PERFORMANCE ANALYSIS SYSTEM FOR FELDA FOOTBALL MANAGEMENT SYSTEM

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ABSTRACT

Football Performance Analysis System (FPAS) is used to manage football competitions by storing each match's data during the match. The system focuses on some important data related to the game. The data gathering process is being recorded on papers which can cause inaccuracy in generating reports and analyzing data. By using a tool to record data during a match and generating some analytical and statistical information at the end of the match, the level of game-play by each player can be examined and used for comparison purposes. To make it happen, a system is designed and developed for portable devices called FPAS. The target operating system for FPAS is Android and the process model used in development of the application is called *Improved Extreme Programming* which is an agile model based on Extreme Programming (XP). By applying a set of corrections on XP method, besides having a high quality and tested software system, the documentation also improved. The delivered development documents are SRS, SDD, STR and SUM.

ABSTRAK

Sistem Analisa Prestasi Bolasepak (Football Performance Analysis System - FPAS) adalah digunakan untuk mengurus sesuatu pertandingan bola sepak dengan menyimpan data setiap perlawanan semasa pertandingan. Sistem ini memfokuskan kepada beberapa data penting yang berkaitan dengan perlawanan. Pengumpulan data direkod secara bertulis yang mana boleh menyebabkan ketidak tepatan dalam menghasilkan laopran dan analisis data. Dengan menggunakan alat untuk merekodkan data dalam sesuatu perlawanan dan menghasilkan beberapa maklumat analitikal dan statistik pada akhir perlawanan, tahap permainan setiap pemain dapat diperiksa dan digunakan untuk tujuan perbandingan.Untuk mengatasi hal ini, satu sistem telah direka dan dibangunkan untuk perkakasan mudah alih yang dikenali sebagai FPAS. Sistem operasi yang disasarkan untuk FPAS ialah Android dan model proses yang digunakan dalam pembangunan aplikasi ini dinamakan sebagai Pengaturcaraan Ekstrem (Improved Extreme Programming) yang lebih baik. Pengaturcaraan Ekstrem yang lebih baik ini merupakan model pintar dan tangkas berdasarkan kepada Pengatucaraan Ekstrem (Extreme Programming) (XP). Dengan menggunakan satu set pembetulan pada kaedah XP, di samping mempunyai kualiti yang tinggi dan sistem perisian yang telah diuji, dokumentasi telah bertambah baik. Pembangunan dokumen-dokumen yang dihantar adalah SRS, SDD, STR dan SUM.

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App	-	Application
AVD	-	Android Virtual Device
FC	-	Football Club
FPAS	-	Football Performance Analysis System
IA	-	Industrial Attachment
IDC	-	International Data Corporation
IDE	-	Integrated Development Environment
OS	-	Operating System
RFID	-	Radio-Frequency Identification
SDD	-	Software Design Document
SDK	-	Software Development Kit
SRS	-	Software Requirements Specification
STD	-	Software Test Description
SUM	-	Software User's Manual
UI	-	User Interface
XML	-	Extensible Markup Language
XP	-	Extreme Programming

CHAPTER 1

PROJECT OVERVIEW

1.1 Introduction

Football Management System is a system which is used to manage football competitions by storing each match's data during the match. The system focuses on some important data related to the game such as total completed passes, total uncompleted passes, total shots on target, total shots off target by players, and etc. At the end of each match the coach or the coaching team can have special reports (which can be statistical or table reports) on each player and on the whole match.

1.2 Company Background

Federal Land Development Authority established on 1956. It is a Malaysian government agency initially founded to handle the resettlement of rural poor into newly developed areas and to organize smallholder farms growing cash crops. As of

the 1990s, it no longer establishes new settlements, but engages in a diversified range of economic development and business activities. The main activities of this company are:

i. Conducting and performing projects on development of lands.
ii. Promoting, facilitating and implementing the development, management and economic, social, agriculture, settlements, industrial and commercial as well as some other secondary activities in its area.
iii. Implementing activities to help modernize agriculture.
iv. Helping, guiding, advising, and managing social activities, settlements, agriculture, industrial and commercial development in the schemes.

Beginning April 2004, FELDA was placed under the Prime Minister's Department and the minister responsible for it is Dato' Sri Mohd Najib Tun Razak, Prime Minister of Malaysia (FELDA, 2013).

1.2.1 FELDA United Football Club

FELDA United Football Club was formed on 2007 to participate in Malaysian FAM Cup on 2007. The objective of the establishment of FELDA United was to encourage the participation of its settlers, especially in sports. It was initiated by FELDA and the then Deputy Prime Minister of Malaysia was in charge of it. Its home ground is the Petronas stadium in Selangor. Their nickname is Budak FELDA, and their supporters' slogan is "Serang Bang Serang", which roughly translates to "attack" (Wikipedia, 2013b).

1.3 Project Background

Management abilities or leadership is a necessary part of any kind of business or other social activities. Also in sport, the coach should have management abilities to be able to perform his leadership duties (Kellett, 1999). In order to have effective management decisions, coaches need to have enough analytical information on each player and also to have useful analytical information, they also need to have statistical information about each game, and players' performance in each game.

As Snee and Hoerl (2004), mentioned in their article, *"Statistical Leadership,"* statistical information are some kind of data which are in danger of risk. Their main discussion is about the new techniques and technologies to gather and analyze statistical information like a traditional statistician. "Statisticians focused on data analysis because there was no infrastructure in place for others to do this. Data analysis was considered a separate job, removed from the process that created the data" (Snee & Hoerl, 2004). Statistics can provide the main information needed in any kind of activities such as engineering, business leadership, government officials and social activities and also sports (Snee & Hoerl, 2004).

To be more specific, in case of football management, by using a tool to record data during a match and generate some analytical and statistical information at the end of the match the level of game-play by each player can be examined and compared with their individual contribution in previous matches.

The data can be entered by one or more information entry clerk and can be broken down to individual players. After a while there will be a collection of useful data about the team which can show how players are doing and they (the coach, the players and the management team of a club) can know their weakness, their quality and their performance.

This project concentrates on performance analysis and is a part of main FELDA Football Management System project.

1.4 Problem Statement

Any data gathered from any source of data have to be analyzed in order to have special meaning. In a same way, the data comes from a football match should illustrate the performance of the team and also each individual players. In some cases, this process is still being recorded on papers which can cause inaccuracy in generating reports and even they may be useless without any data processing.

If the data is stored on paper, and if it is assumed that the analyzed information are accurate, the process of analyzing will be a tedious job, moreover, the management process on this kind of data is also a time consuming process. In addition, the person who is in charge of doing analysis, need to have special skills.

In some cases the coach and management team may have the recorded video of the football match which can help them to see the drawbacks of their team but it is useful for fast decisions in a short time. In order to have the history of their players' performance, they need to record it somewhere.

By using a software system the user will input data and the system will analyze and generate required information just with some clicks. Moreover, the data will be archived and kept for further references.

1.5 Project Objective

The objectives of this project are:

- To review the existing systems in football annotation and performance analysis area
- To develop Football Performance Analysis System for FELDA United Football Club which targets Mobile Devices based on Android OS

- To test the developed system

1.6 Significant of Project

In any football match, or even other matches which are team-playing games, it is not easy for coaches to remember different events and happenings during the match. And also an analysis based on precise supervision can improve the future performance of the team or even individual players. So performance analysis can have a significant role in developing and managing a team−in this case football team. Besides, having the information about previous matches and analyzed information on players can create a historical record for the team and can be used as a guideline for future decisions by management team.

1.7 Project Scope

Scopes of this project are:

- Develop the system based on mobile devices (Tablets and/or Smartphones)
- Applicable on Android operating systems
- Exclusively for FELDA United FC

1.8 Deliverables of Project

For the Performance Analysis part of FELDA Football Management System, the following items are delivered:

- An application which will be run on Android System
- Related development documents
    - Software Requirement Specification (SRS)
    - Software Design Description (SDD)
    - Software Test Description (STD)
    - Software User Manual (SUM)

1.9 Summary

Each software system is produced to cover needs of a specific real system. In order to be able to cover all aspects of functionalities of the system, there should be an investigation on it. This application which is made to be used in football industry is developed to simplify the process of recording match annotations and getting its reports. To maintain the mobility, the application is developed to be used on mobile devices based on Android operating system. Development documents are provided as well to help maintainability.

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