

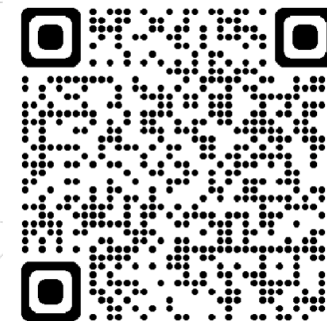
# DATA-DRIVEN ALERTS

*„Make your data shine!“*

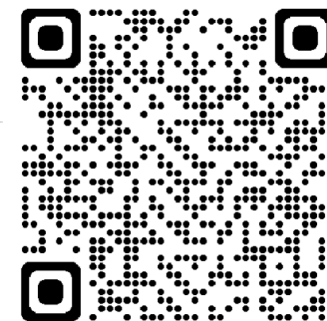
2023

# SPEAKER

LINKEDIN



TWITTER



**ŠTĚPÁN REŠL**



# EVENT SPONSORS, THANKS!!!

## GOLD

---



**span**



**TRIA**

## SILVER

---

**::: bonsai.tech**

## BRONZE

---



GETHYNELLIS.COM



**unitfly**

**DATA SENSE**  
WHERE IT SPEAKS BUSINESS



**comminus**  
FOR EVERY STEP OF THE WAY, THERE'S DATA



**redgate**



**infobip**

**BUG**

 **SSUGCRO**

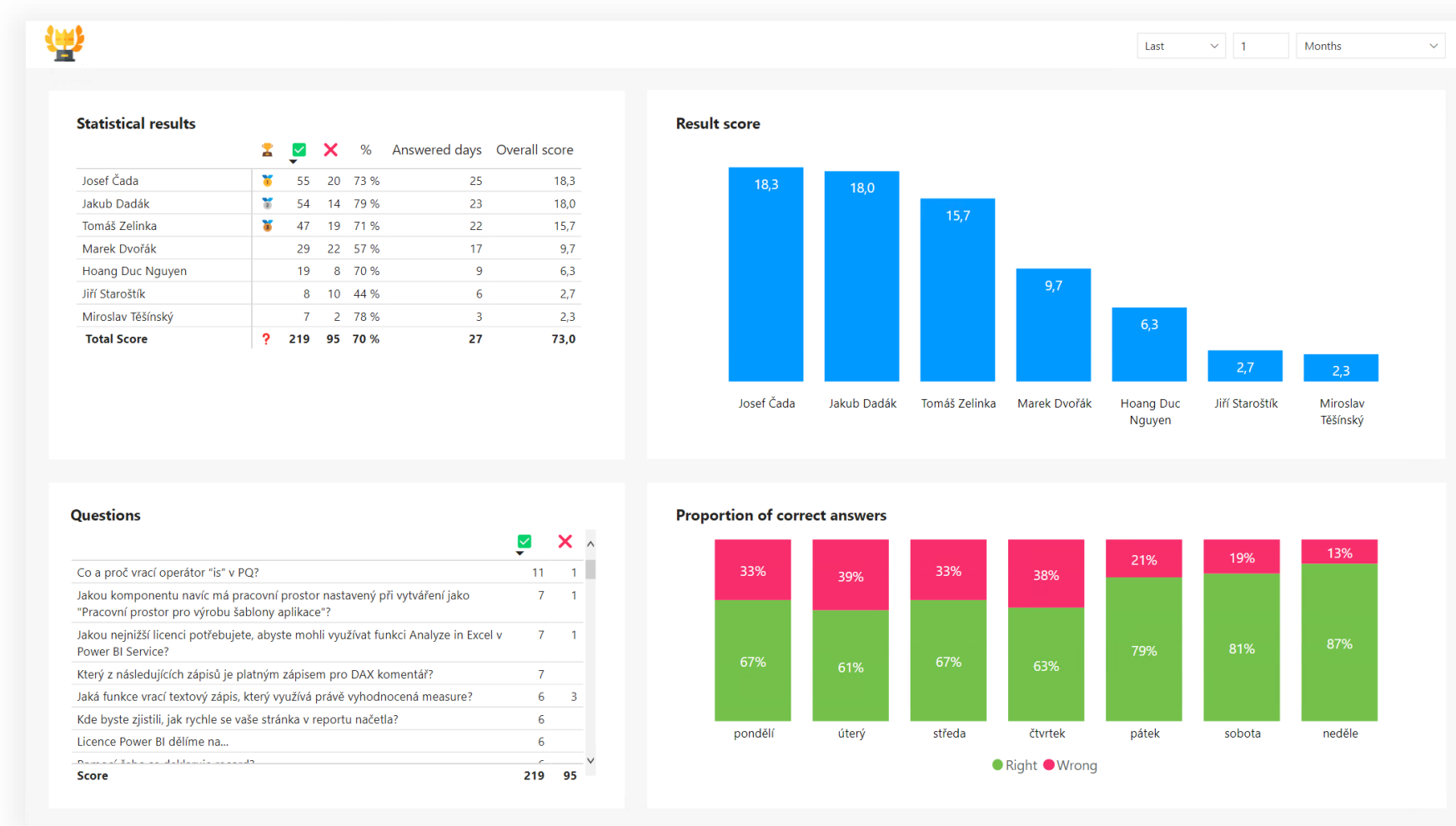
**DATA**  
SATURDAYS



**Story**


# We have a report...


And it is full of a data. Data that would be better served directly in the hands of users.




# Adaptive Card

Data from the report can reach us, for example, in Teams

 **Power Automate**



### POWER BI CARDS - WEEKLY RESULTS

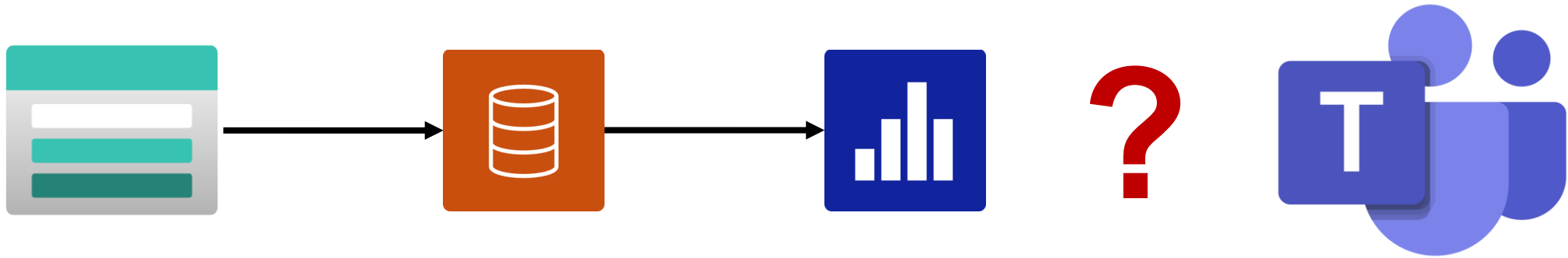


Week - Year	3 - 2022
Rank	1 z 9
Score	3 z 7
Success Rate	42.9%

Let's go practise!

# But how??

What possibilities do we actually have to get the selected information to the users?



# Type of Alerts



# Type of “Alerts”

When Power BI sends us a message, it is somehow "alerting".



**ALERTS  
/  
OUTAGES**



**SUBSCRIPTION  
/  
FAIL MESSAGES**

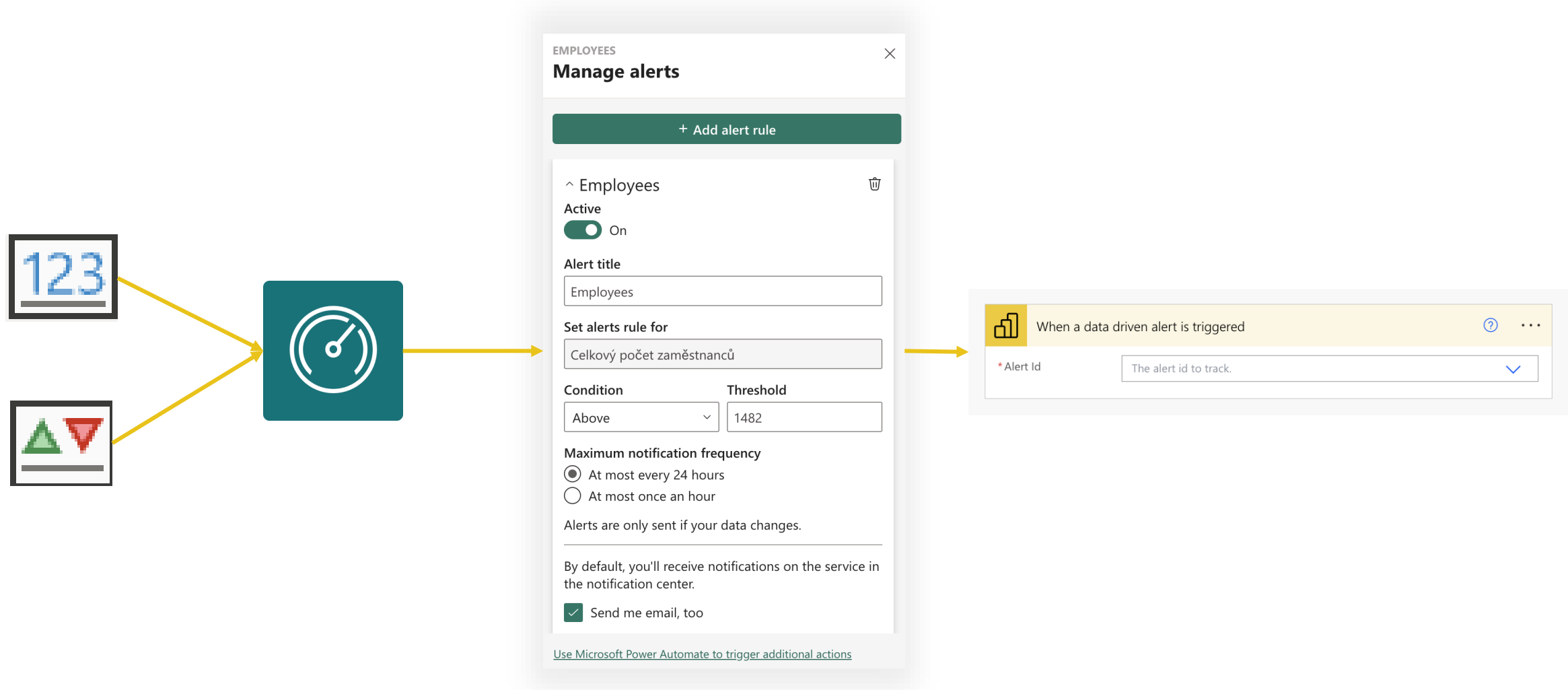


**REST API**

**FULLY NATIVE AND INTEGRATED**

# Alerts from Dashboard

Although these alerts can be used, they are very limited



# Outages...

This notification looks like this...



Power BI

## We're working to fix a problem with data refresh

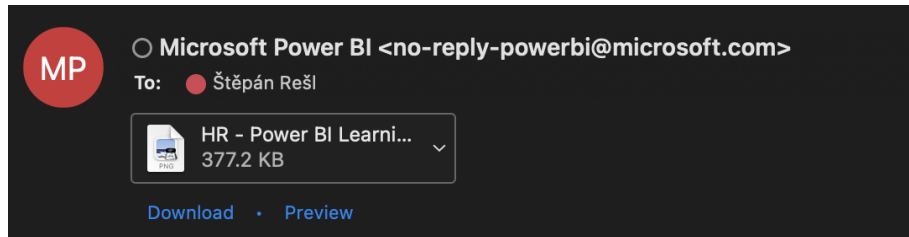
We've detected an issue with Power BI data refresh scenarios that may affect your tenant's resources. As a result, your tenant may experience datasets not refreshing as expected. Our engineers are investigating the problem, and we'll let you know when it's fixed.

If you have questions, please [visit the Power BI support page](#).

---

# Subscription

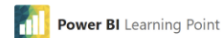
Email again. Fortunately, RLS also supports this



Power BI

## Learning Point - Úvod

[Go to report >](#)



[info@databrothers.cz](mailto:info@databrothers.cz) | +420 774 601 702 | ENGLISH  >

**Hledáte správné školení pro sebe či pro své kolegy?**  
Máme toho pro vás spoustu. Stačí si vybrat.

**Vyberte si podle své role**

- UŽIVATEL**  
Zná základní strukturu Power BI. Umí ovládat svoje reporty, sdílet reporty s kolegy a exportovat data z reportů.
- TVŮRCE MODELU**  
Napojuje se na různé zdroje dat a automatizuje načítání. Přípravuje datové modely, ovládá jazyk M.
- TVŮRCE REPORTU**  
Připravuje reporty, publikuje je, nastavuje Power BI Service a zná jeho komponenty. Zná storytelling, používá DAX.
- DATOVÝ ANALYTIK**  
Kombinace tvůrce modelů a reportů s mnohem větším přístupem do všech oblastí Power BI konzultant/vyvoje.
- VYVOJÁŘ PREMIUM**  
Má dostupné Power BI Premium a umí využít všechny jeho funkcionality.
- IT A BEZPEČNOST**  
Administrátor Power BI. Nastavuje, sleduje, vyhodnocuje stav celého Power BI ekosystému.

[PRO VŠECHNY ROLE](#)

**Vyberte si z našich produktů**

**Podle úrovně**

- ZÁKLADNÍ AKADEMIE**  
Základní dovednosti a orientace v Power BI. Tvorba reportů end-to-end (načítání dat, transformace, vizualizace, PBI Service).
- POKROČILÁ AKADEMIE I ANALÝZA**  
Power Query (M language) v Power BI. Příprava a transformace dat, ETL, způsoby zabezpečení (RLS, OLS, MS licence, atd).
- POKROČILÁ AKADEMIE II REPORTING**  
Vizualizace a reporting v Power BI. Strukturování reportu, data storytelling, pokročilý DAX, PBI Service, atd.

**Podle specializace**

- POWER BI PRO MANAŽERY**  
Business potencial Power BI. Výhody oproti jiným nástrojům, ukádky reportů, integrace, automatizace firemních procesů, atd.
- DATA STORYTELLING**  
Umění vyprávět relevantní a jasné příběhy pomocí dat v Power BI. Využití vizualizací a analýzy ke komunikaci stěžejních informací.
- POWER BI GOVERNANCE**  
Demonstrace Power BI procesů. Zajištění rychlé, bezpečné a dlouhodobé dodávky kvalitního obsahu definovaným uživatelům.

[POROVNAT VŠECHNY PRODUKTY](#)

**Vyhledejte téma**

Search

Nalezl jsem u nás **338** výsledků na zadané téma.

**Seznam témat**

- Power BI Datamarts
- Power BI Metrics
- Power BI Goals - Novinky Q3 - Q4 2022
- Power BI Goals
- Zdroje BI
- Výčetní Power Apps v Power BI Report
- Vlastní mapové podklady
- Synoptic Panel od OKViz
- Streamované vizuály
- Scatter Plots
- Pureviz Infographic
- Inteligentní rozbor
- Insights

[ZOBRAZIT](#)

# Type of “Alerts”

When Power BI sends us a message, it is somehow "alerting".



**ALERTS  
/  
OUTAGES**



**SUBSCRIPTION  
/  
FAIL MESSAGES**

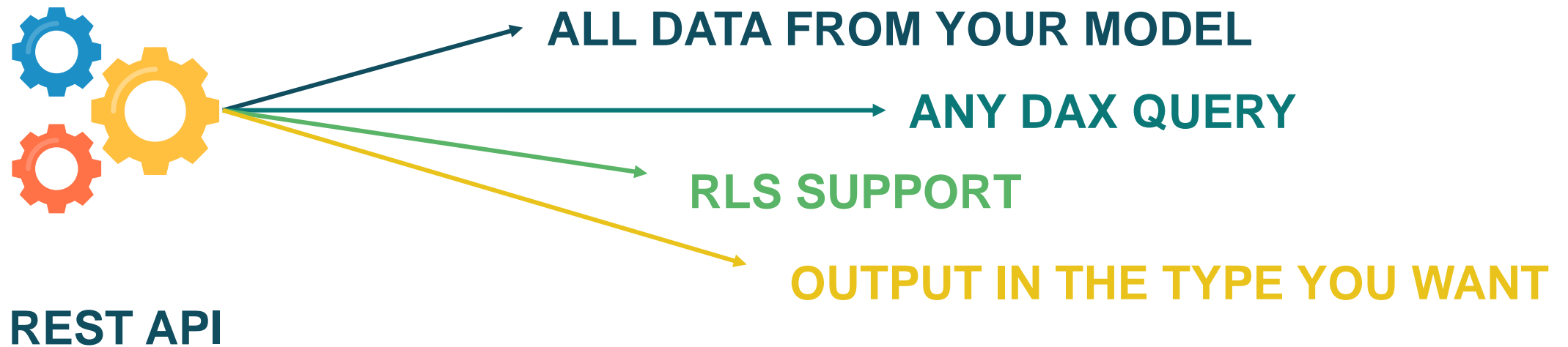
**BUT IMMUTABLE...**



**REST API**

# Let's keep everything under control

When Power BI sends us a message, it is somehow "alerting".



# Don't stop with just Alerts!

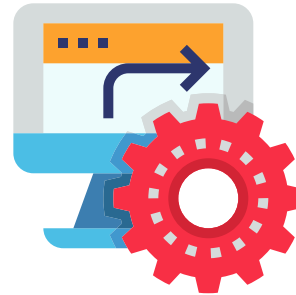
REST API can help us with much more!



Export  
Data



Testing  
Datasets



Automize  
Agenda By  
Data



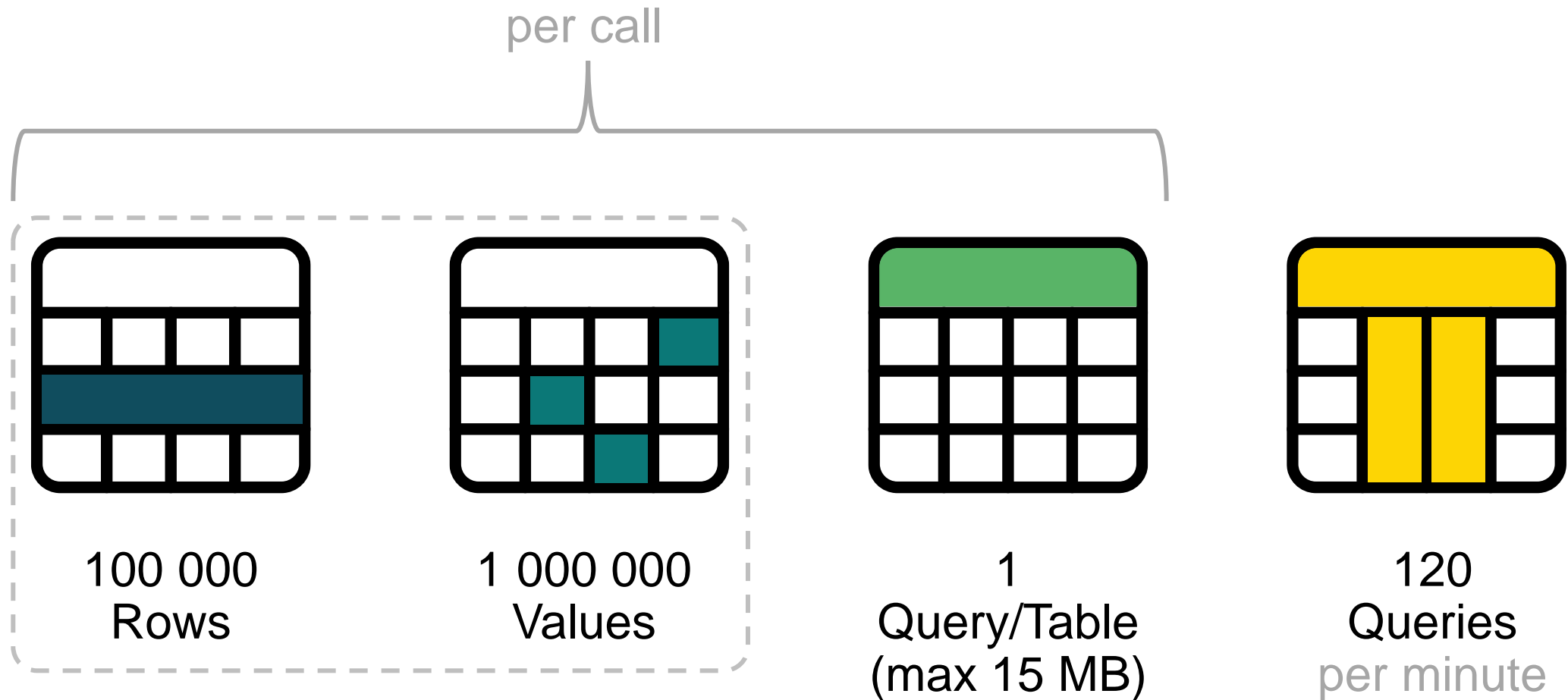
Bring Data  
Closer to  
Users

# **LIMITATIONS**



# Endpoint Limitation

Choosing a chart may seem like a chore... but it's not!



THEY CAN BE BYPASSED

# **ENVIROMENT PREPARING**

# Tenant Settings

What needs to be set up to use this API.

## Dataset Execute Queries REST API

*Enabled for the entire organization*

Users in the organization can query datasets by using Data Analysis Expressions (DAX) through Power BI REST APIs.

☒ Enabled

Apply to:

☒ The entire organization

☐ Specific security groups

☐ Except specific security groups

Apply

Cancel

## Allow service principals to use Power BI APIs

*Enabled for the entire organization*

Web apps registered in Azure Active Directory (Azure AD) will use an assigned service principal to access Power BI APIs without a signed in user. To allow an app to use service principal authentication its service principal must be included in an allowed security group. [Learn more](#)

☒ Enabled

Service principals can use APIs to access tenant-level features controlled by Power BI service admins and enabled for the entire organization or for security groups they're included in. You can control access of service principals by creating dedicated security groups for them and using these groups in any Power BI tenant level-settings. [Learn more](#)

Apply to:

☒ The entire organization

☐ Specific security groups (Recommended)

☐ Except specific security groups

Apply

Cancel

# Access Type

Not everything is always the same! So you need to think carefully.



**USER**



**SERVICE  
PRINCIPAL**

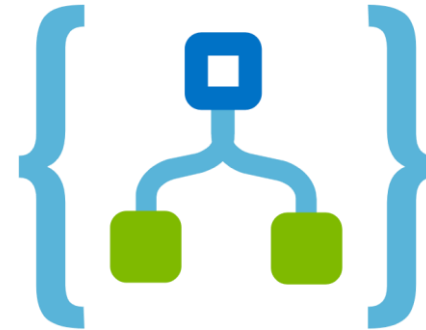
\* DOESN'T SUPPORT DATASETS WITH RLS

# Native callers

Let's look for something that can work directly with this endpoint.




Power  
Automate



Logic  
Apps

# HTTP request

Native but paid...

 oAuth-token

\* Method

POST

\* URI

https://login.microsoftonline.com/08744604-44f5-451a-81b2-2b47618aee96/oauth2/token

Headers

Content-Type	application/x-www-form-urlencoded	✕	📎
Enter key	Enter value		

Queries

Enter key	Enter value	📎
-----------	-------------	---


Body

grant\_type=client\_credentials&  
client\_id= clientID ✕ &  
client\_secret= clientSecret ✕ &  
resource=https://analysis.windows.net/powerbi/api

Cookie

Enter HTTP cookie

Show advanced options ▾

 daxQuery

\* Method

POST

\* URI

https://api.powerbi.com/v1.0/myorg/datasets/ dataset ✕  
/executeQueries

Headers

Content-Type	application/json	✕	📎
Authorization	fx concat(...) ✕	✕	
Enter key	Enter value		

Queries

Enter key	Enter value	📎
-----------	-------------	---

Body

{  
 "queries": [  
 {  
 "query": "EVALUATE VALUES( table ✕ )"  
 }  
 ],  
 "serializerSettings": {  
 "includeNulls": false  
 }  
}

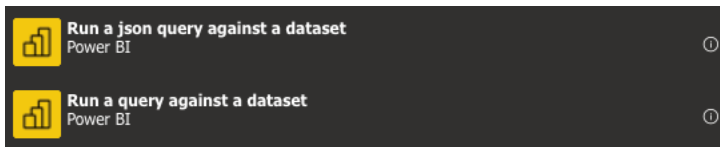
Cookie

Enter HTTP cookie

Show advanced options ▾

# A better way to query this endpoint!

It is part of the licenses for tools of the O365 family. (So free)



**Run a json query against a dataset** ...

\* Workspace

\* Dataset

\* Specification

Connected to stepan.resl@dataprothers.cz. [Change connection.](#)

**Run a query against a dataset** ...

\* Workspace

\* Dataset

\* Specification Query text

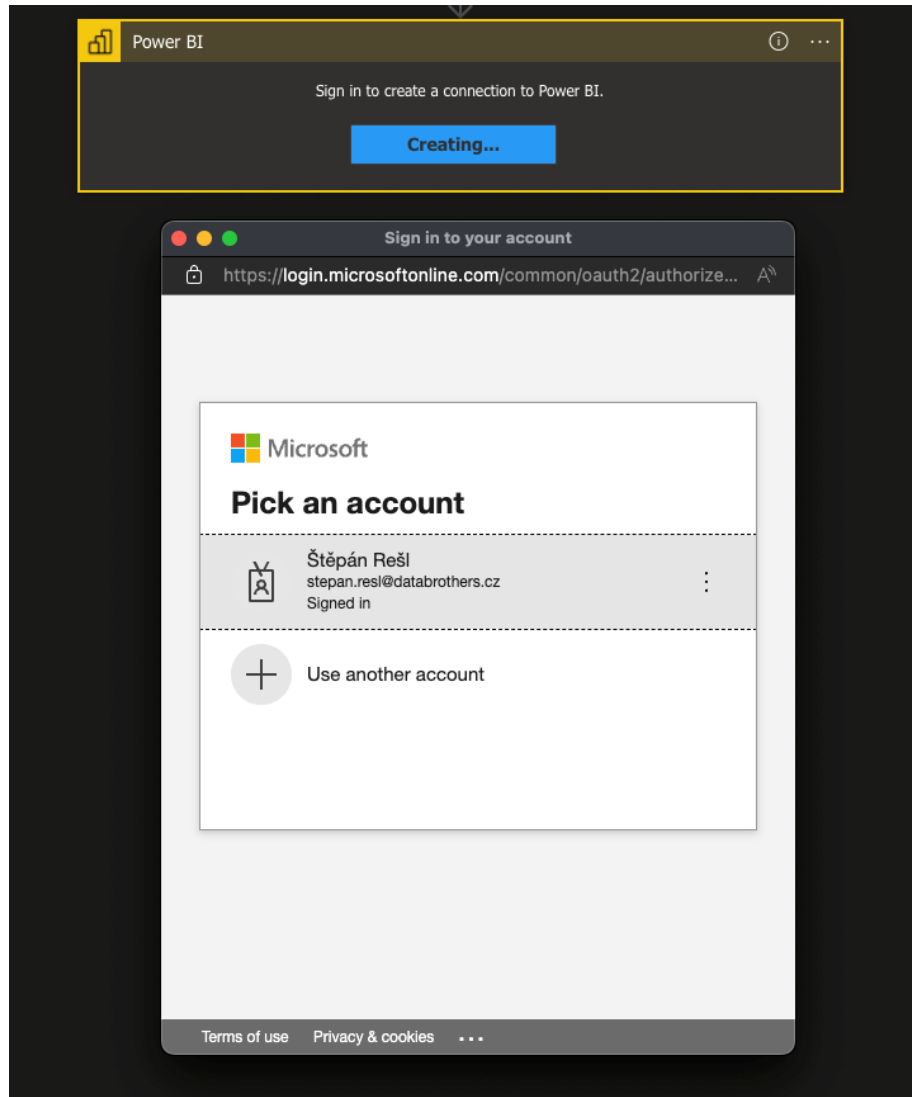
Specification Nulls included

Specification Impersonate user

Connected to stepan.resl@dataprothers.cz. [Change connection.](#)

# Simple login

A very straight forward way to log in.

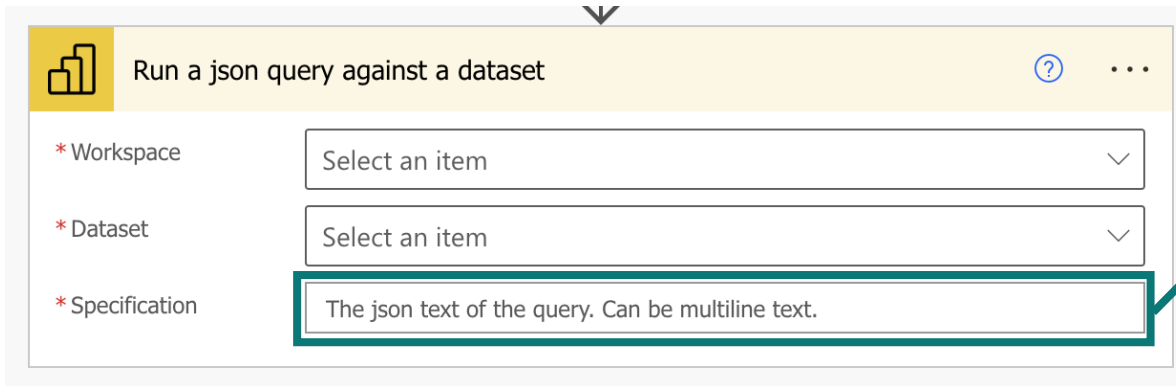


```
{
  "inputs": {
    "host": {
      "connection": {
        "name": "@parameters('$connections')['powerbi']['connectionId']"
      }
    },
    "method": "post",
    "body": {
      "query": "EVALUTATE 'Employees'",
      "serializerSettings": {
        "includeNulls": false
      },
      "impersonatedUserName": "josef.cada@dataprothers.cz"
    },
    "path": "/v1.0/myorg/groups/@{encodeURIComponent('c88c00e0-a353-45c3-83b8-
db68685e0046')}}/datasets/@{encodeURIComponent('71850a1e-ae97-41b0-85e1-02b1e9fead29')}}/executeQueries",
    "queries": {
      "pbi_source": "powerAutomate"
    }
  }
}
```



# The first, more complicated option

It requires all internal requirements to be set directly in the transmitted body




The screenshot shows a web interface titled "Run a json query against a dataset". It features three input fields: "Workspace" and "Dataset", both with "Select an item" placeholder text and dropdown arrows. The "Specification" field is highlighted with a red border and contains the text "The json text of the query. Can be multiline text.". A green arrow points from this field to a JSON code block on the right.

```
{
  "queries": [
    {
      "query": "EVALUATE VALUES('Employees')"
    }
  ],
  "serializerSettings": {
    "includeNulls": false
  }
}
```

# A simpler option

Just click on the options and complete the DAX query

 Run a query against a dataset ? ...

\* Workspace  ▼  
'Workspace' is required.

\* Dataset  ▼  
'Dataset' is required.

\* Query text   
'Query text' is required.

Nulls included  ✓

Impersonate user

[Hide advanced options](#) ^

EVALUATE  
lastWeek

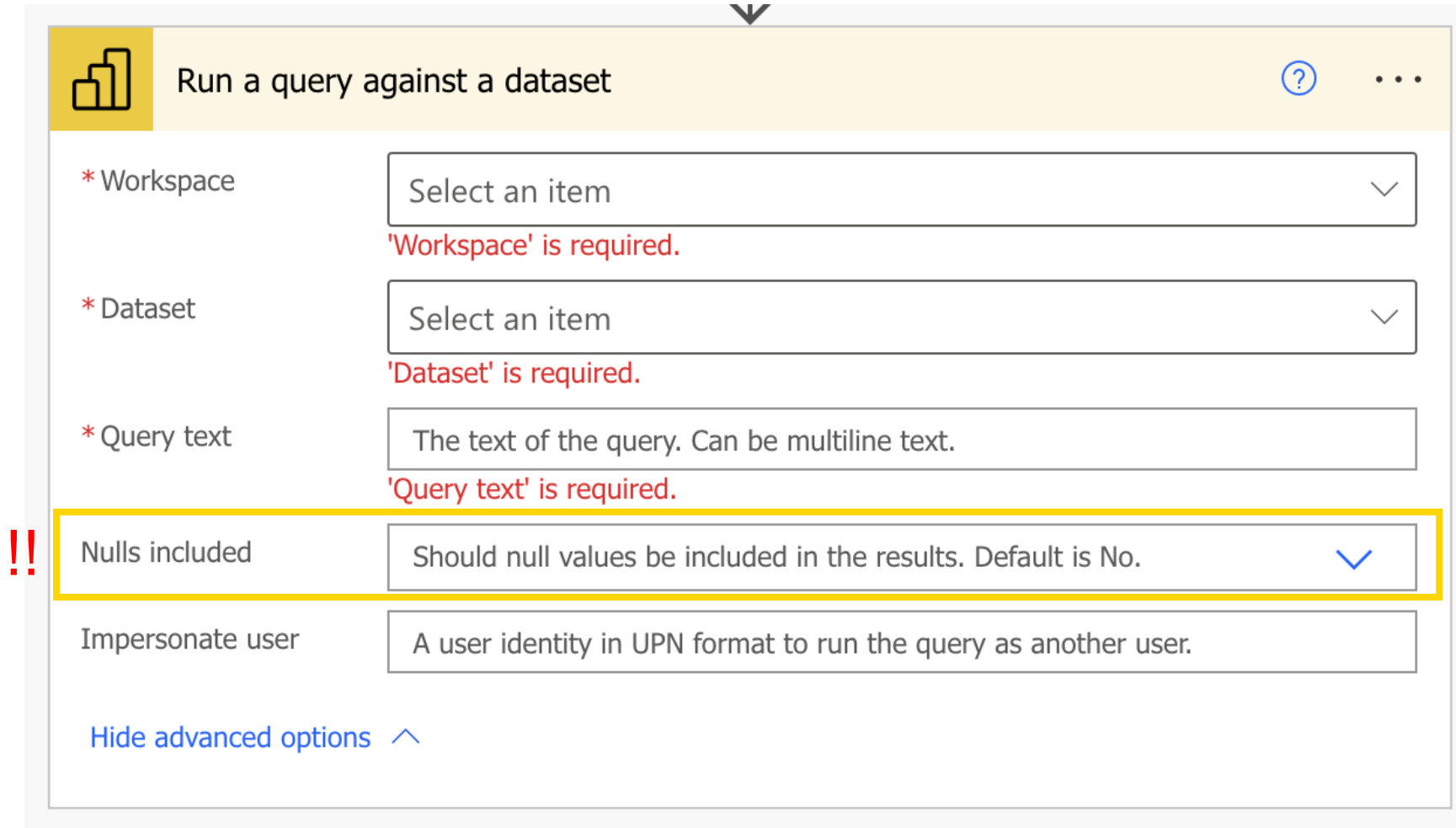
```
EVALUATE  
ADDCOLUMNS (  
    lastWeek,  
    "@forename", RELATED ( 'Employees'[Forname] )  
)
```




```
DEFINE  
    VAR _t =  
        ADDCOLUMNS (  
            SUMMARIZE ( 'Employees', [Forname] ),  
            "@counter", CALCULATE ( COUNTROWS ( pbiCardResults ) )  
        )  
    VAR _sum =  
        SUMX ( _t, [@counter] )  
EVALUATE  
{ _sum }
```


```
EVALUATE  
TOPNSKIP ( 2, 3, lastWeek, lastWeek[Index], ASC )
```


# Including RSL

But watch out! It's not like you can impersonate someone else with READ rights. Only if you have WRITE rights




 Run a query against a dataset  


\* Workspace    
'Workspace' is required.

\* Dataset    
'Dataset' is required.

\* Query text   
'Query text' is required.

!! **Nulls included**  

Impersonate user

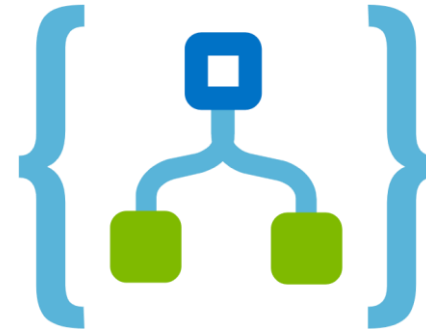
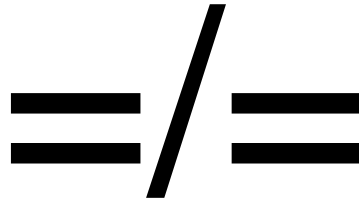
[Hide advanced options](#) 

# Do you think they are the same?

YES but also NO! The primary difference is licensing and reliability



Power  
Automate



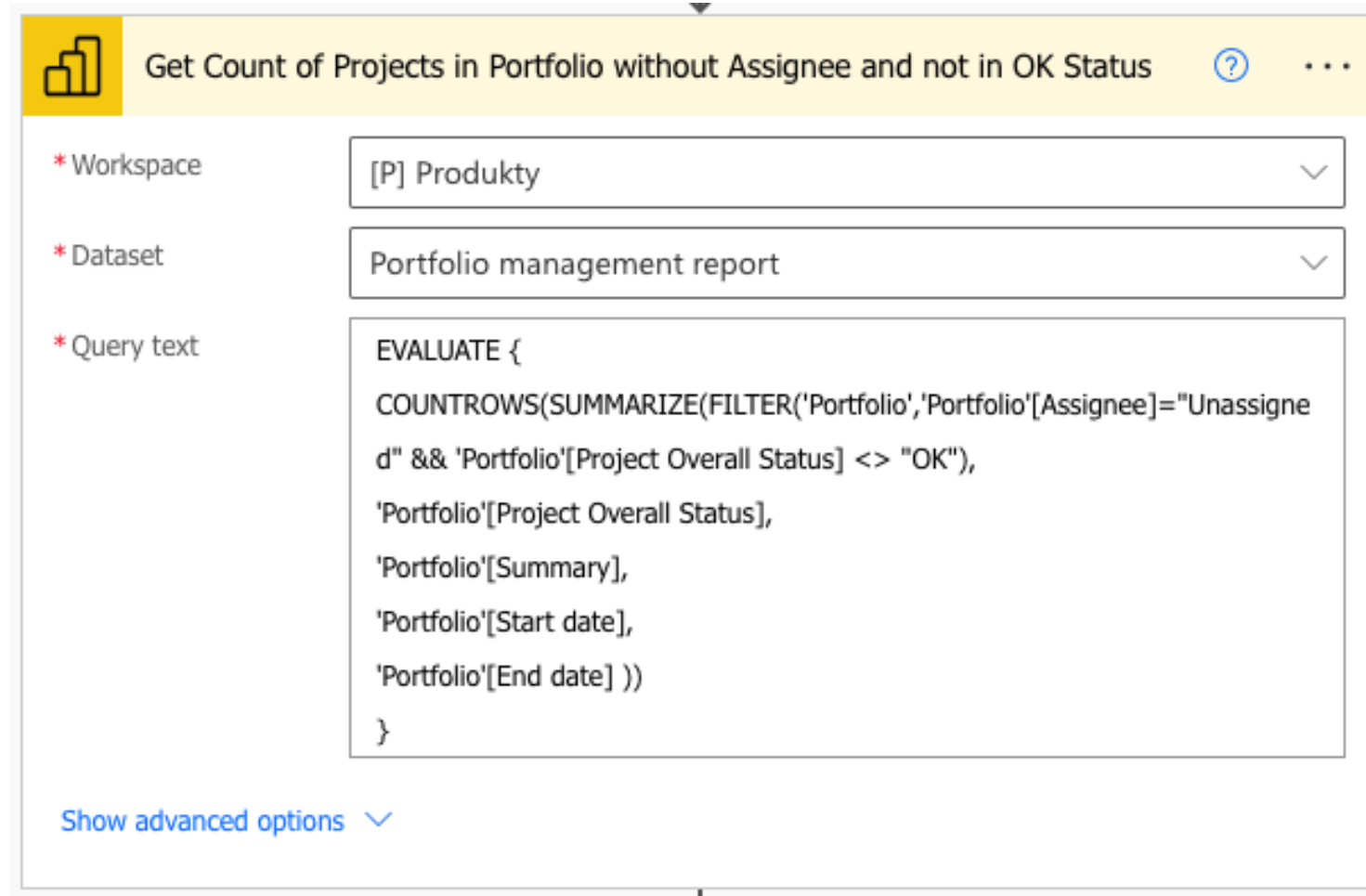
Logic  
Apps



# **WORKING WITH OUTPUTS**

# The query can be for just one number

But only if we follow the DAX query rules! {}



The screenshot shows the Power BI query editor interface. At the top, a yellow header bar contains a bar chart icon, the title "Get Count of Projects in Portfolio without Assignee and not in OK Status", a help icon, and a menu icon. Below the header, the editor is divided into three sections: Workspace, Dataset, and Query text. The Workspace section shows "[P] Produkty". The Dataset section shows "Portfolio management report". The Query text section contains a DAX query that uses COUNTROWS and SUMMARIZE to filter projects based on their assignee status and overall status. At the bottom left, there is a link to "Show advanced options" with a downward arrow.

**Get Count of Projects in Portfolio without Assignee and not in OK Status**

\* Workspace: [P] Produkty


\* Dataset: Portfolio management report

\* Query text:

```
EVALUATE {  
  COUNTROWS(SUMMARIZE(FILTER('Portfolio','Portfolio'[Assignee]="Unassigned" && 'Portfolio'[Project Overall Status] <> "OK"),  
    'Portfolio'[Project Overall Status],  
    'Portfolio'[Summary],  
    'Portfolio'[Start date],  
    'Portfolio'[End date] ))  
}
```

[Show advanced options](#)

# Response

 Get Count of Projects in Portfolio without Assignee and not in OK Status 0s

INPUTS

Show raw inputs >

Workspace

[P] Produkty

Dataset

Portfolio management report

Query text

EVALUATE {COUNTROWS(SUMMARIZE(FILTER('Portfolio','Portfolio'[Assignee]='Portfolio'[Project Overall Status],  
'Portfolio'[Summary],  
'Portfolio'[Start date],  
'Portfolio'[End date] )))}

Show more v

OUTPUTS

Show raw outputs >

First table rows

```
[
  {
    "[Value]": 98
  }
]
```

Connection: [stepan.resl@dataprothers.cz](mailto:stepan.resl@dataprothers.cz)

# Browsing records in response

Power Automate passes each ARRAY through the "Apply to each" method. Even if it contains only one record.

The screenshot shows the 'Apply to each' configuration window in Power Automate. The 'Select an output from previous steps' dropdown is set to 'First table rows'. The 'Parse JSON' action is selected, and its 'Content' dropdown is set to 'Row'. The 'Schema' field contains a JSON schema for an object with a 'properties' object containing a '[Value]' property of type 'integer'. A 'Generate from sample' button is visible below the schema field. At the bottom of the window, there is an 'Add an action' button.

Apply to each

\* Select an output from previous steps

First table rows

Parse JSON

\* Content

Row

\* Schema

```
{
  "type": "object",
  "properties": {
    "[Value]": {
      "type": "integer"
    }
  }
}
```

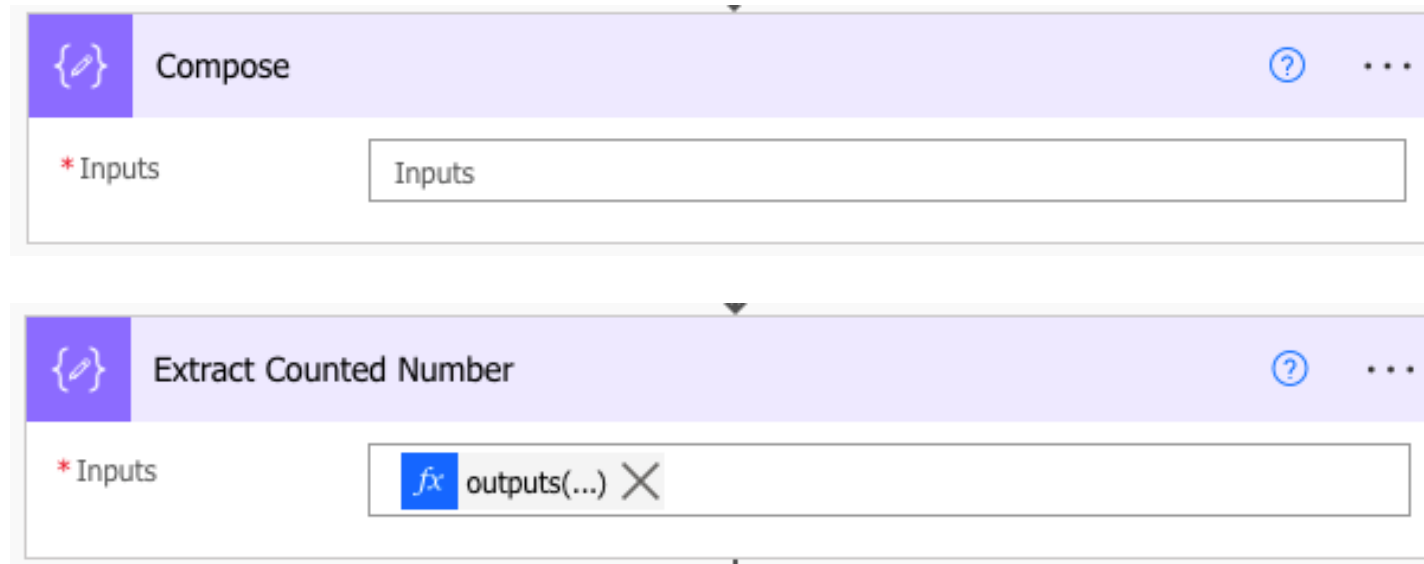
Generate from sample

Add an action



# How to eliminate an unnecessary cycle?

You can query directly to the first entry inside the answer.

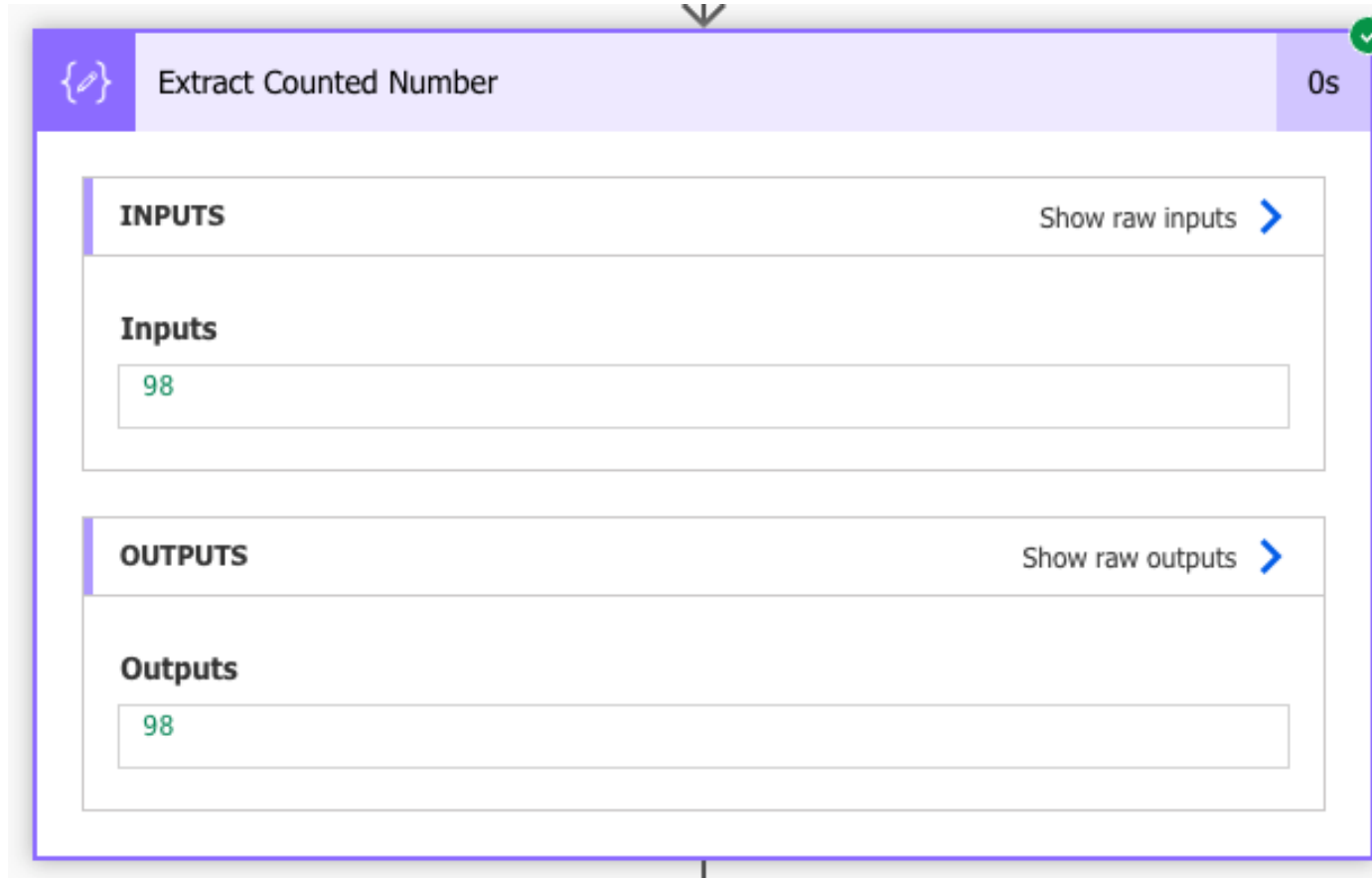


The image shows a workflow editor with two steps. The first step is 'Compose', which has an input field labeled 'Inputs'. The second step is 'Extract Counted Number', which has an input field containing a formula: `outputs(...)` with a blue 'fx' icon and a close button.

```
outputs('Get_Count_of_Projects_in_Portfolio_without_Assignee_and_not_in_OK_Status')['body/firstTableRows'][0]['Value']
```

# Response

You can verify that this repair procedure works by running a test.



The screenshot shows a testing interface for a function named "Extract Counted Number". The interface has a purple header bar with a code icon on the left, the function name in the center, and a "0s" timer on the right with a green checkmark icon. Below the header, there are two main sections: "INPUTS" and "OUTPUTS". Each section has a "Show raw" link with a blue arrow. The "INPUTS" section shows a single input field containing the value "98". The "OUTPUTS" section shows a single output field containing the value "98".

Extract Counted Number		0s
<b>INPUTS</b> <a href="#">Show raw inputs</a>		
Inputs	98	
<b>OUTPUTS</b> <a href="#">Show raw outputs</a>		
Outputs	98	

# Power Automate ways to extract a response

Simple instructions on how to get a specific type of answer

`outputs(...)`



Returns entire response of API

`outputs(...)?['body/firstTableRows']`



Returns all rows from extracted table

`outputs(...)?['body/firstTableRows']?[0]`



Returns first row from extracted table

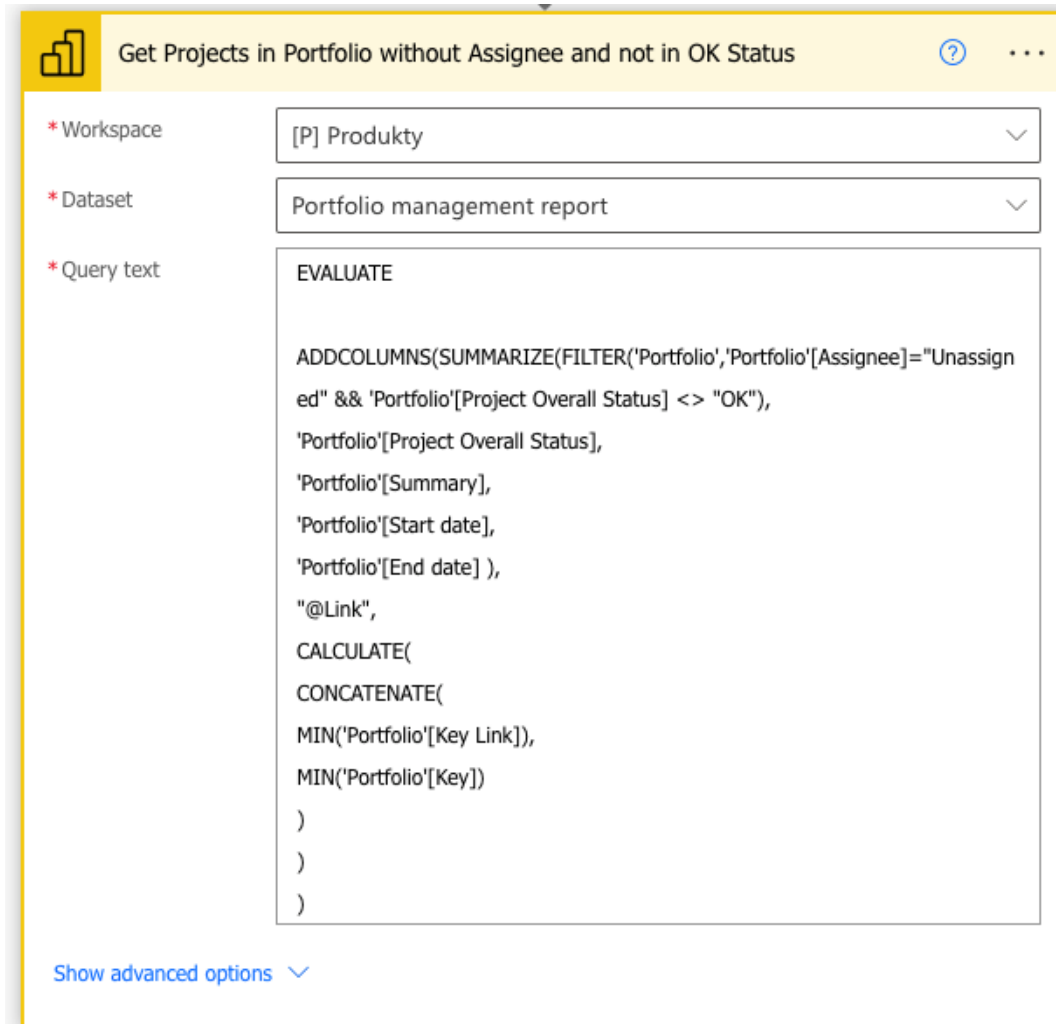
`outputs(...)?['body/firstTableRows']?[0]?['Value']`



Returns exact value from first row from extracted table

# More complicated query sent to the model

This endpoint can also deal with a more complex query



The screenshot shows a query builder interface with a yellow header bar. The title bar contains a bar chart icon, the text "Get Projects in Portfolio without Assignee and not in OK Status", a help icon, and a menu icon. Below the header, there are three sections: Workspace, Dataset, and Query text. The Workspace section has a dropdown menu with "[P] Produkty". The Dataset section has a dropdown menu with "Portfolio management report". The Query text section contains a DAX query. At the bottom left, there is a link "Show advanced options" with a downward arrow.

Get Projects in Portfolio without Assignee and not in OK Status

\* Workspace [P] Produkty

\* Dataset Portfolio management report


\* Query text

```
EVALUATE  
  
ADDCOLUMNS(SUMMARIZE(FILTER('Portfolio','Portfolio'[Assignee]="Unassign  
ed" && 'Portfolio'[Project Overall Status] <> "OK"),  
'Portfolio'[Project Overall Status],  
'Portfolio'[Summary],  
'Portfolio'[Start date],  
'Portfolio'[End date] ),  
"@Link",  
CALCULATE(  
CONCATENATE(  
MIN('Portfolio'[Key Link]),  
MIN('Portfolio'[Key])  
)  
)  
)
```

Show advanced options

# Returned Results

The query returned from the model is subject to certain rules

 Get Projects in Portfolio without Assignee and not in OK Status

\* Workspace

[P] Produkty

\* Dataset

Portfolio management report

\* Query text

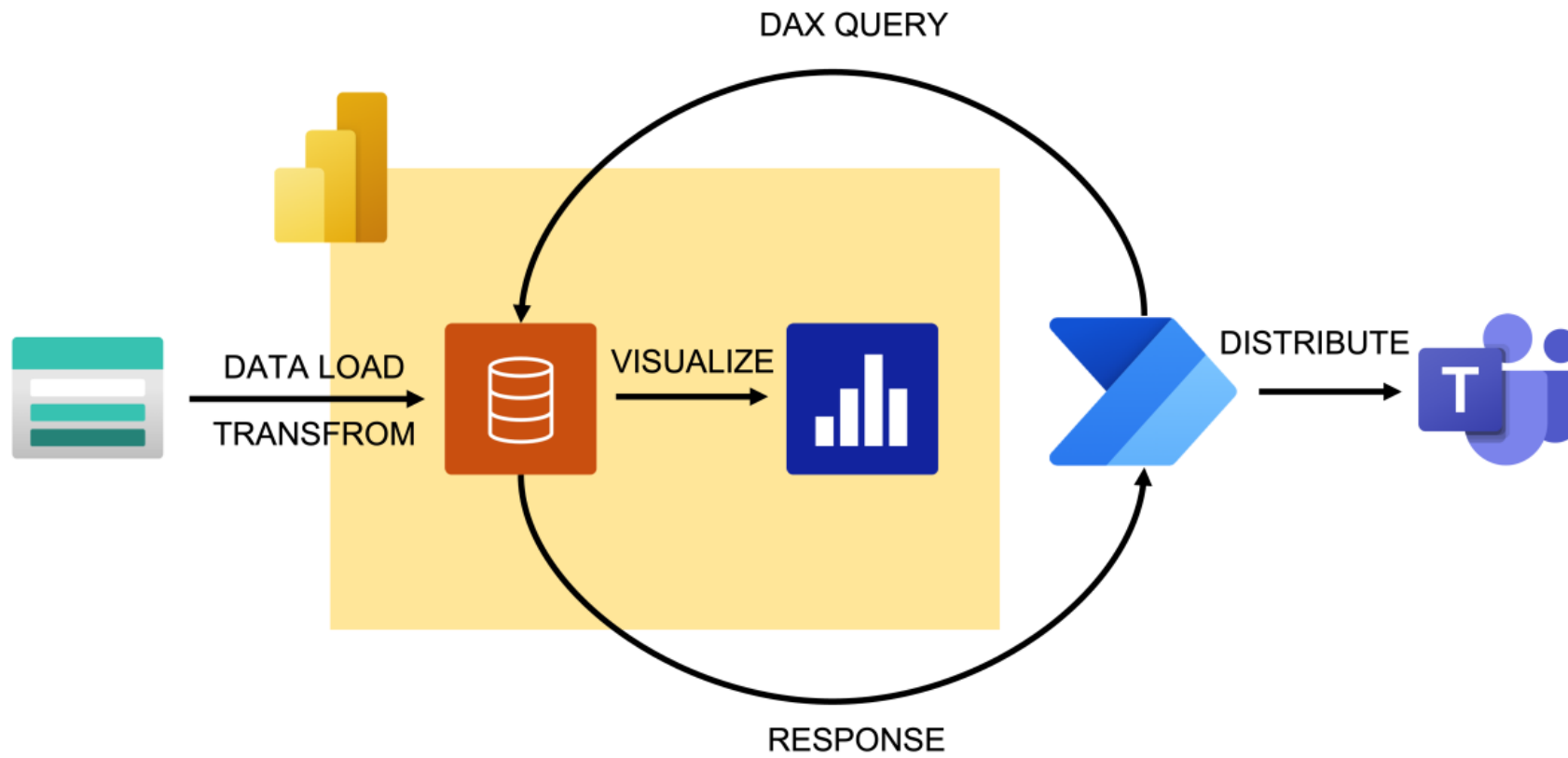
EVALUATE  
  
ADDCOLUMNS(SUMMARIZE(FILTER('Portfolio','Portfolio'[Assignee]="Unassigned" && 'Portfolio'[Project Overall Status] <> "OK"),  
'Portfolio'[Project Overall Status],  
'Portfolio'[Summary],  
'Portfolio'[Start date],  
'Portfolio'[End date] ),  
"@Link",  
CALCULATE(  
CONCATENATE(  
MIN('Portfolio'[Key Link]),  
MIN('Portfolio'[Key])  
)  
)  
)  
)

Show advanced options

```
[  
  {  
    "Portfolio[Project Overall Status]": "N/A",  
    "Portfolio[Summary]": "Application Of Machine Learning Prediction Algorithm",  
    "Portfolio[Start date]": "2019-07-17T00:00:00",  
    "[@Link]": "https://reportee.cz/cs/HHH-9"  
  },  
  {  
    "Portfolio[Project Overall Status]": "ISSUE",  
    "Portfolio[Summary]": "Application Of Azure Synapse",  
    "Portfolio[Start date]": "2019-07-17T00:00:00",  
    "[@Link]": "https://reportee.cz/cs/HHH-9"  
  },  
  {  
    "Portfolio[Project Overall Status]": "RISK",  
    "Portfolio[Summary]": "Mining Worker Safety Helmet",  
    "Portfolio[Start date]": "2021-01-01T00:00:00",  
    "Portfolio[End date]": "2022-02-28T00:00:00",  
    "[@Link]": "https://reportee.cz/cs/HHH-134"  
  }  
]
```

# Full story

If I expand the original story with what we just learned, then we're done!



# **DATASET AS A CALCULATOR**

# Have you seen a dragon?

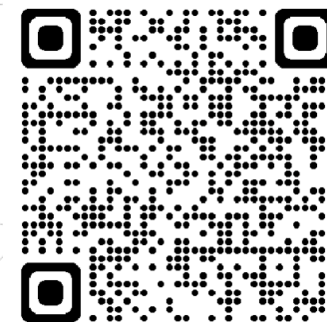


# Help him!

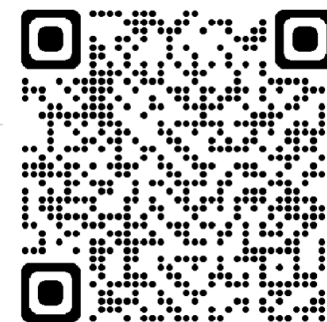


# THANK YOU FOR THE ATTENTION

LINKEDIN



TWITTER



**ŠTĚPÁN REŠL**

