

**DESIGN AND IMPLEMENTATION OF A CHILDREN  
SAFETY  
SYSTEM BASED ON IOT TECHNOLOGIES**

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**Abstract:**

In this paper a system for increasing children's safety is proposed. The focus is on the daily route from home to school and vice versa, assuming the use of school buses. IoT paradigm is exploited together with different localization techniques i.e. RFID and GPS, in order to design a solution for parents willing to make certain of their child's following the main to school or home, i.e. taking the school bus and entering school or leaving school and entering the school bus. In this paper the applicability of RFID technology efficient tracking capabilities is tested in children's tracking and monitoring during their trip to and from school by school buses. The proposed solution is discussed in terms of technologies and architecture and the first prototype is presented.

**Introduction:**

Children's security has always been a priority problem whose solution must constantly be improved. The Smart Cities paradigm clearly takes into account the need of providing a more favourable environment for children's living and learning, but focusing on this aspect it has also to deal with challenges due to cities complex environments, e.g. many construction sites, a large number of running vehicles, crowded meeting places and complex personnel structures. Such an environment indeed is generally lacking of safety conditions for children, which are inherently curious, active, and unaware (or incautious) of surrounding dangers.

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According to the incomplete statistics of news reports, the school-age children security accidents in recent years can be classified into four types: 34.7% of accidents happening outside the schools, 11.7% of children's misconnections, 29.8% of school bus drivers carelessness and 23.8% of children's losses. Safety oriented projects are addressed to use ICT services to build secure ways of reducing accidents probability. For parents the safety of their children is vital and a low cost technology may give a big contribution to improve it. One line of experimentation is related to the monitoring of child's movements through a system involving both GPS (Global Positioning System) and RFID (Radio Frequency IDentification) technologies. The first solution is exploited for school buses localization, while the second to gather informations. Categories of security system for children children's entering and exiting the school bus. This paper is especially focused on children's movements from home to school entrance, trying to solve a little part of the school-age children's security problem. A possible categorisation of security system for children is displayed in. During the past few years, in the area of wireless communications and networking, a novel paradigm named the Internet of Things (IoT) has gained increasing attention both in the academia and industry. In recent times, researchers have used the term "Internet of Things" to refer to the general idea of things.

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