



elisa

Microsoft Flow and Dynamics 365

Jukka Niiranen @ CRM Saturday Oslo, 2017-08-26

Hi, my name is Jukka

- Greetings from Helsinki, Finland
- Working as Dynamics 365 Technical Lead at [Elisa](#)
 - Finnish telco, ICT, online services company, est. 1882
- Dynamics CRM addict since 2005 & v3.0
- Blogger & #MSDyn365 evangelist on social media
 - Blog: survivingcrm.com
 - [@jukkan](#) on Twitter
- Microsoft MVP since 2013



Surviving CRM



Topics

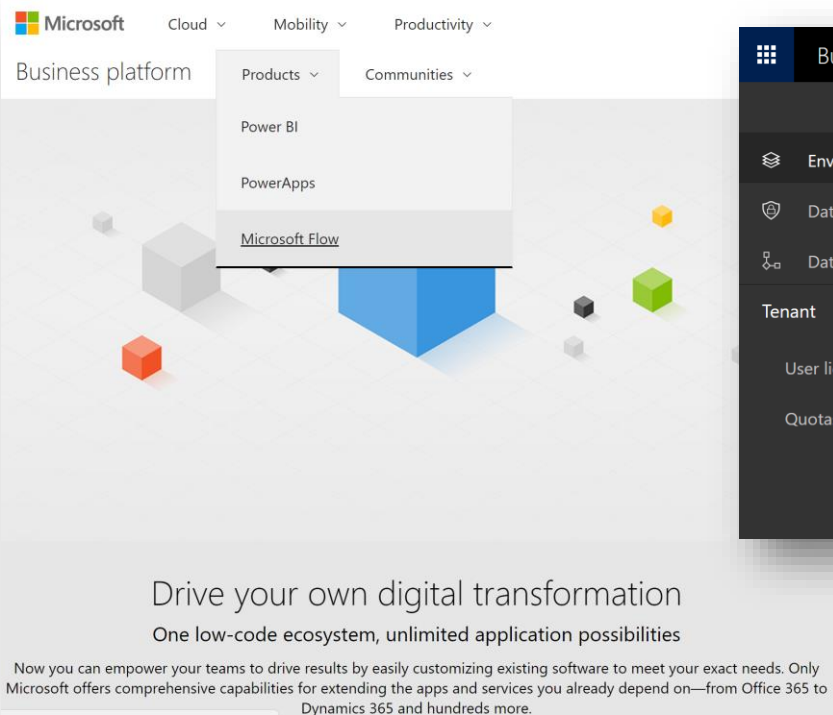
- Positioning Flow in the MS technology stack
- Flow vs. Workflow in Dynamics 365 CE: what are the main benefits & limitations of each
- Living with Flows: administrative capabilities and developer perspective

The brief history of Microsoft Flow

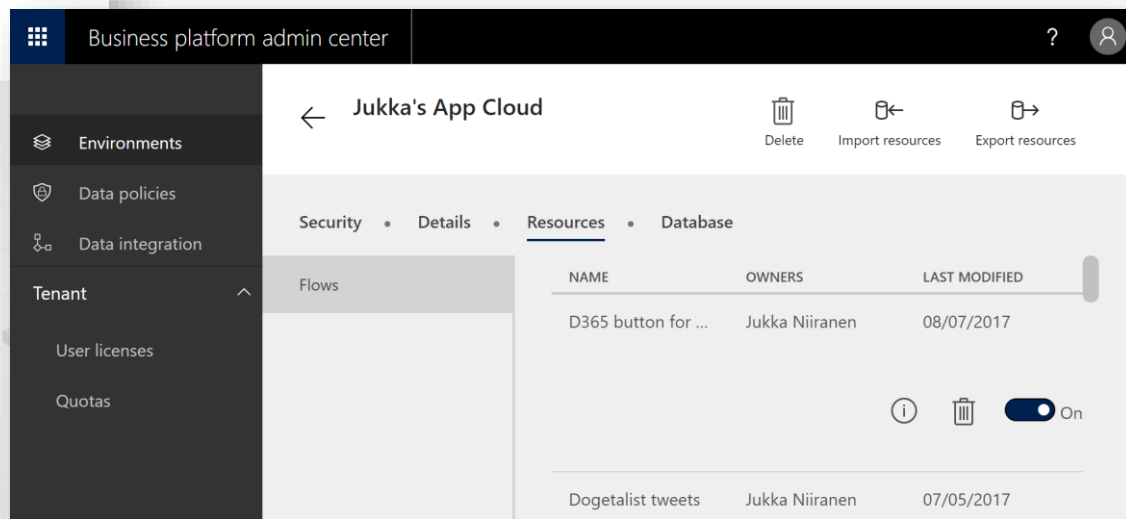
- Preview in April 2016, GA in October 2016
 - Largely based on Logic Apps technology previewed in 2015
- How Flow was initially sold to us by MS:
 - “Allow power users to automate repetitive tasks in their working day”
 - Emphasis on collaborative tools, e.g. emails, SharePoint lists, documents
- What the message has evolved into since:
 - “Flow is a part of the MS Business Platform you can use for building your own business apps”
 - Did you know: there’s a dedicated Business Solutions MVP contribution area for Flow & PowerApps these days

What's this “Business Platform”?

<https://businessplatform.microsoft.com/>



The screenshot shows the Microsoft Business Platform website. The Microsoft logo is in the top left. Navigation links include Cloud, Mobility, and Productivity. A 'Business platform' section is highlighted, with a dropdown menu showing 'Products' and 'Communities'. Under 'Products', 'Power BI', 'PowerApps', and 'Microsoft Flow' are listed. Below the navigation, there's a 3D graphic of colorful cubes on a grid. At the bottom, text reads: 'Drive your own digital transformation', 'One low-code ecosystem, unlimited application possibilities', and 'Now you can empower your teams to drive results by easily customizing existing software to meet your exact needs. Only Microsoft offers comprehensive capabilities for extending the apps and services you already depend on—from Office 365 to Dynamics 365 and hundreds more.'

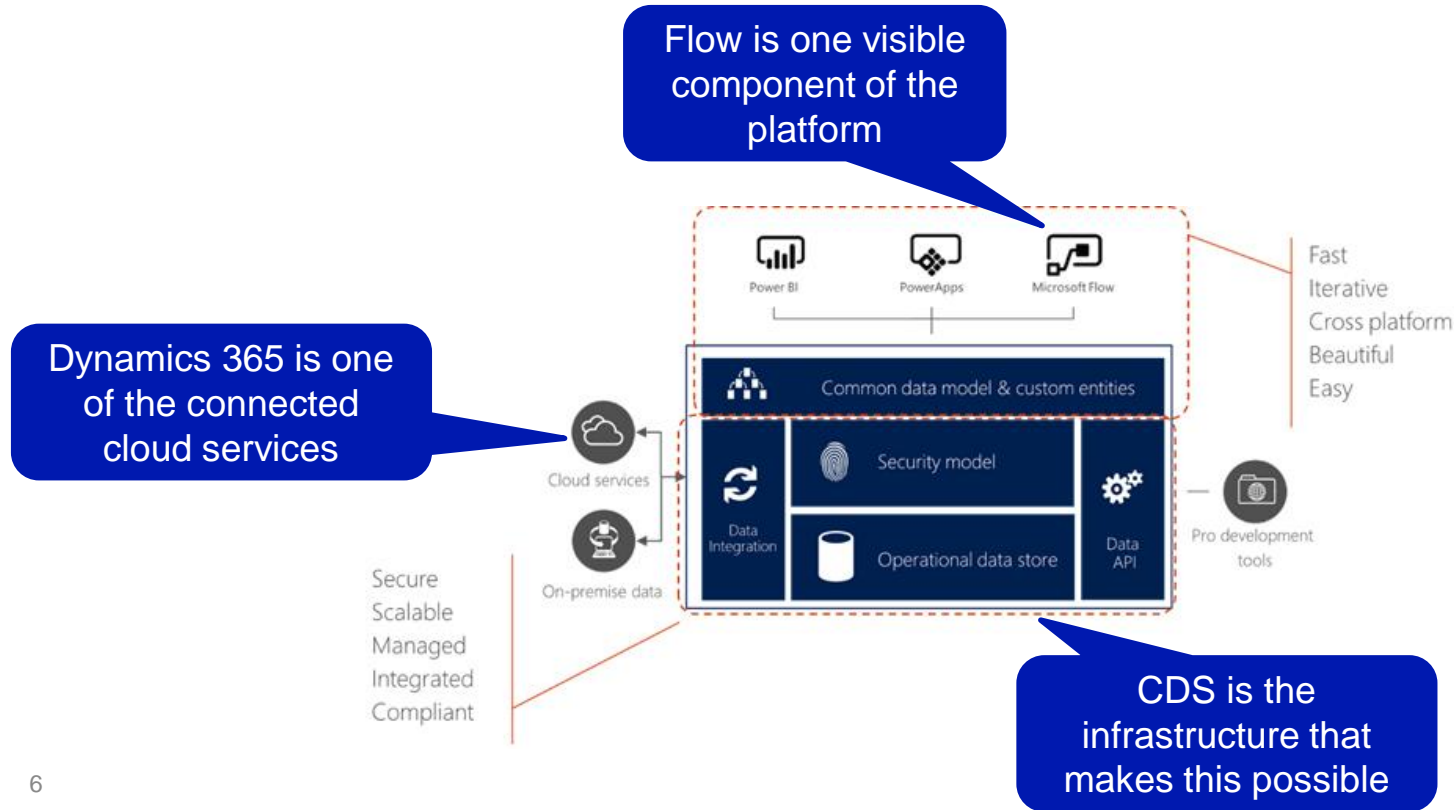


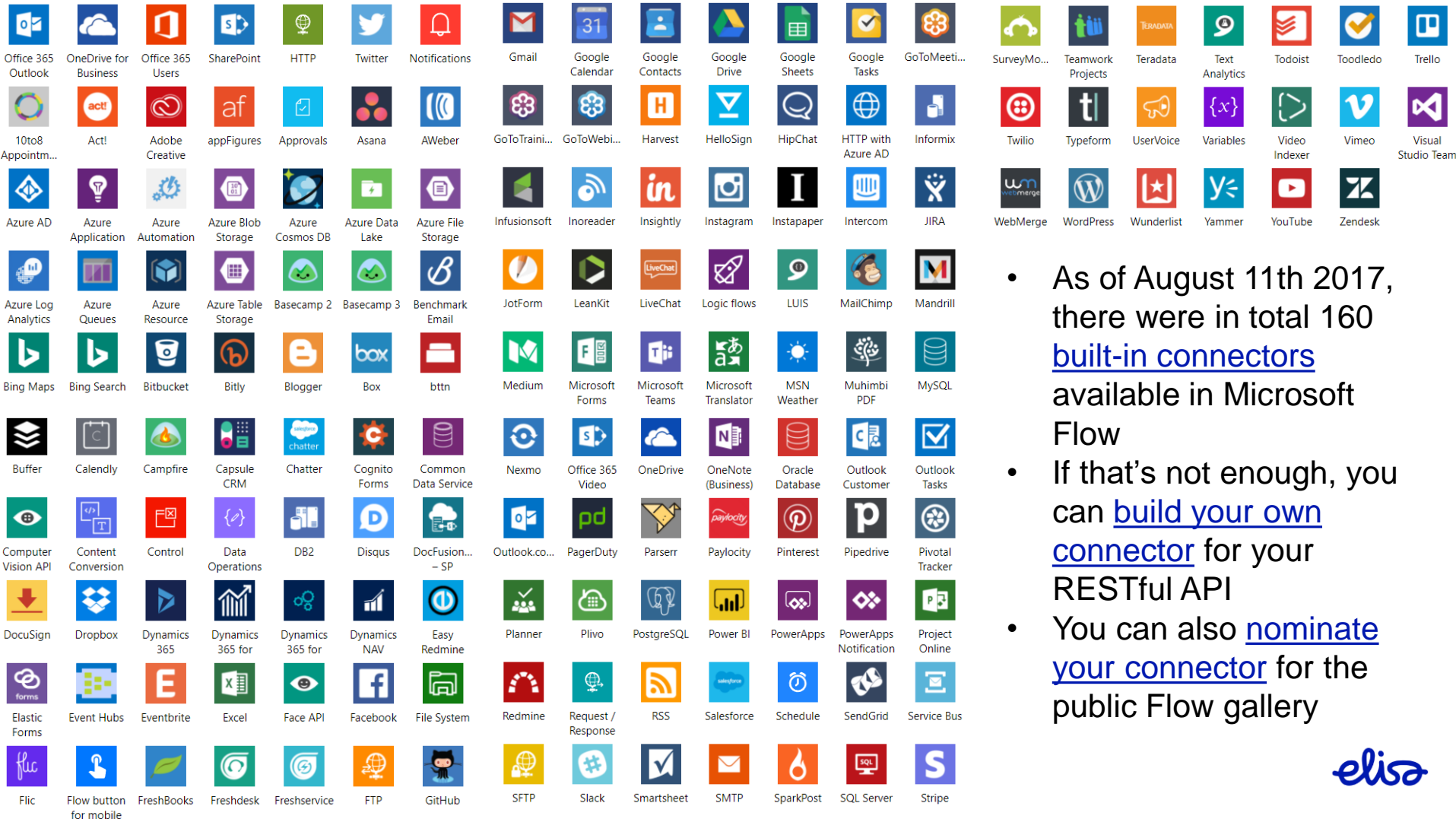
The screenshot shows the 'Business platform admin center' interface. The header includes a grid icon, the text 'Business platform admin center', and a user profile icon. A left sidebar lists 'Environments', 'Data policies', 'Data integration', 'Tenant', 'User licenses', and 'Quotas'. The main content area is titled 'Jukka's App Cloud' and includes buttons for 'Delete', 'Import resources', and 'Export resources'. Below this, there are tabs for 'Security', 'Details', 'Resources', and 'Database'. The 'Resources' tab is active, showing a table of flows. The table has columns for 'NAME', 'OWNERS', and 'LAST MODIFIED'. Two flows are listed: 'D365 button for ...' and 'Dogetalist tweets'. Each flow has an 'i' icon, a trash icon, and a toggle switch.

NAME	OWNERS	LAST MODIFIED
D365 button for ...	Jukka Niiranen	08/07/2017
Dogetalist tweets	Jukka Niiranen	07/05/2017

<https://admin.businessplatform.microsoft.com>

What about Common Data Service?





- As of August 11th 2017, there were in total 160 [built-in connectors](#) available in Microsoft Flow
- If that's not enough, you can [build your own connector](#) for your RESTful API
- You can also [nominate your connector](#) for the public Flow gallery

From a Dynamics 365 customizer perspective

Dynamics 365 Workflow

- “We have a business process requirement for automating a task within our CRM system”

Microsoft Flow

- “Here are a zillion+ connectors & actions that you could use for building a process that does cool stuff automatically in the cloud”

Flow in a simple business scenario

- Microsoft Forms is a super easy tool for building simple web forms
- Microsoft Flow is a super easy tool for pushing new records into Dynamics 365
- How quickly could we build a web form to create new leads in Dynamics 365?




Microsoft Forms to Dynamics 365 leads

The 5 minute lead capture form

Questions Responses 1

Super easy Dynamics 365 lead capture form

1. 

Enter your answer

☐ Long answer ☒ Required ...

[+ Add question](#)

2. Last name *

Enter your answer

3. Company

Enter your answer

4. Email address *

Enter your answer

Microsoft Forms to Dynamics 365 leads


When a new response is submitted (Preview)

* Form title: Super easy Dynamics 365 lead capture form

+ Create a new record

* Organization Name: Jukka's Business Cloud

* Entity Name: Leads

* Last Name:  Last name x


* Topic: New lead from Microsoft Forms

[Show advanced options](#)

[+ New step](#) [✓ Save flow](#)

Dynamics 365 Sales Leads > Teppo Testaaja

+ NEW DELETE QUALIFY PROCESS DISQUALIFY

 LEAD Teppo Testaaja

Qualify (Active for 1 minute)

Summary

CONTACT

Topic *	New lead from Microsoft Forms
Name *	Teppo Testaaja
Job Title	..
Business Phone	..
Mobile Phone	..
Email	teppo@outlook.com

COMPANY

Company *	Test Company
Website	..
Address	..

Approvals via Flow

- Dynamics 365 customers often require approval processes beyond standard Business Process Flow
- They can be built with customization, but it's a bit tedious and doesn't look great
- Flow, on the other hand, offers a specific Approvals action
- Not only is the setup much easier, also the UX for the end user is much nicer

Start an approval

* Title Approve proposal for opportunity: Topic x

* Assigned To Jukka Niiranen x ;

Details Opportunity for Potential Customer x is pending for your approval in Dynamics 365.

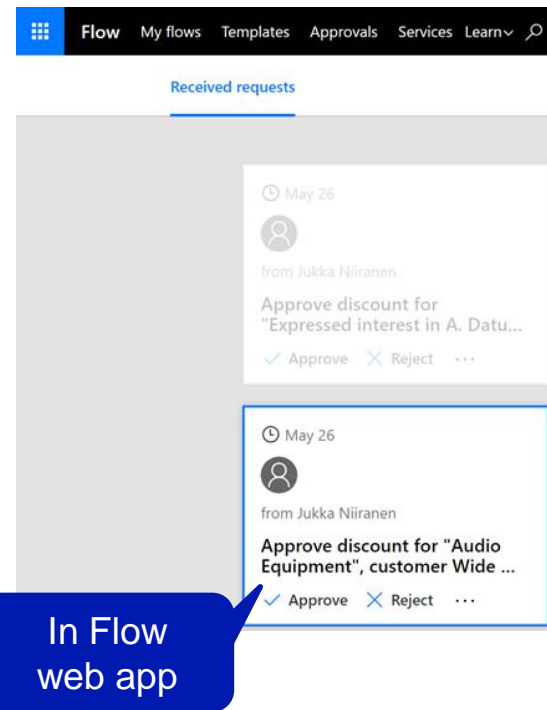
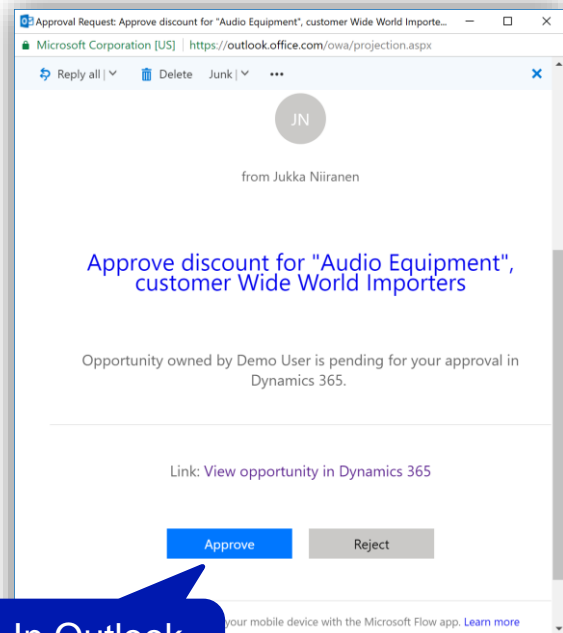
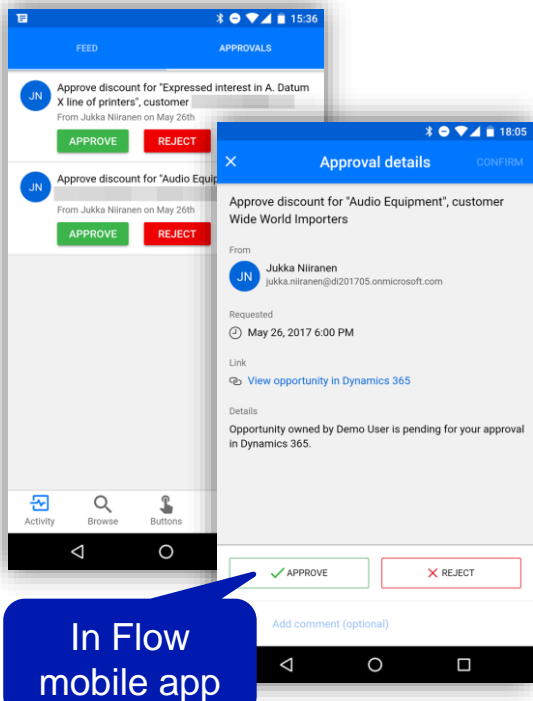
Item Link <https://crm4.dynamics.com/main.aspx?etn=opportunity&pagetype=entityrecord&id=%7B%7D> Opportunity x

Add dynamic content +

Item Link Description View opportunity in Dynamics 365



Approvals everywhere!




Tracking goals

- Dynamics 365 sales data really should be pushed to Power BI for KPI tracking
- With PBI data driven alerts the business logic doesn't have to be in D365 anymore
- Flow can be triggered when threshold value is reached, then perform the necessary actions

OPEN REVENUE Manage alerts

[+ Add alert rule](#)

^ Open Revenue below 100k 

Active
☒ On

Alert title




Set alerts rule for

Condition	Threshold
<input type="text" value="Below"/>	<input type="text" value="100000"/>



Maximum notification frequency
☒ At most every 24 hours
☐ At most once an hour



Alerts are only sent if your data changes.

Revenue alert

 When a data driven alert is triggered (Preview)  

* Alert Id


 Create a new record 



* Organization Name

* Entity Name

* Subject

[Show advanced options](#)



 Post message 

* Group ID




* Message Text [Add dynamic content](#)

Network ID

[Show advanced options](#)

Scheduling

- Everyone has ran into the need for running recurring workflow jobs in Dynamics 365
- MS sadly doesn't offer such a feature, although there are [open source solutions](#) or [ISV products](#) for it
- With Flow, you can now set the Recurrence trigger from seconds to days and run your process till infinity
 - You could even do fancy admin stuff by a PowerShell script with Azure Automation

 Recurrence  

* Frequency

Day

* Interval

1

Time zone


(UTC+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius


Start time


Example: 2017-03-24T15:00:00Z

Triggers (0)

Actions (3)

 Azure Automation - Create job

 Azure Automation - Get job output

 Azure Automation - Get status of job

The Power of N

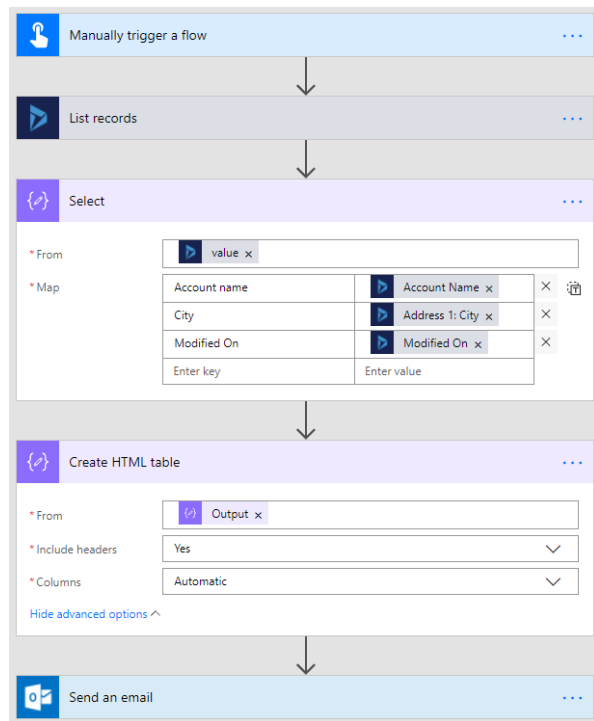
- Flow gives customizers the power to **query** records from Dynamics 365
- Not just that: you can even query a **list** of N records
- The fun doesn't stop: you can also **manipulate** the results
- Flow is therefore able to overcome many of the inherent relational limitations of Dynamics 365 native workflows

The screenshot displays three sequential steps in a Microsoft Flow workflow:

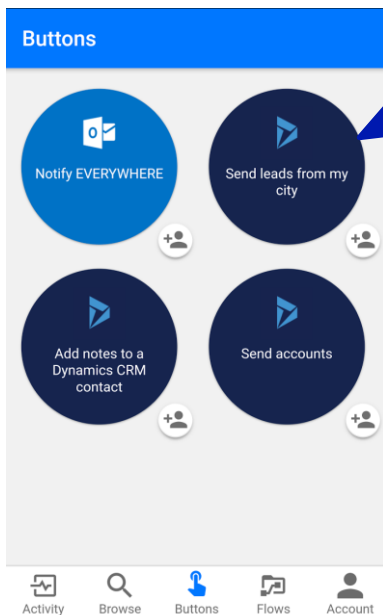
- Get record**: Includes fields for Organization Name (Jukka's Business Cloud), Entity Name (Accounts), and Item identifier (Account).
- List records**: Includes fields for Organization Name (Jukka's Business Cloud) and Entity Name (Accounts).
- Apply to each**: Includes a field for 'value' and a link to 'Add dynamic content'.
- Update a record**: Includes fields for Organization Name (Jukka's Business Cloud) and Entity Name (Accounts).

Emails with a dynamic list of records

- Scenario: you want to send an email with a list of N records
- For Workflow, you'd need a custom activity
 - Workflow Elements by Aiden Kaskela ([link](#))
- With Flow we can query specific fields from a list of Dynamics 365, create a HTML table and insert it into an email
- Dynamics 365: List records
- Data operations: Select
- Data operations: Create HTML table

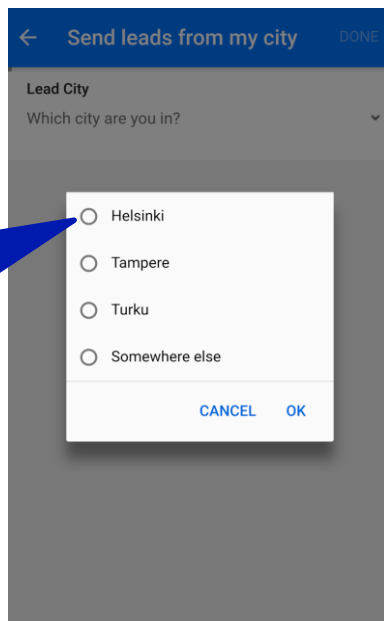


Retrieve Dynamics 365 data with a button



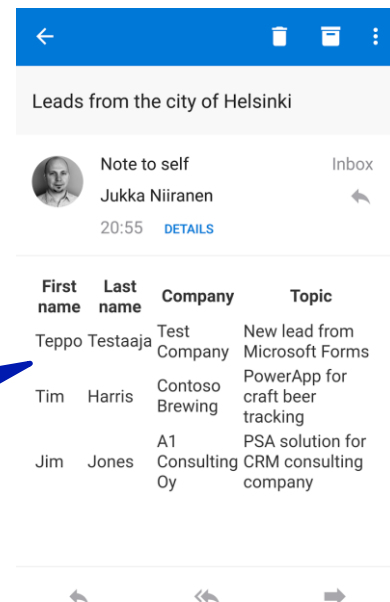
Trigger a Flow from mobile app button

Enter parameters, select "Done"



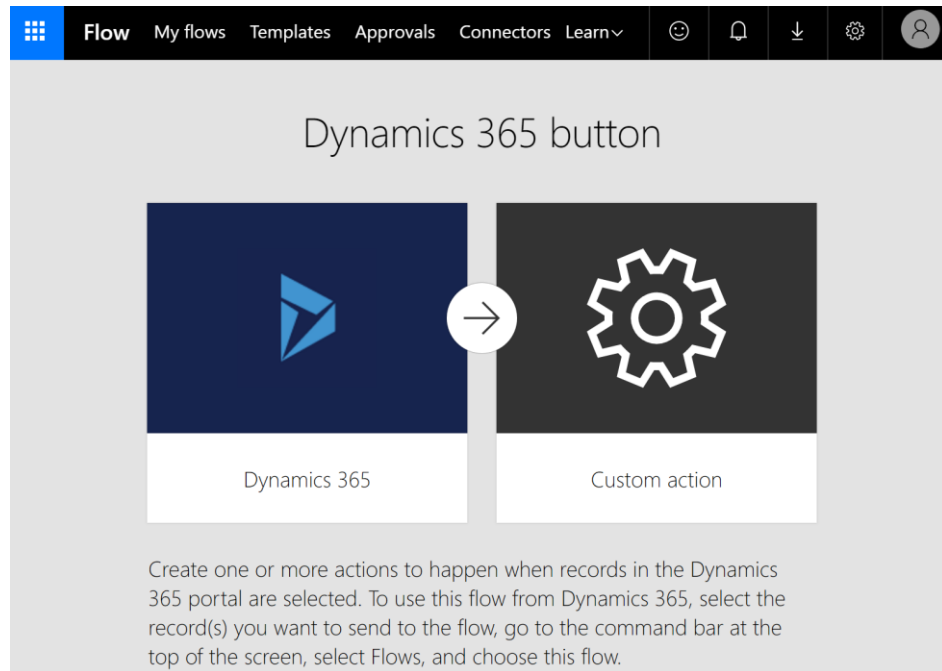
Use parameter to query records, create HTML table

You've got email



On demand automation for Dynamics 365

- Automation is great, but sometimes you'd want to allow the users to run the business logic on demand
- Workflows and Dialogs have always been available in Dynamics 365 Command Bar
- With the July 2017 release, there will now also be a Dynamics 365 button for Flow



Input fields for Flows run on demand

Flow name Dynamics 365 button

✓ Create flow

The screenshot displays the Microsoft Flow Designer interface for a flow named "Dynamics 365 button". The flow is triggered by "When a record is selected". The configuration panel shows two required input fields: "Organization Name" and "Entity Name", both set to "Accounts". Below these fields is a text input box with a placeholder message: "Please enter a random word into this text input box, just because you can". A trash icon is visible next to the text input box. At the bottom of the configuration panel, there is a button labeled "Add text input". The flow is currently in a draft state, as indicated by the "Save flow" button being highlighted.

When a record is selected

* Organization Name

* Entity Name

Random word

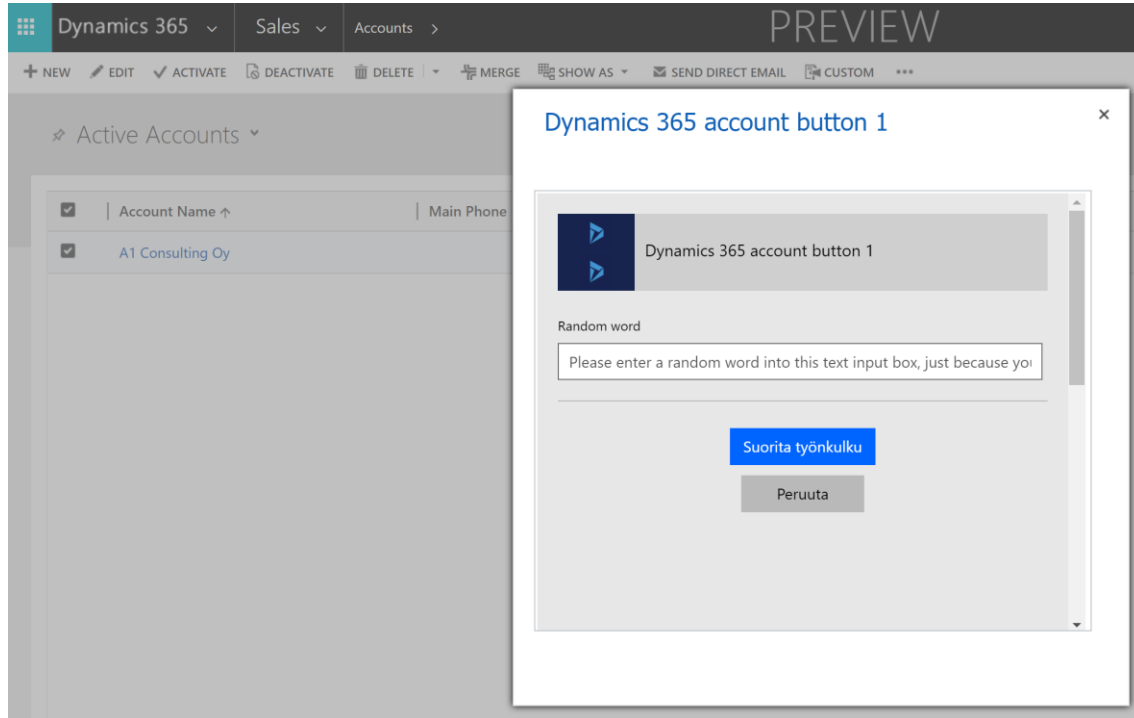
Please enter a random word into this text input box, just because you can

Add text input

+ New step

✓ Save flow

On demand Flows inside Dynamics 365 UI



So, will Flow replace Dialogs?

- Starting with V9, Dynamics 365 Dialogs are deprecated:
 - *"Dialogs are deprecated and are replaced by mobile task flows (available as of the December 2016 update), and business process flows. Both task flows and business process flows will continue to evolve to make the transition easier."*
- Out of the 3 possible 'flows, none are yet match for the power of Dialogs
 - Then again, they all are getting feature updates, whereas Dialogs never evolved beyond the initial version in CRM v5

The last dialog
It's the end of the world for dialogs

Are you aware that dialogs are deprecated?

☐ Yes
☐ No
☒ Whaaat!?!?

Tip
They really are. Read more about it [here](#).

In your own words, how does this make you feel?

Click to add comments

[Help](#) [Summary](#) [Next](#) [Cancel](#)



Dmitriy Ryaboy
@squarecog

Follow

OH: "There are always two solutions to every problem. One is deprecated, the other is not ready yet."

11:08 PM - 19 Sep 2013

321 Retweets 267 Likes



11

321

267



Customizer productivity with Flow

- Workflow processes are tightly connected to the context of the triggering record and built-in logic of Dynamics 365
 - System makes more assumptions -> requires less definition work from customizer
 - Understands things like record ownership, relationships, special data types
- Flow "thinks big" and always requires you to take care of things that are Dynamics 365 specific
 - Need to query all the pieces of information that your Flow logic must touch
 - Need to learn how to use OData filters (or [CRM REST Builder](#))
 - Must perform these clicks each & every time you need a new Flow

Lookups and option sets as output

- *"When a new contact is added to Dynamics 365, I'll send out an email with the contact's parent account (lookup) and gender (option set)"*
- Doh!
- For lookups you'll need to query the related record to access the primary field text value instead of GUID
- For option sets... there isn't any easy way (that I know of) to get the text values dynamically

New contact: Joe Average



Jukka Niiranen

Today, 20:01

Jukka Niiranen ↘

This message was sent with low importance.

Parent account: 2e06f738-0442-e711-8100-5065f38b0571

Gender: 1

Lookups and option sets, the Flow way





Lookup: query the related account record based on GUID in Company Name field

Option set: initialize a string variable, add switch case, set variable based on integer value from Gender field

Use these in your email output instead of raw source record fields

Trigger events: Flow vs. Workflow

- Workflow allows you to monitor specific fields, Flow always looks at the whole record and any fields that are updated
- What sounds like a performance issue for Flow shouldn't really be one, since it uses Dynamics 365 Change Tracking feature
- Nevertheless, the Flow logic must be defined so that updates of irrelevant fields don't cause business issues for users and other systems

-  Dynamics 365 - When a record is selected
-  Dynamics 365 - When a record is created
-  Dynamics 365 - When a record is deleted
-  Dynamics 365 - When a record is updated

Options for Automatic Processes

Scope

Start when:

- ☐ Record is created
- ☐ Record status changes
- ☐ Record is assigned
- ☒ Record fields change
- ☐ Record is deleted

Data manipulation

- Workflows

- Custom workflow activity libraries are needed for any data manipulation beyond concatenation or incrementing values
- Luckily, there's a wealth of open source solutions out there on [GitHub](#)

- Flows

- Expressions offer built-in functions for string, array, logical, conversion, math, date/time
- No direct extension points exist currently
- [Azure Functions via Custom API](#) could be one way to introduce more tools

Dynamic content

Expression

f_x Write expression here

OK

String functions

See more

f_x **concat(text1, text2?, ...)**
Combines any number of strings together

Collection

See more

f_x **contains(value, key)**
Returns true if a dictionary contains a key, if an array cont...

f_x **length(value)**
Returns the number of elements in an array or string

Logical functions

See more

f_x **if(expression, valueIfTrue, valueIfFalse)**
Returns a specified value based on whether the expressio...

f_x **equals(object1, object2)**
Returns true if two values are equal

f_x **and(expression1, expression2)**
Returns true if both parameters are true

Licensing

Workflow

- No separate license needed
- “Unlimited everything”

Flow

- License bundled with Dynamics 365
 - D365 Apps = “Flow for D365”
 - D365 Plans = “Flow Plan 2”
- Licensing is (in theory) specific to a user

Logic App

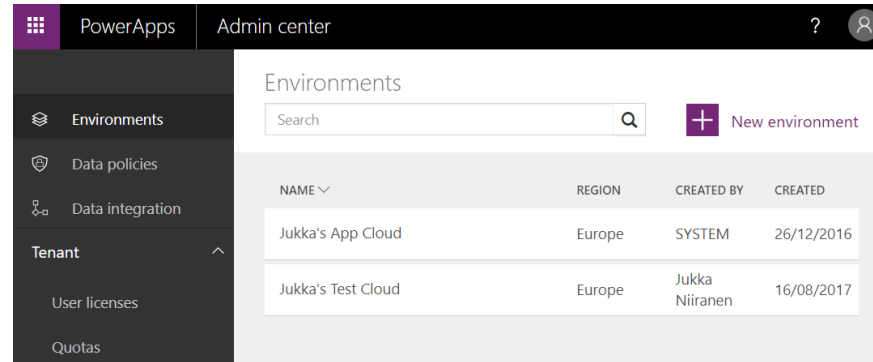
- Azure subscription always required
- License/billing managed on organization level

Flow plans

- The number of Flow runs is aggregated across all users in the company
 - Example: 20 D365 Plan 1 users with 15k Flow runs (Plan 2) = 300k total runs per month, or 1 Flow run every 7 seconds
 - Note: a single Flow has max frequency of once per minute
 - Additional 50k runs = €34/mo
- Features specific to Flow Plan 2 (= D365 Plan bundle):
 - Environments & environment specific policies
 - View flow usage across your company
 - Premium connectors (Salesforce, Oracle and the likes)

Environments

- *"An environment is a virtual space used to store, manage and share apps, flows and business data within the common data service."*
[\[link\]](#)
- Controls user access rights, available apps, geolocation of data
- If you have dev/test/prod Dynamics 365 instances, it makes sense to have separate environments for Flows, too



Moving Flows between environments

- Since August 2017 there is an option to export a Flow as a .zip package
- Creates new or updates existing Flow
- Connections must be re-mapped during import
- No deployment automation, as this is all in the GUI land for power users
- <https://flow.microsoft.com/en-us/blog/import-export-bap-packages/>

Export package

Package details

Created by Jukka Niiranen on 08/16/2017

Name *

Export Flow 1

Environment



Jukka's App Cloud

Description





1st test in exporting a Flow from one environment to another.

Review Package Content

Choose your export options and add comments to provide instruction or add version notes.

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
Export Flow 1	Flow	Update	 

Related resources

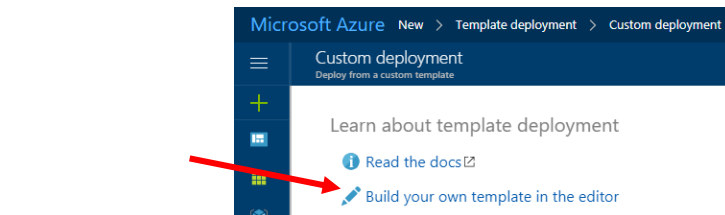
NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
jukka@	Dynamics 365 Connection	Select during import	 
jukka@	Office 365 Outlook Connection	Select during import	 

Export

Cancel

Convert Flow to Logic App

- Exporting the Flow as .json instead of .zip allows the definition to be imported into a new Logic App [\[link\]](#)
- Create new "Template Deployment", import .json, specify Azure subscription & resource groups, save & purchase
- Again, connections must be re-mapped
- Leverage Logic App code view, access control, monitoring, additional connectors & all the developer goodies not available in Flow land



Microsoft Azure New > Template deployment > Custom deployment

Custom deployment
Deploy from a custom template

Learn about template deployment

[Read the docs](#)

[Build your own template in the editor](#)

ExportFlowToLogicApp1 - Logic App Code View

Save Discard Run Designer </> Code view Template

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Tags

DEVELOPMENT TOOLS

Logic App Designer

Logic App Code View

Versions

API Connections

Quick Start Guides

Release notes

SETTINGS

Integration account

Access control configuration

Access keys

Properties

Locks

Automation script

MONITORING

Metrics

Alert rules

Diagnostics logs

Log search

Diagnostics

```
1 {
2   "connections": {
3     "value": {
4       "dynamicscrmonline": {
5         "connectionId": "/subscriptions/7c3f37cb-f893-4cdd-
6         "connectionName": "dynamicscrmonline",
7         "id": "/subscriptions/7c3f37cb-f893-4cdd-
8       },
9       "office365": {
10        "connectionId": "/subscriptions/7c3f37cb-f893-4cdd-
11        "connectionName": "office365",
12        "id": "/subscriptions/7c3f37cb-f893-4cdd-
13      }
14    },
15  },
16  "definition": {
17    "$schema": "https://schema.management.azure.com/
18    "actions": {
19      "Condition": {
20        "actions": {
21          "Send_an_email": {
22            "inputs": {
23              "body": {
24                "Body": "@{triggerBody()}",
25                "Subject": "New lead created",
26                "To": "jukka.niiranen@gmail.com"
27              },
28              "host": {
29                "connection": {
30                  "name": "@parameters('connectionName')",
31                },
32                "method": "post",
33                "path": "/Mail"
34              },
35            },
36            "runAfter": {},
37            "type": "ApiConnection"
38          }
39        },
40        "expression": "@contains(triggerBody(), 'lead')",
41        "runAfter": {},
42        "type": "If"
43      }
44    },
45    "contentVersion": "1.0.0.0",
46    "outputs": {},
47    "parameters": {
48      "connections": {
```

Granting access to Flows

- If everything in the Flow runs automatically, you can just keep it to yourself
- If others need to be able to trigger the Flow, you can add the user or group as "run-only user"
 - Users can either "bring their own connection" or you can grant them access to your credentials in the context of the Flow
- If you want to give other power users full access to edit the Flow, add them as owners
 - This turns it from "My Flow" to "Team Flow"
 - Connections will also be shared

The screenshot shows a 'Manage Run-Only Users' dialog box. At the top, there are tabs for 'Edit flow', 'More', and 'This flow is' (which is active). Below the tabs, the dialog is divided into three main sections: 'CONNECTIONS', 'OWNERS', and 'MANAGE RUN-ONLY USERS'. The 'CONNECTIONS' section lists 'jukka@' and 'Notifications' with a green checkmark. The 'OWNERS' section lists 'Jukka Niiranen' and an 'Add another owner' button. The 'MANAGE RUN-ONLY USERS' section has an 'Add another person' button. On the right side of the dialog, there is a 'Manage Run-Only Users' header, a section for 'Invite others as run-only' with a text input field, a list of users including 'Tapio Niiranen', a 'Shared With' section, and a 'Connections Used' section with a warning note and a list of connections like 'Dynamics 365' and 'Notifications'.

Blocking unwanted Flows

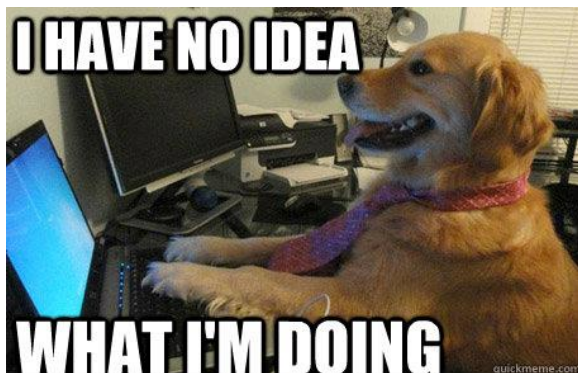
- If you want to STOP users from pulling data from/to Dynamics 365, you can define a Data Policy
- Apps in "business data only" group are not allowed to talk with any apps not included there
- Policy can be defined on environment level
- Applying the policy will immediately suspend all Flows that are violating it
- Note: in D365 V9 there's also a privilege "Run Flows" you can set on security roles

Strict policy to stop rogue Flows and PowerApps ✓ ✕

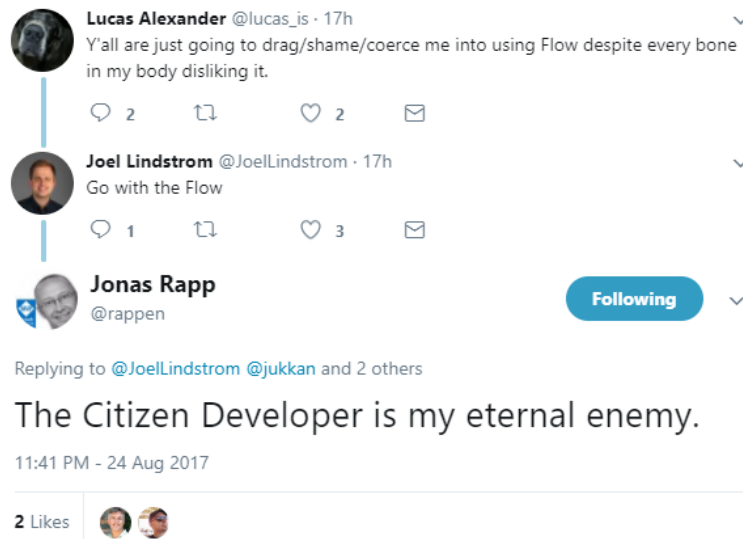
The screenshot displays the 'Data groups' section in the Microsoft Power Platform admin center. It shows two data groups: 'Business data only' and 'No business data allowed (Default)'. The 'Business data only' group includes connectors for Dynamics 365, SharePoint, and OneDrive for Business. The 'No business data allowed' group includes connectors for Salesforce, OneDrive, SQL Server, Dropbox, 10to8 Appointment Scheduling, Act!, and Adobe Creative Cloud. A blue arrow points from the 'Business data only' group to the 'Notifications' panel on the right. The 'Notifications' panel shows several notifications, including 'Flow suspended by an admin policy' for 'Export Flow 1' and 'Dynamics 365 button E1'. The user's name 'Jukka Niiranen' and 'Jukka's App Cloud' are visible in the top right corner.

Where's the happy middle ground for Flow?

Dynamics 365 admins



Dynamics 365 devs



The quest for citizen developer role

- In the words of MSFT:
 - *“Flows empowers any office worker to perform **simple integrations** (e.g. get SMS for important emails) without going through developers or IT. On the other hand, Logic Apps can enable advanced or mission-critical integrations (e.g. B2B processes) where enterprise-level **DevOps and security practices** are required. It is typical for a business workflow to grow in complexity overtime. Accordingly, **you can start with a Flow at first, then convert it to a Logic App as needed.**”*
- More guidance:
 - [Choose between Flow, Logic Apps, Functions, and WebJobs](#)

How should D365 customizers approach Flow?

- It's a connected world
 - Business processes aren't locked inside a single CRM system these days, therefore the business logic you build also needs to cross app boundaries
 - Sharing parts of the logic between D365 workflow and Flow is also allowed
- Pain is relative
 - Recreating traditional workflow functionality in Flow can feel quite cumbersome
 - Implementing cross-app business logic can be super easy compared to pain of traditional integration development
- Go with the Flow, but don't go crazy
 - Plan for the transition to Azure & Logic Apps before you paint yourself into a corner

Thanks for your time! Thank you, sponsors!



