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Designing A Geographic Information System Website For Tourism In Sukabumi Regency Using The Design Thinking Method

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Abstract
The rapid development of digital technology has transformed the dissemination of tourism information, including weh-based tourim services. However, tourism information in Sukabumi Regency remains fragmented, with limited integration, an unattractive interface, and insufficient digital promotional media. This study aims to design the User Interface (UI) and User Experience (UX) of the Sukabumi Regency Tourism Geographic Information System (GIS) website using the Design Thinking method. The Design Thinking approach was selected because it emphasizes user needs through five stages: empathize, define, ideate, prototype, and test. Data were collected through interviews and observations involving tourists, administrators, and tourism managers to identify user needs and existing problems. The findings were analyzed using a User Journey Map and How Might We (HMW) framework to define design opportunities. Design solutions were then developed through mind maps, user flows, wireframes, and UI fundamentals, followed by the creation of an interactive prototype using Figma. The prototype was evaluated using the System Usability Scale (SUS) with fifteen respondents representing the three user groups. The evaluation produced an average SUS score of 69.8, which falls into Grade B, with a "Good" adjective rating and an "Acceptable" usability range. These findings indicate that the proposed website provides satisfactory usability, is easy to use, and effectively meets user needs.

Keywords: UI/UX, Geographic Information System, Tourism, Design Thinking, System Usability Scale.

INTRODUCTION

The rapid advancement of information and communication technology has significantly transformed the dissemination of tourism information through web-based platforms that provide flexible and accessible services (Astuti et al., 2025). Geographic Information Systems (GIS) have become an effective technology for integrating spatial and non-spatial data to support tourism information management and destination promotion (Melo et al., 2025). Sukabumi Regency, Indonesia, possesses considerable tourism potential, including natural, marine, cultural, and geological attractions, particularly the Ciletuh–Palabuhanratu UNESCO Global Geopark (Tarmizi & Ridha, 2021). However, the current tourism information system still faces several challenges, including fragmented and incomplete information, limited digital promotion, and website interfaces that are less attractive and difficult to navigate, resulting in suboptimal user experiences. Previous studies have mainly focused on the functional development and implementation of web-based GIS for tourism, emphasizing mapping capabilities and spatial data management while paying limited attention to User Interface (UI) and User Experience (UX) aspects (Adek et al., 2023). Consequently, many tourism GIS applications provide adequate functionality but fail to fully satisfy user needs in terms of usability, accessibility, and interaction quality. To address this research gap, a user-centered design approach is required to develop a more intuitive and user-friendly tourism information system. Design Thinking, which consists of the empathize, define, ideate, prototype, and testing stages, offers a systematic methodology for understanding user needs and creating innovative design solutions based on users' experiences (Ansori et al., 2023). Therefore, this study aims to identify users' needs and problems related to the Tourism Geographic Information System of Sukabumi Regency, design a user-centered UI/UX prototype using the Design Thinking approach, and evaluate its usability through the System Usability Scale (SUS). The proposed design is expected to improve the accessibility, usability, and overall user experience of the tourism information system while contributing to the application of

Design Thinking in the development of tourism-based Geographic Information Systems (Iskandar et al., 2023).

RESEARCH METHODS

This study employed a design and development research approach focusing on the design of the User Interface (UI) and User Experience (UX) of the Sukabumi Regency Tourism Geographic Information System (GIS) website using the Design Thinking methodology (Arisa et al., 2023). The research was conducted at the Department of Tourism of Sukabumi Regency from January to June 2026. The Design Thinking framework consists of five sequential stages: empathize, define, ideate, prototype, and testing. During the empathize stage, data were collected through direct observation and semi-structured interviews with tourists, tourism administrators, and tourism destination managers to identify users' needs and problems. The define stage involved the development of User Journey Maps and the How Might We (HMW) approach to formulate design problems . In the ideate stage, brainstorming was conducted to generate design solutions, which were translated into user flows, wireframes, and interface concepts. A high-fidelity interactive prototype was then developed using Figma during the prototype stage (Lantana & Fauziah, 2025). Finally, the prototype was evaluated through usability testing using the System Usability Scale (SUS).

Purposive sampling was employed to select respondents who had experience or potential interaction with the tourism information system. The usability evaluation involved 50 respondents consisting of tourists, tourism administrators, and tourism destination managers. The variables measured in this study included usability, ease of use, learnability, efficiency, and user satisfaction toward the developed prototype. Data were collected through observation, interviews, and questionnaires based on the standard 10-item System Usability Scale (SUS) instrument. The collected data were analyzed descriptively by calculating the average SUS score to determine the overall usability level of the prototype according to the established SUS interpretation criteria (Effendi et al., 2024). The research process as a whole is shown in Figure 1.

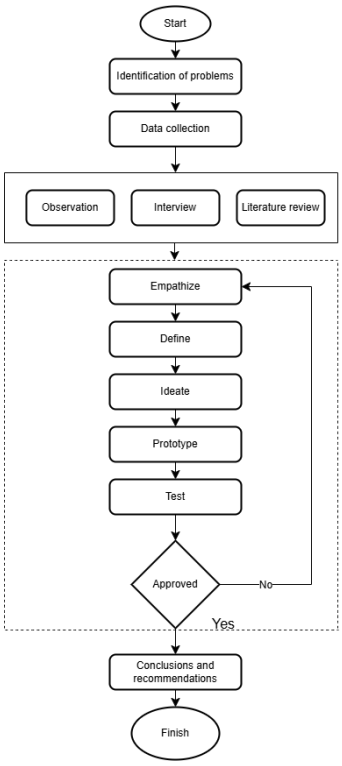

Figure 1. Proposed Research Methods

RESULTS AND DISCUSSION

The Design Thinking methodology was implemented through five sequential stages: empathize, define, ideate, prototype, and testing. Each stage contributed to identifying user requirements, developing design solutions, and evaluating the usability of the proposed Tourism Geographic Information System (GIS) website for Sukabumi Regency.

During the empathize stage, observations and semi-structured interviews were conducted with tourists, tourism administrators, and tourism destination managers to understand their needs and challenges in accessing tourism information. The findings revealed four major issues: incomplete tourism information, fragmented information management across multiple platforms, limited digital promotion, and a website interface that was difficult to navigate. These findings indicate that the existing tourism information system primarily emphasizes information delivery while providing limited support for users interaction and navigation. Table 1 summarizes the main problems identified from interviews and observations. These findings indicate that users require an integrated tourism information system with improved navigation and information accessibility.

Table 1. Summary of User Problems Identified During the Empathize Stage

User Group	Main Problems	Design Requirements
Tourist	Incomplete tourism information	Centralized tourism information
Tourist	Difficult navigation	Simple navigation
administrator	Manual data management	Integrated dashboard
Tourist Manager	Limited digital promotion	Tourism management features

Based on the findings obtained during the empathize stage, the define stage translated users problems into design opportunities using User Journey Maps and the How Might We (HMW) approach. The journey maps revealed several pain points experienced by users throughout their interaction with the existing tourism information platform, including difficulties in locating comprehensive tourism information and inefficient navigation. These findings were synthesized into design requirements emphasizing centralized information management, intuitive navigation, interactive geographic visualization, and simplified content management for administrators.

Table 2. User Journey Map

The ideate stage generated alternative design solutions through brainstorming sessions. The resulting concepts were organized into user flows, wireframes, and interface guidelines to establish a consistent interaction model across the website. The proposed navigation structure was simplified to reduce unnecessary user interactions while maintaining access to essential tourism information such as destination details, facilities, routes, and digital maps. This stage produced the conceptual foundation for the user interface before implementation into an interactive prototype.

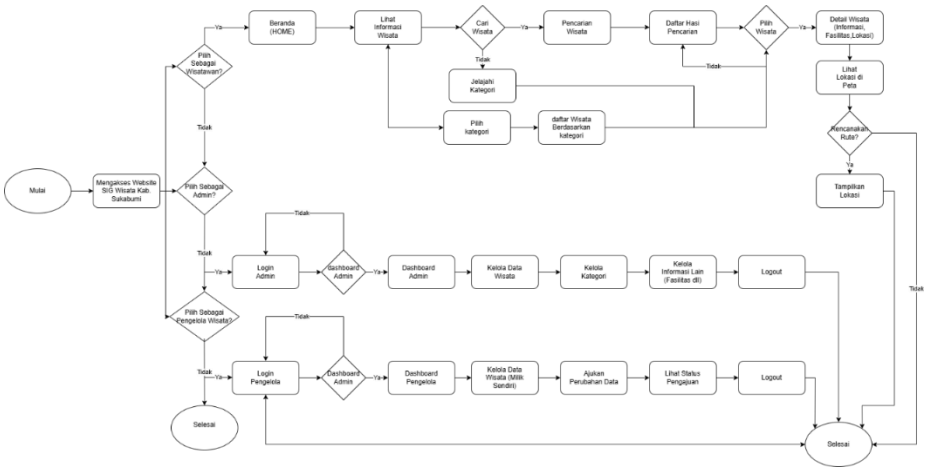

Figure 2. User Flow of the Tourism GIS Website

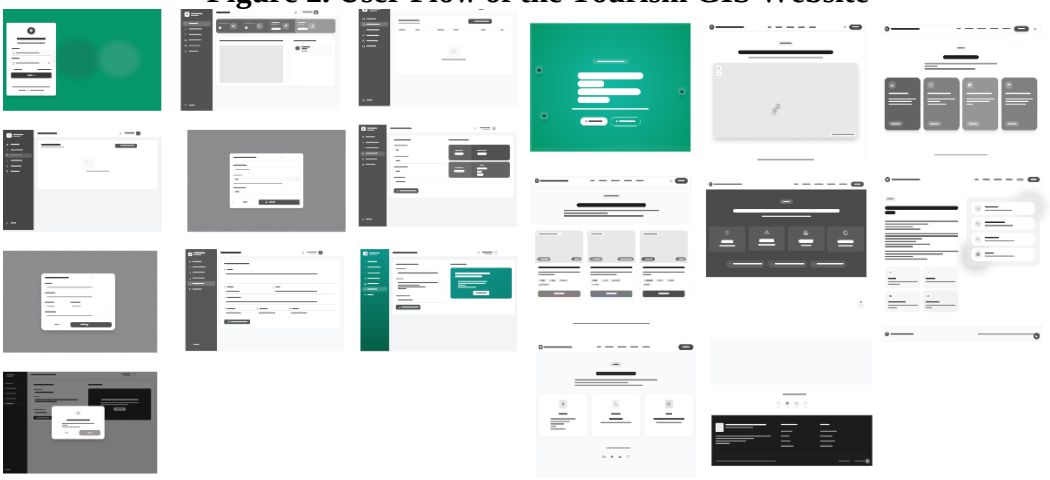

Figure 3. Wireframe low-fidelity from admin access and key features

The proposed interface was implemented during the prototype stage using Figma to create a high-fidelity interactive prototype. The prototype included the main features identified during the previous stages, including the home page, tourism destination information, interactive GIS maps, destination categories, administrator dashboard, and tourism management interface. Visual consistency was achieved through standardized typography, color palettes, icons, and navigation components to improve readability and overall user experience.

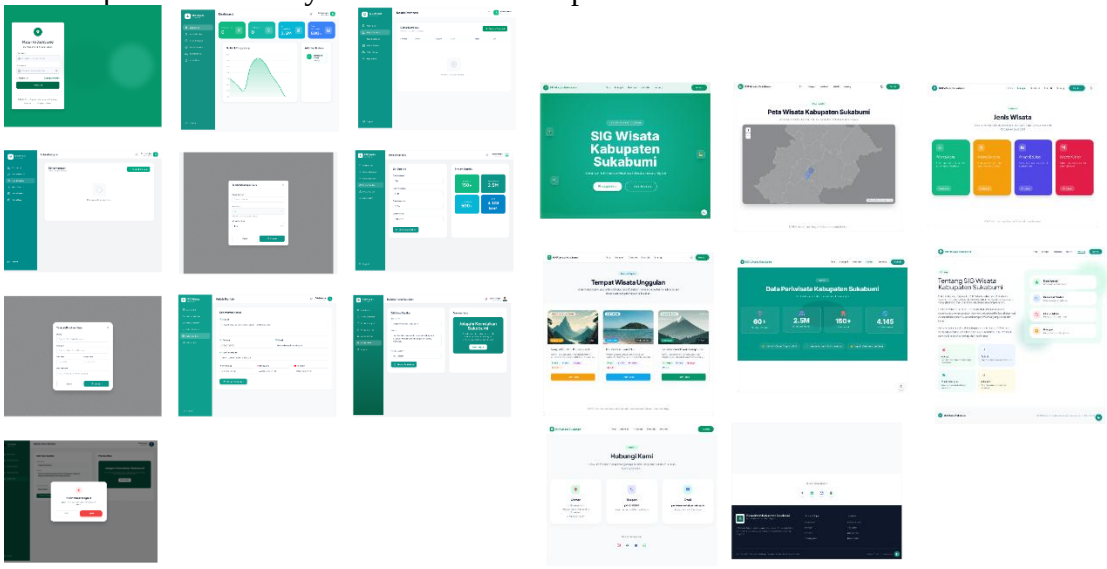

Figure 4. Wireframe hight-fidelity from admin access and key features

The final prototype was evaluated during the testing stage using the System Usability Scale (SUS). Fifty respondents consisting of tourists, tourism administrators, and tourism destination managers participated in the usability evaluation. The prototype obtained an average SUS score of 69.8, indicating that the proposed interface provides an acceptable level of usability. According to the SUS interpretation, this score falls within Grade B, with an adjective rating of "Good" and an "Acceptable" usability level. These findings suggest that users were generally able to understand the interface, navigate the available features, and complete tasks without significant difficulty. The evaluation also confirms that applying the Design Thinking methodology successfully produced a user-centered interface that addresses the primary usability issues identified during the initial research stage.

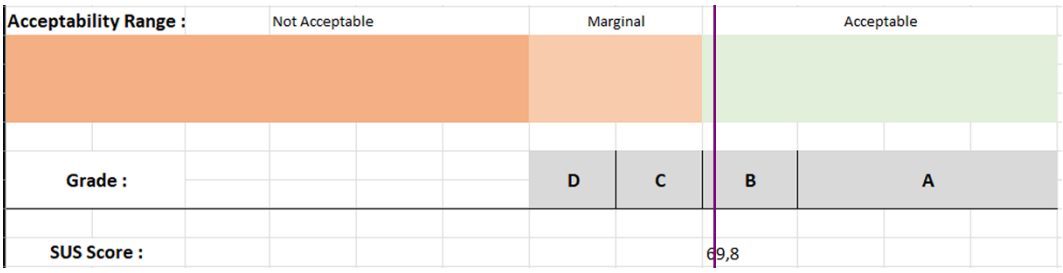

Figure 5. SUS Score Interpretation

Overall, the integration of user-centered analysis, iterative prototyping, and usability evaluation demonstrates that Design Thinking provides an effective framework for designing tourism Geographic Information System interfaces. The resulting prototype not only improves information accessibility and navigation but also enhances the overall user experience for tourists, tourism administrators, and tourism destination managers. Therefore, the proposed design can serve as a practical reference for developing web-based tourism information systems that prioritize usability and user satisfaction.

CONCLUSIONS

This study demonstrates that the Design Thinking methodology provides an effective user-centered approach for designing the User Interface (UI) and User Experience (UX) of a Tourism Geographic Information System (GIS) website for Sukabumi Regency. Through the sequential stages of empathize, define, ideate, prototype, and testing, the research successfully identified users' needs and transformed them into an interactive prototype that offers improved navigation, integrated tourism information, and a more intuitive user experience for tourists, tourism administrators, and tourism destination managers. The usability evaluation confirms that the proposed design is capable of supporting users in accessing tourism information efficiently and conveniently, indicating that the developed interface meets users' expectations and is suitable for implementation as a web-based tourism information system. Therefore, the application of Design Thinking can be considered an appropriate approach for developing user-centered tourism GIS applications and may serve as a reference for future development of similar digital tourism information systems.

REFERENCES

Adek, R. T., Yunizar, Z., & Febriliansyah, M. (2023). Sistem Informasi Geografis Pemetaan Dan Penentuan Lokasi Wisata Alam Strategis Dengan Metode Simple Additive Weighting (Saw). *Positif: Jurnal Sistem Dan Teknologi Informasi*, *9*(1), 49–56.

Ansori, S., Hendradi, P., Nugroho, S., Mayjen Bambang Soegeng, J., Mertoyudan, K., Magelang, K., & Tengah, J. (2023). Penerapan metode design thinking dalam perancangan UI/UX aplikasi mobile SIPROPMAWA. *Journal of Information System Research (JOSH)*, *4*(4), 1072–1081.

Arisa, N. N., Fahri, M., Putera, M. I. A., & Putra, M. G. L. (2023). Perancangan Prototipe UI/UX Website CROWDE Menggunakan Metode Design Thinking. *Teknika*, *12*(1), 18–26.

Astuti, C. C., Yusrinda, R., Al Qur'ani, A., & Untari, R. S. (2025). Pengembangan Website Sebagai Peningkatan Penyebaran Informasi di Era Digital di Raudhatul Athfal (RA) Cahaya Insani Sidoarjo. *JRCE (Journal of Research on Community Engagement)*, *6*(2), 93–101.

Effendi, P. M., Pratama, Y. H. C., & Hafidz, M. Al. (2024). Design Thinking: Pengembangan Prototype Aplikasi Evaluasi Pembelajaran Mata Kuliah Berbasis Web. *No. Hajizah*, 413–420.

Iskandar, Y., Lattu, A., & Permana, M. A. (2023). Perancangan UI/UX Website Ramah Wisatawan di Dinas Pariwisata Kabupaten Sukabumi. *Seminar Nasional Sistem Informasi Dan Manajemen Informatika Universitas Nusa Putra*, *3*, 15–22.

Lantana, D. A., & Fauziah, F. (2025). *Design Thinking dan Inovasi: Strategi Kreatif dalam Pemecahan Masalah*. LPU UNAS.

Melo, R. H., Sabihi, A., Pambudi, M. R., & Rusiyah, R. (2025). Pemetaan Fasilitas Pendukung Objek Wisata di Kabupaten Gorontalo Berbasis Sistem Informasi Geografis. *Geosfera: Jurnal Penelitian Geografi*, *4*(1), 70–76.

Tarmizi, D., & Ridha, M. R. (2021). Sistem Informasi Geografis Berbasis Web Persebaran Fasilitas Pelayanan Kesehatan Di Kota Tembilahan. *Jurnal Perangkat Lunak*, *3*(3), 111–123.