



Implementing an AI Chatbot with Dialogflow

Built with Google's human-like conversational AI

Daniel Liu

AskDaniel@google.com

Google Cloud

Agenda

- How to get started with Qwiklab
- AL/ML Overview
- Chatbot and Dialogflow Overview
- Lab: Implementing an AI Chatbot with Dialogflow

Speakers



Joel Bongco

AVP/CTO, Executive

eWorld Enterprise
Solutions



Ethan Chow

CX Developer

eWorld Enterprise
Solutions



Garry Hwang

Senior CX Developer

eWorld Enterprise
Solutions



Dean Ramos

CX Project Manager

eWorld Enterprise
Solutions



Daniel Liu

Customer Engineer

Google Cloud



How to get started with Qwiklab Training





Home





Catalog

Become a Google Cloud Platform expert with hands-on training.

We give you temporary credentials to Google Cloud Platform, so you can learn the cloud using the real thing – no simulations. From 30-minute individual labs to multi-day courses, from introductory level to expert, instructor-led or self-paced, with topics like machine learning, security, infrastructure, app dev, and more, we've got you covered.

Featured Learning

 Google Cloud Create and Manage Cloud Resources	 Google Cloud Foundational Data, ML, and AI	 Google Cloud Foundational Infrastructure	 Google Cloud Set up and Configure Cloud Environments	 Google Cloud Deploy and Manage Cloud Environments
QUEST Getting Started: Create and Manage Cloud Resources Introductory	QUEST Perform Foundational Data, ML, and AI Tasks in Google Cloud Introductory	QUEST Perform Foundational Infrastructure Tasks in Google Cloud Introductory	QUEST Set up and Configure a Cloud Environment in Google Cloud Advanced	QUEST Deploy and Manage Cloud Environments with Google Cloud Expert

https://google.qwiklabs.com/

Google Cloud Training

Create account

[Sign in with Google](#)

or

First name

Last name


Email

Company

Password

Password confirmation

Send me occasional product updates, announcements, and offers.

I'm not a robot 
reCAPTCHA
Privacy - Terms

By joining you agree to our [Terms of Service](#) and our [Privacy Policy](#).

[Sign in instead](#) [Create account](#)

This site is protected by reCAPTCHA and the Google [Privacy Policy](#) and [Terms of Service](#) apply.



https://google.qwiklabs.com/

A message with a confirmation link has been sent to your email address. Please open the link to activate your account.



Google Cloud Training

Sign in

 Sign in with Google

or

Email

Password

[Forgot password?](#)

Remember me

[Create account](#)

[Sign in](#)

This site is protected by reCAPTCHA and the Google [Privacy Policy](#) and [Terms of Service](#) apply.

[Language](#)

[Help](#)

[Privacy](#)

[Terms](#)





Home



Catalog








My Learning

Welcome, Daniel!

We give you temporary credentials to Google Cloud Platform, so you can learn the cloud using the real thing – no simulations. From 30-minute individual labs to multi-day courses, from introductory level to expert, instructor-led or self-paced, with topics like machine learning, security, infrastructure, app dev, and more, we've got you covered.



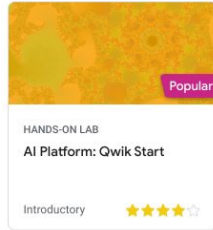
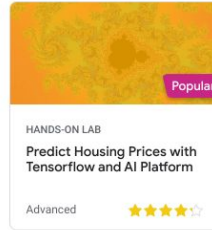
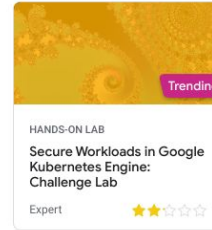


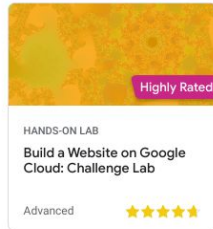
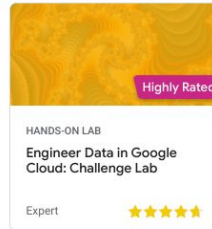
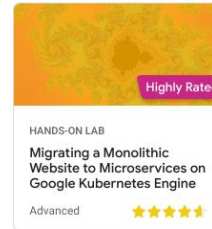
Featured Learning

 Google Cloud Create and Manage Cloud Resources	 Google Cloud Foundational Data, ML, and AI	 Google Cloud Foundational Infrastructure	 Google Cloud Set up and Configure Cloud Environments	 Google Cloud Deploy and Manage Cloud Environments
QUEST Getting Started: Create and Manage Cloud Resources	QUEST Perform Foundational Data, ML, and AI Tasks in Google Cloud	QUEST Perform Foundational Infrastructure Tasks in Google Cloud	QUEST Set up and Configure a Cloud Environment in Google Cloud	QUEST Deploy and Manage Cloud Environments with Google Cloud
Introductory	Introductory	Introductory	Advanced	Expert


What's Hot

https://google.qwiklabs.com/


What's Hot

 <p>HANDS-ON LAB A Tour of Qwiklabs and Google Cloud Introductory ★★★★★</p>	 <p>HANDS-ON LAB Creating a Virtual Machine Introductory ★★★★★</p>	 <p>HANDS-ON LAB AI Platform: Qwik Start Introductory ★★★★★</p>	 <p>HANDS-ON LAB Predict Housing Prices with Tensorflow and AI Platform Advanced ★★★★★</p>	 <p>HANDS-ON LAB Secure Workloads in Google Kubernetes Engine: Challenge Lab Expert ★★★★★</p>
 <p>HANDS-ON LAB HTTP Google Cloud Functions in Go Fundamental ★★★★★</p>	 <p>HANDS-ON LAB Using Role-based Access Control in Kubernetes Engine Advanced ★★★★★</p>	 <p>HANDS-ON LAB Build a Website on Google Cloud: Challenge Lab Advanced ★★★★★</p>	 <p>HANDS-ON LAB Engineer Data in Google Cloud: Challenge Lab Expert ★★★★★</p>	 <p>HANDS-ON LAB Migrating a Monolithic Website to Microservices on Google Kubernetes Engine Advanced ★★★★★</p>

Become a Cloud Expert



Infrastructure & DevOps
Implement, deploy, migrate and maintain applications in the cloud.



Websites & App Dev
For software engineers who develop applications in the cloud.



https://google.qwiklabs.com/

← A Tour of Qwiklabs and Google Cloud



Start Lab

00:45:00

A Tour of Qwiklabs and Google Cloud

45 minutes

Free



[Rate Lab](#)

GSP282

[Overview](#)

[Qwiklabs Fundamentals](#)

[Accessing the Cloud Console](#)

[Projects in the Cloud Console](#)

[Navigation Menu and Services](#)

[Roles and Permissions](#)

[APIs and Services](#)

[Cloud Shell](#)

[Ending your lab](#)

[Congratulations!](#)

GSP282



Google Cloud Self-Paced Labs

Overview



Google Cloud

https://google.qwiklabs.com/



Home



Catalog



My Learning

589 results

Sort by: Relevance



QUEST

Google Cloud Essentials

In this introductory-level Quest, you will get hands-on practice with the Google Cloud's fundamental tools and services. Google Cloud Essentials is the recommended first Quest for the Google Cloud learner - you will come in with little or no prior cloud knowledge, and come out with practical experience that you can apply to your first

[more...](#)

4 hours Introductory 8 Credits On-demand available



QUEST

Getting Started: Create and Manage Cloud Resources

In this introductory-level Quest, you will get hands-on practice with Google Cloud's fundamental tools and services. Getting Started: Create and Manage Cloud Resources is the recommended first Quest for the Google Cloud learner - you will come in with little or no prior cloud knowledge, and come out with practical experience

[more...](#)

5 hours Introductory 13 Credits On-demand available



QUEST

Baseline: Infrastructure

If you are a novice cloud developer looking for hands-on practice beyond Google Cloud Essentials, this quest is for you. You will get practical experience through labs that dive into Cloud Storage and other key application services like Stackdriver and Cloud Functions. By taking this quest, you will develop valuable skills that are

[more...](#)

3 hours Introductory 4 Credits On-demand available



QUEST

Perform Foundational Infrastructure Tasks in Google Cloud

If you are a novice cloud developer looking for hands-on practice beyond Getting Started - Create and Manage Cloud Resources, this quest is for you. You will get practical experience through labs that dive into Cloud

Filter

Cloud Environment

Format

- Any format
- Hands-On Lab
- Quest
- Course
- External Course
- Certification

Level

- Any level
- Introductory
- Fundamental
- Advanced
- Expert

Duration


Modality

Language



Start Lab 01:00:00

I'm not a robot



reCAPTCHA
Privacy - Terms

Implementing an AI Chatbot with Dialogflow

1 hour 5 Credits ★★★★★

GSP078



Overview

Dialogflow is a natural language understanding platform that makes it easy to design and integrate a conversational user interface into your mobile app, web application,

GSP078 —/100

- Overview
- Setup and Requirements
- Dialogflow Concepts and Constructs
- Deploy a simple Dialogflow application to submit helpdesk tickets
- Create Intents
- Allow Fulfillment to Store Help Ticket Data
- Verify that Tickets are Logged in Datastore
- Testing your Chatbot
- Test your Understanding
- Congratulations!

AL/ML Overview





What is AI?

AI is a bigger concept to create intelligent machines that can simulate human thinking capability and behavior

What is Machine Learning?

Machine Learning systems take inputs (data) to make useful predictions and decisions about previously unseen pieces of data.



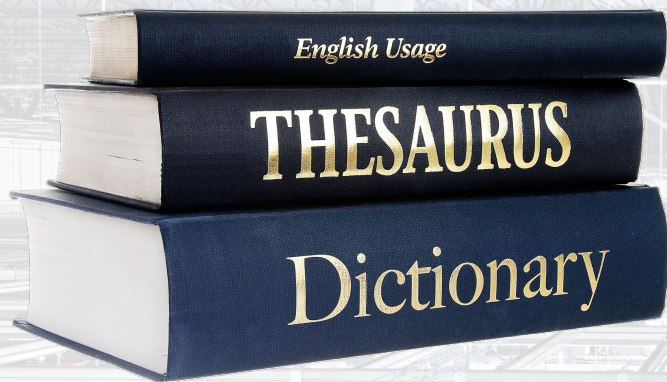
Machine learning is a specific field of AI where a system learns to find patterns in examples in order to make predictions.



Computers learning how to do a task
without being explicitly programmed to
do so.



How did you learn your native language?



Machine Learning Allows You to Solve a Problem Without Codifying the Solution



Google Cloud AI

- ✓ Recognizes patterns in data
- ✓ Predictive analytics at scale
- ✓ Builds ML models seamlessly
- ✓ Fully managed service
- ✓ Deep Learning capabilities

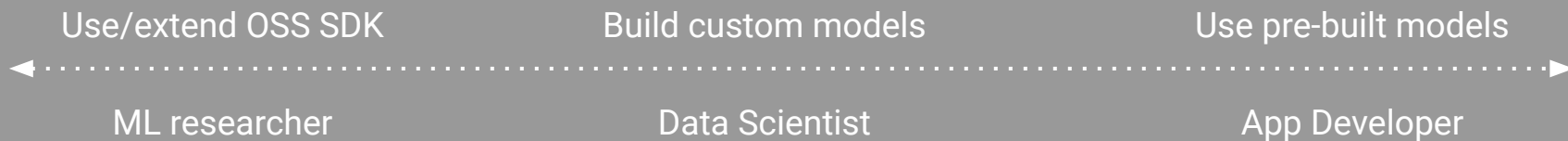
End to End: Google Cloud AI Spectrum



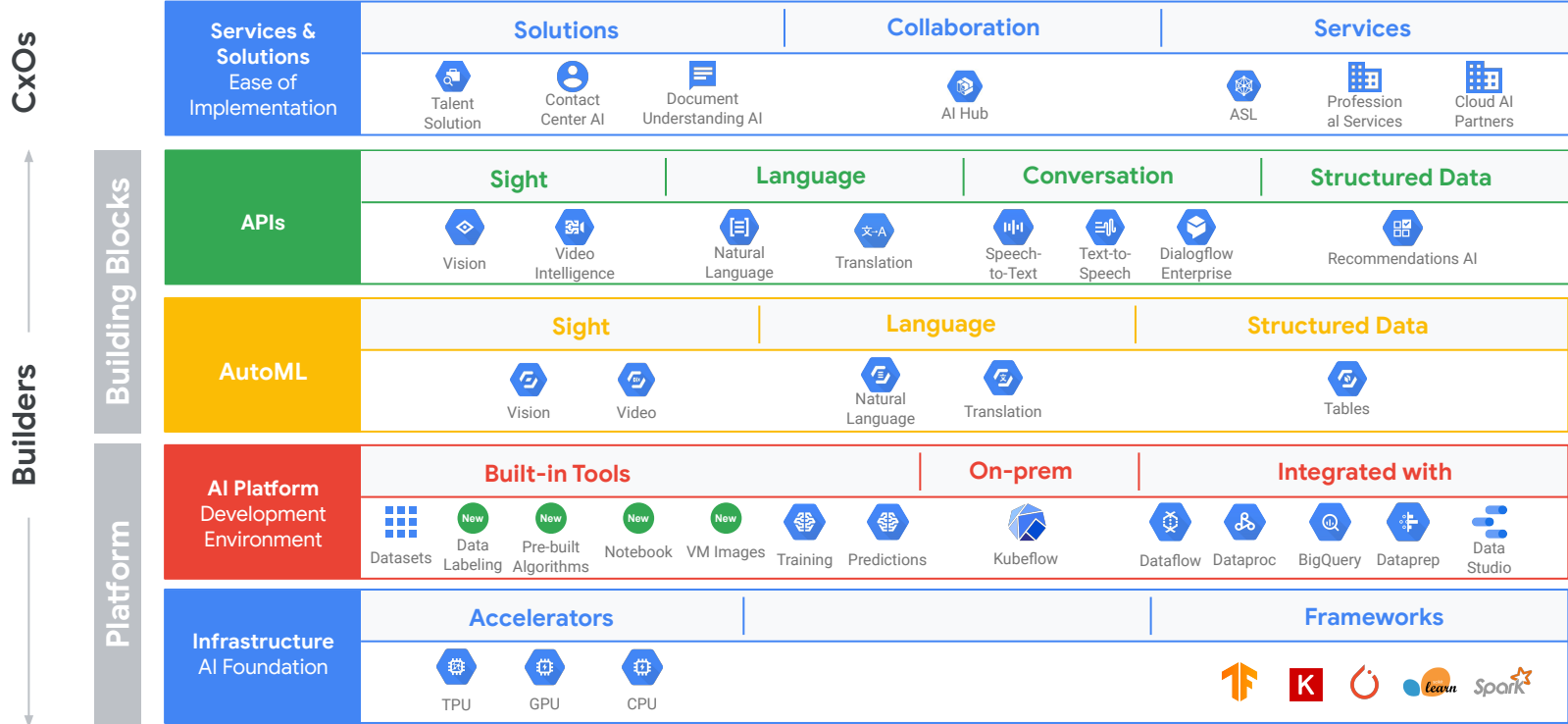
Cloud MLE



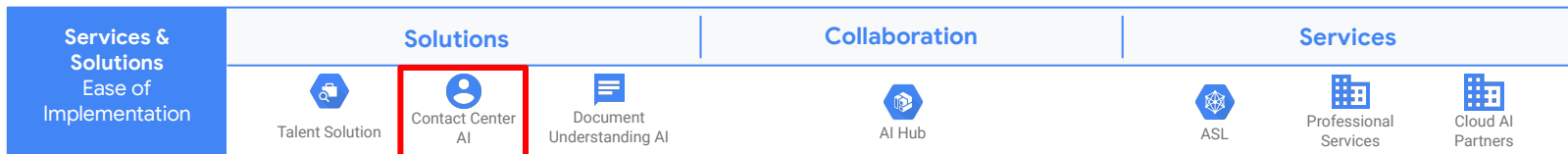
ML Perception services



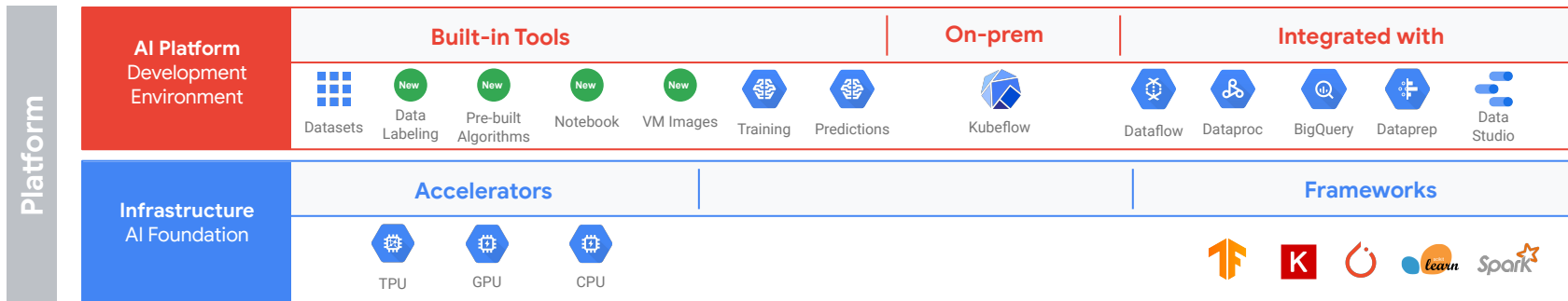
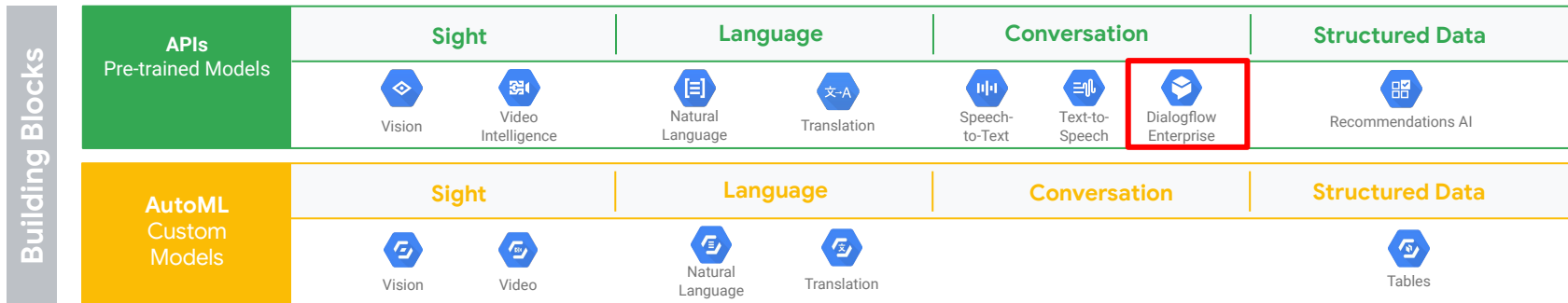
Cloud AI products & solutions



CxOs



Builders



Chatbot and Dialogflow Overview



Dialogflow Digital Assistant Chatbot

Overview

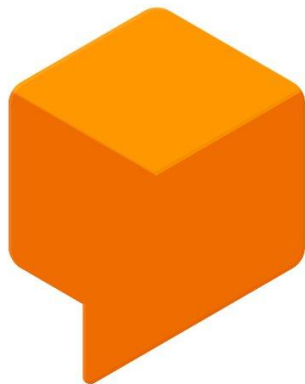


Digital Assistant Chatbots at Google

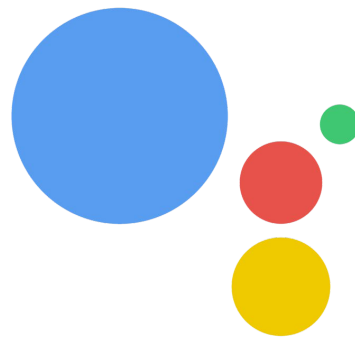
Voice and chat experience from end-to-end



Google Cloud Platform



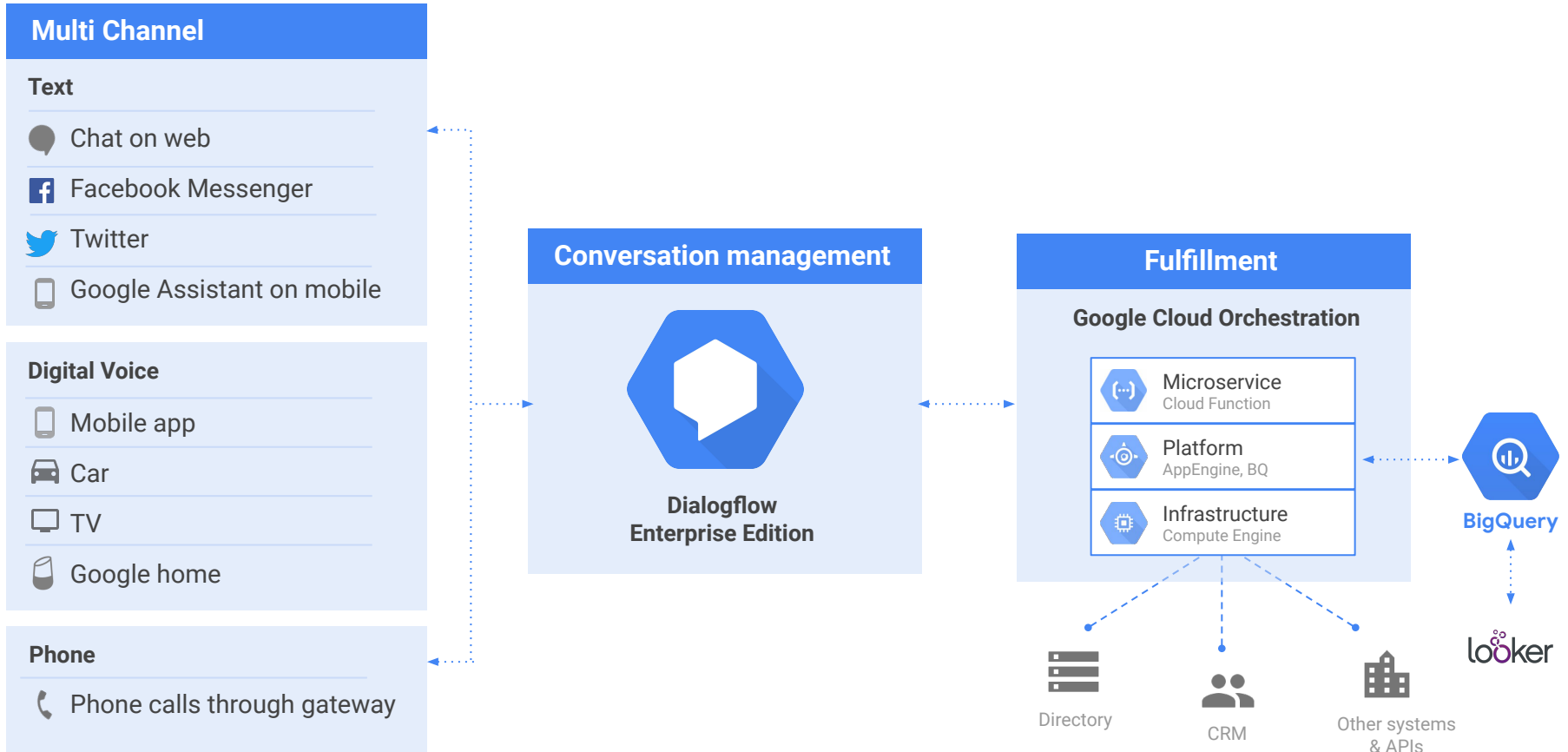
Dialogflow



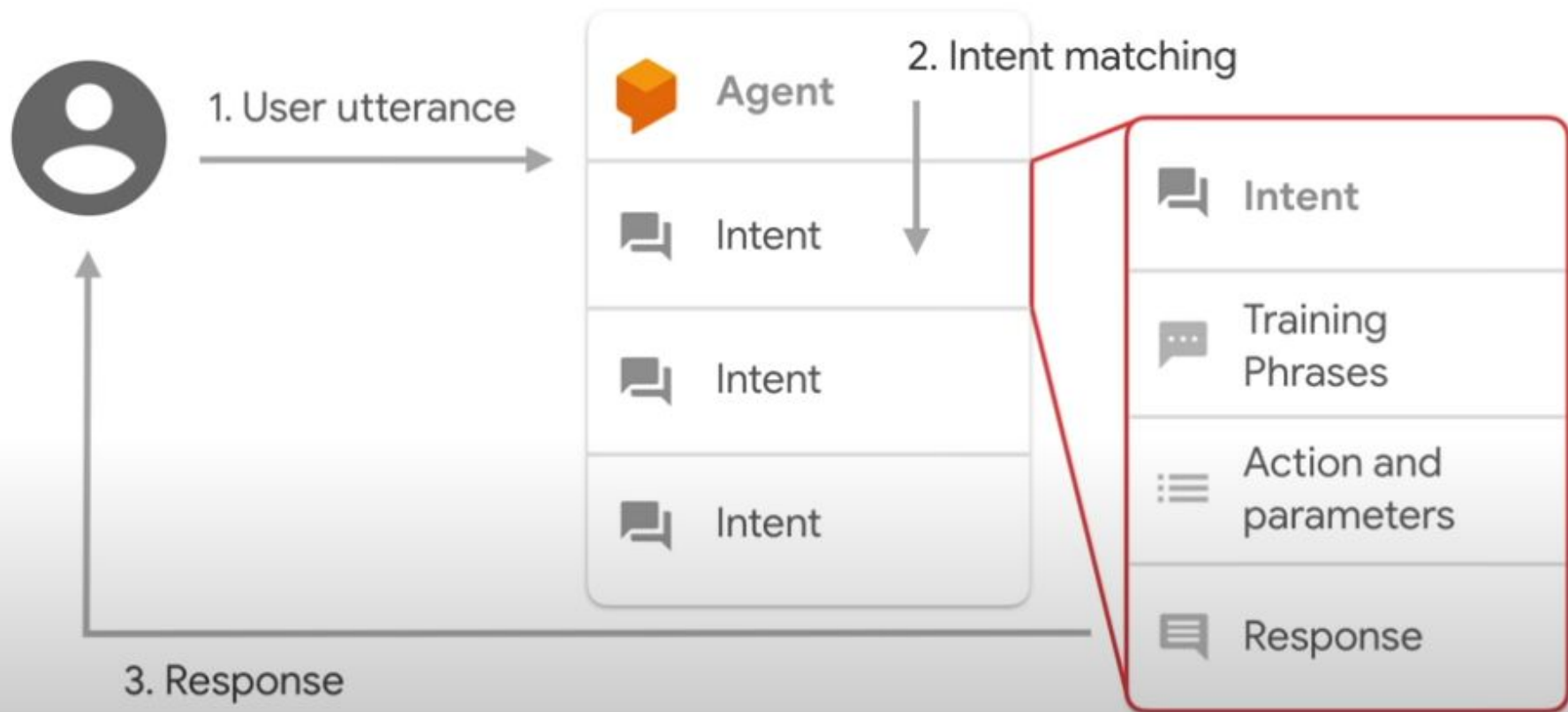
Actions on Google



Google Home



Agent



Dialogflow/Chatbot construct & terminology

- ❖ Intents
- ❖ Utterances
- ❖ Entities
- ❖ Context

Intents

- The verbs in your dialog
- The action a user wants to take that they expect your chatbot to fulfill or facilitate
- Translated needs and wants
- How the application branches logic

I need my coffee
Intent: Get coffee

My laptop is broken
Intent: Tech support

I want to set up an appointment
Intent: set up an appointment

- ❖ Intents
- ❖ Utterances
- ❖ Entities
- ❖ Context

Utterances

- Spoken or typed phrases that invoke the chatbot and its intent.
- Triggers
- What the user will say, but maybe not what you think they will say

Hey Google, I want to work out

Hey Google, hungry

Hey Google, what's the weather?

- ❖ Intents
- ❖ **Utterances**
- ❖ Entities
- ❖ Context

Entities

- The nouns in your dialog
- Composed of root terms and their synonyms
- Maps to variables
- Augmented by built-in entities

- ❖ Intents
- ❖ Utterances
- ❖ **Entities**
- ❖ Context

My **name** is **Lily**

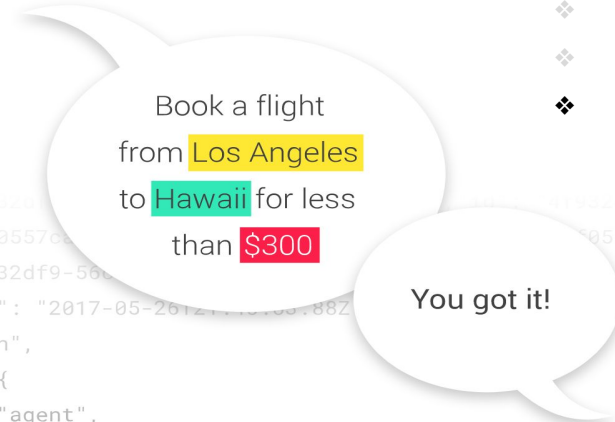
The **food** was terrible

April 4, 2017

Context

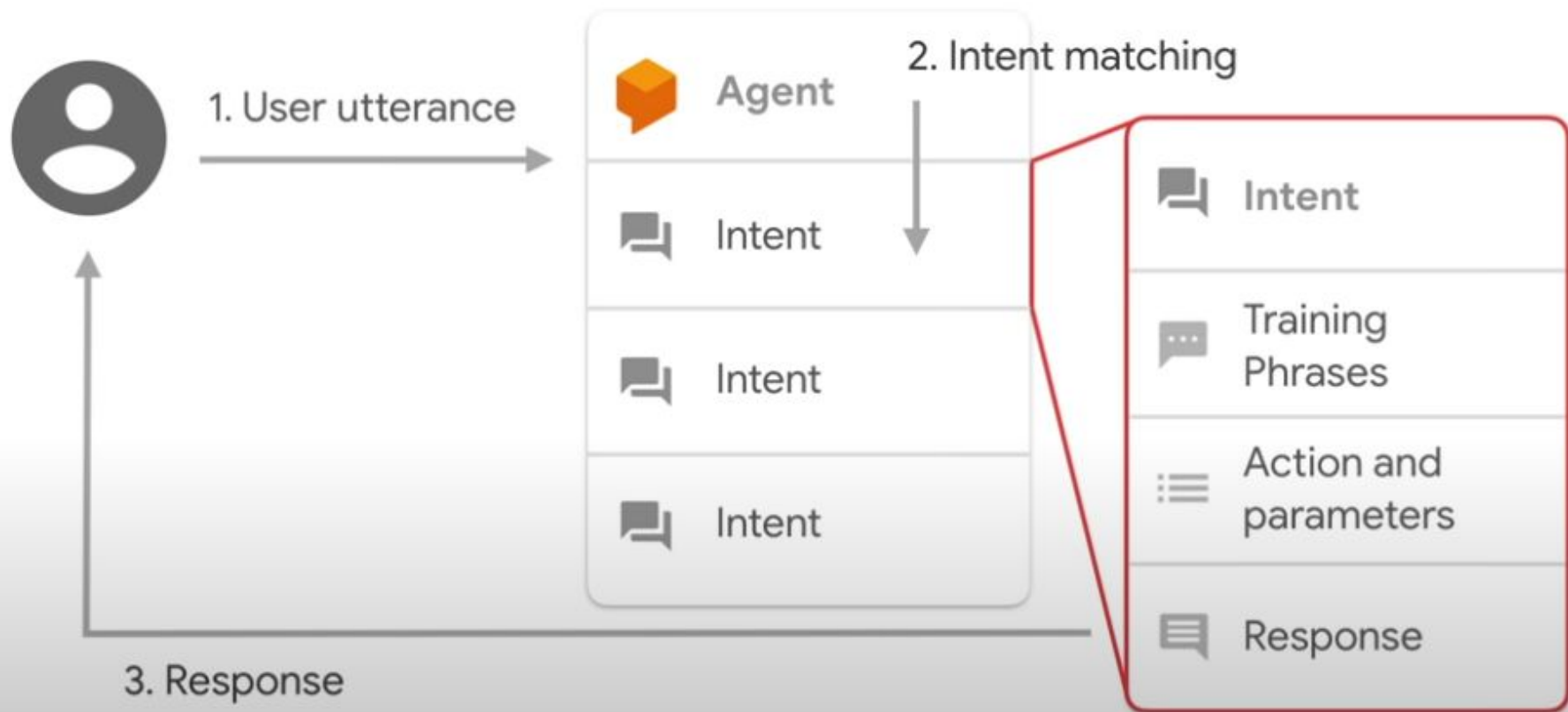
- How the chatbot keeps track of where the user is at in the conversation
- The background history you need when entering a conversation in progress
- Method for an application to store and access variables

- ❖ Intents
- ❖ Utterances
- ❖ Entities
- ❖ **Context**



```
id": "4f932df9-56a9f2-9c88f0557ca",  
"id": "4f932df9-56a9f2-9c88f0557ca",  
"timestamp": "2017-05-26T21:13:03.882Z",  
"lang": "en",  
"result": {  
  "source": "agent",  
  "action": "flight.book", "parameters": {"geo-city": "Los Angeles",  
  "geo-state-us": "Hawaii", "price": {"amount": 300, "currency": "USD"},  
  "contexts": [{"name": "flightbook", "parameters": {  
    "geo-state-us.original": "Hawaii",  
    "price": {  
      "amount": 300,  
      "currency": "USD"  
    }  
  },  
  "geo-city": "Los Angeles",  
  "price.original": "$300",  
  "geo-state-us": "Hawaii".
```

Agent



Pre-built agents help you get a head start



Food Delivery

Create and manage food and drink orders



Formats

Control default units of measurement



Hotel Booking

Find, create and manage reservations for hotels



Jokes

The agent tells jokes



Language Settings

Set language preferences



Local Services

Search local services and shops



Navigation

Ask for directions



News

Get news stories and manage news feed



Radio

Control playing radio stations



Reminders

Schedule, edit, view and remove reminders



Maps

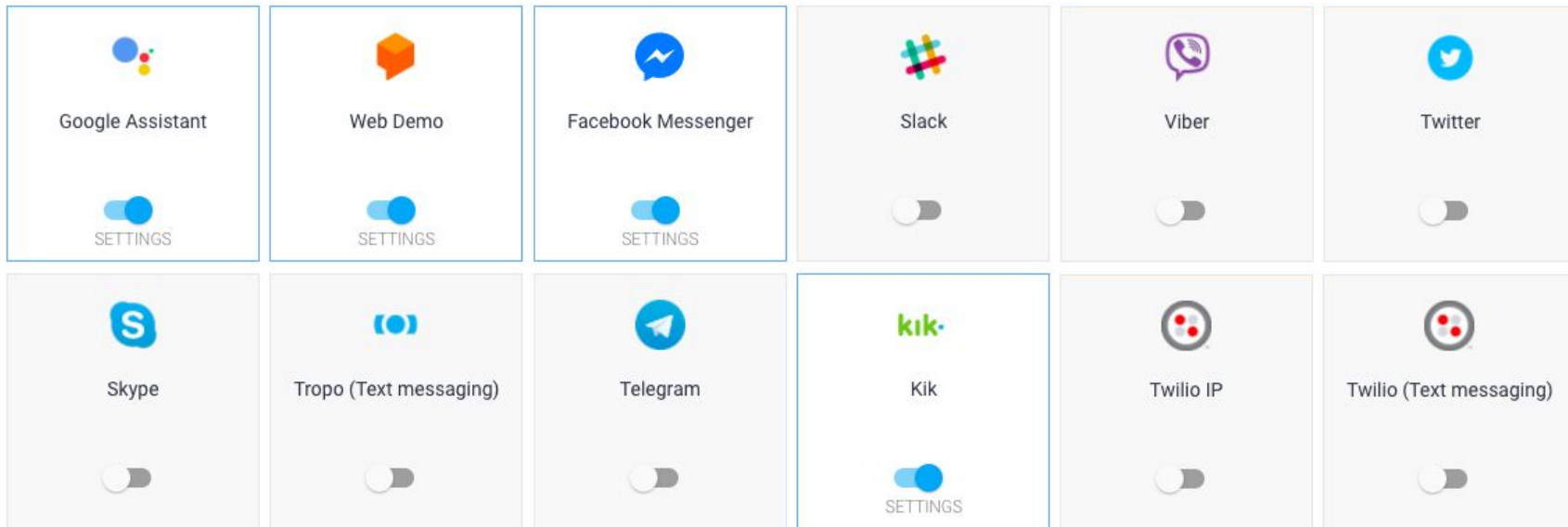
Search maps for a location



Music

Play and control your music and playlists

One-click integrations with most major platforms



Knowledge Connectors

Dialogflow lets you pre-build explicit responses to specific user intents.

Knowledge Connectors enrich the conversation by complementing explicit intents with automated responses sourced from internal knowledge bases (articles, FAQs, etc.).

A screenshot of the 'Create New Document' dialog box in Dialogflow. The dialog has a blue header with the title 'Create New Document' and a close button (X). Below the header, there are several input fields and options:

- 'Document Name *' with a text input field containing 'Enter document name'.
- 'Mime Type *' with a dropdown menu showing 'text/plain'.
- A list of document types: 'FAQ' (highlighted), 'Knowledge Base Article (experimental)', 'File on Cloud Storage', 'URL', and 'Upload file from your computer'.
- Under 'File on Cloud Storage', there is a text input field with the placeholder 'gs://bucket-name/object-name'.
- Under 'URL', there is a text input field with the placeholder 'http://www.example.com/faq'.
- A 'SELECT FILE' button is located below the input fields.
- A 'CREATE' button is located in the bottom right corner of the dialog.

Languages Supported

<https://cloud.google.com/dialogflow-en/enterprise/docs/reference/language>



Language Name	Language Tag	Speech-to-Text	Text-to-Speech	Telephony	Knowledge Connectors	Sentiment Analysis
Chinese						
↳ Cantonese	zh-HK	✓				
↳ Simplified	zh-CN	✓				✓
↳ Traditional	zh-TW	✓				✓
Danish	da	✓	✓			
Dutch	nl	✓	✓			
English	en	✓	✓	✓	✓	✓
↳ Australian locale	en-AU	✓	✓		✓	
↳ Canadian locale	en-CA	✓	✓		✓	
↳ Great Britain locale	en-GB	✓	✓		✓	
↳ Indian locale	en-IN	✓	✓		✓	
↳ US locale	en-US (equivalent to en)	✓	✓	✓	✓	✓
French	fr	✓	✓			✓
↳ Canadian locale	fr-CA	✓	✓			
↳ France locale	fr-FR (equivalent to fr)	✓	✓			✓
German	de	✓	✓			✓
Hindi	hi	✓				
Indonesian	id	✓				
Italian	it	✓	✓			✓
Japanese	ja	✓	✓			✓
Korean	ko	✓	✓			✓
Norwegian	no	✓				
Polish	pl	✓	✓			
Portuguese	pt	✓	✓			✓
↳ Brazilian	pt-BR	✓	✓			
Russian	ru	✓	✓			
Spanish	es	✓	✓			✓
↳ Latin America locale	es-419	✓				
↳ Spain locale	es-ES (equivalent to es)	✓	✓			✓
Swedish	sv	✓	✓			
Thai	th	✓				

Built-in Sentiment Analysis

Measures sentiment of a user request to provide a data point about the user's emotional state of mind.

That data can be used to help determine the need for bringing in live agent help.


[How to interpret sentiment value](#)



Agent

USER SAYS COPY CURL

The service here really sucks!

 DEFAULT RESPONSE ▼ PLAY

I didn't get that. Can you say it again?

INTENT

[Default Fallback Intent](#)

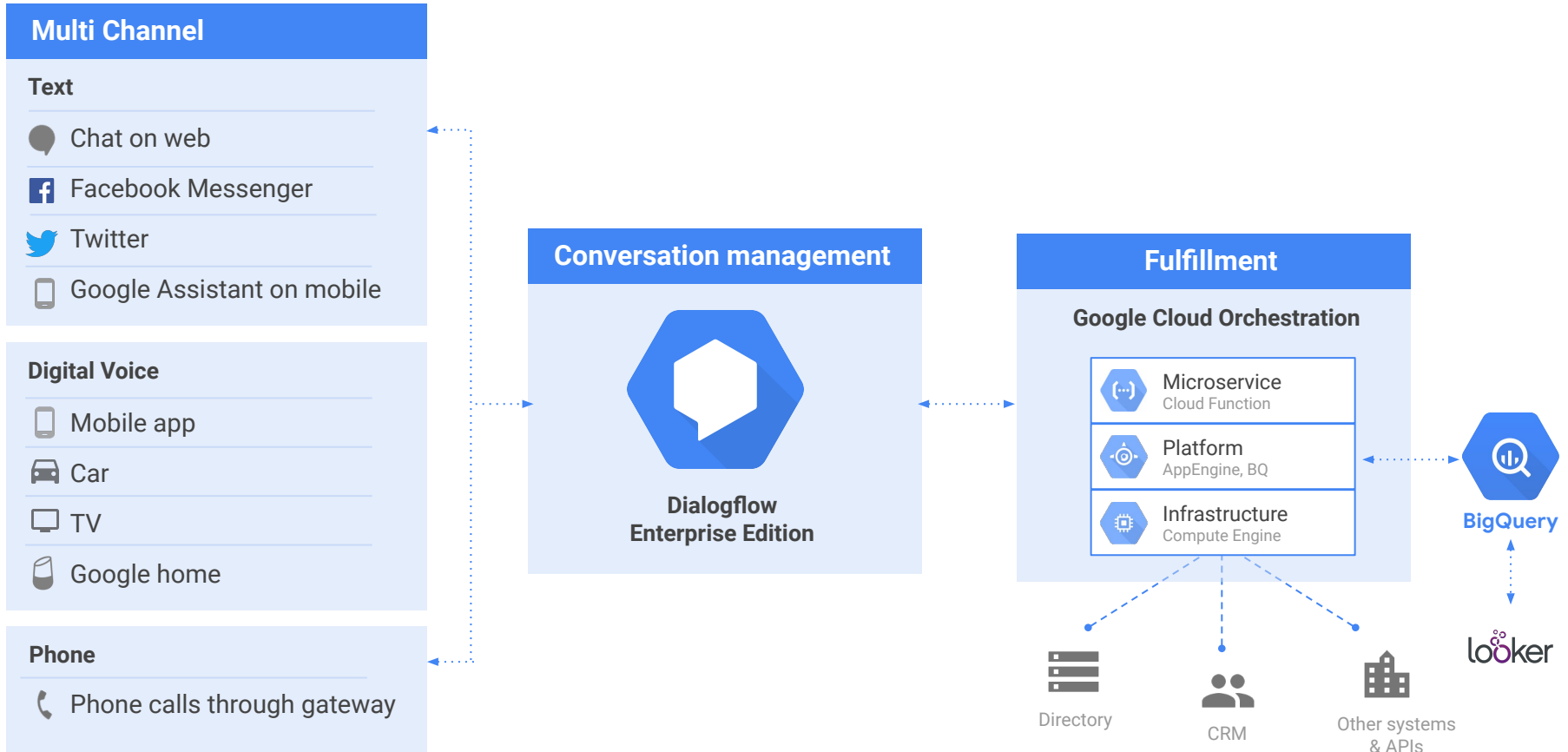
ACTION

input.unknown

SENTIMENT

Query Score: -0.9

DIAGNOSTIC INFO



Conversational Core

Contact Center AI technology



Enabling a
conversation that is
close to human

Understand

- Speech-to-text

Talk

- Text-to-speech

Interact

- **Dialogflow**
- Document assist
- Sentiment analysis

CCAI automates simple interactions and enables agents to solve issues quickly, using industry-leading AI



1 Virtual Agent

Gives patients 24/7 access to immediate conversational self-service, with seamless handoffs to live agents for more complex issues.

2 Agent Assist

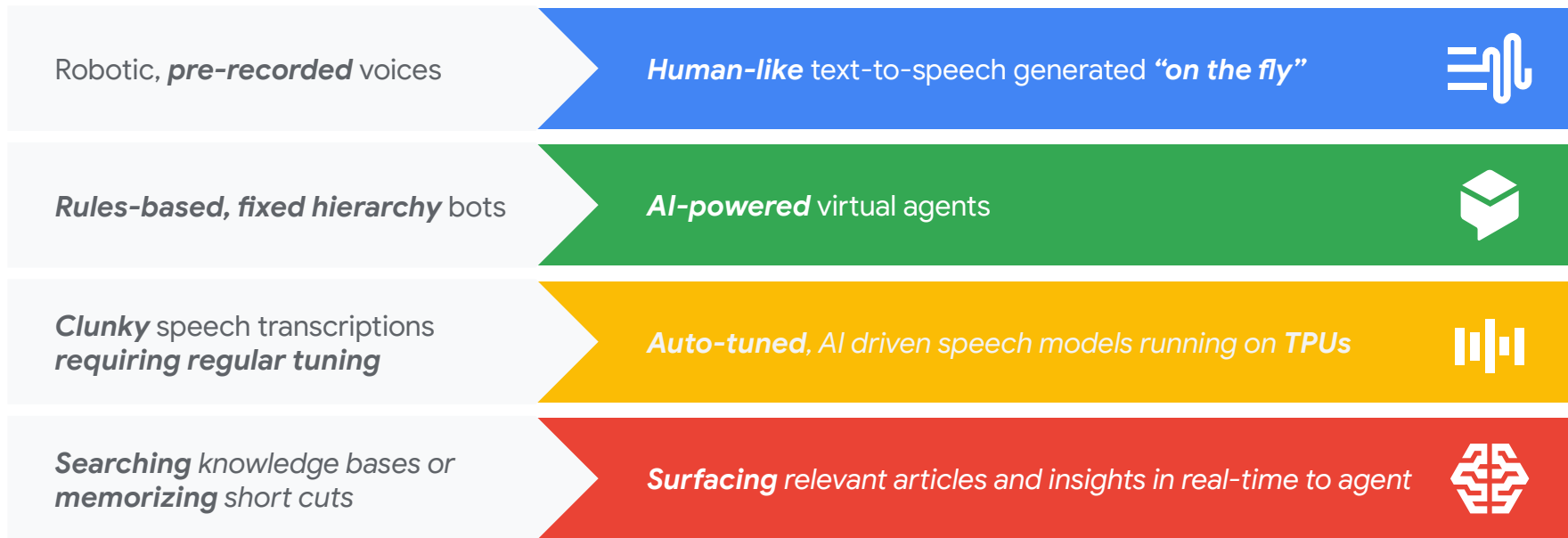
Empowers agents with continuous support during their calls by identifying intent and providing real-time, step-by-step assistance.

3 Insights

Uses natural language processing to identify call drivers, popular questions, and other information that helps contact center managers learn about patient interactions to improve call outcomes.



Google has led the evolution of conversational AI that makes this possible



Insights AI ^{BETA} offers a fully customizable dashboard, running in App Engine

The dashboard is divided into several sections:

- Transcript Search:** A search bar containing the text "google" and a blue "SEARCH" button.
- Word Cloud Tags:** A word cloud with prominent words like "order", "second", "pair", "delay", "issues", "store", "name", "logo", "frustration", "stock", "clown", "one", "size", "socks", "merchandise", "businesses", "idea", "anything", "ones", "title", "gosh", "stock", "thing", "feet", "id", "name", "all", "Google", "pair", "clown", "logo", "word", "cloud", "order", "stock", "frustration", "Google", "Craze", "Gabby".
- Call Log:** A table with columns for Agent ID, Date, and Search Snippet.

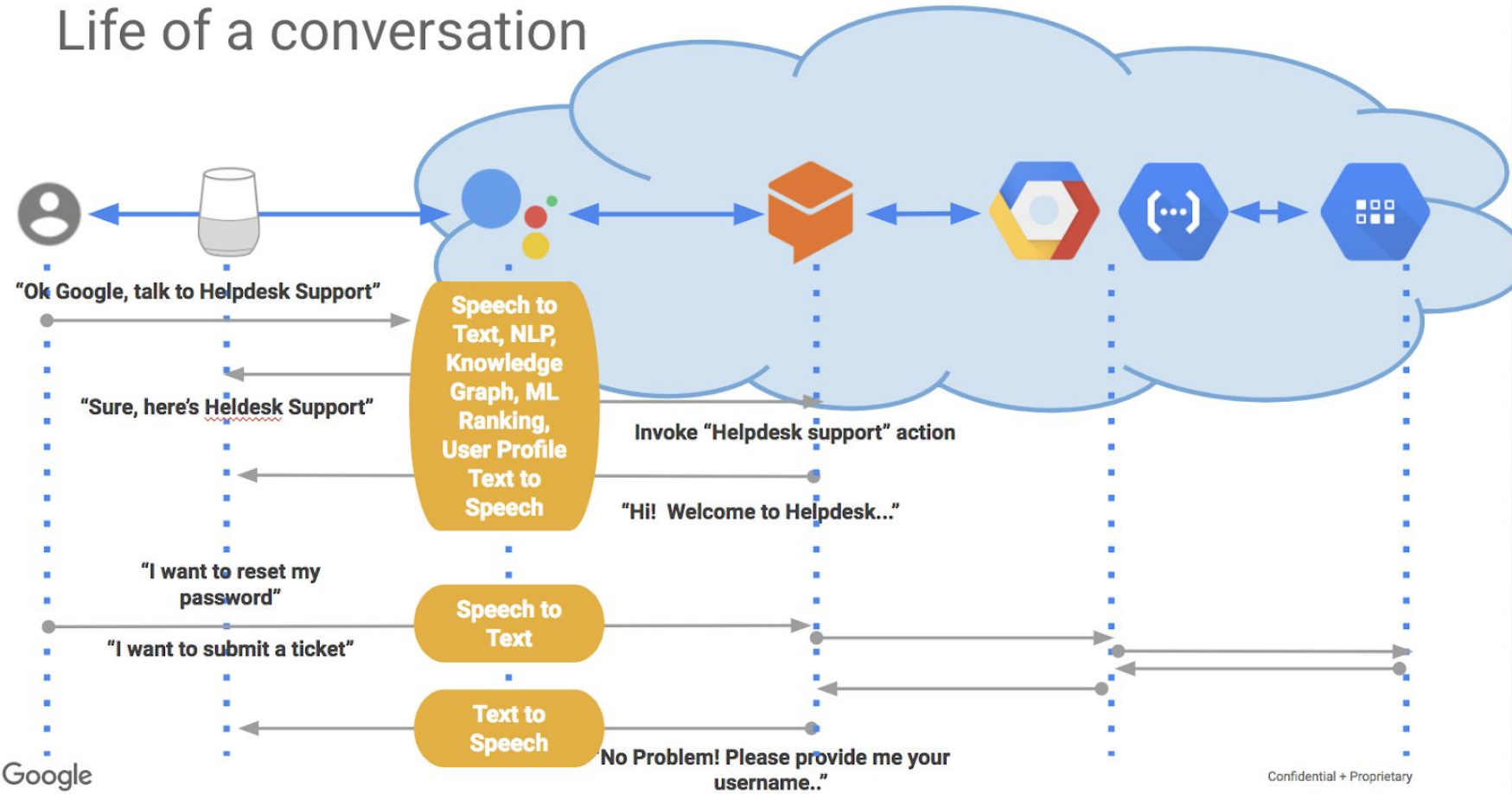
Agent ID	Date	Search Snippet
3331234	2019-3-4	Thank you for calling the Google merchandise store.
4441234	2019-2-14	Thank you for calling the Google merchandise store.
- Summary Metrics (Top Row):**
 - Call Sentiment: 0.00
 - Call Silence: 8%
 - Call Length: 2.19 Min(s)
- Summary Metrics (Bottom Row):**
 - Agent Talk Time: 1.31 Min(s)
 - Client Talk Time: 43 Secs
 - Natural Language Category: Order
- Sentiment Timeline:** A horizontal bar chart showing sentiment over time. The top chart covers 00:00 to 01:07, and the bottom chart covers 01:10 to 01:29. Green bars indicate positive sentiment, red bars indicate negative sentiment, and blue bars indicate neutral sentiment.
- Sentence Player:** A text box containing the sentence: "Sentence: I am so sorry for that, but it's been about a week and you have not yet shipped my order." Below it is a progress bar showing 1:32 / 2:12 and a volume icon.

Go Hawaii Demo

Lab: Implementing an AI Chatbot with Dialogflow



Life of a conversation




Overview

The exercises are ordered to reflect a common cloud developer process. You will:

- Set up your lab and learn how to work with Dialogflow and your Google Cloud environment.
- Deploy a simple Dialogflow application.
- Deploy a simple cloud function within Google Cloud to connect with Dialogflow.
- Test your chatbot.

Start Lab 01:00:00

I'm not a robot



reCAPTCHA
Privacy - Terms

Implementing an AI Chatbot with Dialogflow

1 hour 5 Credits ★★★★★

GSP078



Overview

Dialogflow is a natural language understanding platform that makes it easy to design and integrate a conversational user interface into your mobile app, web application,

GSP078 —/100

- Overview
- Setup and Requirements
- Dialogflow Concepts and Constructs
- Deploy a simple Dialogflow application to submit helpdesk tickets
- Create Intents
- Allow Fulfillment to Store Help Ticket Data
- Verify that Tickets are Logged in Datastore
- Testing your Chatbot
- Test your Understanding
- Congratulations!

Start Lab

01:00:00



I'm not a robot



reCAPTCHA
Privacy - Terms

Implementing an AI Chatbot with Dialogflow

1 h

This lab costs 5 Credits.

[BUY CREDITS](#)

Enter Lab Access Code:

<input type="text" value="12"/>	<input type="text" value="12"/>	<input type="text" value="12"/>	<input type="text" value="12"/>
---------------------------------	---------------------------------	---------------------------------	---------------------------------

[Launch with Access Code](#)


X


End Lab 00:58:40

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. [Learn more.](#)

[Open Google Console](#)

Username
student-04-88ec2a0206b0@ 

Password
6PtK2bbBJ 

GCP Project ID
qwiklabs-gcp-04-5fe2bee2 

End Lab 00:56:42



Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. [Learn more.](#)

[Open Google Console](#)

Username
student-04-88ec2a02

Password
6PtK2bbBJ

GCP Project ID
qwiklabs-gcp-04-5fe2bee2 

- Open link in new tab
- Open link in new window
- Open link in incognito window**
-  Send link to your devices 
- Save link as...
- Copy link address
- Inspect Ctrl+Shift+I

Student ID: student-04-88ec2a0206b0@qwiklabs.net

Password: 6PtK2bbBJ

GCP Project ID: qwiklabs-gcp-04-5fe2bee2982f

Student ID: student-00-6f354a7dfe00@qwiklabs.net

Password: 5xwrzPVk8

GCP Project ID: qwiklabs-gcp-00-bf1ae4ce6bb0



```
'use strict';
const http = require('http');
// Imports the Google Cloud client library
const Datastore = require('@google-cloud/datastore');
// Your Google Cloud Platform project ID
const projectId = 'REPLACE_WITH_YOUR_PROJECT_ID';
// Instantiates a client
const datastore = Datastore({
  projectId: projectId
});
// The kind for the new entity
const kind = 'ticket';
exports.dialogflowFirebaseFulfillment = (req, res) => {
  console.log('Dialogflow Request body: ' + JSON.stringify(req.body));
  // Get the city and date from the request
  let ticketDescription = req.body.queryResult['queryText']; // incidence is a required param
  //let name = req.body.result.contexts[0].parameters['person.original'];
  let username = req.body.queryResult.outputContexts[1].parameters['person.original'];
  let phone_number = req.body.queryResult.outputContexts[1].parameters['phone-number.original'];
  console.log('description is ' + ticketDescription);
  console.log('name is ' + username);
  console.log('phone number is ' + phone_number);
  function randomIntInc (low, high) {
    return Math.floor(Math.random() * (high - low + 1) + low);
  }
  let ticketnum = randomIntInc(11111, 99999);
  // The Cloud Datastore key for the new entity
  const taskKey = datastore.key(kind);
  // Prepares the new entity
```

```
'use strict';
const http = require('http');
// Imports the Google Cloud client library
const Datastore = require('@google-cloud/datastore');
// Your Google Cloud Platform project ID
const projectId = 'qwiklabs-gcp-00-bf1ae4ce6bb0';
// Instantiates a client
const datastore = Datastore({
  projectId: projectId
});
// The kind for the new entity
const kind = 'ticket';
exports.dialogflowFirebaseFulfillment = (req, res) => {
  console.log('Dialogflow Request body: ' + JSON.stringify(req.body));
  // Get the city and date from the request
  let ticketDescription = req.body.queryResult['queryText']; // incidence is a required param
  //let name = req.body.result.contexts[0].parameters['person.original'];
  let username = req.body.queryResult.outputContexts[1].parameters['person.original'];
  let phone_number = req.body.queryResult.outputContexts[1].parameters['phone_number.original'];
```





Thank you