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Software Requirements Engineering

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Chapter 5

Feasibility Study

ศึกษาความเป็นไปได้

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Outline

- Feasibility Analysis
- Technical Feasibility
- Financial Feasibility
- Resource Feasibility
- Schedule Feasibility
- Operational Feasibility

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Objectives

- Assess the overall feasibility of the project to support decision-making.
- Evaluate the technology, software, and hardware readiness, along with technical challenges and solutions.
- Analyze costs, budget, return on investment (ROI), and economic viability.
- Assess the availability of personnel, equipment, and necessary resources.
- Review the project timeline feasibility and strategies to minimize delays.
- Examine the system's practicality, user adoption, and organizational impact.

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Case study

Online Health Consultation System

Online Health Consultation System is a Real-Time Cloud-Based Android application that will provide healthcare consultation services to society.

We aim to help people address their health concerns and guide them by providing the best possible medical advice. Another goal of the application is to bring doctors, healthcare professionals, and patients onto a single platform. Notification-based alerts will keep all parties informed about appointment schedules, prescription updates, and follow-up reminders. Our system will help doctors and healthcare consultants reach more patients efficiently.

The system will have a communication feature through which users can consult with medical professionals via chat, voice, or video calls. Our system will also include a rating system where patients can provide feedback on their consultation experience.

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Case study

Online Health Consultation System

Scope of Project

The Online Health Consultation System is a real-time cloud-based Android application designed to provide virtual healthcare consultation services. The project scope includes the following key aspects:

1. User Roles and Access

- Patients: Can register, book appointments, consult doctors via chat, voice, or video calls, receive prescriptions, and provide ratings/reviews.

- Doctors/Healthcare Professionals: Can manage availability, provide consultations, issue digital prescriptions, and receive patient feedback.

- Administrators: Oversee system functionality, manage user accounts, ensure compliance with data security regulations, and handle technical support.

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Case study

Online Health Consultation System

2. Core Functionalities

- User Registration & Authentication: Secure login for patients and doctors using email/phone verification.
- Appointment Scheduling: Patients can book appointments based on doctor availability.
- Virtual Consultation: Real-time chat, voice, and video call features for doctor-patient interaction.
- Prescription & Health Records: Doctors can provide digital prescriptions and maintain medical history records.
- Notifications & Reminders: Alerts for upcoming appointments, prescription updates, and follow-ups.
- Ratings & Reviews: Patients can rate doctors and provide feedback on consultations.

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Case study

Online Health Consultation System

3. Technology Stack

- Frontend: Android (Kotlin/Flutter) for mobile application.
- Backend: Cloud-based architecture using Firebase, Node.js, or Python (Django/Flask).
- Database: Cloud Firestore, MySQL, or MongoDB for managing user data.
- Security Measures: Data encryption, secure authentication (OAuth, JWT), and compliance with health data privacy regulations.

4. System Constraints and Limitations

- Requires stable internet connectivity for real-time consultation.
- Compliance with healthcare regulations (e.g., HIPAA, PDPA) must be ensured.
- Does not replace emergency medical services—only provides general medical consultation.

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Technical Feasibility

In technical feasibility, we discuss the technologies that will be used in the targeted system in the first part of the book you have studied that the selection of technology and programming language is the most important part of software development.

Following technologies will be used in the development of the system.

☑ Technologies: Android (Kotlin/Flutter), Cloud Backend (Firebase/Node.js), Real-time Chat & Video (WebRTC/Twilio), Secure Authentication (OAuth 2.0).

☑ Integration: Third-party APIs (Payments, AI, Notifications), Wearable device support (Google Fit, Apple Health).

⚠ Challenges: Internet dependency, Data privacy compliance (HIPAA, PDPA), Scalability for high traffic.

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Financial Feasibility

Financial Feasibility refers to the assessment of the financial capacity to develop and operate a system, ensuring the project can be successfully realized. It involves evaluating the various costs associated with development and operations, as well as identifying the potential sources of revenue over the long term.

Cost Category	Estimated Cost
Development Costs	
Mobile App Development	$10,000–$25,000
Backend Infrastructure	$5,000–$15,000
Developer Salaries (Annual)	$50,000–$100,000 per year
Operational Costs	
Cloud Hosting	$100–$500 per month
Third-party Services	$200–$1,000 per month
Marketing & Advertising	$2,000–$5,000 per month

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Resource Feasibility

Resource Feasibility refers to the evaluation of the availability and adequacy of the necessary resources required for the development and operation of a system or project. This includes considering factors such as personnel (developers, system administrators), technology (tools, software, hardware), and facilities (workspace, support systems) to ensure the project can be effectively executed and managed with the resources available.

Resource Category	Details	Availability
Personnel		
Developers	3–5 mobile app developers (Android, backend)	Available, can be hired or contracted
UI/UX Designers	1–2 designers for user interface design	Available, local talent or freelance
System Administrators	1 admin to manage server infrastructure and cloud hosting	Available, can be hired
Healthcare Consultants	Medical professionals for content and guidance	Need to recruit/partner with clinics
Technology		
Development Tools	Android Studio, Firebase, Node.js, WebRTC/Twilio	Readily available
Cloud Services	AWS, Google Cloud, Firebase for hosting and databases	Available, with flexible pricing

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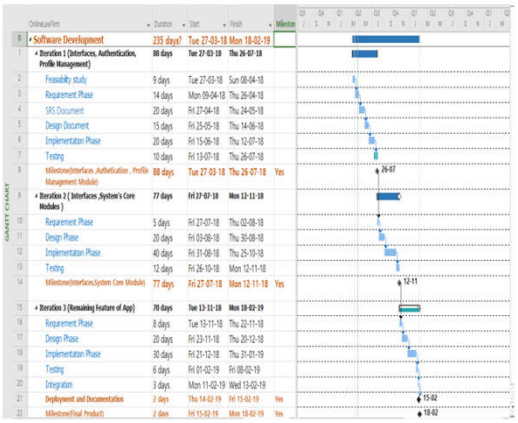
Schedule feasibility

In schedule feasibility, we discussed the time and iteration of the project in this part we make the schedule of the project in which we study the start and end of the project as shown in table.



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Operational Feasibility

Operational Feasibility refers to assessing how well a system can be implemented and operated within an organization. It evaluates whether the system meets operational needs, can be effectively used by end-users, and can be maintained over time. Factors such as ease of use, training requirements, system maintenance, and long-term support are considered to ensure smooth operation and continued value post-deployment.

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Operational Feasibility

Factor	Details	Feasibility
Ease of Use	The app must be simple and user-friendly for both patients and healthcare professionals.	Feasible: Simple design, intuitive navigation.
Training Requirements	Healthcare professionals will need brief training to use video consultations and manage patient data.	Feasible: Short training sessions can be provided.
Support and Maintenance	A support team for troubleshooting and regular software updates.	Feasible: Dedicated support and scheduled updates.
Integration with Existing Processes	The app needs to integrate with existing scheduling systems and EMR for smooth operation.	Feasible: Integration with existing systems is possible.
Scalability	The system should handle more users as the app grows.	Feasible: The system can be scaled as needed.

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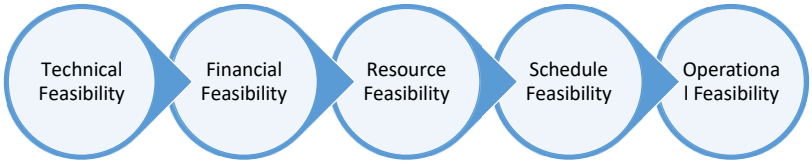
Conclusion

Feasibility Analysis is a process used to evaluate whether a project is achievable by considering key aspects:



This analysis ensures the project is practical, cost-effective, and achievable.

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Thank You

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