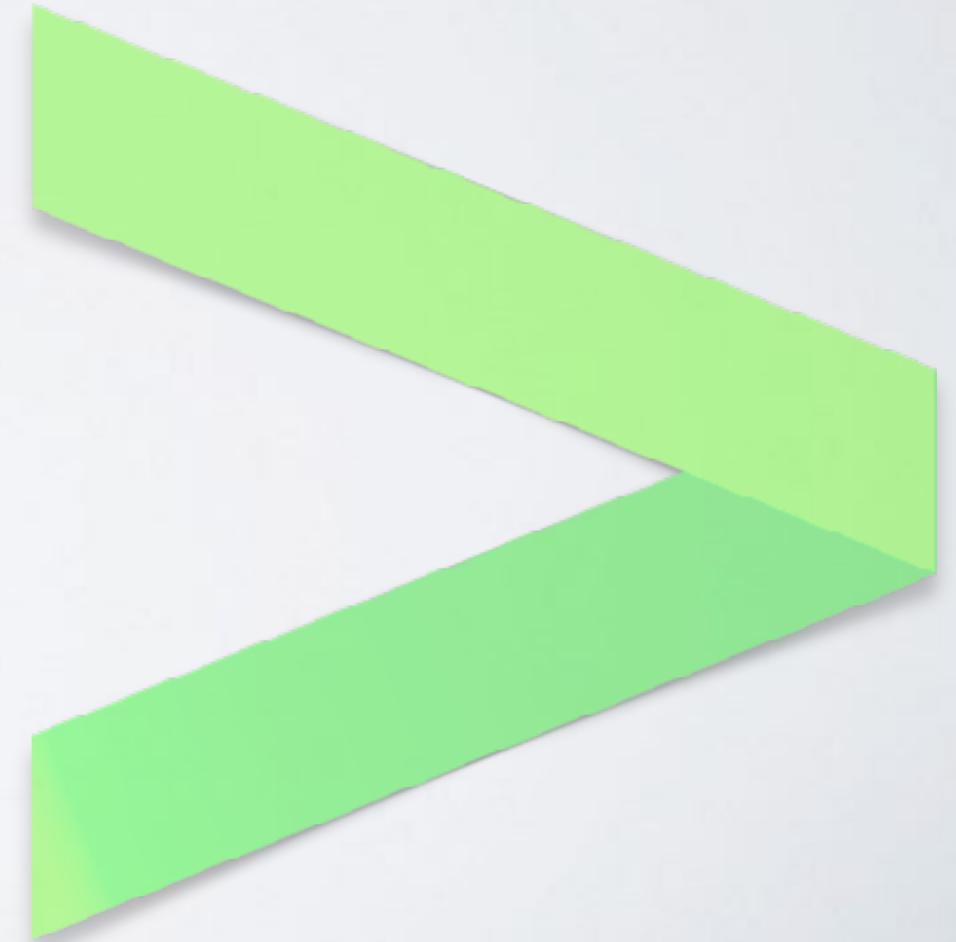
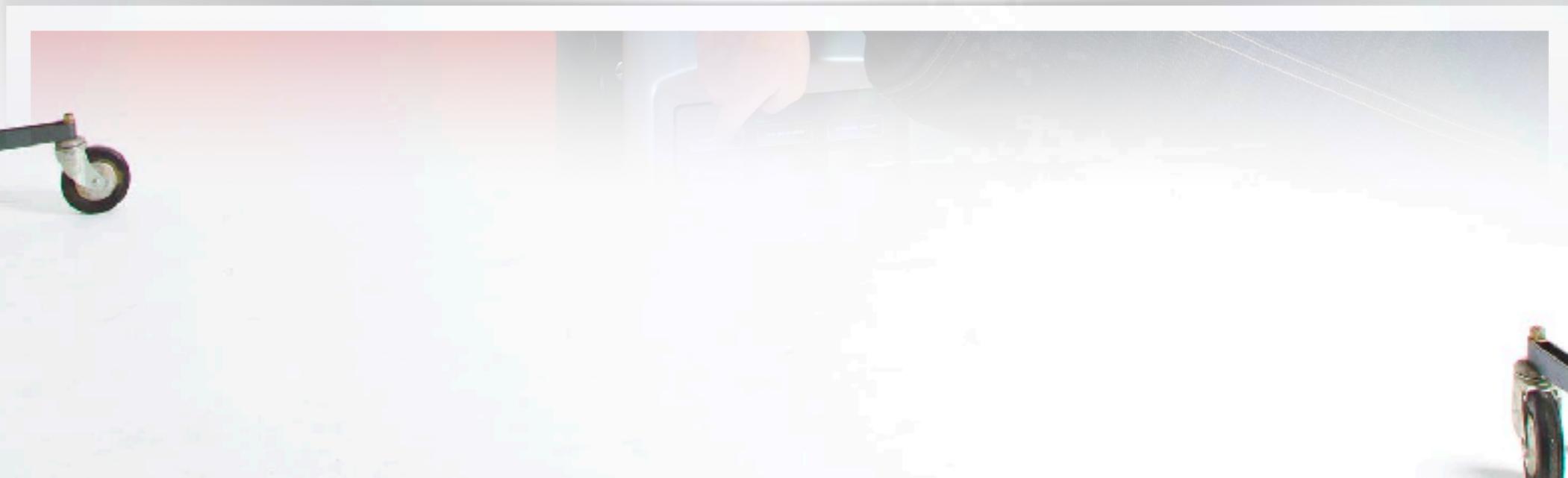
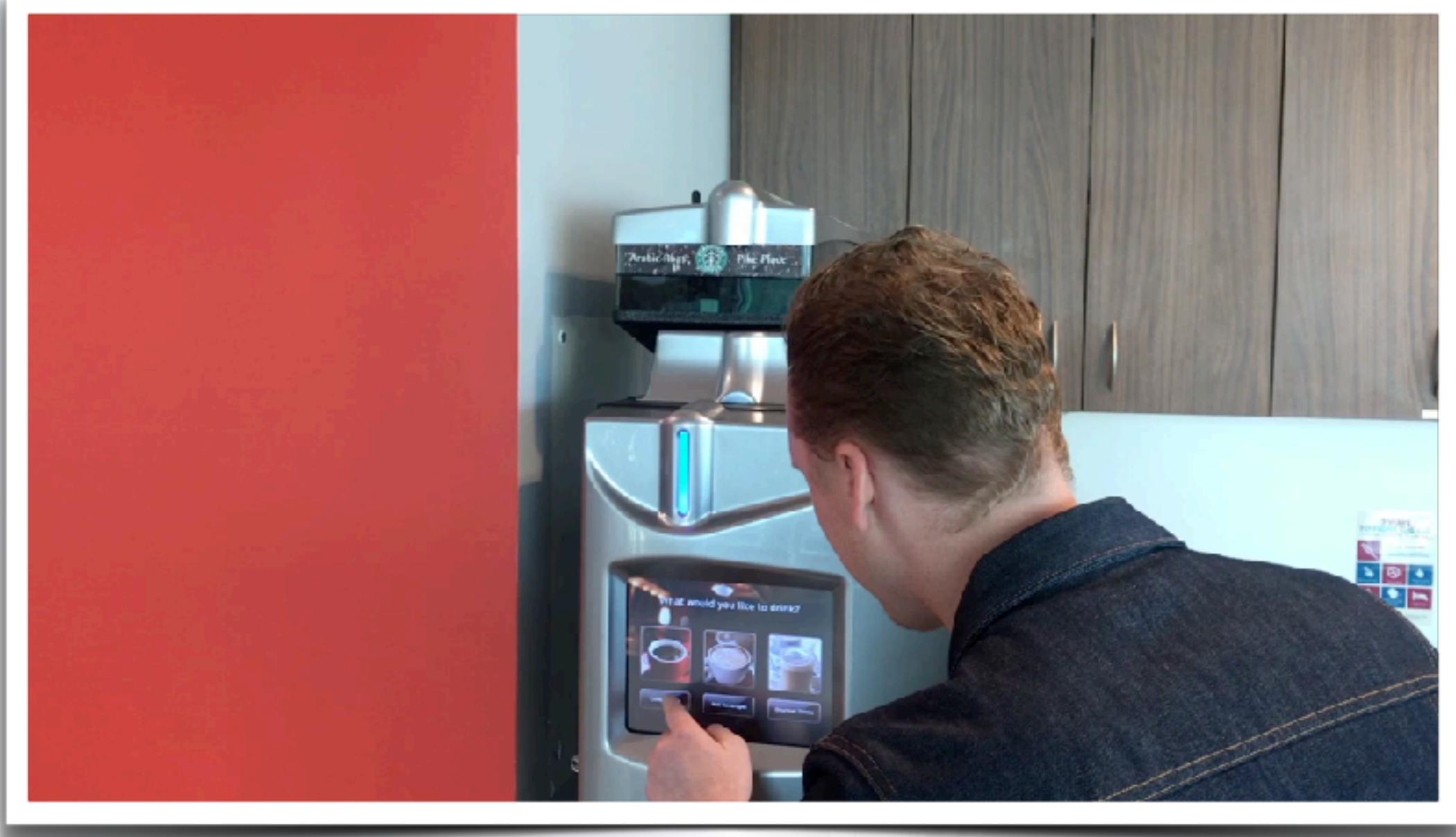
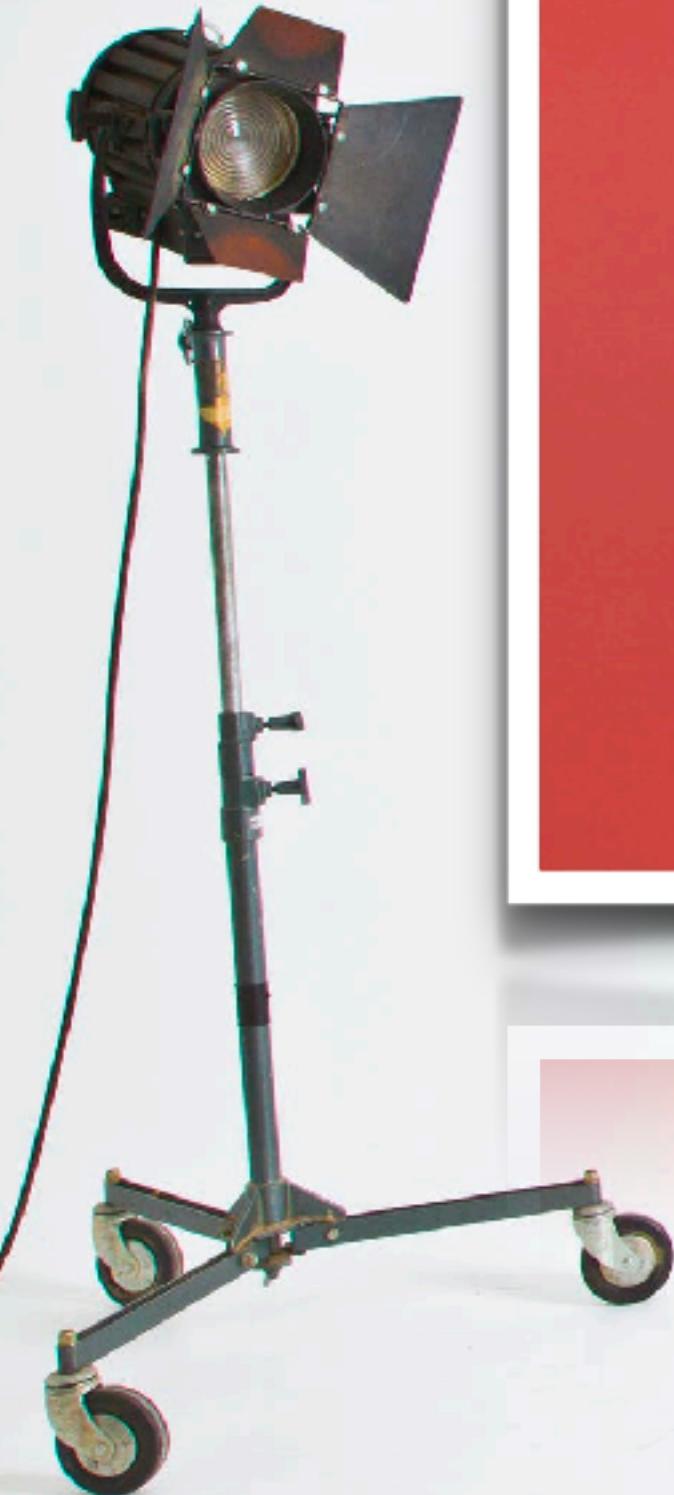


Kapil Kanugo
Liquid Studios
Redwood City, CA



building chatbots 2.0 with Google Dialogflow







I don't want pizza

Okay!
Which toppings would you like?



And tomorrow?

Sorry I didn't get that



What about next week?

Say that again?



DUMB BOTS HAVE LOW B.Q



Change my order to 1 pizza instead of 2

OK, let's start over



Weather this weekend?

Today's weather is 59 deg with low clouds



I went to login page and tried several times but it would not accept my information. What is wrong?

Can you repeat it one more time?





I don't want pizza

And tomorrow?

What about next week?

Okay!
Which toppings would you like?

Sorry I didn't get that

Say that again?

DUMB BOTS LEAD TO BAD UX



Change my order to 1 pizza instead of 2

OK, let's start over



Weather this weekend?

Today's weather is 59 deg with low clouds



I went to login page and tried several times but it would not accept my information. What is wrong?

Can you repeat it one more time?

user experience is like telling a **joke**, if you have to explain it
you are doing it wrong



Fully
autonomous
intelligence

chatbots 2.0 are best fit for
enterprise adoption right now



3.0

Auto pilot
and Co-pilot
intelligence



2.0

Basic
Intelligence



1.0



chatbot is service powered by AI that you interact with via chat interface

“People are spending more time on messaging apps than in social media.”

GUIDED
ASSISTANTS ARTIFICIAL
INTELLIGENCE

TEXT

AVATAR

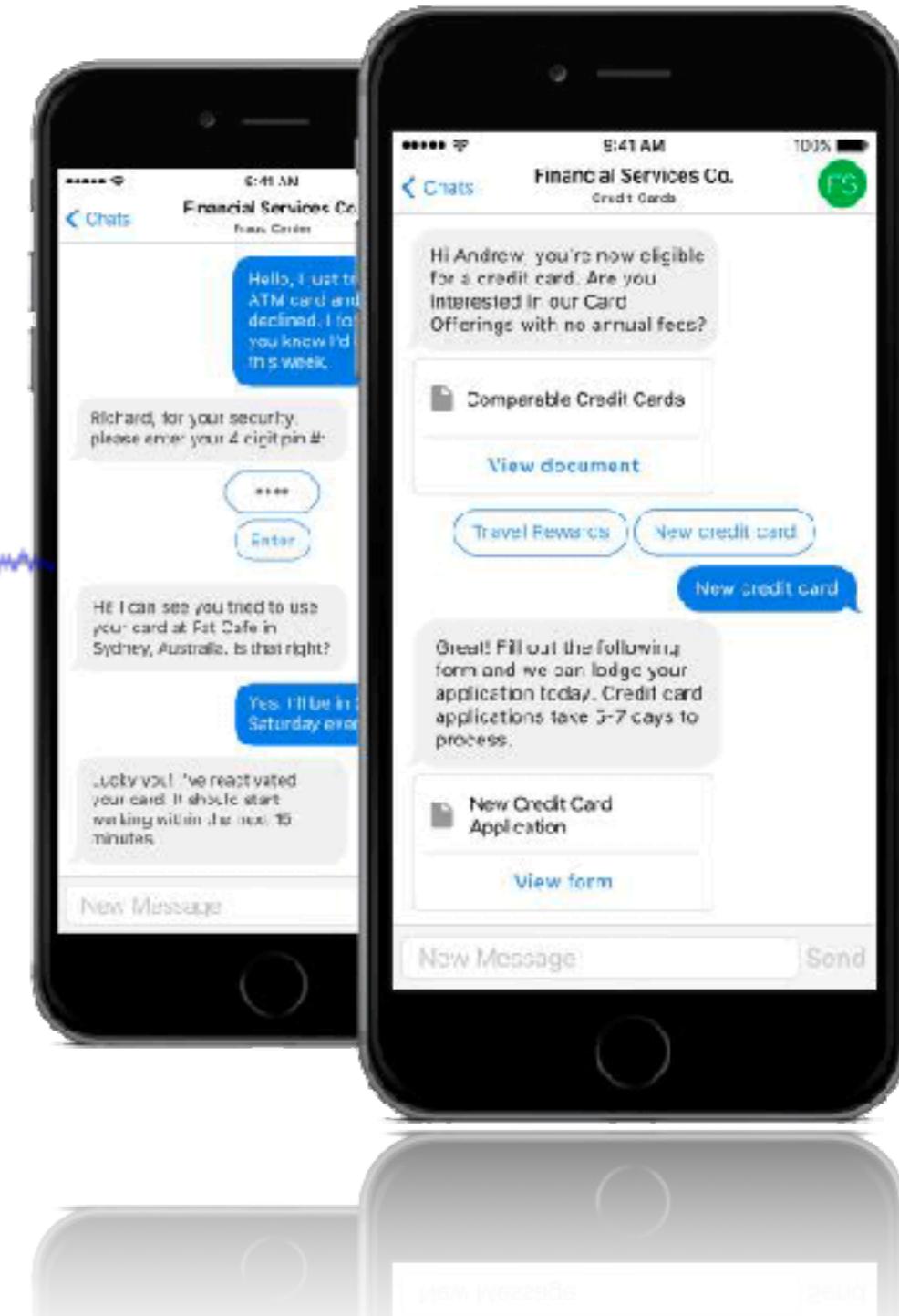
DIGITAL

VOICE

CONVERSATIONAL UI

VIRTUAL
ASSISTANTS USER
INTERFACE

INTELLIGENT
ASSISTANTS SMART





chatbots or virtual agents can use natural language understanding and data to be significantly more effective than FAQ

Intelligent assistants

Mobile Assistant

Home Assistant

Car Copilot

Mobile & Personal assistant

Shopping Assistant

Wellness Assistant

Travel & Entertainment

Financial Advisor

Social Assistant

Personal Advisors

Conversational Voice Assistant

Customer Service
Virtual Assistant

Virtual agents and customer care

Scheduling Assistant

Sales Assistant

Expert and On
Demand

Employee Assistants

Use cases for chatbots

Purchase

Pay bill

Bookings

Friendliness

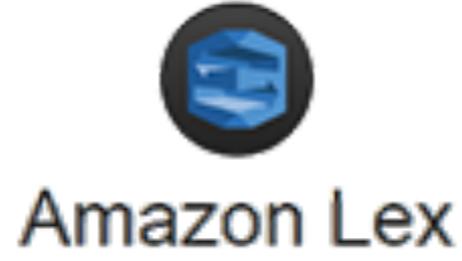
Complaint
resolution

Recommendation
Engine

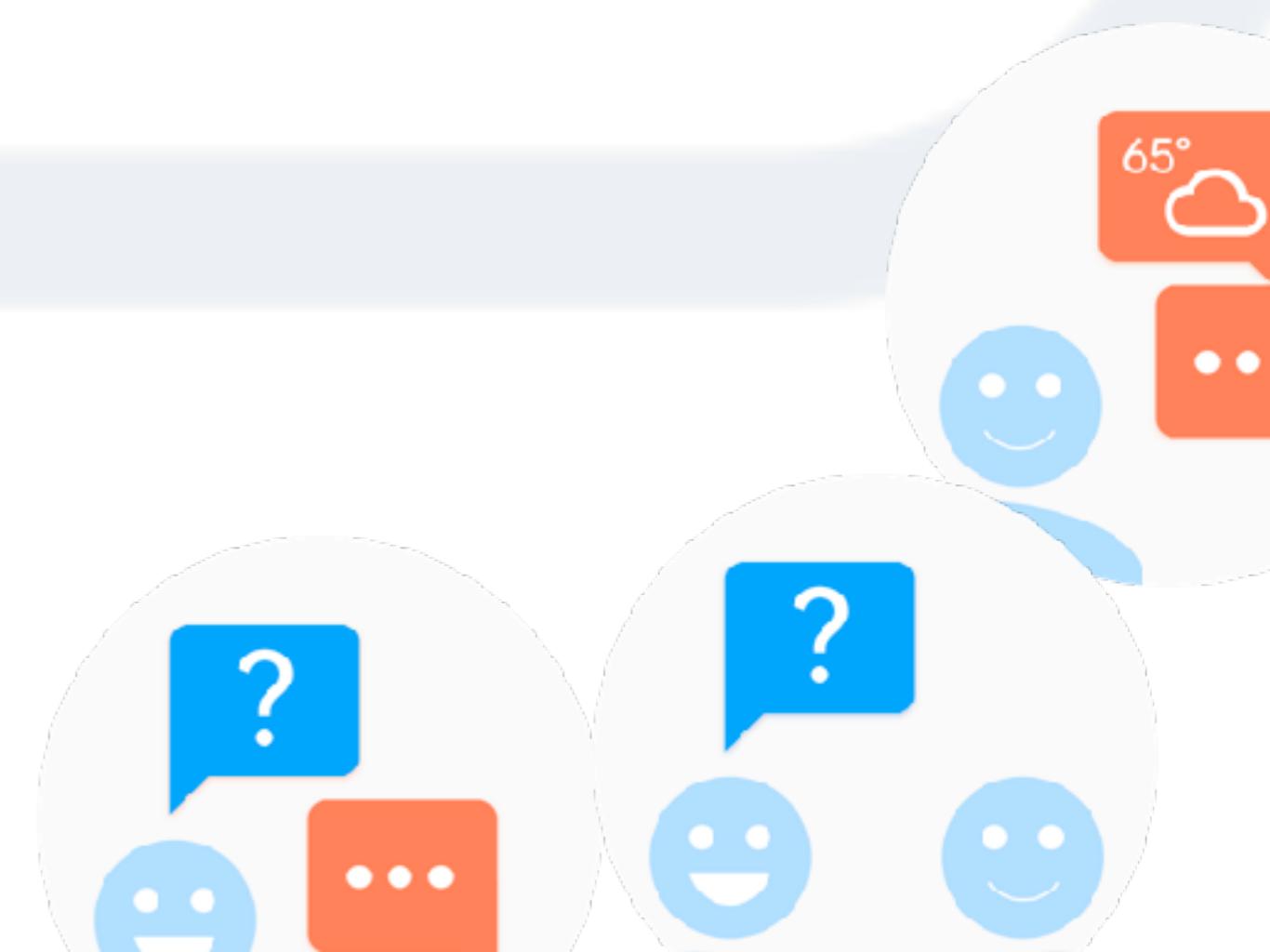
Quick response

24*7
customer
service

chatbots or virtual agents offer decreased operational cost through automated interactions and improved customer experience



create chatbots in 5 mins!
seriously



“Jaguar”

“Jaguar”

“Yeah, right”

“Oh Snap!”

“SNAP”

“I want coffee!”

Vs

“I don’t want coffee”

natural
language
understanding
is a **hard**
problem to
solve



natural language understanding involves breaking
text into identifiable parts

The other boy runs.

Tokenization

The

other

boy

runs

.

Punctuation removal

The

boy

runs

Stop word removal

The

boy

runs

.

Lemmatization

The

boy

run

POS tagging

The

boy

run

DT

NN

VB



- plain text
- language
- context
- semantic info
- feelings

creating chatbots
is more of an

art

than science

Be a guide and assistant first

Greetings

"Hi, I am Amy and I am self learning assistant"

"Welcome to VISA, How can I help you?"

"Hello! How are you doing today?"

Ask questions

"What is the status of my loan?"

"I need to book a flight to New York for 24th July"

"How do I change my password?"

Provide guidance

Escalate

"Please connect me to live agent"

"Need to speak to customer rep"

"Let me connect you to live agent"

Error Handling

"What was that?"

"Do you want to finish this later"

"Sure, we can take care of that"

Push and Pull data

"Lets verify you"

"Hold on while I check your account"

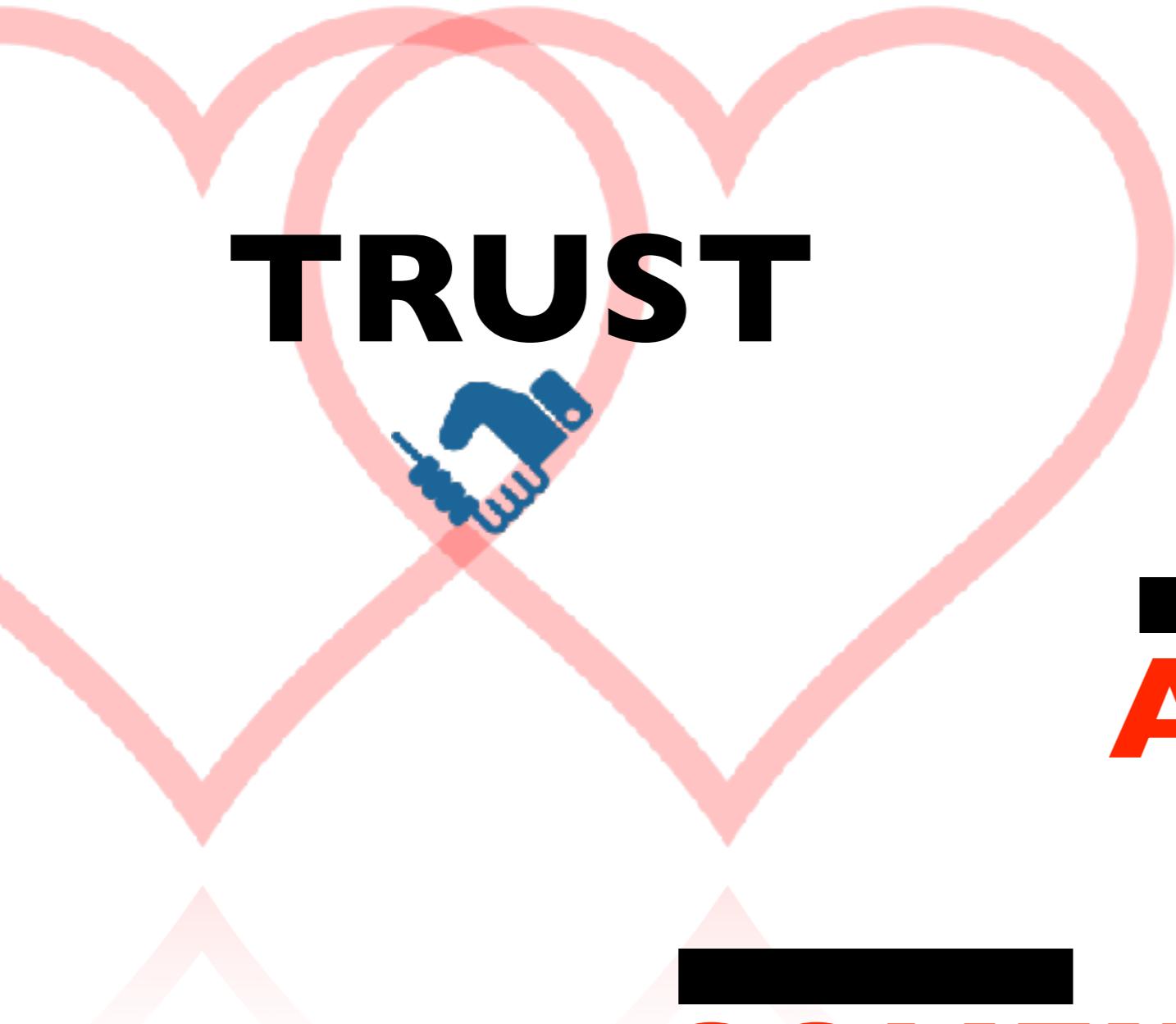
"I don't see this as valid information"

Close call judiciously

"Is there anything else I can help you with?"

"Glad I could help, anything else?"

"Thank you and have a great day"



TRUST

EMPATHY

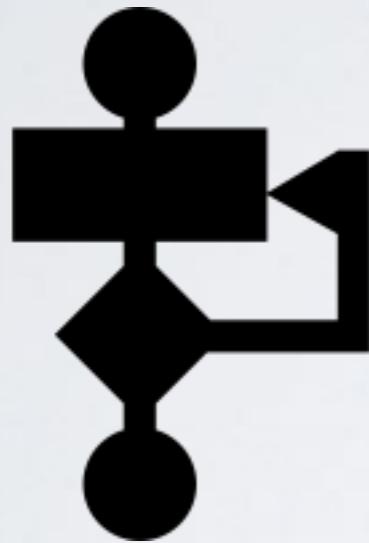
ACCURACY

CONFIDENCE

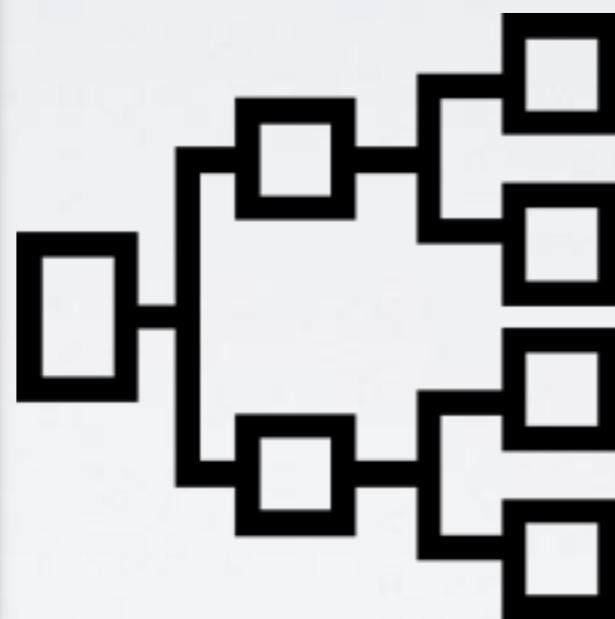
TRANSPARENCY



devise all possible scenarios of handling the craft of conversation



Happy Path



Unhappy Path

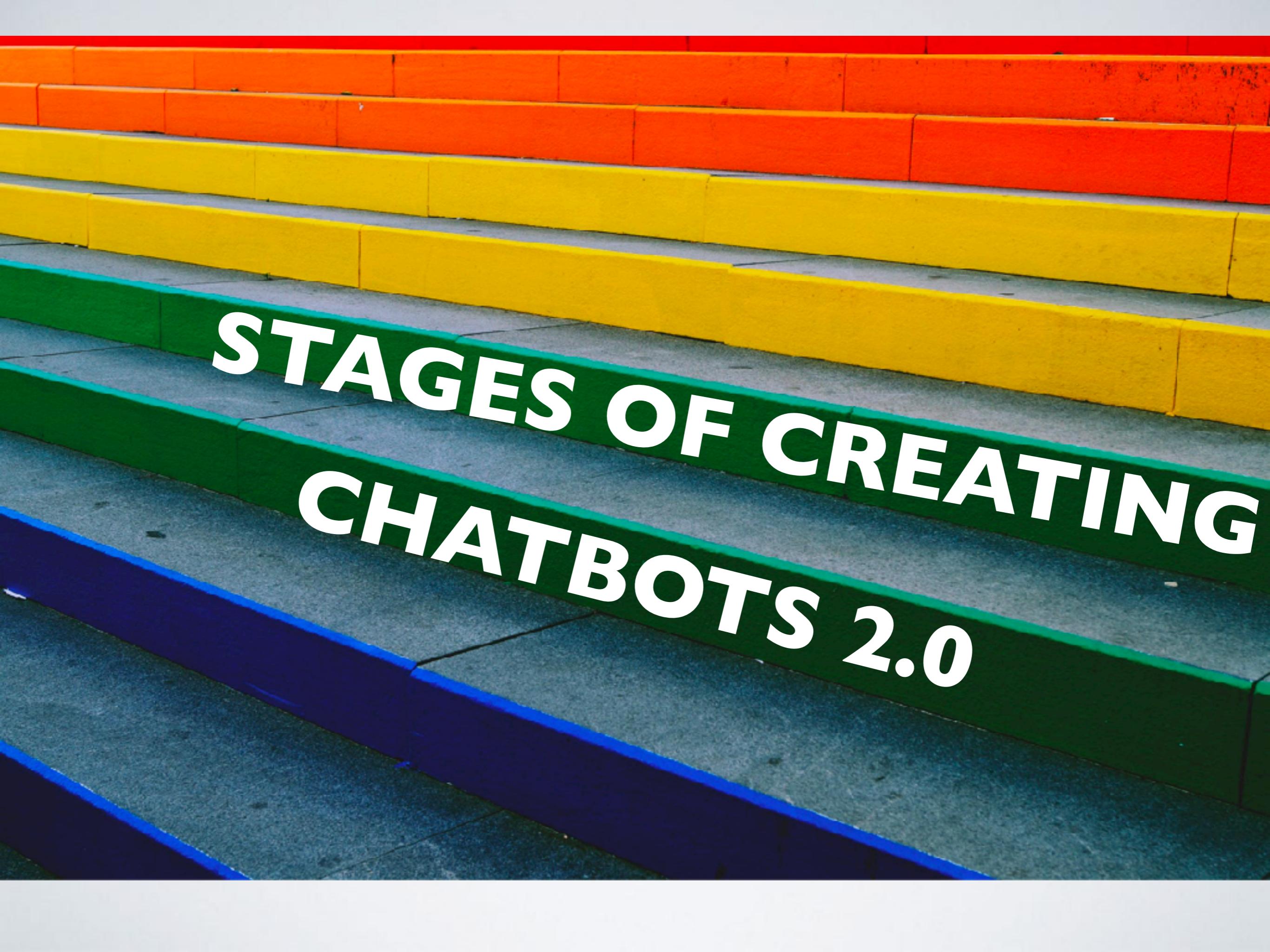


Conversation repair

DESIGN CHECKLIST

- Be casual and keep dialog simple
- Think of your bot as sales clerk
- Give some examples a user might ask
- Always reply, even with micro-interactions
- Offer hints to users
- Add some wit and humor
- Give limited options
- More text and less graphics
- Use explicit confirmation for validation failures
- Add variations to responses to sound natural
- Handle errors with appropriate strategy
- Know when to give up
- Remember implications and context

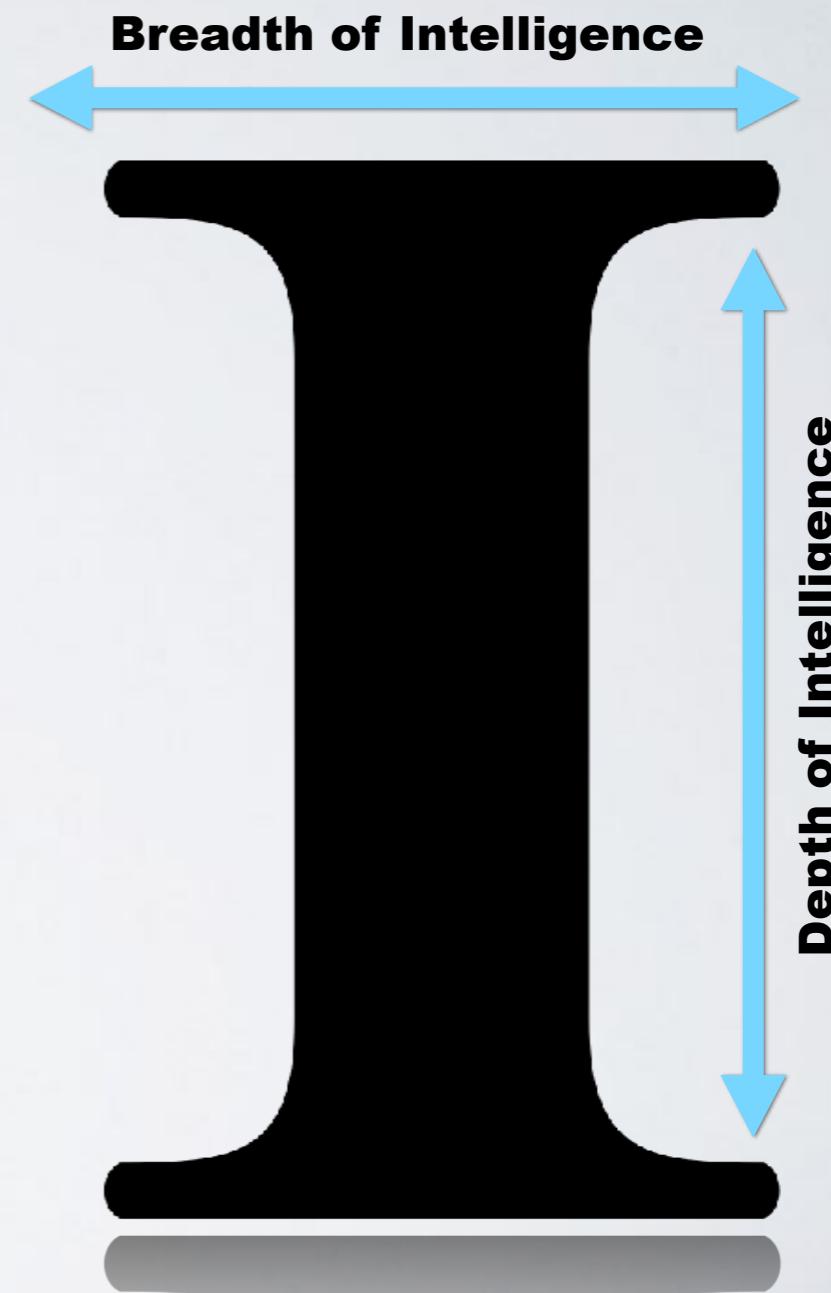
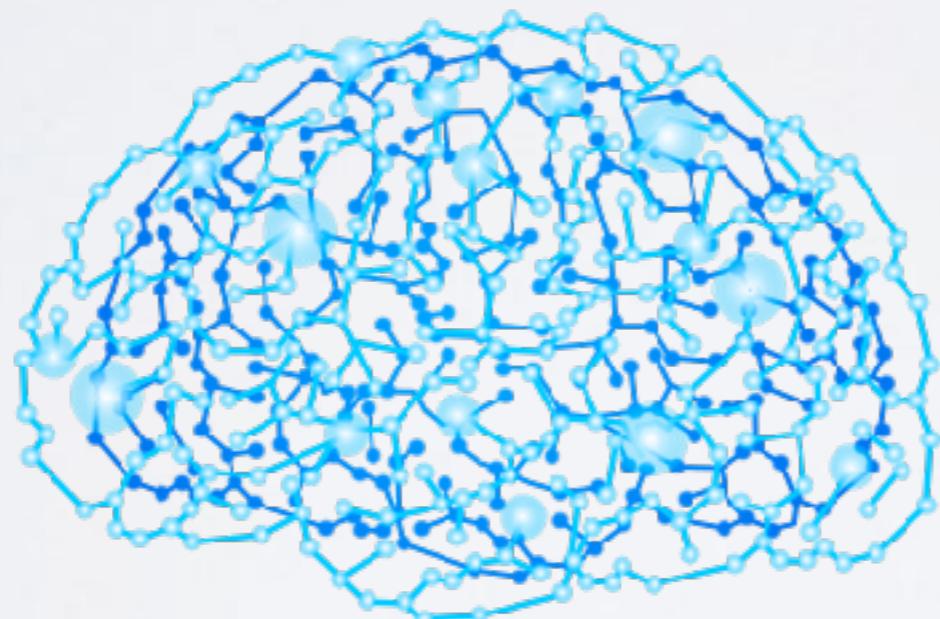




STAGES OF CREATING CHATBOTS 2.0

Increase knowledge corpus for training

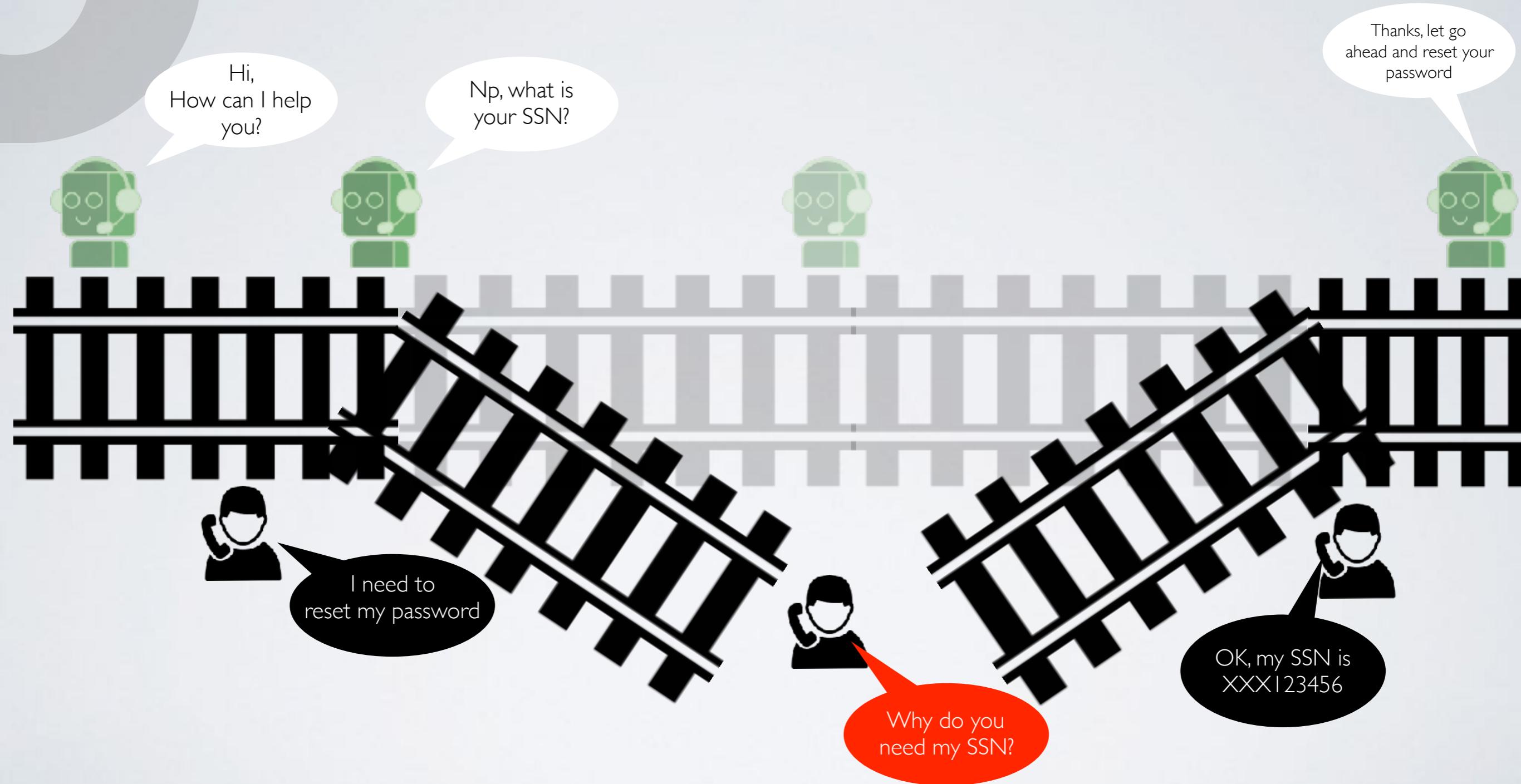
I





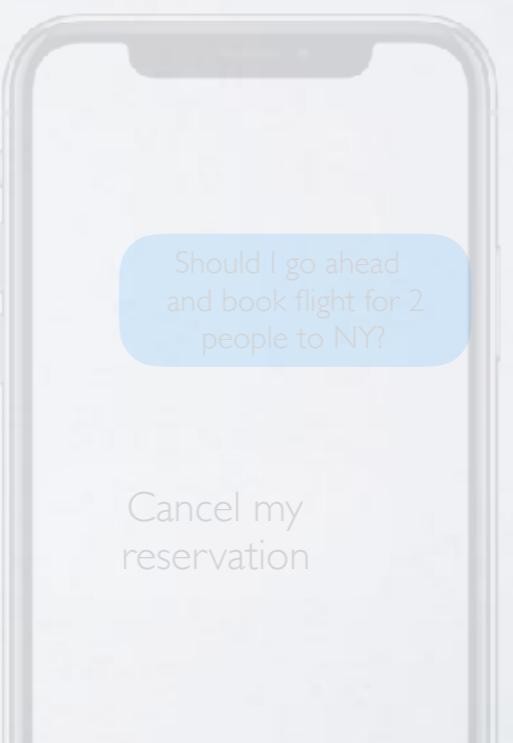
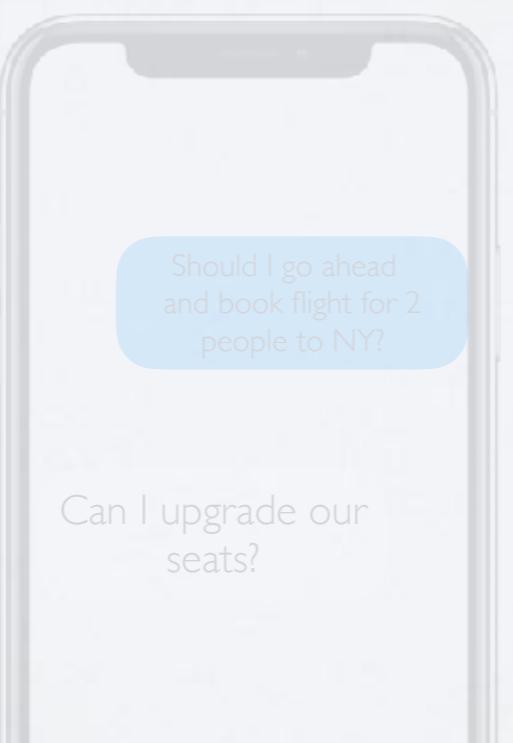
INCREASE
LITERACY
RATE

CONVERSATION REPAIR





error handling is key to conversation repair





error handling allows to create smart chatbots

Can I get your SSN?

Why do you need my SSN?

Can I get your SSN?

I dont remember my SSN

Can I get your SSN?

I only remember last 4 digits

Can I get your SSN?

No

Can I get your SSN?

Customer support

Should I go ahead and book flight for 2 people to NY?

Actually change it to DC

Should I go ahead and book flight for 2 people to NY?

Can you add a child also?

Should I go ahead and book flight for 2 people to NY?

Can I upgrade our seats?

Should I go ahead and book flight for 2 people to NY?

Cancel my reservation

Should I go ahead and book flight for 2 people to NY?

How about flight to mars?

no error handling?....think again



16:16:36 05/06/2015

Establish trust

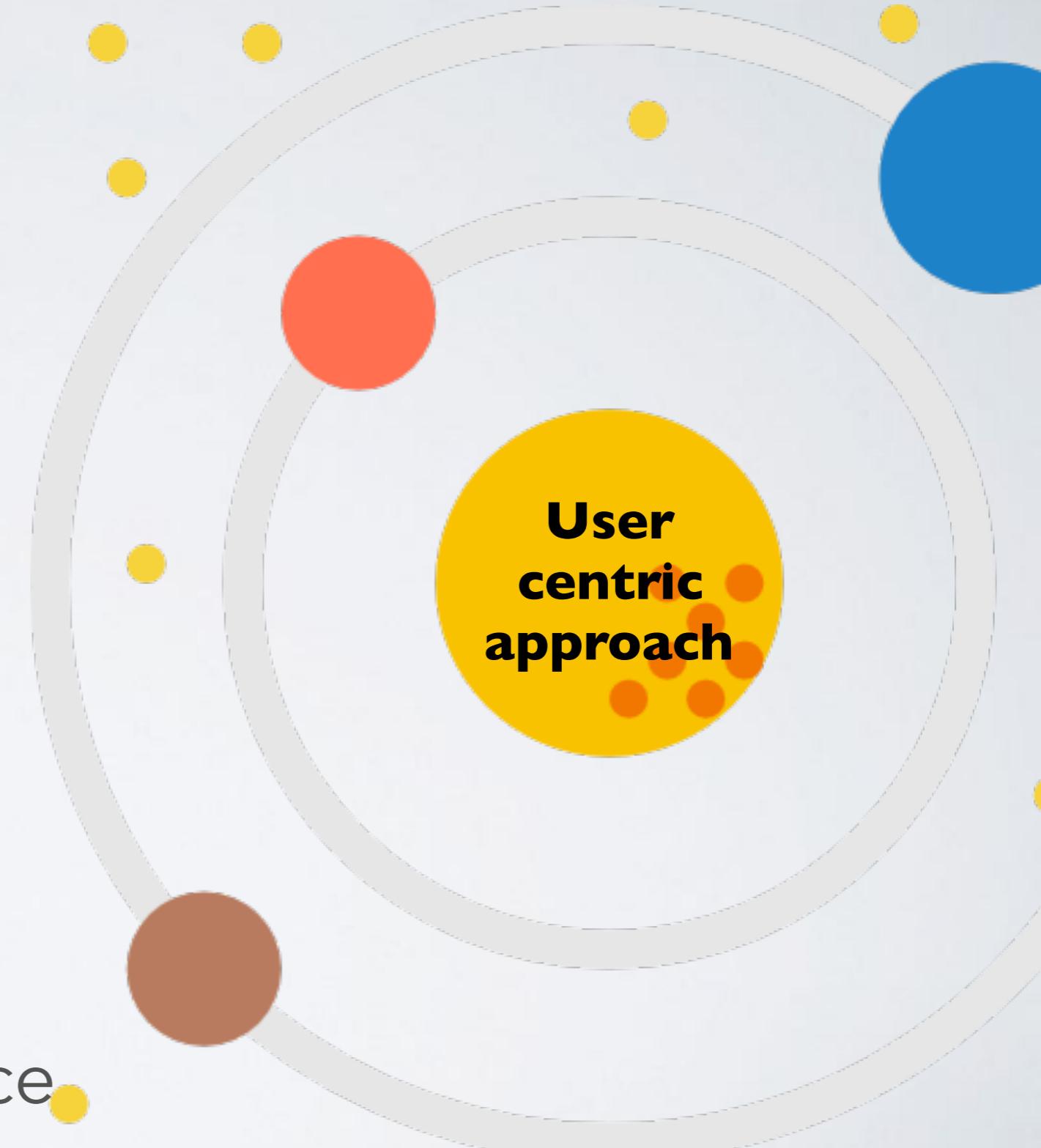
Be concise

Focus on emotions and
true value add

Understand the context relevant
to the conversation

Keep it human and fluid

Personalize the experience



GOOGLE DIALOGFLOW

formerly API.AI

natural language processing engine based on keyword intent matching and understanding human speech to derive intent and meaning

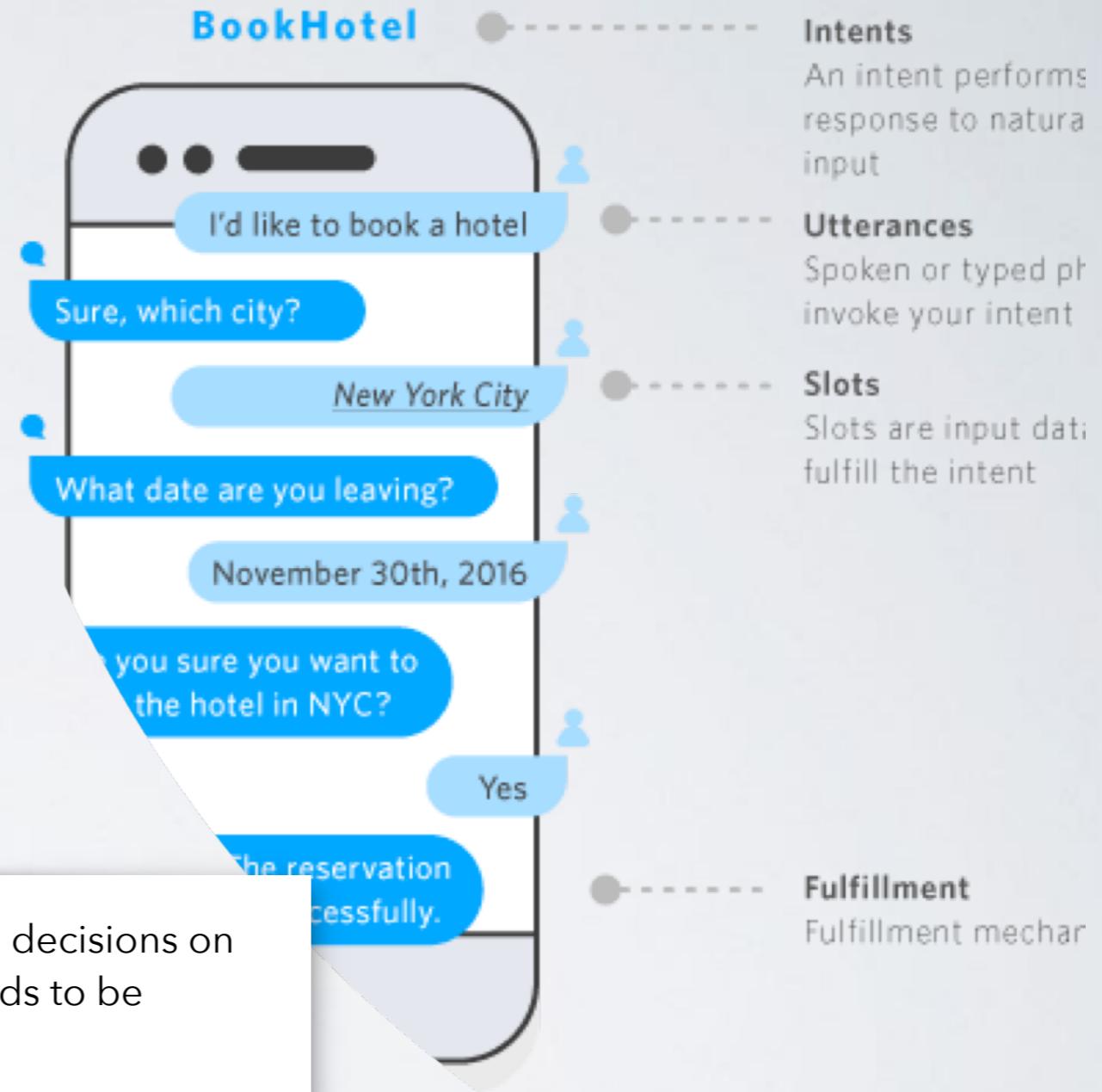


Dialogflow

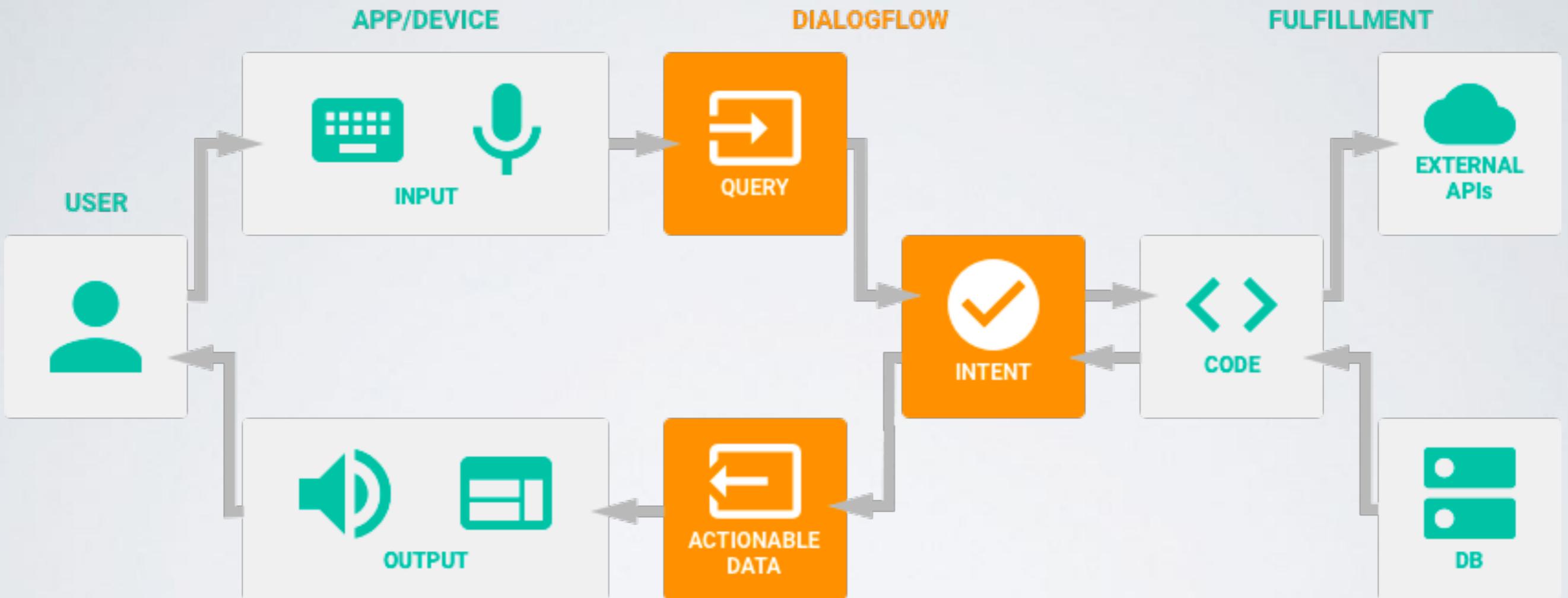
An agent “learns” both from the examples you provide in the **User Says** section and the language models developed by Dialogflow. Based on Machine Learning to match training data to user input.

Based on this training data, it builds a model (algorithm) for making decisions on which intent should be triggered by a user input and what data needs to be extracted. This algorithm is unique to your agent.

The algorithm adjusts dynamically according to the changes made in your agent and in the Dialogflow platform. To make sure that the algorithm is improving, your agent needs to constantly be trained using real conversation logs.



TECHNICAL ARCHITECTURE



DESIGN BOT

Intents

Entities

Contexts

Fulfillment

I am hungry

'I am curious about my loan'

I haven't received my package

I need cab to work

401k is so complicated

I can not understand how to log in

intention

I am hungry

Do I need to carry rain jacket?

I need cab to work

I haven't received my package

I can not understand how to log in

I have a meeting on Monday that I can not miss

I am in mood to listen to jazz



Dialogflow matches user input to a specific intent and determines how to handle response

“Find me a pair of **Size 8** **Adidas** **sport shoes**”



Intent - productSearch

Entity -

- I. Composite Entity - Product Detail
 - I. Component Entity - Size 8
 2. Brand - Adidas
 3. Color - Red
 4. Category - Sport Shoes

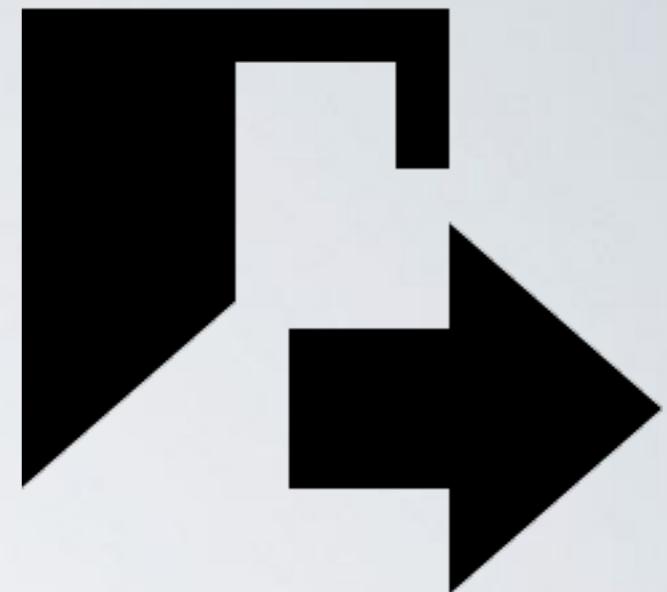
Fallback intents are triggered if user's input does not match any of regular intents

contexts are used to pass information from previous conversation or external info



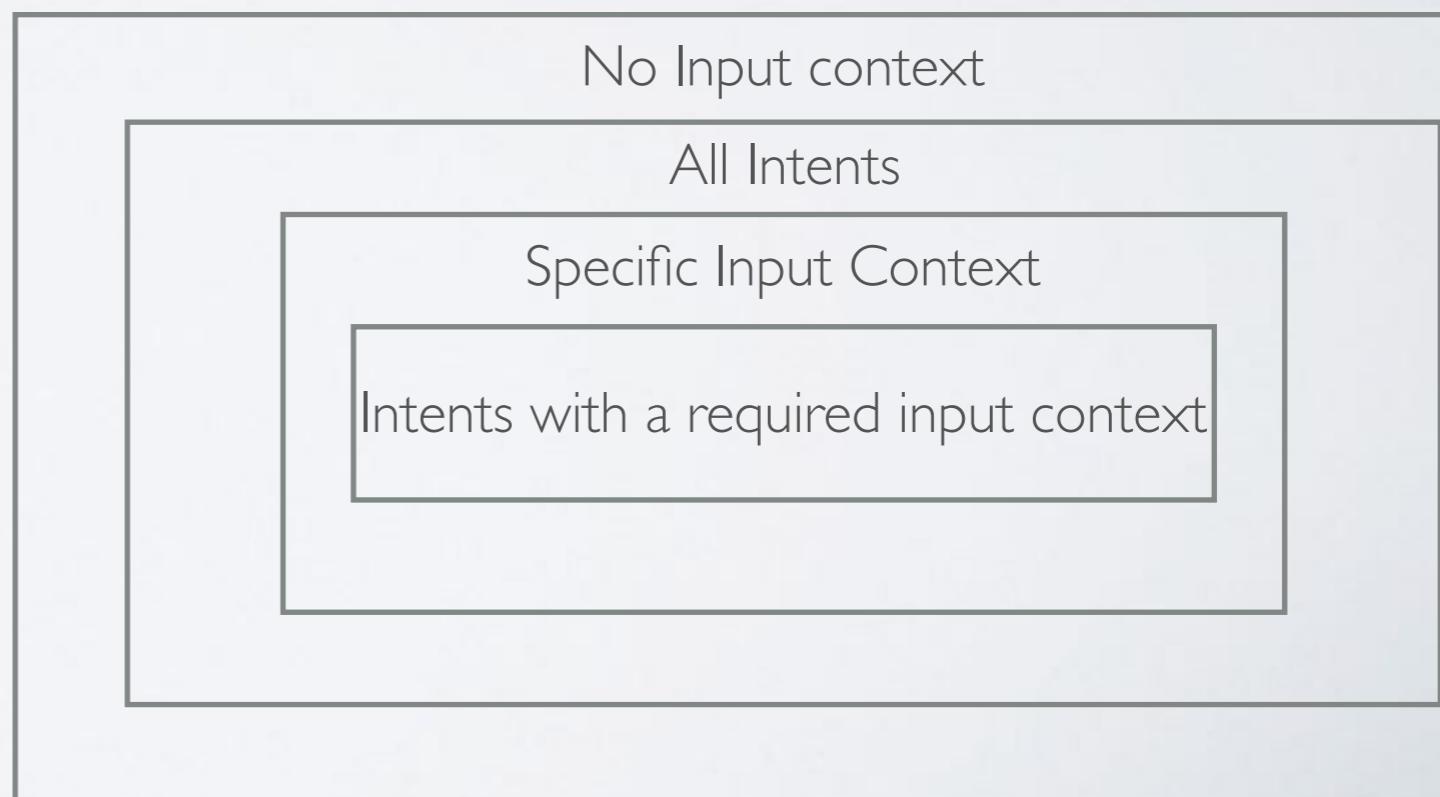
input context

<intent>



output context

Contexts can be used to manage conversation flow.





entities are tool to extract parameter values as actionable data from user input

"I want a scoop of **chocolate** ice-cream"

Intent: getFlavor
Entity: **chocolate**

Define synonyms:

chocolate , durian, coco, vanilla, chocolate chip

Allow automated expansion:

Slightly Risky

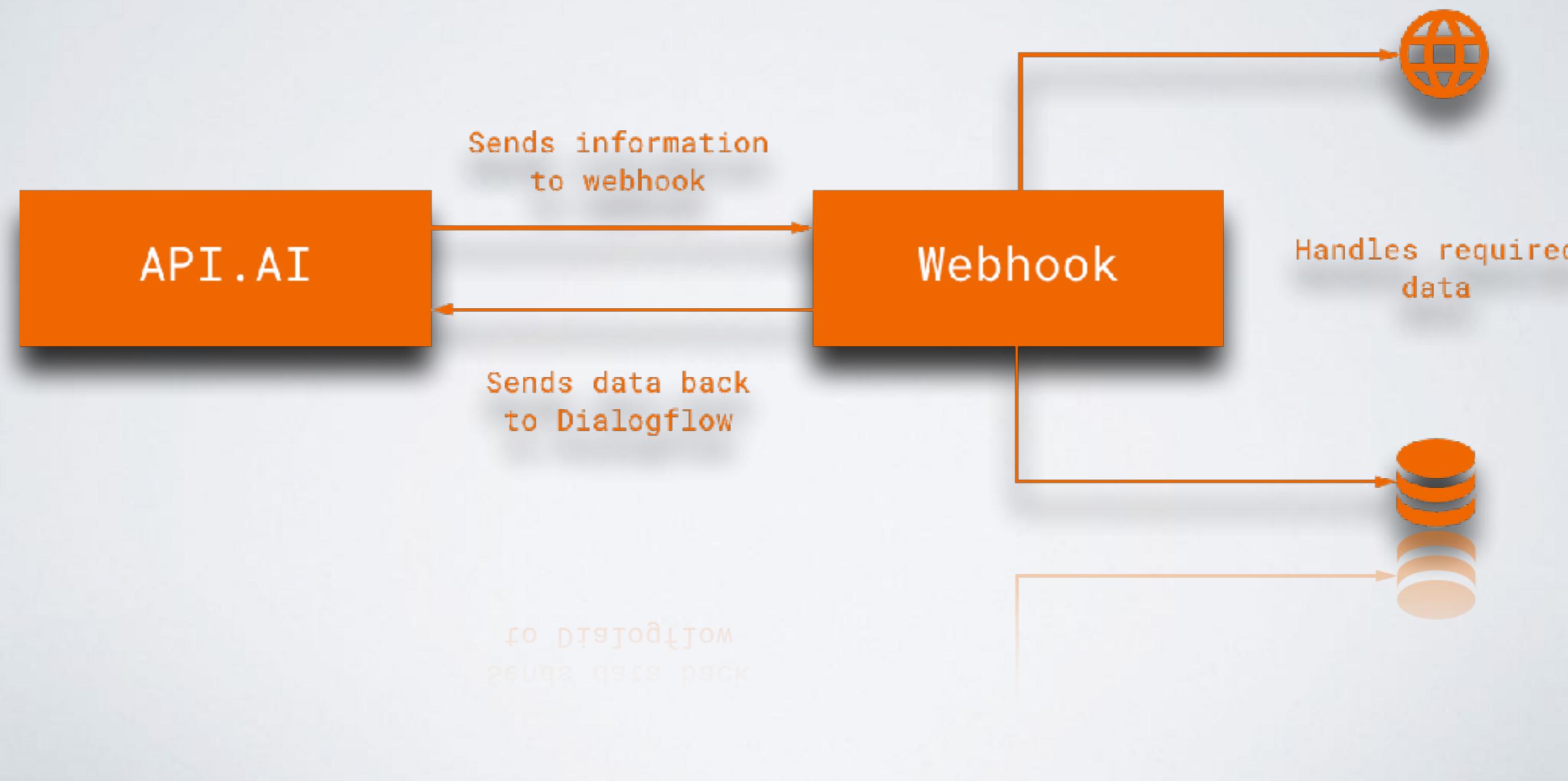
System defined entities

@sys.address
@sys.geo.capital
@sys.geo-country

User defined entities

@vanilla
@chocolate
@mango
@strawberry

FULFILLMENT



Let's build one





WEATHER BOT

What is the weather in San Francisco?



Today's weather is 55F.



Tell me weather for tomorrow?

Tomorrow's weather is 59F



What about this weekend?

Weather for Saturday is 63F with partly cloudy sky



Do I need to wear rain boots in Seattle?

The weather is 71F with sunshine, so you don't need rain boots



How cold is it in Lake Tahoe?

It is 35F with slight chance of snow and gusty winds.

