

Intro to Microsoft Bot Framework

@dotnetnotts

James Mann

Microsoft MVP &
Development Consultant
Black Marble

 @jamesemann





Agenda

Introduction

Why bots?

What is Bot Framework

Dialogs

Formflow

QnA Maker



Bot smarts

luis.ai

Cards

Proactive Bot

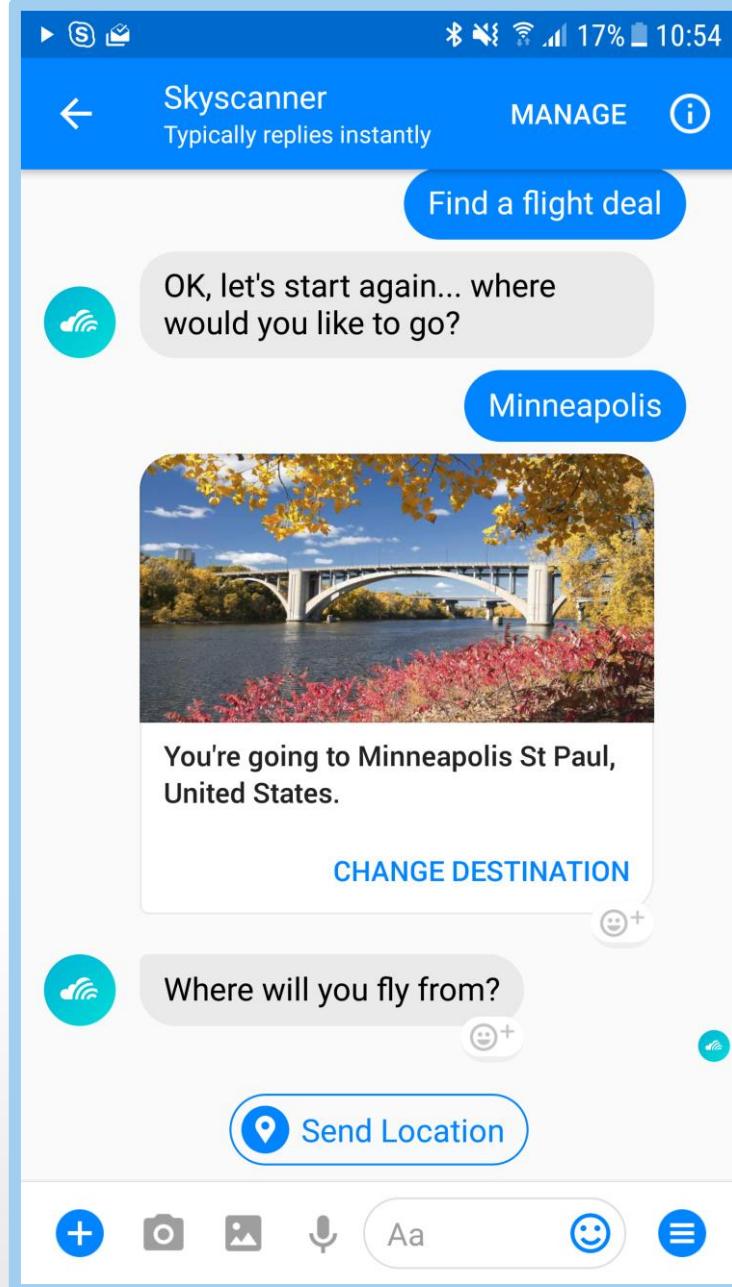


Code

<https://github.com/jamesemann/dotnetnotts>

What is a chatbot?

@jamesemann 

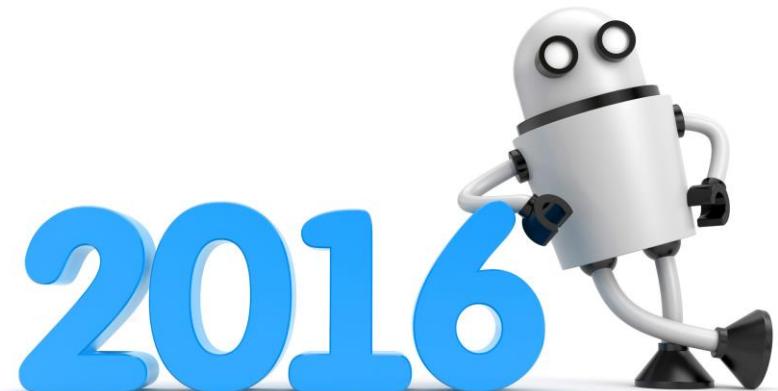
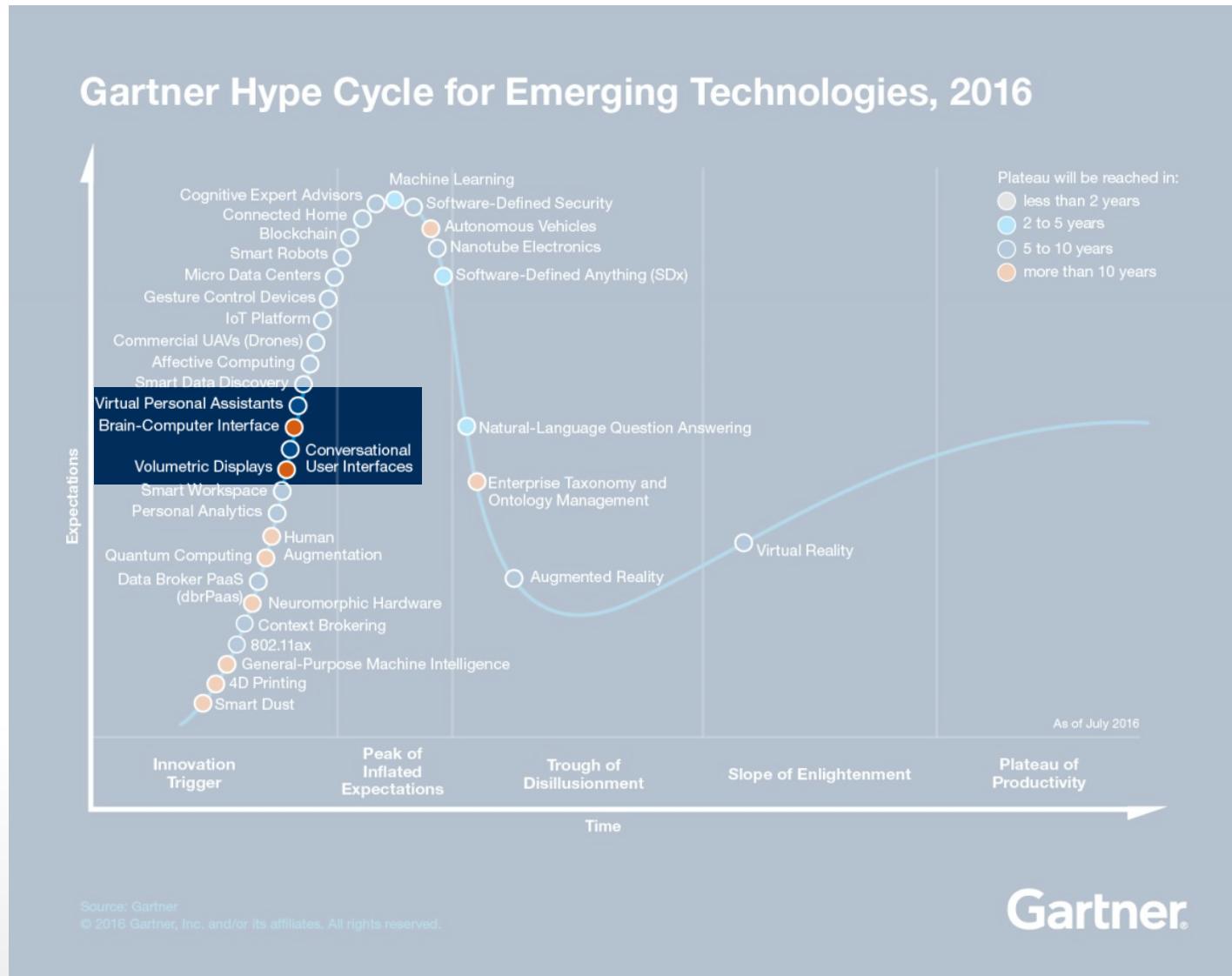


Why chatbots?

@jamesemann 



Year of the chatbot





Distribution

Over 4 billion global users using messaging platforms

6 out of the top 10 apps used globally are messaging apps





Messaging ecosystem





Virtual assistant device ecosystem





Use cases are everywhere

Customer Service

- FAQ
- Account queries
- Resolve order issues
- Parcel Tracking
- Transport queries (bus, train)

Shopping Experience

- Recommend product
- Flight, hotel booking
- Improving search
- Find the right product**

Help Desk

- Problem troubleshooting
- New user on-boarding
- Response suggestion

Employee Support

- Product information
- Data insights
- Find the right expert
- HR – booking holiday, fault reporting
- Meeting room booking

What is Bot Framework?

@jamesemann 



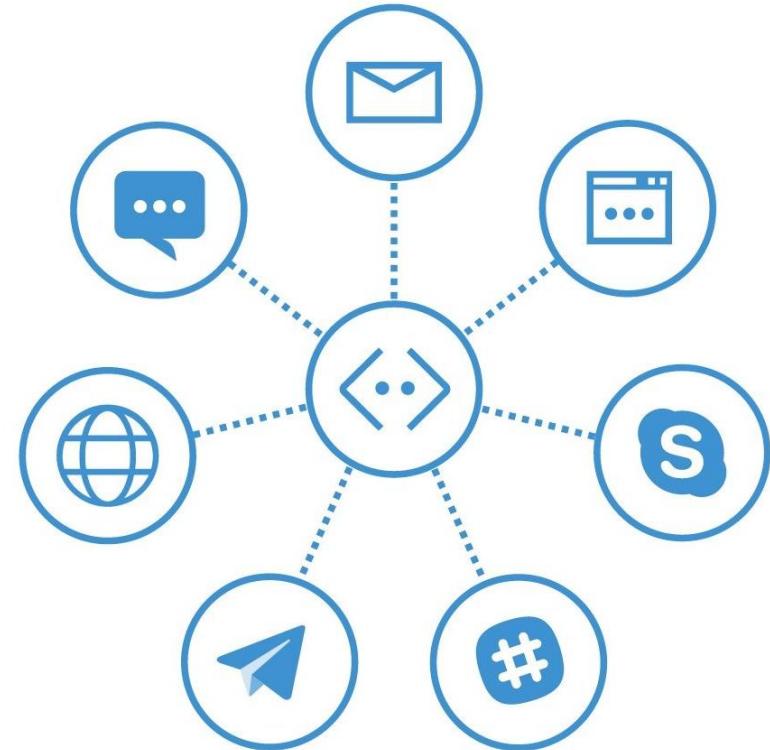
Bot Framework

Build **one** Bot

Host **one** Bot

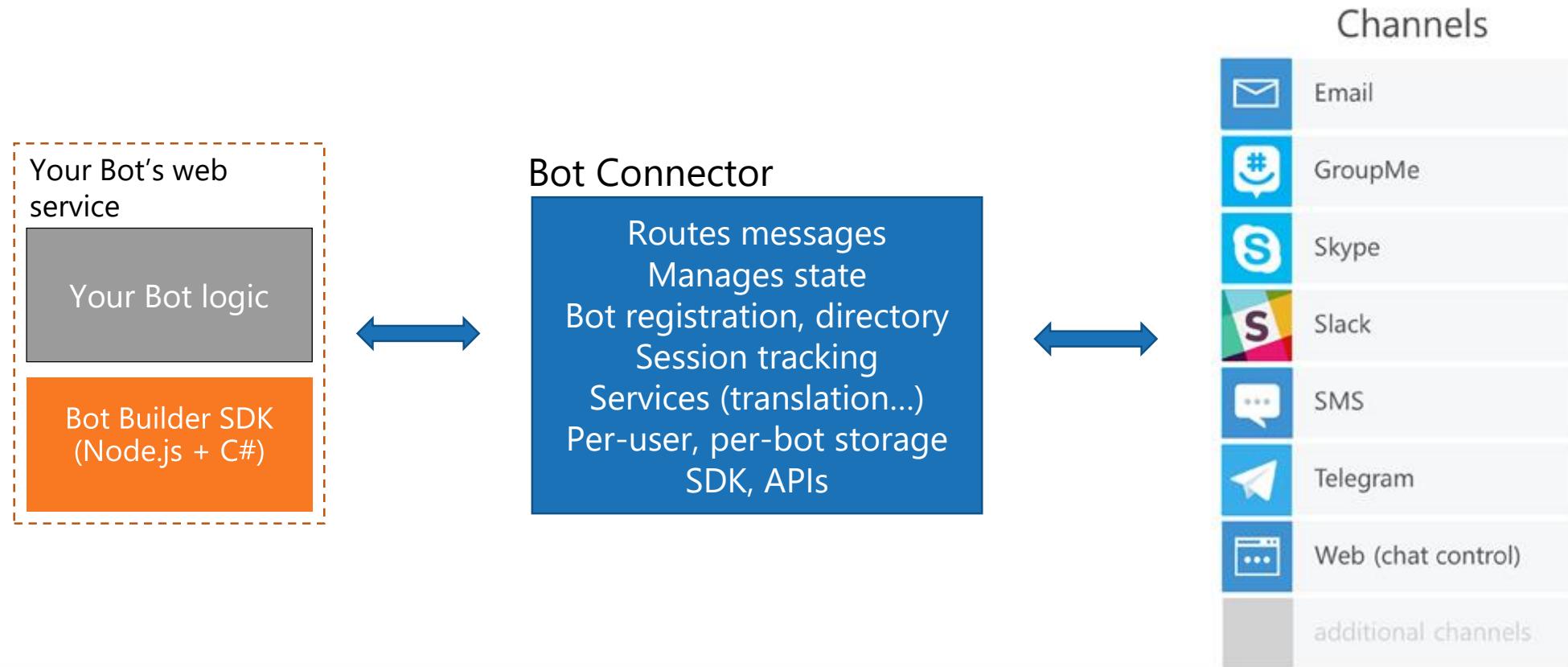
Maintain **one** Bot

Target **multiple** channels





Bot Framework Architecture

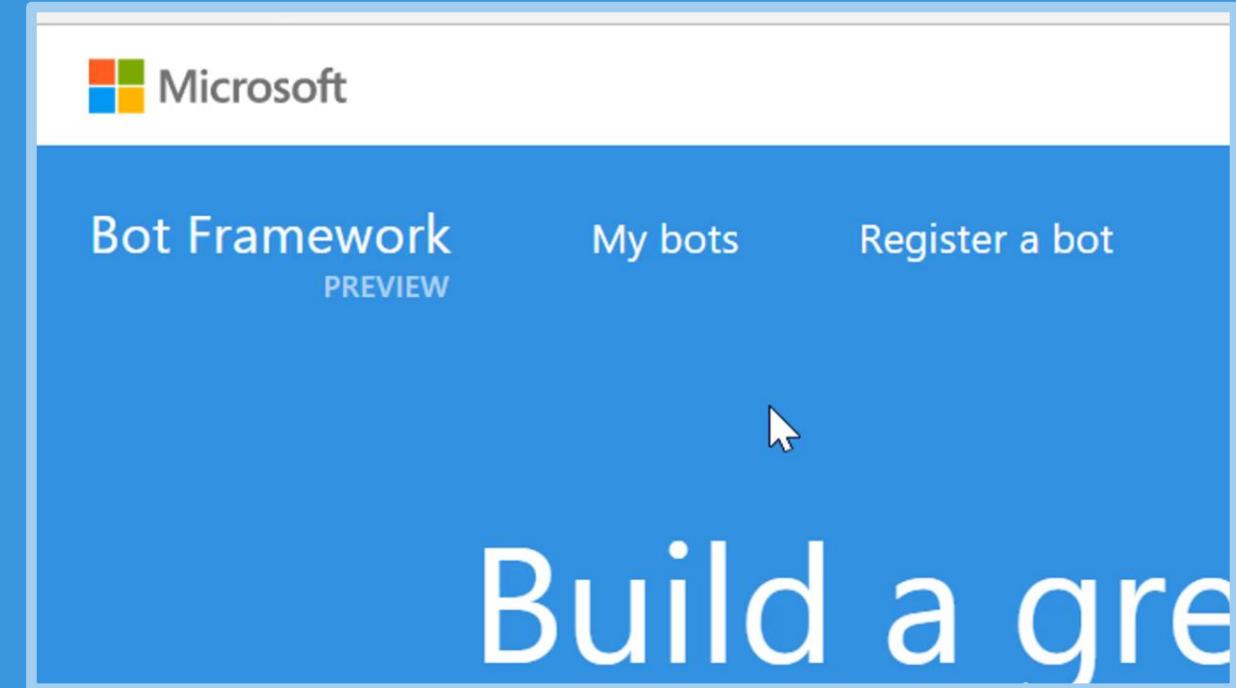




Register

Register your Bot
Application through the

Bot Framework Portal





Build

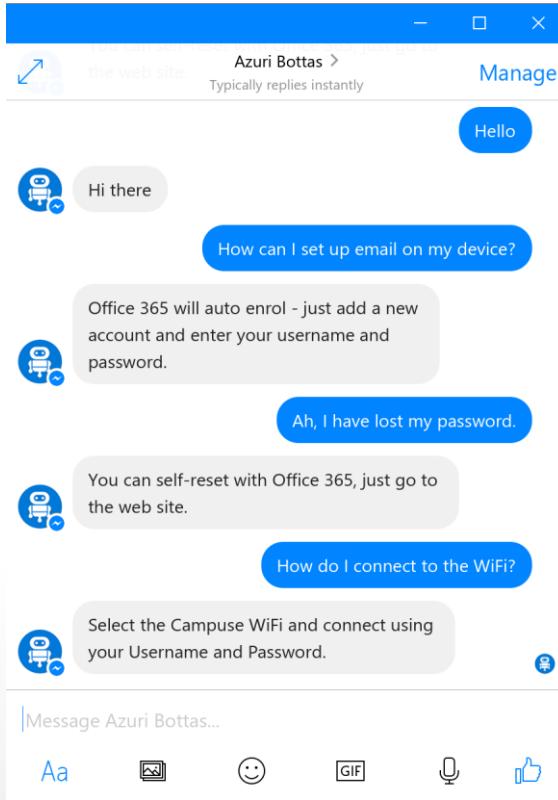
Build your Bot using
C# or Node JS

```
public class MessageController : ControllerBase
{
    /// <summary>
    /// POST: api/Messages
    /// Receive a message from a user and reply to it
    /// </summary>
    [HttpPost("api/Messages")]
    public async Task<HttpResponseMessage> Post([FromBody]Activity activity)
    {
        if (activity.Type == ActivityTypes.Message)
        {
            ConnectorClient connector = new ConnectorClient(new Uri(activity.ServiceUrl));
            // calculate something for us to return
            int length = (activity.Text ?? string.Empty).Length;

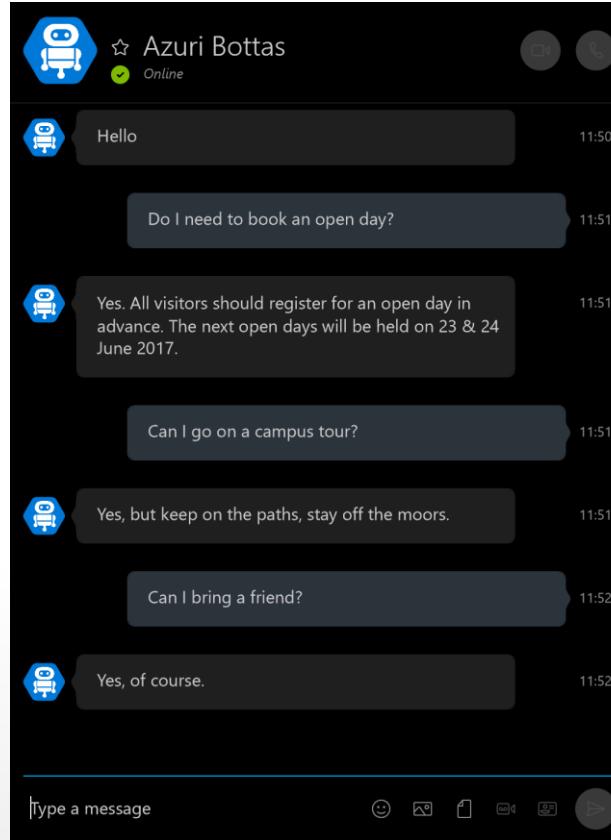
            // return our reply to the user
            Activity reply = activity.CreateReply($"You sent {activity.Text} which is {length} characters long.");
            await connector.Conversations.ReplyToActivityAsync(reply);
        }
        else
        {
            HandleSystemMessage(activity);
        }
        var response = Request.CreateResponse(HttpStatusCode.OK);
        return response;
    }
}
```



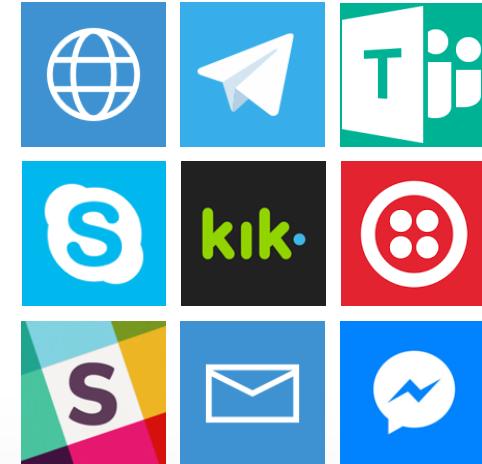
Distribute



Facebook



Skype



& more!

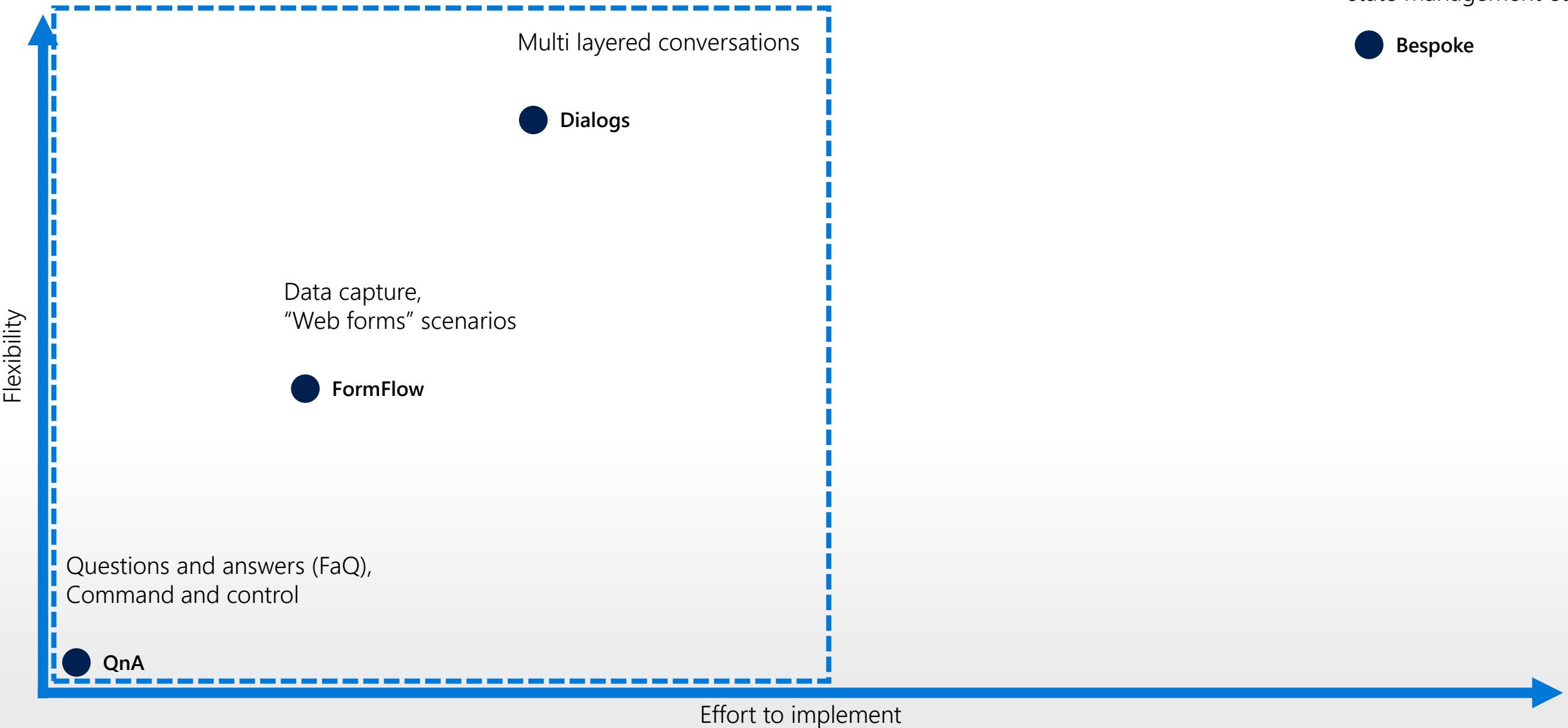
Demo

Your first Bot

@jamesemann 



Modelling your conversation

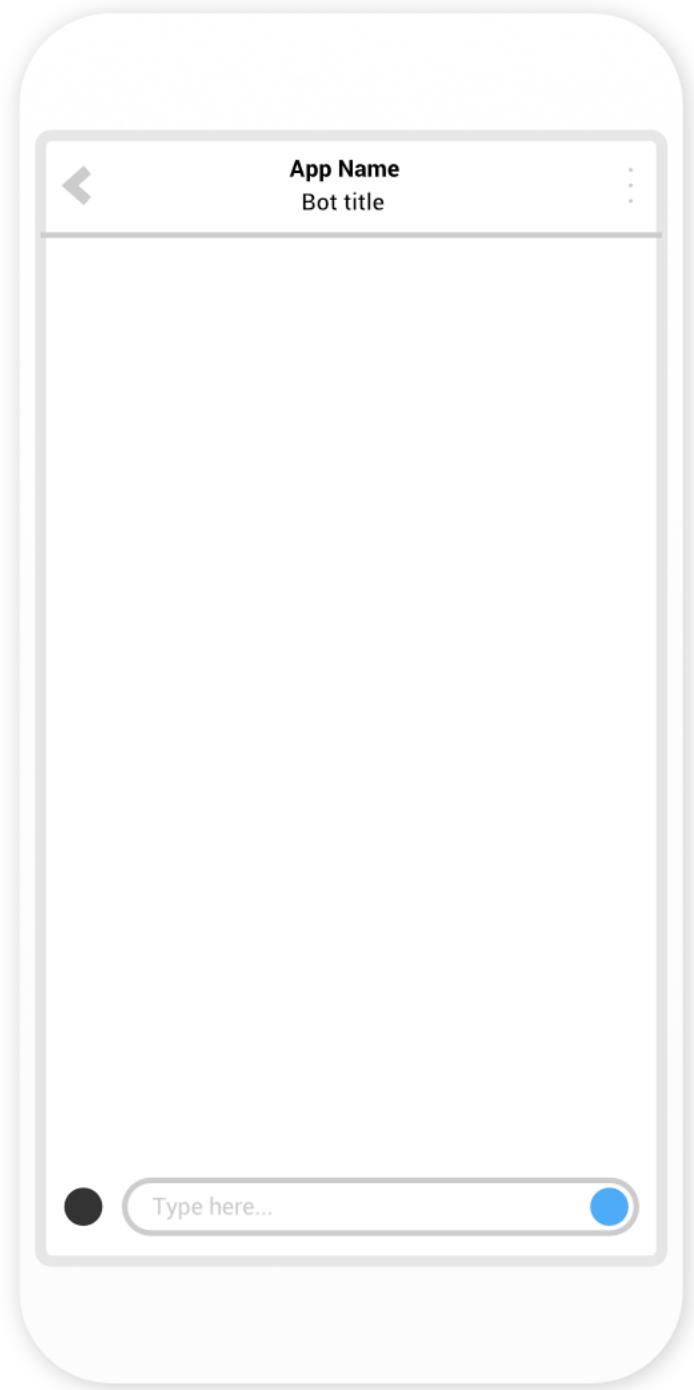


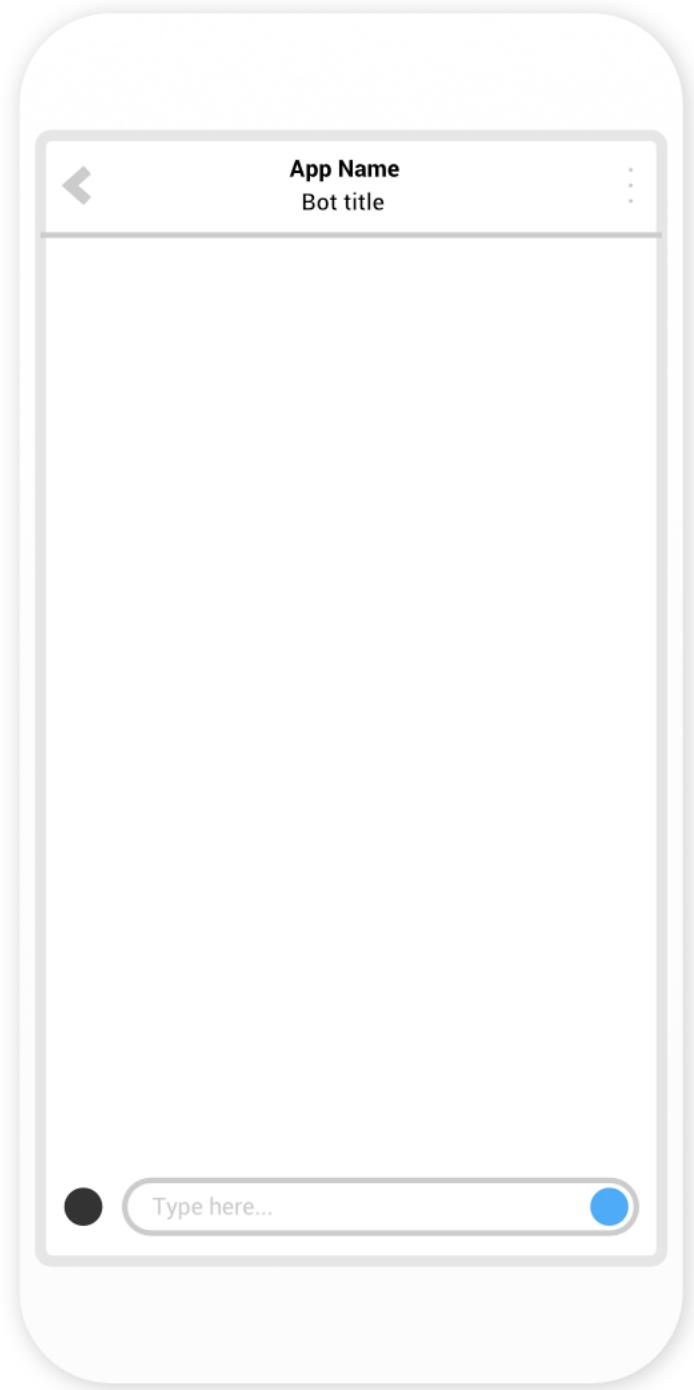
Roll your own
state management etc

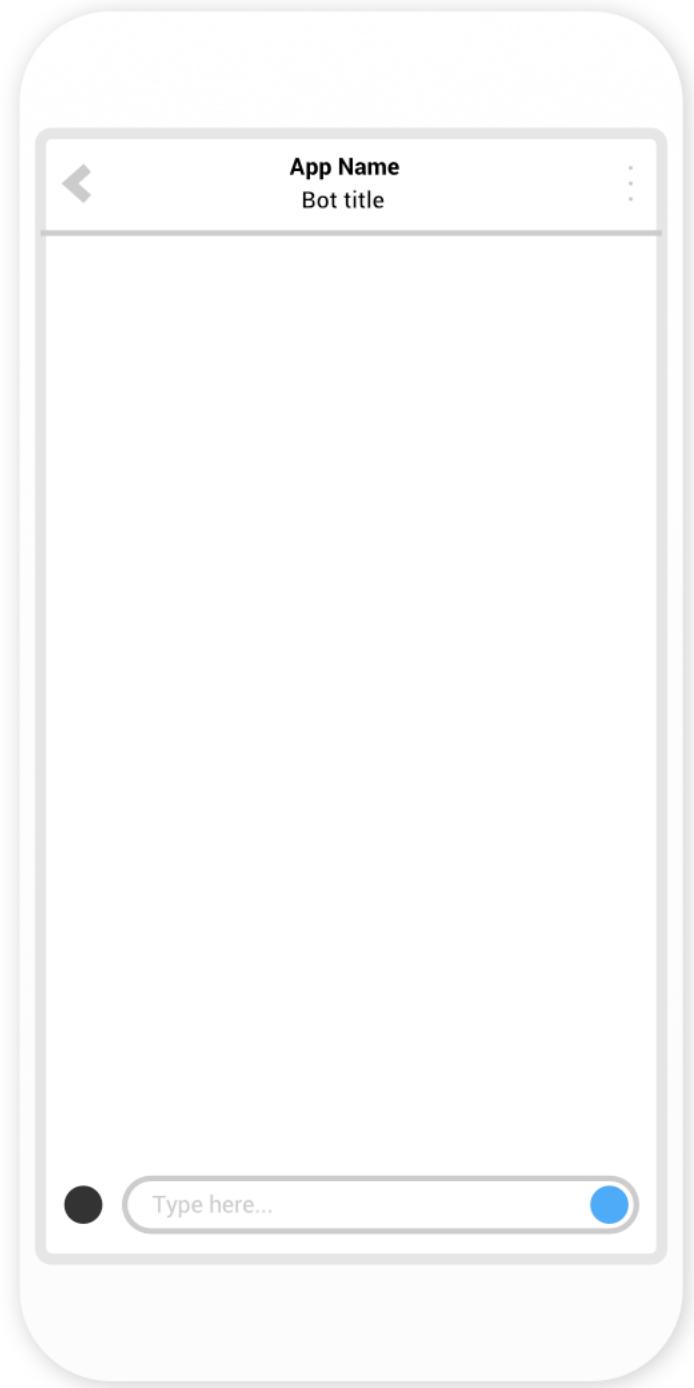
Bespoke

Dialogs

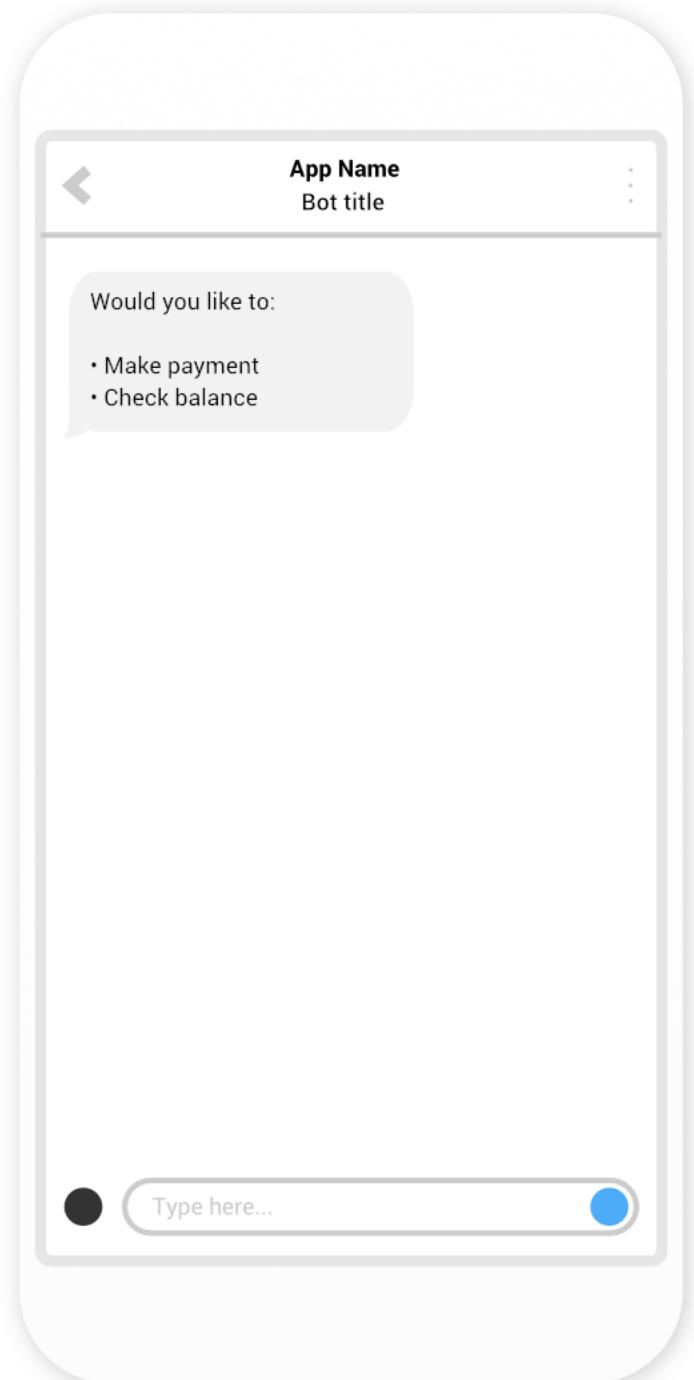
@jamesemann 



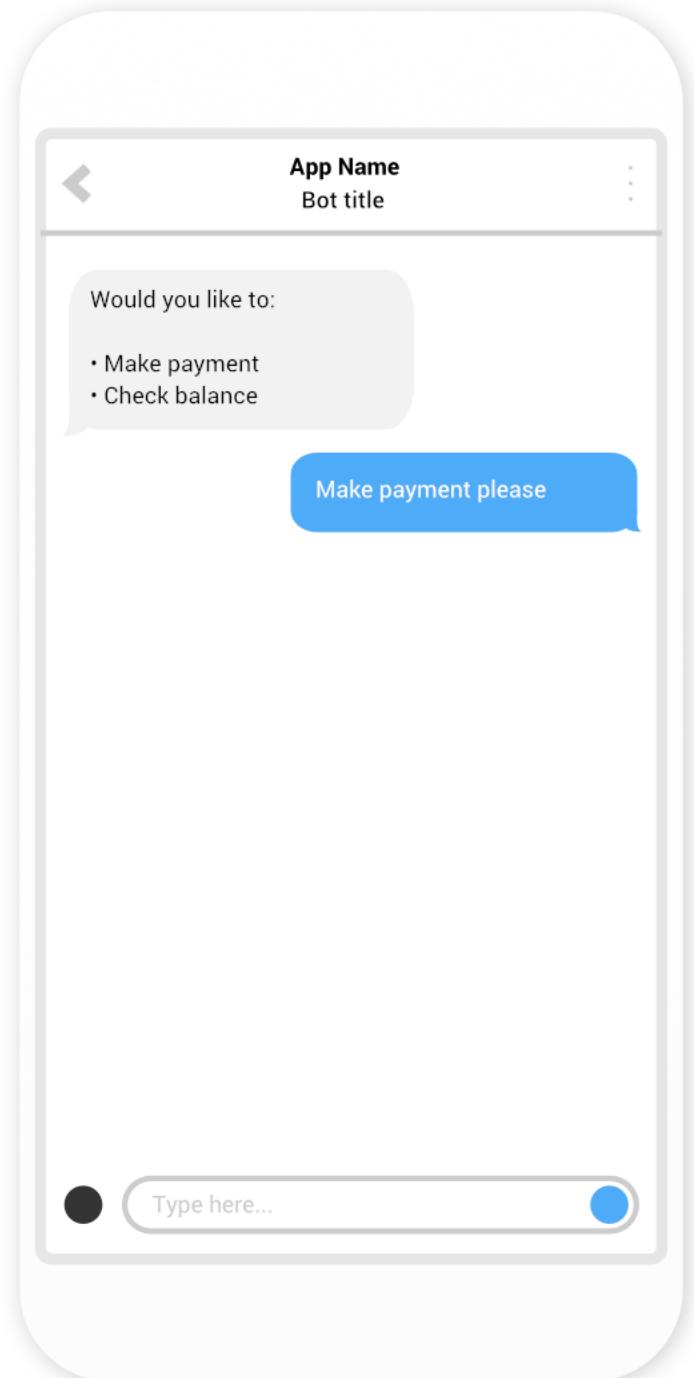




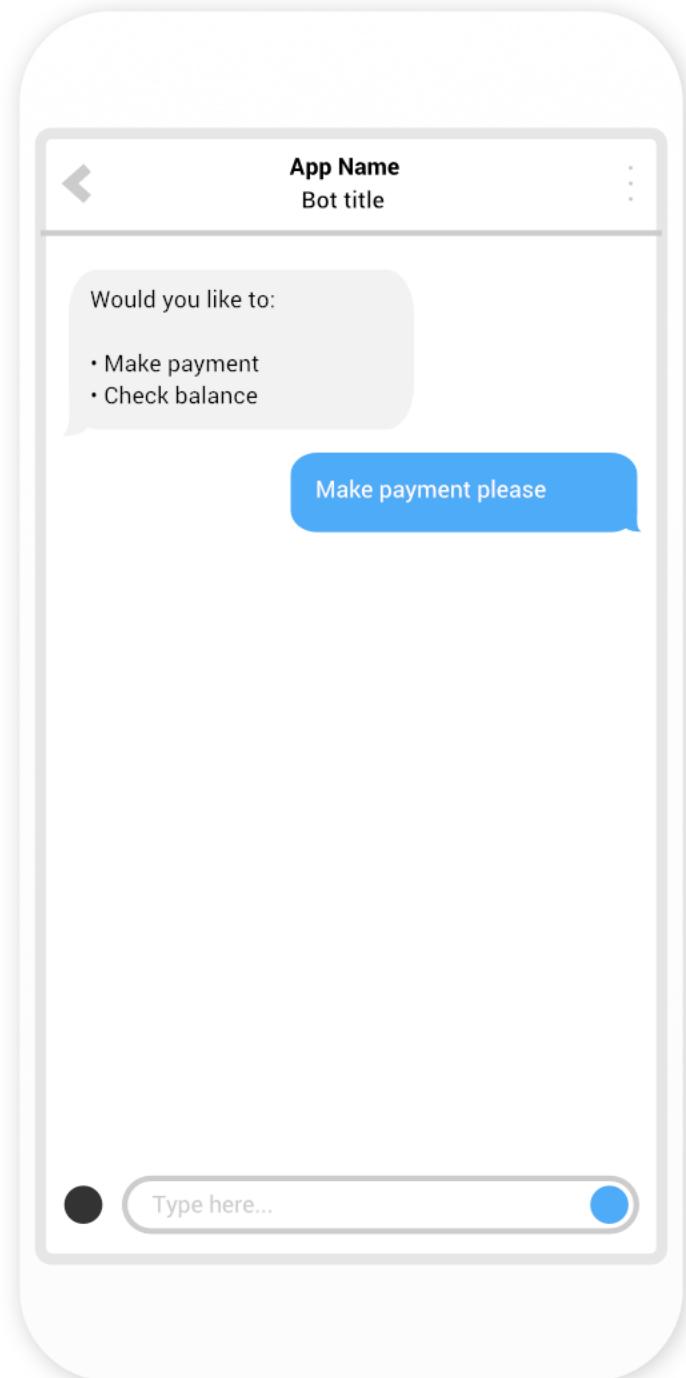
Main Dialog



Main Dialog

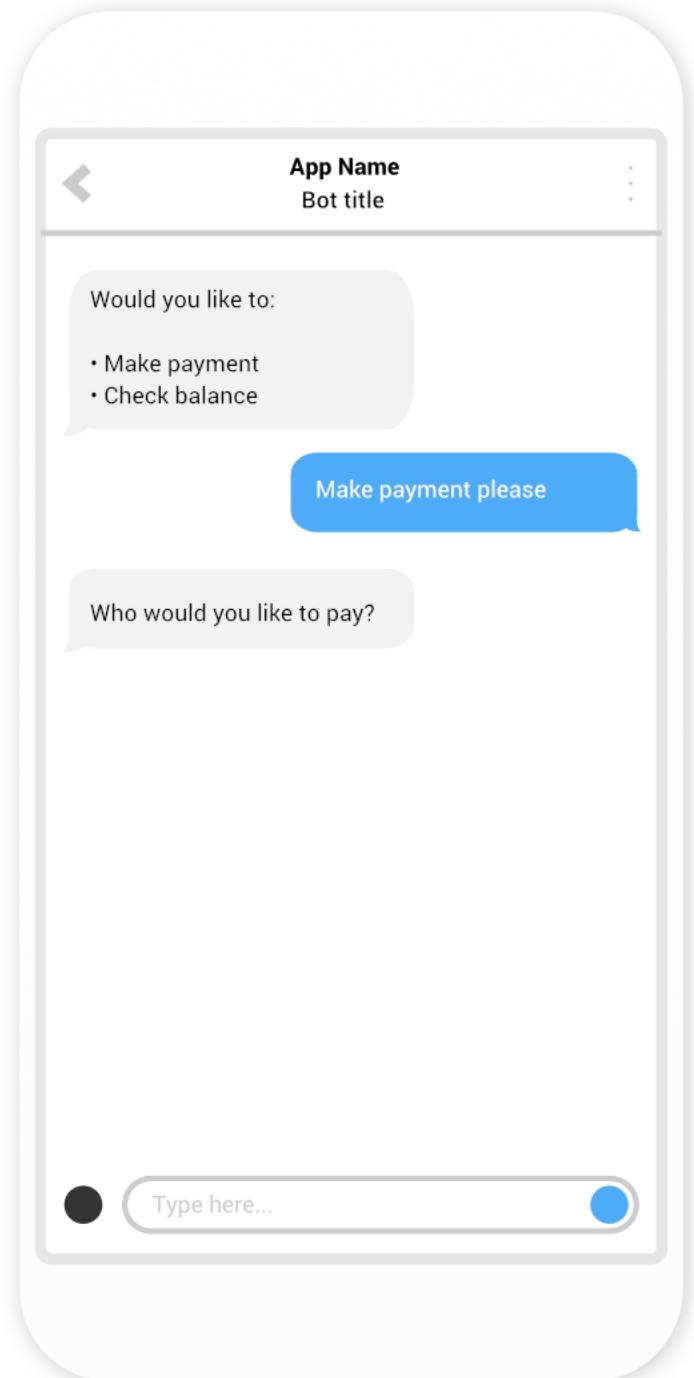


Main Dialog



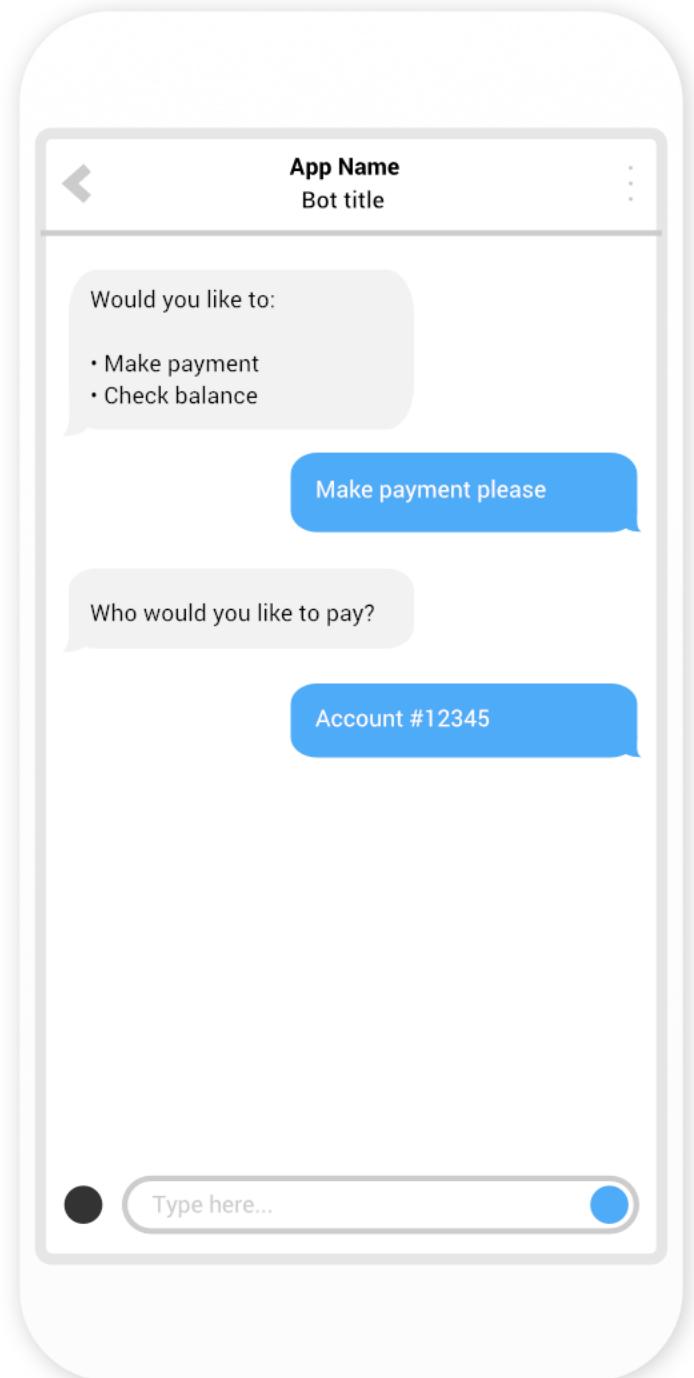
Make payment Dialog

Main Dialog



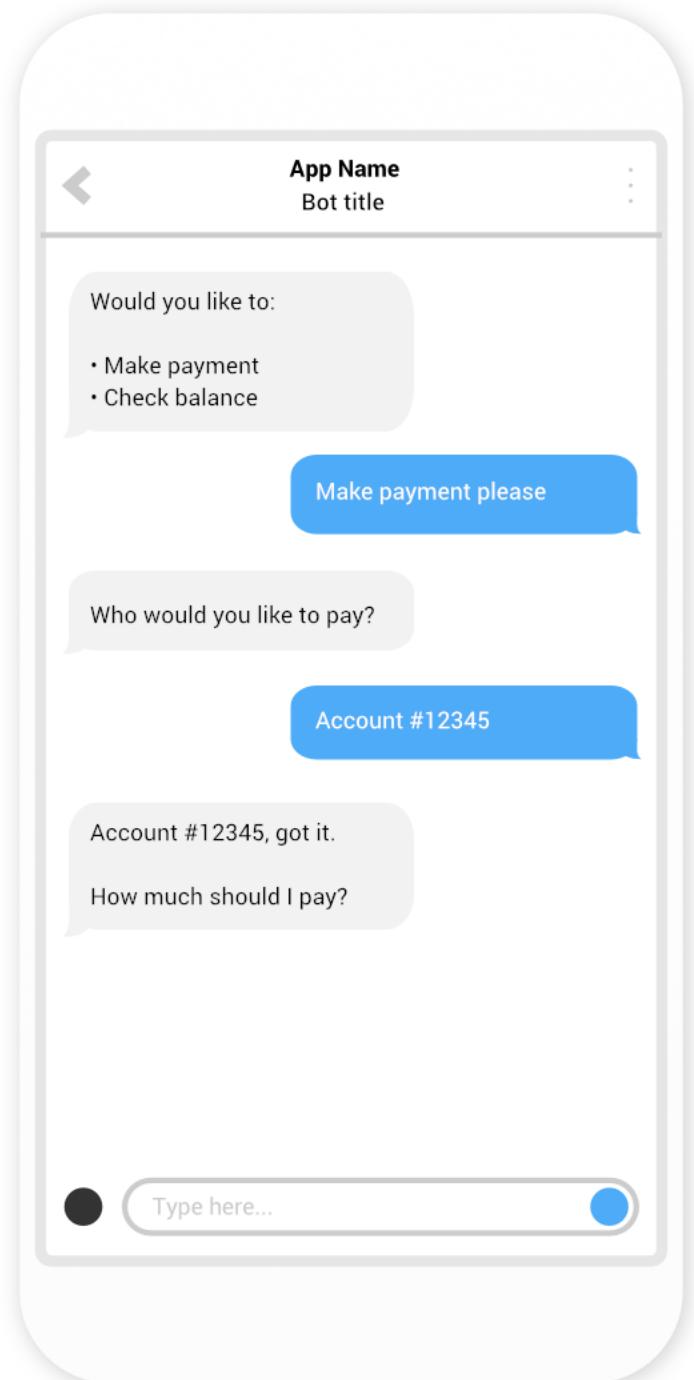
Make payment Dialog

Main Dialog



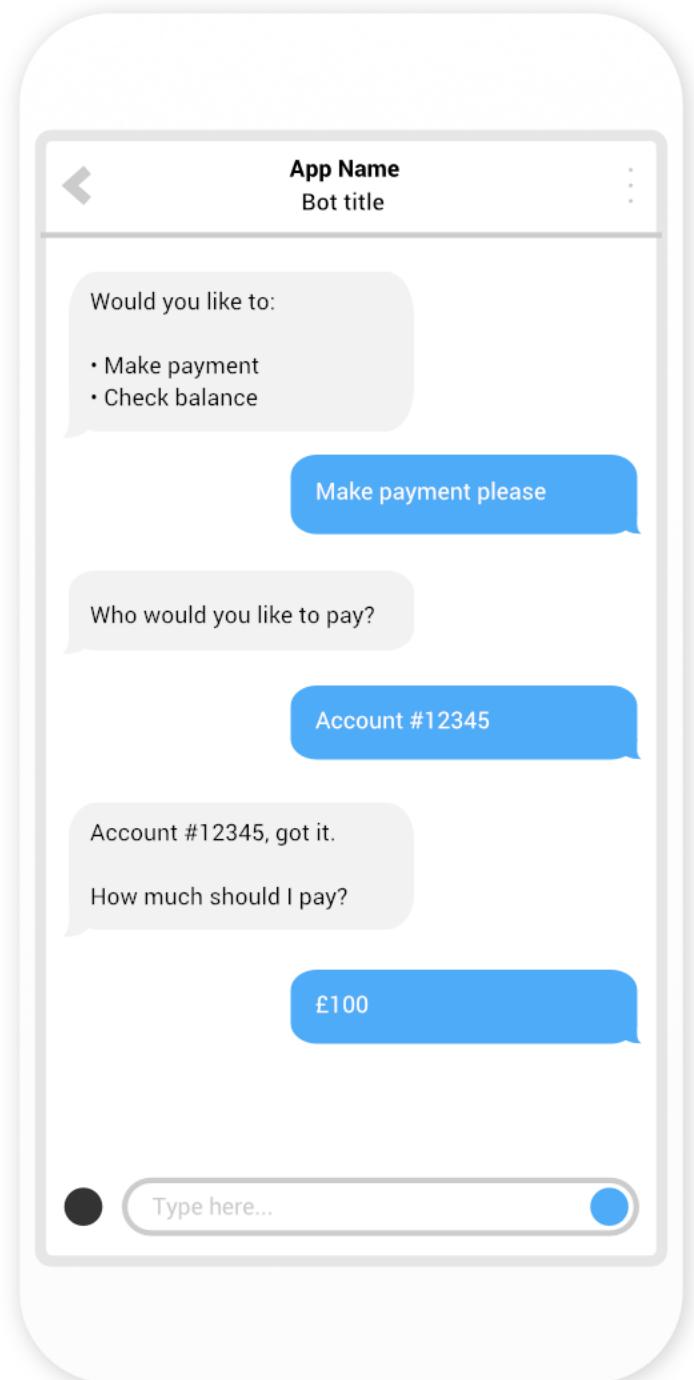
Make payment Dialog

Main Dialog



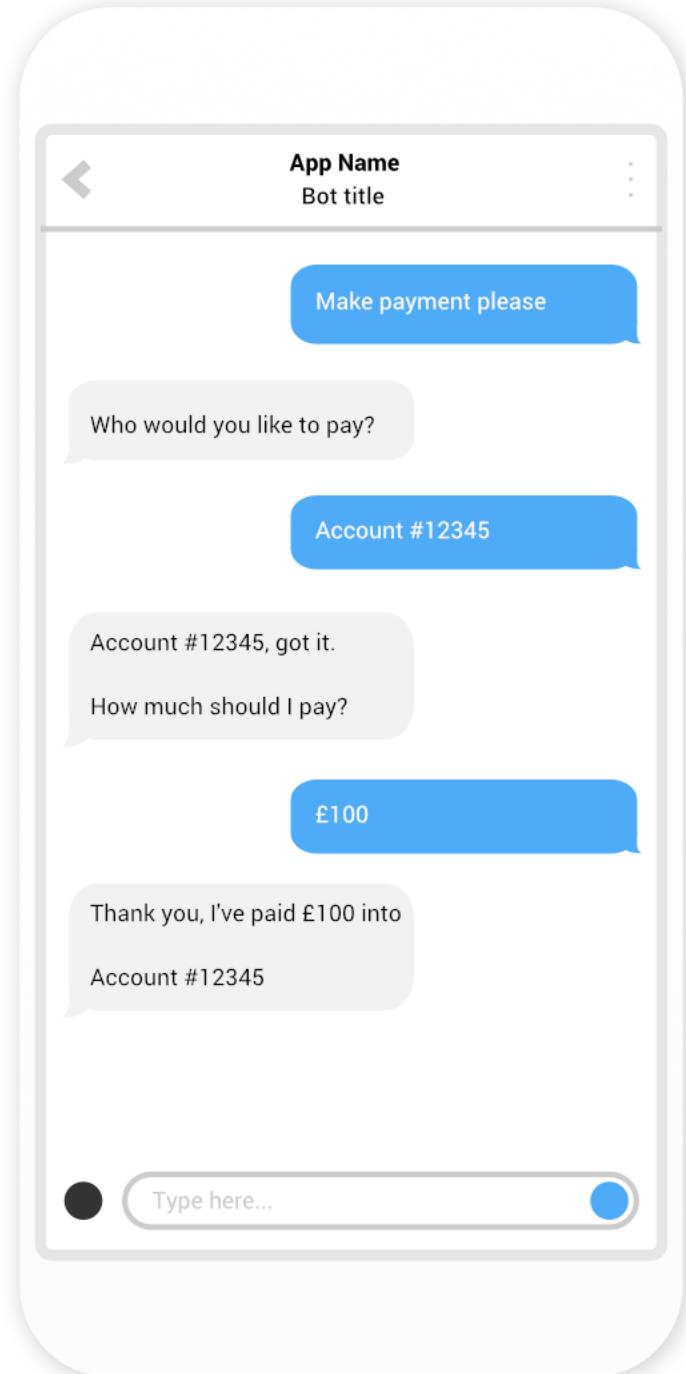
Make payment Dialog

Main Dialog



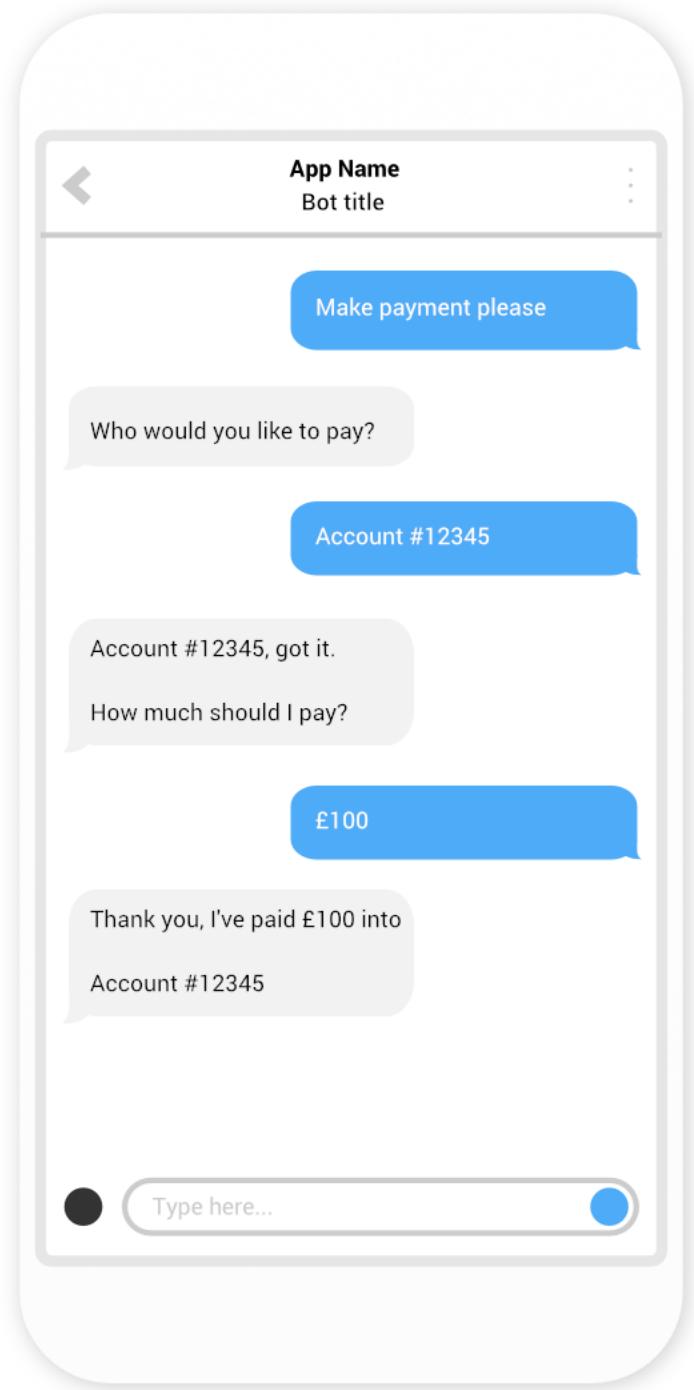
Make payment Dialog

Main Dialog

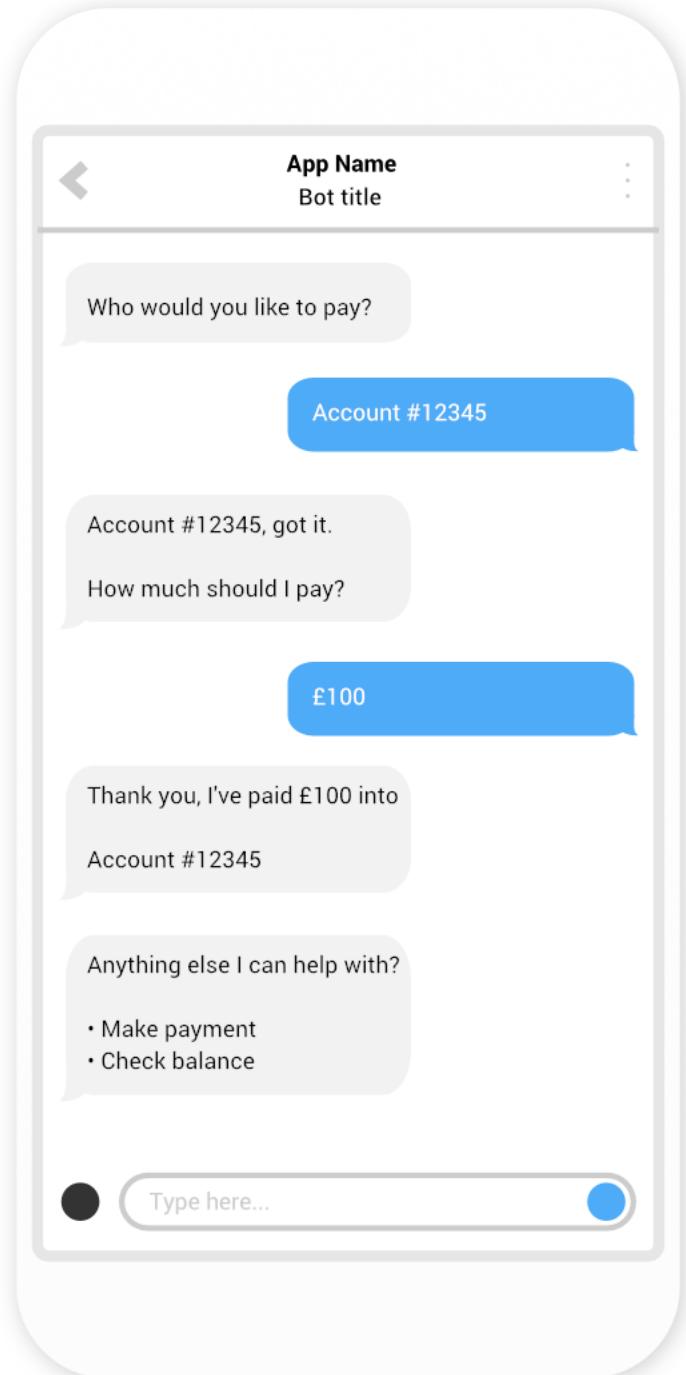


Make payment Dialog

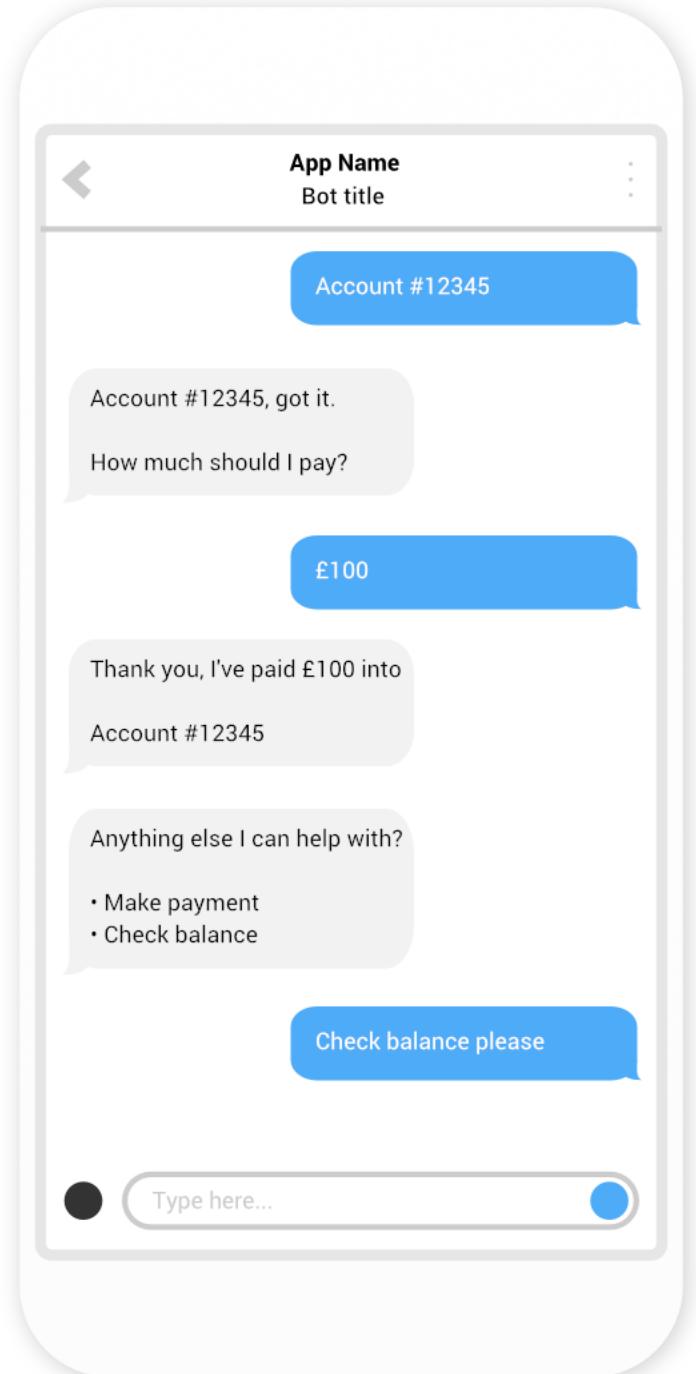
Main Dialog



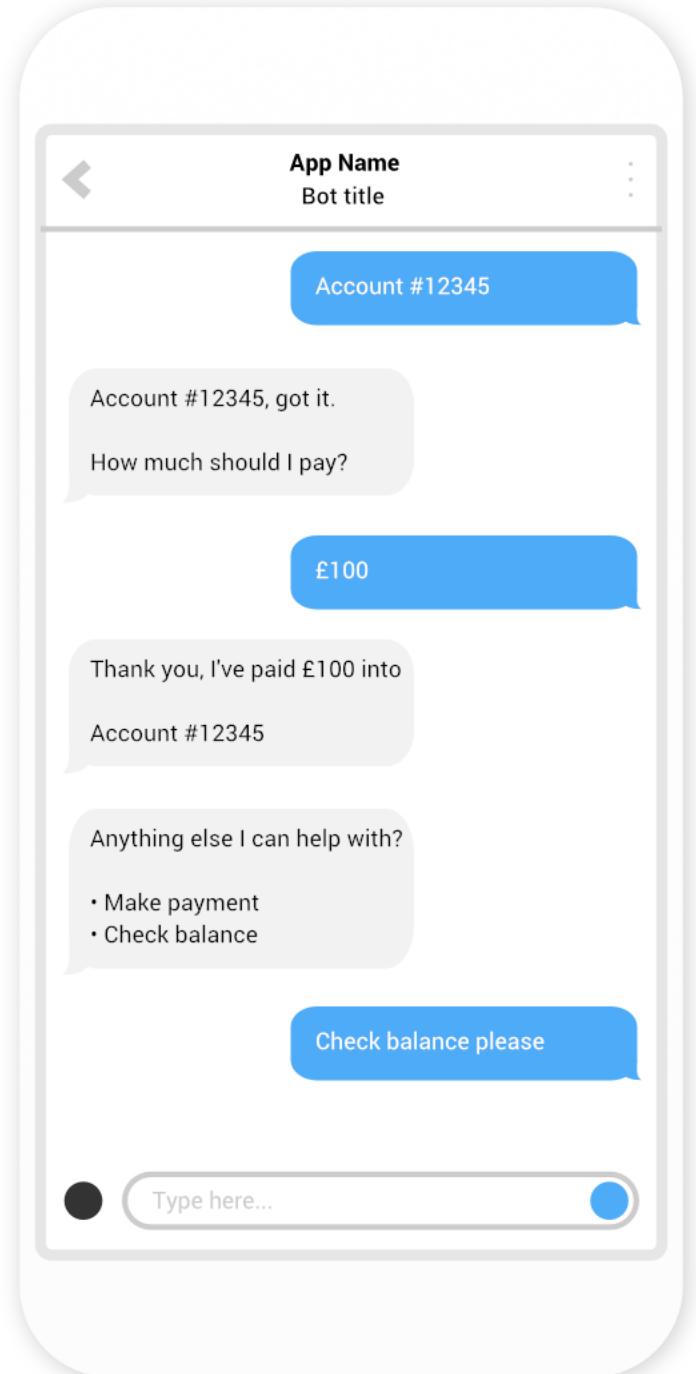
Main Dialog



Main Dialog

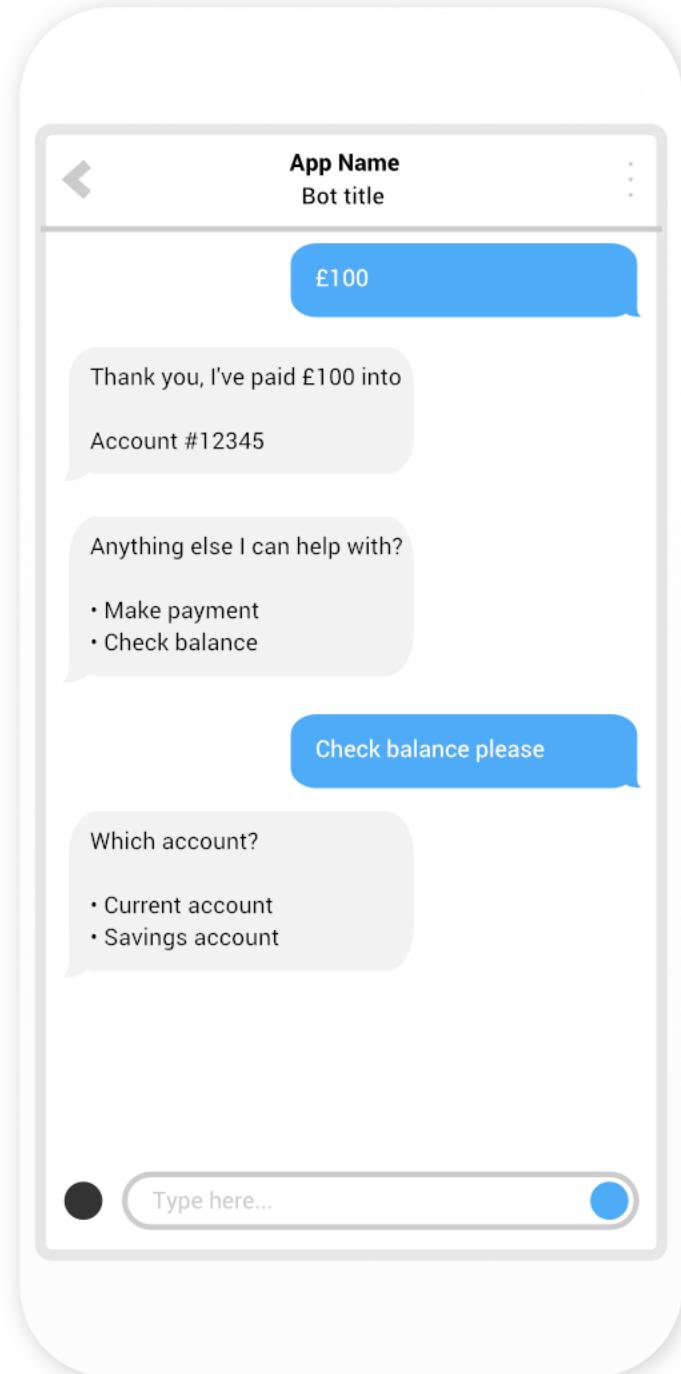


Main Dialog



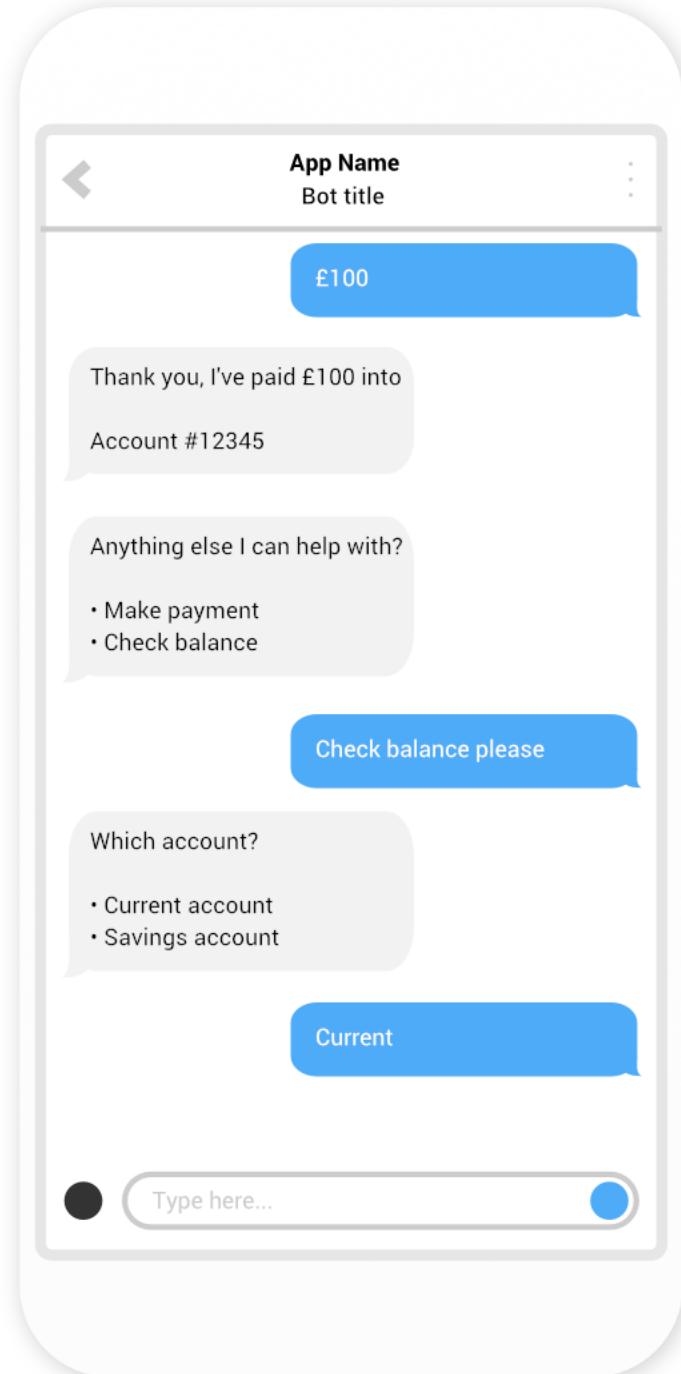
Check balance Dialog

Main Dialog



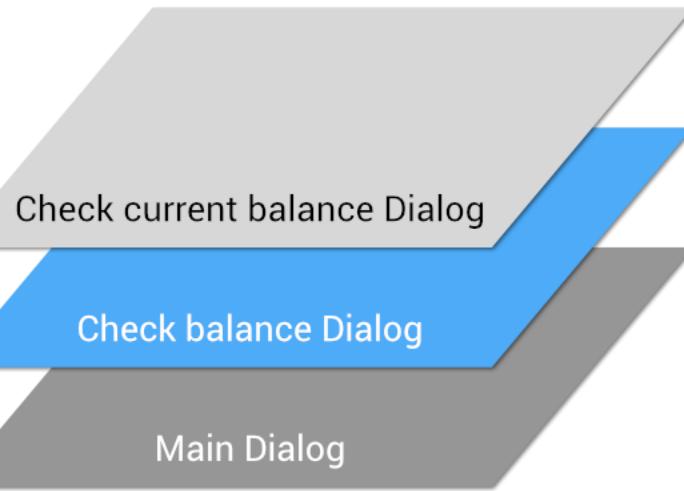
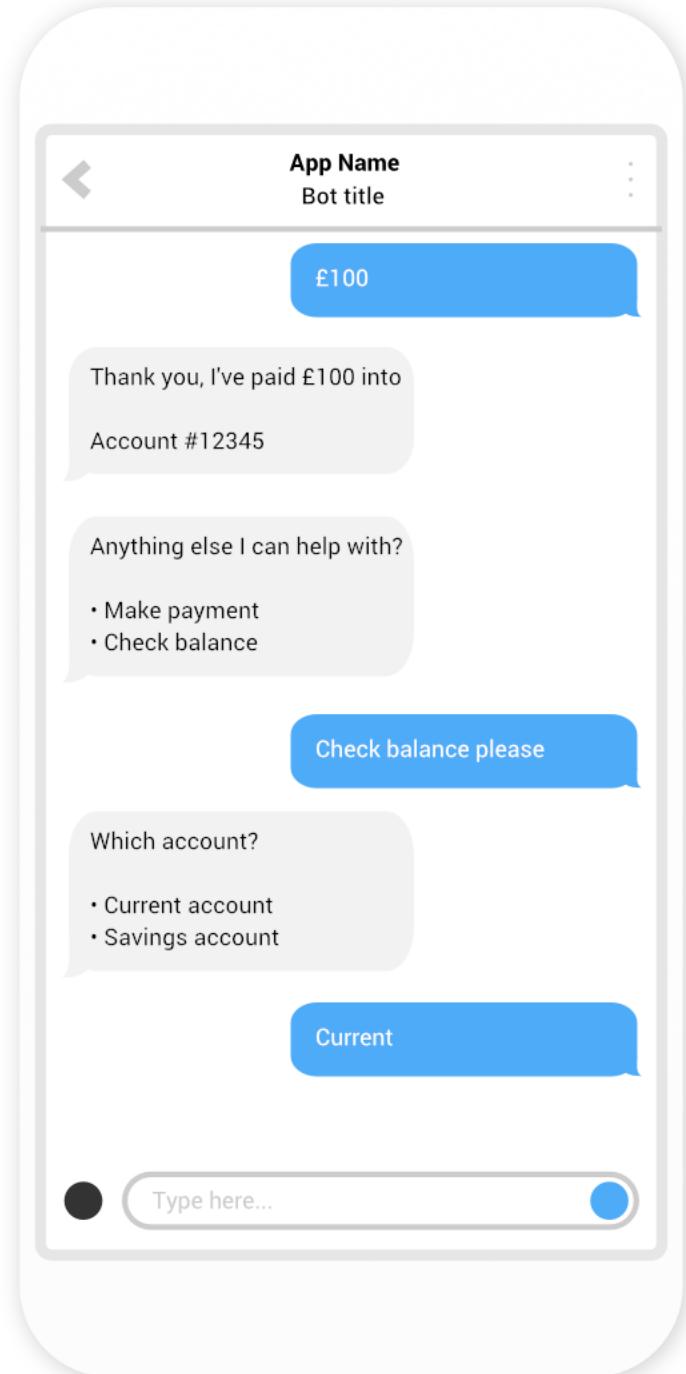
Check balance Dialog

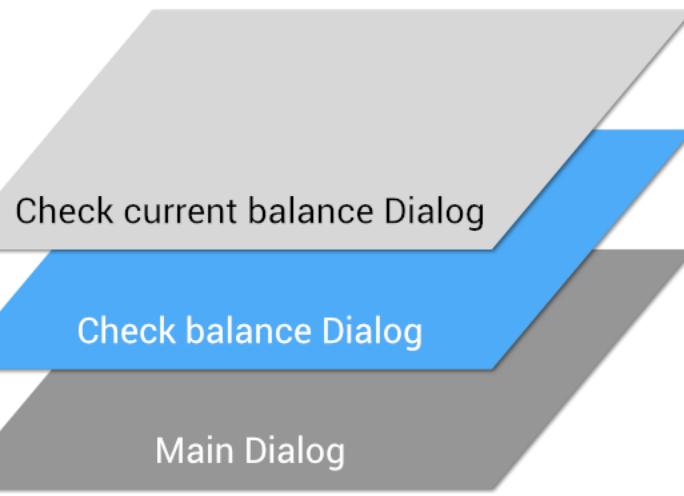
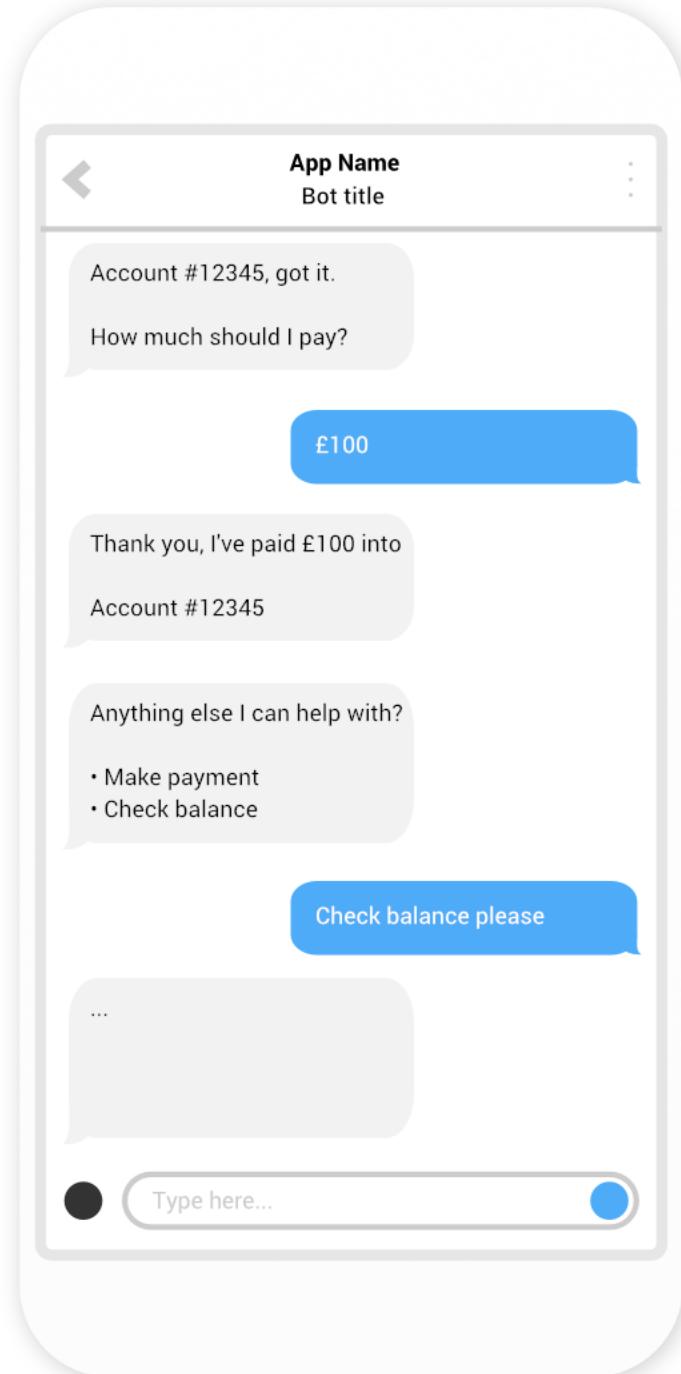
Main Dialog



Check balance Dialog

Main Dialog







Dialog transitions

`Context.Wait()`

Wait for a user to send a message in the same Dialog

`Context.Call()` & `Context.Forward()`

Call another Dialog, adding it to the top of the stack, with or without passing a message to the child Dialog.

`Context.Done()`

Complete the current Dialog, removing it from the stack

Demo

Banking Bot using Dialogs

@jamesemann 

Form Flow

@jamesemann 



Form Flow

Form Flows are suited to data capture

Similar to a form in a traditional web page

Very simple to implement

The screenshot shows a mobile application interface with a dark blue header. Below the header, there is a question: "Are you a current or a prospective student?" with two options: "Current" and "Prospective". A graduation cap icon is next to the "Current" option, which is highlighted with a blue rounded rectangle. In the top right corner of the screen, there are three dots. The main content area features a question "What's your full name?" followed by a text input field containing "James Mann". Below this, another question "What is the best way to get in touch with you?" is displayed, with three options: "Telephone", "SMS", and "Email", each accompanied by a graduation cap icon.

Are you a current or a prospective student?

Current

Prospective

...

Current

What's your full name?

James Mann

What is the best way to get in touch with you?

Telephone

SMS

Email



Parking enquiry chatbot

Parking enquiry

1. What is the nature of your enquiry?

Problem with Machine
 General Enquiry

2. Please provide the machine ID, there should be a white label on the parking machine. If you don't know this, then your street address can help us locate it.

LS1 4PH

3. Please describe your issue so with enough detail that we can resolve it as quickly as possible.

I paid for a ticket and the machine just took my money!!

Done

Demo

Form Flow Bot

@jamesemann 

QnA Maker

@jamesemann 



QnA Maker

Build, train and publish
Q&A bots based on
existing FAQs

<https://www.qnamaker.ai>

From FAQ to Bot
in minutes.

Demo

qnamaker.ai

@jamesemann 

Demo

QnA Maker Bot

@jamesemann 



Agenda

Introduction

Why bots?

What is Bot Framework

Dialogs

Formflow

QnAMaker



Bot smarts

luis.ai

Cards

Proactive Bot

luis.ai

@jamesemann 



luis.ai terminology

Utterance (input)

A spoken or written message

Intent (output)

What is the user intending to do?

Entity (output)

What objects are being referred to?

“Set the
temperature in
the kitchen to 21
degrees”



luis.ai intent recognition & entity extraction



“Set the
temperature in
the kitchen to 21
degrees”

Model
(luis.ai API)

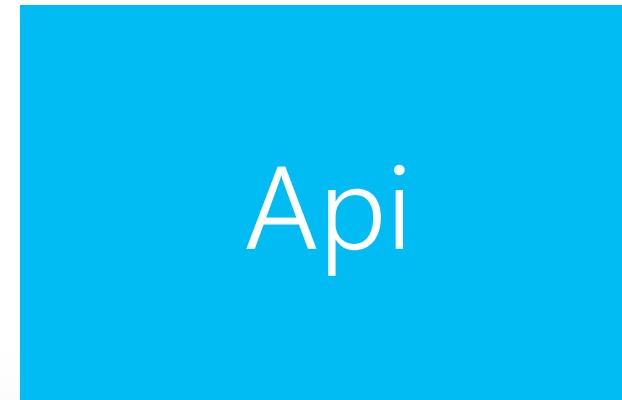
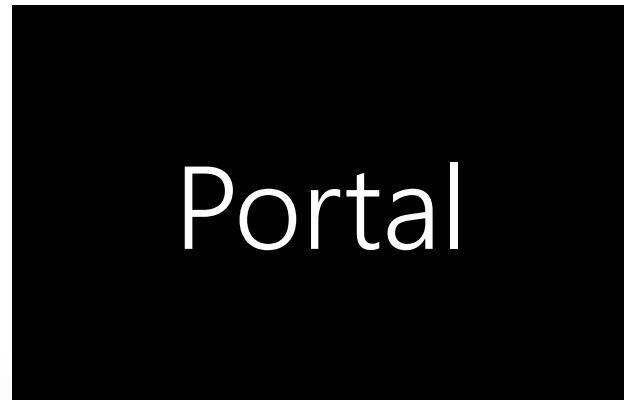
Intent
Set temperature

Entities
Room = Kitchen
Temperature = 21 degrees



luis.ai components

Define
Train
Publish



Consume

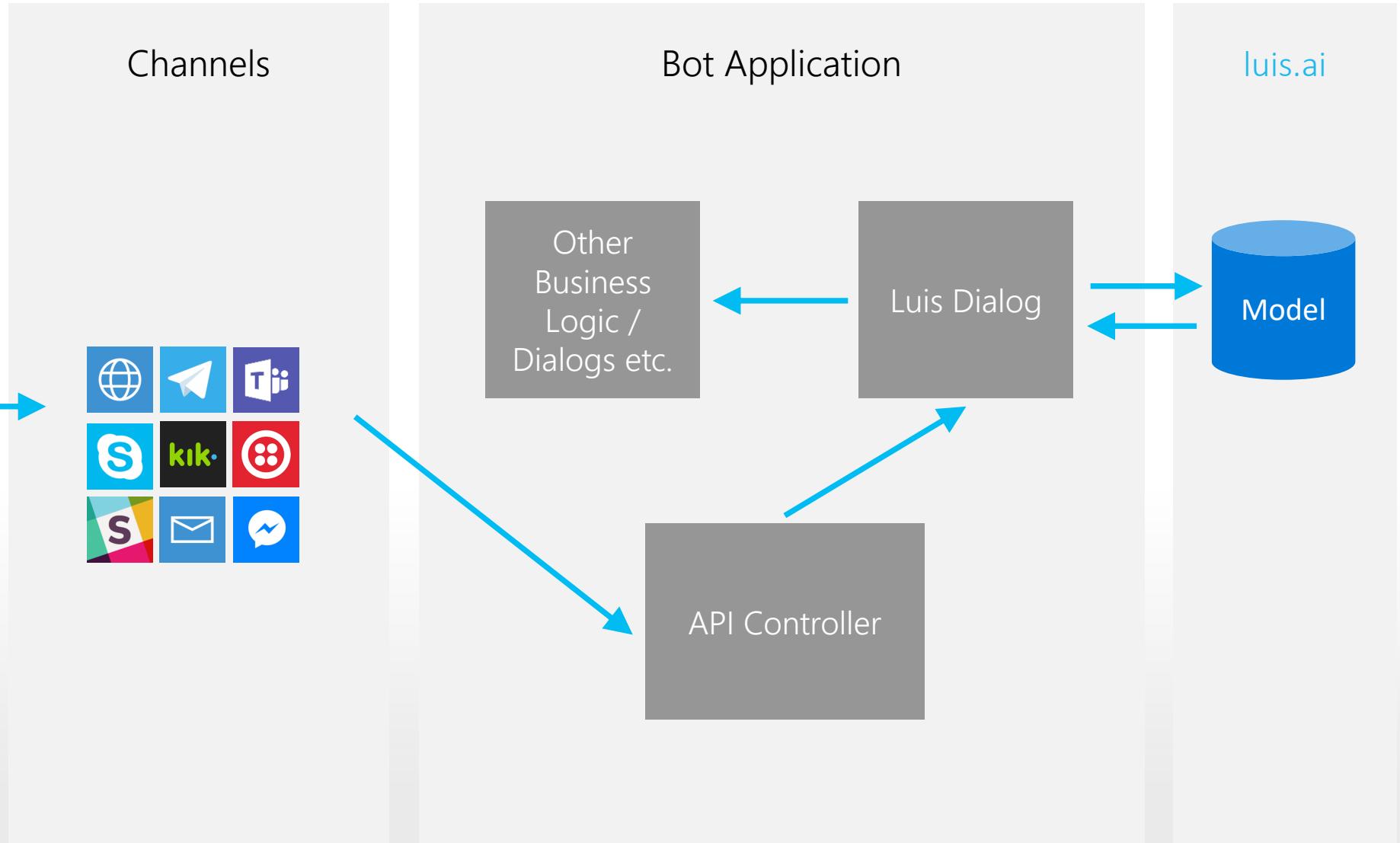
Demo

Home automation model in luis.ai portal

@jamesemann 



A more intelligent bot



Demo

Home automation Bot

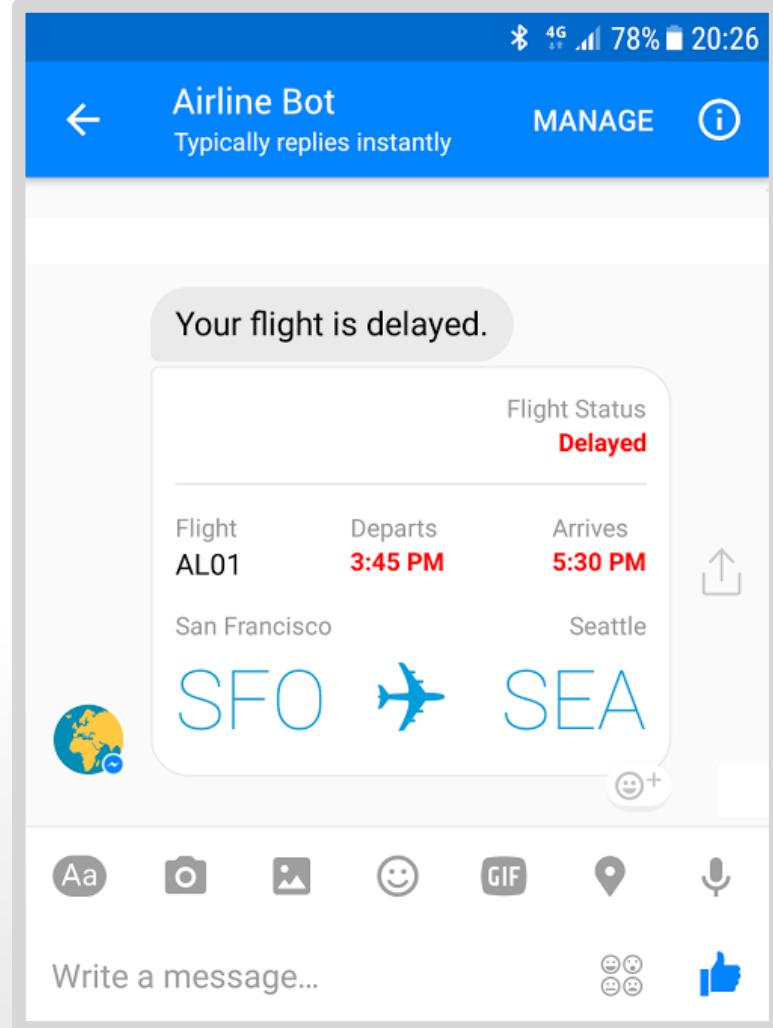
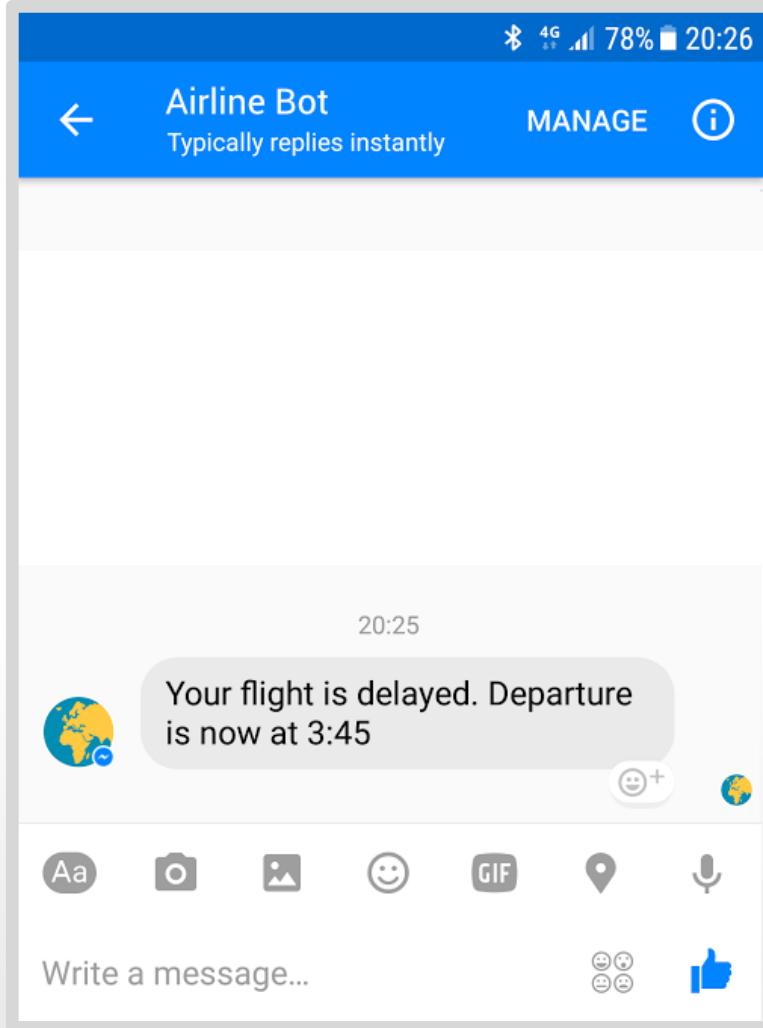
@jamesemann 

Cards

@jamesemann 



Bots can interact with more than just text



 Agent 12:25
Current visitor information

Visitor Name
River Rhodes

OS
MacOS 10.11.4

Weather
Cloudy 54°F

 Grenoble, France (37KB) ▾



[Translate](#) [More Actions](#)

Current Page
[Acme.com/help](#)

Browser
Chrome 50.0.2261

Local Time
5:30 PM

Classic Blue T-Shirt

100% Cotton, 200% Comfortable
[peterssendreceiveapp.ngrok.io](#)



[Shop Now](#)

Classic Black T-Shirt

100% Cotton, 200% Comfortable
[peterssendreceiveapp.ngrok.io](#)



[Shop Now](#)

[View More](#)



Homegrown

Sandwiches and salads
104 Lake St, Kirkland, WA 98033
(425) 123-4567

[View in article](#)

[See more like this](#)



Terminal 1
Gate C24

Passengers

Sarah Hum

Jeremy Goldberg

Evan Litvak

Seat

14A

14B

14C

Flight

KL5051

San Francisco

SFO



JFK



[View Boarding Pass](#)



Today's Top News

President signs new bill
[peterssendreceiveapp.ngrok.io](#)

Bull Market Continues to Rally

The markets react positively to...
[peterssendreceiveapp.ngrok.io](#)



Traffic Expected for Upcoming Holiday

Record traffic is expected due...
[peterssendreceiveapp.ngrok.io](#)



Forest Fires Spread

The dry season has results in r...
[peterssendreceiveapp.ngrok.io](#)



[Read More](#)



Hiretron 12:25 PM

Approval Request

Your approval is requested to make an offer to [Florence Tran](#).

[View applicant](#)

[Approve](#)

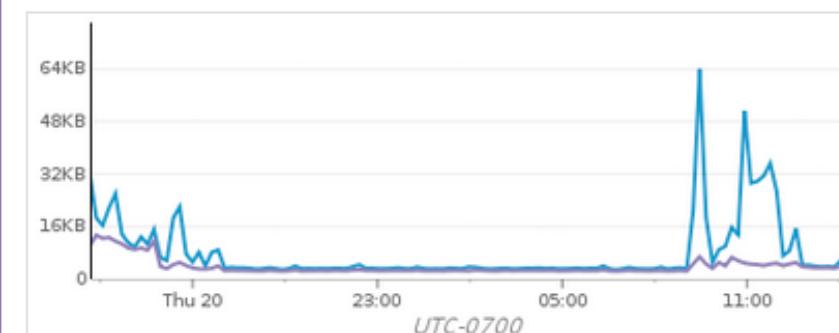
[Reject](#)



Datadog 12:28 PM

Network traffic (kb/s)

How does this look? @slack-ops - Sent by Julie Dodd (7KB) ▾



 T-Bot

This is the initial step for creating a team. Please send your feedback to the team owner.

 Aadi Kapoor	aadikapoor@adventureworks.com
 Aaron Buxton	aaronbuxton@adventureworks.com
 Adam Jarman	adamjarman@adventureworks.com
 AdventureWorks Team	angus.mcneil@adventureworks.com
 Angus McNeil	angus.mcneil@adventureworks.com

Join the team and receive updates from the team owner.

How do I let people know I created a team?

In the **General** channel, you can @mention the team by typing @team or @*[team name]* in the compose box. We'll also send an email on your behalf. You should know that your team owner has to enable @team mentions for them to work!

How do I create a new team?

What are teams and channels?



Creating cards using BotConnector

Demo Cards

@jamesemann 



adaptivecards.io

A new standard for developers to create interactive cards

Define the structure of the card, and let the channel decide how to display it

Notification

Card created: Publish Adaptive Card schema

Miguel Garcia
Created Monday, February 13, 2017 10:08:39 ...

Now that we have define the main rules and features of the format, we need to produce a schema and ...

Board: Adaptive Card
List: Backlog
Assigned to: David Claux
Due date: Not set

[Set due date](#) [Comment](#) [View](#)

Microsoft Teams

Card created: Publish Adaptive Card schema

Miguel Garcia
Created Monday, February 13, 2017 10:08:39 PM

Now that we have define the main rules and features of the format, we need to produce a schema and publish it to GitHub. The schema will be the starting point of our reference documentation.

Board: Adaptive Card
List: Backlog
Assigned to: David Claux
Due date: Not set

[Set due date](#) [Comment](#) [View](#)

Skype

Card created: Publish Adaptive Card schema

Miguel Garcia
Created Monday, February 13, 2017 10:08:39 PM

Now that we have define the main rules and features of the format, we need to produce a schema and ...

Board: Adaptive Card
List: Backlog
Assigned to: David Claux
Due date: Not set

[Set due date](#) [Comment](#) [View](#)

Android

Card Created: Publish...

Miguel Garcia
Created Monday, February 13, 2017

Now that we have define the main rules and features of the format, we need to produce a schema and publish it to...

Board: Adaptive Card
List: Backlog
Assigned to: David Claux
Due date: Not set

IOS

Card Created: Publish...

Miguel Garcia
Created Monday, February 13, 2017

Now that we have define the main rules and features of the format, we need to produce a schema and publish it to...

Board: Adaptive Card
List: Backlog
Assigned to: David Claux
Due date: Not set



Creating cards using ChannelData

Demo

Facebook webview

@jamesemann 

Proactive bots

@jamesemann 



Bot communication isn't always synchronous

Reminders and alerts

"Your flight is delayed"

Long running tasks

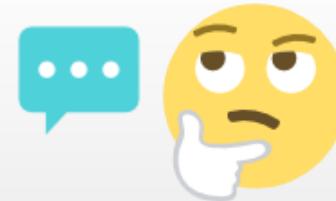
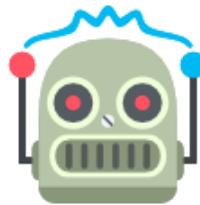
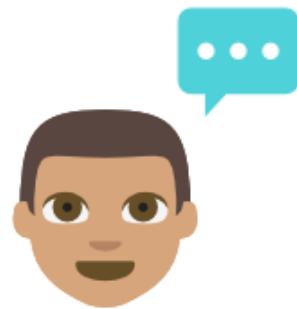
"Started the build... I'll let you know when it's done"

"The build is complete"

Human in the loop (human handoff)



Resuming a conversation



Demo

Customer support proactive Bot

@jamesemann 



Thank you!

- Create an account @ dev.botframework.com
- Download the emulator + Node/C# SDK
- Start providing a conversational interface to your existing apps!

<https://github.com/jamesemann/dotnetnotts>



Resources



Blogs:

[James Mann:](#)

blogs.blackmarble.co.uk/blogs/jmann/

Twitter:



@jamesemann

Useful links:

[Bot samples, tutorials, case studies:](#)
aka.ms/botresources

[Bot framework:](#)

- dev.botframework.com
- github.com/microsoft/BotBuilder
- github.com/microsoft/BotBuilder-samples

[Cognitive Services:](#)
aka.ms/cognitive