SQL KONFERENZ 2025

Database Deployment Automation Using Database Projects & Azure DevOps

Olivier Van Steenlandt



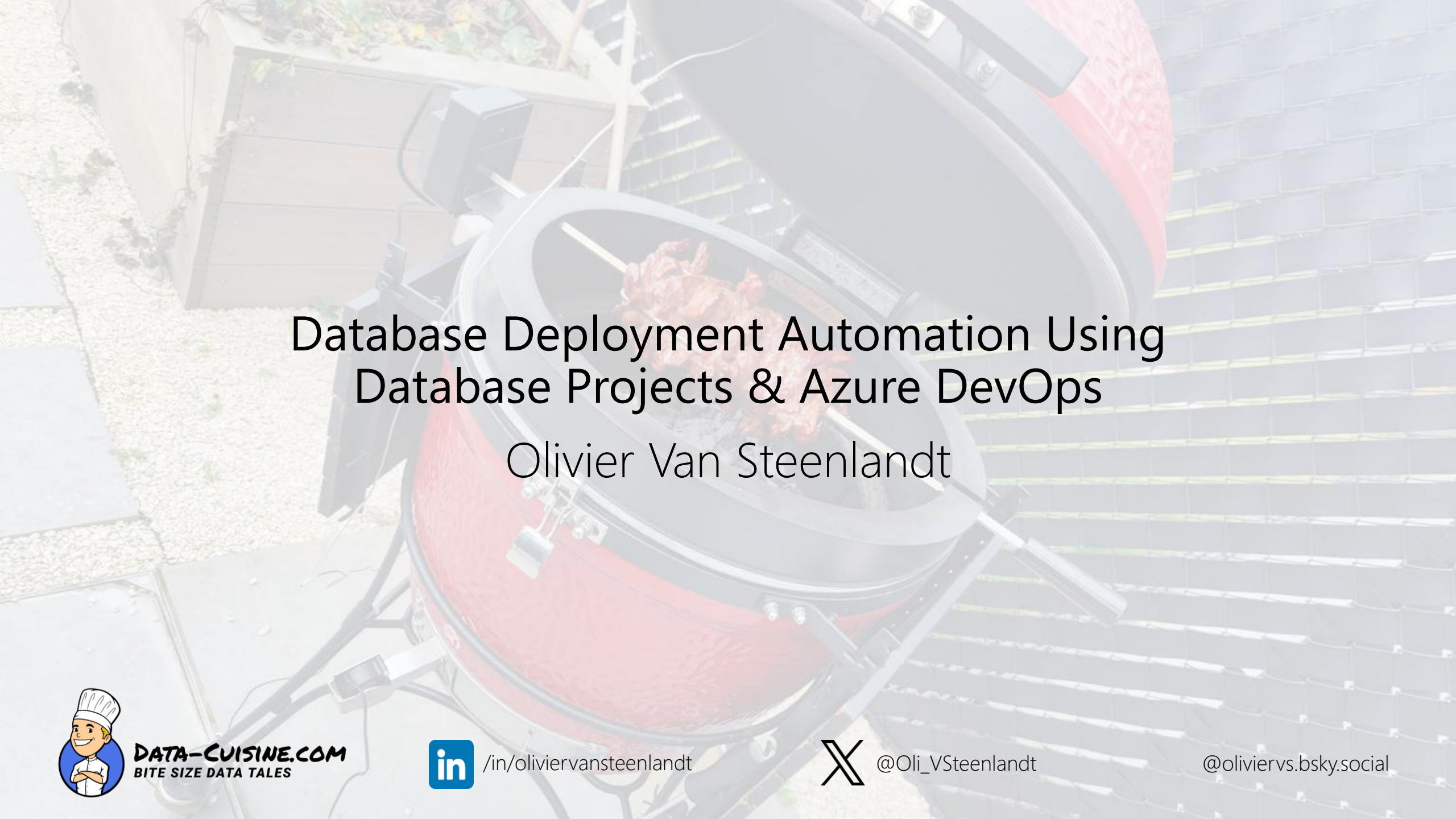


DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social



Database Deployment Automation Using Database Projects & Azure DevOps

Olivier Van Steenlandt

DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

About me

Olivier Van Steenlandt

Datawarehousing & Reporting Teamlead

Core Member @ dataMinds.be

Speaking / Blogging



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

Schedule

Current Situation

Moving forward

Branching

Demo

Summary



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social



Current Situation

Current Situation

Environments

Development
(Acceptance)
Production

Process

Manual
Deployments

Tools

Database Project
Azure DevOps



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

Database Projects



Visual Studio



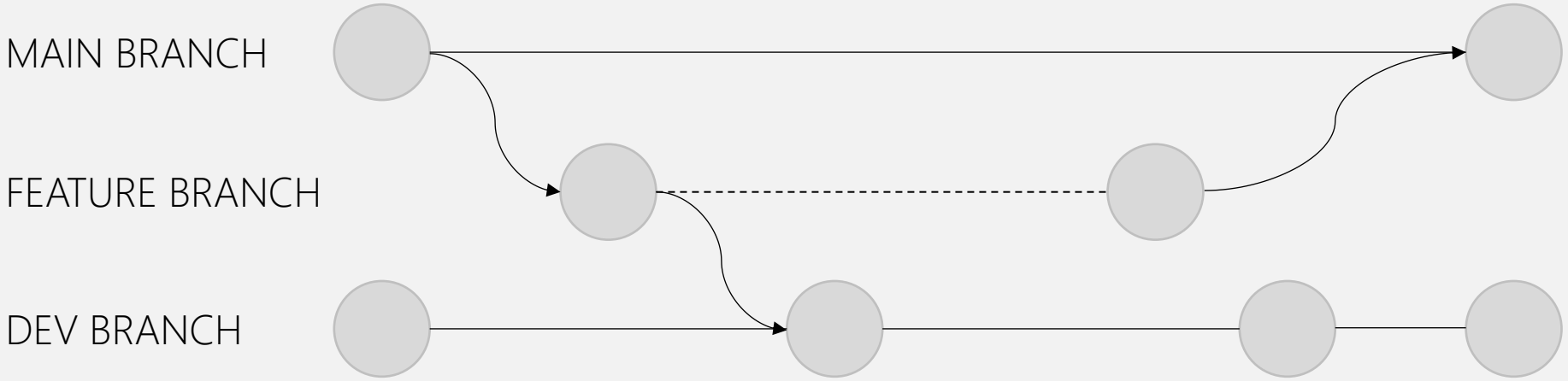
Visual Studio Code



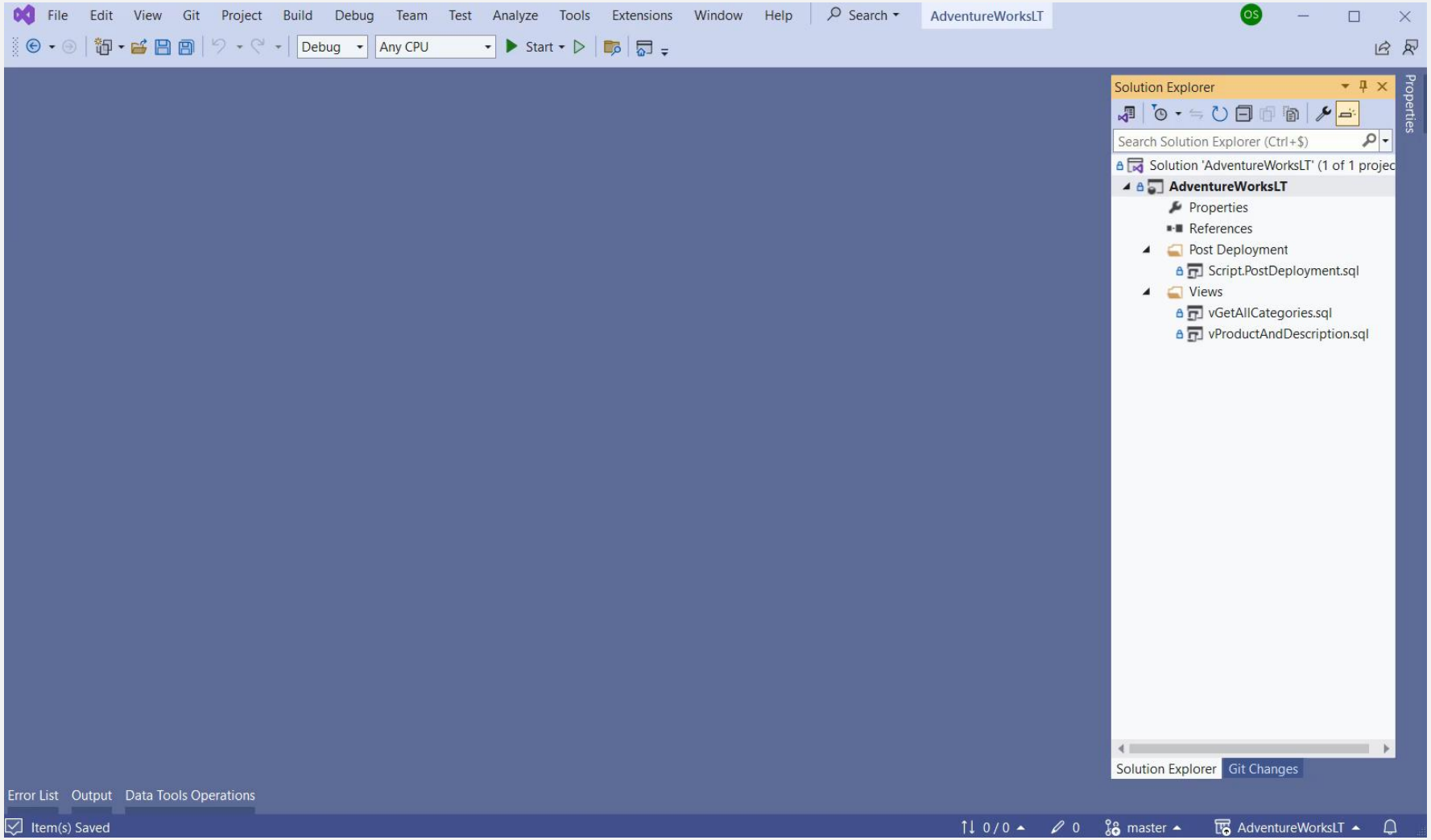
Azure Data Studio

Branching Strategies

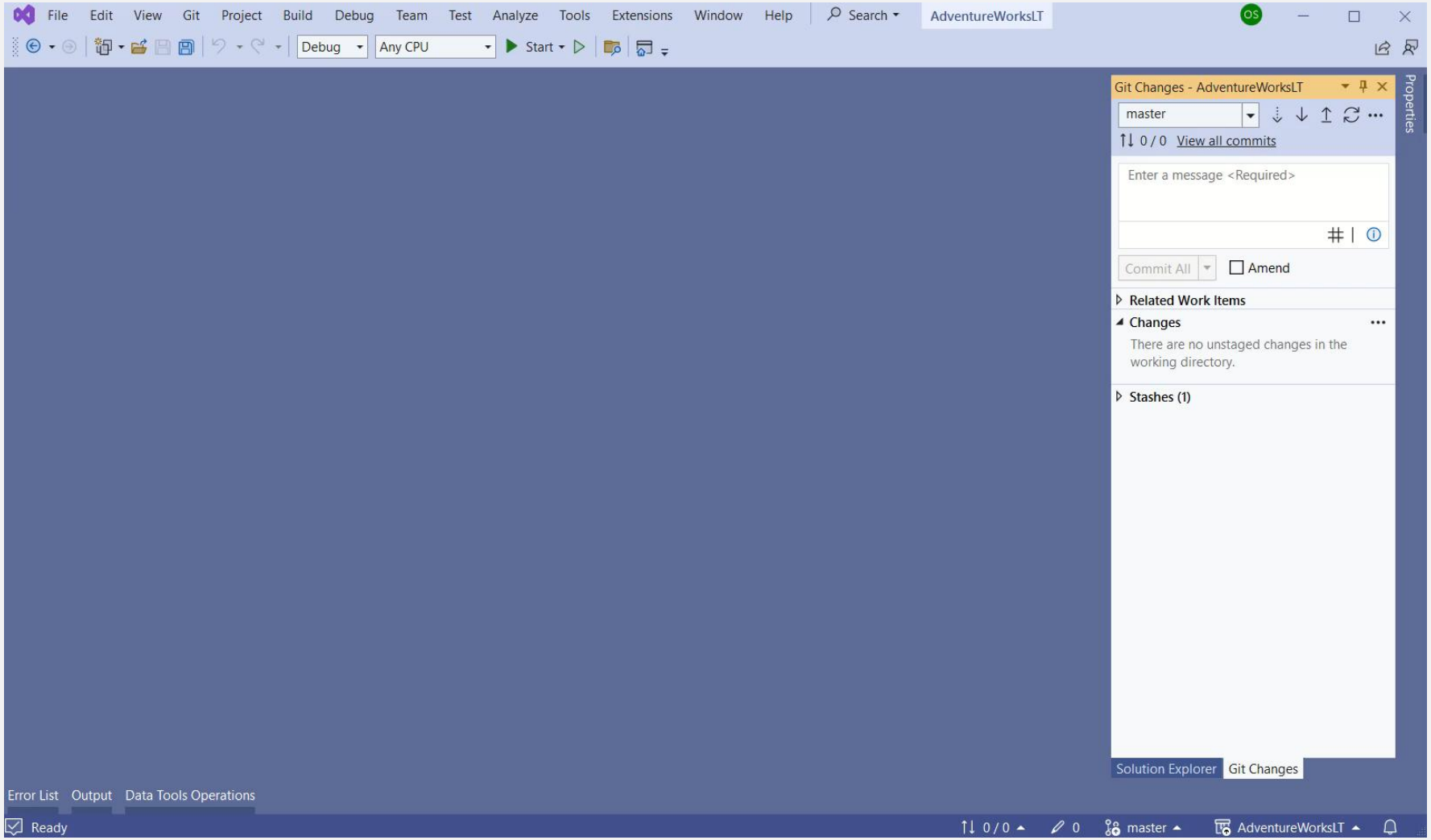
Feature Branching



Development



Manual Deployments





Moving Forward

DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

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)



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

Azure DevOps - Pipelines

CI/CD component

→GUI

→YAML

YAML

Set of instructions

Manage pipelines as code

Indent sensitive



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

Deployment Automation

On-Prem

Self-Hosted Agent

[Blogpost: Install a Azure DevOps Agent]

Cloud

Hosted Agent

Deployment Automation

Azure SQL

> Azure SQL Database deployment task (built-in)

> Command line

SQL Server

> SQL Server database deploy task (built-in)

> Command line



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

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



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

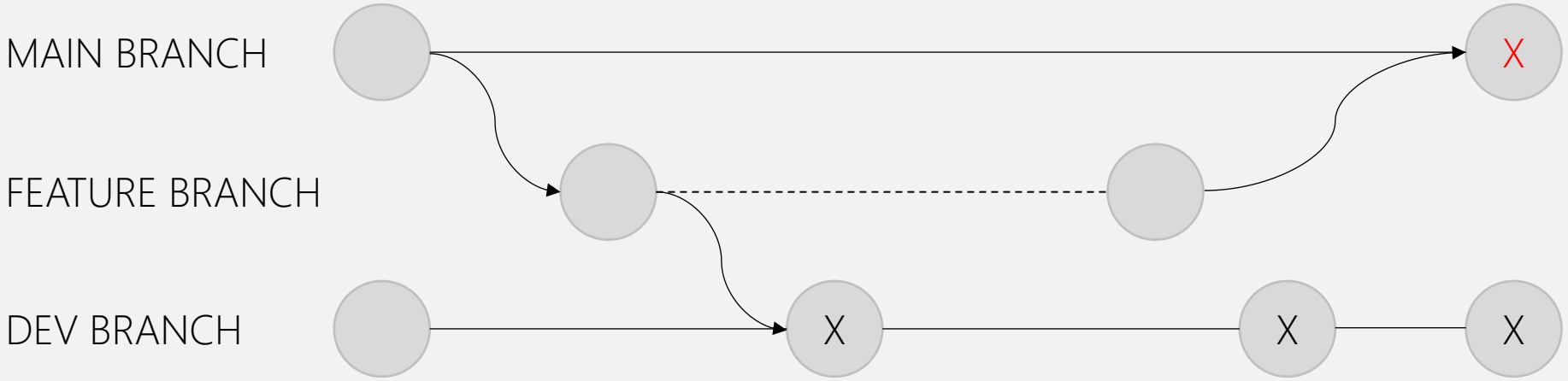
@Oli_VSteenlandt

@oliviervs.bsky.social



Branching

Branching Strategy
Feature Branching



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

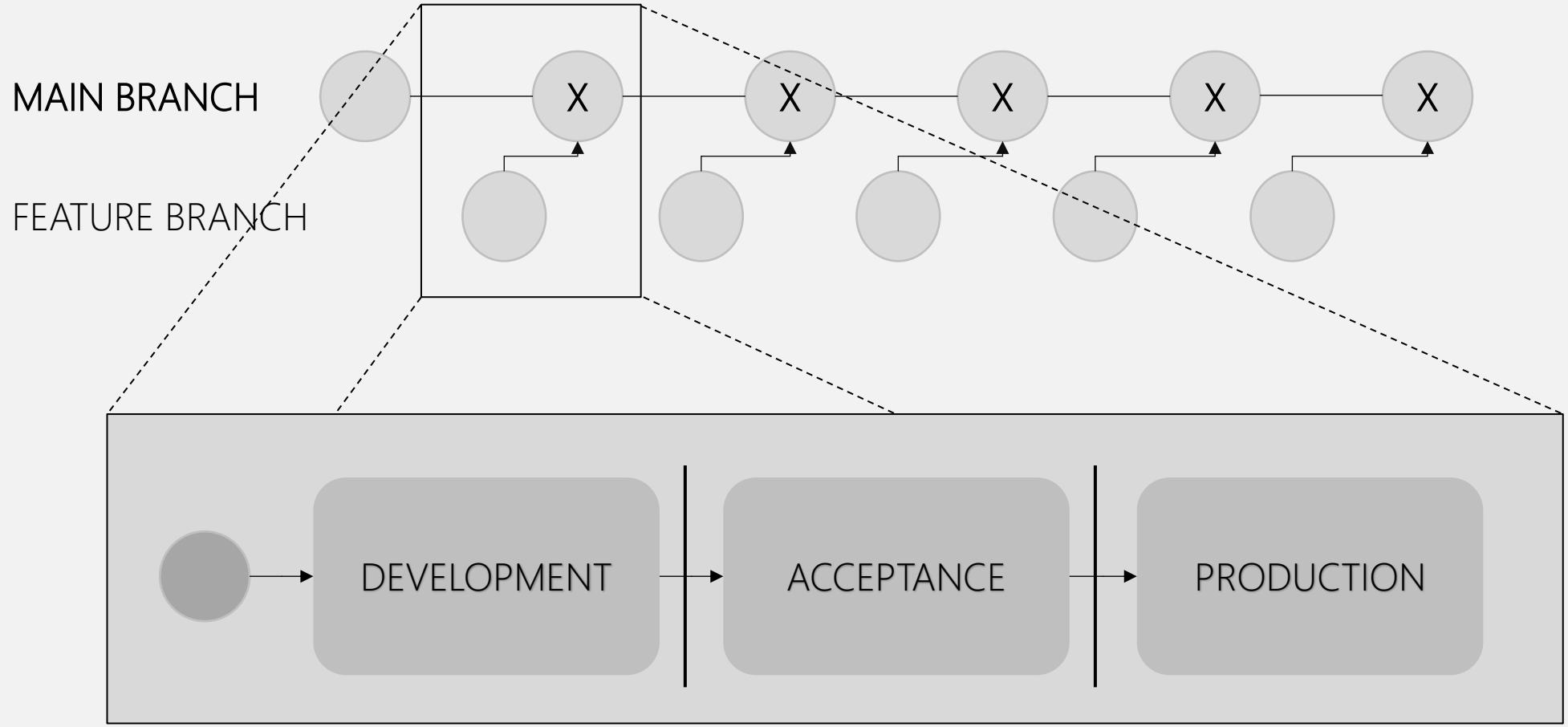

DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

Branching Strategy
Trunk Based Branching



Validation Step

Manual Validation Step

Useful for Trunk Based Branching
Explicitly agree to deploy



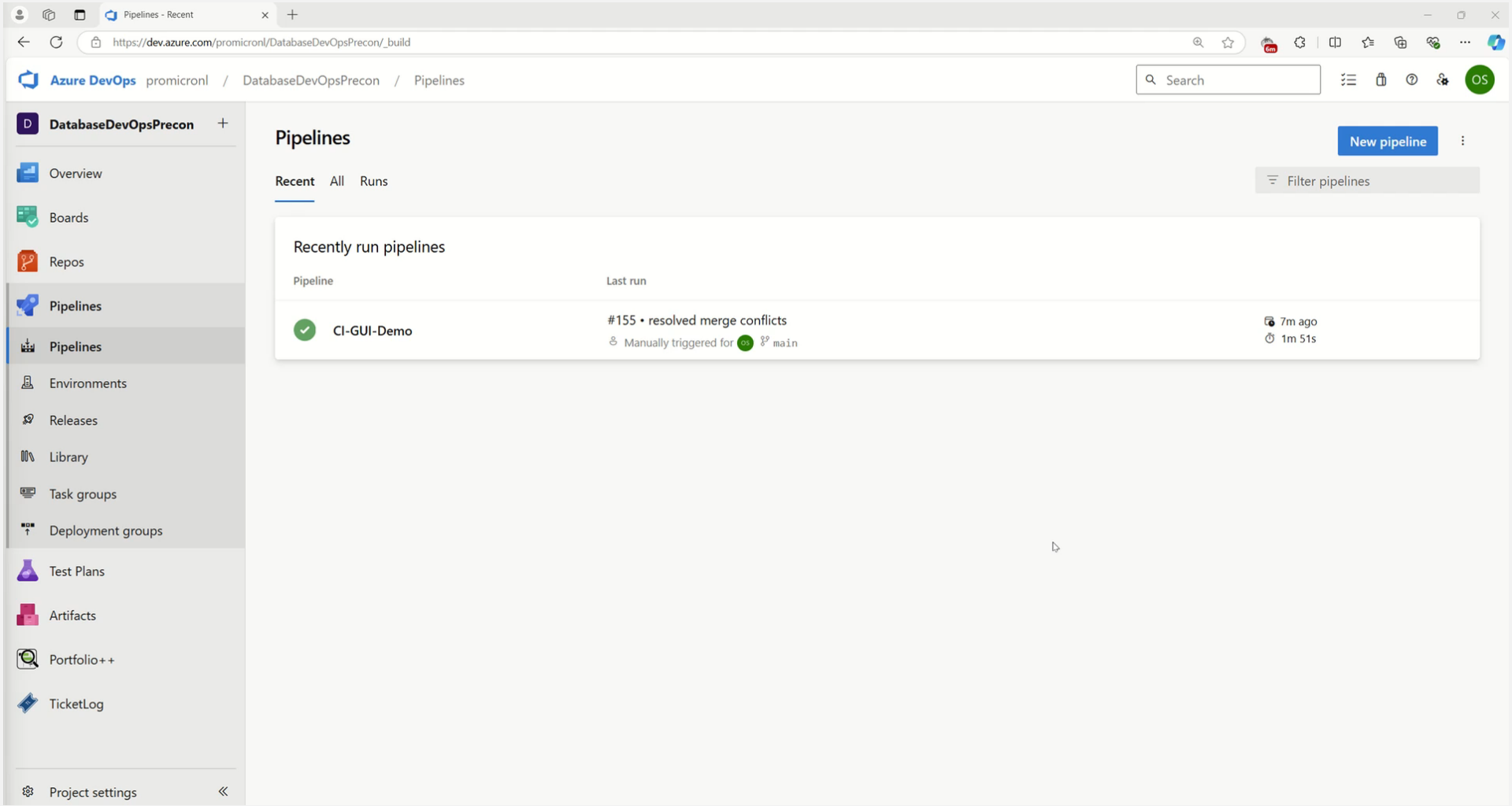


Demo

Demo

Separate Build & Release Pipeline

YAML Build Pipeline





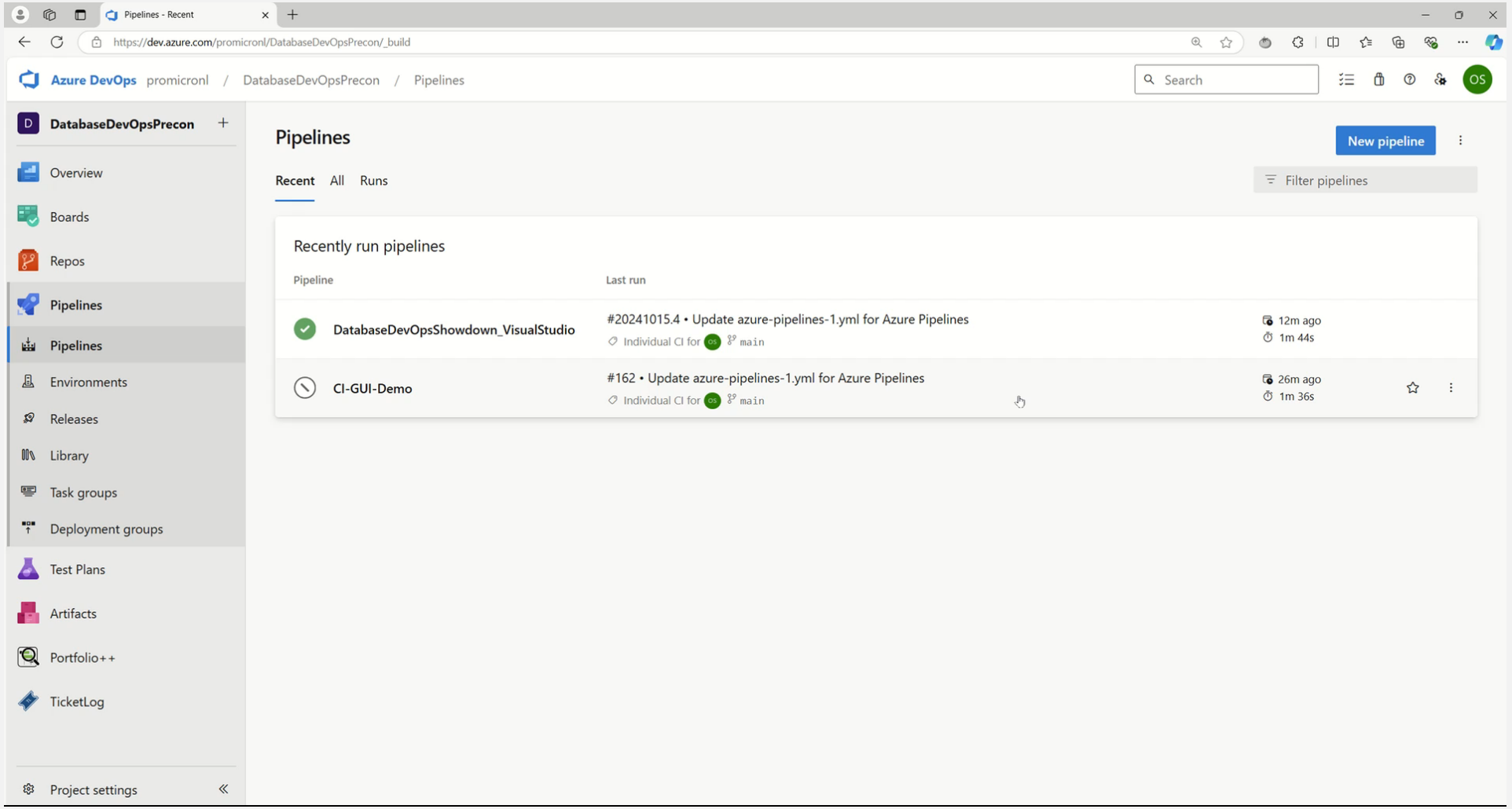
DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

YAML Deployment Pipeline





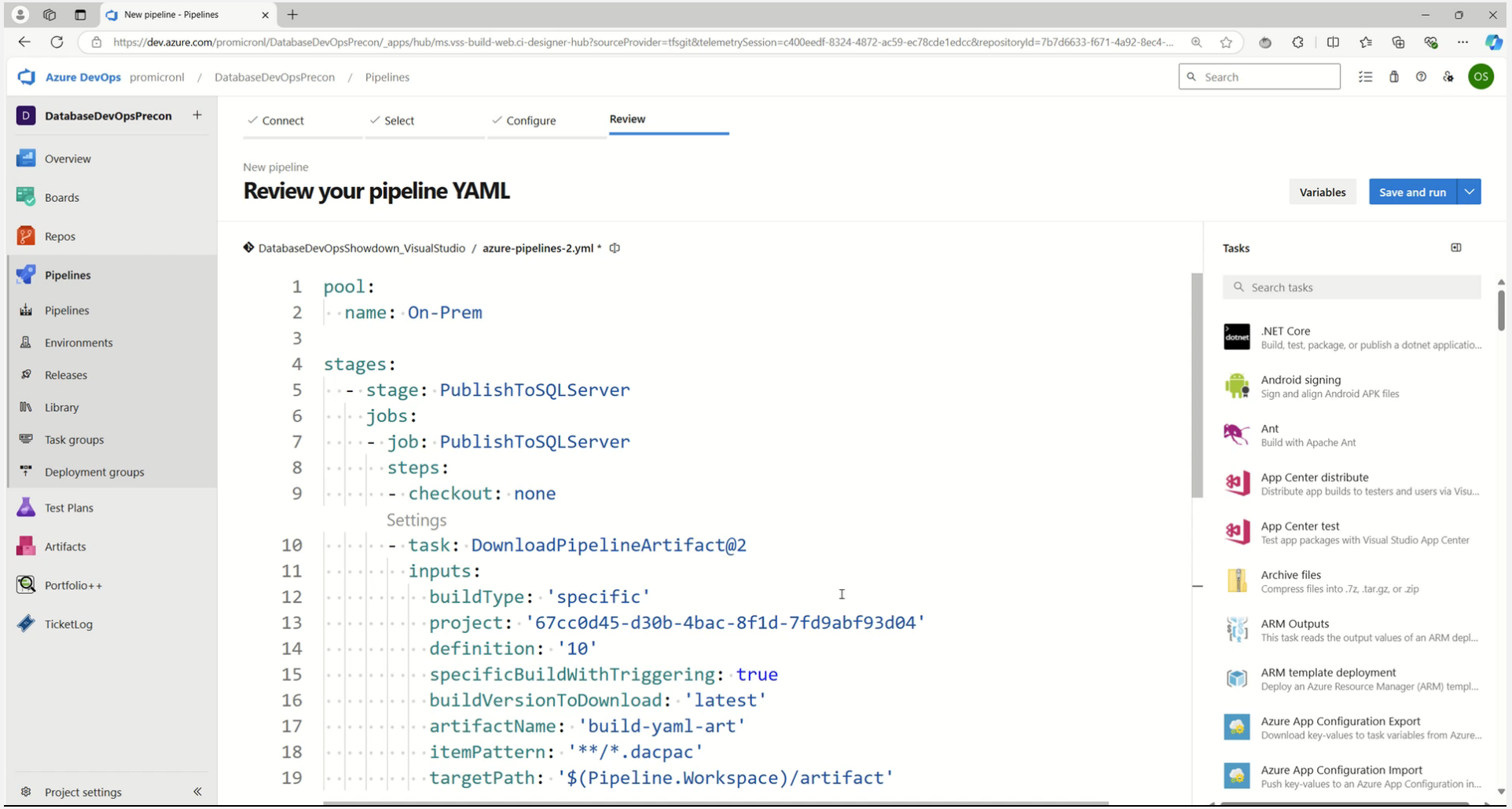
DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

YAML Deployment Pipeline





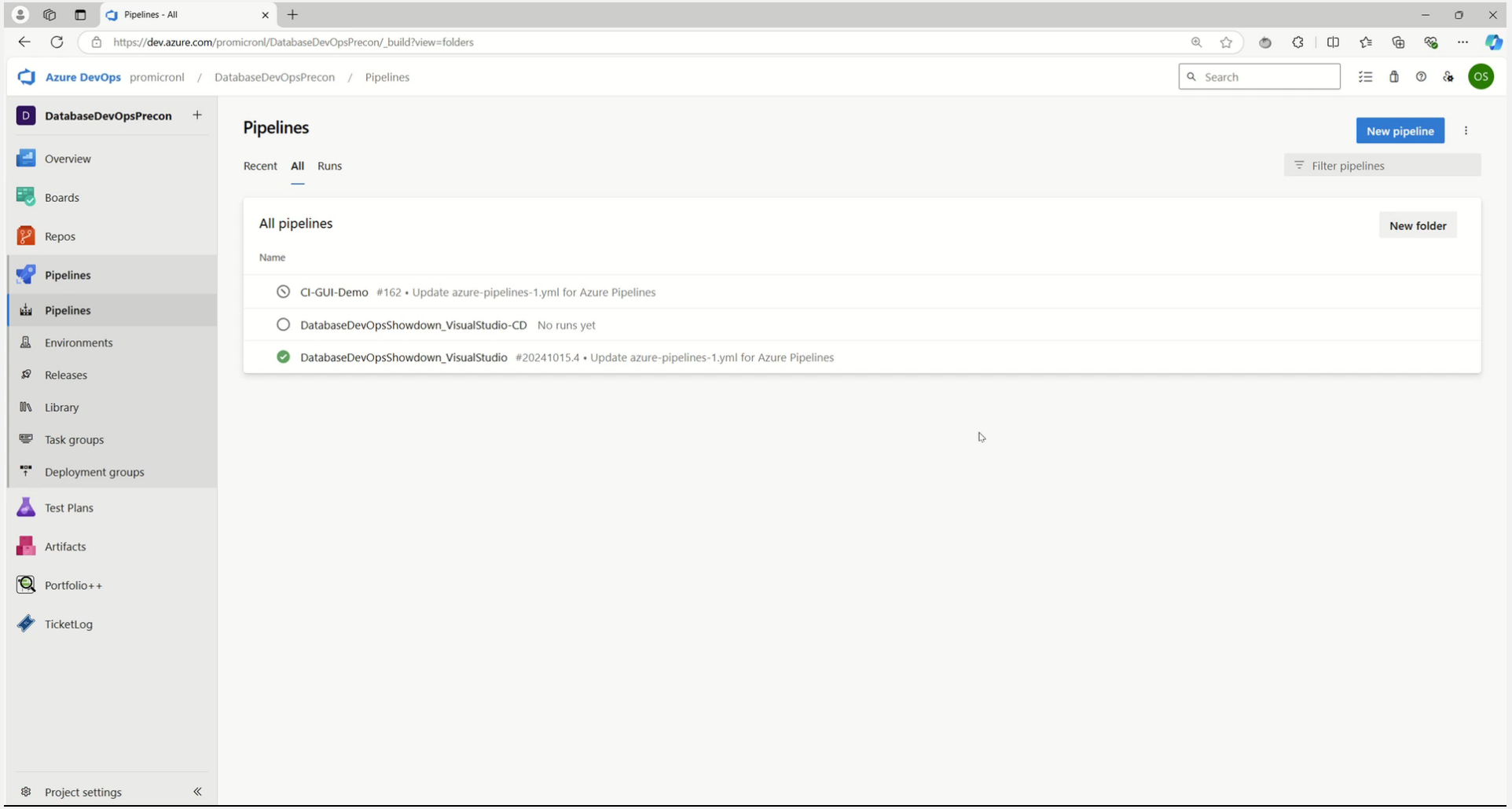
DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

YAML Deployment Pipeline Execution





DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

Demo

One to rule them all



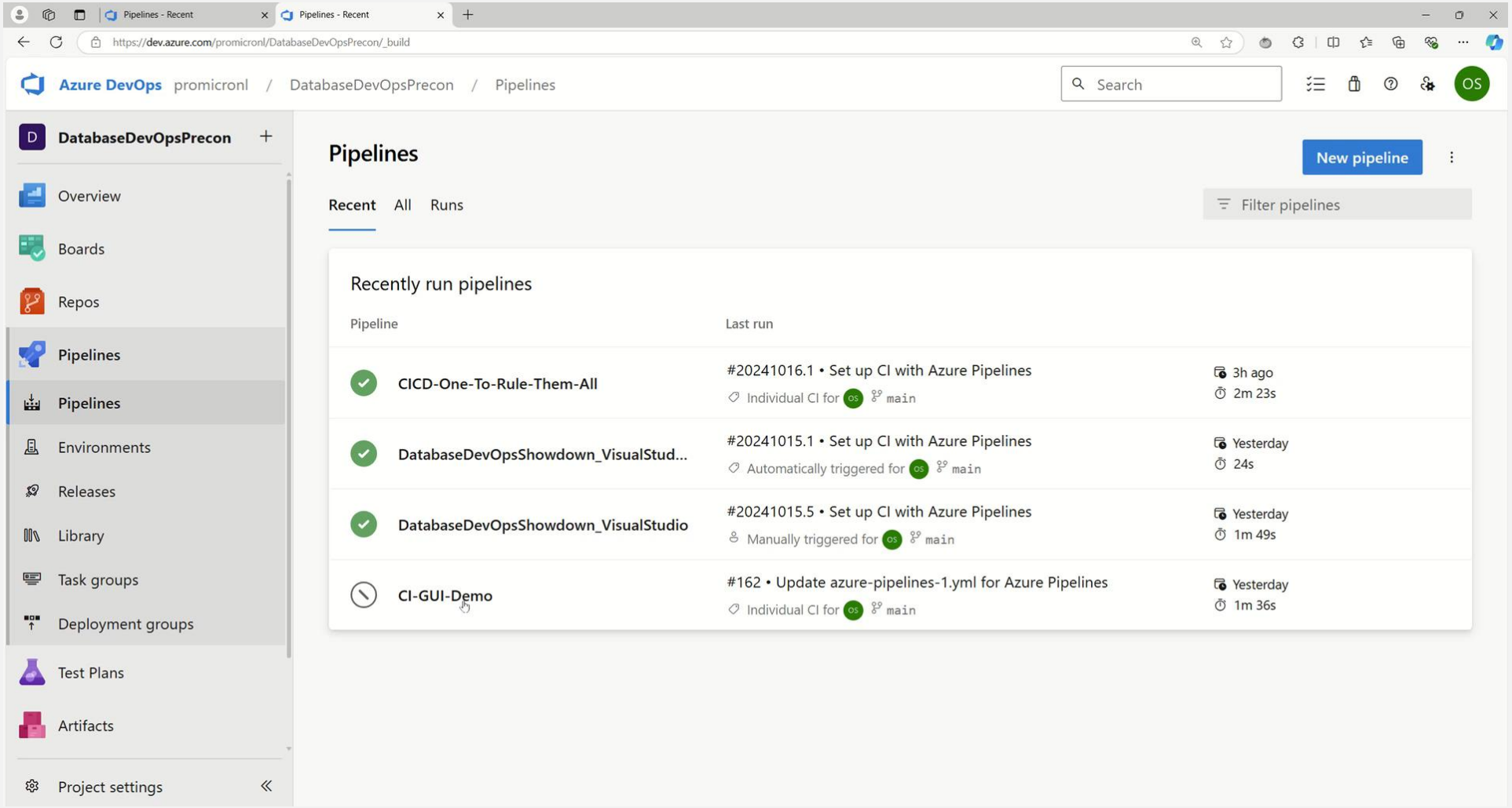
DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

One to rule them all





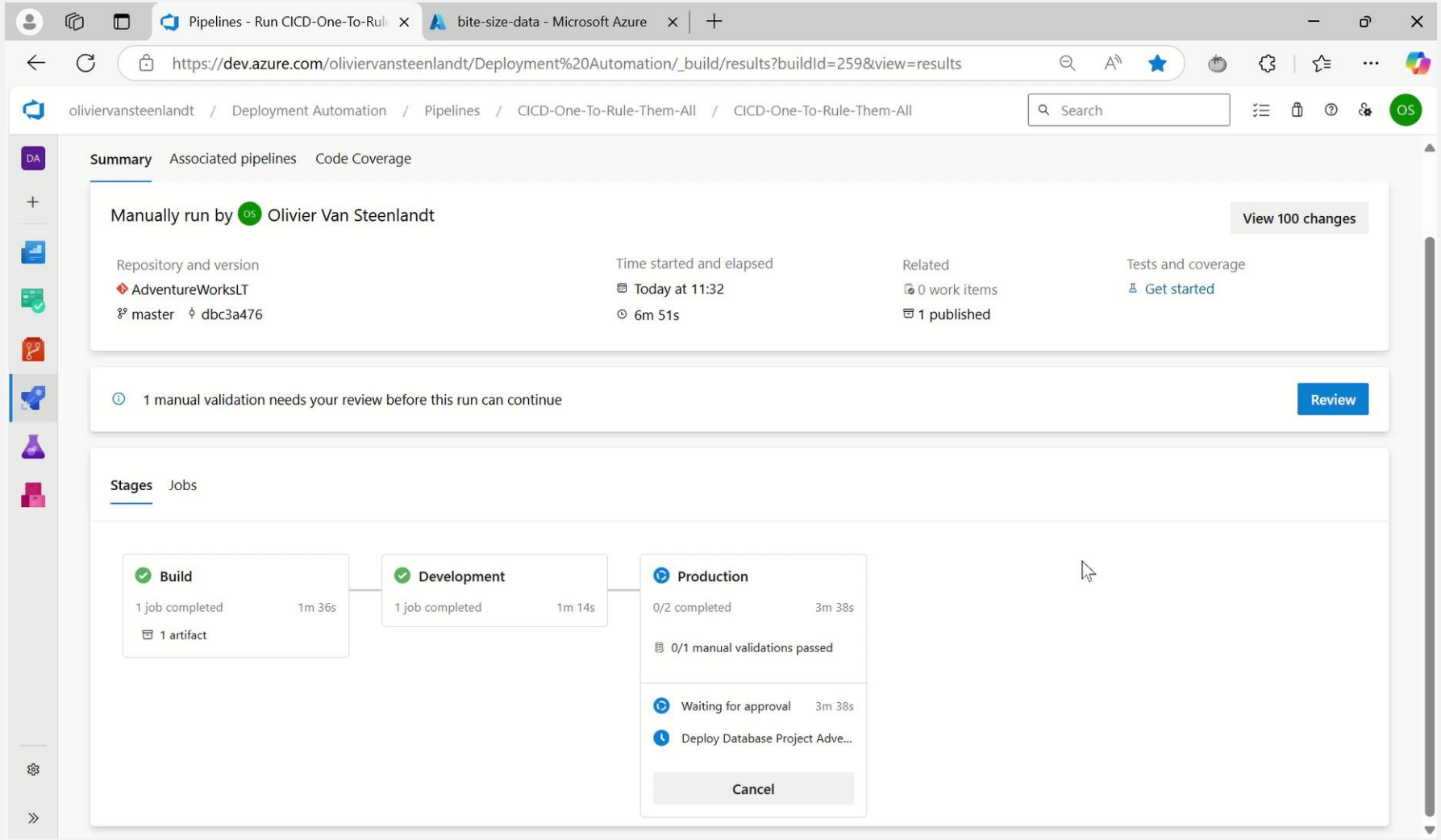
DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

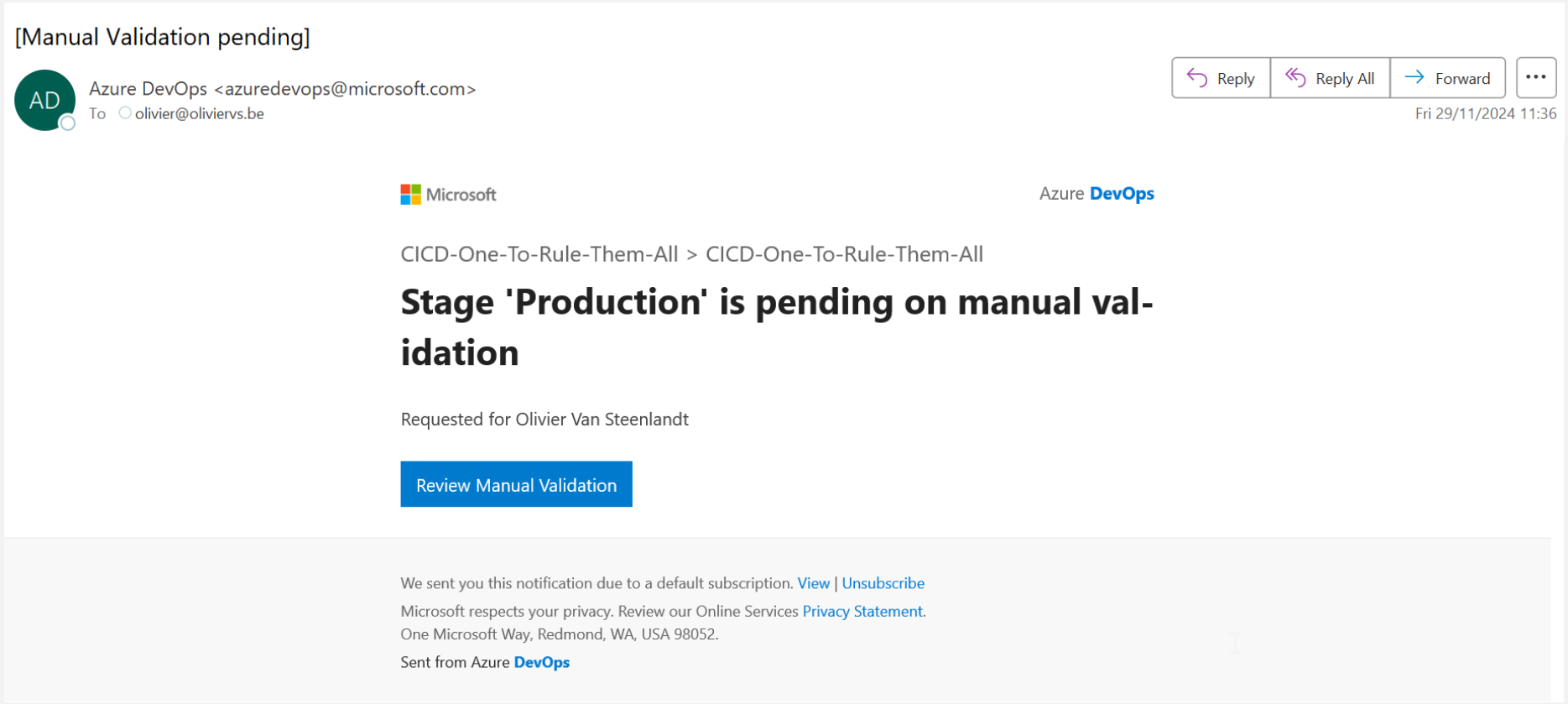
@Oli_VSteenlandt

@oliviervs.bsky.social

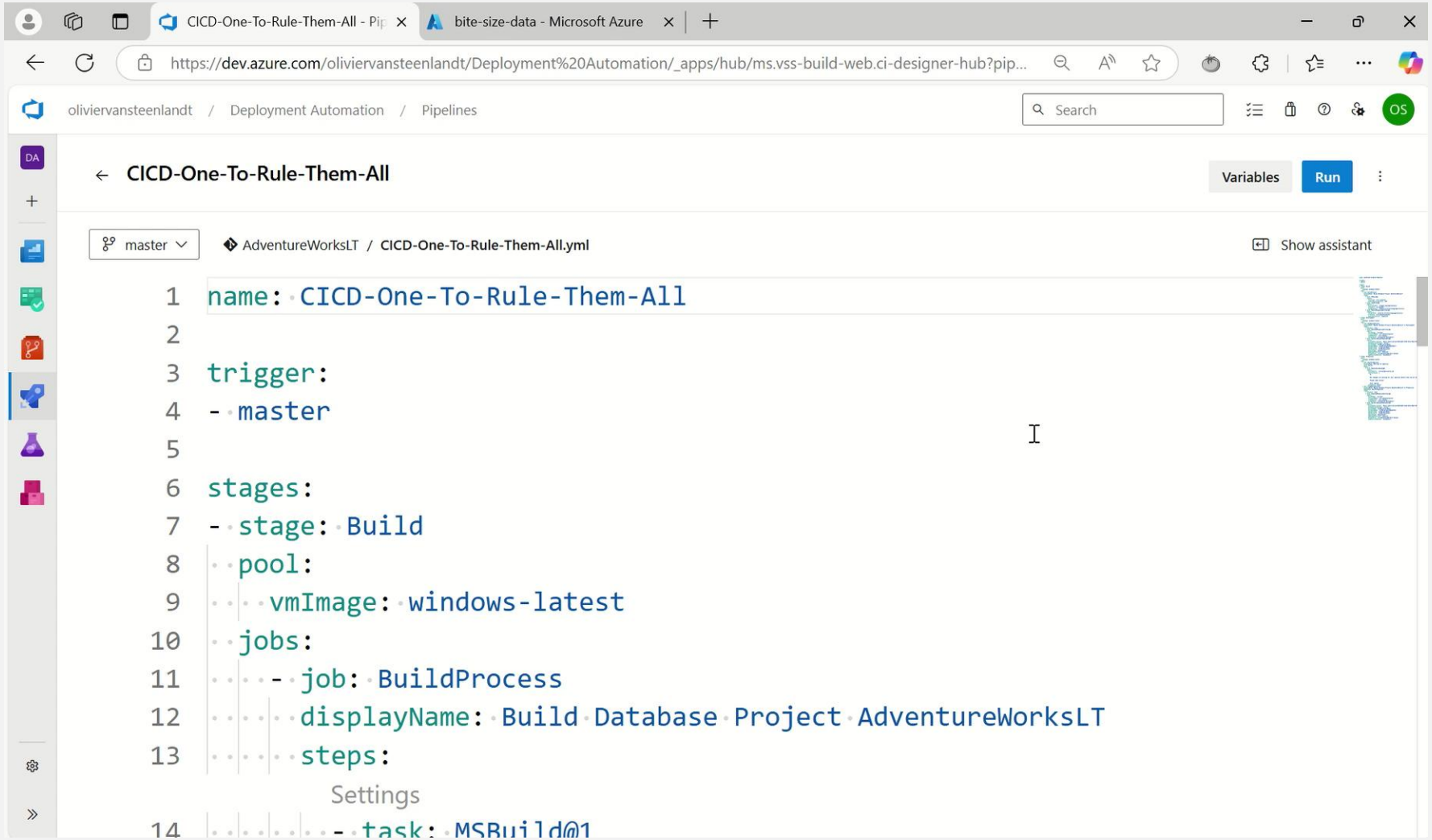
Manual Validation Step



Manual Validation Pending



Manual Validation Step - Technical



Summary



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social

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!

Questions?

Datawarehousing & Reporting Teamlead

Core Member @ dataMinds.be

Speaking / Blogging



DATA-CUISINE.COM
BITE SIZE DATA TALES

/in/oliviervansteenlandt

@Oli_VSteenlandt

@oliviervs.bsky.social