



# Beta Presentation

## Customer Intent Engine and Training Tool

### The Capstone Experience

Team HAP

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*From Students...  
...to Professionals*

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# Project Overview

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- Enhance HAP customer service skills training.
- Build a web application.
- Provide insights from past call transcripts via an interactive dashboard and graphs.
- Identify customer intents from call transcripts.
- Provide a Chatbot that answers customer service concerns.

# Team Member's Technical Tasks

## Technical Tasks Assigned

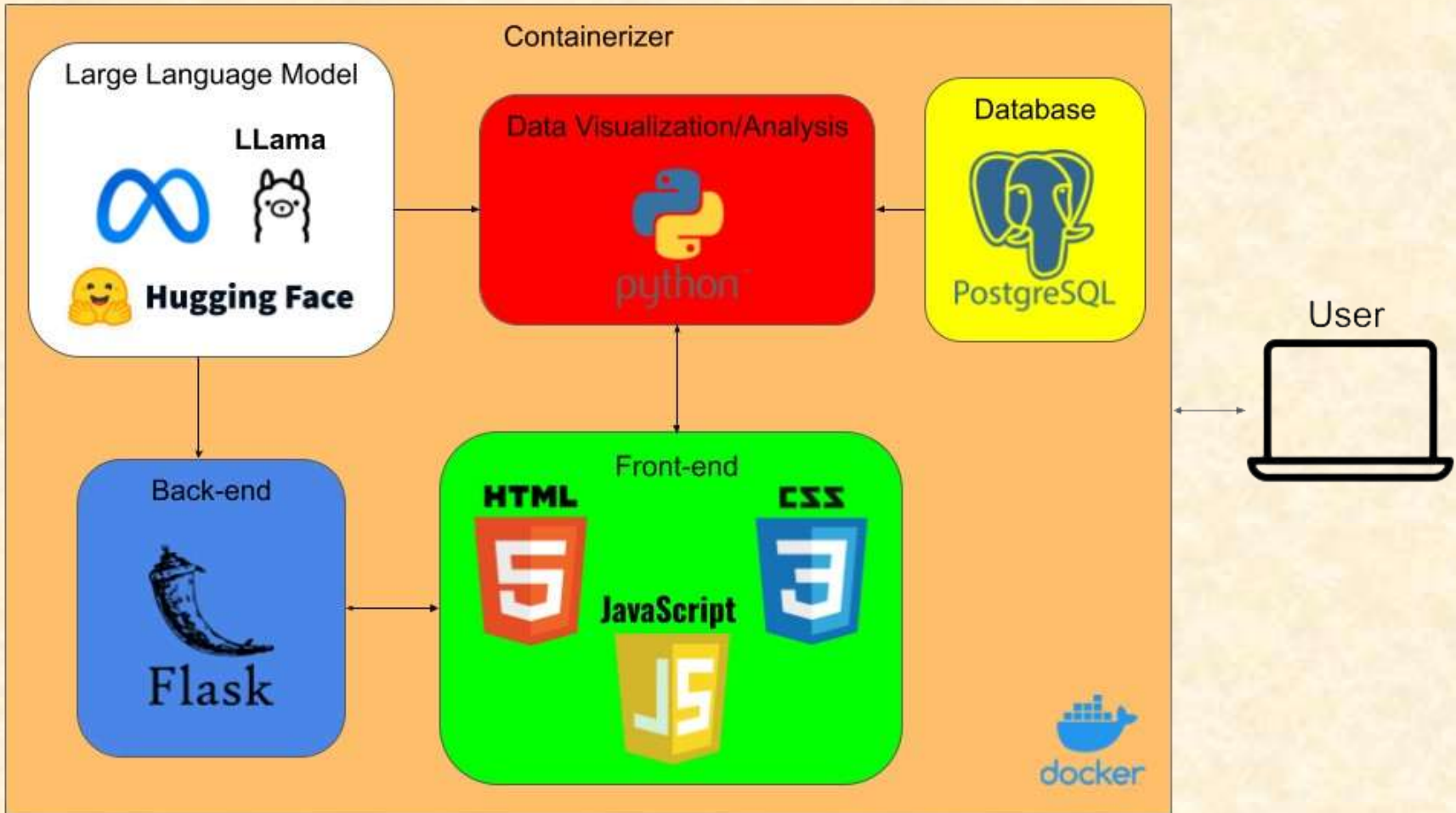
- Abdulrahman Alanazi
  - Set up Word Cloud figures , Word Count bar graphs, Word Context tables, and Location Map.
- Praneetha Ankisettipalli
  - Set up Intent Counters bar graphs, Call Transfer bar graphs, and the Quiz Page.
- Avereys Davis
  - Optimize and improve multiple LLMs for the customer service chatbot.
- Bao Hoang
  - Use LLMs to analyze transcripts, including intent generation, common customer questions, common reasons for each intent, and generate Quiz questions.
  - Set up Sentiment Analysis pie charts, Location tables and figures, LLMs Analysis Page, and the chatbot front end.
- Saarthak Sharma
  - Set up the codebase for the entire project, including the Docker file, Flask, HTML, CSS, PostgreSQL, and JavaScript.
  - Set up the Login page, Frequency of Calls over the Day line graphs, and Transcript Duration histogram.
  - Scrape data from the HAP website for chatbot training.
- Karoline Yashin
  - Set up Frequency of Calls over the Year line graphs, Speaker Duration box-and-whisker plots.
  - Generate PDF summarizing all graphs for specific intents.

## Technical Tasks Completed

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# System Architecture



# Home Page



The screenshot displays the home page of the HAP Customer Intent Engine/Training Tool. The page features an orange header with the 'hap' logo and a navigation bar with links to Home, Intents Counter, Volume of Calls, Word Cloud, Location, Duration, LLM Analysis, Sentiment Analysis, and Calls Diversion. A central white box contains a 'Welcome to HAP!' message, a description of the tool's purpose, and a link to the project sponsor's website. Below this, eight icons represent different analytics: Intents Counter, Volume of Calls, Word Cloud, Location, Duration, LLM Analysis, Sentiment Analysis, and Calls Diversion. At the bottom, there are buttons for 'Generate PDF' and 'Take Quiz'. A chatbot window on the right side shows a conversation about a denied claim.

**hap** Customer Intent Engine/Training Tool

Home Intents Counter Volume of Calls Word Cloud Location Duration LLM Analysis Sentiment Analysis Calls Diversion

## Welcome to HAP!

Our tool is designed to help businesses improve their customer service and increase customer satisfaction. We provide businesses with valuable insights into customer behavior and preferences, helping them make informed decisions and improve their customer service.

Get started with HAP today and take your customer service to the next level!

Check out the project sponsor's website at [HAP](#)

**Intents Counter**  
**Volume of Calls**  
**Word Cloud**  
**Location**  
**Duration**  
**LLM Analysis**  
**Sentiment Analysis**  
**Calls Diversion**

Or, download all information by intent [Generate PDF](#)

Take our quiz to test your knowledge! [Take Quiz](#)

**Chatbot**  
Hi there, how can I assist you today?

How can I tell my customer that his claim has been denied?

Okay, so you need to inform a customer that their claim has been denied. That can be tricky, but here's how you can approach it. First, it's important to be direct and clear, but also empathetic. Start by acknowledging their claim and then state the denial plainly. For example, you could say something like, 'I've reviewed your claim, and unfortunately, it has been denied.' Then, immediately explain the reason for the denial.

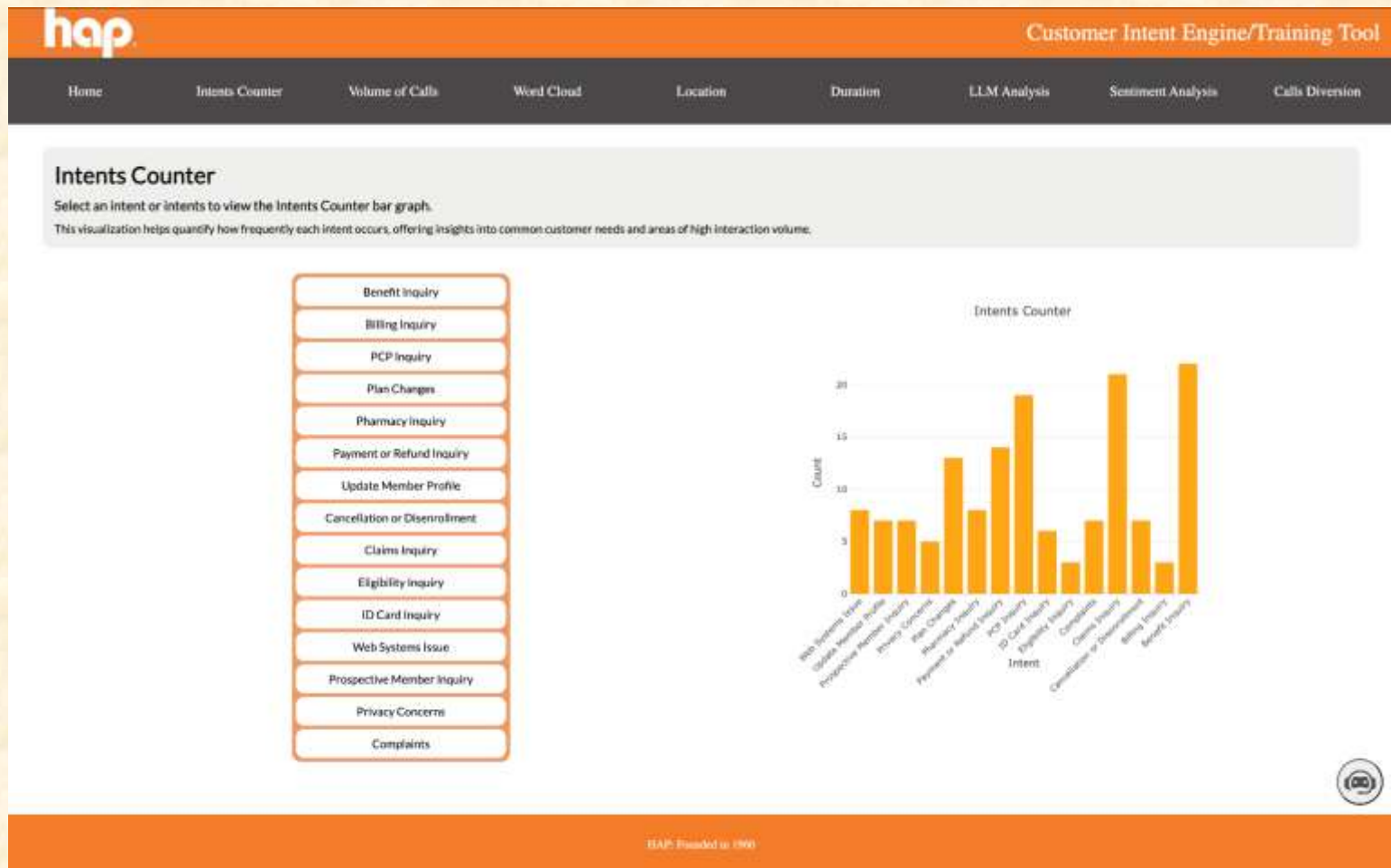
Type a message...

0.0.0.0:5002/location.html

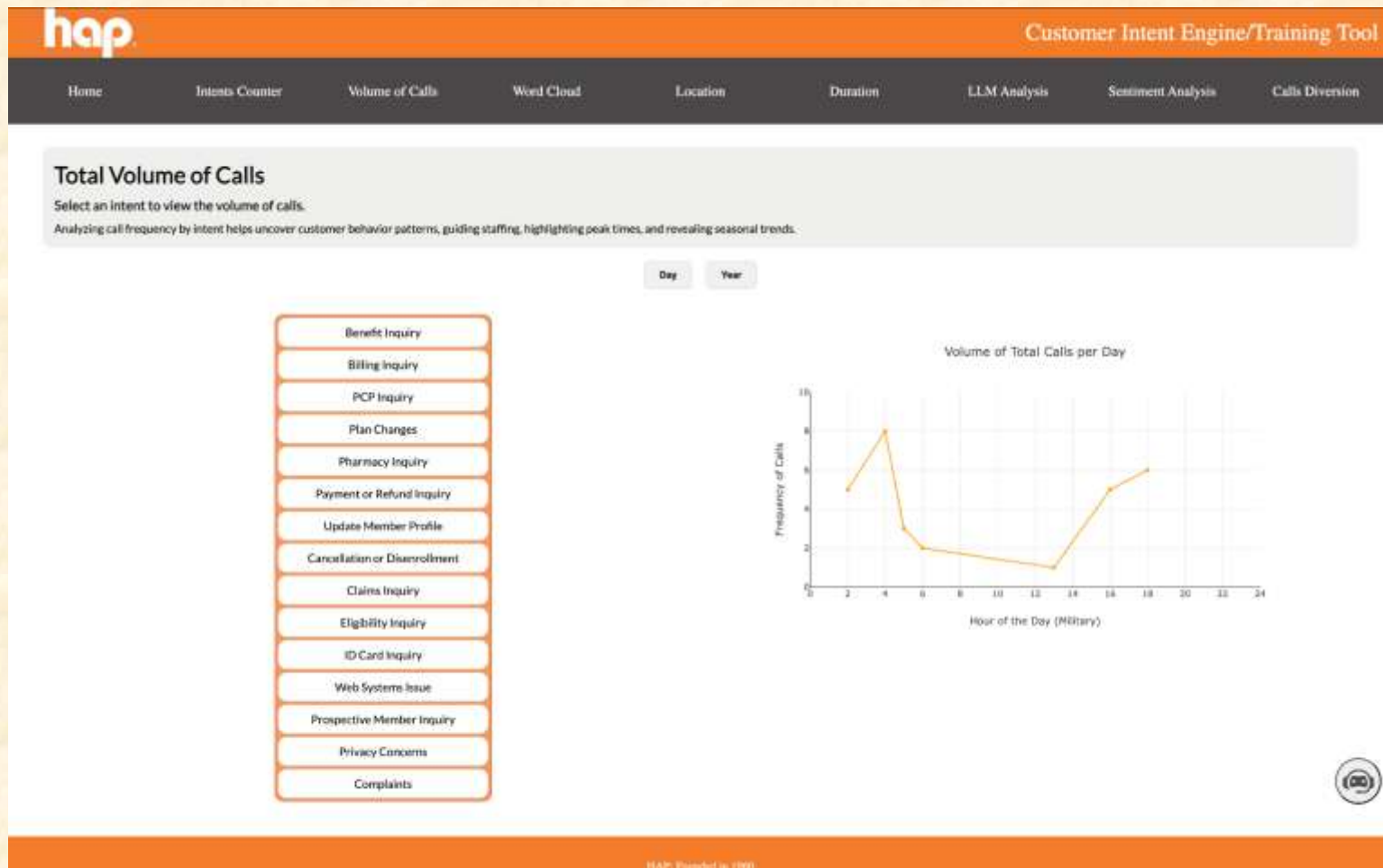




# Intents Counter



# Volume of Calls



# Word Cloud

hap
Customer Intent Engine/Training Tool

Home
Intents Counter
Volume of Calls
Word Cloud
Location
Duration
LLM Analysis
Sentiment Analysis
Calls Diversion

## Word Cloud of Calls

Select an intent to view their corresponding word cloud.

This helps identify key terms and phrases customers use, offering insights into their concerns and improving intent understanding and response strategies.

Benefit Inquiry

Billing Inquiry

PCP Inquiry

Plan Changes

Pharmacy Inquiry

Payment or Refund Inquiry

Update Member Profile

Cancellation or Disenrollment

Claims Inquiry

Eligibility Inquiry


ID Card Inquiry

Web Systems Issue

Prospective Member Inquiry

Privacy Concerns

Complaints

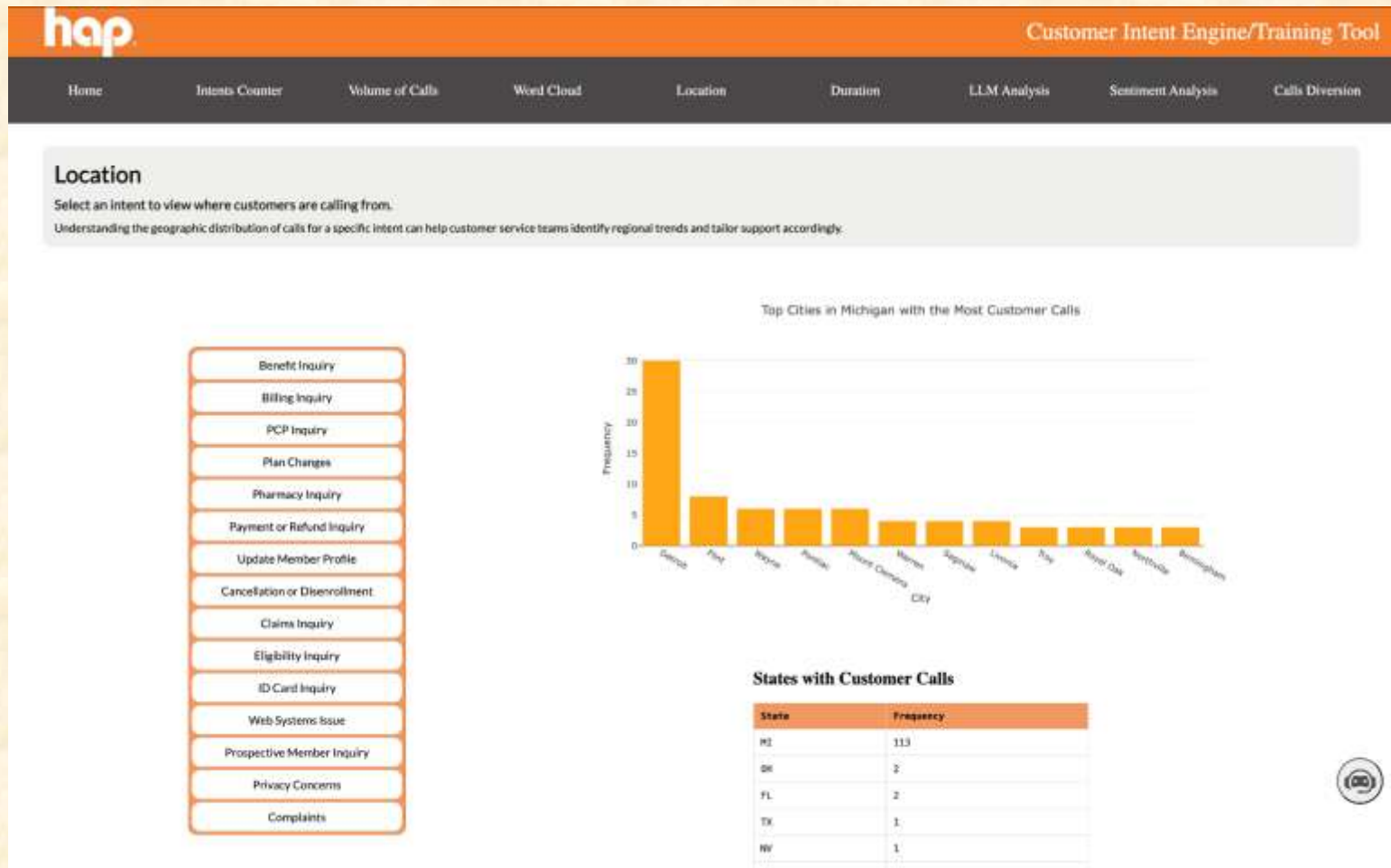


**Top 10 Words and Filtered Context for Benefit Inquiry**

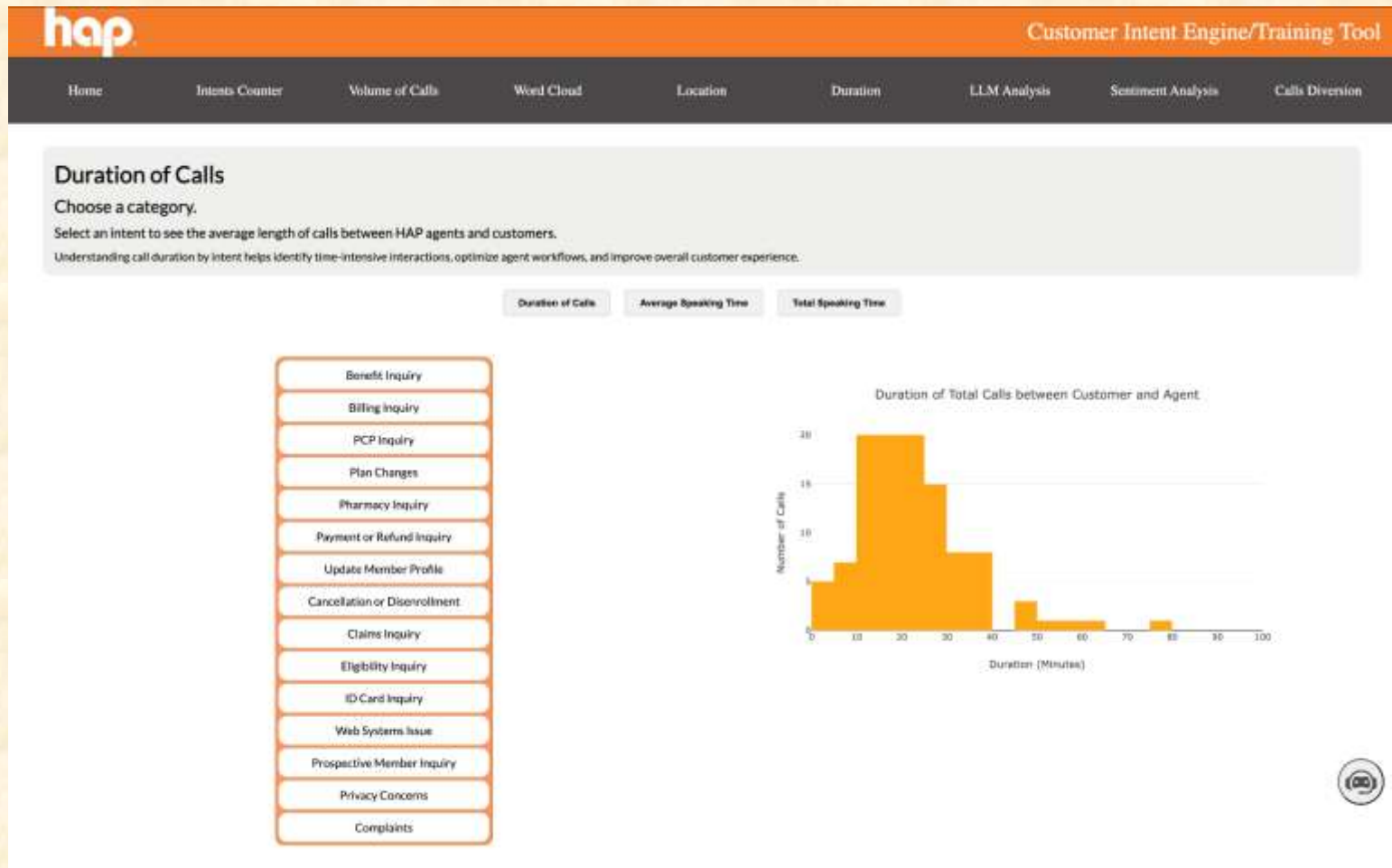
Word	Context
benefit	External HAP Agent It says Hap covers one pair of eye glasses or con
number	I D number?
plan	External Detroit MI - 11:12 Internal HAP Agent Yes, still had the sa information I was having some information and going back and forth to the proces
card	External Milford-White Lake MI Oh, I'm just going crazy with all the
doctor	but I guess it would be according to the prescription your doctor wa
year	External Detroit MI I'm calling because I had cataract surgery, then
service	MI (UTC-05:00) Transcript End Time: Tuesday, December 31, 2024 2:42:
covered	External Detroit MI What was, what was covered with it.
pay	If you exceeded the amount then you would have to pay out of year go




# Location



# Duration



# LLM Analysis



Customer Intent Engine/Training Tool

[Home](#)[Intents Counter](#)[Volume of Calls](#)[Word Cloud](#)[Location](#)[Duration](#)[LLM Analysis](#)[Sentiment Analysis](#)[Calls Diversion](#)

## LLM Analysis

Select an intent to view common questions that customers ask and common reasons that customers call summarized by LLM.

Reviewing frequently asked questions for a specific intent can help customer service representatives better understand how customers express their needs.

Exploring common call reasons associated with each intent provides deeper insight beyond broad categories like PCP Inquiry or Benefit Inquiry.

Benefit Inquiry

Billing Inquiry

PCP Inquiry

Plan Changes

Pharmacy Inquiry

Payment or Refund Inquiry

Update Member Profile

Cancellation or Disenrollment

Claims Inquiry

Eligibility Inquiry

ID Card Inquiry

Web Systems Issue

Prospective Member Inquiry

Privacy Concerns


Complaints

### Common Questions for PCP Inquiry

Common Questions
Can I change my primary care doctor?
How do I update my primary care physician details?
Is my doctor still in network with HAP?
How do I switch my primary care provider?
Can my new doctor be my primary care physician?
What are the steps to change my PCP?
Is my current PCP covered under my plan?
How do I verify my primary care provider's network status?
Can I add this doctor as my primary care physician?
How do I confirm my PCP is registered correctly?
Do I need a referral for this specialist?
How do I select a new primary care provider?
Can I confirm my PCP change over the phone?
How can I find a new primary doctor within network?
Is this doctor licensed for primary care with HAP?

### Common Reasons for PCP Inquiry

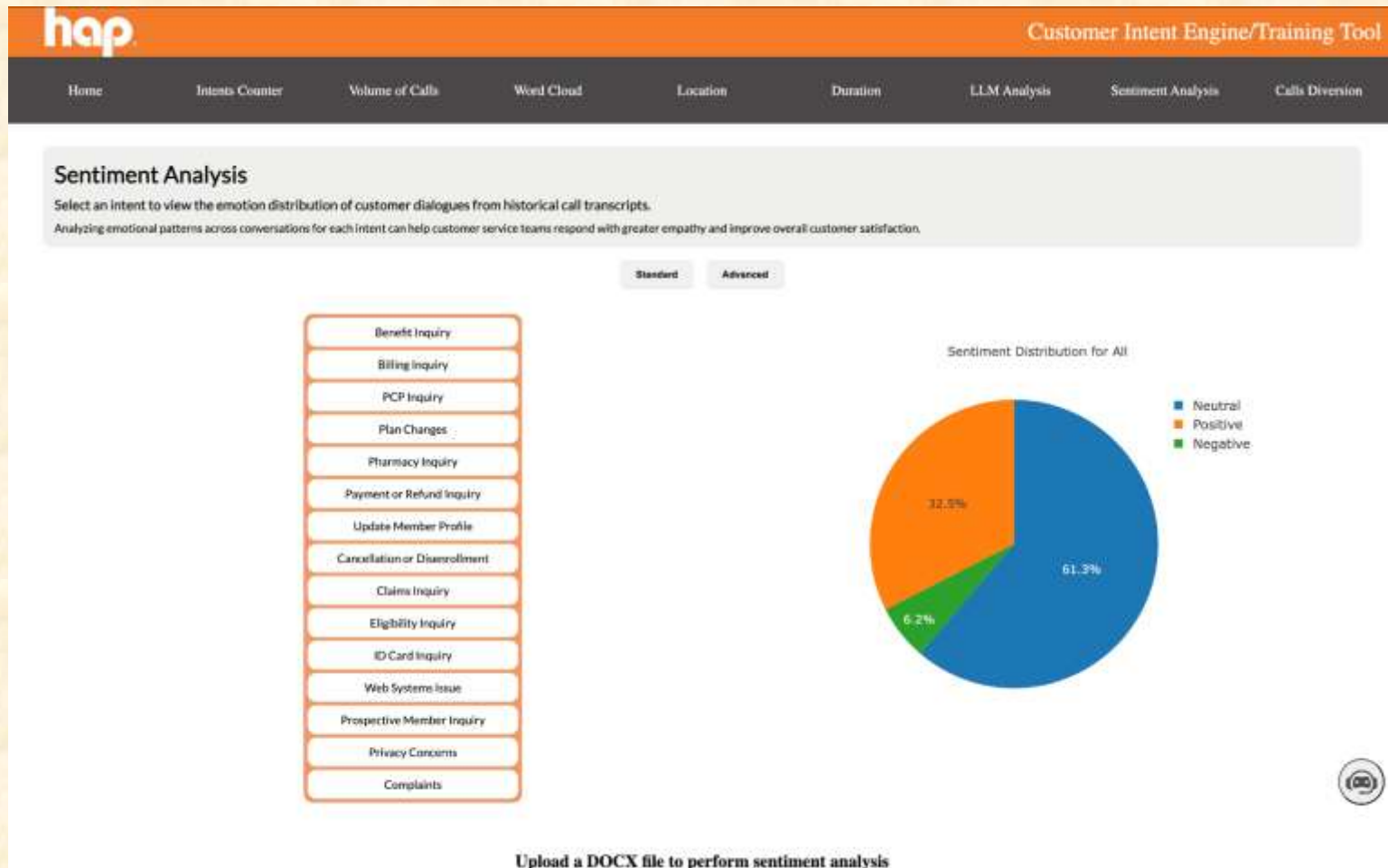
Common Reason
Need to change primary care doctor in insurance records.
Difficulty with online system to update PCP information.
Checking if new doctor is in-network.
Insurance card hasn't activated; issue with adding PCP.
Problem with insurance and address for immunization shot.
Doctor information not displaying on insurance portal.
Need a referral number to see a specialist.
Unclear about coverage specifics for nurse practitioners.
Assigned PCP is not preferred, request to change.
Required PCP update for a child's medical appointment.
Verifying if switching all doctors to a new facility is required.
Confirmation needed if medical appointments are covered.
Parent's doctor retired, need assistance choosing another.
New PCP selection after policy switch back to Hap.
Recent mail verification for member's providers list.



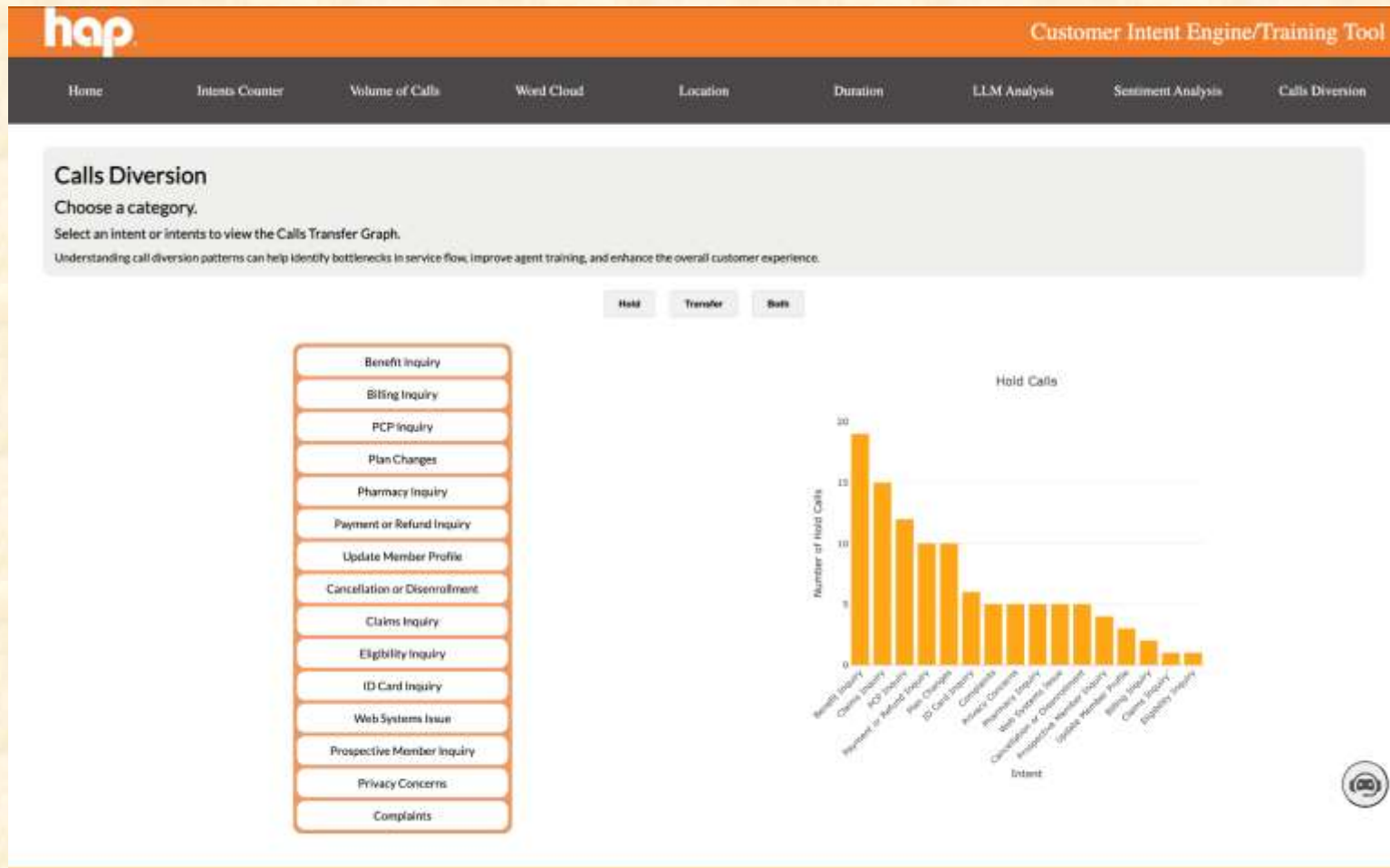
HAP Founded in 1990



# Sentiment Analysis




# Call Diversion





# Quiz

Customer Intent Engine/Training Tool

HomeIntents CounterVolume of CallsWeed CloudLocationDurationLLM AnalysisSentiment AnalysisCalls Diversion


### Test Your Knowledge!

You must score at least a 75% on this quiz to pass.  
We leverage large language models (LLMs) trained on historical call transcripts to capture real-world customer service scenarios and generate quiz questions for representative training.

**Question 1: What should a customer do if they were automatically switched to a new plan and want to revert to their previous coverage?**

- ☐ Wait until the next open enrollment period
- ☐ Contact their employer for a manual change
- ☐ Call customer service and request to be transferred to the appropriate line for assistance
- ☐ Visit a local insurance office in person

Submit Answer



HAP: Founded in 1960



# What's left to do?

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- Features
- Stretch Goals
- Other Tasks
  - Enhance and refine the front-end.

# Questions?

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