Google Home Midterm Presentation

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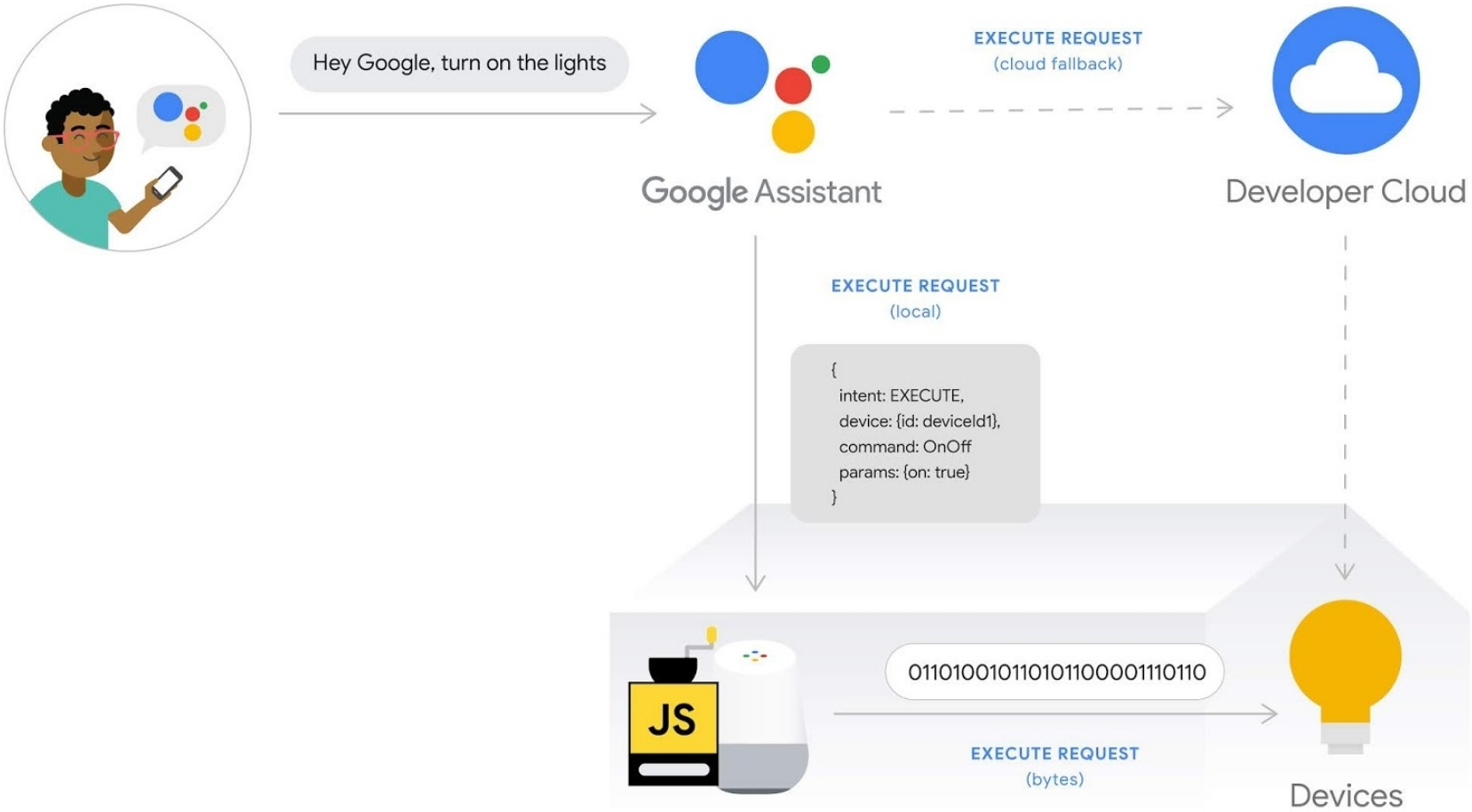
Overview

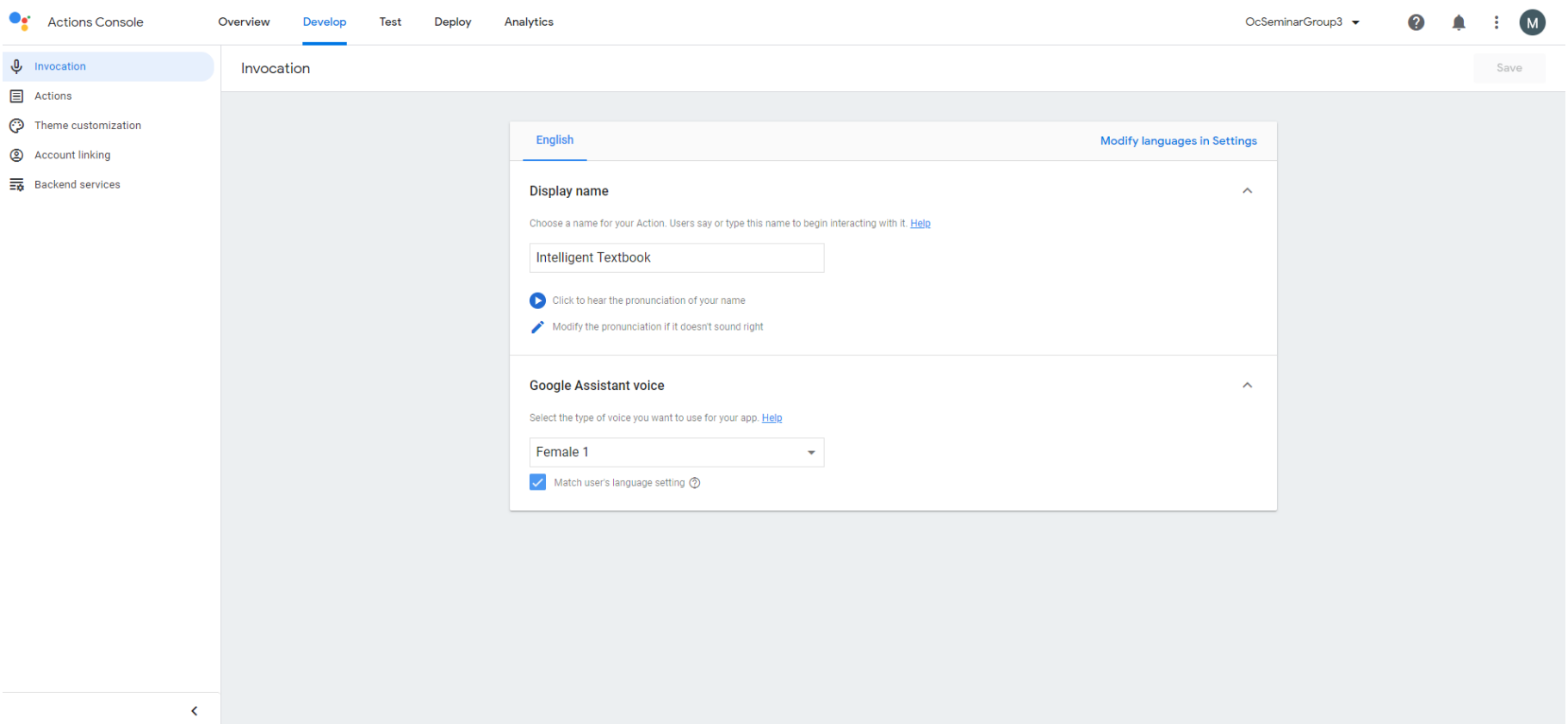
Overview

- Founded by Google in 2016
- Development through Googles developer console and Dialogflow
- Creating skills pretty easy
- No programming skills required

Execution Path



Developer Console



Developer Console cont'd

- Gives an overview of your skill
- Specifies general settings
- Gives the user the ability to test their skill
- Deployment of the skill

Dialogflow

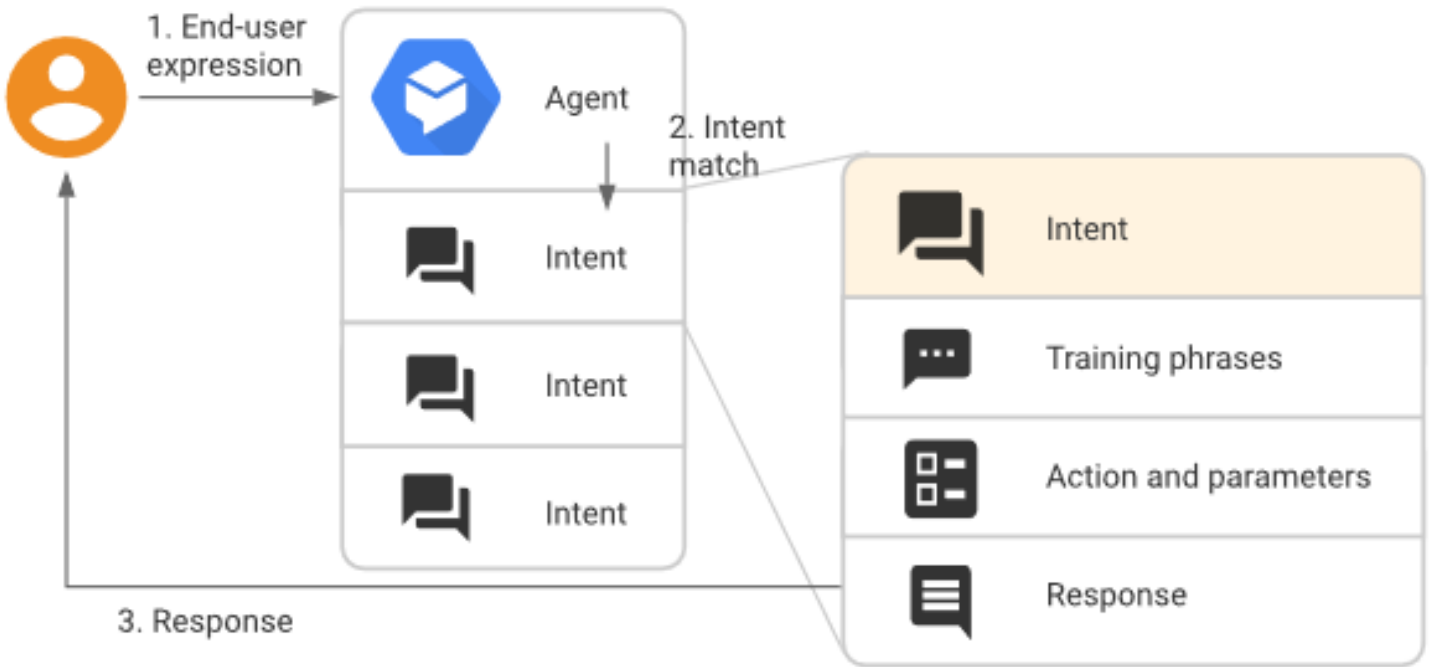
- Service developed and provided by Google
- Natural language tool to create conversational user interfaces for apps, chatbots, etc.
- By adding 'Training phrases' Dialogflow automatically trains the machine learning model

Dialogflow cont'd

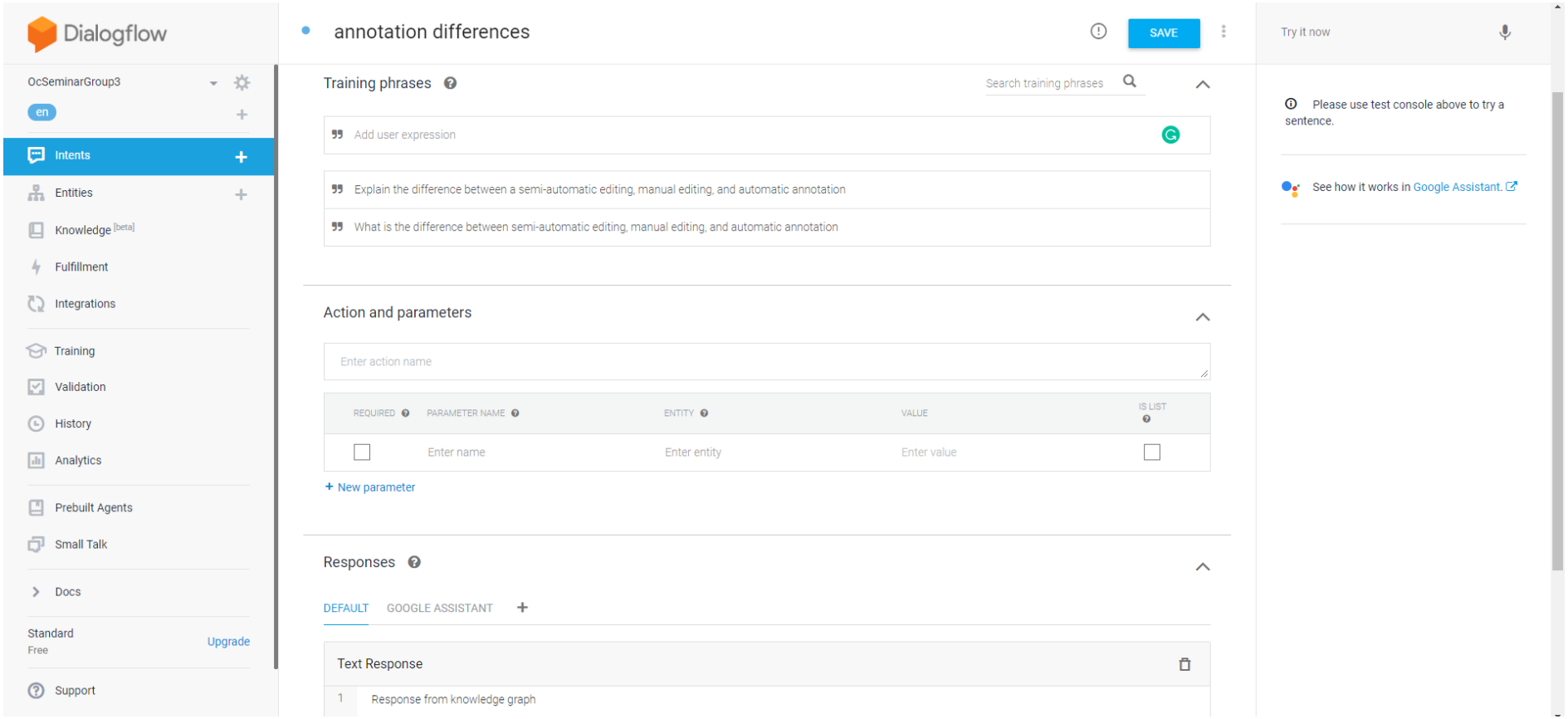
Concepts

- Intents
  - Each intent describes an intent a user might have
  - E.g. check prices, get opening hours or book a repair
  - By communicating with the interface, Dialogflow classifies the user's intent and performs the associated action
  - An intent can require some parameters such as a date in order to book a repair
- Entities
  - Each intent parameter has a type and therefore belongs to an entity
  - There are predefined system entities for dates, colors, addresses, etc.
  - Define entities to make Dialogflow 'understand' your vocabulary
  - E.g. Entity 'bike-type' with the instances road bike and mountain bike

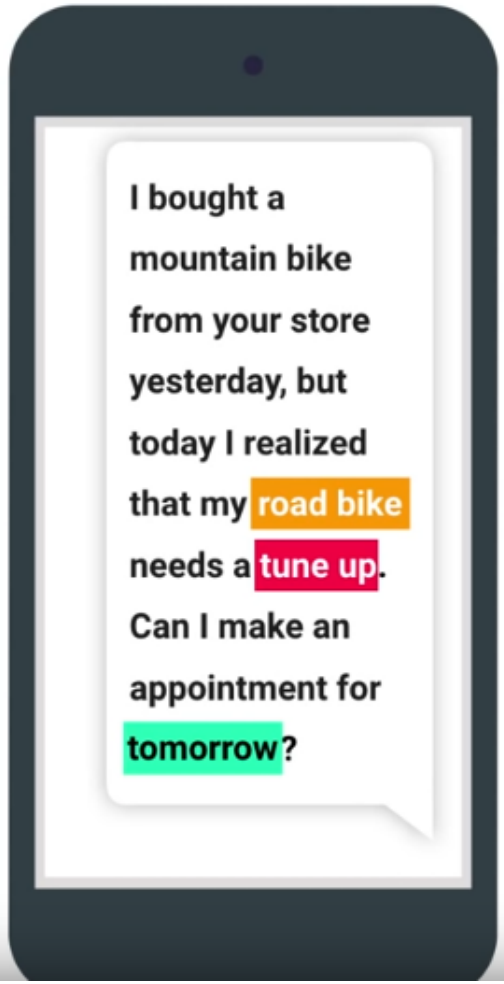
Intents


1. End-user expression
Agent
2. Intent match
Intent
Intent
Intent
Intent
Training phrases
Action and parameters
Response
3. Response

Intents cont'd



Entities



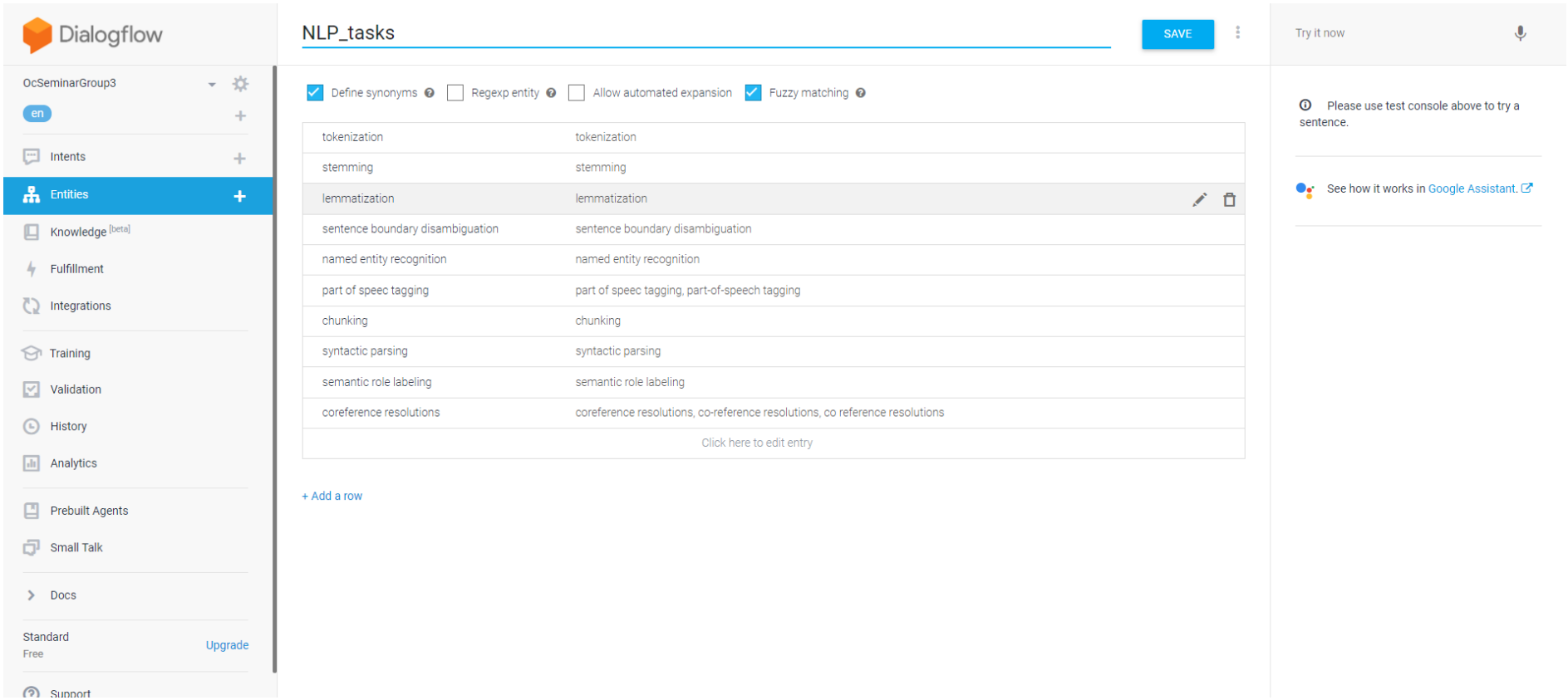
road bike
tune up
tomorrow
2017-11-09

System entities
@sys.time
@sys.date

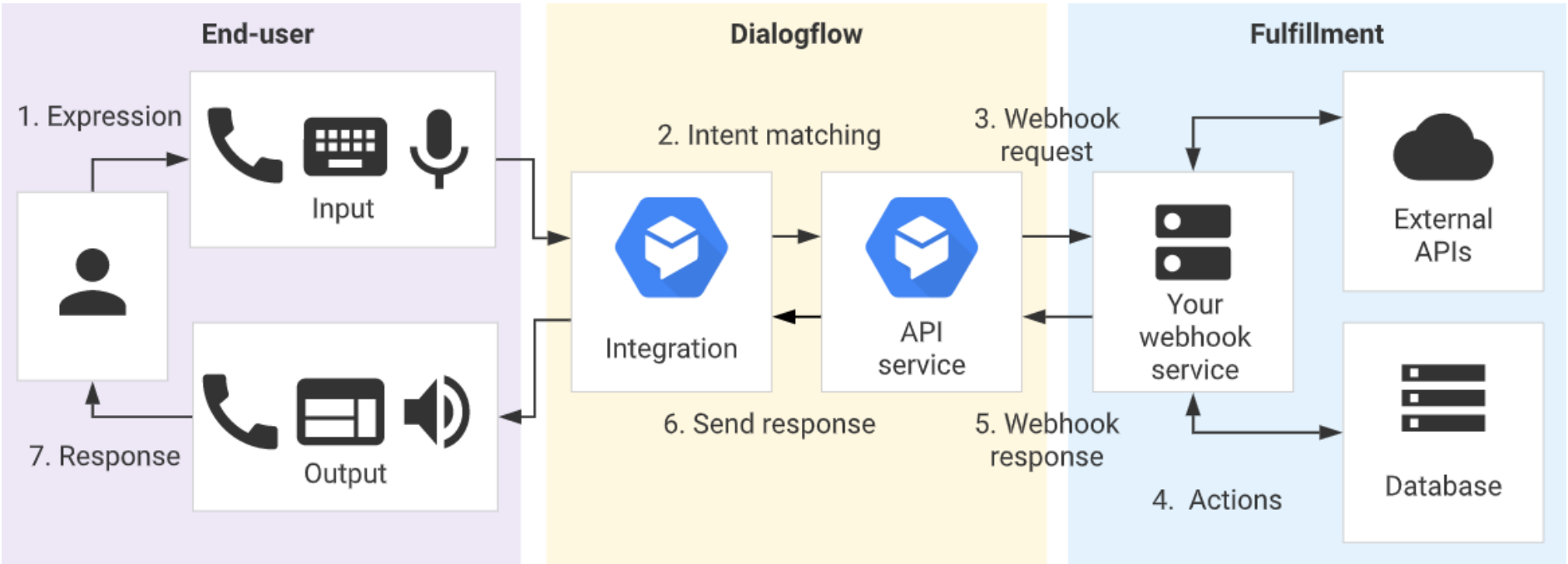
Developer entities
@service-option
- Tune up
- Repair
- Tire change
- Upgrade

@bike-type
- Road bike
- Mountain bike
- Beach cruiser
- Racing bike
- Fixed gear bike
- Cross bike

Entities cont'd



Fulfillment



Connecting to our GraphDB

Problem

Dialogflow doesn't allow direct connection to a database like Mycroft etc.

Solution

- Dialogflow sends a webhook request message that contains information about the matched intent, the action, the parameters, and the response defined for the intent.
- Our service then performs the needed database query.
- Our service sends back a webhook response containing the response to be sent to the end-user.

Webhook Service

Features

- Supports Mutual TLS authentication.
- Body of request and response is a simple JSON object.
- Supports contexts and sessions, follow-up events and custom payloads.
- Response can be a text, card, event or a Google Assistant response.

Limitations

- Response must occur within 10 seconds for Google Assistant applications or 5 seconds for other application, else it will timeout.
- The response must be less than or equal to 64 KiB in size.

Compatible Devices

Compatible Devices cont'd

Google Smart Home

- Google & IoT Devices
  - Accessing to third-party IoT devices through Google Assistant
  - Use *Actions* as Natural Language Understanding
  - Communication between *Google Assistant* and IoT devices handled via cloud services.
  - *Home Graph* to store information of connected devices

Device Types & Traits

- Various device types (air purifier to yogurt maker)
- Capabilities of a device $\Rightarrow$ traits

Sample Trait Schema

Device	Device type	Suggested device traits

Light	`action.devices.types.LIGHT`	`action.devices.traits.OnOff`
		`action.devices.traits.Brightness`
		`action.devices.traits.ColorSetting`

Fan	`action.devices.types.FAN`	`action.devices.traits.FanSpeed`
		`action.devices.traits.OnOff`
		`action.devices.traits.Modes`
		`action.devices.traits.Toggles`

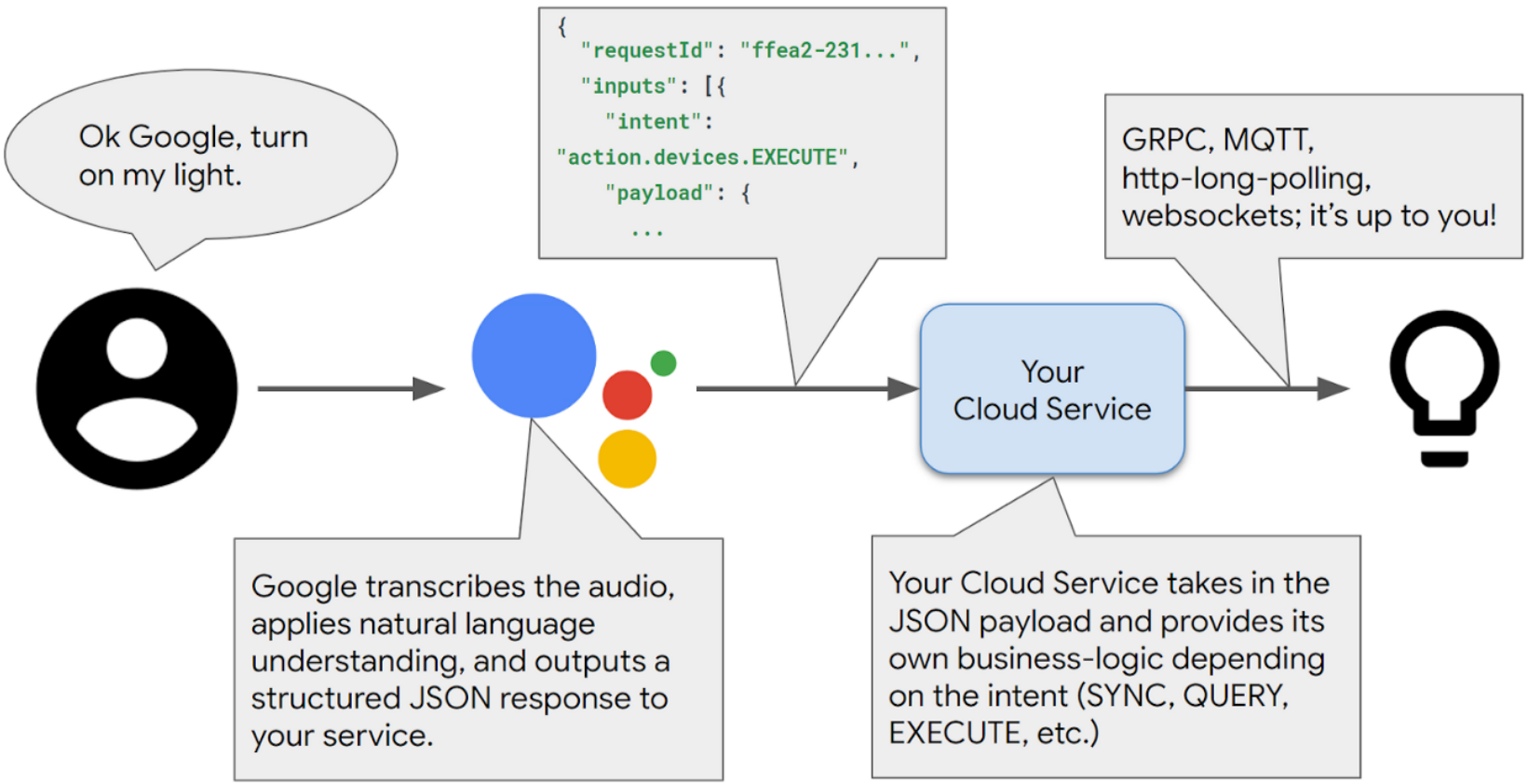
Life Cycle

A user sets up their devices in the Home App for the first time.

A user issues commands to their device.

User throws away their device and no longer uses Google Assistant.

Communication



Live Demo

Thank you for your attention!