

XBCAD7319 - Work Integrated Learning - POE

Group 10

November 22, 2021

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Introduction

This document serves as a record of the XBCAD7312 project and any related artifacts. It is the portfolio of evidence of the project and is broken up into two parts, the first part detailing aspects related to the project such as members and responsibilities, project feasibility, main goals, constraints, business benefits etc. Here, the development process is documented and discussed as well.

The second part of the document is of a more technical nature and details the application and its related system elements. Here, the architecture is outlined, and all related support resources are discussed.

The goal of this document is to simply provide the evidence of *what* and *how* the project work was performed.

Part I

Project

1 Members and Responsibilities

Below the respective members of the project and their roles have been summarized in table format. This structure is a rough guideline and there were cases where these individuals and their roles overlapped.

| Name | Project Role | Responsibilities |
|------------------------------|---|---|
| Amy | Project Sponsor | Provides management level support and direction to the project |
| Yusuf Limbada 18002320 | System Planner System Documentation | Maintain project plan and design system architecture. |
| Rivier Banzoulou 18015745 | Frontend Developer Tester | Design and develop the frontend system and interfaces. |
| Caiden Mc Lennan 18009560 | Frontend Developer Tester | Design and develop the frontend system and interfaces. |
| Rochelle Moodley 19006697 | Documentation | Maintain business process and related documents. |
| Neliswa Mabaso 17314920 | Documentation | Maintain business process and related documents. |
| Charmaine Dobbin 19003337 | System Planner System Documentation | Define planning requirements and manage system documentation. |
| Justin Bailey 19004389 | Frontend Developer Backend Developer Researcher | Develop and manage auxiliary system functionality and requirements. |
| Emile Jonkers 19005768 | Project Coordinator Full-Stack Developer | Manage the project and design and develop system. |

2 Sponsor

Playwrite Occupational Therapy is a team of four occupational therapist working together in a private practice. They are the stakeholders for the proposed project. Their passion is to equip children who see and experience the world differently with the necessary skills and confidence to face any challenge that they encounter. They provide group and individual therapy sessions at school as well as outreach in disadvantage communities.

The proposed project is to create a simple, easy to use, low maintenance website for Playwrite Occupational Therapy. The website is required to provide guidelines to parents, provide activities to promote development and to offer support to parents. The website needs to be interactive and easily accessible for both the therapist and parents to use.

The goal of the project is to design and build a website that can be easily updated and requires little to no maintenance. This goal will be approached using the agile software development methodology. The high-level risks for the project are outlined further below and includes any major and detrimental issues that could potentially be encountered during the different phases of the project. This document also outlines the feasibility of the proposed project, discussing in detail each facet of feasibility.

3 Problem Description

Design and build a functional and comprehensive website to represent Playwrite OT and their practices. The website will equip caregivers and Playwrite customers with the information required to properly deal with occupational therapy issues and related matters. The website focus on user-friendly principles to ensure those with little to no tech skills can still used and benefit from the system. The website will also include a backend admin system that will allow for the management of engagement with users of the system.

Through the development of the proposed system we hope to help guide parents on the development of their children and build a lifelong community that works together to aid those in need.

4 Feasibility

4.1 Operational

Operational Feasibility tests or deliberates whether the project undertaken will be able to solve the specific problem that the company is facing and in the timeframe specified.

The timeframe that has been allocated for this project is *6 months*. Only half a year is effectively available to perform all the required design, development, and related functions. If managed correctly the timeframe will be adequate time for all team members to perform the required duties.

Input will be required and obtained from all parties involved to ensure that all the expected requirements are met and fulfilled. Any changes will be made with an agile nature and development framework in mind and adapted as best as possible with the timeframe and tasks in mind. The business benefits of the project are numerous and are further discussed below.

4.2 Technical

This technical feasibility study explains what technical resources our team may need during the development process and an evaluation of our experience with the allocated resources to ensure that realistic expectations and goals are being considered.

The team will be developing a web-based application for Playwrite Occupational Therapy. The team's skillset and practice with web-based applications are of good standard. The potential options of technology choice is as follows:

- Utilizing the .NET 5 framework and related technologies.
- Utilizing the Angular javascript/typescript framework.

Based on experience, the first option will be the best candidate for the proposed system and will be used in conjunction with the following technologies and platforms, which are all free to use:

- HTML
- CSS
- Javascript
- C#
- Firebase
- Heroku
- Cloudinary

4.3 Economic

In terms of economic feasibility, the benefits of the proposed application will outweigh the risks as our team has had sufficient experience with the above technologies which are all free to use.

The above-mentioned technologies and tools may be free, but the hosting of the web application and the backend database will not be. The application as well as the backend database will require a hosting service. There are many hosting services and package options available which we will be able to decide later since our needs may change and most hosting services allow flexibility. Our team will most likely use Microsoft's Azure hosting services since we have become familiar with it over the last couple years.

4.4 Hosting Options

The system had a number of hosting options, presently the system is on the free plan of Heroku Hosting platform. The hosting options for future growth with price comparisons was investigated a a report was generated. The hosting options report can be found [here](#).

5 Constraints

5.1 Design

- The system should be web-based and mobile-friendly. It must be able to be displayed on different browsers such as Firefox, Chrome, Edge, and Safari.
- The system should be audience-targeted, which means that users interacting with the web application must be able to grasp its conceptual purpose easily.
- The system should be user-friendly, allowing users to navigate easily throughout.
- The system should be available for updates in order to stay modern, for example, allowing user feedback and content updates.

5.2 Scalability

- The system should be scalable for a better performance of the web application. The site must be flexible to allow large traffics, data input and output, small timing, and fast loading of pages.

5.3 Security

- The system should be secure at an industry level. The access to critical part of the system should only be accessible by authorized users and administrators of the organization to ensure protection against intruders, thefts, and system compromise.
- The system should have a secure database. Backing up data to some off-site external hardware, rather than a cloud service, can be also be relevant in case of attacks targeting the database or related services.

5.4 Usability

- The system should be accessible 24/7.

6 Business Benefits

The importance of having a successful website, cannot be understated. In today's era it is paramount that one's business is credibly and accurately represented online. A proper website can allow the business to become known and navigated by an entirely new and different audience. The purpose of this section is to outline the benefits to the client's business as a result of a successful project.

The first benefit for a successful project is Online Credibility; Playwrite Occupational Therapy has customers, which they need to be able to reach and communicate with, wherever they may be geographically. Having a successful website will allow this to happen on a different level and to a different audience – a vast majority of people in the digital world. If a business does not have some form of online representation, it loses some of its credibility. People usually start asking questions like –“How good can they be if they don't have a website”, ”What does the business actually do?”. By establishing an online presence, these questions can be answered and put to rest in a mouse click and a keypress, displaying a transparent image of the business and its inner workings.

Customer Interaction. A website can also be an effective mean to ensure communication and engagement with clients. By including practical and relevant information on the Playwrite website along with some form of a chat system, Playwrite can assist their clients, promote collaboration in an easy manner and open the door for business ideas or occupations. The proposed website can also facilitate enquires from these potential prospects, parents, caregivers etc.

Another benefit will be Growth Opportunity. The proposed site will give Playwrite a chance to attract investors and other potential stakeholder to collaborate with them on their business ventures and vision due to their easy online accessibility. In this manner it will boost the growth of the business allowing them to reach more people and make an even bigger difference.

The proposed new site will provide unparalleled Consumer Insights. Playwrite will be able to analyse their customers and user's behavior in order to provide more relevant assistance which is critical due to the medical nature of the business and each customer having vastly different and specific needs.

The last benefit of a successful website is Market Expansion. This is a powerful tool. Because the Playwrite will have a professional website, Playwrite will be able to break through geographical barriers, because of the power of the Internet, they will be able to reach customers across the province or even country. Anyone in need of the type of services that Playwrite offers will know what Playwrite Occupational Therapy is about.

7 Milestones

The basic milestone documentation was drawn up and updated throughout the lifecycle of the project. The milestones documentation can be found [here](#).

8 Use Cases Documentation

The use cases were drawn following the initial requirements gathering phase of the project and was approved by the sponsor before the development of the system began. The use case diagram documents and related artefacts of the system can be found [here](#).

9 Risk Management

The [Project Risks and Milestones](#) in their final state reflecting the most up to date milestones, risks and their mitigation strategies have been made available in the OneDrive folder.

10 Presentation

The Presentation of the system took place on the 19th of November. The presentation powerpoint can be found under the *Presentation* folder on the project [OneDrive Folder](#). The basic layout and order of presentation per team member is as follows:

| Name | Topics | Slide Numbers |
|------------------|--|------------------|
| Emile Jonkers | Features, and System Architecture | 1-3,8-9,10-12,14 |
| Neliswa Mabaso | Problem Description | 4 |
| Rochelle Moodley | Constraints | 5 |
| Yusuf Limbada | Business Benefits and Feasibility | 6,7 |
| Charmaine Dobbin | Technologies and Database | 14-17 |
| Rivier Banzoulou | Application Architecture and Frontend Demo | 18 |
| Justin Bailey | Software, Support, and Maintenance | 19,20 |
| Caiden Mc Lennan | Absent | Absent |

11 Development

11.1 The Agile Process

We utilized the popular and well documented agile process. This was, however, only implemented in the second semester. The process consisted of the popular sprint cycle which varied in length from 1-2 weeks per sprint, throughout the semester. We implemented two stand up meetings per week on average, usually on a Wednesday and a Sunday. We also conducted the sprint retrospective at the end of the sprint period after the final sprint standup. The [retrospective](#) reports can be found on the OneDrive.

11.2 Kanban Boards

Over and above the agile process we layered the Kanban visual framework. This made clear to all members what was required, by when, and how. We used the popular planning software *Trello* to implement this and at each sprint iteration, a snapshot of the boards were taken and included in the sprint retrospective reports. These can be found on the OneDrive folder or by viewing the boards directly on [Trello](#).

11.3 The Development Process

At the start of the project, the required activities were added to the *Product backlog* column on the Kanban board. At the start of each sprint the tasks were dragged from this column to the *Sprint backlog* column depending on the task size, their duration, and the amount of resources required.

The sprint commences with the allocated workload present within the *Sprint backlog* column. These tasks would then be monitored at the stand-up meeting for the duration of the sprint. Ideally these tasks would then be completed by end of the sprint. As the tasks are assigned and worked on they move from the *Sprint backlog* column over to the *In Progress* column, from here, once completed they move over to the *Review* column and then that specific task will undergo review during the next stand-up meeting. Any tasks that were not completed were then carried over into the next sprint, remaining within the *Sprint backlog* column. Once the task has been reviewed it will finally be archived into the *Done* column. At the end of each sprint the team performed a sprint retrospective meeting to assess the efficiency of the sprint past and any changes that would be required to be made in subsequent iterations should they be required.

11.4 Stakeholder Engagement

The stakeholder (Amy), owner of Playwrite OT, was the individual through which the communication about system direction and needs took place. The communication media itself started as email and after a few weeks of unresponsiveness, shifted over to *Whatsapp*. [Linked](#), the major dialogue between the project coordinator, Emile, and the stakeholder, Amy, is detailed.

11.5 Attendance

The attendance of team members and other related individuals can be found on the Group 10 OneDrive folder or by going directly to the [Attendance spreadsheet](#).

11.6 Meeting Recordings

Most of the meetings in the second semester were recorded and these are available on the OneDrive folder. These recordings were very sporadic due to the inconsistent attendance of members and the resulting ability to perform the standup meeting. First we used CraigBot - the discord voice recording software, after which we switched over to OBS which included video as well as audio to create a more comprehensive documentation perspective.

11.7 Evaluations

The peer and self-evaluations were completed by each individual team member and submitted privately on teams as per the submission requirements. These evaluations were performed according to the templates provided in the XBCAD7319 module documentation.

Part II

Application and System

12 System Capabilities and Features

12.1 Website

The site, being hosted, can be found [here](#).

Users of the system will fall into two categories. Namely:

- Administrators/Therapists
- Parents/Caregivers

Most of the website's functionality will be accessed by the caregiver role without any authorization. The other area of the site that allows for management and user engagement functionality will require authorization and is restricted to the therapist role.

12.2 Newsletters

Users, of any role, will be able to subscribe to the newsletter so that they can be informed of recent updates with regards to Playwrite Occupational Therapy or helpful information for caregivers.

12.3 Informational Content

In-depth content which will include the following:

- Basic and high-level information on occupational therapy and speech therapy.
- Guidelines/checklists/activities for parents on developmental milestones.
- Infographics and videos to educate on the various aspects of development and the struggles children and parents may face.

12.4 Security and Privacy

Due to the medical nature of the website extra security features will be implemented to ensure that the user's data remains private and the system's resources are secured appropriately. This includes, but is not limited to JWT, HTTPS, and security certificates.

12.5 FAQ and Usage Resources

The front end will be designed with simplicity in mind to ensure that our website is intuitive and does not cause usage frustration which will be supplemented with numerous resources and FAQ pages to assist in any confusion that may occur in relation to using the website.

13 Architecture

13.1 System Architecture Plan

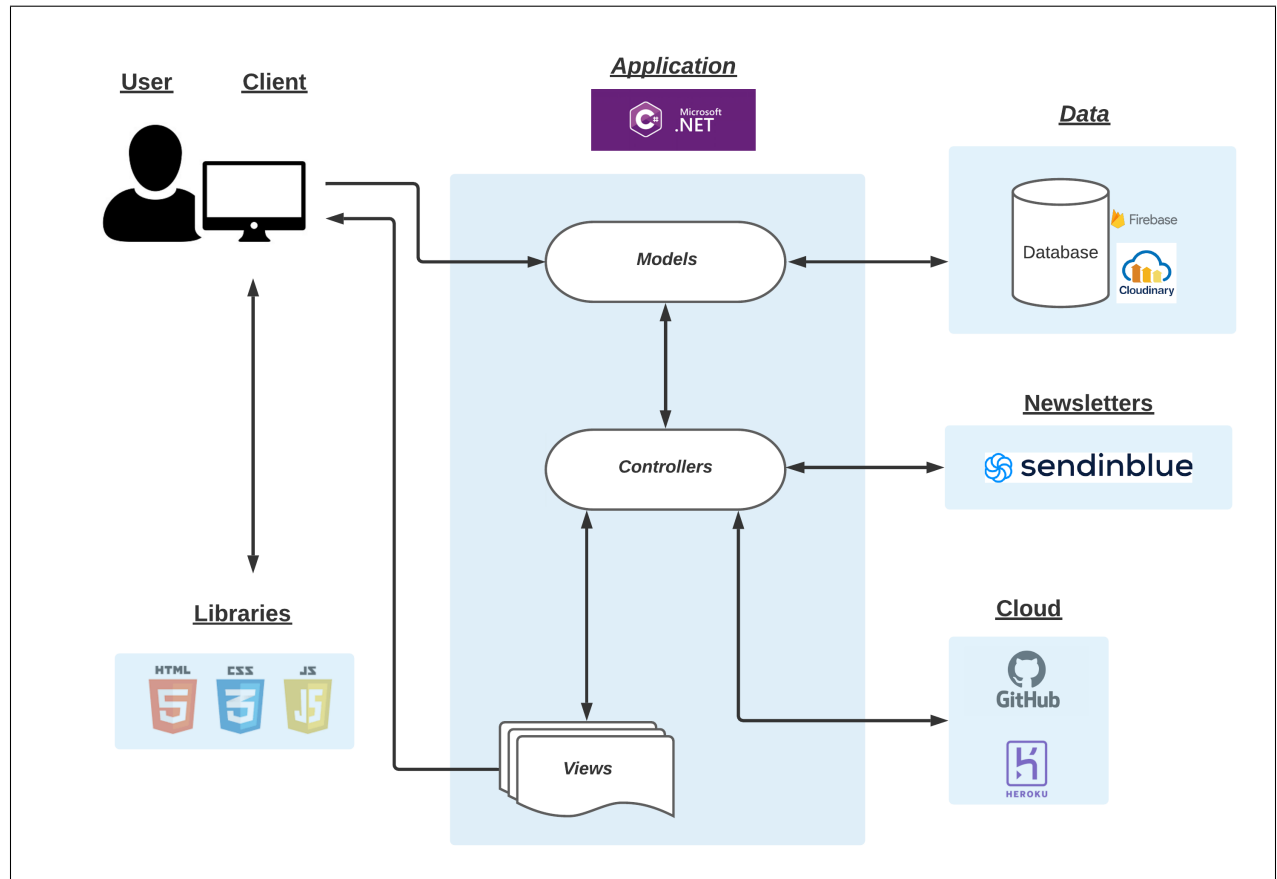


Figure 1: Basic system architecture plan

13.2 Application Architecture Plan

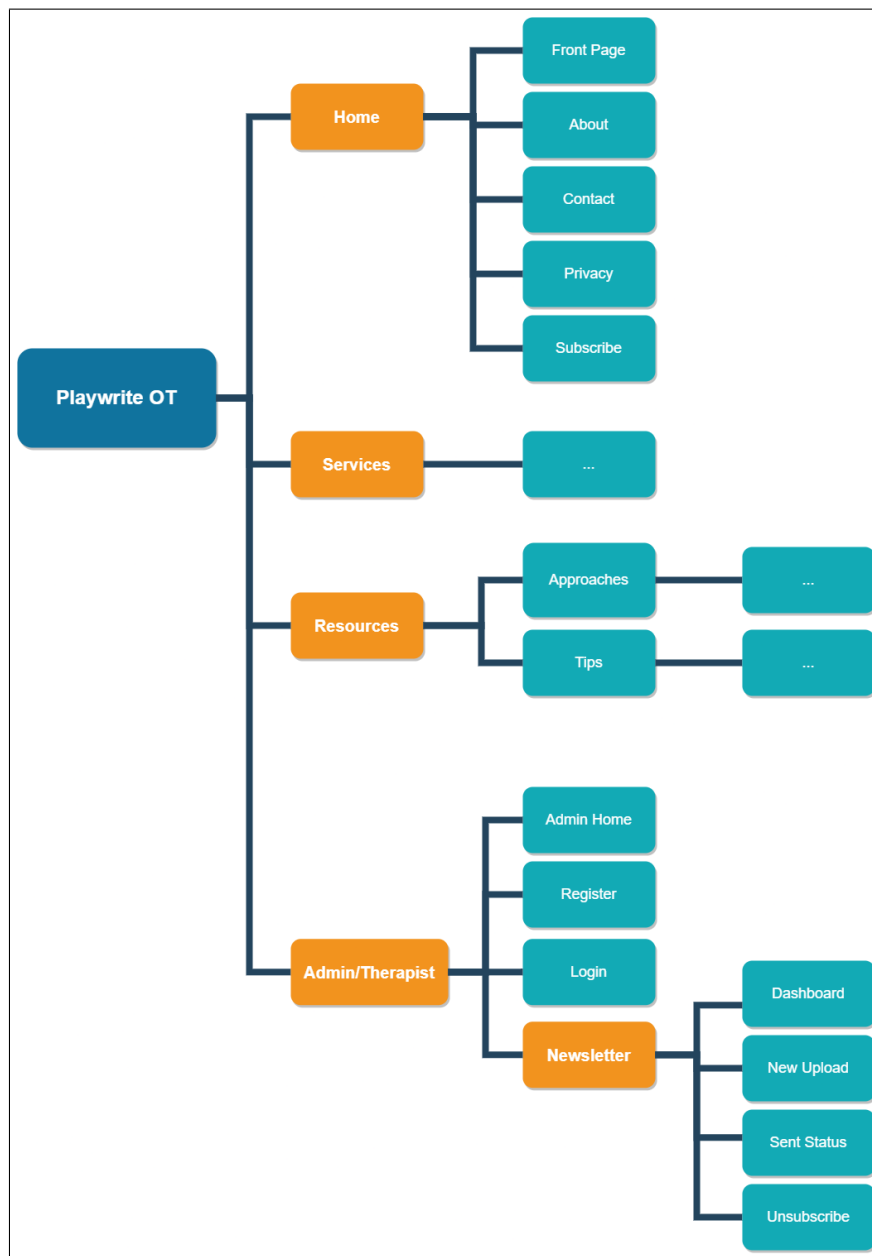


Figure 2: Basic application architecture plan

14 Database

14.1 Firebase

The Firebase Realtime Database NoSQL cloud database was used in the system and enables the storage, synchronization and querying of data at a global scale.

The occupational therapists' account details are stored here, which allows for them to log into the website to perform the respective administrative activities. From a security perspective, the passwords have been hashed and salted before storage, meaning no plain text passwords were stored. See below for the basic structure of the data stored in the Firebase realtime database.



Figure 3: Basic structure of the Firebase DB and its related data

14.2 Cloudinary

Cloudinary was used to store the multimedia content of the website. Cloudinary is an end-to-end image and video-management solution for websites and mobile apps, which covers everything from image and video uploads, storage, to manipulations, optimizations, and delivery.

With Cloudinary, one upload images and videos to the cloud and automate smart manipulations of those media without the installation of other software. Cloudinary was used to seamlessly delivers the media to the website, through a fast content delivery network (CDN), that is optimized at industry standards.

The websites' multimedia content such as images, videos, and newsletters, are all stored within the Cloudinary Media Library.

15 Testing

The system and its related resources underwent basic testing according to a test plan and test cases. These were filled in and performed as anticipated and allowed any overlooked issues to be resolved easily and quickly. These documents can be found under the [Testing](#) folder in the OneDrive.

16 Software

The chosen source control provider for this project was *GitHub* and as such the repository can be directly accessed by going to [GitHub](#) or by accessing the master copy on the [OneDrive Folder](#). Access to the master copy via the folder will expire on 28/02/2022. All source code and documentation required to deploy the app to Heroku is available on GitHub.

17 Support

Documentation on GitHub includes a quick start guide which has step by step instructions for deploying a Docker image of the app to Heroku. Any updates to the app will require the app to be redeployed to Heroku to propagate changes. With regards to maintenance and analytics, Heroku has a dashboard for customers to see the daily web traffic statistics of the deployed app. These dashboards can be used to determine if upgrading plans are required. SendInBlue also provides a dashboard displaying insightful data showing how many people have subscribed and unsubscribed to the newsletters. SendInBlue may also require upgrading or downgrading plans depending on the size of the subscriber list and the number of newsletters sent per month.

A basic [quick-start guide](#) was also compiled summarizing the basic functions of the website alongside a quick video walkthrough.

18 Resources

All the project and system artifacts can be found on the [OneDrive](#)