Database Deployment Automation Using Database Projects & Azure DevOps

Olivier Van Steenlandt

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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

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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

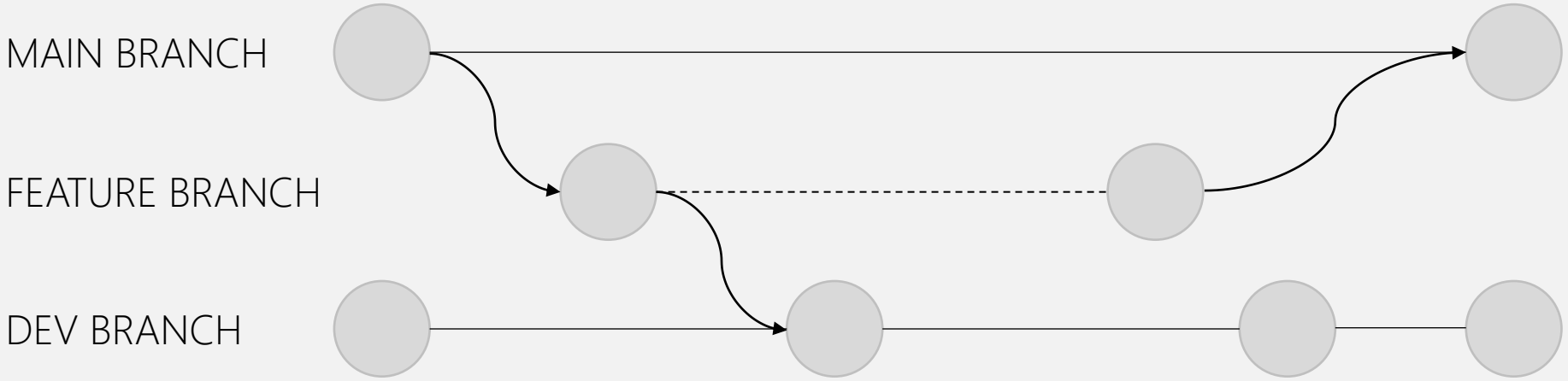
Visual Studio

Visual Studio Code

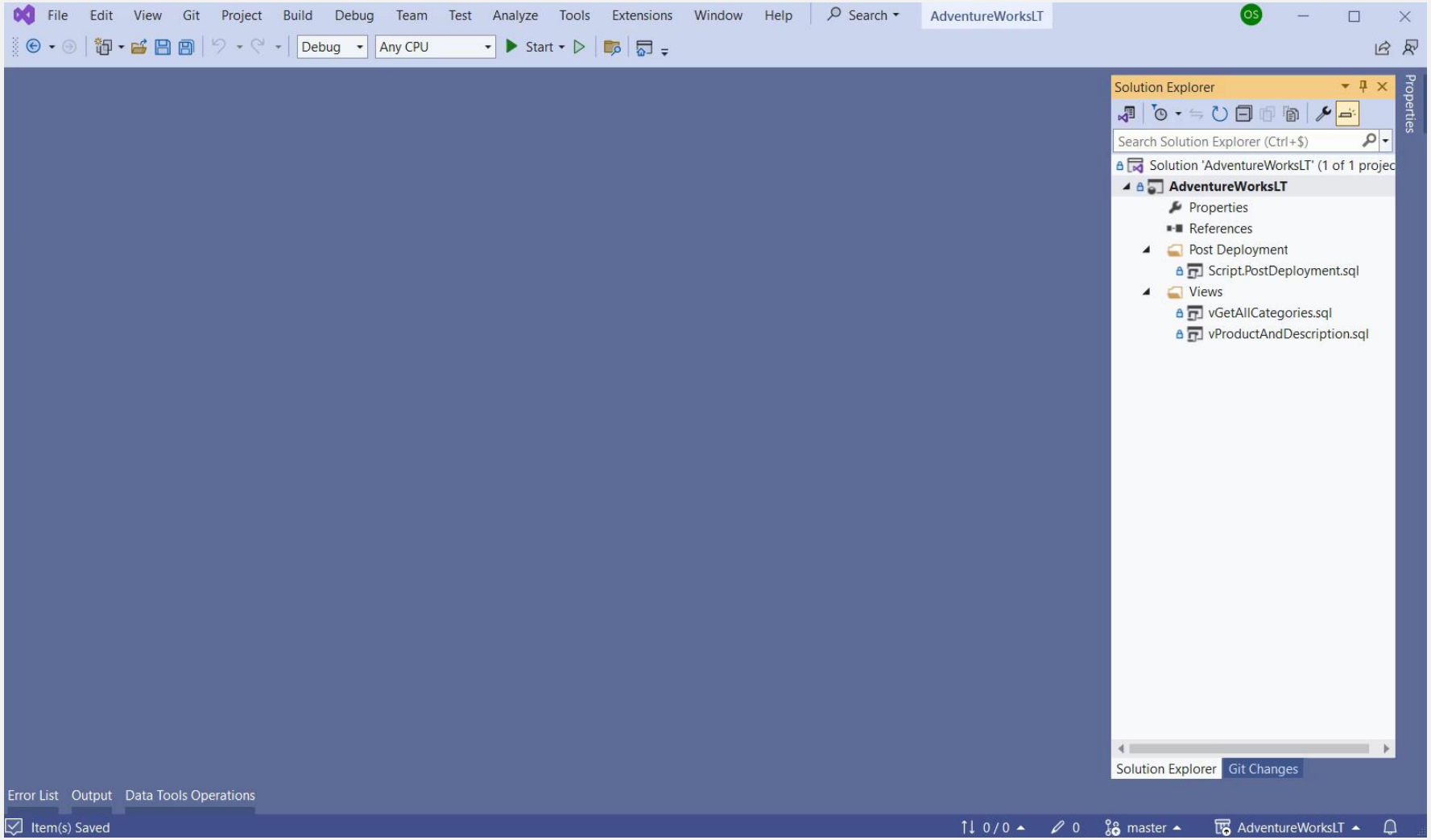
Azure Data Studio

Branching Strategies

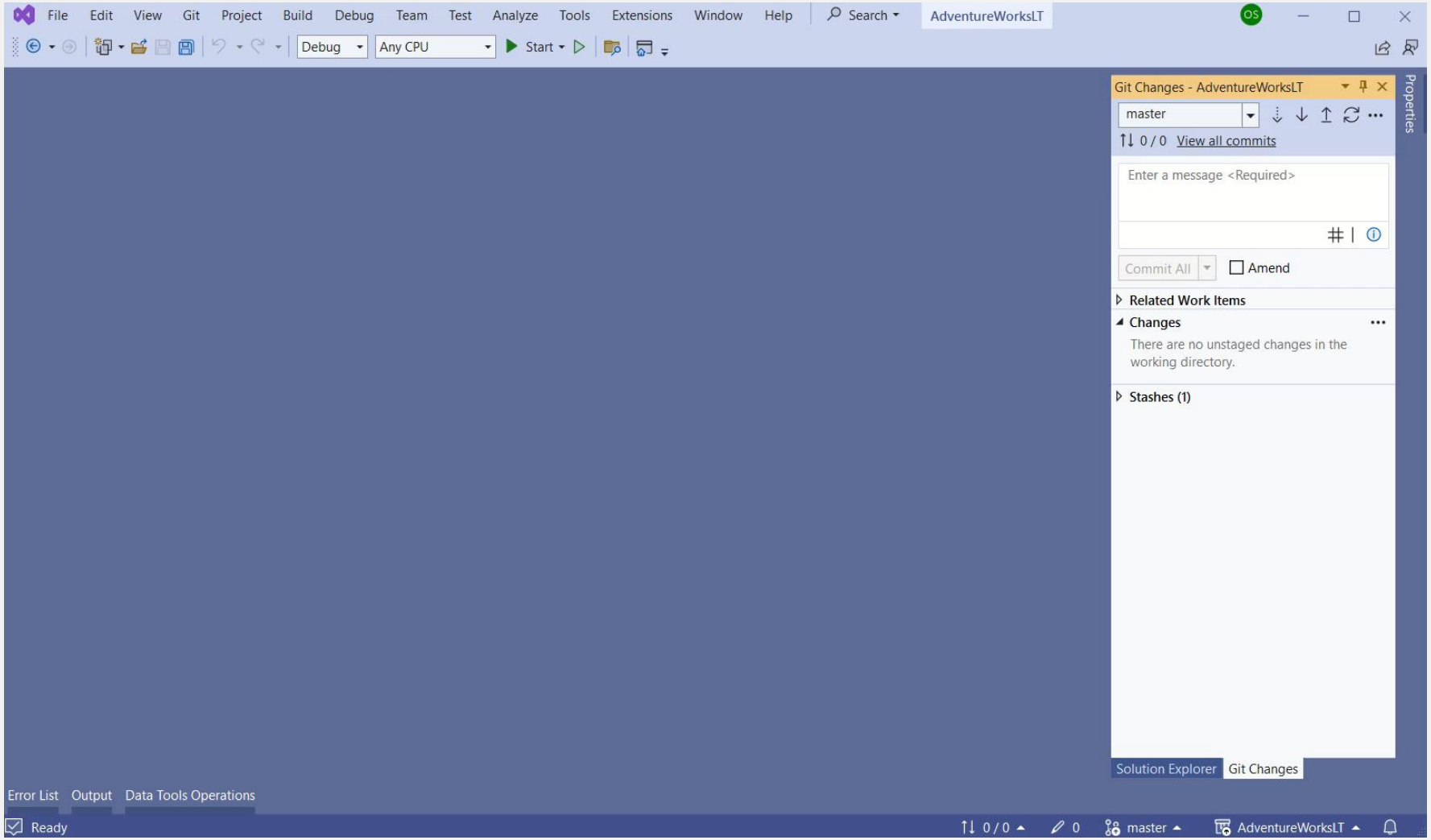
Feature Branching



Development



Manual Deployments



Moving Forward

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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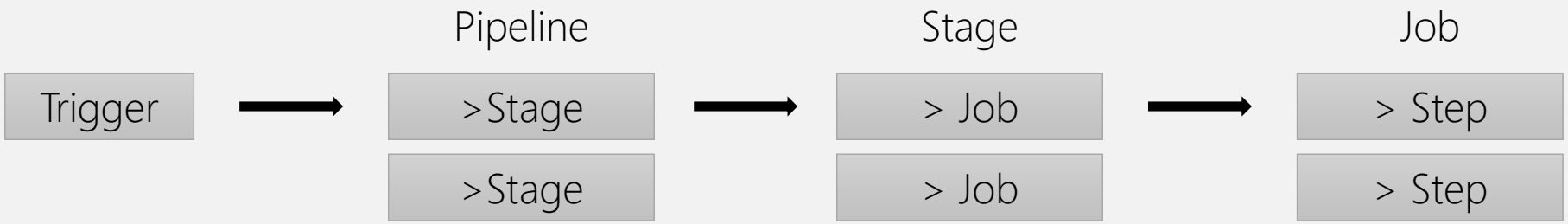
Azure DevOps Pipelines – Key Concepts



Azure DevOps - Pipelines

CI/CD component

→GUI

→YAML

YAML

Set of instructions

Manage pipelines as code

Indent sensitive

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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

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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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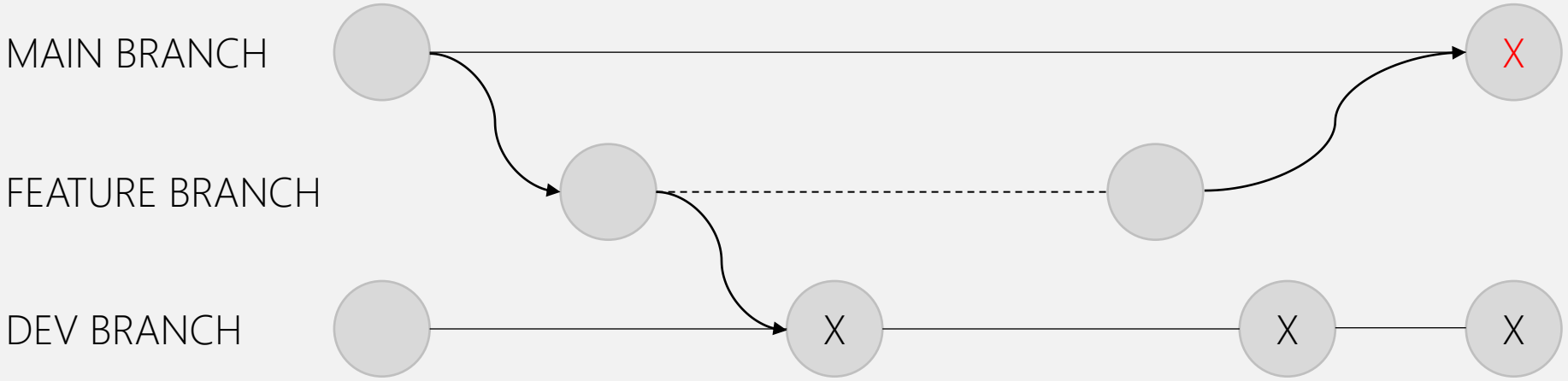
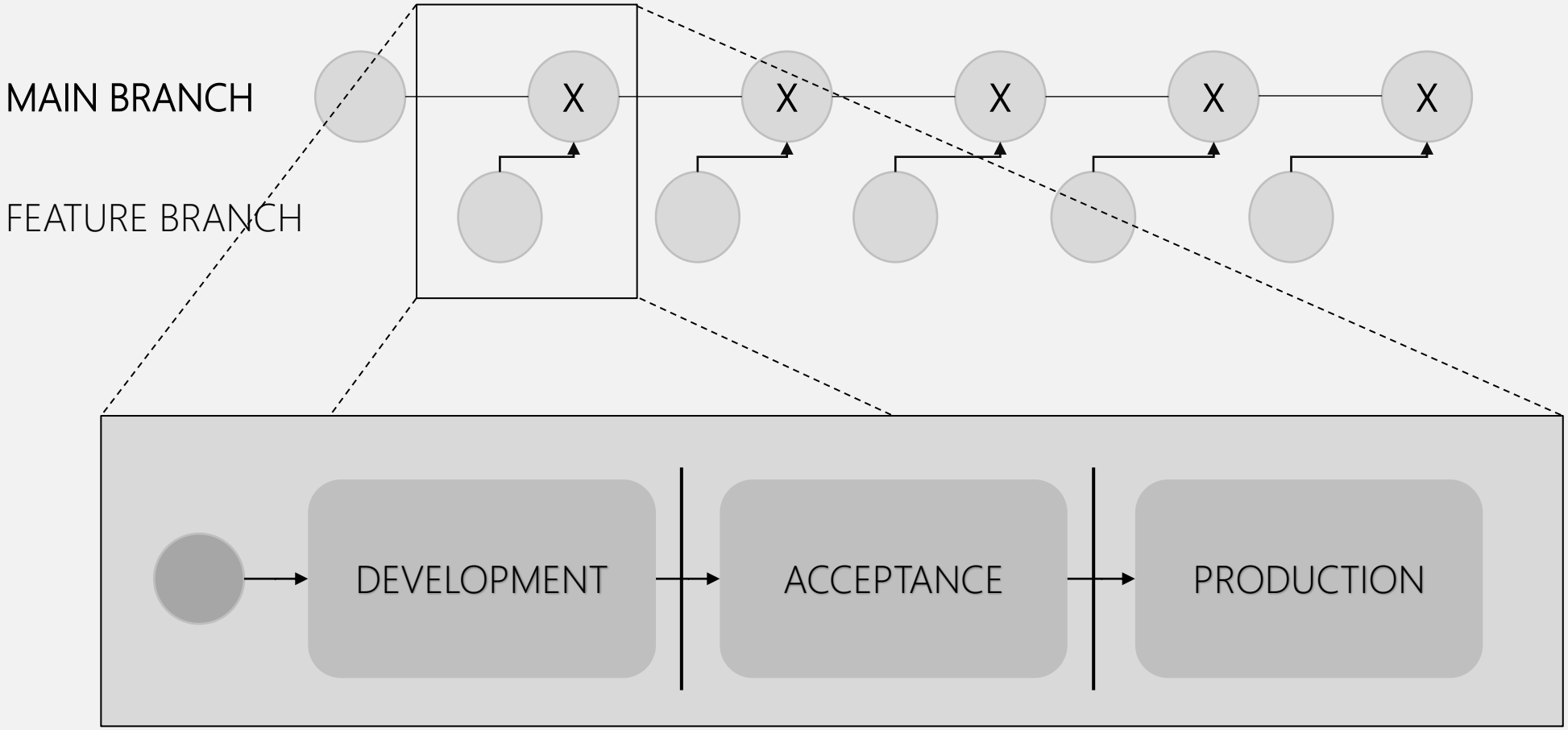
Branching

Branching Strategy
Feature Branching



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

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

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Demo

One to rule them all

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Summary

Moving Forward

Automated Unit Testing

tSQLt – Opensource

Microsoft.Data.Tools.UnitTest - SSDT

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Benefits & Challenges

Time saving (+)

Less room for mistakes (+)

YAML (+)

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

Thank you!

Questions?

Datawarehousing & Reporting Teamlead

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