**HealthClaimPro – A streamlined claims processing and provider management system**

**Project Overview**

* Project Title: HealthClaimPro – A streamlined claims processing and provider management system
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* Date: 26-03-2025

**Purpose**:

This document defines the business needs and high-level requirements. It’s typically created at the start of the project to understand the objectives.

# 1. Background:

# The healthcare industry is constantly evolving, requiring payers and providers to adapt to new regulations, technological advancements, and patient expectations. The **Healthcare Claims & Provider Management System** aims to streamline claims processing, provider credentialing, and interoperability using FHIR/HL7 standards. This system enhances efficiency, accuracy, and compliance while reducing manual intervention in claims adjudication and provider management.

# 2. Objectives:

The project aims to:

* Automate claims intake, adjudication, and payment workflows to improve efficiency.
* Streamline provider credentialing and contract management for faster approvals.
* Ensure FHIR/HL7-based interoperability for seamless data exchange across healthcare systems.
* Use AI-driven risk assessment to detect fraud and optimize utilization management.
* Improve compliance tracking with Medicaid, Medicare, and industry regulations.
* Enable real-time reporting and analytics for stakeholders to make informed decisions.

# 3. Scope:

## 3.1 In-Scope:

* Automated claims validation, adjudication, and reimbursement.
* Provider credentialing, enrollment, and contract lifecycle management.
* Integration with external healthcare data sources (e.g., FHIR APIs, HL7 messages).
* AI-based fraud detection and risk management for claims.
* Compliance tracking for Medicaid/Medicare regulations.

## 3.2 Out-of-Scope:

* Post-claims dispute resolution beyond automated workflows.
* Manual claims processing outside the system’s automation scope.

# 4. Documentation steps:

## 4.1 Stakeholders’ requirement gathering

### 4.1.1 Internal Stakeholders:

* Claims Analysts: Require automation in claims adjudication, fraud detection, and compliance tracking.
* Provider Network Managers: Need a streamlined provider credentialing and contract management system.
* IT Teams: Require system integration with external data sources (FHIR, HL7, Medicaid, Medicare).
* Risk & Compliance Officers: Need real-time compliance tracking, fraud detection, and regulatory reporting.
* Business Analysts: Require dashboards and reporting tools to analyze claim trends and provider performance.

### 4.1.2 External Stakeholders:

* Healthcare Providers: Need a seamless platform for credentialing, claims submission, and reimbursement.
* Payers (Insurance Companies): Require efficient claims processing, risk assessment, and utilization management.
* Regulatory Bodies (Medicaid, Medicare, HIPAA Compliance Teams): Need real-time tracking and auditing tools.
* Patients (Members/Beneficiaries): Expect fast claims processing and easy access to provider networks

### 4.1.3 Business Goals

* Efficiency: Automate claims processing and provider credentialing to reduce manual intervention.
* Accuracy: Leverage AI-driven risk assessment to minimize errors in claims adjudication.
* Interoperability: Enhance data exchange capabilities through FHIR/HL7 standards.
* Compliance: Ensure adherence to HIPAA, Medicaid, and Medicare regulations.
* Data-Driven Decision-Making: Implement analytics-driven insights for better utilization management and pricing

### 4.1.4 High-Level Requirements

* **Claims Processing Automation**: Streamline claims intake, validation, and adjudication.
* **Provider Management**: Enable efficient credentialing, contract lifecycle management, and performance tracking.
* **Interoperability**: Ensure seamless data sharing through FHIR/HL7 compliance.
* **Utilization Management**: Implement AI-powered risk assessment for cost efficiency and fraud detection.
* **Compliance & Security**: Maintain regulatory compliance with HIPAA, GDPR, and state-specific healthcare laws.
* **Analytics & Reporting**: Provide dashboards with key insights on claim trends, risk scores, and utilization metrics.

## 4.2 Functional Requirement Document (FRD)

### 4.2.1 Purpose:

This document outlines the functional and non-functional requirements for the Healthcare Claims and Provider Management System. The objective is to streamline claims processing, provider management, and interoperability using FHIR and HL7 standards.

### 4.2.2 Scope:

The system will support payer core functionalities, including claims management, membership handling, and provider management. Additionally, it will integrate Medicaid and pharmacy benefit management (PBM) capabilities while ensuring compliance with Agile/Safe-Agile methodologies.

### 4.2.3 System Overview:

The solution will provide **automated claims processing, real-time eligibility verification, provider network management, and fraud detection using AI-based analytics**. The platform will be cloud-enabled, ensuring scalability and security.

### 4.2.4 Functional Requirements:

* Automated **claims adjudication** and processing
* **Provider enrollment and credentialing** workflows
* **Utilization management and pricing compliance**
* **FHIR & HL7-based interoperability** with EHRs and external systems
* **Member eligibility verification and benefits determination**
* **Appeals and grievances tracking**

### 4.2.5 Non-Functional Requirements:

#### 4.2.5.1 Performance:

* The system should process **100,000 claims per hour** with an average response time of **under 2 seconds**.

#### 4.2.5.2 Scalability:

* The platform should support **multi-tenant architecture** and handle **growing member data** efficiently.

#### 4.2.5.3 Reliability and Availability:

* **99.99% uptime** with failover mechanisms for high availability.

### 4.2.6 Assumptions:

* All **payer organizations and providers** will be onboarded in phases.
* Regulatory compliance with **HIPAA, CMS, and HITECH Act** will be mandatory.

### 4.2.7 Constraints:

* Integration with **legacy systems** may require additional development.
* Compliance updates may **affect implementation timelines**.

### 4.2.8 User Acceptance Testing (UAT):

* UAT will be conducted in **two phases**:
* **Internal Testing** with Business Analysts and Developers
* **End-User Testing** with payers and healthcare providers

### 4.2.9 Conclusion:

The system will enhance **operational efficiency, reduce claim denials, and improve provider network management**, ensuring smooth interoperability within the healthcare ecosystem.

## 4.3 Test Cases:

### 4.3.1 Test Case ID: TC\_001

**Scenario:** Verify claims submission with valid data

**Expected Outcome:** Claim is successfully submitted and processed.

### 4.3.2 Test Case ID: TC\_002

**Scenario:** Validate member eligibility

**Expected Outcome:** System displays accurate eligibility details.

### 4.3.3 Test Case ID: TC\_003

**Scenario:** Check provider credentialing process

**Expected Outcome:** Provider credentials are verified.

### 4.3.4 Test Case ID: TC\_004

**Scenario:** Test HL7 interoperability with EHR systems

**Expected Outcome:** Data exchange is successful.

### 4.3.5 Test Case ID: TC\_005

**Scenario:** Check scalability under high load

**Expected Outcome:** No performance degradation.

## 4.4 User Stories:

* **US\_001**: As a **claim’s processor**, I want to **automate adjudication** to reduce processing time.
* **US\_002**: As a **payer**, I need **real-time provider network updates** to maintain accuracy.
* **US\_003**: As a **member**, I want to **view my claim status** through an online portal.

## 4.5 Use Cases:

* **UC\_001**: Claim Submission & Processing
* **UC\_002**: Provider Credentialing & Enrolment
* **UC\_003**: Member Eligibility Verification
* **UC\_004**: Appeals & Grievances Handling
* **UC\_005**: Data Exchange via HL7/FHIR

## 4.6 Release notes

### Development Phase:

The public developer is responsible for writing and developing the code according to the project requirements.

### User Acceptance Testing (UAT):

Once development is complete, the code is migrated to the UAT environment, where rigorous testing is conducted to ensure functionality, performance, and compliance with business requirements.

### Production Deployment:

Upon successful UAT approval, the code is released into the production environment, making it accessible for end users and customers.