

RFID tags makes them much more popular candidates in supply chain management[23].

- Food safety

RFID technology can be used in diverse sectors in food industry including processing, storage and distribution. It also can be used to identify physical contamination of food items. This wireless sensor network technology coupled with RFID can be used to develop new RFID sensors which can be used in various food industries [8].

- Transportation

Primarily RFID tags are used to increase the number of transactions both in private and public sectors. Plastic cards embedded with RFID tags are used to replace the paper tickets. When a passenger enters a train, bus or a metro they are checked because their cards have a passive rewritable chip. Most of these cards have passive and partly rewritable chips[23]. At present in transportation industry RFID is used for electronic vehicle registration and identification, electronic toll collection and car parking etc.

- Vehicle identification

One of the emerging applications of RFID is the implementation of RFID System on Roads (RSR). It supports the future smart vehicles. RSR consists of RFID tags, RFID readers, Information Processing Units (IPU), and Information Sharing Units (ISU). RFID tags are contributed on road surfaces, and RFID readers are installed at vehicles. These smart vehicles obtain the information from implanted sensors and RFID tags, which will be processed by IPU and then broadcast to the other vehicles[24].

- Weapon management

For the management of weapons UHF band of RFID can be used. This reduces the wrong identification of the gun and minimizes the cost of registering and evaluating the use of a weapon and most significantly identifying a handgun without the line of sight[25].

IV. CONCLUSION

RFID technology is used in many industries such as medical, aviation, library shelf management, vehicle, animal, and personnel identification and weapon management. It is essential to improve research and development and implement RFID applications in fast growing markets. Limitations of current RFID tags should be identified in order to improve the technology and to fulfill the future expectations and challenges. This includes a development of new low cost smaller tags with on-chip antennas with small form factors. These new improvements will enable using RFID technology in emerging areas such as insect tracking. The realization of on-chip antennas on a single chip will improve the operating

frequency of RFID tags to microwave and mm-wave ISM bands. Packaging and assembly costs will be reduced by developing single chip RFID tags resulting in small form factors. To meet the current demands of the emerging industries, the future research should direct towards developing and implementing low cost, smaller size and higher performance RFID tags.

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