

**CASE STUDY**

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**INTEGRATING MCT WITH RFID: A CASE STUDY**

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**Abstract:** Mobile Communication Technology (MCT) has advanced manifold over the past few years and has established as a leading wireless communication medium. It has a distinct advantage of getting integrated with existing Information Technology environments at very low system requirements. RFID (Radio Frequency Identification) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects, Since RFID tags can be attached to clothing, possessions, or even implanted within people, the possibility of reading personally-linked information without consent has raised privacy concern [1]. In this paper we introduce a system where in we have proposed the integration of two technologies Mobile SMS & RFID to achieve security for inventory system which is totally independent of human intervention and does not need 24X7 human surveillance but will rely on SMS based alert as and when system security is being compromised.

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**INTRODUCTION**

The term Information Communication System can technically be defined as a structure which describes the organized collection, processing, transmission, and dissemination of information in accordance with defined procedures, whether automated or manual. The purpose of developing an Information Communication System is therefore to establish a system which delivers information and communication services in an organization and the activities and management of the information systems function in planning, designing, developing, implementing, and operating the systems and providing services [4]. These systems capture, store, process, and communicate data, information, and knowledge. The system structure includes both technical components and human operators and users. The environment of the System varies from being a single organization or a combination of organizations and/or society as a whole or a section of society depending upon the nature of the Organization.

Information Technology has improved manifold our intellectual and physical abilities more than anything since the development of the written word. Some of the magnificent scientific marvels such as the Internet, the global positioning system, and the human genome project became possible only with advances in information technology. It is estimated that presently there are ten billion computers in the world. Most of the products have computers embedded invisibly in them, making goods as well as services safer, more secure, flexible, and energy-efficient. The costs of the I T products have been showing a significant downward trend and as such are affordable to common man. The tremendous advances in productivity that we have witnessed in the past decade rest on this foundation. We are hard-pressed to think of change of comparable magnitude in human history. In the future, we can expect our computational infrastructure to offer an even more impressive range of social and economic benefits as it grows to include billions of people worldwide. Information technologies have the potential to reduce energy consumption, provide improved health care at lower cost,

enhance security, reduce pollution, enable further creation of worldwide communities, engender new business models, and contribute to the education of people anywhere in the world. These new benefits will be facilitated by geometric advances of the technology in semiconductor and magnetic storage, as well as in electronic and optical communications.

The past two decades has seen explosions in mobile technology and its applications. It has enabled new businesses and new ways to link people. The way we have moved beyond stand-alone computers or components to build large, integrated, distributed information systems that are in service to society [8] the mobile technology has also made significant progress in linking the people involving extremely low resources.

RFID, the acronym refers to small electronic devices that consist of a small chip and an antenna. The chip typically is capable of carrying 2,000 bytes of data or less. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information [2].

The RFID reader reads the id number from passive tag and send to the microcontroller, if the id number is valid then microcontroller send the SMS request to the authenticated person mobile number, for the original password to open the bank locker, if the person send the password to the microcontroller, which will verify the passwords entered by the key board and received from authenticated mobile phone. if these two passwords are matched the locker will be opened otherwise it will be remain in locked position, This system is more secure than other systems because two passwords required for verification. This system also creates a log containing check-in and check-out of each user along with basic information of user.

## PREVAILING SYSTEMS

The development of the Information System is identical with its implementation through Information Technology using Internet as the communication backbone. The development of Internet provided a common and cost effective platform for different organization to implement their need based Information Systems. The web based Information System provides excellent facilities for Information Reception, Storage, Processing and its distribution over the entire globe [7].

In the existing system every time inventory is shipped out of store or shipped into store information system is updated. Application system updates the database to reflect the change into the system, however this updation is based on human intervention. The biggest challenge in the existing system is illegal shipping out of inventory from the go down. While the human security can guard the theft of store but however it goes beyond human intervention to check each item one by one that too when the item count can go in thousands.

## SMS BASED INFORMATION SYSTEM

The dissemination of information through SMS has some distinct advantages over the web based and hence suits some areas where the content of information is small and requires to be received instantly. Advantages of using SMS based information system for some of the applications are directly related to the advantages of SMS itself. SMS is a highly mature communication tool and guarantees a high level of availability and quality of service [6].

Accessibility, Operability and Affordability are the key characteristics of an Information System under discussion. In a geographically disadvantageous area of ours an information system based on mobile communication system presently meets these characteristics than any other alternative system.

## PROPOSED SYSTEM

In a mobile based system the information system is accessed by clients of different mobile service providers. On the other hand in a web based system the Internet simply functions as the carrier of data whereas in a mobile technology based system the service providers may add some more services and hence require to process the same.

Each item in the store has a passive tag with id number which uniquely identifies item or pack of items. Information System stores the tag information against each item stored in the go down. An RFID reader's function is to interrogate RFID tags. The means of interrogation is wireless and because the distance is relatively short; line of sight between the reader and tags is not necessary. A reader contains an RF module, which acts as both a transmitter and receiver of radio frequency signals. The transmitter consists of an oscillator to create the carrier frequency; a modulator to impinge data commands upon this carrier signal and an amplifier to boost the signal enough to awaken the tag. The receiver has a demodulator to extract the returned data and also contains an amplifier to strengthen the signal for

processing. A microprocessor forms the control unit, which employs an operating system and memory to filter and store the data. The data is now ready to be sent to the network [3].

The RFID reader reads the passive tag and send id number to microcontroller, which in turn send it via WIFI to server which when receives the id number validates it against the database to verify the validity of the item to be shipped out, if item being shipped out is not to be shipped out it raises buzzer alarm and also send SMS to police. In case the item being shipped out is as per database to be shipped out, then server sends SMS to store keeper for validation of product to ensure second validation, if store keeper reverts back with affirmation the person is allowed to ship out item or else security is alerted and shipping is stopped. This system also creates a log containing ship-in and ship-out of each item along with shipping information.

## CONCLUSION

The Information System of an Organization forms the backbone of the services which it has to provide to different people. A RFID Based MCT Information system could be used when we have huge inventory associated with different outlets. This leads to an extremely reliable, affordable and instant Information system is always a pre-requisite for the smooth deliverance of the system. As against a web based system using Internet as the medium of data communication the RFID based MCT system is in all areas a preferable solution. The investments on the development of a RFID based MCT information system are moderate and even generate some revenue also for the organization. The implementation of the system requires specific structure of the database and its design is driven primarily by information content. The communication infrastructure in respect of the mobile systems is far widespread than any other system therefore.

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