WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Lost and Found System Using RFID in Kumbh Mela

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Introduction

Kumbh Mela, is one of the largest religious gathering in the world. It is held generally held in the Indian calendar month of Kumbh and has a special significance amongst the devotees in the world. It is held in the city of Prayagraj. This year the Kumbh mela had a special importance as it was held after a gap of 144 years. The importance is determined on the basis of the planetary position.

With such a large gathering in the city of Prayagraj, there are utmost chances of getting lost when the devotes take a holy dip. The lost refers to the process of losing track of some of the members in the group especially small children and the elderly people. As a result they are left alone to fend for themselves and locating them and ensuring that they are able to join their group becomes a herculean task. Thus, a system needs to developed to as to ensure that they remain continuously connected to the other members of the group and that they can be easily traced.

RFID, when expanded stands out as Radio Frequency Identification. This is the technique which is used to keep check on the people who are otherwise unable to join their group due to communication issues or otherwise.

Figure 1 below depicts one of the use of RFID technology

Figure 1: use of RFID technology

Source: https://www.encstore.com/assets/blogs/bcat1/1689267482-some-of-the-most-innovative-applications-of-rfid-technology.webp

This paper discusses the various issues of RFID

Literature Survey:

Lost and found is the word which is every common in day to day to parlance (Allen, R. (2017). For example, historians have tried to understand and study the items, artifacts and entities which are lost, stolen or otherwise found to be left wanting (Szivos, M. (2024). While there may be different contexts for locating these *lost items,* one thing that stands out is the aspect of trying to determine the pattern, the nature and the context in which can be

used into productive work. However, this involved time and the resources were constrained on account of the tools and the mechanism which were available.

With technology making significant advances, the entire process of catering to the lost and found mechanism changed drastically. RFID is the technology which is now widely used to locate and trace the entities.

RFID stands for Radio frequency identification. In today's parlance, the RFID has gaine gained tremendous application ranging from locating and tracking people to shipment of goods in logistics operations (Want, R. (2006); Nath, B., Reynolds, F., & Want, R. (2006).

However, designing a RFID application systems require careful considerations on account of the technological considerations, operational feasibility and other technical aspects which need to be taken into account (Hussien, F. A., Turker, D. Z., Srinivasan, R., Mobarak, M. S., Cortes, F. P., & Sanchez-Sinencio, E. (2005, June).

Figure 2 represents the some of the design considerations in the development of RFID Tags

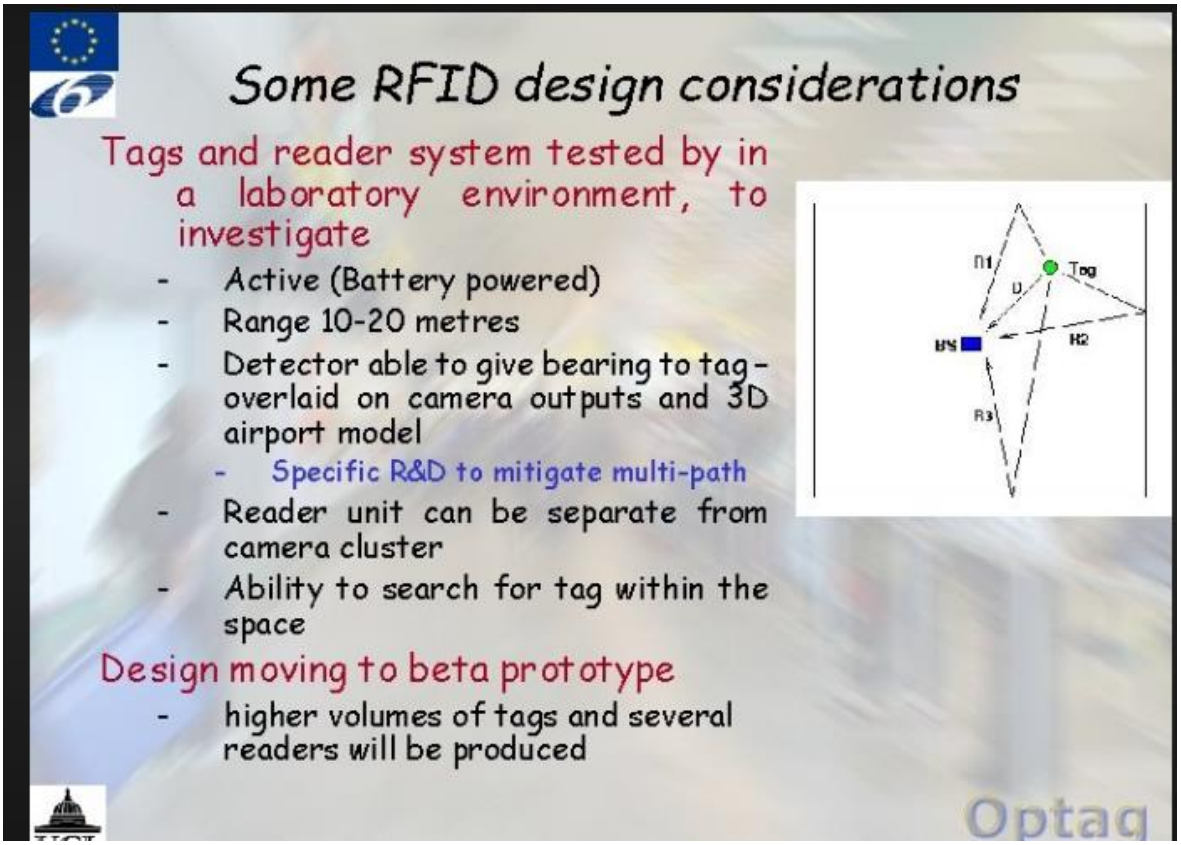

Figure 2: Depiction of considerations in the design of RFID tags

Source: http://slidetodoc.com/presentation_image_h2/c4aa3d571003870a6518f1554612c0f0/image-7.jpg

The design of RFID

The design of the RFID tag takes into account the following points of considerations

The System Architecture Design:

The system architecture design is the most important part of the RFID device It has the following components

RFID Tags: A RFID tag is attached to the entity such as a visitor. This tag contains a unique ID which is linked to the personal details of the entity and these details are stored on the cloud-based server.

- **RFID Reading device:** This is a device which is responsible to read the details in the RFID tag. It is positioned at point from wherein it can read the RFID card
- **Central Database:** This is a cloud-based component which stores the details of the RFID tag. It stores the personal details as well as the movement details of the entity which is holding the RFID tag.
- **Mobile & Web Application:** The software is the interface between the RFID tag and between the cloud-based server. This provides 24x7 connectivity to the customer
- **Communication Module:** This is responsible for integrating the SMS services and mobile notifications to generate alerts about the lost

entities.

Methodology:

The process of activating the RFID tag

1. **Registration Process:** This is the basic process wherein each of the entity is required to register the RFID tags with the personal details of the entity.
2. **Tracking:** Upon registration then RFID tag is activated with the help of the software. This process involves is the establishment of the entity with the cloud-based server, the RFID tag and the personal details of the entity.
3. **Identification:** During the movement is the entity loses contact with the members of the group or otherwise, the cloud-based server retrieves the stored information and thus assists in the location of the entities by sending notifications such as SMS.Data Collection:

Conclusions

The RFID tags have a wide range of applications in todays' scenario. With the advancements in technology, and the increase in the complexity of the business processes, the usage, applications and deployment of RFID tags has increased in various commercial aspects. For example, RFID tags are used in patient monitoring who are suffering from sleep walking diseases to the domestic pets as well as in the movement of goods from the manufacture's premises to the final destination. This helps in keeping track and avoiding loses due to mishandling, getting lost or otherwise are difficult to trace.

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