

FPGA BASED LUGGAGE TRACKING SYSTEM IN AIRPORT

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ABSTRACT

Identifying and tracking luggage in an airport and plane in order to increase the efficiency of luggage transport system, which, as a result, increases the precision of the system, decreases the damages arising from the missing of the luggage and its wrong transport and decreases the errors of the manpower. The use of an interactive RFID-based bracelet luggage tracking system would make the process of luggage handling easier and faster as it would reduce the passenger waiting time when a mishandling error occurs. In this paper, implementation of an intelligent RF reader was done to provide various computing and logging operations, but also support the deployment of real-time tasks, execution control and automatic update of check-in and check-out information.

Keywords: *FPGA, Bracelet, RF system, Luggage Tracking.*

I INTRODUCTION

In the light of the increasing number of airline users, many initiatives have been undertaken to enhance customers satisfaction. These include the implementation of RF luggage tracking system in airports. This system is still facing some challenges as it does not involve the passenger in the luggage tracking process. Consequently, an efficient luggage handling system is required. The use of an interactive RF-based luggage tracking system would make the process of luggage handling easier and faster as it would reduce the passenger waiting time when a mishandling error occurs. The currently used luggage handling system causes a large number of mishandled bags. Mishandled luggage generates big losses to airline companies.

RF implementation in airports becomes very useful since it enhances the ability of luggage tracking, and increases customer's satisfaction. Yet, many improvements were done on the RF system to optimize its results. In, the implementation of an intelligent RF reader was done to provide various computing and logging operations, but also support the deployment of real-time tasks, execution control and automatic update of check-

in and check-out information. As threats of terrorism have increased globally, world attention has turned sharply to airport security. Governments, airlines, airport authorities, and the public have become acutely aware of the vulnerability and need to safeguard passenger and freight transportation.

This intense focus has radically changed airport operations and is straining the already tight budgets of airport authorities. Those authorities, along with the airlines and federal government, are actively seeking cost-effective technology solutions to meet the challenges. Technology can be used to not only supplement manual security processes, but to also perform new activities that cannot be performed manually. Travel and transportation impacts a wide spectrum of industries. The airline industry handles more than 2 billion passengers annually. A major challenge to the industry, both in customer satisfaction and security, is tracking passenger luggage. Meeting security measures for luggage matching can delay departures significantly, impacting cost efficiencies and customer satisfaction. Cost of mishandled or lost luggage, Passenger traffic monitoring is major issues in the air transport industry. The balance of enhanced security standards and customer convenience is becoming increasingly more difficult to achieve in the wake of new threats that terrorism poses.

With airports and airlines continuing to be vulnerable to threats, one of the areas where the maximum time is consumed is check-in for passengers and luggage handling for airport / airline staff. The travel industry is under constant pressure to improve customer service, safety and satisfaction while streamlining the process of passenger travel. A number of technologies have been implemented to speed these processes but one technology that has the potential to revolutionize luggage handling technique is Radio-frequency. RF is used to enhance the ability for luggage tracking, dispatching and conveyance so as to improve the management efficiency and the users' satisfaction. The RFID-enabled system provides luggage handlers and airport operators with real-time and historical track-and-trace data, giving an instant overview of the position of bags in ULDs and dollies. Developed in response to customer requests, the system provides a significant improvement in communication between the operators and luggage handlers, which will help to reduce the number of short-shipped or misrouted items. This in turn, will improve passenger security and satisfaction as well as reducing flight delays caused by mishandled luggage.

II DESIGN OF THE PROPOSED SYSTEM

Fig.1 gives the operational flow carried out in the automatic luggage system.

Existing system for luggage checking system design and develop "Airport Luggage System" using GSM technology along with RF (ACTIVE) reader. Where firstly, the basic operation of RF (ACTIVE) reader and design of authenticated person accessing system will be studied and later metal detector system is developed, and a alert system using GSM system by sending luggage whole information upto date is designed as shown in Fig.2.

Baggage Traffic Control in Airports making use of RFID Technology

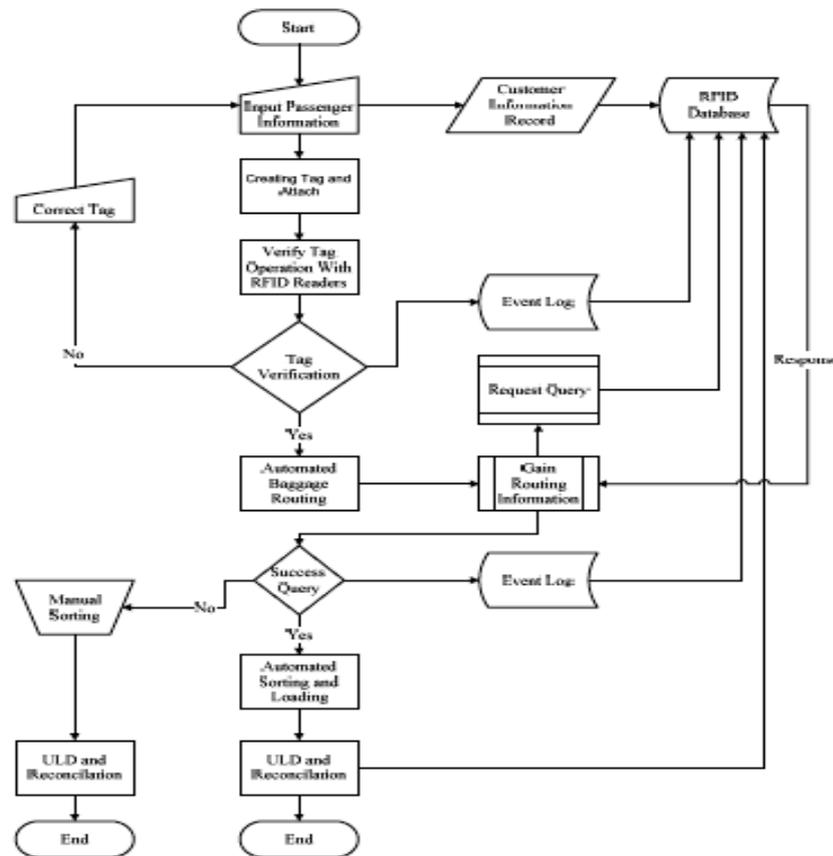


Fig.1. Operational view

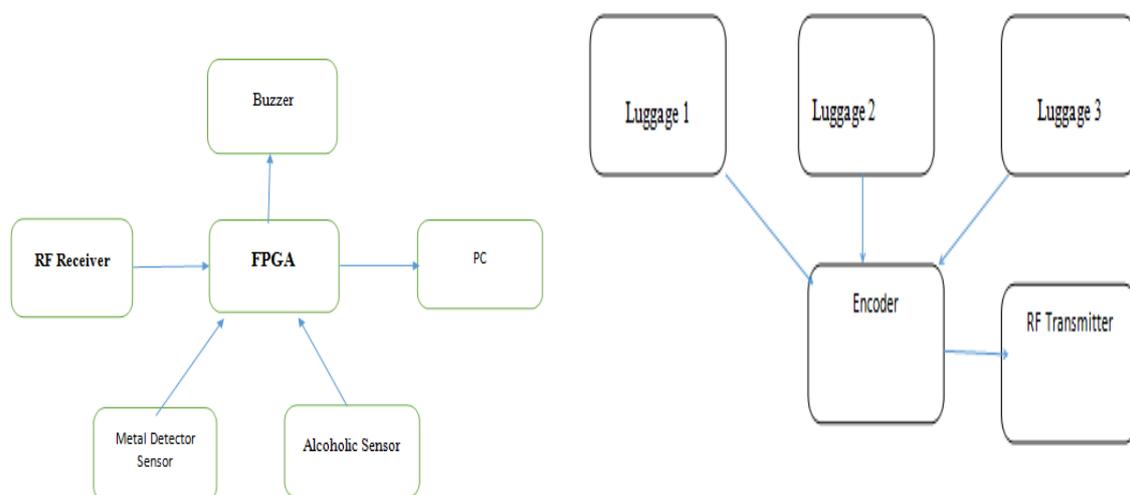
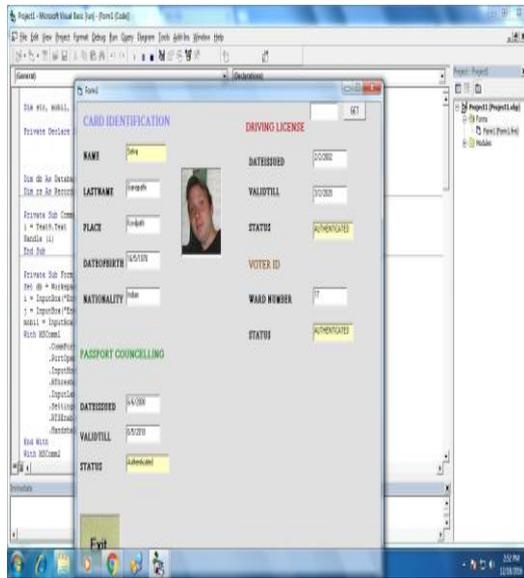


Fig.2. Receiver Section and luggage Section

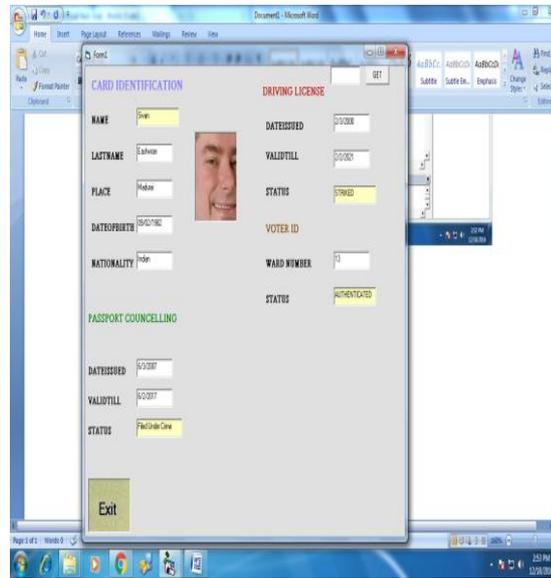
III. SIMULATIONS & RESULTS

After making all possible connections and connecting hardware kit to the computer the following observations are made as shown in the following screenshots from step 1 to step 5.

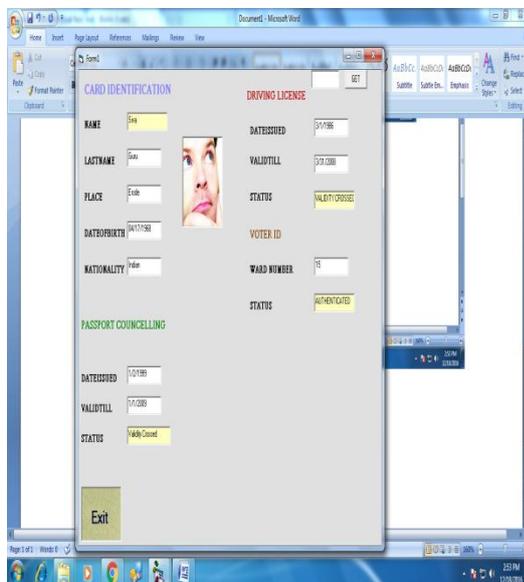
STEP 1



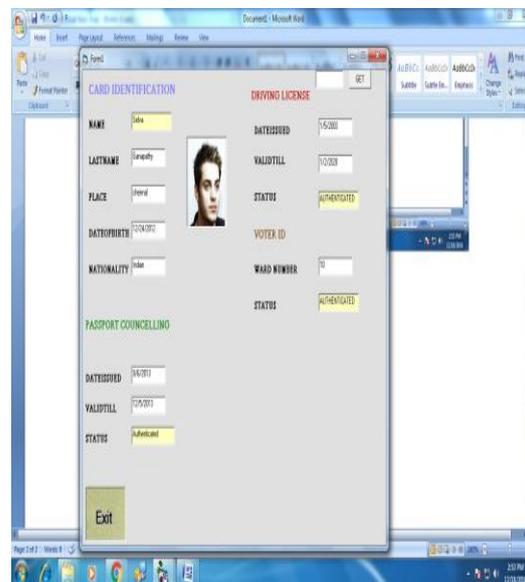
STEP 2



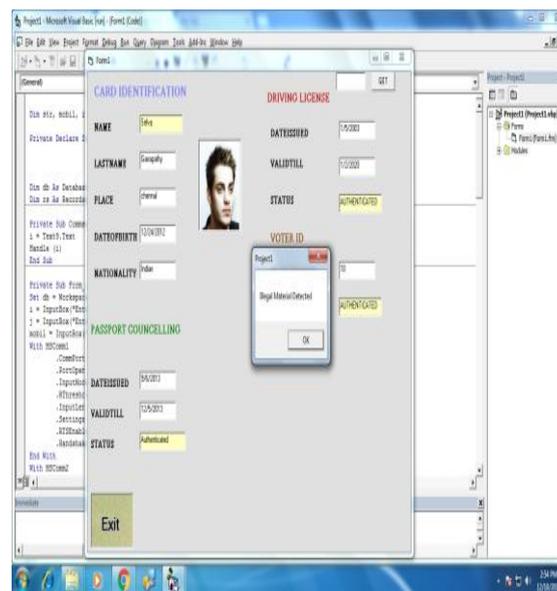
STEP 3



STEP 4



STEP 5



IV. CONCLUSION

In this proposed system, Implementation of RF (Active) dramatically increases efficiency and lowers operational costs, avoids cost of lost luggage & delayed planes. A number of technologies have been implemented to speed these processes but one technology that has the potential to revolutionize luggage handling technique is Radio-frequency identification technology (RF).RF (Active) is used to enhance the ability for luggage tracking, dispatching and conveyance so as to improve the management efficiency and the users' satisfaction. The RF-enabled system provides luggage handlers and airport operators with real-time and historical track-and trace data.. Developed in response to customer requests, the system provides a significant improvement in communication between the operators and luggage handlers, which will help to reduce the number of short-shipped or misrouted items. This, in turn, will improve passenger security and satisfaction as well as reducing flight delays caused by mishandled luggage.

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