Project Innovation

Requirement Analysis

Version 1.0

**COVALI**

**Name: StudentNr : Email :**

Mihael Druzeta 5367131 mihael.druzeta@student.nhlstenden.com

Mihaela Covali mihaela.covali@student.nhlstenden.com

Timofei Arefev 5300428 timofei.arefev@student.nhlstenden.com

Daryl Genove daryl.genove@student.nhlstenden.com

Peter Zlamala peter.zlamala@student.nhlstenden.com

Erika Nicolau 5326745 [erika.nicolau@student.nhlstenden.com](mailto:erika.nicolau@student.nhlstenden.com)

Jia Men Lam 5290201 [jia.men.lam@student.nhlstenden.com](mailto:jia.men.lam@student.nhlstenden.com)

Table of Contents

[Introduction 3](#_Toc1469186277)

[Requirements 4](#_Toc1731240489)

[Functional Requirements 4](#_Toc2048059776)

[Non-Functional Requirements 5](#_Toc871371098)

[Smart bag/Mobile app 5](#_Toc163797946)

[Priority Levels 6](#_Toc1236026566)

[Project Overview Diagram 8](#_Toc1488537342)

# Introduction

In today's modern society, the emphasis on efficiency and convenience is crucial in product design, particularly for items that are carried daily. Covali addresses the prevalent problem of forgotten personal belongings by introducing Project "Smart Bag". This innovative bag utilizes advanced sensor technology to detect and track its contents, guaranteeing that you never leave home without your essential items. The Smart Bag takes a proactive approach to personal organization by alerting users if any necessary item is not present before they leave their household. The bag will also be a top-notch design that combines both fashion and functionality, ensuring that users can carry their belongings in a style that will compete on the fashion market.

This document will outline the upcoming stages of development for the Smart Bag, from initial idea to implementation. It covers in-depth talks on the bag’s aesthetics, technical specifications, and features, as well as potential enhancements for future iterations that are not essential but could be beneficial. Moreover, it includes financial plans and a diagram that will overview the whole project, making the company follow it step by step and ensure that everything will be up to standard. Furthermore, the document is tested and confirmed by our team of quality controllers, ensuring that the document is factually correct and precise.

If the approach with the Project Smart Bag is not successful, it may be necessary to reevaluate the design and consider alternative solutions to meet the project’s goals.

# Chapter 1: Requirements

In this document, we outline the functionalities and performance expectations for our Bag with Sensors project and the accompanying Custom Application. We categorize our requirements into two main types: functional and non-functional.

* Functional requirements define the specific tasks and features that our Bag with Sensors and Custom Application should perform. These are the actions users anticipate from our system, such as detecting items in the bag, sending notifications, and providing user-friendly interfaces.
* Non-functional requirements, however, focus on the quality and performance aspects of our system. These include factors like durability, battery life, security, and usability. These requirements ensure that our product not only functions correctly but also deliver an effective and satisfactory user experience.

By comprehensively documenting these requirements, we ensure that our Bag with Sensors and Custom Application meet the needs of our users and operate as intended.

## Functional Requirements

**Registration and Configuration of Items**

* Through the accompanying smartphone app, customers will be able to register and configure their daily requirements for the Covali bag system.
* The goods that users often carry in the bag may be specified, and each item can have an RFID or NFC tag attached for identification.

**Monitoring and Detection in Real Time**

* Using integrated sensors that connect with RFID or NFC tags, the Covali bag will check to see if any registered things are missing or lost.
* It will update the bag's inventory in real-time upon detecting changes in the item's state (presence or absence).

**Phone Application Alarm System**

* Through Bluetooth or Wi-Fi connectivity, the accompanying mobile app will send the alarm to the user's associated smartphone.

**Power Management**

* To enable the ongoing functioning of the sensors and networking functionalities, the Covali bag must have a dependable power supply (such as inbuilt power banks or rechargeable batteries).
* It will maximize power consumption to guarantee longer battery life and reduce the frequency of recharging.

**Compatibility and Integration**

* The accompanying mobile app and the Covali bag's sensors and connection functions must work together flawlessly.
* To provide wide accessibility and usage, the system must be interoperable with popular smartphone platforms (Android).

**User Interface (UI) Design**

* The mobile application must have an easy-to-use interface that makes it simple to set up, customize, and keep track of the contents of the Covali bag.
* It will give notifications based in the status of the items.

## Non-Functional Requirements

In this part, we talk about the things that make our project work well, even though they are not directly about what it does. These include how strong and long-lasting the bag is, how accurate the sensors are, and how easy it is to use the app. We also look at things like keeping your info safe and making sure the app runs smoothly. These are all important to make sure our project is reliable and easy to use.

# Smart bag/Mobile app

**Design**   
Simply to make the bag look cool and modern so it attracts people to use it.

**Durability and build**  
Make sure the bag is strong and will not break easily, so it lasts a long time.

**Size and weight**  
The bag should not be too heavy or big, so it is easy to carry around.

**Sensor Technology**  
Sensors need to provide accurate information and work well, so they can tell what is inside the bag.

**Battery Life**  
The battery needs to last for a long time, so the client does not have to charge it often.

**Compatibility**  
Make sure the bag hardware works well with several types of phones and systems, so anyone can use it.

**User Interface Design**  
Making the app easy to use and nice to look at so anyone can use it easily.

**Mobile application compatibility**  
Making sure the app works on different phones and systems, so everyone can use it.  
  
**Notification System**  
This is about getting messages from the app if you forget something in your bag.

**Integration:**  
Making sure the app works well with the bag sensors so it can tell you what is inside.

**Performance**  
Make sure the app runs smoothly and does not freeze or crash.

**Customization Options**  
Let you change things in the app to make it fit your preferences.

# Chapter 2: Priority Levels

In any project, understanding priorities is crucial for success. By assigning priority levels to various requirements, stakeholders can effectively allocate resources, make informed decisions, and ensure that the most critical aspects are addressed first.

For our project, we have established clear priority levels tailored to each stage of development. These priorities are based on the specific needs of the bag with sensors and the custom application. By understanding these priority levels, the team can focus on the most important tasks and optimize their time and effort accordingly. This approach ensures that we meet key objectives and deliver a successful product that meets user needs effectively.

**Functional Requirements**

|  |  |  |
| --- | --- | --- |
| **Title** | **Value** | **Complexity** |
| Registration and configuration of item | High | High |
| Monitoring and detection in real time | Medium | Medium |
| Implementing Wi-Fi Connection | High | High |
| Phone Application Alarm System | High | High |
| Power Management | Medium | Medium |
| Compatibility and integration | High | High |
| User Interface (UI) design | High | High |

**Non–Functional Requirements**

|  |  |  |
| --- | --- | --- |
| **Title** | **Value** | **Complexity** |
| Design | Medium | Medium |
| Durability and build | High | Medium |
| Size and weight | Low | Low |
| Sensor technology | High | High |
| Battery life | Medium | Medium |
| Compatibility | High | High |
| User Interface Design | Medium | Medium |
| Mobile application compatibility | High | High |
| Notification System | High | High |
| Integration | High | Medium |
| Security | Low | Low |
| Performance | High | High |
| Customization options | Low | Medium |

# Project Overview Diagram

