CONCEPT PAPER

For

RFID based

Asset Management System

1. Introduction:

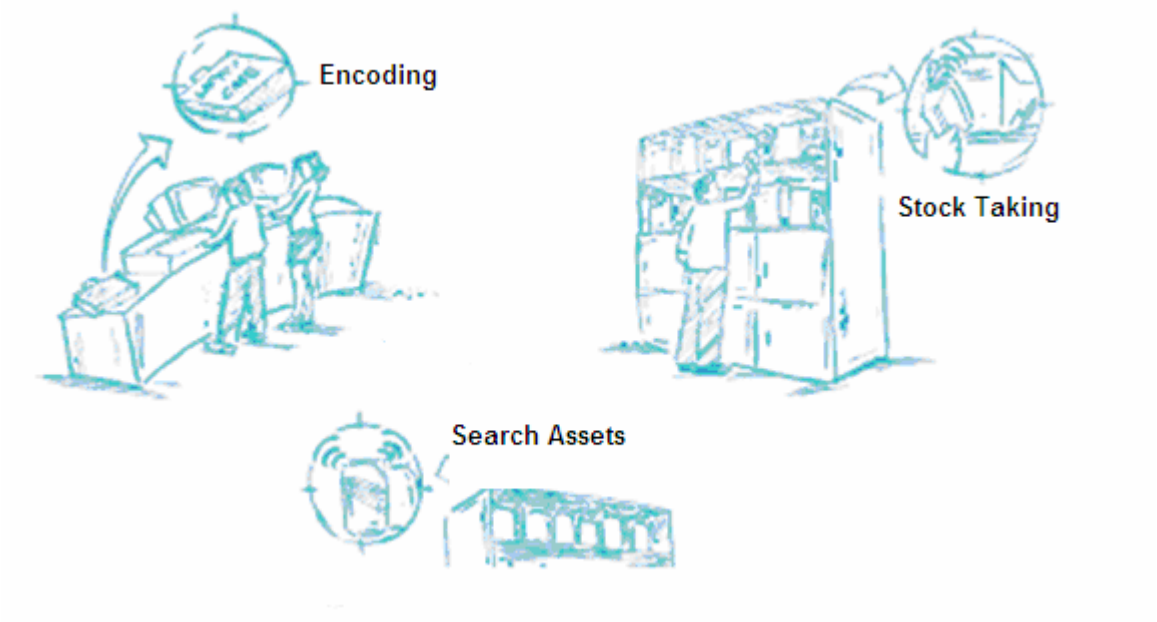
An organization is known by its assets. These assets include fixed and portable assets. Organizations also classify them as IT and Non-IT assets. Typically these assets are assigned a unique identification number after procurement. The details related to the asset are then maintained in the database against the asset ID. The asset ID is written on the asset or is printed on a paper label and pasted onto the asset. As the IDs are human readable the identification and tracking of the assets is done manually. The physical stock reconciliation is also done manually.

There is a need of a machine readable, electronic, programmable and re-programmable ID to facilitate offline automatic identification and data capture.

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 asset. The tag can have a printable substrate to facilitate printing of human readable characters. The information related to the asset such as description, make, vendor details, warranty period, value, owner, etc. can be electronically programmed on the RFID tag. This information is available offline.

A RFID tag cannot be read when it is mounted directly on to metal. Thus for the RFID tags to be used on the assets they need to be widely classified as metallic or non-metallic assets. For metallic assets the tag will be mounted on a non-conducing spacer (typically a ferrite sheet). These tags will be thicker in physical dimensions than the tags used for non-metallic assets but the technology used remains the same.



3. The Process:

a) **Encoding:** The RFID tags can be printed and encoded at a programming station equipped with a label printer and encoder. These tags can then be pasted or attached to the respective asset. The programming of the RFID tag can also be done using a RFID hand-held terminal. The data elements considered for encoding depend upon the organization's need. For example if we take Manufacturing Industries, Hospitals, R&D Organisation

b) **Asset wise Stock Taking:** The Stock Taking is done using the RFID hand-held terminals. It is so simple that an individual can just read the RFID tag and the information is stored in the hand held terminal, which at the end of the process can be downloaded on PC or Server through Wireless or RS 232 C communication port.

c) **Location-Asset wise Stock Taking:** In organizations where Asset ID is related to Location Identification, a different process can be adopted. Every Location ID is recorded in RFID Tag which is attached to the location. For example, in an office there are four cabins then on the cabin door or on the side of the door, a RFID Tag is attached / pasted which has the Location ID. Therefore the stock taker can first read the location tag followed by Asset tag. It will mean that all the Assets ID read after the location tag belong to this location. When next location tag is read, the following assets will belong to that location.

d) **Search:** An asset can be searched by keying in the Asset ID in the hand held terminal and reading the probable assets. When the keyed in Asset ID of hand held terminal matches with the read RFID tag on an asset, the terminal beeps indicating that asset has been found. Even on the touch screen display, message pops up indicating the result of search.

e) **Tracking:** In the case where Location ID & Asset ID is related, movement between locations can be tracked. The purpose is to update the information in Master files which is used for stock reconciliation at an interval. This will also track the case of Damage, Destruction and Sale of assets.

f) **Offline Reading:** The advantage of RFID Tag is that it stores key data which can be read without the connectivity to data base and the choice of data elements is entirely user's need. For example if the RFID tag contains Name & Technical Specifications of the Asset, the user can know by reading the tag on the asset using hand held terminal. Assume that the tag also contains the Warranty Expiry Date, Preventive Maintenance Due Date and Calibration Due Date. If there is a need that in a particular location which all equipments / assets Warranty will be expiring in next 10 days. The user has to set the days limit on the hand held terminal and start reading the RFID tags on the assets. The cases which meet the search criteria, the reader will beep and record such case automatically on the hand held terminal that can be uploaded to PC or Server as per the requirement.

The existing software for asset management is made RFID compatible using the respective hardware APIs and DLLs. The asset ID generated by the software is mapped with the unique serial number of the RFID transponder IC.

4. Components of the system:

a. RFID tag
b. Desktop Reader / Writer
c. Hand Held Readers
d. Printer
e. Software