Information system for the protection of infrastructure in companies

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ABSTRACT: *In this work, an information system is designed to improve the response capacity, coordination and documentation of security activities, providing the company with a safer and more reliable environment, as well as providing valuable data for strategic decision making in security matter. The implementation of this technological application translates into more efficient supervision of the activities of security guards, facilitating the early detection of possible incidents and allowing quick and preventive responses.*

I. INTRODUCTION

In Currently, due to the accelerated growth of the population, as well as the density of urban and industrial areas, adequate surveillance services are required to protect the integrity of both people and properties, as stated in [1].

To address this situation, in the work of various authors [1], likewise in [2] and [3] proposals have been developed in response to the current social reality. However, sometimes the community faces the following internal security problem, such as ensuring that the guard adequately performs his work within a certain place and time. Given the above, administrators identify the following challenge: what method can be used for effective control over the security guards, who are in charge of security on a property. This problem becomes an annoying difficulty when covering sections of land, mainly because the guards can delay or simply evade the assigned work [1].

During recent years, information systems constitute one of the main areas of study in the area of business organization [4]. In this sense, immersive virtual reality systems have growing relevance [5]. In academic environments, security is a fundamental priority to guarantee an environment conducive to learning, research and peaceful coexistence. In this context, the creation of a route registration system is proposed through a mobile application, specifically designed to optimize surveillance functions. This initiative proposes taking advantage of technology to enhance effectiveness and precision in the supervision of key areas of the campus, providing those responsible for security with more advanced and agile tools.

In order to strengthen the security and protection of material assets, as well as the community of the institutions where they are located, the need arises to implement innovative and efficient solutions to address this problem. The main objective of this work is to improve the response capacity, coordination and documentation of security activities, providing the Institution with a safer and more reliable environment, as well as providing valuable data for making strategic decisions regarding security.

To meet this purpose, the research will explore in detail the conceptualization, development and implementation of the mobile application, considering technical, operational and security aspects. In addition, the potential impact of this tool on the efficiency of security guards, incident prevention and the general perception of security within the university community will be analyzed.

II. MATERIALS AND METHODS

For the design of the information system proposal, it is taken as a starting point to efficiently manage and document the tours carried out by security guards. For this, systems theory is used as a basis as a support tool for the design of the information system. (Figure 1). For the implementation of this project, the following technologies were used:
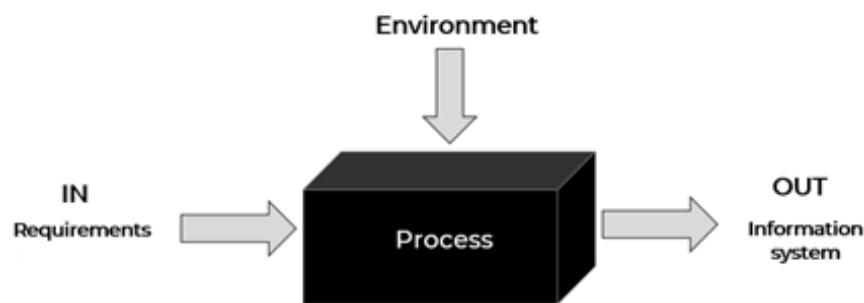
Fig. 1 General Systems Theory as a support tool for the design of the information system.

React Native: It is a mobile application development framework that allows you to build native applications using React and JavaScript. It uses a component-based approach, making it easy to create modular and reusable user interfaces. React Native is known for its ability to develop cross-platform mobile apps, meaning it can be used to build both iOS and Android apps from a single code base.

React Native is a solid choice due to its ability to develop cross-platform applications. By sharing a single codebase, efficiency is maximized and development costs and times are reduced by simultaneously addressing the IOS and Android markets. React Native's component-based structure facilitates rapid development. Modular and reusable components streamline the user interface building process and make it easier to adapt to changing requirements.

Likewise, React Native has an active community and extensive support, which guarantees access to resources, libraries and solutions to common challenges. Plus, the large community means a higher chance of finding developers with experience in React Native.

Expo: It is a platform and set of tools built on React Native that simplify and accelerate application development. It provides a series of preconfigured services and libraries that address common aspects of mobile applications, such as camera access, push notifications, and asset management. Expo enables fast and efficient development by eliminating the need for complex configurations and workflows.

Expo simplifies React Native app development by providing pre-configured tools and services. Eliminates the need for complex configurations, making it easier to focus on developing application-specific features. This program offers quick and easy access to common mobile app functionalities, such as the camera, push notifications, and asset management. This speeds up development and ensures a consistent user experience. Likewise, Expo simplifies the application implementation and update process, facilitating distribution through the application store and constant updating of functions.

Firebase: It is a mobile and web application development platform that offers a variety of cloud services. For this project, Firebase can be used to manage user authentication, store and retrieve real-time data through its real-time database, and manage push notifications. It provides a robust infrastructure that facilitates the development of functions such as user management, data storage, and real-time messaging.

Firebase provides robust user authentication services, ensuring secure handling of user identity and credentials. Firebase's real-time database is crucial for tracking and instantly updating data such as users' progress in workouts and body logs. Firebase's built-in ability to manage push notifications makes it easy to implement reminders and motivational messages, improving user retention and engagement in your app.

Together, the choice of React Native, Expo, and Firebase is based on their ability to provide efficient development, access to key functionality, and reliable infrastructure for the project. The combination of these technologies guarantees a balance between versatility, simplicity and power for mobile application development.

III. RESULTS

A proposal is made for a system to efficiently manage and document the tours carried out by security guards. Its main objective is to guarantee compliance with the daily scheduled patrol routes, thus contributing to strengthening security in the company.

Together, this system not only ensures compliance with planned security rounds, but also improves response capacity, operational efficiency and decision-making in the field of security.

Efficient Tour Registration: Efficiently and accurately capture information related to the tours of security guards at the Tecnológico Nacional de México in Colima.

Compliance with Scheduled Routes: Ensure that guards follow pre-established patrol routes, thus contributing to strengthening security in specific areas of the campus.

Monitoring: Provide the ability to monitor tours, allowing supervisors and security managers to have active control over ongoing activities.

Detailed History: Maintain a detailed and accessible history of the routes taken, facilitating the review of past events and the identification of behavior patterns.

Resource Optimization: Contribute to the optimization of human and material resources destined for security through efficient route management.

Ease of Use: Provide an intuitive and easy-to-use user interface to ensure rapid and effective adoption by security personnel.

IV. CONCLUSION

The implementation of this technological application translates into more efficient supervision of the activities of security guards, facilitating the early detection of possible incidents and allowing quick and preventive responses. The ability to maintain a detailed history provides a valuable tool for retrospective analysis and informed decision making in the continuous improvement of security strategies.

The application integrates seamlessly with existing infrastructure and stands out for its ease of use, facilitating its adoption by security personnel and ensuring a smooth transition towards a more technological and efficient approach to security management.

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