Enriched Patient Care Management Platform

Enhancing Patient Care through Data-Driven and Agentic-AI Solutions

Objective

Clinical Staff was unhappy with the amount of time and number of steps it took in Athena EMR to initiate and complete a palliative care consult. The EMR workflows are geared towards general patient consult, whereas palliative care consultations primarily focus on mental well-being and improving quality of life for patients and their families. The Product Team had explored replacing Athena with an EMR solution that is either geared towards palliative care consultations or offers customization of patient consult workflows. After exploring a few options, the Product team settled on Elation EMR.

Meanwhile, the business development team was interested in exploring data collected from ADT feeds with the goal of identifying potential new patients.

The Engineering team was tasked with:

- While consulting with Clinical Staff, leading the migration from Athena to Elation.
- While consulting with Clinical Staff and the Product Management team, building custom patient encounter workflows with an explicit focus on palliative care consultation.
- While consulting with the Product Management and Business Development teams, enabling teams to uncover the hidden value in billions of rows of HL7 data that have been collected through various ADT feeds.

Key Requirements

Clinical Staff:

- Custom Workflow: For a given patient, provider begins the consult by looking at PHQ score trending based on data collected from PHQ9/12, following then by palliative care consult workflow
- Video Consult from within the Workflow without needing to download any vendor specific software application

Business Development and Product Management Team:

- Access to aggregate data to build reports
  - List of new patients based on a set of CPT/HCPCS/ICD codes
- Patient Outcomes and satisfaction metrics
- Administrative Data and or claims information

Challenges

- Elation did not offer fully customizable workflows - it was an offering in development with an year+ delivery date
- Elation API did not provide direct access to consult notes and PHQ forms and data
- Elation required a separate mobile only app for video
- Aggregated data offered very little value, ADT Feed data was not curated.
  - Aggregated data lacked business value
- Data from ADT feeds was being captured in RAW format and stored as a binary blob in database, there was no official catalog of data, nor had anyone ever parsed through it.
- No product analytics being collected (GTM/Mixpanel etc. was not used at all)
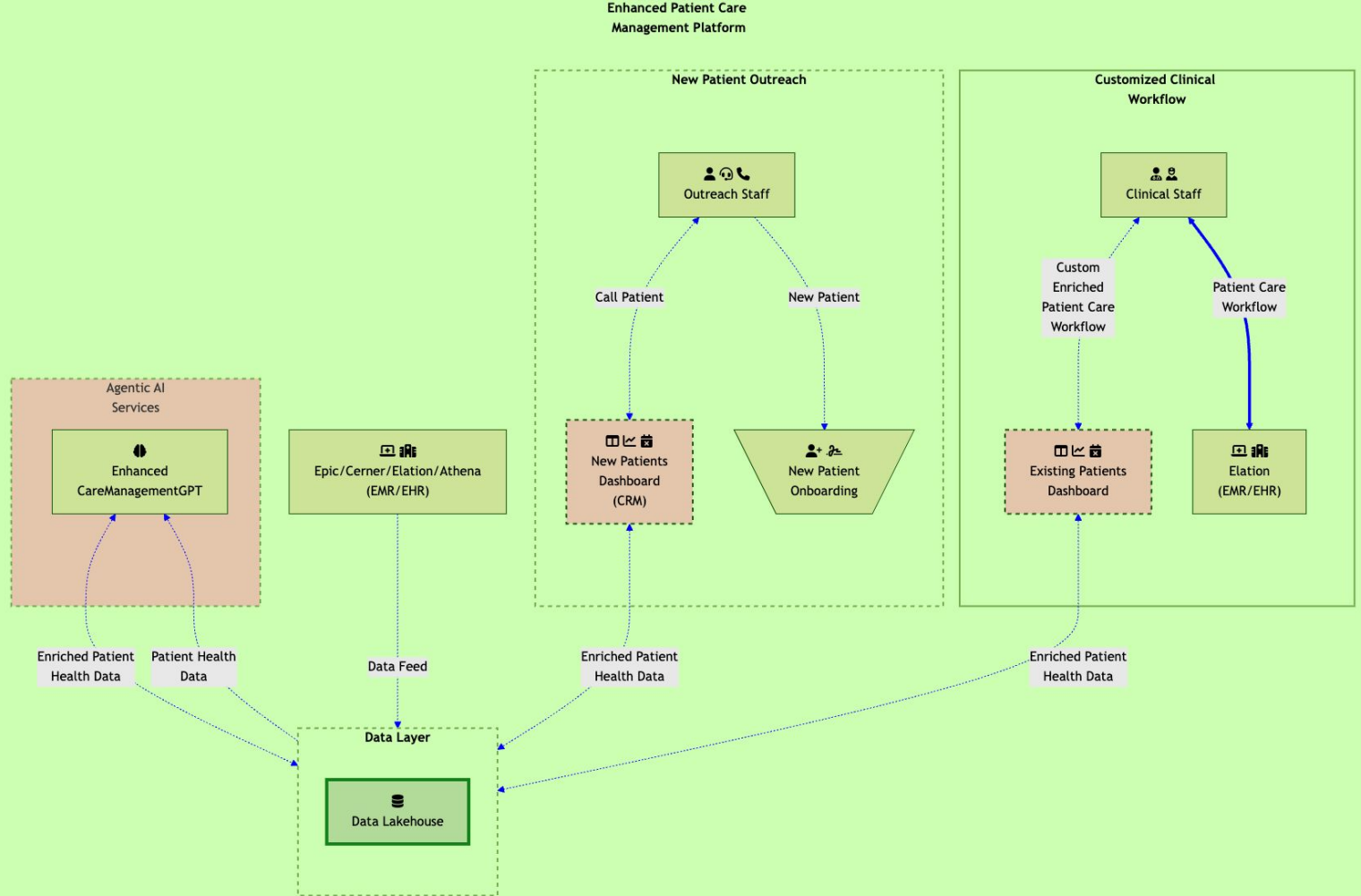
Solution

For Clinical Staff:

- A Chrome Extension - Dubbed Enriched Patient Care - that offered a palliative care specific customized consult workflow
  - Which started with PHQ trend summary, a PHQ questionnaire, followed then by the rest.
- Offered Zoom Video Capabilities using the WebAPI and Zoom's WebSDK
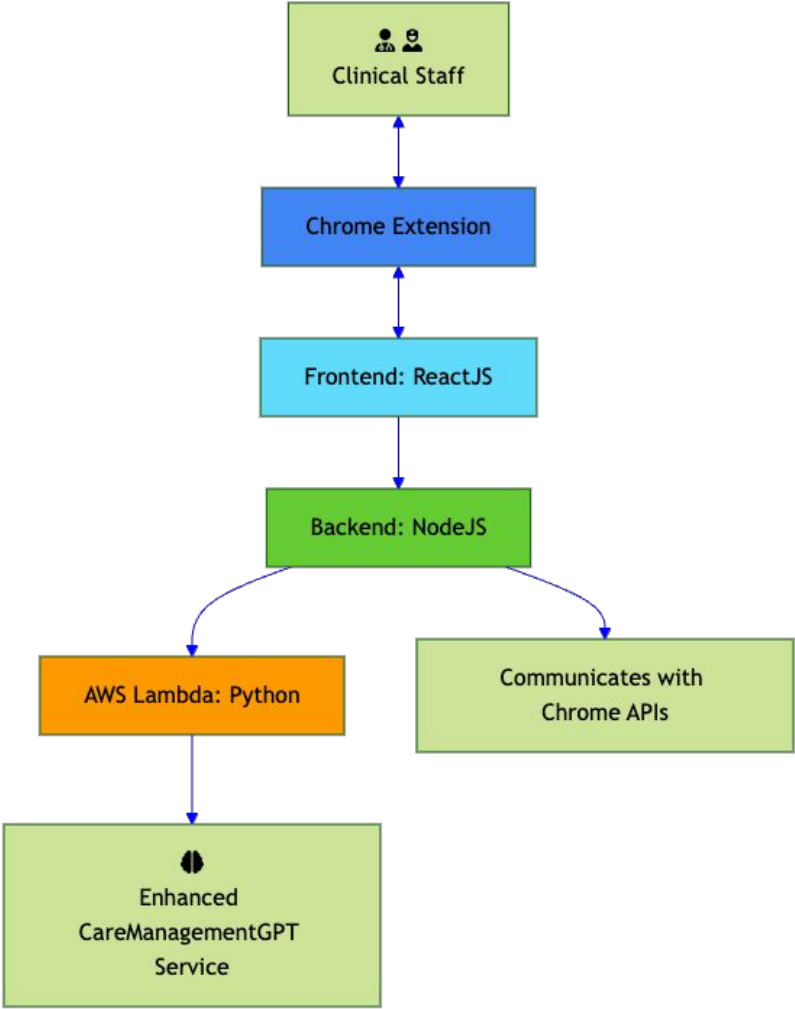- Used LLMs to build PHQ Trending summary

For Business Development and Product Management Team:

- Build an ETL that parsed through most recent till 1 year in the past from the ADT feeds and curated/filtered into a Data Lakehouse
- This allowed Business Development and Product management team to run queries and generate list of patients, contact information, and insurance information, based on a set of CPT/HCPCS/ICD code

# Enriched Patient Care Experience using Data and Agentic-AI

Enhanced Patient Care
Management Platform

New Patient Outreach

Outreach Staff

Call Patient

New Patient

Customized Clinical
Workflow

Clinical Staff

Custom
Enriched
Patient Care
Workflow

Patient Care
Workflow

Agentic AI
Services

Enhanced
CareManagementGPT

Epic/Cerner/Elation/Athena
(EMR/EHR)

New Patients
Dashboard
(CRM)

New Patient
Onboarding

Existing Patients
Dashboard

Elation
(EMR/EHR)

Enriched Patient
Health Data

Patient Health
Data

Data Feed

Enriched Patient
Health Data

Enriched Patient
Health Data

Data Layer

Data Lakehouse

Chrome Extension

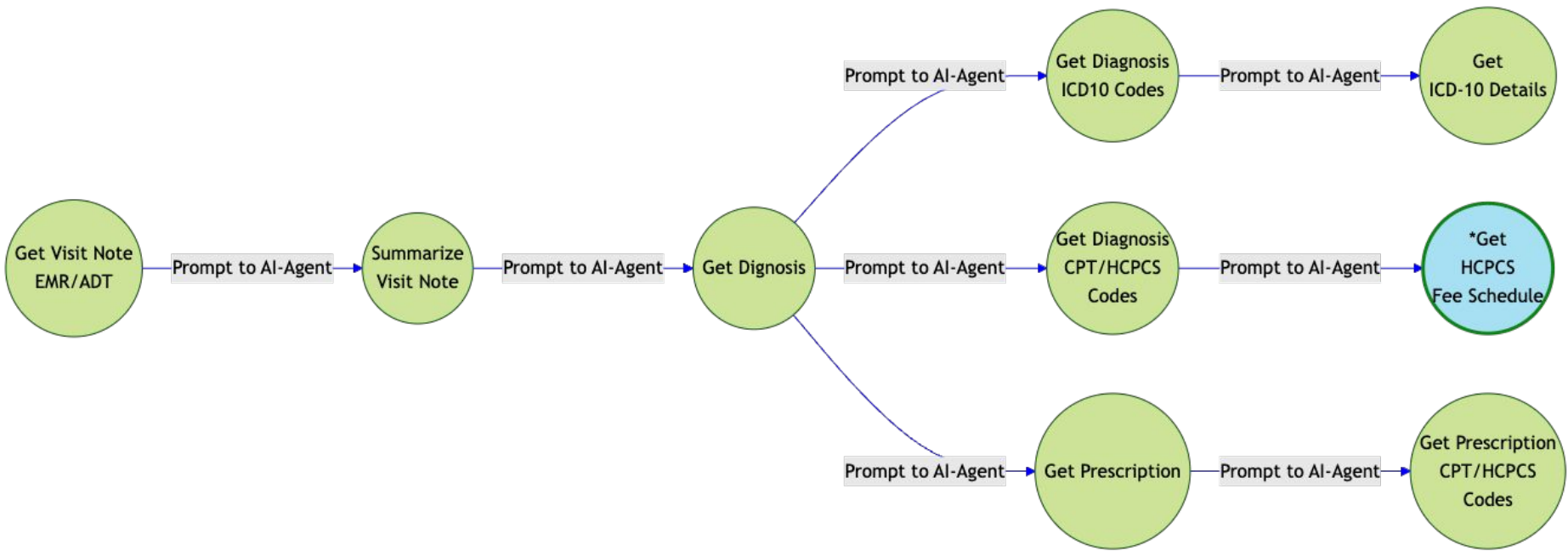# ADT Feeds → ETL → Data Lakehouse (S3, RedisJSON, PostgreSQL)
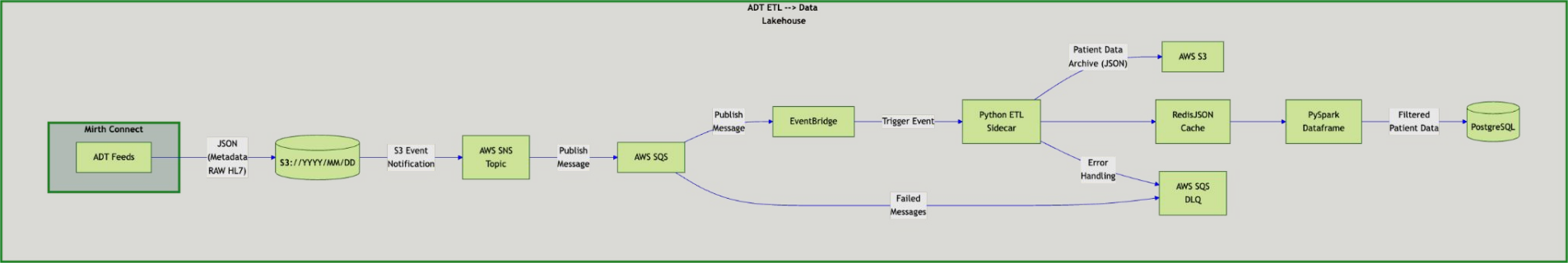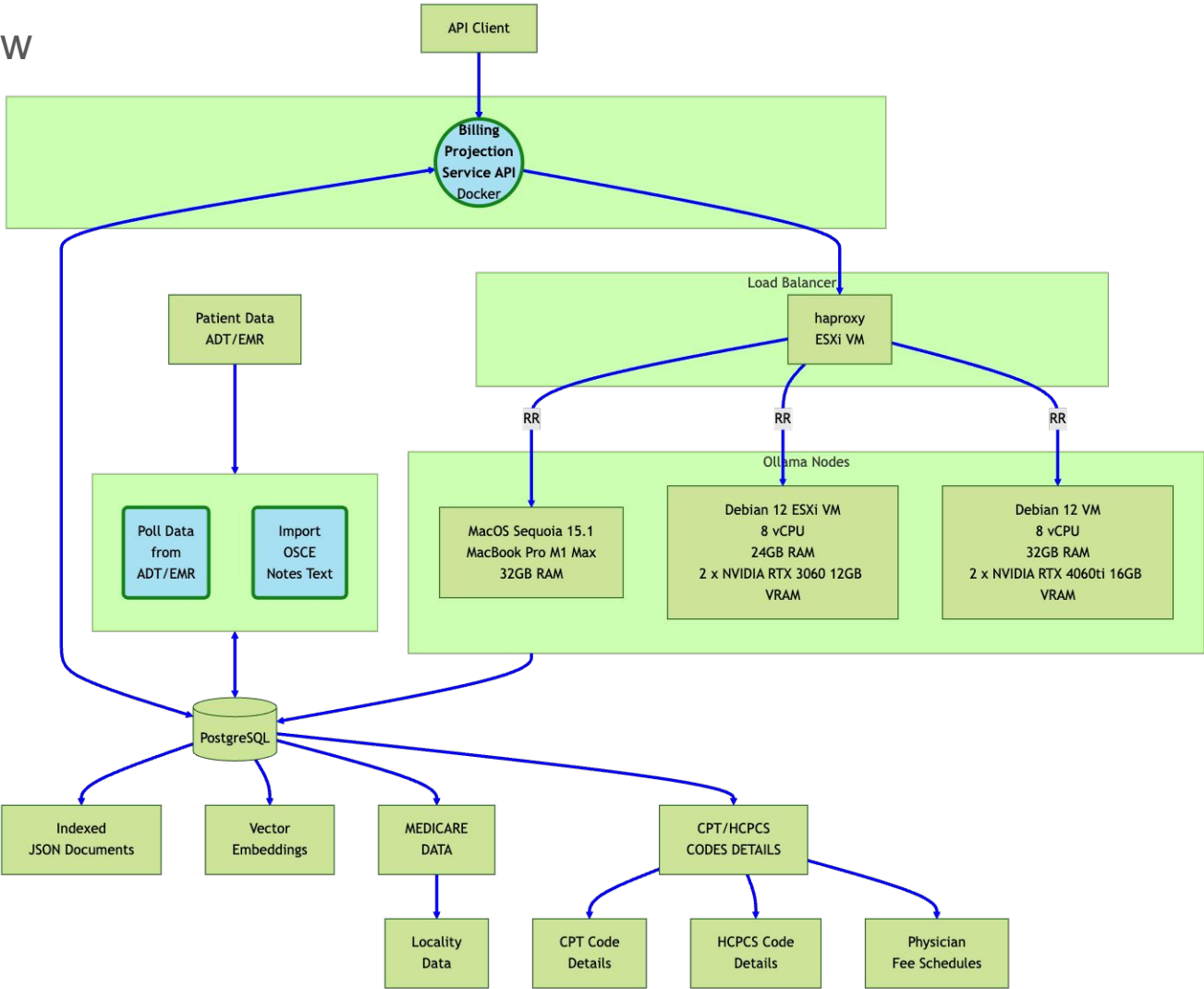
Enriched Patient Care Data
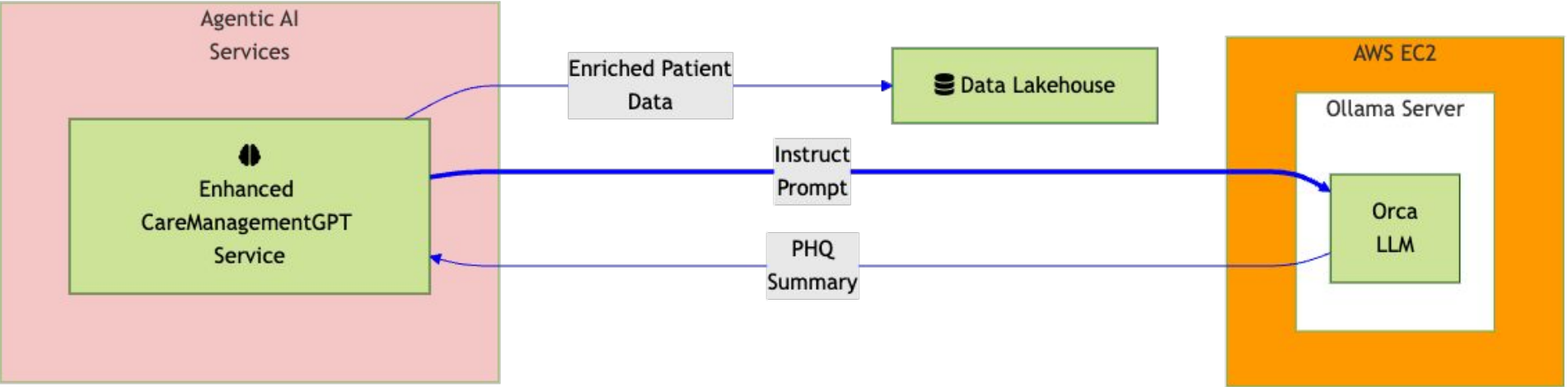
Agentic-AI Platform as a Service as a Private Cloud

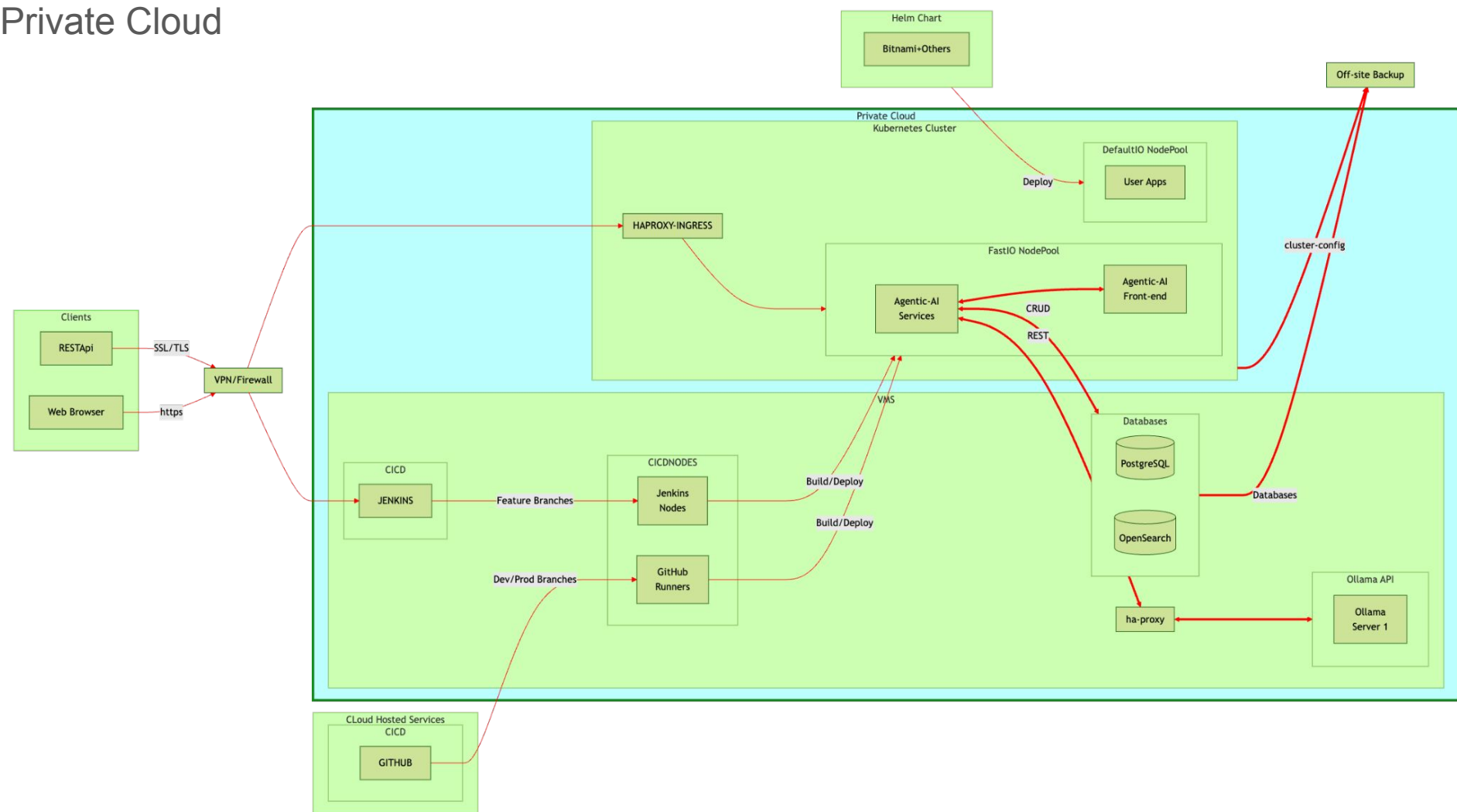Build and develop cost-effective Agentic-AI Solutions + Data Privacy

Medical Billing Projection Service (Agentic-AI end-to-end workflow)
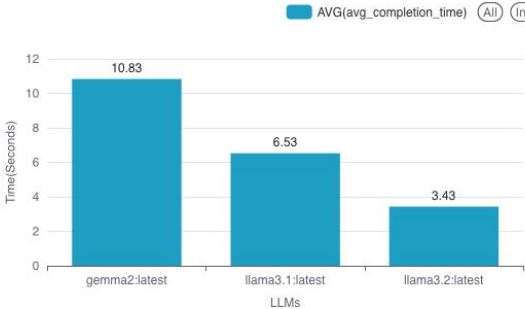
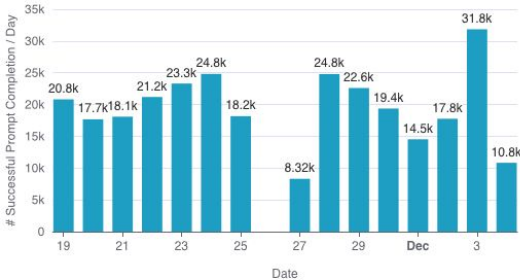# Agentic AI Platform Overview
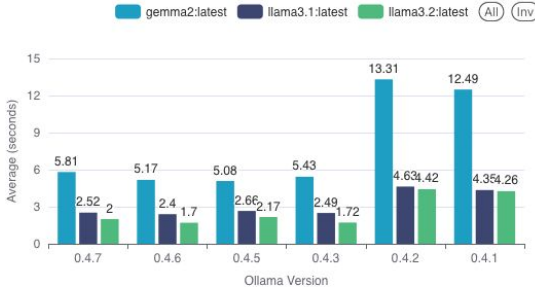
Private Cloud

Platform Performance Dashboard

Platform Performance Dashboard ⭐ Published   👤 Superset Admin ✏️ 18 seconds ago   EDIT DASHBOARD ···

AVG Successful Prompt Completion Time Per Model

AVG(avg_completion_time) (All) (Inv)

- gemma2:latest — 10.83
- llama3.1:latest — 6.53
- llama3.2:latest — 3.43

Time(Seconds) / LLMs

Successful Prompt Completions Per Day

Successful Prompt Completion / Day

20.8k, 17.7k, 18.1k, 21.2k, 23.3k, 24.8k, 18.2k, 8.32k, 24.8k, 22.6k, 19.4k, 14.5k, 17.8k, 31.8k, 10.8k

Date (19, 21, 23, 25, 27, 29, Dec, 3)

Average Successful Prompt Completion time per model per Ollama Release

gemma2:latest   llama3.1:latest   llama3.2:latest (All) (Inv)

Average (seconds) / Ollama Version

- 0.4.7 — 5.81, 2.52, 2
- 0.4.6 — 5.17, 2.4, 1.7
- 0.4.5 — 5.08, 2.66, 2.17
- 0.4.3 — 5.43, 2.49, 1.72
- 0.4.2 — 13.31, 4.63, 4.42
- 0.4.1 — 12.49, 4.35, 4.26

Average Tokens Per Second Per Model

AVG(avg_tokens_per_second) (All) (Inv)

- gemma2:latest — 28.52
- llama3.1:latest — 34.81
- llama3.2:latest — 51.9

Tokens Per Second / LLMs
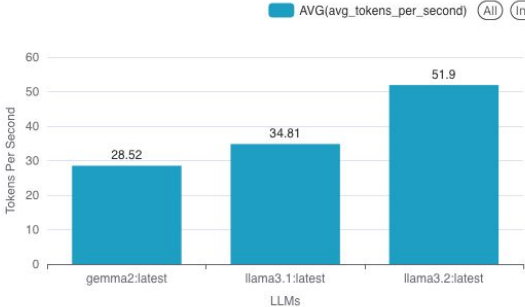
Total Number of Tokens Generated Per Day

Total Tokens Generated

3.3M, 2.71M, 2.74M, 3.06M, 3.23M, 3.4M, 2.55M, 1.14M, 3.3M, 3.05M, 2.63M, 1.96M, 2.54M, 4.68M, 1.6M

Date (19, 21, 23, 25, 27, 29, Dec, 3)