Football Analytics: Strategy Builder

Final Business Plan

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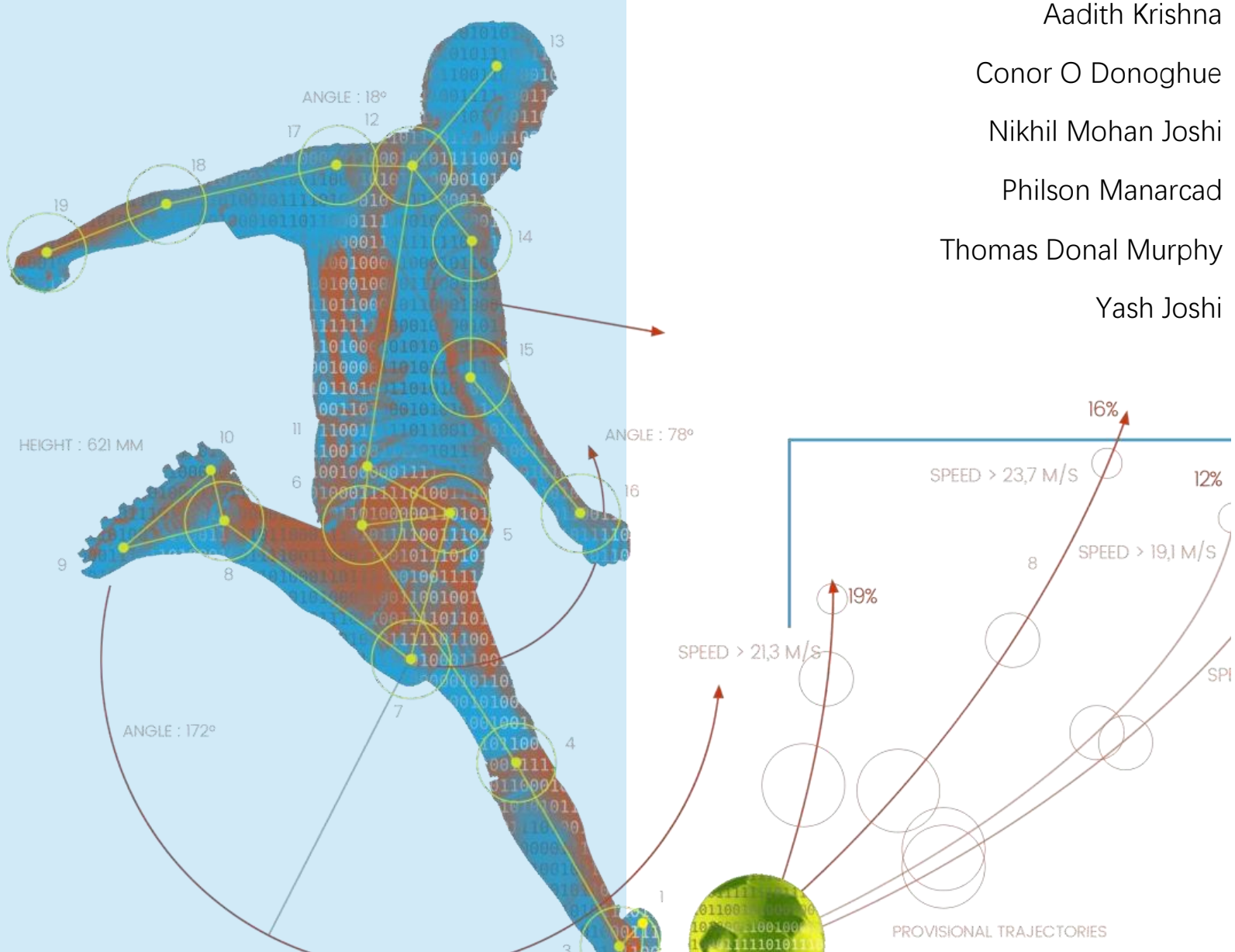
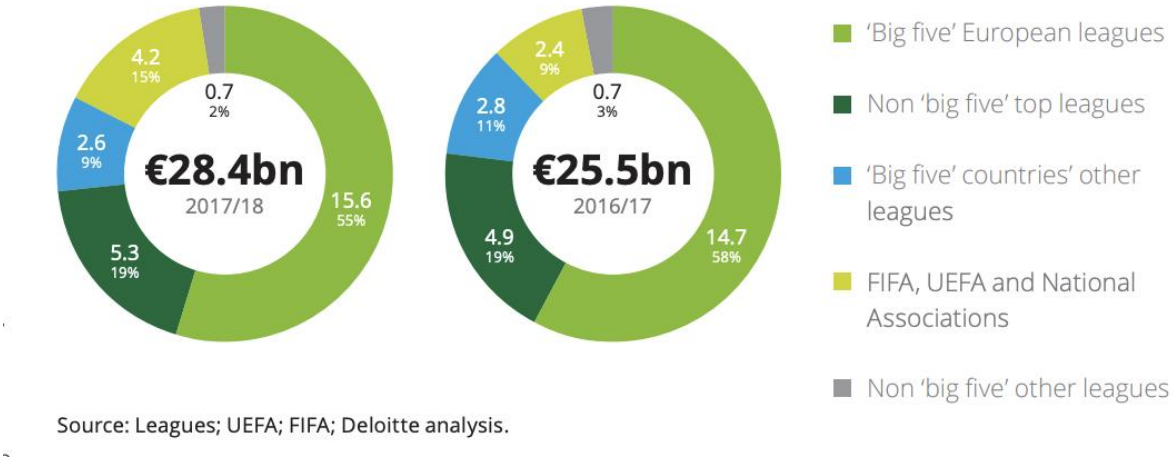


Contents

Executive Summary

Football is associated with passion and intuition. Unanimously, it is one of the most viewed and profitable sports across the globe; case and point UEFA Euro 2020. The cumulative global audience for the live match event crossed 5.23 billion in 2020 making UEFA Euro 2020 one of the most viewed moments of all time (UEFA EURO 2020, 2021). Deloitte's Annual Review of Football Finance 2019 stated the overall size of the European football market, in terms of revenue had reached €28.4 billion in 2017/18 (Annual Review of Football Finance, 2019).

Chart 1: European football market size – 2016/17 and 2017/18 (€ billion)



Source: Leagues; UEFA; FIFA; Deloitte analysis.

Technology has enhanced sports consumption, and has revolutionized performance management among football clubs. However, the rise of technology has also increased the ever-growing competition among those clubs. Not only do they need to be on top of their game but also fulfil the expectations of their many stakeholders which include fans, players, shareholders, and sports media. To achieve the same, football clubs are tapping into the essence of data analytics to harness actionable insights for improving their overall performance metrices. Although a question arises – How do they tap into this essence and go towards profitability and simultaneously improve their sporting performance? Enter, football strategy tools.

We, as a group, have come up with a one stop solution, a strategy tool aimed towards lower tier clubs to help them analyse their teams and opponents through a data-driven approach and further assist their tactical decisions.

This Business Plan Report is a guide to the product and its business operations. Broken down into 5 Major sections namely: Problem, Product, Market Research, Operations, Financials; the report at first, takes us through the Problem followed by Product Section where we go through the Product Details as of today, feedback received from a prospect customer and the future plans for the Product.

Following that is the Market Research Section where we deep dive into Market, our Target Customers and the scope of expansion. It also has a detailed Competitor Analysis that shows why our product has a competitive edge over our competitors. Up next is the Operations Section where we provide organisation structure and the Technology/Equipments required for the business. Followed by that the report then deep dives into the financials of the business breaking it down to Fixed Costs, Variable Costs and Year wise breakdown of revenue & expenditure. It highlights how a company starting with 6 customers and with low tier clubs as its customers manages to break even in 1.5 Years and makes a profit of €219,053.94 in its third year and ends up with 106 customers. The Report also has Appendix Section to provide more details for references purposes.

Problem

Over the previous two decades, data analytics has become more important in many aspects of our life, including business, healthcare, media, and sports. Football was supposed to be resistant to this tendency until a few years ago. Early adopters in the main football leagues are already flourishing as a result of the competitive edge that data analytics investments are beginning to provide: Liverpool, Brentford and AZ Alkmaar are just a few of several successful case studies. Clubs who do not aim to hop on the analytics bandwagon, in our opinion, risk being left behind. We still have the difficulty of being able to analyse the data. If football teams, for example, are inundated with massive amounts of data but lack the technical expertise to assess and extract useful information, data becomes essentially useless. It is like presenting a complete set of stock, currency, and commodity prices, ratios, and indications to someone who is unfamiliar with financial markets: the data alone does not make that person an infallible trader. Football clubs need data to make informed judgments, but they also require analytics to make sense of it (Soccerment, 2020).

In order for all of the clubs to have a strategic advantage at this time, they must examine the facts on how they play against their opponents. Teams generally, analyse their self-data and try to find a solution to optimize their gameplay and their own style of playing. This can also improve the overall performance of the team, but for having competitive advantage over opponents, club also has to analyse and study the opponent team's data and then strategize the gameplay for the particular match to be played.

Currently, the data analytics solutions given to the clubs focusses on developing and nurturing their own players and teams, so as to improve their performance. Some solutions concentrate on scouting and transfers, while some talk about analysis on injury prevention and post-match analysis, but the

need is of having a consolidated solution which analyse the opponent teams' variety of data and compares with our club teams' data.

So, what we are proposing here is a comprehensive solution that contains all the above-mentioned features, for the football teams to take data driven decisions based on information gathered from the matches they played. With the tool, the teams make amendments to their tactics to improve the gameplay that will help in achieving competitive advantage over the opponents. The insights generated from the tool with the help of match & player level data can be used by managers and support staff to tweak the strategy that suits their squad or recruit new players that will improve the team.

Product

In order to address the problem discussed in the previous section, the team has developed a tool that would assist football club managers/coaches in deriving meaningful insights such as Opponent Game style, Passing Patterns, Player analysis & Comparison, Future Win Predictions etc and take strategic decisions based out of it. The insights in the tool are generated based on the events data which is a record of what happens in a match.

The Product is broken down into 2 sections. The First section – "Team View" focusses on enabling the match preparations exercises a football club manager/coach goes through before a game. Based on our conversation with the Cork City FC Coach, below are some of the key questions the coach tries to analyse before a game.

Where do we stand based on previous match results?
(Based on the last 3 or 4 encounters what are our chances?)

How does the opponent play?
(*Meaning passing styles, attacking preferences, defense play*)

Set Pieces Analysis
(*Watch videos of the set pieces and see if there is preferred style, key player to look forward to*)

From Conversation with Cork City FC Coach

The Second section – "Player View" is focussed on Player Level Analysis which can be used for Player Scouting or comparing players for various reasons.

Current Product

Team View

In this part of the product, the club manager/coach can select an opponent team within their league and compare with their own team. It enables them to understand their opponent and setup their team against them in a way so as to get a strategical upper hand. The table below shows the different featured incorporated into the "Team View" of the tool.

FUNCTIONALITY	WHAT TO EXPECT?
WIN PROBABILITY	Know the possible future outcomes based on simulations generated using historical match information
PASS MAPS	Show Passing patterns to understand influence of players on the pitch
EXPECTED THREAT (XT)	Define the strong areas of Team in the pitch and key players in those areas
DEFENSIVE ACTIONS	Define areas in the pitch where Team is stronger on defense
PLAYER RECOMMENDATION	Use performance metrics to cluster the players and recommend similar players & counter players for game

For snapshots of the Product, please refer **Appendix A: Product**.

Win Probability

It's important for a Manager/Coach to understand the possibility of their club to win/lose. It helps them understand how strong the opposition is based on the information about the team in the past. We use a concept called expected Goal (xG) which is computed based on probability of scoring a goal from different areas in the pitch. This is used to run 20k simulations to emulate the next game and predict the chances of win/loses and the possible score line of future matches. (Herbinet, 2018)

Pass Maps

Pass Maps are diagrams build based on the player pass information to teammates. Similar types of passes are clustered together to build a network graph that connects all the players of the team. It helps to understand the on-field formation, most influential players of the opponent and allows a manager/coach for different tactical set ups.

Expected Threat

Expected Threat (xT) is a derived metric computed with the help of match level information of team to understand the threat of opponent teams in different areas of the pitch. It helps to define the strong areas of opponent team along with their key players in those areas by considering the probability of scoring a goal from a particular location in a succession of n number of events. With the help of expected threat, managers will be able to setup their playing eleven based on the strengths and weaknesses of the opponents (Expected threat -socceraction 1.2.1 documentation, 2022)

Defensive Actions

Defensive Actions of a Team allows managers/coaches to understand how opponent team play. Whether they are offensive and trying to counter within the other half itself. It provides insights into which areas of the pitch a team is stronger on the defense.

Player Recommendations

In order to counter the opponent teams, managers will be recommended players from their own team who are quite similar to an opponent player based on their characteristics. Along with similar players, the product also recommends a player who could be a potential counter to an opponent player for marking purposes. This would help the managers/coach setup their team based on opponent teams.

Player View

This part of the solution helps the managers to understand in detail about the performance of the players in the league based on metrics depending upon the position they play in. It also assists them in player scouting during the transfer season to look for potential replacements in their team. The table below shows the different featured incorporated into the player view of the tool.

FEATURE	DEFINITION
PLAYER COMPARISON	Visualise & compare the performance metrics of players based on the position of the player to measure the quality
PLAYER SCOUTING	Recommend Player for scouting purposes

Player Comparison

Player performance is measured with the help of various metrics that is defined based on the positions the players play. These metrics are represented with the help of charts and diagrams for easier understanding. Managers can use this information to identify the shortcomings & advantages of their players over others and can use it for performance improvement of Players.

Player Scouting

Players are recommended for scouting purposes. A Manager can know potential replacements for a player during transfer season/match replacement based on their similarity with other players in terms of their performance. These performance metrics are different depending on the position they play in.

A high-level approach for building the product can be understood from below:

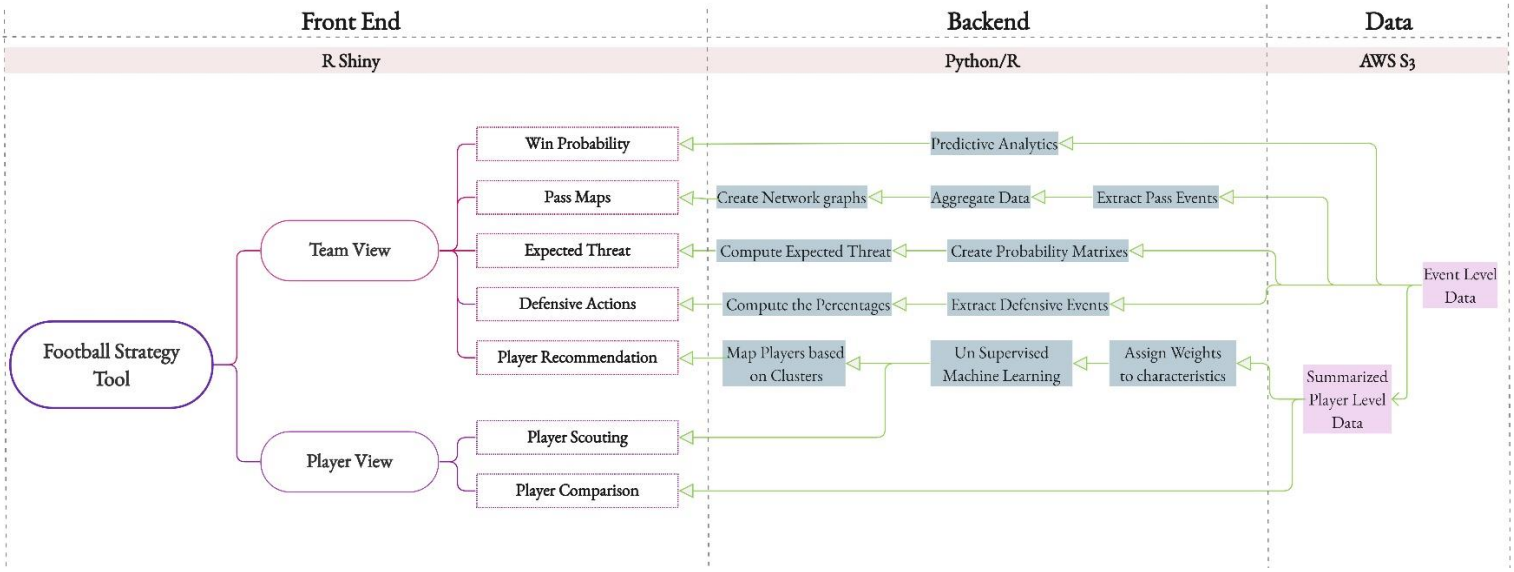


Figure: Product Development Approach

Please refer **Appendix C: Project Management** for details on Project Roadmap & Task lists used for monitoring purposes.

Data Source

The Product is based on Event Level Data which entails information of what happens on the football pitch during an instance of a football match. At the moment, we plan to source this data from a Company called 'STATMETRIX' (please refer to **Appendix B: Statmetrix** for more details) who offer the services of providing the data based on the video recorded during a match. As a business we understand the importance of having an inhouse data generation capability therefore, the first year

has been dedicated to developing the same. Resources & Development Costs have been allocated for the same. This will allow the team to run the business independently in future.

Feedback on Product – A Conversation with Cork City FC Coach

Our Team met with Cork City FC Coach for Feedback and to understand if the features in the product offered an advantage especially when compared with our competitors. Below is summary of the feedback received.

About Expected Threat- "*An Interesting Functionality which gives lot more information about Opponent and definitely not available right now in the Competitors tool. Can be used easily to study the Set pieces of opponents*"

About Player Scouting – "*Value add feature. Makes lives easier for Coaches when looking for Players. Would be good to include Transfer Rates & Availability information for better recommendation*".

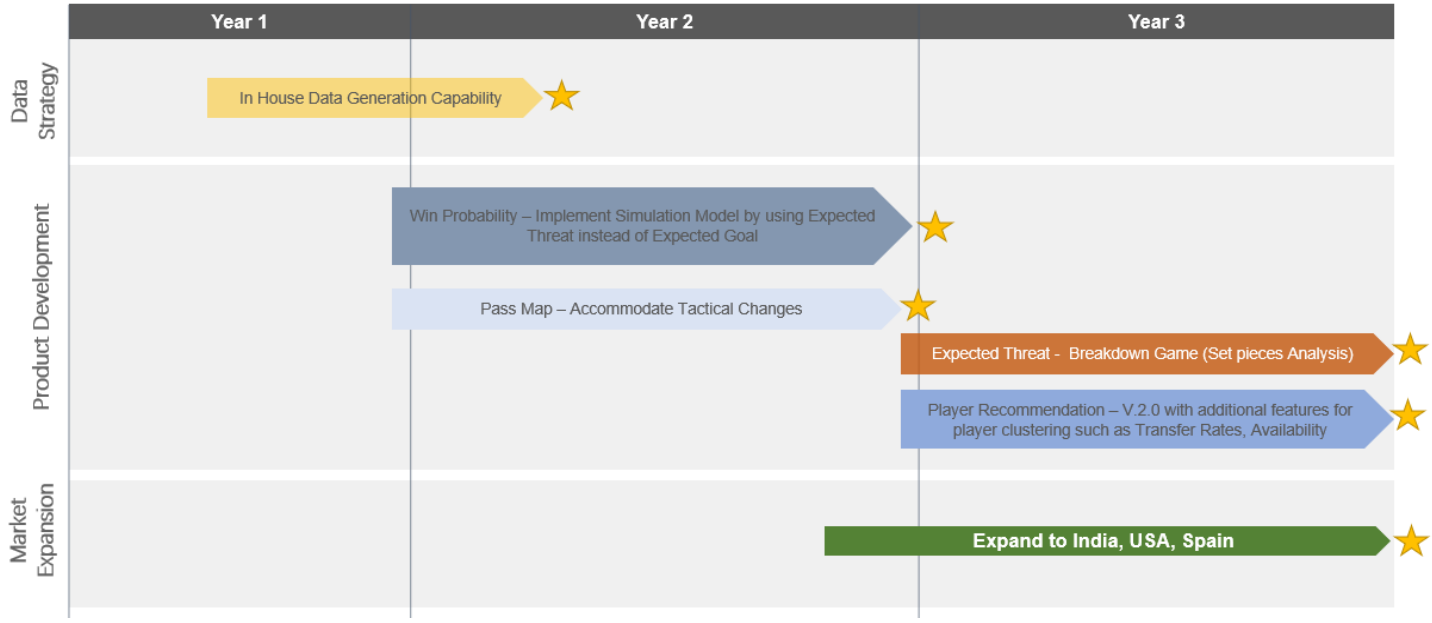
About Win Probability – "Currently rely on just previous match results. It helps in moving away from that approach alone and focussing on teams' performance to predict win/loss".

The Coach expressed interest and offered to provide us data for us to provide them this analysis which they could use for preparing in their future matches.

Future Plans

Based on the feedback received from Industry expert and our Business Presentation the Team will focus on the first having its own in-house data generation capability. This will allow the company to expand to wider customer base without risking the dependency on third party (StatMetrix) for data. 2 Additional Resources for this development work will be hired and backend team will work along with them to ensure successful completion. Post that, the team will be able to focus on improving & fine tuning the product and accommodating the recommendations based on their interactions with other football coaches.

Below is the roadmap for our Future Plan



Market Research

Market research was conducted through a combination of industry engagement and online research using market reports and studies conducted by trusted sources. This was carried out to understand the market that our football analytics tool finds itself in. Through this research we were able to gain a well-rounded understanding of our market and target market, potential customers, Market trends, barriers to entry and our competitors. Understanding these elements of our market helped us define a customer valuation proposition that will be outlined at the end of this section.

Market Description

Our initial research indicated that football clubs are at a risk of being left behind if they do not begin harnessing the power of analytics like so many football clubs are doing today. Jan Van Haaren, Chief Analytics Officer at SciSports highlighted that a growing number of clubs are leveraging match data by partnering with specialised companies that offer data-driven tools for scouting and player recruitment (State of the football analytics industry in 2021, 2021). Furthermore, within the football analytics world there is an ever-increasing amount of data being generated with Steve McLaren FIFA's technical director stating that typically "An average football data set is somewhere around

2,000-2,500 events per game" (McLaren, 2021). Therefore, the ability to turn this data into insight is becoming paramount for football clubs to remain competitive. This highlighted a clear need for a football analytics tool that could turn collected match event data into insight. But we first had to understand the size of the market for such a product.

A 2022 Sports Analytics Market report conducted by SM Strategic Market Research found that the sports analytics market was worth $2.1 Billion in 2020 and is expected to grow to $16.5 Billion by 2030 based on a Compound Annual Growth Rate (CAGR) of 22.9% (Sports Analytics Market, 2022). This dramatic increase is being driven by several factors such as rising spending budgets on new technology innovations, an increase in the number of customer channels, increased desire by coaches and players to use real-time data for decision making and the growing usage of video and wearable technology in games generating valuable data. Furthermore, the football segment of the report had the largest market size during the forecasted period with a CAGR of 24%. This was largely due to football being a major team sport in the team's segment currently utilizing various tracking technologies to boost performance of players and teams. It was also found that software was the leading component during the forecasted period with the rising use of real time data in technologies like ML, AI and Big Data. This research showed us that the sports analytics market is moving in favour of software solutions particularly in the football segment.

Target Market

Having established that a market exists for sports analytics software it is important to narrow in on a specific target market. As this product is for football clubs seeking to improve player and team performance, professional football teams will be our target customers. A 2021 report conduct by FIFA on professional football clubs provided some clarity on the number of customers we could expect to find at the professional level. The report stated that there were 4,429 professional football clubs globally in 201 considered countries (FIFA Landscape, 2022). Using the bottom-up method & this number, we estimate a **Total Available Market (TAM)** as below:

Number of football clubs by yearly price of product €5,400

4429 clubs x €5,400 = €23,916,600

However, in the first three years we will only be targeting teams within the UK and Ireland, Spain, India, USA. The below table gives a summary of the number of football teams in each country respectively.

Country	Number of Professional Clubs	Clubs (excluding top tier clubs)	Source
England	111	91	(Professional Football Report, 2019)
Ireland	20	10	(Professional Football Report, 2019)
Northern Ireland	36	24	(Professional Football Report, 2019)
Scotland	42	30	(Professional Football Report, 2019)
Wales	55	33	(Professional Football Report, 2019)
India	33	33	(Professional Football Report, 2019)
USA	68	43	(Professional Football Report, 2019)
Spain	122	102	(Professional Football Report, 2019)
Total	**487**	**366**	

Using these figures, we have calculated our **Serviceable Available Market (SAM)** as follows:

Number of low tier football clubs by yearly price of product €5,400

366 clubs x €5,400 = €1,976,400

However, we will be prioritizing lower budget teams with our more affordable product compared to what is currently available in the market. For Year 1 & 2, Business will focus on UK & Ireland only with 6 customers being the start-up target in the first month. A monthly growth rate of customers is estimated to be 15% and a churn rate of 6% will be the factors that will contribute the customer growth. However, the beginning of the 3rd year will see an additional 10 clubs (India – 2, USA – 2, Spain -6 estimated based on 6% of the SAM for each country) being added owing to the expansion into other countries like USA, India, Spain.

Therefore, based on above factors we calculate our **Serviceable Obtainable Market (SOM)** as follows:

Year 1

13 Customers (UK & I only)

€ 51,300

Year 2

34 Customers

(UK & I only)

€ 130,950

Year 3

108 Customers

(All 4 countries)

€ 420,300

Market Trends

The 2022 Sports Analytics Market report conducted by SM Strategic Market Research (Sports Analytics Market, 2022) outlined some key trends being experienced in the Sports Analytics Market. Sports clubs are currently increasing spending budgets for new innovative technologies that can help teams gain a competitive advantage with an increase in the number of customer channels being anticipated. Furthermore, there is an increased interest by coaches and team managers to use real-time data insights to assist in the planning of gaming strategies, training and scouting of players with advanced technologies such as Artificial Intelligence, Machine Learning and big data analysis being leveraged. This is evidenced by high profile teams such as Liverpool, Manchester City and Chelsea adopting data driven decision making through their analytics teams' recommendations and their adoption of analytics technology. Finally, there is also a growing usage of wearable technology, human performance labs and video analysis in the sports market to help gather valuable first-hand data.

This product capitalises on these market trends by offering a well-designed analytics solution that leverages Machine learning to offer coaches and management at a glance information on player and opponent performance. Furthermore, this product is being launched in a market where spending budgets are increasing for analytics solutions at a time where large volumes of data is being generated through the wide usage of wearable technology and video analysis.

Barriers to Entry

When dealing with a software start-up there is a high risk of failure with 19% failing because of competitors outperforming them (Griffith, 2014). Naturally competition would be a barrier to entry in this market with a risk of competitors stealing market share when a new solution is launched into the market. However, according to Andrew Rapacke a registered patent attorney and managing partner of Rapacke Law Group (Rapacke, 2019) the only full proof way of protecting a software solution is by taking a defensive or offensive patent approach, provisional patent approach, trade secrets approach or trademark approach. This is a legal and lengthy process with uncertain outcomes at a high cost. Therefore, the best method for ensuring competitiveness in this market is by creating a reliable, and innovative solution to performance analysis that is not currently offered in the market. Introducing this at an affordable price for low budget teams to allow them to compete with high profile teams with large budgets for analytics would ensure a competitive product.

According to a 2022 Market research report on the sports analytics market a key barrier to entry and challenge for this group is in relation to the integration of data from data silos (Markets and Markets, 2022). This is in relation to the ability of a company to successfully extract value from data and monetize the extracted insights. However, a sufficient amount of data must exist in the market with Markets and Markets stating, "consolidating data from distinct data sources into meaningful

information can incite various new challenges for organizations, especially centralized business enterprises." Therefore, this product must choose its data sources carefully from trusted sources. Thankfully there is data available from companies such as Statsbomb and Statmetrix with event level data being collected which is required for the functionality of this product as described in the technical aspect of this project. Furthermore, we plan to begin collecting our own data for customers first hand using video analysis in the third year of the products launch in order to have our own first-hand data and not relying on third party vendors.

Competitor Analysis

Over the last 10 to 15 years football analytics has grown massively. Third party vendors who originally collected data for fans and media are now selling data to football clubs (The Numbers Game, 2018). Through conducting competitor analysis multiple potential competitors were found in the football analytics sector. These competitors were mainly offering products related to Video Analysis and Wearable technology. Please see the table below for a comparative analysis of several competitors and their strengths and weaknesses

Video Analytics Software

Majority of football analytics software today revolves around video analysis with companies such as Wyscout, Statsbomb, Coach Paint – Tracab, Play – Metrica Sport, Spiideo and Isports Analysis. These applications allow for detailed video analysis with the ability to add "telestration" (arrow tags etc) icons to a video and break a match down into video clips easily for presenting to players and coaches. Much of the software is backed by AI to allow for data tracking of individual players with metrics such as distance travelled, and top speeds being tracked. Please see the table below which highlights the strengths and weaknesses of these potential competitors.

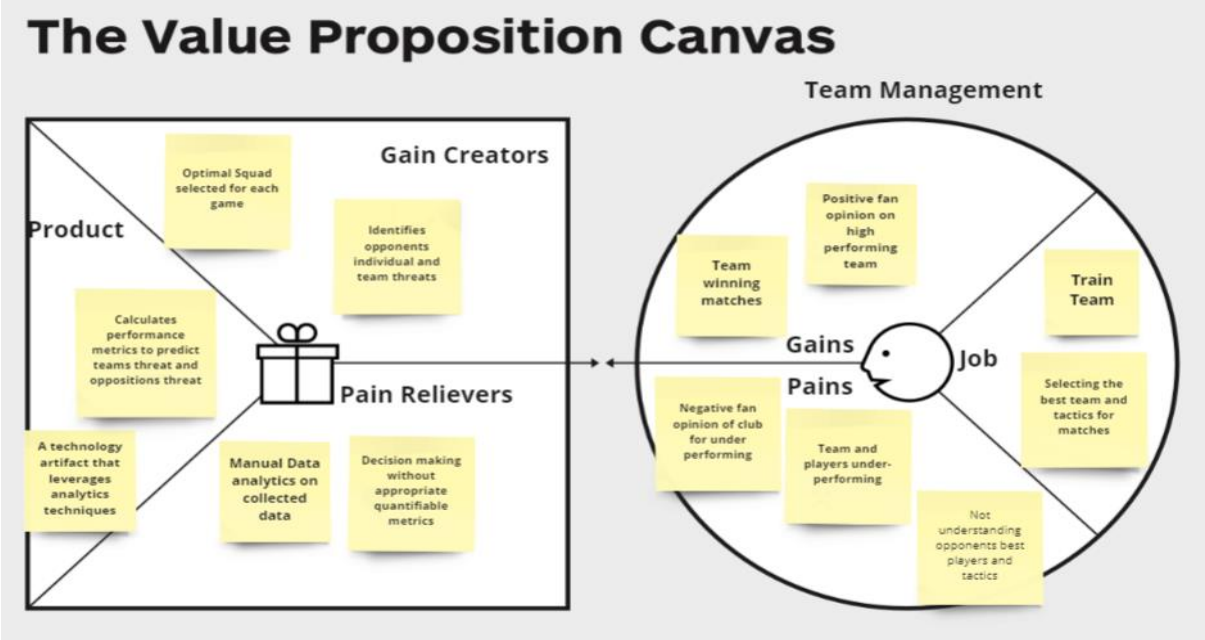
Wearable Technology Vendors

Wearable technology has become widely used in all sports with small GPS devices being attached to players clothes while training and playing. These devices very accurately track player movement metrics such as distances travelled, and top speed reached as well as heart rate and body temperature. Some vendors such as Catapult provide software where the data collected can be stored and extracted. These devices are a primary source of data Collection. Please see the table below which highlights the strengths and weaknesses of these competitors.

Competitor Name	Competitor Strengths	Competitor Weaknesses	Our Advantage
wyscout	• Breaks down match video's into clips. • Easy to use telestration tools for visualisation, backed by AI. • Allows for easy presentation for team analysis. • Automated data tracking compatible with multiple video medias	• Requires manual human intervention for data analysis and decision making. • Lacks Player Scouting Functionality, Win Prediction capabilities, Lacks insights in pitch domination. • High cost (€648 per month for 170mins) (Please Refer **Appendix D: Competitor Pricing**)	• Predictive analytics techniques for decision making. E.g., Win Prediction, expected threat calculation • No further manual data analysis technique required once application features are run. • Provides metrics for comparing players and teams instead of non-quantifiable interpretations of video. • Automatically extracts value from collected data for analytics teams. • Assists in Player Scouting & Counter Player Recommendation for tactical gameplay
TRACAB	• Easy to use telestration tools for visualisation, backed by AI. • Automated player and data tracking. • Customizable GUI for presentation.	• Requires manual human intervention for visualisation tagging. • Looks at passed events and does not predict for the future.	
STATSports®	• Data collection device for player movement tracking. • Extremely reliable and accurate	• Requires manual human intervention for data analysis and decision making. • Looks at passed events and does not predict for the future. • Requires purchase of hardware for each player. • No access to opposition data.	
STATSBOMB	• Flexible and customisable suite of data visualisation platforms • Predictive analytics functionality (expected goals).	• Expensive software that only top-level clubs can afford. (€10,000 yearly, Please Refer **Appendix D: Competitor Pricing**)	• Expected threat which takes account of all events leading up to a goal and not just the position the goal was scored from.

Customer Value Proposition

From conducting the above Market analysis, the below customer value proposition was visualised by the team. We believe we can deliver value to our target audience by offering an easy to use and well-designed football analytics tool that leverages machine learning to deliver valuable at a glance insight for coaches and managers on the performance of their own teams and competitors at a price that is far more affordable than what is currently available on the market. The below customer value proposition describes how the product fits in with a team managers role (the core decision maker using our product) and how it can create valuable gains and relive painful aspects of a manager's day to day job.



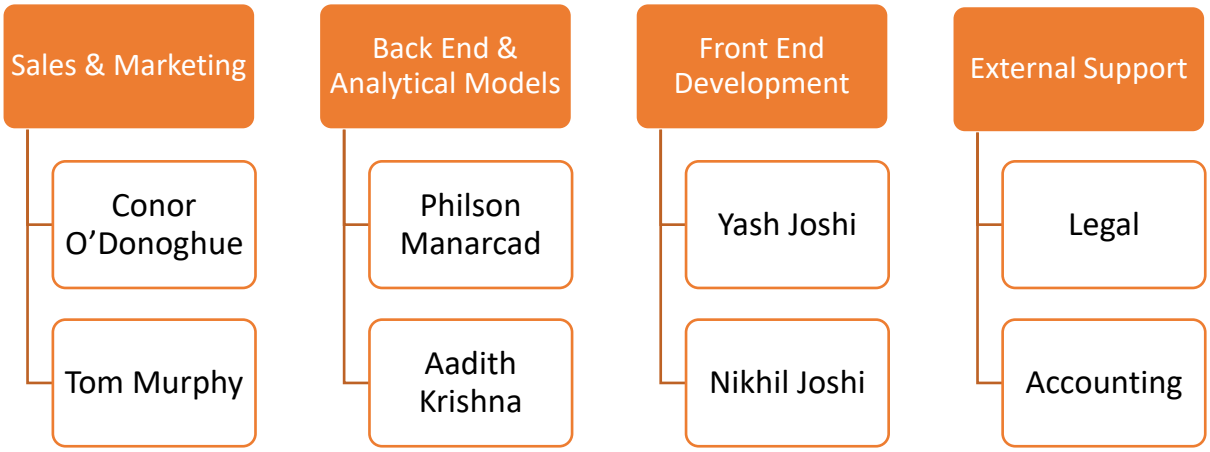
Operations

People

We feel our current team has the capabilities of growing our business without the need of any major additions. The interface of the system will be updated and modified as & when needed by our Lead Developer, Yash Joshi with the help of Nikhil Joshi. Philson Manarcad and Aadith Krishna will primarily be in control of the analytical models and back-end for our service and would lead the development of data generation capabilities during the initial years. Sales, Marketing, and the financial side of the business will be primarily controlled by Conor O'Donoghue and Tom Murphy. We feel our team roles

reflect our personality types and previous educational and industry experiences. While our team roles are assigned and we as a team all agree we all possess the skills and knowledge to be fluid and multifunctional in our operations allowing us to all to fulfil any role required at a given time. The company will be established as a Private Company Limited by Shares (LTD company), with equal shares among the 6 founding members who will all have the distinction of Directors. Philson Manarcad will hold the position of Secretary. This ensures we are in line with the requirements for establishing a company of this type. (CRO - Company Incorporation (Irish Government website), 2022)

While Philson and Aadith are going to be employed under full time salary positions for the initial years, the rest of our team will be compensated by sales commission. Conor, Tom, Yash, and Nikhil will be paid 20% commission per user sign up as we look to grow the business. At the End of third Year, Company will be growing exponentially and therefore the rest of the team will be able to draw salary as well and become full time employees to drive the business forward.



One aspect of our business we feel the need to be outsourced is the need for a chartered accountant to ensure the correct financials are being reported, such as tax. We will therefore budget 4% of our turnover for the services of such.

In year 1 we plan to have the product fully operational. Since we don't plan to have lot of work on front end during the initial year, our front end and sales and marketing team agree not to take a salary in an effort to stabilise our business financially. Instead, Tom, Conor, Yash, and Nikhil will work off commission on a part time employment position, while Aadith and Philson will be fully employed to ensure the product is able to continuously provide fresh data to the customer football clubs as every match is wrapped up and therefore will receive a salary. This allows us to free up costs to hire a chartered accountant. As our business will be established as a Private Company Limited by Shares (LTD company), we will rely on our sales revenue as well as government and EU grants for the early survival of the company. We chose to establish our company as such due to the relative security of

liability should the business fail. At present we have not ruled out eventually becoming a publicly traded company, but at present due to the nature of our business we feel the benefits of LTD are superior.

Year 2 we expect to grow into the UK market, increasing our revenue, with this extra revenue we plan to invest in better technology as well as expand our cloud infrastructure to handle the additional users.

Year 3 we will being expanding beyond the UK & Ireland into India, USA, Spain which will be the period when the true potential of this business is realised.

Technology & Equipment

Software

Due to the need for high powered and reliable storage, we will utilise Amazon S3 to store our data files. This will be at a cost of €36 per annum during the first 2 years. The 3rd Year will mark the start of our own data generation capabilities which would also require storing the match videos in AWS S3 Glacier. Therefore, for Year 3 AWS cost is estimated at €966 per annum. Our front end is created using the R Shiny. This is an open-source package allows for interactive web apps built in R, which we feel meets the functionality and aesthetic we initially looked for when sitting down to develop our product. We feel as though the benefits and functionality of the front end which can be provided by Shiny outweighs the benefits of a custom-made interface using manual coding which is both labour and technologically intensive.

We will also need to translate game footage into data which can be fed into our analytical models. For this we will use Statmetrix. This third-party company takes the match recording provided by the teams, translates it into usable event data for our product. This will come at a cost of €20 per customer, per month with additional initial hardware (camera, tripod) costs of €841 when a club is starting.

Our back-end code for our analytical models made from Python & R. We felt that Python gave us the best flexibility and insights from our data to allow us to build our models from which our product is based off.

Hardware

We expect the need to replace our hardware in terms of laptops and mobile devices every 3 years. Our business operations are exclusively based off software and so our need for hardware is limited to laptops for development.

Financials

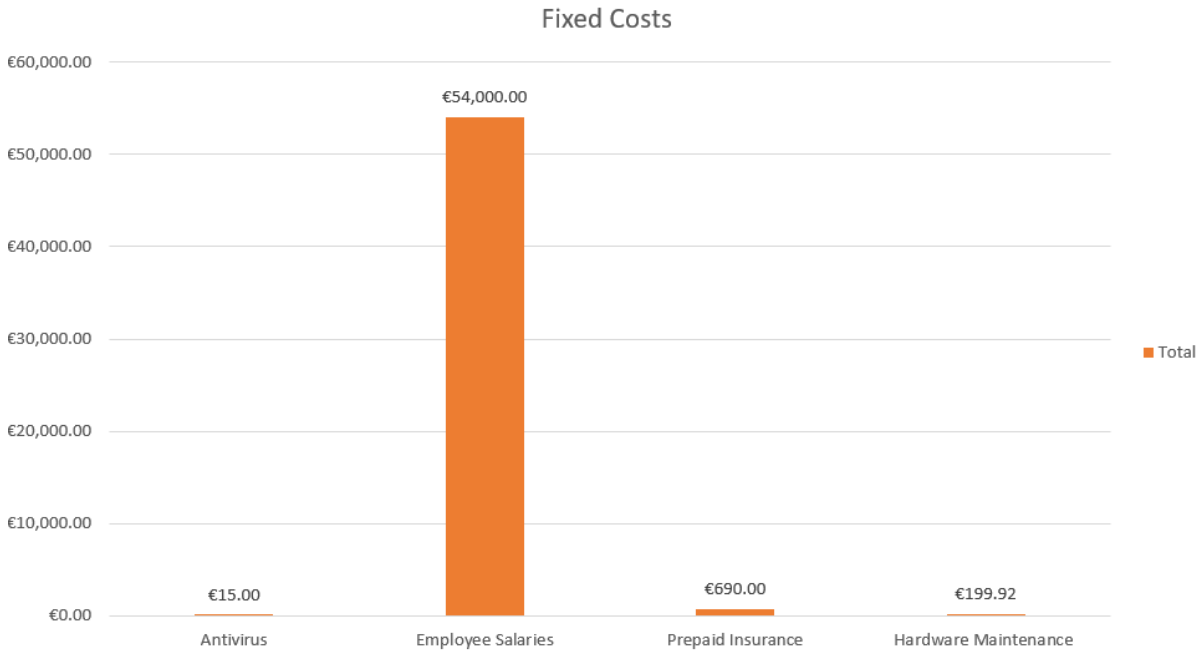
Due to the seasonality of football and the deadlines of our master's program, our financial calendar does not fit the standard fiscal calendar. Instead, we will begin our Quarter 1 in Nov 2022. We feel this will give a greater ability to view our costs, income, and profits in correlation to the football calendar.

Fixed Cost Expenses

A fixed cost is an expense which remains at a constant figure, regardless of income or external factors. Or fixed costs will remain set for the first 3 years of operations. Our fixed costs are as follows;

We were able to get an insurance quote of **€690** per annum. The insurance (Professional Indemnity and Public/Employers Liability based on sound insurance quote) allows us to be in line with current regulations regarding employment and trading. Our figure employee salaries are based on the salaries of 2 back-end resources who will be employed full time. The figure for salaries is **€54,000** per Year**.** To adequately protect our hardware and data we will need antivirus protection. For this we will need Norton Antivirus Protection which costs **€15.00** per year. This will keep our data and hardware secure and prevent breaches and security incidents. (Norton 360 | Plus, Standard, Deluxe, Premium - Antivirus Plus, 2022). In the case of accidental damage or malfunction, we have also allocated **€199.92** for hardware maintenance a year.

The total fixed costs per annum is **€54,904.92** for each year for Years 1,2, and 3.



Variable Cost Expenses

A variable cost is a cost that fluctuates based on an external source, of the revenue of the company. Our variable costs are broken down into the following headings; Legal expenses (4% of overall turnover), Accounting (4% of overall turnover (Finegan, 2022)), Marketing (10% of turnover), Statmetrix (€20 per customer per month), Hardware: Camera + tripod cost (€841), and commission (20% of each new customer). To best understand the variable costs, it is important to investigate a more micro view of the financials.

Year 1

Start-up Costs

In the first year of operations, we will need to make initial investments to get the business off the ground. Firstly, we will need the purchase of hardware. The 2 backend resources will require the purchase of new hardware in order to effectively code the back end, develop, and improve our analytical models. For this we will spend €1,000 each, equating to an expenditure of **€2,000**. Business License cost to setup the company will be **€195**

We will also require the funding from a grant. We will hope to secure the Local Enterprise Office (LEO) and European Union Regional Development Fund, Priming Grant. (Priming Grants - Local Enterprise Office, 2022) This grant will hopefully give us a cash injection of **€75,000**. This will allow us to cover our costs in Year 1 and into Year 2 before we break even in April 2024. This grant will stabilise our company financially as we look to establish ourselves and build a revenue stream sustainable enough to allow the business to run without assistance.

Expenditure

In year 1 we will allocate **€5,130** towards marketing at the discretion of Tom and Conor. This is to help our business grow and break into new markets, both foreign and domestically. The figure is based off 10% of the turnover of the business. Sales commissions will equate to **€1,260** for the year 1. Our figure for both legal and accounting is based off 4% of the turnover respectively, translating to an overall cost of **€2,052** for legal and **€2,052** for accounting. Our cloud needs will cost us **€36** for a year to store our data files in AWS S3. Our cost for Statmetrix for year 1 is **€2,280**. This is the cost of translating the game footage provided by our customer clubs to data which we can use for our models. Our cost for acquiring Hardware (Camera & Tripods) for Match recording will cost us **€13,172.69**. As we focus on having our own data generation capability, we allocate **€31,500** for the development cost work for which starts after 5 Months of kicking off.

For year 1:

Fixed Cost: **€54,904.92**
Variable Costs: **€57,482.69**
Initial Startup Cost: **€2,195**

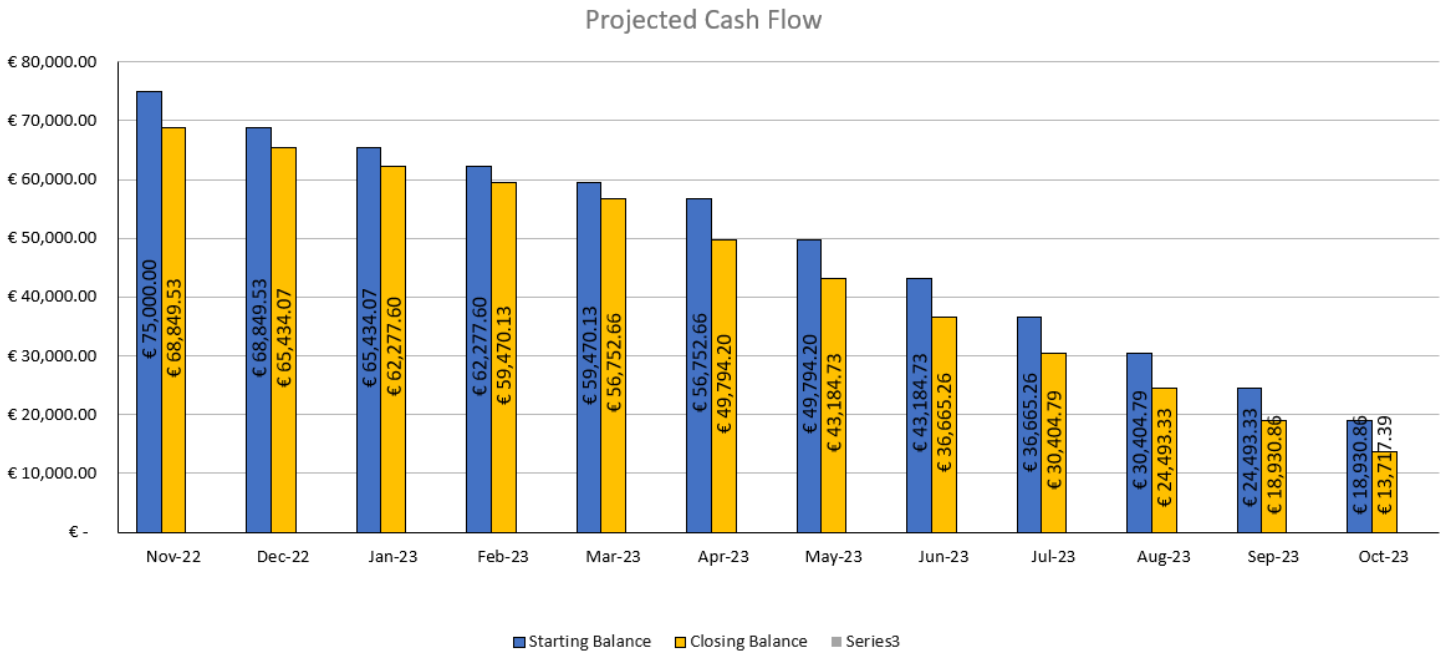
Therefore, Our Total Expenditure (Fixed + Variable + Startup Cost) for Year 1 comes to a total of **€114,582.61.**

Income

Firstly, we will price our service at a price of €450. We feel this price is appealing to prospective users in comparison to our competitors while also allowing us to produce stable and healthy revenue each month. We expect to grow our product at a rate of 15% monthly in terms of user sign ups. We feel this is a healthy and achievable growth rate which is realistic in the world of sport analytics with the current market competitors. As our product is a subscription model, we must account for churn. Churn is the number of users we expect to lose after the first month of subscription. We anticipate a churn rate of 6% monthly.

In Year 1 we expect to have a total users post churn of 13 users. This equals a total cumulative revenue of **€51,300**. This can be broken down by quarter. Quarter 1 will bring a revenue of **€8,550.** Quarter 2 will bring **€11,250**. Quarter 3 will return **€13,950**. Finally, Quarter 4 will return **€17,550**.

Overall, in Year 1 we expect cash losses of **-€61,282.61**. However, with the funds from the grant we will receive, we will finish the year with a projected end balance of **€13,717.39.**



Year 2

Expenditure

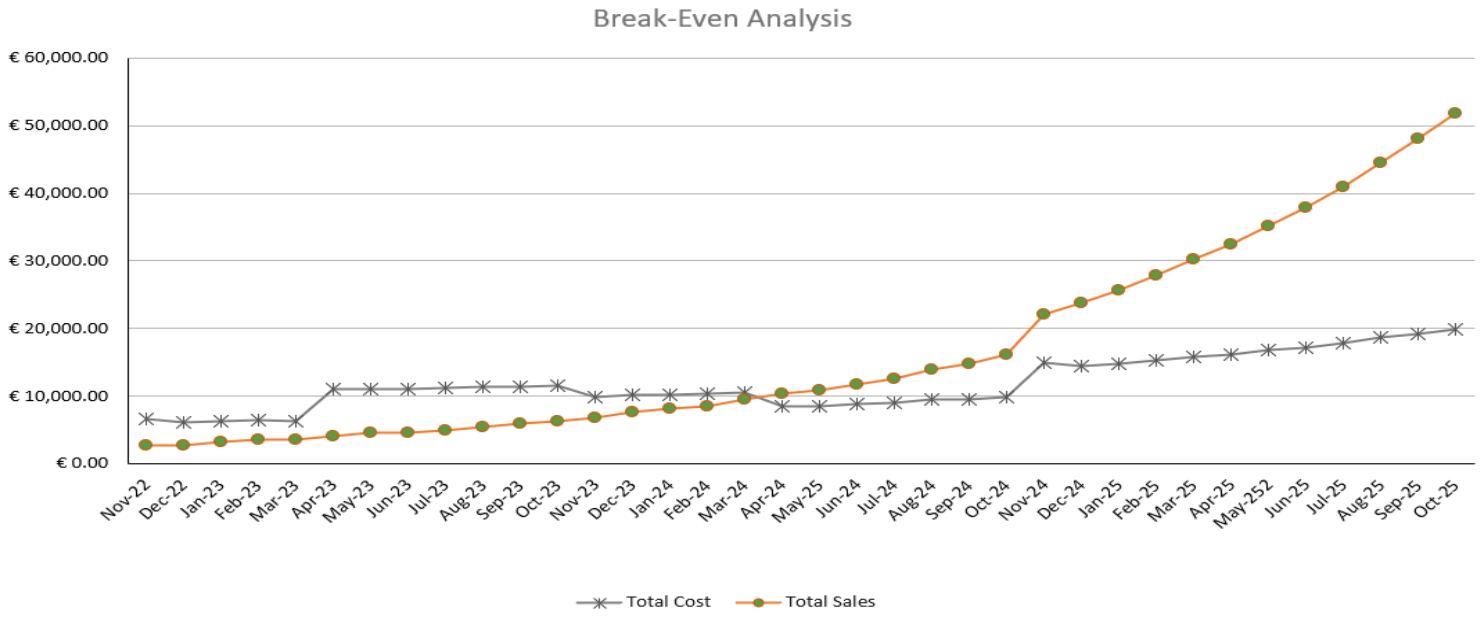
Year 2 will incur the same fixed costs as Year 1. These will again total **€54,904.92.**

In Year 2 we will allocate **€13,095** towards marketing, this figure is generated from 10% of our turnover. Our sales commissions divided between Tom, Conor, Nikhil, and Yash will equate to **€1,980** for the year. Our figure for both legal cost is **€5,238**, and accounting is **€5,238.** Our cloud needs will cost us **€36** for the year for cloud storage. Our cost for Statmetrix for Year 2 is **€5,820** owing to increase in customer counts. Addition of new customers would mean that we incur **€17,276.25** as cost for Hardware (Camera + Tripod). As part of our efforts to have our in-house data generation capability, we allocate **€11,250** as we plan to wrap up the development in 2nd year. Total Variable Costs therefore comes to **€59,933.25**

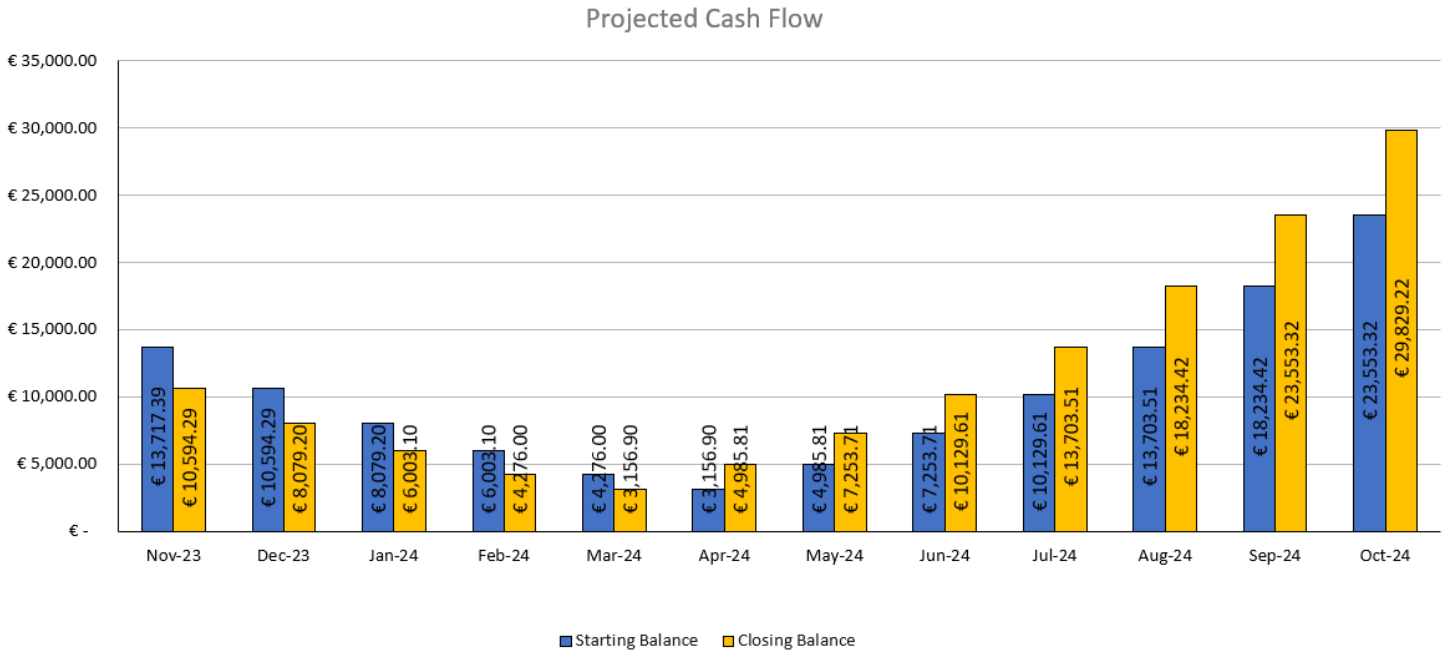
Total Expenditure for Year 2: **€114,838.17**

Income

In Year 2 we expect to have a total users post churn of 34 users. This equals a total cumulative revenue of **€130,950**. This can be broken down by Quarter. Quarter 1 will bring a revenue of **€22,500**. Quarter 2 will bring **€28,350**. Quarter 3 will return **€35,100**. Finally, Quarter 4 will return **€45,000**. In April 2024 we expect to begin to turn a profit and break-even. This can be seen in the graph below.



Overall, in Year 2 we expect profits of **€16,111.83**. Combined with the previous year's closing cash balance, we will finish the year with a projected end balance of **€29,829.22**.

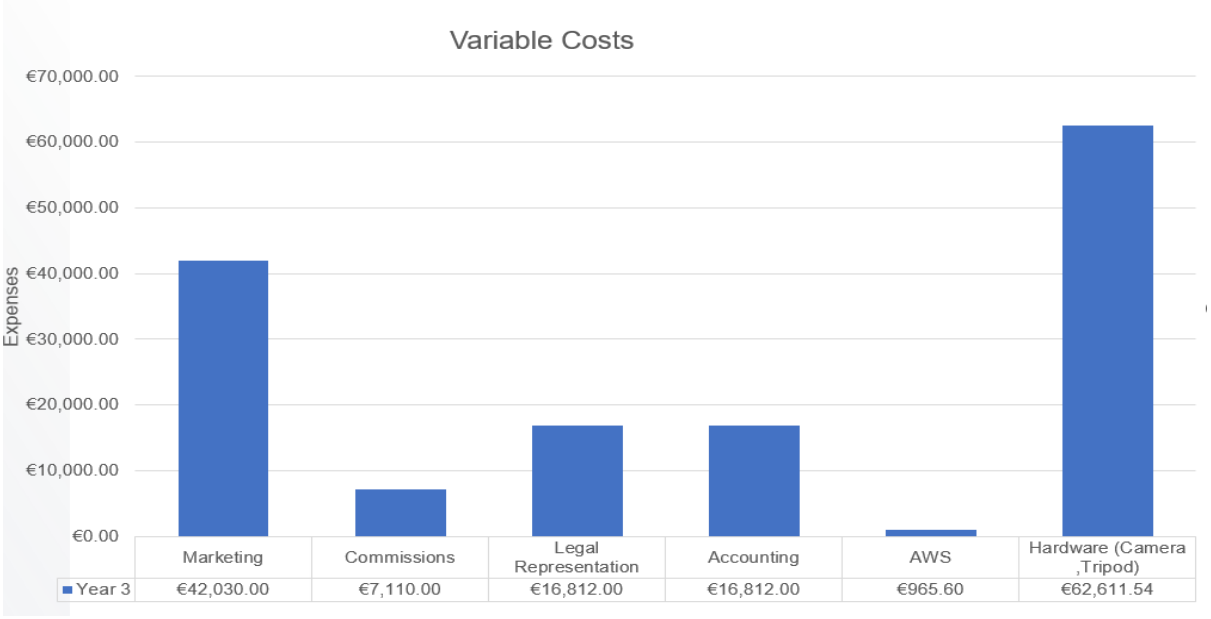


Year 3

Expenditure

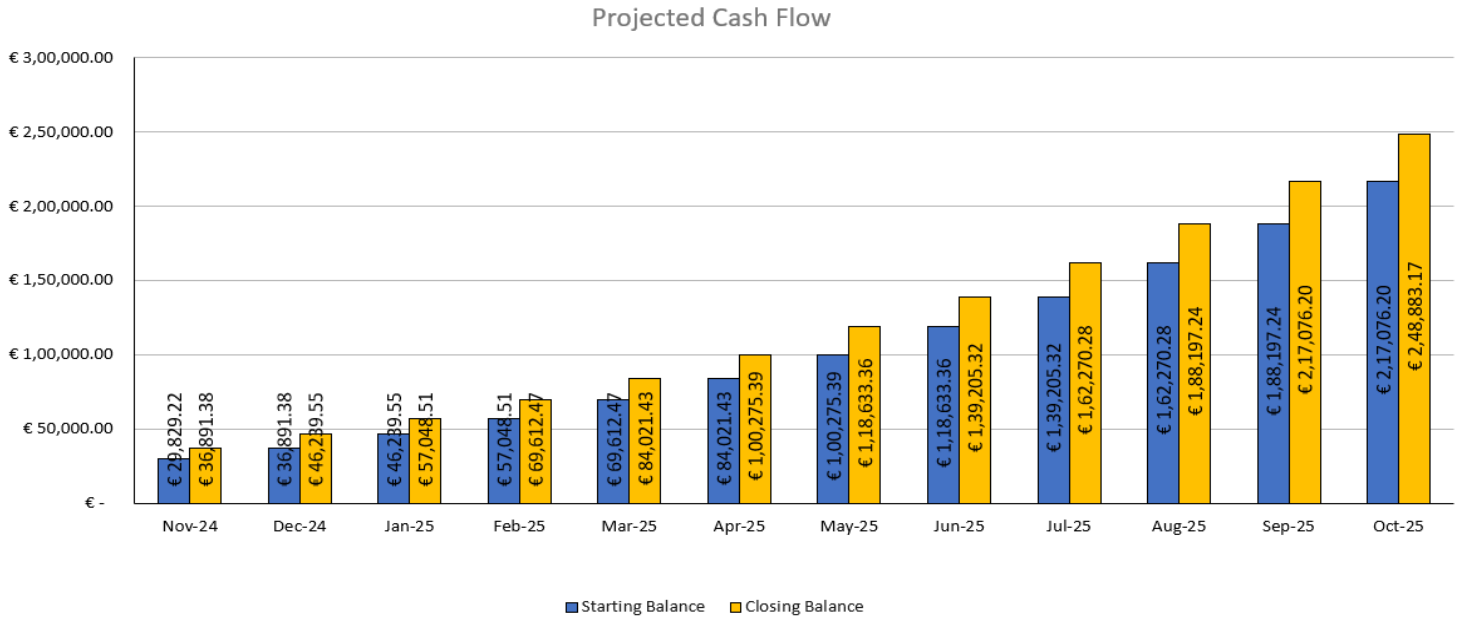
Year 3's fixed costs are the same as the previous 2 years. The figure remains a total of **€54,904.92.**

Year 3's allocation towards marketing comes to a total of **€42,030**. Again, this figure is generated from 10% of our turnover. Our sales commissions divided amongst our team will equal to **€7,110** for the year. Our figure for accounting is a total cost of **€16,812**, and the allocation for legal will total at **€16,812.** We understand that these figures for accounting and legal are quite high, however this allocation, if unused, the surplus be reinvested back into the business. Our cloud storage (AWS) needs will cost us **€965.60** for the year. This increase in cost is due to the fact that starting Year3 we will be recording the football matches and generating our own data rather than relying on StatMetrix which means we will need to store the match videos in AWS (Storage Tier: Glacier instant retrieval, please refer to **Appendix E: AWS Storage Estimation** for detailed information). As we onboard new customers, we will require Hardware (Camera +tripod) for match recording and hence a cost of **€62,611.54**



Income

Year 3 we expect to have a total users post churn of **108 users**. This equals a total cumulative revenue of **€420,300.** This can be broken down by quarter. Quarter 1 will bring a revenue of **€71,550**. Quarter 2 will bring **€90,450**. Quarter 3 will return **€113,850**. Finally, Quarter 4 will return **€144,450**. Overall, in Year 3 we expect profits of **€219,053.94**. Combined with the previous year's closing cash balance, we will finish the year with a projected end balance of **€248,883.17**.



As seen above, the third year will be the period when the true potential of the Business is realised. We see an exponential growth in revenue & profits which will allow us to bring in more resources and continue growing our business.

Conclusion

Our Conversation with Industry experts also has validated the worth of the product in terms of the functionalities offered and the insights generated from it which tells us there is a good potential for the product. Our estimates consider capturing just 30% of the Serviceable Available Market, i.e 108 out of 366 clubs which we believe is quite reasonable.

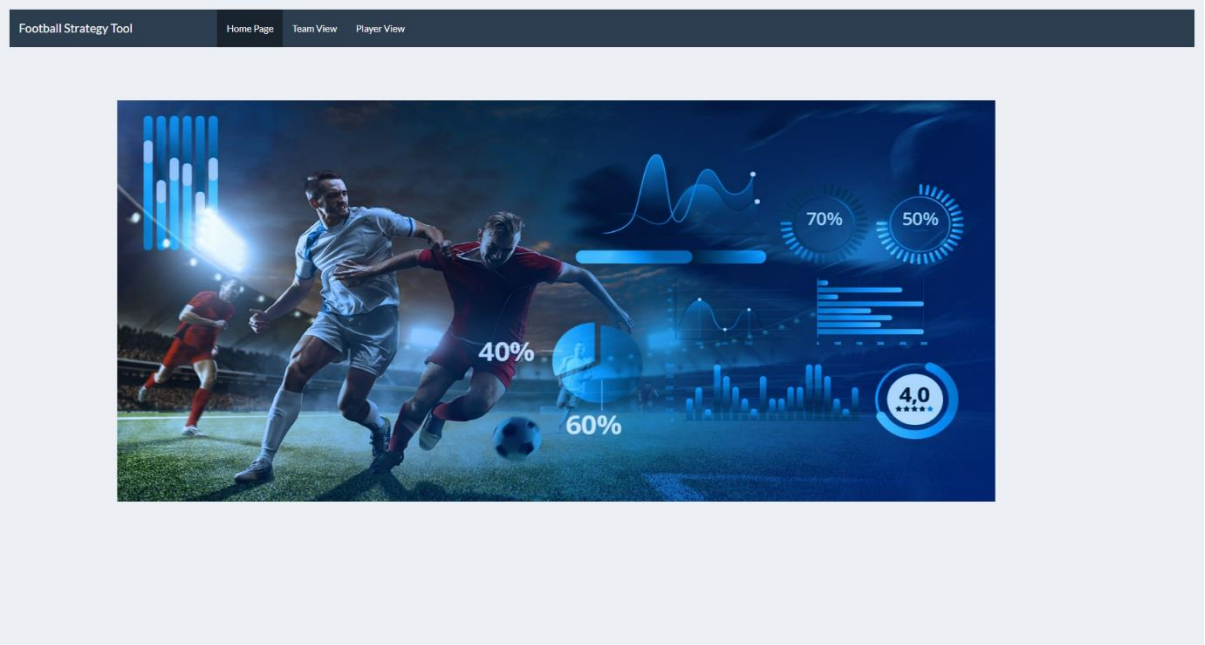
The Target Market currently is based on just the Men's Football clubs who are registered with FIFA; however, it does not consider Women's clubs or other Clubs who are not registered with FIFA which gives us a potential to capture more clubs. Additionally, we understand that the decision to Target UK, Ireland, Spain, India, USA limits our Serviceable Available Market but it can be further increased over the next phase from Year 3 onwards to Target more countries and more clubs. This will allow the business to establish its footprint globally.

The current product is a result of multiple Iterations with a lot of thought put into the needs of coaches. Having said that, the team would still want to research further and use acumen of its customer Club coaches to enhance its offerings to be potentially capable of entering the Premier Leagues and compete with its competitors for a better market share.

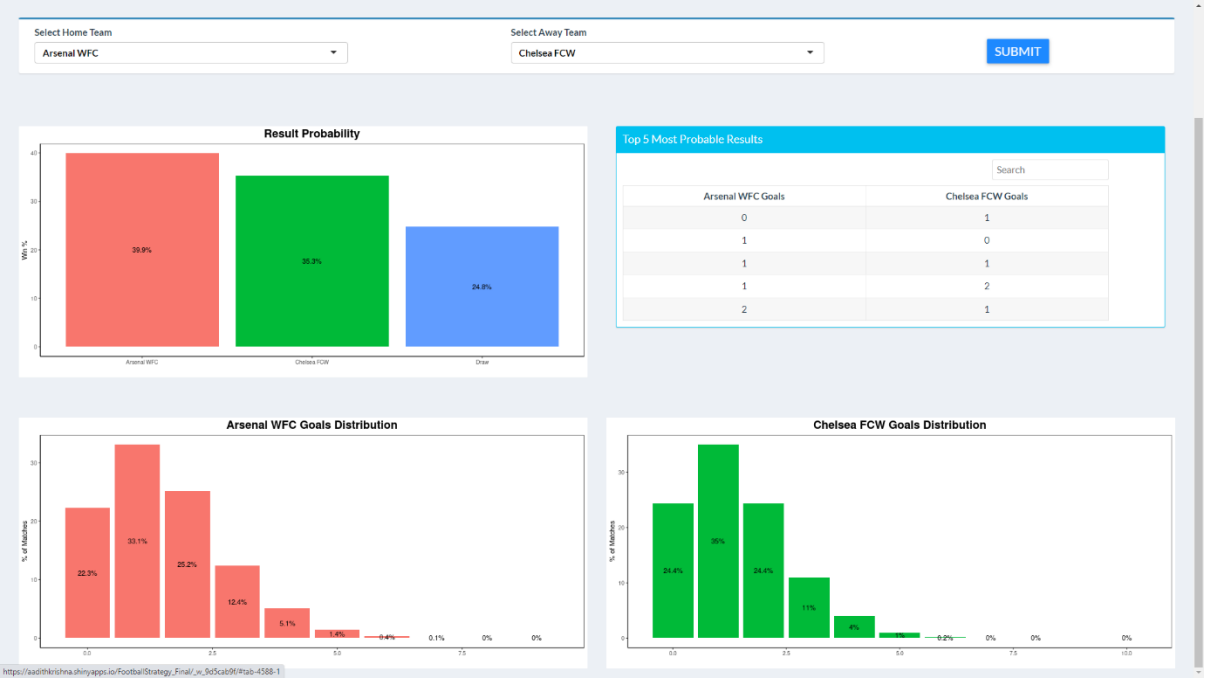
Appendix

Appendix A: Product

A.1: Home Page

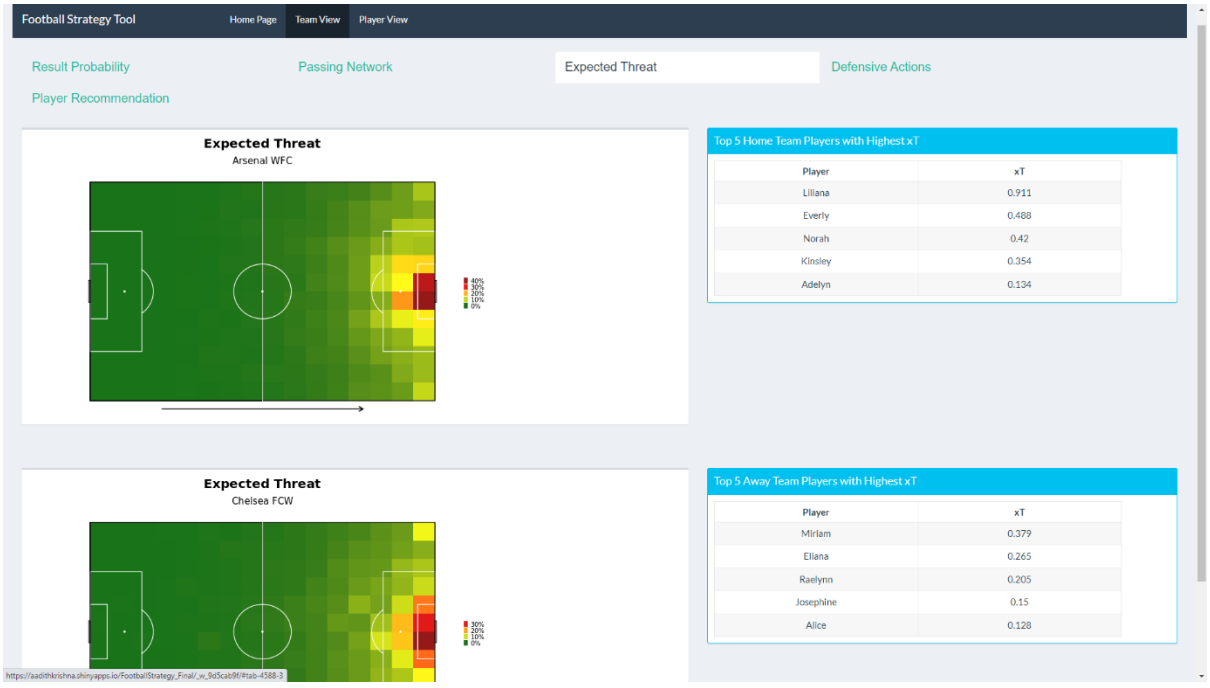


A.2: Team View - Win Probability

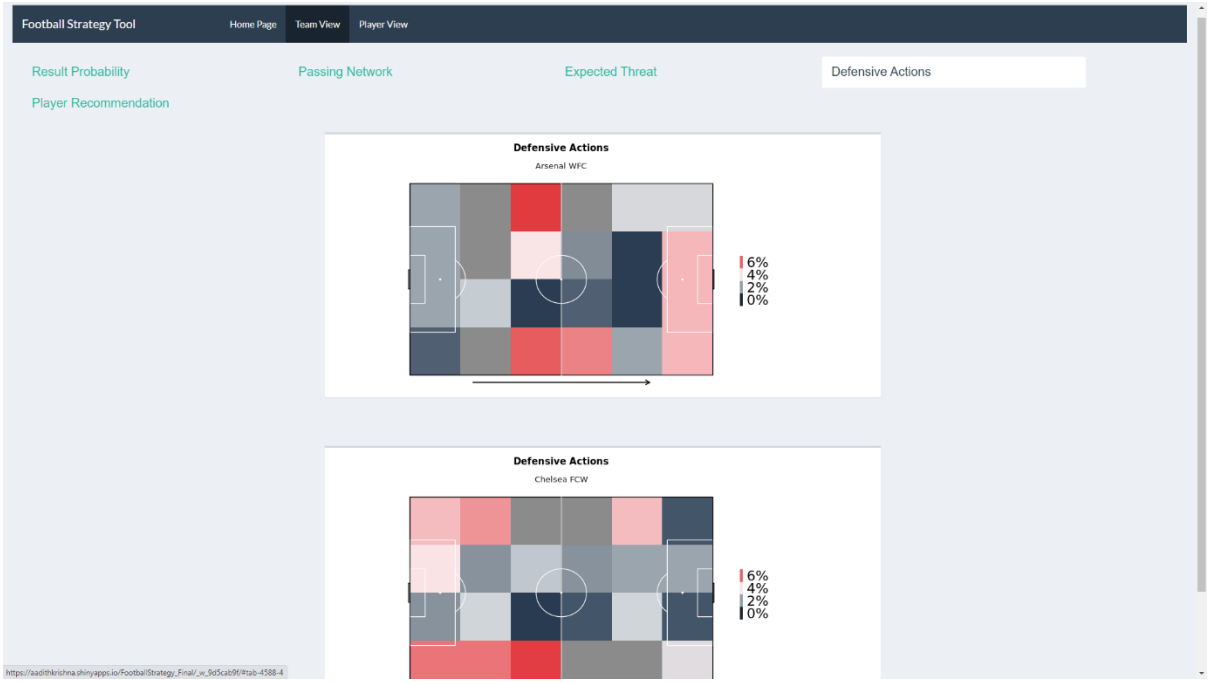


A.3: Team View - Pass Maps

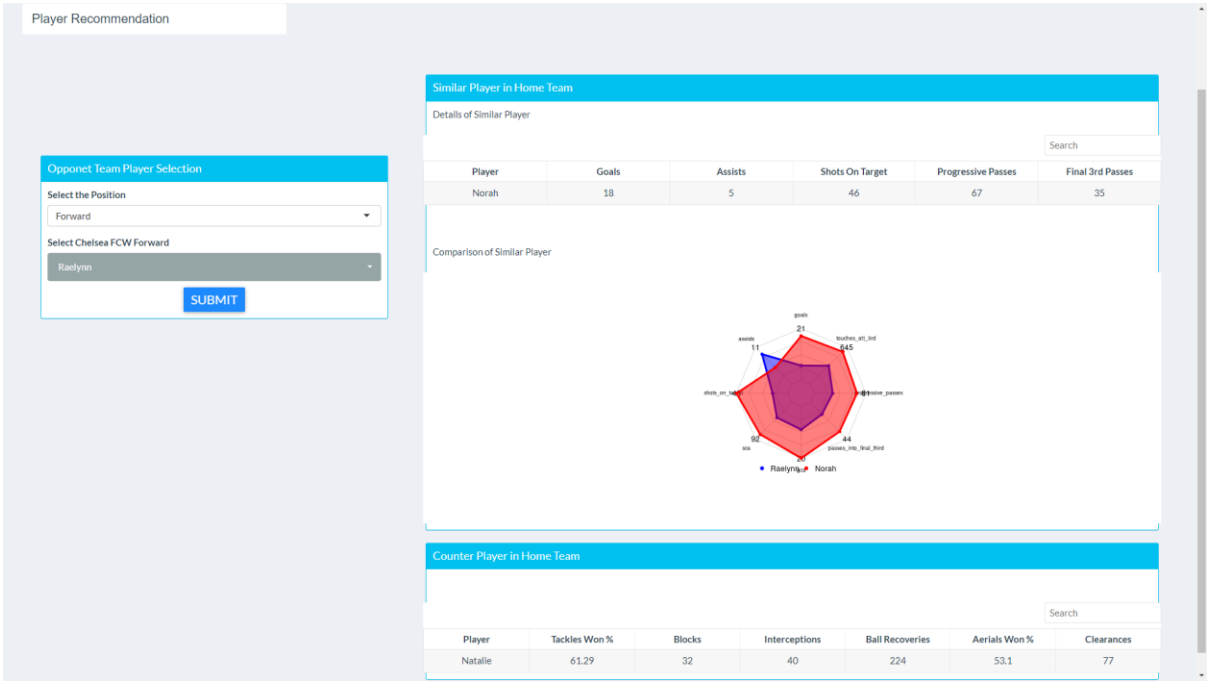
A.4: Team View - Expected Threat



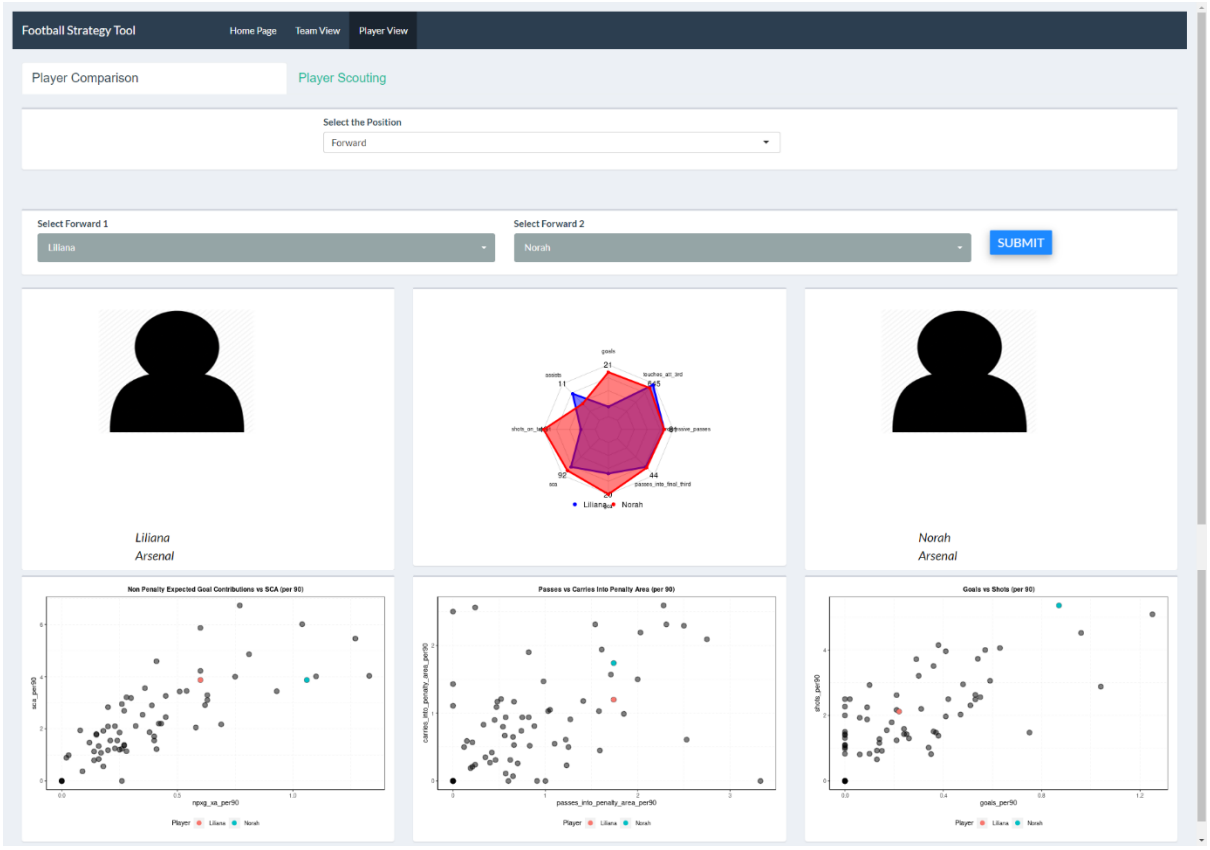
A.4: Team View - Defensive Actions



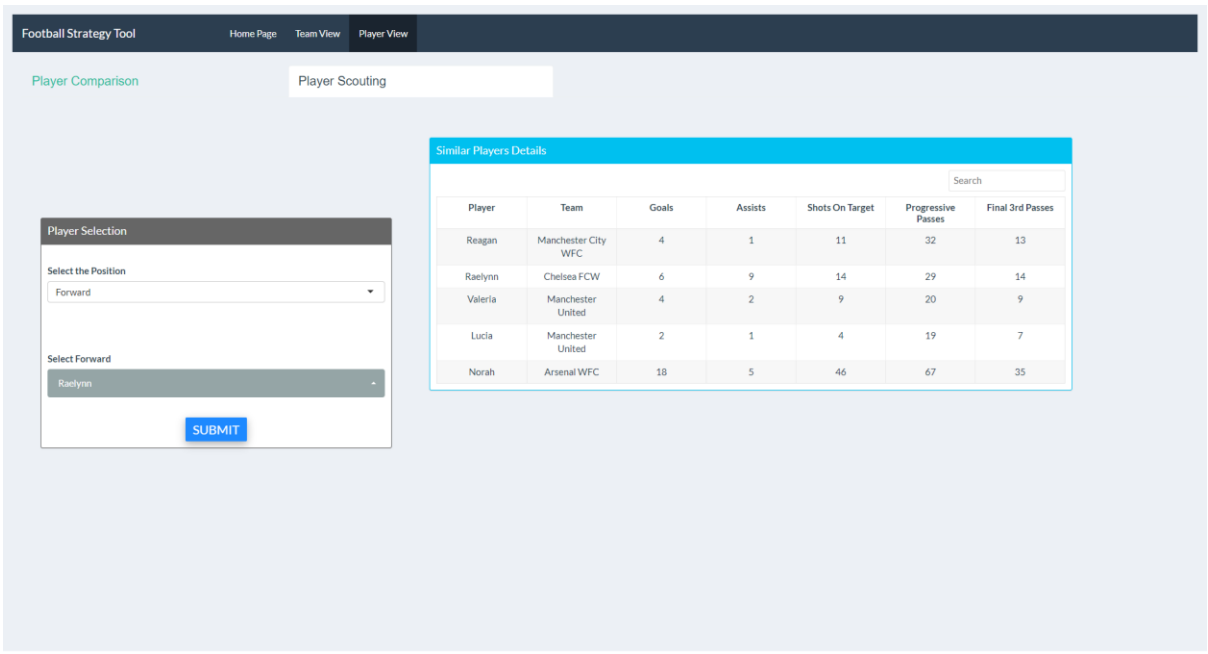
A.5: Team View - Player Recommendation



A.6: Player View – Player Comparison

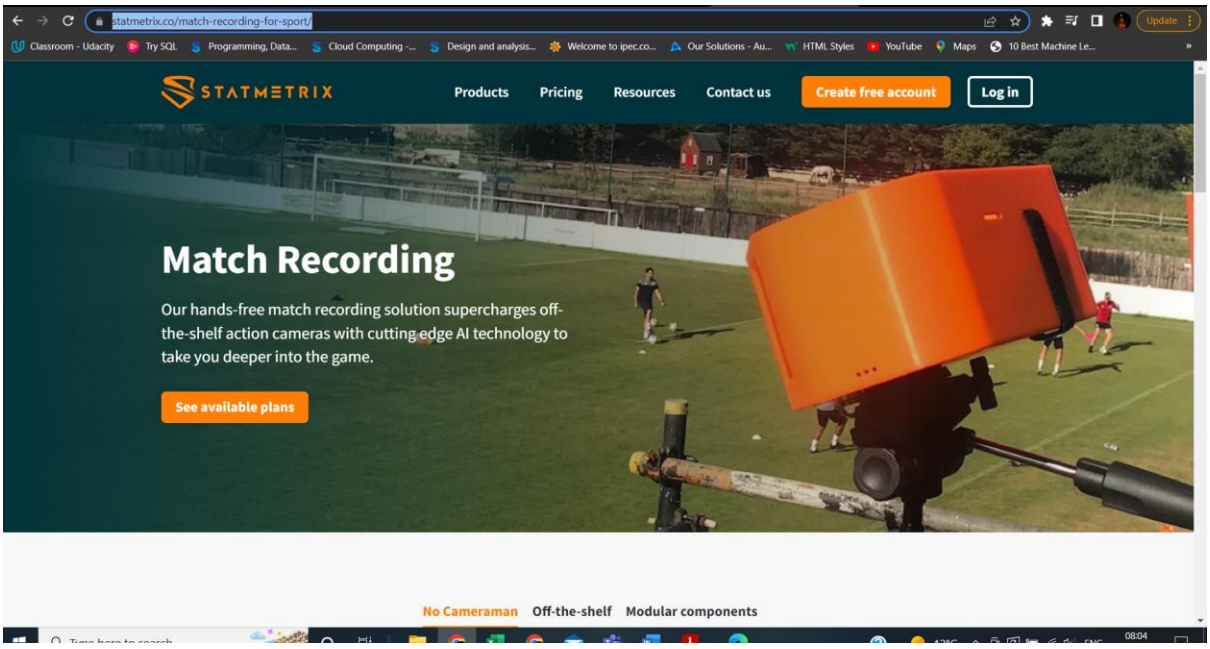


A.7: Player View – Player Scouting

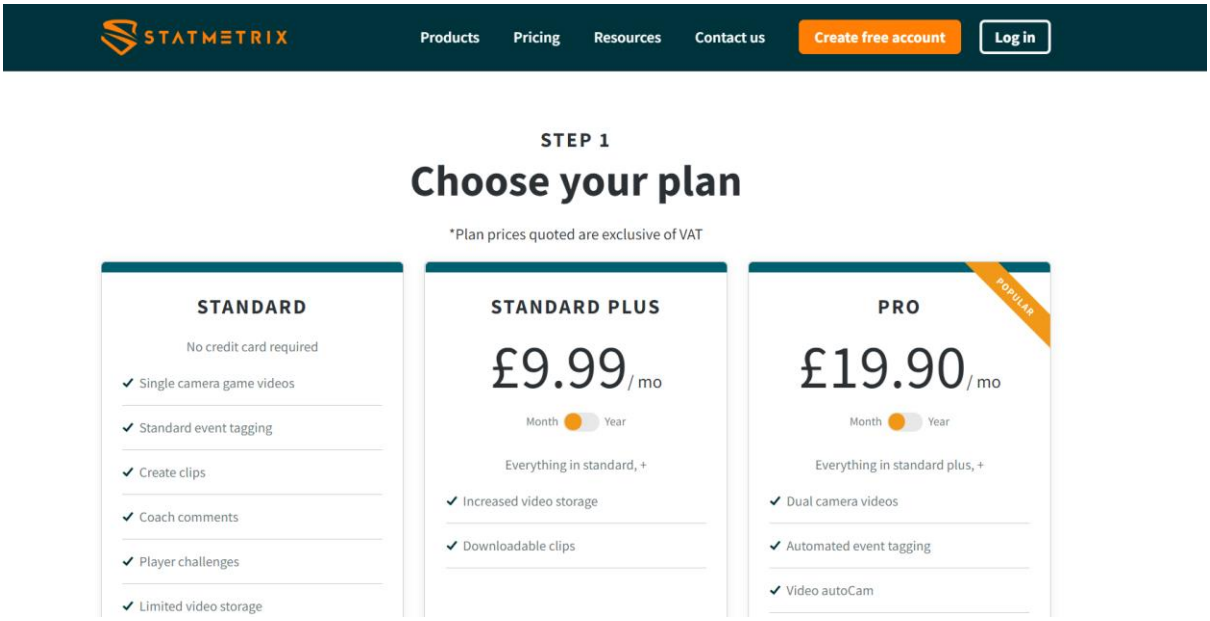


Appendix B: Statmetrix

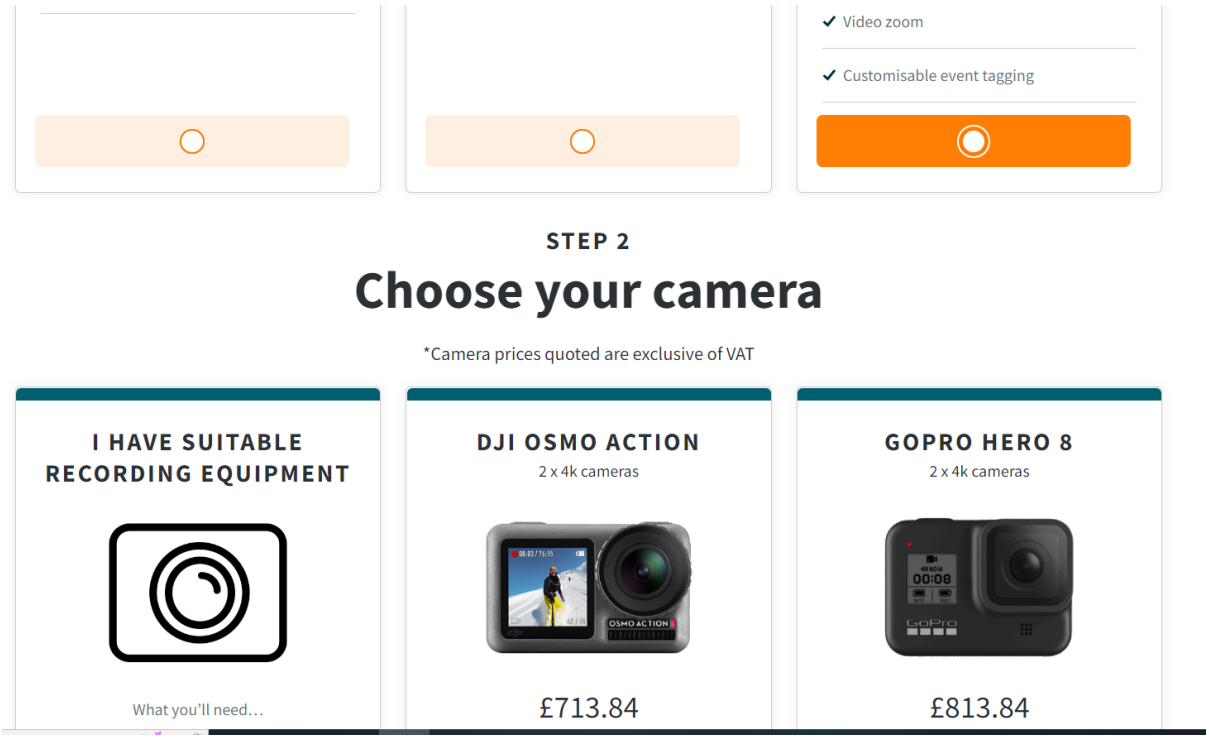
B.1: Match Recording Service



B.2: Match Recording Pricing

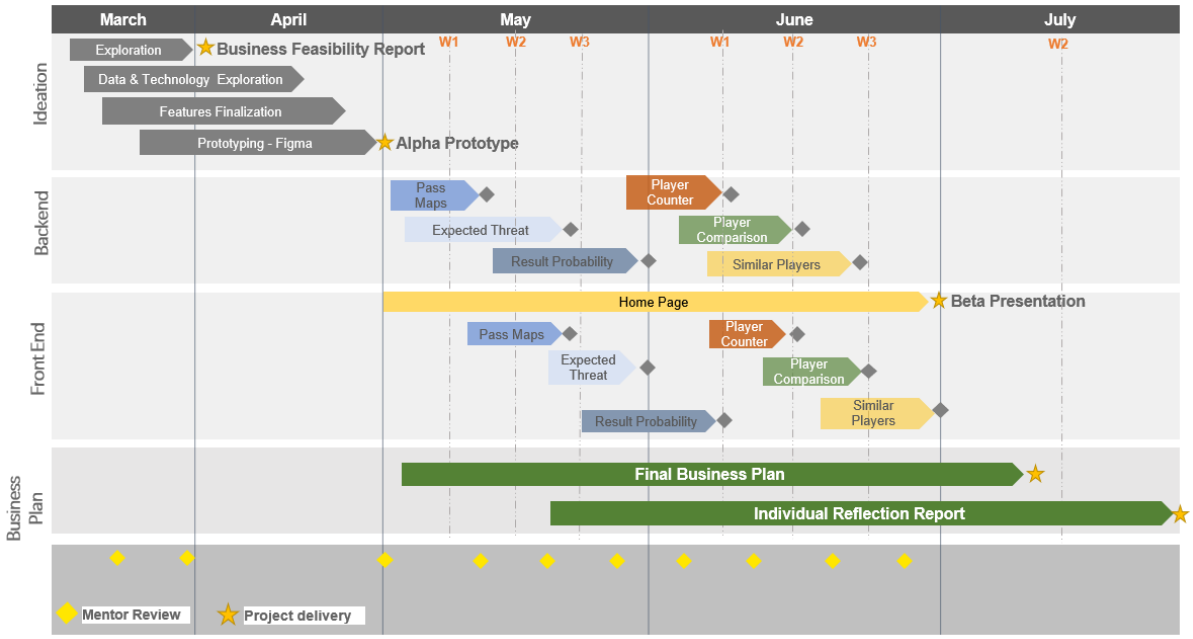


B.3: Match Recording Pricing(continued)



Appendix C: Project Management

C.1: Project RoadMap

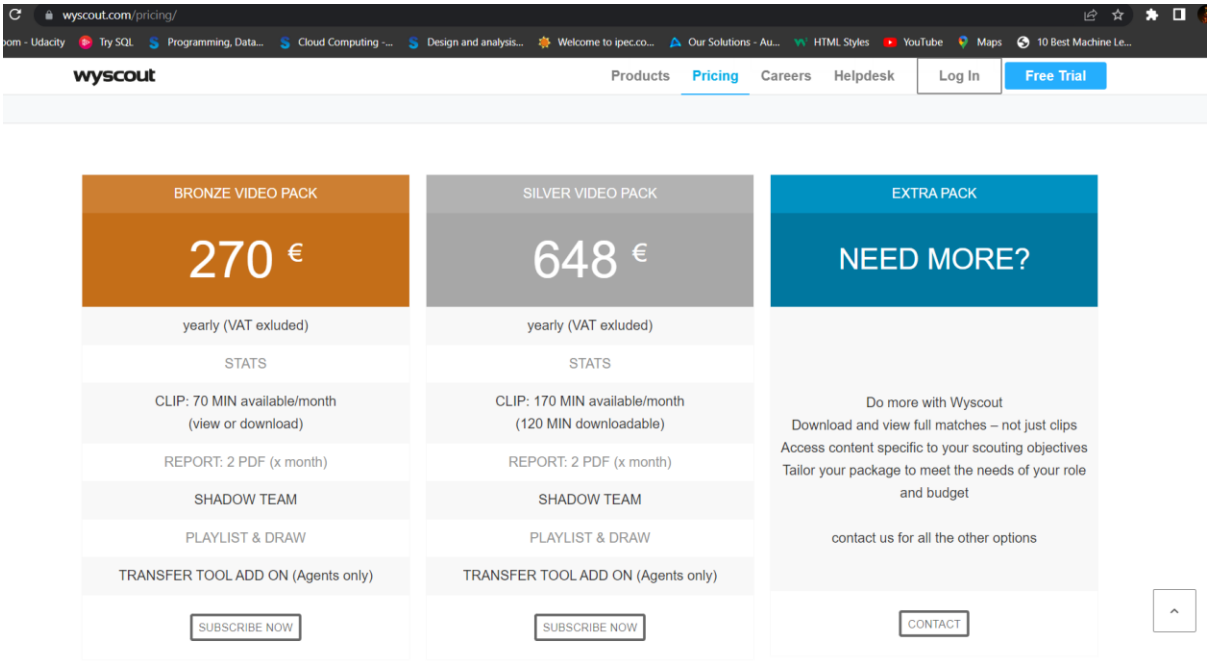


C.2: Project Task list used for Monitoring

Task	Deadline	Assigned	Status	Remarks/Action items
BE – Result Probability	20th May	Aadith/Philson		Have a baseline for this.
BE – Pass Map	26th May	Aadith/Philson		Have a base version now. 1. Need to check the parameterization part to show pass maps based on match id and team selection. 2. Front end research
BE- Player Counter	4th June	Philson/Aadith		1. Identify the traits/player characteristics for clustering – Aadith 2. Explore Clustering techniques – Philson 3. Implementation – Philson 4. Mapping for counter player selection - Aadith
BE- Player Comparison	4th June	Philson/Aadith		1. Identify the traits for comparison among each player types(Defender, Mid Fielder etc) - Aadith 2. Explore Clustering techniques – Philson 3. Implementation - Philson
BE- Similar Player	4th June	Philson/Aadith		same as above
BE- Expected Threat	15th June Extended date: 24th June	Philson/Aadith		1. Need to identify the computation methods for xT by 5th June- Philson 2. Need to find a way to represent the Transition Matrix easily to reduce computation complexities by 10th June - Philson 3. Validate the computed values by 13th June –Philson 4. Player Action Threat evaluation by 24th June - Philson
BE- Defensive Actions	12th June	Aadith/Philson		
AWS Setup	31 May	Philson		No access to Cloud9 Service & S3. Have sent an email to Dr. Stephen. Let's continue working on local until we have it. – 29/05 Environment setup. Access to S3 needs to be checked. - 01/06
Front End - Learning	5th June	Everyone		Need few hands here to help out Yash with the Front-end work. Yash to share link for learning – **Done 26/05** Yash needs to see interaction part of prototype – **Done 31/05** Learn Reactjs – 05/06 Explore R shiny/dash library in python for front end as backup – **Done 05/06** Dropping Reactjs. Work to progress in R Shiny. Aadith to take lead – 10/06
FE – Home Page	5th June	Aadith/Yash/Nikhil/ Rest		1. Let's start with simple stuff. Work your way up.
FE – Result Probability	5th June	Aadith/Yash/Nikhil/ Rest		
FE – Pass Map	20th June	Aadith/Yash/Nikhil/ Rest		1. Research this. Specifically on combining the relation graph & football pitch.
FE- Player Ranking(similar & counter player)	24th June	Aadith/Yash/Nikhil/ Rest		
FE- Player Comparison	24th June	Aadith/Yash/Nikhil/ Rest		
FE – Defensive Actions	24th June	Aadith/Yash/Nikhil/ Rest		
FE – Player Scouting	24th June	Aadith/Yash/Nikhil/ Rest		
Presentation - Technical	24 June	Aadith/Philson/Yash		1. Make sure Codes are working properly. Add messaging/comments in codes for easy understanding. 2. Prepare scripts by 25th June – All 3 3. Test Run on 26th June & Practice – All 3 4. Second Practice session 27th Morning– All 3
Presentation - Business	30 June	Tom/Conor/Nikhill		1. Prepare Financials, Operations – Conor 2. Prepare the Marketing side – Tom 3. Product/Problem/Intro – Nikhil 4. Slides – Conor/Tom
Business Plan Report	15h July	Tom/Conor/Philson/ Aadith		Tom – Marketing; Conor – Problem/Financials/Operations ; Product- Philson/Aadith ; Colating Report: Aadith/Philson

Appendix D: Competitor Pricing

D.1: Wyscout Pricing



(Pricing - Wyscout, 2022)

D.2: StatsBomb Pricing

Re: We are Data Champions | StatsBomb Contact Form
1 message

Fin Davies <fin.davies@statsbomb.com>
To: krishna.aadith@gmail.com

Hi Aadith,

We are pleased to hear that you are interested in StatsBomb Data and Analysis. StatsBomb currently provides data and platform access for business use only with packages starting at 10k per season, but we have a range of options for students.

The best place to start is our StatsBomb Academy. We offer a range of analytics courses online, affordable and open to everyone. These are available at https://statsbomb.com/academy/.

After the course is complete and you have more of a sense of the analytics involved, you'll find that we have made some data available for free, which you can find here: https://github.com/statsbomb/open-data.
There is also a pre-built R package (https://github.com/statsbomb/StatsBombR), that you can use to analyse the data.

We don't have specific data on players in the Premier League in our public data. However, we have partnered with FBref, who use our data on their website. This would be a good place to find some up to date data on Premier League players.

In the meantime, please sign up to receive our newsletters and you will be the first to find out when we make new products available and follow our Twitter account, where we release daily content on leagues across the world. Scroll to the bottom of the page on https://statsbomb.com to sign up.

I am more than happy to answer any further questions so please feel free to get in touch.

Yours sincerely,

Fin Davies
Junior Sales Administrator

+44(0)7926097815

@StatsBomb
www.statsbomb.com

StatsBomb
Data Champions.

Appendix E: AWS Storage Estimation

	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25
# of Customers	46	50	54	58	63	68	73	79	86	93	100	108
Avg Game Count in a month(# of customers*8)	368	400	432	464	504	544	584	632	688	744	800	864
Size of Video(GB) (Avg Game Count* 33GB)	12144	13200	14256	15312	16632	17952	19272	20856	22704	24552	26400	28512
	Storage needs to be considered now as we switch to our own data generation											
AWS Storage Cost	€ 52.80	€ 52.80	€ 68.00	€ 68.00	€ 68.00	€ 68.00	€ 88.00	€ 88.00	€ 88.00	€ 88.00	€ 88.00	€ 112.00

... | Sheet3 | Income Expenditure | Sales Projection | START UP COST | Break Even | Cashflow | **AWS Storage Cost**

Appendix F: Source Code Guide

Source Codes available in the Zipped folder named Source_code.zip.

View	Functionality	Source code(backend) file name	User Interface Code file in Rshiny	Graphs/plots source code file in R	Source code to read transformed data from AWS S3
Team View	Win Probability	source_codes\backend \Win Probability.pynb	source_codes\frontend \ui.R	source_codes\frontend \global.R	source_codes\frontend \server.R
	Pass Maps*	-			
	Expected Threat	source_codes\backend \Expected Threat.pynb			
	Defensive Actions*	-			
	Player Recommendation	source_codes\backend\clustering			
Player View	Player Comparison*	-			
	Player Scouting	source_codes\backend \clustering			

*data transformation handled in front end itself.

References

- UEFA.com. 2021. UEFA EURO 2020. [online] Available at: <https://www.uefa.com/insideuefa/about-uefa/news/026d-132519672495-56a014558e80-1000--uefa-euro-2020-impresses-with-5-2-billion-cumulative-global-liv/> [Accessed 31 March 2022].
- Www2.deloitte.com. 2019. Annual Review of Football Finance. [online] Available at: <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/sports-business-group/deloitte-uk-annual-review-of-football-finance-2019.pdf> [Accessed 31 March 2022].
- Soccerment, 2020. THE GROWING IMPORTANCE OF FOOTBALL ANALYTICS. [Online]Available at: https://soccerment.com/the-importance-of-football-analytics/
- Herbinet, C., 2018.Predicting Football Results Using Machine Learning Techniques. Post Graduate. Imperial College London.
- Socceraction.readthedocs.io. 2022. Expected threat -socceraction 1.2.1 documentation. [online] Available at: <https://socceraction.readthedocs.io/en/latest/documentation/xT.html>
- (State of the football analytics industry in 2021, 2021) SciSports, 2021. State of the football analytics industry in 2021. Available at: <https://www.scisports.com/state-of-the-football-analytics-industry-in-2021/#:~:text=Clubs%20such%20as%20Midtjylland%20and,out%20longer%2Dterm%20research%20projects%E2%80%A6> [Accessed 15 June 2022].
- (McLaren, 2021) McLaren, S., 2021. Steve McLaren, FIFA Technical Director talks to media at FIFA High Performance.
- (Sports Analytics Market, 2022) 2022. Sports Analytics Market. [online] SM Strategic Market Research. Available at: <https://www.strategicmarketresearch.com/market-report/sports-analytics-market> [Accessed 16 June 2022].
- (Professional Football Report, 2019) Fédération Internationale de Football Association, 2019. PROFESSIONAL FOOTBALL REPORT 2019. [online] Zurich: PROFESSIONAL FOOTBALL REPORT 2019. Available at: <https://digitalhub.fifa.com/m/a59132e138824c1c/original/jlr5corccbsef4n4brde.pdf> [Accessed 16 June 2022].
- (Griffith, 2014) Griffith, E., 2014. Startups are failing because they make products no one wants. [online] Fortune. Available at: [Accessed 26 March 2022]

- Rapacke, A., 2019. Startups: How to Stop Bigger Competitors from Stealing Your Ideas - The Rapacke Law Group. [online] The Rapacke Law Group. Available at: [Accessed 26 March 2022]
- (Markets and Markets, 2022) Markets and Markets, 2022. Sports Analytics Market by Component. [online] Markets and Markets. Available at: <https://www.marketsandmarkets.com/Market-Reports/sports-analytics-market-35276513.html> [Accessed 19 June 2022].
- (The Numbers Game, 2018) Youtube.com. 2018. The Numbers Game | How Data Is Changing Football | Documentary. [online] Available at: <https://www.youtube.com/watch?v=ILcXH_4rwr4> [Accessed 26 March 2022].
- Ie.norton.com. 2022. Norton 360 | Plus, Standard, Deluxe, Premium - Antivirus Plus. [online] Available at: <https://ie.norton.com/ps/3up_norton360_nav_PLA.html?om_sem_cid=hho_sem_sy:ie:ggl:pm:e:nb:kw0000724896::c:google:16153282740::&nortoncountry=IE&gclid=Cj0KCQjwn4qWBhCvARIsAFNAMigTidWm2tIUeXYPXa_yBx7Wc7kf8Q5u3sZw28tkKmmBuf9SMIlqWsgaAnzrEALw_wcB&gclsrc=aw.ds> [Accessed 4 July 2022].
- Finegan, R., 2022. How Much Should My Company Accountant Cost?. [online] Beyond Accounting. Available at: <https://beyond.ie/accounting-advice-ireland/financial-advice-how-much-should-my-company-accountant-cost/> [Accessed 4 July 2022].
- Wyscout. 2022. Pricing - Wyscout. [online] Available at: <https://wyscout.com/pricing/> [Accessed 15 July 2022].
- Landscape.fifa.com. 2022. FIFA Landscape. [online] Available at: <https://landscape.fifa.com/en/landscape> [Accessed 14 July 2022].