Microsoft

Fundamentals of Microsoft Teams

Teams application packaging and testing

Global Microsoft 365 Developer Bootcamp

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MVP Office Servers and Services

I advise my clients to be proactive in adopting new Microsoft technologies that help them to reach business needs and to accomplish their goals.

Has more than 20 years working on IT, with Master in Information Technologies, last projects have more focus in Office 365, Infrastructures and Security within Microsoft Infrastructure Products.

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gfi NEW CHALLENGES. NEW IDEAS

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Agenda

- Teams application packaging and testing
- Build a basic Microsoft Teams Bot
- Build a Microsoft Teams Tab
- Resources & Lab’s

1

Teams application packaging and testing

Teams application packaging and testing

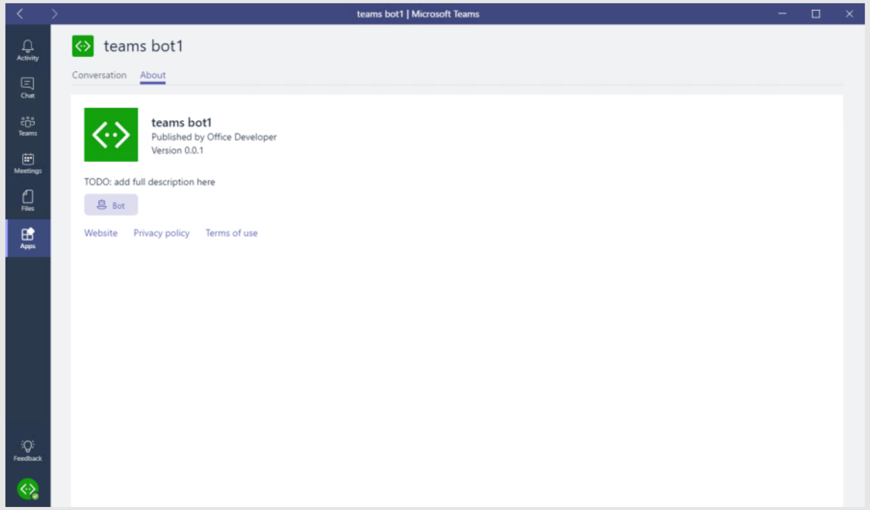
Teams extensibility options

What is a Teams App?

Why create a Teams App?

How to create a Teams App

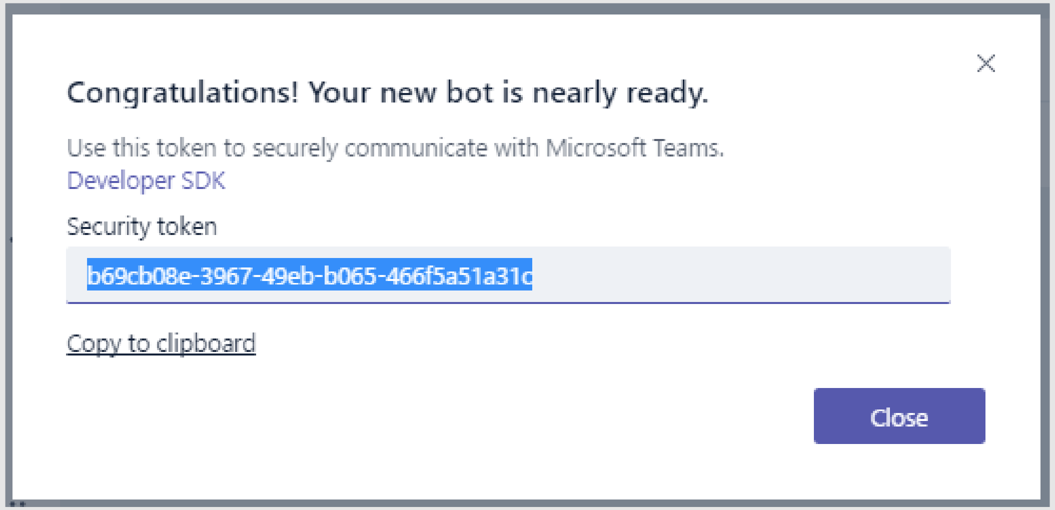
Teams extensibility options



teams bot1

teams bot1
Published by Office Developer
Version 0.0.1

TODO: add full description here



Congratulations! Your new bot is nearly ready.

Use this token to securely communicate with Microsoft Teams.

Security token: b69cb08e-3967-49eb-b065-466f5a51a31c

Microsoft Teams App

Tabs

Bots

Messaging extensions

Connectors

Custom Bot

Receive & reply to messages

What is a Teams App?

Package of services available to users in the contexts (or “scopes”) that make the most sense.

Services

Tabs

Bots

Messaging extensions

Connectors

Scopes

Personal (App bar)

Team (Channel)

Package (deployment)

Upload (one Team)

Tenant App Catalog

Office Store

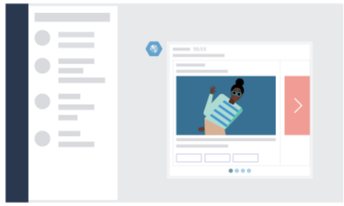
Why create a Teams App?

Immersive experience

The platform places content and conversations side by side.

Tabs and conversations

Tabs give your app a dedicated canvas that allows people to jump between conversations and your experience.

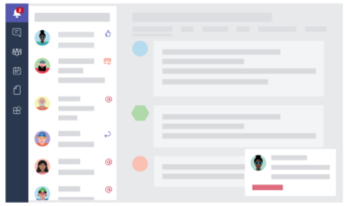


Customizable cards

Cards let you surface important tasks, information, and reminders in actionable ways.

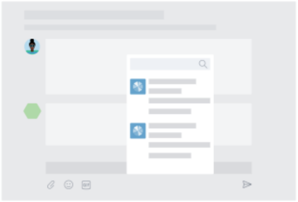
Bot framework

The Bot framework offers a natural language UX that can interact with your services.



Instant notifications

The activity feed displays notifications for your users.



Messaging extensions

Messaging Extensions are quick and easy shortcuts to key components of your service.

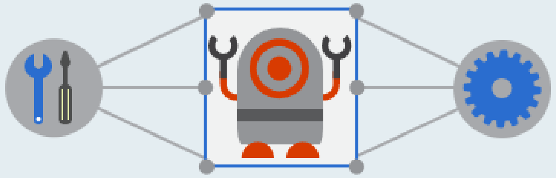
How to create a Teams App

Develop components

HTML

TypeScript / JavaScript

.NET



Integrate with Teams

Microsoft Teams JavaScript Library

Bot Builder SDK - Node.js & C#

Package and deploy

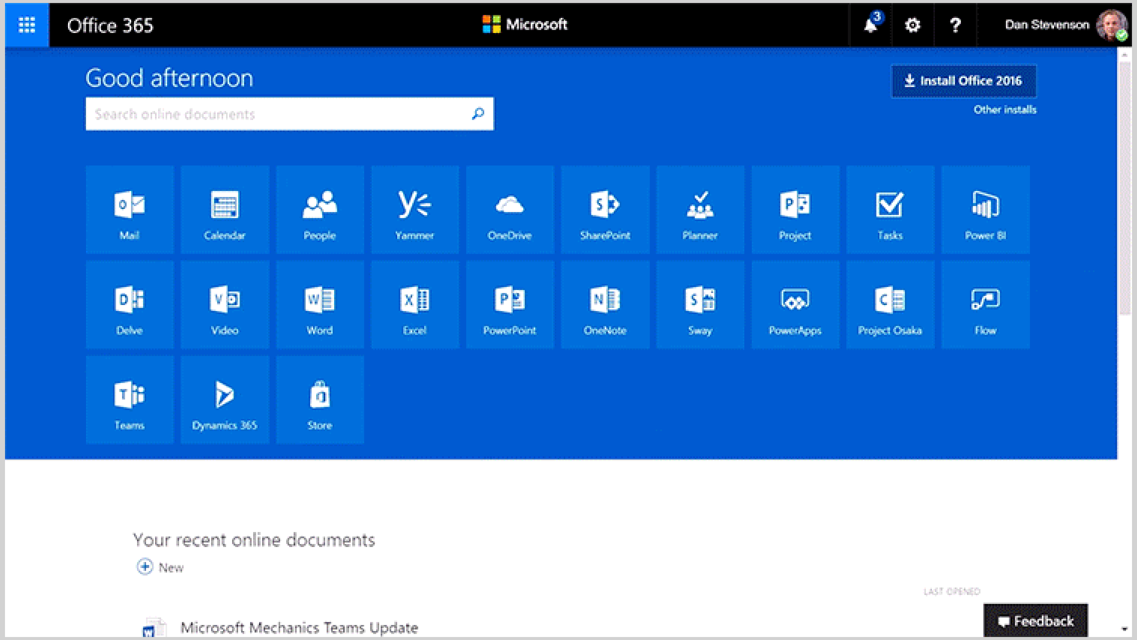
Host web pages and services

Create and package manifest

Upload/publish package

2

Build a basic Microsoft Teams Bot



Build a basic
Microsoft Teams Bot

Overview of building a Microsoft Teams Bot

Bot Framework vs Webhook (Custom Bot)

Conversation Basics

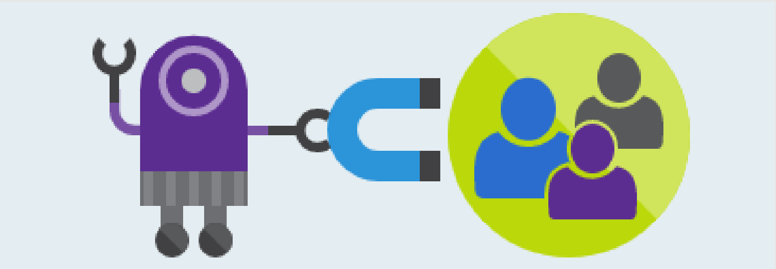
Channel Conversations and 1:1 Conversations

Messages, Cards and Actions

Events

Testing your Bot

Overview of building a Microsoft Teams Bot

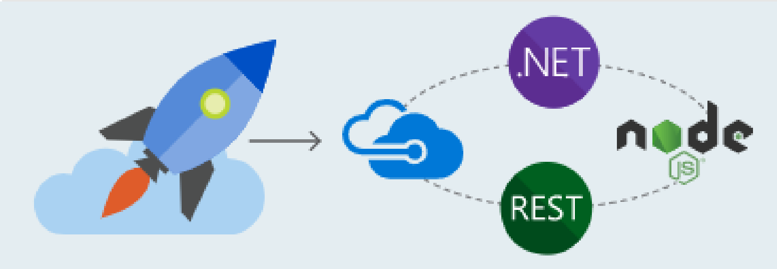


Design a great bot

Be responsive – respond to messages and events

Recognize and respond to questions and non-questions

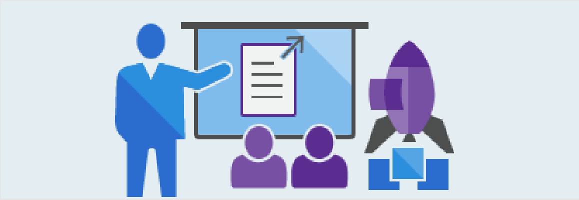
Have a personality



Develop your bot

Bot Builder SDK for .NET

Bot Builder SDK for Node.js



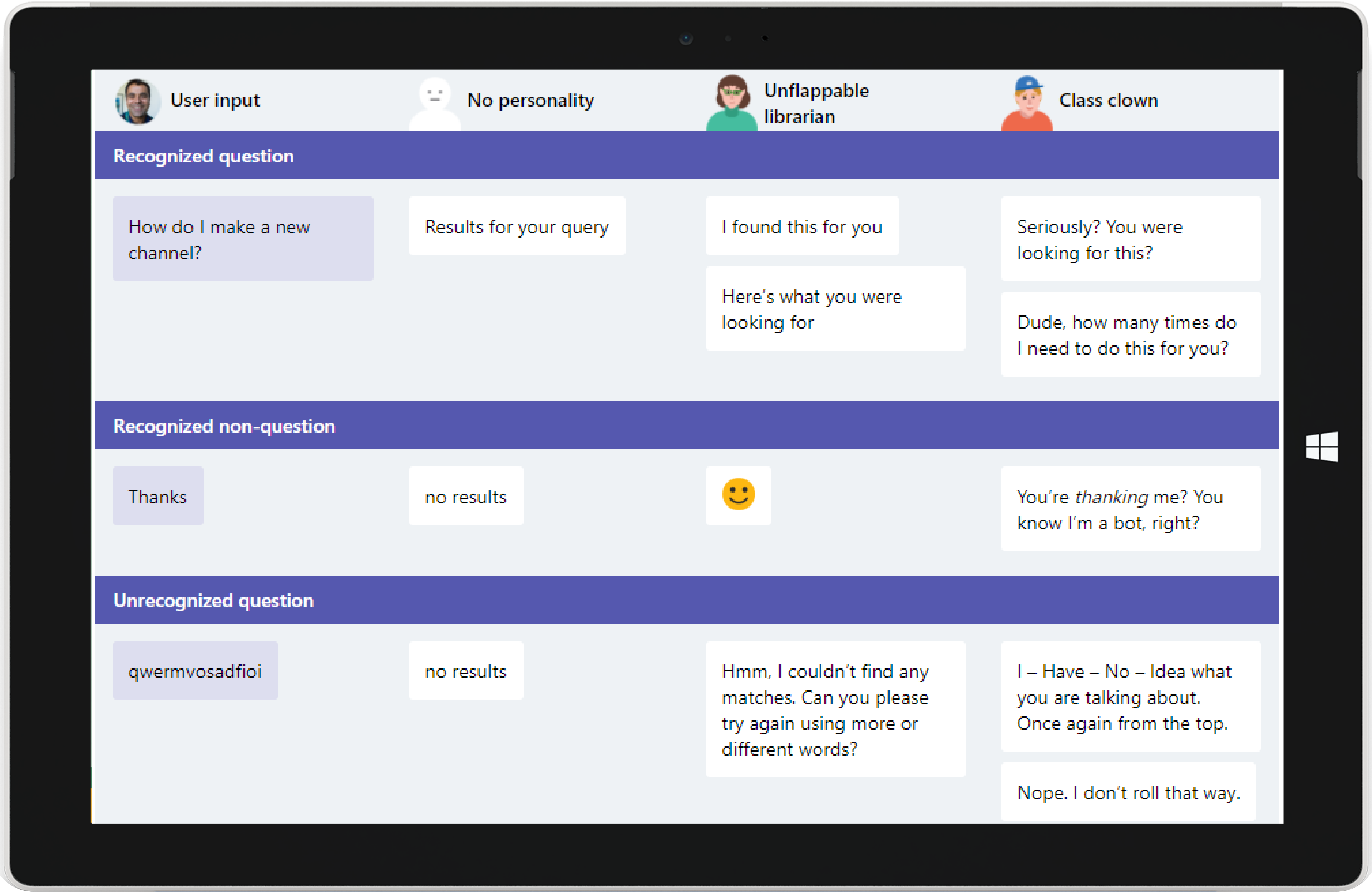
Register and deploy your bot

Get a Bot ID and App ID/Secret and configure bot

Make sure bot is reachable from the internet

Enable analytics

Examples of bot personality and response types



User input	No personality	Unflappable librarian	Class clown
Recognized question			
How do I make a new channel?	Results for your query	I found this for you Here's what you were looking for	Seriously? You were looking for this? Dude, how many times do I need to do this for you?
Recognized non-question			
Thanks	no results	🙂	You're *thanking* me? You know I'm a bot, right?
Unrecognized question			
qwermvosadfioi	no results	Hmm, I couldn't find any matches. Can you please try again using more or different words?	I – Have – No – Idea what you are talking about. Once again from the top. Nope. I don't roll that way.

Conversation basics

Activity objects are used to pass information back and forth between bot and channel (or user).

Messages property

Text (Plain / Markdown)

Attachments (Simple media / Cards)

Entities (Users, Bot client)

Dialogs manage conversation flow

Pre & Post events for prompts & replies

Dialog stack and state managed by Bot Framework

Values passed to/from dialogs

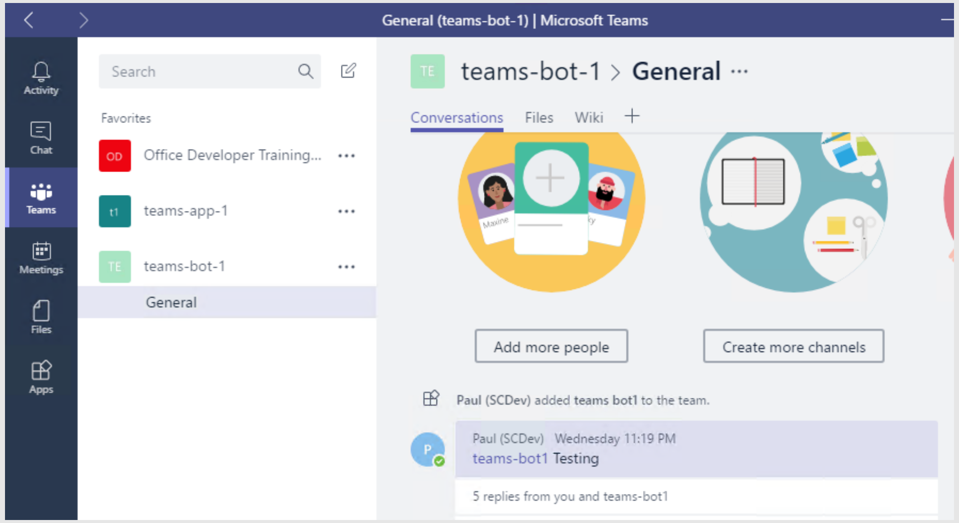
StateService

User

Conversation

Private (User in Conversation)

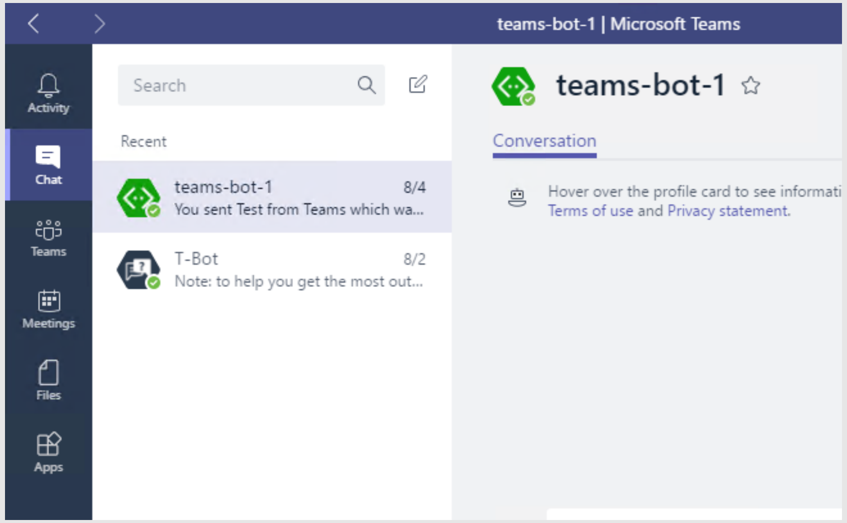
Channel conversations and 1:1 conversations



Paul (SCDev) added teams bot1 to the team.

Paul (SCDev) Wednesday 11:19 PM
teams-bot1 Testing

5 replies from you and teams-bot1



teams-bot-1 8/4
You sent Test from Teams which wa...

T-Bot 8/2
Note: to help you get the most out...

Hover over the profile card to see informati
Terms of use and Privacy statement.

Channel conversation

Access to channel data, including members

Events when users added/removed from channel

Messages will contain 'at' (@) references

1:1 conversation

Access only to user – not team

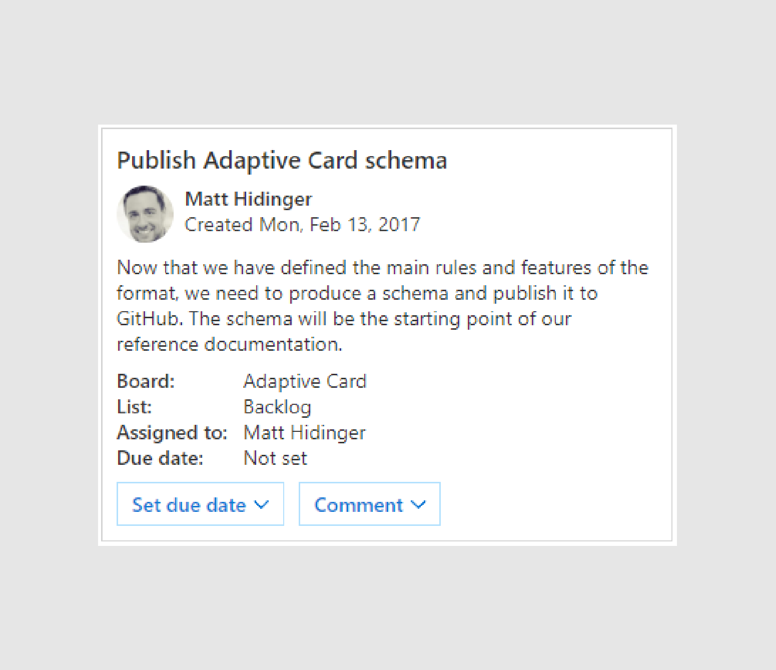
Event when user initiates conversation

No 'at' references

Messages – Text formats

Format	From user to bot	From bot to user	Notes
Rich text	✓	✓	Basic markdown, no tables
Pictures	✓	✓	Maximum 1024×1024 and 1 MB in PNG, JPEG, or GIF format; animated GIF not officially supported
Cards	✗	✓	Currently supports Hero, Thumbnail, and Office 365 Connector cards
Emojis	✗	✓	Currently supports emojis via UTF-16 (such as U+1F600 for grinning face)

Cards



Publish Adaptive Card schema

Matt Hidinger
Created Mon, Feb 13, 2017

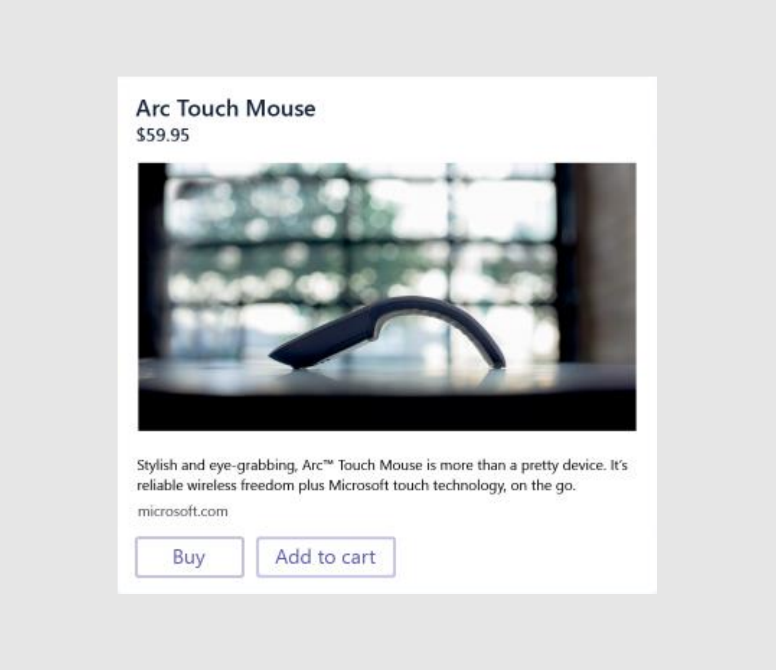
Now that we have defined the main rules and features of the format, we need to produce a schema and publish it to GitHub. The schema will be the starting point of our reference documentation.

Board:	Adaptive Card
List:	Backlog
Assigned to:	Matt Hidinger
Due date:	Not set

Adaptive Card

A customizable card that can contain any combination of text, speech, images, buttons, and input fields.

Supported in Teams, Outlook, Windows, etc.



Arc Touch Mouse
$59.95

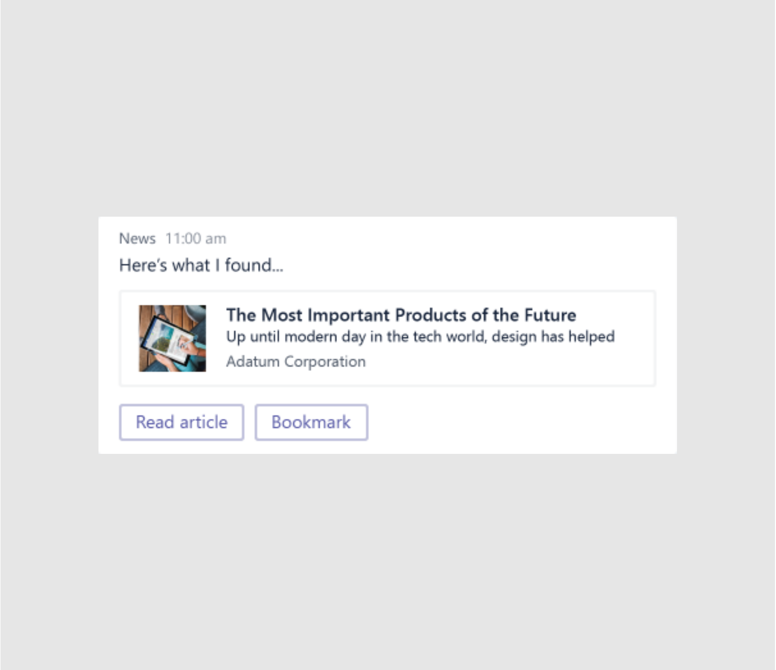
Stylish and eye-grabbing, Arc™ Touch Mouse is more than a pretty device. It's reliable wireless freedom plus Microsoft touch technology, on the go.

microsoft.com

Hero

Largest card

Best used for articles, long descriptions or scenarios where your image is telling most of the story



News 11:00 am

Here's what I found...

The Most Important Products of the Future
Up until modern day in the tech world, design has helped
Adatum Corporation

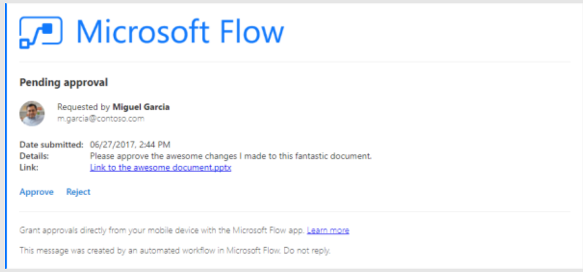
Thumbnail

Short and sweet

Ideal for short answers, or if you want to return several cards at once to provide options

Good for deep link to tab or service

Cards



Microsoft Flow

Pending approval

Requested by **Miguel Garcia**
m.garcia@contoso.com

Date submitted: 06/27/2017, 2:44 PM
Details: Please approve the awesome changes I made to this fantastic document.
Link: Link to the awesome document.pptx

Approve Reject

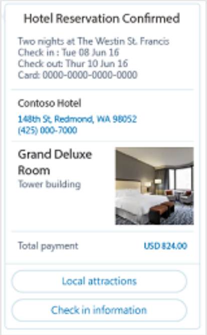
Grant approvals directly from your mobile device with the Microsoft Flow app. Learn more

This message was created by an automated workflow in Microsoft Flow. Do not reply.

Office 365 Connector Card

Flexible - Provides for multiple sections, images and fields

Also supported in O365 Groups (Exchange)



Hotel Reservation Confirmed

Two nights at The Westin St. Francis
Check in : Tue 08 Jun 16
Check out: Thur 10 Jun 16
Card: 0000-0000-0000-0000

Contoso Hotel
148th St, Redmond, WA 98052
(425) 000-7000

Grand Deluxe Room
Tower building

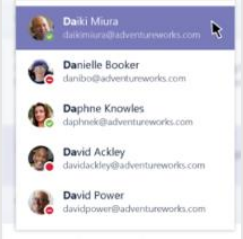
Total payment USD 824.00

Local attractions

Check in information

Receipt

A card that enables a bot to provide a receipt to the user. It typically contains the list of items to include on the receipt, tax and total information, and other text.



Daiki Miura
daikimiura@adventureworks.com

Danielle Booker
danibo@adventureworks.com

Daphne Knowles
daphnek@adventureworks.com

David Ackley
davidackley@adventureworks.com

David Power
davidpower@adventureworks.com

List / List collection

Scrolling list of items

Collection of Hero/Thumbnail cards in Carousel or Vertical layout

Actions

Actions require a type, value and title. The title is displayed in the card.
The type/values perform specific actions:

Type	Action
openUrl	Opens a URL in the built-in browser.
messageBack	Sends a message and payload to the bot (from the user who clicked the button or tapped the card) and sends a separate message to the chat stream.
imBack	Sends a message to the bot (from the user who clicked the button or tapped the card). This message (from user to bot) is visible to all conversation participants. *Not recommended for bots in channels
invoke	Sends a message and payload to the bot (from the user who clicked the button or tapped the card). This message is not visible.
signin	Initiates OAuth flow, allowing bots to connect with secure services.

Events

Activity objects are used to pass information back and forth between bot and channel (or user). Activities can represent Events, denoted by ActivityType == ‘conversationUpdate’

Team Member Events

`teamMemberAdded`

`teamMemberRemoved`

Payload object contains added/removed members

***Adding bot fires this event**

Channel Events

`channelCreated`

`channelRenamed`

`channelDeleted`

ChannelData object reflects current state

Team Events

`teamRenamed`

ChannelData object reflects current state

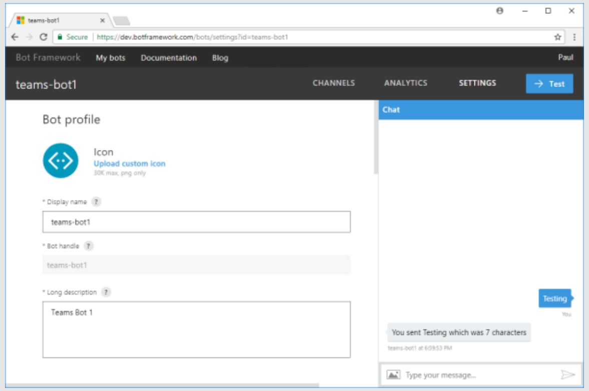
Reactions

`reactionsAdded`

`reactionsRemoved`

replyToId contains the ID of the specific message

Testing your Bot



Bot profile

Icon

30K max, png only

* Display name ?

teams-bot1

* Bot handle ?

teams-bot1

* Long description ?

Teams Bot 1

Testing

You

You sent Testing which was 7 characters

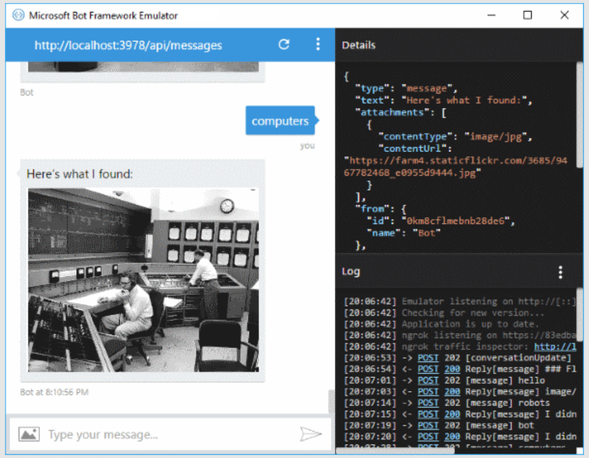
teams-bot1 at 6:59:53 PM

Type your message...

Bot registration portal

Help confirm registration settings

Simulates 1:1 conversation


Microsoft Bot Framework Emulator
http://localhost:3978/api/messages
Details
Log

Bot

computers

you

Here's what I found:

Bot at 8:10:56 PM

Type your message...

```
{
  "type": "message",
  "text": "Here's what I found:",
  "attachments": [
    {
      "contentType": "image/jpg",
      "contentUrl":
"https://farm4.staticflickr.com/3685/94
67782468_e0955d9444.jpg"
    }
  ],
  "from": {
    "id": "0km8cflmebnb28de6",
    "name": "Bot"
  },
```

```
[20:06:42] Emulator listening on http://[::]
[20:06:42] Checking for new version...
[20:06:42] Application is up to date.
[20:06:42] ngrok listening on https://83edba
[20:06:42] ngrok traffic inspector: http://l
[20:06:53] -> POST 202 [conversationUpdate]
[20:06:54] <- POST 200 Reply[message] ### Fl
[20:07:01] -> POST 202 [message] hello
[20:07:03] <- POST 200 Reply[message] image/
[20:07:14] -> POST 202 [message] robots
[20:07:15] <- POST 200 Reply[message] I didn
[20:07:19] -> POST 202 [message] bot
[20:07:20] <- POST 200 Reply[message] I didn
```

Bot Framework Emulator

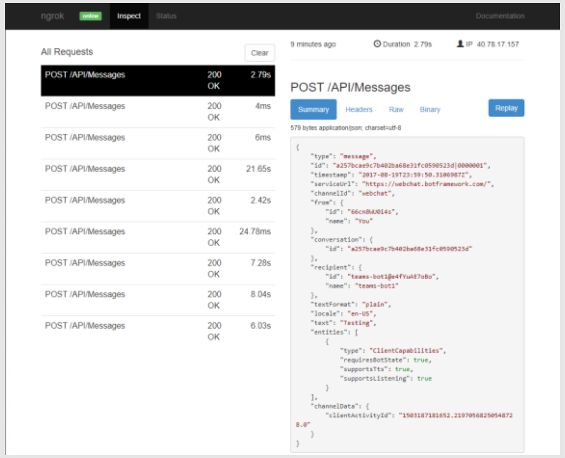
Separate download

Does not require registration

Can connect to bot on localhost

Supports speech recognition

Send sample Team Member Events



All Requests

POST /API/Messages	200 OK	2.79s
POST /API/Messages	200 OK	4ms
POST /API/Messages	200 OK	6ms
POST /API/Messages	200 OK	21.65s
POST /API/Messages	200 OK	2.42s
POST /API/Messages	200 OK	24.78ms
POST /API/Messages	200 OK	7.28s
POST /API/Messages	200 OK	8.04s
POST /API/Messages	200 OK	6.03s

9 minutes ago Duration 2.79s IP 40.78.17.157

POST /API/Messages

579 bytes application/json; charset=utf-8

```
{
    "type": "message",
    "id": "a257bcae9c7b402ba68e31fc0590523d|0000001",
    "timestamp": "2017-08-19T23:59:50.3106987Z",
    "serviceUrl": "https://webchat.botframework.com/",
    "channelId": "webchat",
    "from": {
        "id": "66cn8WU014s",
        "name": "You"
    },
    "conversation": {
        "id": "a257bcae9c7b402ba68e31fc0590523d"
    },
    "recipient": {
        "id": "teams-bot1@e4fYuAE7oBo",
        "name": "teams-bot1"
    },
    "textFormat": "plain",
    "locale": "en-US",
    "text": "Testing",
    "entities": [
        {
            "type": "ClientCapabilities",
            "requiresBotState": true,
            "supportsTts": true,
            "supportsListening": true
        }
    ],
    "channelData": {
        "clientActivityId": "1503187181652.21970568250548728.0"
    }
}
```

ngrok Tunnel

Separate download

Forwards internet requests to local machine

Allows inspection of request/response

3 Build a Microsoft Teams Tab

Build a Microsoft Teams Tab

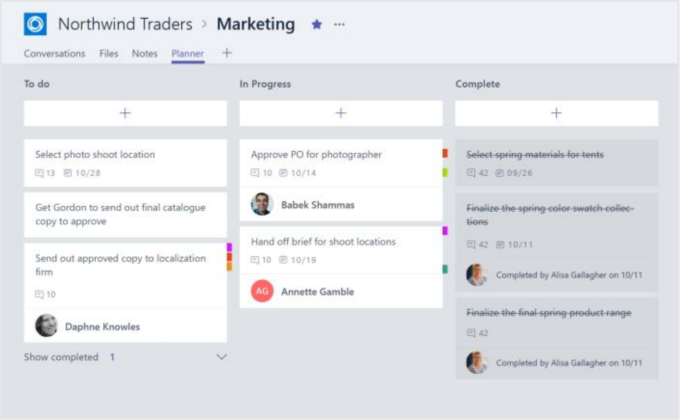
Overview of building a Microsoft Teams Tab

Tab content and configuration

Interacting with Teams and External Systems

Azure Active Directory and the Microsoft Graph API

Overview of building a Microsoft Teams Tab



Select photo shoot location

13 10/28

Get Gordon to send out final catalogue copy to approve

Send out approved copy to localization firm

10

Daphne Knowles

Approve PO for photographer

10 10/14

Babek Shammas

Hand off brief for shoot locations

10 10/19

Annette Gamble

~~Select spring materials for tents~~

42 09/26

~~Finalize the spring color swatch collections~~

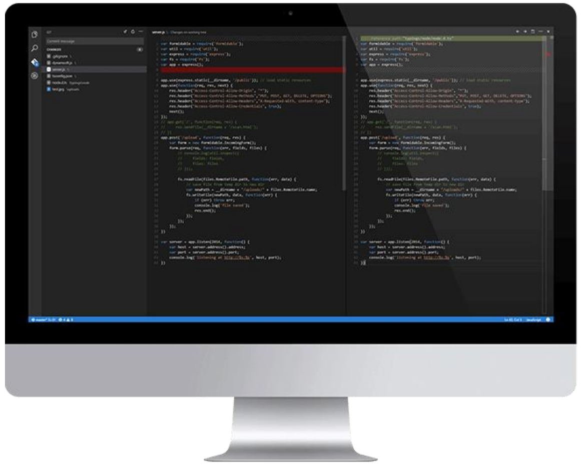
42 10/11

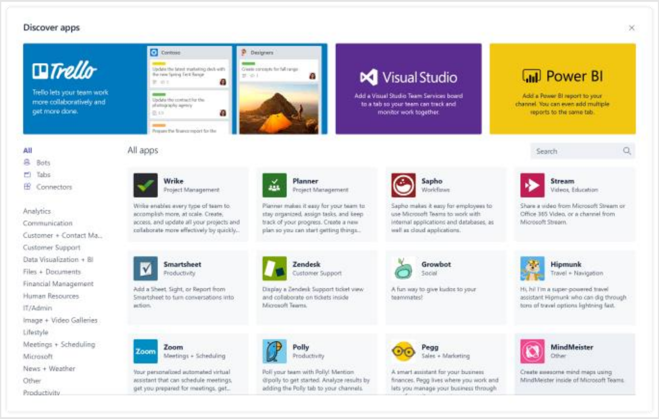
Completed by Alisa Gallagher on 10/11

~~Finalize the final spring product range~~

42

Completed by Alisa Gallagher on 10/11





Trello lets your team work more collaboratively and get more done.

Add a Visual Studio Team Services board to a tab so your team can track and monitor work together.

Add a Power BI report to your channel. You can even add multiple reports to the same tab.

Wrike enables every type of team to accomplish more, at scale. Create, access, and update all your projects and collaborate more effectively by quickly...

Planner makes it easy for your team to stay organized, assign tasks, and keep track of your progress. Create a new plan so you can start getting things...

Sapho makes it easy for employees to use Microsoft Teams to work with internal applications and databases, as well as cloud applications.

Share a video from Microsoft Stream or Office 365 Video, or a channel from Microsoft Stream.

Add a Sheet, Sight, or Report from Smartsheet to turn conversations into action.

Display a Zendesk Support ticket view and collaborate on tickets inside Microsoft Teams.

A fun way to give kudos to your teammates!

Hi, hi! I'm a super-powered travel assistant Hipmunk who can dig through tons of travel options lightning fast.

Your personalized automated virtual assistant that can schedule meetings, get you prepared for meetings, get...

Poll your team with Polly! Mention @polly to get started. Analyze results by adding the Polly tab to your channels.

A smart assistant for your business finances. Pegg lives where you work and lets you manage your business through

Create awesome mind maps using MindMeister inside of Microsoft Teams.

Design a great tab

Select relevant app functionality

Scope and focus the user experience

Integrate and streamline access

Develop your tab

HTML/JavaScript/TypeScript

REST services

Deep Linking and context

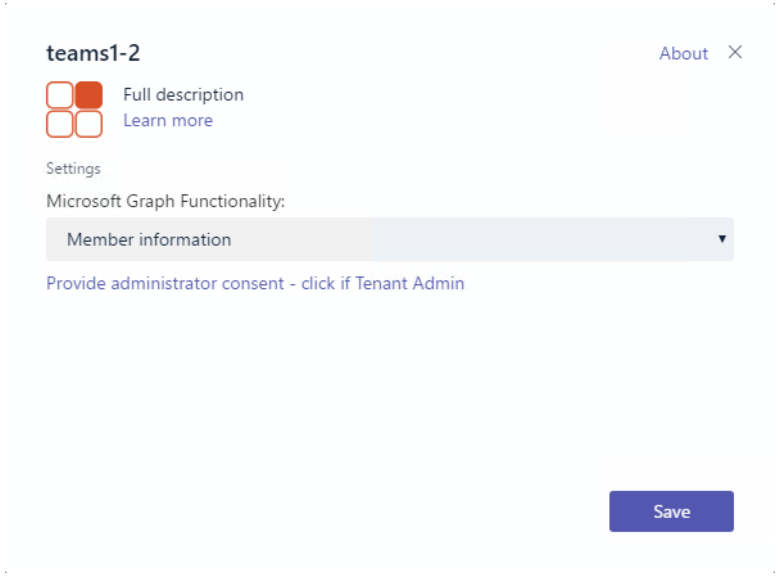
Deploy your tab

Upload to Team

Upload to Tenant App Gallery

Submit to Office Store

Tab Configuration and Content



teams1-2

Full description

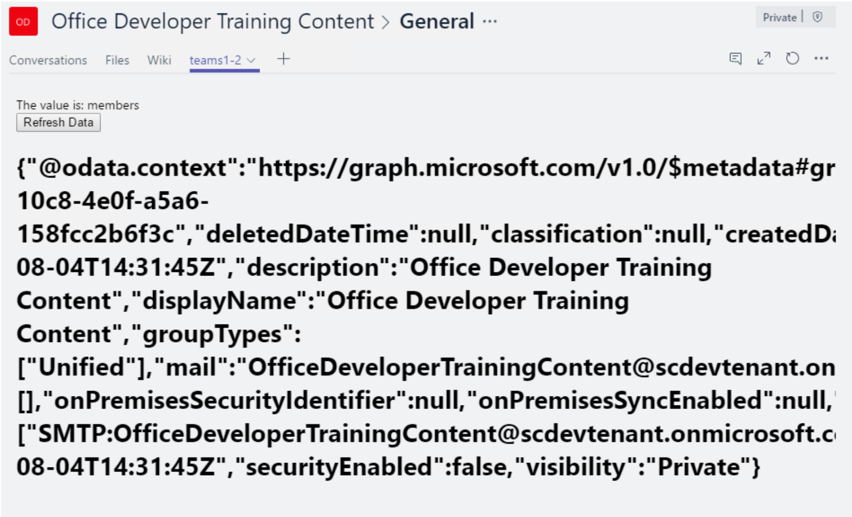
Learn more

Settings

Microsoft Graph Functionality:

Member information ▾

Provide administrator consent - click if Tenant Admin



The value is: members

```
{"@odata.context":"https://graph.microsoft.com/v1.0/$metadata#gr
10c8-4e0f-a5a6-
158fcc2b6f3c","deletedDateTime":null,"classification":null,"createdD
08-04T14:31:45Z","description":"Office Developer Training
Content","displayName":"Office Developer Training
Content","groupTypes":
["Unified"],"mail":"OfficeDeveloperTrainingContent@scdevtenant.on
[],"onPremisesSecurityIdentifier":null,"onPremisesSyncEnabled":null,
["SMTP:OfficeDeveloperTrainingContent@scdevtenant.onmicrosoft.c
08-04T14:31:45Z","securityEnabled":false,"visibility":"Private"}
```

Tab Configuration

Configured in manifest

Displayed when Tab added to Channel

Collect information

Call setSettings() specifying Content Url and Entity Id

Tab Content

Rendered in IFRAME

Url specified by configuration page

Inspect context for EntityId/SubEntityId

Retrieve state based on Entity/SubEntity/User

Interacting with Microsoft Teams

Teams API provides context for User / Team / Organization

Getting Context through URL placeholders

Placeholders specified in URL in manifest

Resolved at runtime

Placeholders for each property of `Context` object
`{upn}, {teamId}`

Getting Context through the JavaScript library

Library provides function to get context
`microsoftTeams.getContext()`

Asynchronous method with only success callback
Returns context object

Noteworth Properties	Description
teamId	The team ID in the format 19:[id]@thread.skype
channelId	The channel ID in the format 19:[id]@thread.skype
Locale	Lowercase lang-locale
theme	default | dark | contrast
entityId	The entity id you set up on your config page
subEntityId	The sub entity id you set up on your config page
upn	The user identifier in email format
tid	Guid identifying the current Tenant ID
groupId	Guid identifying the current O365 Group ID

Interacting with external services

Authenticating

Authentication cannot occur in IFRAME

Teams JavaScript library facilitates popup and cross-window communication

```
microsoftTeams.authentication.authenticate({
  url: <auth URL>,
  width: <width>,
  height: <height>,
  successCallback: <successCallback>,
  failureCallback: <failureCallback>})
```

In <auth URL> signal result and pass data

```
microsoftTeams.authentication.notifySuccess(token)
microsoftTeams.authentication.notifyFailure(err)
```

Redirecting across domains

Tabs can only show pages in `validDomains` list of manifest

Call `microsoftTeams.navigateCrossDomain(yourNewUrl)` to request the IFRAME containing your page is redirected to the specified URL.

(Could also display page in popup via `authenticate`)

4 Resources & Lab’s

Resources

Code Samples

https://docs.microsoft.com/en-us/microsoftteams/platform/samples/code-samples

Official Documentation

https://docs.microsoft.com/en-us/microsoftteams/microsoft-teams

YouTube Teams Channel

http://aka.ms/TeamsVideos

Lab 1

10
min

Create and test a basic Microsoft Teams app using Yeoman

https://github.com/OfficeDev/TrainingContent/

In this exercise, you will setup for Microsoft Teams to do the Labs

Follow the instructions in this link

https://github.com/OfficeDev/TrainingContent/blob/master/Teams/04%20Fundamentals%20of%20Microsoft%20Teams/Lab.md

Prerequisites

To complete the step-by-step instructions in this lab, you will need:

- Azure Subscription
- Office 365 Tenant

Lab 2

10 min

Create and test a basic Microsoft Teams bot using Visual Studio

https://github.com/OfficeDev/TrainingContent/

In this exercise, you will setup for Microsoft Teams to do the Labs

Follow the instructions in this link

https://github.com/OfficeDev/TrainingContent/blob/master/Teams/04%20Fundamentals%20of%20Microsoft%20Teams/Lab.md

Prerequisites

To complete the step-by-step instructions in this lab, you will need:

- Azure Subscription
- Office 365 Tenant

Lab 3

10 min

Call the Microsoft Graph API inside a tab

https://github.com/OfficeDev/TrainingContent/

In this exercise, you will setup for Microsoft Teams to do the Labs

Follow the instructions in this link

https://github.com/OfficeDev/TrainingContent/blob/master/Teams/04%20Fundamentals%20of%20Microsoft%20Teams/Lab.md

Prerequisites

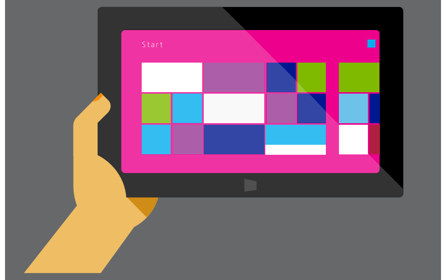
To complete the step-by-step instructions in this lab, you will need:

- Azure Subscription
- Office 365 Tenant

Engage

Microsoft Tech Community

https://techcommunity.microsoft.com



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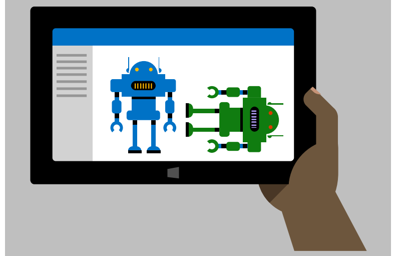
Channel 9 Dev Show

http://aka.ms/O365DevShow



Podcasts

http://dev.office.com/podcasts

SharePoint Patterns and Practices

http://aka.ms/sppnp

PnP

UserVoice

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Thank You!

Summary

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