

# Google Assistant System Design

## Documentation for Health Concierge

This documentation is for informational purposes of understanding the system design of how Google Assistant Dialogflow and the Google Assistant NLP toolkit is used in conjunction with our Health Concierge web application.

Google Dialogflow is a platform which allows components called “Actions” that can be integrated into an interactive session with Google Assistant supported devices inclusive of smartphones and smart speakers (Google Home).

Within the Dialogflow platform there are separate parts of the system design that allow for an interactive conversational experience that can result in dynamic web application interaction and user interaction and input.

Intents within Dialogflow represent a unique identifier that we have specified to be hooks to open specific parts of our health concierge web application. Intents can be also defined as “Conversational Actions”. In this context, the Intents direct the generalized action process to only open up parts of the web application that we will be hosting the functions of our health concierge web app.

The health concierge web app will be providing the services as defined in our initial and since updated writeup. These services include a dashboard page, input page, telemedicine services, and pharmaceutical delivery page.

The interaction shall be defined between three parties: The USER, the ASSISTANT, and the CONCIERGE.

The USER will initiate a Google Assistant session and request the opening of the CONCIERGE application built within the ASSISTANT. The ASSISTANT will request input from the user via voice command or text command. The USER, on first interaction can request a list of services he/she can access. The ASSISTANT will list options of: dashboard, input, telemedicine, and pharmaceutical delivery. The USER, on subsequent interaction can immediately request CONCIERGE interaction without going through the list prompts. An example interactive action the USER can take is to request access to the dashboard of the CONCIERGE. The USER will speak a variant of “please open my dashboard”. The NLP system of Dialogflow that we trained will recognize a range of variants from just the word “dashboard” to “open my dashboard please”. Upon recognition of request from the USER, the CONCIERGE will open up the dashboard page of the health concierge web application. This is done by a webhook and opening of a browser page from the user’s phone.

We thought it necessary to detail this system design and workflow because the logic of the system is built into the Dialogflow platform. Screenshots have been added below as an example of the Dialogflow platform we used to build out these processes.

The screenshot displays the Dialogflow Fulfillment console for the 'health-concierge' agent. The left sidebar shows the navigation menu with 'Fulfillment' selected. The main content area is titled 'Webhook' and shows a 'DISABLED' toggle. Below this, the 'Inline Editor' is active, showing the JavaScript code for the fulfillment function. The code defines a 'welcome' function that adds a welcome message to the agent's context. A 'DEPLOY' button is visible at the bottom right of the editor.

```
index.js  package.json
1  use strict;
2
3
4
5  const functions = require('firebase-functions');
6  const {WebhookClient} = require('dialogflow-fulfillment');
7  const {Card, Suggestion} = require('dialogflow-fulfillment');
8
9  process.env.DEBUG = 'dialogflow:debug'; // enables lib debugging statements
10
11 exports.dialogflowFirebaseFulfillment = functions.https.onRequest((request, response) => {
12   const agent = new WebhookClient({ request, response });
13   console.log('Dialogflow Request headers: ' + JSON.stringify(request.headers));
14   console.log('Dialogflow Request body: ' + JSON.stringify(request.body));
15
16   function welcome(agent) {
17     agent.add('Welcome to my agent!');
18   }
19 })
```

**Webhook and custom fulfillment console.** Which we have customized to fulfill our health concierge web application redirections.

The screenshot displays the Dialogflow Entities console for the 'health-concierge' agent. The left sidebar shows the navigation menu with 'Entities' selected. The main content area is titled 'Entities' and shows a 'CREATE ENTITY' button. Below this, the 'CUSTOM' tab is active, showing a list of entities: '@ dashboard', '@ delivery', and '@ telemedicine'. A search bar is visible at the top of the entity list.

**Entities.** The three main components of our health concierge web application are defined here as entities.

Dialogflow

health-concierge

en

Intents

Entities

Knowledge (beta)

Fulfillment

Integrations

Training

Validation (beta)

History

Analytics

Prebuilt Agents

Small Talk

Intents

CREATE INTENT

Search intents

Default Fallback Intent

Default Welcome Intent

Health Monitor

Pharmaceutical Delivery

Telemedicine

**Intents.** The three main ‘hooks’ to catch user language from the Dialogflow NLP engine are defined and customized here, along with the welcome message.