



elisa

The logo for elisa, featuring the brand name in a white, lowercase, sans-serif font. The letter 'i' has a small dot above it. The background is a vibrant, abstract liquid composition in shades of blue, orange, and yellow, with fine, translucent lines creating a sense of depth and movement.

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/>

Microsoft Cloud Mobility Productivity

Business platform

Products Communities

Power BI

PowerApps

Microsoft Flow

Drive your own digital transformation

One low-code ecosystem, unlimited application possibilities

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.

Business platform admin center

Jukka's App Cloud

Environments Data policies Data integration Tenant User licenses Quotas

Security Details Resources Database

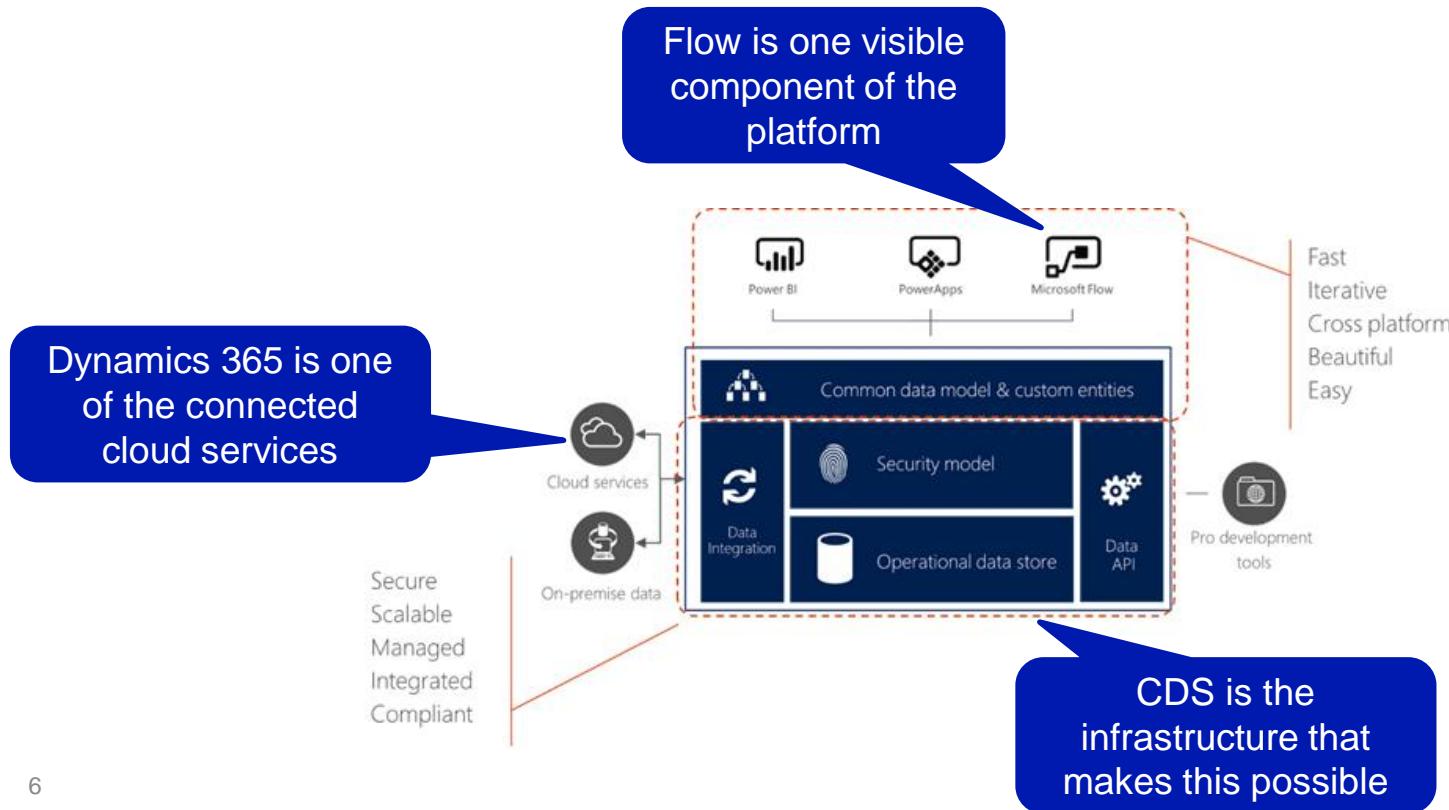
Flows

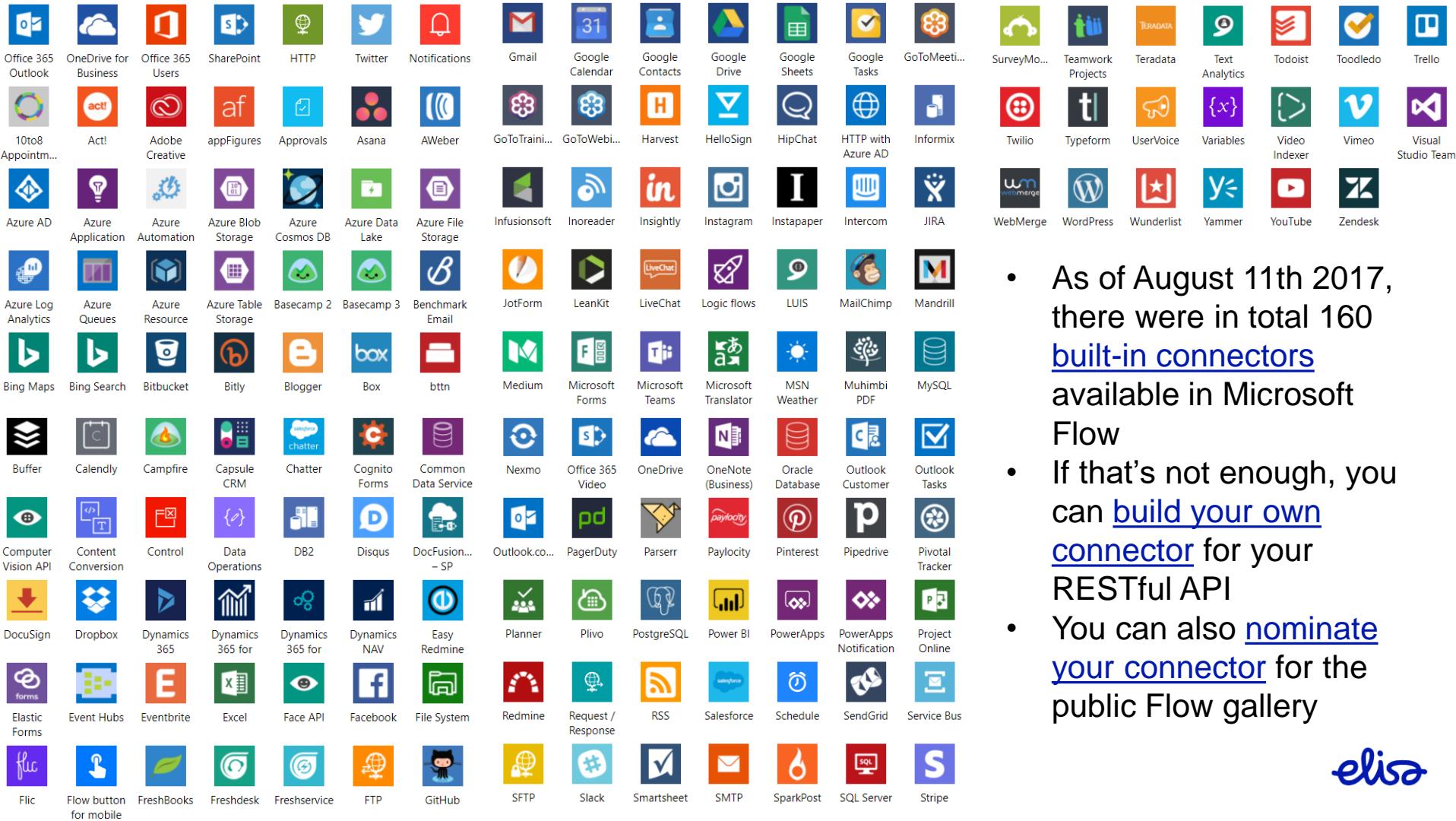
NAME	OWNERS	LAST MODIFIED
D365 button for ...	Jukka Niiranen	08/07/2017
Dogetalist tweets	Jukka Niiranen	07/05/2017

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



What about Common Data Service?





From a Dynamics 365 customizer perspective

Dynamics 365 Workflow

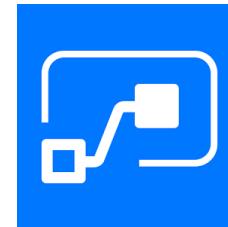
- “We have a business process requirement for automating a task within our CRM system”

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. First name 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

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](#)

* Assigned To: Jukka Niiranen

Details: Opportunity for [Potential Customer](#) is pending for your approval in Dynamics 365.

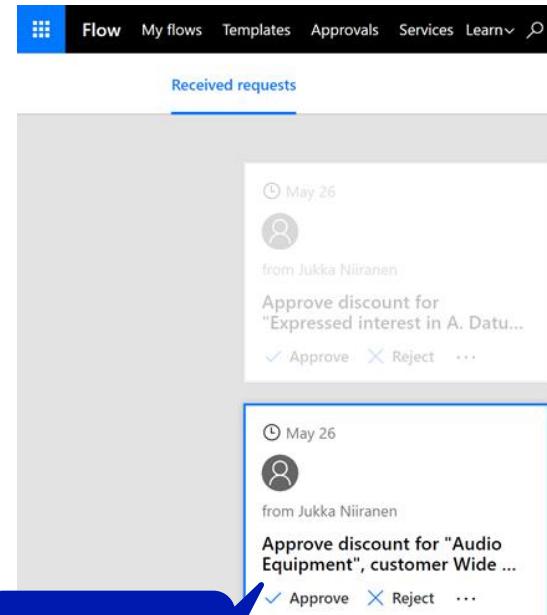
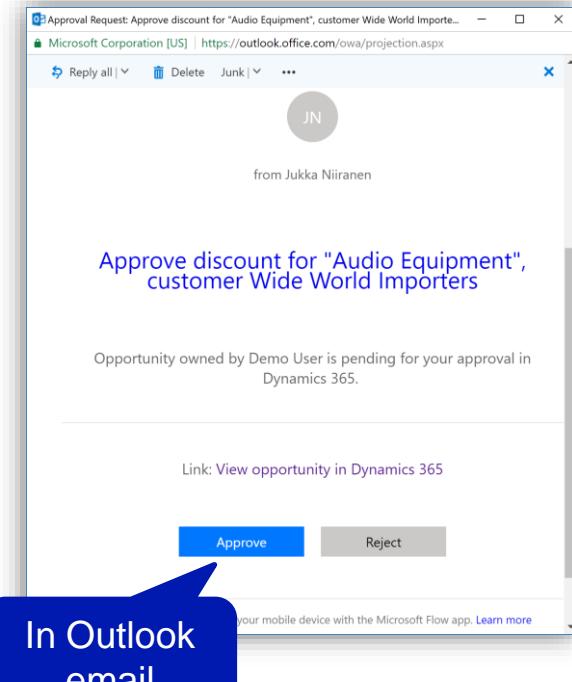
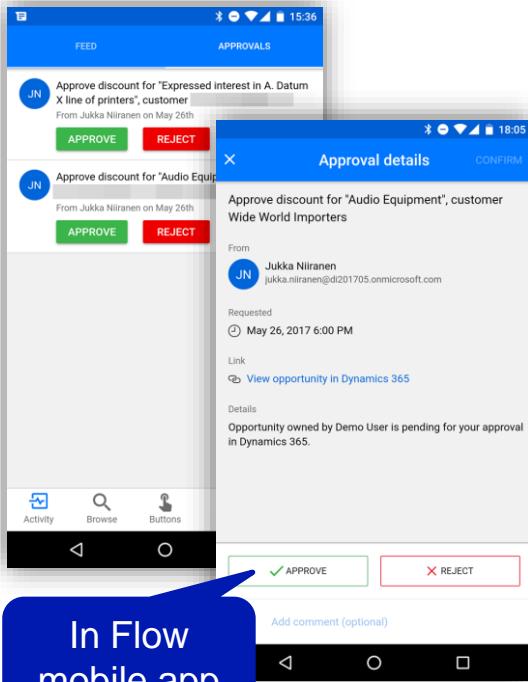
Item Link: [Opportunity](https://crm4.dynamics.com/main.aspx?etn=opportunity&pagetype=entityrecord&id=%7B%67D)

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: Open Revenue below 100k

Set alerts rule for: Open Revenue

Condition: Below Threshold: 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: Open Revenue below 100k

Create a new record

* Organization Name: Jukka's Business Cloud

* Entity Name: Tasks

* Subject: Call an emergency meeting for sales team!

Show advanced options

Post message

* Group ID: All Company

* Message Text: ABC. A-Always. B-Be. C-Closing. ALWAYS BE CLOSING!

Add dynamic content

Network ID: Default

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

The screenshot shows the 'Recurrence' configuration screen for a Microsoft Flow. At the top, there's a header with an info icon and three dots. Below it, the 'Recurrence' tab is selected, showing a clock icon. The form fields include:

- * Frequency: Day
- * Interval: 1
- Time zone: (UTC+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
- Start time: Example: 2017-03-24T15:00:00Z

Below this, there are tabs for 'Triggers (0)' and 'Actions (3)'. The 'Actions (3)' tab is selected, showing three items:

- Azure Automation - Create job
- Azure Automation - Get job output
- Azure Automation - Get status of job

The Power of N

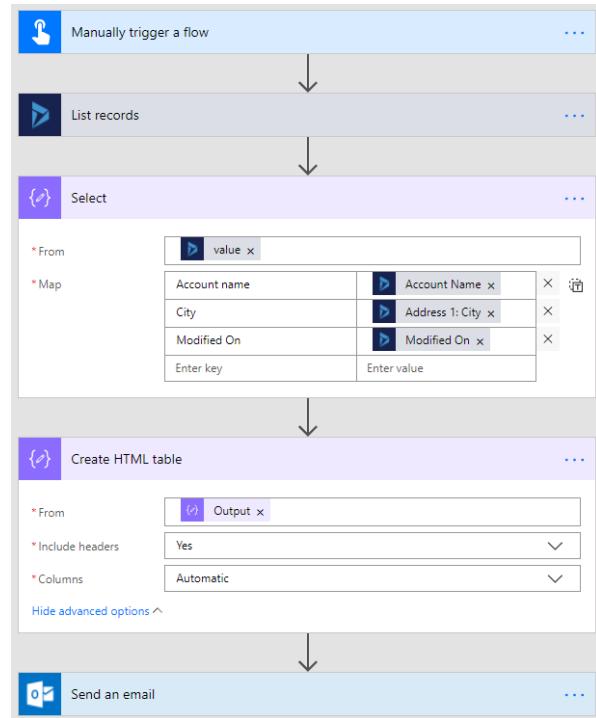
- Flow gives customizers the power to **query** records from Dynamics 365
- Not just that: you can even query a **list** of N records
- The fun doesn't stop: you can also **manipulate** the results
- Flow is therefore able to overcome many of the inherent relational limitations of Dynamics 365 native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

The image displays four separate Microsoft Flow step cards, each with a title, input fields, and a 'More options' button (three dots).

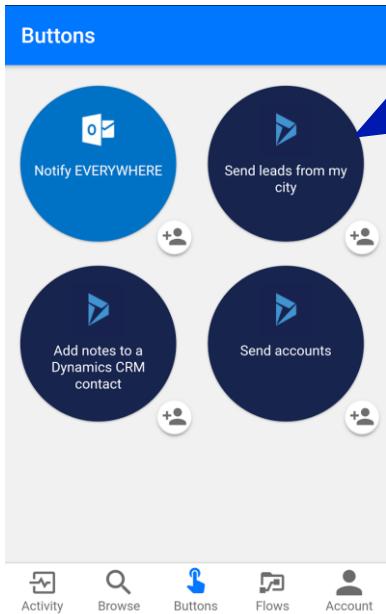
- Get record**:
Title: Get record
Organization Name: Jukka's Business Cloud
Entity Name: Accounts
Item identifier: Account
- List records**:
Title: List records
Organization Name: Jukka's Business Cloud
Entity Name: Accounts
- Apply to each**:
Title: Apply to each
Select an output from previous steps: value
Add dynamic content (+)
- Update a record**:
Title: Update a record
Organization Name: Jukka's Business Cloud
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

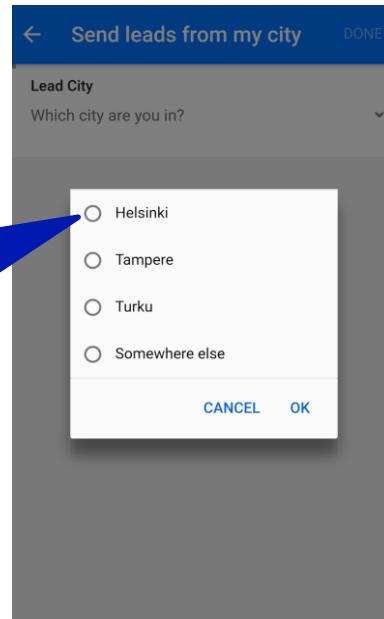


Retrieve Dynamics 365 data with a button



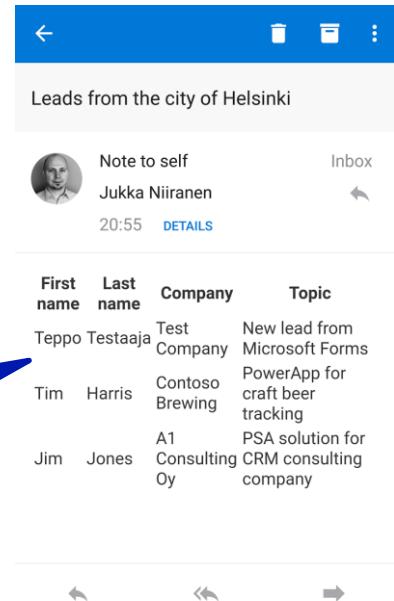
Trigger a Flow from mobile app button

Enter parameters, select “Done”



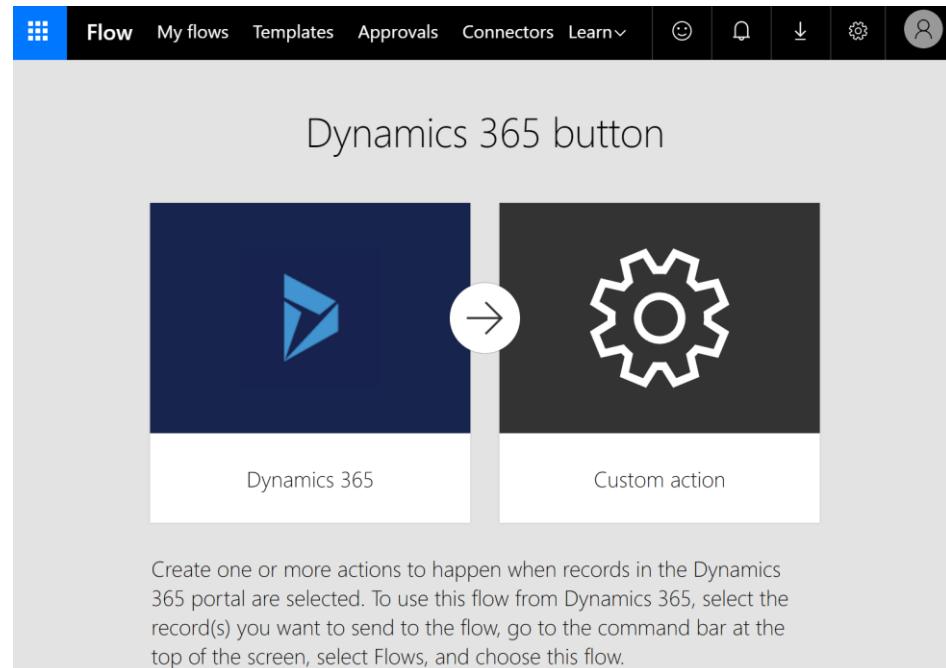
Use parameter to query records, create HTML table

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

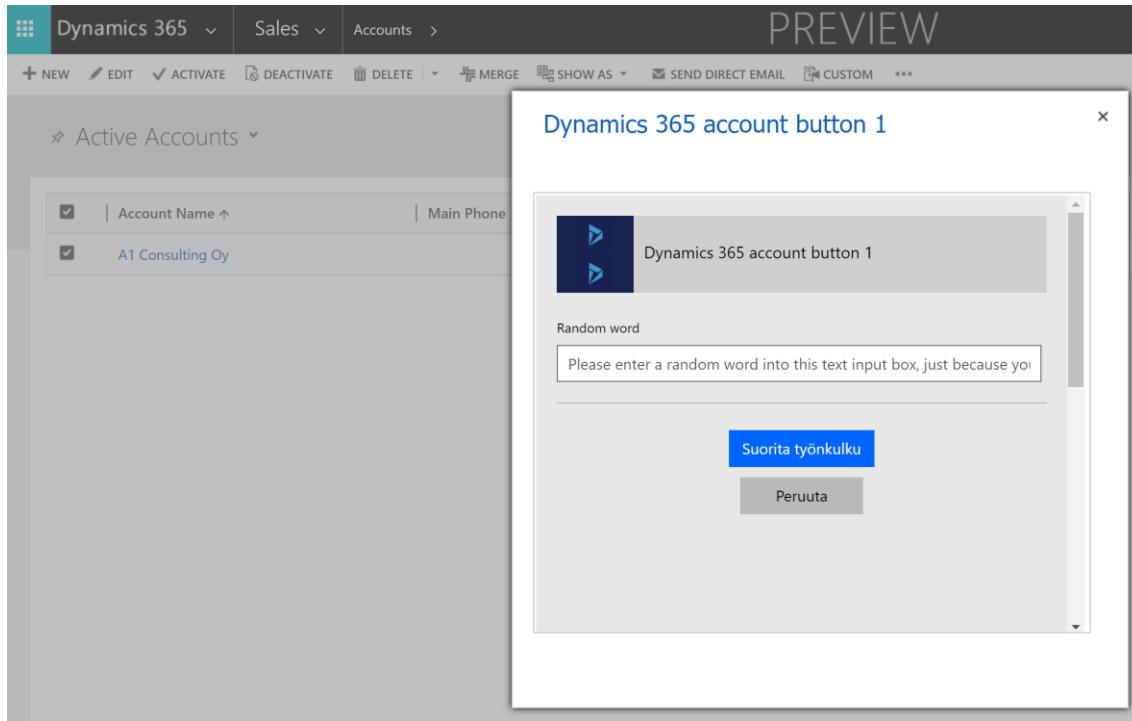


Input fields for Flows run on demand

Flow name Dynamics 365 button ✓ Create flow

The screenshot shows the Microsoft Flow builder interface. At the top, it says "Flow name Dynamics 365 button" and "✓ Create flow". Below that is a card titled "When a record is selected" with a Dynamics 365 icon. It has two required fields: "Organization Name" (dropdown) and "Entity Name" (dropdown set to "Accounts"). Below these are two text input steps. The first step has a purple "AA" icon and the placeholder "Random word". The second step also has a purple "AA" icon and the placeholder "Please enter a random word into this text input box, just because you can!". At the bottom, there are buttons for "+ New step" and "✓ 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 screenshot shows a 'The last dialog' window from Microsoft Dynamics 365. It displays a message: 'It's the end of the world for dialogs'. Below this is a question: 'Are you aware that dialogs are deprecated?' with three radio button options: 'Yes', 'No', and 'Whaaaaat?!?'. A text area asks, 'In your own words, how does this make you feel?'. At the bottom are 'Help' and 'Summary' buttons, and a 'Next' and 'Cancel' button on the right.



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



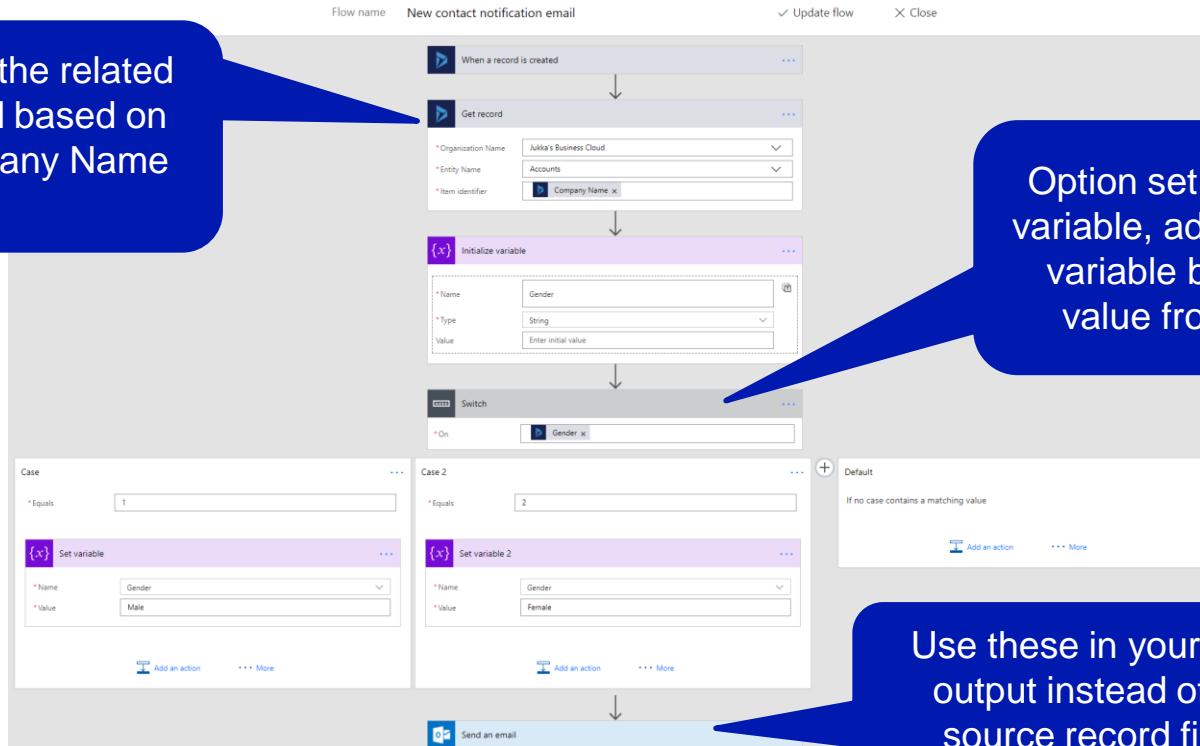
Jukka Niiranen
Today, 20:01
Jukka Niiranen ▾

This message was sent with low importance.

Parent account: 2e06f738-0442-e711-8100-5065f38b0571
Gender: 1

Lookups and option sets, the Flow way

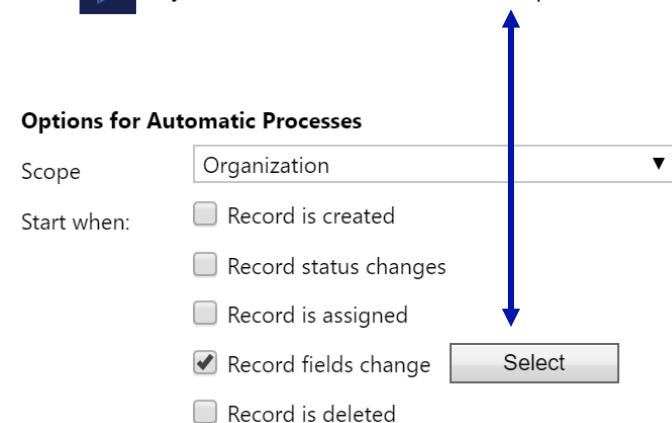
Lookup: query the related account record based on GUID in Company Name field



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



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

fx Write expression here OK

String functions See more

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

Collection See more

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

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

Logical functions See more

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

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

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

Licensing

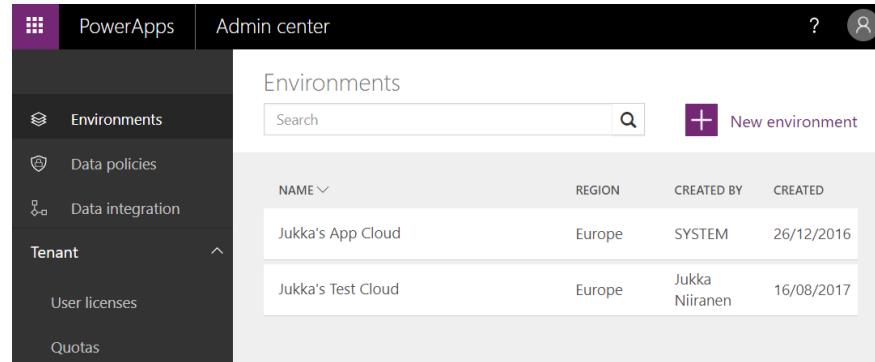
Workflow	Flow	Logic App
<ul style="list-style-type: none">• No separate license needed• “Unlimited everything”	<ul style="list-style-type: none">• License bundled with Dynamics 365<ul style="list-style-type: none">• D365 Apps = “Flow for D365”• D365 Plans = “Flow Plan 2”• Licensing is (in theory) specific to a user	<ul style="list-style-type: none">• 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



The screenshot shows the Microsoft PowerApps Admin center interface. The left sidebar has a dark theme with purple accents. It includes links for Environments, Data policies, Data integration, Tenant (expanded to show User licenses and Quotas), and a search bar. The main content area is titled "Environments" and lists two environments:

NAME	REGION	CREATED BY	CREATED
Jukka's App Cloud	Europe	SYSTEM	26/12/2016
Jukka's Test Cloud	Europe	Jukka Niiranen	16/08/2017

A purple "New environment" button is located in the top right corner of the main content area.

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 *

Environment

Description

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	

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

The screenshot shows the Microsoft Azure Logic App Code View interface. At the top, there's a navigation bar with 'Microsoft Azure' and 'Custom deployment'. Below it, a callout box says 'Learn about template deployment' with a link 'Read the docs' and a button 'Build your own template in the editor' (which has a red arrow pointing to it). The main area is titled 'ExportFlowToLogicAp1 - Logic App Code View'. It shows a JSON code editor with the following content:

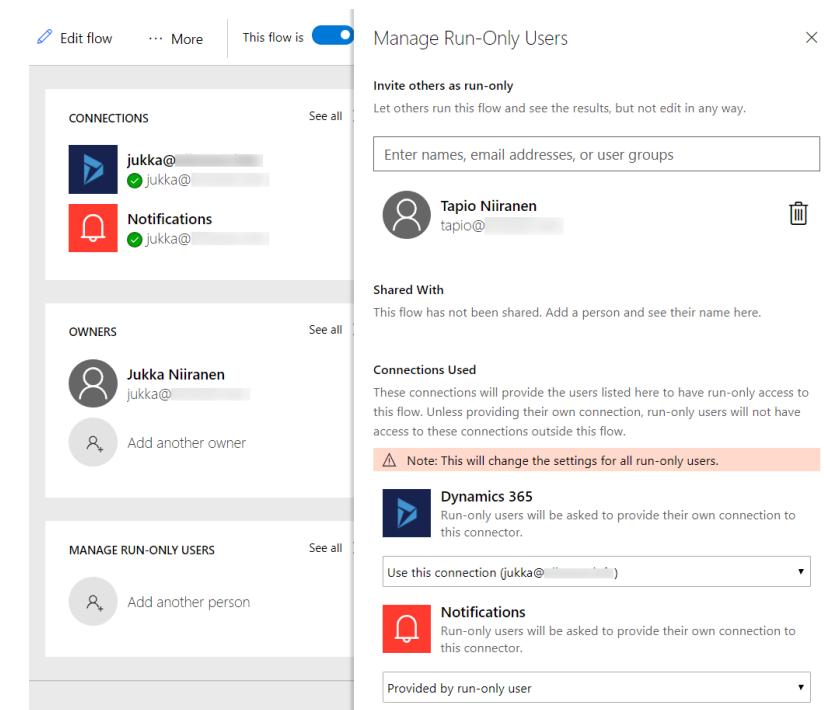
```
$connections: {  
    "value": {  
        "dynamicscrmonline": {  
            "connectionId": "/subscriptions/7c3f37ct  
            "connectionName": "dynamicscrmonline",  
            "id": "/subscriptions/7c3f37cb-f893-4cdt  
        },  
        "office365": {  
            "connectionId": "/subscriptions/7c3f37ct  
            "connectionName": "office365",  
            "id": "/subscriptions/7c3f37cb-f893-4cdt  
        }  
    }  
},  
"definition": {  
    "$schema": "https://schema.management.azure.com/  
    "actions": {  
        "Condition": {  
            "actions": {  
                "Send_an_email": {  
                    "inputs": {  
                        "body": {  
                            "Body": "Topic: @triggerBody()  
                            "Subject": "New lead created"  
                            "To": "jukka.niiranen@elisa.fi"  
                        },  
                        "host": {  
                            "connection": {  
                                "name": "@parameters(  
                            }  
                        },  
                        "method": "post",  
                        "path": "/Mail"  
                    },  
                    "runAfter": {},  
                    "type": "ApiConnection"  
                }  
            },  
            "expression": "@contains(triggerBody())?[]  
            "runAfter": {},  
            "type": "If"  
        }  
    }  
},  
"contentversion": "1.0.0.0",  
"outputs": {},  
"parameters": {  
    "$connections": {  
        "value": {  
            "dynamicscrmonline": {  
                "connectionId": "/subscriptions/7c3f37ct  
                "connectionName": "dynamicscrmonline",  
                "id": "/subscriptions/7c3f37cb-f893-4cdt  
            },  
            "office365": {  
                "connectionId": "/subscriptions/7c3f37ct  
                "connectionName": "office365",  
                "id": "/subscriptions/7c3f37cb-f893-4cdt  
            }  
        }  
    }  
},  
"type": "TemplateDeployment"
```

On the left side, there's a sidebar with various tabs: Overview, Activity log, Access control (IAM), Tags, DEVELOPMENT TOOLS (Logic App Designer, Logic App Code View - highlighted with a dashed border), Versions, API Connections, Quick Start Guides, and Release notes. Below that is the SETTINGS section with Integration account, Access control configuration, Access keys, Properties, Locks, Automation script, MONITORING section with Metrics, Alert rules, and Diagnostics logs, and a Log search tab.

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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



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

Environments • Data groups

Categorize these connectors into one of two data groups, "Business data only" and "No business data allowed". Users will be prevented from creating flows and apps that combine connectors from the "Business data only" and "No business data allowed" data groups. [Learn more](#)

Business data only

No business data allowed (Default)

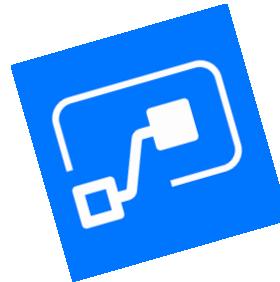
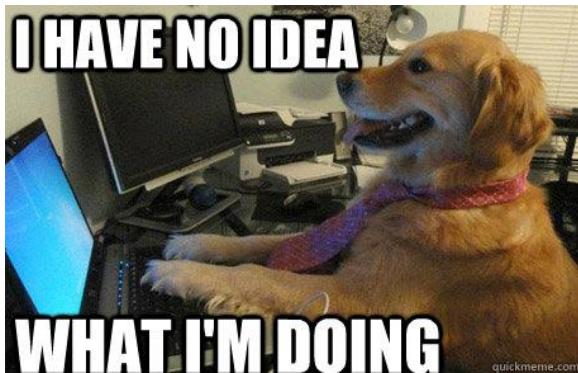
Notifications

- Flow suspended by an admin policy New account notification email 2min
- Flow suspended by an admin policy Add notes to a Dynamics CRM contact 2min
- Flow suspended by an admin policy Export Flow 1 2min
- Flow suspended by an admin policy Doqetalist tweets 2min
- Flow suspended by an admin policy Dynamics 365 button E1 2min

Show all activity

Where's the happy middle ground for Flow?

Dynamics 365 admins



Dynamics 365 devs

Lucas Alexander @lucas_js · 17h
Y'all are just going to drag/shame/coerce me into using Flow despite every bone in my body disliking it.

Joel Lindstrom @JoelLindstrom · 17h
Go with the Flow

Jonas Rapp @rappen

Following

A screenshot of a Twitter thread. The first tweet is from Lucas Alexander (@lucas_js) at 17 hours ago, saying "Y'all are just going to drag/shame/coerce me into using Flow despite every bone in my body disliking it." It has 2 replies, 2 likes, and a message icon. The second tweet is from Joel Lindstrom (@JoelLindstrom) at 17 hours ago, saying "Go with the Flow." It has 1 reply, 3 likes, and a message icon. The third tweet is from Jonas Rapp (@rappen). A "Following" button is visible on the right.

Replying to @JoelLindstrom @jukkan and 2 others

The Citizen Developer is my eternal enemy.

11:41 PM - 24 Aug 2017

2 Likes



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!



OSLO
26 AUG



