



SECP1513-09 TECHNOLOGY AND INFORMATION SYSTEM

Design Thinking Project Report

Product Name: InsightAI (AI-Powered Business

Insights)

Group Name: Data Innovators

Prepare for: Ts. Dr. Pang Yee Yong

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INTRODUCTION

What is Design Thinking?

Design thinking is a problem-solving methodology that focuses on understanding user needs, redefining challenges, and developing innovative solutions. This process involves five key stages: empathizing to gather insights into user experiences and challenges, such as conducting interviews; defining to clearly articulate the main problem based on gathered insights; ideating to generate diverse and creative solutions through brainstorming; prototyping to create testable models or representations of the solution; and testing to evaluate and refine the prototype based on user feedback.

Project Overview

InsightAI is a platform that leverages Big Data and Artificial Intelligence to provide actionable business insights. By integrating predictive analytics and real-time data processing, it empowers companies to be able to make make informed decisions, optimize operations, and enhance customer satisfaction. This innovation helps connect the gap that exists between raw data and strategic intelligence.

DETAIL STEPS

2.1 Empathize

We conducted interviews with alumni that currently are business managers, data analysts, and IT professionals to understand their pain points with current data analytics tools. Key challenges identified include the overwhelming volume of data, difficulty in extracting actionable insights, and the lack of accessible AI-driven analytics.

2.2 Define

The three major problems identified based on the insights highlight significant challenges faced by businesses in managing and utilizing their data effectively. Firstly, there is considerable difficulty in processing and interpreting large datasets, which overwhelms traditional analytics tools and impedes timely decision-making. Secondly, small and medium enterprises often find advanced AI tools inaccessible due to high costs and technical complexity, leaving them unable to leverage cutting-edge technologies for growth. Lastly, fragmented data insights lead to inefficiencies in decision-making processes, as organizations struggle to derive coherent and actionable strategies from their available data. These issues collectively underscore the need for a comprehensive solution like InsightAI to bridge these gaps.

2.3 Ideate

The team brainstormed several solutions, including enhanced data visualization tools, AI-powered dashboards, and predictive analytics systems. We selected a platform integrating Big Data processing with AI models to provide tailored business insights as the most impactful solution.

2.4 Prototype

The prototype features include a user-friendly dashboard that offers real-time data visualization, predictive analytics designed to identify sales and operational trends, and customizable AI models tailored to meet the specific needs of various industries.

2.5 Test

We tested the prototype with one of the small businesses that the alumni had to see how well it worked. The feedback showed that it was easy to use, helped improve decisions, and saved time when analyzing data.

DETAILED DESCRIPTION

3.1 Problem

Modern businesses generate an immense amount of data daily, estimated at 2.5 quintillion bytes according to IBM (2021). However, much of this data remains underutilized due to limitations in traditional tools, which struggle to process and convert raw information into actionable insights. This inability to extract meaningful data leads to inefficiencies, such as missed opportunities in customer engagement and poor resource allocation. For small and medium enterprises (SMEs), the challenges are even greater. According to a report by McKinsey (2022), only 20% of SMEs in emerging markets have access to advanced AI tools due to prohibitive costs and technical complexity. These barriers prevent SMEs from competing effectively in a data-driven economy. Fragmented data insights further exacerbate the issue, as organizations often find it difficult to align their data with strategic objectives, reducing the overall efficiency and impact of their decision-making processes. This underscores the urgent need for innovative solutions like InsightAI to help businesses, especially SMEs, overcome these challenges and harness the full potential of their data.

3.2 Solution

After thoroughly analyzing the challenges and evaluating potential solutions, we formulated a comprehensive approach to effectively address these pressing issues. InsightAI integrates the transformative capabilities of Big Data and Artificial Intelligence to revolutionize how businesses process and utilize data. The platform enables real-time analysis of vast datasets, ensuring that critical insights are not only accessible but also actionable. Its sophisticated predictive models empower organizations to anticipate market trends, optimize operations, and make strategic decisions with confidence. Furthermore, InsightAI is designed to be inclusive and user-friendly, extending its advanced AI tools to small and medium enterprises that often face barriers due to cost and complexity. By breaking down these barriers, InsightAI democratizes access to cutting-edge technology, allowing businesses of all sizes to compete and thrive in a rapidly evolving, data-driven economy. Through this innovative solution, InsightAI not only simplifies data management but also fosters smarter, more informed decision-making across diverse industries.

3.3 Team Working

To ensure the project ran smoothly, we began by discussing and deciding on roles within the team. Me, Dimas Prabowo was unanimously chosen as the team leader due to his strong organizational and leadership skills, while Zufar focused on research and data integration. Together, we brainstormed and finalized our project idea, focusing on InsightAI as a solution to address challenges in data management and analytics.

During the empathize phase, Zufar conducted interviews with small business owners and IT professionals to gather insights about their struggles with data analytics. These findings guided our approach in defining the core problems and potential solutions. In the ideation phase, both members collaborated to outline features and capabilities for the InsightAI platform, prioritizing accessibility and practicality.

In the prototyping phase, Dimas took charge of designing the user interface, ensuring it was intuitive and visually appealing. Zufar worked on integrating sample datasets to demonstrate the platform's predictive analytics and real-time data processing features. Through consistent collaboration and feedback exchange, we refined the prototype to better align with user needs.

Finally, during the testing phase, we presented the prototype to potential users, including small business owners, who provided valuable feedback. This collaborative effort ensured each member's contributions were effectively aligned, leading to the successful completion of our project.

DESIGN THINKING ASSESSMENT POINTS

The design thinking process began with the empathy phase, where we uncovered user struggles with current analytics tools and identified key pain points through interviews and surveys. This led to the define phase, where we clearly articulated the need for accessible, AI-driven insights to address challenges such as data overload and inefficient decision-making. Next, during the ideation phase, we explored creative solutions by combining Big Data and AI to devise impactful strategies that catered to diverse business needs.

In the prototyping phase, we developed an intuitive analytics platform equipped with real-time data visualization, predictive models, and customization options tailored to industry-specific requirements. Finally, the testing phase involved validating the platform's effectiveness in real-world scenarios by gathering feedback from small business users, which confirmed its usability, practicality, and value in enhancing decision-making processes

DESIGN THINKING EVIDENCE

Empathy Phase

The empathy phase focused on understanding user challenges with current analytics tools. To achieve this, we conducted an in-depth interview with an alumni who owns multiple small businesses. The discussion provided valuable insights into the real-world struggles faced by small business owners, including difficulty extracting actionable insights from data, managing operational inefficiencies, and navigating the high costs of adopting advanced analytics tools. This alumni's experience highlighted the pressing need for solutions that are affordable, user-friendly, and capable of streamlining data interpretation. These findings became the cornerstone of our problem analysis and solution development.

Define Phase

In the define phase, we analyzed the insights collected from the alumni during the empathy phase and categorized the challenges into three main problems: data overload, limited accessibility of advanced analytics tools, and inefficiencies in decision-making processes. Data overload emerged as a significant issue, as the alumni reported struggling to handle the vast amount of information generated by multiple businesses, which made timely analysis difficult. The cost and complexity of AI-powered tools were also major barriers, particularly for small-scale operations with limited resources. Additionally, fragmented and inconsistent data often hindered efficient decision-making, creating operational bottlenecks. By systematically organizing these challenges, we developed a clear and actionable problem statement to focus our efforts on addressing these pressing needs effectively.

Ideate Phase

During the ideate phase, we brainstormed a variety of solutions based on the alumni's feedback and the challenges identified in the define phase. The alumni highlighted the need for tools that are not only affordable but also intuitive and capable of delivering actionable insights. With these insights in mind, our team explored options such as AI-driven dashboards, interactive data visualization tools, and predictive analytics systems. Each concept was carefully evaluated for feasibility, scalability, and relevance to the needs of small business owners. After thorough deliberation, we selected InsightAI, a platform that integrates real-time Big Data processing with AI models. This choice was guided by its potential to streamline decision-making, enhance operational efficiency, and make advanced analytics accessible to smaller businesses. InsightAI was designed with user-centric features to ensure practicality and impact.

Prototype Phase

In the prototyping phase, we translated our conceptual ideas into a functional version of InsightAI. Guided by the feedback from the alumni, we prioritized user-friendly features such as an intuitive dashboard that visualized real-time data effectively. The prototype also included predictive analytics models to help anticipate trends and identify opportunities across various business operations. Our team worked collaboratively, with one member focusing on interface design to ensure simplicity and usability, while another integrated sample datasets to showcase the platform's capabilities. Throughout the process, we maintained regular communication to ensure that the prototype aligned with the needs of small business owners. The resulting prototype served as a tangible representation of our solution, allowing us to test its functionality and gather feedback for further refinement.

Prototype Testing Phase

The testing phase involved presenting the InsightAI prototype to the alumni for real-world evaluation. They tested the platform by applying it to manage operations across their multiple businesses. The feedback was largely positive, with the alumni highlighting the platform's ease of use, its ability to generate actionable insights quickly, and the significant time savings it offered. However, they also suggested adding features to allow greater customization and improving the integration of external data sources. This constructive feedback was instrumental in identifying areas for improvement and fine-tuning the platform. By incorporating these suggestions, we ensured that InsightAI met the practical needs of small business owners and was ready for broader implementation

REFLECTION

1. Dimas Prabowo (A21EC4043)

What is your goal/dream with regard to your course/program?

My goal for this computer network and security course is to contribute to the evolution of safe technology in digital systems and use my skills to design creative solutions that protect data, networks, and applications from potential cyber threats.

How does this design thinking impact on your goal/dream with regard to your program?

During the design thinking process, it improves my capacity to develop creative and efficient solutions, with the goal of guaranteeing that these ideas are able to meet difficulties that are encountered in the actual world. In addition to this, it inspires me to work together with other individuals in order to pinpoint the most effective answer.

What is the action/improvement/plan necessary for you to improve your potential in the industry?

I intend to always seek additional information by continuously studying, to stay up to speed with the most recent developments in cybersecurity, to obtain appropriate certifications, to participate in hands-on projects, and to locate a community that has the same passion in order to improve my potential in the industry.

2. Muhammad Zufar Aljauza (A21EC4051)

What is your goal/dream with regard to your course/program?

My objective for this computer network and security course is to help advance secure technology in digital systems by developing innovative solutions that safeguard data integrity and protect networks and applications from cyber threats..

How does this design thinking impact on your goal/dream with regard to your program?

This design thinking has allowed me to experience firsthand working together in a group and has instilled into me the importance of not only good teamwork but also efficient leadership. This will certainly be useful in my future work to solve many problems in the future.

What is the action/improvement/plan necessary for you to improve your potential in the industry?

I will improve myself by studying and increasing my knowledge on the matter and the trends around the industry so that I may apply it whenever the time comes. I will also improve my practical skills so that I can get used to my application of knowledge.

TASK DISTRIBUTION

| No. | Members | Task |
|-----|----------------------------|---|
| 1. | Dimas Prabowo A21EC4043 | <ul style="list-style-type: none">• Report Writing (Design Thinking Evidence)• Report Writing (Design Thinking Assessment Points)• Report Writing (Design Thinking Assessment Points)• Report Writing (Detailed Description)• Report Writing (Detailed Steps)• Report Writing (Introduction) |
| 2. | Zufar Aljauza A23CS0282 | <ul style="list-style-type: none">• Video Preparation• Prototype Sketch• Prototype Design• Presentation Slides• Preparation |

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