



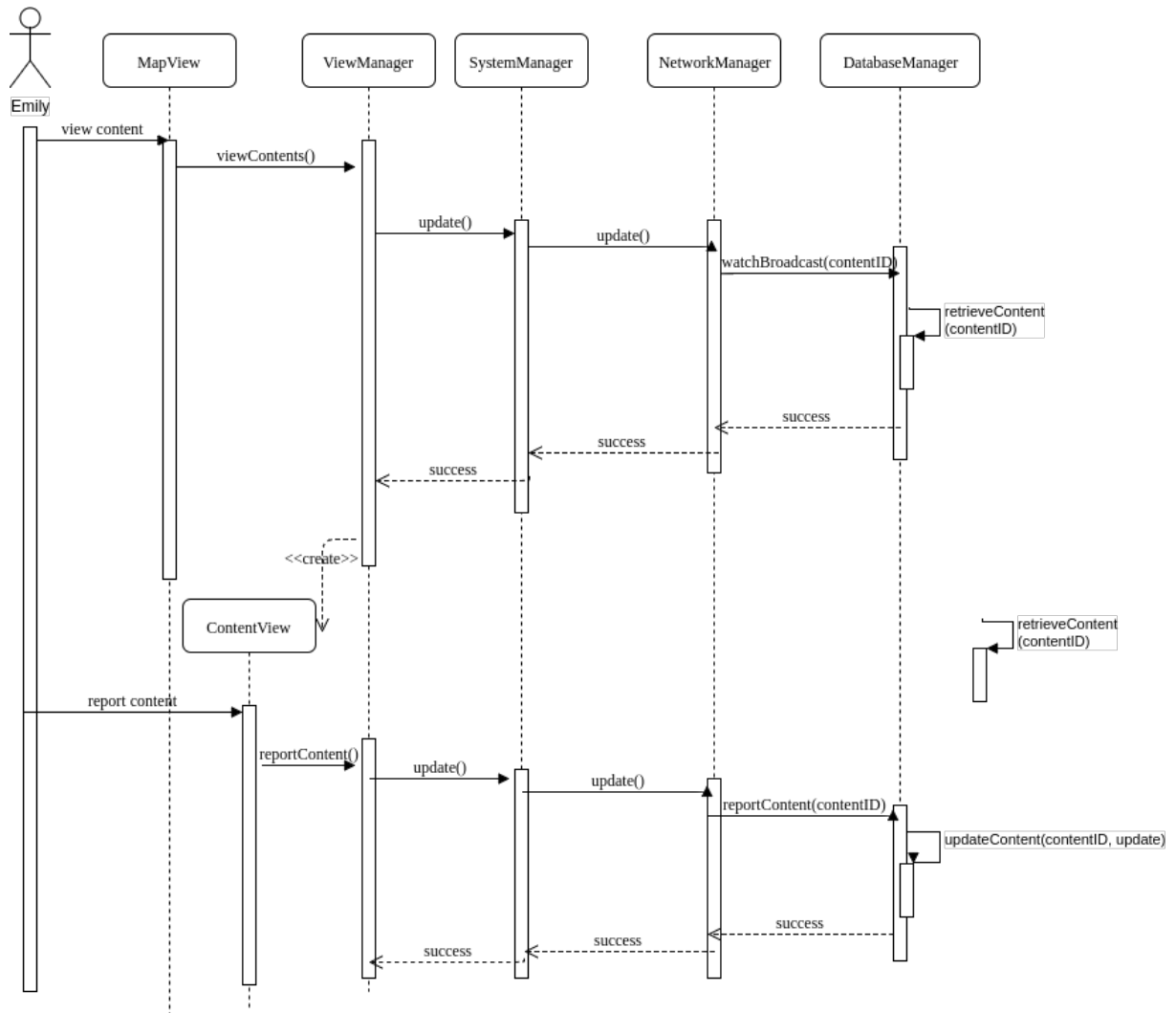
3.5.4.3 Change Settings Sequence Diagram



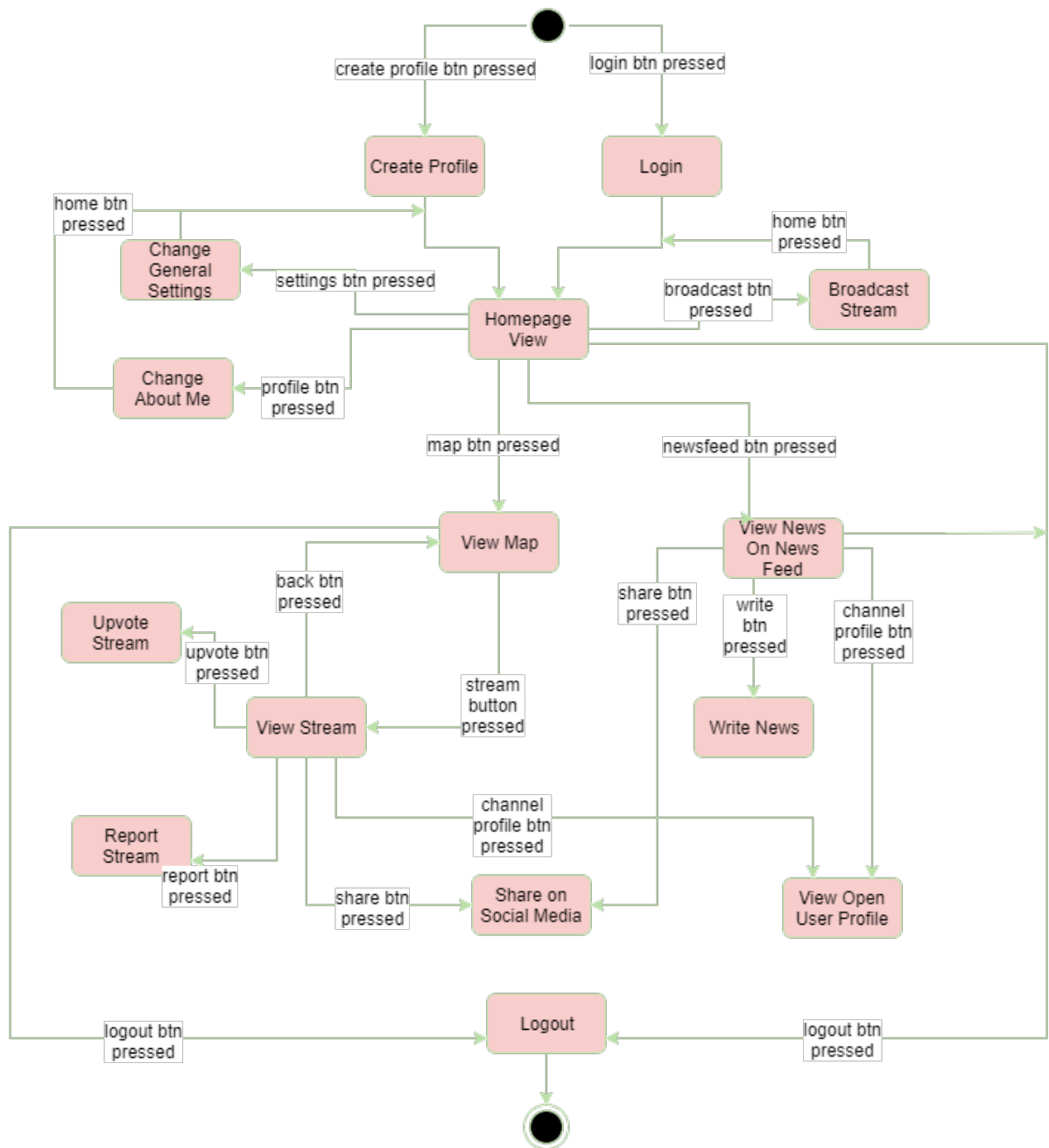
3.5.4.4 Broadcast Video Sequence Diagram



3.5.4.5 Watch and Report Broadcasts Sequence Diagram

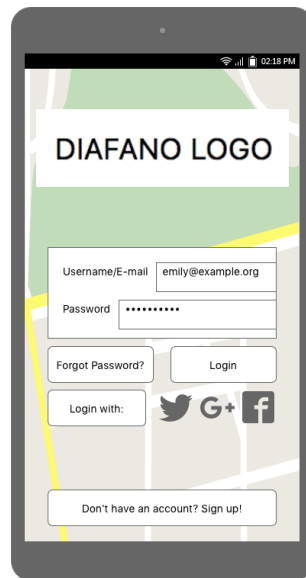


3.5.4.6 Application Flow Activity Diagram



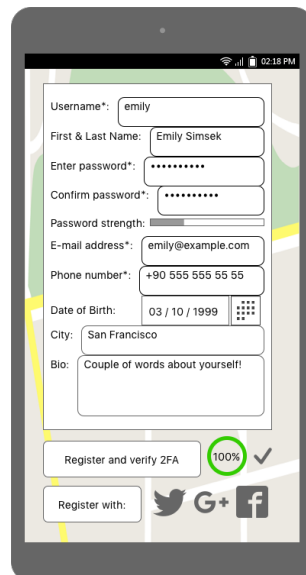
3.5.5 User Interface

3.5.5.1 Home/Login Screen



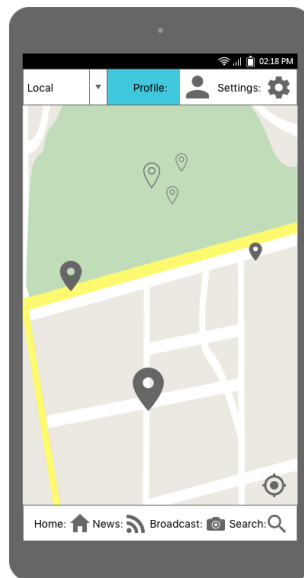
A mobile app login screen mockup. At the top, the status bar shows signal, Wi-Fi, and battery icons, along with the time 02:18 PM. Below the status bar is a header with the text "DIAFANO LOGO" in a white box. The main content area has a light green and yellow background. It contains a login form with two input fields: "Username/E-mail" with the value "emily@example.org" and "Password" with masked characters "*****". Below the password field are two buttons: "Forgot Password?" and "Login". Underneath these is a "Login with:" section featuring icons for Twitter, Google+, and Facebook. At the bottom, there is a button that says "Don't have an account? Sign up!".

3.5.5.2 Register Screen

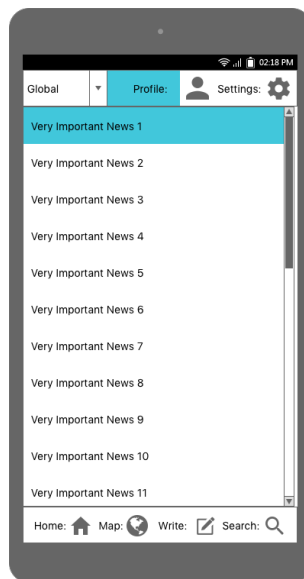


A mobile app registration screen mockup. The status bar at the top shows signal, Wi-Fi, and battery icons, along with the time 02:18 PM. The background is light green and yellow. The registration form includes several input fields: "Username*" with "emily", "First & Last Name" with "Emily Simsek", "Enter password*" with "*****", "Confirm password*" with "*****", "E-mail address*" with "emily@example.com", "Phone number*" with "+90 555 555 55 55", "Date of Birth" with "03 / 10 / 1999" and a calendar icon, "City" with "San Francisco", and "Bio" with the placeholder text "Couple of words about yourself!". A "Password strength" indicator shows a progress bar. At the bottom, there is a button "Register and verify 2FA" next to a green circle with "100%" and a checkmark. Below this is a "Register with:" section with icons for Twitter, Google+, and Facebook.

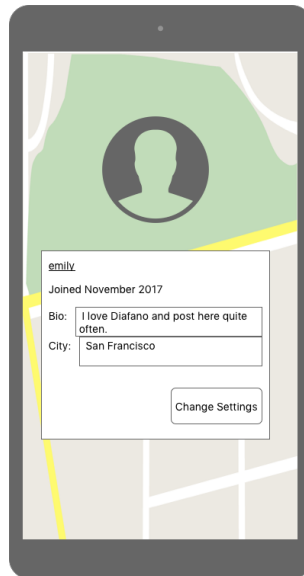
3.5.5.3 Main Map Screen



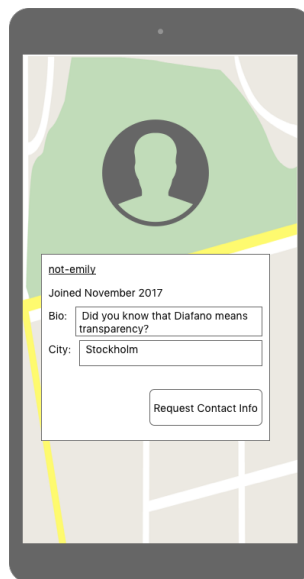
3.5.5.4 Main News Screen



3.5.5.5 My Profile Screen



3.5.5.6 Other Users' Profile Screen



Bibliography

- [1] Pew Research Center: How Americans Get Their News, 2016. <http://www.journalism.org/2016/07/07/pathways-to-news/>. Accessed: 2017-10-8.
- [2] Beware Online Filter Bubbles, ted.com, 2011. https://www.ted.com/talks/eli_pariser_beware_online_filter_bubbles. Accessed: 2017-10-8.
- [3] About Google News, google.com, 2017. https://www.google.com/intl/en-us/about_google_news.html. Accessed: 2017-10-31.
- [4] Google News: the secret sauce — Technology, the guardian, 2017. <https://www.theguardian.com/technology/2013/feb/25/1>. Accessed: 2017-10-31.
- [5] iOS - Feature Availability - Apple, apple.com, 2017. <https://www.apple.com/ios/feature-availability/#news>. Accessed: 2017-10-31.
- [6] These Charts Show How Crucial Twitter Is for the Turkey Protesters , the atlantic, 2013. <https://www.theatlantic.com/international/archive/2013/06/these-charts-show-how-crucial-twitter-is-for-the-turkey-protesters/276798/>. Accessed: 2017-10-31.
- [7] New study quantifies use of social media in Arab Spring , the atlantic, 2011. <http://www.washington.edu/news/2011/09/12/new-study-quantifies-use-of-social-media-in-arab-spring/>. Accessed: 2017-10-31.

- [8] CNN iReport , cnn. <http://edition.cnn.com/specials/opinions/cnnireport>. Accessed: 2017-11-04.
- [9] Have Your Say , bbc news. <https://bbcnewsupload.streamuk.com/>. Accessed: 2017-11-04.
- [10] Send 'World News' Your Story Idea , abc news. <http://abcnews.go.com/WN/mailform?id=10691207>. Accessed: 2017-11-04.