

DivvyHealth
Product Requirements Document (PRD)



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1. Executive Summary

DivvyHealth is a Web3-powered, AI-driven marketplace designed to connect healthcare providers, patients, and pharmacies through a secure and transparent platform. By leveraging AI models to match patients with providers and blockchain technology for secure payments using stablecoin, DivvyHealth enables a more streamlined, cost-effective healthcare ecosystem.

This white paper outlines the technical structure, key components, intellectual property, and open-source technologies that drive the platform.

2. Introduction

The healthcare industry is plagued by inefficiencies, high administrative costs, and poor integration of advanced technologies. DivvyHealth aims to solve these challenges by introducing a dynamic platform that not only connects healthcare stakeholders but does so with cutting-edge technology.

The platform provides:

- A **Web3 marketplace** where healthcare providers, patients, and pharmacies interact securely.
- **AI-driven** matching of healthcare services with patient needs.
- **Blockchain-based stablecoin payments** for secure, fast, and transparent transactions.



3. Technical Overview

Web3 Integration

DivvyHealth is built on Web3 technology, leveraging decentralized identity management (using **Ethereum-based wallets** for secure login) and smart contracts for automating the interactions between providers, patients, and pharmacists.

Key Features:

- **Decentralized identity management:** Patients and providers can log in securely using their Web3 wallets.
- **Smart contracts:** Automate payments, appointments, and prescription management in a trustless environment.
- **Blockchain infrastructure:** Powered by the Ethereum network, transactions are transparent and immutable.

AI and Machine Learning Models

DivvyHealth uses AI and machine learning models to power several key functionalities:

- **Persona generation:** AI models create detailed profiles of patients, providers, and pharmacists based on NAICS and MCC codes.
- **Problem matching:** Advanced machine learning algorithms analyze historical data and current trends to identify key healthcare challenges for each user persona.
- **Solution recommendations:** AI models provide personalized healthcare solutions, such as treatment plans or medication recommendations, tailored to each patient's specific needs.

The AI models are trained on large datasets, including patient records (with anonymization), prescription history, and public healthcare data.

Payment Systems and Stablecoin Integration

The DivvyHealth platform integrates with blockchain payment systems to enable seamless, secure transactions using **stablecoin**. Key features include:

- **Stablecoin payments:** Transactions between patients, providers, and pharmacies are facilitated using stablecoins (e.g., USDC or DAI) to ensure price stability and avoid volatility associated with cryptocurrencies like Bitcoin or Ethereum.
- **Smart contracts:** Payments are executed automatically when service conditions are met, reducing the need for intermediaries.



4. System Architecture

The system architecture of DivvyHealth is divided into the following layers:

- **User Interface Layer:** React-based web and mobile interfaces where patients, providers, and pharmacists interact with the platform.
- **Application Layer:** The core application logic, built using **Node.js** and **Express**, handles user authentication, appointment scheduling, and prescription management.
- **AI & ML Layer:** Python-based AI models for generating personas, identifying problems, and suggesting solutions.
- **Blockchain Layer:** **Smart contracts** built on the Ethereum blockchain handle transactions, identity verification, and decentralized data storage.
- **Database Layer:** A combination of **PostgreSQL** for traditional data storage and **IPFS (InterPlanetary File System)** for decentralized file storage (e.g., prescriptions, patient records).

5. Intellectual Property

DivvyHealth's unique value proposition lies in its proprietary AI models, data-processing algorithms, and blockchain integration for secure healthcare transactions. Below are the primary areas covered by intellectual property (IP):

Proprietary AI Algorithms

- **Persona Generation:** The algorithm that generates detailed profiles for patients, providers, and pharmacists based on real-world data, NAICS codes, and MCC codes.
- **Problem and Solution Matching:** The AI model that identifies healthcare problems and matches them with personalized solutions, integrating real-time data from patient interactions, medical research, and public health sources.

Smart Contract Design

- **Automated Healthcare Transactions:** The smart contracts that handle the automation of payments, appointments, and prescription deliveries between patients, doctors, and pharmacists.

Machine Learning Models for Predictive Healthcare

- **Treatment Optimization:** DivvyHealth's proprietary machine learning models predict and optimize treatment plans based on patient history, doctor recommendations, and pharmaceutical trends.

Data Security Protocols

- **Blockchain-Based Recordkeeping:** The decentralized, blockchain-based system for storing patient records and medical prescriptions ensures that data remains immutable and secure.

DivvyHealth has applied for patents in the areas of AI persona generation, healthcare problem identification algorithms, and smart contract automation in healthcare.



6. Open Source Components

While DivvyHealth relies heavily on its proprietary AI models and blockchain smart contracts, the project also uses various open-source components, contributing to transparency and collaboration with the developer community. Below are key open-source components used:

- **Ethereum Blockchain:** An open-source blockchain platform for deploying smart contracts and managing decentralized payments.
- **React: An open-source JavaScript library for building user interfaces.**
- **Node.js:** An open-source, cross-platform runtime environment for server-side applications.
- **OpenAI GPT API:** While the API is proprietary, our interaction models and data-handling mechanisms are based on open standards.
- **IPFS:** For decentralized file storage, ensuring security and accessibility.

We have chosen these open-source technologies to foster collaboration and make the platform scalable, while remaining open to contributions from the developer community.

7. Security and Compliance

DivvyHealth is designed with security and compliance at the forefront, particularly in healthcare, where sensitive data is being handled.

HIPAA Compliance

DivvyHealth is fully compliant with HIPAA regulations, ensuring that all patient data is encrypted and stored securely using a combination of traditional and decentralized storage methods. All communication between users and the platform is encrypted using TLS (Transport Layer Security).

Data Encryption

- **Data at Rest:** All sensitive data is encrypted using **AES-256**.
- **Data in Transit:** All data transfers are encrypted using industry-standard **TLS 1.3**.

Stablecoin and Blockchain Security

All transactions made via stablecoins are executed via audited smart contracts, ensuring that payments are securely processed and logged on the Ethereum blockchain.

8. Scalability and Future Vision

Scalability

DivvyHealth is designed with scalability in mind. The platform's microservices architecture allows it to scale horizontally, with each module—user management, AI modeling, and payment processing—scaling independently. The blockchain and AI systems are designed to handle

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thousands of users concurrently, ensuring that as the platform grows, performance remains stable.

Future Vision

DivvyHealth aims to become the leading marketplace for healthcare services, expanding into new territories and offering additional features, including:

- **Telemedicine Services:** Expand the platform to support real-time consultations via video calls.
- **AI-Powered Diagnostics:** Develop more advanced AI models to provide diagnostic support for physicians and patients.
- **Cross-Border Healthcare:** Utilize stablecoins and blockchain to facilitate seamless healthcare services across borders, reducing the friction of international healthcare payments and data sharing.

9. Conclusion

DivvyHealth represents the next evolution in healthcare services, combining the power of AI and blockchain technology to create a seamless, secure, and transparent ecosystem for healthcare providers, patients, and pharmacists. By leveraging Web3 technology, DivvyHealth is setting a new standard in patient care, security, and efficiency.

We are committed to continuous innovation and believe that DivvyHealth's intellectual property, combined with open-source components, will drive a revolution in the healthcare industry.