

# Software Requirements Specification

for

**Project**

**Version 1.0 approved**

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21/09/2004

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## Revision History

Name	Date	Reason for Changes	Version

# 1 Task 1.1: Requirement elicitation (1.1, 1.2)

## 1.1 Domain Context

### 1.1.1 Problem statement

Currently, the demand for printing among university students in Vietnam, particularly students at Ho Chi Minh City University of Technology (HCMUT), is increasing significantly. Printed learning materials are becoming more useful to students in their studies. However, with traditional printing services offered by printing shops, several problems remain, such as:

- Students may need to travel a long distance to reach printing shops.
- The number of students is much greater than the number of printing shops, which means students might have to wait in long lines if there are many printing requests.
- Many printing shops offer only basic printing options (e.g., black-and-white or standard color printing), limiting students' ability to customize the format, layout, or binding of their materials based on their specific needs.
- Traditional printing services usually operate within certain hours, which may not align with students' schedules, especially those who need materials printed outside of business hours.
- Customizing print formats can be difficult due to communication between students and shop owners.
- Prices for printing services can vary widely depending on the shop, leading to confusion or dissatisfaction among students who may not always know what to expect in terms of cost.
- Some shops may not consistently deliver high-quality prints or use lower-grade paper, which affects the overall quality of printed materials. This can be problematic when students need professional-quality documents for presentations or reports.
- Print requests can only be made at the shop, meaning students have to wait for their requests to be completed.
- Sending files through various platforms can lead to errors, making file management challenging.
- There is no guarantee that the information in printed materials will not be disclosed when sending them to the printing shop.

### 1.1.2 Solution

The HCMUT\_SSPS printing service system is developed to address these issues. Specifically:

- Printing stations are set up in various locations across the campus, making it convenient for students to travel. In addition, students can choose the most suitable printing station based on their schedules.
- The system is developed on a web platform, providing a remote printing service, minimizing waiting times at the printing stations.
- The system gives students full control over uploading files and adjusting print configurations, ensuring they get their prints exactly as they want, with absolute privacy.
- The system uses the number of A4 pages as a currency unit for the printing service. Students can deposit money and use it to make print requests. Each A4 page has a fixed price, and the system can calculate and display the total cost of a print request.
- The printing history and the page purchase history are stored in the system, allowing students to access and review their activities.

## 1.2 Stakeholders and Needs

### 1.2.1 Students

- **Description:** Students are the main users of the system's printing service. They create print requests, upload documents, select printers, and make payments.
- **Needs:** Students need convenient and affordable access to print documents. They also required secure and convenient online payments, along with the ability to view print and page purchase history when needed.

### 1.2.2 Student Printing Service Officer (SPSO)

- **Description:** SPSO is responsible for managing and supervising student printing activities in the system, as well as the resources used within this system. They ensure that everything runs smoothly and efficiently.
- **Needs:** SPSOs require useful management tools implemented in the system.

### 1.2.3 IT department

- **Description:** IT department is responsible for developing and supplying software and related technologies for digital printing and print management.

- **Needs:** To build and develop the smart printing service system for the university.

#### 1.2.4 HCMUT (Ho Chi Minh City University of Technology)

- **Description:** HCMUT is the investor, implementing the system to serve students.
- **Needs:** To provide a printing service for students, making document printing easier and offering a better management system for student printing.

#### 1.2.5 Online Payment Systems

- **Description:** The electronic payment system supports students in purchasing additional print pages easily.
- **Needs:** To integrate the payment system into the smart printing service.

### 1.3 Benefits of the System

#### 1.3.1 Students

- **Benefits:** Students save time and effort using the service and can easily manage their printing requests and expenses related to printing.

#### 1.3.2 Student Printing Service Officer (SPSO)

- **Benefits:** The SPSO benefits from streamlined resource management, allowing for easy oversight and control of printers, configurations, and printing policies, ensuring efficient operation of the service across all campuses.

#### 1.3.3 IT department

- **Benefits:** The service generates economic advantages for the IT department, while also boosting its visibility and reputation within the university. By managing and supporting the smart printing system, IT staff gain valuable experience and enhance their technical expertise, contributing to their overall professional growth.

#### 1.3.4 HCMUT (Ho Chi Minh City University of Technology)

- **Benefits:** Implementing a modern, efficient printing service strengthens HCMUT's reputation as a tech-savvy institution, attracting students and external partnerships. Additionally, the system generates revenue through paid services like extra printing pages, contributing to the university's financial sustainability.

### 1.3.5 Online Payment Systems

- **Benefits:** By integrating with the printing service, Online Payment Systems gain a consistent flow of transactions from students purchasing additional printing pages, boosting its usage and visibility. Moreover, they can benefit from being associated with a trusted university service, reinforcing its reputation as a reliable and secure payment solution for students.

## 1.4 Functional requirements:

### Students:

- Students can upload document files onto the system for printing.
- Students can choose a printer.
- Students can specify printing properties.
- Students can view their own printing log for a time period.
- Students can view a summary of number of print pages for each page size
- Students can buy additional pages through an online payment system.
- Students can not print number of pages exceeding their page balance

### SPSO (Student Printing Service Officer)

- The system allows SPSO to view the printing history of all students or a student for a time period and for all or some printers.
- SPSO can permit and configure file types.
- SPSO can add, enable, or disable printers in the system.
- The system shall allow the SPSO to manage configurations, such as changing the default number of pages, change reset date, change permitted file types.
- The system allows the SPSO to view the reports of the using of the printing system generated yearly and monthly by the system.

### IT department

- The system should log printing actions, including student ID, printer ID, and file name.
- The system must generate monthly and yearly reports on printing activities.
- IT department must ensure system integration with online payment systems.

- IT department is responsible for maintaining user data security.
- IT department must support technical issues related to printer integration and system errors.

#### **HCMUT (Ho Chi Minh University of Technology)**

- HCMUT oversees the system's integration with the campus's authentication (SSO) and payment systems (BKPay).
- HCMUT can review monthly and yearly reports on printing activities.
- HCMUT should ensure the system complies with data privacy policies.
- HCMUT provides students with a certain number of print pages each semester.
- HCMUT manages the allocation of resources such as printers and paper supply for the service.

#### **Online Payment Systems**

- The system allows students to buy additional pages using an online payment system.
- Online payment systems must provide secure transaction methods for students.
- Payment systems must integrate with student account balances.
- Payment systems must support refunds or corrections for failed transactions.
- The system must generate reports on payment transactions for both users and the university.

### **1.5 Non-functional requirements:**

- The system must be available as both a web-based app and a mobile app.
- The system must handle up to 1000 concurrent users.
- The system should provide authentication service to all users before using the printing service.
- The system should maintain uptime and provide reliable access to printing services.