



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

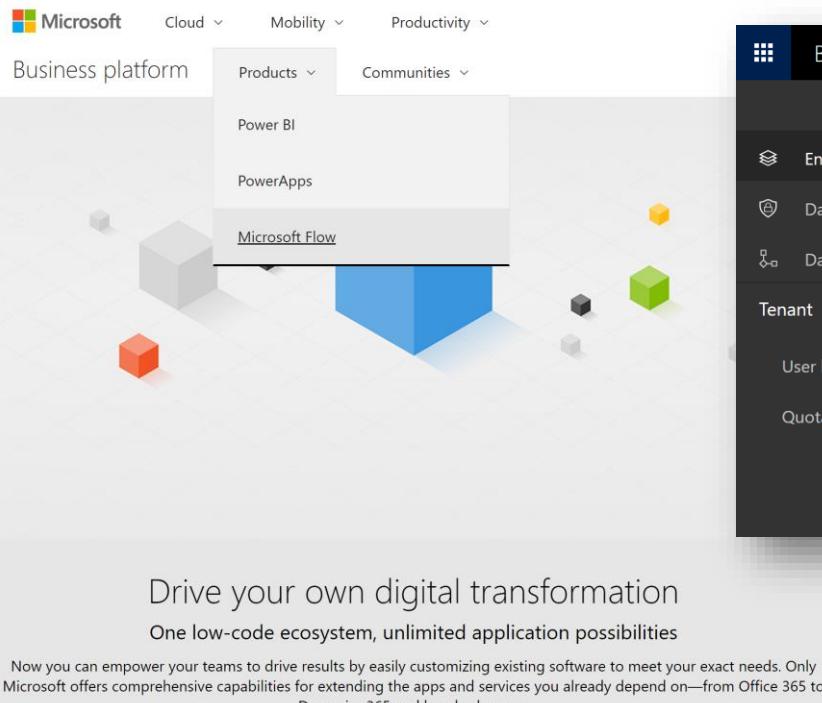
- Positioning Flow in the MS technology stack
- Flow vs. Workflow in Dynamics 365 CE: what are the main benefits & limitations of each
- Living with Flows: administrative capabilities and developer perspective

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/>



Microsoft Cloud Mobility Productivity

Business platform

Products Communities

Power BI

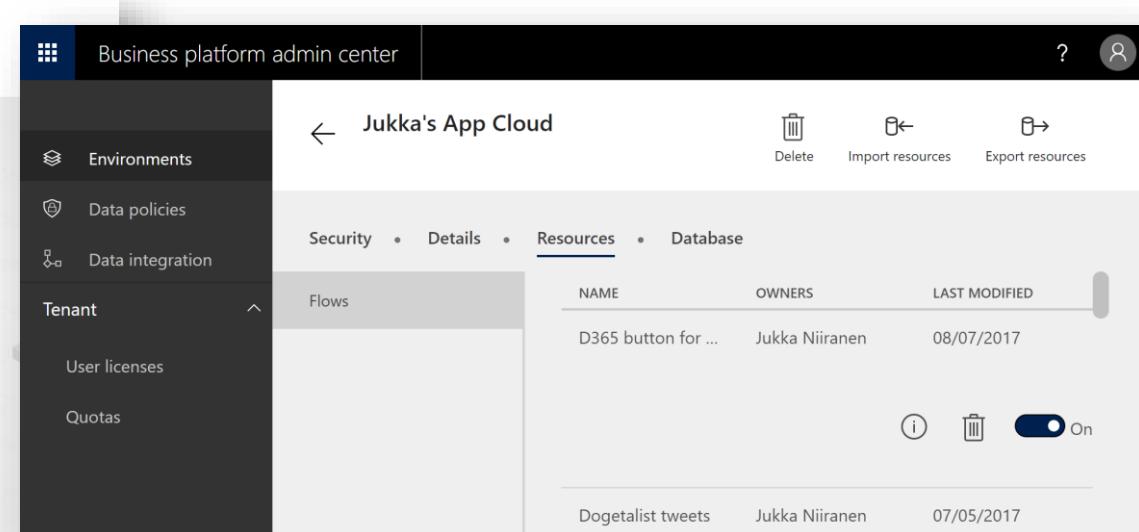
PowerApps

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

Environments

Data policies

Data integration

Tenant

User licenses

Quotas

← Jukka's App Cloud

Security Details Resources Database

Flows

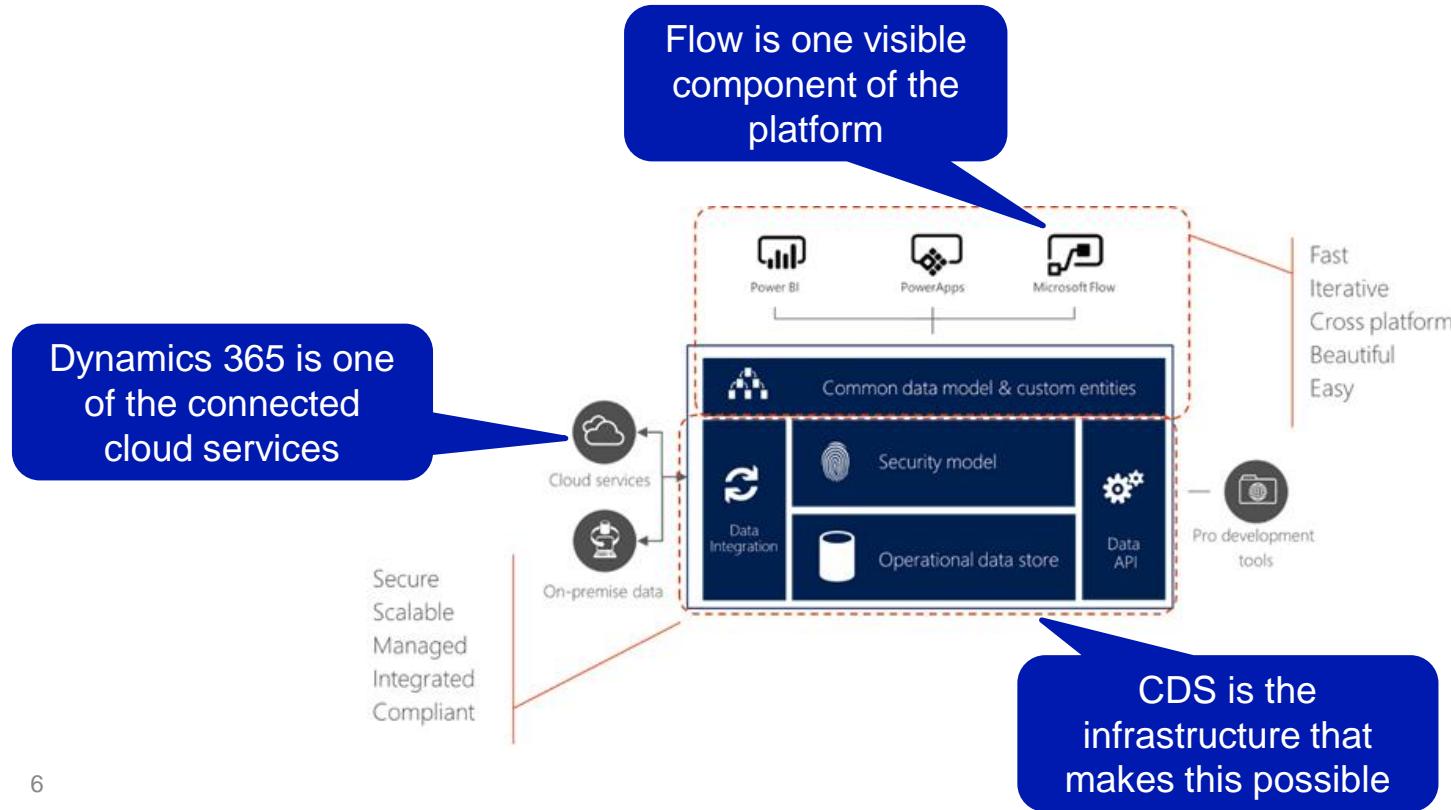
NAME	OWNERS	LAST MODIFIED
D365 button for ...	Jukka Niiranen	08/07/2017
Dogetalist tweets	Jukka Niiranen	07/05/2017

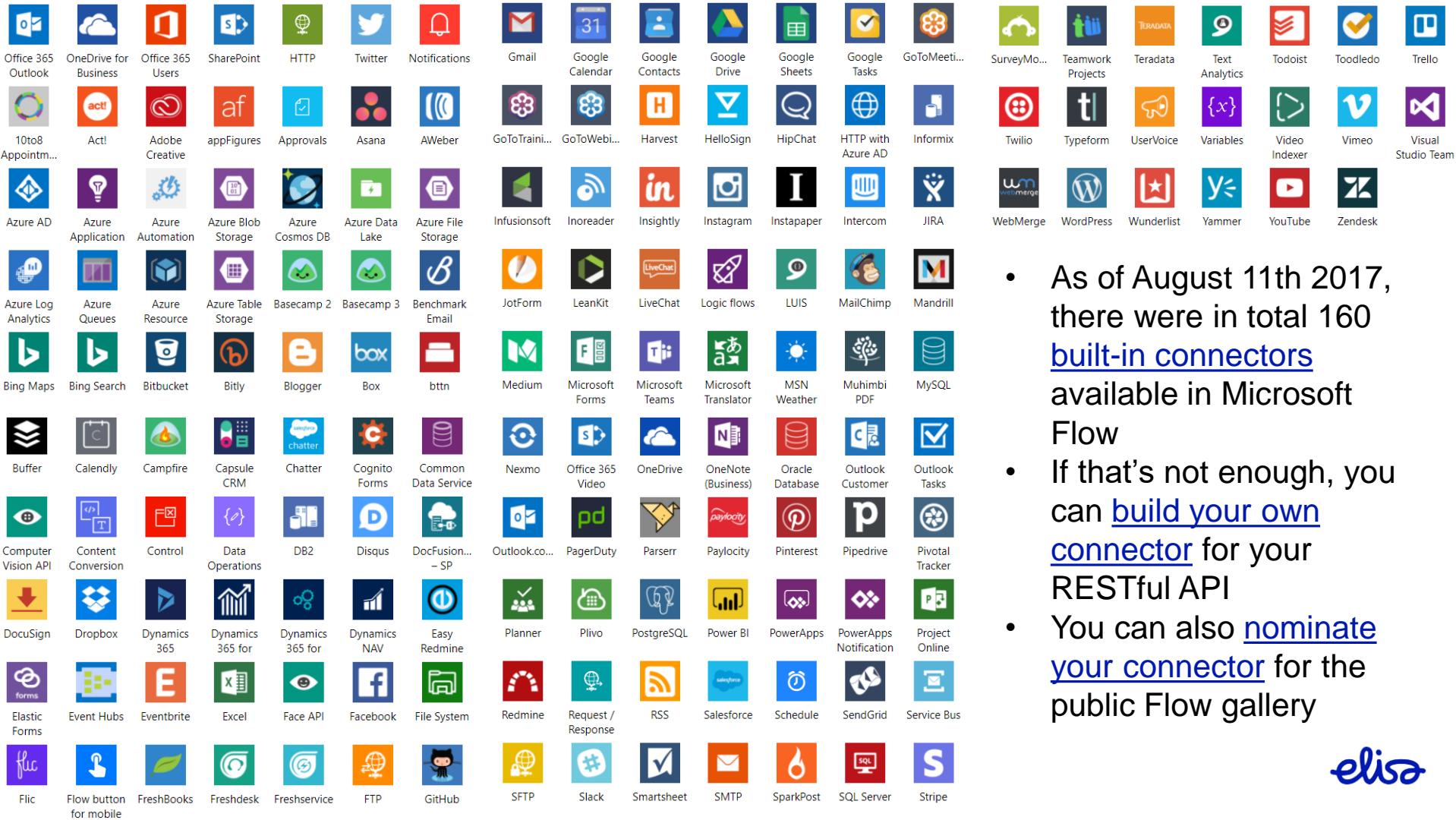
Delete Import resources Export resources

<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

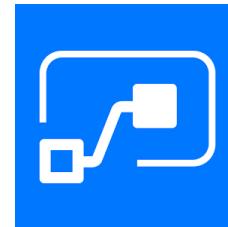
- “We have a business process requirement for automating a task within our CRM system”

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.
Long answer Required ...

+ Add question

2. Last name *

3. Company

4. Email address *

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:

Topic: New lead from Microsoft Forms

+ New step Save flow

Dynamics 365 Sales Leads 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.

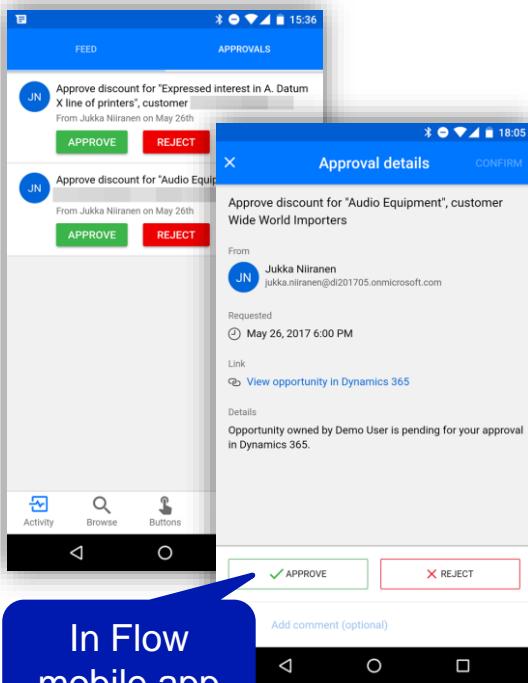
Item Link: [Opportunity](https://crm4.dynamics.com/main.aspx?etn=opportunity&pagetype=entityrecord&id=%7B%67D)

Add dynamic content [\[+\]](#)

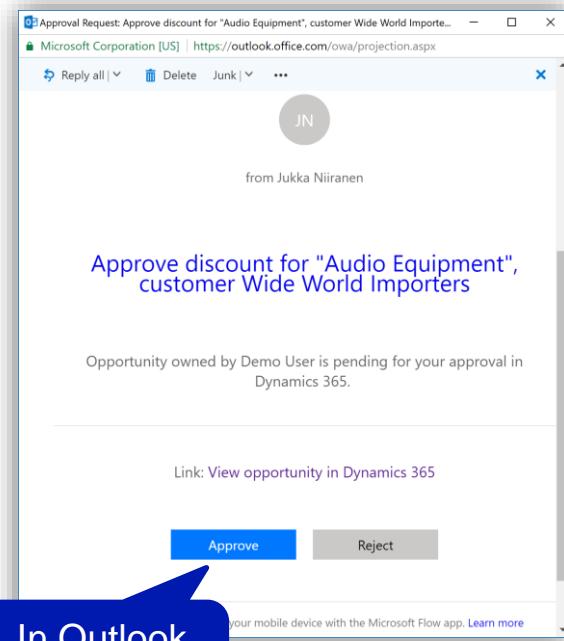
Item Link Description: View opportunity in Dynamics 365



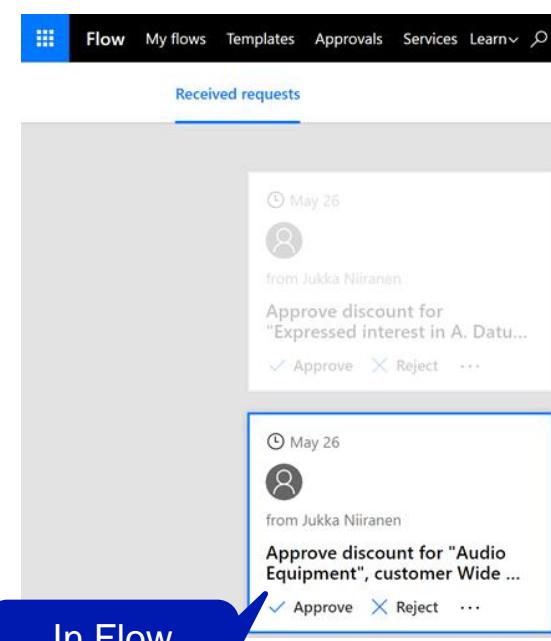
Approvals everywhere!



In Flow
mobile app



In Outlook
email



In Flow
web app

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!

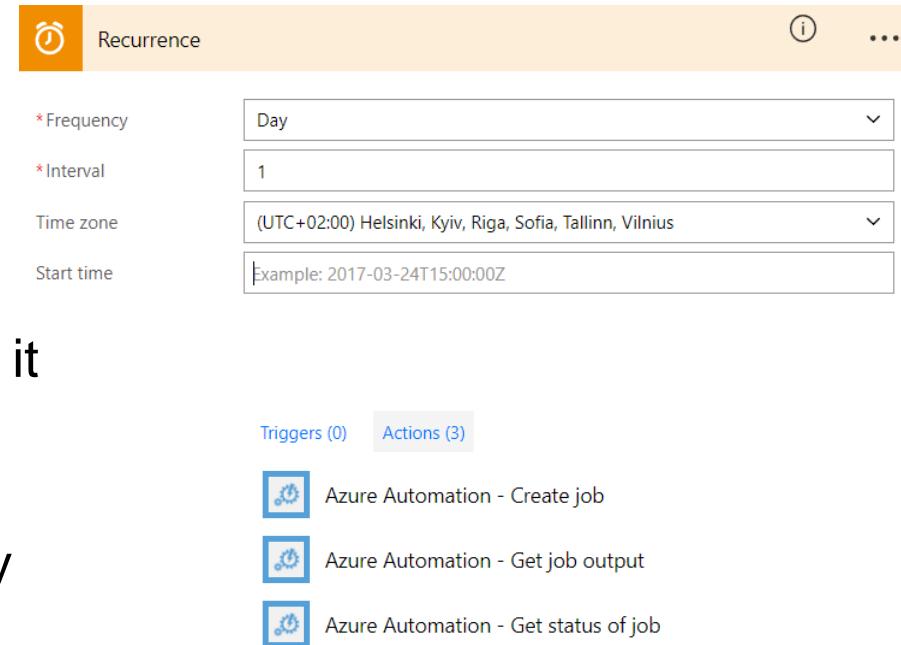
Add dynamic content

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



Recurrence

* Frequency: Day

* Interval: 1

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

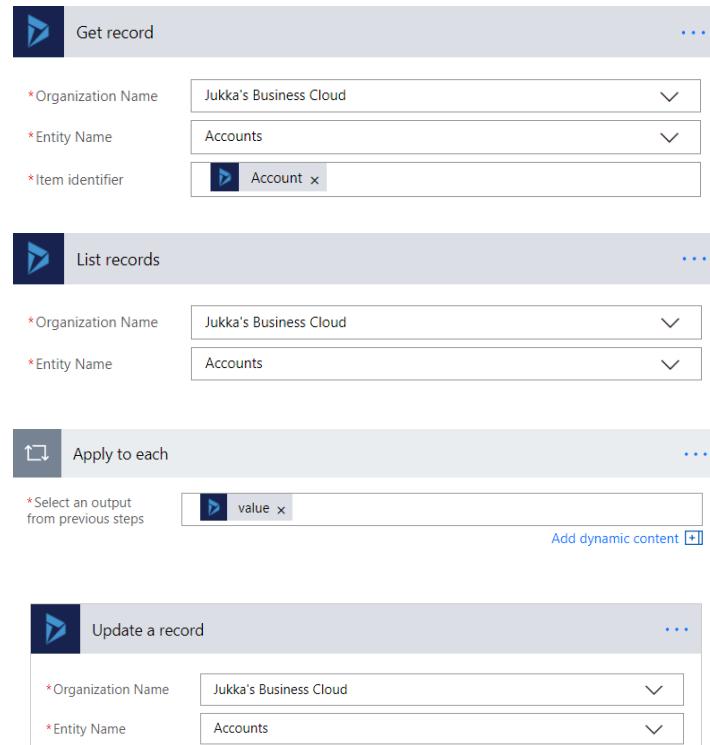
Start time: Example: 2017-03-24T15:00:00Z

Triggers (0) Actions (3)

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

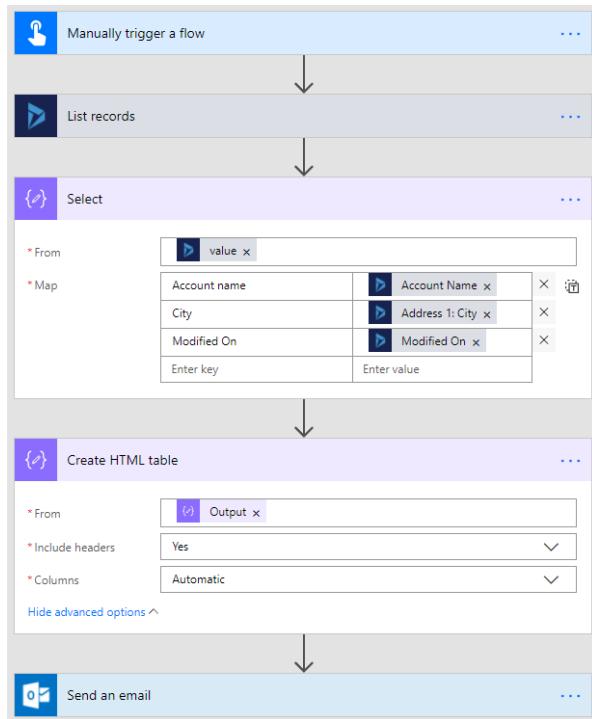
The Power of N

- 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

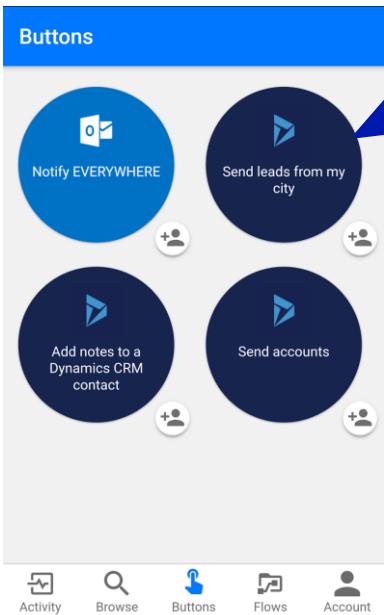


Emails with a dynamic list of records

- 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

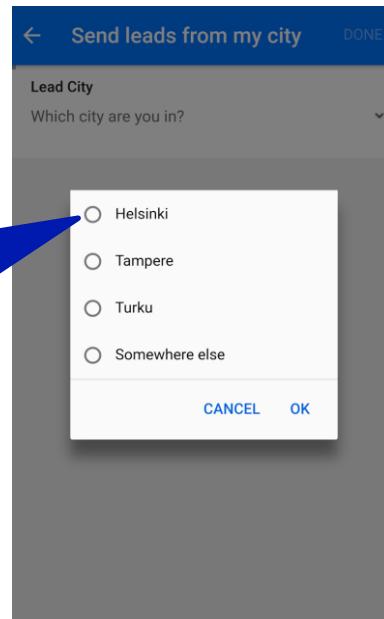


Retrieve Dynamics 365 data with a button



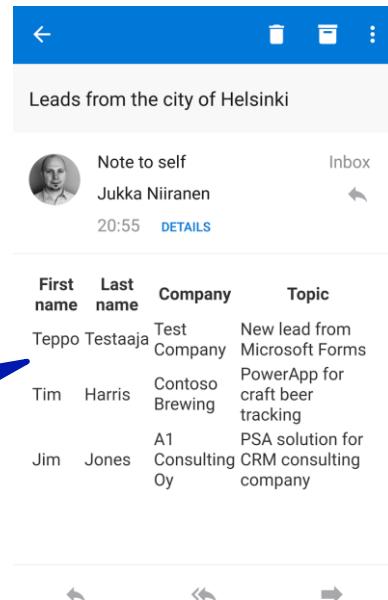
Trigger a Flow from mobile app button

Enter parameters, select "Done"



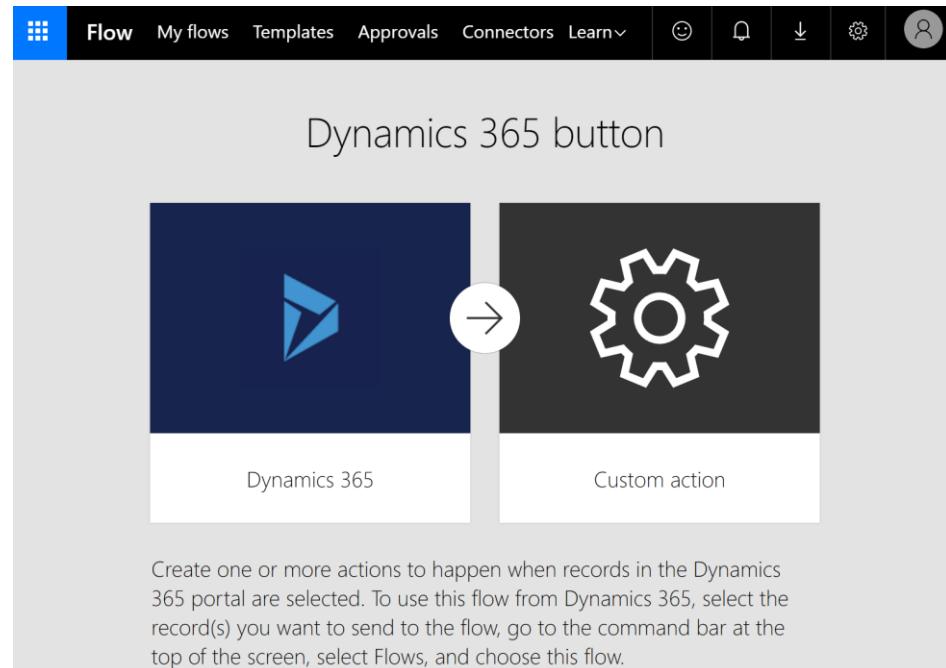
Use parameter to query records, create HTML table

You've got email



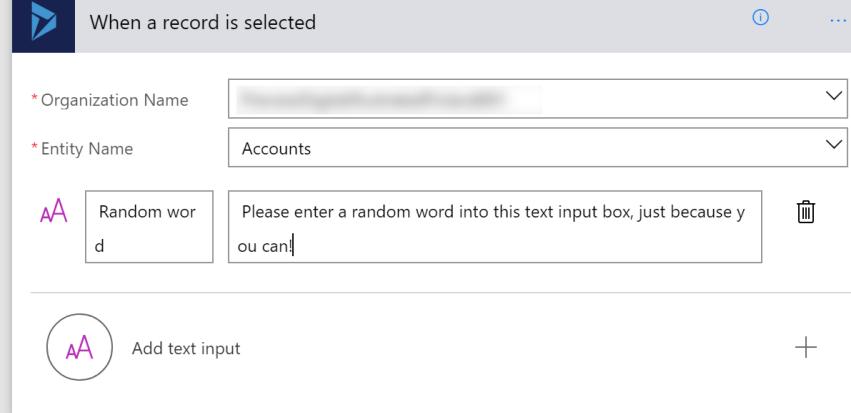
On demand automation for Dynamics 365

- 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



When a record is selected

* Organization Name: Accounts

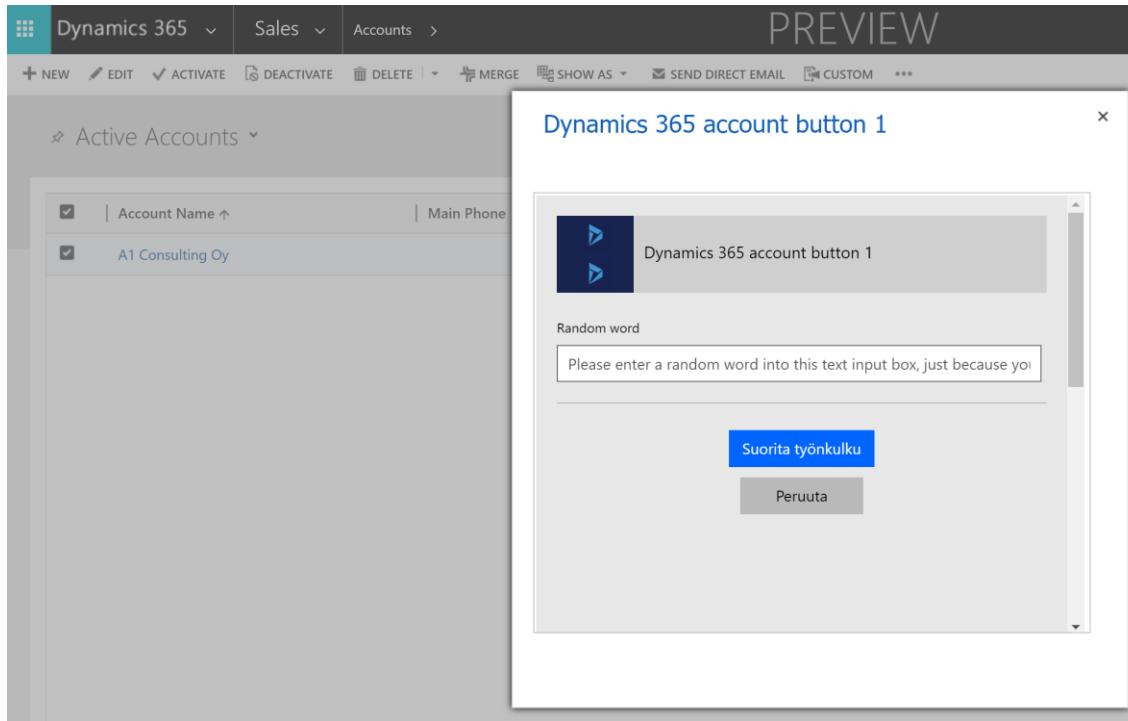
* Entity Name: Accounts

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

Add text input

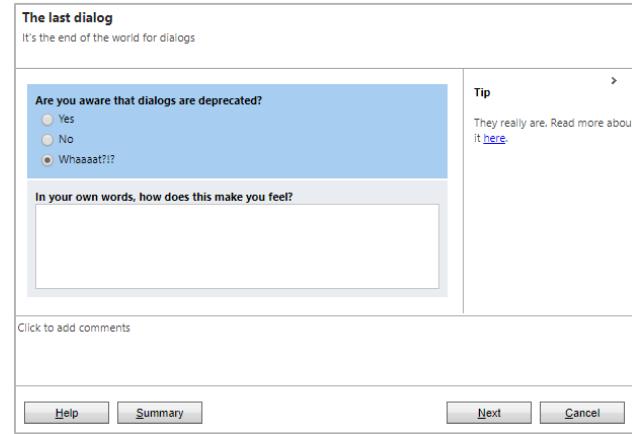
+ New step ✓ Save flow

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
 Whaaaaat!?!?

In your own words, how does this make you feel?
[Text input field]

Click to add comments

Help Summary Next Cancel



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



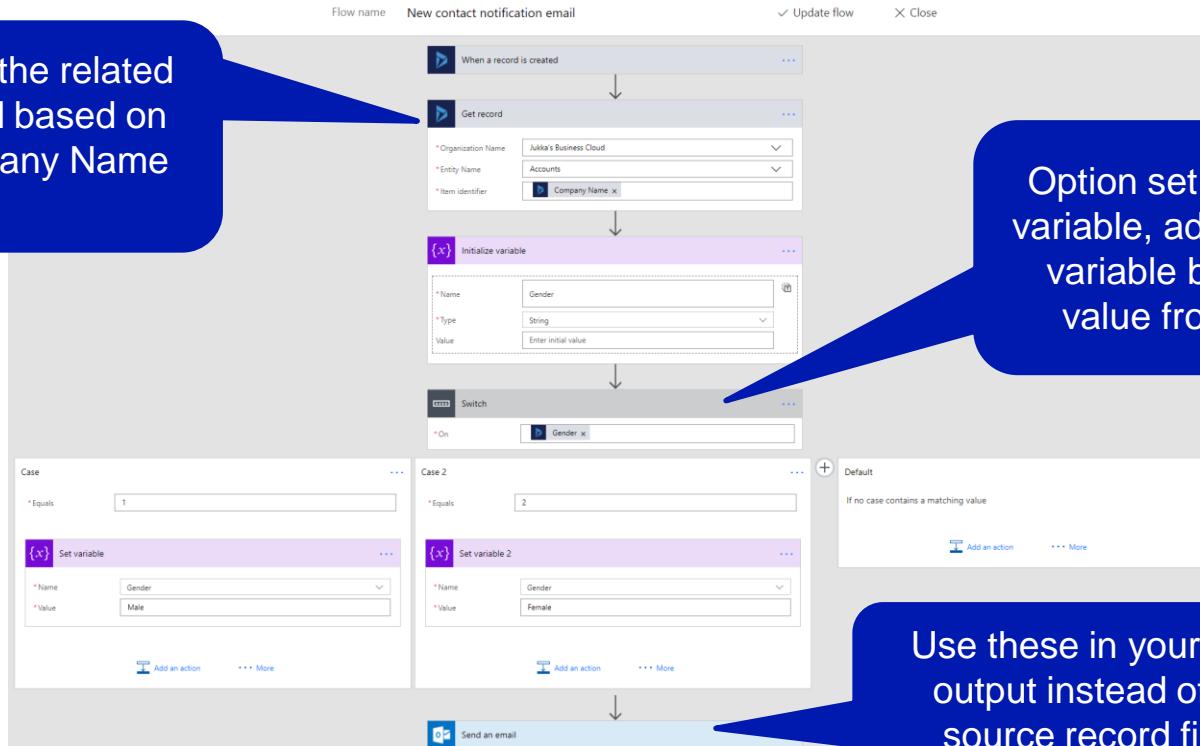
Jukka Niiranen
Today, 20:01
Jukka Niiranen ▾

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



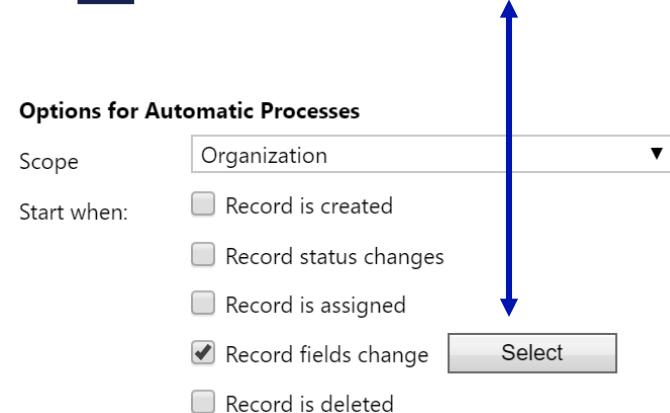
Option set: initialize a string variable, add switch case, set variable based on integer value from Gender field

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



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

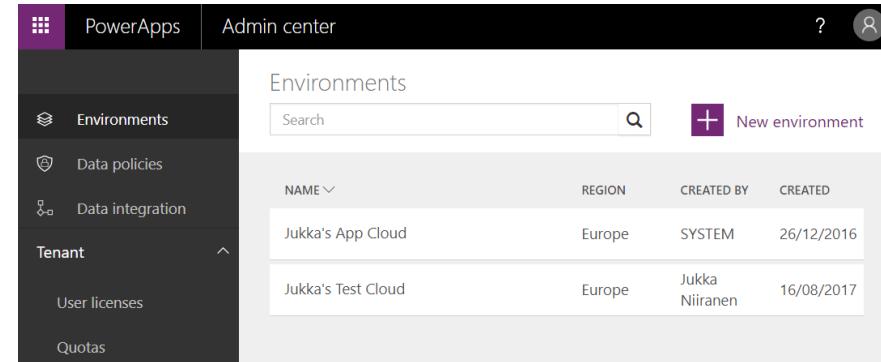
Workflow	Flow	Logic App
<ul style="list-style-type: none">• No separate license needed• “Unlimited everything”	<ul style="list-style-type: none">• License bundled with Dynamics 365<ul style="list-style-type: none">• D365 Apps = “Flow for D365”• D365 Plans = “Flow Plan 2”• Licensing is (in theory) specific 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 shows a table with two rows of data. The table columns are NAME, REGION, CREATED BY, and CREATED. The data rows are:

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

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	 

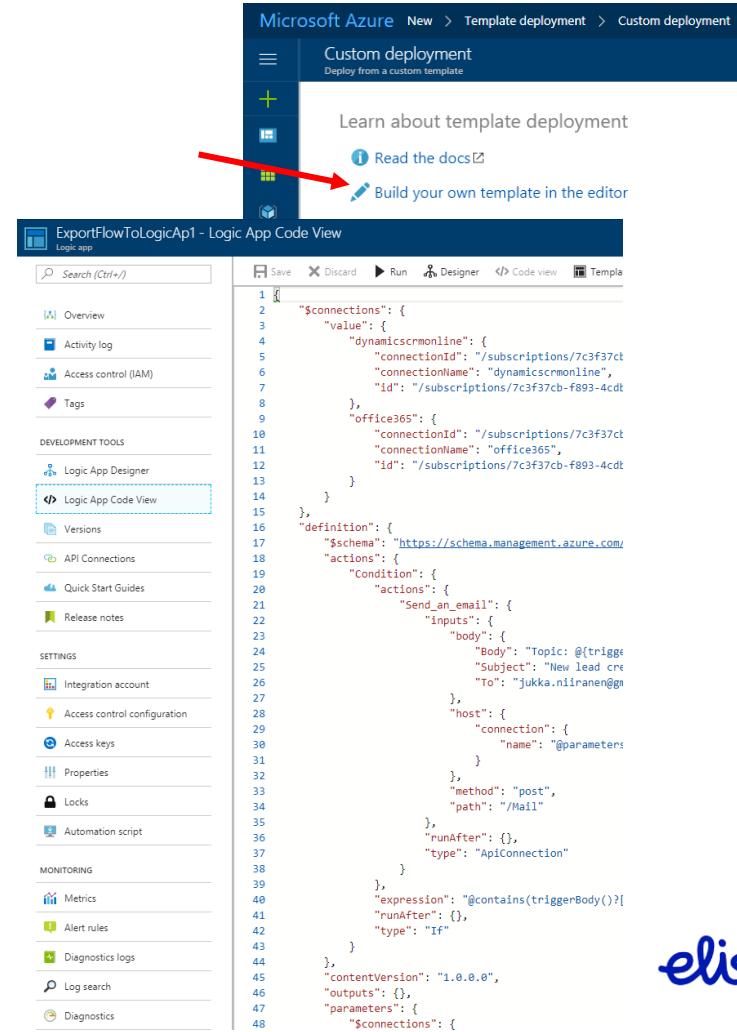
Related resources

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

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

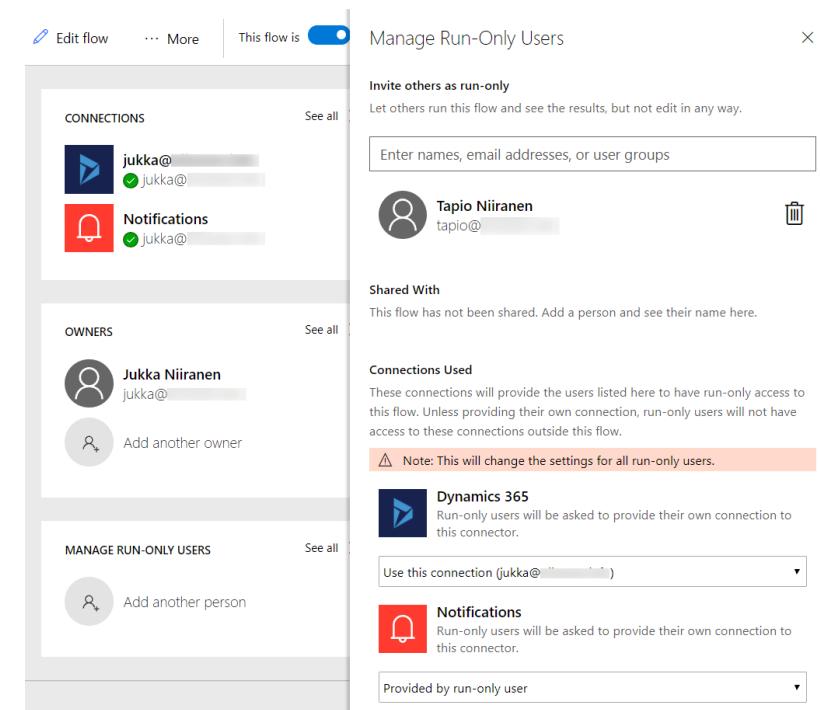


The screenshot shows the Microsoft Azure portal interface. At the top, the navigation bar includes 'New', 'Template deployment', and 'Custom deployment'. The main area is titled 'Custom deployment' with the sub-instruction 'Deploy from a custom template'. A red arrow points from the 'Read the docs' link to the 'Build your own template in the editor' button. Below this, a specific Logic App is shown in 'Code View' mode. The code editor displays a JSON template for a Logic App. The template includes sections for connections, definition, and actions. The 'connections' section defines two connections: 'dynamicscrmonline' and 'office365'. The 'definition' section specifies the schema and actions, including an 'Send an email' action with a 'trigger' and 'host' configuration. The 'actions' section contains an 'If' condition with an 'expression' and 'runAfter' logic. The 'parameters' section is also defined. The sidebar on the left lists various Logic App management options: 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  "$connections": {
2    "value": {
3      "dynamicscrmonline": {
4        "connectionId": "/subscriptions/7c3f37ct
5        "connectionName": "dynamicscrmonline",
6        "id": "/subscriptions/7c3f37cb-f893-4cd
7      },
8      "office365": {
9        "connectionId": "/subscriptions/7c3f37ct
10       "connectionName": "office365",
11       "id": "/subscriptions/7c3f37cb-f893-4cd
12     }
13   }
14 },
15 },
16 "definition": {
17   "$schema": "https://schema.management.azure.com/
18   "actions": {
19     "Condition": {
20       "actions": {
21         "Send_an_email": {
22           "inputs": {
23             "body": {
24               "Body": "Topic: @(trigger
25               "Subject": "New lead cre
26               "To": "jukka.niiranen@n
27             },
28             "host": {
29               "connection": {
30                 "name": "@parameters(
31               }
32             },
33             "method": "post",
34             "path": "/Mail"
35           },
36           "runAfter": {},
37           "type": "ApiConnection"
38         }
39       },
40       "expression": "@contains(triggerBody())?[
41         "runAfter": {},
42         "type": "If"
43       }
44     },
45     "outputs": {},
46     "parameters": {
47       "$connections": {
48         "value": {
49           "dynamicscrmonline": {
50             "connectionId": "/subscriptions/7c3f37ct
51             "connectionName": "dynamicscrmonline",
52             "id": "/subscriptions/7c3f37cb-f893-4cd
53           },
54           "office365": {
55             "connectionId": "/subscriptions/7c3f37ct
56             "connectionName": "office365",
57             "id": "/subscriptions/7c3f37cb-f893-4cd
58           }
59         }
60       }
61     }
62   }
63 }
```

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

- Add
- Dynamics 365
- SharePoint
- OneDrive for Business

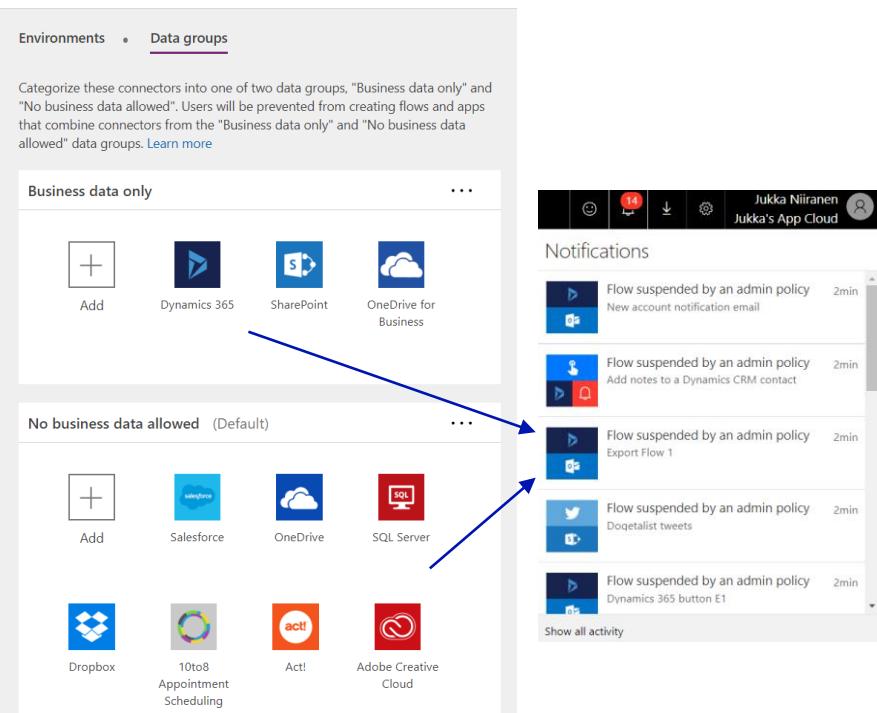
No business data allowed (Default)

- Add
- Salesforce
- OneDrive
- SQL Server
- Dropbox
- 10to8 Appointment Scheduling
- Act!
- Adobe Creative Cloud

Notifications

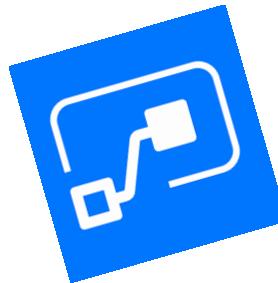
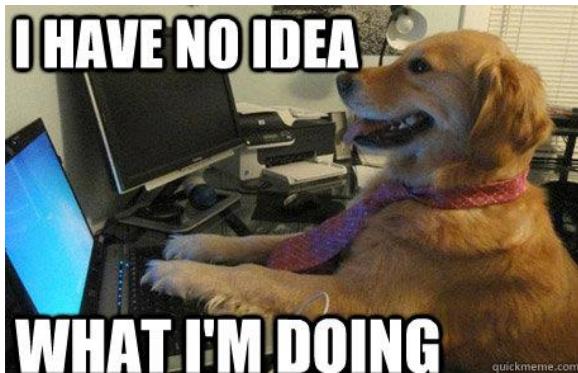
- Flow suspended by an admin policy New account notification email 2min
- Flow suspended by an admin policy Add notes to a Dynamics CRM contact 2min
- Flow suspended by an admin policy Export Flow 1 2min
- Flow suspended by an admin policy Doqetalist tweets 2min
- Flow suspended by an admin policy Dynamics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

2 2 2 2

Joel Lindstrom @JoelLindstrom · 17h
Go with the Flow

1 1 3 3

Jonas Rapp @rappen

Following

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



