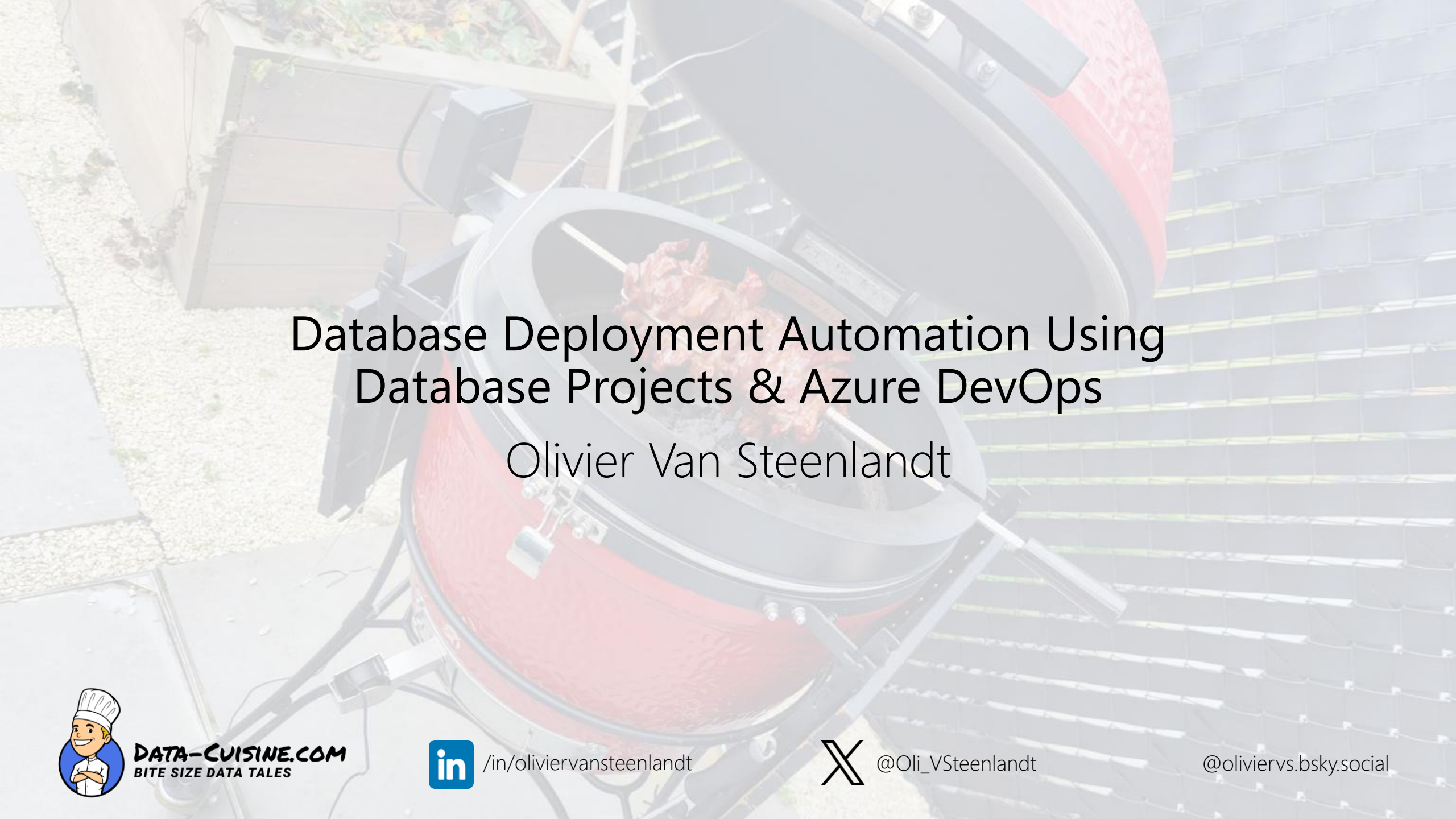


Database Deployment Automation Using Database Projects & Azure DevOps

Olivier Van Steenlandt

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THANK YOU SPONSORS!

Platinum



Gold









Bronze









I want feedback! ☺



Database Deployment Automation using Database Projects & Azure DevOps

About me

Olivier Van Steenlandt

datashift Expert @ datashift

Core Member @ dataMinds.be

Microsoft MVP Most Valuable Professional Speaking / Blogging

Running / Cycling / Swimming



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Schedule

Current Situation

Moving forward

Branching

Demo

Summary



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Current Situation

Current Situation

Environments

Development
(Acceptance)
Production

Process

Manual
Deployments

Tools

Database Project
Azure DevOps



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Database Projects



Visual Studio



Visual Studio Code



Azure Data Studio

(Retiring February 28th 2026)



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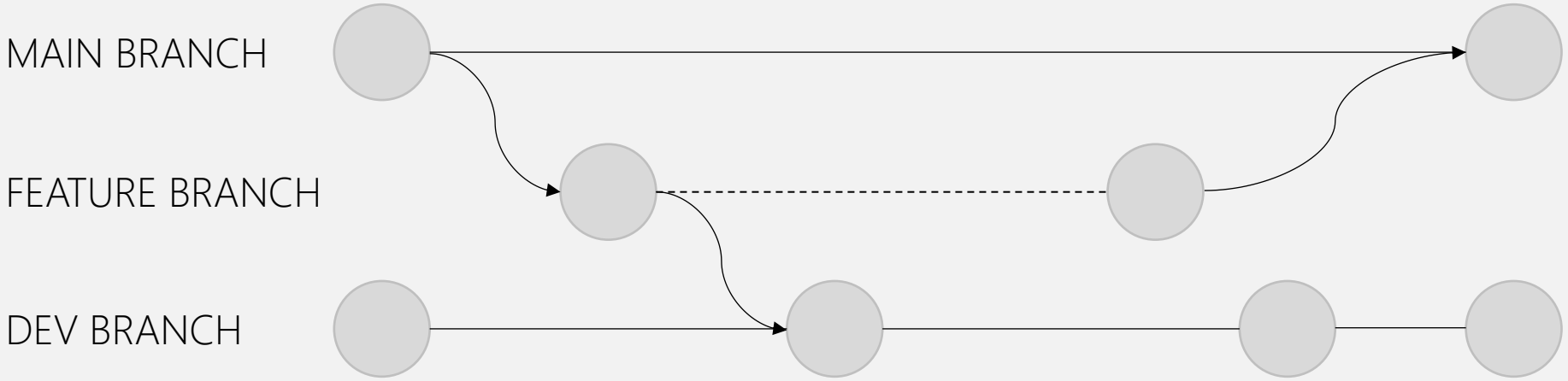
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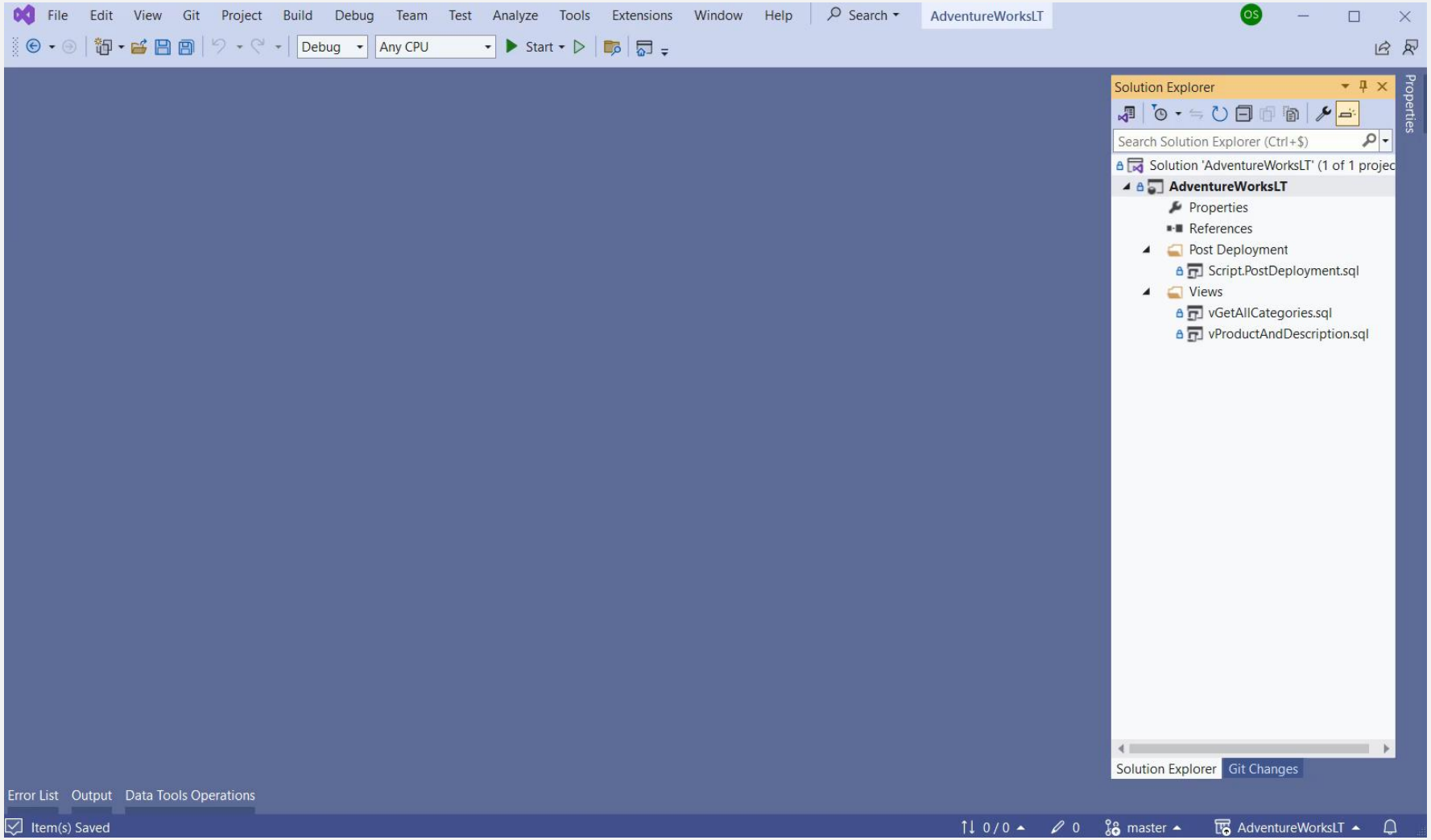
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Branching Strategies

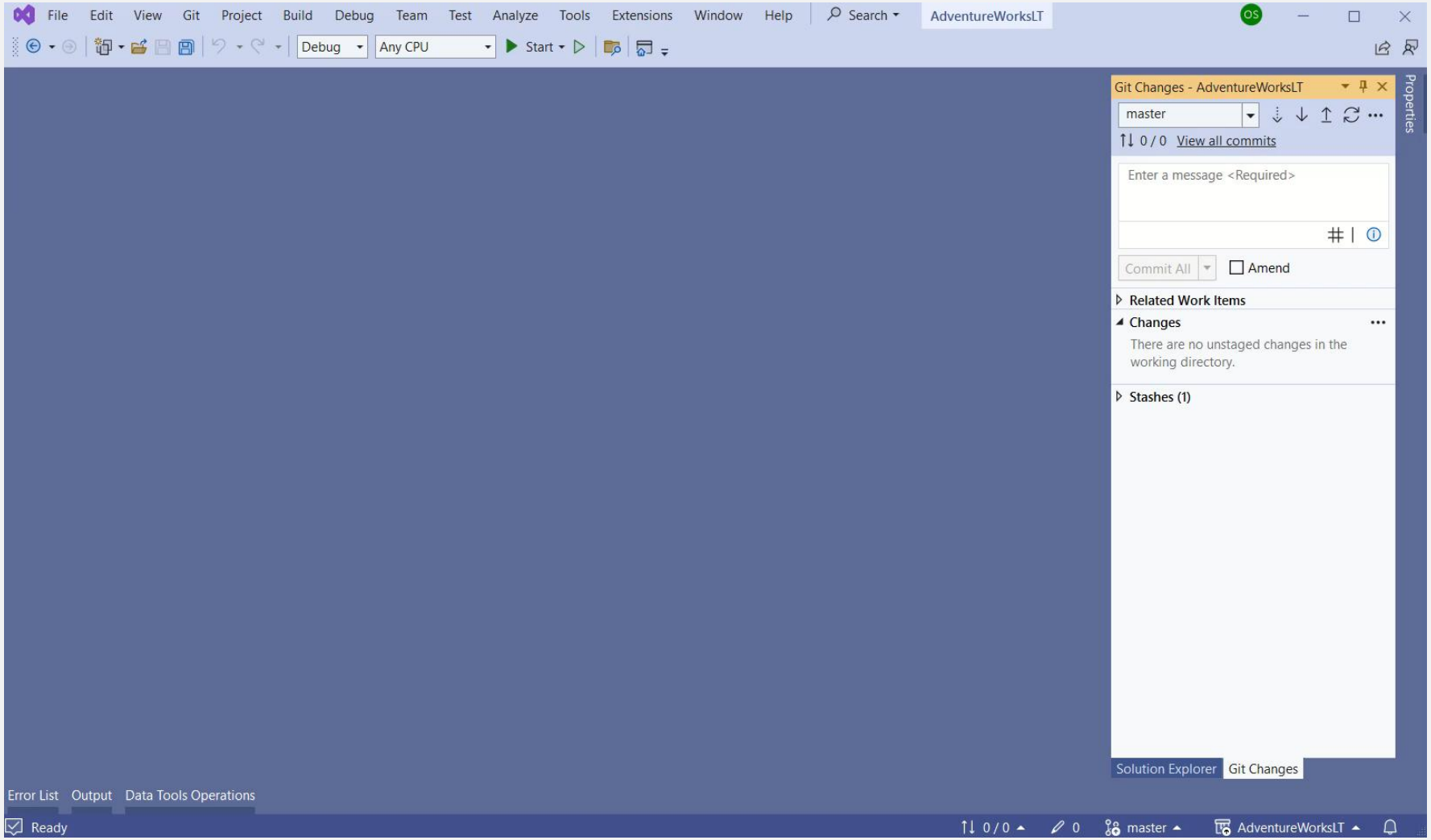
Feature Branching



Development



Manual Deployments





Moving Forward

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Deployment automation - why?

Less manual work

Time-saving

Less room for mistakes/misconfiguration

Mistakes?

Wrong Target Database

Deploy to PRD by accident

Publish Settings

Dropped all indexes

→ Publishing Profiles!



Azure DevOps

Repos

Pipelines

(Test Plans)

(Artifacts)

(Boards)



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Azure DevOps - Pipelines

CI/CD component

→GUI

→YAML

YAML

Set of instructions

Manage pipelines as code

Indent sensitive



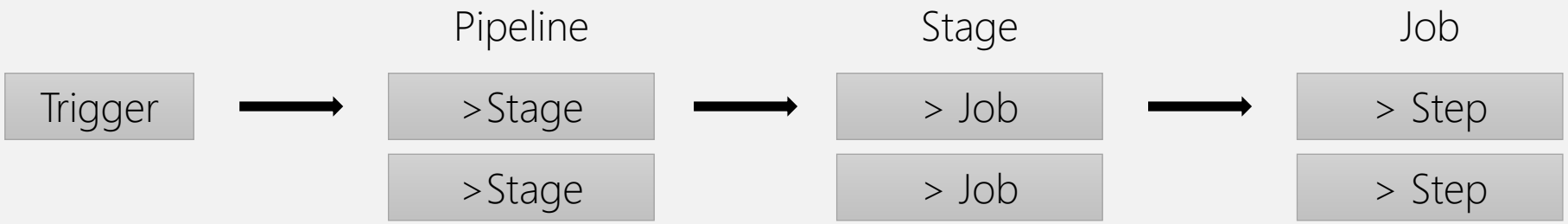
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Azure DevOps Pipelines – Key Concepts



Deployment Automation

On-Prem

Self-Hosted Agent

[Blogpost: Install a Azure DevOps Agent]

Cloud

Hosted Agent

Pricing (Private Projects)

Free Tier

1 parallel job

1800 minutes/month

Paid Tier*

>1 parallel job

Hosted: $40/parallel job

Self-Hosted: $15/parallel job

(unlimited minutes)

* Monthly Pricing - February 2025



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Deployment Automation

Azure SQL

> Azure SQL Database deployment task (built-in)

> Command line

SQL Server

> SQL Server database deploy task (built-in)

> Command line



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Deployment Automation

DacFx
API Library

SqlPackage
CLI for DacFx

Database development &
Deployment Automation

.dacpac / .bacpac

Available for: SQL Server, Azure SQL, Azure SQL MI, Azure Synapse Analytics, Microsoft Fabric



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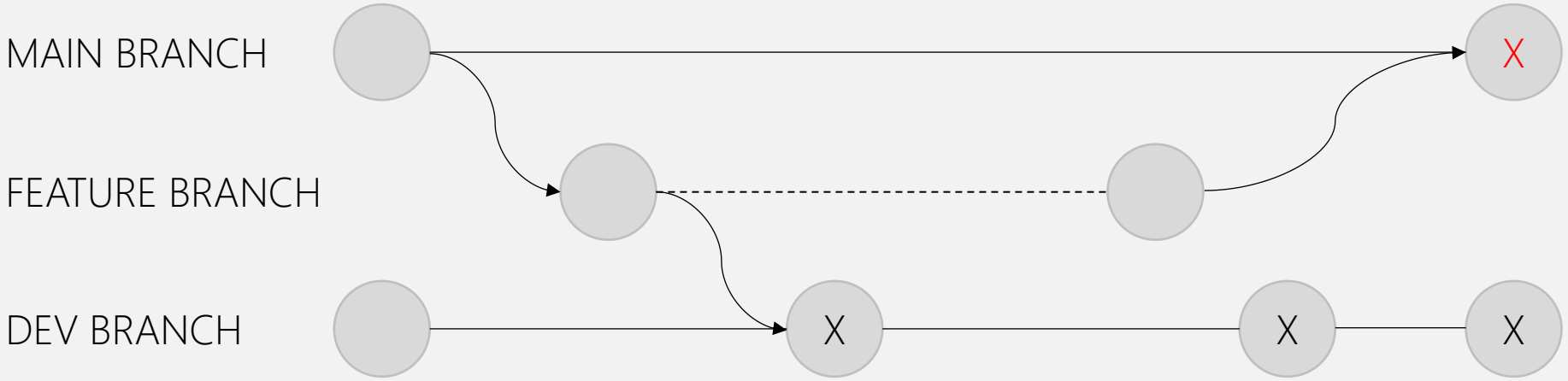
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Branching

Branching Strategy
Feature Branching



X = Automated Build and deployment to development
X = Automated Build and deployment to production

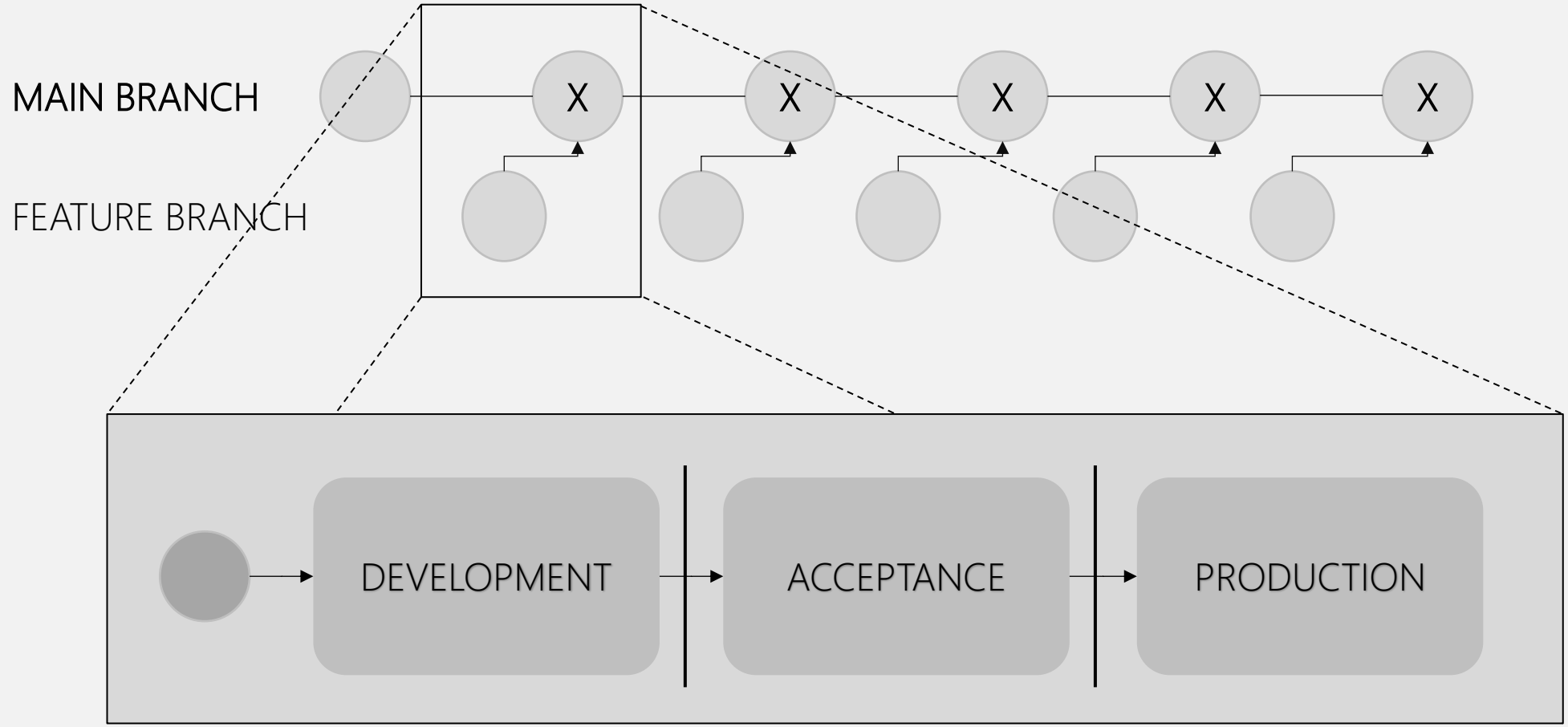

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Branching Strategy
Trunk Based Branching



Validation Step

Manual Validation Step

Useful for Trunk Based Branching
Explicitly agree to deploy



Comparing Branching Strategies

Feature Branching

Flexible

Big changes

Trunk Based Branching

Less flexible (FIFO-principle)

Small changes

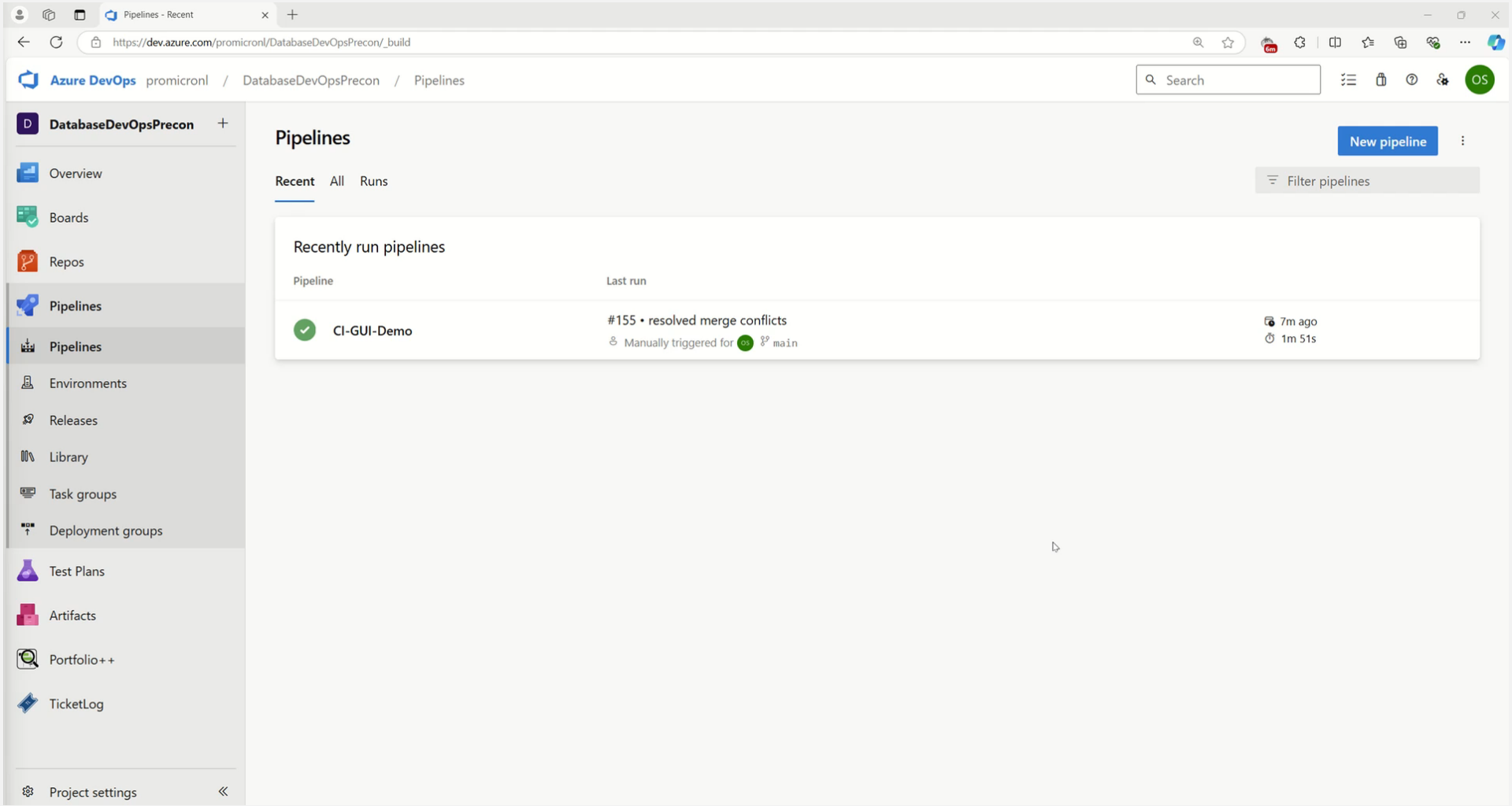


Demo

Demo

Separate Build & Release Pipeline

YAML Build Pipeline





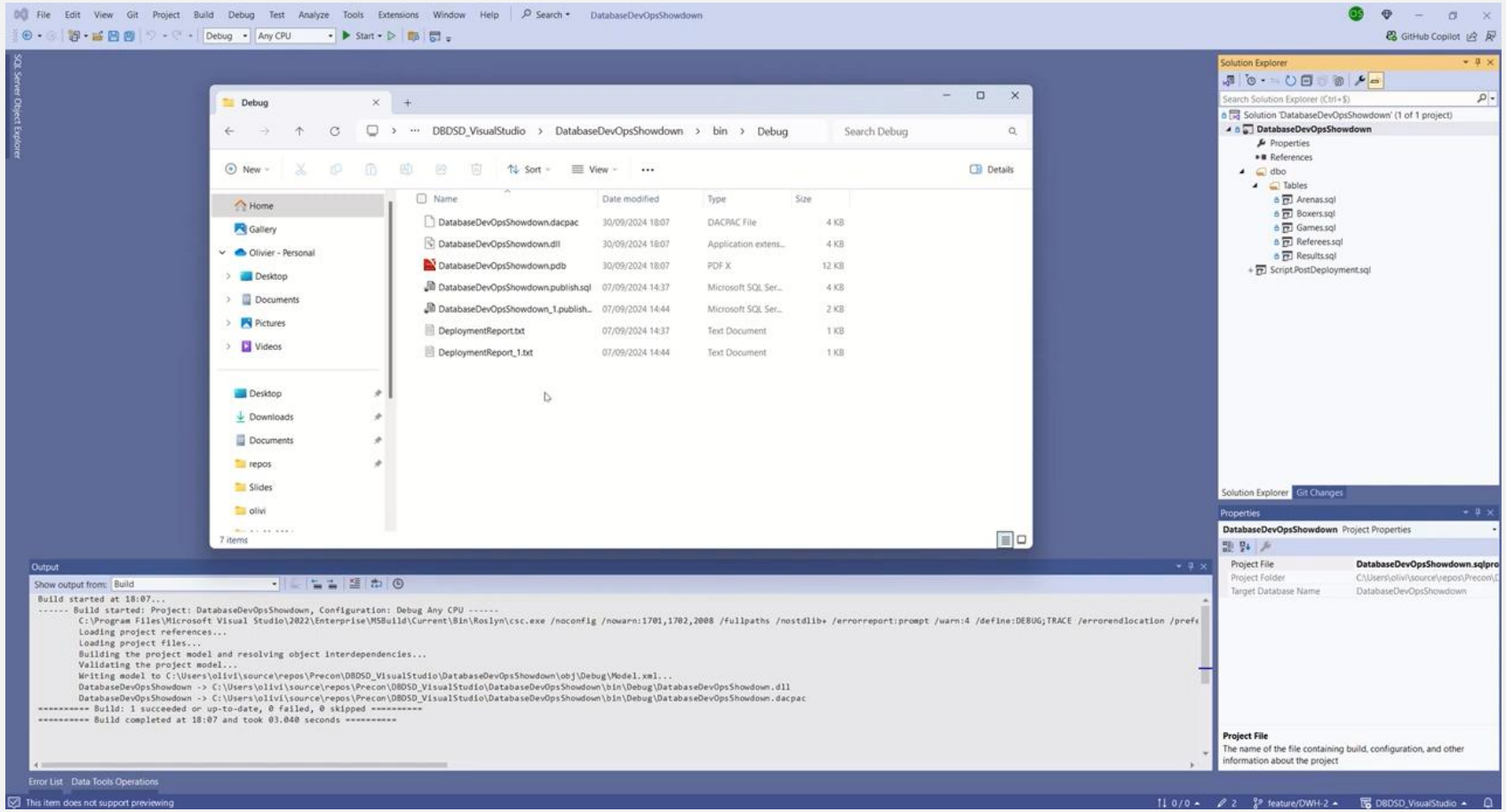
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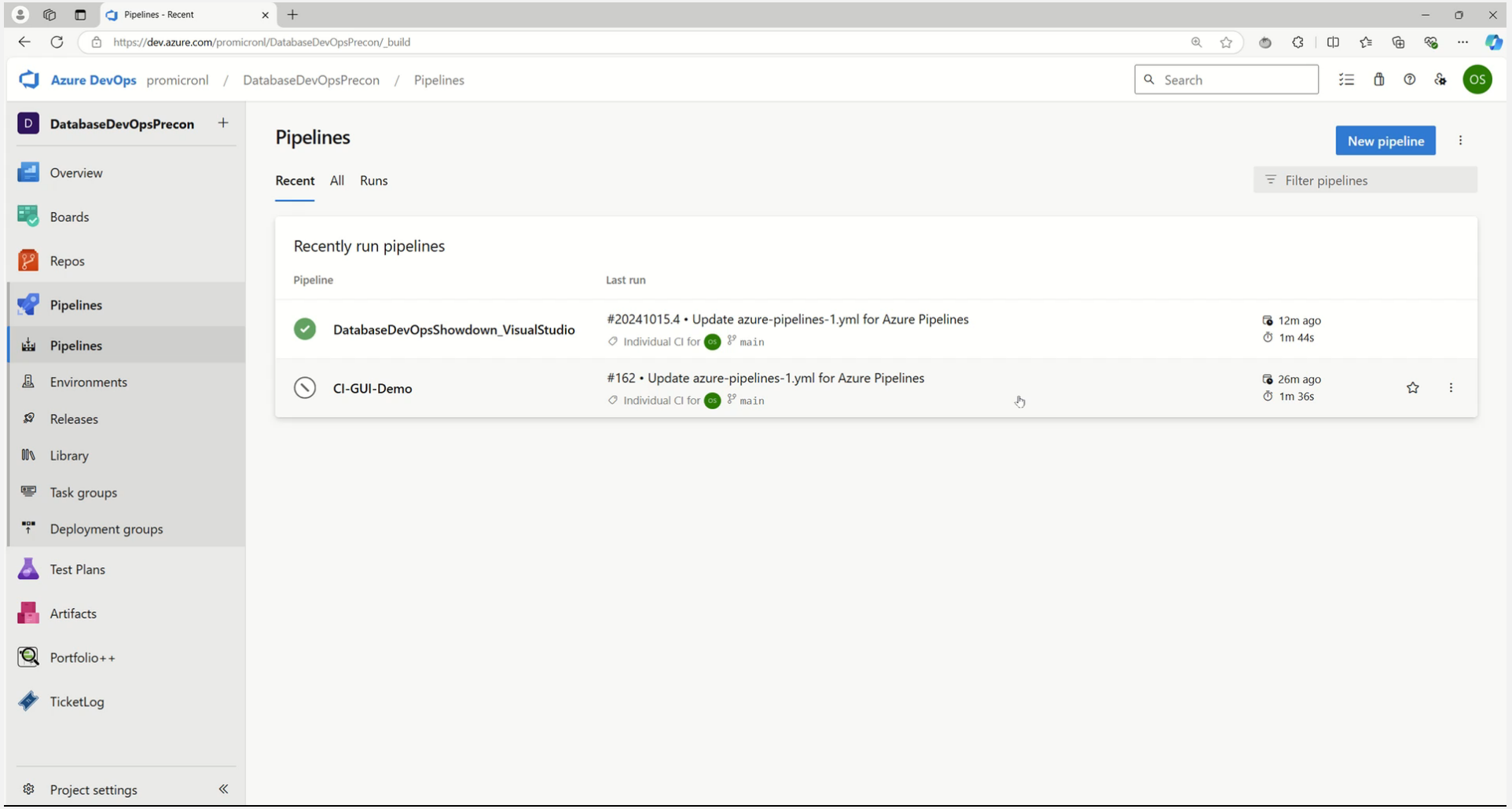
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YAML Build Pipeline - .dacpac Artifact



YAML Deployment Pipeline





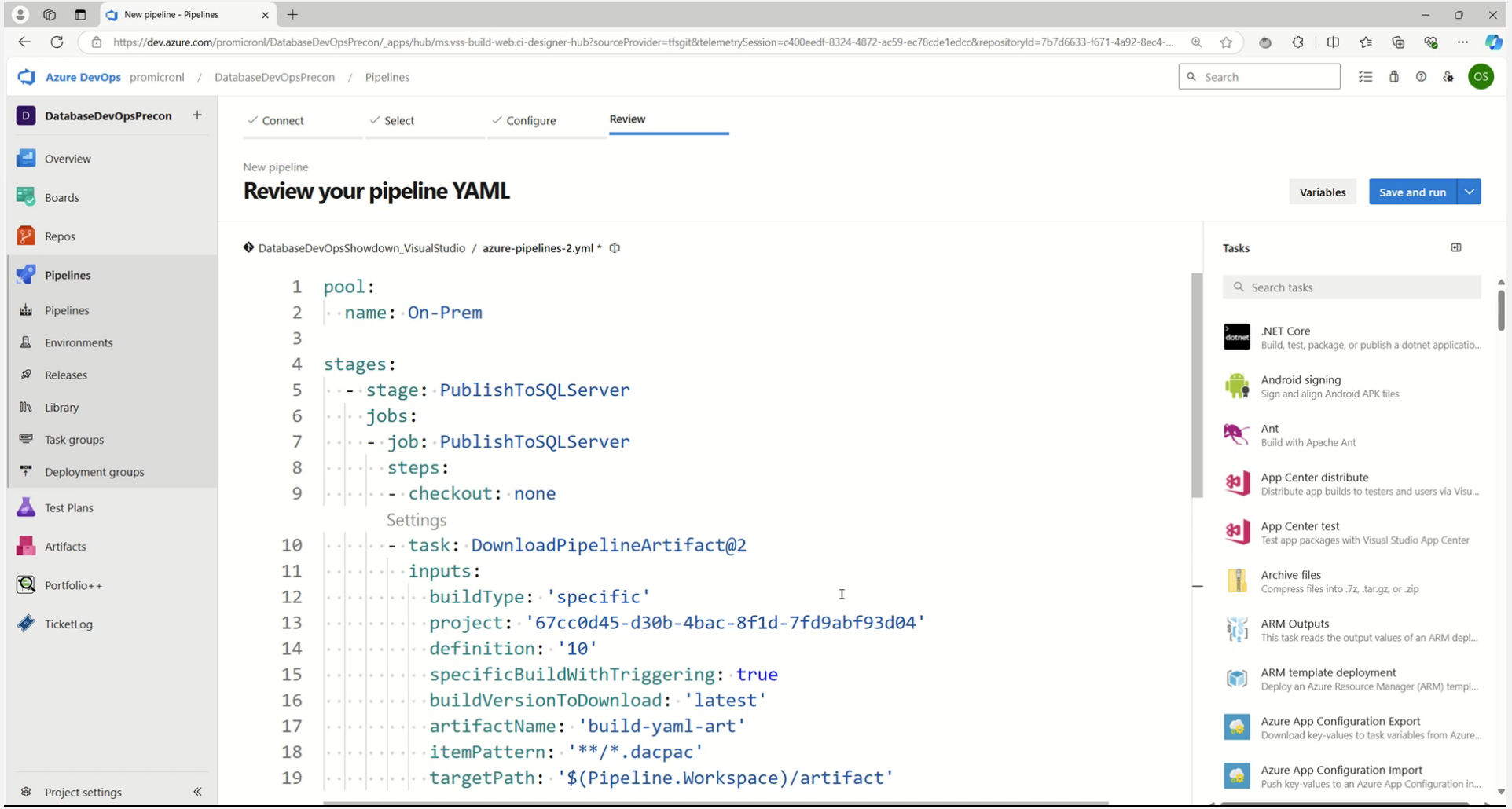
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YAML Deployment Pipeline





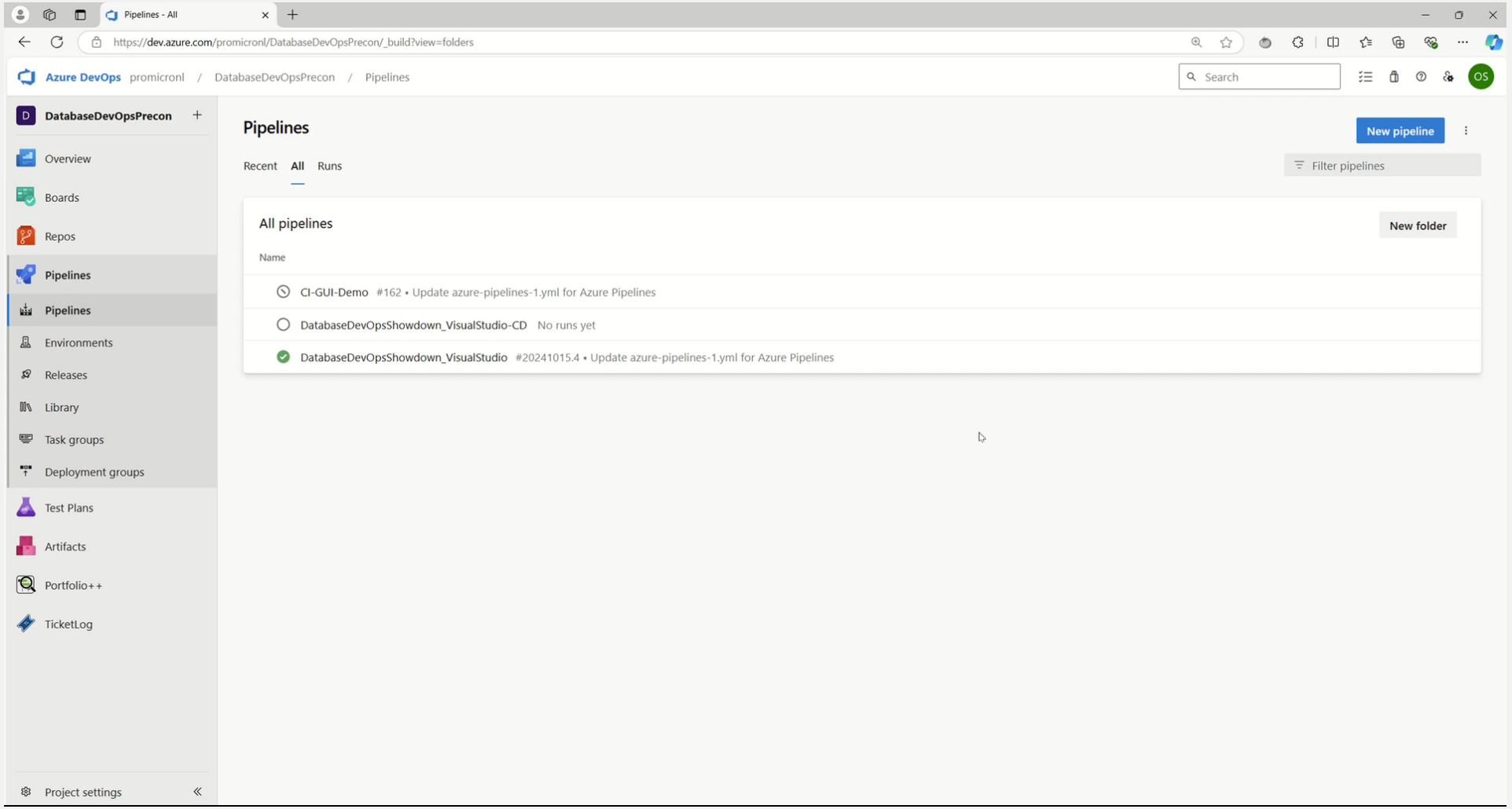
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YAML Deployment Pipeline Execution





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Demo

One to rule them all



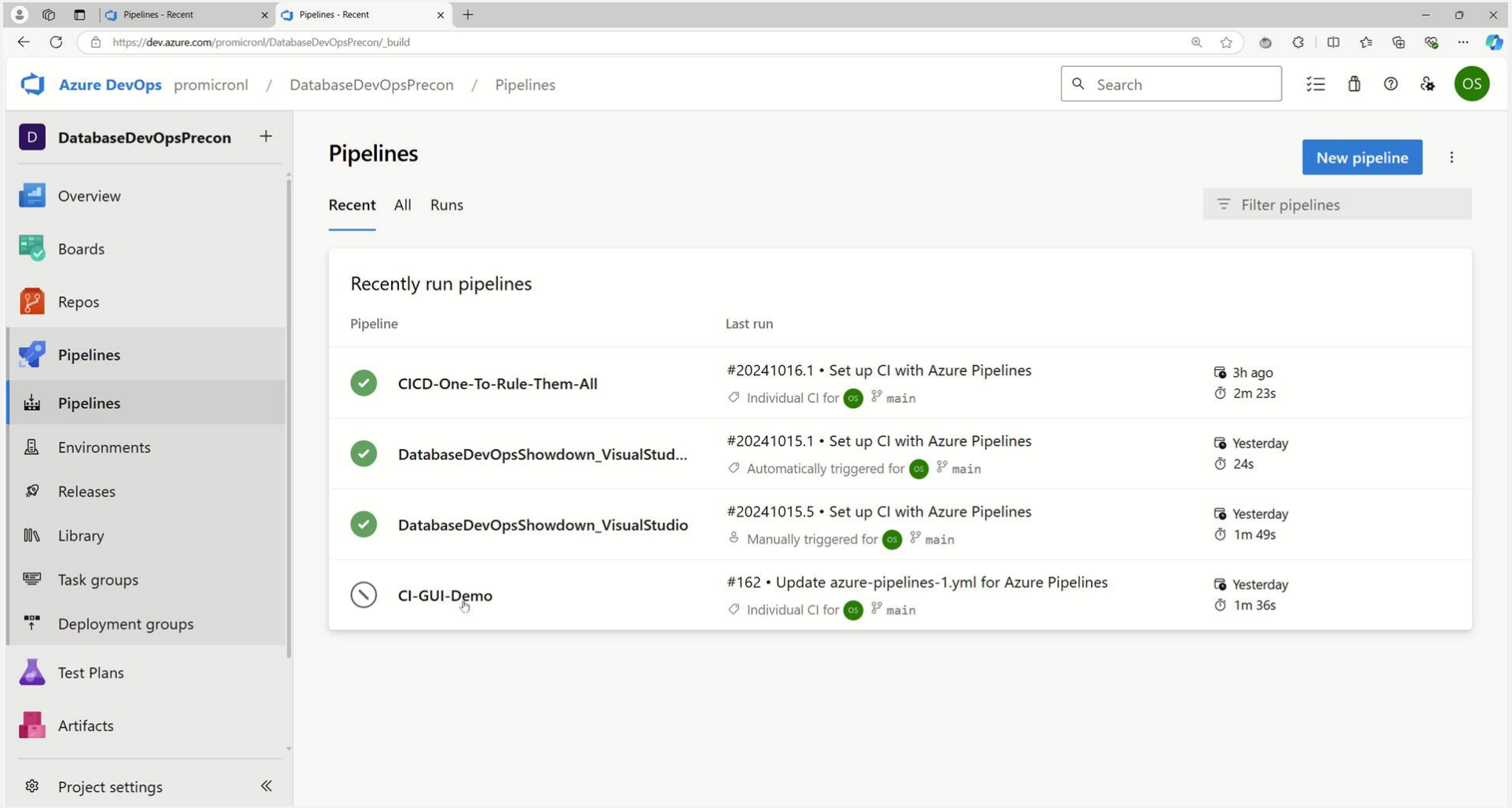
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One to rule them all





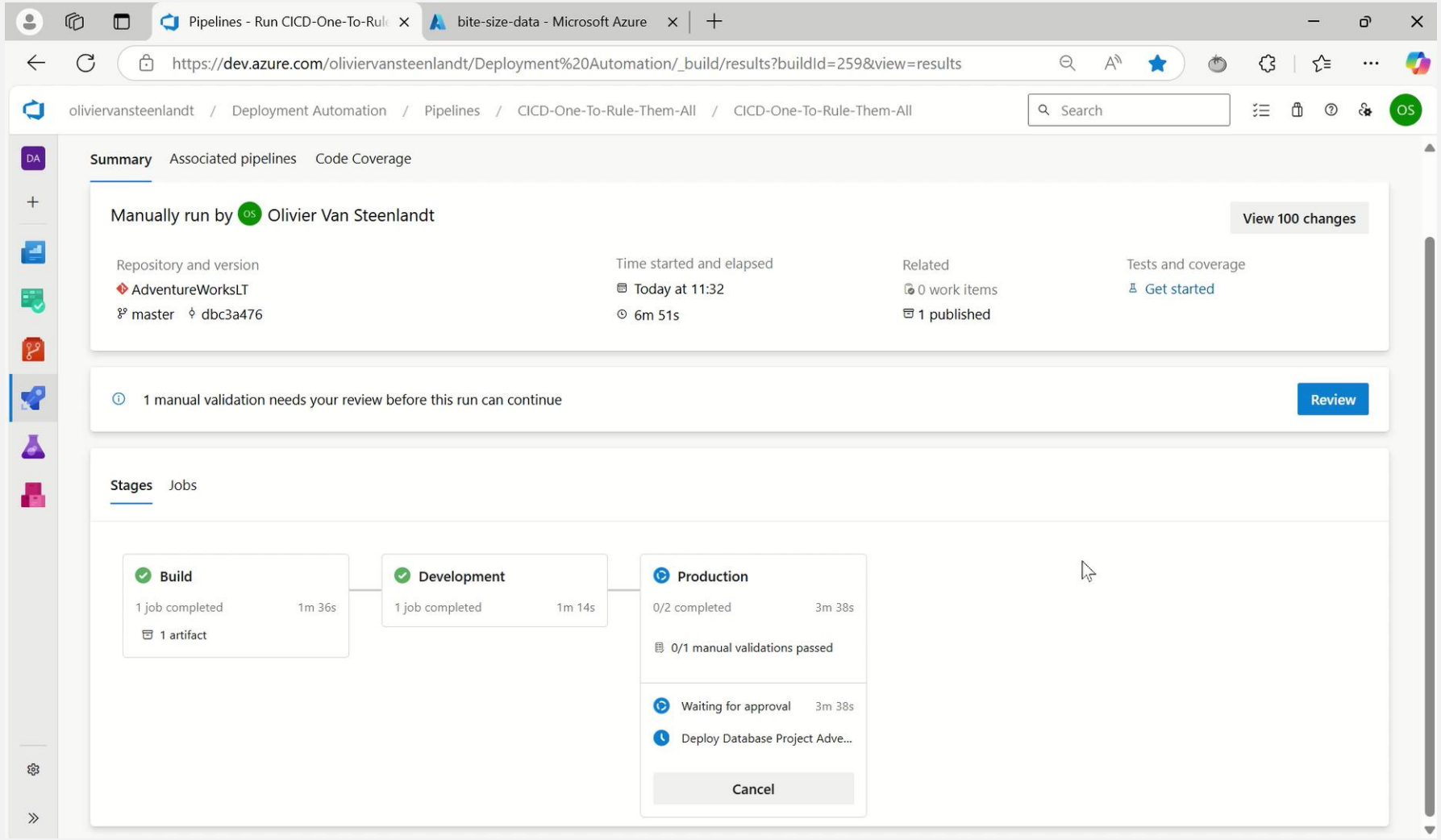
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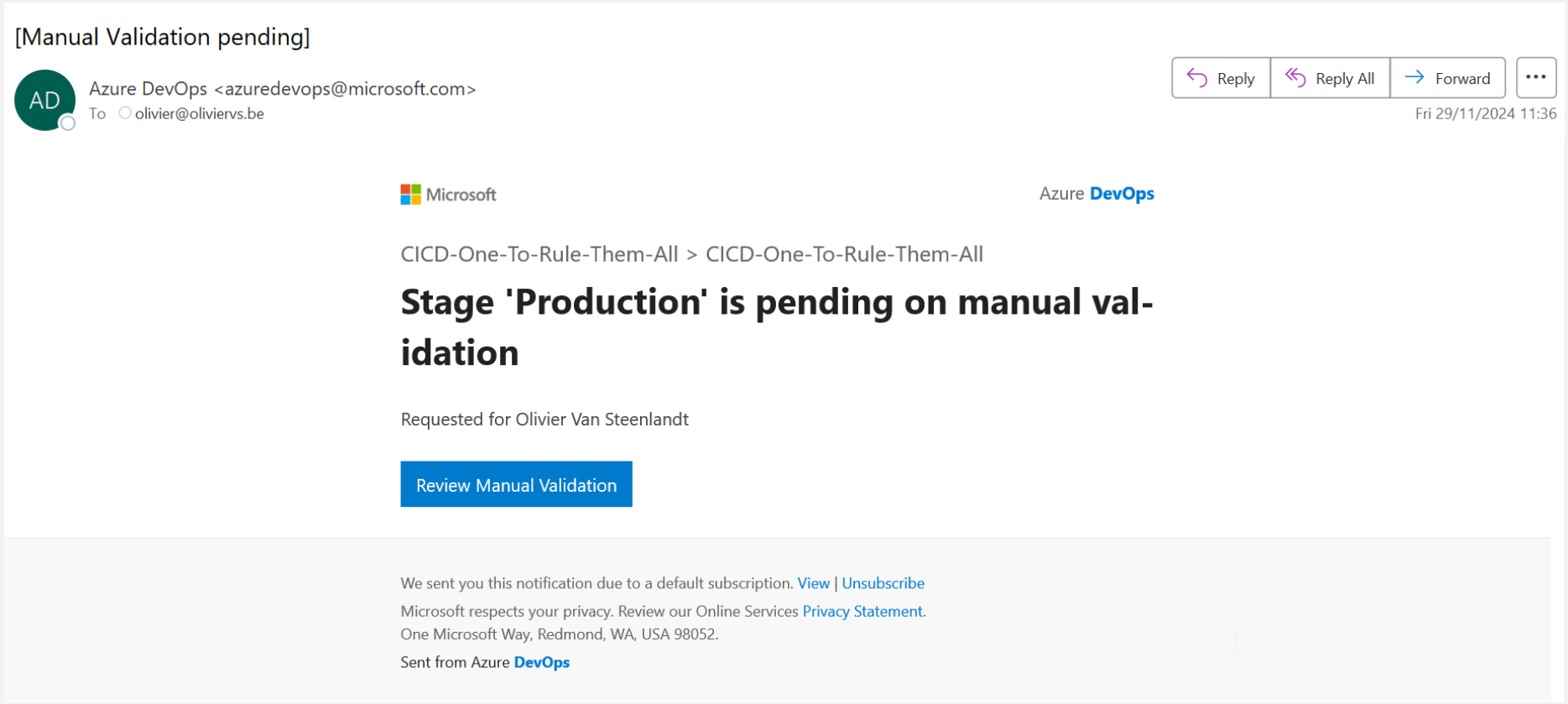
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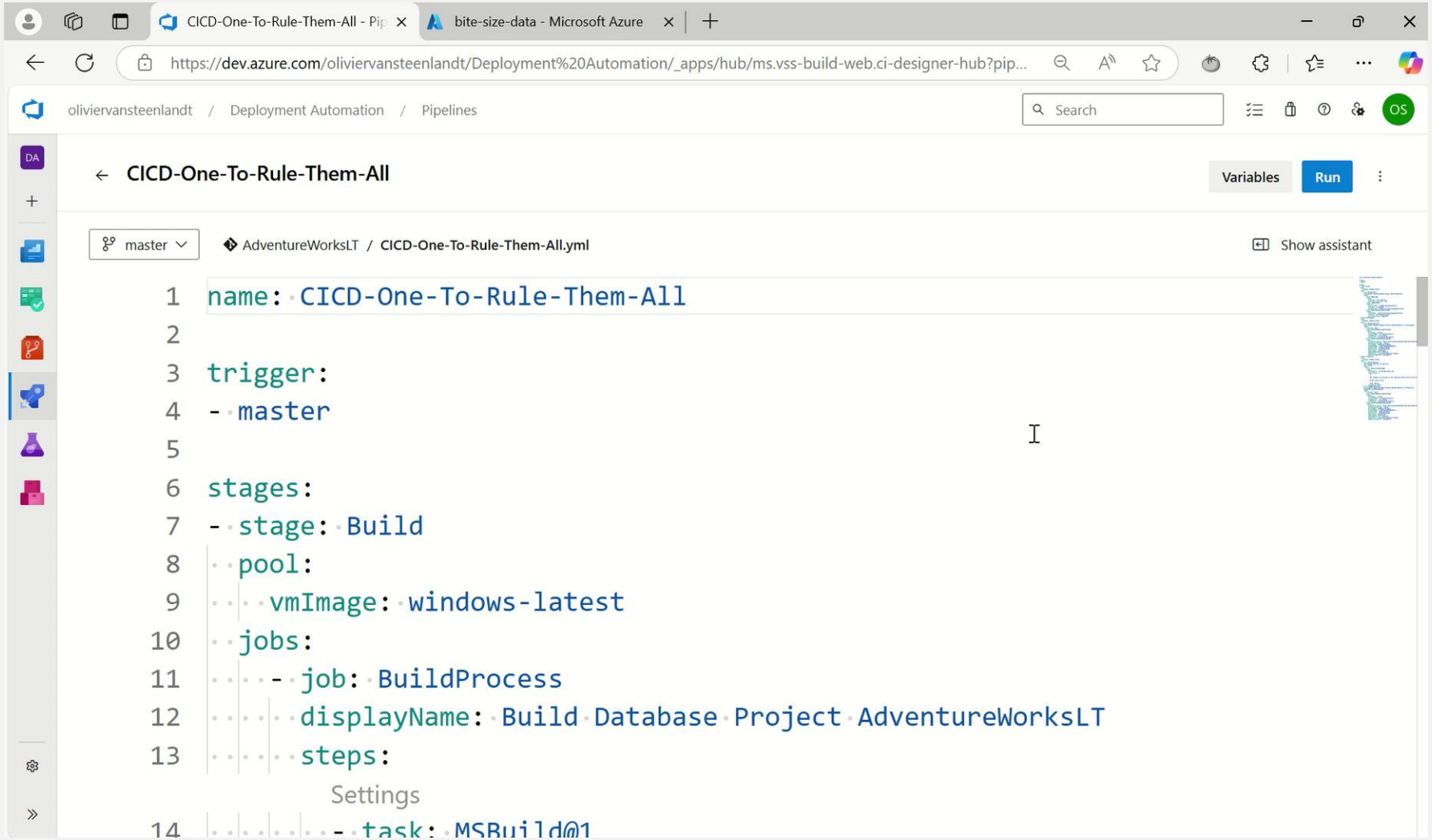
Manual Validation Step



Manual Validation Pending



Manual Validation Step - Technical



Summary



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Moving Forward

Automated Unit Testing

tSQLt – Opensource

Microsoft.Data.Tools.UnitTest – SSDT

Linting

Code Analysis in Visual Studio

SqlScriptDOM



Benefits & Challenges

Time saving (+)

Less room for mistakes (+)

YAML (+)

- Strict ruling for indents (-)
- Managed as code (+)

Thank You!

Olivier Van Steenlandt

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