



## **FACULTY OF SCIENCE**

### **ACADEMY OF COMPUTER SCIENCE & SOFTWARE ENGINEERING**

<b>MODULE</b>	<b>IFM3B10</b> ADVANCED SOFTWARE ENGINEERING
<b>CAMPUS</b>	APK
<b>EXAM</b> <b>SPECIAL SSA</b>	JANUARY 2014

# **CASE STUDY**

<b>DATE</b>	13 JANUARY 2014	<b>SESSION</b>	09H00 – 12H00
<b>DURATION</b>	3 HOURS	<b>MARKS</b>	150
<b>ASSESSOR</b>			MR T.D. MPHUTHI
<b>INTERNAL MODERATOR</b>			DR W.S. LEUNG
<b>EXTERNAL MODERATOR</b>			DR L. FUTCHER

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#### **PLEASE TAKE CAREFUL NOTE OF THE FOLLOWING:**

1. Read this CASE STUDY carefully.
  2. The CASE STUDY serves as a guide to describe the role that you should take on when answering the questions provided in the question paper.
  3. All questions provided in the question paper that make a reference to the CASE STUDY should be answered in relation to this CASE STUDY.
  4. All provided questions in the question paper that do not make a reference to the CASE STUDY should be answered in relation to the learning material covered during the course of the module.
  5. This CASE STUDY consists of 4 (including this cover page) pages.
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### **eJozi Consulting**

eJozi Consulting is a leading up-and-coming technology-consulting firm in Johannesburg. They have recently undertaken a project for the South Gauteng Farmers Association where they are developing a mobile app to enable farmers to track the growth patterns of their plantation.

The software development project for the development of the plantation tracking system has started, however the team has had some setbacks, which have led the management team at eJozi Consulting to seek your advisory services, for providing guidance on what actions they need to take from a software development as well as a project management perspective.

### **Software Development & Testing**

The South Gauteng Farmers Association is happy with the system proposed by the eJozi Consulting however, a large portion of the association is worried about issues relating to the reliability of the system, due to the poor experiences that they have had with user interfaces of previous technology systems developed by eJozi Consulting. Essentially, the association would like to have a degree of assurance that the system will be adequately tested before being issued to them. The eJozi Consulting has processes in place for verification and validation however, some of the defined goals associated with these processes are not satisfied. As the lead consultant on the software project, one of your tasks will be to help the association understand the approaches used for testing the system, as well as the role that the association will play during the testing of the system.

### **System Architecture & Security**

The plantation tracking mobile app will be built on client-server architecture, so the farmers will be able to add records of their plantation to their personal profile through their mobile app and this information will be stored and manipulated on the system's server, which is accessible using each farmer's unique profile code and password. The profile code will be a 5-digit number greater than 10000, while the password will be an alphanumeric string of 8 characters in length.

The farmers will also be able to access the system through a web browser, where they will login using their profile code and password combination. Once logged in, the farmers will be able to get access to their full plantation record as well as a forecast of the expected growth pattern of their plantation, which is based on the historic record of each plantation.

A major worry for the development team is that the historic data that is continuously growing as new plantation records are added to the system will be corrupted if the system's security is compromised, so they would like you to advise them on the necessary security measures that are needed.

### **The South Gauteng Farmers Association's Legacy system**

The South Gauteng Farmers Association currently uses an old system for recording entries of plantation patterns, obtained from the farmers who are a part of the association. The association's officers use the legacy system to add new records into the system as well as to review old records already existing in the system if they are required for publication purposes. The legacy system lacks integration with modern technologies and it requires users to physically be located at the office in order to use the system, as it is only accessible from a limited number of workstations that still have the old technology supporting the system. This is a critical issue for the South Gauteng Farmers Association because it means that the work is restricted to the office, which is undesired in an industry such as agriculture.

The lack of support for the system on newer technologies has made maintenance difficult, so much that the system is often down and unusable at least two times in a week. Due to this, many of the association's officers have refrained from using the legacy system and resorted to using spreadsheet systems to record the information. The South Gauteng Farmers Association needs a strategy for dealing with the legacy system as a large amount of money has been spent on training staff members to use the legacy system, and organisational policies have been put in place for this training process.

### **Project Management**

eJozi Consulting has had some issues with the quality of teamwork in previous projects, resulting in teams lacking effectiveness. This has been worrisome to the eJozi Consulting's management because their software development team is made up of analytical individuals who are motivated by personal success and recognition.

The high-level project time-line for the plantation growth pattern tracking system has been presented in Table 1. This time-line represents the managed process that eJozi Consulting uses as a starting point for executing all of their projects; each new project adapts this process to meet the project-specific requirements. eJozi Consulting has put aside R80 000 for the project based on estimations driven by measurements made on previous projects

that used the same managed process.

TASK	DURATION (MONTHS)	DEPENDENCIES	END DELIVERABLE
T1 (Verification & Validation)	8		D1 (Verification & Validation Documents)
T2 (Design)	5		D2 (System Design)
T3 (Development & Testing)	3	T2	D3 (Initial Release)

**Table 1:** High Level Project Time-Line

Upon evaluating the high level requirements, you have identified the variables in Table 2 as good descriptions of the project, which may be used during cost modelling.

VARIABLE	VALUE
Constant Factor	5
Number of Lines of Code	10 000
Complexity	1
Multiplier	3

**Table 2:** Cost Modeling Variables and Values