

Android Applications of NFC Technology in Enterprise

CHENG Chun Kit, LEE Chak Fu, LI James, Wong Ho Yan

Advised by Prof. Jogesh K. MUPPALA

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Motivation

In Hong Kong, offices take attendance record manually and use physic keycard which has a low security. We noticed that currently Divide, a commercialized software developed by Enterproid, enables to store business data in a secure platform and separate mobiles' normal activities.

Overview of Divide[^](TM) platform

Combines cloud-based management with device-level technology

Ensures enterprise security and control

Provides a separate and secure workspace



Objective

We have made use of Near Field Communications and the security features of Enterproid famous Divide application to facilitate convenience and security in enterprise.

Our objective is to develop an NFC Android smartphone application. The three android applications with NFC we created are Business Card Exchange application for exchanging staffs' business card conveniently, meeting application for taking attendance in a cross-country video conference and Keycard system to open office gate entrances.

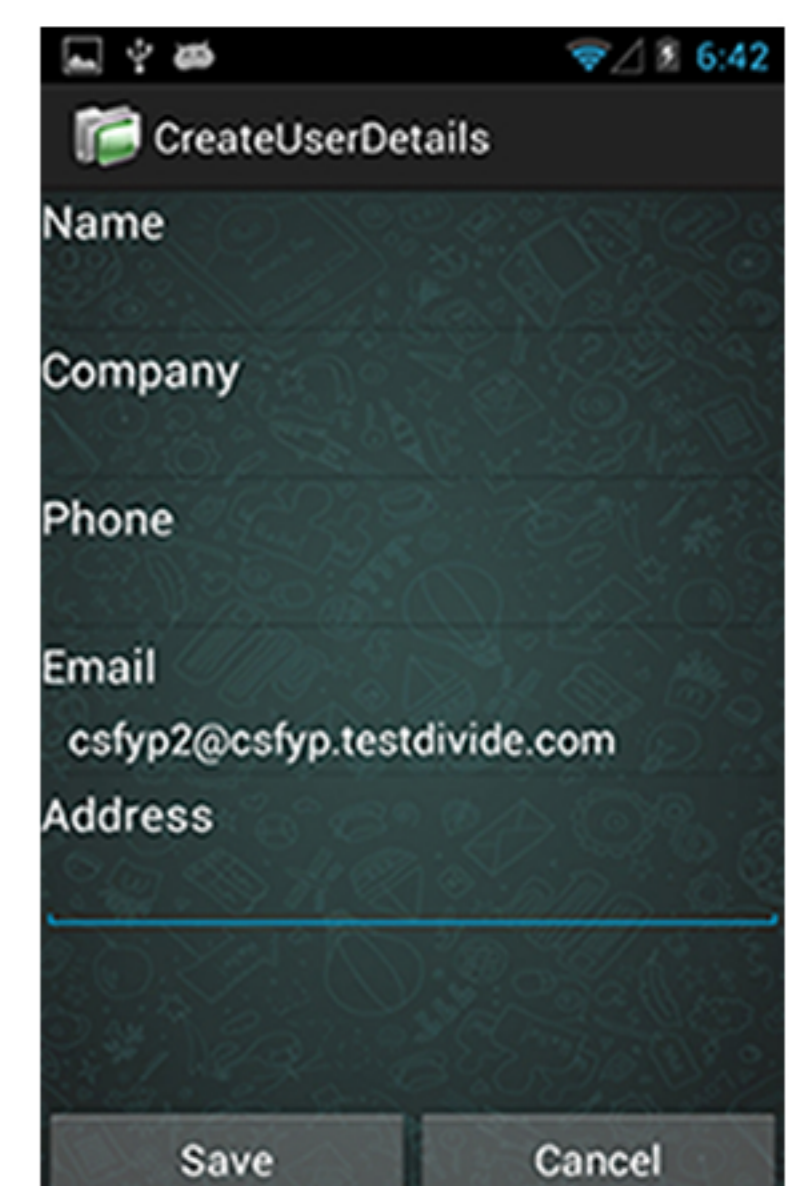
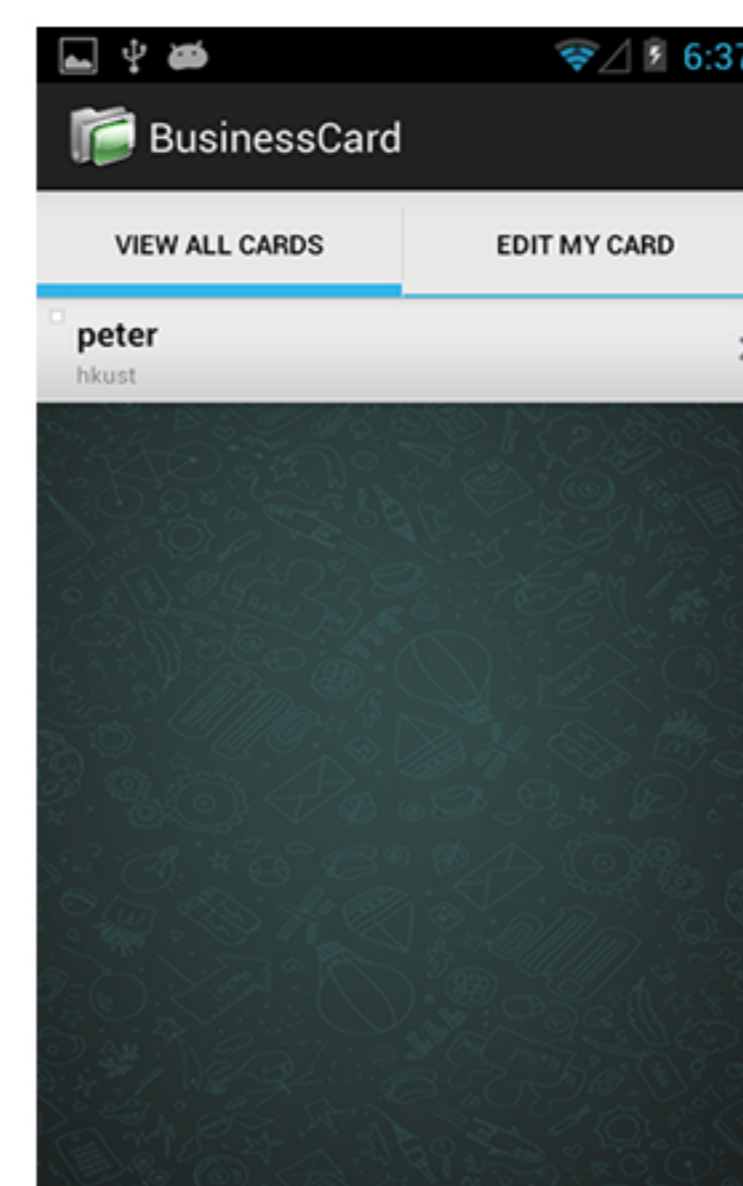
Project Overview

Business Card Exchange Application

This application provides a convenient way for users to exchange their business information using NFC, namely name, company, phone number, E-mail and address.

KEY FEATURES:

- Create his/her own Business Card
- Send his/her Business Card using NFC
- Receive Business Cards using NFC
- View Business Cards
- Add Business Card details to contact

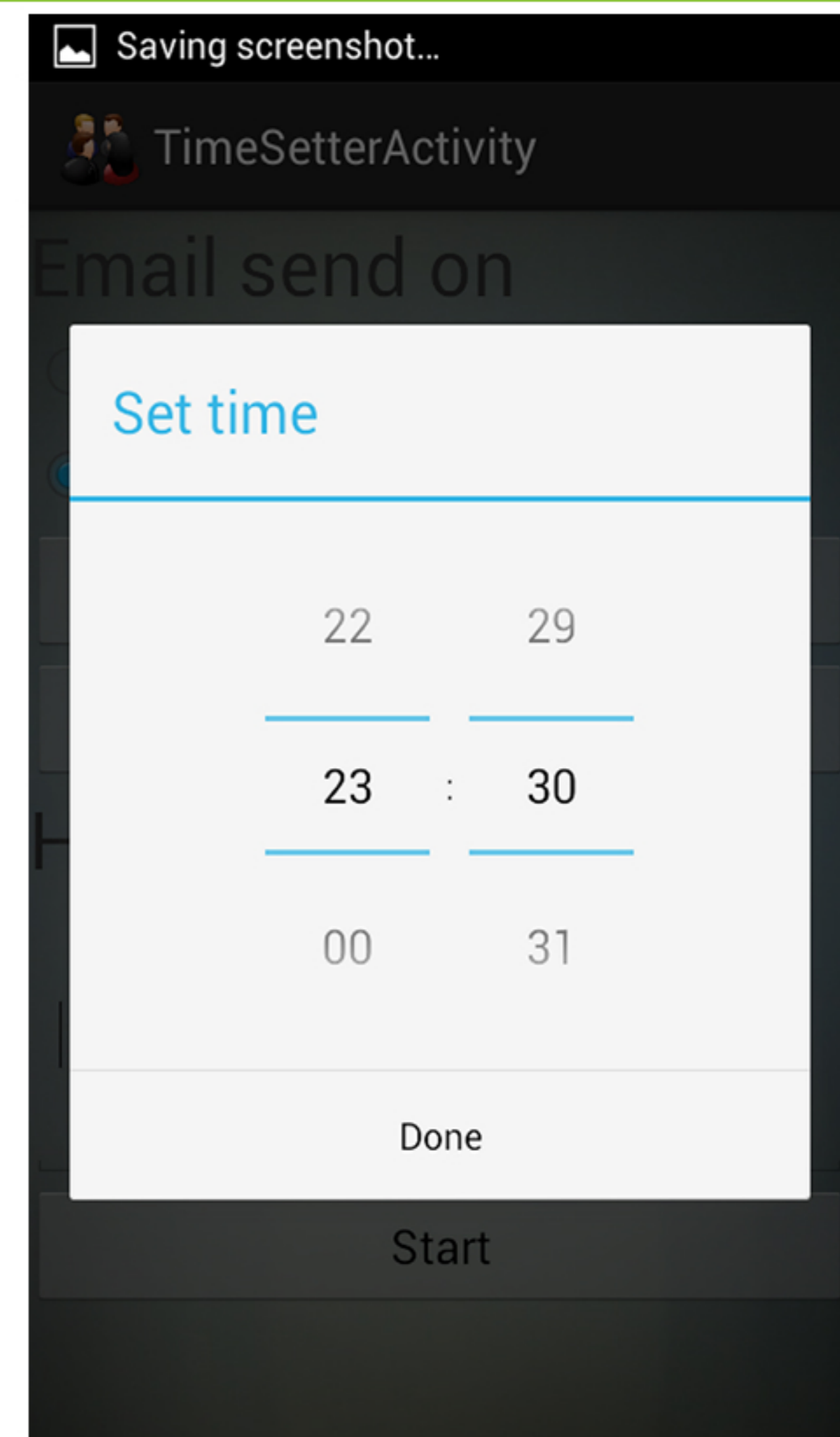


Meeting Application

This application is used during cross-country video conferencing meetings for checking in and recording meeting attendance.

KEY FEATURES:

- Create events and invite guests
- Any guest's phone to act as a hub
- Guest check-in with NFC technology
- Multi-hub for check in propose in different region
- Receive the attendance record through email



Keycard System

Our design goal is to provide a security keycard system for the NFC in Divide.

KEY FEATURES:

- Use NFC technology to open gates
- Create and Update gate through web platform
- Multi-gates with different settings
- Accessing with more than one device
- Provide Gate reader log
- Provide secure communication between devices



Implementation

Storage Option

Internal storage

- Store private data on the device memory
- Using File I/O Handler

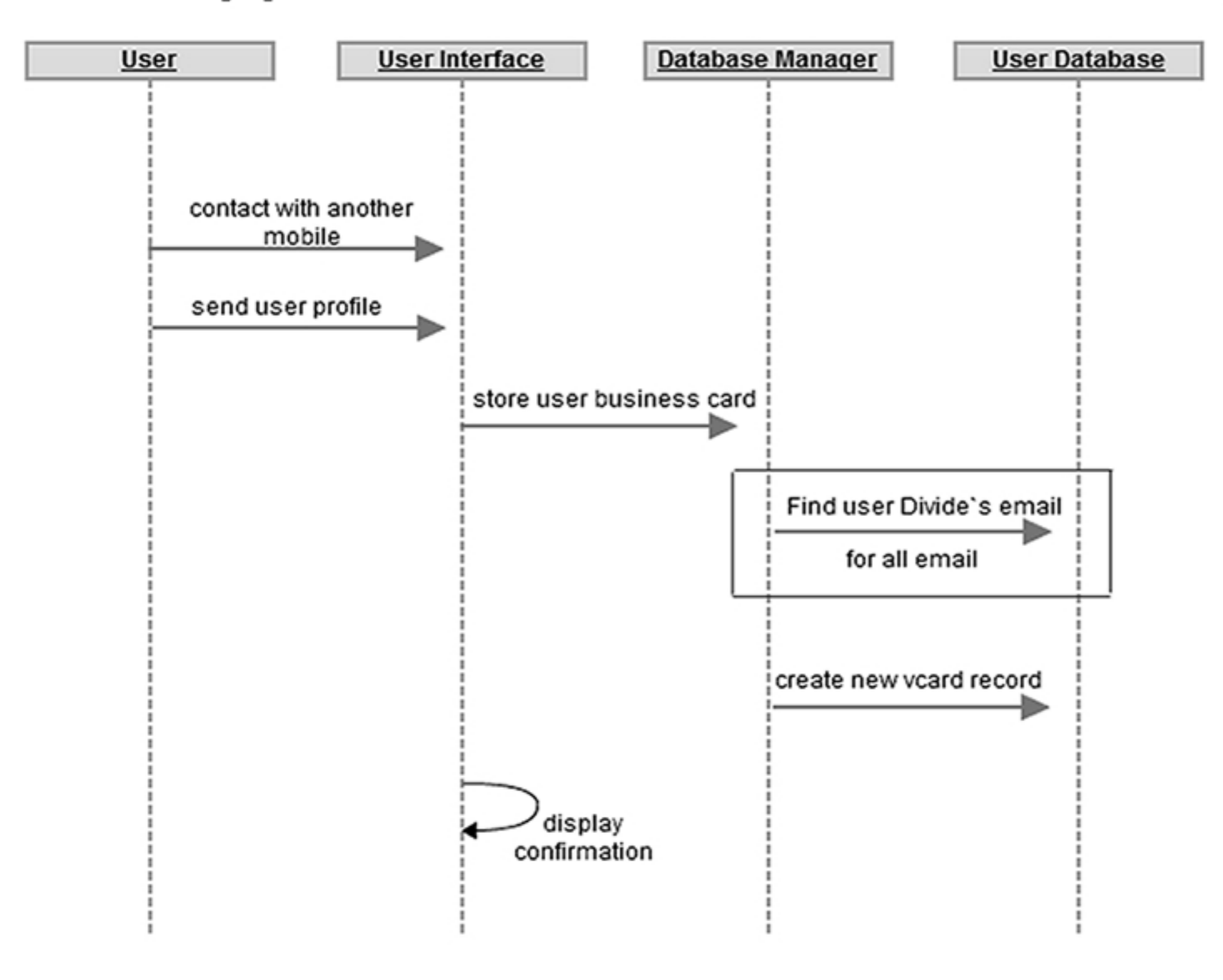
SQLite database

- Store structured data in a private database
- Using SQLiteOpenHelper

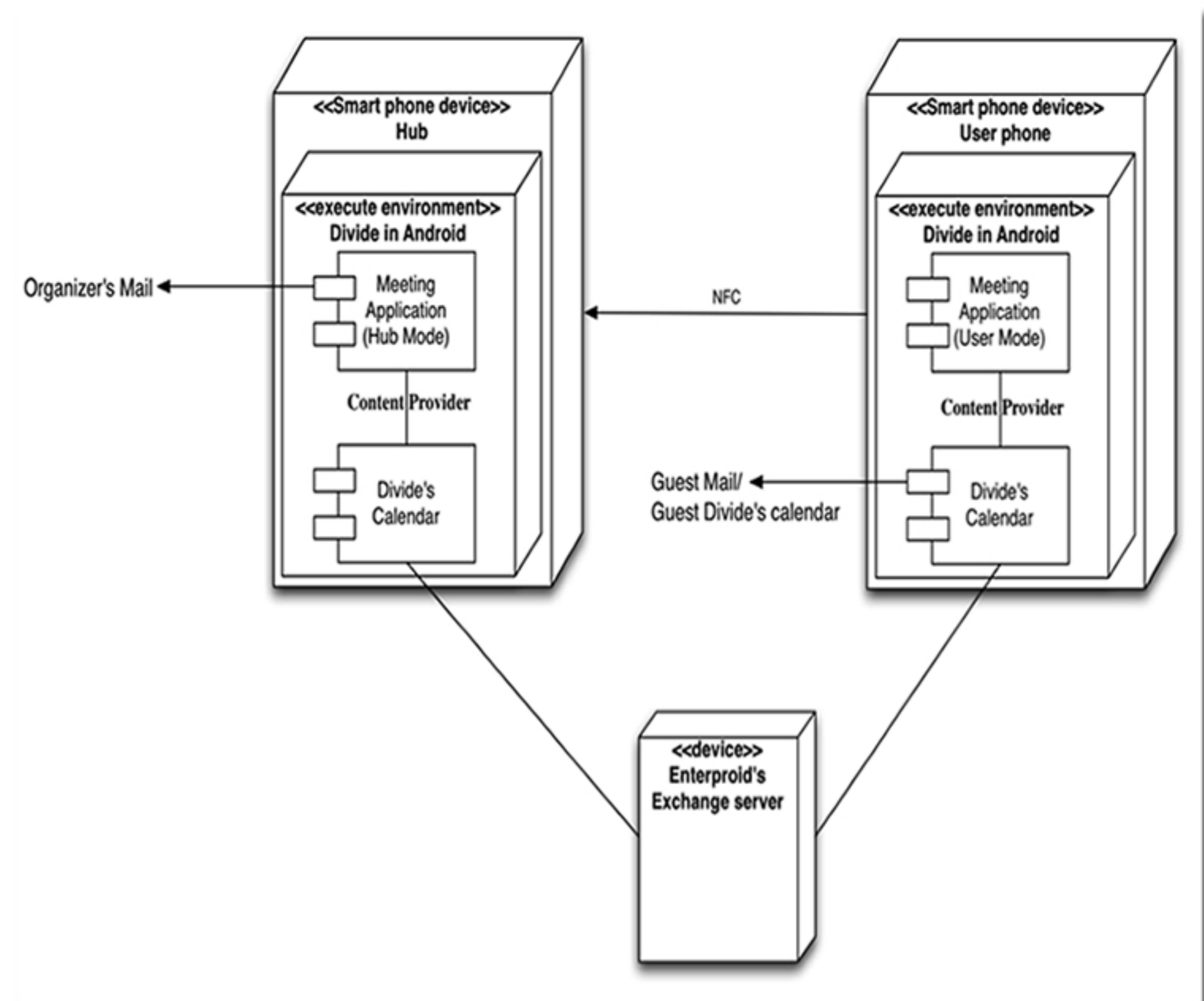


Diagram

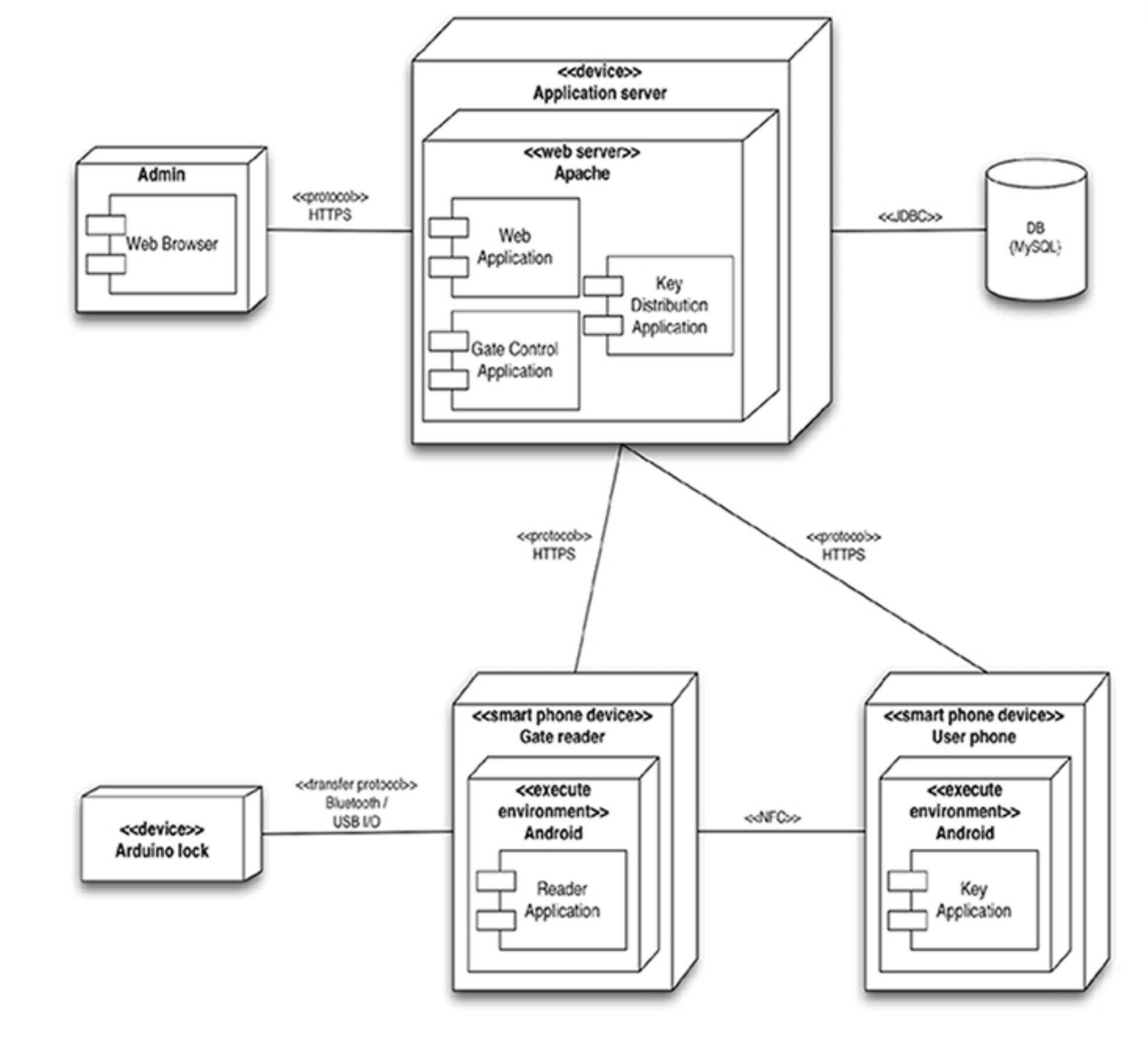
This sequence diagram describes the flow when two mobiles exchange information in business card application.



The deployment diagram shows the structure of the Meeting Application. We have divided the Meeting Application into User mode and Hub mode.



This deployment diagram shows the structure of the Keycard System. The Keycard System mainly links up with the application server, the gatereader, the Arduino and the client phone.



Result

We have successfully achieved our entire goal in three applications.

We have successfully developed NFC Android smartphone applications that have the following functions:

1. simple NFC Contact to swap user business card,
2. taking meeting attendance
3. implementing keycard System.

After the testing, it showed that our applications can achieve nearly all the functionalities we planned to implement originally. Our system according to the evaluation is highly reliable, secure and scalable.