



# 15 edycja konferencji SQLDay

8-10 maja 2023, WROCŁAW + ONLINE



---

partner złoty

---

## Future Processing

---

partner srebrny

---



---

partner brązowy

---





Kamil & Adrian Słomka

# Power BI & Azure DevOps - better together



# Słomka & Słomka



## Kamil Słomka

- Consultant, architect & technical **lead** with over 12 years experience in Business Intelligence and data analytics solutions
- Power BI Trainer & co-author of Power BI online course (Elitmind Academy)
- Contact: <https://www.linkedin.com/in/kamil-s%C5%82omka-5a6b50109/>



## Adrian Słomka

- Data architect & technical lead, DataOps Advocate. He thinks that he understands the difference between DevOps and DataOps
- Co-founder of <http://www.faro.team>
- Contact: <https://www.linkedin.com/in/adrian-s%C5%82omka-34a11a7a/>



# AGENDA



- DevOps & DataOps
- Power BI - publishing scenarios
  - Self-service content publishing
  - Enterprise content publishing
- Live Demo!
- How can I do the same?
- Next steps: what more can I do?



# DevOps & DataOps

- Or rather DevOps vs DataOps?

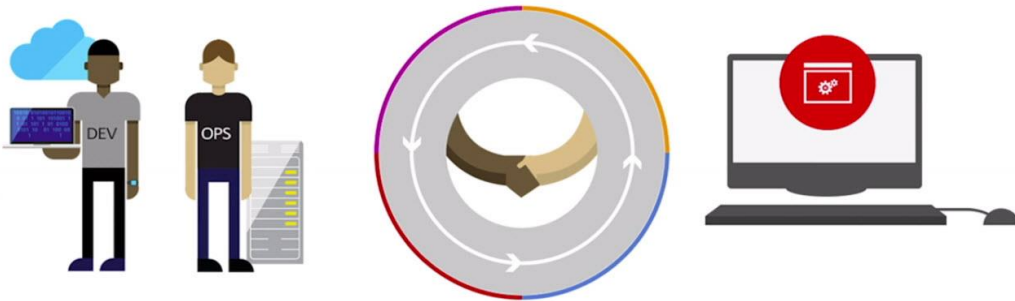


# DevOps

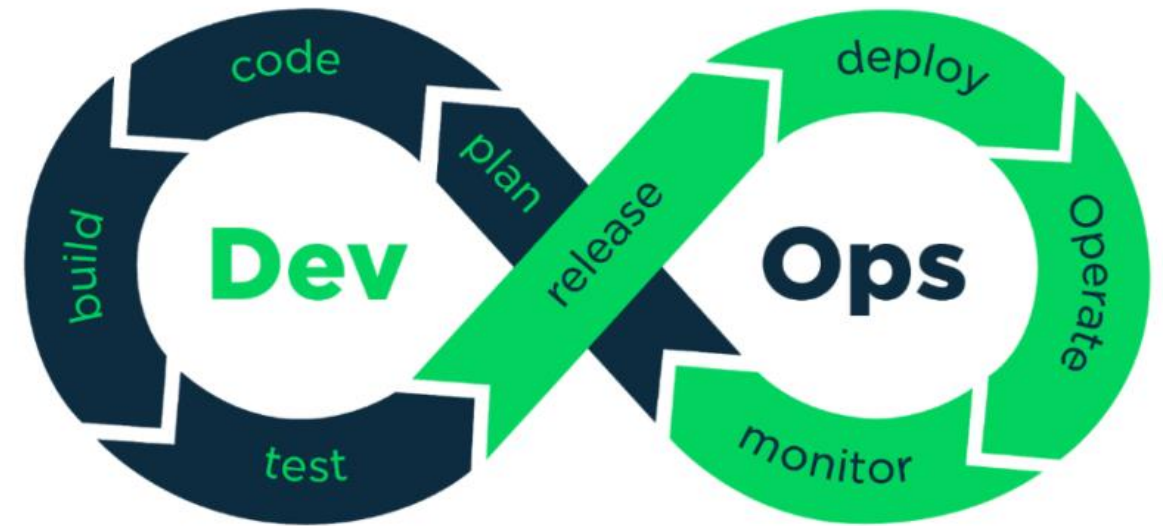


- DevOps is the union of **People, Process, and Products** to enable continuous delivery of **value** to our end customer

## DevOps: the three stage conversation



1 People    2 Process    3 Products



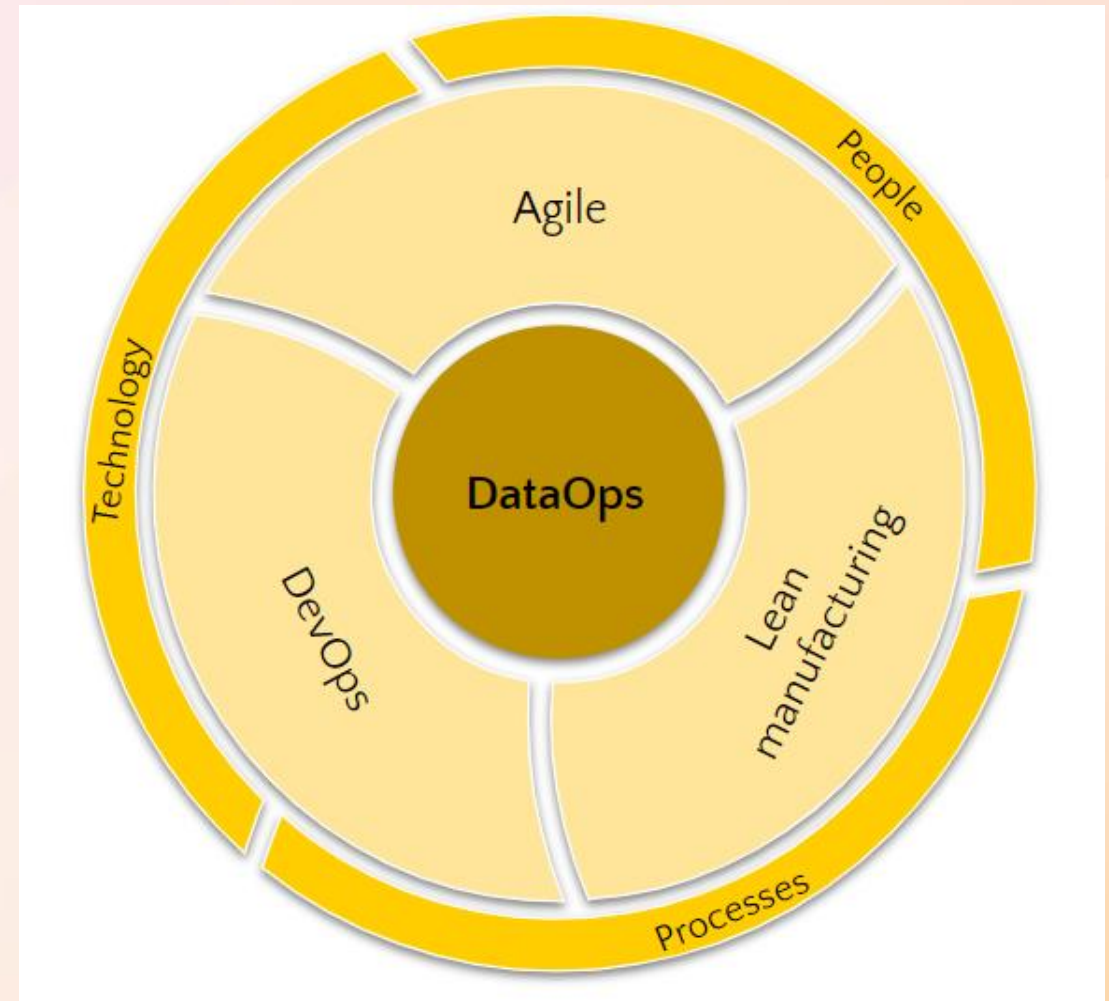
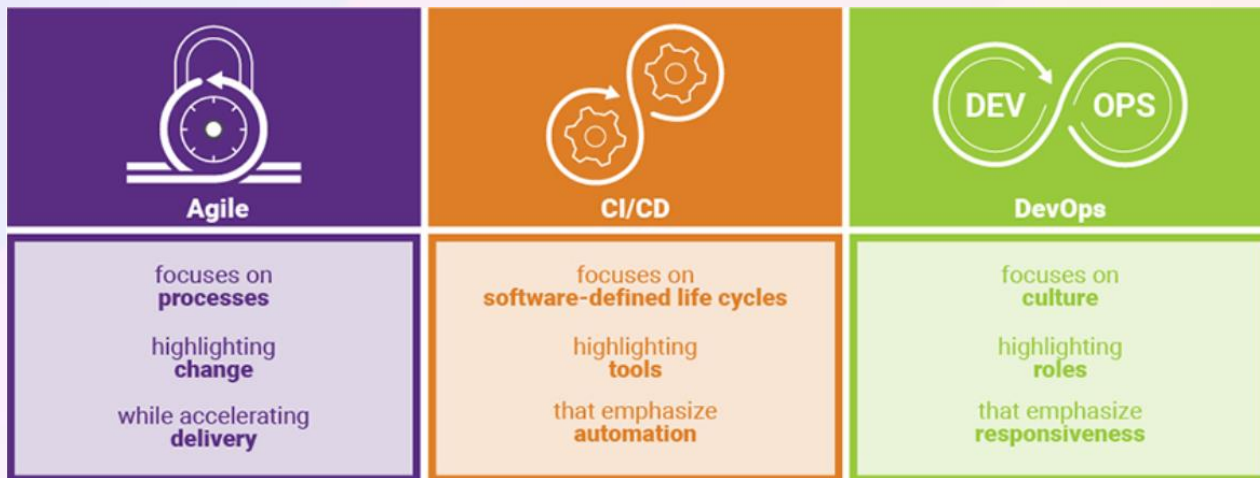
Plan > Code > Integrate > Test > Deploy > Operate > Monitor > Feedback



# DataOps



- DataOps combines: Agile development, DevOps and Lean manufacturing and applies them to Data Analytics





# Power BI - publishing scenarios

- What options do we have?



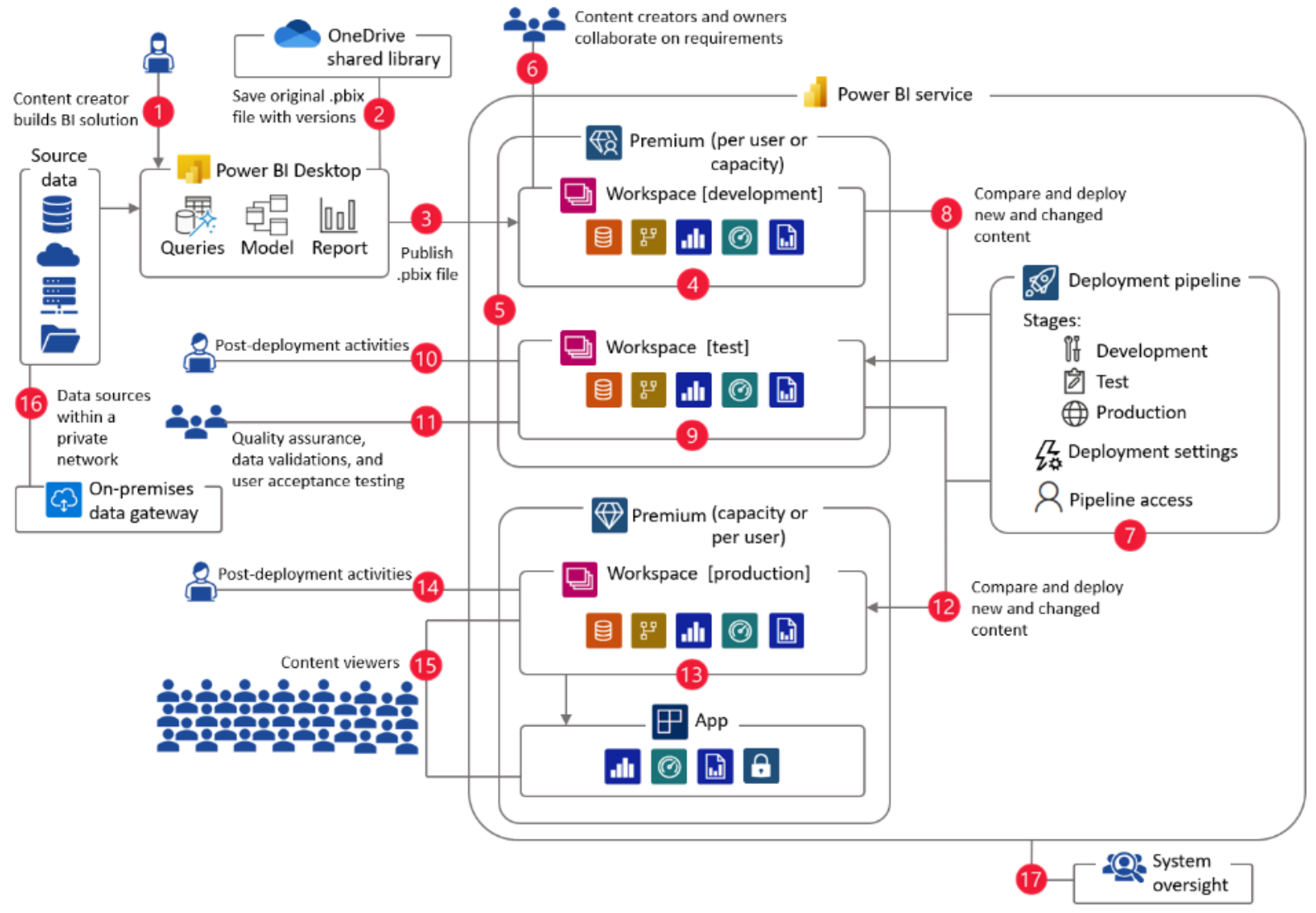


# Self-service content publishing

- Scenario suitable for self-service scale
- No git repo used, no Azure DevOps
- Mainly a manual process:
  - Deployment to Dev done by hand
  - Deployment to Test and Prod done by PBI Deployment Pipelines, triggered by hand
- Maybe we can automate a bit?

## Self-service content publishing

### Publishing content to development, test, and production with deployment pipelines



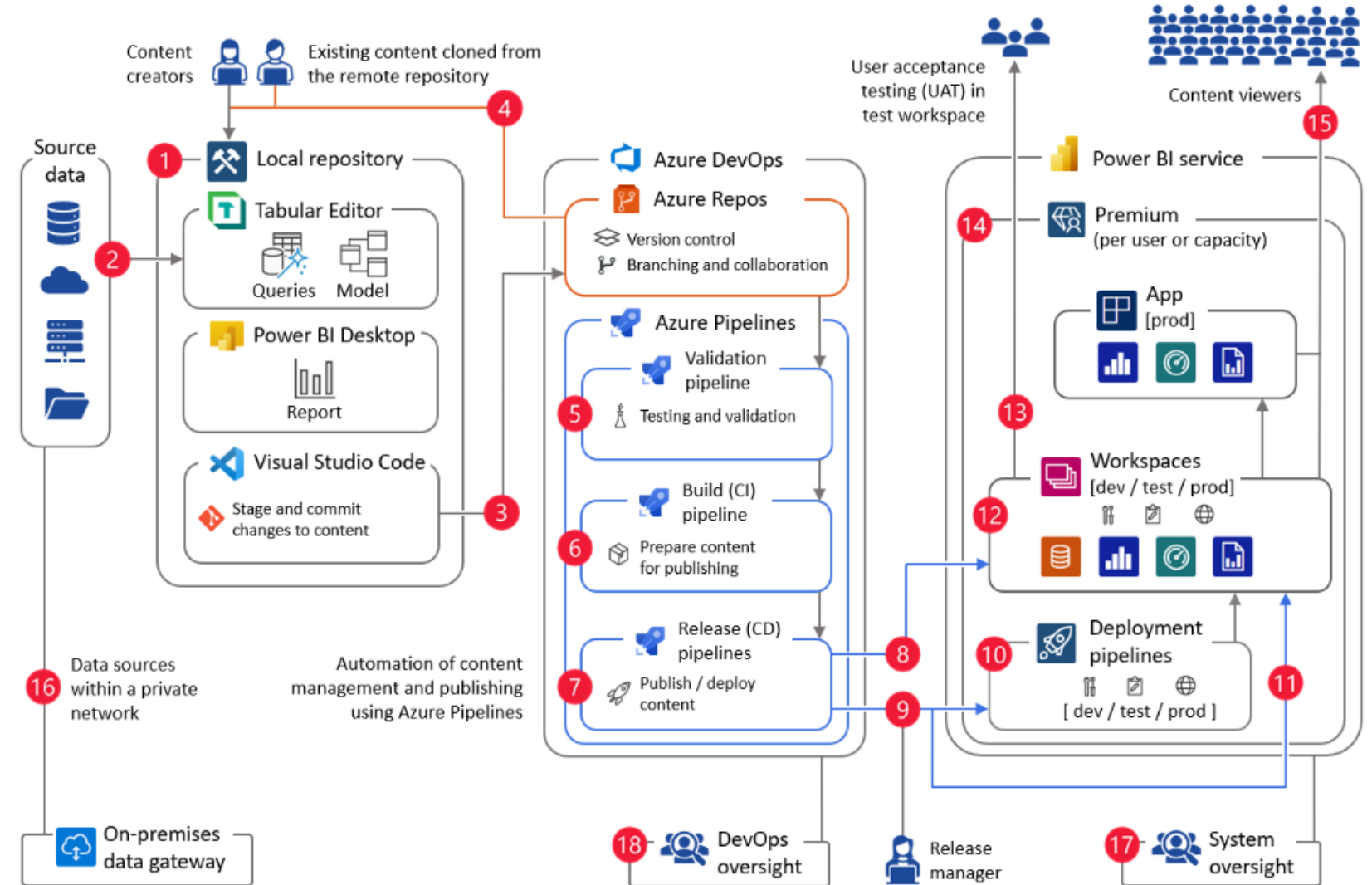
<https://learn.microsoft.com/en-us/power-bi/guidance/powerbi-implementation-planning-usage-scenario-self-service-content-publishing>



# Enterprise content publishing

- Scenario suitable for enterprise scale
- Making good use of Azure Git Repos and Azure DevOps Pipelines
- Automation by Azure DevOps
  - Commit / Pull Request can start the whole Deployment Process
  - ADO Pipelines are triggering PBI Deployment Pipelines
- There is a variant with direct deployments (REST API/XMLA endpoints)

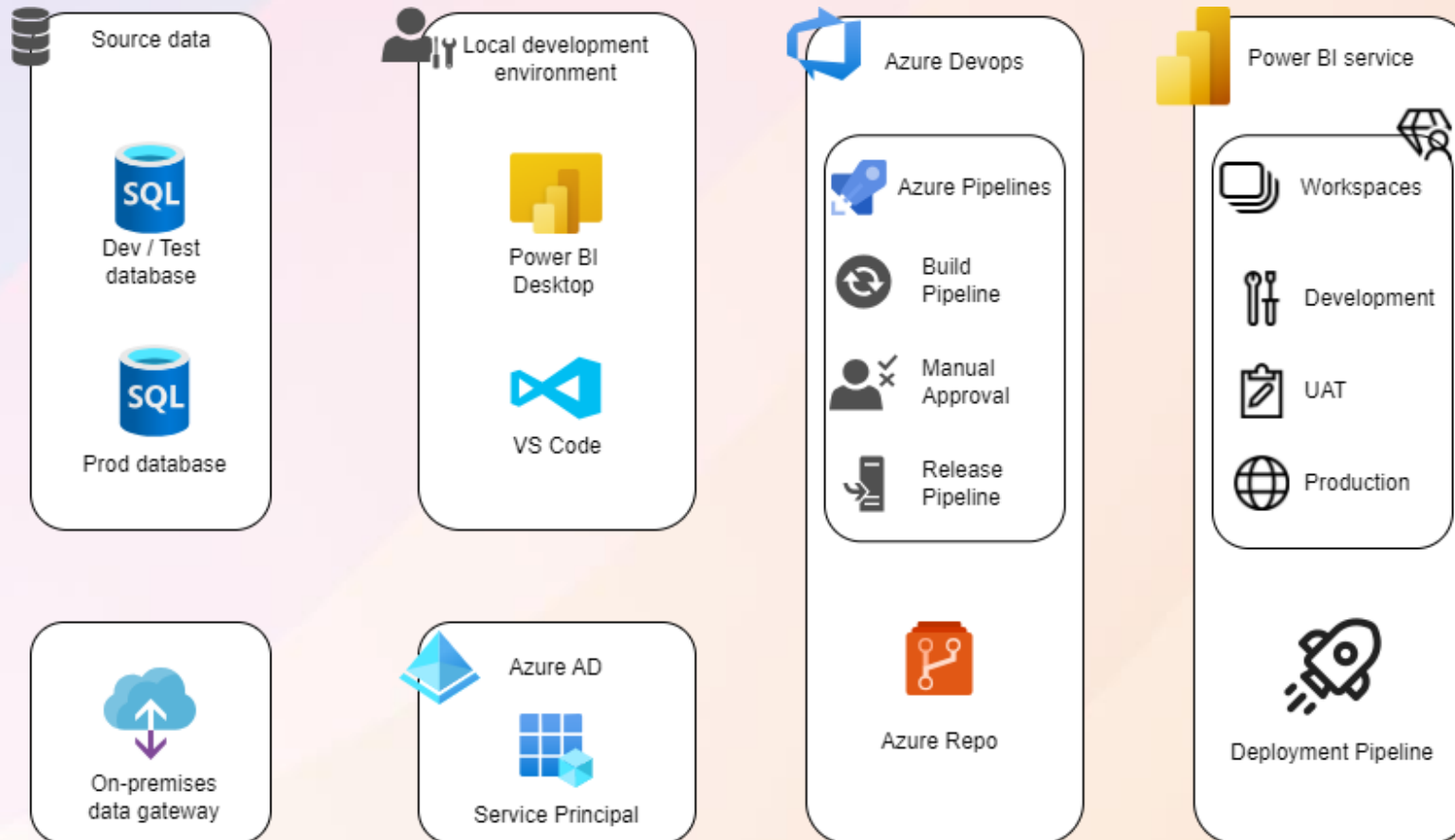
## Enterprise content publishing Enhance collaboration and manage content at scale by using Azure DevOps



<https://learn.microsoft.com/en-us/power-bi/guidance/powerbi-implementation-planning-usage-scenario-enterprise-content-publishing>



# Solution: building blocks





# Live Demo!

- Let's deploy something!



# How can I do the same?

- Building blocks of the Demo environment



# How can I build the demo environment?

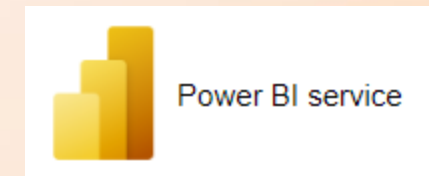
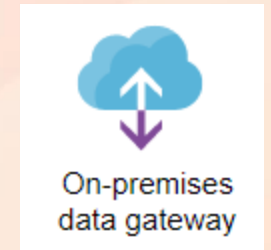
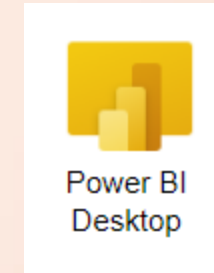


## 1. Local environment

- Power BI Desktop as the development tool for Power BI reports & models (\*.pbix)
- VS Code used for Git integration
- On-premises Data Gateway for network connectivity between a data source and PBI service

## 2. Power BI

- Data sources created in the On-premises Data Gateway
- 3 workspaces for content publishing : Development, UAT, Production (**Premium per User**)
- Deployment Pipeline created:
  - Workspaces assigned to 3 environments (Development, UAT, Production)
  - Deployment Rule for Production environment to replace database connection
- **Premium Licence required** to use PBI Deployment Pipelines



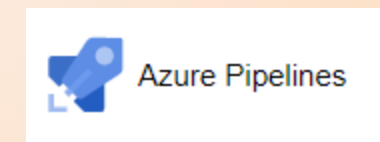
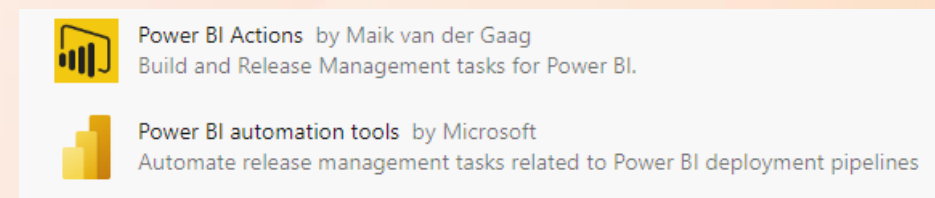
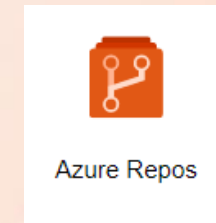
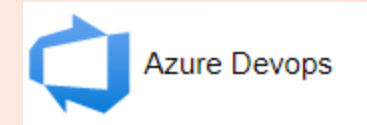


# How can I build the demo environment?



## 3. Azure Devops

- Agents installed on the local environment (MS Hosted ones also can be used)
- Git repo created
- Extensions installed:
  - Power BI Actions (3rd party):  
<https://marketplace.visualstudio.com/items?itemName=maikvandergaag.maikvandergaag-power-bi-actions>
  - Power BI Automation Tools (Microsoft):  
<https://marketplace.visualstudio.com/items?itemName=ms-pbi-api.pbi-automation-tools>
- Service Connections created with a Service Principal
- Build & Release Pipelines created



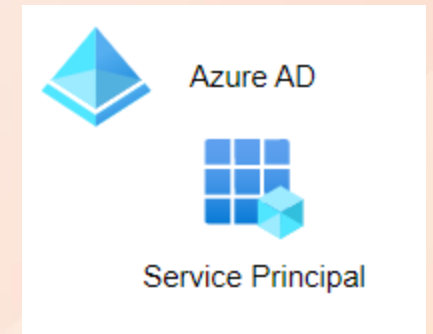


# How can I build the demo environment?



## 4. Azure AD – Service Principal

- Service Principal with secret key created and added to a security group
- Power BI Service Permissions:
  - Tenant Settings: Allow to use REST APIs via security group
  - Workspaces: Member at least
  - Deployment Pipeline: Admin
  - Data sources: User at least







# Next steps

- What more can I do?
- What is Microsoft working on?



# Possible additions and extensions



- Keep Data Models as text files in Git (Tabular Editor, pbi-tools)
  - Microsoft data model development tools, such as **Visual Studio with Analysis Services projects**, store the entire data model definition in a *Model.bim* file
    - So the workflow looks like:  
**development in .bim** file -> **deploy from .bim**
  - **Tabular Editor** has a feature called *Folder serialization*, which deconstructs the Model.bim file into separate object-specific files within an organized folder structure
    - .pbix -> decompile to .json files -> **development in .json** files -> compile to .bim -> **deploy from .bim**
  - **pbi-tools** is a command-line tool bringing source-control features to Power BI. It works alongside Power BI Desktop and enables mature enterprise workflows for Power BI projects:
    - .pbix -> decompile to .json files -> **development in .json** files -> compile to .pbix / .pbit / .bim -> **deploy from .pbix / .pbit / .bim**
- Validation Pipeline / Test Automation (e.g. Tabular Editor best practices or schema checks, data verification)
- Control the scope of a Deployment
- Other branching strategy
- Deployments done by REST API / XMLA endpoints instead of PBI Deployment Pipelines
  - Deployment with REST API doesn't require Premium nor Azure DevOps extensions!



# What is Microsoft (and the community) preparing for us?

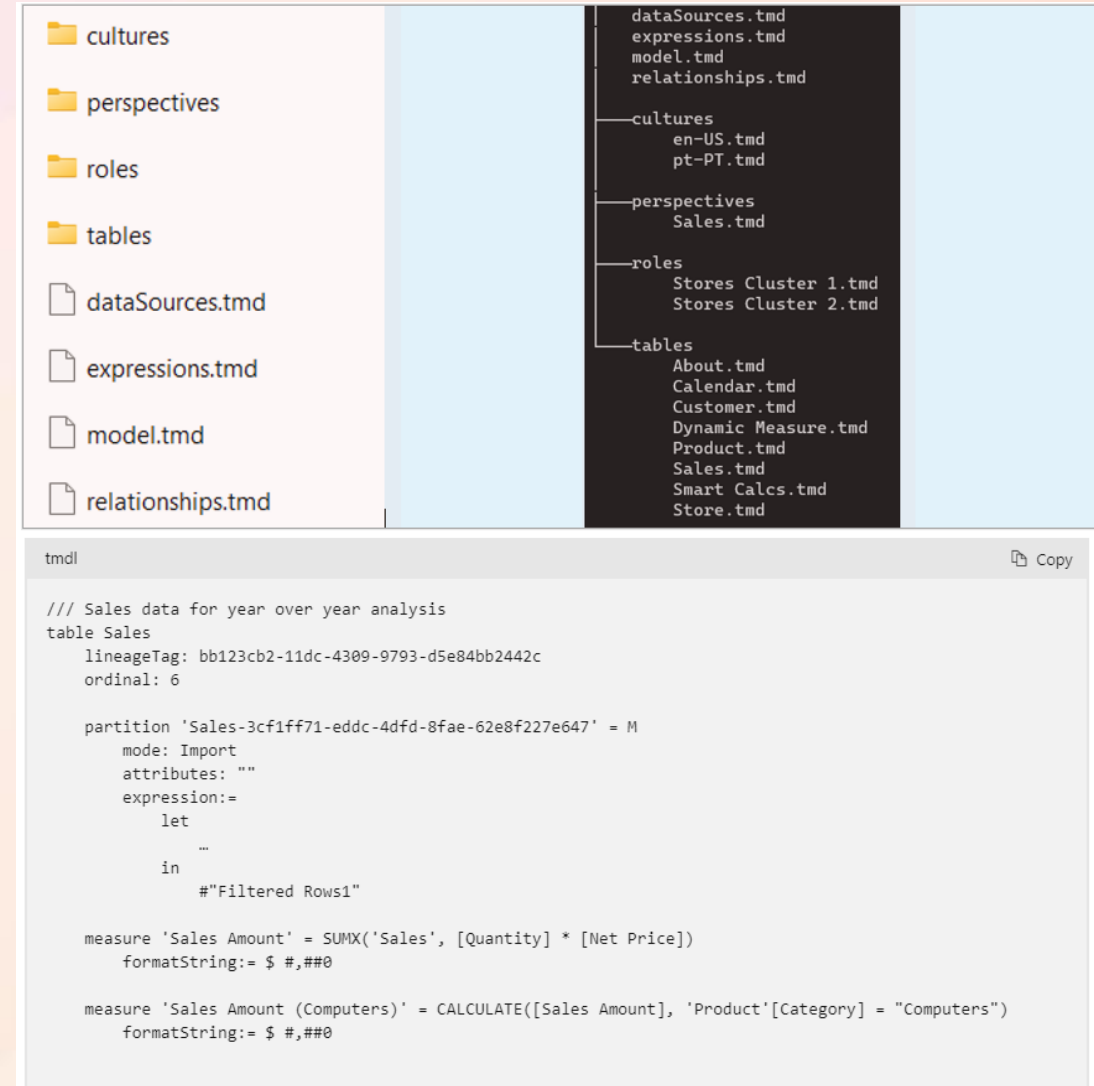


- Tabular Model Definition Language (TMDL) is in public preview!
  - A human readable format using a YAML-like syntax
  - A standard folder output format where each model object has an individual file representation
  - TMDL is a crucial step towards better integration with source-control systems
  - TMDL will gradually be integrated into Microsoft tools
  - There will be an open-source Visual Studio Code extension
  - Community tools like *pbi-tools*, *Tabular Editor* and *ALM Toolkit* are expected to support TMDL

## Workflow:

.pbix -> decompile to .tmd files -> **development in .tmd files** -> **deploy .tmd** (XMLA endpoint)

<https://learn.microsoft.com/en-us/analysis-services/tmdl/tmdl-how-to?view=asallproducts-allversions>  
<https://www.powercommunity.com/announcing-public-preview-of-the-tabular-model-definition-language-tmdl/>





# Take-away points



Key points to remember from the presentation:

- DataOps is not only DevOps for Data Analytics
- In DataOps testing is always a challenge
- Azure DevOps is a powerful tool, which integrates well with Power BI, but we need to know what to automate
- There is no single gold standard for DevOps implementation for Power BI, there are many options to choose from
- A lot can (and should!) be improved in Power BI to make it even more DevOps friendly (everything as code!)
- Tools developed by Power BI Community are well recognized and appreciated by Microsoft (pbi-tools, Tabular Editor)
- **Despite childhood illnesses, we strongly recommend investing your effort in implementing DevOps for your Power BI**



# 15 edycja konferencji SQLDay

8-10 maja 2023, WROCŁAW + ONLINE



---

partner złoty

---

## Future Processing

---

partner srebrny

---



---

partner brązowy

---

