

CONCEPT PAPER

For

RFID based

File & Document Tracking System



1. Introduction:

An organization which has public and/or financial dealings generates/obtains large amount of valuable documents to be maintained for a very long time. Movement tracking and preservation of these documents is of prime concern because these should not be misplaced / lost. The organizations which belong to this category are, for example, Banks, Insurance Companies, Finance Companies and Government Departments. It is a mammoth task to maintain and track these valuable documents manually or simply using computer software. The basic need is to capture identity of a file / document electronically to avoid human errors.

2. Proposed System:

Every RFID transponder IC has a unique ID world-wide. The transponder is packaged and converted in a tag or label form to be attached to the file/document. The tag can have a printable substrate to facilitate printing of human readable characters. The information related to the file/document such as File ID, description, owner details, date of creation, etc. can be electronically programmed on the RFID tag. This information is available offline.

The proposed solution is based on RFID (Radio Frequency Identification) technology that will have the following advantages:

- 2.1 Access to Rooms/Vaults shall be restricted to authorized users only.
- 2.2 Searching of Files shall be facilitated through Hand Held Reader that does not require Line of Sight to read the RFID tags.
- 2.3 The process of File Retrieval and Return will be automated to facilitate Self Check-out and Self Check-in system.
- 2.4 EAS (Electronic Article Surveillance) will raise an alarm for unauthorized retrieval from the room.

3.0 Details of proposed functionalities are:



3.1 ACCESS CONTROL (1): An authorized user shall be issued a RFID card with pre-defined access rights. Only this authorized access card can open the main door of the room/vault, when the card is waved in the vicinity of the RFID Reader mounted near door. Even to exit the room user will have to identify using the ID Card. This type of Access Control shall restrict the entry to Room/Vault and will record the entry / exit, date and time of authorized users.

3.2 SEARCH & STOCK RECONCILIATION (2): The room/vault stores the files which are arranged and kept in order. Depending on the requirements of the organisation, application can correlate the shelf location information along with other details. This will need a strict discipline on behalf of users (to return the files in the designated shelf) and will increase the effectiveness and generate intangible benefit by saving the retrieval time. With help of a Hand Held RFID reader having WIN CE application, the misplaced / required file can be searched quickly and easily. The same hand held will be used for stock taking. This will reduce the time for stock taking and improve accuracy which will allow frequent stock taking.

3.3 CHECK-OUT (3): Whenever a file is retrieved from the shelf to be taken out of room/vault, an Issue or Check-Out process will have to be performed. The purpose of issue process is twofold. One, the identity of file is associated with the identity of the RFID Card holder and other the EAS flag of the tag pasted on the file will have to be disabled. If the EAS is not disabled the Gate Antenna at the exit will raise an alarm for the unwarranted act.

3.4 EAS (4): The three-loop magnetic field generated in the 1 meter aisle of the RFID Gate Antenna will detect every movement at the speed of 25 RFID tags per sec. This Gate Antenna checks for EAS flag on a file which is being taken out.

3.5 CHECK-IN (5): Whenever an issued file is to be deposited back in the vault, Return or Check-In process is to be performed. This process is exactly opposite of Issue process and is also twofold. One, it detaches the identity of file from the user identity and two the EAS flag of the tag pasted on the file shall be enabled.

The above mentioned functionalities are for day to day operations but there is an important function of generating the RFID Tag for every new file. This process is called Electronic Personalisation / Encoding and it involves entry of required information and writing the same on the EEPROM of the RFID Tag.