

DEVELOPMENT OF A MOBILE APPLICATION FOR SWAZI ENTERTAINMENT EVENTS

Petros Mashwama, Stephen G. Fashoto, Lindelwa Mabuza

Department of Computer Science, University of Swaziland, Kwaluseni, Swaziland

Corresponding Author: Stephen Fashoto, gbengafash2@gmail.com

ABSTRACT: The use of mobile technology within the entertainment industry is growing at a fast rate worldwide. In Swaziland, the lack of real time informative platforms has led to several property damages due to an angry audience that did not get all the information or updates about an event on time.

This paper presents a system that connects event organizers, artists, and fans. It has been noted that most event mobile applications tend to focus on either uploading information on events updates or information on artists. This system integrates these two ideas into one package in the sense that users have event updates and also get updates on a specific artist all in the same system. Most of the existing applications do not have a platform where users get to comment about a past event that was uploaded in a system.

KEYWORDS: Mobile apps, event organizers, artists, fans and entertainment.

1. INTRODUCTION

Globalization as a concept seemed so far for most African countries. However, the 21st century has experienced a great revolution through technological based systems as a driver of globalization. The mobile technology has dominated our daily lifestyle, this development has greatly enhanced people's everyday communication experiences through: creating an information hub that makes it easy for people to access information in any area of interest; bringing people closer to each other through various real-time platforms; improved access to various entertainment genres; and, improving marketing and trade of products and services across the globe.

Over the recent years the Swazi nation has adopted the culture of downloading mobile applications. This means mobile application developers have an emerging market that is ready for new and innovative Swazi oriented products that will improve Swazi people's lives in various dimensions. Many companies from Swaziland have already started to seize this opportunity by producing good mobile applications. One example is the android application, created by a group of UNISWA (University of Swaziland) graduates, called '*Occupapp*' which allows one to find people in their

area with needed occupation skills or services.

However, on the other hand there is a missing link that has created a gap in the fast-growing Swaziland creative entertainment industry. As one of the major income earners in the country, mobile applications that provide information about events, would have a major impact on the industry by making users more informed in real-time about any event of interest, empowering them through various creative ways and enhancing their event experience. However, so far Swaziland does not have any professionally developed mobile application that gives updates and information about popular events and venues. Most people still depend on newspapers, television, posters and word of mouth for information about popular events [UG15]. This is a setback for the entertainment industry, but also it is a great opportunity for mobile application developers to fill the gap. Therefore there is a great need for a mobile application that will centralize information about latest upcoming events and related resources. This paper will be dedicated to outlining in detail how a proposal to achieve this goal through *Swazi Entertainment Events Mobile Application* (SEEMA). The problem being solved in this paper is the lack of a platform for people to get real-time information about events especially related to entertainment, and the lack of a platform that connects event organizers and fans with artist. The motivation for tackling this problem is that, entertainment is by far an important part of any society. Due to general global development, we now live in fast-growing economies; hence generally people work much harder and want to take breaks. From time to time people find themselves asking the following questions:

- What's there to do?
- What do I have to do with my free time?
- The conference is over at 4pm, what's going on after that? [Ant16]

If you had a long day or week of work, it can be frustrating not to know where you can relax and be entertained. Also missing a show or an event because you did not know about it can be a sad experience. Such cases are very common for people

who have moved into a new place or are visiting. Another unpleasant situation is when one goes to an event expecting certain activities or performances that have been advertised but finds out that those performances have been canceled. That clearly causes disappointments and anger to the attendees of the event, and even worse, it creates a bad name for the organizers.

[Mhl16] noted that, there have been several reported cases where fans damaged properties because the artist they expected in an event did not show up. A reason for such problems is that there are not enough platforms in Swaziland where fans are frequently updated with details of events. Hence this mobile application serves to bridge the gap in communication, mainly, between organizers and fans. This paper created a platform where fans would be able to have real time updates of events and give feedback to the organizers. Organizers will have the option to run polls to include fans opinions in planning for an event and that simple feature will make fans feel part of the show and valued.

The system connects event organizers, artists, and fans. It is an effective way of sending real-time updates on what is happening around Swaziland and bring a platform where fans can get to know more about their favorite Swazi Artists.

This paper addresses the improvement of user's event experience by frequently updating them with any new information that comes about any event happening in Swaziland. It also gives a catalogue of data about registered artists. The system also provides a feedback mechanism on user's experience on events (i.e. users are offered an opportunity to comment on recent shows).

Mobile applications provide a fast and efficient way for event organizers to circulate event updates among attendees. It is thus a good business investment since it is specifically suited for the target market, youth of ages between 15 and 35 years of age, who are technology and smartphone savvy, hence making it more efficient than print media.

This platform is important for fans and fun lovers because this system will keep them updated with events and in case of changes they will not have to find out about it at the event but will get to know about such changes prior. It will help them also to know more about their favorite artist and be able to track their shows.

It is every artist's wish to produce something that will be loved by people. Getting a platform where artists can get to hear what their fans think of their new product and performances will help artists' present better shows that will be loved by their fans. Event organizers desire to go paperless and to be able to connect to attendees and integrate all into one

[***17]. This system will meet all three objectives, which will be of great help to Swazi event organizers.

Swazi Entertainment Events Mobile Application (SEEMA) is an application which will give updates on entertainment events that are happening around Swaziland. The form of entertainment that will be covered by the application will be live entertainment and exhibition entertainment. The users of the app will be artist, event organizers and fans or fun lovers who will be attending events. Event organizers will post information with details about an upcoming event and the information will be verified by the administrators so that people are not misled by wrong or false information. Event organizers will be registered and vetted first on the system before they can post information. The type of entertainments events that usually take place in Swaziland for example, fashion show, stand-up comedy, theatre, variety show (presented by *DJs*, musicians, dancers) and drag races will have links in the home page where users can click on to get information.

As part of the application, there will be a section that will have profiles of registered artists where there will be information about them, that is, the biography of the artist and information on their career. This is meant for fans to know more about the artists.

The remainder of the paper is organized as follows: In section 2, we review previous literature on mobile apps for entertainment and research gaps, while the methodology is presented in section 3. The system implementation and documentation are presented in section 4, while some conclusions are drawn in section 5.

2. REVIEW OF RELATED WORK

Mobile applications are no longer a future-leaning technology to explore someday, but a vital tool that attendees need to customize and enhance their event experience [***14]. It is the ultimate time-saving tool that empowers attendees to make a speedy and informed decisions regarding where they will spend their time and with whom all on the fly.

The history of event updates can be traced back to ancient civilizations. It became a major force in capitalist economies in the mid-19th century, based primarily on newspapers and magazines. In the 20th century, advertising grew rapidly with new technologies such as direct mail, radio, television, the internet and mobile devices [CC13].

The 21st Century has seen the great use of social media as a communication platform. For some Africans, the social media platforms have become a primary source of news and entertainment. TV news is also still relevant, but they are in fewer than 60

million households in Sub-Saharan Africa which has a population closing in on the billion. Traditional TV is not reaching everyone meanwhile mobile phones already have a higher penetration and smartphones used more than doubled in two years to 2016. After smartphones were introduced several mobile applications which are downloadable via app stores have been introduced, and it has dominated in a short space of time. In 2013, over 700 applications were being developed and launched each day. App development has created over 600,000 jobs in the US alone and has even become its own industry in less than a decade [BB14].

After the mobile applications were popular then the entertainment event industry started having interest in making their own apps because mobile apps were taking over the world. Attendees of events were happy to be part of the new system and showed interest on it which led to several event applications to be developed.

[LD15] highlighted the birth of what is now becoming known as the events industry. She identified that commercializing popular celebrations required wealth for people to participate and therefore meant selecting suitable elements of the traditional festivities and adapting them. The purpose of fairs has changed over time to what are seen today as events that mainly operate for enjoyment, with rides, sideshows and stalls.

With the increase in work through industrialization, the practicalities of celebration meant that people were too tired to celebrate as they had done previously. Thus commercial celebration provided the opportunity to relax from working life and from a government perspective; it provided the basis for ensuring that celebration and traditional pleasure culture did not interfere with work

Facebook

Facebook started as a simple networking service for Harvard students. Its initial objective was to provide a platform where students could share personal news, events, and announcements and perhaps most importantly, photographs. Although Mark Zuckerberg and his partner's initial objective may have appeared limited, the popularity of the service soon presented the possibility of much larger objectives [McK15].

Almost everyone on social media uses Facebook now, and its event feature has been around since the social network's very early days before smartphones were popular. Today Facebook is still one of the best places to find out about what sort of things are going on in your local area. Users can use the official Facebook app to look for events, or they can download the events from Facebook. Facebook has shown to be a dedicated app for discovering new events around where a user may be [Mor17].

Time to Enjoy - Events Apps

Time to Enjoy is a San Diego-based mobile application meant to help people discover and plan events in a matter of seconds. It has transformed mobile phone calendars into search engine for events. The user finds a date and time in which he/she will be available and simply 'tap to search' for events. By importing the user phone's calendar, users can quickly scan through their schedule, find gaps of free time, and tap on this open block to populate Time to Enjoy's list of local events. One can fill out the event form and in a matter of seconds and a digital poster to be searchable by users can be created.

The Co-founder and CEO of Time to Enjoy Jan Anton said, "Our vision and ultimate goal is to become a driving platform where event providers connect with people looking for events and I believe we have created a platform to publish events, and to expand the visibility of events exponentially" .

Songkick app

If one loves concerts, songkick is the application that a user may want to install on his/her mobile device. What's particularly great about this application, is that it allows the user to import artist names from various music libraries like Spotify or Apple music so that they can track their favorites and set up alerts to be instantly notified when they are playing around [Mor17]. The users are also able to get personalized concerts recommendations, browse full tour schedules, see venue details, compare tickets and even buy tickets directly through the songkick application

Connector app

This particular events application was designed specifically for college students who want a better way to discover events and activities on campus. Users can create both private and public events to help them meet new people. [Mor17] highlights that anyone looking for an event to attend can use the application to connect with people who share similar interests and form groups right through the application. Each student gets a profile where they can show their profile pictures, their brief biography, their connections and the groups they are following.

2.1. RESEARCH GAP

From the few mobile apps systems that have been reviewed in this paper, it has been noted that most event mobile applications tend to focus on either uploading information on events updates or information on artist updates. This system is trying to integrate these two ideas into one package in a sense that users will get to have event updates and also get updates on a specific artist all in the same system.

Facebook covers a lot of activities happening worldwide, which leads to a problem when one exclusively wants to see events happening around Swaziland, but with our proposed application, you would be able to do that, hence saving the user's time.

The Time to Enjoy Application is an interesting app because it would schedule the event you want to attend into your calendar which is good in a sense that you would not forget to attend it, however to some users that may feel like a commitment which most people do not like. As much as the proposed application's objective is to make sure that people always know about ongoing or upcoming events, it will not make them commit to it, because some people may only want to see events but that will not necessarily mean they want to attend it.

Most of the existing applications do not have a platform where users get to comment about an event that was uploaded in the system. This platform is

important for both event organizers and artist for them to get feedback on their work, hence improve their planning and strategies for future events.

3. METHODOLOGY

3.1. DESCRIPTION OF THE PROPOSED SYSTEM

The proposed system is designed to function with two applications which should be able to communicate with each other through a common database. It is designed for use only by the administrator with a well-defined friendly graphical user interface that will make it interactive and easy for the user. This proposed system consists of a Web application for desktop user and a mobile application for mobile device. The applications can both retrieve and send information to the database as shown in figure 1.

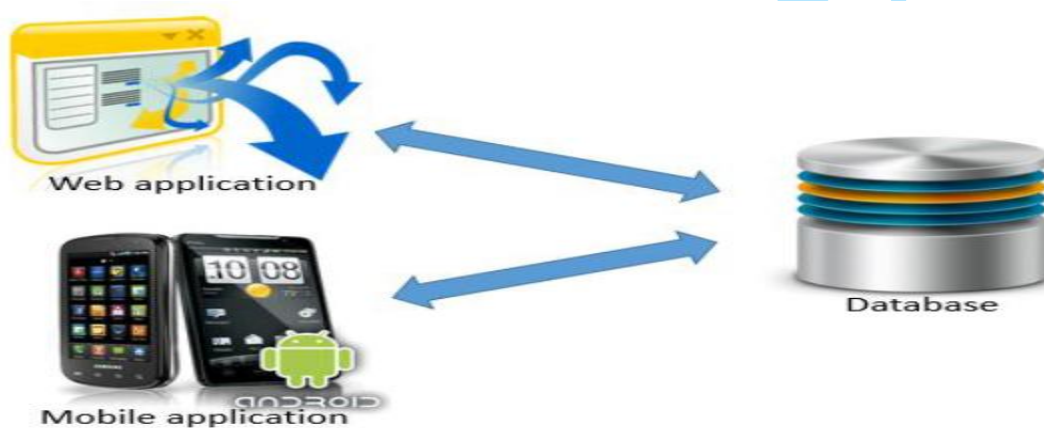


Figure 1. Description of Proposed system

Web application contains the same basic logic as the mobile application but will be used on a personal computer. It will read all the needed data from the database, such as the events, personal information and so on. It will be developed using javascript for the application logic.

Mobile application contains the application which will be developed on Android studio using java for the application and XML for the GUI.

The database will handle all data that is going through the system and will store it. Using one common database makes it simple for all applications to communicate and all the data is stored in one place. The database will be a Mongo database (DB) and the server to be used will be the nodejs.

3.2. PRODUCT PERSPECTIVE

The proposed system in figure 1 consists of two parts: the mobile application and web application.

The mobile application will be used to view information about events and artists while the web application dashboard will be used for managing the information about the events, artists and the fans.

The application relies heavily on data, Mongo DB will be used to store the data. This data will consist of information about events organizers, events, and artist which should all be accessible to the administrator for modification. The mobile application will only use the database to get data while the web portal will also add and modify data. All the database communication will go over the Internet.

SEEMA which require big data, fast feature development and flexible deployment and for these reasons Mongo DB will be the best database to be used for this system. Mongo DB lets one deploy faster, easier and scalable database environment for this system.

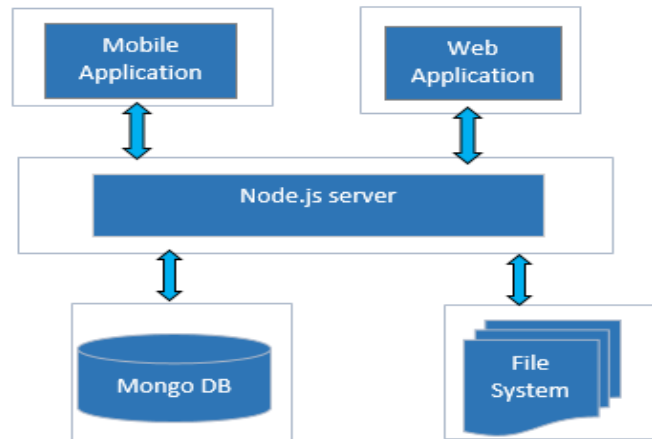


Figure 2. Distributed System for the Proposed System Architecture

Node.JS Server will be used in the system due to its reason of using non-blocking event driven I/O to remain lightweight and efficiency in the phase of data-intensive real-time application that run across distributed devices as shown in figure 2. It will interact efficiently with the file system which will be responsible for the media that will be uploaded by the event organizers and artists.

When there is a file request node.js eliminates the waiting and simply continues with the next request in the following manner:

1. Sends the task to the computer's file system.
2. Ready to handle next request.
3. When the file system has opened and read the file, the server returns the content to the client.

3.3. FEATURES OF PROPOSED SYSTEM

The desired functionalities for this application are focused on uploading events and detailed information of those events also personal and social information of artists. All users will be identified by their username and password, login into the system and create a profile with their general information, which will be seen by other users. Events may contain user posts. Posts consist of uploaded multimedia and/or text. After their creation, users can comment on individual posts.

Both mobile and desktop platforms shall have access to the same information from one database. However, they do have some different intended

features. The desktop application shall have the option of reviewing data and events from previous, ongoing and future shows.

4. PROPOSED SYSTEM DESIGN

4.1. CLASS DIAGRAM

The class diagram in figure 3 consists of the proposed system classes, intended for updating and managing the attributes of specific events and users while enforcing the rules for those actions. This means that, for instance, assigning an event organizer to create an event implies that an existing event organizer must be added. Otherwise an exception will be thrown; or if a user selects an option to post a comment, the post is added to the comment threads.

4.2. ARCHITECTURE OF THE PROPOSED SYSTEM

The system architecture in figure 4 represents the steps in the algorithm showing diagrammatic illustration in which the user can access the system from login to searching events or artist in the mobile application.

4.3. SEQUENCE DIAGRAM OF PROPOSED SYSTEM

The authentication procedure is involved in the mobile application as shown in figure 5.

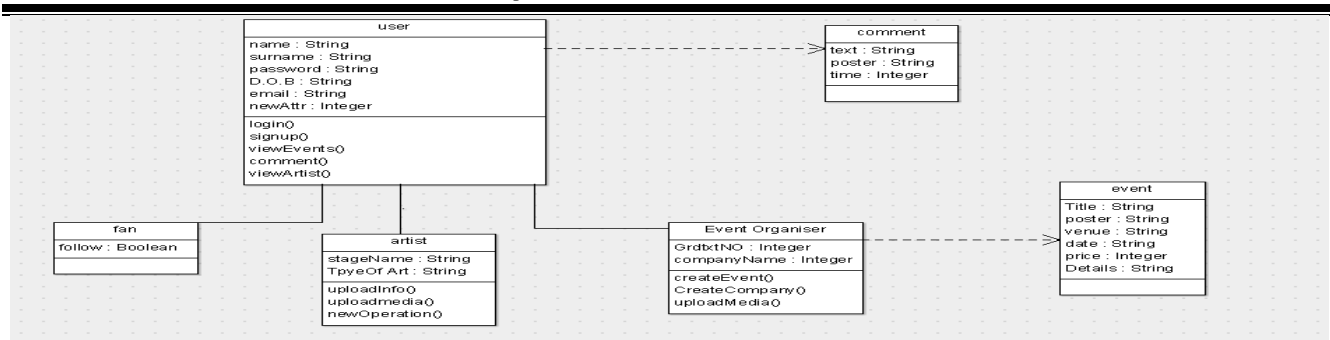


Figure 3. Class Diagram

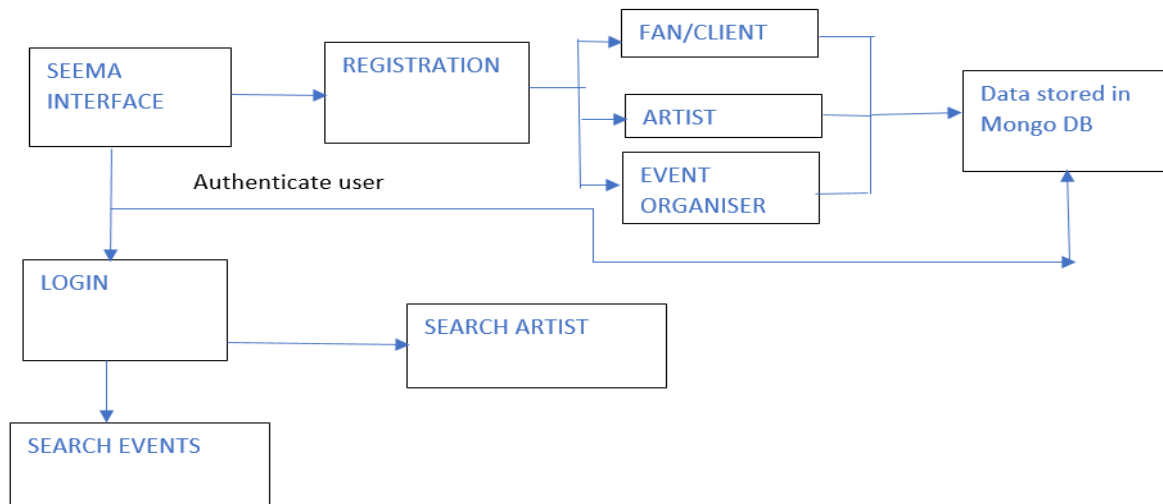


Figure 4. Mobile Application Architecture of Proposed system

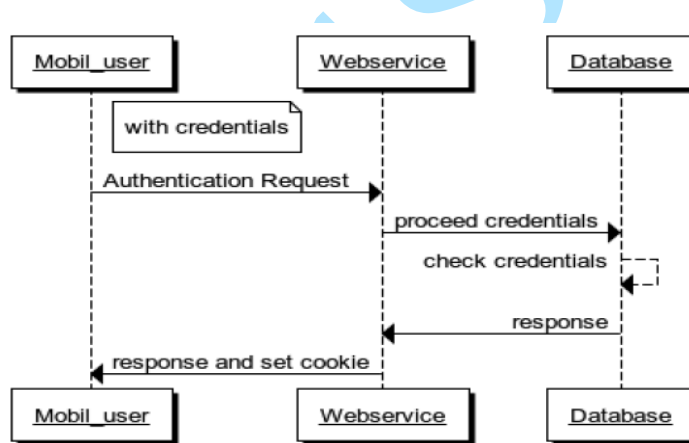


Figure 5. SEEMA Authentication Architecture

The Mobile User sends a request with his credentials to the responsible web service that communicates with the database as shown in figure 5. Those credentials are checked for validity and a response is sent back.

4.4. USE CASES OF THE PROPOSED SYSTEM

The Use case Diagrams in figure 6 to 9 represents the methodology used in system analysis to identify, clarify, and organize the system requirement. Use

case diagrams mainly include actors and their actions, called use cases.

4.4.1. Actors

- **System Under Design** - The System under Design is the Swazi Entertainment Events Mobile Application (SEEMA) that is being created. This actor represents the system and the actions it takes.
- **Administrative User** - The Administrative User is a user who administers the system by

overseeing accounts creation and administration as shown in figure 6.

- **Event Organizer** - The event organizer's role on the system is to manage events information that will be posted into the system and also manage media to be posted on certain events as shown in figure 7.
- **Artist** - An Artist will manage information about him/her self that will be uploaded into the system, also they will manage their media that will also be posted on the system as shown in figure 8.
- **Fans / Clients** - The client represents a person who will use the system to require information of events happening around Swaziland and information of certain artists. Also, they will get to comment on uploaded media or any other platforms on which they can comment on as shown in figure 9.

4.4.2. List of use cases actions of the proposed system

1. Creating an account
2. Edit an account
3. Delete an account
4. Deactivate an account
5. Renew an account
6. Registration
7. Login
8. Reset Password
9. View (events, artists and fan's comments)

4.5. USE-CASE DIAGRAMS

The use-case diagrams are illustrated in figures 6 to 9.

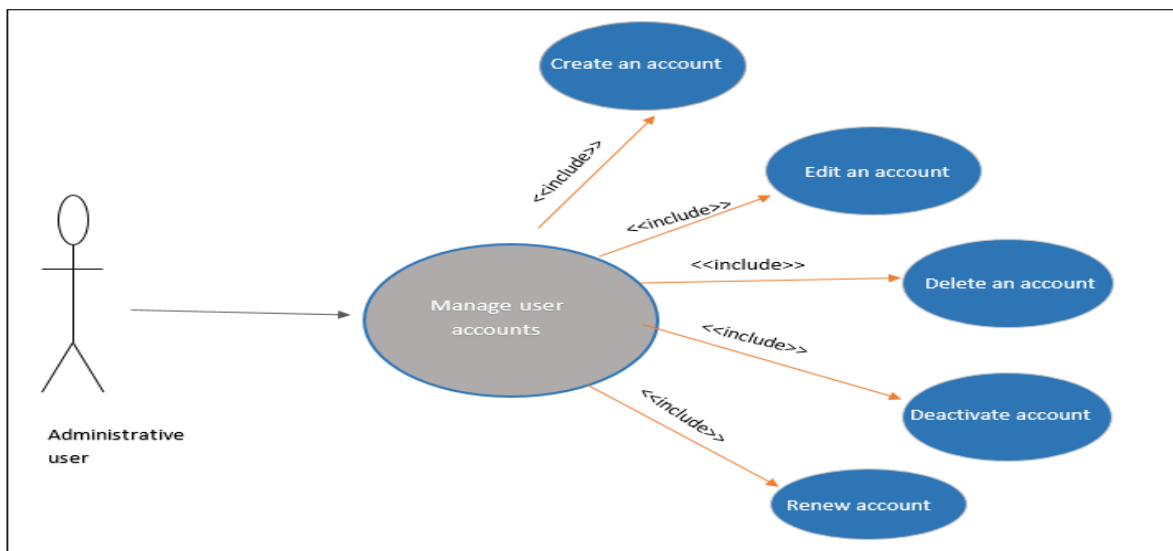


Figure 6. Administrative User Use-Case

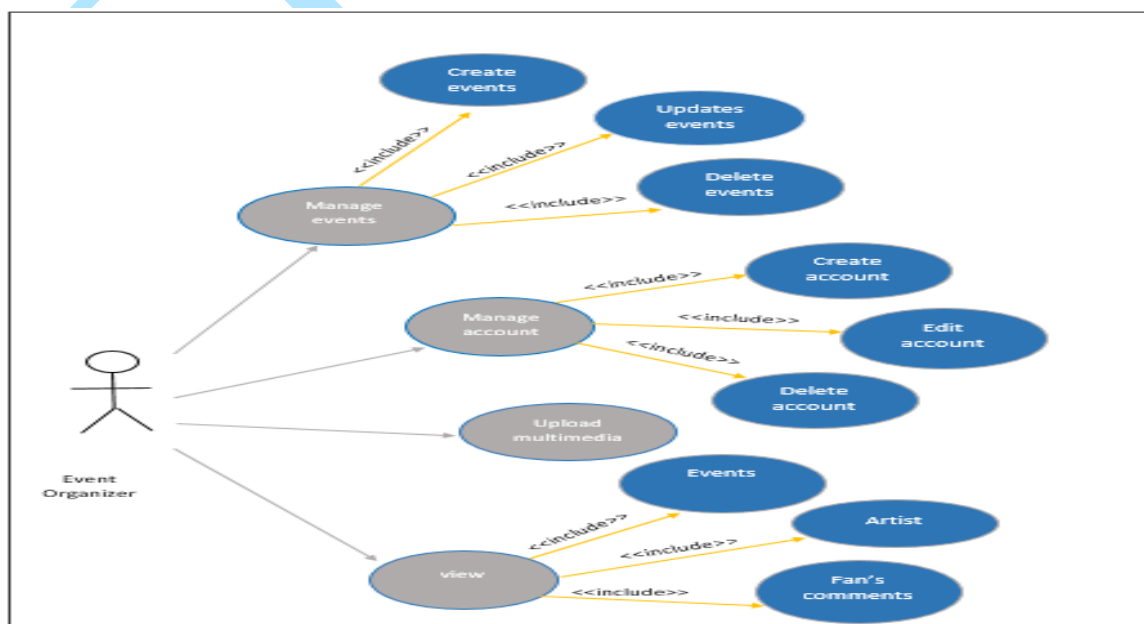


Figure 7. Event Organizer Use-Case

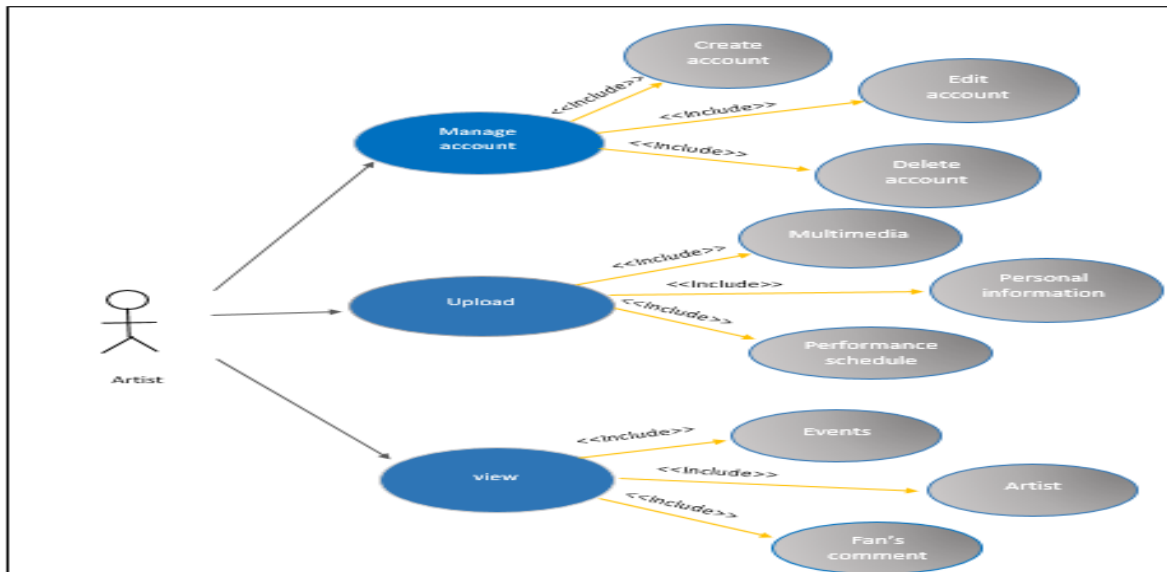


Figure 8. Artist Use-Case

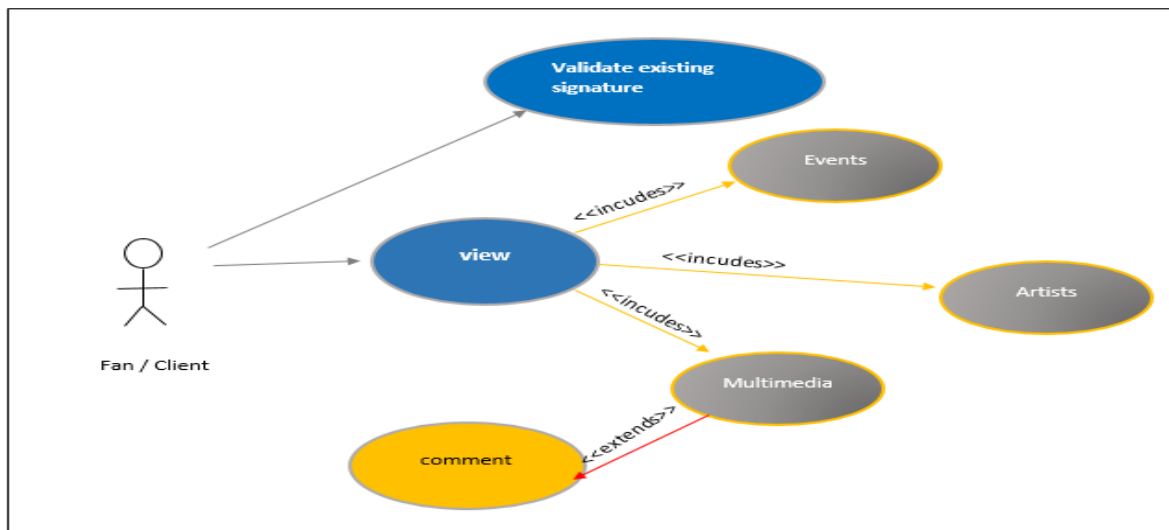


Figure 9. Fan/Client Use-Case

5. THE APPLICATION

5.1. SYSTEM IMPLEMENTATION AND DOCUMENTATION

The following programming tools were used in the development of the web-based and mobile apps for the proposed system

Web Application Dashboard:

- ✓ JavaScript for the application logic
- ✓ HTML + CSS for the GUI

Mobile Application: use Android studio with the following:

- ✓ Java was used for the application logic
- ✓ XML for the GUI

Database used: Mongo DB

5.2. NON-FUNCTIONAL REQUIREMENTS

5.2.1. Performance requirements

- The system must give the right result on a search; and that this must happen 98% of the time, with the optimal rate being 100% of the time. The system requires an internet connection, for it to communicate with the database.
- The system should allow multitasking, in the event multiple users are logged in. The design structure of the system will be simple to allow for this multi-tasking, through the use of the scalable Mongo DB

5.2.2. Design constraints

For efficiency the application will rely on an internet connection. The application requires that there is an

internet connection for any transaction within to occur, especially retrieving data. We consider worst case scenarios, where there is no internet connection, and the client badly needs to use the service. Then it will not be possible.

5.3. SYSTEM TESTING RESULTS

WEB APPLICATION

The web dashboard will be used by the administrator, event organizers and artists. The admin will manage all user accounts. The preliminary view of the dashboard user interface is shown in figure 10.

The event organizer and artist used it to create events which fans will view on the mobile application. Figure 11 shows the interface for creating an event. This is how an event is created, MTN BUSHFIRE event was created for a demo.

The homepage of the event created is shown on figure 12.

For event organizers and artist to be able to create events they need to be under a certain Agency, which will be verified by the administrator. The interface for the agency registration is shown on figure 13.

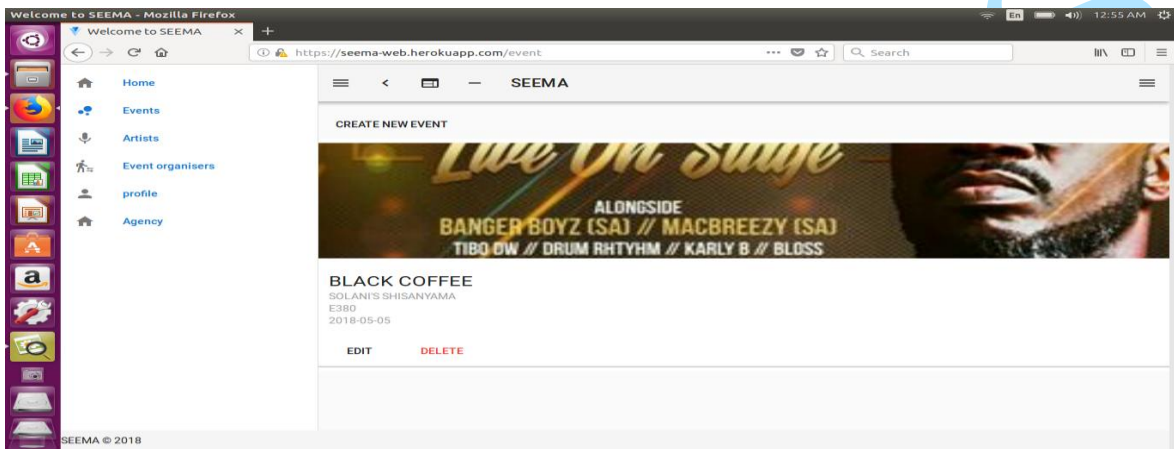


Figure 10. Dashboard User Interface

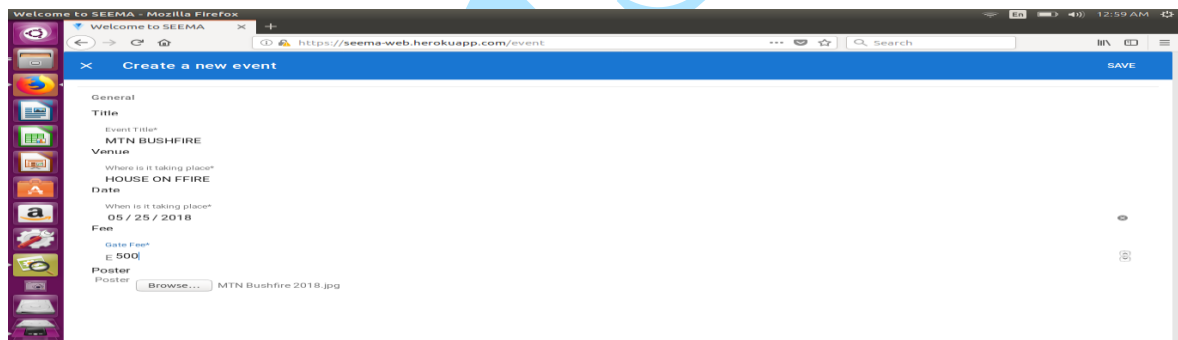


Figure 11. Event Interface (MTN Bushfire)

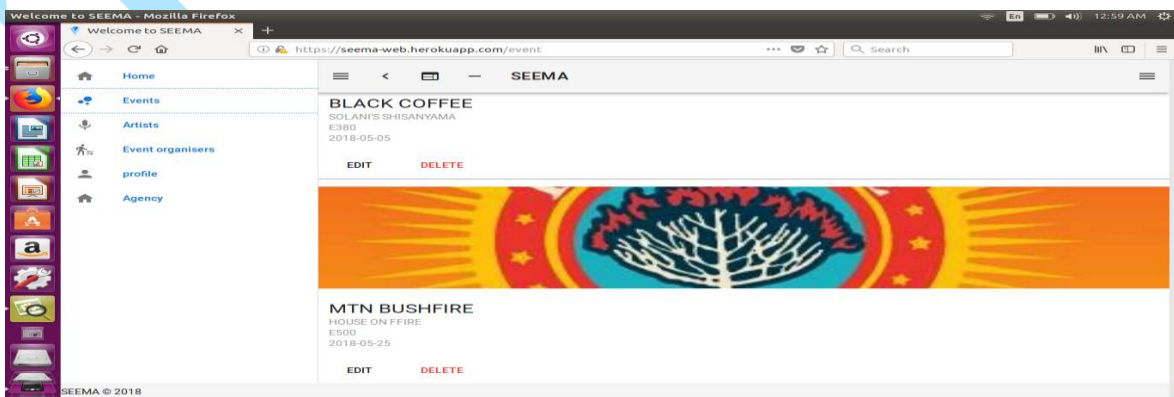


Figure 12. Homepage of the event

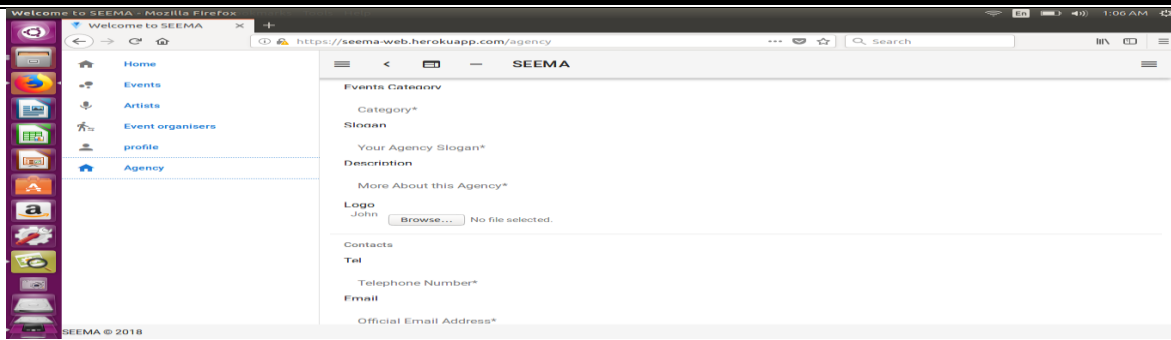
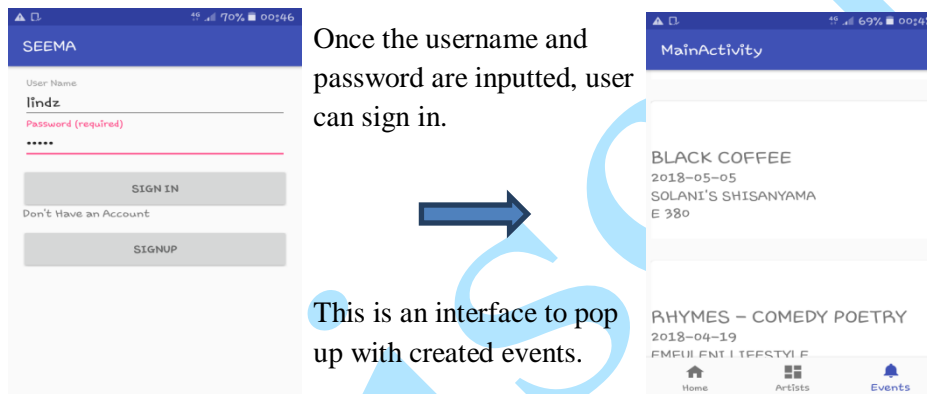


Figure 13. Agency Registration Interface

MOBILE APPLICATION

The mobile application will be useful to all users of the system especially for the fans to view recent updated events on the application. But before they can see these events they will have to be registered to the system. Once registered, the user can be able

to sign in into the system by inputting their username and password as shown in figure 14, then after that they can be able to view events created on the web dashboard, note events can only be created on the web dashboard.



Once the username and password are inputted, user can sign in.

This is an interface to pop up with created events.

Figure 14. Mobile Application Registration Interface

Figure 15 shows the MTN BUSHFIRE event created which was created on the web dashboard before the mobile app is open.

they are registered to use the application and are logged in. It may act as a gig guide to tourist in Swaziland who may not know events happening around.

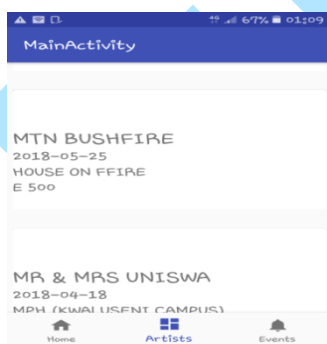


Figure 15. MTN Bushfire

CONCLUSION

The use of SEEMA will enable people to view entertainment events happening in Swaziland and also get up to date information on those events. Since only event organizers and artists can create an event, this will make the events information reliable. With this study any clients/fans can see events, either they know the organizers or not, as long as

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