

Database Deployment Automation Using Database Projects & Azure DevOps

Olivier Van Steenlandt



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BITE SIZE DATA TALES



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About me

Olivier Van Steenlandt



Datawarehousing & Reporting Teamlead



Core Member @ dataMinds.be



Speaking / Blogging



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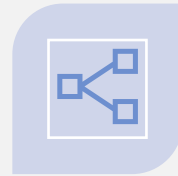
Schedule



Current
Situation



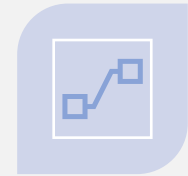
Moving
forward



Branching



Demo



Summary

Current Situation



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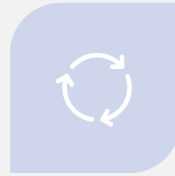
Current Situation

Environments



Development
(Acceptance)
Production

Process



Manual
Deployments

Tools



Database Project
Azure DevOps

Database Projects



Visual Studio



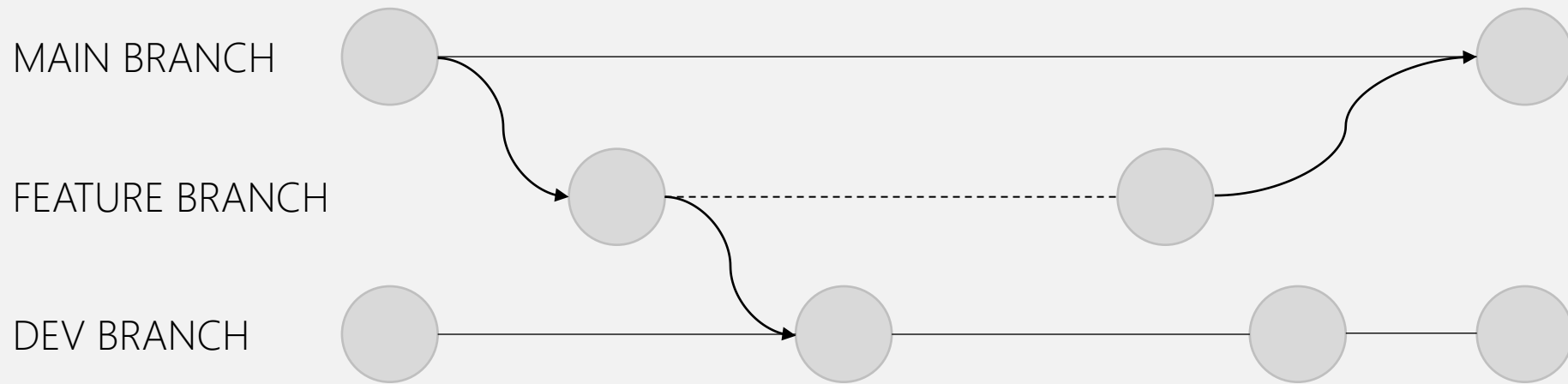
Visual Studio
Code



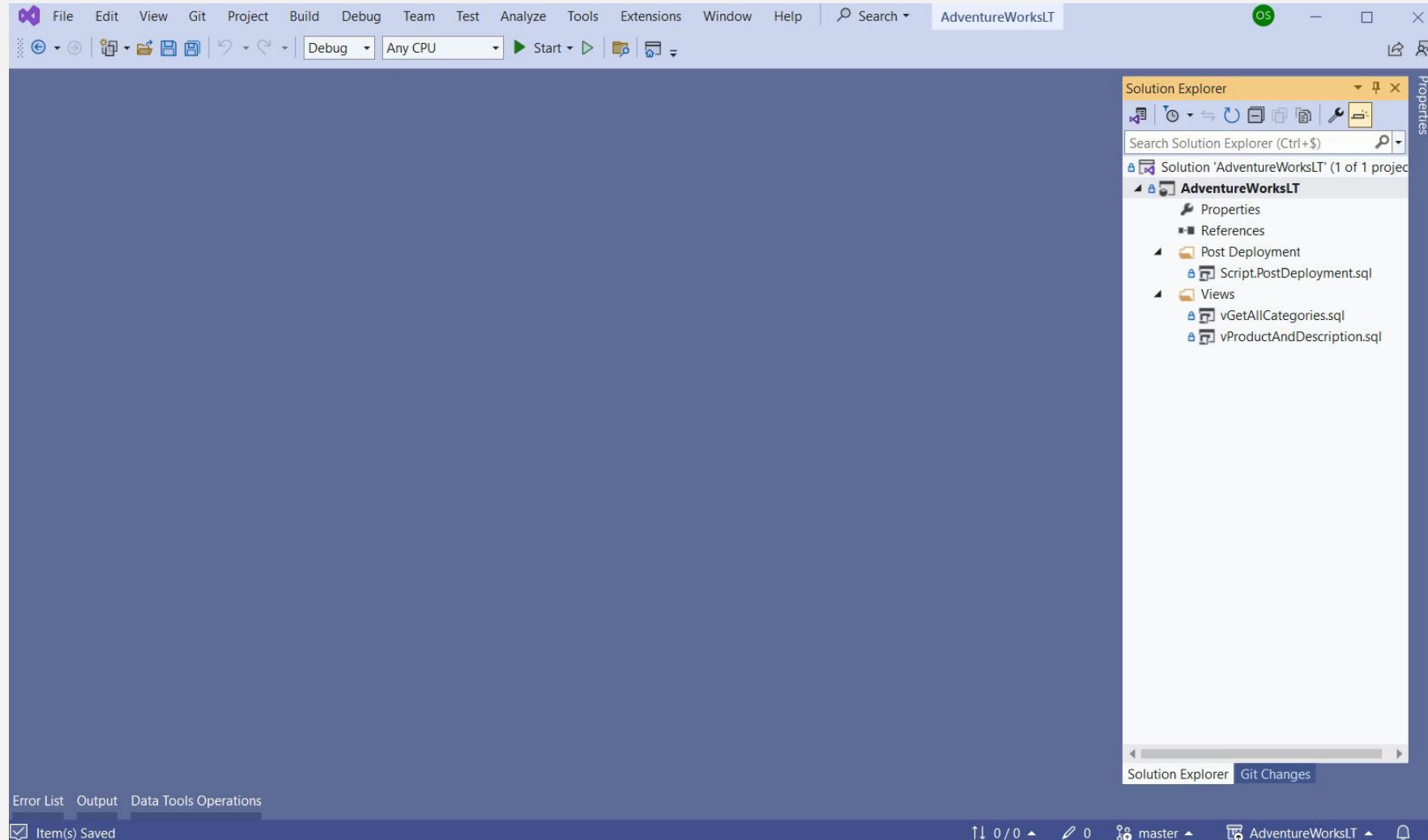
Azure Data
Studio

Branching Strategies

Feature Branching



Development



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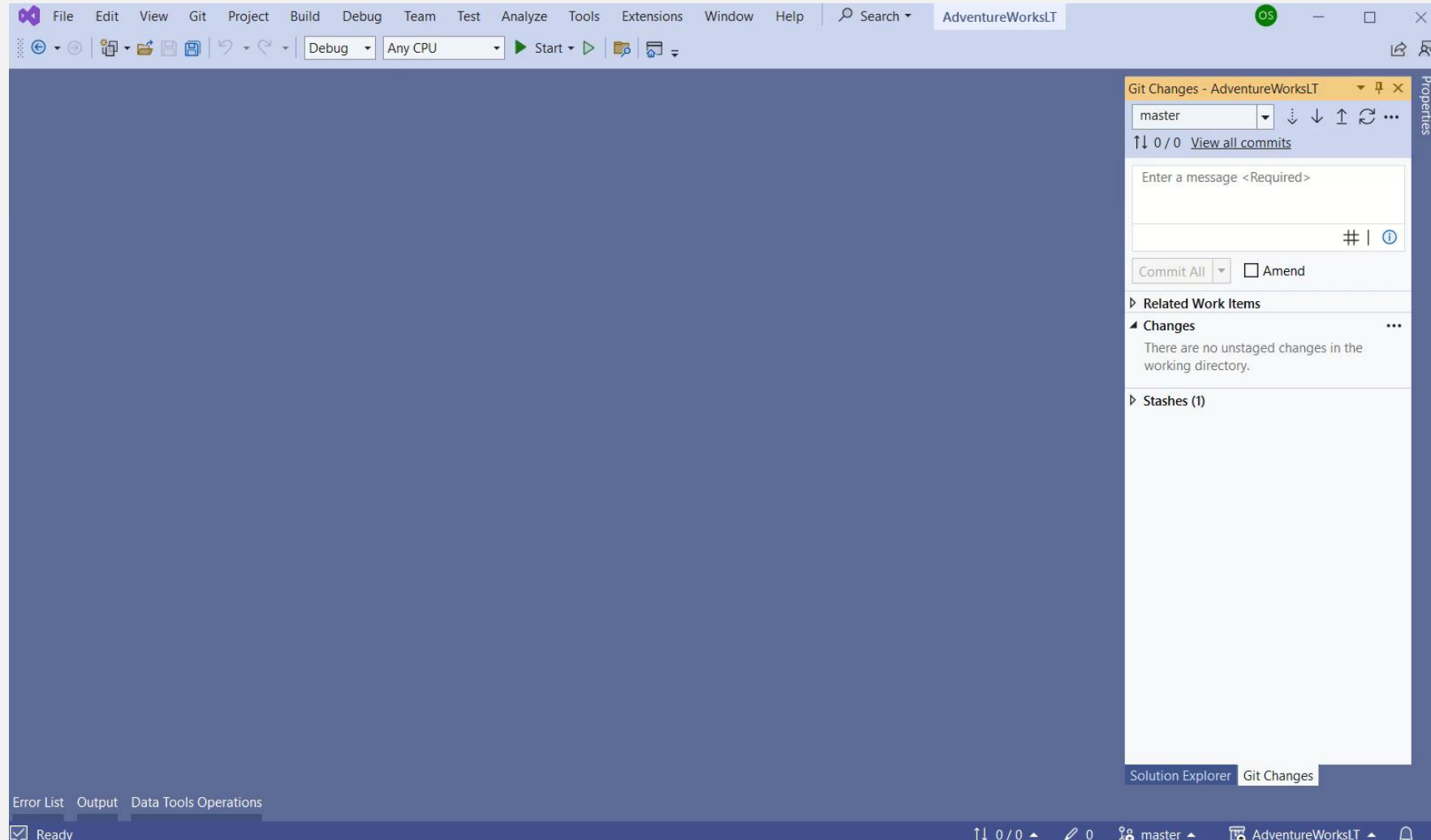
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Manual Deployments



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Moving Forward



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Deployment automation - why?

Less manual work

Time-saving

Less room for mistakes/misconfiguration



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Mistakes?

Wrong Target Database

Deploy to PRD by accident

Publish Settings

Dropped all indexes

→ Publishing Profiles!



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Azure DevOps

Repos

Pipelines

(Test Plans)

(Artifacts)

(Boards)



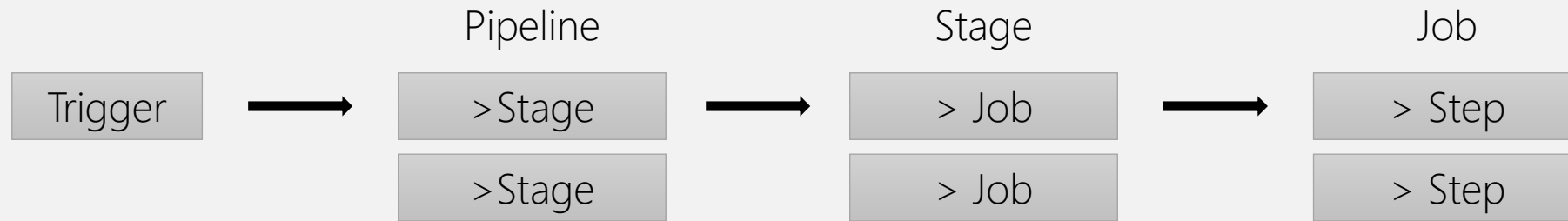
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Azure DevOps Pipelines – Key Concepts



Azure DevOps - Pipelines

CI/CD component

→ GUI

→ YAML



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YAML

Set of instructions

Manage pipelines as code

Indent sensitive

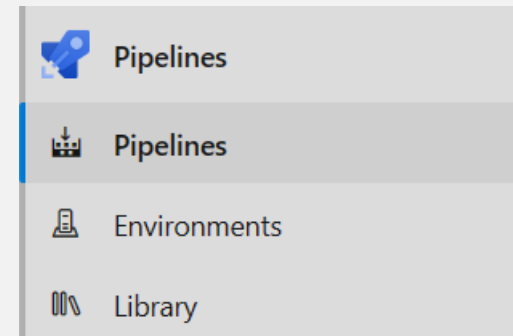
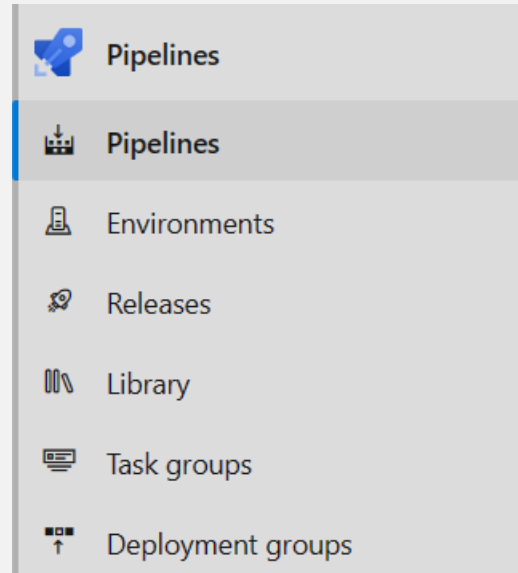


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Azure DevOps Pipelines

Pipelines?

Releases?



Deployment Automation

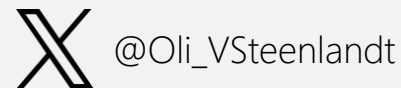
On-Prem

Self-Hosted Agent

[Blogpost: Install a Azure DevOps Agent](#)

Cloud

Hosted Agent



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Pricing (Private Projects)

Free Tier

1 parallel job

1800 minutes/month

Paid Tier*

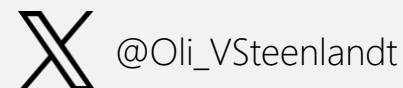
>1 parallel job

Hosted: \$40/parallel job

Self-Hosted: \$15/parallel job

(unlimited minutes)

* Monthly Pricing - December 2023



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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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Deployment Automation

Azure SQL

- > Azure SQL Database deployment task (built-in)

- > Command line

SQL Server

- > SQL Server database deploy task (built-in)

- > Command line

Branching



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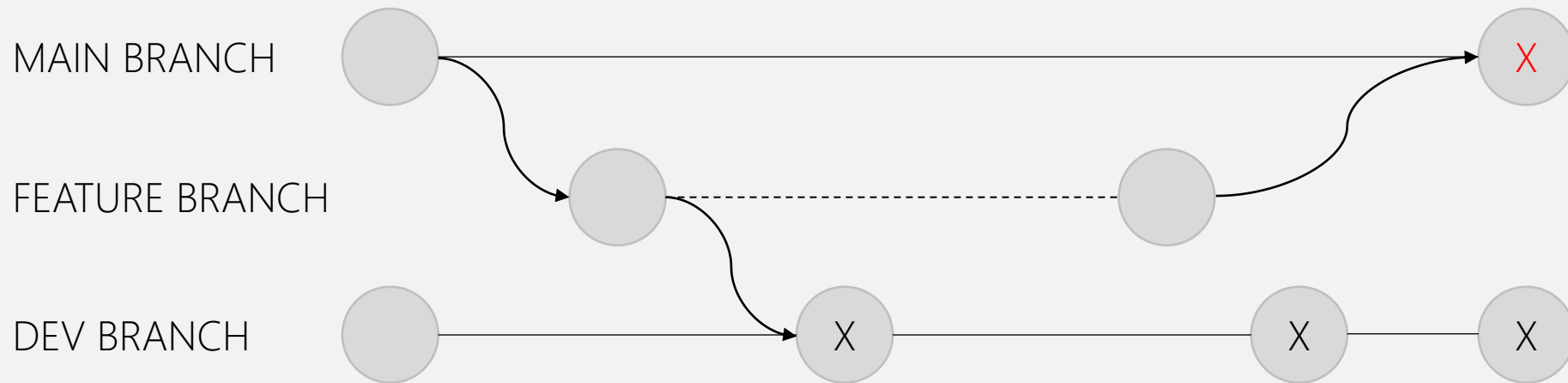


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Branching Strategy

Feature Branching

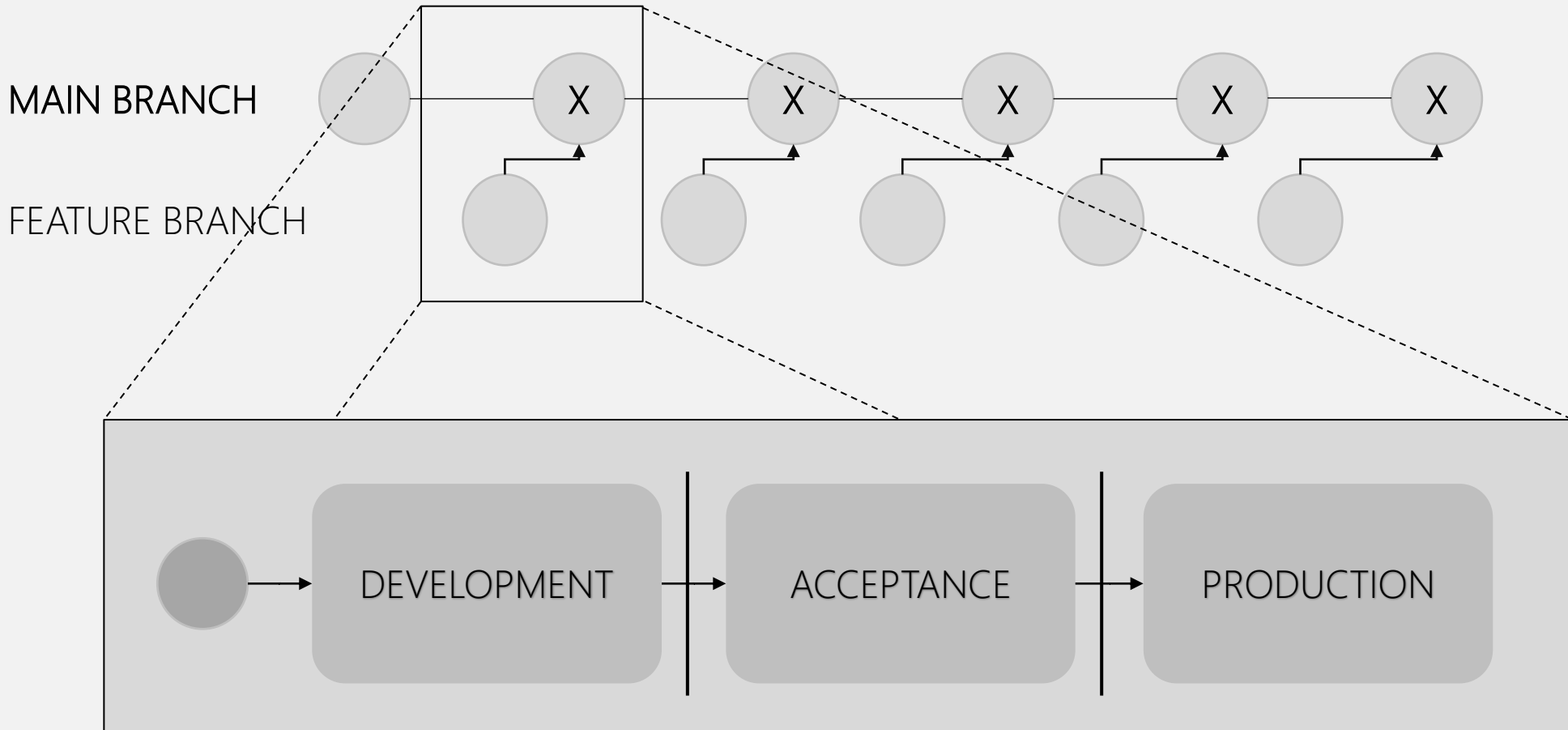


X = Automated Build and deployment to development

X = Automated Build and deployment to production

Branching Strategy

Trunk Based Branching



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Validation Step

Manual Validation Step

Useful for Trunk Based Branching
Explicitly agree to deploy



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Comparing Branching Strategies

Feature Branching

Flexible

Big changes

Trunk Based Branching

Less flexible (FIFO-principle)

Small changes

Demo



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Demo

Separate Build & Release Pipeline



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One to rule them all



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Summary



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Moving Forward

Automated Unit Testing

tSQLt – Opensource

Microsoft.Data.Tools.UnitTest - SSDT



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Benefits & Challenges

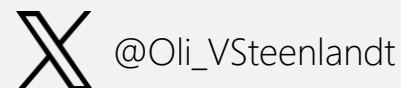
YAML (+)

Strict ruling for indents (-)

Managed as code (+)

Time saving (+)

Less room for mistakes (+)



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Thank you!

Questions?



Datawarehousing & Reporting Teamlead



Core Member @ dataMinds.be



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