

**School of Computing**

**Department of Software Engineering**

**SRS for Web based staff material control system**

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# Chapter One

# 1. Introduction

## 1.1. Background of the organization

Woldia university was established through the council of ministers Regulation No 223/2011 issued on May 26,2011 G.C.Corner stone for construction activities of the university was laid on Oct ,26,2008 by his Excellency Ato Ayalew Gobezy , former president of the Amhara Regional state , and his excellency Dr. Adhana Haile , former deputy state minister of education, with the first university president Professor Yalew Endawek.

Currently, the total area of the university is 196 hectares of land. Woldia university has two campuses, namely, the main campus called Woldia university and the other one is Mersa campus College of Agriculture. It is 25 kms far from the main campus.

The first batch of students, numbering 599, has been admitted to the university on Dec 10/2011 in fabulous reception ceremony involving invited guest’s city residents, representatives of different zone & Woreda administrative offices and university’s community. students have been placed in to four faculties and 12 departments.

In its second year of operation, the university admitted over 1457 New students. The number of faculties grew in to six, the two newly added being the faculty of Agriculture and pedagogic al and behavioral science faculty. Likewise, the number of departments doubled in to 24. Currently, the university has a student population of over 16,000.

The university is anticipated to contain a student population of 25,000 over a period of ten years in two institutes, two colleges and six facilities. More than 200 blocks and 18 academic staff modern apartments built inside main campus phases with in the specified period.

# 1.2 Statement of the problem

## 1.2.1 Existing system

The current staff material control system at Woldia University is entirely manual, relying heavily on paper-based processes for tracking, managing, and recording material usage and inventory. This involves extensive paperwork, physical documentation, and manual data entry by staff members. Information about material requests, approvals, and inventory levels is maintained in physical ledgers, spreadsheets, or other non-digital formats.

## 1.2.2 Major problems of the existing system

**Manual staff control systems can present several challenges, including:**

* **Time-Consuming Processes:** Manual systems often involve paperwork, physical documentation, and manual data entry, which can be time-consuming and prone to errors. Staff members spend significant time on administrative tasks rather than focusing on their core responsibilities.
* **Data Inaccuracy:** Manual data entry increases the risk of errors, leading to inaccurate records and information.
* **Limited Accessibility:** Physical documents and records are often stored in centralized locations, making it challenging for staff members to access information when needed. This can hinder collaboration, decision-making, and responsiveness to staff inquiries or requests.
* **Lack of Transparency:** Manual systems may lack transparency and accountability, as paper-based processes make it difficult to track changes, approvals, and actions taken. This can lead to confusion, misunderstandings, and disputes among staff members and management.
* **Difficulty in Reporting and Analysis:** Generating reports and analyzing data from manual systems can be cumbersome and time-intensive. It may require manual compilation of data from multiple sources, making it challenging to obtain timely and accurate insights for decision-making.
* **Security Risks:** Physical documents and records are susceptible to loss, theft, or damage, posing security risks to sensitive information
* **Limited Scalability:** Manual systems may struggle to scale and accommodate the growing needs of the organization, particularly as staff numbers increase or operational requirements evolve. This can lead to inefficiencies and bottlenecks in staff material control processes.
* **Compliance Concerns:** Manual systems may not adequately address regulatory requirements or compliance standards related to data privacy, labor laws, and employee rights. This can expose the organization to legal risks and penalties for non-compliance.
* **Dependency on Key Personnel:** Manual systems often rely heavily on specific individuals who are knowledgeable about the processes and procedures. If these individuals leave the organization or are unavailable, it can disrupt staff material control operations and continuity.
* **Costs and Resource Allocation:** Maintaining manual systems requires resources such as paper, storage space, and personnel for administrative tasks. These costs can add up over time and detract from investments in more efficient and innovative staff material control solutions.

## 1.2.3 Proposed system

The proposed system is a web-based staff material control system designed to automate and streamline the control of material requests, approvals, inventory tracking, and reporting. This system aims to replace the existing manual processes with a digital platform, offering real-time access to information, improved accuracy, and enhanced efficiency. Key features of the proposed system include:

* **Automated Material Requests and Approvals**: Staff members can submit material requests online, and managers can approve or deny requests electronically, reducing the time and effort required for these processes.
* **Real-Time Inventory Tracking**: The system will provide up-to-date information on material inventory levels, helping to ensure accurate tracking and prevent stockouts or overstocking.
* **Comprehensive Reporting**: The system will generate detailed reports on material usage, inventory levels, and request histories, providing valuable insights for decision-making and resource planning.
* **User Roles and Permissions**: Different user roles (e.g., staff-user, administrators) will have specific permissions, ensuring that sensitive information is only accessible to authorized personnel.
* **Integration with Existing Systems**: The proposed system will integrate with existing systems used by the university, ensuring seamless data flow and reducing the need for duplicate data entry.
* **Enhanced Data Security**: The system will implement robust security measures, including encryption, access control s, and regular backups, to protect sensitive information and ensure data integrity.

## 1.2.4 Advantages of the Proposed System

Transitioning from manual staff material control to a digital system offers several advantages, such as:

* **Increased Efficiency**: Automated systems streamline processes, reducing the time and effort required for administrative tasks such as data entry, record-keeping, and communication. This allows staff to focus on more productive activities, leading to higher efficiency across the organization.
* **Improved Accuracy**: Automated systems minimize human errors associated with manual data entry and processing. By maintaining accurate and up-to-date records, organizations can ensure compliance with regulatory requirements and make informed decisions based on reliable data.
* **Enhanced Accessibility**: Digital systems provide easy access to staff information, documents, and resources from anywhere with an internet connection. This improves collaboration, communication, and decision-making among staff members and management, regardless of their location.
* **Better Communication**: Automated systems facilitate seamless communication through features such as internal messaging, notifications, and alerts. Staff members can receive timely updates, announcements, and reminders, improving transparency and engagement within the organization.
* **Cost Savings**: While an initial investment may be required to implement and maintain a staff control system, the long-term cost savings can be significant. Automated systems reduce the need for paper, printing, storage, and manual labor, resulting in lower operational expenses over time.
* **Scalability**: Digital systems can easily scale to accommodate the growing needs of the organization, whether it's increasing staff numbers, expanding operations, or adapting to changes in business requirements. This scalability ensures that the system remains effective and responsive as the organization evolves.
* **Data Security**: Automated systems offer robust security features to protect sensitive staff information from unauthorized access, loss, or theft. Encryption, access control s, and regular backups safeguard data integrity and confidentiality, minimizing security risks and compliance concerns.
* **Comprehensive Reporting and Analysis**: Staff control systems generate real-time reports and analytics on various aspects of staff operations, such as attendance, performance, training, and payroll. This provides valuable insights for decision-making, resource allocation, and strategic planning.
* **Regulatory Compliance**: Digital systems help organizations comply with regulatory requirements related to data privacy, labor laws, and employee rights. Built-in compliance features ensure that staff control processes adhere to legal standards and industry best practices, reducing the risk of penalties or litigation.
* **Employee Satisfaction**: Automated systems improve the staff experience by streamlining processes, enhancing communication, and providing access to relevant information and resources. This boosts morale, engagement, and productivity, contributing to a positive work culture and retention of talented employees.

**1.3 Motivation**

The motivation behind developing a web-based staff material control system is to address the inefficiencies and challenges associated with the current manual system. Employees, particularly those in material management, have expressed a strong desire to transition to a digital system to reduce the time and effort spent on administrative tasks and to improve the accuracy and accessibility of information. By implementing an automated system, Woldia University aims to enhance the overall efficiency of its material control processes, improve data accuracy, and provide a better working experience for its employees. This transition is expected to lead to significant time savings, cost reductions, and improved decision-making capabilities, ultimately benefiting the entire organization.

# 1.4. Scope and limitation of the project

## 1.4.1 Scope

### 1.4. 1.1. Scope of the Project

The scope of the Staff Material Control System (SMCS) project includes the design and development of a web-based software application to optimize the control of material resources within Woldia University. The system will focus on material tracking, barrowing control , and database control to enhance operational efficiency and transparency. The project will involve designing an interactive and user-friendly interface, as well as a robust database to store data and material information. The system will be developed using PHP for the backend, CSS3, HTML5, Bootstrap, and JavaScript for the frontend, and MySQL for the database.

### 1.4.1.2 Limitations of the Project

While the Staff Material Control System (SMCS) aims to improve material control processes at Woldia University, there are several limitations to consider:

* The system will not address human resources control directly, focusing solely on material control aspects.
* The project may face constraints in terms of time and resources, which could impact the depth of features and functionalities implemented.
* Integration with existing university systems and processes may pose challenges that could affect the overall effectiveness of the system.
* The system's performance and scalability may be limited by the technology stack and infrastructure available at Woldia University.
* The project scope may need to be adjusted based on feedback and requirements changes during the development process.

# 1.5. Project Goal and Objectives

# 1.5.1. Goals

The primary goal of creating a staff material control system is to optimize the control of material resources within the university, aiming to enhance operational efficiency, transparency, By automating administrative tasks such as material tracking, borrowing control , the system reduces manual effort and minimizes errors, enabling managers to make informed decisions and employees to have clarity about their roles and responsibilities. Additionally, the system ensures compliance with labor laws and regulations, reduces operational costs, and supports strategic workforce planning by providing insights into staff utilization, performance trends. Ultimately, the staff material control system aims to facilitate continuous improvement in staff-related processes and practices, driving organizational success and employee satisfaction.

## 1.5.2. General Objectives

The main objective of this system is to design a web-based software for staff material control system for Woldia University.

## 1.5.3. Specific Objectives

The specific objectives of this project are to:

* To design an interactive and user-friendly interface.
* To create a system that is easy to use for users.
* To design a database that stores data and material.
* To develop functionalities for tracking materials throughout their lifecycle.
* To implement access control mechanisms to ensure data security.
* To develop reporting tools for material usage, inventory levels, and trends.
* To design the system to handle a large volume of data and user interactions.
* To ensure compatibility and seamless integration with other university system

## 1.6. Methodology

## 1.6.1. Data collection method

The requirement elicitation process for the staff material control system (SMCS) was conducted through a combination of interviews and questionnaires. Initially, interviews were conducted with individuals possessing in-depth knowledge of staff material control systems to gain insights into existing challenges, requirements, and potential solutions. Additionally, documents related to staff material control processes were collected and reviewed to further understand the intricacies of the system. Subsequently, a questionnaire was organized and distributed to stakeholders, including customers and end-users, to gather feedback and insights on possible solutions to the identified problems. This comprehensive approach ensured that the requirements of the SMCS were thoroughly analyzed and aligned with the needs and expectations of all stakeholders involved.

## 1.6.2. System design and analysis tools

Table1. 1: Design and Analysis Tools

|  |  |
| --- | --- |
| *Tool* | Purpose |
| *MS Word* | Used for report writing |

## 1.6.3. System development tools

Table1. 2:Development tools

|  |  |
| --- | --- |
| *Tool* | Purpose |
| *VsCode* | Editing |
| *Chrome, Microsoft edge for developer* | Inspecting and debugging |
| *PHP* | Server-side scripting (Backend) |
| CSS3, HTML5 , JavaScript | Client-side scripting (Frontend) |
| MySQL | Database |

# Chapter two

# 2. System requirement specification

# 2.1. Background

The Staff Material Control System (SMCS) project at Woldia University aims to address the inefficiencies and challenges associated with the current manual system. The existing system relies heavily on paper-based processes for tracking, managing, and recording material usage and inventory, leading to time-consuming processes, data inaccuracy, limited accessibility, lack of transparency, and other issues. To overcome these challenges, the proposed system will automate and streamline the control of material requests, approvals, inventory tracking, and reporting through a web-based platform.

# 2.2. Functional requirement

### 2.2.1 User Management

* The system shall allow the administrator to create, modify, and delete user accounts.
* The system shall allow users to log in and access their account information.
* The system shall allow users to view their checkout history.

### 2.2.2 Materials Management

* The system shall allow the administrator to create, modify, and delete material records.
* The system shall allow the administrator to associate materials with categories and locations.
* The system shall allow the administrator to define the maximum checkout duration for each material.

### 2.2.3 Identification Methods

The system shall support RFID tags, barcodes, and biometric scanners as identification methods.

The system shall allow the administrator to associate identification methods with materials.

### 2.2.4. Checkout Process

* The system shall allow users to check out materials by scanning their identification method.
* The system shall record the transaction and update the inventory accordingly.
* The system shall send a notification to the user when the checkout duration is about to expire.

### 2.2.5.Return Process

* The system shall allow users to return materials by scanning their identification method.
* The system shall update the inventory and mark the material as available for the next user.

### 2.2.6.Reporting

* The system shall generate reports on resource utilization, overdue items, and maintenance schedules.
* The system shall allow the administrator to filter and sort the reports by category, location, and time period.

# 2.3. Non-functional requirement

## 2.3.1 Performance Requirements

1. **Response Time**: The system should respond to user interactions within 2 seconds under normal load conditions.
2. **Scalability**: The system should be able to handle a minimum of 500 simultaneous users without significant degradation in performance.
3. **Reliability**: The system should have a minimum uptime of 99.9% to ensure that it is available when needed.
4. **Data Integrity**: The system should ensure that data is accurately captured, stored, and retrieved without corruption.
5. **Auditability**: The system should maintain an audit trail of all user interactions and transactions for accountability and traceability purposes.

## 2.3.2 Security Requirements

1. **Access Control**: The system should implement role-based access control (RBAC) to ensure that only authorized users can access certain features and data.
2. **Data Encryption**: All sensitive data, such as user information and transaction records, should be encrypted both in transit and at rest.
3. **Authentication**: The system should require users to authenticate themselves using secure methods such as passwords, biometrics, or multi-factor authentication.
4. **Data Backup**: Regular backups of the system data should be performed to prevent data loss in case of system failure or security breach.
5. **Security Audits**: Regular security audits should be conducted to identify and mitigate potential security vulnerabilities.

## 2.3.3 Portability Requirements

1. **Cross-browser Compatibility**: The system should be compatible with major web browsers such as Chrome, Firefox, Safari, and Edge.
2. **Mobile Responsiveness**: The system should be responsive and accessible on mobile devices to cater to users who access the system from smartphones or tablets.
3. **Platform Independence**: The system should be platform-independent and compatible with different operating systems such as Windows, macOS, and Linux.

# 2. 4. Feasibility study

## 2.4.1 Operational feasibility

## 2.4.2 Technical feasibility

## 2.4.3 Economic feasibility