Integrated Information System for Nigeria Security Agencies

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ABSTRACT
This work aims to develop an integrated security portal, a tool for enhancing Nigeria's Security. This work was motivated by the inability of security operations to be centralized and share information, manual process of keeping criminal records, unavailability of most security portals to have whistleblowing platform, and database of wanted and missing persons by security agencies (such as Nigeria Immigration Service (NIS), Nigeria Security and Civil Defense Corps (NSCDC), Nigeria Police, Independent Corrupt Practices Commission (ICPC) and Economic and Financial Crimes Commission (EFCC). Investigative research was employed to enable critical analysis of the existing procedure, to identify its shortcoming, and how the new system will improve the standards of the existing services. In designing the new system, an object-oriented hypermedia design methodology incorporated with object-oriented analysis and design methodology was adopted using the following programming languages; JavaScript for controls and flexibility, PHP for effective linking and communication with the database machine, HTML for browser communicator and a database machine, MySQL. This research work will enhance the quality, convenience, and reliability of Security Agencies in Nigeria, by providing a database for wanted and missing persons, a platform for whistleblowing, and the ability of information to be shared among the security agencies and in turn reduce the time spent by users in visiting numerous security agency websites.

I. INTRODUCTION
The merging of diverse software and hardware (usually system) components into a single entity are known as system integration. It's also the result of a process aimed at bringing together many, often disparate subsystems so that the data contained in each becomes part of a bigger, more complete system that, ideally, rapidly and easily communicates data as needed. As a result of synergy, this unit functions well and produces benefits. System integration tries to reduce a solution's entire operating expenses rather than just certain parts of it. The system integrator is also in charge of assuring the necessary stability and security. In all of this, the ability to constantly develop the solution as a whole should be considered. (Siegel et al., 2018). According to Babar and Bhope (2016), a portal is a website that serves as a guide or point of entry to the World Wide Web, usually with a search engine or a collection of connections to other websites. Nigeria's whole security system is experiencing a plethora of difficulties that pose substantial threats to the country's business survival as a result of tidal waves of criminal activity and general insecurity. Due to these issues, as well as the ineffectiveness of existing security personnel, security agencies were formed. A multitude of security concerns has put people's safety in the country in jeopardy (Adrienne, 2017).

Aim and Objectives of the Study
This study aims to develop an integrated portal for Nigerian security agencies with the following objectives;
1. To develop a centralized portal for sharing valuable information
2. To create a database of criminals and wanted persons by security agencies.
3. To provide a platform for whistleblowing.
4. To develop a system that will promote trust in communication channels by implementing a technology that will make use of an adaptive data mining technique to authenticate access to the Agency.

Analysis of the Existing System

The present system, which is used by security agencies to hold information about prisoners, saves the names of the prisoners or law offenders, information about the crime, the date of the FIR, the criminal's background, and the length of time spent in jail. However, once the period has expired and the individual has been freed, it becomes impossible for military officials to maintain track of the date and time of the offender's release. Because every worker does not know the offender's release date, they are not notified on time, confusing. The issue of security is the country's primary concern, and it encompasses the government's roles in providing security and protection to the lives and property of its residents. Because each security agency is given various duties and functions, making them independent of one another, cooperating in terms of exchanging essential information to catch lawbreakers is difficult. The army and its units, for example, are responsible for protecting the country from external attacks, whereas the police are responsible for internal security and maintaining law and order for the good of the people. However, these agencies operate independently, making their work more difficult and exhausting. Furthermore, although the majority of these security services profess to be digital, their activities are still manual. Bookkeeping, for example, is still used as a database by the police. These documents and records are destroyed forever if a fire breaks out or if the hoodlums' assault.In addition, the research will result in the creation of an integrated platform for security agencies. The researcher used the interview approach to get information that would not have been attainable without direct access to the interviewee. This enables the researcher to gain a deeper understanding of the issues. For this research, oral and telephone interviews were extremely useful. The internet, which provides some of the details necessary to assess some major concerns, was another source of data collecting that gave the researcher a lot of information. An interview with each security agency's information technology section was done as part of the analysis of the current system.

Methodology and System Analysis

The waterfall-based Object-Oriented Hypermedia Design Methodology (OOHADM) and Object-Oriented Analysis and Design Methodology (OOADM) will be used for fact-finding and prototyping in software development. The researcher's justification for using these approaches is mostly dependent on their efficacy. The waterfall model is the classic model of software engineering, according to Munassar and Govardhan (2019). This is one of the oldest models, and it's still used in government projects and by a lot of big businesses. This paradigm is an activity-centered procedure that requires activities to be completed in a specific order. This model includes five (5) separate phases, and before any action in each phase may begin, the activity or activities in the phase before must be completed completely before the following phase can begin. This paradigm is document-intensive, with each phase producing at least one document. It also emphasizes early planning to guarantee that design problems do not occur. It also works effectively for projects where quality control is a primary concern because of its extensive document planning. Waterfall lifetimeis made up of numerous non-overlapping stages. The model starts with defining system and software requirements before moving on to architectural design, detailed design, coding, testing, and maintenance (Emmanuel et al., 2019)

Data Flow Diagram of the New System Model

The user sends an encrypted message including the password and username to the server, which validates it and returns it to the user. The server's IP address and port number must be identified for it to handle this.
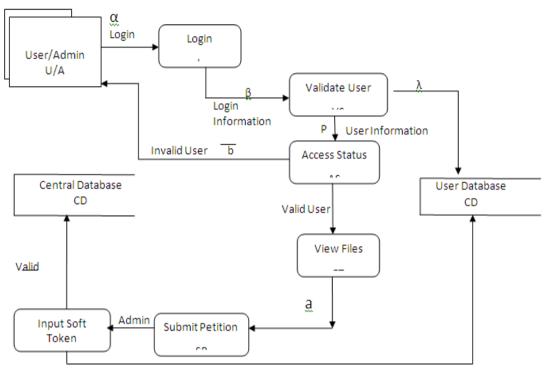
Figure 3.6: Data Flow Diagram of the New System Model, Source Field Work (2021)

The data flow diagram depicts the movement of data from one security database to the next, as well as to the central database. When a user logs in to the new system, the system validates the user's pin code and username against a central database. The account will be blocked if the pin fails to authenticate three times in a row. The classification data mining approach is used to retrieve information from the central database (such as submitted petitions and other information from security agencies), classify it, and deliver it to the proper agency.

Use Case Diagram of the New System
This dissertation's model is broken into multiple parts, each of which requires access restrictions. Different use cases were outlined in terms of how they could be implemented in the software. Use cases areas listed below:
1. User Use Case
2. Agencies Use Case
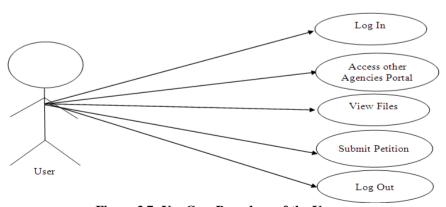3. Use a Case diagram of the New System.

Figure 3.7: Use Case Boundary of the User

Figure 3.7 represents the user use case diagram. The user will log in, have access to the portal to view files and submit a petition.
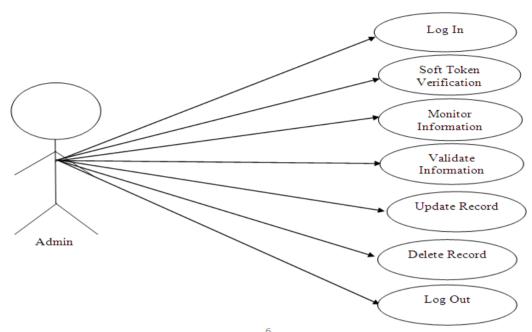

Figure 3.8: Use Case Boundary of the Admin

The admin can log in to the system using two-factor authentication, pin, and username which is further authenticated by soft token verification. The admin can monitor information, validate information, update a record, and delete a record as shown in figure 3.8.
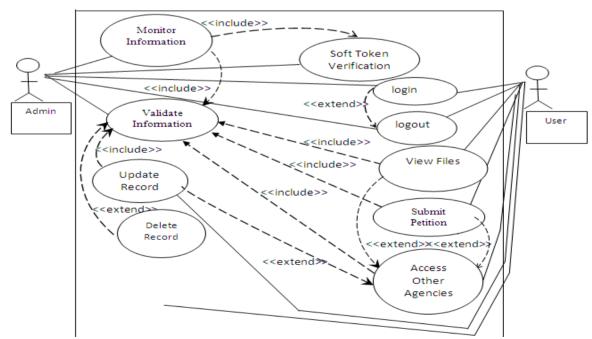

Figure 3.9: Use Case Diagram of the New System

In the above boundary diagram, the large rectangle is the system boundary. Everything inside the rectangle is part of the system under development. Outside the rectangle are the actors that act upon the system. Actors are entities outside the system that provide the stimuli for the system. Typically, they are human users or other systems. Inside the boundary,the rectangle is the use case. These are the ovals with names inside. The lines connect the actors to the use cases that they stimulate.

a) An <<includes>> relationship indicates that the second use case is always invoked by the first use case.

b) An <<extends>> relationship indicates that the second use case may optionally invoke the first use case.

II. RESULT

Following the investigation and analysis of the many issues encountered by some of the most well-known existing security systems, a new model for information distribution was offered as a way forward for effective and strengthened national security. The suggested system was built to address the limitations of the existing system and to provide additional value to security administrators, to decrease their stress by providing quick access to information that will aid in the arrest of lawbreakers. The various steps involved in the manufacturing of the software product were carried out using object-oriented analysis and design methodology.In a single automated platform, numerous agents doing diverse tasks were integrated with other functional modules. A series of functional tests were performed on the proposed portal to see if the system's basic aims and design goals were satisfied, and the findings showed that the system did. The following is a list of the performance of the Nigerian security services' integrated portal:

This website adapts to all screen resolutions and platforms responsively and speedily. It's user-friendly and mobile-friendly. For optimizing its page layout for specific screen size, the integrated portal for Nigerian security agencies used three main criteria: web page initial visibility, which ensures that all key information is visible above the fold so users can see it without scrolling; and web page initial visibility, which ensures that all key information is visible above the fold so users can see it without scrolling. There is a compromise between the number of items shown and the amount of detail given for each item. Second, the readability of a web page is determined by how easy it is to read the text in various columns given their assigned width. Finally, there's web page aesthetics, which is concerned with how the website looks when all of the elements are the right size and location for this screen size. These three criteria should be available in a wide range of sizes, from 360 x 640 pixels to 1920 x 1080 pixels, according to usability recommendations. Most existing security portals take longer to load because they have a high bounce rate, which causes users to not find the page content valuable, limiting accessibility. This portal, on the other hand, has a high accessibility rate because its HTTP requests are minimized, and the time to the first byte, which refers to the time it takes a browser to get data from the server, is short, allowing requests to be delivered to the browser more quickly, improving accessibility and user-friendliness. This website is safe because a web application firewall has been enabled to protect it from attacks and hacks. It also adheres to website security best practices and has no known vulnerabilities or configuration concerns.

III. CONCLUSION

This research has proven beyond a reasonable doubt that deploying a system to assist security agencies and other similar professions in their line of work in drastically improving the services they give to society at large is extremely practicable. The study found that most security agency portals have flaws; for example, the police portal lacks a whistleblower avenue, and the Nigeria Immigration portal lacks a platform for the wanted person(s), implying that wanted people who are not public figures or celebrities can easily flee the country without being tracked. Because of these constraints, the outcome of this study is essentially superior. The study also indicated that many of the respondents have no computer skills and that some respondents are unfamiliar with their agency portal and its security program. The opportunity for agencies to have a single site piqued the respondents' interest. According to the results of this performance evaluation, respondents rated the research's speed, flexibility, and accessibility as making the improved system a superior option for the security agency.This site has made a significant contribution to the country's security by allowing information to be quickly accessed by any of the country's security organizations. It also offers solutions to some of the issues that Nigerian security agencies face, particularly in this period of kidnapping and insurgency, when securing information from man-in-the-middle appears to be nearly impossible.

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