# varugaip-padhivaedu

## 1 INTRODUCTION

The term varugaip-padhivaedu is taken from the language Tamil, which means Attendance Register.

RFID cards now seem to have integrated into the day-to-day life of most space-age men. We see them at educational institutions, companies, conferences, tollgates, etc. Since there is a lurk of this tech in our college, the plan is to make a more comprehensive system out of it. The system can be used to students/faculty attendance management, room level security fencing and registration, indoor location tracking, event management, private virtual currency system, etc. To begin with, we are implementing the attendance management system (AMS) using the prevailing RFID cards that our college students and faculties are using.

One can argue that there are many such systems that are either available in market or being developed. Still the available systems aren't easy to setup and integrate within the institution's infrastructure. Our system will be as portable as a Bluetooth speaker but also providing the highest possible security features, taking the criticality of any AMS into account.

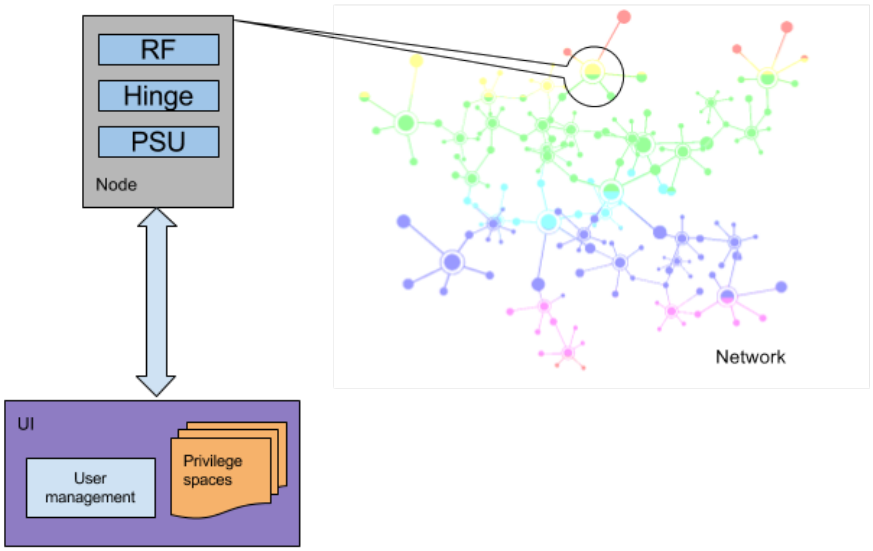
Each physical device will be a self-sustaining node by itself which can automate its integrating into the infrastructure. The design of the device will be in such a way that there will be virtually no user interaction. Still the device will be recognizing the card that's passing through its field, thereby giving it full autonomy.

## 2 OBJECTIVES

There are many products available in the market for the same application, but the main drawback is that those products are not user-friendly and portable. Our main motto in this project is to make it user-friendly in all aspects. Reduction of cost and size is implemented and it is designed to be completely portable.

## 3 METHODOLOGY

The system’s hardware may be divided into three subsystems based on the functionality; a Hinge subsystem which takes care of network management in the ad-hoc network, a RF subsystem which obviously manages all the RF side work, a PSU subsystem which takes care of the node lifetime before maintenance. In addition to this, there will be a UI for management of the system.




## 3.1 Hinge subsystem

The networking part of the product will be managed by this subsystem. Network will be an ad-hoc based custom network whose physical layer will be supported by WLAN and WPAN interfaces. This will surely manage all the interfaces from the UI and other subsystems.

## 3.2 RF subsystem

This subsystem generates the Radio Frequency beam to identify the user's ID card. Our project is designed to increase the range of coverage. The power of the RF beam is increased to traverse the card through obstructions, so wearing the ID is not mandatory. Multiple card detection is also possible. The specialty of this subsystem is identifying the direction of the user (entering or leaving the classroom) with time notification. It will be helpful in monitoring the users' presence in the classroom.

## 3.3 PSU subsystem

The PSU of our module is designed to make each node as a portable device, in order to reduce the power consumption. We modeled few power consuming modes through which the power supplied to the RF subsystem will controlled as per the commands from the Hinge subsystem. There are idle and normal modes of power supply to the RF subsystem that change according to the temporal frequency of users passing through the module.

## 3.4 UI

The UI will be providing technicians to access management level tools for the hardware space, privileged users to a controlled administration space and the end users to an information analysis space. These security spaces will be having different privileges to the interfaces of the hardware network installed.

The UI is going to be cross platform (web app, mobile app, chat bots) leaving the users to decide the method to access the UI.