

# Mobile RFID Handler

## Definition of the task

This project explores how mobile phones using NFC can replace RFID cards for identification. You are asked to explore how RFID tags can be scanned, stored and set as well as how user data can be exported and shared using different techniques. The task includes going through and critiquing the product overview and use cases, creating a technical specification for the products and making proposals on a timeline and schedule for its production. The team is asked to make prototypes for the application as part of the project. The report should include a risk analysis and proposed mitigations to problems that the team encounters.

## Product Overview

*A simple way of using your mobile phone to read, store and send RFID data using NFC.*

## Mobile User Application

The application will enable the user to:

- Scan RFID tags and store them together with relevant information to uniquely identify each tag to the user.
- Scan RFID tags and identify whether it is a new tag or if it is already stored.
- Use the mobile application to identify itself to a RFID reader using the stored RFID tag information.

## Administrator Interface

The interface will enable the administrator to:

- List all users and their stored RFID tags.
- Add and remove RFID tags for a user.

## Data

The mobile application stores the below data to a central database and displays it in the administrator interface.

- User identification information
- RFID tags stored by user
- Information on user RFID usage

## Use cases

### Add card (Mobile application)

- 1) User opens app
- 2) User log in (if not logged in)
- 3) User selects "Add new Card"
- 4) User holds up and scans RFID card X, using the mobile phone
- 5) User is notified upon successful scan
- 6) User is requested to name the scanned card- Ex "Card1", "A", "3", or similar
- 7) Repeat step 3-5 x3
- 8) User log out

### **Scan card (Mobile application)**

- A. User opens app
- B. User log in (if not logged in)
- C. User selects "Show Cards"
- D. User chooses Card#2 (in the list that currently holds three cards)
- E. User shows mobile phone to RFID reader
- F. Since Card#2 exists, a green diode is lit (or other indicator)
- G. User holds up an unknown card to the cardreader and a red diode is lit (or other indicator)
- H. User closes app and then holds up the mobile phone to the cardreader - a red diode is lit

### **Administration of users (Administrator interface)**

1. The administrator goes to interface
2. User logs in (if not logged in)
3. The administrator selects "List all users" in the interface
4. A list is presented to the Administrator in the interface
5. The administrator highlights user X in the interface
6. The administrator presses "Show user X's RFID keys" in the interface
7. The administrator, can the choose to add or remove entities for user X
8. The administrator logs out

## **Exporting and sharing user data**

*Explore ways that user data can be exported and shared using a selection of techniques.*

### **Database access**

A web interface that displays information on all users, their RFID tags and information on usage.

### **Raw data export**

Possibility to export data using a selection of common data formats. One time or per chosen cadence.

**API access**

Possibility to setup integration using API. SOAP/JSON.

**Additional**

The team will explore the current technical landscape of NFC and its areas of usage. What emerging techniques are there and what effect will they have?

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