Project Proposal

Level 02

Sport Facilities Management System

TechitOut

Faculty of Information Technology

University of Moratuwa

2023

Group Name

TechitOut

Project Name

Sport i

Client's name and address

Mr. Maneth Wijetunga.

Idea Boost

Group Members

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Supervisor

Ms. R.G.C. Upeksha

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1 Introduction

In today's fast-paced world, sports and physical fitness play a pivotal role in our lives, promoting health, camaraderie, and entertainment. Players all over the world learn new things to improve their game. Players often face challenges in arranging schedules that align with their preferred coaches, and creating a schedule tailored to their individual preferences can be equally daunting. Simultaneously, there exists a void in knowledge regarding nearby sports arenas and the amenities they offer, leaving players and coaches unaware of some fantastic opportunities. Here, under the watchful guidance of experienced coaches, players embark on transformative journeys, honing their skills and pushing their limits.

Therefore, developing an application to combat these issues while player, Coach and complex can meet in one place. The system under consideration has been designed to address the issues and efficiently handle the scheduling of individual tasks. With capabilities like automation of many tasks, it aids in efficient and effective management of sports.

2 Background and Motivation

Sport facilities are pivotal community assets, fostering physical activity, social interaction, and sports development. However, traditional methods of managing these facilities often fall short in terms of efficiency and user experience, with outdated booking systems and inefficient resource allocation. To address these challenges, our project seeks to develop a comprehensive Sport Facility Management System (SFMS). This initiative is motivated by the pressing need to modernize facility management and optimize resource allocation. With an SFMS in place, we aim to streamline operations, enhance the overall user experience, and promote the health and wellbeing of our community. By leveraging technology and data-driven insights, this project will not only improve facility management but also contribute to revenue generation and the long-term sustainability of our sports facilities, ensuring they continue to serve as vibrant hubs for the community.

3 Problem in Brief

The current sports ecosystem lacks a dedicated online platform that comprehensively caters to coaches, physiotherapists, ground management staff, equipment maintenance personnel, and facility management staff. This absence results in inefficiencies, missed opportunities, and restricted access to essential resources and services for sportsmen, coaches, and ground owners within the sports community.

For Sportsmen:

1. Difficulty in Finding Facilities:

Sportsmen encounter difficulties locating suitable sports facilities or grounds for practice or events, leading to inconvenience and potential scheduling conflicts.

2. Limited Access to Coaches:

Locating qualified coaches who match their specific needs and schedules remains a challenge, hampering their ability to receive proper training and guidance.

3. Inefficiency in Booking:

The booking process for sports facilities often involves time-consuming methods, such as phone calls or in-person visits, resulting in wasted time and missed opportunities.

4. Lack of Physiotherapy Services:

Access to essential physiotherapy services for injury prevention, recovery, and nutritional guidance remains limited, negatively affecting sportsmen's performance and well-be.

For Coaches:

5. Job Opportunity Challenges:

Coaches face difficulties finding coaching opportunities, particularly part-time or freelance work that aligns with their availability and skills.

6. Limited Exposure:

Coaches struggle to market their coaching services and gain visibility among potential clients, impacting their ability to build a client base.

7. Scheduling Conflicts:

Coaches often encounter scheduling conflicts when attempting to accommodate multiple clients, affecting their effectiveness in managing coaching responsibilities.

For Sport Complex Management:

8. Inefficient Facility Management:

Ground owners and facility managers encounter challenges in efficiently managing sports grounds and facilities, resulting in underutilization or overbooking.

9. Limited Visibility:

Ground owners may find it challenging to effectively promote their facilities to a broader audience, leading to decreased occupancy rates.

10. Manual Booking Processes:

The absence of an online booking system makes facility bookings a manual and error-prone process, causing inconvenience for users.

11. Ineffective Marketing:

The lack of an online presence hampers efforts to market facilities to a wider user base, potentially resulting in lower revenue.

12. Lack of Equipment Management

The absence of a system for equipment management leads to difficulties in tracking, maintaining, and ensuring the availability of sports equipment, affecting the overall user experience.

13. Lack of staff management

Ground owners and facility managers face challenges in efficiently managing staff responsible for maintenance, security, and customer service, impacting the quality-of-service delivery.

4 Aim and Objectives

4.1 Aim

The aim of this project is to develop a system for Players, Coaches and Sport complex to meet each other and arrange a time slot for work together.

4.2 Objectives

1. To connect players with subject-matter experts by enabling them to select a coach of their choice based on the coach's qualifications and availability.
2. To facilitate complex bookings by offering detailed information on facility amenities, pricing, and real-time availability, allowing users to reserve time slots that suit their schedules.
3. To enhance complex functionality and user experience by consistently updating and introducing new features based on user feedback and evolving needs.
4. To efficiently manage and organize sports complex data, including user profiles, booking records, and facility information, through a robust data management system.
5. To enable users to participate in specific training sessions offered by sports complexes by enrolling in tailored packages that cater to their individual goals and preferences.
6. To ensure the highest level of data security and privacy by implementing a multi-tiered access control system, granting different levels of access to users based on their roles and responsibilities, thereby safeguarding sensitive information.

5 Proposed Solution

Sports Connect is an innovative web application designed to seamlessly connect players, coaches, and sport arenas, fostering a thriving sports community. Whether you're a sports enthusiast looking for a coach to improve your skills, a coach seeking the perfect location to train your athletes, or a sport arena hoping to attract individuals with shared interests, Sports Connect has you covered.

1. Coach and Physio Finder:

- Access a comprehensive list of certified coaches and physiotherapists.
- Utilize a search and match feature to find suitable coaches based on your needs.
- Explore coach profiles, availability, and feedback from other clients.

2. Coaching Job Opportunities:

- Search for coaching and part-time job listings in the sports industry.
- Apply for coaching positions and communicate with potential employers.

3. Package-specific Features:

- Basic Package (for beginners):
  - Access pre-assigned coaches and fixed training schedules.
- Advanced Package (Customizable):
- Choose your preferred coach from a list of available options.
- Customize your training experience, including booking grounds, coaches, equipment, and additional services.
- Enjoy the convenience of ground costs included within the booking.

4. Ground Booking Solution:

- Find and book training locations easily.
- Use an online booking system that checks ground availability.
- Securely make payments for ground bookings.

For Sport Complex Management:

1. Ground Booking Solution:

- List, manage, and optimize your sporting facilities on the platform.
- Utilize an online booking system that checks ground availability.

- Securely accept payments for ground bookings and services.

2. Marketing and Public Relations:

- Access marketing tools to promote your facilities effectively.
- Attract users through promotional programs and online advertising.

3. Equipment Management:

- Track sports equipment types, quantities, and condition in real-time.
- Schedule equipment maintenance and repairs for optimal functionality.
- Allow users to request specific equipment as needed.
- Monitor equipment usage with detailed logs and receive maintenance and restocking notifications.

4. Staff Management System:

- Create staff profiles with roles and availability.
- Efficiently assign staff to tasks and shifts.
- Keep records of staff training and certifications.
- Assign maintenance, security, and customer service tasks.
- Facilitate staff coordination and communication through a centralized hub.

5. Payment Processing (At the End):

- Securely process payments for ground bookings and additional services.
- Ensure a hassle-free payment experience for athletes, coaches, and ground owners.

6. Data Security and Compliance:

- Maintain strong data security measures and regulatory compliance.

7.Feedback and Iteration:

- Continuously improve the platform based on user feedback to enhance the overall experience.

5.1 Technologies Used

Figma: Figma is a collaborative design and prototyping tool used by designers and teams to create user interfaces, interactive prototypes, and design assets. It is a web-based platform that allows multiple users to work simultaneously on design projects in real-time, fostering seamless collaboration and feedback. Figma's features include vector-based design tools, version control, component libraries, and the ability to create interactive prototypes, making it a popular choice for designing web and mobile applications. Its

cloud-based nature ensures accessibility from anywhere, making it easy for design teams to work together, iterate on designs, and maintain design consistency.

React: React is a JavaScript library that is used to develop component based single page applications. React has a huge community support and has evolved as a mature framework that is already being used to build powerful web solutions. Also, because the mobile solution is going to be using react as its underlying technology, we can reuse modules, helper functions and many more resources supporting faster and efficient development.

Typescript: Typescript is a type system used on top of Vanilla JavaScript. It helps developers make fewer errors and bugs during development. This improves development efficiency.

Node.js: We are using node.js to handle the server-side tasks and the backend. The ability to use JavaScript allows a lot of flexibility because both the frontends (web and mobile) are written using JavaScript. It is also competing very well with the popular thread-based model using its own asynchronous event-driven architecture. Because our app doesn't require large CPU intensive multithreaded tasks, the architecture of node is sufficient.

Express.js: We are using the utilities and middleware provided by the framework Express.js to build the foundation on which we are going to build our backend API.

GitHub: GitHub is the most popular version controlling platform in the industry. Also, most of its very powerful features such as the use of web hooks are free. These features can be used to create CI/CD pipelines which improve efficiency during deployment and maintenance. GitHub also provides a comprehensive suite of project management tools.

Amazon Web Services (AWS): aws is one of the leading cloud computing platforms globally, offering a wide range of cloud services, including hosting solutions for various applications and workloads.

Jira: Jira is a popular project management and issue tracking software developed by Atlassian. It is widely used by software development teams but can be applied to various industries and projects. Jira allows teams to plan, track, and manage their work efficiently by providing features for creating and prioritizing tasks, tracking progress, assigning work to team members, and generating reports. It is known for its flexibility, customizability, and integrations with other tools, making it a versatile solution for managing tasks, projects, and workflows in a collaborative and organized manner.

5.2 Conceptual overview of the proposed Solution

Inputs

Outputs

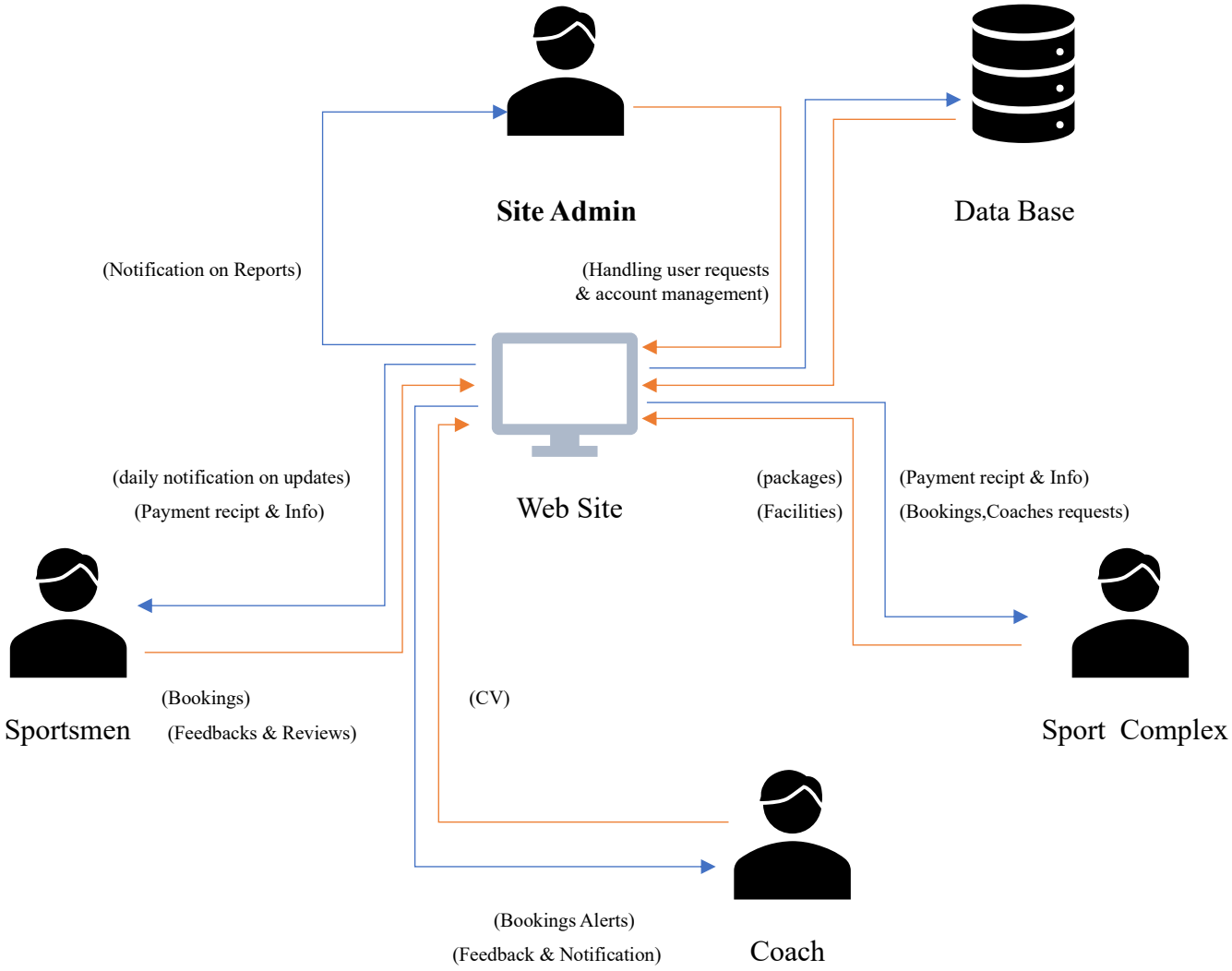

Figure 01

5.3 Capability to solve the problem.

Our system possesses a robust set of capabilities designed to address the challenges outlined in our objectives effectively. By offering a platform where players can select coaches based on their preferences and qualifications, we empower individuals to make informed choices about their training. Furthermore, our system simplifies complex bookings by providing detailed facility information and real-time availability, streamlining the scheduling process. Regular updates and feature enhancements ensure that sports complexes stay competitive and offer a dynamic user experience. Robust data management supports the organization and accessibility of complex information. Additionally, our enrollment system enables players to easily participate in customized training sessions, aligning with their goals. To safeguard sensitive data, we've implemented a multi-tiered access control system, providing peace of mind to all users. In summary, our system's capabilities are poised to transform the sports management landscape, aligning with our objectives, and resolving key challenges in the field.

5.4 Availability of resources

- Most of the development resources are readily available to the development team members.
- All the implementation resources can be acquired at a low cost with minimum recurring annual costs.

5.5 Nature of Solution

For Player:

Input –

- Player details
- Payment details
- Achievements
- Feedbacks

Output –

- Notifications on daily work rosters
- Digital payment receipts.
- Communication
- Player Profile
- Coaches' profiles
- Sport complexes and facilities

Process –

- Payment processing
- Registration
- Communicating with Coaches
- Viewing Schedule
- Booking a venue

For Coach:

Input –

- Coach details
- Payment details
- Achievements

Output –

- Player Profile
- Digital payment receipts.
- Notifications on daily work rosters
- Sport complexes and facilities
- Communication

Process-

- Schedule Management
- Roster Management
- Booking a venue

For Sport Complex:

Input –

- Price Schedule
- Packages
- Coaching Staff
- Discounts
- Events and Competitions
- Facilities
- Location, Opening and Closing time.

Output –

- Coaches Profile
- Payments details.

Process –

- Booking details
- Facility Management

Users –

- Player
- Coach
- Sport complex manager

5.6 Feasibility Study

The feasibility study for the system is done to gather the facts about the practicality of creating such a system. This section will help us to better understand the product. The study is divided into three primary subtopics.

1. Technical Feasibility

2. Economic Feasibility

3. Operational Feasibility

5.6.1 Technical Feasibility:

In this section, we measure the technical feasibility of our system based on users' perspectives as well as from the system perspective.

“sport i” is a system that has desktop applications. Developers are using react to develop the applications. This will help the developers to reduce the learning curve, increase productivity and reduce time spent on learning 2 or more different languages.

Server will be containerized and launched on a cloud function that can scale according to the traffic. This will help to keep the costs down and scale according to the traffic.

5.6.2 Economic Feasibility:

Costs

- **Hardware and software costs:**

Sportsman can use their existing personal smartphones to access the application and Complex Staff can use a PC or Tablet to access the desktop version for their convenience. If the staff doesn’t already have a PC or Tablet, there will be an initial one-time cost for their owners.

- **Development Team Cost:**

Since the production of the software application is carried out by university students as a volunteer-based product, each team member will be responsible for bearing the cost of electricity and telecommunication independently.

- **Utility Cost**

There will be costs for electricity and Telecom ISP charges due to the system needing to be up and running 24/7.

- **Hosting Cost**

After development, the project can be hosted in any hosting service that can support containerized deployment, like AWS, GCP, and Heroku. Each of these services must be paid for.

5.6.3 Operational feasibility

The primary objective of this project is to develop a web-based application that simplifies and optimizes key operations within a sports complex setting. facility allocation, maintenance tracking, automated task assignments, receipt generation, booking handling and financial management within the sports facility management context. Every user involved in this project possesses inherent knowledge and expertise in each of these operational aspects, eliminating the need for additional training to transition to this software. Consequently, the project is deemed operationally feasible, as it aligns seamlessly with the existing skill sets of all stakeholders involved in the sports facility management system.

6 Resource Requirements

Development Requirements

● Computer with sufficient storage to accommodate the development environment, code

repositories, libraries, and various project files.

● Windows or Mac OS

● Internet connectivity

● Backend development framework and a database system (e.g.: Oracle, MongoDB, SQL, NodeJS)

● Encryption and security technologies

● Design software and tools (e.g.: Figma, Adobe XD)

● Development tools and software licenses (e.g.: IDE’s)

Implementation Requirements

● Hosting and server infrastructure

● Long-term affordable data storage

● Suitable web domain

7 Appendix

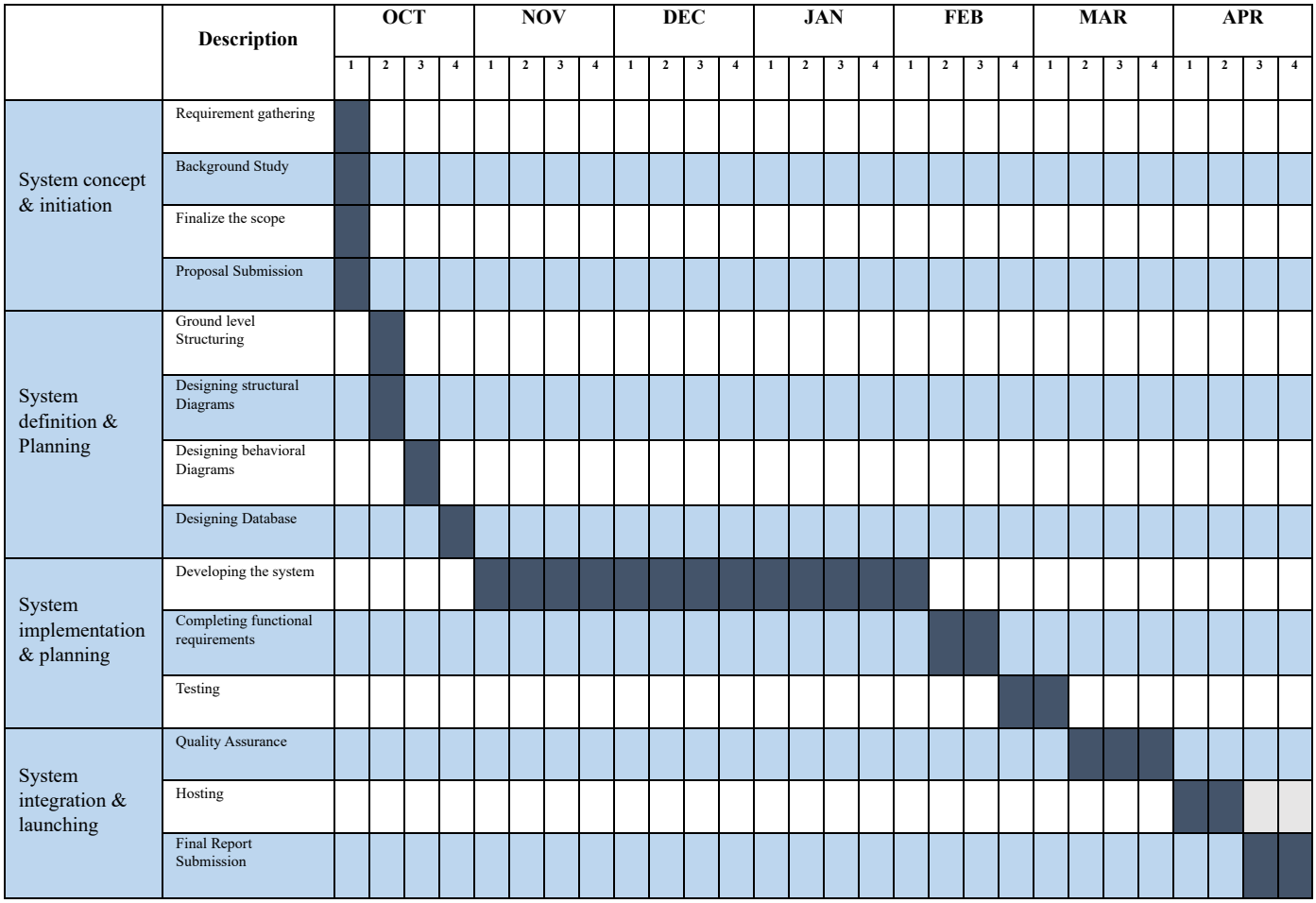

Figure 02

8 Signatures of the Group Members

Index No	Name	Signature
214036J	Chathuranga S.P.Y.N	
214237C	Wijesinghe W.N.U	
214169T	Ranasinghe H.B.C.B	
214213B	Udayanga M.S.K	
214190A	Senarathna K.V.T.A	

Figure 03

9 Supervisors' declaration

I hereby declare that I have checked this project, and, in my opinion, this project is adequate in terms of scope and quality.

Name of Supervisor: Ms. R.G.C. Upeksha

Designation:

Date:

Signature:

Any further comments: