PLAYER PERFORMANCE ANALYSIS SYSTEM

SOFTWARE REQUIREMENTS SPECIFICATION DOCUMENT

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1. INTRODUCTION

With technology getting involved in almost everything in life these days, sports has become an area to exploit. With so much data and information, available self-evaluation is very important. With football teams becoming more and more competitive these days, there is a pressing need for good performance analysis. With most teams analysing on a team performance basis, it would be more helpful for both the management and the players if the analysis is done on a player-to-player basis about stats according to each player's specific position/role.

We plan to design a client-server model to address the above-mentioned problem pertaining to both the team management and individual players. Our system would help the player to improve specific aspects of his game by viewing the statistical analysis provided based on his previous performances.

The purpose of this document is to analyse and elaborate on the high level needs and features of the Player Performance Analysis System. It focuses on the capabilities and facilities provided by the system we are developing. The details of what are all the needs of this system and whether it fulfils those needs are detailed in the use-case and supplementary specifications.

1.1PURPOSE

The purpose of this Software Requirements Specification (SRS) document is to describe the external behaviour of the system. Requirements specification defines and describes the operations, interfaces, performance and quality assurance of both the client and server sides of this Performance Analysis system. The document also defines the non-functional requirements such as the user interface. It also provides a brief about the constraints that are to be considered when the system is designed and developed, and other factors necessary to provide a complete and comprehensive description of the requirements of the software.

1.2 SCOPE

The SRS document captures all the requirements in a single document. The Player Performance Analysis System that is to be developed helps to provide a detailed analysis of the team performance, which can be analysed, visualized and pruned according to a specific player, opposition or some statistical measure. This system aims to implement the following features.

- This system provides individual accounts to each staff member and all the players.
- Breakdown of our advanced analysis onto the client side (the players) into simple statistics visualizations for their interpretation in an easy manner.
- Among the player specific statistics, the system further curates specific numbers according to their position, which is essential for the players to improve in certain aspects.
- Provide an efficient database management engine to smartly manage the details of all players, coaches and crunch the numbers for detailed analysis.
- Easy handling of details with operations like adding, deleting, updating players/staff/stats.
- Provision of a separate coaches corner for them to provide comments and assistance to every single player pertaining to their previous performances.
- Maintaining an up to date database on injury details, time to recover, suspensions, transfer scouting for the team management.

The features described above are used in the future phases of the software development cycle. These features largely meet the needs of all the users (players/management). The success criteria for the system is based on the level up to which the features described are implemented in this system.

1.3 DEFIFNITIONS, ACRONYMS & ABBREVIATIONS

This information is provided in reference to terms in the forthcoming sections, and also certain important terminologies to be used in various sections of the software in general.

VAR – Video Assistant Referee
PIN – Personal Identification Number
GK – Goalkeeper
CB/RB/LB – Center Back, Left Back, Right Back
CDM,CAM,LM,RM – Central Defensive/Attacking Midfielder , Left/Right Midfielder
LW,RW – Left/Right Winger
ST, CF – Striker , Center Forward.

1.4 REFERENCES

The SRS document for the Player Performance Analysis System uses the following documents as references: FIFA guidelines, Draft Technical Data Specification (DTDS)

1.5 OVERVIEW

The SRS document will provide a detailed description of the Player Performance Analysis System, covering an outline of the requirements, overview of the characteristics and constraints of the system.

Section 2 : This section of the SRS will provide the general factors that affect the product and its requirements. It initially specifies the background for all the

requirements. The items such as product perspective, product function, user characteristics, constraints, assumptions (if any) and dependencies and requirements subsets are described in this section.

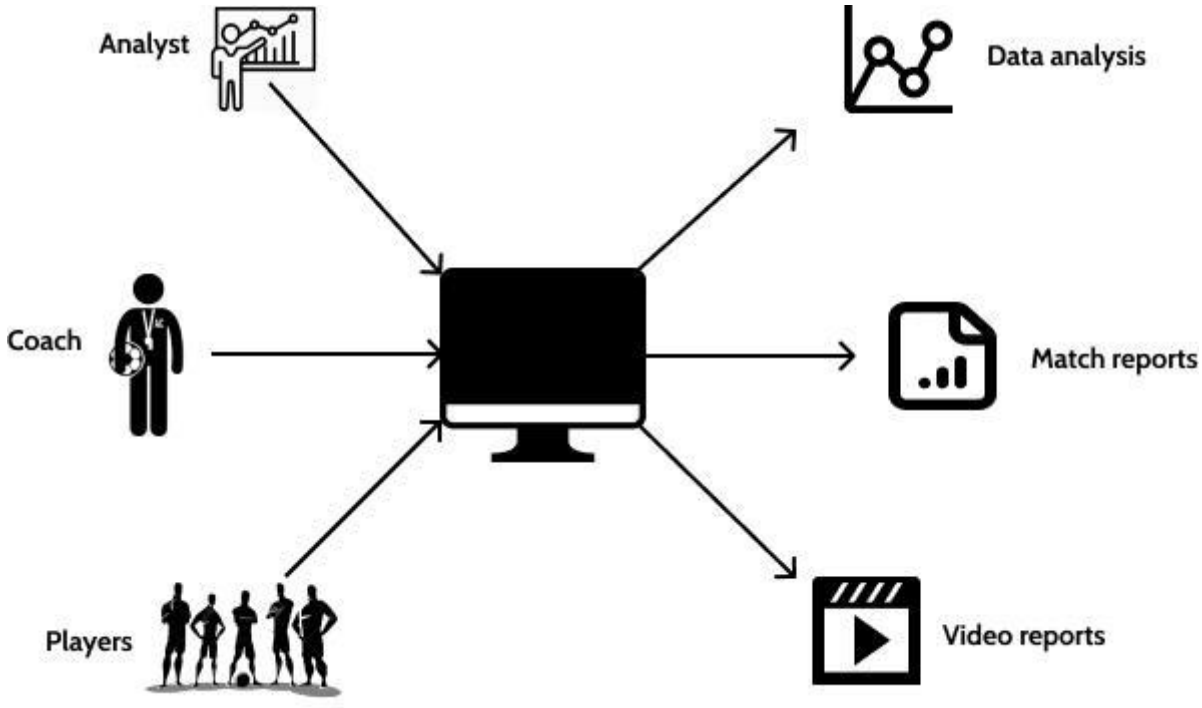
Section 3 : This section of the SRS contains all the software requirements mentioned in Section 2 in detail sufficient enough to enable designers to design the system accordingly to satisfy the requirements and testers to test if the system satisfies all those requirements.

2. OVERALL DESCRIPTION

2.1 PRODUCT PERSPECTIVE

- The Player performance analysis system is a package to be used by professional football clubs/academies to improve the performance and efficiency of the players and also helps coaches in decision making. The system to be developed benefits greatly the players, coaches and the analysts of the team using the system. The system provides data analysing along with match reports and video reports for players to analyse their own game and mistakes and the analyst can keep the data updated all the time so that the coaches and players get the updated information all the time.

- The complete overview of the system is shown in the overview diagram below: The product to be developed has interactions with the players, coaches and analysts who belong to the club.
- The product has to interact with other systems like: the Internet



Overview of the proposed system

2.2 PRODUCT FUNCTIONS

The Player performance analysis system proves online real-time information about the player's performance in the previous matches and also prepares them with enough information for their next match with video analysis on their opponents. The product functions are more or less the same as described in the product perspective. The functions of the system include the system providing different type of services based on the type of users[Player/Coach/Analyst]

- The player and coach should be provided with the updated information on their performance from previous matches as well as reports of their next opponent.
- The members are provided with the catalogue from where they can choose either then want to self analyse their performance or choose to read a report on them or opt to watch a video report of them or choose to see a video on their next opponents.
- The coach can also view all the above as the players and all will be given a provision to see who are the players that have seen the reports and haven't seen them yet.
- The analysts are provided with interfaces to add/delete/update the reports.
- The system uses the team's information security requirements to provide the login facility to the users.
- Provision of a separate coaches corner for them to provide comments and assistance to every single player pertaining to their previous performances.
- Breakdown of our advanced analysis onto the client side (the players) into simple statistics visualizations for their interpretation in an easy manner.

2.3 USER CHARACTERISTICS

The users of the system are players, coaches and analysts of the team who maintain the system. The coaches and players are assumed to have basic knowledge of computers and Internet browsing. The administrators of the system to have more knowledge of the internals of the system and is able to rectify the small problems that may arise due to disk crashes, power failures and other catastrophes to maintain the system. The proper user interface, users manual, online help and the guide to install and maintain the system must be sufficient to educate the users on how to use the system without any problems.

2.4 CONSTRAINTS

- The information of all the users must be stored in a database that is accessible by the Player performance analysis system.
- The team information security system must be compatible with Internet applications.

- The system is connected to the team's computer and is running all 24 hours a day.
- The users access the system from any computer that has Internet browsing capabilities and internet connection.
- The users must have their correct usernames and passwords to enter into the Analysis System
- There must be a strong back office team from the management side to keep the database up to date in all fronts.

2.5 ASSUMPTIONS AND DEPENDENCIES

- The users have sufficient knowledge of computers.
- The Team computer should have an Internet connection and Internet server capabilities.
- The users know the English language, as the user interface will be provided in English.
- The product can access the team's player database.
- The copyrights and agreements for the video footage and the statistics have been properly obtained.

3. SPECIFIC REQUIREMENTS

This section describes in detail all the functional requirements.

3.1 FUNCTIONALITY

3.1.1 Login Capability

The system shall provide the users with signup/login capabilities for both the management side and the players.

3.1.2 Account Credentials Modification Capability

The system shall grant its users access to modify their account credentials including but not limited to passwords, preferences etc.

3.1.3 Alerts

The system can alert the user in case of announcements and also when team meetings, practice, gym sessions etc. are scheduled.

3.2 USABILITY

- The system shall allow the users to access the system from the Internet using HTML or it's derivative technologies. The system uses a web browser as an interface.
- Responsive design of the interface shall be implemented to make it aesthetically appealing to work on.
- Since all users are familiar with the general usage of browsers, no specific training is required.

- The system is user friendly and self-explanatory.

3.3 RELIABILITY

The system has to be very reliable due to the importance of data and the damages that incorrect or incomplete data can incur.

3.3.1 Availability

The system is available 100% for the user and is used 24 hrs. a day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.

3.3.2 Mean Time Between Failures (MTBF)

The system will be developed in such a way that it may fail once in a year.

3.3.3 Mean Time to Repair (MTTR)

Even if the system fails, the system will be recovered back up within an hour or less.

3.3.4 Accuracy and Efficiency

The accuracy and efficiency of the system is limited by its users' capabilities and also the rate at which the player data is retrieved, which is subject to the internet speed of the coach and player side.

3.3.5 Maximum Bugs or Defect Rate

Not specified.

3.3.6 Access Reliability

The system shall provide 100% access reliability.

3.4 PERFORMANCE

3.4.1 Response Time

The Response time of the system is restricted by the user's internet bandwidth. The system shall respond to the user in not less than two seconds from the time of the request submittal. The system shall be allowed to take more time when doing large processing jobs.

3.4.2 Administrator Response

The system shall take as less time as possible to provide service to the administrator/ management staff.

3.4.3 Throughput

The number of transactions is directly dependent on the number of users, the users may be the players or employees of the management staff. .

3.4.4 Capacity

The system is capable of handling 100 users at a time.

3.4.5 Resource Utilization

The resources are modified according the club's requirements and also certain special requirements according to the coach/player's specifications.

3.5 SUPPORTABILITY

3.5.1 Internet Protocols

The system shall be complying with the TCP/IP protocol standards and shall be designed accordingly.

3.5.2 Information Security Requirement

The system shall support the FIFA information security requirements and use the same standard as the FIFA and UEFA patent guidelines.

3.5.3 Maintenance

The maintenance of the system shall be done as per the maintenance contract.

3.5.4 Standards

The coding standards and naming conventions will be as per the respective football federation's standards.

3.6 DESIGN CONSTRAINTS

3.6.1 Software Language Used

The languages that shall be used for coding the Online Library System are Python3, HTML, CSS, JavaScript, Bootstrap, React, Node and Tableau.

3.6.2 Development Tools

Will make use of HTML, CSS, Bootstrap for the front-end needs and mongoDB, python and JavaScript for the back-end needs.

3.6.3 Class Libraries

Python Libraries will be extensively used for most of the backend needs. Will make use of the existing Java libraries available for JSP and Servlets. Some new libraries for the web-based application will be used.

3.7 ONLINE USER DOCUMENTATION AND HELP SYSTEM REQUIREMENTS

Online help is provided for each of the feature available with the Performance analysis System. All the applications provide an on-line help system to assist the user. The nature of these systems is unique to application development as they combine aspects of programming (hyperlinks, etc) with aspects of technical writing (organization, presentation). Online help is provided for each and every feature provided by the system.

3.8 PURCHASED COMPONENTS

The System Administrator will need to purchase the license for FIFA Server and the federation servers. The interface development license is available with Windows and Unix Environment. So the system need not purchase any licensing products, pertaining to the web development.

3.9 INTERFACES

3.9.1 User Interfaces

Will make use of the existing Web Browsers such as Microsoft Edge, Firefox or Google Chrome. The user-interface of the system shall be designed as shown in the user-interface prototypes.

3.9.2 Software Interfaces

A firewall will be used with the server to prevent unauthorized access to the system.

3.9.3 Communication Interfaces

The Player performance analysis system can be connected to the World Wide Web (WWW) and also the team servers.

3.10 LICENSING REQUIREMENTS

The usage of the Player performance analysis system is restricted to the authorities of the team who deploy it, the coaches, management staff, scouts and all the players.

4. SUPPORTING INFORMATION

The user interface prototypes are currently unavailable.