Power BI
Deployment
Pipelines

Azure DevOps

Application Lifecycle Management

Aka. Application Lifecycle Management for Power BI

Data-Marc.com

Marc Lelijveld

Data & Analytics consultant
Macaw Netherlands

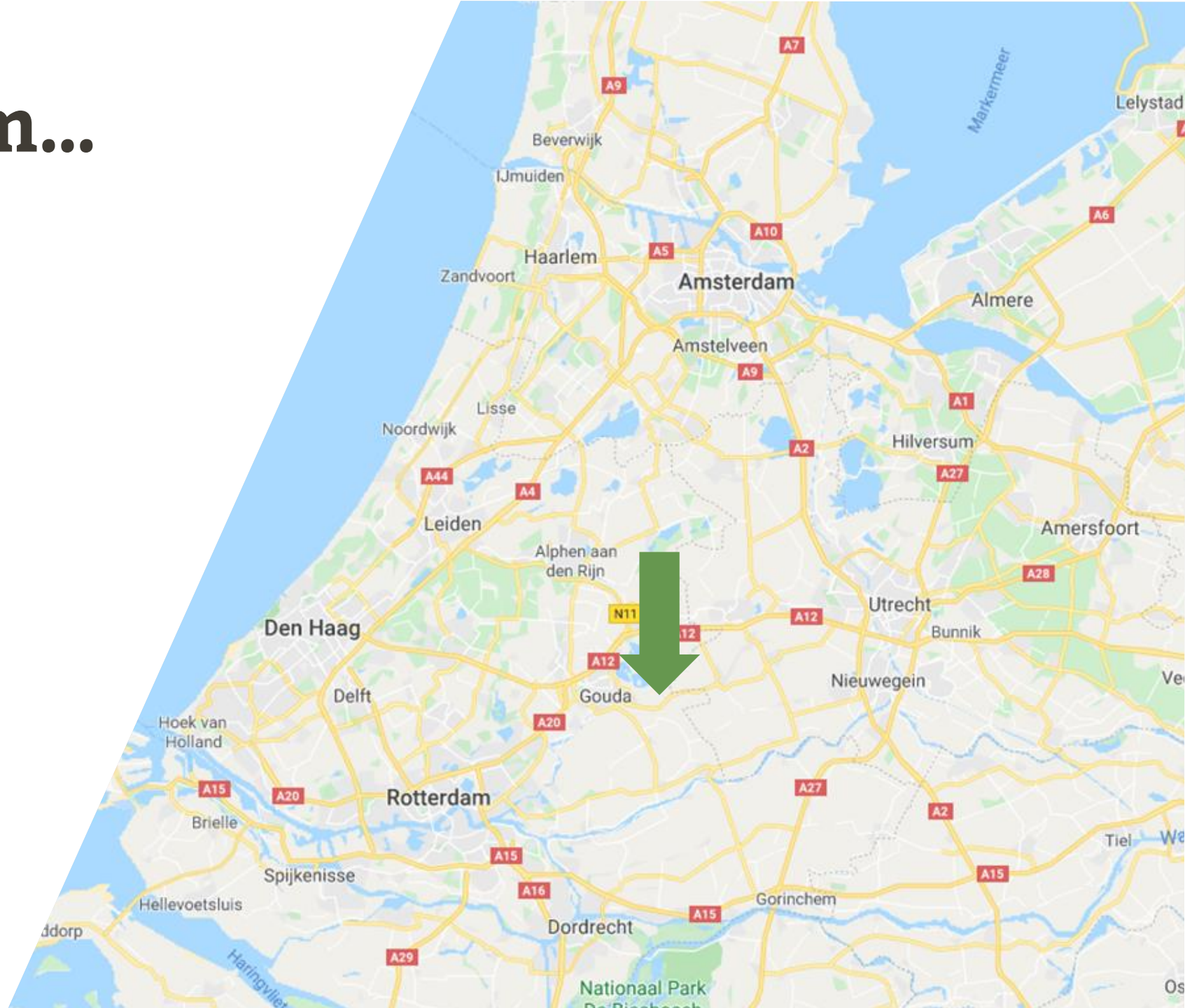
Microsoft Power Platform
FASTTRACK RECOGNIZED
SOLUTION ARCHITECT
2022

MVP Microsoft® Most Valuable Professional

Microsoft MCT

Marc.Lelijveld@outlook.com
@MarcLelijveld
linkedin.com/in/MarcLelijveld
Data-Marc.com

Where I’m from…

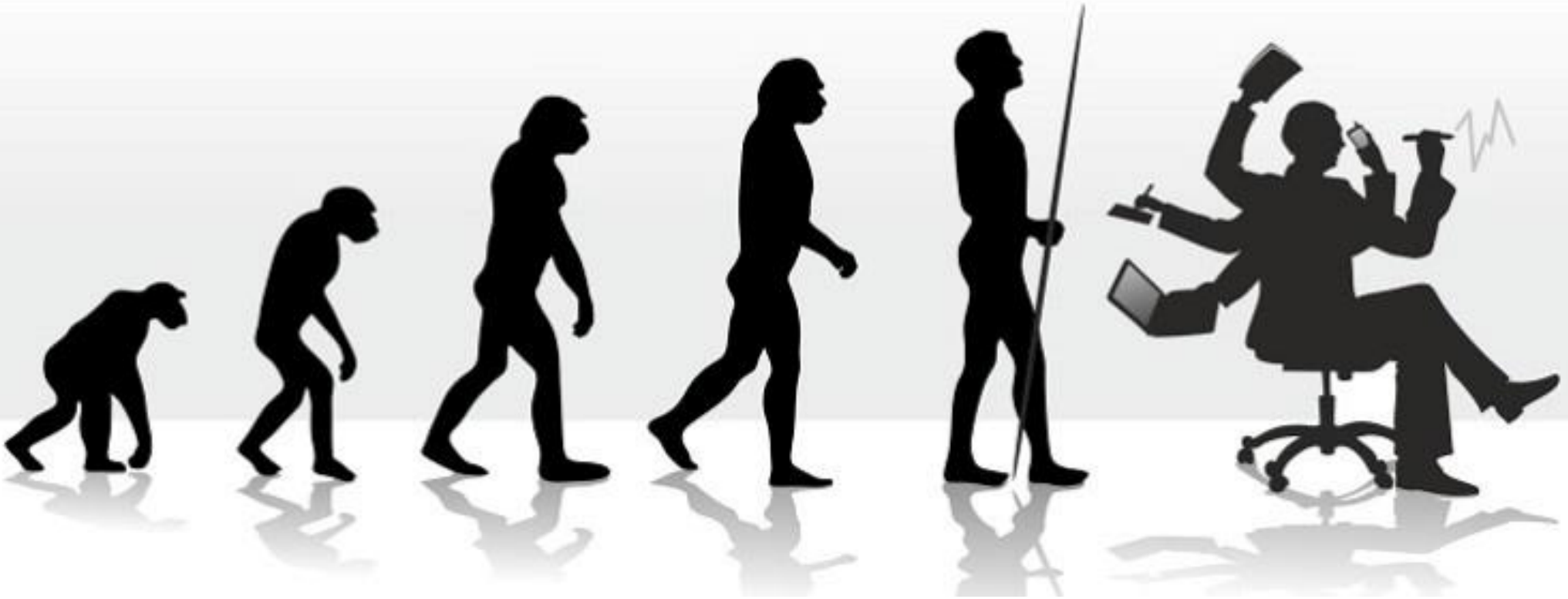


What we cover today

- The evolution of BI
- Deployment Pipelines
- Deployment framework
- Azure DevOps vs Deployment Pipelines

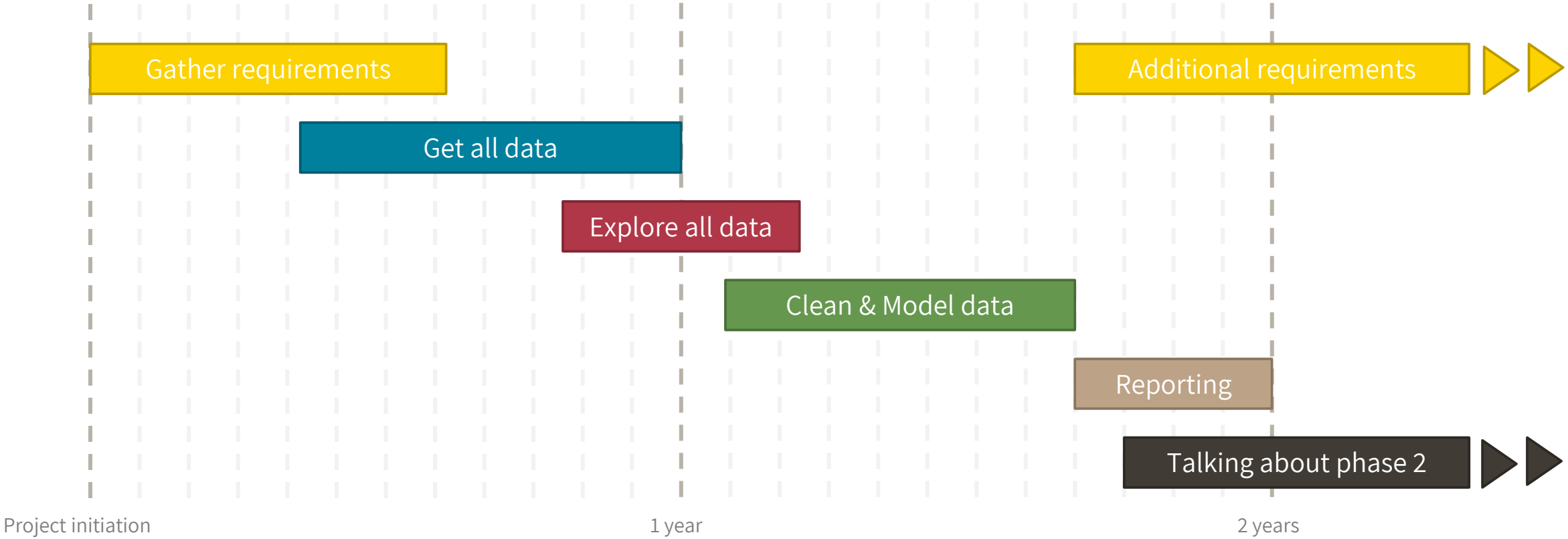
Our way of working

Busy era



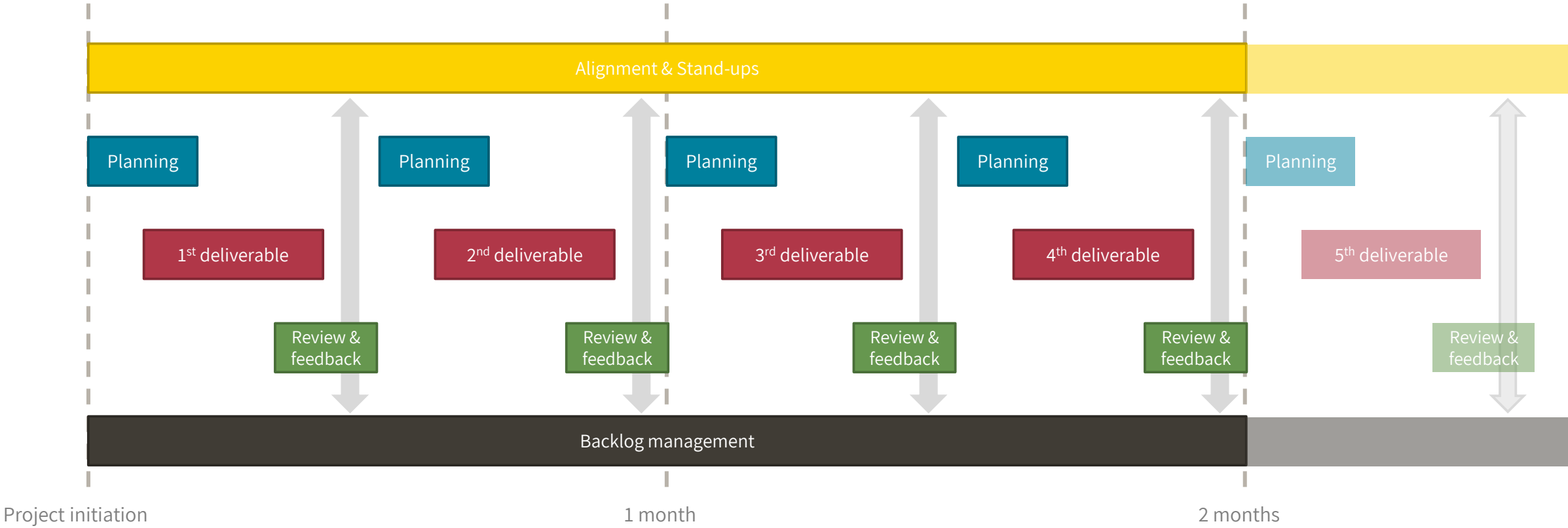
Data-Marc.com

Classic approach



Data-Marc.com

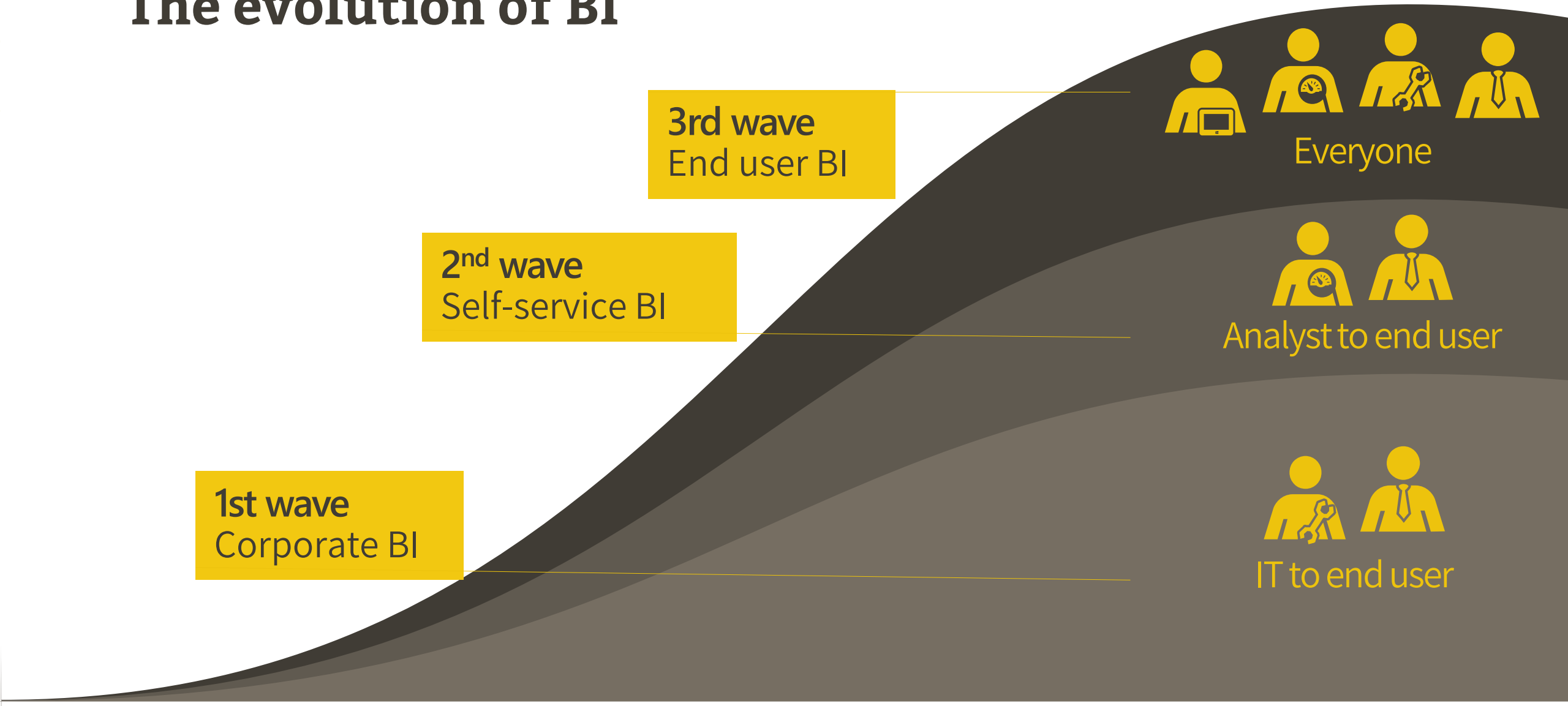
Start working agile



Data-Marc.com

The evolution of BI

The evolution of BI

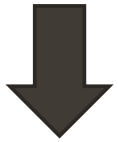
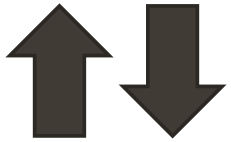


Data-Marc.com

Self-service vs End-user BI

Data-Marc.com

Deployment scenarios

	Corporate BI	IT-Managed Self-Service BI	Business-Led Self-Service BI
Approach	 Top-Down	 Blended	Bottom-Up
Data sources	Published by IT	Only governed sources	Any type of data source
Ownership	Fully supported by IT	IT for data model, Business for reports	Business supports all elements of the solution
Governed by	IT	IT for data, business for reports	Business
Usage scope of business	Only use of content	Creation of (custom) reports and dashboards	Data prep, modelling, reports and dashboards
Endorsement	Certified	Promoted	None

Data-Marc.com

Deployment scenarios

	Corporate BI	IT-Managed Self-Service BI	Business-Led Self-Service BI
Approach	Top-Down	Blended	Bottom-Up
Data sources	Published by IT	Only governed sources	Any type of data source
Ownership	**100%**	**50/50**	**100%**
Governed by	IT	IT for data, business for reports	Business
Usage scope of business	Only use of content	Creation of (custom) reports and dashboards	Data prep, modelling, reports and dashboards
Endorsement	Certified	Promoted	None
	IT-Driven		**Business Driven**

Data-Marc.com

Today's challenges

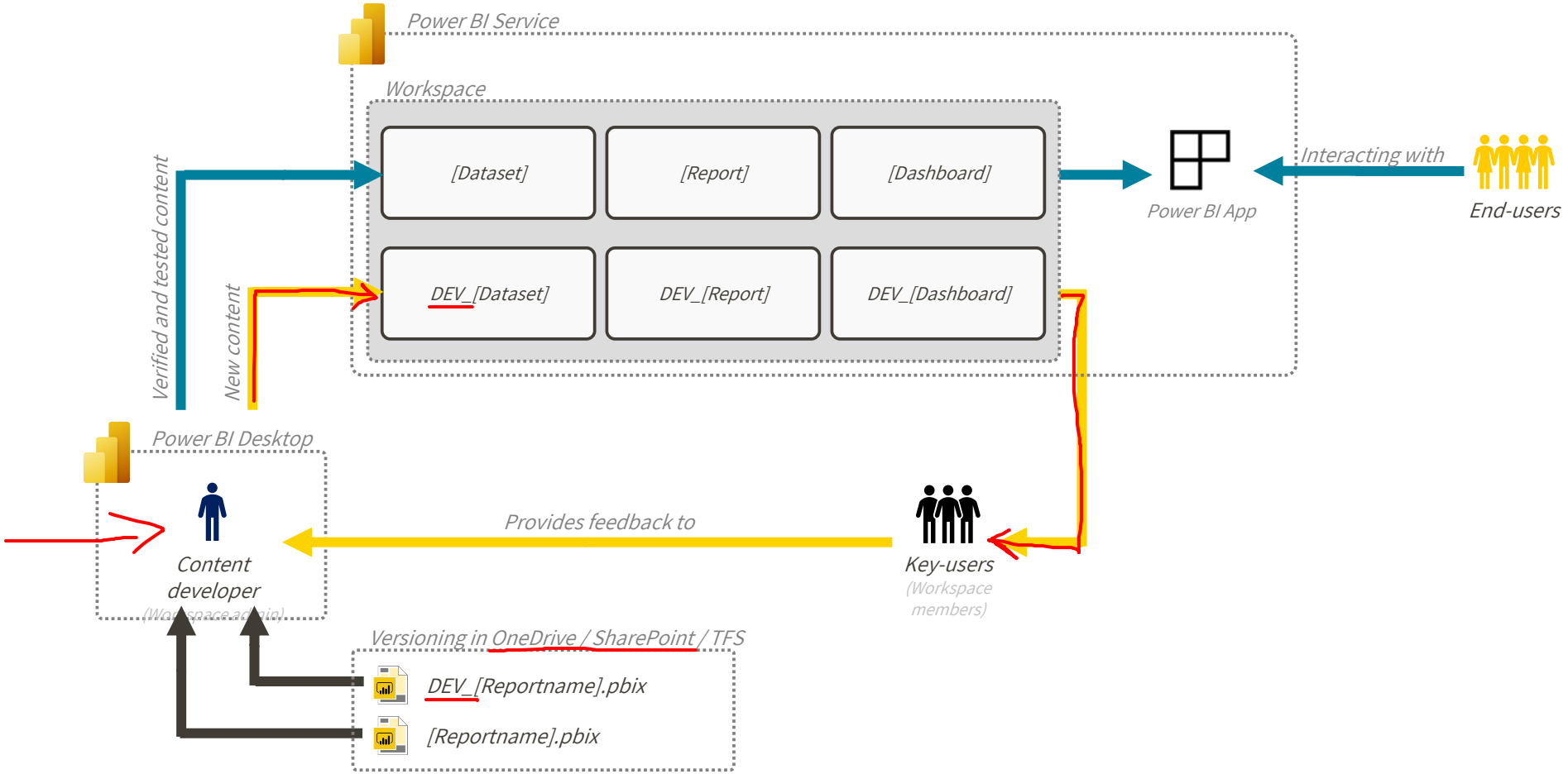
- Growing demand for BI
- Shorter time from ideation to delivery
- Faster development
- No room for mistakes
- More professional way to manage our content
- Structure and standardization

Data-Marc.com

Deployment framework – self service

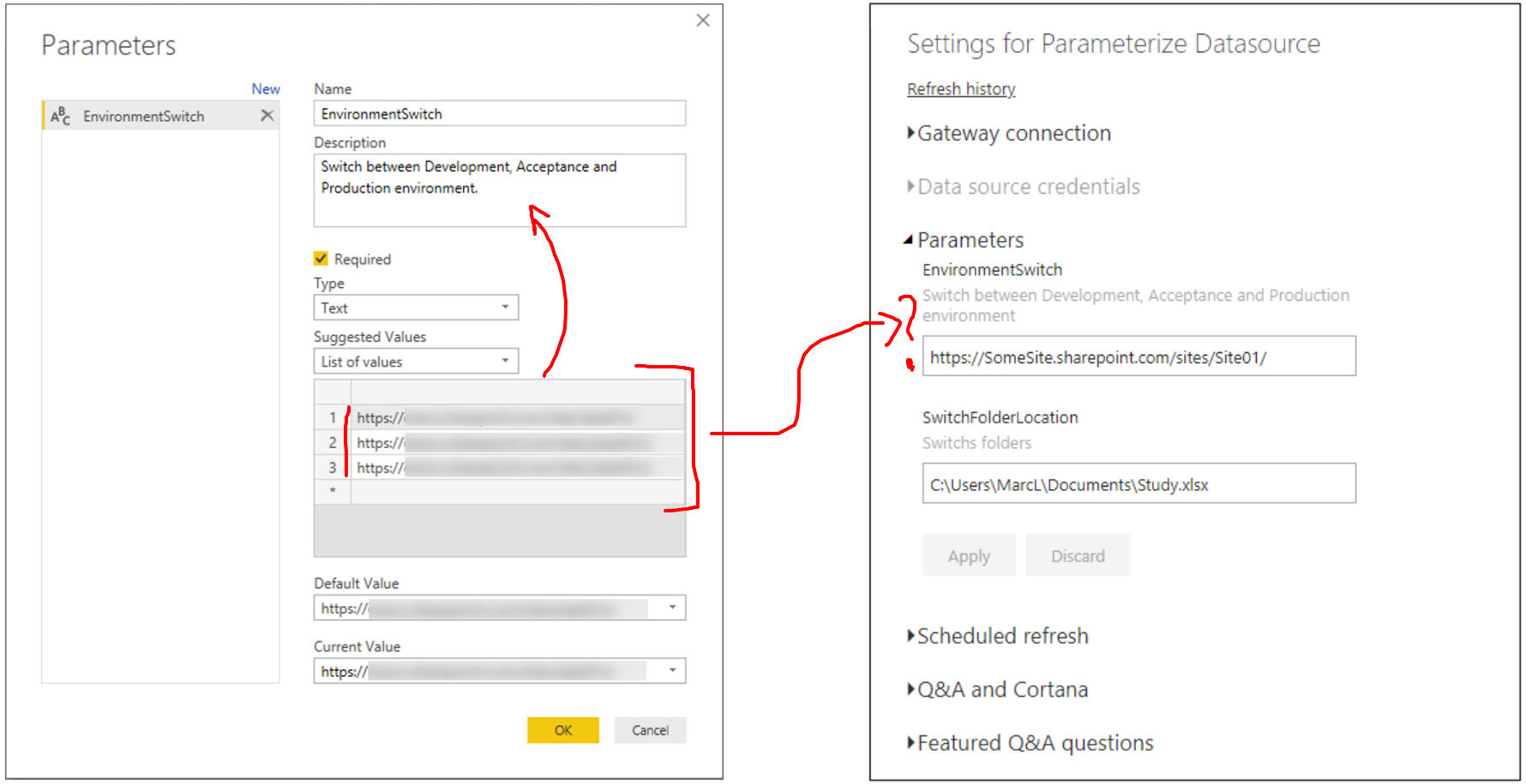
Data-Marc.com

Deployment scenario (self service scale)



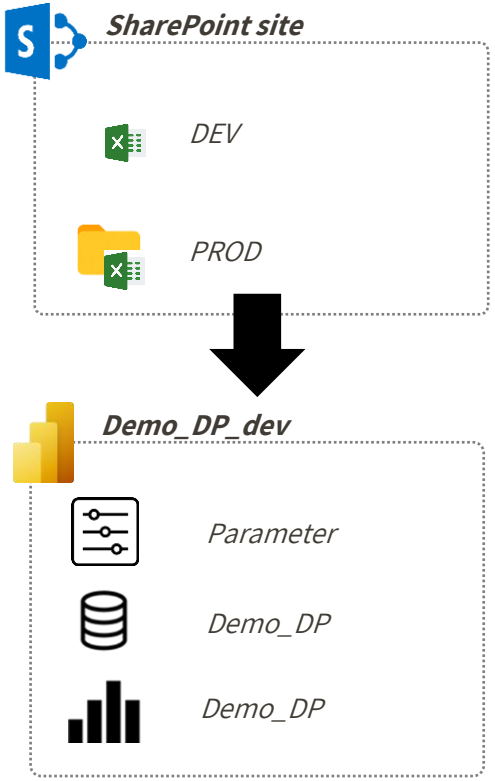
Data-Marc.com

Deployment scenario (self service scale)



Data-Marc.com

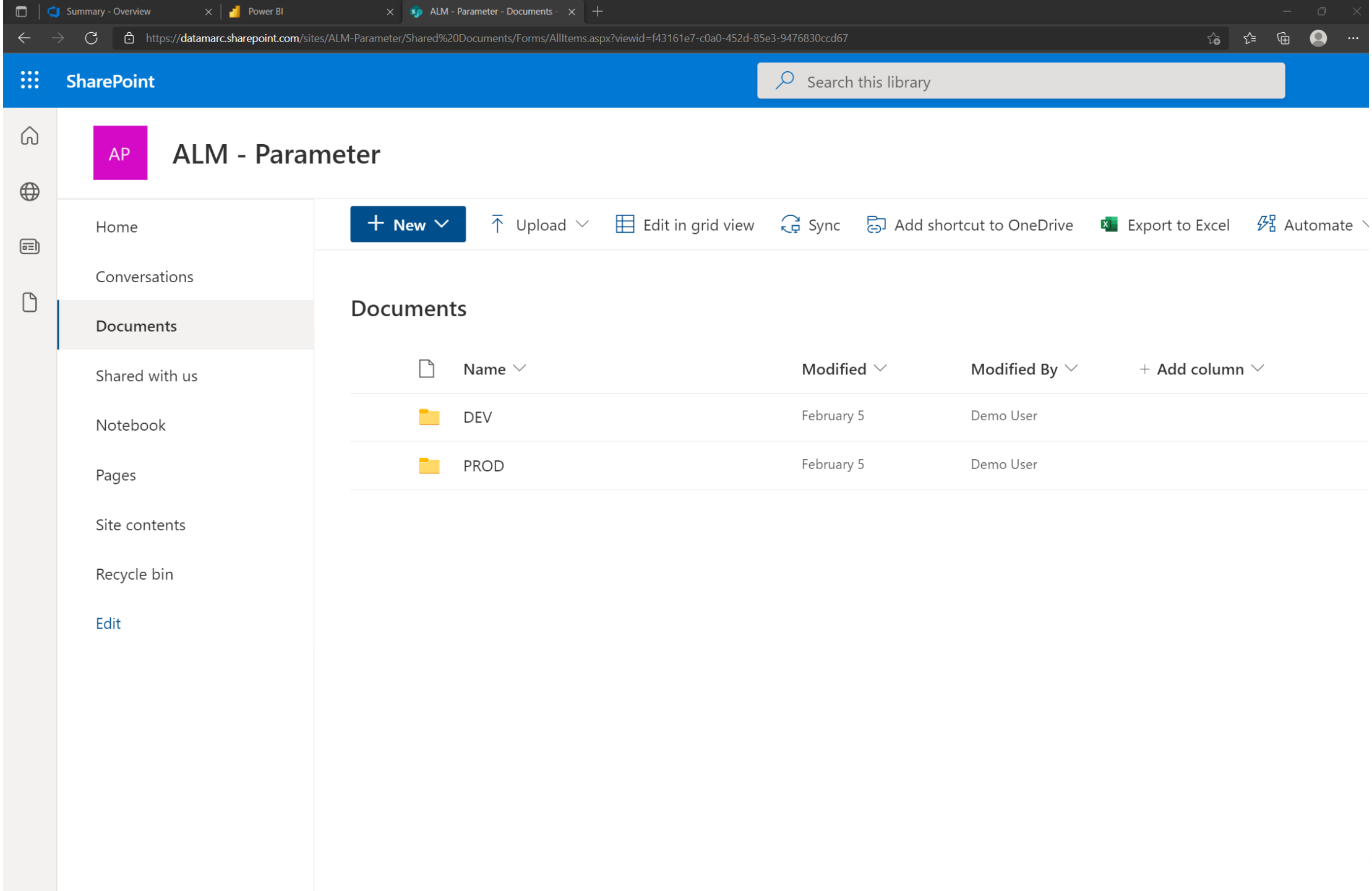
Demo context (self service scale)



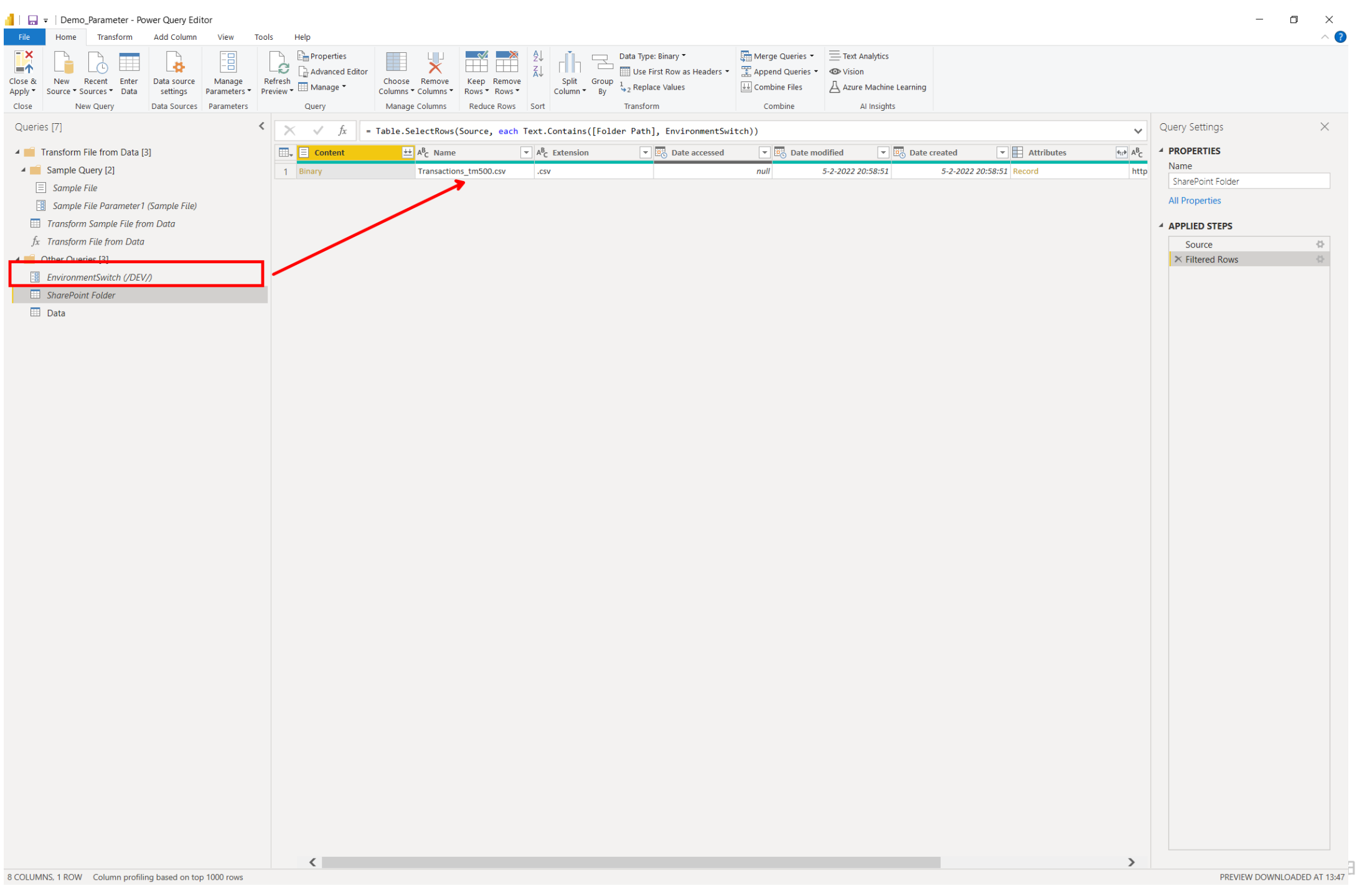
Data-Marc.com

Demo time!

Because life is boring without risks


Summary - Overview
Power BI
ALM - Parameter - Documents
https://datamarc.sharepoint.com/sites/ALM-Parameter/Shared%20Documents/Forms/AllItems.aspx?viewid=f43161e7-c0a0-452d-85e3-9476830ccd67
SharePoint
Search this library
AP
ALM - Parameter
Home
Conversations
Documents
Shared with us
Notebook
Pages
Site contents
Recycle bin
Edit
New
Upload
Edit in grid view
Sync
Add shortcut to OneDrive
Export to Excel
Automate
Documents
Name
Modified
Modified By
Add column
DEV
February 5
Demo User
PROD
February 5
Demo User

Marc.com


Demo_Parameter - Power Query Editor
File
Home
Transform
Add Column
View
Tools
Help
Close & Apply
New Source
Recent Sources
Enter Data
Data source settings
Manage Parameters
Refresh Preview
Properties
Advanced Editor
Manage
Choose Columns
Remove Columns
Keep Rows
Remove Rows
Split Column
Group By
Data Type: Binary
Use First Row as Headers
Replace Values
Merge Queries
Append Queries
Combine Files
Text Analytics
Vision
Azure Machine Learning
Queries [7]
Transform File from Data [3]
Sample Query [2]
Sample File
Sample File Parameter1 (Sample File)
Transform Sample File from Data
Transform File from Data
Other Queries [3]
EnvironmentSwitch (/DEV/)
SharePoint Folder
Data
= Table.SelectRows(Source, each Text.Contains([Folder Path], EnvironmentSwitch))
Content
Name
Extension
Date accessed
Date modified
Date created
Attributes
1
Binary
Transactions_tm500.csv
.csv
null
5-2-2022 20:58:51
5-2-2022 20:58:51
Record
http
Query Settings
PROPERTIES
Name
SharePoint Folder
All Properties
APPLIED STEPS
Source
Filtered Rows
8 COLUMNS, 1 ROW
Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 13:47

Demo_Parameter - Power Query Editor

File | Home | Transform | Add Column | View | Tools | Help

Close & Apply | New Source | Recent Sources | Enter Data | Data source settings | Manage Parameters | Refresh Preview | Properties | Advanced Editor | Manage | Choose Columns | Remove Columns | Keep Rows | Remove Rows | Split Column | Group By | Data Type: Binary | Use First Row as Headers | Replace Values | Merge Queries | Append Queries | Combine Files | Text Analytics | Vision | Azure Machine Learning

Close | New Query | Data Sources | Parameters | Query | Manage Columns | Reduce Rows | Sort | Transform | Combine | AI Insights

Queries [7]

- Transform File from Data [3]
  - Sample Query [2]
    - *Sample File*
    - *Sample File Parameter1 (Sample File)*
    - *Transform Sample File from Data*
    - *Transform File from Data*
- Other Queries [3]
  - *EnvironmentSwitch (/PROD/)*
  - *SharePoint Folder*
  - Data

```
= Table.SelectRows(Source, each Text.Contains([Folder Path], EnvironmentSwitch))
```

	Content	Name	Extension	Date accessed	Date modified	Date created	Attributes	
1	Binary	Transactions_tm500.csv	.csv	null	5-2-2022 20:59:04	5-2-2022 20:59:04	Record	http
2	Binary	Transactions_tm1500.csv	.csv	null	5-2-2022 20:59:04	5-2-2022 20:59:04	Record	http
3	Binary	Transactions_tm1000.csv	.csv	null	5-2-2022 20:59:04	5-2-2022 20:59:04	Record	http
4	Binary	Transactions_tm2000.csv	.csv	null	5-2-2022 20:59:04	5-2-2022 20:59:04	Record	http
5	Binary	Transactions_tm2584.csv	.csv	null	5-2-2022 20:59:04	5-2-2022 20:59:04	Record	http

Query Settings

PROPERTIES

Name: SharePoint Folder

All Properties

APPLIED STEPS

- Source
- Filtered Rows

8 COLUMNS, 5 ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 13:47

Marc.com

Advanced Editor

SharePoint Folder

Display Options

```
let
    Source = SharePoint.Files("https://datamarc.sharepoint.com/sites/ALM-Parameter/", [ApiVersion = 15]),
    #"Filtered Rows" = Table.SelectRows(Source, each Text.Contains([Folder Path], EnvironmentSwitch))
in
    #"Filtered Rows"
```

No syntax errors have been detected.

Done Cancel

Data-Marc.com

Create a deployment pipeline

Use a pipeline to manage your workspace content through the deployment stages, continuously delivering the latest content to your users.

Deployment Pipelines

1

Create a pipeline

Start by creating the pipeline you'll use for managing and deploying the workspace content

2

Assign your workspace

Select your workspace and assign it to a deployment stage (development, test, or production).

3

Develop and test your content

Manage, preview, and compare your workspace content until its ready for releasing to users

4

Share with your users

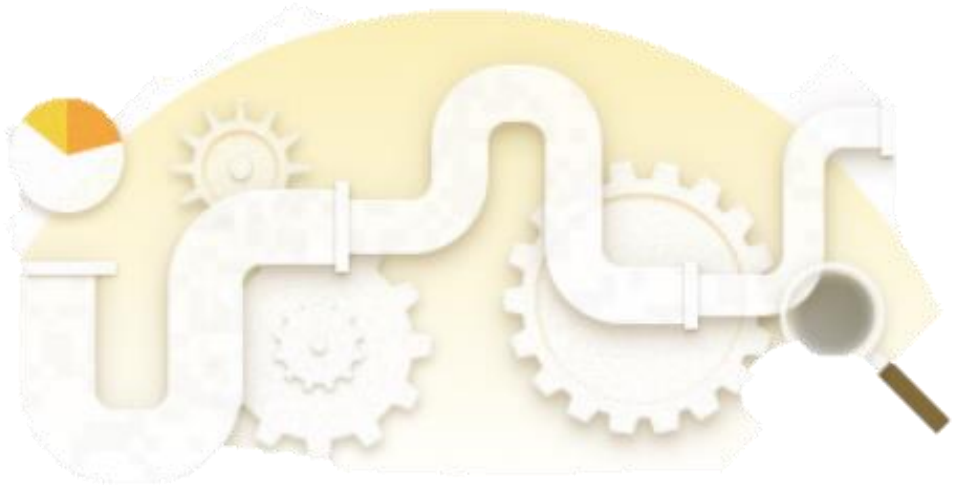
Deploy your content to production and share it with your organization

Create a pipeline

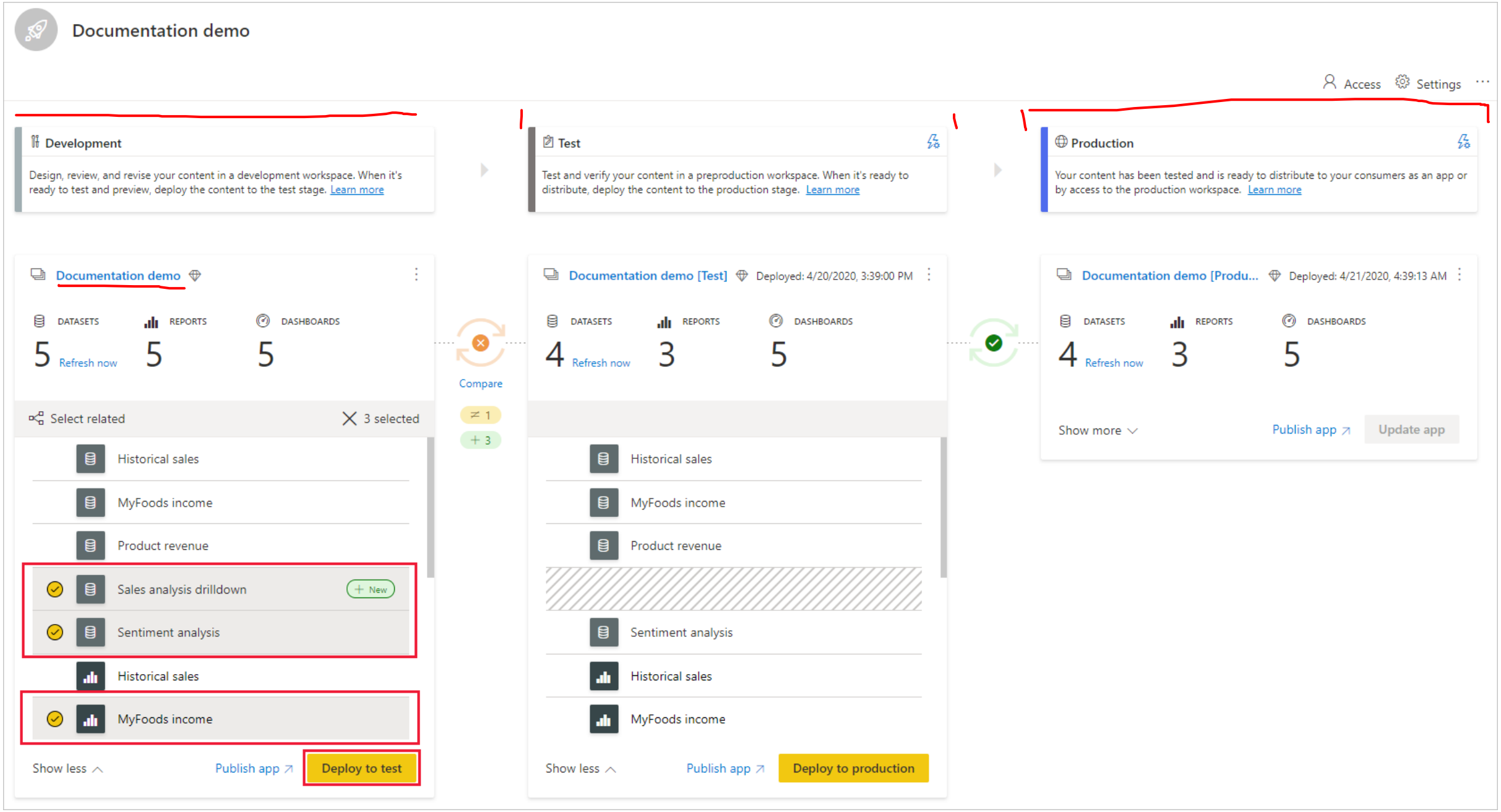
Data-Marc.com

How it works

- Meta data deployment
- Incremental deployment
- Requires Premium! (must be P-sku in production!)
- No versioning (yet?)

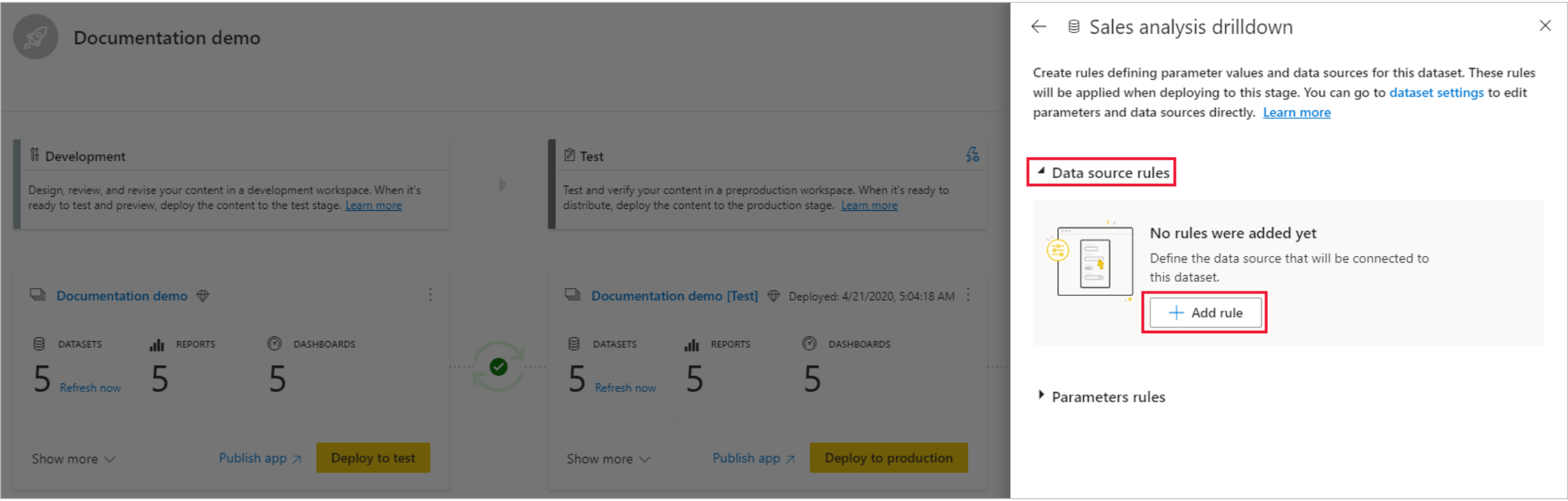


Data-Marc.com



Data-Marc.com

Deployment settings



Data-Marc.com

Demo time!

Because life is boring without risks

Why you should care about Power BI Deployment Pipelines

ON JULY 9, 2020 / BY MARC / IN POWER BI PREMIUM, POWER BI SERVICE / EDIT

After a short holiday break, it is time for a new blog post! This time about one of the most exciting functionalities in Power BI that has been released in the past release wave, Power BI Deployment Pipelines!

In this blog I will elaborate on what Power BI Deployment Pipelines are, why it is an important part of your landscape and a comparison to other options you

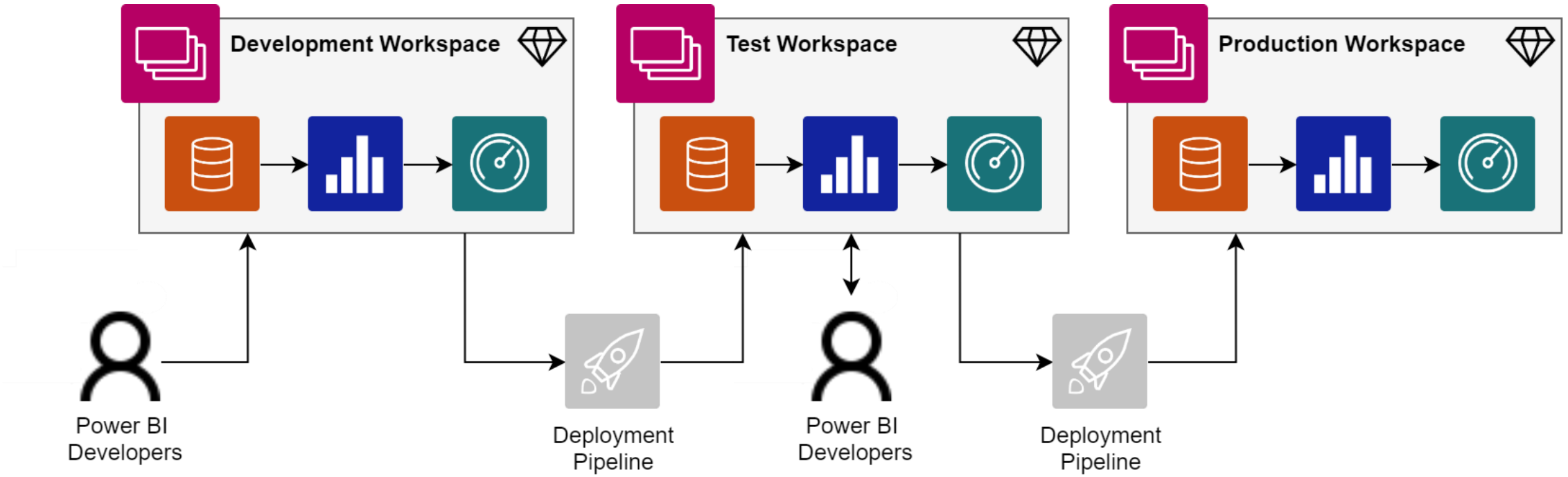
SEARCH

Search …

YOU ARE FOLLOWING THIS BLOG

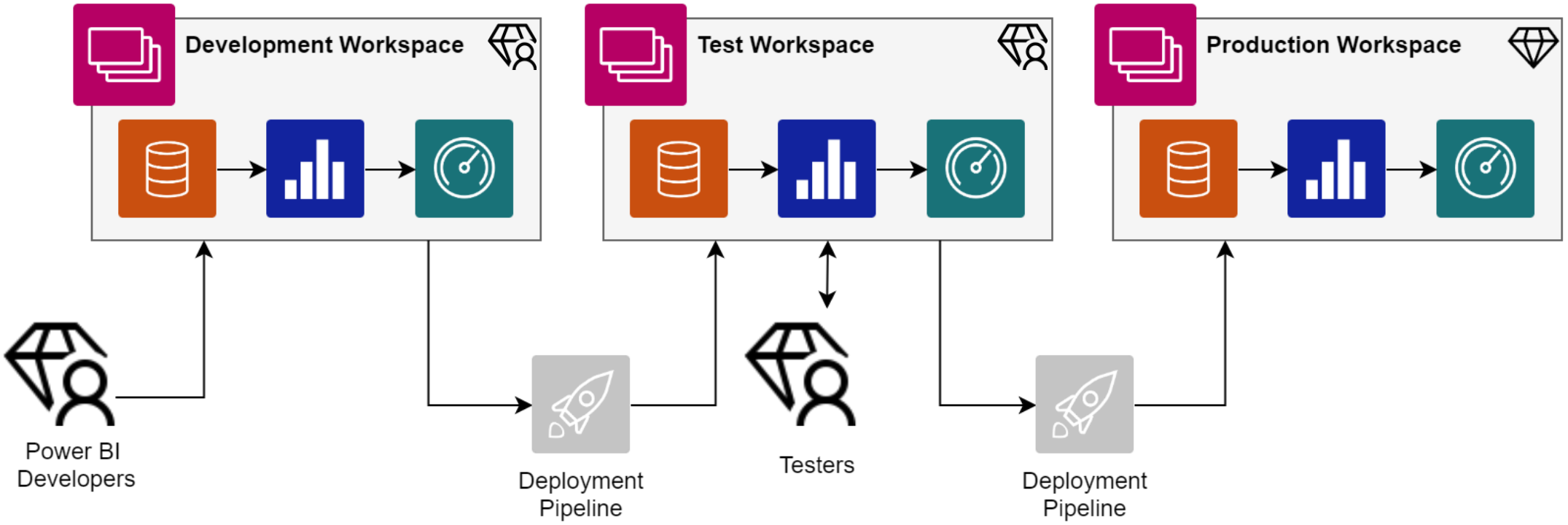
You are following this blog, along with 1,281 other amazing people (manage).

Default setup



Data-Marc.com

Possible option to lower capacity allocation



Data-Marc.com

Leverage Power BI Deployment Pipelines with Premium per user licensing

ON OCTOBER 5, 2020 / BY MARC

/ IN DEVELOPING, POWER BI PREMIUM, POWER BI SERVICE

At Microsoft Ignite, there were two really exciting announcements when it comes to enterprise features for Power BI. Both directly took my attention, as well as for many others. Obviously, the first one is Power BI Premium per user (PPU) licensing. Secondly, Deployment Pipelines reached General Availability!

Two super important features for enterprises and the maturity of Power BI! Let's have a look at both announcements and how these announcements together will have a massive impact!

SEARCH

Search …

FOLLOW BLOG VIA EMAIL

Enter your email address to follow this blog and receive notifications of new posts by email.

Join 1,391 other followers

Enter your email address

FOLLOW

Deployment framework – large organizations

Data-Marc.com

Azure DevOps

Azure Boards

Deliver value to your users faster using proven agile tools to plan, track, and discuss work across your teams.

Azure Pipelines

Build, test, and deploy with CI/CD that works with any language, platform, and cloud. Connect to GitHub or any other Git provider and deploy continuously.

Azure Repos

Get unlimited, cloud-hosted private Git repos and collaborate to build better code with pull requests and advanced file management.

Azure Test Plans

Test and ship with confidence using manual and exploratory testing tools.

Azure Artifacts

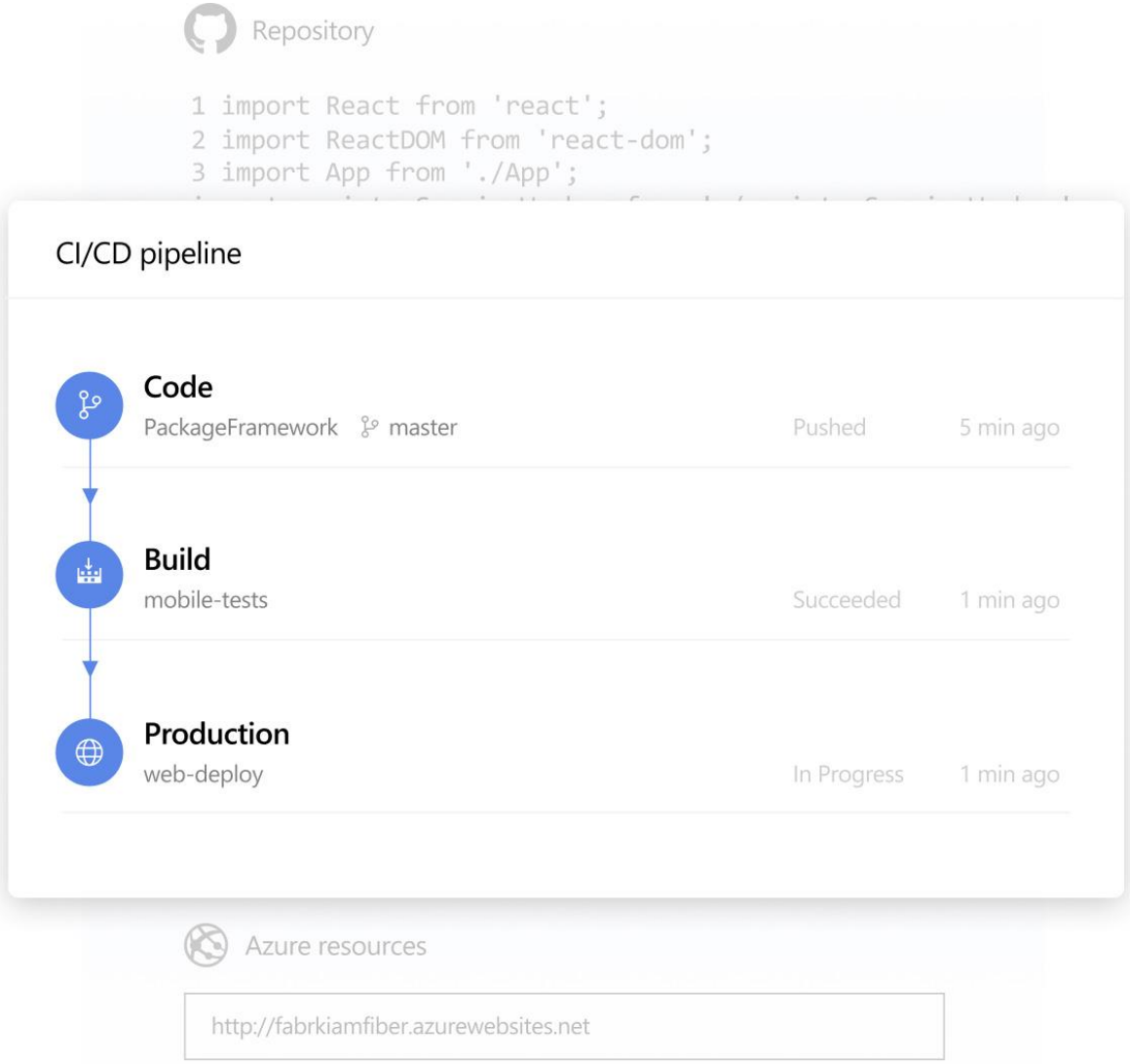
Create, host, and share packages with your team, and add artifacts to your CI/CD pipelines with a single click.

Extensions Marketplace

Access extensions from Slack to SonarCloud to 1,000 other apps and services—built by the community.

Data-Marc.com

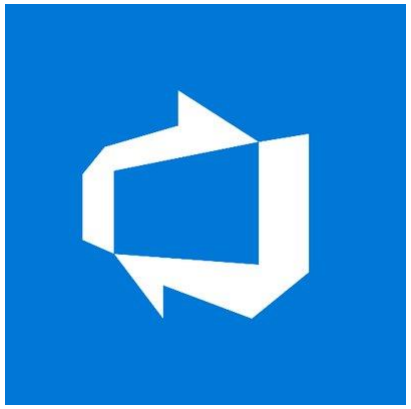
Azure DevOps



Azure Pipelines

Data-Marc.com

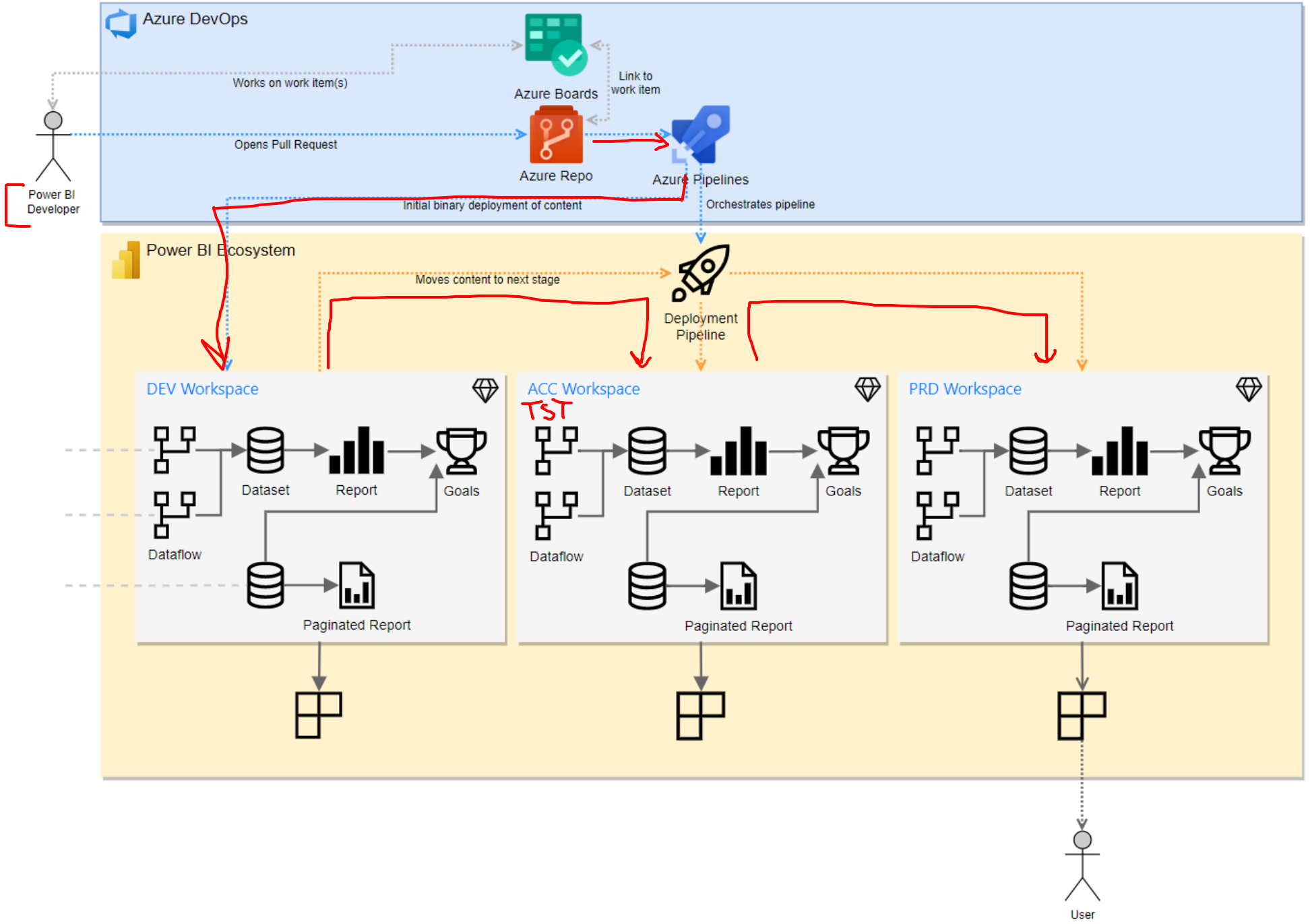
Deployment scenario (at enterprise scale)



Azure DevOps

Power BI Service

Data-Marc.com



Data-Marc.com

Demo time!

Because life is boring without risks

Power BI Demo Deployment > Release-6

Pipeline | Variables | History | + Deploy | Cancel | Refresh | Edit | ...

Release

Manually triggered

by Marc Lelijveld

3/4/2022, 11:11 AM

Artifacts

_PBI Deployment Pipeli...

e9613309

main

Stages

Development

Succeeded

1 warning

on 3/4/2022, 11:12 AM

Test

Succeeded

1 warning

on 3/4/2022, 11:13 AM

Production

Failed

Deploy content to the Prod...

on 3/4/2022, 11:17 AM

Data-Marc.com

Power BI Demo Deployment > Release-6 > Development Succeeded

Pipeline | Tasks | Variables | Logs | Tests | Save | Discard | ...

You can edit approvals, tasks, and variables of this release. Edits will be saved only to this release. To make changes to the pipeline, edit the release pipeline

Development
Deployment process

Agent job
Run on agent

Power BI Report Task: CreateReport
Power BI: Report Tasks

Power BI: Report Tasks

View YAML

Task version 2.*

Display name *
Power BI Report Task: CreateReport

Azure Details

Power BI service connection * | Manage

Macaw Extension - service connection | New

PowerBI Details

Action *

Create or Update PowerBI Report

Workspace name *

0d21251c-696f-439c-a40e-bcf05687c64a

Power BI file *

$(System.DefaultWorkingDirectory)/_PBI Deployment Pipeline/Sales & Returns Sample v201912 - BarCode Filter.pbix

Control Options

Output Variables

rc.com

Power BI Demo Deployment > Release-6 > Test Succeeded

Pipeline | Tasks | Variables | Logs | Tests | Save | Discard | ...

You can edit approvals, tasks, and variables of this release. Edits will be saved only to this release. To make changes to the pipeline, edit the release pipeline

Test
Deployment process

Agent job
Run on agent

Deploy content to the Test stage
Deploy content in a deployment pipeline

Deploy content in a deployment pipeline

View YAML

Task version 1.*

Display name *
Deploy content to the Test stage

Power BI service connection * | Manage
Demo service connection | New

Pipeline *
57364748-a89f-4a2f-b356-74b43de850fb

Target stage *
Test

- [x] Next task starts only after the deployment is completed

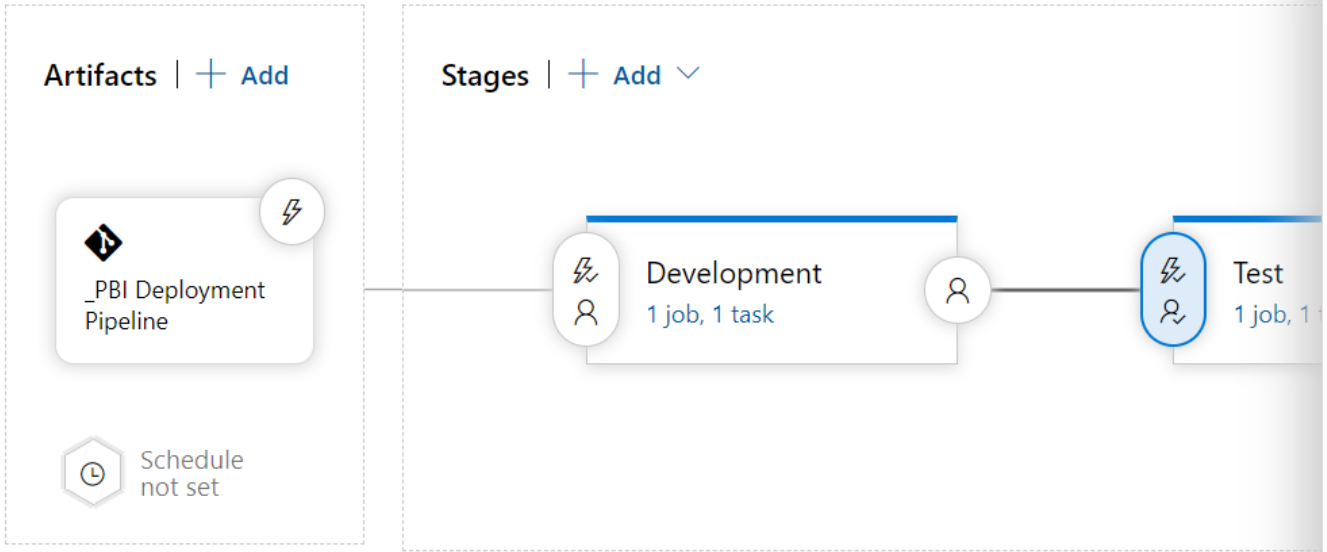
Artifacts to deploy *

- (•) All
- ( ) Selective

- [ ] Create new workspace if needed?
- [x] Allow the deployment to create new artifacts in the target workspace.
- [x] Allow the deployment to overwrite existing artifacts in the target workspace.
- [ ] Update the app in the target workspace.

Deployment options
Control Options
Output Variables

e-Marc.com



Pre-deployment conditions

Test

Triggers

Define the trigger that will start deployment to this stage

Pre-deployment approvals

Enabled

Select the users who can approve or reject deployments to this stage

Approvers

DU Demo User ✕ ML Marc Lelijveld ✕ Search users and groups for approvers

Approval order

- Any order
- In sequence
- Any one user

Timeout

30 Days

Approval policies

- [ ] The user requesting a release or deployment should not approve it
- [ ] Revalidate identity of approver before completing the approval.
- [ ] Skip approval if the same approver approved the previous stage

Data-Marc.com

Things to keep in mind

Make sure permissions are set correctly!

- Add the Service principal to each stage workspace and the deployment pipeline itself
- Grant delegated API permissions to the service principal in AAD (Pipelines & workspace permissions)

Get the DevOps extension

- Macaw extension for binary file upload for dev + pipeline tasks
- Microsoft extension if you prefer MSFT managed task, but does not support binary file upload

Data-Marc.com

Integrate Power BI Deployment Pipelines with Azure DevOps

ON JUNE 4, 2021 / BY MARC

/ IN AZURE, DEVELOPING, POWER BI REST API, POWER BI SERVICE, POWERSHELL, XMLA ENDPOINTS

Back in 2019, Ton Swart and I wrote a blog post on Versioning and CI/CD for Power BI with Azure DevOps. Back then, there were not many options available for versioning and professionalizing your ALM story for Power BI. Till today, this blog post is still my most read blog on Data-Marc.com which makes us proud.

SEARCH

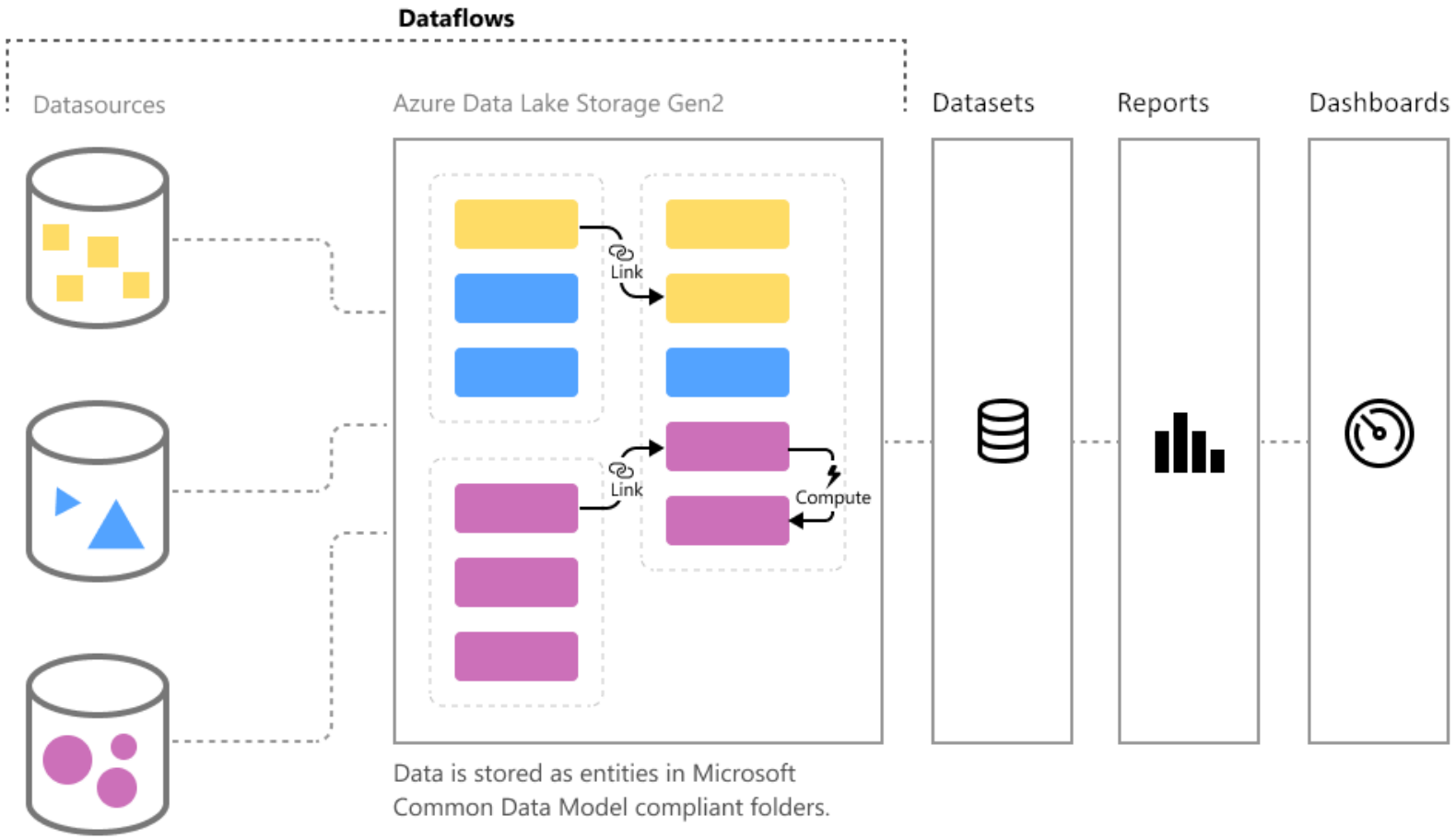
Search …

FOLLOW BLOG VIA EMAIL

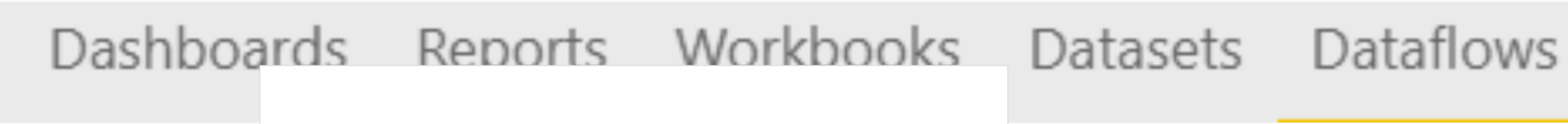
Enter your email address to follow this blog and receive notifications of new posts by email.

Join 2,559 other followers

But what about dataflows?



Data-Marc.com



Move dataflows across workspaces with the Power BI REST API

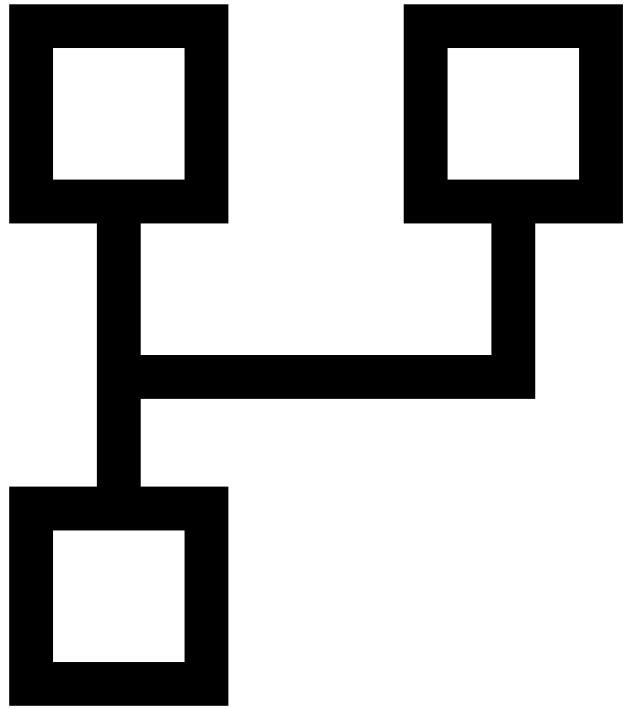
ON OCTOBER 22, 2019 / BY MARC
/ IN DATAFLOWS, DEVELOPING, POWER BI REST API, POWER BI SERVICE, POWERSHELL
/ EDIT

Dataflows are part of the Power BI service for a while now. More and more people are starting to benefit from it in multiple perspectives. The two most heard ones are re-use of data (and logic), but also isolate refreshes to avoid dependencies of refresh failures from different sources.

Same as for your data sources, you might have different workspaces setup in different stages of your DTAP development approach. In the past, I wrote a

Dataflows and CI/CD

- Dataflows are created and maintained in the Power BI Service
- Stage-to-stage deployment via pipelines is supported
- What about versioning of Dataflows?



Data-Marc.com

Integrate Power BI Deployment Pipelines with Azure DevOps

Data-Marc.com

Comparison

Functionality	Azure DevOps	Deployment Pipelines	Better option
Working with multiple users	Yes	Yes	-
Incremental deployment	No	Yes	Deployment pipelines
Meta data deployment	No	Yes	Deployment pipelines
Requires Power BI Premium	No	Yes	DevOps
Versioning	Yes	No	DevOps
Dataflow support	Yes	Yes	DevOps
Integration with other processes	Yes	Yes, via DevOps	DevOps
Customization	Yes	No	DevOps

Data-Marc.com

Macaw Power BI Extensions

Macaw | 778 installs | ★☆☆☆☆ (1) | Free

Power BI release manager tasks for VSTS.

Get it free

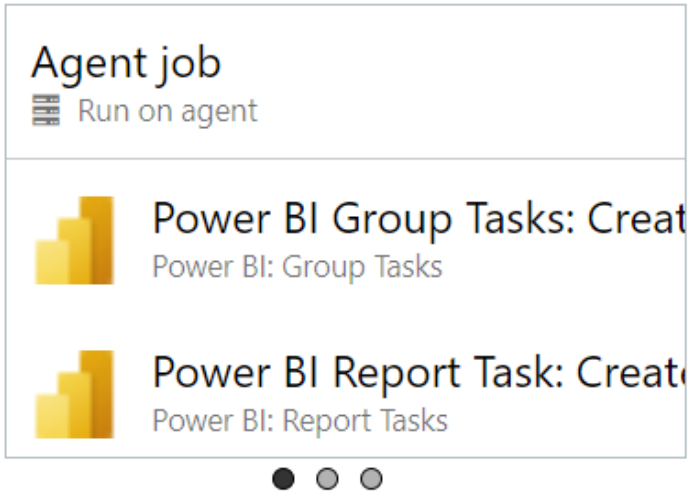
Overview Q & A Rating & Review

Macaw Power BI Extensions is a Build and Release Task for Azure Pipelines. With this tasks you can control your Power BI deployment in Azure DevOps

Actions that can be performed with this extension are:

- Workspace tasks
  - Create or Update Power BI workspace
  - Delete Power BI workspace
- Report tasks
  - Create or Update Power BI Report
  - Delete Power BI Report
  - Delete Power BI DataSet
  - Update the parameters values for the specified dataset
- Pipeline tasks
  - Deploy all content to a target stage
  - Deploy specific content to a target stage

For more information please read: https://data-marc.com/2021/06/04/integrate-power-bi-deployment-pipelines-with-azure-devops/



Categories

Azure Pipelines

Works with

Azure DevOps Services

Azure DevOps Server

Resources

License

Power BI automation tools (Preview)

Microsoft | 465 installs | (0) | Free

Automate release management tasks related to Power BI deployment pipelines

Get it free

Overview | Q & A | Rating & Review

The Power BI deployment pipelines tool enables BI teams to build an efficient and reusable release process for their Power BI content. You can leverage the tasks in this Azure DevOps extension to integrate Power BI into your organization's automation process. Here are a few examples of what can be done using the extension:

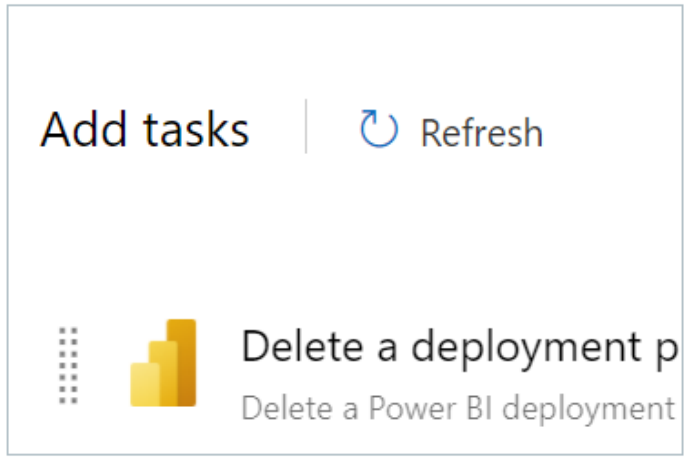
- Manage Power BI pipelines from start to finish, including creating a pipeline, assigning a workspace to any stage, deploying and deleting the pipeline.
- Assign users to a pipeline.
- Assign users to a workspace.
- Deploy all/selected items in a Power BI pipeline to the next stage.

Learn more about using these tasks here.

To get started with deployment pipelines, learn more here.

Release Notes

Version	Remarks
1.0.2	Public preview release.



Categories

Azure Pipelines

Tags

dataset | Deployment Pipelines | PBIX | Power BI | release | Utility task

Works with

Azure DevOps Services

Wrap up

Professionalize your deployment process

Easy **roll-back** within pipelines

Versioning can be achieved with DevOps

Deployment pipelines is worth using! But integration is even more powerful

Combine them, as they are **better together!**

Data-Marc.com

Thanks for attending!

Https://data-marc.com/?s=Deployment

Marc Lelijveld
Data & Analytics consultant
Macaw Netherlands

Microsoft® Most Valuable Professional

Microsoft MCT

Marc.Lelijveld@outlook.com

@MarcLelijveld

linkedin.com/in/MarcLelijveld

Data-Marc.com