Microsoft Fabric and Azure DevOps – The story so far

Microsoft Fabric

Azure DevOps

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Fabric User Group

Managing expectations

- Demos during the session
- All on Trial tenant (no NDA material)
- Includes details about new Microsoft CI/CD workflows document

Agenda

- Bio
- Intro to Microsoft Fabric
- Intro to Azure DevOps
- Configuring Azure Repos for Git integration
- Using Azure DevOps with suggested CI/CD workflow options
- CI/CD for Data Warehouses

Kevin Chant

- Data Engineering Manager in the Netherlands
- Worked in IT since the days of Windows 95
- Experience in various sectors
- Various certifications, Data Platform MVP

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Dutch Fabric Usergroup

Microsoft CERTIFIED DEVOPS ENGINEER EXPERT ★★★

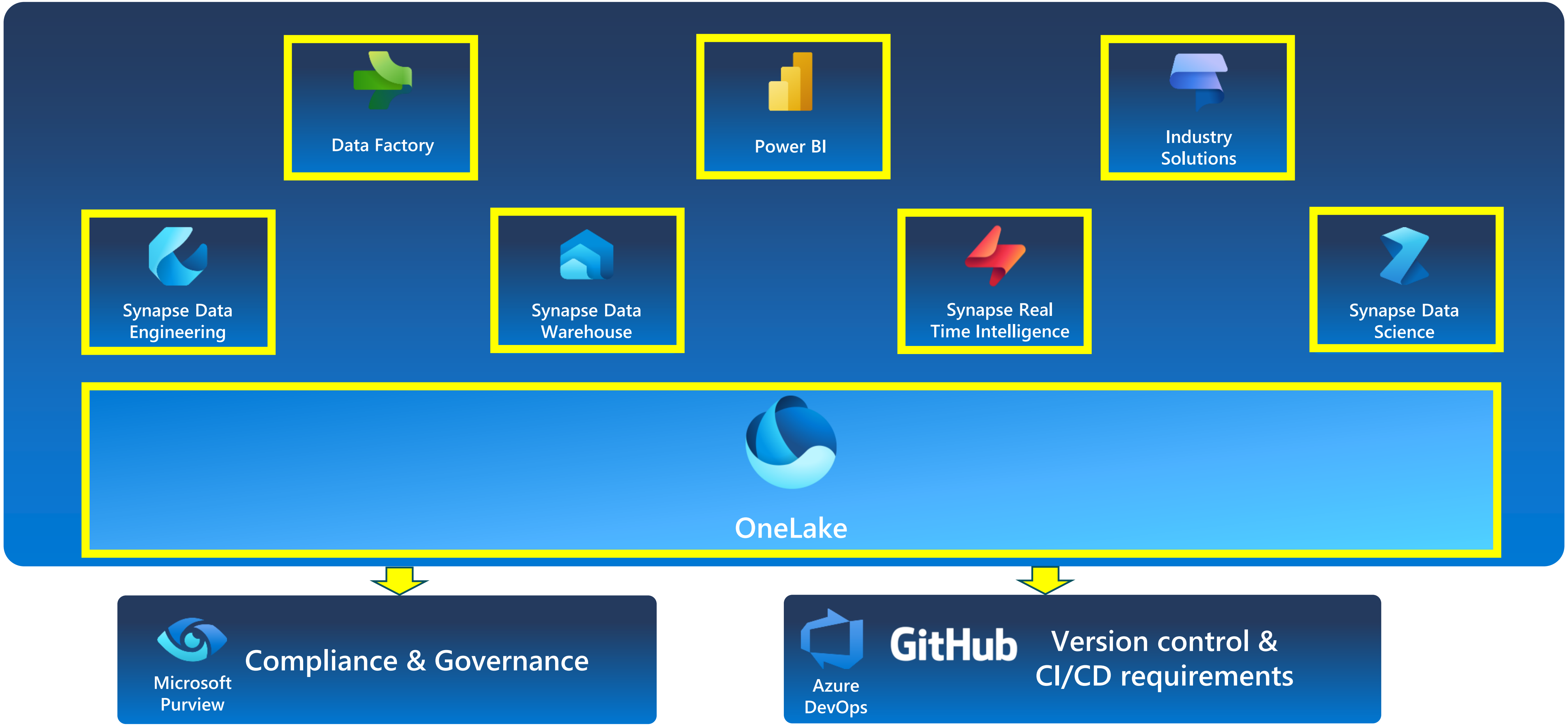
Microsoft Fabric

Comp analytics platform

Lake centric and open

Empower every Business user

AI Powered



Data Factory

Power BI

Industry Solutions

Synapse Data Engineering

Synapse Data Warehouse

Synapse Real Time Intelligence

Synapse Data Science

OneLake

Microsoft Purview

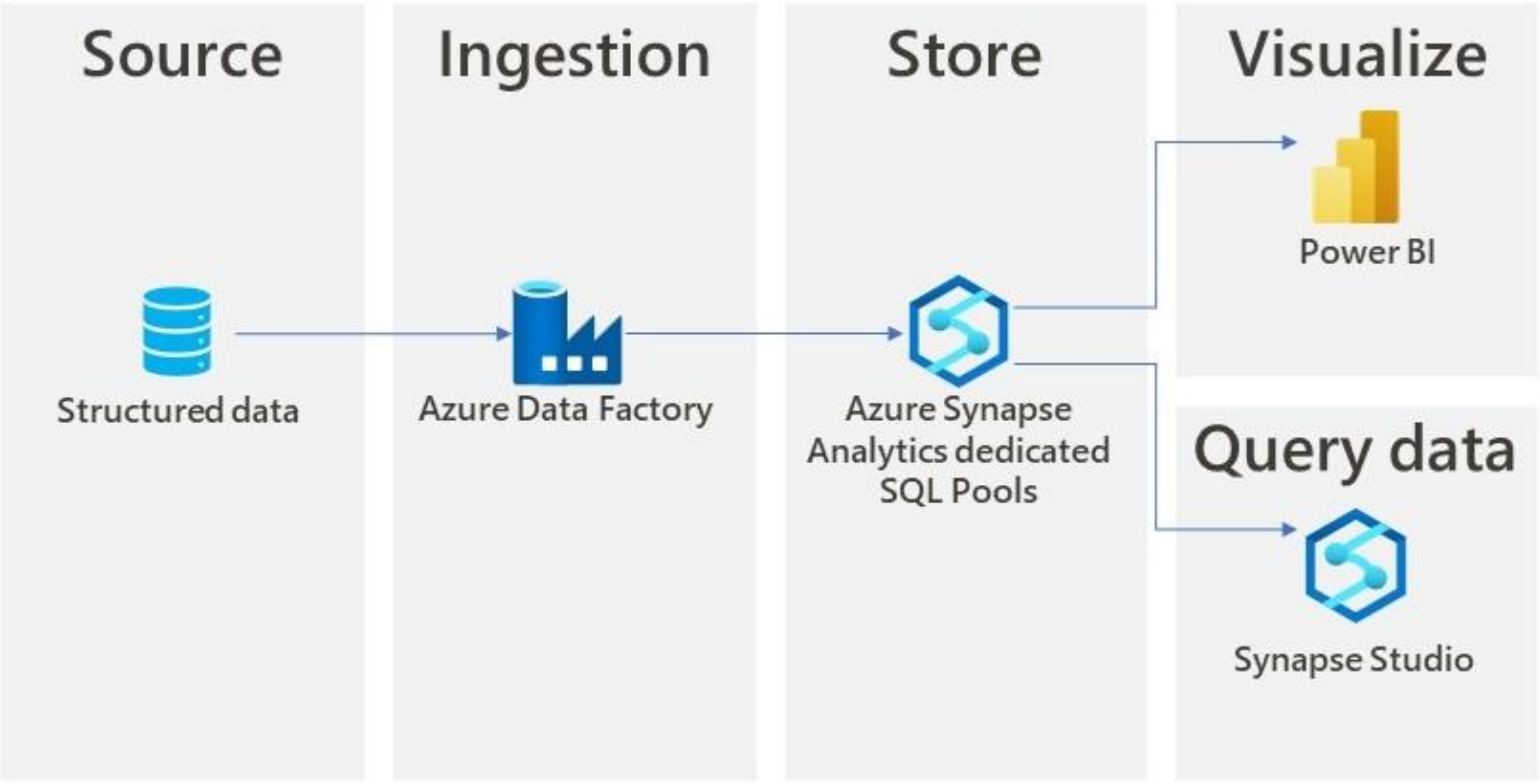
Compliance & Governance

Azure DevOps

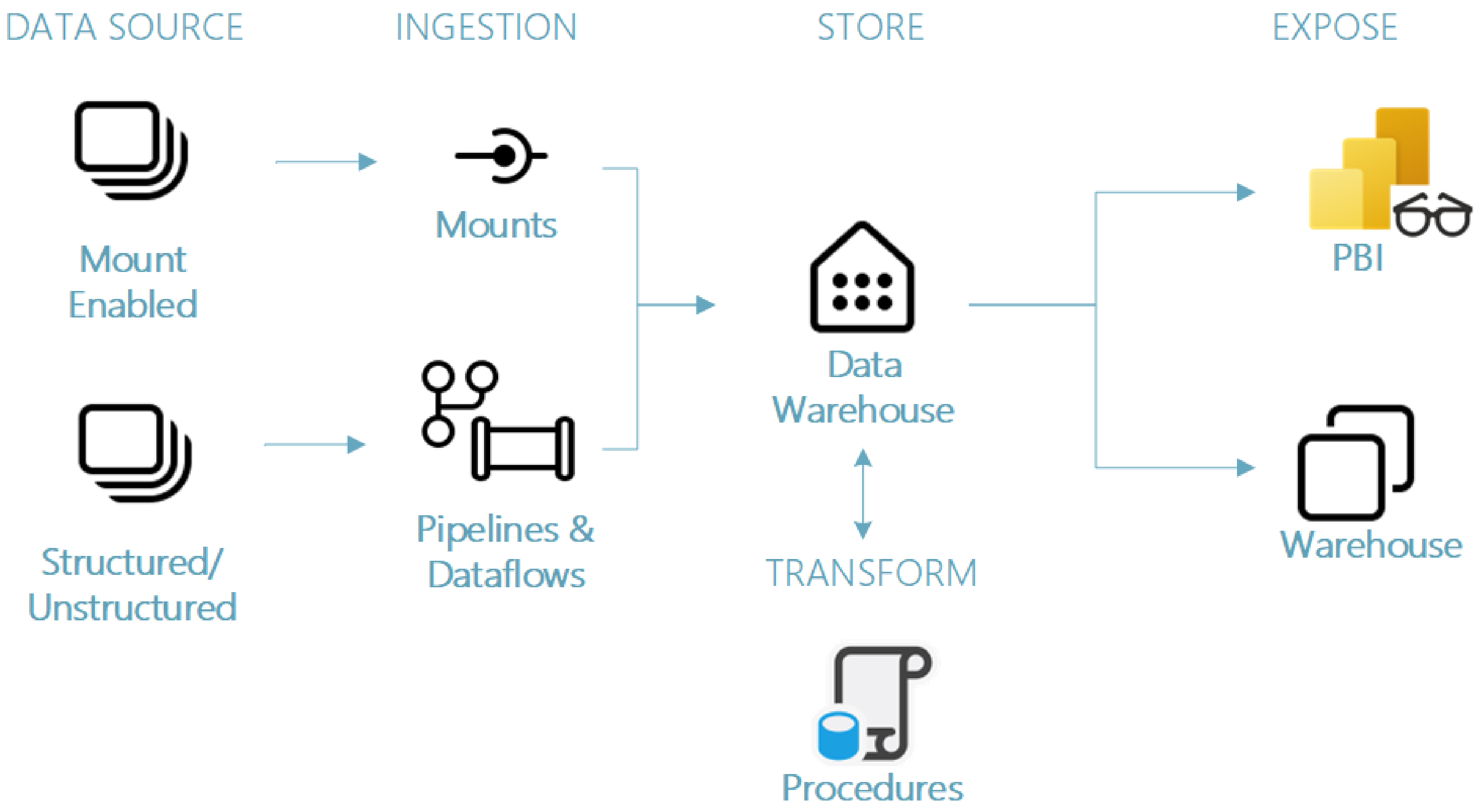
GitHub

Version control & CI/CD requirements

Integrating various services



Within Microsoft Fabric



Fabric Demo

Azure DevOps

- Manages Application Lifecycle Management
- Collection of services
- Two main versions

Azure DevOps Demo

About Microsoft Fabric Git Integration

- Allows supported items in a workspace to have metadata synchronized with a Git repository.
  - To be more precise a workspace synchronizes with a branch.

- Items supported at various levels.

- Supports Azure DevOps and GitHub cloud-based offerings.

- Requires Fabric or Power BI Premium capacity.

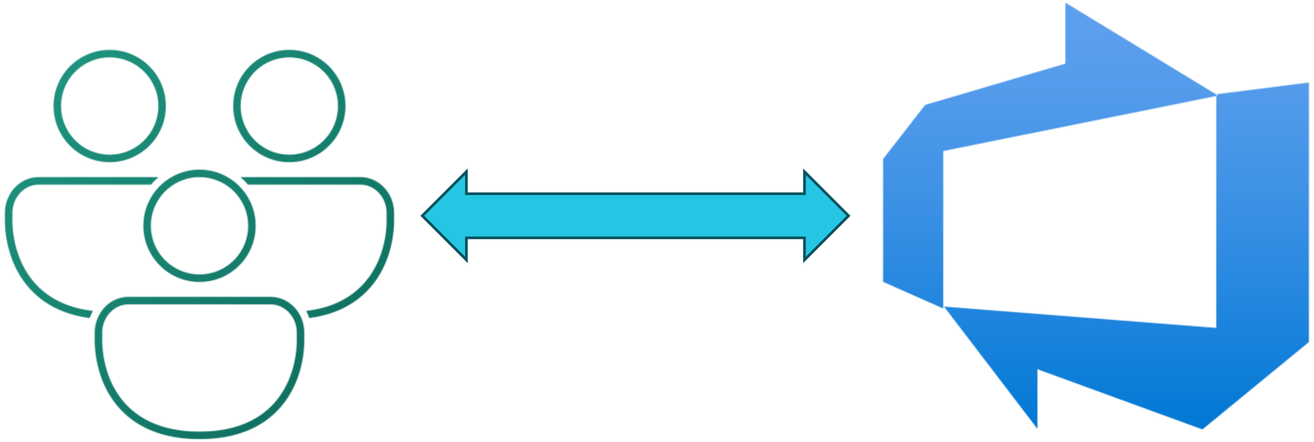
Configuring AzDo for Microsoft Fabric Git Integration

- Utilizes Microsoft Entra ID authentication.
- Both workspace and repository require access.
- Entra user needs to be on same tenant, Azure DevOps org **does not**!

Security considerations

- Keep organization & repository in relevant region.
- Keep organization private.
- Consider GitHub Advanced Security for Azure DevOps.

Git integration Demo



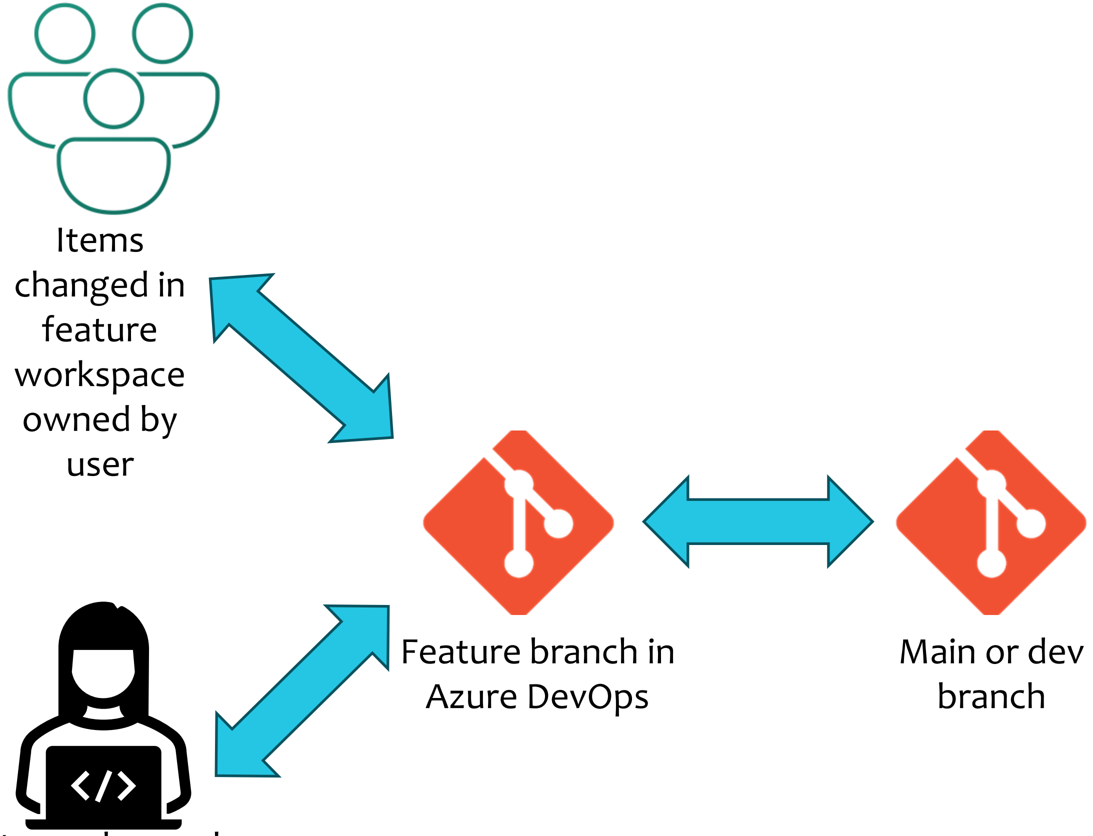
Microsoft Fabric workspace

Azure DevOps

Using Azure DevOps with suggested CI/CD workflow options

- Microsoft released document last month.
- Highlight how Azure DevOps fits into suggested CI/CD workflows.

Recommended development process



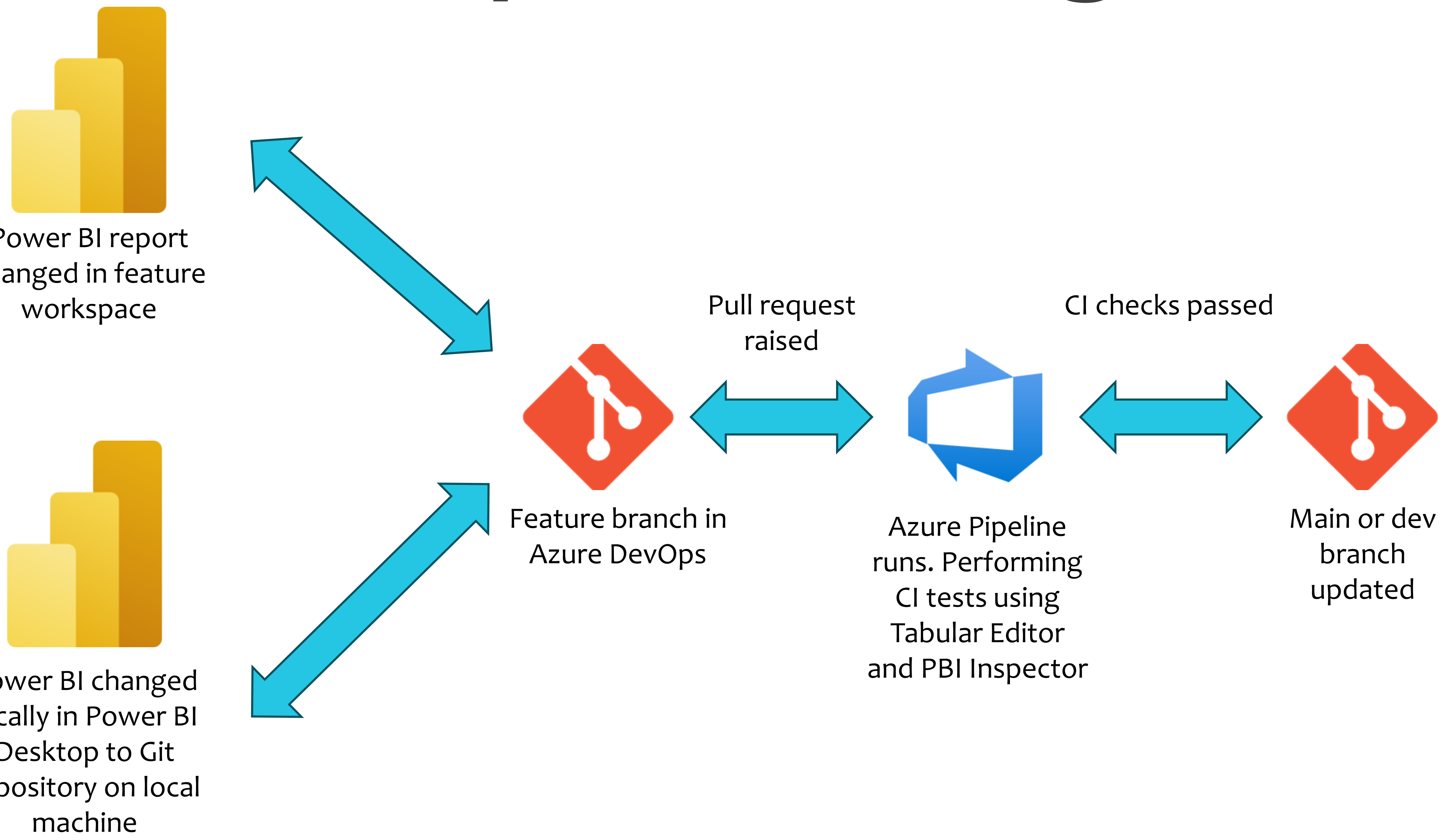
Items changed in feature workspace owned by user

Feature branch in Azure DevOps

Main or dev branch

Items changed by IDE to Git repository on local machine

One step further by introducing unit tests



Power BI report changed in feature workspace

Power BI changed locally in Power BI Desktop to Git repository on local machine

Feature branch in Azure DevOps

Pull request raised

Azure Pipeline runs. Performing CI tests using Tabular Editor and PBI Inspector

CI checks passed

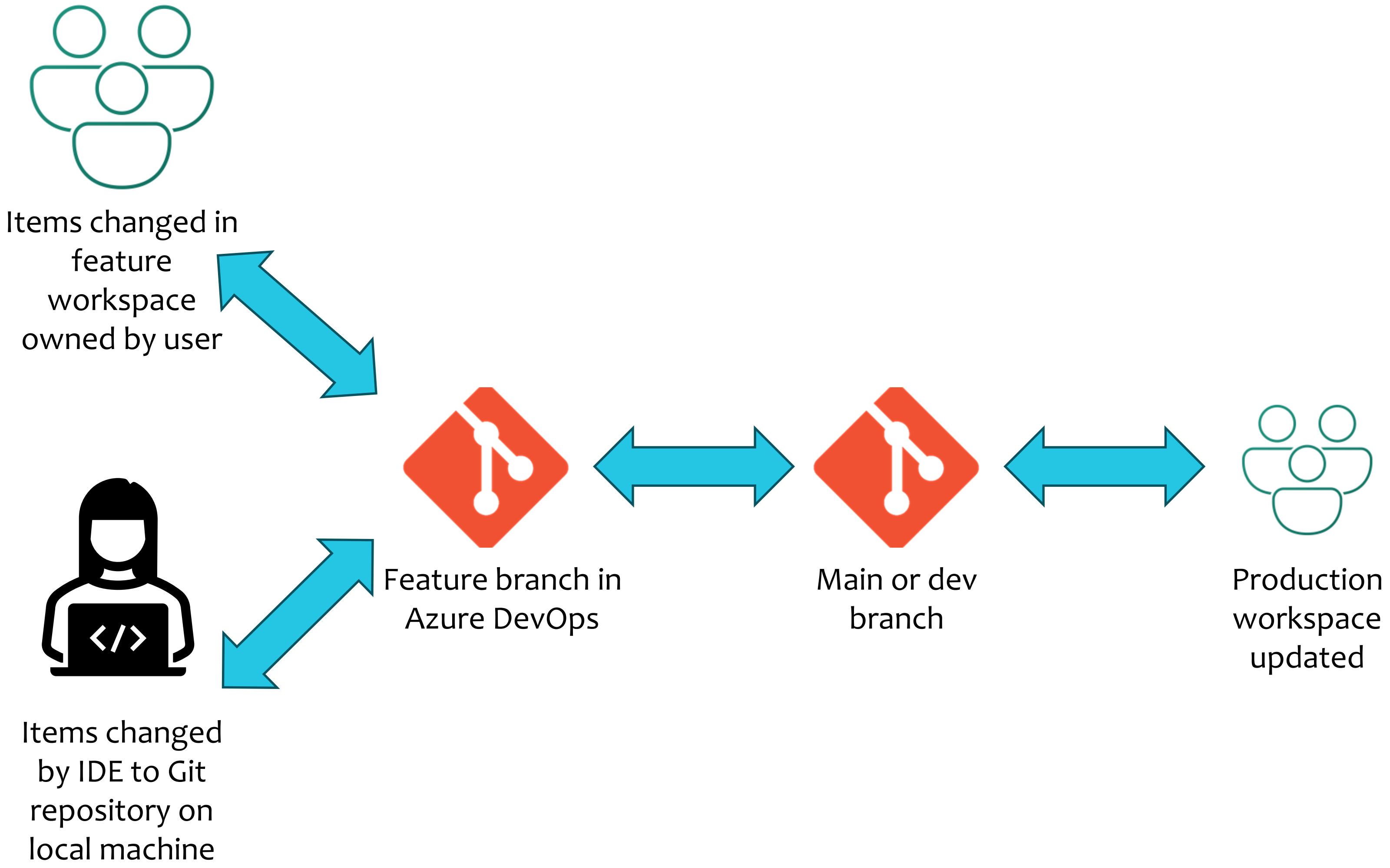
Main or dev branch updated

Release Option 1 – Git-based deployments

- Deploy to multiple workspaces connected to the same Git repository.

- Achieved by having workspaces connected to different branches.

Release Option 1 - Diagram


Items changed in feature workspace owned by user
Items changed by IDE to Git repository on local machine
Feature branch in Azure DevOps
Main or dev branch
Production workspace updated

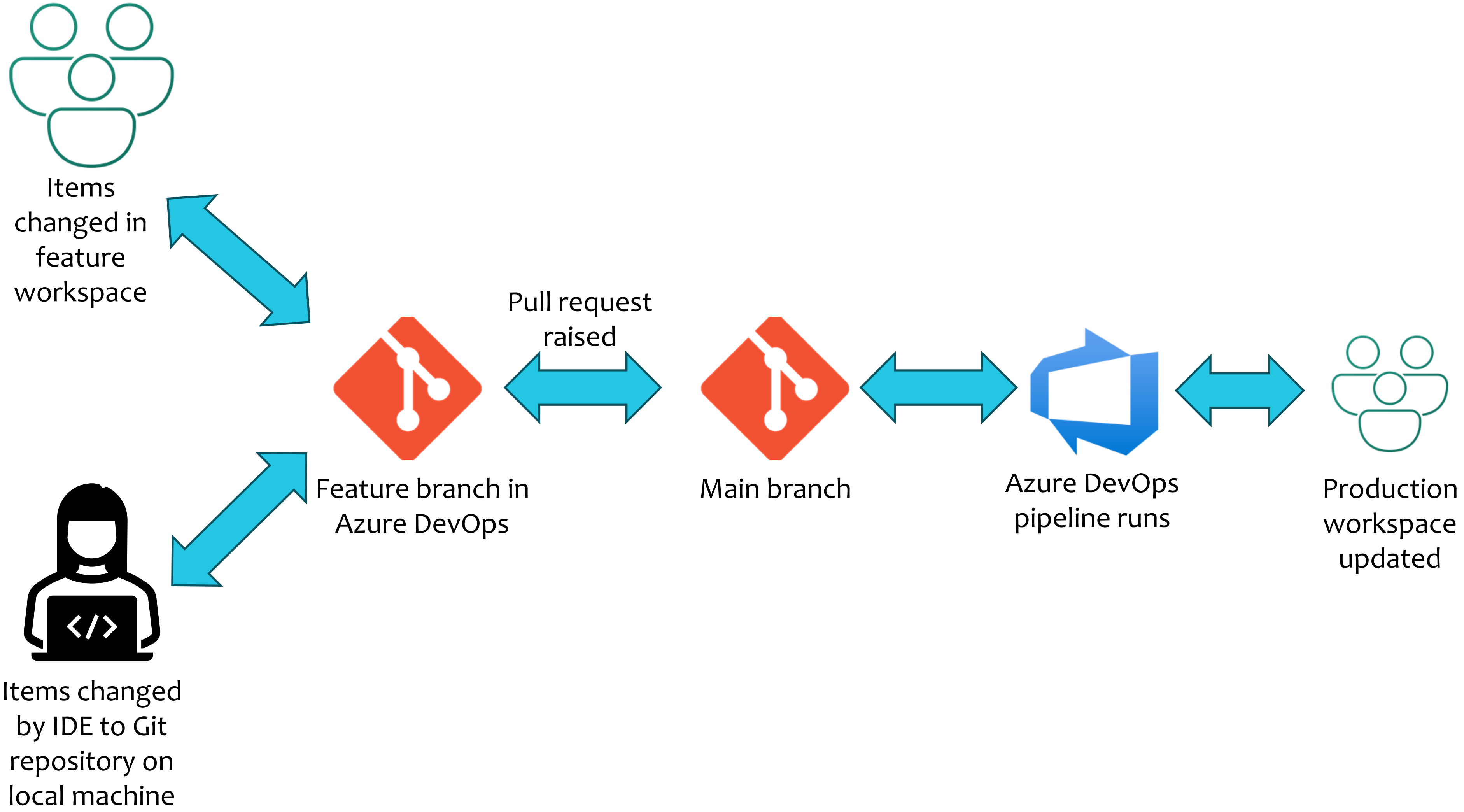
Release Option 2 – Git-based deployments using build pipeline

- Deploy to different workspaces using Azure Pipelines.

- Recommendation is that each workflow contains a build and release process.
  - Build for unit tests.
  - Release to perform update.

- Note that for various APIs only Power BI items are supported by service principals at this moment in time.

Release Option 2 - Diagram



Items changed in feature workspace
Items changed by IDE to Git repository on local machine
Pull request raised
Feature branch in Azure DevOps
Main branch
Azure DevOps pipeline runs
Production workspace updated

Azure Pipeline recommendations

- Consider YAML Pipelines.
  - You cannot do a PR on a classic pipeline!

- Self-hosted Azure Pipeline agents to keep workload secure.

- Keep sensitive values in either:
  - Variable groups.
  - Azure Key Vault

- Implement approvals process for production workloads.

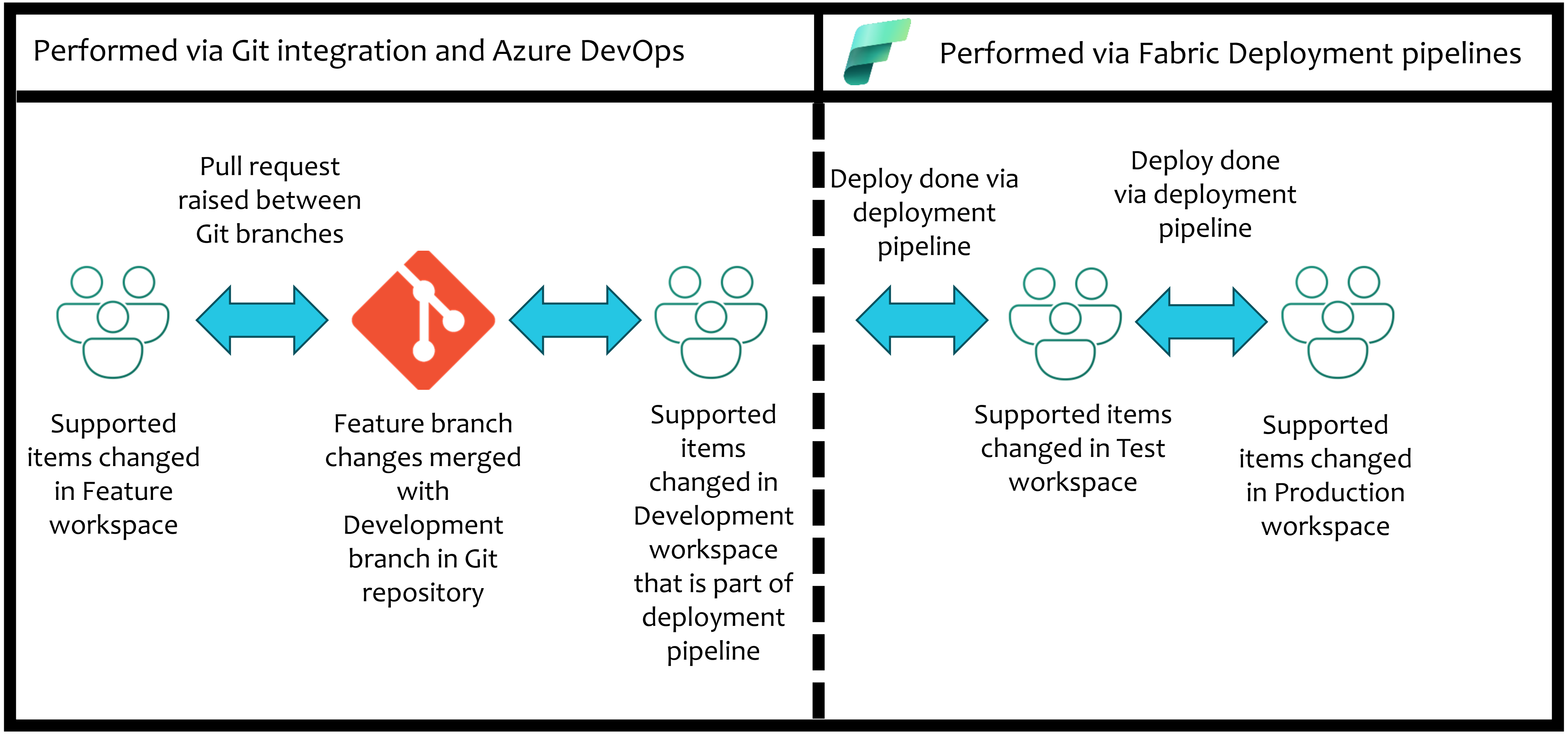
Release Option 3 – Deploy using Microsoft Fabric deployment pipelines

- Perform your pull request from feature branch to branch connected to a workspace that represents Dev stage of a deployment pipeline.

- From there orchestrate using Microsoft Fabric deployment pipelines.

- Alternatively, orchestrate to different Microsoft Fabric deployment pipeline stages using Azure DevOps.

Release Option 3 - Diagram



Performed via Git integration and Azure DevOps

Performed via Fabric Deployment pipelines

Pull request raised between Git branches

Supported items changed in Feature workspace

Feature branch changes merged with Development branch in Git repository

Supported items changed in Development workspace that is part of deployment pipeline

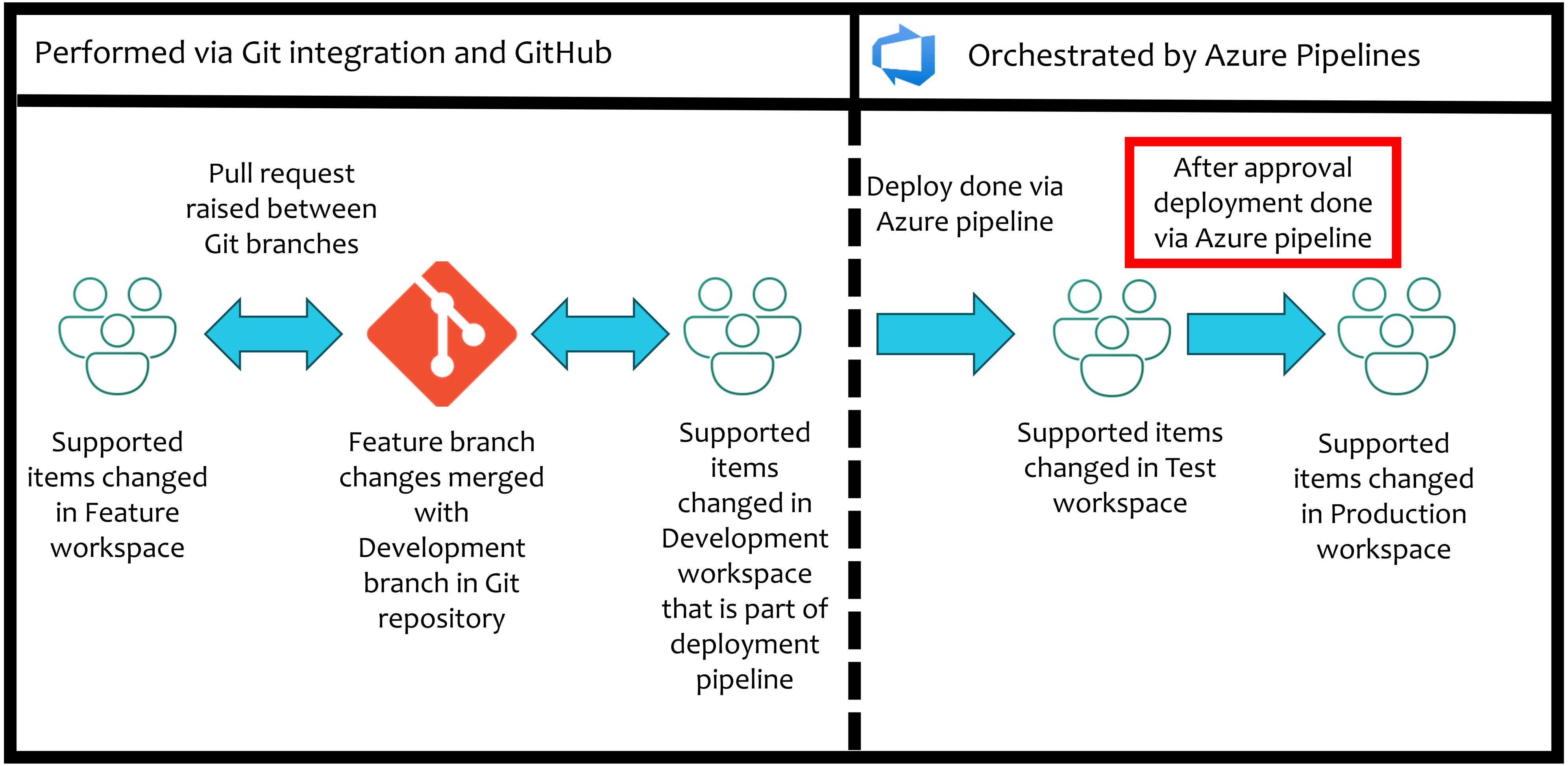
Deploy done via deployment pipeline

Supported items changed in Test workspace

Deploy done via deployment pipeline

Supported items changed in Production workspace

Orchestrated by Azure Pipelines



Performed via Git integration and GitHub

Orchestrated by Azure Pipelines

Pull request raised between Git branches

Supported items changed in Feature workspace

Feature branch changes merged with Development branch in Git repository

Supported items changed in Development workspace that is part of deployment pipeline

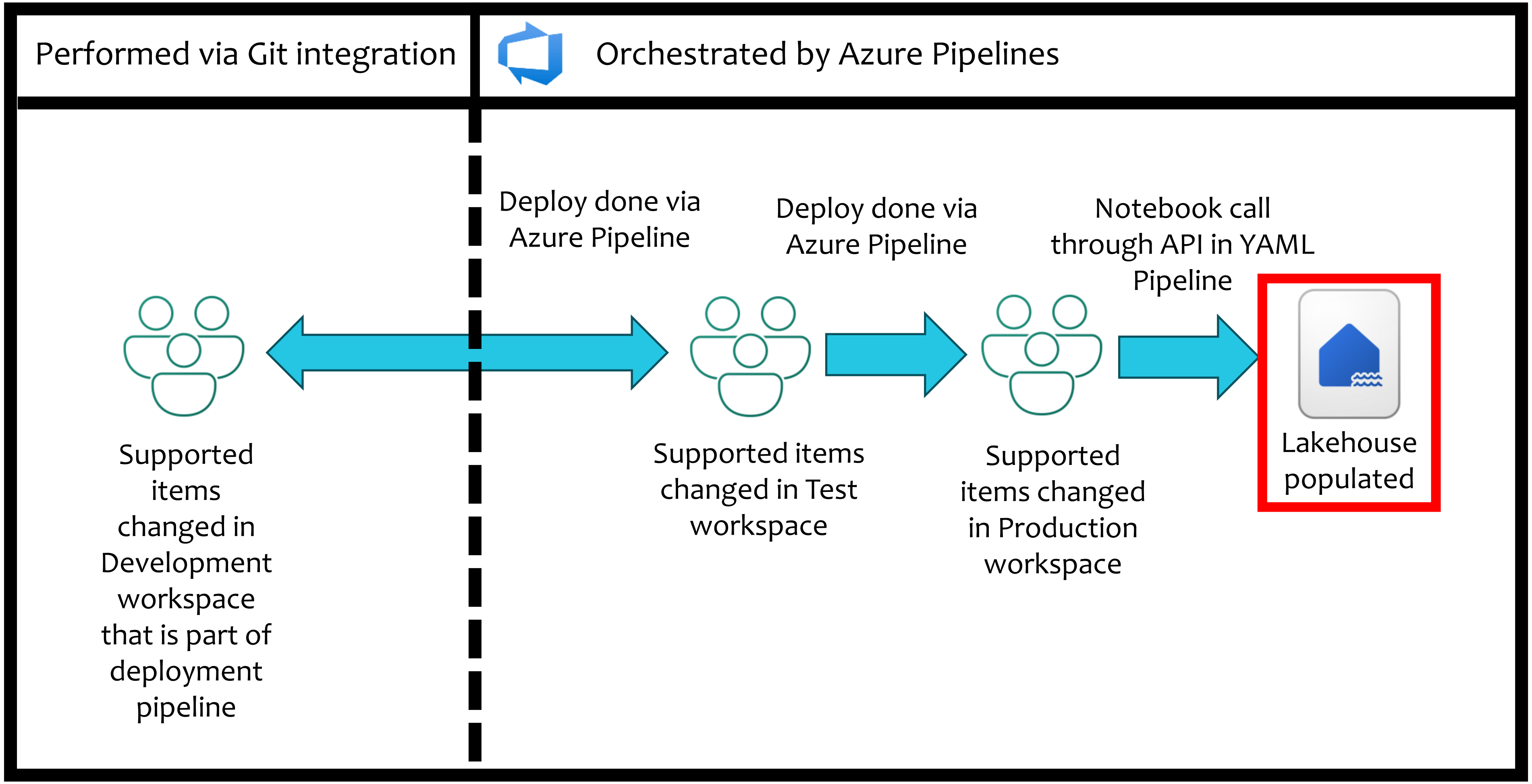
Deploy done via Azure pipeline

After approval deployment done via Azure pipeline

Supported items changed in Test workspace

Supported items changed in Production workspace

Another advantage of Azure Pipelines



Performed via Git integration

Orchestrated by Azure Pipelines

Deploy done via Azure Pipeline

Deploy done via Azure Pipeline

Notebook call through API in YAML Pipeline

Supported items changed in Development workspace that is part of deployment pipeline

Supported items changed in Test workspace

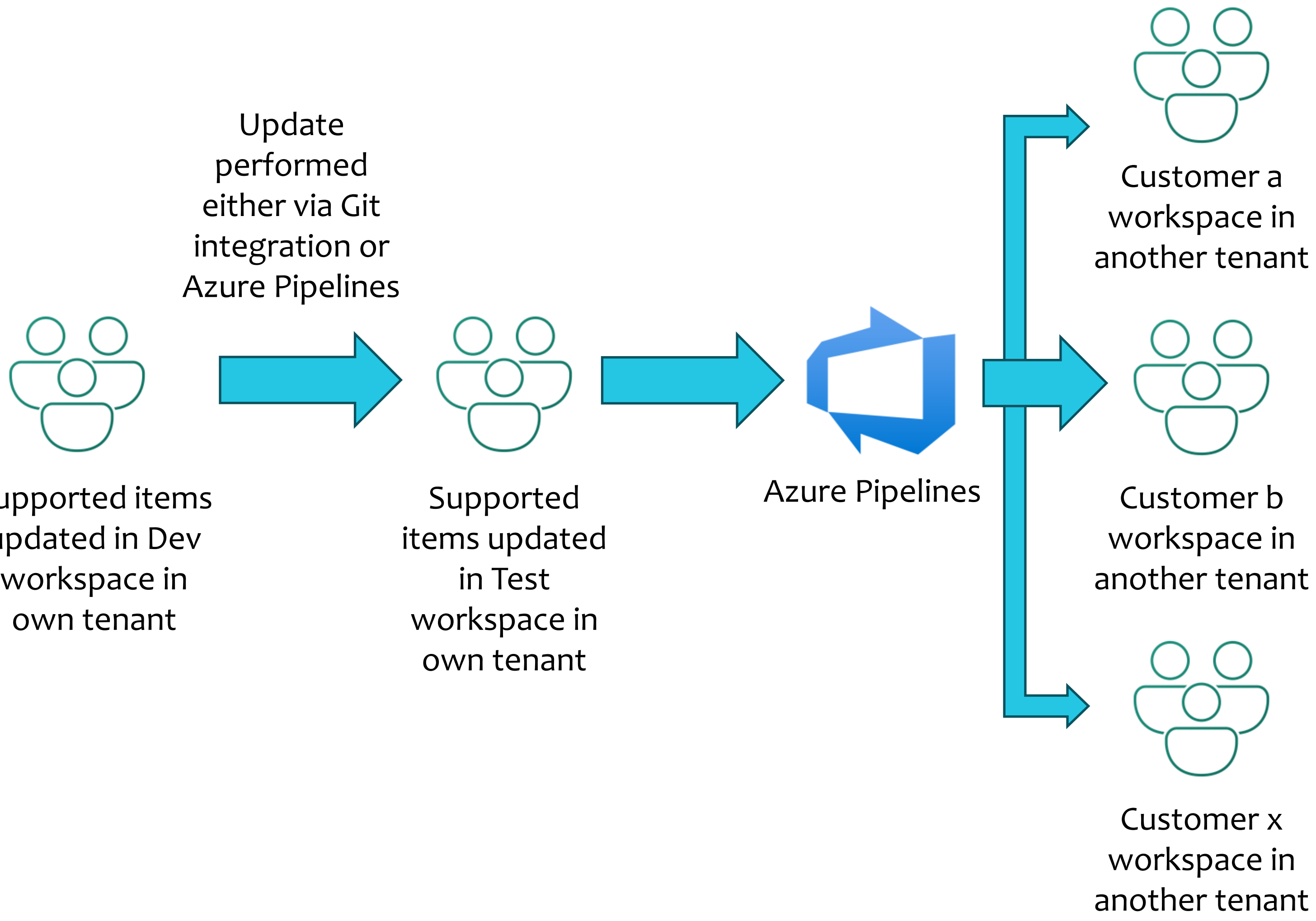
Supported items changed in Production workspace

Lakehouse populated

Release Option 4 – For multiple customers/solutions/tenants

- Dev and test stages are managed in same Fabric tenant.
- Deployment to Prod stages to workspaces in other tenants using Azure Pipelines

Release Option 4 - Diagram



Update performed either via Git integration or Azure Pipelines

Supported items updated in Dev workspace in own tenant

Supported items updated in Test workspace in own tenant

Azure Pipelines

Customer a workspace in another tenant

Customer b workspace in another tenant

Customer x workspace in another tenant

Demos

- Power BI Desktop Projects
- Deploying to multiple workspaces via Git integration
- Deploying via deployment pipelines

CI/CD methods for Data Warehouses

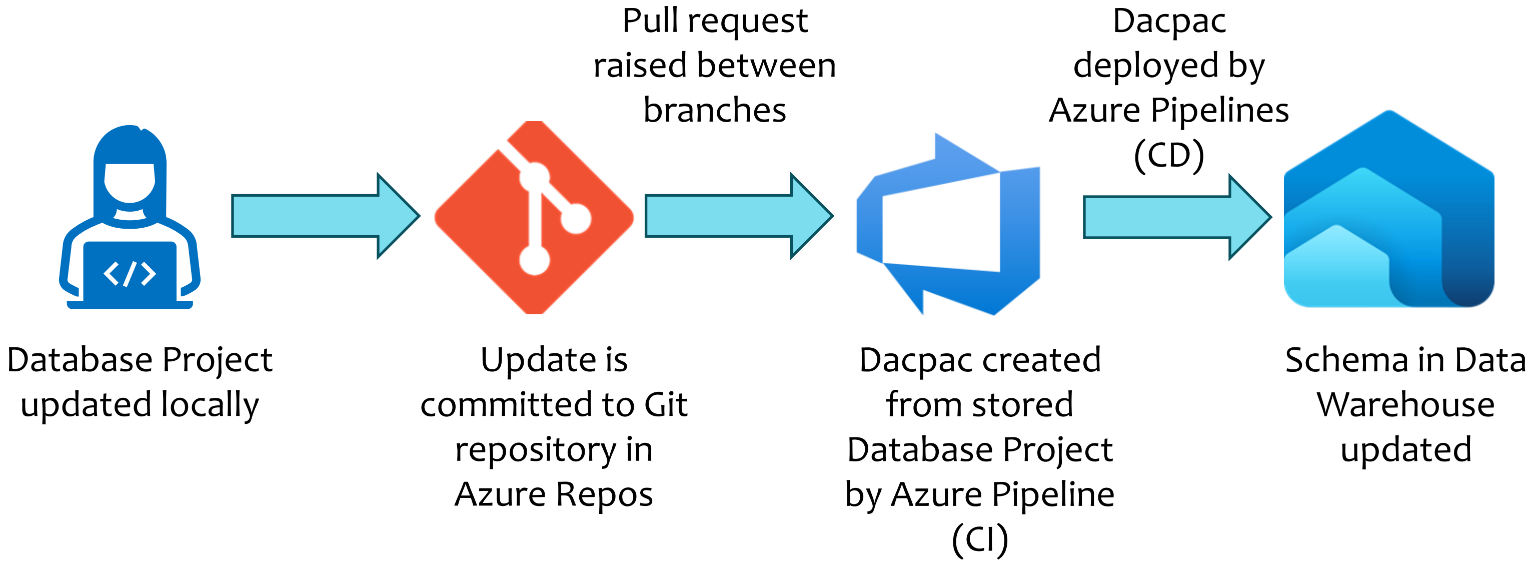
- Can connect to Data Warehouse via connection string

- Allows deployment through traditional CI/CD methods.
  - State-based (dacpac)
  - Migration-based (potential caveats)

- Supports Database Projects created in number of places.

- CI/CD can be performed an Azure DevOps pipeline.

CI/CD for Data Warehouses



Database Project updated locally

Update is committed to Git repository in Azure Repos

Pull request raised between branches

Dacpac created from stored Database Project by Azure Pipeline (CI)

Dacpac deployed by Azure Pipelines (CD)

Schema in Data Warehouse updated

CI/CD for Data Warehouse Demo

Questions

Thank you

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- Blog: https://www.KevinRChant.com
- GitHub: https://github.com/kevchant

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Links shared

- Thoughts about disabling classic pipelines in Azure DevOps
- Introduction to Git integration
- Power BI Desktop projects
- Power BI Project (PBIP) and Azure DevOps CI performance tests

Additional links shared

- Working with Microsoft Fabric Git integration and multiple workspaces
- Initial tests to copy a Direct Lake semantic model to another workspace using Microsoft Fabric Git integration
- Introduction to deployment pipelines
- CI/CD for Microsoft Fabric Data Warehouses using Azure DevOps