1. **Introduction**

*The needs for access control and resource management*

A major problem that one perceives when visiting a hospital is the location and management of doctors and nursing staff in situations of overload due to increased traffic and the lack of discipline from patients who do not obey staff orders and are removed without permission from their chambers . Also the management of the security personnel is utmost importance for the timely response to illegal actions

These developments have highlighted the need to implement resource management systems in a hospital environment. Various risks may arise from authorised access to wards and areas of the hospital .It is important to known the location of staff, medical equipment and patients in medical emergency situations when the times is of the essence. Also in situations such as a fire event it is important to know the exact number of people trapped in the area for an effective evacuation operation

**2. Target of project**

The resource management system ,unlike for another systems to have been proposed does not aim for the exact location of resource at the level of few centimetres but at the chamber/room level. This is achieved with RFID sensors at the building doors with passive cards or tags in people’s possession .Thus with cheaper and less equipment the results provided by the system are adequate for the resource management needs of the hospital.

In each chamber the ID’s of the attenders and additional data such as temperature, humidity, door status, fire sensor status are collected and sent to the central station a computer and with appropriate software analysed and displayed on a screen , Emphasis is placed on human safety so that the system to facilities evacuation of the building in case of fire or other emergency situation not to be hindered by the system. The simulation was done on a mock-up materials obtained from online stores and local stores.

More specifically , the system will provide the following functions:

* Monitoring of manpower and equipment via graphics visualization from a work station
* Search for a specific employee or patient and indication of the system in which chamber the selected one is located
* Notification by sound and visual means for opening of a window or balcony door without the consent of the chamber manager
* Notification by sound and visual means in the event that someone escapes or enters a chamber without the intended use if RFID card or tag
* Notification by sound and visual means in case of fire. The operator has full knowledge of the people inside the building.
* Release all locking mechanisms for doors in case of fire. This way can be evacuated without danger.
* Release switch locking mechanisms for doors on both sides (inside and outside )for emergency cases without the intervention of the microcontroller to eliminate the slightest possibility of the doors not opening due to malfunction of the electronics.
* Retrieve history of movement for the chamber in an excel file. Since in hospital the installation of CCTV in the chambers is against the law on personal data, such a system could be useful in legal matters
* Ability to monitor temperature and humidity in the chambers so there is knowledge of all rooms for a single point. The management of the heating of the chambers will ba facilitated
* Distributed data storage for each chamber locally. With this technic in case of collapes of the workstation the system can recover within a few second without losing the information about status of each chamber. Also while the system management workstation is down , the system works in the background.
* Notification of the hospital’s security staff in case the system user activates the corresponding button if he/she deems it necessary.

1. **System Design**

For the design of the system, two design alternatives are presented that differ in the way for the passive cards/tags are recorded and in the existence or not of a locking mechanism on the door.

The first proposal includes the installation two RFID readers ,one placed outside the room and one inside. This design in addition to controlling and managing resource provides access control to the hospital premises. It is a design suitable for environment such a public hospital that aim to suppress and terminate uncontrolled access into patient care rooms.

Premises = κτίριο

Suppress = καταστέλλω

Proposal = πρόταση πχ λύσεις

Corresponding = αντίστοιχο

Deem = θεωρώ /κρίνω

Collapse = Κατάρρευση

Matters = θέματα

Malfunction = Δυσλειτουργία

Slightest = το παραμικρό

Intervention = Πρέμβαση

Evacuation - εκκένωση

Proposed = προτείνω

Aim = σκοπός

Chamber = θάλαμος

Possession = κατοχή

Adequate = επαρκής

Hindered = εμπόδισε

Attenders = Παραβρισκόμενοι

Appropriate = Κατάλληλος

Intended use = προβλεπόμενη χρήση