**TOPIC PROPOSAL DOCUMENT**

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| **Surname, First Name MI.** | **Program/Specialization** | August 19, 2025 | |
| **Section** | **Signature** |
| Proponent Name. | Pick. |  |  |

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| **TITLE OF THE PROPOSED PROJECT**  *Provide a clear, concise, and descriptive title for the proposed project that reflects its content, domain, and/or purpose.* | | | | | |
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| **PROJECT DISCIPLINE:** | Select Project Discipline/Area | | | | |
| **PROJECT CATEGORY:** | Select Project Category | | | | |
| **SDGs:** |  | | | | |
| **PROJECT PRIORITY** | 1st | 2nd | 3rd | 4th | 5th |

***Note: Remove all text in RED and BLUE prior to printing and submission. Contents in your proposal should be brief (at least 2 - 3 paragraphs and should not be less than 5 sentences). See example content in BLUE text as a guide.***

**Background of the Study**

*In this section, present the current state of the domain or industry where the project is relevant. Highlight trends, challenges, or problems that exist. Discussion should be through a General-to-Specific approach as follows:*

1. *You can start your discussion by introducing the general field of study under which your research problem belongs. Make sure to highlight the importance of this field both to society, in general, and to a specific community. Support your discussion by citing prominent researchers in the field especially when you need to define critical terminologies or point out important aspects of this field.*
2. *Follow up your discussion by focusing on a particular sub-field in the next paragraph, and so on, until the specific problem that you want to focus on becomes the topic of a particular paragraph. Make sure that in each paragraph, you provide sufficient citations to prominent researchers when you must define technical terms or when you need to point out the importance of a particular sub-field.*
3. *After your focus problem is already introduced, you will need to very briefly describe the various solutions that have already been proposed/tested for it by previous researchers. Support from literature is critical at this point. You need to cite as many related works as possible, these works must be of recent vintage and preferably published in high quality journals and conference proceedings. Your main goals are: (1) to point out that although these previous tasks have already addressed important aspects of the problem, they nonetheless still pose certain limitations, and (2) to provide a clear description of these limitations and how they still affect the effective addressing of the problem.*
4. *Very briefly, you can also already provide a hint on the specific approach that you want to use for your proposed solution (e.g., Data Mining, or more specifically, Neural Nets, or still more specifically, Recurrent Neural Networks). If you do so, then you will need to describe the approach in general. Make sure to cite major and reliable sources of information in describing the approach. The goal is to provide proof that this approach has not yet been used to address the problem, although it might have been used to solve similar problems, which you will also have to enumerate supported with proper citations*

Information management systems have become essential in supporting efficient governance, especially at the grassroots level. Barangays, being the smallest administrative units in the Philippines, handle resident profiling, issuance of certifications, documentation of incidents, and dissemination of announcements. Traditionally, these processes are managed manually through logbooks and paper forms, which often result in delays, redundant data entry, and inaccurate reporting [1]. The increasing demand for transparency, accuracy, and accountability in local governance calls for the development of digital systems to replace manual procedures.

The emergence of web-based and mobile technologies has significantly transformed how information is collected, stored, and accessed. A Barangay Information Management System (BIMS) that can be accessed both via the web and mobile devices provides an opportunity to bridge the gap between community members and local officials. Such a system ensures real-time access to information and promotes citizen engagement [2]. With mobile penetration rates in the Philippines continually increasing, integrating a mobile application allows residents to conveniently request services and access updates on community programs [3]. Recent trends in e-governance highlight the importance of digitization in improving service delivery and empowering citizens [4]. By adapting these approaches at the barangay level, communities can streamline their operations, reduce bureaucratic inefficiencies, and foster a culture of responsiveness and inclusiveness. Moreover, introducing such systems supports the national government’s digital transformation agenda, which emphasizes technology-driven governance [5].

The BIMS also addresses long-standing challenges in data centralization and disaster preparedness. Accurate resident data supports barangay leaders in resource allocation, emergency response, and social service delivery. During health crises or natural disasters, barangays equipped with digital information systems can more efficiently identify vulnerable households and deploy assistance.

Finally, adopting a digital BIMS contributes not only to administrative efficiency but also to the empowerment of local communities. By ensuring transparent and accessible public service, the system strengthens trust between the government and its constituents. Thus, the proposed project aims to design and develop a secure, reliable, and user-friendly information management system tailored to the needs of barangay-level governance.

**Project Context, Purpose and Description**

*In this section, explain the specific environment or scenario where the project will be implemented (this could include a company, community, organization, school, or specific user group). Define the core problem or need your project addresses. What gap, inefficiency, or opportunity exists? Explain why this problem needs to be solved and how your project contributes to addressing it.*

*Next, summarize the proposed project in general terms. State what it is (e.g., mobile app, web platform, desktop system, AI model), what it will do, and its major components. Keep it understandable even to a non-technical reader.*

*Finally, explain the value and impact of your project to its intended users or beneficiaries. Discuss how it can improve processes, solve a practical problem, support decision-making, or offer innovation in a specific field.*

The proposed project directly aligns with the United Nations Sustainable Development Goals (SDGs). Specifically, it contributes to SDG 11: Sustainable Cities and Communities, by promoting inclusive and efficient local governance; SDG 16: Peace, Justice, and Strong Institutions, by enhancing transparency and accountability in public service; and SDG 9: Industry, Innovation, and Infrastructure, by leveraging technology to modernize governance processes [6].

The purpose of this project is to create a web-based and mobile Barangay Information Management System that supports residents and officials in managing records, issuing documents, reporting incidents, and disseminating announcements. Its significance lies in providing a scalable solution that can be adapted to multiple barangays, enhancing community engagement, data-driven decision-making, and digital inclusivity. Furthermore, it empowers both barangay officials and citizens by ensuring that essential services and information are readily accessible anytime and anywhere.

**Objectives of the Project**

*An objective of the project is a concrete statement that describes what the proponent/researcher is trying to achieve. A well-worded objectives will be SMART, i.e. Specific, Measurable, Attainable, Realistic, and Time-bound.*

***General Objective***

* *General objective should broadly state what the project aims to achieve.*

***Specific Objectives***

* *List 5 SMART specific objectives (5th objective is intended for the evaluation of the project).*
* *Specific objectives should break the general objective into measurable, actionable goals (e.g., "Design a secure login module", "Implement data visualization dashboard").*
* *Specific objectives are short term and constricted in focus.*
* *Most of all, specific objectives give a clearer vision of what the study is trying to achieve.*
* *Use action verbs such as design, create, develop, integrate, test, and evaluate.*

**General Objective**

To develop a web-based and mobile application Barangay Information Management System that enhances community service delivery, transparency, and efficiency.

**Specific Objectives**

1.To develop web and mobile modules for document request processing (e.g., barangay clearance, certificates).

2.To implement a secure incident reporting feature that allows residents to file complaints or reports digitally.

3.To integrate analytics dashboards for barangay officials to generate real-time demographic and incident reports.

4.To test and evaluate the overall system’s using ISO 25010 in terms of functionality, usability, performance, compatibility/supportability, and security.

**Scope and Limitations**

*Clearly define what your project will and will not include. This manages expectations and keeps the project feasible. Also identify any known limitations (e.g., offline access, limited user roles, etc.).*

The scope of the project covers the design and development of a Barangay Information Management System (BIMS) with both web and mobile interfaces. Core modules include resident profiling, document request and issuance, incident reporting, and announcement dissemination. The system will also integrate role-based access control, ensuring that barangay officials, staff, and residents access only relevant functionalities.

However, the system is limited in several aspects. First, it will not initially include payment integration for document processing, although this can be added in future enhancements. Second, the system will focus on a single pilot barangay during its initial deployment, with scalability options for multiple barangays in later phases. Third, while it will incorporate basic data security and encryption, advanced cybersecurity features such as intrusion detection will remain outside the scope. Lastly, the project does not replace national government systems but complements them at the barangay level.

**Proposed Project Features and Functionalities**

*Describe the core features of the system that aligns with your objectives that solves the defined problem. Identify emerging technologies (limit to the group's capability to integrate) that will address the defined problem. Novelty must be considered in all aspects of the project (design and features).*

The Barangay Information Management System will include the following features and functionalities:

* Resident Profiling Module: Stores resident demographic and household data.
* Document Request and Issuance: Enables residents to request barangay certificates, clearances, and permits online.
* Incident Reporting System: Allows residents to report concerns (e.g., accidents, disputes, emergencies) digitally, with geotagging support.
* Community Announcements and Notifications: Push notifications through the mobile app to inform residents of upcoming events, health advisories, and emergency alerts.
* Role-Based Access Control: Secure login for administrators, barangay officials, and residents.
* Analytics and Dashboard: Provides barangay officials with data-driven insights on population, requests, and incident trends.
* Artificial Intelligence (AI)-assisted Analytics: For detecting patterns in requests and incidents, helping barangay officials make informed decisions.

**Proposed Technologies and Tools**

*List the programming languages, development frameworks, libraries, databases, and tools you propose to use. Justify the choice based on suitability and team familiarity.*

The project will be developed using modern web and mobile technologies. The development will use the following:

* Front-End: React.js (web), React Native (mobile)
* Back-End: Node.js with Express.js REST API
* Database: MongoDB Atlas (cloud-based NoSQL database)
* Hosting: Amazon Web Services (AWS) for scalability and reliability
* Authentication & Security: JSON Web Tokens (JWT), HTTPS, secure coding practices
* Frameworks & Methodology: Agile Scrum methodology for iterative development and testing

These tools and technologies ensure a scalable, secure, and user-friendly solution aligned with modern software engineering practices [7][8].

**References**

*Include any supporting sources, research, or prior works used to frame your proposal (use IEEE reference style ->* [*https://journals.ieeeauthorcenter.ieee.org/wp-content/uploads/sites/7/IEEE\_Reference\_Guide.pdf*](https://journals.ieeeauthorcenter.ieee.org/wp-content/uploads/sites/7/IEEE_Reference_Guide.pdf) *).*

[1] R. Heeks, Information Systems and Public Sector Management in Developing Countries, Routledge, 2018.

[2] K. Scholl, “Local Governance and E-Government Systems,” International Journal of Public Administration, vol. 44, no. 6, pp. 505–516, 2021.

[3] GSMA, “The Mobile Economy Asia Pacific 2022,” GSMA Intelligence, 2022.

[4] T. Janowski, “Digital Government Evolution: From Transformation to Governance,” Government Information Quarterly, vol. 32, no. 3, pp. 221–236, 2015.

[5] Department of Information and Communications Technology (DICT), “Philippine Digital Transformation Strategy 2022,” DICT, 2022.

[6] United Nations, “The 17 Sustainable Development Goals,” UN, 2015. [Online]. Available: https://sdgs.un.org/goals. [Accessed: Aug. 19, 2025].

[7] R. Buyya, C. Vecchiola, and S. Thamarai, Mastering Cloud Computing: Foundations and Applications Programming. McGraw Hill, 2013.

[8] A. Sharma and P. Tim, Full-Stack Web Development with React and Node. Packt Publishing, 2021.

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| **CHECKED BY:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  Course Instructor  (Signature over Printed Name)  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **APPROVED BY:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  Program Director, BSIT  (Signature over Printed Name)  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
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