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**cLOUD**

Neum 18-20/4/2018

NetWork 

# How to: Create a custom connector for Microsoft Flow

Dragan Panjkov  
K2NE, MVP

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 **Banjaluka.com**  
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**FAKTOR**

**FBL**

**FENA** FEDERAL NEWS AGENCY

 **hayat.ba**

**HAYAT** | HD

**INFO**  
www.info.ba

 **Poduzetnik.ba**

**racunalo**  
www.racunalo.com

**REUNION**

**RSG**  
RADIO

**STUDENT**

**STUDOMAT**

**TERMINAL**

# Dragan Panjkov

Microsoft MVP since 2014 – Office Servers and Services

Consultant at K2 Northern Europe ([www.k2.com](http://www.k2.com))

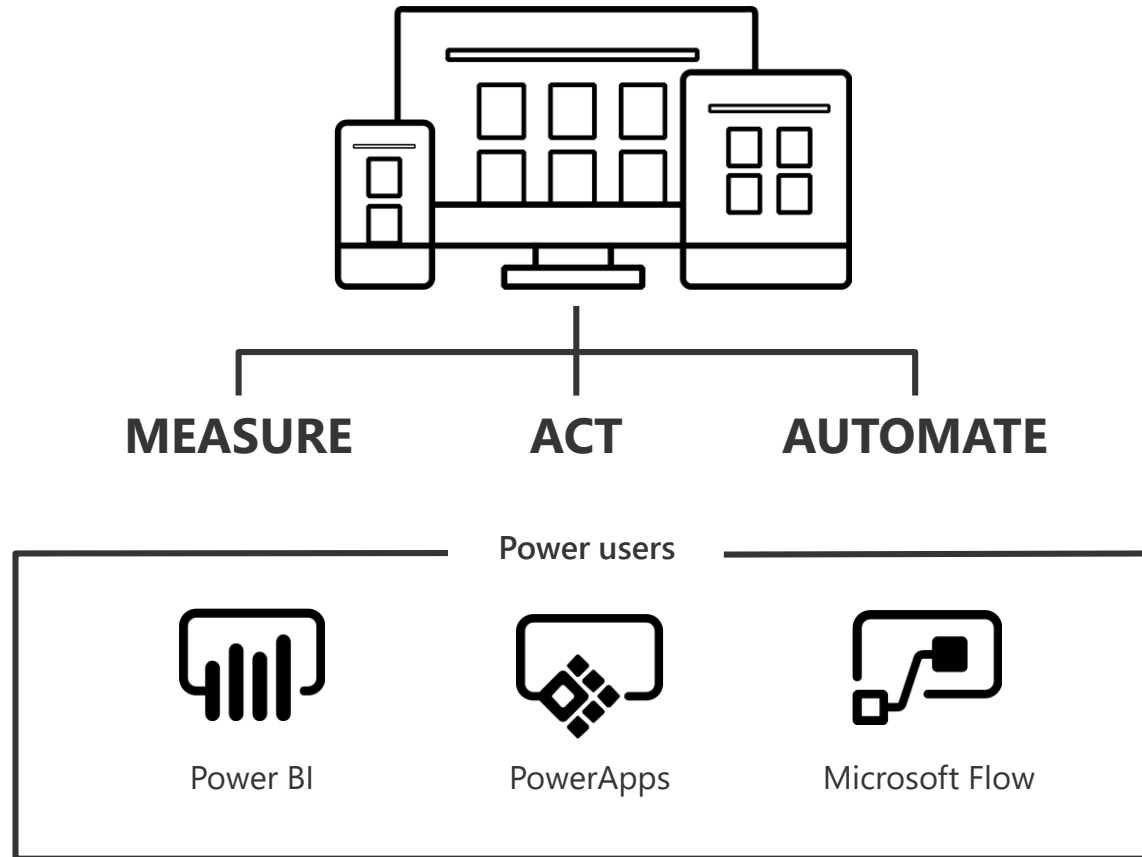
Website and blog: [www.dragan-panjkov.com](http://www.dragan-panjkov.com)

Twitter: @panjkov

Github: [www.github.com/panjkov](https://www.github.com/panjkov)



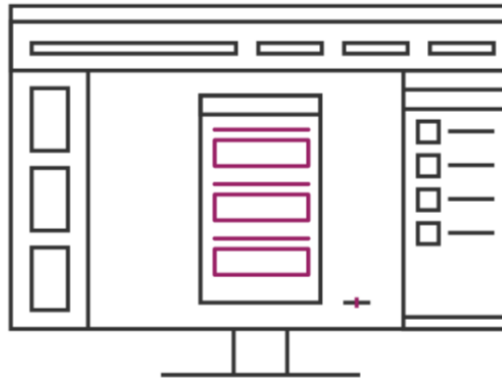
# Business Application Platform



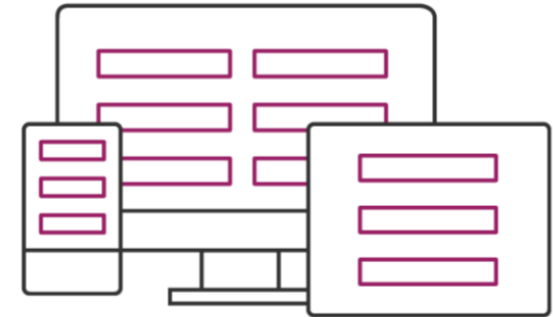
Microsoft PowerApps is a service for creating and using  
**custom business apps** across platforms



Connect to data &  
systems you're already  
using; create the data  
you need



Create apps, forms, and  
workflows without  
writing code

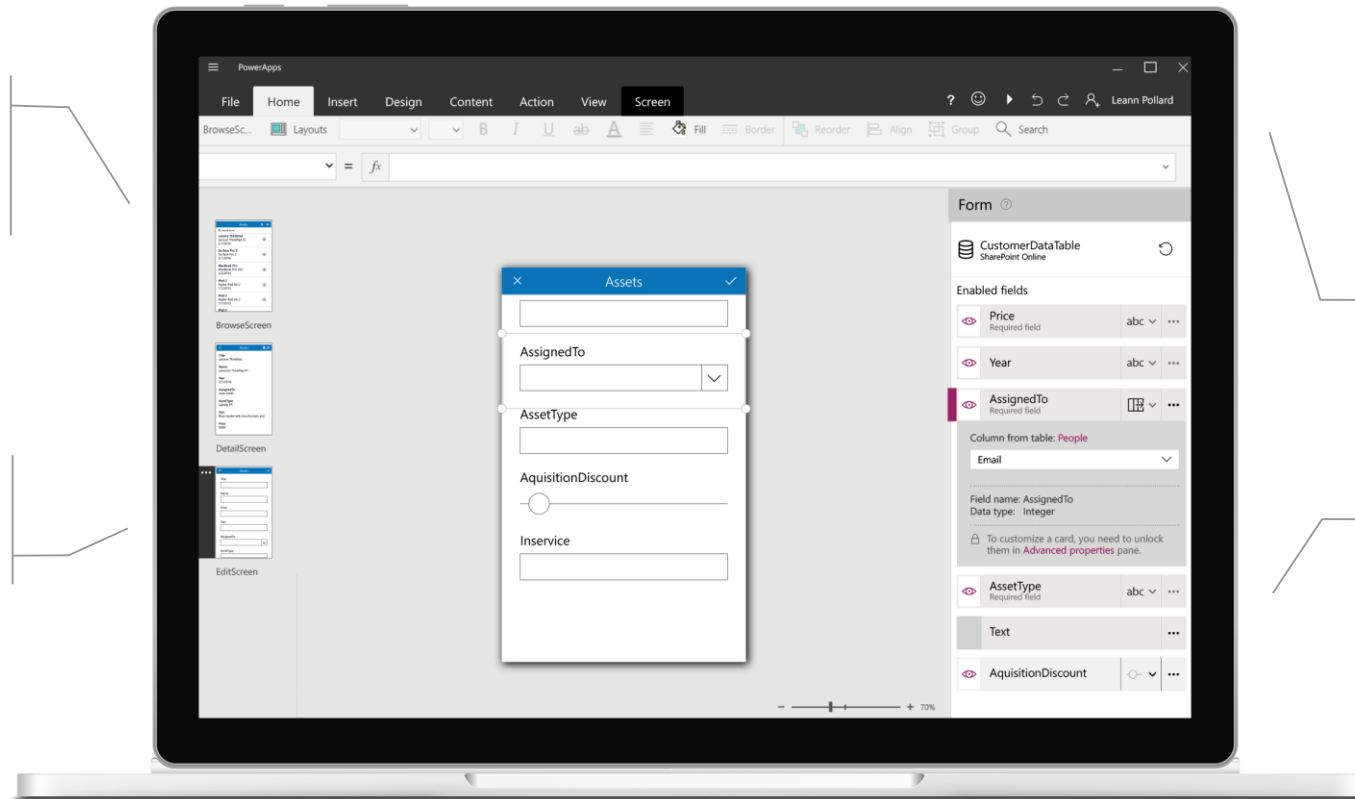


Use apps on web  
and mobile

# Build useful apps without writing code

Craft forms and screens in a visual designer that helps you see exactly what you'll get

Take advantage of device capabilities like cameras, GPS, and pen controls

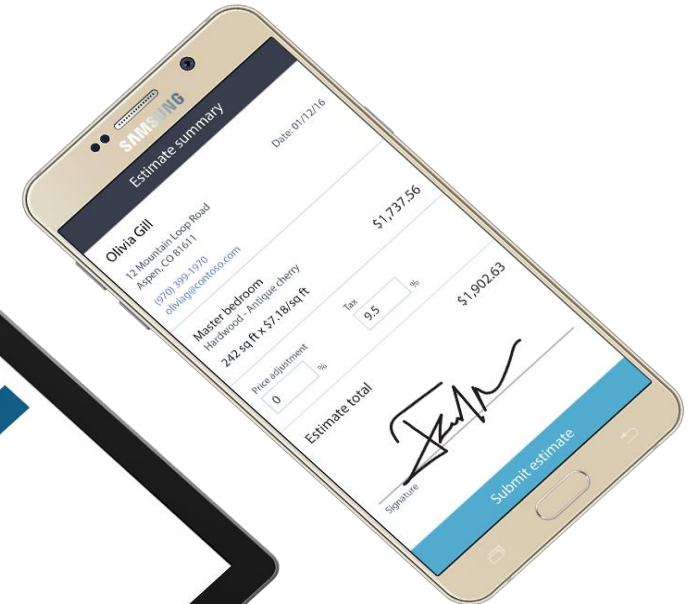
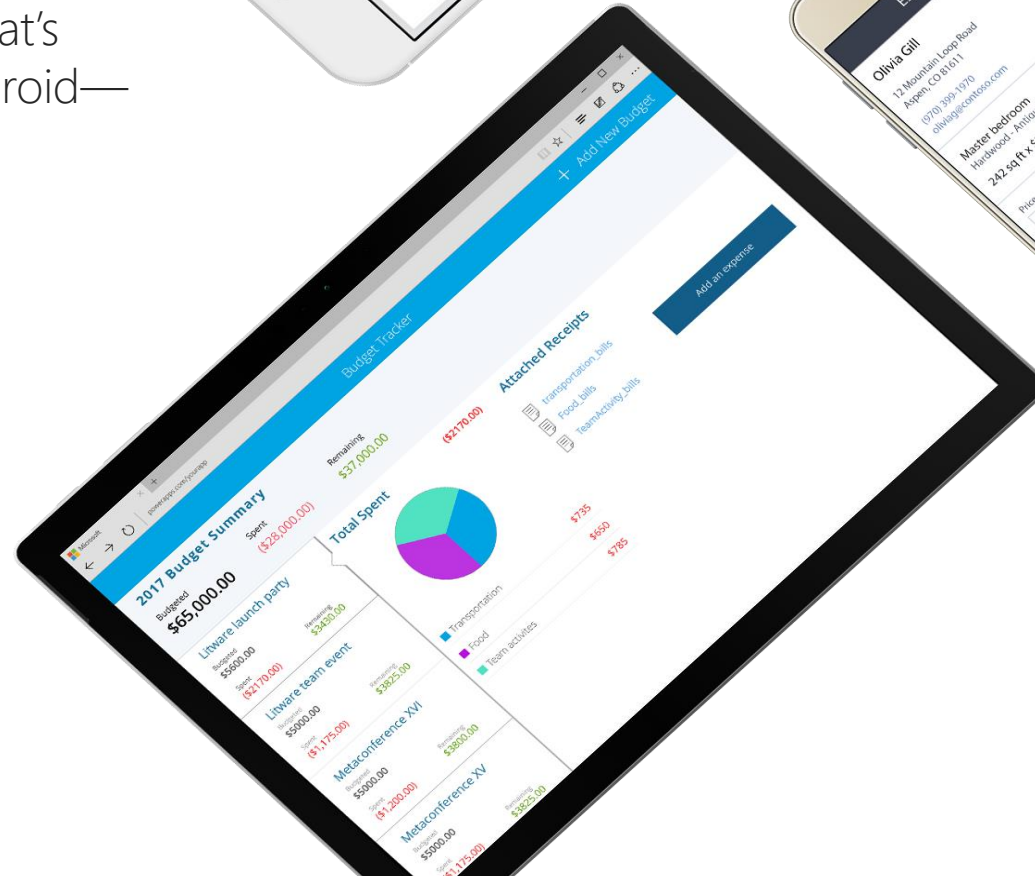
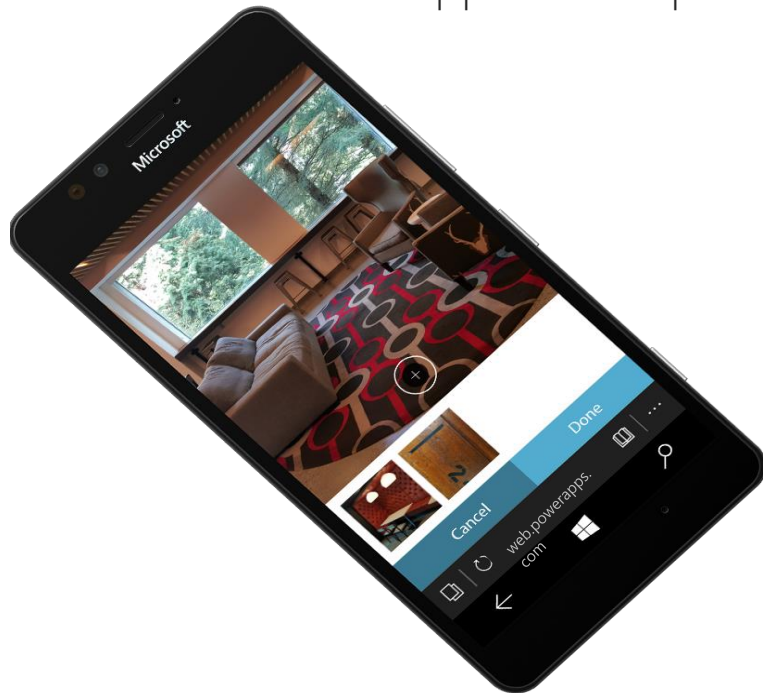


Build business logic into your apps with an Excel-inspired expression language

Extend the capabilities of connected data sources, or focus just on the bits you need

# Publish apps instantly for web and mobile

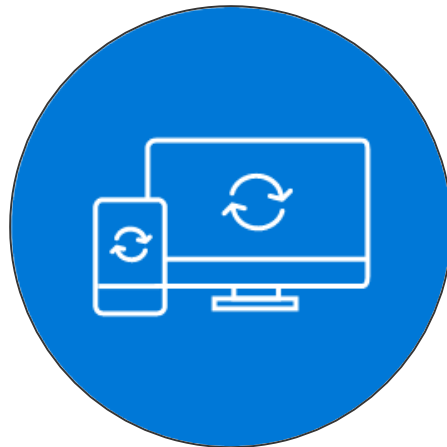
Get apps to your team when and where they're needed, whether that's on the web, Windows, iOS or Android—no app store required.



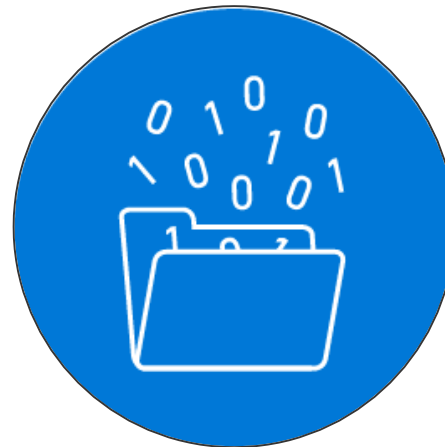
Microsoft Flow helps **non-developers** work smarter by automating workflows across apps and services



Get notifications



Copy files



Collect data



Automate approvals



# What makes up a Flow?

## Example: Notification Flow

































Trigger—the event that kicks off the flow:

- Manually
- On a schedule
- On an event in the cloud

Actions—what the flow does  
*Uses data from the trigger*

The screenshot displays a Microsoft Flow (Power Automate) interface. At the top, a trigger card titled "When a record is created" is shown, with a dropdown menu for "Organization Name" set to "PowerAppsMSITest1" and a dropdown menu for "Entity Name" set to "Leads". An arrow points down to an action card titled "Send an email". The "Send an email" card has a "To" field with a dropdown menu set to "Owner", a "Subject" field with the text "Follow up on Lead", and an "Email body" field with the text "Don't forget to follow up with the lead: [Topic] . The last name is: [Last Name] .". The "Email body" field also includes a "Show advanced options" link. The "To" field has an "Add dynamic content" link. The "Subject" field has a "Show advanced options" link.

# Templates help users to get started

 Create a flow from blank	 Copy Dynamics CRM Accounts to Common Data Service customer organizations By Microsoft Used 227 times	 Copy Dynamics CRM Accounts to customers in Dynamics 365 for Operations By Microsoft Used 197 times	 When an object is created in Dynamics CRM, create a list item By Microsoft Used 194 times	 Create Dynamics Leads based on Tweets with a button tap By Microsoft Used 31 times	 Add a Dynamics Case after email approval By Microsoft Used 31 times	 Copy new Dynamics CRM Cases to the Common Data Service By Microsoft Used 26 times	 Create a Wunderlist Task for New CRM Leads By James Turner Used 26 times
 When a new opportunity is created post to Yammer By Richard Bosse Used 133 times	 Create Dynamics CRM Leads from an Excel table By Microsoft Used 121 times	 Create Dynamics Leads based on Tweets By Microsoft Used 118 times	 Create a new record in Dynamics CRM when a new list item is added By Microsoft Used 95 times	 Send an mail from your SMTP server on new opportunities By Kerem Eser Used 26 times	 Copy new Dynamics CRM Leads to the Common Data Service By Microsoft Used 25 times	 Attach OneDrive files about Dynamics Contacts as notes By Microsoft	 Create CRM Account for new Azure Queue Messages By Marius Pedersen
 Copy new Dynamics CRM Contacts to the Common Data Service By Microsoft Used 91 times	 Create a SharePoint item based on a Dynamics CRM record By Henry Scheinin Used 79 times	 Create Dynamics notes for Emails By Microsoft Used 61 times	 Move rows from and Excel table to Dynamics AX Online Vendors By Microsoft Used 56 times	 Send a Push Notification for new Sales Orders By Isaac Dorgbenu	 Copy Teams from the Common Data Service to Operations Customer Groups By Michael Berroth	 Copy Salesforce Accounts to Dynamics AX Online Customers By Microsoft	 When a new lead is created in Dynamics CRM, add it to a Smartsheet By Microsoft
 Copy from Dynamics CRM to the Common Data Service and Operations	 CRM Opportunity Win to Create a New Project	 Create Dynamics CRM Leads from a Google Sheet	 On approval create a Dynamics CRM entity for items in a SharePoint list	 Create a case in Dynamics from Freshdesk	 Low stock warning	 Social Media Promotions	 Add notes to a Dynamics CRM contact

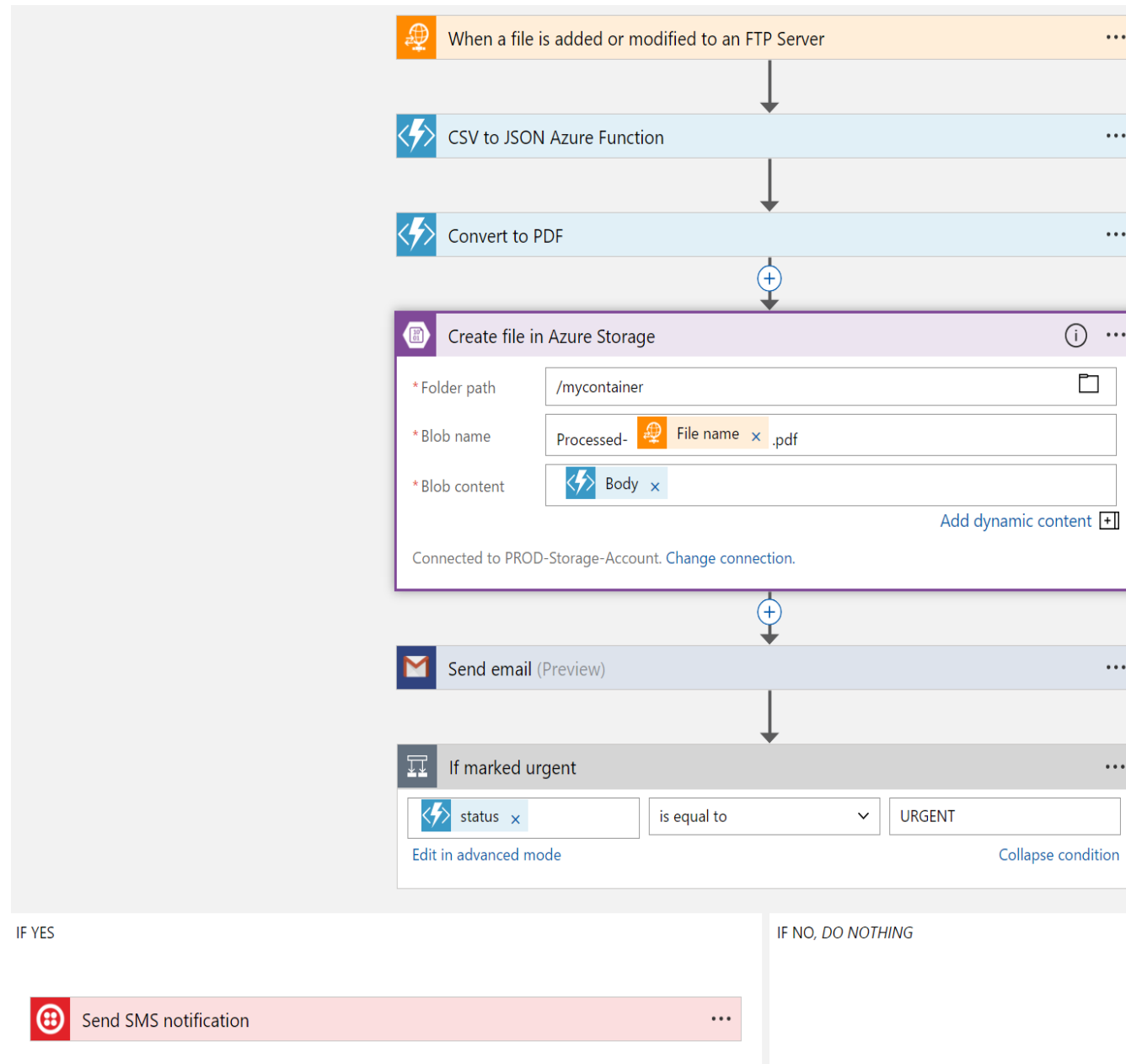
# Logic Apps

Visually design workflows in the cloud

Express logic through powerful control flow

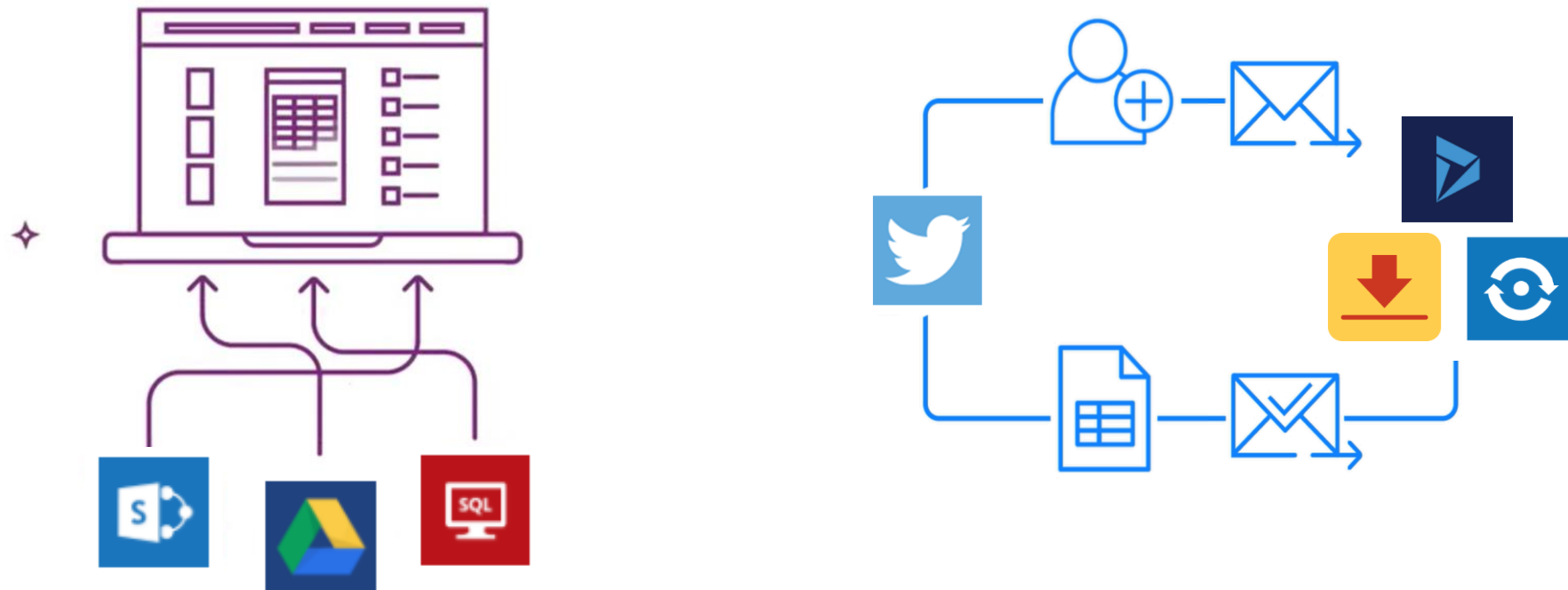
Connect disparate functions and APIs

Utilize declarative definition to work with CI/CD



# Connectors

A **connector** is a wrapper around an API that allows the underlying service to talk to **Logic Apps**, **Microsoft Flow** and **PowerApps**



# Connect to cloud AND on-premises data



Quickly generate and customize apps based on Excel files, SharePoint Online lists, Dynamics 365, Salesforce records and more. You can even connect custom APIs.

Even connecting to data in your local systems through the common on premises data gateway.

Your apps will be able to fully interact with underlying sources and will respect the permissions you've already established in them.

190+ connectors today

Public connectors  
available to all users

Custom connectors you  
can build for your  
organization

### Popular connectors



Office 365 Outl...



OneDrive for B...



Office 365 Users

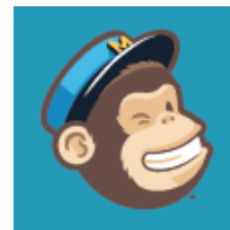


SharePoint

### Recently added or updated connectors



Instagram



MailChimp

PREMIUM



Trello



Project Online

### Custom connectors



AppreciateWeb...



GitHub Demo

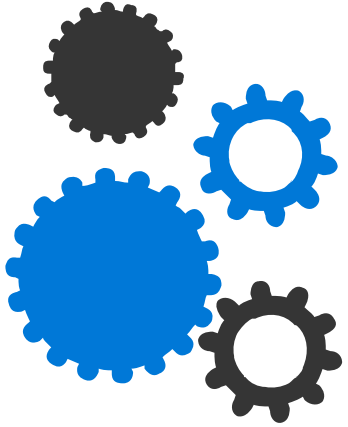


HolidayApi



AppServiceApi

# Why build a connector?



## Enterprise developers

Looking for connectivity to a service we don't currently support  
Need connectivity to a custom or internal service

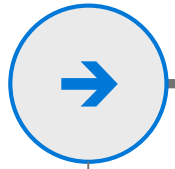


## Partners and ISVs

Expand the number of services you integrate with  
Provide the extensibility your customers need  
Increase exposure and adoption



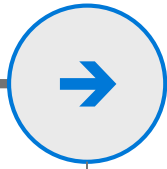
# Building a Custom Connector



## Develop

Build, secure and describe your API

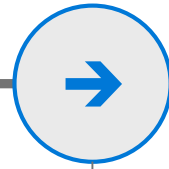
Import from existing artifacts (Open API, Postman) or build from scratch



## Test

Validate your API calls

Use in Flow and PowerApps for E2E testing



## Share

Allow other users within your organization to use your connector

# Develop a connector

- Start from scratch
- Start from Postman collection
- Start from Swagger(Open API) definition

# Configure authentication type

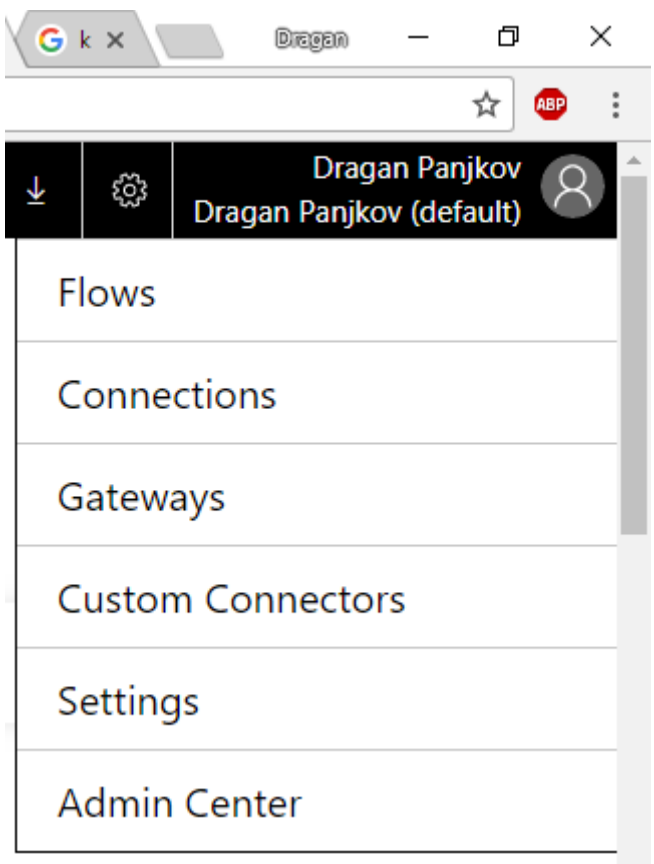
- No Authentication
- Basic authentication
- API Key
- OAuth 2.0

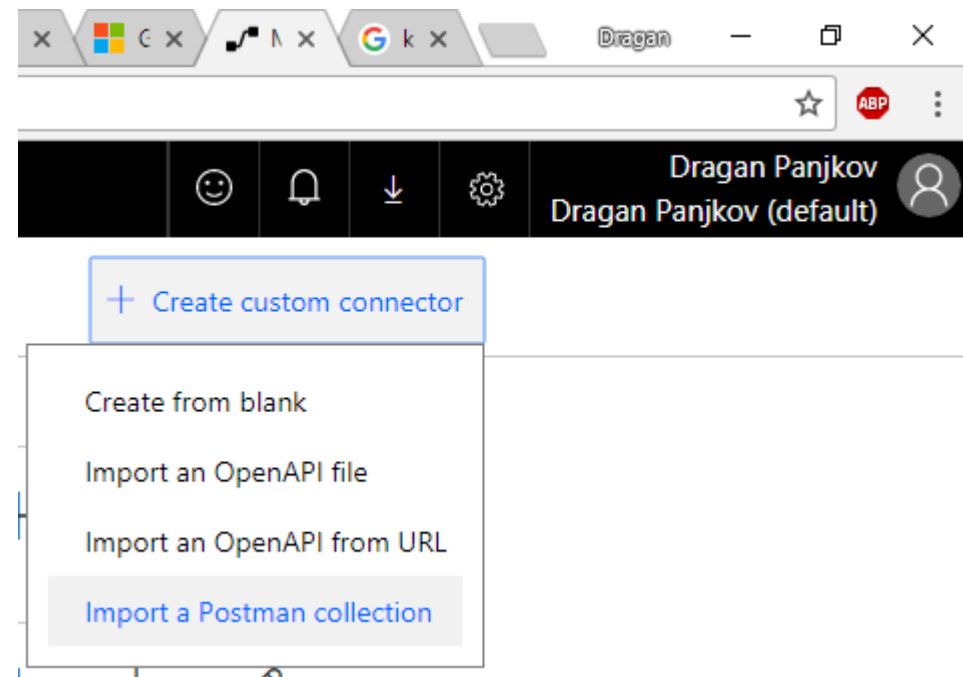
# Configure actions, triggers and references

- Model request and response
- Import from sample
- Triggers: Webhooks or polling
- Validation

# Building Connectors

demo





## Create custom connector

Custom connector title

Continue

Cancel



## General information

Add an icon and short description to your custom connector. Your host and base URL will be automatically generated from the swagger file.

### General information



↑ Upload

[Upload connector icon](#)

Supported file formats are PNG and JPG. (< 1MB)

Icon background color

A color to show behind the icon (e.g., '#007ee5')

Description

Give your custom connector a short description

☐

Connect via on-premises data gateway [Learn more](#)

Scheme

☒

HTTPS

☐

HTTP

\* Host

api.contoso.com



Base URL

/

← Connector Name My New Connector

1. General > **2. Security** > 3. Definition > 4. Test

✓ Create connector ✕ Cancel

## Security

Choose the authentication type and fill in the required fields to set the security for your custom connector.

[Learn more](#)

### Authentication type

Choose what authentication is implemented by your API \*

No authentication



Edit

← General

Definition →

Choose what authentication is implemented by your API \*

No authentication



No authentication

Basic authentication

API Key

OAuth 2.0

### Authentication type

Choose what authentication is implemented by your API \*

Basic authentication



 Edit

ⓘ Do NOT enter secrets here. These fields are used to configure display names for connections.

### Basic authentication

Users will have to provide a valid user name and password before using this API

Parameter label

Parameter name

username



username

password



password

 Edit

[< General](#)

Definition [→](#)

### Authentication type

Choose what authentication is implemented by your API \*

API Key



 Edit

### API Key

Users will be required to provide the API Key when creating a connection

Parameter label

Parameter name

Parameter location



Header



 Edit

## Security

Choose the authentication type and fill in the required fields to set the security for your custom connector.  
[Learn more](#)

Choose what authentication is implemented by your API \*

OAuth 2.0

 Edit

### OAuth 2.0

Identity Provider

Generic Oauth 2

Client id \*

Client id

Client secret \*

\*\*\*\*\*

Authorization URL \*

Authorization URL

Token URL \*

Token URL

Refresh URL \*

Refresh URL


Scope

Scope

Redirect URL

Save the custom connector to generate the redirect URL

Identity Provider

Generic Oauth 2 

Azure Active Directory

Basecamp

Box

DropBox

Facebook

Fitbit

Generic Oauth 2

GitHub

Google

Instagram

Live

Outlook

Pinterest

Salesforce

Slack


Smartsheet

Spotify

Stripe

Todoist

Visual Studio Online



### Actions (1)

Actions determine the operations that users can perform. Actions can be used to read, create, update or delete resources in the underlying connector.



New action

### Triggers (0)

Triggers read data in from your connector. A trigger focuses on a particular event that happens, say a new Contact or Order being created and provides the relevant data so that users can take action on that event.



New trigger

### References (0)

References are reusable parameters used by both actions and triggers.

#### General

\* Summary [Learn more](#)



\* Description [Learn more](#)



\* Operation ID

This is the unique string used to identify the operation.



Visibility [Learn more](#)



none



advanced



internal



important

#### Request

It defines the pre-requirements needed in order to make a request. Describes a single operation parameter. A unique parameter is defined by a combination of a name and location.

+ Import from sample

#### Response

It defines the shape of response returned by the underlying connector when making the request.

default

default

+ Add default response

# Using custom connectors in Flow

demo



[←](#) Get Weather for Location

[Edit flow](#)

[More](#)

This flow is ☒ On



### Get Weather for Location

Define a custom action to happen for a selected item. It could be sending an email, copying the item to a folder or web service, or something else. You decide. To run this flow, select an item and choose this flow from the Flow menu.

[Edit description](#)



[See analytics](#)

#### CONNECTIONS

[See all](#)



SharePoint



onmicrosoft.com




OpenWeatherMap test



OpenWeatherMap test

#### OWNERS

[See all](#)


 For a selected item ...

\*Site Address  /sites/FlowDemos ×

\*List Name  ▼


[+ Add an output](#)




 Get item ...


\*Site Address  /sites/FlowDemos ×

\*List Name  ▼


\*Id  ID ×





 Weather ...

q  Title ×




 Apply to each ...


\*Select an output from previous steps  weather ×


 Update item ...



\*Site Address  sites/FlowDemos/ ×

\*List Name  ▼

\*Id  ID ×

\*Title  Title ×

Date  utcNow() ×

Weather  sub(...) ×  description ×

Sign-off status



# FlowDemos

Public group



Edit



Share



Copy link



Delete



Flow



## CityWeather

Title

Dubrovnik

Sarajevo

Neum



Bingen, DE



Get Weather for Location

Request sign-off

Create a flow

See your flows

er

w clouds


04/19/2018 12:43:36

21.99, few clouds

04/19/2018 14:42:32

24.72, few clouds

Run flow




Get Weather for Location  
Owners: Dragan Panjkov

Run flow

Cancel


See details

 Edit connections

Powered by [Microsoft Flow](#)

★ Following

Group conversations ↗



Dragan Panjkov

👤 1 member

🔄

1 selected


✕

🔍

ℹ️

Started flow "Get Weather for Location" ✕

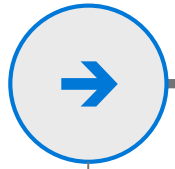
## CityWeather

Title ▾		Date ▾		Weather ▾	+
Dubrovnik		04/19/2018 12:42:28		24.8, few clouds	
<input type="radio"/>	Sarajevo		:	04/19/2018 12:43:36	21.99, few clouds
Neum		04/19/2018 14:42:32		24.72, few clouds	
<input checked="" type="radio"/>	Bingen, DE	:		05/09/2018 22:01:59	17.74, mist

# Practical example – K2

demo

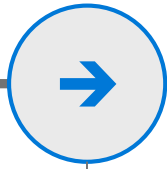
# Building a ~~Custom~~ Connector



## Develop

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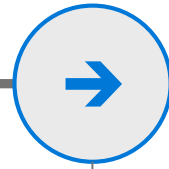
Import from existing artifacts (Open API, Postman) or build from scratch



## Test

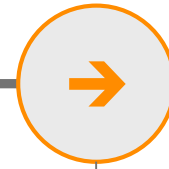
Validate your API calls

Use in Flow and PowerApps for E2E testing



## Share

Allow other users within your organization to use your connector



## Certify

Share your connector with all users of Flow and PowerApps

Only for Public Connectors

# Resources

flow.microsoft.com

<https://aka.ms/apiconnectors>

[https://help.k2.com/onlinehelp/k2five/userguide/5.0/default.htm#How Tos/WorkflowRESTAPI/Workflow-REST-with-MS-Flow.htm](https://help.k2.com/onlinehelp/k2five/userguide/5.0/default.htm#How_Tos/WorkflowRESTAPI/Workflow-REST-with-MS-Flow.htm)



