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# A Prototype based Smart Notice Board for Smart Cities

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### Abstract



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#### Abstract:

A notice board, also known as a bulletin board, is a board on which notices or messages are posted for public viewing. They can be made of various materials such as cork, fabric, or metal, and are typically found in public spaces such as schools, universities, community centers, and workplaces. A smart city is a city that uses modern technology and data-driven solutions to improve the quality of life for its citizens. Smart notice board is an innovative solution that provides an effective way of communication in public spaces. It combines the convenience of traditional notice boards with the efficiency of modern technology to display important information in real-time. The system is designed to automatically update and display various types of content, such as news, weather updates, advertisements, and emergency notifications. The user-friendly interface allows users to easily upload and manage content, while the customizable display options enable the board to fit seamlessly into any environment. The Smart notice board is a cost-effective, eco-friendly, and flexible solution that can enhance communication and engagement in public spaces. This paper deals with advanced notice board for smart cities. It presents a prototype based notice board incorporating micro-controller PIC18F2550. A communication GSM module SIM 800L device is interfaced to the ports of the micro-controller PIC18F2550.

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## ☰ Contents

### I. Introduction

A smart city is a modern city that uses digital technologies and data analytics to enhance the quality of life of its citizens, improve sustainability, and optimize its operations. Smart cities utilize a variety of technologies, such as sensors, data analytics, and internet of things (IoT) devices, to collect and analyze data from various sources in real-time [1]. This information is then used to make informed decisions that improve city services, optimize traffic flow, and enhance public safety. Smart cities also focus on improving the quality of life for their citizens by providing access to digital services and resources. This can include providing free public Wi-Fi, developing mobile applications to make it easier for citizens to access city services, and creating digital platforms for citizen engagement. The content on a notice board is usually changed frequently, and it is important to keep it up-to-date to ensure that people receive accurate information. Notice boards can be maintained by designated individuals such as teachers, administrators, or office staff [2]. Alternatively, they can be set up as a communal space where anyone can post information. Smart notice boards are an innovative application of digital technology that is transforming the way we communicate and share information. Smart notice boards use digital displays and connectivity to provide real-time updates and notifications to users [3]. They are designed to be easy to use, customizable, and accessible from anywhere, making them an ideal solution for a variety of settings, such as schools, universities, offices, public spaces, and more. Smart notice boards are typically comprised of a digital display that can be customized to show a variety of information, such as event schedules, news feeds, weather updates, and social media feeds [4]. The content displayed on the board can be updated in real-time, either manually or through an automated system that pulls information from various sources, such as social media accounts, RSS feeds, or APIs. One of the key advantages of smart notice boards is their ability to provide real-time updates and notifications to users. For example, a school might use a smart notice board to provide up-to-date information on exam schedules, student activities, and school closures. In an office setting, a smart notice board might display meeting schedules, project updates, and other important information that employees need to stay informed [5]. One of the most significant benefits of smart notice boards is their ability to enhance communication and collaboration among users. By providing real-time updates and notifications, smart notice boards help to ensure that all stakeholders are on the same page and have an opportunity access for the data they need to make informed decisions. Another important benefit of smart notice boards is their ability to promote engagement and participation. By displaying dynamic and interactive content, smart notice boards can help to capture the attention of users and encourage them to take action, whether it's attending an event, participating in a survey, or sharing information with others. Smart notice boards can also help to reduce the environmental impact of traditional notice boards, which often rely on paper-based materials that are both wasteful and costly. By using digital displays and connectivity, smart notice boards eliminate the need for paper-based materials, reducing waste and lowering costs. In addition to their many benefits, smart notice boards also present some challenges and considerations. For example, implementing a smart notice board can need an initial financial investment in computer equipment and firmware, as well as ongoing maintenance and support costs. **Significance of Digital Notice Boards** It is also important to consider data security and privacy concerns when using smart notice boards, as they often rely on data connectivity and can potentially expose sensitive information to unauthorized users. One of the key features of smart notice boards is their ability to provide real-time updates and notifications to users. This has been highlighted in several studies, which have shown that real-time updates can improve communication and collaboration among users. For example, a study by Hiu et al. (2019) found that a smart notice board in a university setting significantly increased students' awareness of events and activities on campus, leading to increased attendance and participation [6]. Similarly, a study by Simha et al. (2016) found that a smart notice board in an office setting improved employees' awareness of project updates and deadlines, leading to better collaboration and teamwork. Smart notice boards also offer a high degree of customization, allowing users to tailor the content displayed to their specific needs and preferences. This has been highlighted in several studies, which have shown that customization can improve engagement and participation among users [7].

For example, a study by Munteanu et al. (2017) found that a smart notice board in a public space that allowed users to customize the content displayed led to increased engagement and participation, as users were able to create and share their own content. Similarly, a study by Lee et al. (2020) found that a smart notice board in a hospital setting that allowed patients to customize the content displayed improved their satisfaction with the hospital experience, as they were able to access information that was relevant and personalized to their needs. Another important feature of smart notice boards is their ability to promote environmental sustainability by reducing the use of paper-based materials. This has been highlighted in several studies, which have shown that smart notice boards can reduce waste and lower costs. For example, a study by Akshat et al. (2017) found that a smart notice board in a public space that replaced traditional paper-based notices with digital displays reduced waste by up to 80% [8]. Similarly, a study by Yash et al. (2015) found that a smart notice board in a university setting that replaced paper-based flyers with digital displays reduced printing costs by up to 90%. However, despite the many benefits of smart notice boards, there are also several limitations and challenges that need to be considered. One of the main challenges is the cost of implementation, as smart notice boards require an upfront investment in hardware and software, as well as ongoing maintenance and support costs. This has been highlighted in several studies, which have shown that the cost of implementation can be a significant barrier to adoption. For example, a study by Majumdar et al. (2015) found that the cost of implementing a smart notice board in a hospital setting was a major barrier to adoption, as it required significant investment in hardware and software. Another important consideration when using smart notice boards is data security and privacy [9]. Smart notice boards often rely on data connectivity and can potentially expose sensitive information to unauthorized users. This has been highlighted in several studies, which have shown that data security and privacy concerns can be a significant barrier to adoption. For example, a study by Neeraj et al. (2016) found that concerns about data security and privacy were a major barrier to adoption of smart notice boards in a hospital setting, as it required sensitive patient information to be displayed on the boards [10].

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