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Walk Experience

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CPR

MISSISSAUGA MUSIC WALK OF FAME

ENTERTAINMENT & TOURISM | CAPSTONE PROJECT
HONOURS BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING)

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ABSTRACT

The Mississauga Music Walk of Fame (MMWF) acknowledges the work of musicians and music industry members who have spent a considerable amount of time in Mississauga. Founded in 2012 and located in Port Credit Memorial Park, The Walk is home to the City's most accomplished music industry talents. Noticing the lack of engagement at The Walk, the team aims to bring its stars into the 21st century through the introduction of digital innovations. The Walk Experience Project captures the imagination of its visitors and invites them to learn more about the City's artists and their outstanding work allowing the Mississauga Music Walk of Fame to unlock its true potential. By developing an immersive experience available for mobile devices, visitors of The Walk open themselves to a magical interaction with musical legends, immersing themselves into their legacy. Also, the content management system provides a means through which those who maintain and enter individuals into The Walk of Fame can manage and update inductee content seen by its visitors. The proposed innovations will use augmented reality experiences to promote cultural heritage, and leverage data analytics. Through the acquisition of interactive analytics, the Committee has the potential to pitch and scale the idea to Walks of Fame all over the world. Being the first of its kind, the Walk Experience Project has the capability to be a true staple of how digital innovation can foster and celebrate community.

ABOUT CAPSTONE PROJECT

TIMELINES • PROGRAM • SCHOOL

- **September 2021 – December 2021**: Capstone Project, 4-credit course (18 hours / week)
- **January 2020 – April 2020**: Capstone Project Inception, 4-credit course (18 hours / week)
- **September 2020 – December 2020**: Capstone Project, 4-credit course (18 hours / week)

PROGRAM • SCHOOL

- Hons. Bachelor of Appl. Computer Science (Mobile Computing)
- Applied Computing, Faculty of Applied Science and Technology

Sheridan | Get Creative

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INTRODUCTION

The purpose of the capstone report document is to serve as a guide regarding information about the Walk Experience project. This document gives the reader insight into the project overview, requirements, architecture, plan, and validation and testing.

Section Breakdown

Project Overview	
The project overview aims to describe the team's project and the real-world problem it is solving. Going over a description of the problem and the solution that highlights the implementation of mobile computing, cloud computing and advanced areas of computer science required to solve the problem presented. This section also covers the impact and feasibility in the solution proposed.	**Subsections** o Domain and Industry Overview o Problem Description o Solution Description o Solution Impact o Solution Feasibility

Project Requirements	
The project requirements define the system's context, identifying the stakeholders and detailing the high-level use-cases the system implements. This section also displays primary user interfaces, the wireframes for these interfaces are used to help the user understand how the application may be used.	**Subsections** o System Context o Use-Cases o User Interface

Project Architecture	
The project architecture provides an overview of the architecture utilized in the project. The architecture overview describes the rationale behind architectural decisions made as well as highlighting different components of the system.	**Subsections** o Architecture Overview o System Components o Deployment Model

Project Plan	
The project plan acts as a guide for the PMP (Project Management Plan) created in JIRA, this includes a description of the team's sprint plans and the iteration goals for each sprint, as well as a breakdown of responsibilities amongst the team members. This section also covers risk management and the five most critical risks to the project.	**Subsections** o Iteration Plan o Risk Management Plan

Validation and Testing	
The validation and testing section describe the testing strategy the team has implemented to validate the system created. Detailing the content that is not included within the Test Plan found on JIRA.	**Subsections** o Testing Strategy o Validation Results

Conclusion	
The conclusion section provides a summary of the problem as well as how much of that problem is solved. This section also details the suitability and feasibility of the solution based on the document's contents and gathered evaluations and further work that needs to be done.	**Subsections**
	o Project Suitability
	o Domain Expert Evaluation
	o User Testimonials
	o Future Work

PROJECT OVERVIEW

The Walk Experience project aims to provide users with an interactive experience when exploring a Walk of Fame. The domain experts include Mississauga Music Walk of Fame committee members Cliff Hunt, Patti Jannetta, and Don McVie. The industry partner, the Mississauga Music Walk of Fame, aims to recognize artistic heritage within the music industry that made their mark on the City of Mississauga and the world. The domain and industry overview aims to give more information regarding statistics of the arts and music industry in Canada. The problem overview dives deeper into details regarding the problem in which we intend to solve.

DOMAIN AND INDUSTRY OVERVIEW

The Walk Experience Project attempts to solve a problem related to Arts, Entertainment and Recreation (71), which pertains to Musical Groups and Artists (71113), and Agents and Managers for Artists (7114). The Canadian Industry Statistics website described the Arts, Entertainment and Recreation sector as one which comprises establishments including sites of historical, cultural or educational interests. This sector alone includes 67,694 establishments across Canada. In 2018, this sector had an average revenue of $245.1K and a profit of 83.6%.

Under the Arts, Entertainment and Recreation sector includes the Musical Groups and Artists and the Agents and Managers for Artists. Canadian Industry Statistics website described the Musical Groups and Artists sector as one which is engaged in producing live performances of musicians and/or vocalists. The sector contains 7,669 establishments throughout Canada, and an average revenue of $120.7 thousand and profit of 93.8%. Finally, the Canadian Industry Statistics website describes the Agents and Managers for Artists as those who represent or manage performing artists, entertainers, and celebrities. This sector has 1,874 establishments worldwide, and an average revenue of $278.1 thousand and a profit of 85.3%. (Government of Canada, 2019).

PROBLEM DESCRIPTION

The Mississauga Music Walk of Fame is located in Port Credit Memorial Park in Mississauga, Ontario. The Walk of Fame was founded in 2012 by late councillor Jim Tovey, who invited local musical talents to form the first Mississauga Music Walk of Fame committee. With the support of the newly founded committee, the Port Credit BIA, the Southside Shuffle Blues Festival, sponsors, and local supporters, the first Mississauga Music Walk of Fame came to life. The Mississauga Music Walk of Fame aims to recognize individuals that have spent a significant amount of time in Mississauga and have made an impact on the music industry. Currently, the Mississauga Music Walk of Fame is home to 29 music industry talents who have made their mark on the city of Mississauga.

The problem that the team is solving is how to bring stationary stars on any given Walk of Fame to life. When tourists visit a Walk of Fame, they tend to admire the stars and would like to know more about inductees that they are interested in. However, they do not have a platform of further researching each inductee on the stars. The Walk Experience project aims to give users a platform where they can learn more about an inductee's life and career through the scanning of an inductee's star. Through use of mobile computing and cloud technology, the team brings users a personalized and exclusive experience, unlike anything they have seen before.

The implementation of the Walk Experience project would completely change the way in which an individual experiences any given Walk of Fame. According to one of the domain experts "The Walk has historic significance because people like Oscar Peterson are legends that kids growing up today don't really fully understand the impact that that man had on the music industry worldwide. And we can bring that to life which is so important."

In scanning a stationary star on the Walk of Fame, users have the ability to learn more about the inductee and explore their life and career. This allows visitors to see the inductees as more than an individual whose name is engraved on a star. The team's goal is to bring more of an appreciation towards to the Mississauga Music Walk of Fame, as well as other Walk of Fames using the application.

SOLUTION DESCRIPTION

Currently, visitors of the Mississauga Music Walk of Fame may view an inductee's name on a star, and maybe they recognize the inductee, perhaps they do not. The Walk Experience Project creates a system that allows visitors to learn and interact as they traverse the Walk, allowing visitors to view more on an inductee than just their name. Through mobile computing, visitors are brought information in the form of greetings, interviews, biographies and more to reflect on the inductee, their legacy and what they have brought to the community. Utilizing a dual-platform mobile application, owners of different devices can visit the Walk and experience a new and engaging way to interact with this community staple. Partnered with the mobile application, the Mississauga's Music Walk of Fame Committee uses a content management system to manage inductees and the content shown through the application. The system developed is expected to promote the Mississauga Music Walk of Fame, introducing it to new and broader audiences. The solution employs the ability to be adaptable as well as customizable so that the system may be utilized at other Walks of Fame. As mentioned in the RFC, "This customization is at least in part enabled by the development of a content management system that allows Walk administrators to input data…".

Mobile Computing

The primary focus of this project is the mobile computing component. The mobile application can enhance both iOS and Android visitors' engagement with the Walk through a dual-platform implementation. The app includes a virtual interactive element where users can scan stars and access various modes of content surrounding an inductee and their life's work, creating a well curated experience for visitors. The ability to obtain this content seamlessly is integral to the mobile computing solution as it utilizes the mobile device's ability to detect and interact with a star. Other interactive and engaging experiences can be supported through augmented reality, which makes a visit to the Mississauga Music Walk of Fame a unique one that cannot be replicated elsewhere.

Cloud Computing

The use of cloud computing is seen in the content management system built for the Mississauga Music Walk of Fame, which permits administrators to handle inductee data being displayed in the mobile application. The system requires an easy to navigate, intuitive web service allowing administrators to add an inductee and their related content with the ability to edit, update and delete it. The storage of data, as well as captured analytics of the Walk and the individual stars, also require cloud computing.

Advanced Areas of Computer Science

For the team's project, a key component is the ability to interact with each star, creating a "magical" and unique experience that has not been replicated at other Walks of Fame. The application's ability to scan stars through various conditions is a critical factor and employs the use of an OCR Text Recognizer to analyze and detect text, and algorithms to detect similarity of the text recognized with the existing inductee names inducted at the Walk of Fame.

The introduction of augmented reality can create this new experience where visitors can view 3D scenes designed for each inductee depending on their legacy, this implementation includes models relating to an inductee as well as sounds associated creating a full experience. Included as well is a walkthrough of the inductee stars to assist visitors that wish to go straight to an AR experience.

Lastly, the implementation of data mining and data analytics can monitor the interactions with both the Walk as a whole, specific stars and the different content they display. The inclusion of analytics can assist the Mississauga Music Walk of Fame Committee in garner numbers for quantifying engagement with the Walk or estimating participation at the Walk and community events. Analytics such as which inductees are most visited and content that is viewed the most often are some analytics that are recorded.

SOLUTION IMPACT

The solution creates an unparalleled experience for those attending the Mississauga Music Walk of Fame. The application's interactivity allows users to encounter something different from typical interactions with stars on a Walk of Fame. This unique Walk's pull will entice broader audiences, including a younger demographic, to try something engaging and new, a way to experience Mississauga's heritage from their devices. The impact this would have on the community could be astounding as local businesses in the Port Credit area can benefit from the increased traffic due to the Walks engagement. The attention brought on will affect other Walks, as the opportunity to create a better experience for their visitors may attract them to the team's solution. As the first of its kind, the project would attract a new and diverse audience through word of mouth and social media interest as well as renewed attention, marketing and promotion from the various local, regional and provincial tourism organizations. The solution will also have the potential to attract local, national, and international media attention.

SOLUTION FEASIBILITY

To address the feasibility of the Walk Experience Project, three factors have been considered: the design and construction, deployment, and adoption of the solution. The design and construction sub-section outlines the foreseeable risks that could prevent the proposed solution from being constructed. Succeeding this, the deployment sub-section highlights how the solution will be deployed to the community partner such that its intended audience can use it. Lastly, the adoption sub-section describes how the project aims to get users to download and interact with the system.

Design and Construction

The solution is designed to be adaptable and customizable such that it can be applied to other Walks of Fame around the world. This customization is at least in part enabled by the development of the content management system which allows Walk Administrators to input data and content securely, and update information as necessary to keep the mobile experience current and relevant. The Walk Experience Project is technically feasible because the technologies needed for the mobile application and the content management system already exist and are readily available for the team to leverage in order to build a unique and robust experience. The team has chosen to create two code bases for the mobile application (Android/iOS). There are foreseeable risks associated with this design decision because working natively may require increased efforts towards the mobile aspect of the project. The team has the technical acumen and mentorship to navigate the technical skills required of these technologies and aims to work within familiar development environments that can achieve the needs of the project where possible – such as ASP .NET. Other foreseeable risks include scheduling and changing project direction during development. As a team that consists of working students, scheduling conflicts and lack of communication between team members or the team and its stakeholders must be well-monitored. Additionally, if the direction of the project must pivot, it can impact scheduling and looming deadlines, therefore it must be mitigated where possible. Lastly, this project is made possible and feasible with experienced domain experts who possess the rights to the multimedia resources needed for the system to be designed and constructed.

Deployment

Firstly, the Walk administrators must be able to access the content management system in order to feed the information needed to the mobile application. The content management system can be deployed through the chosen Cloud provider and will be able to be accessed securely from the administrator's device. Secondly, the visitors should have access to the mobile application, which must be accessible to all mobile devices by being deployed to both Android and iOS app stores. Therefore, deploying the solution such that it can be used by its intended audience is feasible.

Adoption

The Mississauga Music Walk of Fame (MMWF) Committee has been leading the efforts to adopt this solution in Mississauga so that it can be the first of its kind. The Walk Experience Project has been introduced at the Mississauga Music Walk of Fame's 2021 Induction Ceremony. The team had given community members an overview of what visitors would be able to do with the adopted solution, and where able to garner interests from inductees, city representatives, those working in local tourism to the ceremony's attendees. Additionally, adoption to other walks is feasible because the analytics and scalability of the solution will be kept in mind from the get-go, which can then be leveraged to pitch to interested parties.
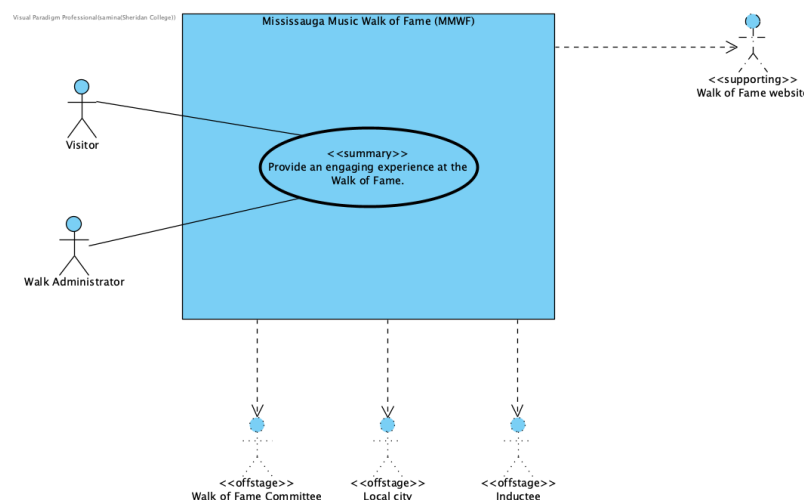
PROJECT REQUIREMENTS

This section describes the project's context, allowing the identification of stakeholders in the design. The current requirements are materialized in use-cases, allowing the team to display how users would interact with the system. Utilizing use-cases enables us to give a high-level understanding of how the system works to achieve the project goal of providing an engaging experience at a Walk of Fame. To find more detailed explanations of use-cases refer to the Software Requirements Specification Document.

VPP VPository: https://online.visual-paradigm.com/w/ysfvfoxq/login.jsp?r=drive/#diagramlist:proj=1&open

SYSTEM CONTEXT

The System Context Diagram outlines the context of the project. This diagram shows the stakeholders of the system, these being the primary, supporting and off-stage actors. Primary actors include the Walk of Fame Visitor, one of the most important actors as they are the target user for the application. This system creates engaging encounters for the visitor, allowing a learning experience for those who hope to discover more about the city's artistic heritage. Another primary actor is the Walk Administrator, and this actor utilizes the content-management system that handles the addition, update and maintenance of an inductee and their content. As primary actors, they both interact with the system directly. Supporting actors such as the Walk of Fame website is referenced as aiding the application in its delivery of information and content to the user. For off-stage actors, they are those that have a vested interest in the application but do not directly interact with it. These actors include the Walk of Fame Committee, the local city and the inductee. The Walk Administrator interacts with the system and is part of the Committee, but the Committee itself does not. Apart from direct interaction, they wish to create a magical experience for those visiting their walk while honouring inductees. Similarly, the local city that The Walk resides in has an interest in a space allowing for the display of city heritage and a new unique attraction those visiting the city as well as patrons of the city may enjoy. Lastly, the inductee has the opportunity to see people who are inspired by them as well as those wishing to learn more to have a unique and memorable interaction with their legacies.

System Overview – (Main Use-Cases)	
Explore the Walk of Fame	This use-cases describes the users' interactions with the mobile application. The application allows the user to scan stars and view information about an inductee, alternatively the visitor may "Tour the Stars", which provides a purely AR experience, allowing visitors to view markers for each inductee above their star and navigate to an AR immersive experience from there.
Manage Inductees	Manage inductees allows the Walk Administrator access to maintain the inductees and their information as well as their content. The use-case allows for updating and managing the mobile application both in forms of inductees as well as how the application is formatted to best highlight an inductee.
Manage Analytics	Analytics allows the Walk Administrator to track interactions that the visitors are having with The Walk through the mobile application. Reports on specific interactions, such as which inductee is most viewed, or what type of content is most popular amongst visitors.
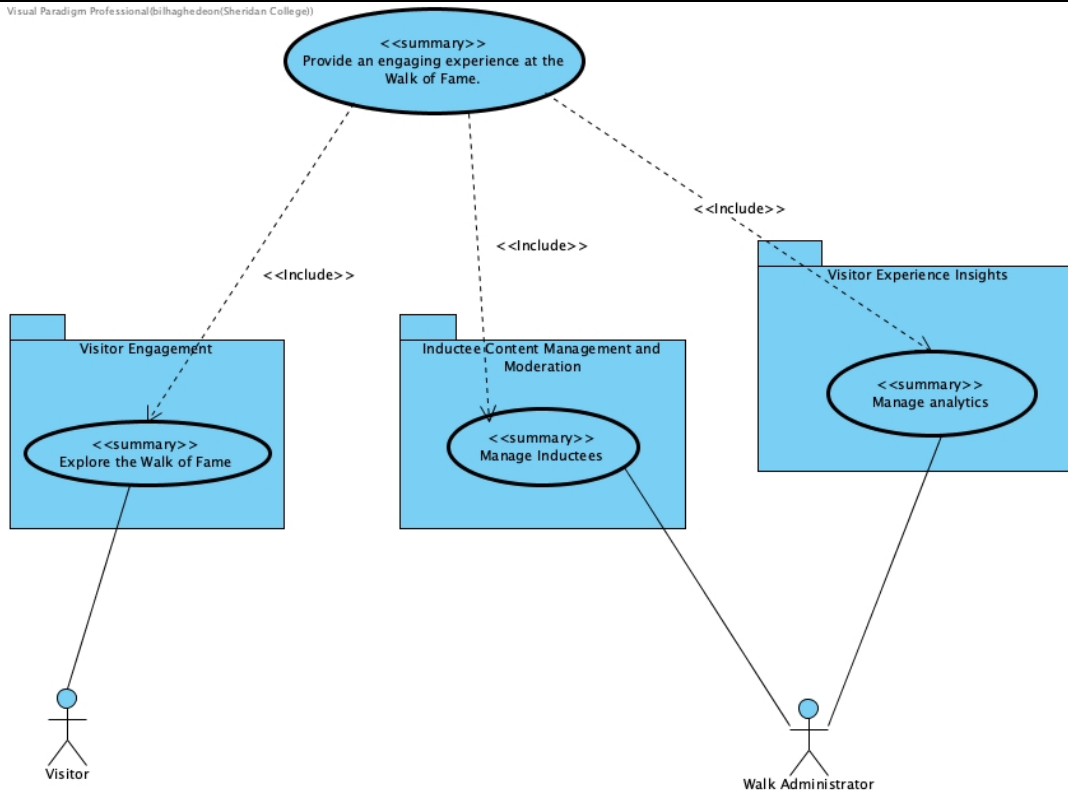
USE-CASES

Manage Inductees

The Manage Inductees use-case aims to allow for Walk administrators to access and maintain information regarding inductees on a given Walk of Fame. The Create an Account use case allows for Walk Administrators to create a new account through the login system provided by Amazon Cognito. The Create a Walk of Fame use case allows for Walk Administrators to create a new walk of fame to be associated with their account. The Add Inductee use-case gives Walk Administrators the ability to add new inductees into the content management system. Finally, the Add Inductee Content Sections use-case allow for Walk Administrators to add new inductee content sections to an inductee's page.

Manage Analytics

The Walk of Fame Committee requires access to Visitor Experience Insights from the Walk of Fame to allow for more informed decisions to be made regarding the Walk and the experience offered. Insights can range from knowing how many visitors have used the application, the number of visitors who leveraged the augmented reality experience to viewing graphs on overall visitors, and most scanned stars. Additionally, visualizations to see a breakdown of how much time was spent viewing different categories of content can be used to better understand what visitors are interested in most. The Manage Analytics use-case encompasses the Record Event, Evaluate Analytics, and Generate Report use-cases. Record Event refers to capturing user events in the mobile application and logging them into a database through an API post request. This allows for the Inductee Content Management and Moderation system to retrieve these user events and preform parsing and calculations to display appropriate visualizations to the Walk Admin in the Analytics Dashboard. The Walk Administrator can then Generate Reports which packages the insights into a PDF that can be shared with the Committee and its stakeholders.

Explore the Walk of Fame

The Explore the Walk of Fame summary use-case details how the visitor interacts with the mobile application. This use-case highlights the visitor engagement functional area. While exploring the Walk of Fame, visitors can either explore an individual inductee or tour the stars.

For the Explore an inductee use-case, the visitor scans a star and is shown a welcome message from the Inductee, greeting the visitor and introducing themselves. Next, the user is presented with the inductee's hub. From the hub, users may navigate to different content sections that includes collections of various types, text, photos, videos or audio and the visitors may interact with those content collection elements. On the home page, visitors may also navigate to an augmented reality view, if the inductee has an AR Experience, to showcase the inductee's legacy in a new fun way.

The Tour the Stars use-case gives users the capability to walk through and learn about the Walk of Fame purely in augmented reality. It aims to get a user to leverage their device in an active rather than passive manner, the visitor can select inductees from the tour and enter that star's personal AR experience. Once the visitor is done exploring the specific inductee, they may resume their tour.

Explore the Walk of Fame SRS: Mississauga Music Walk of Fame.vpp://diagram/BNUB3h6GAqAADVtj

USER INTERFACE

The following shows the wireframes of the content management system:

Create a Walk of Fame Page: The create a Walk of Fame page allows for a Walk Administrator to add a Walk of Fame to the content management system.

**Inductee Management
Page:** The inductee
management page shows a
list of all inductees added to
the system.
Walk administrators have the
ability to add an inductee
and access an inductee's hub
page here as well.

Nevada

< BACK

ADD INDUCTEE

Please fill inductee information below.

Inductee Name

Karen

Inductee Email

ksmith@sheridancollege.ca

Inductee Occupation

Musician

Year Inducted

2021

Submit

Mississauga Music Walk of Fame

Administration   **Inductees**   Analytics

Add Inductee

Walk Name

Address

Date Founded

Website

○ Walk of Fame   ○ Museum   ○ Gallery

Would you like to publish the Walk :

○ Now   ○ Later

Add Walk

Add Inductee: The add inductee page allows for a Walk Administrator to add an inductee to the content management system.

Inductee Hub Page: The inductee hub page shows a list of all inductee content sections, as well as information about the inductee. Walk Administrators have the ability to update inductee information.

Add Inductee Content Sections Page: The add inductee content sections page allows for a Walk Administrator to add inductee content to the content management system. Walk Administrators can add text, photo, music, and video content to the system.

Wireframes for analytics management:
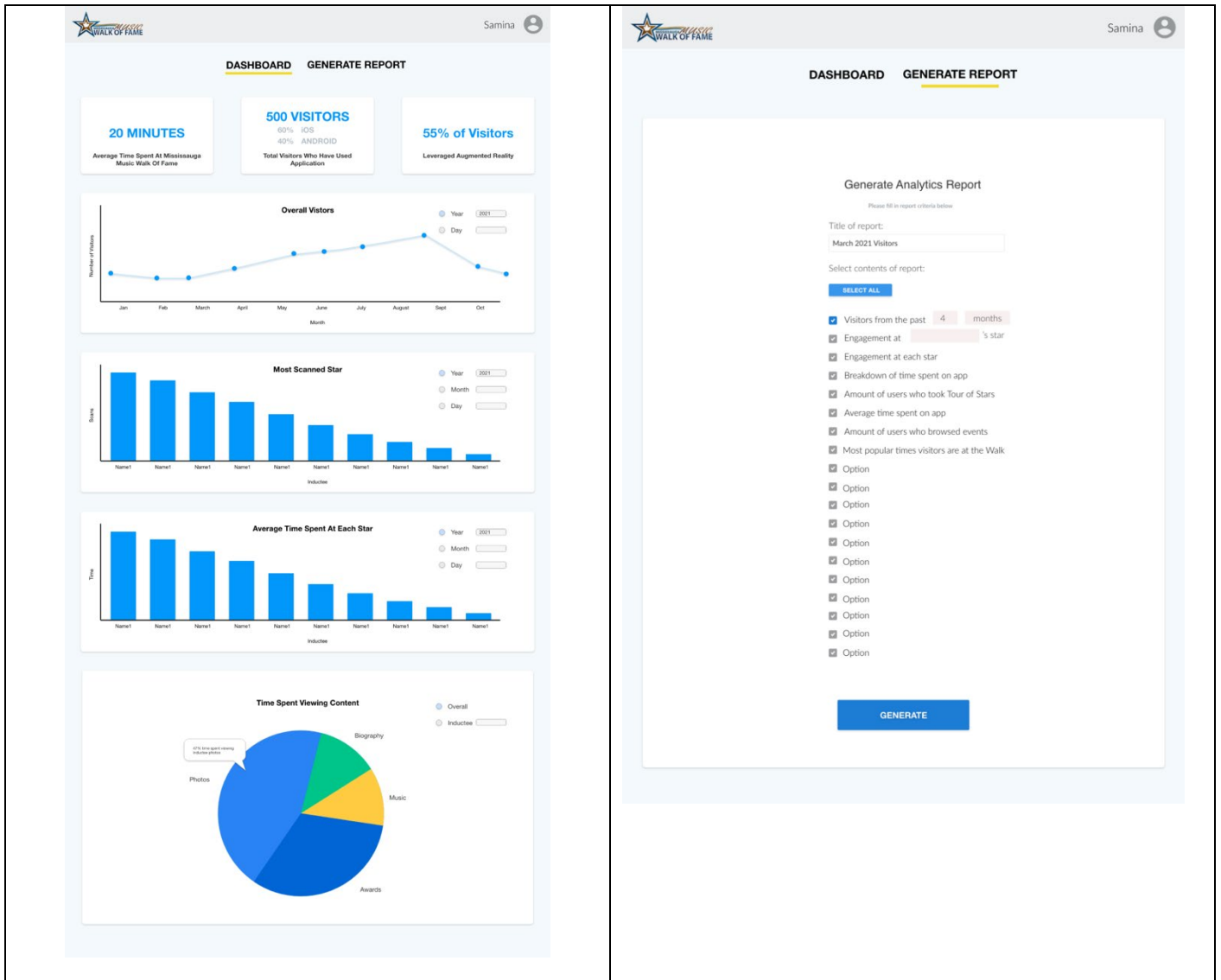
Evaluate Analytics: Showcases Visitor Experience insights from the mobile application through quick statistics, bar graphs, and charts. The Walk Admin can toggle between different attributes to query analytics.	Generate Report: Walk Administrator can select contents that will make up the analytics report which will be packaged into a PDF that can be downloaded to the admin's computer.

Wireframes for the mobile application :
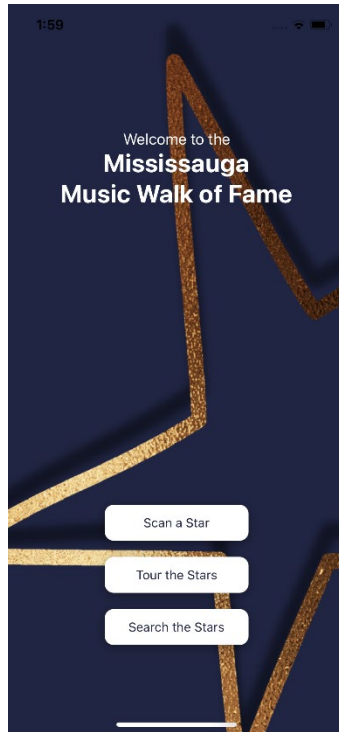
Visitors are able to either scan a star and view an individual inductee, tour the stars, an AR experience, or search the stars, which is a list of inductees.
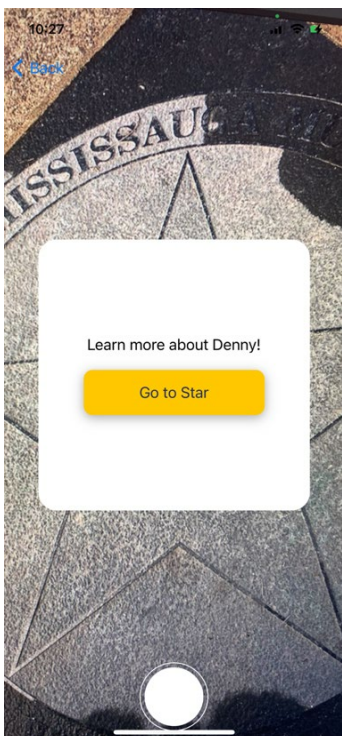
Once a visitor selects to scan a star the scanning view will be displayed allowing them to scan the chosen star.
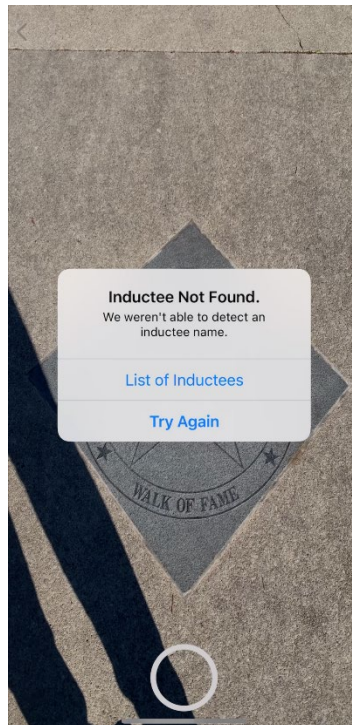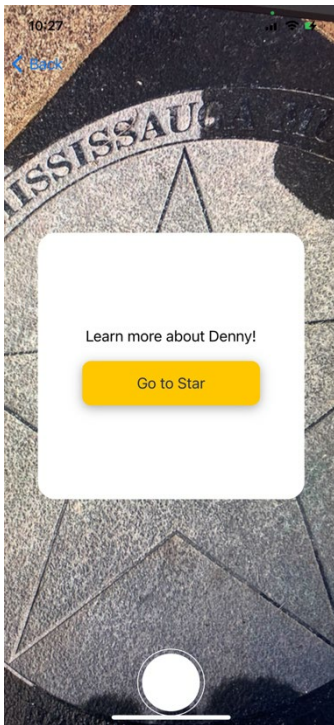
If the application is unable to detect the star an alert is show allowing the user to navigate to the List of Inductees or try again.
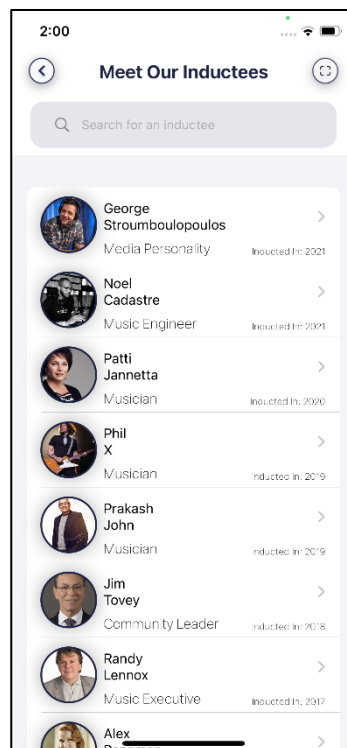
A user can navigate to Search the Stars, in this view they can select a user from a list of them or use the search functionality.

Once the star is scanned users will be shown a welcome video message from the inductee or a representative introducing them to the star.
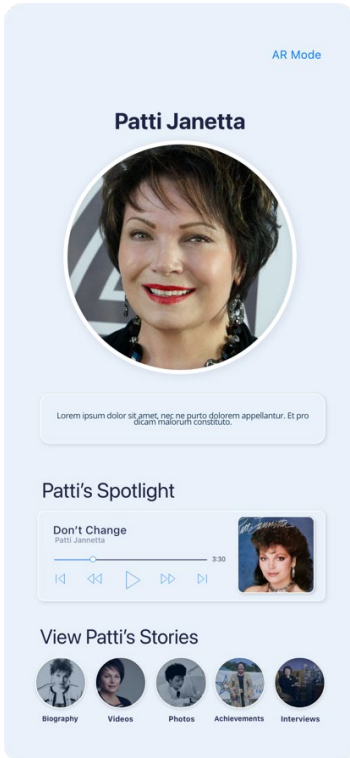
From the welcome video the visitor may navigate to the inductee hub, form here visitors may select the AR experience if the inductee has one, view the biography or a content section
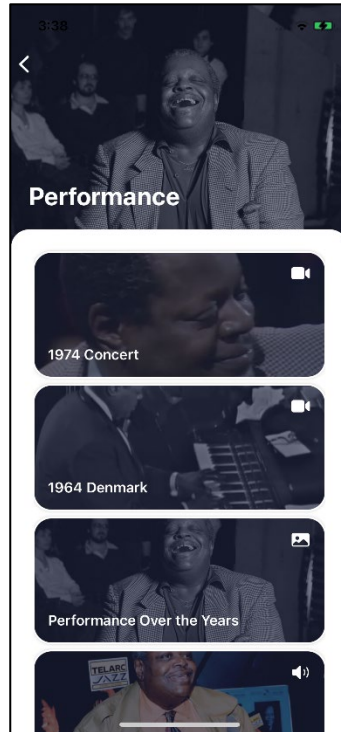
Within the content section the visitor is shown the different types of collections falling within that section.
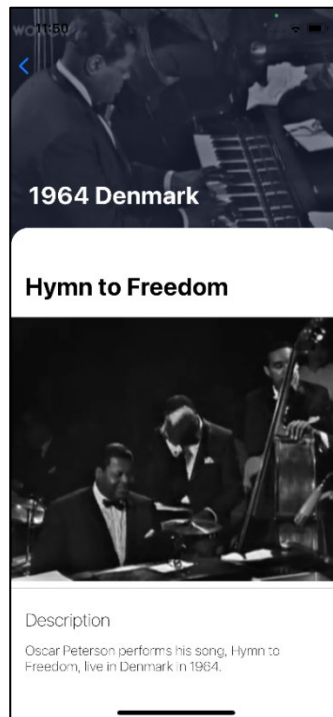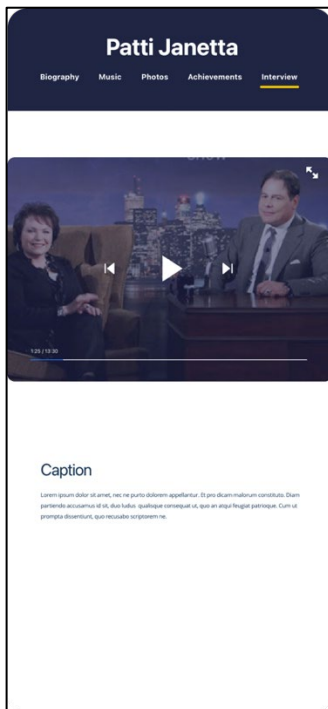
If the visitor selects a content collection that contains video elements the video view is shown allowing a visitor to interact with the video player as well as view a description of the video.
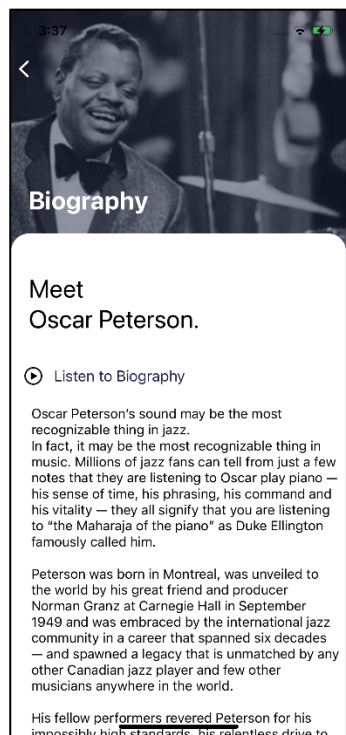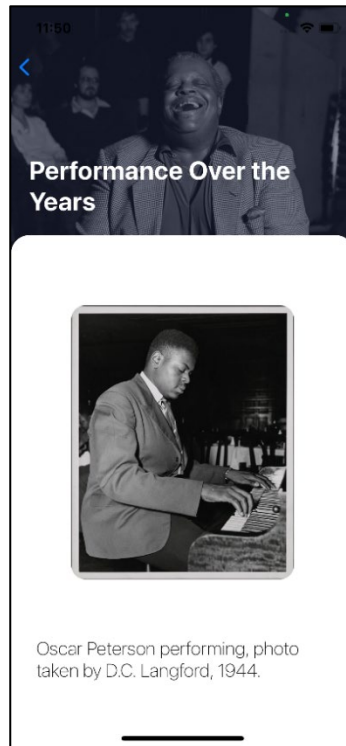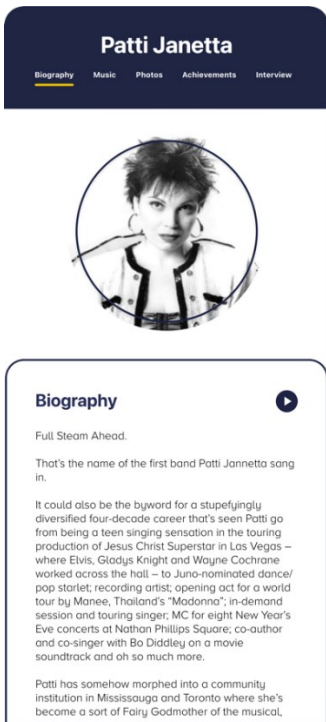
If the visitor selects a content collection that contains photo elements the photo view is shown allowing a visitor to interact with the image carousel and scroll through the collection of photos as well as view a caption of the photo displayed.

This is an example of biography, but other text content is shown similarly, there is a title as well as a body of text that is able to be scrolled through.
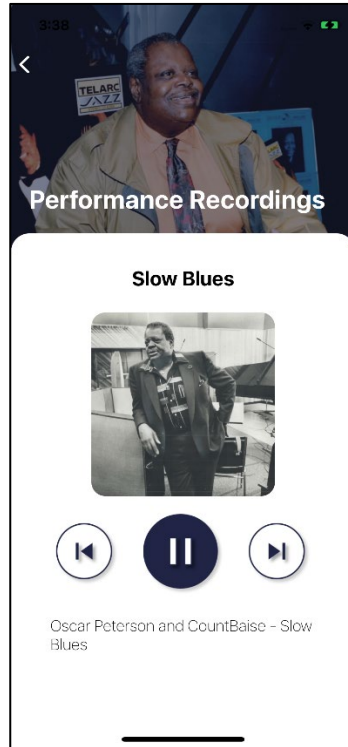
This is the audio content, we have the audio title, cover photo and description as well as buttons to navigate between audio files and pause or play the audio.
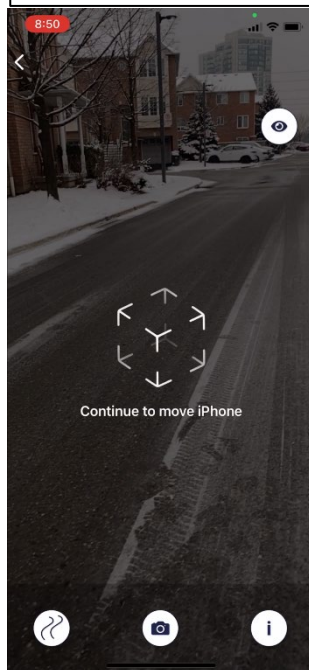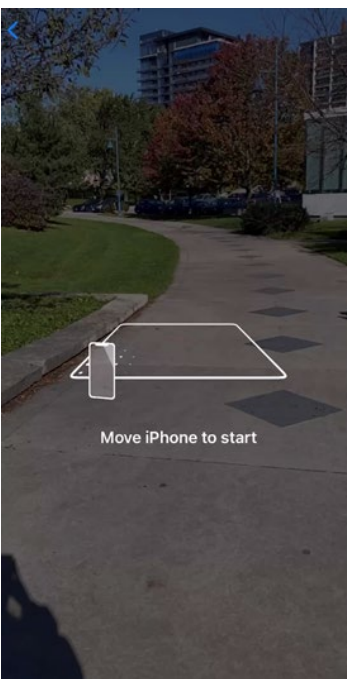
If the inductee selected has an AR experience the user may navigate to the AR view, this view will coach the visitor to place the inductees AR scene properly.

The visitor will see a scene including models that pertain to the inductee and their legacy. They may navigate back using the inductee button.
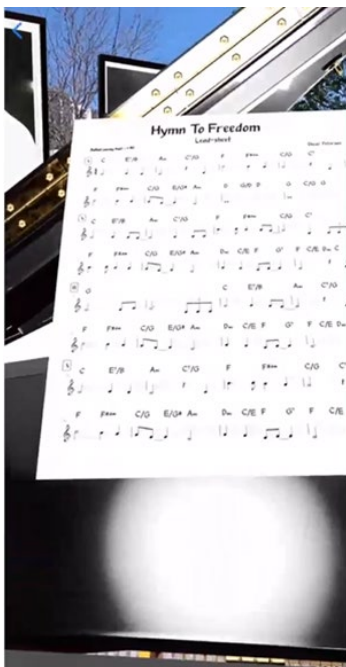
Visitors may walk up to the AR experience and interact with the models displayed. Some models may move around, play music, etc.
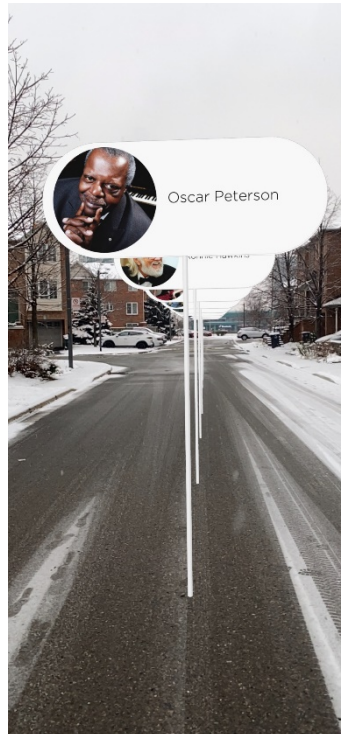
When the visitor selects to tour the stars, they are met with a view displaying markers above the inductee's star that display their name and photo, the visitor may navigate to the AR experience from here.

The visitor is shown an experience similar to the one navigated to from the inductee hub page.
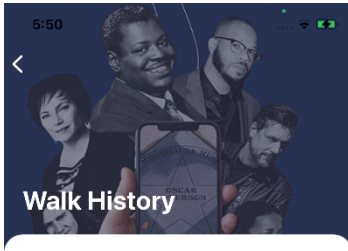
The user can view the history of the walk of fame as well as have it read out to them.

Walk History

▶ Listen to History

The Mississauga Music Walk of Fame is located in Port Credit Memorial Park in South Mississauga Ontario. It was founded in 2012 by the late Mississauga City Councillor Jim Tovey, a former rock musician who received his own star on The Walk following his untimely death in 2017.

The Mississauga Music Walk of Fame honours local musicians who have made a significant impact on the city, Music Industry builders and innovators, and Mississauga's very own International Superstars.

In 2012, Councillor Tovey and the founding Walk of Fame Committee comprised of local music historians and enthusiasts John Stewart, Mike Beggs and Ric Cooper and performer/producer Patti Jannetta joined with the Port Credit BIA, the Southside Shuffle Blues Festival, sponsors and enthusiastic supporters to bring the first Mississauga Music Walk of Fame to life. Inducted that first year were, the great Oscar Peterson, the legendary Ronnie Hawkins, opera singer Krisztina Szabo, and Triumph drummer and industry entrepreneur Gil Moore.

What a way to kick off a Walk of Fame!

The AR Guide is used to instruct the user on how to use the control buttons within the experience.

AR Experience
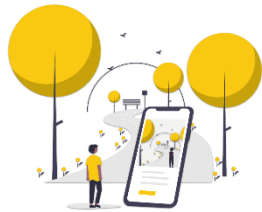
Guide to controlling the AR View!

Tapping the eye button will show or hide the control buttons at the bottom of your screen.

This button allows you to read the history of the Walk of Fame.
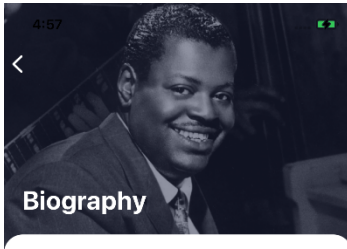
If the user is not connected to the internet they are shown the offline view of the inductee's biography.

PROJECT ARCHITECTURE

The following section provides an overview into the architecture used within the project. The architecture overview section goes into depth as to why we used layered architecture as the chosen architectural pattern. The system components section aims to break down the individual components needed to bring the system together. Finally, the deployment model section speaks towards what artifacts, devices, and execution environments are necessary to bring the team's project to life.

Link to VPP Repository: https://online.visual-paradigm.com/w/ysfvfoxq/login.jsp?r=drive/#diagramlist:proj=1&open

ARCHITECTURE OVERVIEW

Link to Software System Architecture diagram: Mississauga Music Walk of Fame.vpp://diagram/Ph2EUm6GAqAAXzU5

For the overall architecture of the project, the team decided to use a layered architecture maintains separation and independence between components of the system as each layer depends on the layer immediately below it. Additionally, as layers are being developed incrementally, their corresponding services can be made available to users. This architecture also lends a hand to the scalability needed for this project as it is changeable and portable, the ability to build an architecture that works for multiple Walks requires this aspect. The reference architecture for this system is the Transaction Processing System Architecture the rationale for this choice is that the architecture provides a

transaction between the MMWF Committee and the Walk visitor, inductee content is displayed for the visitor to individually interact with.

These layers are connected by using dependency constraints. The following diagram shows the software system architecture. This diagram consists of four parts: a presentation layer, domain layer, service layer, and the infrastructure layer. All these layers are components of the system that are architecturally significant. The presentation layer includes the different UI subsystems for both mobile and web applications, this includes the view to Explore an inductee UI subsystem, the Tour the Stars UI subsystem, Analytics UI Subsystem and Inductee Content Management UI Subsystem. The services layer holds subsystems that handle the API, these are in the form of controllers. The domain layer contains the subsystems including content inductee data as well as analytics data. Finally, the infrastructure layer subsystems that include external systems, such as MongoDB, content storage servers, OCR text recognition and Reality Composer Project.
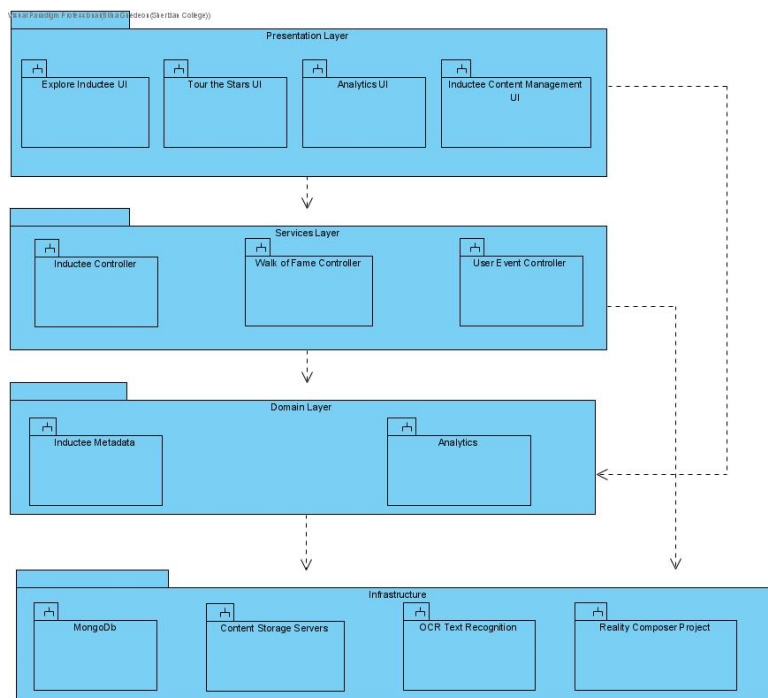
SYSTEM COMPONENTS

The major components of the system include the following:

Mobile App:
The mobile application is broken up into two components: the Android application and the iOS application. The role and responsibility of the mobile app in delivering the architecturally significant requirements of the system is that it connects with the API in order to provide updated information about the inductees presented in the application. In addition to doing so, the application submits post requests to the API in order to update the Analytics component of

the content management system.

Content Management System:
The content management system is responsible for intaking information from Walk administrators regarding inductees and inductee content to be displayed on the app. On the content management system, Walk Administrators are able to add a new walk of fame, as well as view, add, delete, and update inductee information and inductee content. The content management system interacts with the API directly through GET, POST, PUT and DELETE requests in order to fulfil these requests.

Web API:
The Web API is responsible for handling any requests that deal with the database. These include GET, POST, PUT and DELETE requests for the inductee, template, user event and walk of fame tables.

MongoDB Database:
The MongoDB database is responsible for holding all of the uploaded data from the content management system. This includes inductee, walk of fame, user event, and analytics summary information.

DEPLOYMENT MODEL

Link to Deployment Model: Mississauga Music Walk of Fame.vpp://diagram/f6v4Jm6D.AAAAVIn

The following diagram shows the deployment model that we have created for the system. The deployment model contains the devices, artifacts, and execution environments within the cloud server that are used in the project. The devices that are used within the project can be broken up in Walk Committee devices and visitor devices. The Walk Committee device is a client device in which they can access a browser to view the content management system on. The visitor devices include a smartphone device that can run iOS or Android so that they can access the mobile application. The artifacts included in the project are the Walk Experience Content Management API, the Walk Experience Content Management Application, Inductee Content and Media Content Servers. The execution environments that are capable of running the artifacts which include ASP .NET Core, WiredTiger MongoDB storage engine, and AWS Cloud Server.
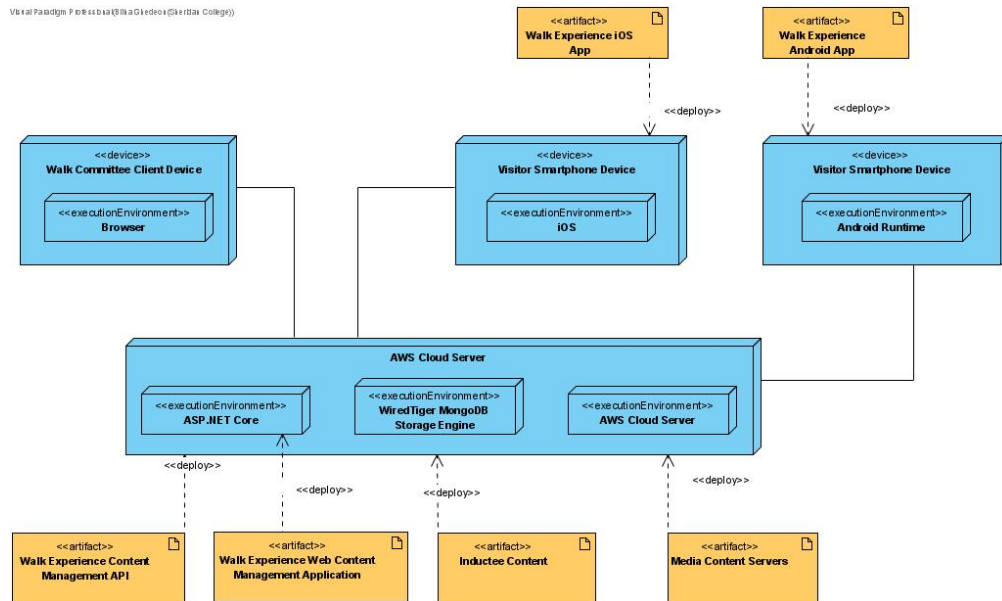
PROJECT PLAN

The following section describe the project's iteration and risk management plans. The iteration plan outlines each iteration involved in the construction of the project, and an overview of each's specific goal. All iterations correlate to upcoming releases; the releases are categorized and ordered as followed: inception, elaboration, alpha, beta, and final release. The risk management plan underlines the risks associated with the project and provides insight into the top five risks which must be monitored effectively throughout the project. The team manages the project's iterations and risks on JIRA, following an agile methodology. Each Monday, the team conducts a meeting to complete a sprint review lead by the project's SCRUM Master, a sprint retrospective lead by the Risk Analyst, and a session to plan the next sprint which is led by the team's Project Owner. During the sprint review, the team summarizes what was and was not accomplished in the latest sprint and identifies issues faced by the team which prevented items from being completed. The sprint retrospective allows the team to reflect on areas of improvement, the status of risks, identification of new risks, and developing or following mitigation strategies. The meeting concludes with a sprint planning session, where the team reviews items in the backlog, and identify which stories and tasks are to be completed in the next sprint – the feasibility of the sprint being planned, and goals are clarified as the team ends one sprint and moves onto the next iteration of the project. Sprints are weeklong and end and begin every Monday, additionally the team conduct daily scrums on Mondays, Wednesdays, and Thursdays.

JIRA Project Management Plan (PMP): https://mmwf.atlassian.net/jira/software/projects/WOFPMP/boards/9
JIRA Risk Management Plan (RMP): https://mmwf.atlassian.net/jira/software/projects/WOFRM/boards/8

Project Responsibility Matrix		
Project Requirements	Bilha Ghedeon	Nevada Graci	Samina Khaliq
Project Responsibility		

Project Owner			✓
SCRUM Master	✓		
Risk Analyst		✓	
Requirements Engineering			
Requirements/ Business Analyst			✓
Stakeholder Champion by Stake Holder	Visitors / Mississauga Residents	MMWF Committee / City of Mississauga	Music Industry Members (Inductees)
Functional Area Champion by Functional Area	Engagement	Organize Inductee Information Customizable	Learning / Analytics
User Experience Design Lead	✓		
Software Architecture			
Software Architect		✓	
Requirements Model Lead			✓
Domain Model Lead			✓
Design Model Lead		✓	
Deployment Model Lead		✓	
Interaction Model Lead	✓		
Construction			
Full-Stack Developer	✓	✓	✓
Integration / DevOps Lead	✓		
Testing			
QA Lead	✓		
Verification & Validation Champion by Functional Area	Engagement	Organize Inductee Information Customizable	Learning / Analytics
Test Model Lead			✓
Support			
Tools and Devices Support	✓		
Communication Support			✓

ITERATION PLAN

In completion of each iteration, the goal of the team is to complete one story per iteration. The following is each of releases, along with the goals of each.

Inception Release

The purpose of the inception release is to complete majority of research into technologies and tools to be utilized, UML models should be refactored to fit with changes made to the project and the initial implementation of core functionalities to both the application and CMS are tackled.

Iteration 1

In our first iteration, our team began the initial project set up of the MMWF mobile application and the content management system. In the start of iteration 1, the team conducted thorough research on which cross-platform AR and image recognition solution is best to use for our application. The team tested Xamarin to decide if it was the most viable option for cross-platform development. The team set up the initial database tables, including the inductee and inductee content table, as well consult with MMWF team to confirm information needed for these tables.

Iteration 2

In our second iteration, our team set up the initial project for the iOS application. The team created a structure in which the user can have a seamless experience from scanning a star to viewing inductee information. In terms of the content management system, the initial project was set up for the Web API in C# .NET Core.

Iteration 3

In our third iteration, the team designed the mobile UI workflow and views to help visualize the structure of the mobile application. The construction of the JSON that assists in data retrieval between the content management system and the mobile application was completed. Our team researched into cognitive services to build an image recognition model that assists in detecting an inductee's Star.

Elaboration Release

The elaboration release results in the completion of the first phase of the content management system being deployed for use. Critical functionalities of the application are completed and prepared for the deployment, and the implementation of lower priority, second phase functionalities to the application.

Iteration 4

In our fourth iteration, our team implemented functionality in which a mobile device that does not support AR can still view information regarding a given inductee. In terms of the content management system, the creation of the functionality needed for the Web API and deploy the API to Azure for the CMS to use.

Iteration 5

In our fifth iteration, our team began implementing access to data driven views in the mobile application through the retrieval and parsing of the inductee JSON from the API. The addition of a custom camera used to scan an inductee's Star. Finally, the ability to update and delete inductee content was implemented for the Web API.

Iteration 6

In our sixth iteration, the team implemented the scan button for the iOS application as well as the design and add the view an inductee's home page for the iOS application. The inductee information is retrieved from the Web API. In the content management, the ability to view all inductees that are in the system was implemented.

Iteration 7

In our seventh iteration, our team researched and established user analytics and reflected on the research in the database as well as the Web API so logs of user interaction with the application may be recorded. Secondly the iOS application includes an AR View for users to view the inductee's information in either AR Mode or Regular view as well as iterate on iOS views. For the content management system, we implemented the ability to add an inductee to the system as well as researched media hosting servers to store inductee media content.

Iteration 8

In our eighth iteration, our team integrated the ability to view inductee content, such as a biography, photo, achievements and welcome message, which is retrieved from the Web API. Also research was completed into the cognitive services required to detect the text within an inductee's star as to retrieve the proper inductee to display.

Iteration 9
In our ninth iteration, the team implemented the retrieval of text found within a Star that was scanned and located the appropriate inductee to display and display an image in augmented reality. Capture user events when scanning a star and log them within the application to be retrieved and displayed in the CMS. In terms of the content management system, our team is implemented the ability for an administrator to view and delete an inductee's Content.

Alpha Release
The alpha release ensured the completion of the content management system allowing a Walk Administrator to create an account and a Walk of Fame, and the application has implemented augmented reality models, the functionality of content sections and elements into the iOS application and improved scanning functionality. For Analytics users are able to view analytics and generate a report.

Iteration 10
In our tenth iteration, the team showcases the different content views in the iOS application at the MMWF Induction ceremony.

Iteration 11
In our eleventh iteration, the team began the research and brainstorming needed to scale the content management system, update the current form of scanning the inductee star to utilize image to text functionality within the iOS application as well as solidify how AR is included within the project, update the video view for the iOS application.

Iteration 12
In our twelfth iteration, the team updated the database and API to include inductee content sections, load a model in augmented reality and test location-based validation while scanning a star.

Iteration 13
In our thirteenth iteration, the team solidified the workflow of uploading and editing inductee content section elements in the CMS and allow Walk Administrators can view analytics. The application is iterated on to include content sections and visitors will be able to view AR visuals within the application.

Iteration 14
In our fourteenth iteration, the team implemented functionality to allow Walk Administrators to create a Walk of Fame and view the inductee hub within the CMS. The application incorporates the tour the stars functionality utilizing AR and scanning of an inductee's star is iterated on to be more effective.

Iteration 15
In our fifteenth iteration, our team enhanced tour the stars in the mobile application, as well as incorporated photo processing on the scanned inductee star to decipher it. The CMS incorporates the create an account functionality for a Walk Administrator.

Beta Release
The beta release warrants the completion of the content management system, including the ability to update inductee and inductee content sections, delete inductee content sections, and preview an inductee. This also marks the completion of the ability to view analytics and download insights, while allowing admins the ability to preview how content will be displayed in the application. The team also completes a simplified Android application without AR.

Iteration 16
In our sixteenth iteration, our team researched the storage of content and AR models within the application and addressed any incomplete functionality within the Tour the Stars use case. Recognize the walk the user is located at and display that walk and incorporate content sections into the android application.

Iteration 17
In our seventeenth iteration, our team scaled analytics to record events from each walk, updating content sections to display audio content and incorporate text to speech for text content. A form within the CMS to update inductee content sections and functionality to delete an inductee content section was implemented.

Iteration 18
In our eighteenth iteration, our team implemented a scheduler for gathering analytics in the CMS. Researched into creating a Python script to summarize analytics and updated the Android UI as well as taking a photo in AR.

Iteration 19
In our nineteenth iteration, our team created a dashboard for analytics in the CMS, implemented and host a Python script to summarize analytics. Include the ability to store offline content and alert the user when the inductee is not found. As well as updated the android application with content sections.

Iteration 20
In our twentieth iteration, our team implemented functionality to generate an analytics report in the content management system. Incorporate the ability to generate a report for analytics, update the android application, incorporate fun fact functionality, and incorporate search the list of inductees and audio within the AR Experience.
Final Release
The final release resulted in the addition of an Off-Walk feature and finalizing deliverables for the final release.
Iteration 21
In our twenty-first iteration, the team prepared our project for the Capstone Showcase by putting together a presentation and demos of both the application and the CMS. We also began brainstorming ways to engage users that are not accessing the app from the Walk of Fame.
Iteration 22
In our twenty-second iteration, our team implemented a location-based functionality to provide a look on how the app would tackle an Off-Walk experience. We also polished up the user interface components within the content management system. Lastly, the team presented the capstone to Defence committee.
Iteration 23
In our twenty-third iteration, our team completed the final draft of the capstone report, the demos and presentations of the CMS and mobile application.

RISK MANAGEMENT PLAN

The Risk Management Plan (RPM) helps monitor the risks stagnating the software development lifecycle of a project. For the Mississauga Walk of Fame project, the major risks surround communication, effectively meeting deadlines and confusion in both technology and requirements. The current top five risks include:

1. Unfamiliar tools and technologies	
Risk Description	*Planning Details*
When dealing with new technologies and frameworks, the team is unfamiliar with the project may be at risk (schedule/deadlines, etc.) because the team must take time to learn and familiarize themselves with the tool. Trial and error are a significant way to eat up the team's time and efforts. Also utilizing technologies that are the best fit for the specific system we are creating, being able to defend the choice of technologies we make.	o Decipher which tools will be utilized early on as to have the time to immerse oneself in them properly. o Do appropriate research into documentation and seek mentors who know of the technologies to receive insight into them. o Utilize tutorials and online guides, maintain a scheduled practice of unfamiliar tools. o Compare different technologies so that we can make the best decision, as well as speak to others with more knowledge on specific technologies.

2. Issues with up to date, and functioning technology.	
Risk Description	*Planning Details*
The team's technology not being up to date or not working could lead to catastrophic issues with the development of the system.	o Keeping technologies up-to-date and consistent with each other's environment o Requesting appropriate devices when needed o Making sure all projects run the same on each team members devices o Notifying team when something goes wrong o Having a backup tech available if needed.

3. Ability to be scaled for multiple Walks	
Risk Description	*Planning Details*
If the product is unable to be customized and scaled to work for multiple Walks of Fames, it risks the product's potential to be ground-breaking technology and hinders future adoption.	o Make sure during design processes that the application is not becoming too specific for MMWF (i.e., product is not just for musical walks of fame)

4. Resources funding	
Risk Description	*Planning Details*
Unclarity on resources requiring funding or trials/ free resources, such as hosting, expiring.	o Making inquiries about resources available from stakeholders o Getting quotas from services being used

5. Misunderstanding requirements	
Risk Description	*Planning Details*
Unclarity on requirements can lead to team members making assumptions. Assumptions further lead to aspects being included or alternatively excluded when the opposite is required. As with the unfamiliarity with tools risk, this could lead to a time-consuming mistake that requires reassessment and refactoring when the situation might not have called for it if requirements were understood.	o Maintain an open dialogue with the domain experts, reflect on the team's understanding of their requests. o Touch on significant components of the project when in meetings with domain experts. o Present domain experts with our interpretation using visuals when possible. o Be upfront when requirements are not clear, or confusion is detected.

VALIDATION AND TESTING

The following section outlines the project's testing strategy, and validation results. The testing strategy section will describe the validation and testing strategy to be used to demonstrate that the software meets its requirements and will include the types of testing that was performed. This section is also comprised of details entailing how testing is integrated throughout the team's development process and will present the tools and frameworks used. The validation results section will highlight the state of the project in terms of the testing that was completed. Additionally, the section will provide a reflection on the quality of the developed system based on the results of the tests performed during development.

Links:

Jira Test Plan

Issues Repository in BitBucket for iOS

Issues Repository in BitBucket for CMS

Issues Repository in BitBucket for Walk Experience API

TESTING STRATEGY

The team is currently using a manual validation and testing strategy. Development testing is currently being conducted by the team as part of the project's development process and has primarily consisted of defect testing to identify as many issues as possible. The types of tests that are to be performed include unit, component, and system testing. The team emphasized verifying the functionality implemented in objects through manual testing. Some of the tests that are implemented for the project's significant use-cases have been outlined in the tables below. The team has integrated testing into the development process through the creation of a test plan in JIRA. Each use case that has been implemented has a correlating set of test cases that have added as issues to the test plan project board and backlog. The workflow developed for testing is structured as followed: a test is created, and added to the board with the initial tag as needing to be verified, when the testing has begun, its tag is changed to reflect that testing is in progress, and once a result has been achieve, a test issue will be branded as pass or failed, and if failed, will require further inspection and tasks to be completed in the project management plan to address the issue. The BitBucket repositories for the Walk Experience's iOS application, Content Management and Moderation system, and API have been linked to the team's testing plan and project plan JIRA boards – this has streamlined the ability to create issues if an issue occurs during the testing process. Other benefits provided by this framework include UI Tests which will be important in helping the team recognize if the app works as we expect it to by allowing the replication of workflows.

Explore an Inductee	
Use Case Description	Test case examples
The Explore an Inductee use-case describes the user interactions once they have scanned an inductee's star. The user will be presented with a welcome video that is followed by the scanned inductee hub. From here the user may navigate to different content sections with content collections that display varying types of content as well as navigate to an AR view.	o Scan an Inductee's Star o Scan an object that is not an Inductee's Star o Retrieve and load an Inductee o Inductee is not retrieved o Inductee Information is not retrieved o Visitor is at the walk of fame

View Inductee List	
Use Case Description	Test case examples
The View Inductee List use-case allows users to navigate to a populated list of inductees and navigate from there to a selected inductee. The list of inductees may also be filtered through using a search functionality.	o All inductees are loaded o Inductees are loaded in correct order o Appropriate inductee is shown when searched

Tour the Stars

Use Case Description	Test case examples
The Tour the Stars use-case gives users the capability to walk through and learn about the Walk of Fame purely in augmented reality. It aims to get a user to leverage their device in an active rather than passive manner, the visitor will be able to select inductees from the tour and enter that star's personal AR experience. Once the visitor is done exploring the specific inductee, they may resume their tour.	o Reality Composer Project file loaded o Reality Composer Project file not loaded o AR View configured o AR View not configured o Entity loaded o Entity not loaded

Record Event

Use Case Description	Test case examples
Records user events performed inside the application for purposes of collecting visitor experience insights.	o Record visitor scanned inductee star o Record visitor was unsuccessful in scanning inductee star o Record correct details for user event (device ID, date, time) o Record event into database

Add Inductee

Use Case Description	Test case examples
The Add Inductee use-case describes the Walk Administrators ability to add an inductee into the content management system.	o Add inductee input o Add inductee invalid input

Add Inductee Content

Use Case Description	Test case examples
The Add Inductee Content use-case describes the Walk Administrators ability to add an inductee content into the content management system.	o Add text content input o Add text content invalid input o Add music content input o Add music content invalid input o Add video content input o Add video content invalid input

Delete Inductee Content

Use Case Description	Test case examples
The Delete Inductee Content use-case describes the Walk Administrators ability to delete inductee content from the content management system.	O Delete inductee content from database

View an Inductee	
Use Case Description	*Test case examples*
The View an inductee use-case describes the Walk Administrators ability to view an inductee's information that was added in the content management system.	○ Retrieve and load inductee information

View Inductee Content	
Use Case Description	*Test case examples*
The View inductee Content use-case describes the Walk Administrators ability to view an inductee's content that was added in the content management system.	○ Retrieve and load inductee content information

VALIDATION RESULTS

The system has not yet been tested by independent users, however, conducting tests by independent users as been identified as part of the future work to be done for the project. The application is heavily dependent on design and user experience, this interaction required mostly manual testing to interact with the application as a user would.

Content Management System

The validation method that was used primarily in the content management system and the web API is manual testing. With manual testing, test cases were conducted manually in the content management system and web API to determine any potential bugs, issues, and defects. In the Web API, Postman and the Visual Studio debugger were used to test the output of various API calls created within the project. In the content management system, the Visual Studio debugger was used to set breakpoints within the code to ensure that the system was generating the correct input.

Mobile Applications

Aspects that were testing for the mobile application included, properly scanning and detecting an inductee's star, this was done at the walk to ensure that the application would work with the physical stars as well as the appropriate alert coming up when the inductee's name was not detected. Throughout the development process the units of the application were tested manual every time a functionality was added, and the system as a whole was tested at each iteration of release for the project. This included appropriate parsing for inductees and their content as well as correctly recognizing when a user was located at the Walk of Fame or not.

For the augmented reality experience created for iOS devices, manual testing was required to test the AR models that were developed. Apple's Reality Composer mobile companion app was used to help design and animate model entities, the app allowed one to experiment with placing the model into one's environment to see how it would behave and scale – this cut out the immediate need to have to build an application each time a model was updated and needed to be tested.

Regarding the offline mode, to ensure the API call was being stored, and the profile images were being downloaded, and analytics were being stored – XCode's ability to download a device's container to view the app's Document folder was helpful for confirming the presence of the files and confirming files formats were appropriate.

To test the off-walk experience on the iOS app, a GPS exchange format (GPX) file was used to gage if a user was accessing the app at the Walk of Fame location or from outside the area. The GPX file, in tandem with XCode's location functionalities, allowed for the testing of the off-walk experience, where the home page options varied based on whether one was at the Walk or not.

CONCLUSION

The problem this system solves is bringing rudimentary Walk of Fames to life. Visitors to the Walk of Fame do not have a meaningful, curated source of information on the inductees that are on display at the Walk of Fame. The team has created a system where curated content surrounding an inductee may be presented to visitors so that they may enjoy an exclusive experience only found at a Walk of Fame. Substantial portions of the system that have been implemented is sections of the iOS application which includes the ability to explore an inductee, capturing user analytics as well as the implementation of the API. The Android application includes similarly the implementation of the API as well as a simplified version of the iOS application which does not include Augmented Reality at this stage.

The iOS application has implemented major structural components of the system. The user may select to scan a star view a list of the inductees or tour the stars. When the scan a star option is selected, they may hover their camera over a star and the system captures and analyze the frame received, upon detecting an inductee's star the user is shown the inductee's welcome video and from there to the inductee's hub. Furthermore, the user may search through a list of inductees and filter by name when searching for an inductee.

If a visitor selects the tour of the stars option, they are immersed in a fully augmented reality experience. Once the user is coached into moving their device's camera to detect a horizontal plane, the inductees appear in the user's environment. The user can move amongst the displayed inductees, tap on the one they would like to know more about and be presented with an augmented reality experience catered around the selected inductee. Once the user has explored the inductee in augmented reality, they can resume the tour and do the same for others.

For each view that is developed in the mobile application analytics may be recorded, such as logging which inductees were scanned and the types of content the user viewed from the selected inductee. These recorded analytics are then stored in the database for further use by the content management system so Committee Members may visualize the analytics and generate reports.

Through implementation of the content management system, any given Walk Administrator can successfully manage information about inductees in a Walk of Fame. Currently, Walk Administrators have the ability to create an account, create a Walk of Fame, view inductee and inductee content information, add an inductee, and add inductee content sections. In doing so, Walk Administrators can customize the mobile application to tailor to their own inductees through use of the team's technology.

PROJECT SUITABILITY

Project Suitability
The team has made progress in completing all of the defined use-cases. In terms of the mobile application, it is currently capable of successfully scanning text from a star on a given Walk of Fame. Upon scanning, the application can display information from the API based upon the inductee. This is mirrored through the Android application as well. Additionally, the iOS has added functionality of displaying an augmented reality scene for inductees and an offline experience. The application is also able to record analytics that are added to the database through API calls. In terms of the content management system, Walk Administrators can create an account, create a new walk, inductee and inductee content as well as edit everything that is created. The CMS also includes the ability to visualize the analytics retrieved from the application and generate a report based on those visualizations.

Domain Experts	
	Feedback
The team maintained open communication with the domain experts through Microsoft Teams. Feedback was given and received through meetings as well as posts to the Teams channels when requested. The following is a depiction of the input provided by the domain experts Cliff Hunt, Patti Jannetta and Don McVie. Following the Elaboration Release the team presented the application at the Mississauga Music Walk of Fame Induction Ceremony. Feedback was given from various inductees as well as members of the community, that would potentially be using this application.	*Application Feedback:* Our domain experts highlighted that the scanning of a star must be as seamless as possible, a star must be recognized appropriately. Feedback was generally excitement at the opportunities within tourism, etc. for the Port Credit area.

Project Supervisor	
	Feedback
The team's project supervisor held weekly meetings to ensure the team was on a proper trajectory for the project. The feedback on the work completed was that the feasibility of the project remained as well as the solutions suitability to the problem it is aiming to solve.	Application: • AR Experience should not make the user do too much work. o *Which the team iterated on and heard positive feedback.* • Scanning should work more seamlessly Demo of CMS: • UI views received positive feedback Changes that need to be made • Adding an avatar with an add inductee content button beside the last inductee of every year • Removing unnecessary buttons such as inductee home

	• Removing edit inductee button from home and adding it to the inductee content page • Showing validation upon add inductee and inductee content form submit

DOMAIN EXPERT EVALUATION

Throughout the development of the Walk Experience Project, feedback has been received from committee members following each release. The feedback received from Cliff Hunt, Patti Jannetta and Don McVie echo that the Content Management System is intuitive and can be applicable to multiple Walk of Fames, additionally, that the augmented reality experience was a great addition from the original concept they had of the application. Notably, there was an ongoing conversation with the committee regarding the upkeep of the star's plaques at Port Credit Memorial Park. During the team's on-site visit to record the Alpha Release, the team noticed how hard it was for the average person to decipher Oscar Peterson's name through simply looking at the star. The committee had mentioned this was something they had been in discussion about as the City does not perform maintenance of the Stars during Winter, and they had hoped to replace older Stars with clearer lettering. Due to this concern, the team decided to look into location-based scanning as future work for the project.

USER TESTIMONIALS

Official user testimonials have not yet been gathered by the team due to COVID and location-based restrictions. Live demos and preparing a survey to be answered by users and testers have been identified as part of the future work to be done for the project.

However, the following feedback was received from peers during a video demo of the application:

Peer Feedback
Feedback
• "Very clever solution to a need that I did not even realize existed! The implementation looks so stunningly well put-together especially considering the sheer scale of the application. So much complication and it all seems to be handled so well!" • "The technology used is great for user interaction and allows users to fully emerged in the person's memoire. The use of AR creates a new form of interaction compared to just scrolling though pictures. The user interface looks great." • "I am blown away by the quality of this project. I absolutely love the use of AR, plus the ability to take pictures of the AR experiences is super cool! The ability to take a picture of an inductee's star and have information about the artist appear instantly is awesome. The content management system is also really well done. Honestly, I don't have much to say about it other than that, just really great work!" • "Overall great idea, loved that it incorporates the local community and the history of it's people."
Based upon the critiques given from peers during the video demo, our team plans to continue developing the augmented reality and user interface components of the mobile application. The following feedback regarding this was received: • "Project was good as a whole but there was just one issue I came across in the demo. Does the AR always show up on the middle of the street? That may be a hazard! Other than that good project!" • "The project was very well done, the demo was properly structured. There is not much that I can think of for feedback other than this being just a wonderful application and with a few more tweak to maybe the UI, the application would be equivalent to a professional app for the MMWF. This seemed like a tremendous amount of work and your group delivered it perfectly." • "Great demo of your project! All areas of your project look like they were well thought out and implemented impeccably. I would like to mention couple additions to the UI that I think would improve the UX: o when displaying a gallery, add indicators with positions to signal that it is swipe-able and to display when the user has reached the end so they don't have to figure out if an image is the last one to swipe through o when playing live music, display a preview of the next album cover if there is another song in the queue and disable the next button when you've reached the end of the queue."

FUTURE WORK

The future work that is required for determining the project's suitability include conducting tests by independent users, recording official domain expert evaluations, and attaining user testimonials. As the team reached Final Release the following use-cases will be implemented for future iterations of the project:

Future Use-Cases for Upcoming Iterations		
CMS	*Android*	*iOS*
• Preview Inductee • Iterations on current use-cases	• Tour the Stars • Offline Experience • Iterate on current use-cases	• Iterations on current use-cases

New Technologies

The team revisited its choice to use Microsoft Azure for image to text detection to detect an inductee name from the star – the team has instead leveraged Google's image to text pod for iOS. Additionally, the augmented reality must be iterated on to created location-based anchors, the team found that the stars being located so close to each other may cause issues when doing so.

Project Continuation

The team has noted there is a possibility of this project to be large enough to span multiple generations of students since our community partner, the Mississauga Music Walk of Fame, aims to make this project adaptable for all Walks of Fames. In terms of the mobile application, the hope is to add some incorporation with social media, interaction and advertisement for establishments in the area.

In terms of the content management system, the hope is to implement functionality to allow for users to preview how an inductee would look on the star. Our team also hopes to continue to further optimize the content management system by updating existing functionality and expanding the amount of API calls available to use.

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