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CoCast - SLR

Vandan D. Patel
pavandan@sheridancollege.ca

Nikita S. Paralkar
paralkar@sheridancollege.ca

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<CO-CAST>

<SHERIDANLIFE RADIO > | CAPSTONE PROJECT
HONOURS BACHELOR OF COMPUTER SCIENCE
(MOBILE COMPUTING)

STUDENT TEAM

<Vandan Patel>, 4th Year Student

E: [<pavandan@sheridancollege.ca>](mailto:pavandan@sheridancollege.ca)

<Nikita Paralkar>, 4th Year Student

E: [<paralkar@sheridancollege.ca>](mailto:paralkar@sheridancollege.ca)

SUPERVISOR

Prof. Magdin Stoica

E: magdin.stoica@sheridancollege.ca

T: +1 (905) 845-9430 x2497

Sheridan College

DOMAIN EXPERTS

TBD,

E: amelia.sher@sheridancollege.ca

T: TBD

Community / Industry Partner

TBD,

E: [TBD](#)

T: TBD

Sheridan College

ABSTRACT

We are currently living in a world surrounded by technology, making us very dependent on the little nitty gritty way of accomplishing tasks efficiently. Being mindful of the of the changes that are occurring upon us, we are compelled to helping where possible. Personally, Sheridan College pilots their very own campus radio station – Sheridan Life Radio (SLR) a member of the National Campus and Community Radio Association, whose main aim is to bring a little bit of everything to the table covering special occasions such as Canadian upcoming holidays, Valentine’s Day, Mother’s Day to motivational and inspirational podcasts. SLR primarily doesn’t only produce content for the college but for podcasting platforms such as Spotify, Google Podcasts and Apple Podcast. Hence, keeping in mind of the wide variety of topics that the SLR tackles, the most troublesome one happens to be the management of podcasts. Where the mode of operation for them currently is to have individuals chase producing – the act of finding guests, stories and angles and collaborative podcasting process. This process can be nerve-wreaking and frustrating. To help SLR overcome this problem a proposed solution is to have procuring audio clips to one stop location for the clip gathering cutting the stress and effect of people personally being out and about in the field. Since the proposed solution aims to make the way of operation smarted and less stressful for the SLR team it is called Co-Cast.

ABOUT CAPSTONE PROJECTS

TIMELINES • PROGRAM • SCHOOL

- **January 2021 – April 2021:** [Capstone Project Inception](#), 4-credit course (18 hours / week)
- **September 2021 – December 2021:** Capstone Project, 4-credit course (18 hours / week)

PROGRAM • SCHOOL

- [Hons. Bachelor of Computer Science \(Mobile Computing\)](#)
- [Applied Computing, Faculty of Applied Science and Technology](#)

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INTRODUCTION

Co-Cast main aim is to make the lives of the in-house Radio team more efficient. Connecting **the ability of utilizing Mobile Computing to allow a content creator to have direct access to the interviewee submission on phone or modular device, making it easier to create content on the go.** In addition, there is also a Cloud Computing aspect to the solution where the backend is developed as a potential cloud service to host all prompt submissions which will interact with other possible services.

PROJECT OVERVIEW

Co-Cast is a computer assisted application whose aim is to have **procuring audio clips to one stop location** for the clip gathering cutting the stress and effect of people personally being out and about in the field. The team consists of two Mobile Computing students – Vandan Patel and Nikita Paralkar, who are working closely with Sheridan Life Radio and Domain expert of the project Amelia Sher. The consultation faculty supervisor for Co-Cast is Madgin Stoica.

DOMAIN AND INDUSTRY OVERVIEW

Sheridan Life Radio is *Sheridan's Campus radio station that is also a member of National Campus and Community Radio Association*) whose main aim is to bring a little bit of everything to the table. From special occasions such as Canadian upcoming holidays, valentine's day, mother day etc. to motivational and inspirational podcasts. Currently the SLR is commencing its podcasts in a very old fashion style. Where individuals are responsible for getting onto the field and gather details and thoughts from guest around in the area, which can be nerve wrecking and time consuming. Hence the Capstone Co-cast is in charge of making this process fairly simpler, aims to have procuring audio clips to one stop location for the clip gathering cutting the stress and effect of people personally being out and about in the field. Giving SLR an easier stand of simply editing the Audio turned Speech transcription and edit for the podcast required. Rather than traversing through each and every section of the recorder audio and finding the one.

PROBLEM DESCRIPTION

Sheridan Life Radio are our own personal Campus Radio Station that is community partnership operated (formally called Sheridan Life Radio (SLR) – member of National Campus and Community Radio Association) whose main aim is to bring a little bit of everything to the table. SLR has over 30+ people currently working together in the team. Their aim is to put together something special for each passing event and day from special occasions such as Canadian upcoming holidays, valentine's day, mother day etc. to motivational and inspirational podcasts. SLR primarily doesn't only produce content for the college but for podcasting platforms such as Spotify, Google Podcasts and Apple Podcast.

SOLUTION DESCRIPTION

To solve the problem, there should be a platform which fulfills the requirements of podcaster and contributor to create podcasts. Mobile or tablet will be used to record audio clips and to allow a content creator to have direct access to interviewee submissions. Cloud Computing will play an important role in this because the solution will be deployed as a cloud service to host all submissions, and which will interact with other services like transcription.

Mobile Computing

Mobile Computing is relevant to this solution as it will allow contributors to have direct submissions of their audio clips on a phone or tablet which makes it easier for contributors. It also helps interviewer to check on the submission and with the mobile device interviewer can record responses and organize interviewee information instantaneously. The app provides a recording solution so that user can record interview on the app itself rather than using native recorder of phone and then submitting it.

Cloud Computing

Cloud computing provides an important role in the project as it will need a backend deployed as a cloud service to host all submissions. This can be helpful for dividing stories and interviewers working in the field. Editor can simultaneously access the system so that they can watch clips and can edit it for the production. Cloud services like AWS can be used which offers natural language processing for language transcription which plays an important role in editing submissions.

Advanced Areas of Computer Science

Primary advanced area of computer science that will play a significant role in this project will be data analytics and the secondary area that will support the project will be Cognitive computing / AI. Advanced area of applications like cognitive computing will be used for audio transcription e.g. Google's Speech-to-Text, IBM Watson etc. AI to detect and improve audio quality. Text analysis for the use of filler words, and mining topics. For instance, if a contributor is using swear words then it could be found in text analysis and can be beep or mute that word in the audio. Claim Buster can be used to detect claims made by interviewee's response.

SOLUTION IMPACT

The solution streamlines the chase producing and collaborative podcasting process. It creates the ability to gather, screen and stitch clips at one-stop location rather than walk around and hoping to catch someone willing to speak to them on topics especially during the pandemic. Most importantly the editing process allows those vet audios which can be sorted through various submissions. Due to this dynamic process, it would also increase the pace of creating new content.

SOLUTION FEASIBILITY

In this section feasibility of solution will be discussed based on Design and Construction, Deployment and Adoption. Design and Construction will identify constructing and designing the proposed solution with the foreseeable risks that could prevent a solution. Deployment will identify the feasibility of deploying the solution to our industry partner. Adoption will target the feasibility of user to download this app.

Design and Construction

The design and construction of our proposed solution should be quite feasible. This project is a cross platform mobile application which would be for both android and IOS. Some of the risks associated with this project are selection of poor software architecture which might further restrict application to build on initial project, incorrect software design might lead to make big changes in application. So, the correct software design will be ensured by making multiple iterations.

Deployment

Deployment of this app to an industry partner should not be very difficult. This is because they are Radio station and have expertise in this domain. As the radio station would be the admin of this application, we'll provide them this project so they can do beta testing and provide bugs/errors in this app.

Adoption

Getting user to use this deployed solution would not be hard as it will be firstly used by Sheridan Radio station which already has many students who contributes podcasts and some as interviewers. Second, one of the features this will provides to the user would be directly submitting it from phone from any location rather than walking in the station and giving one to one interview. Third, after submission, it would be easier for editor to edit as every audio would be gone through data analytics in which editor wouldn't need to hear much audio clips and just select some of the best by just reading data.

PROJECT REQUIREMENTS

Co-Cast is an online application set be used by mobile users. The application as a whole requires multiple set of data to provide and store information that can be easily accessed by the SLR (Sheridan Life Radio) for processing their podcasts in the future. A detailed and more subtle version and description of the elaborated models for Co-Cast can be found - <https://online.visual-paradigm.com/w/vfrrooxn/drive/#diagramlist:proj=0&open>

SYSTEM CONTEXT

Co-Cast as a whole is a very interrelated project, where each stake holder holds an important viewpoint and task in the application to move forward. Particularly there are 1-6 Stakeholders; Individual, Host, Interviewer, Producer, Editor and Audience. A detailed and more subtle version and description of the

elaborated models for Co-Cast can be found - <https://online.visual-paradigm.com/w/vfrooxn/drive/#diagramlist:proj=0&open>

USE-CASES

Keeping in mind that Co-cast is a wide spread application with a few stakeholders(Contributor , Editor and Admin) who are connected either directly and indirectly, there are various stage of the application that need to be kept in mind – specifically how the application will progress forward such as –

Use Case	Description
Login	- User access to the podcast accounts
Create Account	- New user validity
Access Recording	- Contributor able to access the recordings after submission
Manage Audio Time	- Set a particular time for question
Deploy Podcast	- Share and manage the podcast to the right platform
Manage Podcast	- Verify the podcast acquired is right
Record	- Make the initial podcast recording

A detailed and more subtle version and description of the elaborated models for Co-Cast can be found - <https://online.visual-paradigm.com/w/vfrooxn/drive/#diagramlist:proj=0&open>

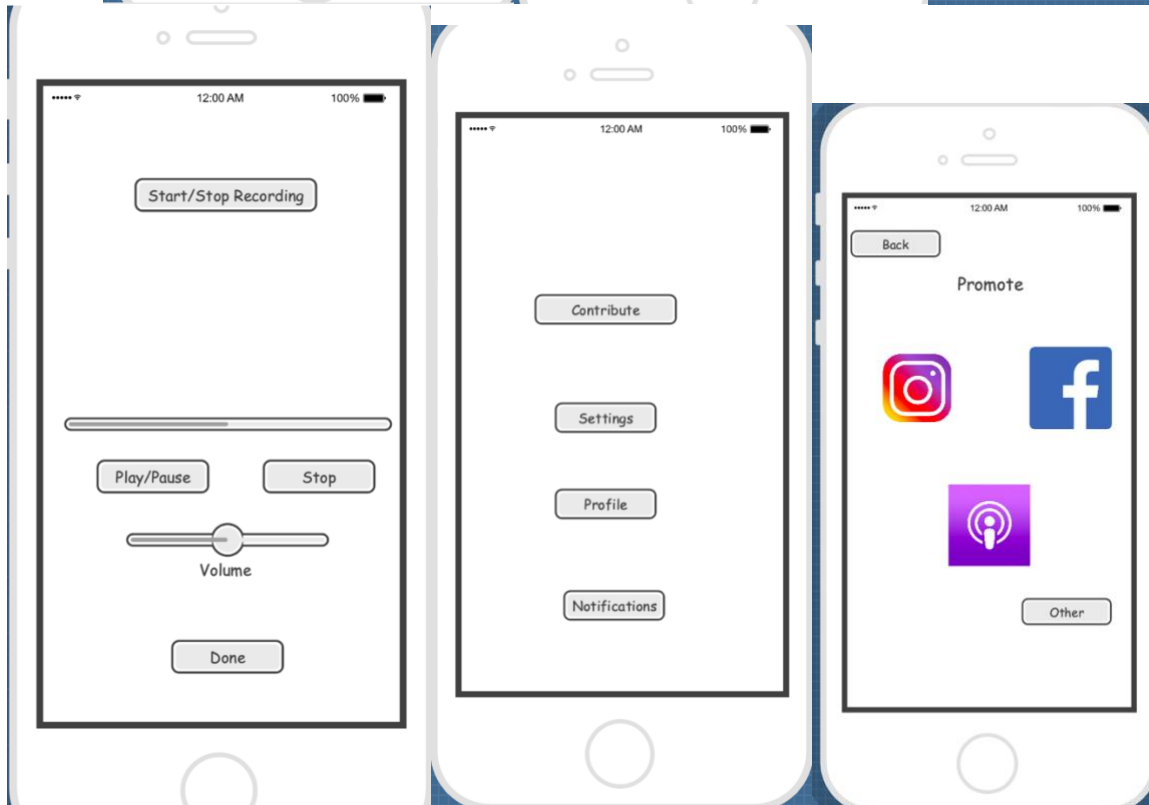
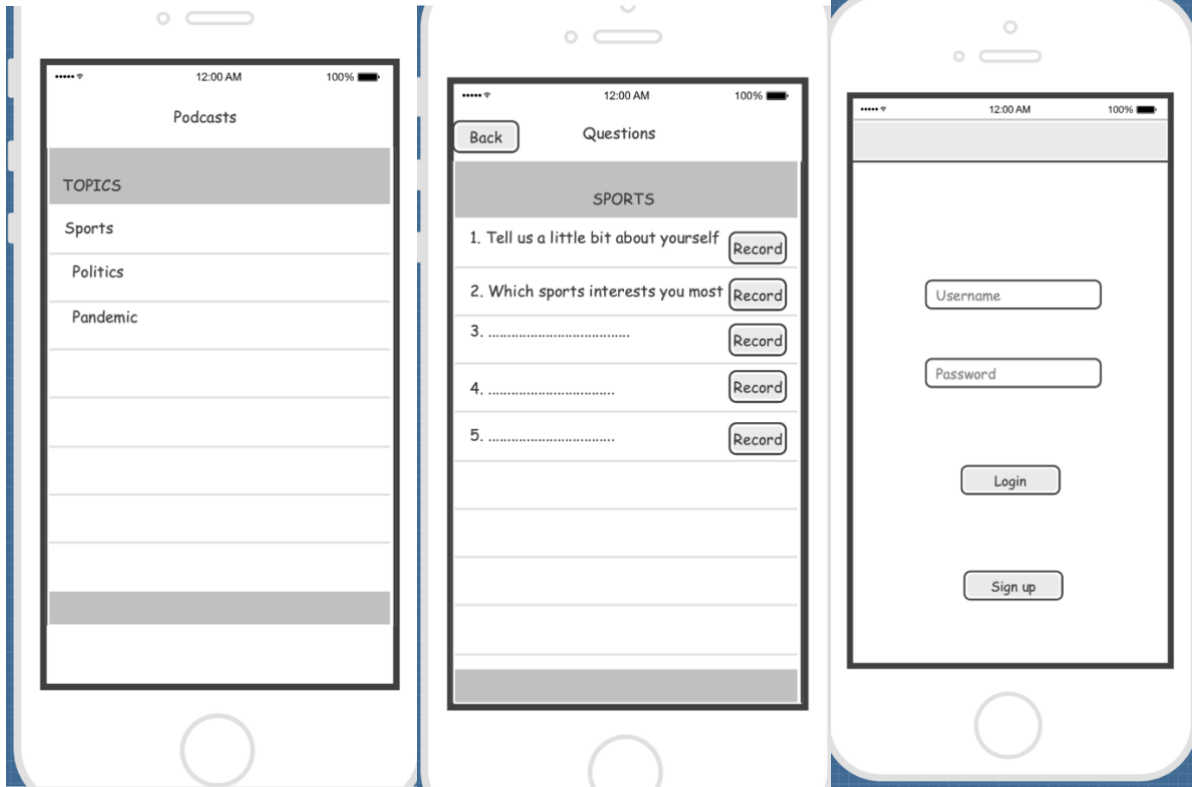
USER INTERFACE

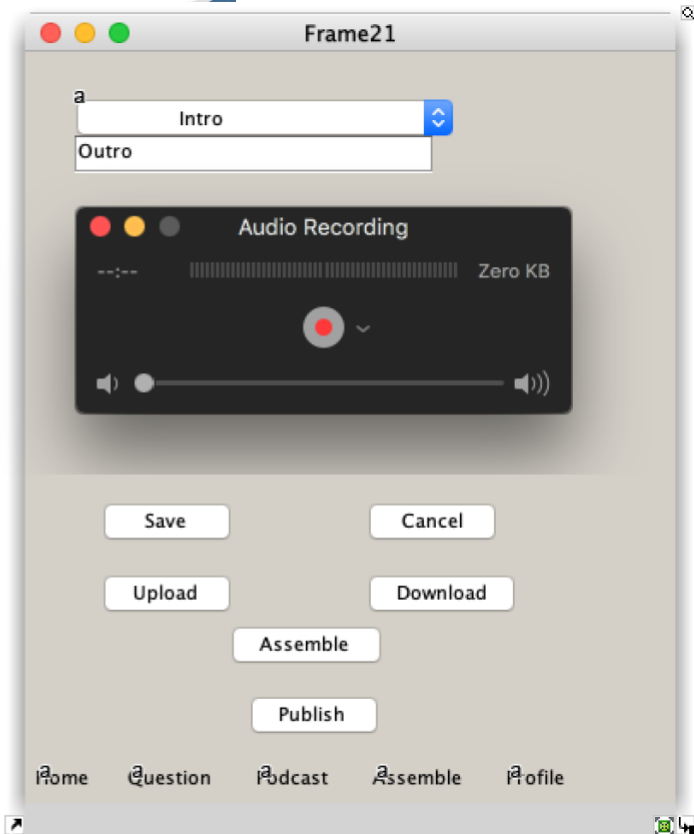
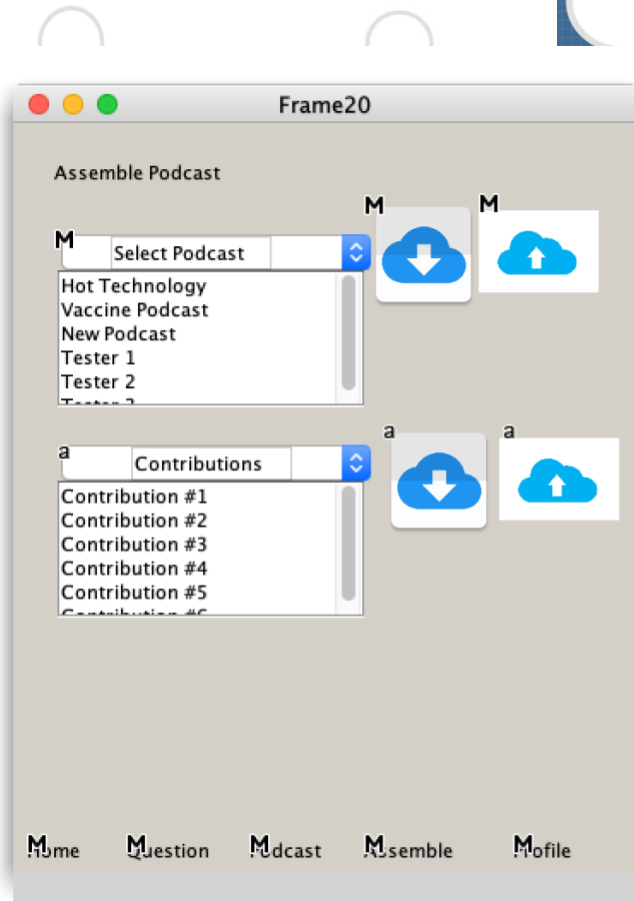
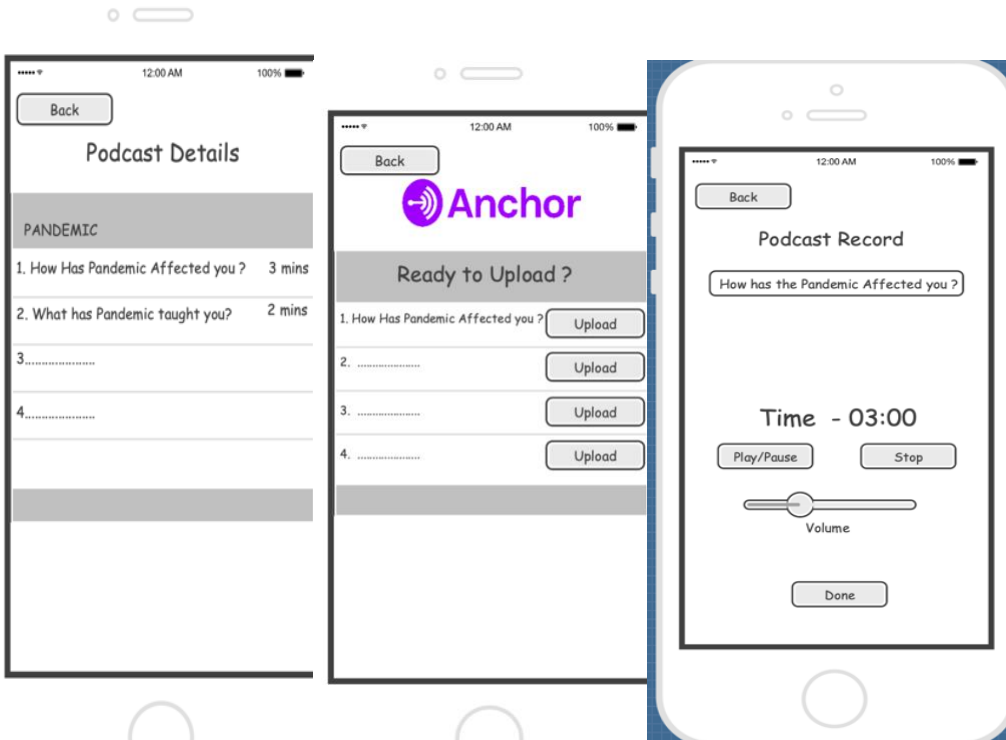
Cocast consists of multiple stakeholders in general to have the application running. From the user also known as Contributor to the producer, they all are separate stakeholders with multiple separate view. There are specifically 5 different type of stakeholder – podcast host, podcast editor, podcast producer, podcast interview and podcast contributor. All the stakeholders are lead into their individual interfaces using the login that is assigned to them.

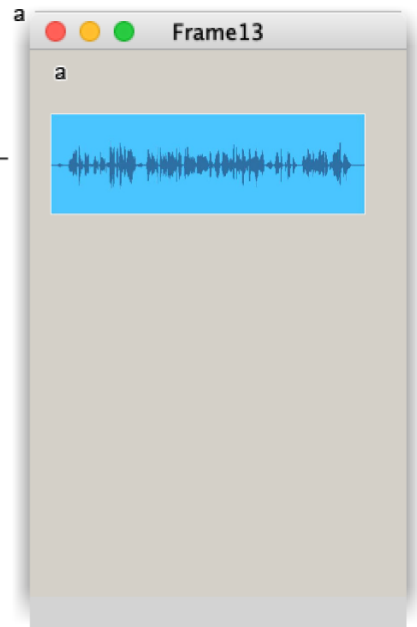
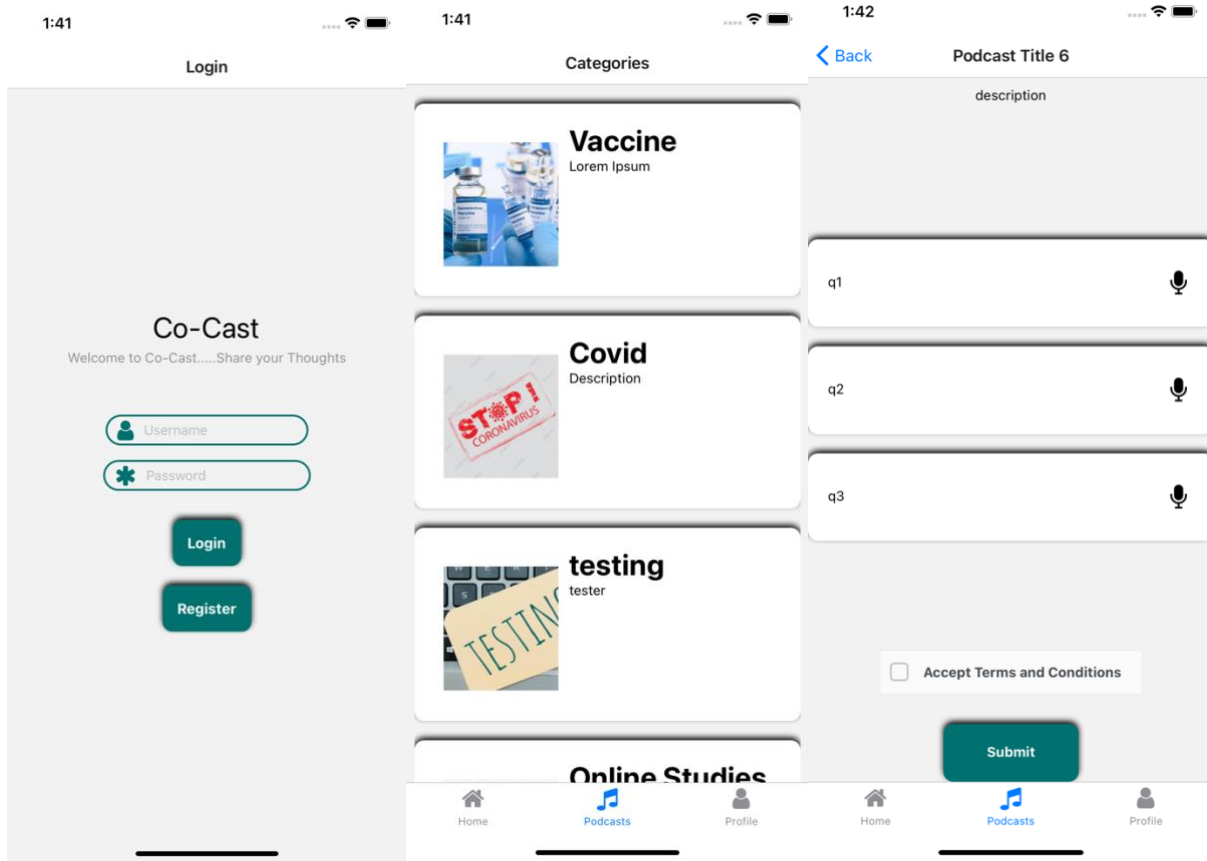
Podcast host consist on one of the simplest user interface – reason being as the main purpose of the host is sole to introduce the topic of the podcast to the audience and have introductory and closing statements for the podcast. The user interface for the Host consists of : The Memo record – which consists of introductory and closing, access to their prior recording and topics for the future podcast.

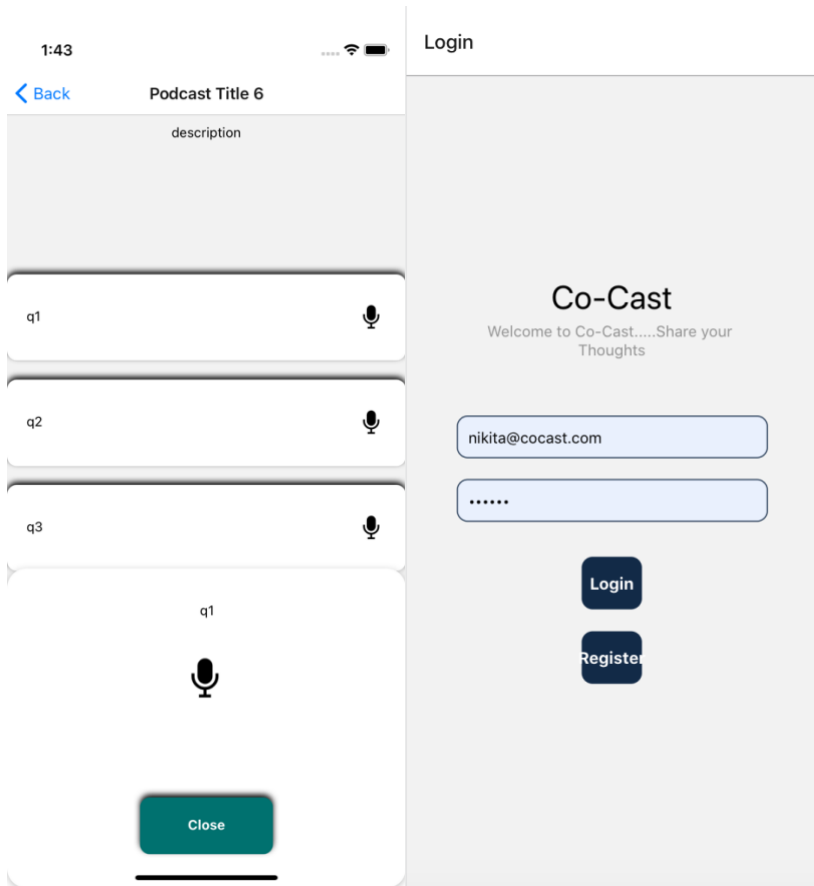
Podcast Editor consist of the stakeholder that is also responsible for the verification of the memo that is received from the contributors. The user interface for the Host consists of: verify Memo – which is later broke down to list format to denote the kind of audios that came in and their multiple fields and setting.

Podcast Producer consists of the stakeholder that is responsible for the promotion and getting the podcast out and about to multiple users.









PROJECT ARCHITECTURE

This section of this document contains an overview of the architectural implementation of this project. This architecture is modelled using the layered architecture. All the models provide general overview of the layers which contains User Interface, Application Logic, Domain Layer and Infrastructure Layer. This section also includes deployment model which show deployment of each system components. A detailed and more subtle version and description of the elaborated models for Co-Cast can be found - <https://online.visual-paradigm.com/w/vfirrooxn/drive/#diagramlist:proj=0&open>

ARCHITECTURE OVERVIEW

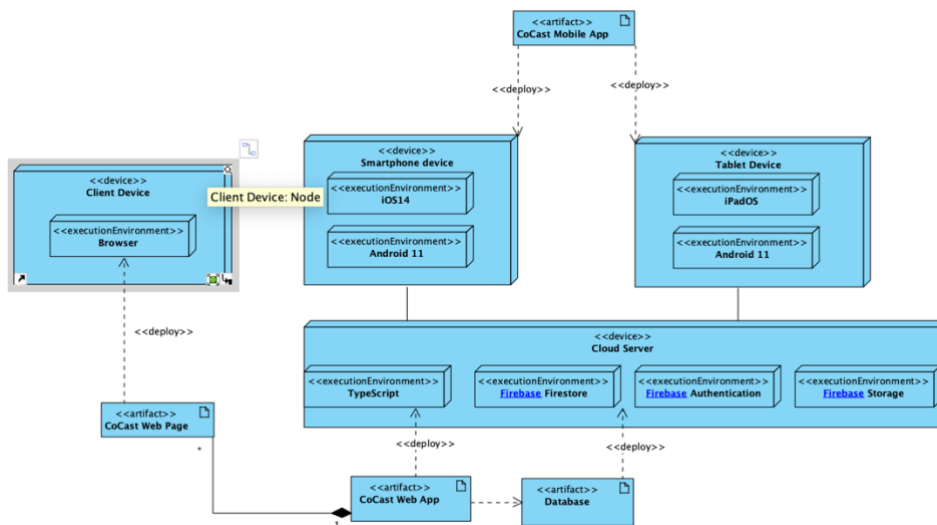
Co-cast has been designed using the Layered logic architecture. The various layers and models describe the application in a more extraordinary fashion All the models provide general overview of the layers which contains User Interface, Application Logic, Domain Layer and Infrastructure Layer. Co-cast utilizes the aspect of multiple different models :- requirement , domain, interaction, validation etc to depict how the application will run in sets.

SYSTEM COMPONENTS

System contains mainly User Interface, Application Logic layer, domain layer and infrastructure layer. The user interface contains mainly mobile UI. Mobile UI is responsible to display different view to users to interact with mobile application. Application logic layer contains Controllers which demonstrates business logic behind views and Navigation which demonstrates how views are connected to each other. Domain Layer contains Application model which displays how data is structured and used in Controllers and views and stored in database. Infrastructure Layer has two subsystems which is anchor and firebase.

DEPLOYMENT MODEL

Deployment model of the application uses computational resources like IOS and Android, firebase firestore, firebase storage, firebase authentication. Typescript will be used to execute this application for both front-end and backend programming.



PROJECT PLAN

As the Co-cast is widespread application there are multiple users which have different roles like contributor, admin, host. All the development process which contains iteration plan and risk management plan is planned on JIRA. All iteration and risk management plan can be found on <https://cocast-capstone-final.atlassian.net/projects>

ITERATION PLAN

In the iteration plan all the team members decide who is working on which part of the application in the form of user stories derived from each use case. In this project iterations are performed every week. Detailed plan can be accessed by the link above in the introduction of project plan.

<i>Project Responsibilities</i>	<i>Vandan Patel –Team Member 1</i>	<i>Nikita Paralkar – Team Member 2</i>
<i>Project Management</i>		
<i>Project Owner</i>		✓
<i>Scrum Master</i>	✓	
<i>Risk Analyst</i>	✓	
<i>Requirements Engineering</i>		
Requirements / Business Analyst		✓
Stakeholder Champion (by Stakeholder)		✓
Functional Area Champion (by functional area)		✓
User Experience Design Lead		✓
<i>Software Architecture</i>		
Software Architect Requirements Model Lead	✓	✓
Domain Model Lead	✓	✓
Design Model Lead Deployment Model Lead	✓	
Interaction Model Lead	✓	
<i>Construction</i>		
Full-Stack Developer (UI, code and unittests)	✓	✓
Integration / DevOps Lead	✓	✓
<i>Testing</i>		
QA Lead		✓
Verification & Validation Champion (by Functional Area)	✓	
Test Model Lead		✓

<i>Support</i>		
Tool and Devices Support	✓	✓
Communication Support	✓	✓

RISK MANAGEMENT PLAN

Risks that are being identified in this project will be taken care by every iteration process which includes identifying risk, measure risk, examine solution, implement solution and monitor results. This cycle will go through every iteration to make sure that project is on the track. Some of the risks for this project like team collaboration, diverting project solution, use of new tools, . To refer to full risk management plan go to <https://cocast-capstone-final.atlassian.net/jira/software/projects/CRM/boards/2>.

VALIDATION AND TESTING

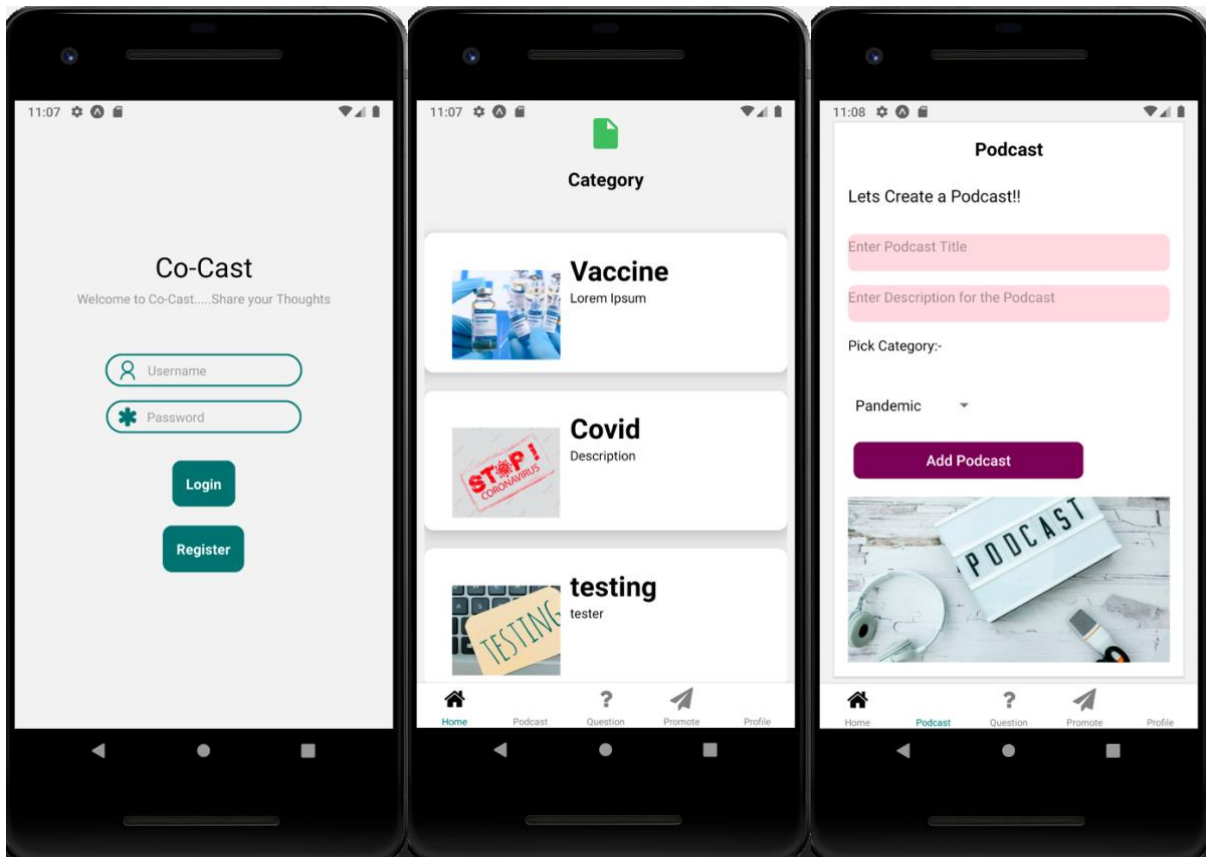
This section of the document contains testing strategies and validation results

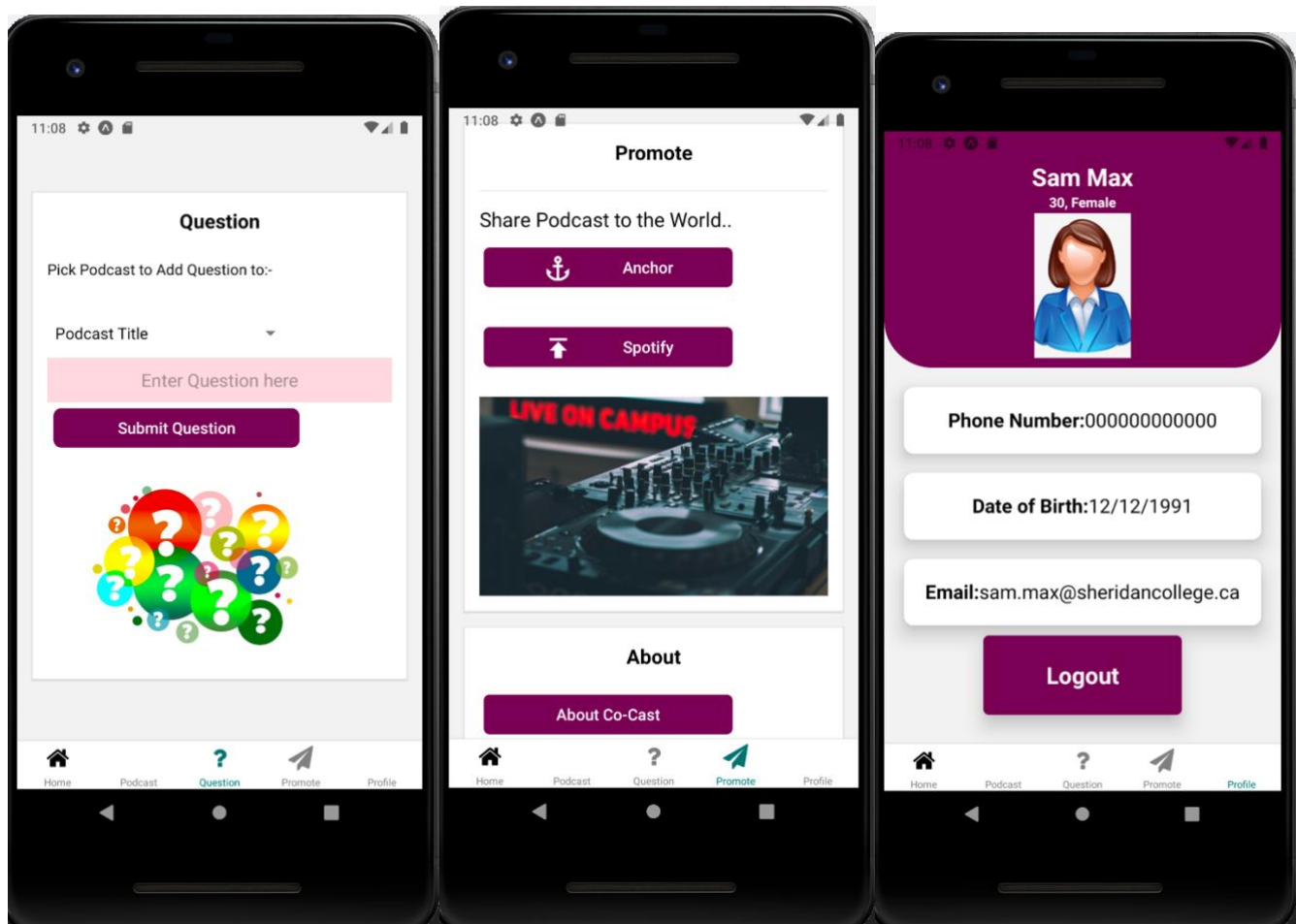
Co-cast performed separate validations for both Editor and Contributor. As the editor stakeholder in Cocast application – they have certain rights and access that the contributor does not have permit to. The Test plan for the Editor was merrily concentrated towards performing the majors tasks of:

- Adding a Category for the Podcast
- Adding Podcast from the category provided
- Adding questions to the Podcast
- Displaying the correct Podcast list as questions are selected

Editor test was performed in a way that all the required tests for the application to communicated fairly with the contributors side of things. Update to the test as the project progress would be to add a Speech to Text and Visa Versa feature making it easier for the editor to select the recording to be used rather than wasting time.

Editor Project Run:-





Test plan for the Contributor contains major tasks like:

- Displaying categories
- Displaying podcasts in each categories
- Recording responses for each questions
- Saving responses in contributor's account
- Validating submissions by contributors.

Link associated with Bitbucket - <https://bitbucket.org/paralkarsheridan/capstone-cocast/commits/>

TESTING STRATEGY

There is various testing that will be done like unit test, integration test and component test. Jest is a delightful JavaScript framework which will be used to test this application. It is great choice of framework as it supports typescript. After implementing each use case, tests will be written for each class and function used in Controller using Jest framework. Also, all asynchronous functions will be tested to make sure it works in application.

VALIDATION RESULTS

CONCLUSION

The Problem provided to Co-Cast was to come up find a more feasible and effective solution for Sheridan radio to be able to achieve recording for specific podcast without having the hustle to perform chase producing in the process. Co-cast has dynamically managed to attain a solution for the issue, have established a application channel that is automatically connected to a database that handles major requests, manages user contributions and podcast development – to minimize the amount of time wasted to gather works for the podcast.

PROJECT SUITABILITY

Co-cast has managed to create a dynamic solution to attain the data from multiple contributors and editors within Sheridan Life radio – making the storage and usage of the application feasible. Co-cast has converted the task that would else be done by another individual to be minimized into an application – easy to use on the tips. The application has validation protocol – allowing it to divert either to the Editor profiles or the contributors profile. The users are provided with a easy to use navigation network that allows the navigation between the application and its screens. The Screens are well labeled and user friendly making the selection and input submission more interactive.

Throughout the entire process the team of Co-cast has been in contact with Amelia – Sheridan Life Radio Leads, she has been guiding and providing first hand information regarding the problem – and guiding us to the correct mindset to solve the problem. The team of Co-cast has also been quite lucky to have Samina – 4th year student in the Mobile Computing Degree (Class mate) as the person who is in direct contact with the editors side of the Podcast construction, she provided us with the various issues that Editors are facing in the Sheridan radio prior to our application.

DOMAIN EXPERT EVALUATION

Co-cast has had a constant connection with Amelia who happens to be one of the head in Sheridan Radio, she has been guiding us with the various internal process information about the systems in use at the moment.

Domain Expert	Comments
- Amelia	- The application is quite interactive and easy to use

	<ul style="list-style-type: none"> - It will help solve the major problem of getting the podcast topic out to the public - Application needs to have multiple options of Category selection as they are constantly added in and because we have a vast majority of them - Screen flow very well – easy to navigate to the next screen.
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USER TESTIMONIALS

<i>View Tested</i>	<i>Comments</i>	<i>Likeliness to used in future?</i>
<i>Contributor View</i>	<ul style="list-style-type: none"> - <i>Application is easy to use and has consistent screen interactions</i> - <i>May required a bit of color to make eye catchy</i> 	<i>Would use most probably</i>
<i>Contributor View</i>	<ul style="list-style-type: none"> - <i>Simplistic</i> - Interactive - Something new 	<i>Would use</i>
<i>Editors View</i>	<ul style="list-style-type: none"> - <i>Colorful to the view</i> - Simple to navigate through - Responsive 	<i>Would use</i>
<i>Editors View</i>	<ul style="list-style-type: none"> - <i>Color little strong for eyes</i> - Interactive - Simple to use 	<i>Would use most probably</i>

FUTURE WORK

Co-cast has a few plans for the future for expansion of the application. As the Application is currently is cutting the main cause of chase producing and giving both the editor and contributor adequate amount of time to analyze the podcast and provide a response – in the future Co-cast and bridge the gap for the editor to constantly fluctuate between several application. In addition Co-cast also plans to convert the achieved recordings into a speech to text system and visa versa making it a little more lighter for the Editors to select the Recording they would like to utilize. Cocast Plans to make the application available in both IOS and Android Play stores. As the application moves ahead of the production for a backup do plan to add the application in a more Web based platform – making it easier for editors on the edit.

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