Hackathon Vietnam
Google Developer Student Clubs

LOGi

Your trusted Health Diary

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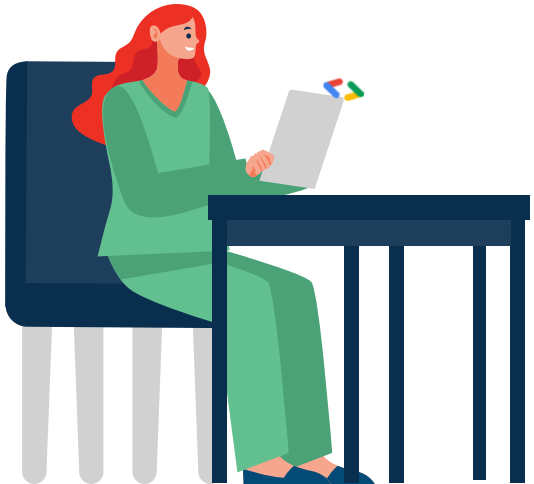
01 **General Information**

Name of project

LOGiT



The name **LOGiT** cleverly encapsulates the primary function of the app, which is to log various bodily expressions and health conditions into a health journal for consultation with physicians.

The fusion of “log” and “it” not only implies the act of recording but also suggests taking charge of one's health.

The transformation of the letter “T” into a medical cross in the logo reinforces the app's commitment to health and wellness.

The red and black color tones evoke a sense of reliability and professionalism.

Brief description

LOGiT is designed to meet the critical demand for improved supervision and administration of patient health, especially for those in need of continued care post-discharge. Our objective is to alleviate the strain on hospital resources caused by extended, and often avoidable, hospital stays that also consume patients' time.

Utilizing the widespread accessibility of smartphone technology, **LOGiT** strives to: enhance communication between patients and healthcare providers, improve medication adherence, and facilitate more accurate diagnosis and treatment.

In doing so, **LOGiT** aspires to revolutionize the patient care model by bringing the oversight of health management into the comfort and convenience of the patient's home, thereby enhancing the quality of care and patient satisfaction.

United Nations' Sustainable Development Goals

Goal 3: Good Health and Well-being

Goal 11: Sustainable Cities and Communities

Goal 3 emphasizes the importance of ensuring healthy lives and promoting well-being for all ages, which directly relates to our objective of improving healthcare access, monitoring, and management for patients.

Goal 11 highlights the significance of creating sustainable and inclusive cities, which resonates with our aim to enhance healthcare delivery and reduce unnecessary hospital visits, contributing to more efficient and sustainable healthcare systems.

Problems Research

Across the globe, including Vietnam, a significant challenge looms large: the critical issue of hospital overcrowding, profoundly impacting both patients and the healthcare workforce.

AT WORLDWIDE

“I wouldn’t like to have to visit at emergency department just now... Indeed, the overcrowding has resulted in lengthy waits for patients; one man related how he had spent four days on a trolley. Minister for Health Stephen Donnelly, Taoiseach Leo Varadkar – everyone agrees it is unacceptable. The inevitable outcome will be worse outcomes, even death, for some patients.” – The Irish Times

IN VIETNAM

“Every day, the Viet Duc hospital hosts around 2,000 inpatients and receives about 2,000 outpatients, with an average of 1-2 accompanying relatives per patient (around 2,000-4,000 people). Alongside 2,000 healthcare staff, approximately 10,000 people gather around the hospital’s 3-hectare premises daily.” – Viet Nam +

“Many large hospitals in HCM City, such as People’s Hospital 115, Gia Định Hospital, Oncology, Ear, Nose and Throat, Eye, and Lê Văn Thịnh, also recorded a sharp increase in patients coming to receive medical examinations and treatment for heart, geriatric, respiratory, infectious, pediatric and oncological diseases. Many infirmaries receive 1,200-10,000 patients per day, an increase of more than 30 per cent compared to before. In addition, the medical examination and treatment areas and many departments of Chợ Rẫy Hospital were also crowded with patients. Many patients said that they had to leave their homes at 3am or 4am to get to the hospital for an examination. ” – Viet Nam News

Problem Statement

1. Inefficient patient management:
Discharged patients:
- Difficulty accurately recalling the course of their illness.
- Misdiagnosis due to incomplete information.

Unnecessary hospital admissions:
- Increased healthcare costs.
- Strains healthcare resources.

2. Treatment adherence:
Patients forgetting or taking incorrect medication dosages:
- Compromised treatment effectiveness.
- Potential health risks.

3. Challenges in accessing healthcare services:
Geographical distance:
- Time-consuming travel.
- Financial burden of transportation.

Difficulty assessing symptom severity:
- Anxiety and confusion.
- Delayed medical attention.

4. Pressure on healthcare professionals:
Work overload:
- Increased risk of errors.
- Compromised service quality.

Challenges in prioritizing critical cases:
- Potential patient harm.

Our Solution

LOGiT is developed to provide physicians and patients with advanced technological solutions for the meticulous management of health statuses.

Actors: doctors, patients

1. Exclusive features for <u>doctors</u>

Live-tracking notification: The application equips doctors with the ability to monitor their patients' health status in real time. Notifications alert them immediately if a patient reports abnormal symptoms, enabling the provision of prompt and precise medical advice and the arrangement of appointments when necessary.

Health documentation archive: The application serves as a secure repository for personal health documents submitted by users, as well as the professional evaluations rendered by physicians throughout the course of monitoring. These records are not only crucial for ongoing diagnostic deliberations but also provide invaluable insights into the progression and analysis of medical conditions.

Our Solution

2. Exclusive features for patients

Reminders: This utility allows patients to create personalized alerts for taking medications, scheduling doctor's visits, or other daily healthcare-related activities.

Self-report abnormal symptoms:
The system permits patients to log any unusual symptoms they experience and track symptom progression for their doctor's review.

Health blog: The application provides the patient with health blogs in accordance to their current health status (the blogs and articles are collected from reliable sources). From the blogs, users can "bookmark" – save the blogs that are meaningful to them for later readings.

3. Features for both doctors and patients

Appointment scheduling: The application streamlines the arrangement of appointments, enabling both doctors and patients to schedule and view upcoming appointments directly within the app.

Communication: An integrated communication system facilitates direct contact between patients and doctors, encompassing symptom reporting and messaging. This feature ensures more efficient communication and the delivery of timely advice or interventions for patients.

03 Technology and Platforms

Flutter

An open-source UI software development kit created by Google. It is used to develop cross-platform applications for Android, iOS, Linux, Mac, Windows, Google Fuchsia, and the web from a single codebase

Firebase Authentication

Provides back-end services, easy-to-use SDKs, and ready-made UI libraries to authenticate users to your app. It supports authentication using passwords, phone numbers, popular federated identity providers like Google, Facebook, Twitter, and more..

Android Studio

The official IDE (Integrated Development Environment) for Android development, which includes the Android SDK and tools for comprehensive app development.

Firebase

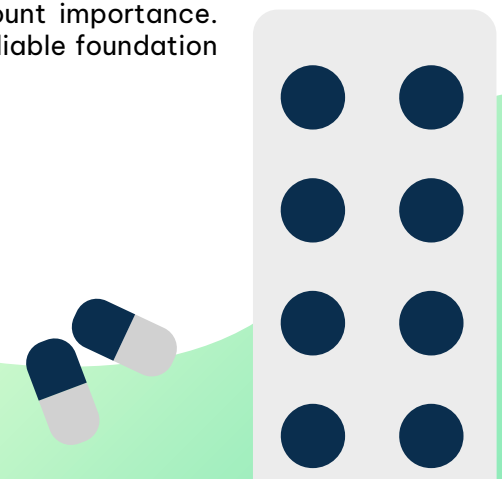
A platform developed by Google for creating mobile and web applications. It offers a suite of cloud services, including a real-time NoSQL database, authentication services, analytics, performance monitoring, and more.

3.1 **Competitive Advantages**

The **Flutter** framework, built on the **Dart** programming language, offers an impressive collection of user interface elements that are straightforward to learn and apply. This accessibility has accelerated our frontend development process, enhancing productivity without compromising the aesthetic and functional quality of our user interfaces. Additionally, the ability to compile Dart source code directly into machine code significantly boosts the performance of our application's frontend components.

Google's Firebase service is utilized for the storage and management of user data within our system. This platform stands out for its capacity to update data in real time and its robust security measures, particularly when integrated with Cloud Platforms. These features are critical in safeguarding user data privacy, ensuring data integrity, and maintaining consistency across the board. For our project, which demands meticulous handling of patient medical data, respecting privacy and enabling real-time symptom tracking are of paramount importance. **Firebase's** capabilities align perfectly with these requirements, providing a reliable foundation for our data management needs.

During our project's testing phase, we employ the **Android Emulator**, a tool that has greatly enhanced our ability to visualize the user experience within the system. By simulating a mobile device environment, the emulator offers us a window into the user's perspective on the application, especially regarding the user interface (UI) and the logic that governs its behavior. This emulated experience is invaluable as it allows us to understand and refine how users will see and interact with our application, ensuring that the UI is both intuitive and effective.



04 Target Users

LOGiT is designed to cater to **patients of all ages** who are proactive about their healthcare needs. This includes individuals who:

1. Seek healthcare services from hospitals or private clinics.
2. Favor a more streamlined approach to communication and easy access to their medical records.
3. Are keen to take an active role in the management of their health conditions.
4. Place a high value on the convenience and efficiency that technology can bring to their healthcare experience.

LOGiT is also tailored for **healthcare institutions**, such as **hospitals** and **private clinics**, seeking to optimize their operations. This group encompasses:

1. Healthcare administrators and managers.
2. Medical professionals, including doctors, nurses, and technicians who require efficient tools to support patient care.
3. Administrative staff responsible for coordinating patient appointments and handling administrative duties.

By focusing on the needs of both **individual patients** and **healthcare organizations**, the **LOGiT** can offer a comprehensive platform for facilitating seamless communication, improving patient outcomes, and boosts the operational effectiveness within the healthcare ecosystem.

Personas

Patient

Nguyễn Thị Hằng:

- **Age**: 45
- **Occupation**: Homemaker
- **Background**: Nguyễn Thị Hằng has been managing a chronic health condition for several years. She often finds it challenging to keep track of her medications and follow-up appointments amidst her busy household responsibilities. Nguyễn Thị Hằng prefers seeking medical care from a nearby private clinic due to its convenience. She values a digital solution that allows her to easily communicate with her doctor, schedule appointments, and receive medication reminders to better manage her health condition while balancing her family commitments.

Healthcare Professionals

Dr. Mai Thị Anh:

- **Age:** 40
- **Occupation**: General Practitioner
- **Background**: Dr. Mai Thị Anh works at a private clinic in the bustling city center. She sees a diverse range of patients every day and understands the importance of effective communication and remote monitoring in ensuring optimal patient care. However, managing her patients' health remotely while balancing her clinic duties poses a significant challenge. Dr. Mai Thị Anh seeks a digital solution that allows her to efficiently communicate with her patients, monitor their health remotely, and streamline administrative tasks such as appointment scheduling and prescription management, ultimately enhancing the quality of care she provides.

Personas

Hospital

Hanoi General Hospital:

- **Type**: Public Hospital
- **Location**: Hanoi, Vietnam
- **Background**: Hanoi General Hospital is one of the largest public hospitals in the city, serving a diverse patient population. The hospital is committed to providing high-quality care and continuously seeks innovative solutions to enhance patient experience and improve operational efficiency. With the LOGiT app, Hanoi General Hospital aims to streamline communication with patients, facilitate remote monitoring of patient health, and optimize appointment scheduling processes. By integrating digital health solutions into its operations, the hospital aims to enhance patient engagement, improve care coordination, and ultimately deliver better outcomes for its patients.

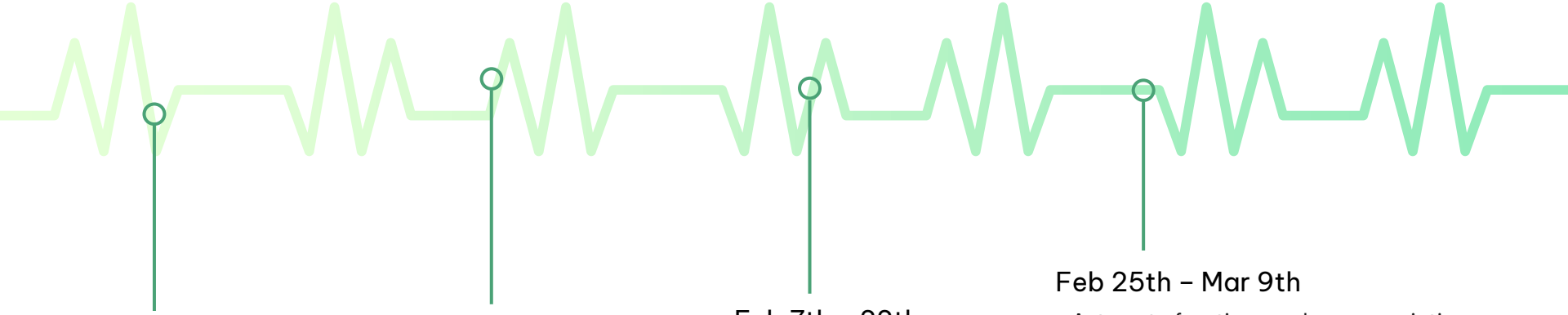
Hospital

Lotus Private Hospital:

- **Type**: Private Hospital
- **Location**: Ho Chi Minh City, Vietnam
- **Background**: Lotus Private Hospital is renowned for its state-of-the-art facilities and personalized healthcare services. As a leading private hospital in the region, Lotus Hospital is committed to providing exceptional patient care while ensuring a seamless and efficient healthcare experience. By adopting digital health solutions such as the LOGiT app, Lotus Hospital aims to enhance patient engagement, improve communication with patients, and optimize clinic workflows. With features like remote monitoring, appointment scheduling, and medication reminders, the hospital aims to empower patients to take control of their health while receiving the highest quality of care and support from their healthcare providers.

Software development plan

2024



Jan 15th

Determine the problem, use cases, potential approaches and benefactors from the solution.

Feb 7th

Initiate the project, implement basic screens, design UI prototype and choose the appropriate technological stacks for the project.

Feb 7th - 22th

Release the MVP (Minimum Viable Product), perform functional testing and verification to align the product with requirements.

Feb 25th – Mar 9th

- Automate functions such as prescription scanning and information extraction.
- Upgrade the back-end system to meet increased demand.
- Partner with organizations, companies, and hospitals to raise capital.
- Analyze user feedback to improve the system and AI.
- Apply advanced AI models for efficiency and user-friendliness.
- Develop the database and system to reach more seniors.

Estimated Budget

Infrastructure

- Development Tools: $500 - $1,500 (one-time purchase or annual fees for Android Studio & other tools).
- Version Control: $0 - $300 per year (for services like GitHub).

Operating

- Firebase Realtime Database & Firestore: $25 - $1,000+ per month (based on usage).
- Firebase Authentication: $0 - $500 per month (based on the number of authentications).
- Push Notifications: Integrated with Firebase, additional costs based on usage.
- Analytics: Integrated with Firebase, potential additional costs for premium services.

Marketing and launch

- Promotional Content Creation: $2,000 - $10,000 (one-time).
- Digital Marketing Campaigns: $2,000 - $20,000 per month.
- Google Play Store: $25 (one-time registration fee).
- Apple App Store: $99 per year.

Peformance Metrics

User Experience Metrics

- Ease of Use: Evaluate the user interface for intuitiveness and ease of navigation.
- User Feedback Collection: Collect and analyze user feedback, including suggestions for improvements and reported issues.

Technical Performance Metrics

- Content Filtering: Discuss mechanisms in place to prevent the generation of harmful or inappropriate content.
- Use Case Restrictions: Note any restrictions on use cases for ethical reasons.

ABOUT US

Nhâm Đức Huy

Võ Minh Khôi

Lê Ngọc Thảo

Trần Thiên Phúc

References

1. Hospitals in HCM City face overcrowding (vietnamnews.vn) (2023)
2. Bệnh viện Việt Đức quá tải, bệnh nhân tới khám tăng kỷ lục | Vietnam+ (VietnamPlus) (2023)
3. Why are hospitals so overcrowded and is there anything that can be done? – The Irish Times