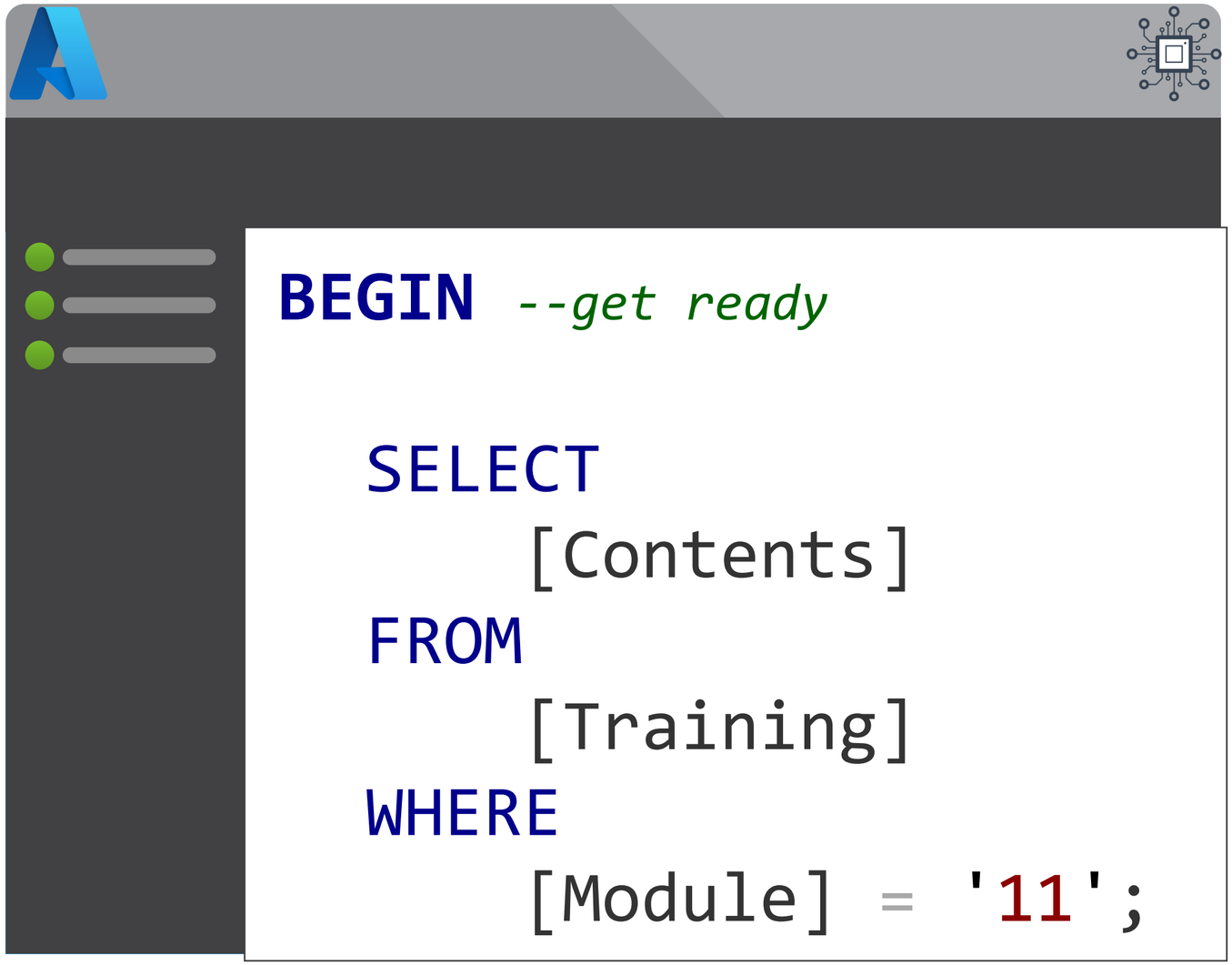
Module 11

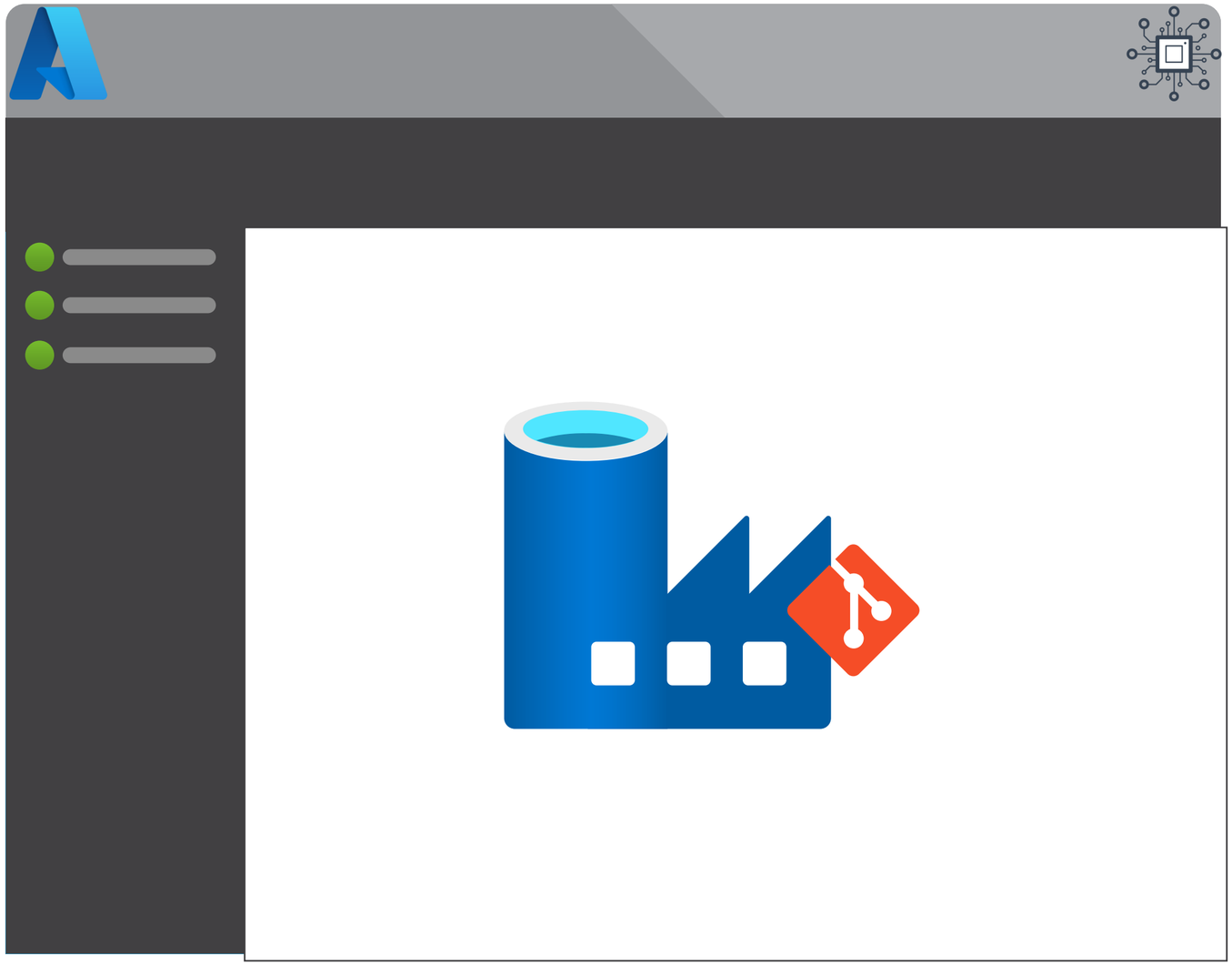
CI/CD



- Source Control vs Developer UI
- Basic ARM Template Deployments
- Advanced Deployment Patterns

Module 11

CI/CD



- Source Control vs Developer UI
- Basic ARM Template Deployments
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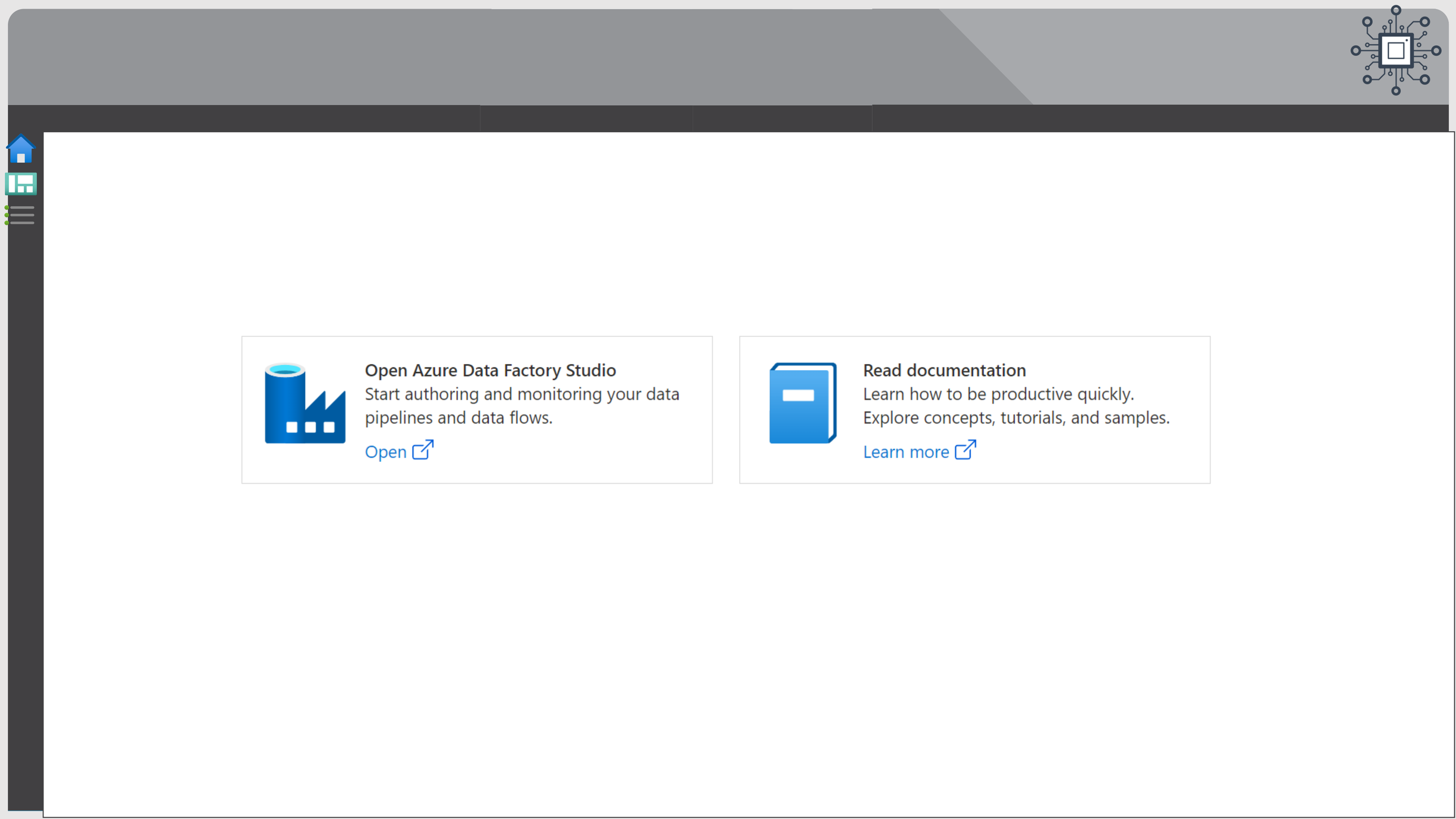
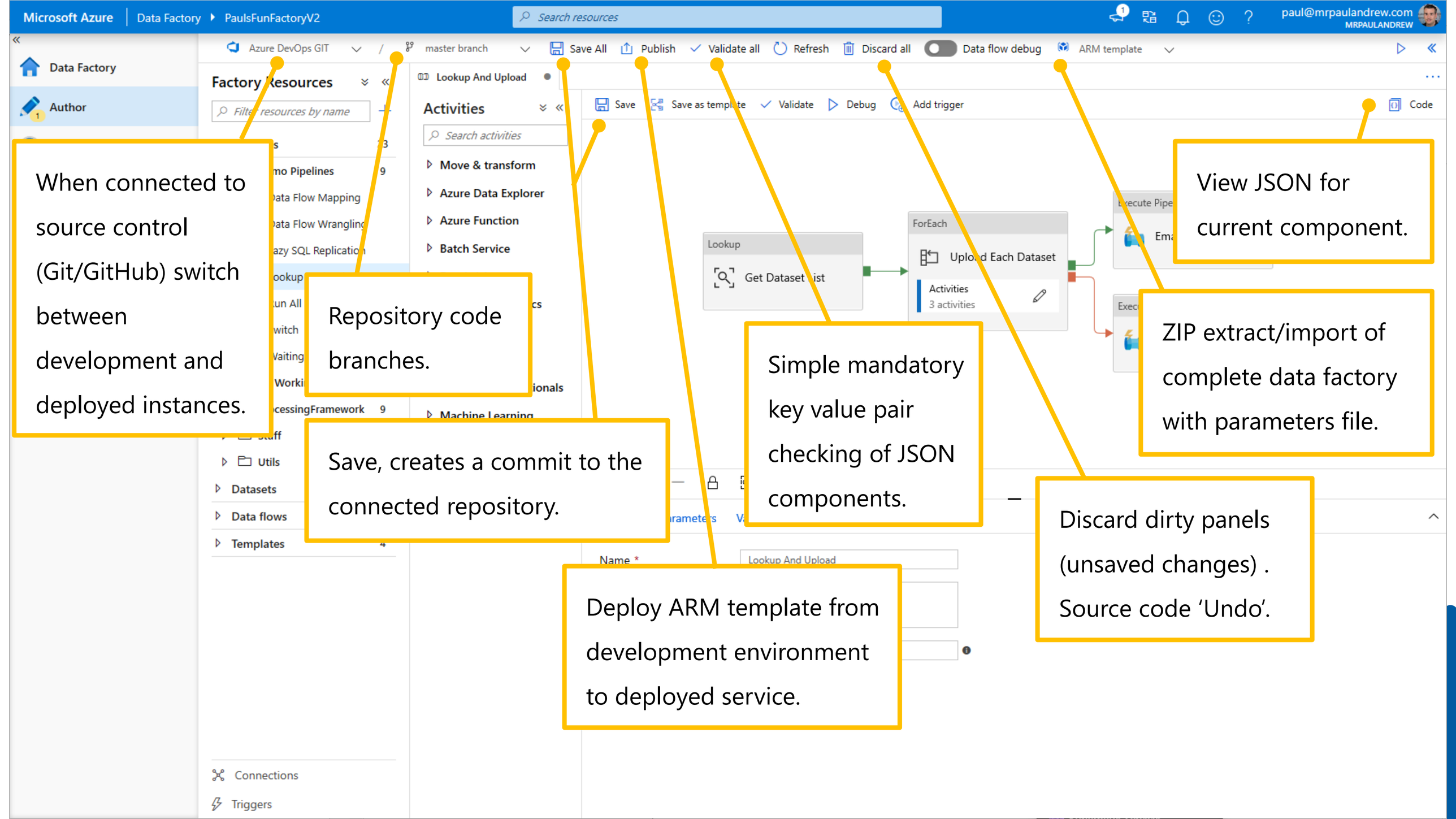
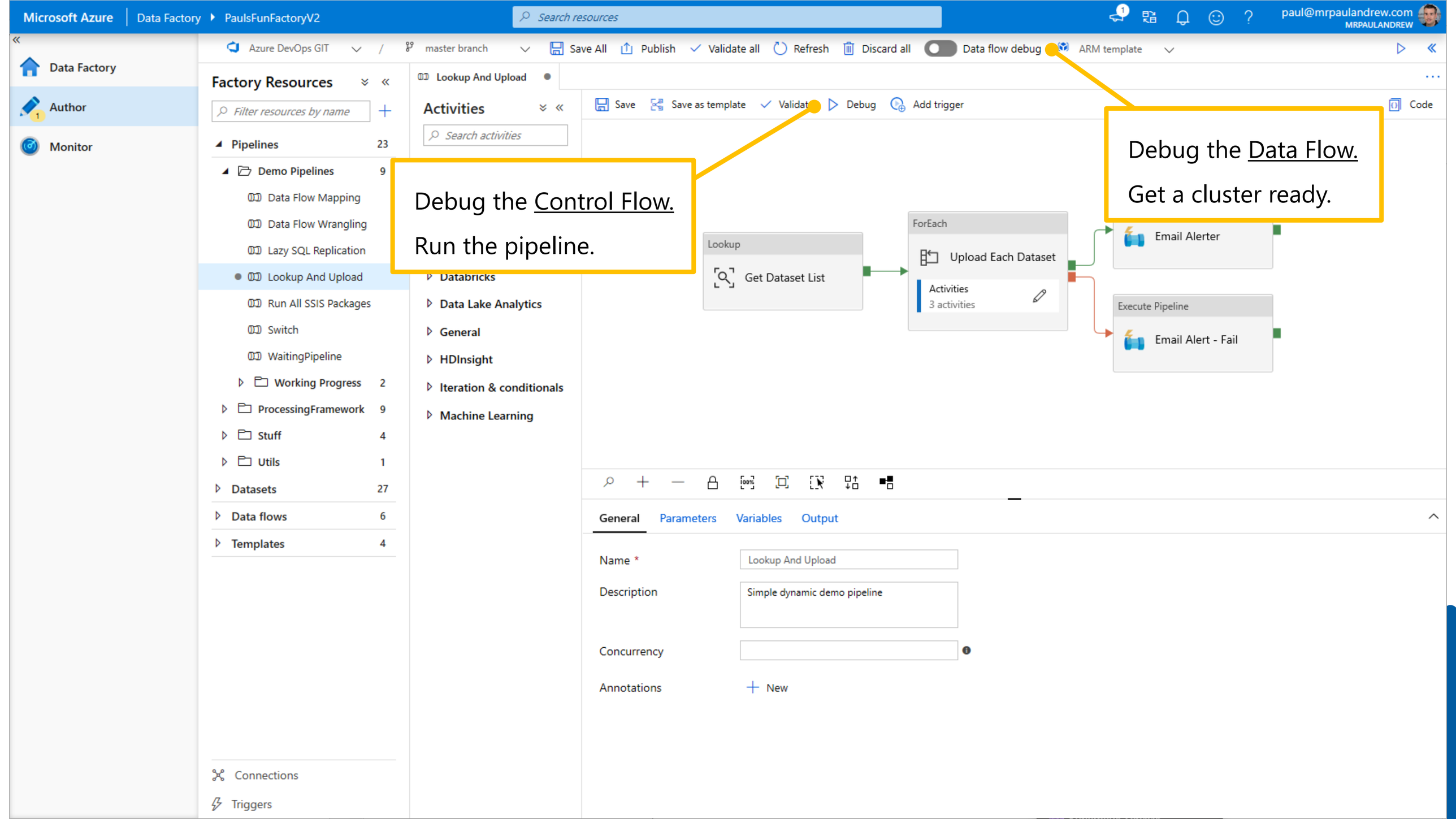
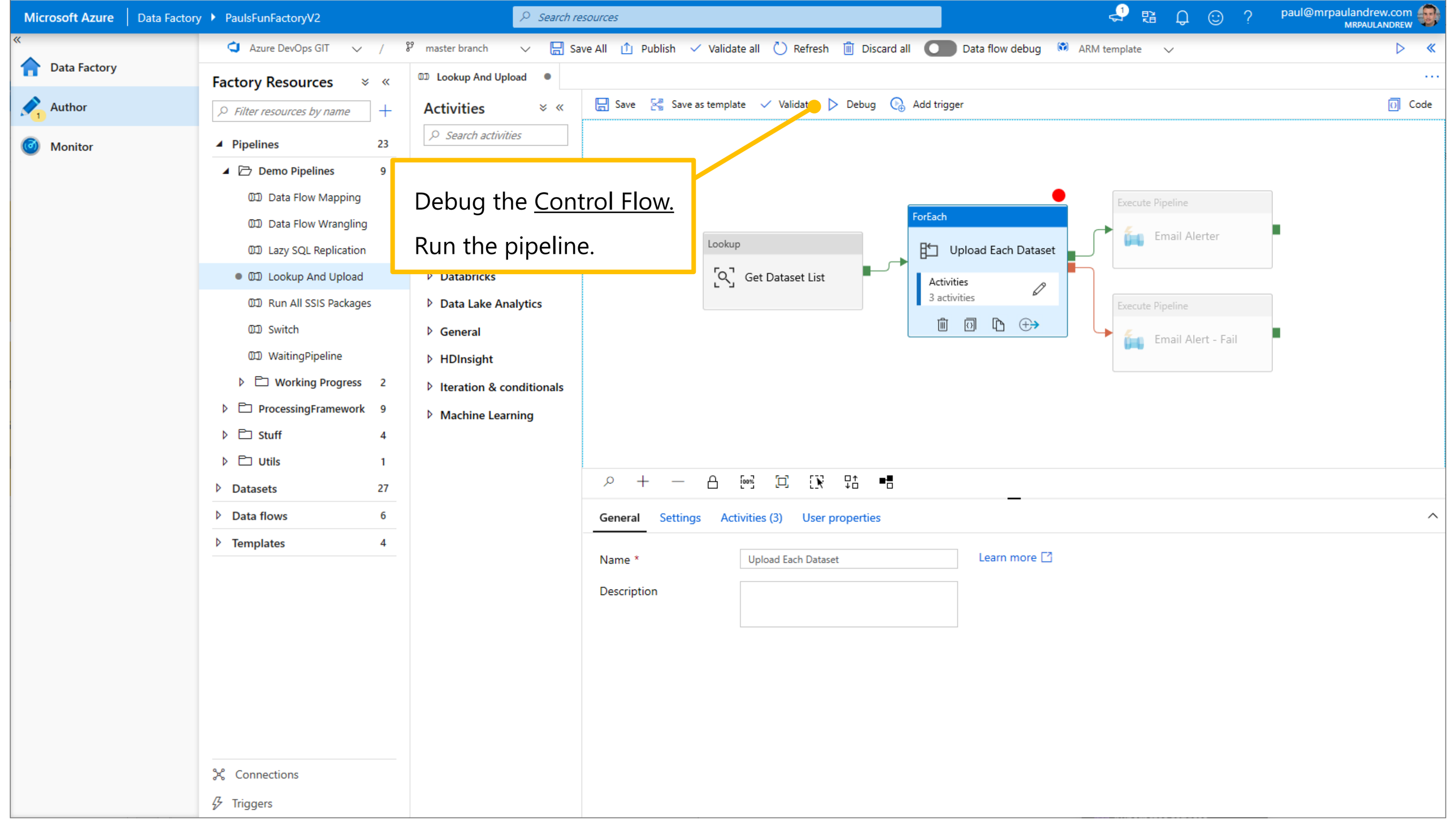

Open Azure Data Factory Studio
Start authoring and monitoring your data pipelines and data flows.
Open
Read documentation
Learn how to be productive quickly.
Explore concepts, tutorials, and samples.
Learn more


When connected to source control (Git/GitHub) switch between development and deployed instances.
Repository code branches.
Save, creates a commit to the connected repository.
Deploy ARM template from development environment to deployed service.
Simple mandatory key value pair checking of JSON components.
Discard dirty panels (unsaved changes) . Source code 'Undo'.
ZIP extract/import of complete data factory with parameters file.
View JSON for current component.
Microsoft Azure
Data Factory
PaulsFunFactoryV2
Search resources
paul@mrpaulandrew.com
MRPAULANDREW
Azure DevOps GIT
master branch
Save All
Publish
Validate all
Refresh
Discard all
Data flow debug
ARM template
Data Factory
Author
Factory Resources
Filter resources by name
Lookup And Upload
Activities
Search activities
Move & transform
Azure Data Explorer
Azure Function
Batch Service
Machine Learning
Save
Save as template
Validate
Debug
Add trigger
Code
Lookup
Get Dataset List
ForEach
Upload Each Dataset
Activities
3 activities
Utils
Datasets
Data flows
Templates
Connections
Triggers
Name *
Lookup And Upload


Microsoft Azure
Data Factory
PaulsFunFactoryV2
Search resources
paul@mrpaulandrew.com
MRPAULANDREW
Data Factory
Author
Monitor
Azure DevOps GIT
master branch
Save All
Publish
Validate all
Refresh
Discard all
Data flow debug
ARM template
Factory Resources
Filter resources by name
Pipelines 23
Demo Pipelines 9
Data Flow Mapping
Data Flow Wrangling
Lazy SQL Replication
Lookup And Upload
Run All SSIS Packages
Switch
WaitingPipeline
Working Progress 2
ProcessingFramework 9
Stuff 4
Utils 1
Datasets 27
Data flows 6
Templates 4
Connections
Triggers
Lookup And Upload
Activities
Search activities
Databricks
Data Lake Analytics
General
HDInsight
Iteration & conditionals
Machine Learning
Save
Save as template
Validate
Debug
Add trigger
Code
Debug the Control Flow.
Run the pipeline.
Debug the Data Flow.
Get a cluster ready.
Lookup
Get Dataset List
ForEach
Upload Each Dataset
Activities
3 activities
Email Alerter
Execute Pipeline
Email Alert - Fail
General
Parameters
Variables
Output
Name *
Lookup And Upload
Description
Simple dynamic demo pipeline
Concurrency
Annotations
New


Microsoft Azure
Data Factory
PaulsFunFactoryV2
Search resources
paul@mrpaulandrew.com
MRPAULANDREW
Data Factory
Author
Monitor
Azure DevOps GIT
master branch
Save All
Publish
Validate all
Refresh
Discard all
Data flow debug
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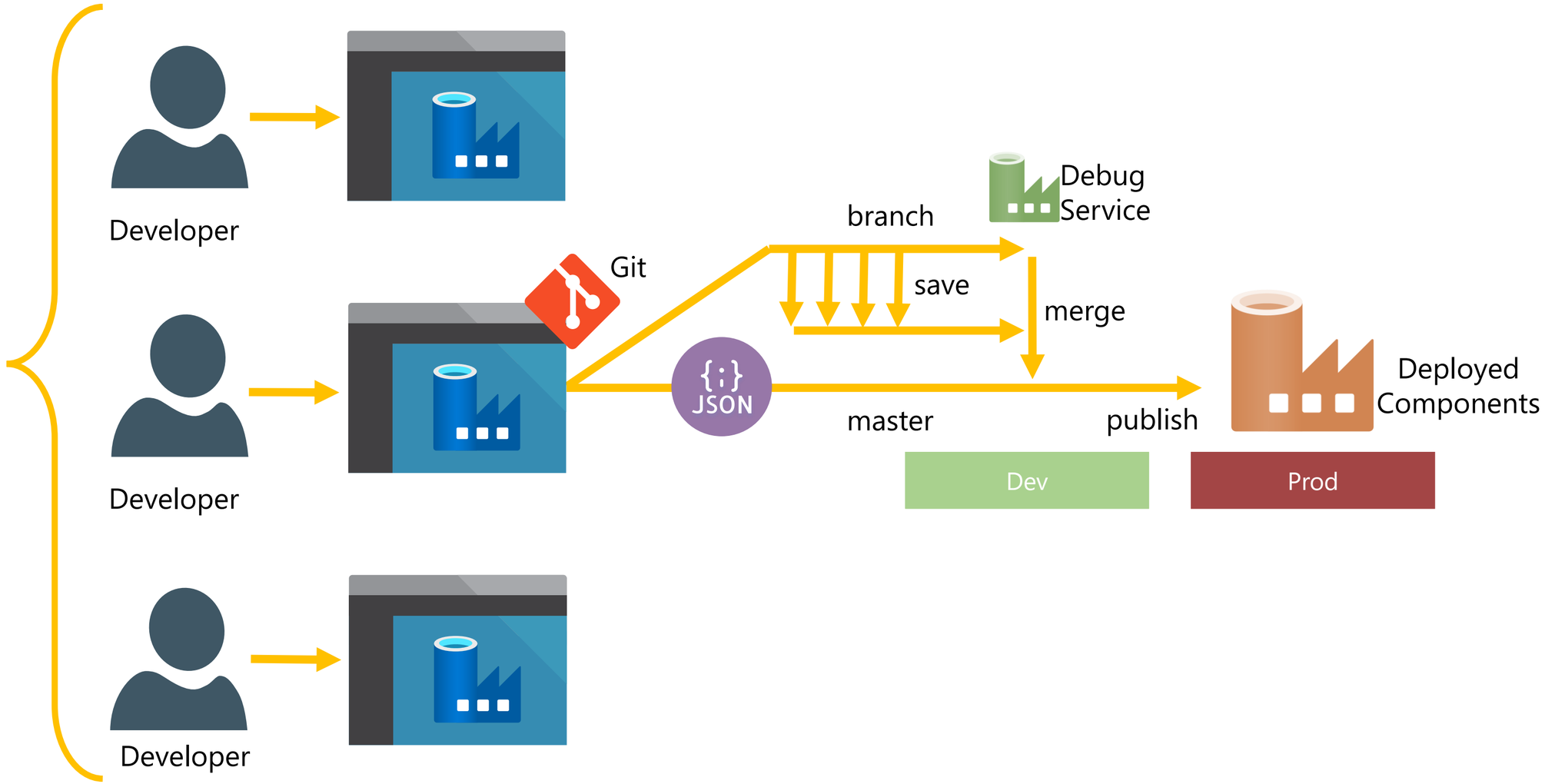
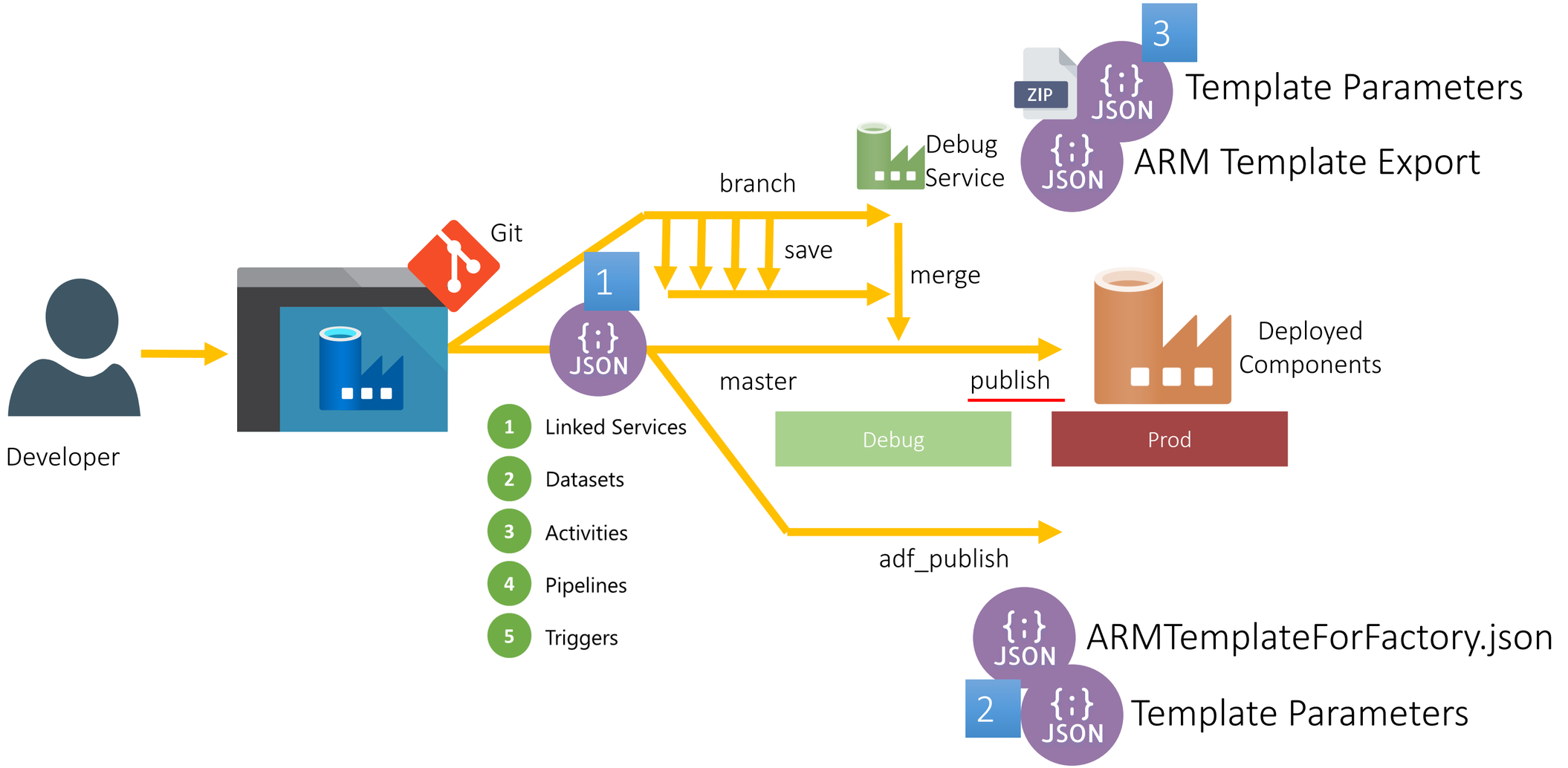
Datasets 27
Data flows 6
Templates 4
Connections
Triggers
Lookup And Upload
Activities
Search activities
Databricks
Data Lake Analytics
General
HDInsight
Iteration & conditionals
Machine Learning
Save
Save as template
Validate
Debug
Add trigger
Code
Debug the Control Flow.
Run the pipeline.
Lookup
Get Dataset List
ForEach
Upload Each Dataset
Activities
3 activities
Execute Pipeline
Email Alerter
Execute Pipeline
Email Alert - Fail
General
Settings
Activities (3)
User properties
Name *
Upload Each Dataset
Learn more
Description

Data Factory Continuous Integration

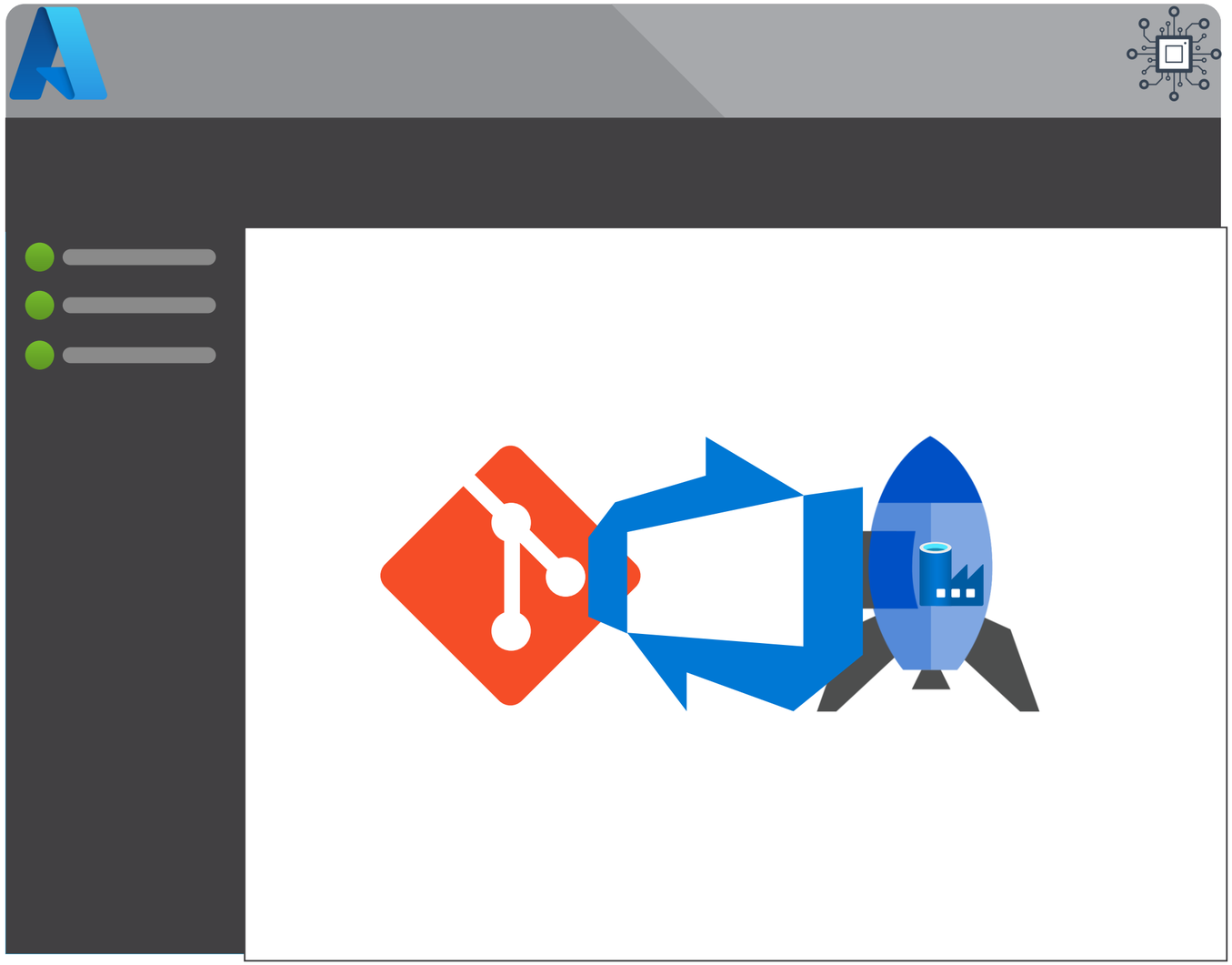


Getting Our ADF Source Code

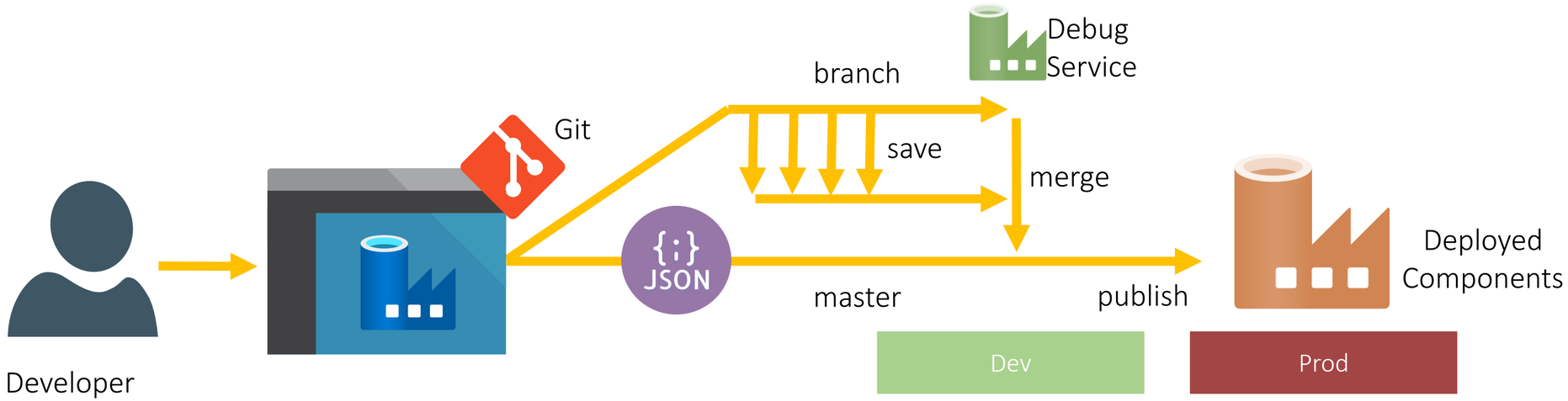


Module 11

CI/CD

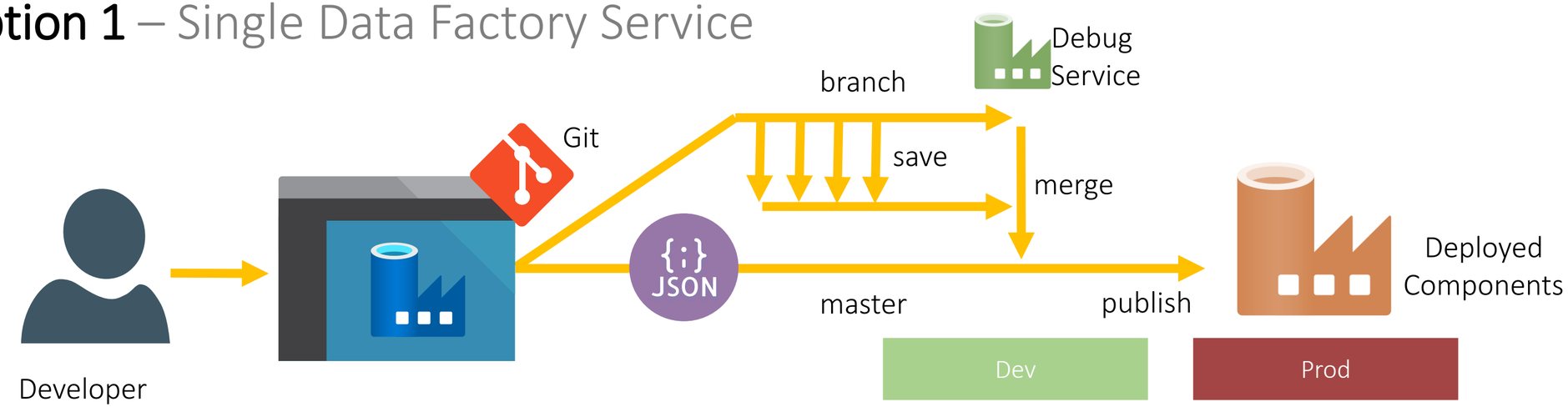


- Source Control vs Developer UI
- Basic ARM Template Deployments
- Advanced Deployment Patterns

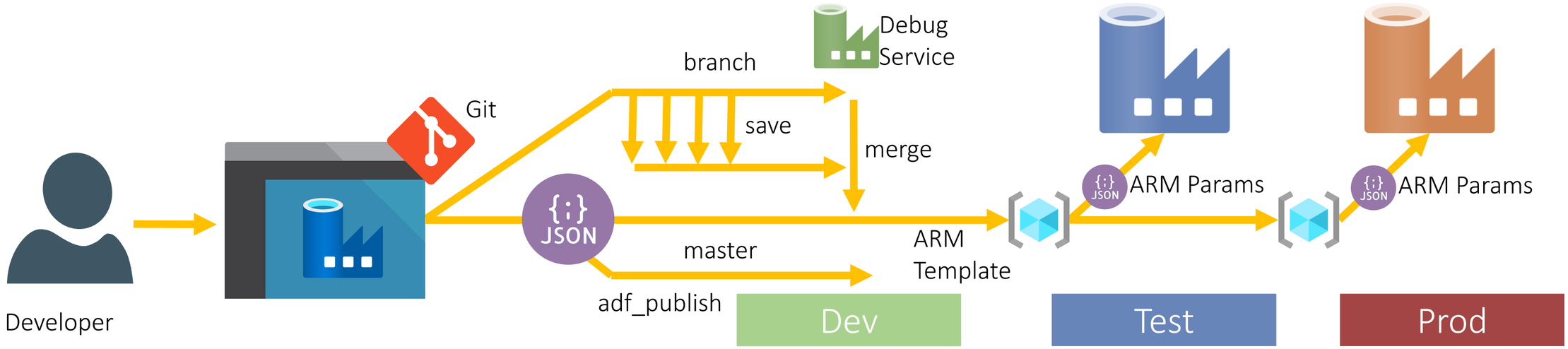

Debug
Service
branch
Git
save
merge
{;}
JSON
Deployed
Components
master
publish
Developer
Dev
Prod

Data Factory Continuous Delivery

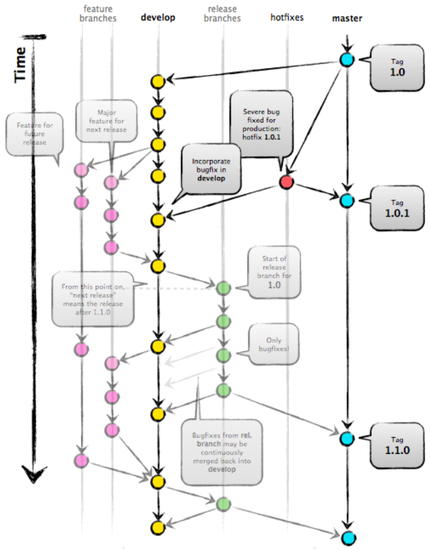
Option 1 – Single Data Factory Service



Option 2 – ARM Templates for Multiple Data Factory Services



Data Factory Continuous Delivery



Gitflow

Azure DevOps

Build Artifacts

Releases

Scoped Variables

Test

Azure Resource Group Deployment

- Override Template Parameters
  -factoryName "$(DataFactory.Name)"

ARMTemplateForFactory.json

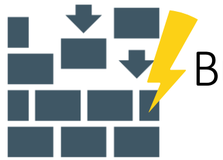
Release Approver

Production

Azure Resource Group Deployment

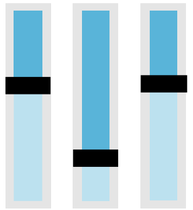
Data Factory Continuous Delivery

Azure DevOps



Build Artifacts

Releases



Scoped Variables

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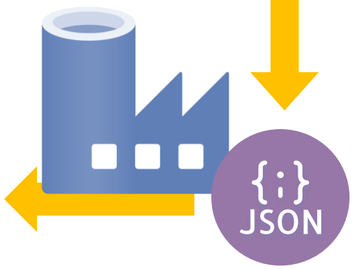
Release Approver

Production

Azure Resource Group Deployment

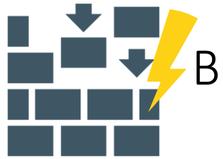


ARMTemplateForFactory.json

1. Linked Services
2. Datasets
3. Activities
4. Pipelines
5. Triggers

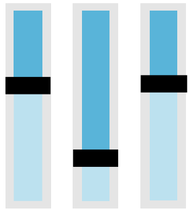
Data Factory Continuous Delivery

Azure DevOps



Build Artifacts

Releases



Scoped Variables

Test

Azure Resource Group Deployment

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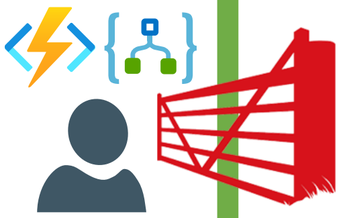
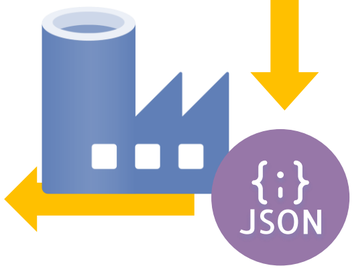


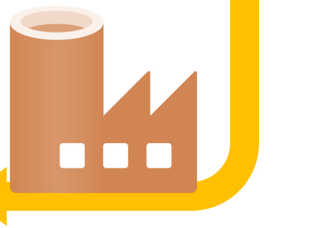
Release Approver

Production

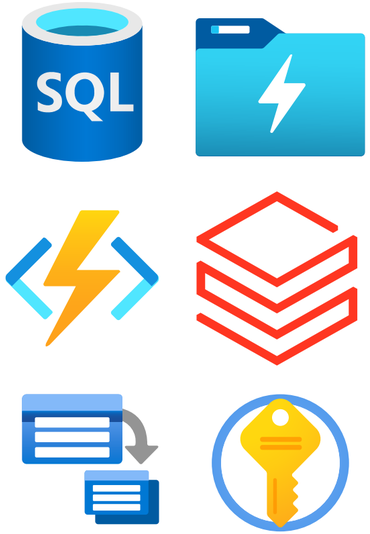
Azure Resource Group Deployment



ARMTemplateForFactory.json



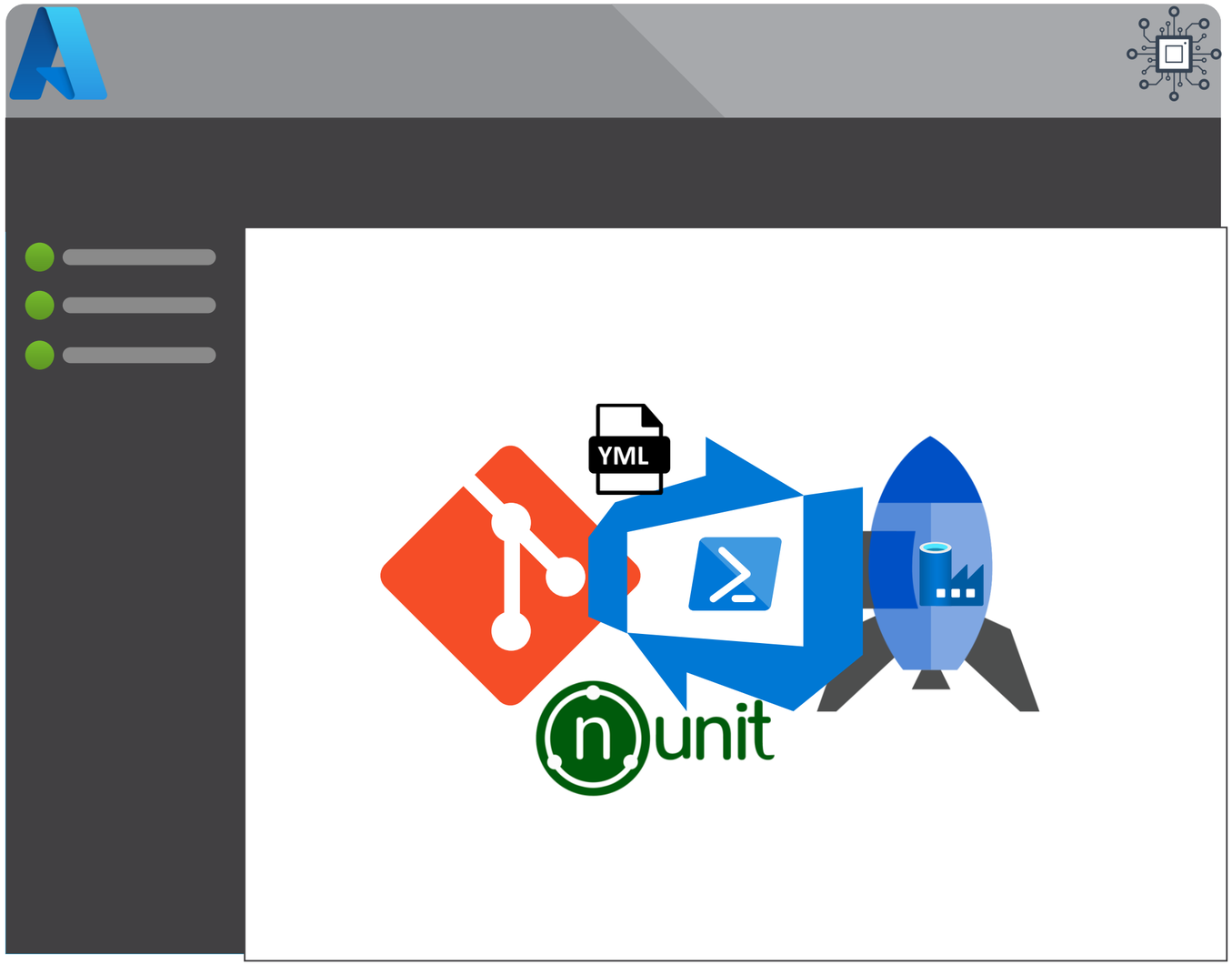
1 Linked Services



Demo

Module 11

CI/CD



- Source Control vs Developer UI
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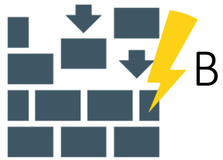
- Advanced Deployment Patterns

Data Factory Continuous Delivery

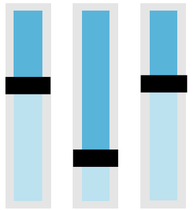
- Option 3

Azure DevOps



Build Artifacts

Releases



Scoped Variables

1 Linked Services

2 Datasets

3 Activities

4 Pipelines

5 Triggers

Test

Run PowerShell

params.json

Azure Resource Group Deployment

Set-AzDataFactoryV2Pipeline

Set-AzDataFactoryV2Dataset

Set-AzDataFactoryV2LinkedService

- Override Template Parameters

  -factoryName "$(DataFactory.Name)"

Release Approver

Production

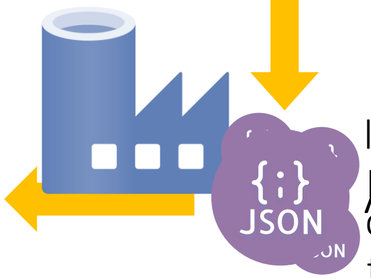
Run PowerShell

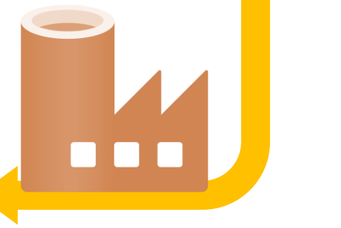
params.json

Azure Resource Group Deployment

Set-AzDataFactoryV2IntegrationRuntime

Set-AzDataFactoryV2Trigger





linkedservices.json

pipelines & activites.json

datasets.json

triggers.json

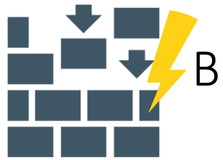
ARMTemplateForFactory.json

adf_publish

Data Factory Continuous Delivery

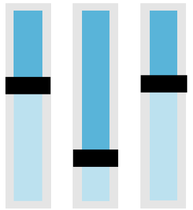
- Option 3

Azure DevOps



Build Artifacts

Releases



Scoped Variables

Test

Run PowerShell

params.json

Set-AzDataFactoryV2Pipeline

Set-AzDataFactoryV2Dataset

Set-AzDataFactoryV2LinkedService

Release Approver

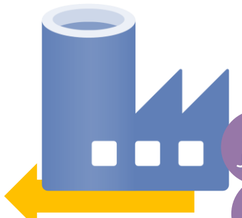
Production

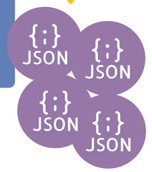
Run PowerShell

params.json

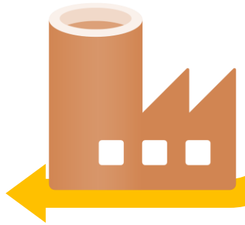
Set-AzDataFactoryV2IntegrationRuntime

Set-AzDataFactoryV2Trigger





linkedservices.json
pipelines & activites.json
datasets.json
triggers.json



1 Linked Services

2 Datasets

3 Activities

4 Pipelines

5 Triggers

Caveats

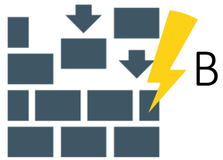
1) Handle own dependencies.

2) Handle own removals.

Data Factory Continuous Delivery

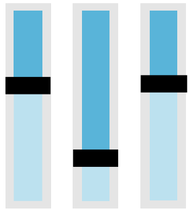
- Option 4

Azure DevOps



Build Artifacts

Releases

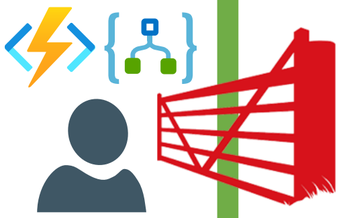


Scoped Variables

Test

Run PowerShell

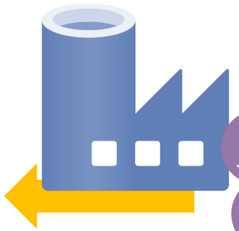
```
Import-Module -Name "azure.datafactory.tools"
Publish-AdfV2FromJson -RootFolder $AdfPath `
  -ResourceGroupName $resourceGroupName `
  -DataFactoryName $dataFactoryName `
  -Location $region `
  -Stage $configFilePath
```

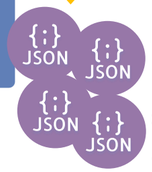


Release Approver

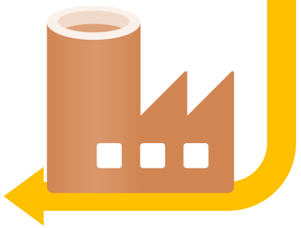
Production

Publish Azure Data Factory





linkedservices.json
pipelines & activites.json
datasets.json
triggers.json



1. Linked Services
2. Datasets
3. Activities
4. Pipelines
5. Triggers

https://www.powershellgallery.com/packages/azure.datafactory.tools

Deployment Options Summary

Option 1 – Use a single Data Factory service.

Option 2 – ARM Templates for multiple Data Factory services (environments).

Option 3 – Use PowerShell cmdlets for each ADF artifact.

Option 4 – Use a PowerShell module or custom Azure DevOps task.

Demo

Data Factory DevOps Story Summary

What is your code branching strategy?

Which source control tool to use?

How many environments do we want?

What deployment method do we want to use?

What artifacts are we going to use?...

OR

How much control do you want?

ARMTemplate ForFactory.json

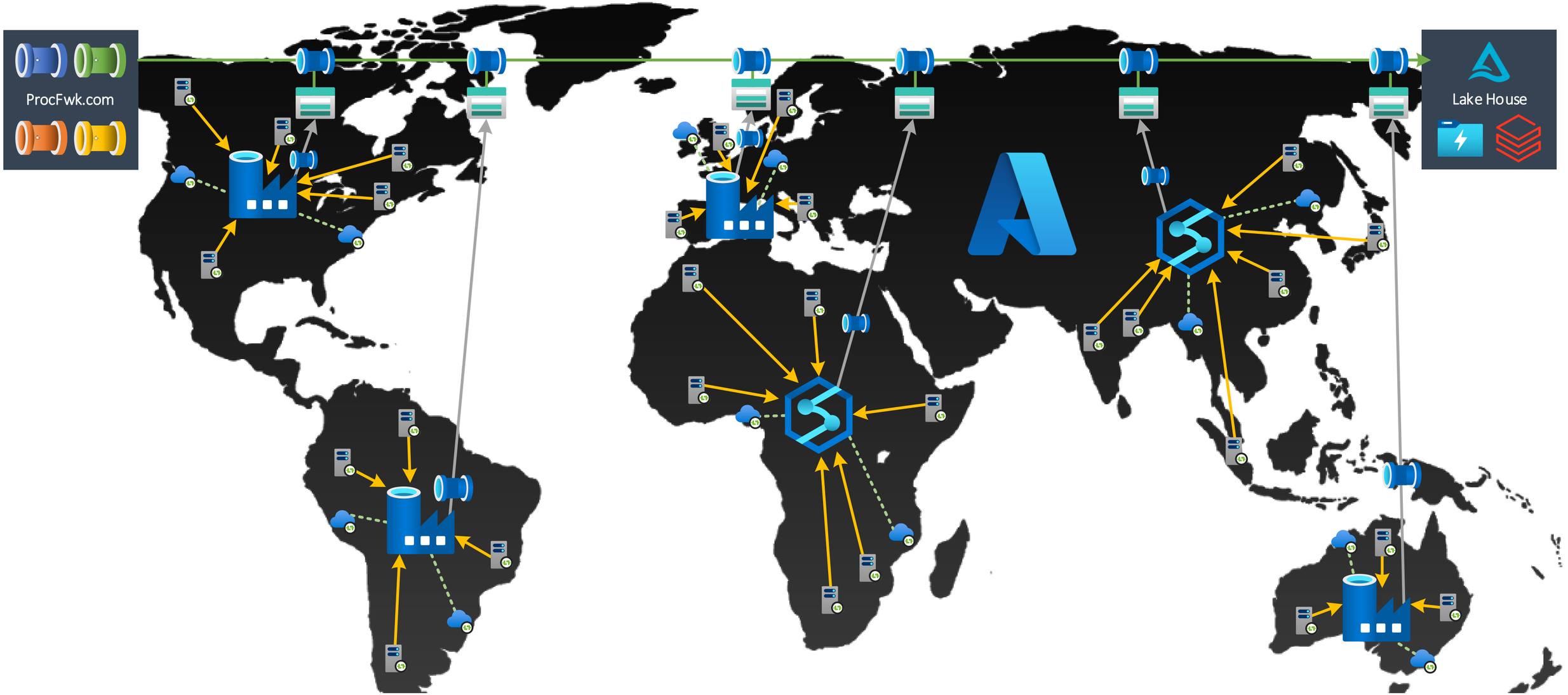
linkedservices.json

pipelines & activites.json

datasets.json

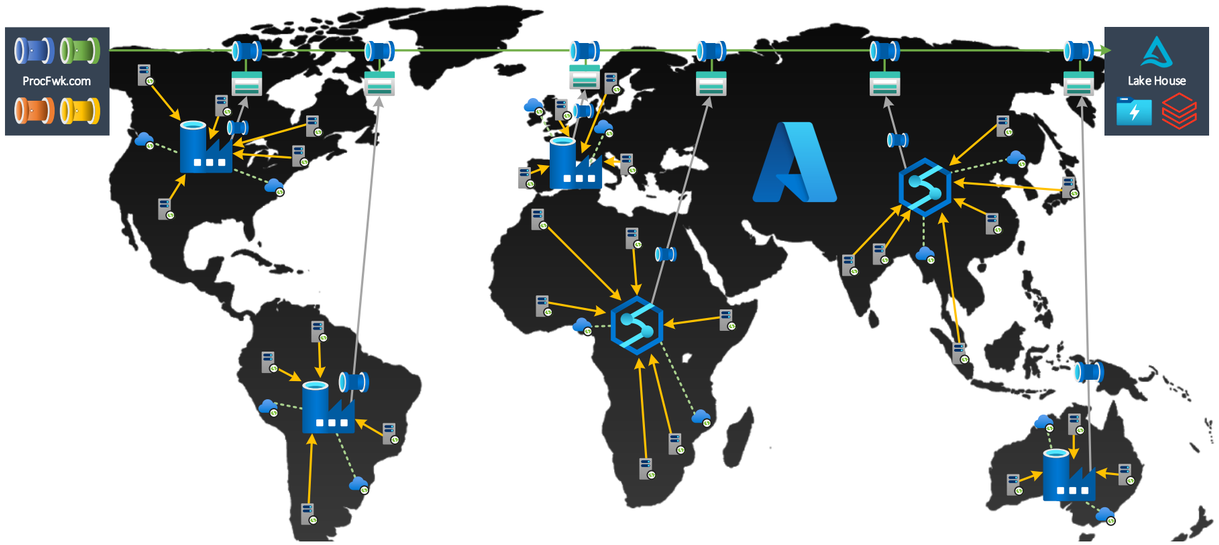
triggers.json

Hub & Spoke Integration Architecture

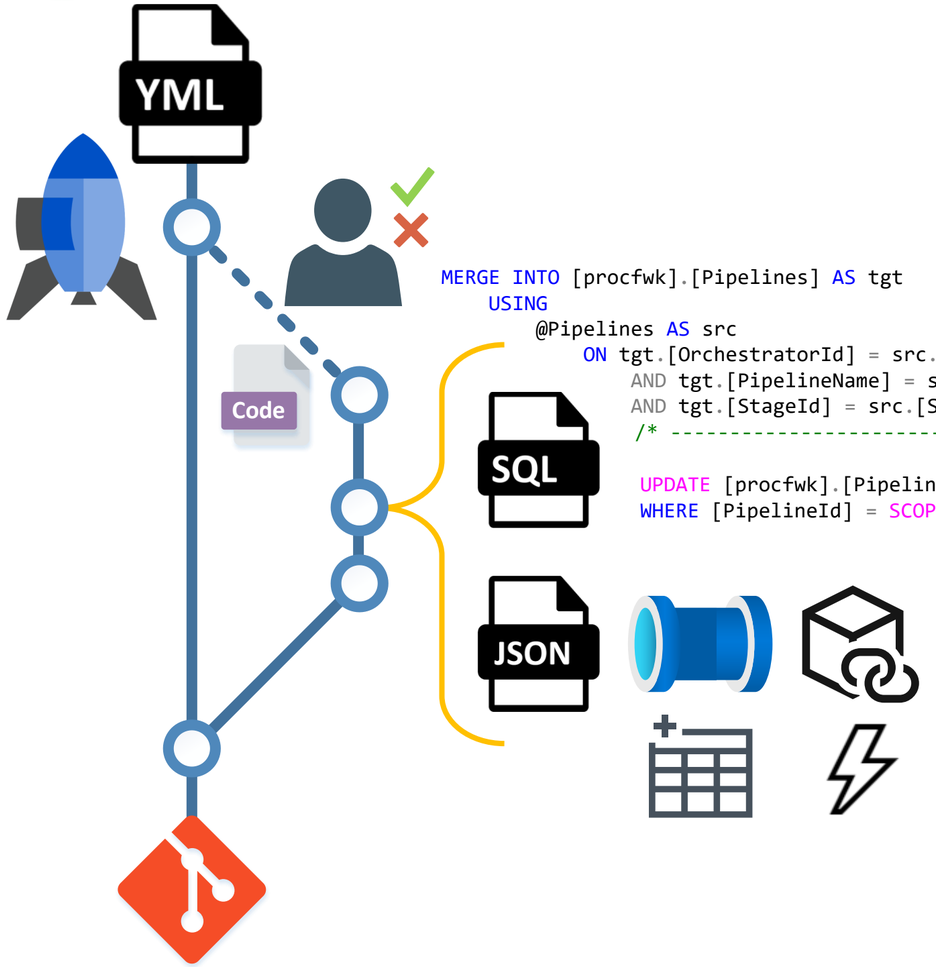


https://mrpaulandrew.com/2021/08/10/scaling-azure-data-integration-pipelines-decoupling-data-extract-and-transform/

How Small Can Deployments Be?

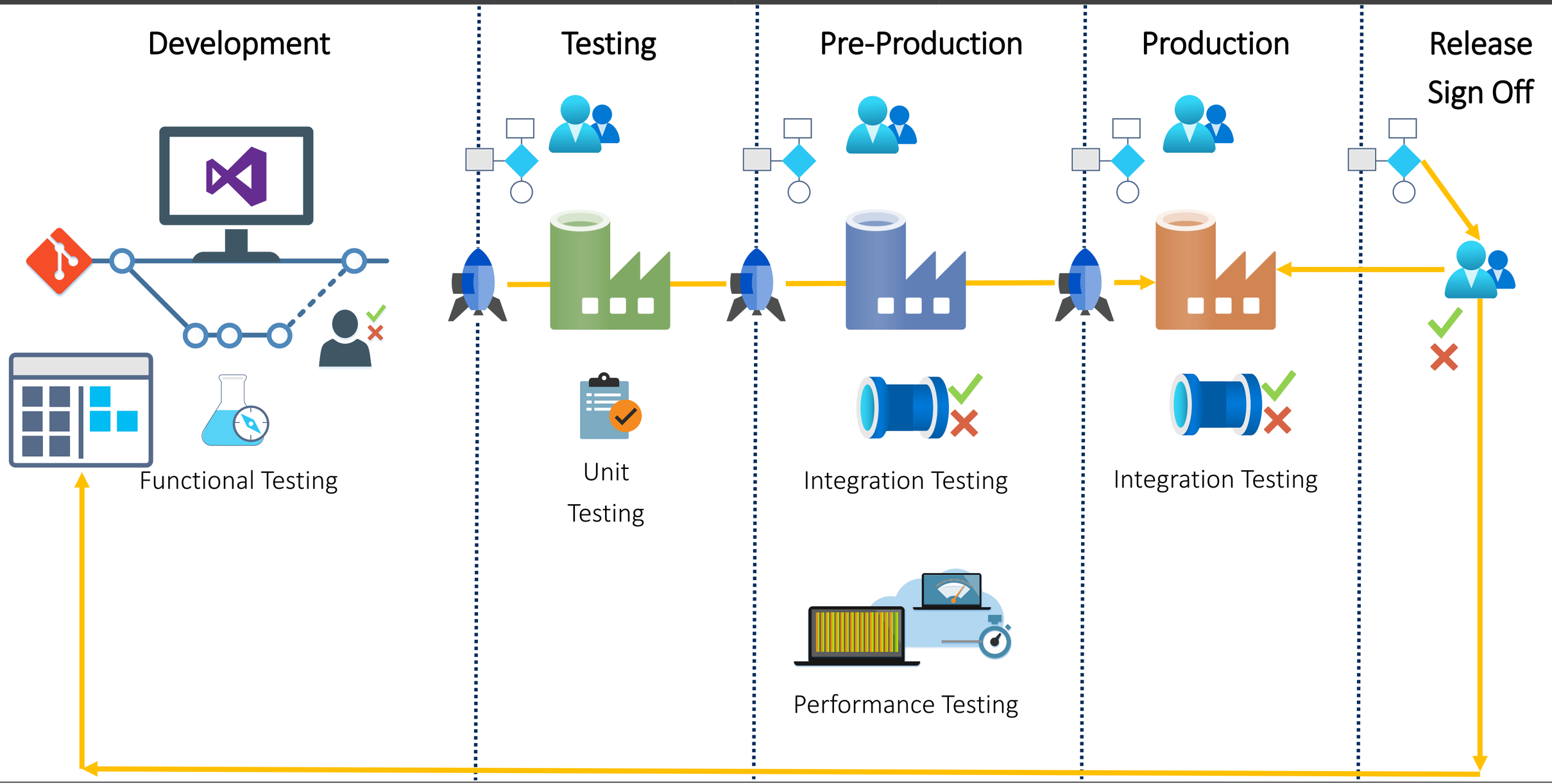



```
UPDATE [procfwk].[Pipelines] SET [Enabled] = 1
WHERE [PipelineId] = SCOPE_IDENTITY();
```



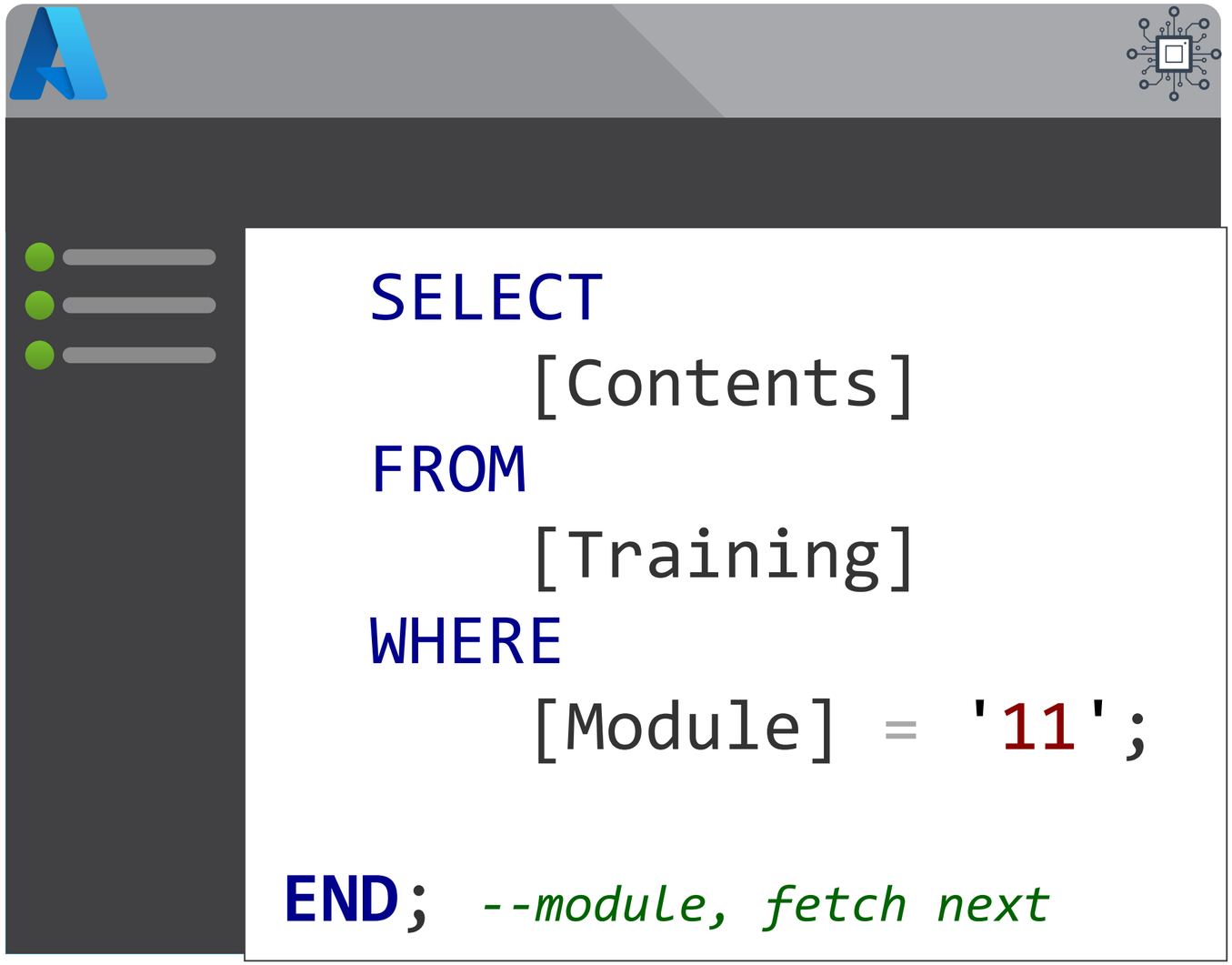

```
MERGE INTO [procfwk].[Pipelines] AS tgt
    USING
        @Pipelines AS src
            ON tgt.[OrchestratorId] = src.[OrchestratorId]
            AND tgt.[PipelineName] = src.[PipelineName]
            AND tgt.[StageId] = src.[StageId]
            /* ------------------------------------ */

            UPDATE [procfwk].[Pipelines] SET [Enabled] = 0
            WHERE [PipelineId] = SCOPE_IDENTITY();
```

Deployment Life Cycle & Gateway



Module 11

CI/CD



```
    SELECT
        [Contents]
    FROM
        [Training]
    WHERE
        [Module] = '11';

END; --module, fetch next
```

- Source Control vs Developer UI
- Basic ARM Template Deployments
- Advanced Deployment Patterns