

PROJECT 1.1 - 1.2: Requirement Elicitation for HCMUT Smart Printing Service (HCMUT_SSPTS)

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1 Task 1.1: Requirement Elicitation

1.1 Domain context of the Smart Printing Service

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.
- Customizing print formats can be difficult due to communication between students and shop owners.
- There is no guarantee that the information in printed materials will not be disclosed when sending them to the printing shop.
- Printing services often do not display prices or provide receipts, making it hard for students to manage their printing expenses.
- 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.
- Print requests can only be made at the shop, meaning students have to wait for their requests to be completed.

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.
- 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

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

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.
- **Benefits:** They can easily manage the resources within the system.

1.2.3 Service Providers

- **Description:** Service providers (software providers) are 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.
- **Benefits:**
 - Generate economic benefits for the service provider.
 - Enhance the provider's brand recognition in the market, attracting more users.
 - Help individuals gain work experience and improve their professionalism.

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.
- **Benefits:** Enhancing the reputation of the university among individuals and external organizations and raise the income of the university.

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.
- **Benefits:** Increase revenue and expand the customer base for the online payment service.

1.3 Scope of the system

- The system will focus primarily on providing a smart printing service for students at HCMUT.
- SPSOs will handle the management and maintenance of printers within the system.
- The university management will be responsible for overseeing the system, ensuring its smooth operation, and integrating authentication and payment systems.

2 Task 1.2: Functional and non-functional requirements

2.1 Functional requirements:

Students:

- Students can upload document files to the system for printing.
- Students can select a printer, paper size, and configure printing properties.
- Students can view their own printing history and balance for each semester.
- Students can buy additional pages using an online payment system.
- The system must support guest users by displaying basic service information.

SPSO (Student Printing Service Officer)

- SPSO can view printing logs for specific students and printers for a specified date range.
- SPSO can manage the list of permitted file types for uploading.
- SPSO can add, enable, or disable printers in the system.
- 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.

Service Providers

- 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.
- Service Providers must ensure system integration with online payment systems.
- Service Providers are responsible for maintaining user data security.
- Service Providers 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.

3 Non-functional requirements: