



Title: Requirements Specification

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Olympic Developers

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Overview: In this deliverable, the team clearly lays out the required features the application will have by the end of the capstone period. This includes Functional, Non-Functional, and Environmental requirements as well as a Risk Analysis.

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1. Introduction

The Olympics have symbolized the pinnacle of professional athleticism for over a century. The games were designed to bring together athletes from across the world as a demonstration of national solidarity. In order to bring pride to their prospective countries, these athletes train as much as they can within the 4 year span between which the summer games are held. The goal of HYPO2 is to offer a fair, competitive edge to athletes who train during off seasons. Athletes attend HYPO2 high-altitude training camps to increase endurance and improve overall health. The purpose is to train and support these athletes so they can excel in world-class competition.

2. Problem Statement

While HYPO2 has been extremely successful, the current business model still faces a few challenges relating to client communication and scheduling. HYPO2 staff communicate with their customers through individual text messages and emails which often requires constant, redundant work. This process for HYPO2 and their employees is more complex than it needs to be. For example, when a HYPO2 client wants to change a scheduled activity, they first ask HYPO2 if the change is possible, leading HYPO2 to cross reference data from all of the camps, facilities and services. If the change is approved, a master PDF must be manually updated for the client and communicated with all HYPO2 staff through email. If the change is denied, there is a negotiation of other options and the process begins again. This could lead to using valuable camp time to plan rather than to train. The variability of training camps alongside the lack of a standard for automated communication has led HYPO2 to focus more on company operation rather than camp performance.

3. Solution Vision

The goal of this project is to improve on the existing workflow by creating a software system that allows employees to effectively communicate with clients, create training schedules, and receive notifications of changes in scheduling or client requests. HYPO2 envisions a communication system that benefits employees and clientele alike thus promoting training camp productivity. The proposed solution includes a web application that offers a client portal allowing coaches to access and change their schedules with ease. Alongside an admin portal that allows HYPO2 staff to access and update training camp information such as activities, costs and team schedules. Any use within these portals will be communicated automatically to respective recipients through templates already used by HYPO2. The Olympic Developer's solution creates an opportunity for employees to better provide real time schedules and up to date information in reference to HYPO2's offered services.

4. Project Requirements

To provide a robust software solution for HYPO2, the following functional, nonfunctional, and environmental requirements must be met.

4.1 Functional Requirements

Functional requirements are units of functionality that encapsulate the main features that users will interact with when they visit the web management portal. They can be described as a series of top-level functions that carry out the main tasks for our software. Correct implementation of the following specifications will ensure that an outstanding customer experience remains at the forefront of HYPO2's business:

4.1.1 Shared Functionalities

These are features that are shared between administrator and customer accounts. The functionalities that compose this category will behave the same for all users. The interface may display different results depending on the type of user, but the underlying logic will remain the same which is why they are considered "shared" functionalities.

- **User Accounts**

When first visiting HYPO2's web portal, users will be prompted to sign into an account. An account can be created, or if one already exists the user may sign in. This account contains personal information such as the user's name, phone number, affiliation, username and password. This process of acquiring new users will be carried out using Amazon Incognito by AWS which is an application programming interface that stores user credentials and sends verification messages. User data is retained even after the duration of a training camp so that the same information is not be inputted twice. These credentials can be stored for a set time interval and discarded when the current health information has changed. An account is required to use the web application since it will be storing confidential health information.

- **User Validation**

For security purposes, all users must have their credentials validated. When a user first creates an account, they will be asked to provide a method of communication. A confirmation message will be relayed to the user, where they will verify that they are human. We can use Amazon Incognito to handle this verification process as it comes equipped with application-to-peer messaging. This process can be used in tandem with a CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) while the user is creating an account to provide further protection against scammers.

- **Notification Preferences**

Both customers and administrators will be provided with an interface where they can opt-in and opt-out of certain notifications. Possible notifications that can be sent to the customer include promotional messages, test result alerts, and cost updates. Similarly, administrators will be able to opt-in or opt-out of incoming customer messages, appointment reminders, and payment confirmations. This data will be stored along with the users' account credentials in HYPO2's database so that these preferences can be updated and saved.

4.1.2 Account-Specific Functionalities

Since this platform will be utilized by HYPO2 clients and staff alike, it must be able to perform a wide variety of tasks. Certain areas of the software will only be accessible to administrators while other aspects will be specific to the customers. Functionalities that fall under this domain will behave the same way but with different constraints. The administrative schedule will look like the customer schedule but the administrative schedule will show all activities from every team and the customer schedule will show their teams activities only.

Customer Functionality

- **Camp Setup**

HYPO2 Customers will be prompted with an interface after signing up to provide an estimation for services needed in the camp. There will be a list of services provided by HYPO2 alongside input fields. These input fields allow customers to input the expected quantity of each service to be used in the camp. During this setup, there will be a running camp total on the page to provide billing transparency for customers and allow them to see exactly how and where their money is expected to be spent. Some services provided include:

Accommodations	Food/Dining	Ground Transport	Training Venues and Tools	Sports Med Services
Blood Testing	Physiological Testing	Sports Nutrition	Sports Psychology	Miscellaneous

- **Estimate Cost**

A real-time running total of camp costs is needed for the level of transparency HYPO2 is looking to provide. The service quantity will be multiplied with service cost and totaled,

displayed each time a service quantity is added or removed. This allows customers to get a better understanding of how and where their money will be spent.

- **Calculate Running Total**

Predetermined formulas will be utilized to calculate an accurate running total. Most of the services offered by HYPO2 have constant pricing so the values used in these equations can remain constant. The services with a volatile price can be updated manually by administrators.
- **Update Running Total**

Changes made to the customer's running total of camp costs will be automatically updated and viewable in the live-billing interface. The tabulated section containing this feature will display the original estimate given by HYPO2 on the left and the running total on the right. The running total will represent the actual amount spent by the customer while they are at HYPO2. Every dollar that is added to the original estimate will appear in the running total with a description of the services being provided. This will provide a level of transparency between the client and his athletes because it will show where the derivations from the estimate are occurring. Updating the running total will occur when a customer adds or deletes a service from their weekly schedule. First, a message will be relayed to administrators at HYPO2 signifying that a change has been made. A function call will also be invoked to allow the database to update this information. Then the customer's schedule will be updated to display the added or removed camp service. This update will appear for HYPO2 administration and staff as well so they can keep track of booked appointments.
- **Display Customer Main Menu**

After camp setup, users will have full access to the portal. There will be a main menu including tabs for camp schedule, document information, and billing information. Each interaction will bring the user to their expected destination with a route to get back to the main menu.
- **Display Customer Schedule**

In order to properly communicate camp activity location and times, each user will be able to view their schedule daily or weekly forms. Each activity will be seen in blocks and organized chronologically within a day. Each activity type will be

assigned a color to help remove language barriers as colors are universal and provide a categorical medium. Each block within will contain activity type, time, and location.

- **Display Extended Schedule**

Each appointment can be clicked and expanded which provides the user with a more vivid display as well as an in-depth description including start and end times, activity address, service summary including attached relative documents alongside a button to request to cancel the activity.

- **Cancel Appointment**

In the event that a customer needs to cancel a given activity, the customer has a time window to cancel without incurring a charge. Any change made after that will result in a cancellation fee. HYPO2 retains the right to waive this under extenuating circumstances. Users will be prompted with a confirm cancellation popup in order to prevent accidental cancellations. Any fees will be communicated to the customer in the popup. A notification will then be sent to HYPO2 communicating the change. Any and all changes will update schedules for both admin, staff, and client as well as the live camp summary.

- **Display Document Information**

Users will be able to view test results, personal health information, and other documents through the document results tab. This information can be displayed in a variety of different formats including an on-site table or a pdf document. This data is considered confidential information, and must be stored in our database in accordance with Health Insurance Portability and Accountability Act (HIPAA) regulations due to keeping track of health information.

- **Pull Documents**

Data pertaining to the test results, clinical notes, and other documents that customers receive while at the camp will be stored in HYPO2's MySQL database. When a customer gets sent a new test result or clinical note, the web portal will "pull" this information from the database and send the customer a notification. The application will update the tabulated section automatically, populating a table or pdf document.

- **Display Billing Information**
Camp billing information will be viewable through the billing tab on the main menu. The camp cost estimation will be viewable alongside a live camp summary. This allows for customers to compare and contrast how they expected to use their funds against how they are being used. These will be broken down categorically by service meaning users will be able to see exactly how their funds are being allocated. The live summary costs will be broken down into what has been spent and what is still scheduled to be spent as this can be viewed at any point within a training camp.

Administrator Functionality

- **Admin Main Menu**
There will be a main menu for administrative employees including tabs for camp services, schedules, billing, and test results. Each interaction will bring users with administrative privileges to their expected destination with a route to get back to the main menu.
 - **View and Update Camp Services**
HYPO2 administration will have an access point to the application to input services, descriptions and prices that will be stored in the database to drive the correlation between services and their price. The services and descriptions will be viewable by customers in their camp setup interface. The price will populate a MySQL table to be used in the client cost calculator. Price points, services and their respective descriptions are subject to change within HYPO2. The administrative level needs access to be able to make these necessary changes.
 - **Display Administrator Schedule Page**
A daily and/or weekly schedule will be displayed in one of the tabulated sections in the administrators interface. This will display all of the booked appointments for the given time. The schedules will have a view for color-coding by team as well as a view for color-coding by activity. This differs from the customer schedule page which only displays their teams booked appointments. Providing the client with an overview like this will help HYPO2 establish meeting times and track overall camp progression.

- **Automated Messaging**

Currently intake forms are sent out by HYPO2 and expected to be filled out by the customer by hand. This onboarding process can instead be handled by our web management portal through the use of pre-composed message templates. Before this process can occur, a customer must have an account registered with HYPO2's web portal. The contact information that is provided during account validation will be used as the customer's main method of communication which is how they will start receiving automated messages. When the following criteria is met, an automatic notification containing the companies intake form will be relayed. When the customer receives the intake form, they will be instructed to fill in their information in a specific format, either comma-separated or hyphen-separated. This unified format will allow the data to be parsed at a later date. The administrator interface will contain a tabulated section for receiving these intake forms. Once a schedule has been created by HYPO2, a pre-templated message can be sent from this dashboard, containing an updated PDF of the team schedule as well as down-payment information.

- **Communication API**

The technology that will be supporting our application-to-peer messages is provided by Amazon SNS by AWS. This service will allow the web management portal to send and receive pre-templated messages and send scheduled reminders.

- **Upload Document Information Page**

Admin will use an interface to upload test results, clinical notes and other related documents to the application that will be viewable in the client document information tab. Each document will be uploaded and assigned to its respective team for access. In order to provide data integrity, the content of the pdf document will not be scraped and stored but rather store the entire document in the database as a blob. When documents are uploaded, an automated notification will be sent to its respective user.

Staff Member Functionality

- **Staff Member Main Menu**

Within the web management portal, there will be a staff member specific main menu including tabs for schedules, and upload test results. Each interaction will bring the staff member to their expected destination with a route to get back to the main menu.

- **Tailored Service Schedule**
A daily or weekly schedule will be displayed in the schedule tab. This will display all of the booked appointments of a staff member's respective service. The blocks within the schedule will contain start time, end time, as well as clients name address and phone. This will be the medium between customer and staff to keep a real-time accurate schedule including any and all changes. The staff member will interact with the schedule and set up availability by creating event blocks for themselves.
- **Upload Document Results Page**
Staff members will use an interface to upload their respective documents to the application that will be viewable in the client document tab. Each document will be uploaded and assigned to its respective team for access. In order to provide data integrity, the content of the pdf document will not be scraped and stored but rather store the entire document in the database as a blob. When the document results are uploaded, an automated notification will be sent to its respective user.

4.2 Performance (Non-Functional) Requirements

Performance (non-functional) requirements are how the team will measure the performance of the above functional requirements. To test whether or not the application is user-friendly. Different groups will be asked to perform a set of tasks to find out if the product is easy to use. This is essential to determine if the product's functional requirements are implemented correctly.

● 4.2.1 Usability

The team will test usability of the platform with 3 different types of users: developers, HYPO2 clients, and administrators. This will be tested by giving tasks to the certain type of user and seeing how long it takes and how easy it was for the user to complete the task.

● Developers

Developers will test both types of functional requirements for client users and administrative users to see if there are any bugs that need to be fixed before passing it on for further testing. Before further testing can be started, it must be approved by the client to send out to HYPO2 clients and to run tests with a HYPO2 administrator.

● HYPO2 Clients

HYPO2 consumers that have been verified by the client to participate in testing of the product will be emailed a working link of the product. They will also be sent a task list that pertains to the client users functional requirements. This includes

signing up for a training camp, viewing the schedule, and requesting/canceling services. The testing for the usability can be moderated if the HYPO2 client allows it. If the HYPO2 client is okay with being moderated, a time will be set by our client. If no time can be set or they are not comfortable with being moderated, the test will be unmoderated. The scale we will begin using to measure the usability of the product will be Adobe's System Usability Scale (SUS) as requested by the client. At this time there are no concrete questions we will ask HYPO2 clients before sending out test HYPO2 Clients. The team and our client will choose questions we want to ask the HYPO2 Clients. Questions might include: *I would like to use this product frequently, I found the product unnecessarily complex, and I thought the product was easy to use.*

- **HYPO2 Admin**

For testing the admin usability with HYPO2, the team will ask the client to test the working link of the product. They will be given a task list that has tests for the administrative user functional requirements. These include things such as: creating a training camp schedule, updating pricing, and updating schedules. HYPO2 clients and staff will be using Adobe's System Usability Scale (SUS). The HYPO2 clients, staff and admin user will be asked the same questions regarding product usability.

- **HYPO2 Staff**

For testing the staff usability with HYPO2, the team will ask the staff from different services offered at HYPO2 to test the working link of the product. They will be given a task list that has tests for the staff user functional requirements. These include things such as: looking at their service schedule and uploading documents with information related to the service they provide. HYPO2 clients and staff will be using Adobe's System Usability Scale (SUS). HYPO2 clients, staff and admin will be asked the same questions. Also, these tests can be moderated or unmoderated similar as with the HYPO2 clients testing.

4.3 Environmental Requirements

Environmental requirements are restrictions given by the client. There are five environmental requirements for the HYPO2 web portal. The five include: transferable repository, desktop compatibility, software user manual, as-built report, and web-portal appearance.

- **4.3.1 Transferable Repository and USB**

This repository will contain a professionally-documented codebase. Once the Spring 2022 semester comes to an end, the repository will be transferred to the CEO/Founder of

HYPO2 Sean Anthony. The repository will be contained on GitHub. Before ownership, the running current version that is transferred will be copied and stored on a USB drive and given to the client.

- **4.3.2 Desktop Compatibility**

The website must be able to be developed on an AWS Cloud and already be tested before the project duration is over. The user interface will be scaled to an appropriate size depending on the desktop used to open the application.

- **4.3.3 User Manual on Software**

There will be a clear user manual explaining the final product that will be handed over with the repository and USB. The user manual will contain a walk-through for both the admin and HYPO2 clients to help with understanding, configuring, and operating the web portal.

- **4.3.4 As-Built Report**

Over the full production of the web portals code, there will be documentation of each push to the Github repository exemplifying the reasoning and the features added or fixes integrated for the system. This is required to help with ease of future development if the client decides to add more features or even look for any possible bugs that weren't worked out before the capstone deadline.

- **4.3.5 Appearance**

The interface for the HYPO2 web portal will be aesthetically similar to the HYPO2 main website. This will include the HYPO2 logo and the client will provide the team with their style guide to ensure brand consistency.

5. Potential Risks

5.1 Incorrect Data Displayed

When displaying information to users, there comes the risk of providing incorrect data. Managing data and using correct implementation will be important to mitigate any chances of displaying inaccurate information.

5.1.1 Likelihood: The likelihood of having incorrect data displayed to the user is low as through the testing process, it will be a priority to ensure that the output

of data will be correct. Without correct data display, the application will not be used

5.1.2 Severity: The severity of this issue is moderate if the appropriate data is not displayed. Users will miss important scheduling information that can hurt HYPO2's credibility and result in losing current and potential clients. However, with incorrect data being displayed, the issue can be worked on as soon as it is spotted as data would not match up with what is stored and the output of data.

5.2 Incorrect Data Stored

With this application, it will be important to correctly handle the data of teams and their athletes. The risk of incorrectly managing data will be a detriment to the application as it is needed to determine schedules and to accommodate athletes needs.

5.2.1 Likelihood: The likelihood of incorrect data being stored is low since the database will contain specific information that the user or admin must input. The data the user inputs will be stored exactly as they report.

5.2.2 Severity: The severity of this issue is high because the data being stored will help determine camp schedules and other necessities for athletes. With the use of incorrect data, the issue of displaying incorrect data becomes an issue as well, which will be harder to detect since the data displayed will match the stored data that is wrong.

5.3 Authentication Bugs

As HYPO2 works with sensitive information, it is important to have different levels of permissions for certain users. Allowing any user to access information on other athletes will be against Health Insurance Portability and Accountability Act (HIPPA) regulations and create substantial consequences.

5.3.1 Likelihood: The likelihood of authentication bugs becoming an issue is low because of the limited number of people testing the product. Starting with admin access and coaches access will allow for the program to be correctly implemented and tested before expanding permissions to athletes and other user types.

Spring 2022 Semester



Figure 1.0 Gantt Chart

The software design process being utilized to create HYPO2’s platform centers around the waterfall method. The entire first semester is spent gathering requirements and conducting a thorough analysis on the technologies needed to accomplish the desired behavior of the application. Thus far, the Technology Feasibility and the Requirements Document have provided an extensive overview of the necessary technologies. After constructing several prototypes in our Technical Demo, requirements gathering will conclude. Fortunately, this last deliverable will yield a proof of concept which will make transitioning into development simpler. Since all requirements and design models have been constructed in the prior semester, development can begin immediately at the start of the next semester. Implementation will center around an iterative process with each version of the application being more refined than the next. Setting up implementation in this nature allows for progress to be tracked and goals to be achieved. Each release will incorporate different areas of the software until finally the team can deliver a minimum viable product to HYPO2.

7. Conclusion

As HYPO2 continues to have success in handling different teams obligations through training camps, their process has not come without struggles of tedious tasks. Working with multiple teams becomes difficult to manage when all information is handled through spreadsheets and manually inputted. The issue does not end there as these spreadsheets must be

analyzed for information that determines camp schedules and the needs of specific athletes. The staff of HYPO2 must then communicate constantly with teams to ensure that any changes made can be accommodated for, on top of the constant flow of data needing to be processed. The work that HYPO2 does can be changed by removing the manual work and automating the work with a web application that manages the needed data. In this web application, clients and staff will also be able to communicate automatically to have consistency rather than having emails and texts being manually sent. To transition to a system that eases the workflow for staff without making it harder on HYPO2's clients will benefit all parties as HYPO2 seeks to centralize all data and communication.

In order to satisfy all members of HYPO2 current operation system, the application will be used by three main classifications of users. HYPO2 clients, HYPO2 admin, and HYPO2 staff. Each type of user portal has different requirements. The HYPO2 client portal has the minimum level of access as all features only supply their respective data. The HYPO2 staff portal has access to all team's information relative to their specialty as well as access to their respective schedules. For example, HYPO2's staffed chiropractor will have access to all information from every team relative to their profession as well as a real-time schedule of all chiropractic appointments. The HYPO2 admin portal has the highest level of access as it needs to be able to view and update every aspect of a training camp regardless of the team. Automated messages will be used at every juncture to communicate all changes to admin, staff, and clients alike. A notification system will be used to remind users of upcoming appointments and training sessions.

The team has decided on which technologies will be used to create the desired solution. Every aspect of the web application has been thoroughly discussed and broken down into individual functionalities. HYPO2 has looked into solutions before but ran into the problem getting larger and larger as it progressed. These individual functionalities keep the scope of the problem in a manageable state and will allow for HYPO2 to see this solution through. There is nothing like this product in the Olympic industry and has the ability to change the way Olympic athletes and supporting entities view the training camp process.