**SOFTWARE REQUIREMENTS SPECIFICATION**

**For**

**ARREARS PAYMENT AGREEMENT (APA) MANAGEMENT SYSTEM**

**Version 1.2 approved**

**Prepared by Kekirunga Jean**

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# Introduction

## 1.1 Purpose

The purpose of this SRS document is to present a detailed description of the different functionalities of the system to be developed and implemented; a system that effectively monitors and follows up the payment of arrears by the customers of National Water and Sewerage Corporation. The system is to ensure that all arrears are paid according to the Arrears Payment Agreement.

This document also explains the features, interfaces, functional requirements, and non-functional requirements of the system.

The document is intended for the stakeholders of this project that is the Manager and the Commercial Officers of NWSC Bwaise branch.

## 1.2 Document Conventions

This document follows the IEEE format; bold faced font has been used for emphasis, headings and sub headings. Highlighted words are used in the glossary and italicized text is used in the diagram labelling.

## 1.3 Intended audience and Reading suggestions

This document is intended for mostly the Manger and Commercial Officers of NWSC Bwaise branch.

## 1.4. References

* https://www.nwsc.co.ug
* Payment of Arrears Agreement, NWSC Bwaise Branch.

## 1.5 Product scope

The system shall be web based. The user will be required to enter the link of the system in the browser of his/her choice and will then be immediately directed to the system’s Login page. The Login page will require a username and password authentication that restricts access by unauthorised users. The Login page also will have a “Forgot Password” option.

After successfully logging in, the user will be directed to the home page, which will have the different system functionalities within different menu items.

# 2. Overall description

In this part, background information about specific requirements of the system will be provided briefly. General issues that affect the product and outline of the functional requirements will be mentioned too. In short, this section will mainly give information about product perspective, product functions, constraints, assumptions and dependencies.

## 2.1 Product perspective

The system being developed is a new self-contained software product. It is to be developed for the Commercial Officers of NWSC.

## 2.2 Product functions

The system should perform the different functionalities.

1. The system shall capture the details of the customer i.e. Name, Reference Number, Arrears Due, etc.
2. The system shall notify the customers when they are due for payment.
3. The system shall notify the NWSC Commercial Officers when a customer makes a payment.
4. The system shall capture the payment details of the customer in regards to payments made on the arrears.
5. The system shall filter out the defaulting customers and automatically put them on a priority list. This list will contain the details of customers who have failed to comply to the agreement.
6. The system shall generate monthly reports that show how many arrears have been registered Vs the arrears that have been cleared in a particular month.

**THE CONTEXT DIAGRAM OF APA MANAGEMENT SYSTEM**



figure 1: Context diagram 1

**THE USE CASE DIGRAM FOR THE IOS MOBILE APP ANALYSIS SYSTEM**



figure 2: Use case diagram 1

# 

## 2.3 User classes and characteristics

I carried out some interviews with the Commercial Officers of NWSC Bwaise branch, because they are the expected users of this system, to find out their characteristics.

|  |  |
| --- | --- |
| **User group characteristics** | |
| **System name**: *APA Management System* | Interviews completed for users groups selected |
| **User group***: Commercial officers and Managers of NWSC* | |
| **CHARACTERISTICS** | **POTENTIAL USER REQUIREMENTS** |
| **Size of user group:** 100 of the population of NWSC employees. |  |
| **Age range:** 18- 60 years | Given particular consideration to older groups who may be reserved about advanced technology. |
| **Gender** **:** Roughly equal numbers of males and females |  |
| **Language and Culture:** English will be the main language | Will not include other language options |
| **Educational level/ qualification:** Bachelors graduate | Design for people who are expected to have a basic and general understanding of computers and how they work. |
| **Physical limitations/ Disabilities:** None |  |
| **Special skills:** None |  |
| **Experience with similar systems:** 100% of the users have had an experience with web systems. | * Use highly supportive interface with clear logical structure. * Use terms that users will understand (NWSC jargon). |
| **IT Experience:** Good | * Use highly supportive interface with clear logical structure. * Use terms that users will understand (NWSC jargon). |
| **Knowledge of task:** High |  |
| **Previous training:** From experience with NWSC systems |  |
| **Motivation to use:** Medium | Make system appear attractive to the user |
| **Discretion to use:** Users may decide not to use the product | Make system easy to use.  Increase response time of the system |
| **Likely concerns:** Security issues (unauthorised access) | * Ensure design that allows privacy. * Strengthen security issues. |
| **Other relevant characteristics:** Not yet defined |  |
|  | |

## 2.4 Operating environment

The software will be able to run on NWSC desktop and laptop computers connected to the internet.

## 2.5 Design and implementation constraints

The software will be developed on only Windows 10 operating system.

Data from the NWSC database will be used to test the software.

## 2.6 User documentation

The system shall have Java script pop-ups for most of the actions of the system to show the users what they are expected to do or what they have done.

# 3. External interface requirements

## 3.1 User interfaces

The system will have a login page that will look like this one below.

The system will also have a home page that will look like this one below

## 3.2 Hardware interfaces

The system will have no hardware interfaces.

## 3.3 Software interfaces

The system’s user interface will be integrated with a web browser. The client makes requests to be performed on the data uploaded through select input tabs via an interface.

The server side system analyses the information input by the user from the UI, verifies it and performs the different functionalities as requested by the user.

## 3.4 Communication interfaces

The system requires http to communicate with the server. The system can be configured to be accessed via any available port.

The web based UI is the only means of communication between the user and the system. The system is accessible through all popular well browsers that interact with HTML pages.

# 4. System Features

## 4.1 Capturing Customer Details

### **4.1.1 Description and policy**

This feature lets the Commercial Officers enter the details of the customer.

### **4.1.2 Stimulus and Response sequences**

The Commercial Officers will use the system link to get access to the system. When connected, they will be redirected to the dashboard with different menu items. The C/O will then choose the ***Agreement***button and fill out the agreement form for the customer being worked on. The C/O will then submit the information via a ***Submit*** button.

### **4.1.3 Functional requirement**

**REQ 1**

**NAME:** The System shall capture the details of the customer.

## 4.2 Customer Notification

### **4.2.1 Description and priority**

This feature notifies the customer when they are due for payment.

### **4.2.2 Stimulus/ response sequence**

The system shall send notifications to the customer two days prior to the date of clearing the respective arrears.

### **4.2.3 Functional requirement**

**REQ 2**

**NAME**: The system shall notify the customer when they are due for payment.

## 4.3 Capturing customer’s Payment Details

### **4.3.1 Description and policy**

This feature will capture the payment details of the customer once they make a payment transaction either in the bank or via mobile money.

### **4.3.2 Stimulus / Response**

The C/O will prompt the system to display the payment details of the customer.

### **4.3.3 Functional requirement**

**REQ 3**

**NAME:** The system shall capture the payment details of the customer.

## 4.4 Filtering out Defaulting Customers and putting them on a Priority List.

### **4.4.1 Description and priority**

The feature filters out the customers who have not cleared as agreed in the agreement.

### **4.4.2 Stimulus / Response**

The system will automatically filter out customers who haven’t cleared their arrears by the dates stated in the agreement and will place their details on a ***Priority list.***

### **4.4.3 Functional Requirement**

**REQ 4**

**NAME:** The system shall filter out defaulting customers and put them on a priority list.

## 4.5 Generate Reports

### **4.5.1 Description and policy**

This feature will generate monthly reports on the performance of arrears.

### **4.5.2 Stimuli/ Response**

The system will generate monthly reports on the performance of arrears e.g. the number of Arrears registered Vs the number of Arrears cleared, the number of Arrears registered in a particular month, etc.

### **4.5.3 Functional Requirement**

**REQ 5**

**NAME**: The system shall generate monthly reports.

# 5. Other Non-functional Requirements

## 5.1 Performance requirements

The response time is expected to be fast to increase efficiency, with a maximum waiting time of thirty seconds. This prevents the user from assuming that the system is down.

The system will allow many users at a time.

The system will have a low power consumption.

The system should be able to perform failure handling that is to say the system components should fail independently of others. The system components must be built so they can handle the failure of other components they depend on.

## 5.2 Safety requirements

The system will be integrated with Data Integrity Gateway tools to perform data cleaning to detect, eliminate and correct all errors and inconsistencies.

## 5.3 Security requirements

## 5.4 Software quality attributes

**Portability**

The system should support new versions of the related browsers. The administrative and server technologies should be standard and supported by most platforms.

**Maintainability**

The system will be well documented to enable proper maintenance and in cases of further system developments and change of team members, they can still follow up.

**Reliability**

The system should work reliably, with automatic backup and recovery features. In case of unexpected termination of a session, the unsaved data should be recovered without loss and displayed to the respective users.

**Availability**

The entire system should be available round the year, except for a periodic maintenance. The maintenance period should be pre-scheduled and short. The users should be reminded of the unavailability period, well in advance.

**Testability**

The system will be tested with the data sets from the NWSC data stores, and also tested for syntax and semantic errors, which will be debugged to increase efficiency.

## 5.5 Business rules

The following are some of the constraints that are to be considered while designing the system.

* Updates to the system will only be made by the software developers of the corporation.
* An Agreement shall be accorded to only one customer reference number at a time.

# 6. Appendix: Glossary

***Term/ Acronym Description/ Meaning***

APA Arrears Payment Agreement

Arrears Debts that are overdue after missing one or more required payments.

C/O Commercial Officer

DESC Description

IEEE Institution of Electrical and Electronics Engineers

Interface Outlook (Physical Appearance) of the system that users interact with to manipulate the system.

NWSC National Water and Sewerage Corporation

Priority List A list of defaulting customers

REQ Requirements