



Dialogflow

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- Google-owned developer of human-computer interaction technologies based on natural language conversations
- Works on NLP and backed by ML
- Text-based and voice interactions throw conversational interfaces (voice apps and chatbots), powered by AI
- Lets build conversational interfaces on top of products and services by providing a powerful natural language understanding (NLU) engine to process and understand natural language input

Basic concepts

Agents

- Natural Language Understanding modules

Intents

- Recognize what users want


Entities

- Extract information that users mention

Dialog control

- Shape the flow of your conversation

Basic concepts - Agents

 **Dialogflow**

HotelBotConv

en

Intents

Entities

Knowledge ^[beta]

Fulfillment

Integrations

Training

History

Analytics

Prebuilt Agents

Small Talk

> Docs

Standard
Free

Upgrade

? Support

Account


Logout

HotelBotConv

SAVE

Try it now

General Languages ML Settings Export and Import Speech Share



DESCRIPTION

Describe your agent

DEFAULT TIME ZONE

(GMT+1:00) Europe/Madrid

Date and time requests are resolved using this timezone.

GOOGLE PROJECT

Project ID	
Service Account	

API VERSION

☒ **V2 API**
Use Cloud API as default for the agent. Your webhook will receive V2 format requests and should return V2 format responses.

☐ **V1 API**
Legacy APIs

BETA FEATURES

☐ **Enable beta features and APIs**
Be the first to get access to the newest features and latest APIs. (Full V2-beta API reference)


API KEYS (V1)

Client access token	
---------------------	--

Please use test console above to try a sentence.

See how it works in Google Assistant.


Basic concepts - Intents

 **Dialogflow**

HotelBotConv ▾ ⚙
en +
Intents +
Entities +
Knowledge ^[beta]
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Intents


CREATE INTENT

Try it now 


Search intents 🔍

- AddParameter
- BookHotel
- ClearParameter
- 🔖 Default Fallback Intent
- Default Welcome Intent
- SearchHotel

ⓘ Please use test console above to try a sentence.

 See how it works in Google Assistant. [↗](#)

Basic concepts - Entities

 Dialogflow

HotelBotConv

en

+

Intents

+

Entities

+

Knowledge [beta]

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Entities


CREATE ENTITY


Search entities

Q

@ cities
@ features
@ hotel-amenity
@ location
@ nearBy
@ parameters
@ pricerange
@ rating
@ room-type

Try it now

 Please use test console above to try a sentence.

 See how it works in Google Assistant. [↗](#)

Basic concepts - Dialog control

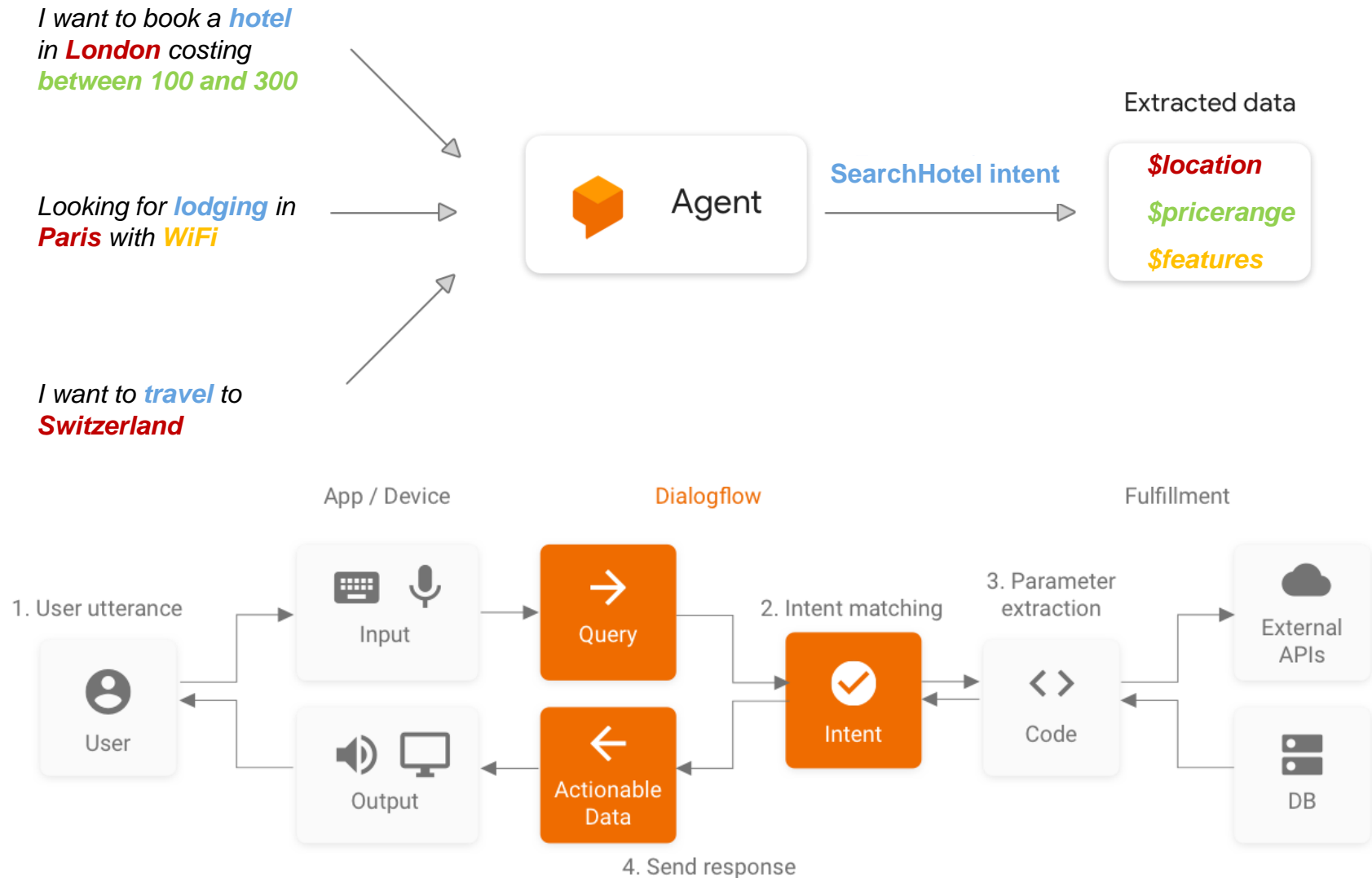
Linear dialog

- Slot filling

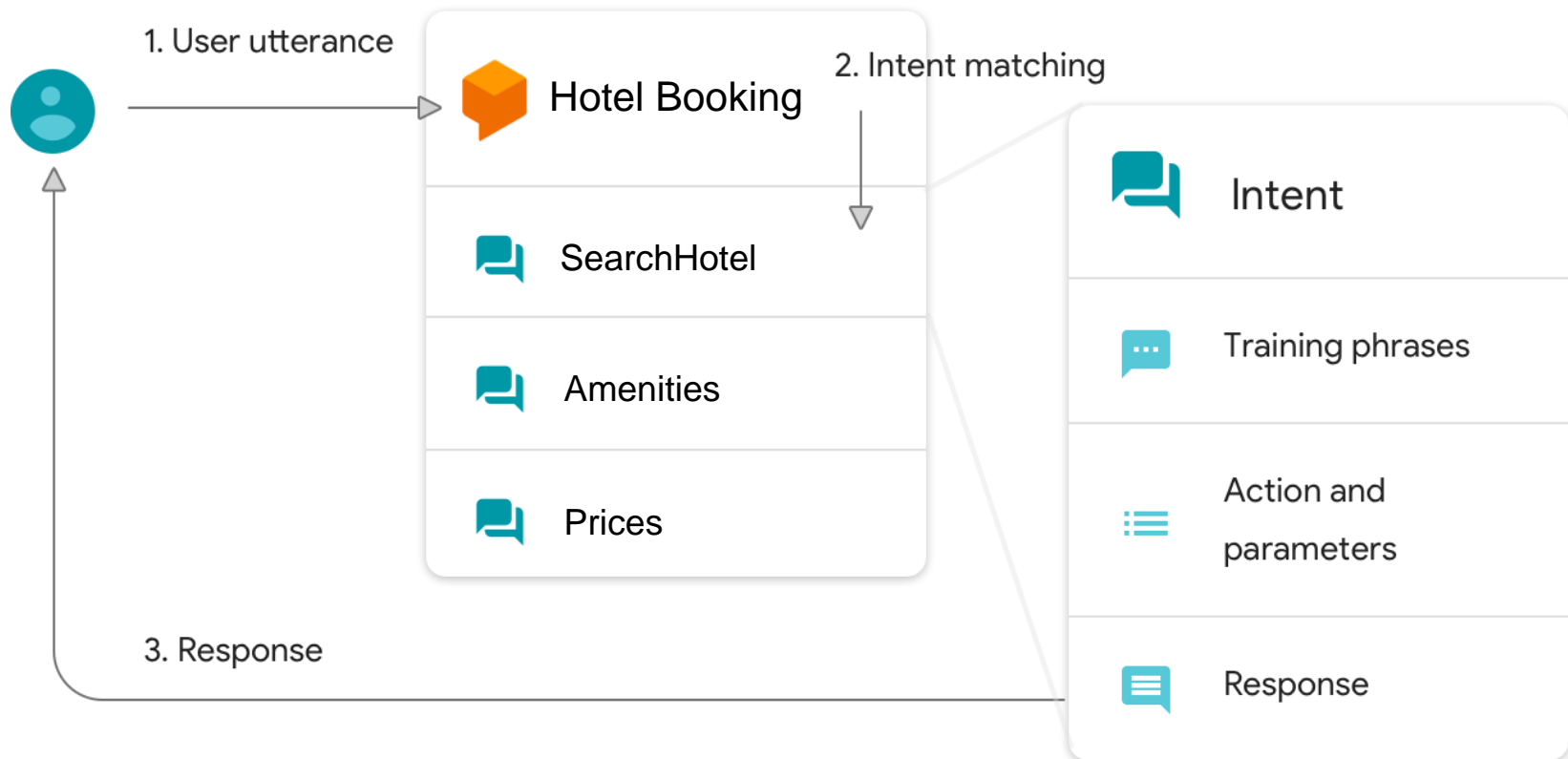
Non-linear dialog

- Contexts
- Fulfillment and back-end modifications

Agents – How do agents work



Agents - How to match user utterance



Intents

- Intent name
- Training phrases
 - What a user might say to the agent
 - Automatically expanded to match similar user utterances (Dialogflow's built-in machine learning)
- Actions and parameters
 - Defines how relevant information (parameters) are extracted from user utterances
- Responses
 - \$location
 - #searching.location

SearchHotel

SAVE

Contexts ?

Events ?

Training phrases ?

Search training phrase 🔍 ^

” Add user expression

@ I want to book a hotel in @sys.location.location

” Book hotel in London

Action and parameters ^

searching

REQUIRED ?	PARAMETER NAME ?	ENTITY ?	VALUE	IS LIST ?
<input type="checkbox"/>	location	@sys.location	\$location	<input type="checkbox"/>
<input type="checkbox"/>	Enter name	Enter entity	Enter value	<input type="checkbox"/>

[+ New parameter](#)

Responses ? ^

[DEFAULT](#) +

Text response ⓘ 🗑

1 Looking for a hotel in \$location.

Intents - Priority

Highest

High

Normal

Low

Ignore

name

SAVE

?

▼

?

▼

phrases

?

Search training phrases

Q

^

”

Add user expression

JSON response after matching intent

```
{
  "responseId": "dac7a747-9f65-4953-aa2a-a95d4e41c0c6",
  "queryResult": {
    "queryText": "excellent rated",
    "action": "rating",
    "parameters": {
      "pricerange": {
        "higher": 300,
        "lower": 100
      },
      "location": {
        "city": "London"
      },
      "nearBy": {
        "place": "Big Ben"
      },
      "rating": "excellent",
      "hotel-amenity1": "restaurant",
      "hotel-amenity": "WiFi"
    },
    "allRequiredParamsPresent": true,
    "fulfillmentText": "Adding rating",
    "fulfillmentMessages": [
      ...
    ],
    "outputContexts": [
      {
        "name": "projects/hotelbotconv/agent/sessions/a1cbfd04-6131-b4ca-56be-349f1b70d611/contexts/searching",
        "lifespanCount": 1,
        "parameters": {
          ...
        }
      },
      {
        "name": "projects/hotelbotconv/agent/intents/c63a5155-fddf-4190-aafe-40db516851ca",
        "displayName": "Rating"
      }
    ],
    "intentDetectionConfidence": 1,
    "diagnosticInfo": {
      "webhook_latency_ms": 284
    },
    "languageCode": "en"
  }
}
```

Entities

- System entities
 - Pre-built entities provided by Dialogflow
 - @sys.geo-city, @sys.any, @sys.time, @sys.number
- Developer entities
 - Entities created by our own
 - @hotel-amenity, @pricerange, @nearby, @rating
- Session entities

Entities - Define

features

SAVE

☒ Define synonyms ⓘ ☐ Allow automated expansion

wifi	wifi, WiFi, internet
restaurant	restaurant, Restaurant
gym	gym, fitness
pool	pool, swimming pool, swimming, swimmingpool
conference	conference, conference room, meeting room
jacuzzi	jacuzzi
pet	pet, pet friendly
breakfast	breakfast, breakfast included
Click here to edit entry	

+ Add a row

Entities - Developer composite

pricerange

☐ Define synonyms  ☐ Allow automated expansion

between @sys.number:lower and @sys.number:higher

more than @sys.number:lower

below @sys.number:higher

Prices

[SAVE](#)

Training phrases

” Add user expression

” costing between 100 and 500 CHF

PARAMETER NAME	ENTITY	RESOLVED VALUE	
pricerange	@pricerange	between 100 and 500	×
currency-name	@sys.currency-name	CHF	×

Agent

USER SAYS

[COPY CURL](#)

costing between 100 and 300 per night

 DEFAULT RESPONSE 

<p>, , {city: 'Zürich'}, {lower: 100.0, 'higher': 300.0}, , , </p><p>What else should I consider?</p>

CONTEXTS

[RESET CONTEXTS](#)

searching

INTENT

Prices

rating

hotel-amenity1

hotel-amenity

pricerange {"higher":300,"lower":100}

geo-city Zürich

Dialog control

- Contexts
 - Store parameter values from users' request
 - Allow your agent to carry information from one intent to another
 - When we apply context to an intent, Dialogflow will only consider that intent for matching if the context is active
 - Input and output
- Follow-up intents
 - Special intents nested under parent intents
- Fallback intents
 - Triggered if user input is not match to any of the available intents
 - Can be used to help guide the user in the right direction
- Contexts and fulfillment

Contexts

- SearchHotel

Contexts ?

Add input context

1 searching ⊗ Add output context

- SearchEnd

Contexts ?

searching ⊗ Add input context

1 searching ⊗ 3 ending ⊗ Add output context

- [U] "Book hotel in Zürich." – *searching* context is set and activated
- [B] "What else do you want to include?" - Turn 1. Context is attached to *SearchEnd* intent
- [U] "That's all." – *ending* context is set and activated, *searching* context is reactivated
- [B] "I found 72 results. What about including any feature?" - Turn 1 of *ending*
- [U] "With WiFi" - Turn 1
- [B] "I found 70 results. Would you like to specify any price range?" - Turn 2 of *ending*
- [U] "Costing between 100 and 280 per night" – Turn 2
- [B] "I found 11 results. How should the hotel be rated?" – Turn 3 and context is removed
- [U] "Excellent"
- [B] "I found these 5 results....."

Contexts

- SearchStart

Contexts ?

Add input context

1 searching ⊗ Add output context

- Features

Contexts ?

Add input context

1 searching ⊗ Add output context

- SearchEnd

Contexts ?

searching ⊗ Add input context

1 searching ⊗ 4 ending ⊗ Add output context

- Results

Contexts ?

searching ⊗ Add input context

1 results ⊗ 1 searching ⊗ Add output context

Contexts

Try it now



See how it works in [Google Assistant](#).

Agent

USER SAYS

[COPY CURL](#)

hi



DEFAULT RESPONSE



Good day! What can I do for you today?

INTENT

[Default Welcome Intent](#)

ACTION

[input.welcome](#)

DIAGNOSTIC INFO

Try it now



See how it works in [Google Assistant](#).

Agent

USER SAYS

[COPY CURL](#)

book hotel in Zürich



DEFAULT RESPONSE



<p>Looking for a hotel in Zürich</p><p> I found 67 hotels </p></p><p>What else should I consider?</p>

CONTEXTS

[RESET CONTEXTS](#)

searching

INTENT

[Location](#)

ACTION

[searching](#)

Try it now



See how it works in [Google Assistant](#).

Agent

USER SAYS

[COPY CURL](#)

that's all



DEFAULT RESPONSE



<p>I found 67 results.</p><p>Is there any facility you would like to have?

CONTEXTS

[RESET CONTEXTS](#)

ending

searching

Turn 1

INTENT

[SearchEnd](#)

ACTION

[end](#)

Contexts

Try it now

See how it works in [Google Assistant](#).

Agent

USER SAYS
with wifi

COPY CURL



DEFAULT RESPONSE

<p>Looking for a hotel in Zürich with wifi</p><p>I found 40 hotels </p></p><p>What else should I consider?</p>

CONTEXTS

RESET CONTEXTS

ending

searching

Turn 2

INTENT

Features

ACTION

searching

PARAMETER VALUE

features ["wifi"]

rest

DIAGNOSTIC INFO

Try it now

See how it works in [Google Assistant](#).

Agent

USER SAYS

costing between 100 and 280 per night

COPY CURL



DEFAULT RESPONSE

<p>Looking for a hotel with wifi in Zürich costing between 100.0 and 280.0</p><p>I found 33 hotels </p></p><p>What else do you want to include?</p>

CONTEXTS

RESET CONTEXTS

ending

searching

Turn 3

INTENT

PriceRange

ACTION

searching

PARAMETER VALUE

currency-name

rest

pricerange {"higher":280,"lower":100}

Try it now

See how it works in [Google Assistant](#).

Agent

USER SAYS

rating excellent

COPY CURL



DEFAULT RESPONSE

<p>Looking for a hotel rated as excellent with wifi in Zürich costing between 100.0 and 280.0</p><p>I found 21 hotels </p></p><p>What else should I take into consideration?</p>

CONTEXTS

RESET CONTEXTS

ending

searching

Turn 4

INTENT

Ratings

ACTION

searching

PARAMETER VALUE

rating excellent

rest

DIAGNOSTIC INFO

Try it now

See how it works in [Google Assistant](#).

Agent

USER SAYS

with restaurant

COPY CURL



DEFAULT RESPONSE

<p>Looking for a hotel rated as excellent with wifi, restaurant in Zürich costing between 100.0 and 280.0</p><p>I found 17 hotels </p></p><p>What else do you want to include?</p>

CONTEXTS

RESET CONTEXTS

searching

Reset

INTENT

Features

ACTION

searching

PARAMETER VALUE

features ["restaurant"]

rest

DIAGNOSTIC INFO

Follow-up intents

- A follow-up intent is matched only when the parent intent is matched in the previous conversational turn.

●	BookHotel	^
●	↳ BookHotel - yes	
●	↳ BookHotel - no	

●	Amenities	^
●	↳ moreAmenities	

- BookHotel

Contexts ?

Add input context

1 booking ⊗ 2 BookHotel-followup ⊗ Add c

- BookHotel - yes

Contexts ?

BookHotel-followup ⊗ Add input context

Add output context

- Fulfillment allows to use the information extracted by Dialogflow's natural language processing to generate dynamic responses or trigger actions on your back-end.
- To use fulfillment, you need to set up a webhook. A webhook is a web server endpoint that you create and host.
- Webhook request: When an intent with fulfillment enabled is matched, Dialogflow will make an HTTP POST request to your webhook with a JSON object containing information about the matched intent.
- Finally, your webhook should respond back with instructions for what Dialogflow should do next.

Fulfillment - When we used it

- To access and use the information extracted by Dialogflow's natural language processing

```
@app.route('/get_hotel_detail', methods=['POST'])
def get_hotel_detail():
    data = request.get_json(silent=True)
    parameters = data['queryResult']['parameters']
    rest = parameters['rest'] if 'rest' in parameters else ''
    action = data['queryResult']['action']
    intent = data['queryResult']['intent']['displayName']
    query = data['queryResult']
    project_id = os.getenv('DIALOGFLOW_PROJECT_ID')
    session_client = dialogflow.SessionsClient()
    session = session_client.session_path(project_id, "unique")
```

Fulfillment - When we used it

- To modify the responses given by the chatbot

```
def booking_hotel(data, hotel_found):  
    number_hotels = len(hotel_found)  
    response = ''  
    if number_hotels == 1:  
        response = "Here is the link to your selection: " \  
            + '<a href="%s">%s</a> ' % (hotel_found[0]['url'], hotel_found[0]['url'])  
    else:  
        if data['queryResult']['parameters']['selection'] != '':  
            selection = data['queryResult']['parameters']['selection']  
        else:  
            selection = data['queryResult']['parameters']['numericSelect']  
        name = data['queryResult']['parameters']['name']  
        if selection != "":  
            index = int(selection) - 1  
            response = "Here is the link to your selection: " \  
                + '<a href="%s">%s</a> ' % (hotel_found[index]['url'], hotel_found[index]['url'])  
        if name != "" and "last" not in name:  
            for hotel in hotel_found:  
                if hotel['hotel_name'] == name:  
                    response = "Here is the link to your selection: " \  
                        + '<a href="%s">%s</a> ' % (hotel['url'], hotel['url'])  
        if name != "" and "last" in name:  
            response = "Here is the link to your selection: " \  
                + '<a href="%s">%s</a> ' % (hotel_found[-1]['url'], hotel_found[-1]['url'])  
    return response
```


Limitations

- Can only match one intent per user input → recursion and multiple access instead of including all combinations

- SearchStart

Training phrases ?

” Add user expression

” I want a hotel

@ hotel in @sys.any:rest

@ I want to go to a hotel @sys.any:rest

@ stay in a hotel @sys.any:rest

@ to a hotel @sys.any:rest

@ I want to go to @sys.any:rest

@ looking for hotels @sys.any:rest

@ i want it @sys.any:rest

- Location

Training phrases ?

” Add user expression

@ at @location:location @sys.any:rest

” at Madrid

@ @location:location @sys.any:rest

@ @location:location

” in London

@ in @location:location @sys.any:rest