

Microsoft Graph:

patterns of productivity, identity and security

<https://aka.ms/m-graph>

Ayça Baş

Cloud Developer Advocate @Microsoft



@aycabs

Here are the skills you are taking away today:

-
1. How to use Microsoft Graph to power your app experiences
 2. What type of apps can you build with Microsoft Graph
 3. Tips and best practices for making the most of using Microsoft Graph



What is Microsoft Graph?



Microsoft Graph

...is the Microsoft 365 **data** that describes the patterns of productivity, identity and security in an organization.

For individual users



and all the organization



Microsoft Graph powers
Microsoft 365 experiences

TEAMS

Activity

Chat

Teams

Calendar

Calls

Files

Apps

Help

Search or type a command

Calendar

Meet now

+ New meeting

Today < > November 2019

Work week

 Search Me Favorites


People

 Miriam Graham

 Brian Johnson (TAILSPIN)

 Adele Vance

 Patti Fernandez

 Megan Bowen

 Lee Gu

 Johanna Lorenz

Are my documents safe in Delve?

Megan Bowen

Marketing Manager
12/1110

 MeganB@M365x598082.OnMicrosof
t.com

 MeganB@M365x598082.OnMicrosof
t.com

+1 412 555 0109

 My OneDrive

 [Update profile](#)

Today

Age Group	Number of people
2p	10
3p	20
4p	30
5p	40
6p	50
7p	60
8p	70
9p	80
10p	90
11p	100

About me

I have 8 years' experience in the Sales and Marketing Department, as a direct sales rep, product manager, and marketing lead before taking my present position. Prior to joining Con...

[Update about me](#)

 Chief Author, Marketing Review,
Annual Review Sales and Marketing
Committee, Corporate Marketing
Guidelines Review

Get back to your recent documents and email attachments [See all >](#)

Others will only see documents that they have access to and email attachments that you've sent to them. [Learn more about why you can trust Delve](#)

 You
Modified • September ...

 You
Modified • September ...

PowerPoint

Fabrikam
<product>

Mark 8 Project Team

1 view

 Excel

Concurrent Project Data

Mark 8 Project Team

1 view

Click a person to see what they're working on [See all](#)

[See all >](#)

MICROSOFT SEARCH

Contoso Electronics

Office 365

Search

1

Good evening

Install Office

+

Start new

O

Outlook

OneDrive

W

Word

X

Excel

P

PowerPoint

N

OneNote

S

SharePoint

T

Teams

Y

Yammer

Dynamics 365

Flow

A

Admin

→

All apps

Recommended

<

>

You recently opened this
2h ago

Création du contoso "Mark 8"

QUADCOPTER ET L'ÉTAT DE LA CAMÉRA D'ART

P

Création du contoso Mark 8
m365x598082-my.sharepoint...

You recently opened this
17h ago

February 15

This letter is to convey an invitation for the following persons to use the Contoso corporate credit card account for purchases of less than \$200.00:

Katrin Jordan

Gordy Kent

Sarah Davis

Credit Card Account number: Visa 456243327564660

For debit purchases, these persons have permission to use the Contoso corporate debit card account for purchases of less than \$100.00.

W

Debit Card Account number: MasterCard 5439889902791730

The debit card closes to Bank account number: 251251785-0100088

Contoso Purchasing Permissions
m365x598082-my.sharepoint...

You recently opened this
17h ago

Employee Engagement Initiative

W

Employee Engagement Plan
m365x598082-my.sharepoint...

Recent

Pinned

Shared with me

Discover

Feedback

Need help?

Microsoft 365

The world's productivity cloud across work and life



Office 365

/

Windows 10

/

EMS

Microsoft Graph



Microsoft Graph can power your
app experiences



Office 365

Windows 10

Enterprise
Mobility + Security



Your tailored
experiences or
customizations



Demo

Getting started with Microsoft Graph

Apps

Tools

Data

Extend ours or create your own

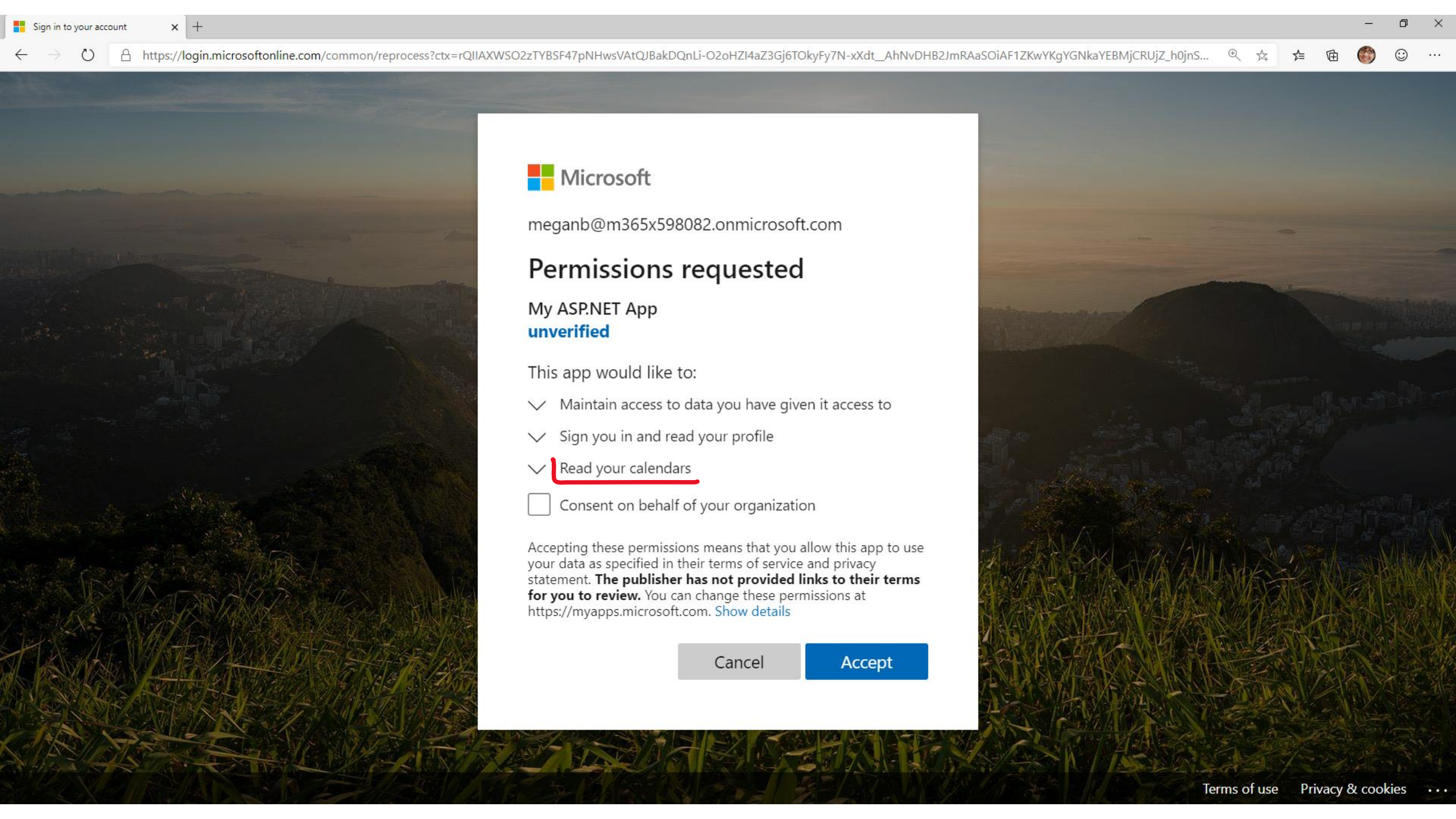
For Developers,
Citizen developers
and ITPros

Microsoft 365

1. It's your data
2. It does not cross boundaries across organizations
3. It requires consent to access it

Data

Microsoft 365



meganb@m365x598082.onmicrosoft.com

Permissions requested

My ASP.NET App
unverified

This app would like to:

- ✓ Maintain access to data you have given it access to
- ✓ Sign you in and read your profile
- ✓ Read your calendars
- ☐ Consent on behalf of your organization

Accepting these permissions means that you allow this app to use your data as specified in their terms of service and privacy statement. **The publisher has not provided links to their terms for you to review.** You can change these permissions at <https://myapps.microsoft.com>. [Show details](#)

Cancel

Accept

Popular data sets



Mail



Conversations



Tasks



Users



Files



Events

 Activities

 Attachments

 Audits

 Calendar

 Categories

 Charts

 Classes

 Contacts

 Conversations

 Cross-device experiences

 Customer booking

 Device configuration

 Device management

 Domains

 Education

 Events

 Files

 Financials

 Groups

 Identity

 Lists

 Mail

 Messages

 Notes

 Notifications

 Pages

 Places

 Plans

 Reports

 Schools

 Search

 Secure score

 Security alerts

 Sites

 Social

 Subscriptions

 Tasks

 Teams

 Threat intelligence

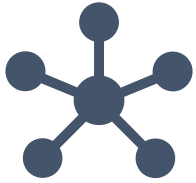
 Users

 Workbooks

• • • and many, many more

Tools

for Developers

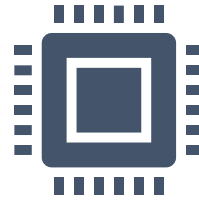


Interfaces

Microsoft Graph API

Microsoft Graph Data Connect

Microsoft Graph Connectors



SDKs

Graph Explorer

Interactive documentation

Microsoft Graph Client libraries (.Net,
Java, JS, ObjectiveC, etc)



UX Components

Microsoft Graph Toolkit

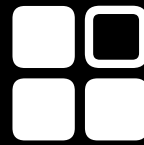
Microsoft Graph API

A single API endpoint for user, group and organizational data

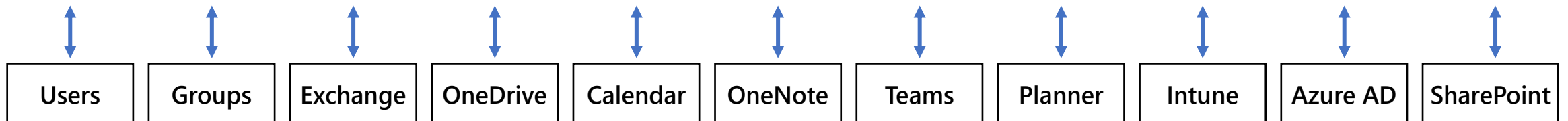
One endpoint
One token
All users



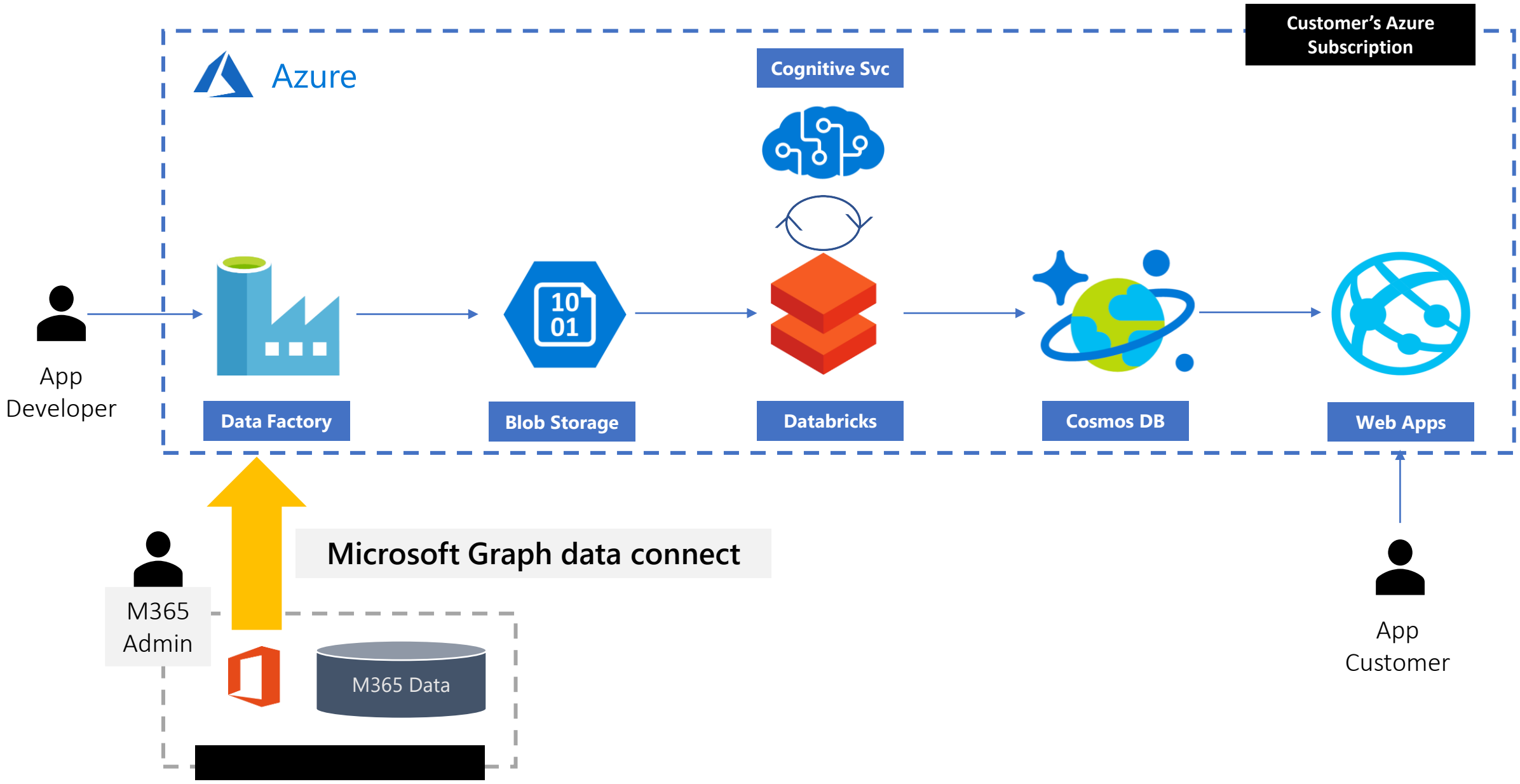
Your app



<https://graph.microsoft.com>



Microsoft Graph Data Connect



Microsoft Graph Connectors

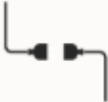





YOUR custom
data as a 1st class
citizen in
Microsoft Search

SharePoint

test

✕ Exit search

All Files Sites People News **Purchase Orders**

	99042637-Intel Ethernet Server Adapter I350-T4 Supplier: Zones, Inc. - 0003014194 Status: Pending approval	Total Price: 246 USD Submitted by Tim Kerns
	99042636-Jabra Evolve 65t Wireless Bluetooth Earb Supplier: Zones, Inc. - 0003014194 Status: Pending approval	Total Price: 205 USD Submitted by Nigasan Ragunathan
	99042635-FY20 Technofocus – Business Applications VILTs Supplier: Technofocus Solutions Pvt Ltd - 0003014077 Status: Approved	Total Price: 15750 USD Submitted by Kathryn Dougherty
	99042633-Ninja Unwinder Set-Up [Furniture SOW] Supplier: COMPASS GROUP NAD-EVENT MANAGEMENT - 0... Status: Pending approval	Total Price: 6493.5 USD Submitted by Megan C. DeBruler
	99042629-Scania Customer Evidence Video Post-Production Q1-FY20 Supplier: RUN STUDIOS LLC - 0001120481 Status: Approved	Total Price: 150 USD Submitted by Derek Britz
	99042628-HP HDMI to DVI Adapter for Neha Godwal Supplier: HP Inc. - 0002113766 Status: Approved	Total Price: 550 USD Submitted by Shelley Koch

Demo

Microsoft Search

Microsoft Graph cross-platform libraries

Tier 1





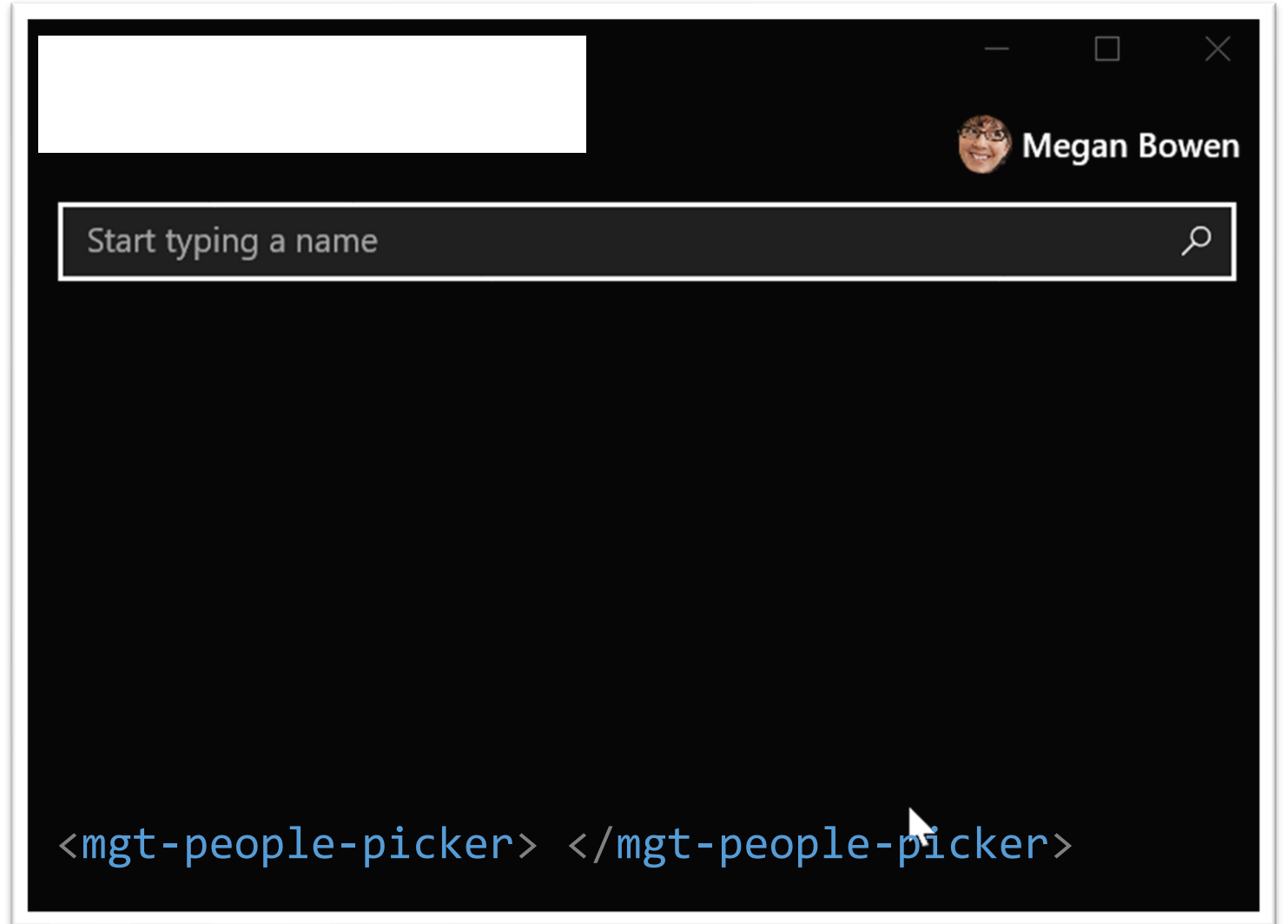
Tier 2



<https://aka.ms/m-graph>

Microsoft Graph toolkit

- Connected to Microsoft Graph
- Work with any framework
- Use on
 - Web apps
 -  Teams Tabs
 -  SharePoint Web Parts



Demo

Microsoft Graph toolkit

Not a developer?

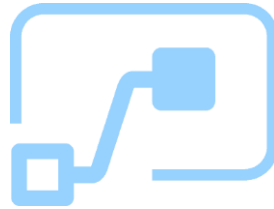
Tools



PowerApps

App templates

Connectors



PowerAutomate

Connectors

HTTP request



PowerShell

RC SDK

Apps

Extend ours or create your own

Extend Microsoft 365 experiences



Documents



Conversations



Portals



Timeline



Search

Build your experience



Web
apps



Bots &
agents



Device
& native



Daemon
apps



Workflow
automation



Analytics
apps



<https://aka.ms/m-graph>

What's new with Microsoft Graph?

3 tips and tricks to become a Graph coder

1. Know the 7 basic operations
2. Learn the 7 basic query parameters
3. Used least privileged permissions



TIP 1 | Know the 7 basic operations

Intent	HTTP METHOD	Description	Example
List	GET	List collection	GET /users
Get	GET	Get member of the collection	GET /users/{id}
Create	POST/PUT	Create new item in the collection	POST /users/ PUT /me/activities/{id}
Update	PATCH/PUT	Update item	PATCH /users/{id} PUT /me/activities/{id}
Delete	DELETE	Delete item	DELETE /users/{id}
Invoke	POST	Invoke operations	POST /domains/{id}/verify
Batch	POST	Execute multiple requests	POST /\$batch

TIP 2 | Learn the 7 basic query parameters

Value	Description	Example
<code>\$filter</code>	Filters results (rows)	<code>/users?\$filter=startsWith(givenName,'J')</code>
<code>\$select</code>	Filters properties (columns)	<code>/users?\$select=givenName,surname</code>
<code>\$orderBy</code>	Orders results	<code>/users?\$orderBy=displayName desc</code>
<code>\$top</code>	Sets the page size of results	<code>/users?\$top=10</code>
<code>\$expand</code>	Retrieves related resources	<code>/groups?\$expand=members</code>
<code>\$count</code>	Retrieves the total count of matching resources	<code>/me/messages?\$top=2&count=true</code>
<code>\$search</code>	Returns results based on search criteria. Currently supported on messages and person collections	<code>/me/messages?\$search=pizza</code>

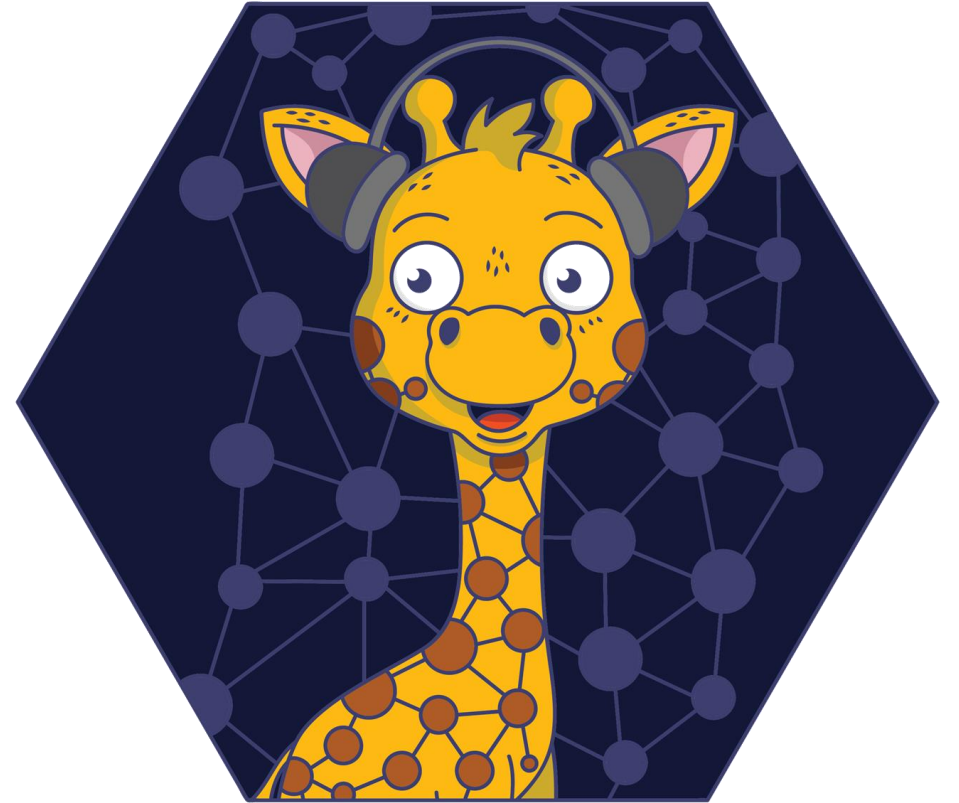
Try in Graph Explorer: <https://aka.ms/g-explorer>

TIP 3 | Used least privileged permissions

- ❑ Use only request permissions which are necessary!
- ❑ When building a multi-tenant app, expect customers to have various application and consent controls in different states
- ❑ Don't use App-Only for user interactive scenarios

Congratulations!

You are now upskilled in Microsoft Graph



Resources

Session Slides: <https://aka.ms/graph-session>

Microsoft Graph: <https://aka.ms/m-graph>

Microsoft Graph Toolkit: <https://aka.ms/g-toolkit>

Microsoft Graph Explorer: <https://aka.ms/g-explorer>

Thank you!

Ayça Baş

Cloud Developer Advocate @Microsoft

 @aycabs