

Module 4

Dynamic Pipelines



```
BEGIN  --get ready
```

```
SELECT
```

```
    [Contents]
```

```
FROM
```

```
    [Training]
```

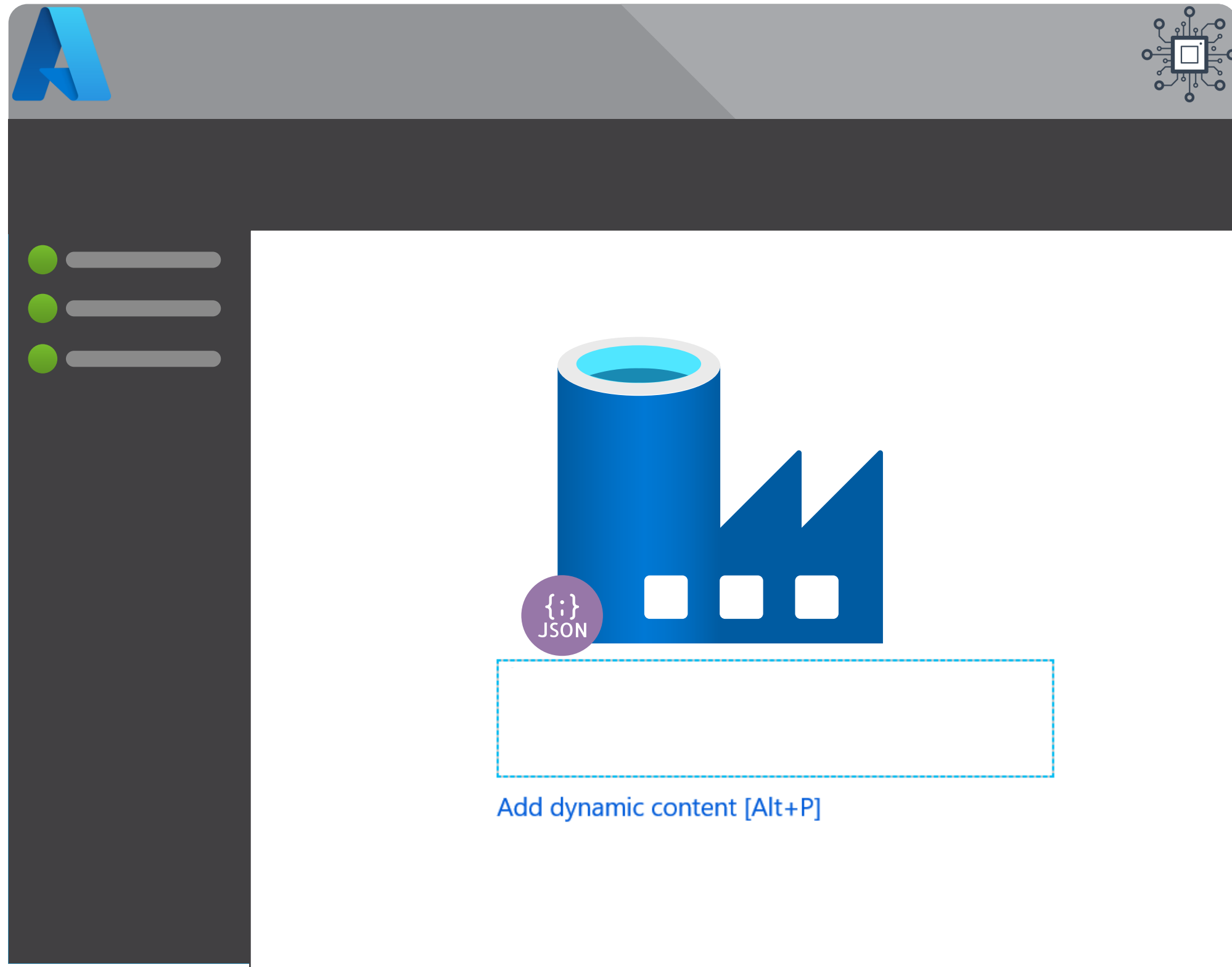
```
WHERE
```

```
    [Module] = '4';
```

- Expressions & Interpolation
- Simple Metadata Driven Execution
- Dynamic Content Chains
- Reference Names

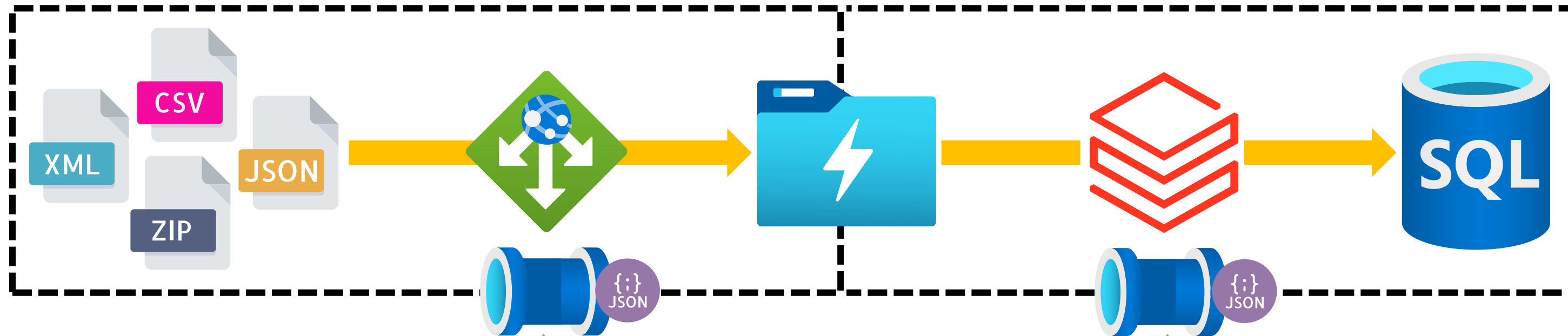
Module 4

Dynamic Pipelines



- Expressions & Interpolation
- Simple Metadata Driven Execution
- Dynamic Content Chains
- Reference Names

Data Factory Components



1 Linked Services

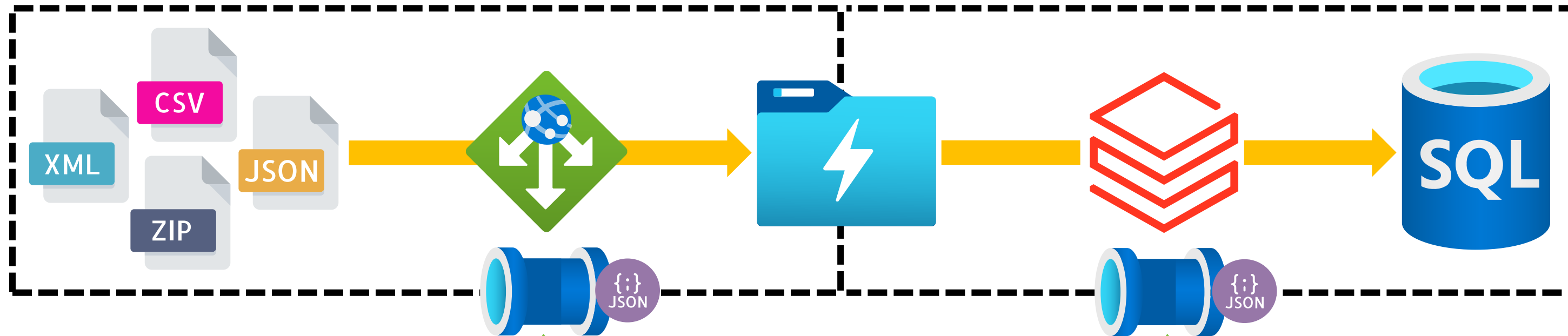
2 Datasets

3 Activities

4 Pipelines

5 Triggers

Data Factory Components – Add Dynamic Content



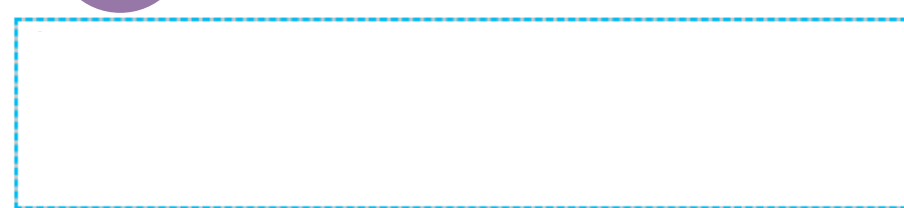
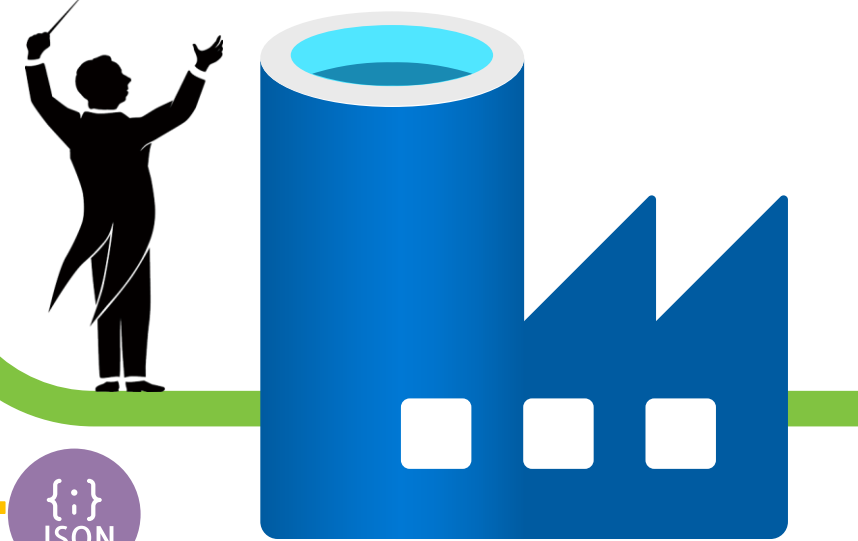
1 Linked Services

2 Datasets

3 Activities

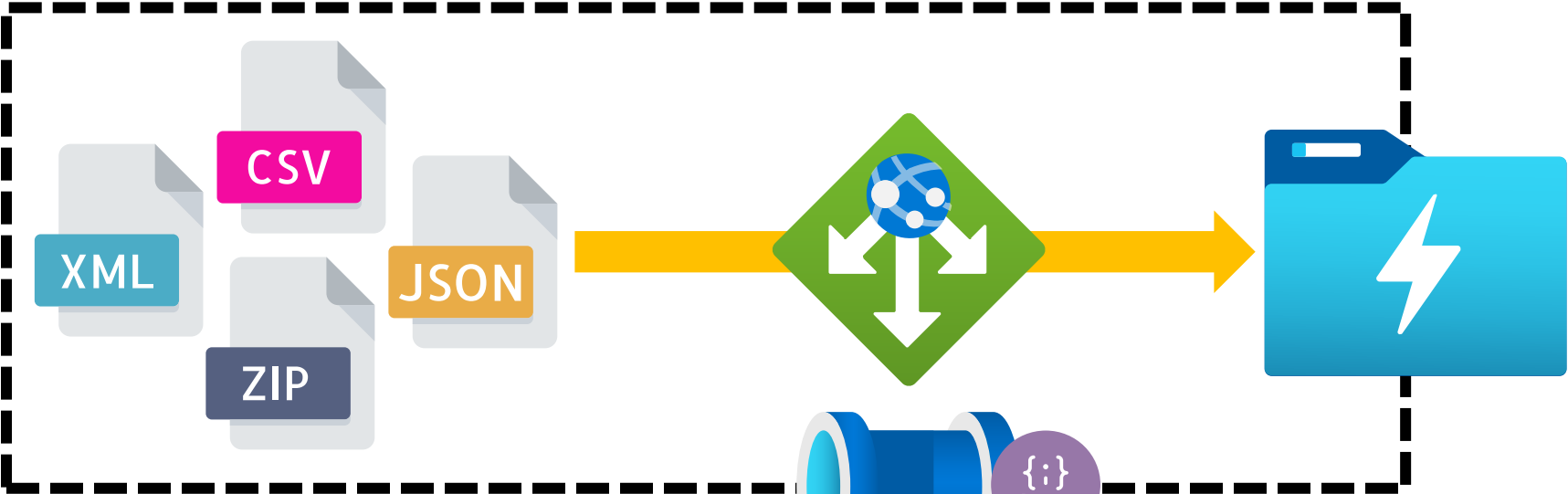
4 Pipelines

5 Triggers

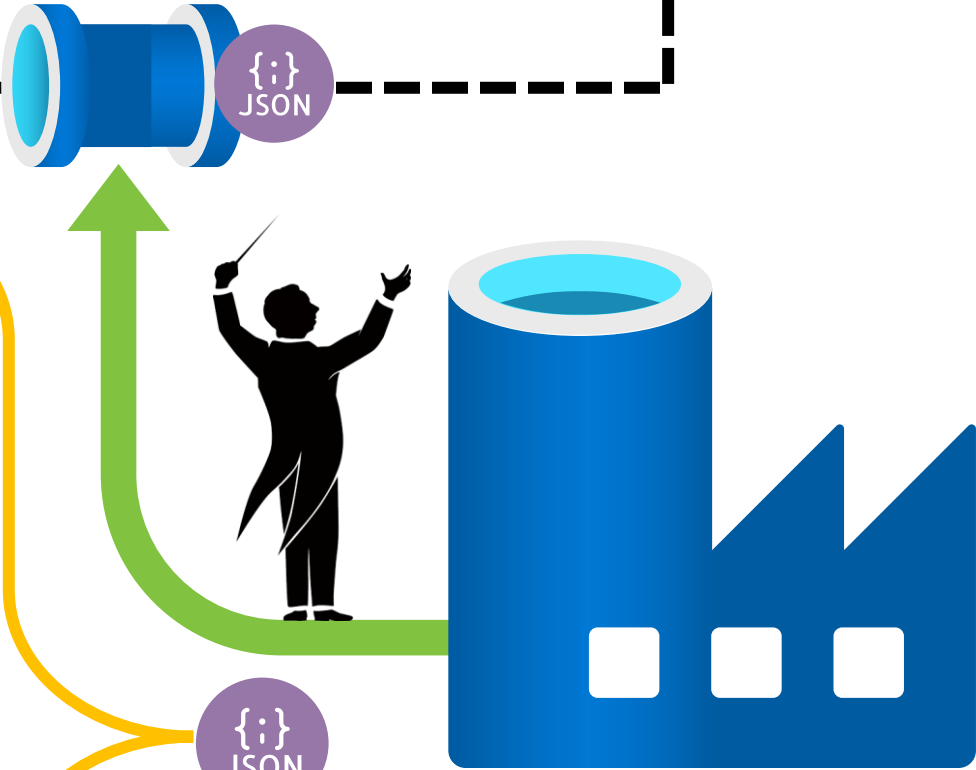


Add dynamic content [Alt+P]

Control Flow Expressions



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



@pipeline().parameters.DemoParam

Add dynamic content [Alt+P]

Add dynamic content

@pipeline().parameters.DemoParam

Clear contents

Filter...

Use expressions, functions or refer to system variables.

System variables

Data factory name
Name of the data factory the pipeline run is running within

Pipeline Name
Name of the pipeline

Pipeline run ID
ID of the specific pipeline run

Pipeline trigger ID
ID of the trigger that invokes the pipeline

Pipeline trigger name
Name of the trigger that invokes the pipeline

Pipeline trigger time
Time when the trigger that invoked the pipeline. The trigger time is the actual fired time, not the sch...

Pipeline trigger type
Type of the trigger that invoked the pipeline (Manual, Scheduler)

Functions

Expand all

- Collection Functions
- Conversion Functions
- Date Functions
- Logical Functions
- Math Functions
- String Functions

Control Flow Expressions

Save

Save as template

Validate

Debug

```
"SomethingDynamic": {  
  "value": "@pipeline().parameters.DemoParam",  
  "type": "Expression"  
}
```

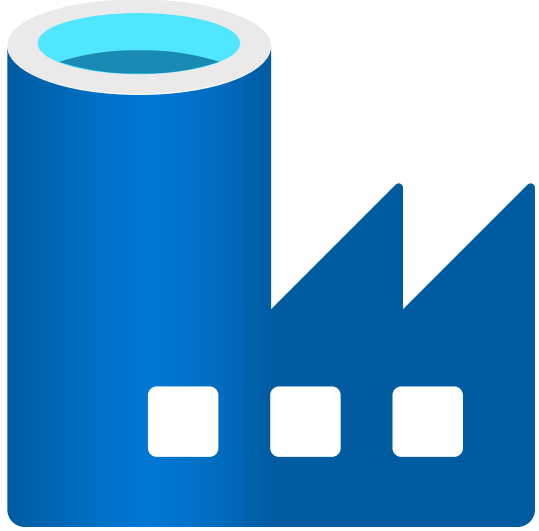
```
"SomethingDynamic": "@pipeline().parameters.DemoParam"
```

String Interpolation

```
"SomethingDynamic": "Hello World"
```

```
"parameters": {  
  "DemoParam": {  
    "type": "string",  
    "defaultValue": "World"  
  }  
}
```

```
"SomethingDynamic": "Hello @pipeline().parameters.DemoParam"
```



{:}
JSON

@pipeline().parameters.DemoParam

Add dynamic content [Alt+P]

Add dynamic content

@pipeline().parameters.DemoParam

Clear contents

Filter...

Use expressions, functions or refer to system variables.

- System variables
- Data factory name

Name of the data factory the pipeline run is running within
- Pipeline Name

Name of the pipeline
- Pipeline run ID

ID of the specific pipeline run
- Pipeline trigger ID

ID of the trigger that invokes the pipeline
- Pipeline trigger name

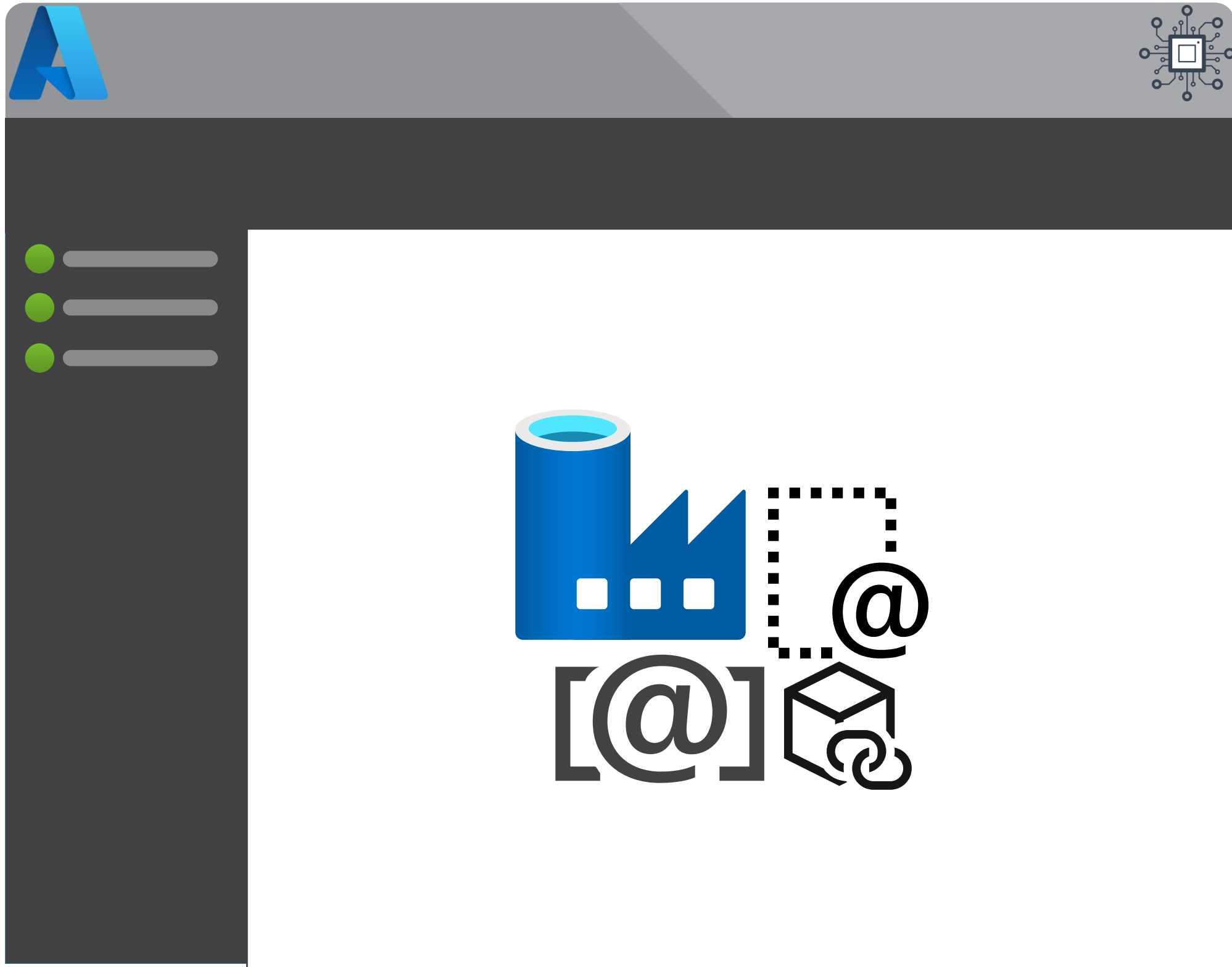
Name of the trigger that invokes the pipeline
- Pipeline trigger time

Time when the trigger that invoked the pipeline. The trigger time is the actual fired time, not the sch...
- Pipeline trigger type

Type of the trigger that invoked the pipeline (Manual, Scheduler)
- Functions
- Expand all
- Collection Functions
- Conversion Functions
- Date Functions
- Logical Functions
- Math Functions
- String Functions

Module 4

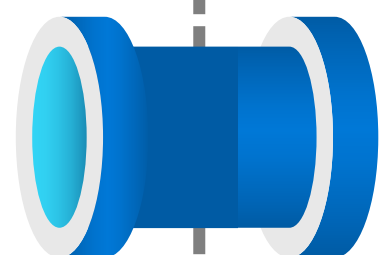
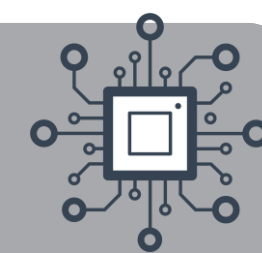
Dynamic Pipelines



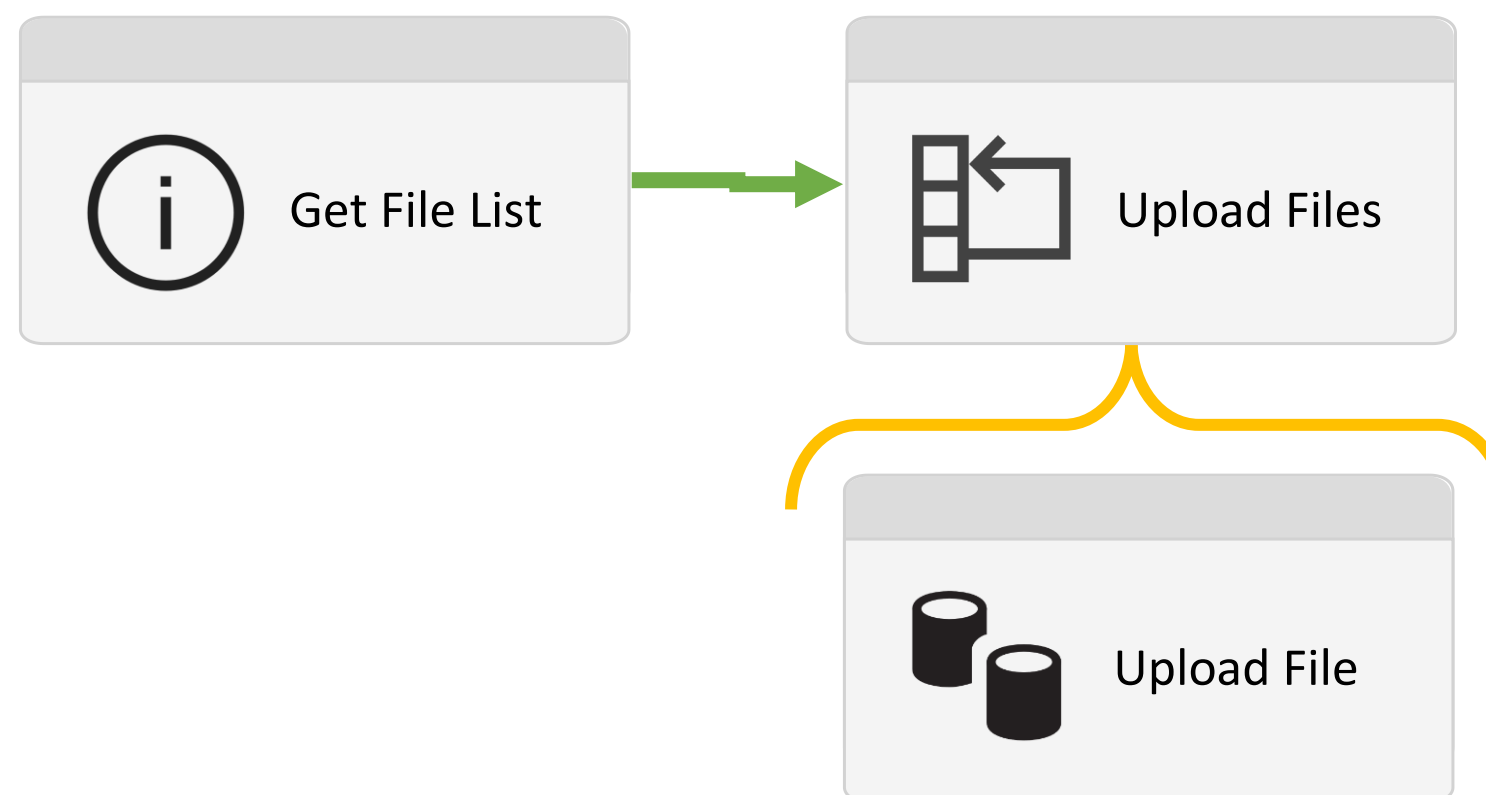
- Expressions & Interpolation
- Simple Metadata Driven Execution
 - Outputs
 - Global Parameters
 - Variables
- Dynamic Content Chains
- Reference Names



Data Discovery and Upload



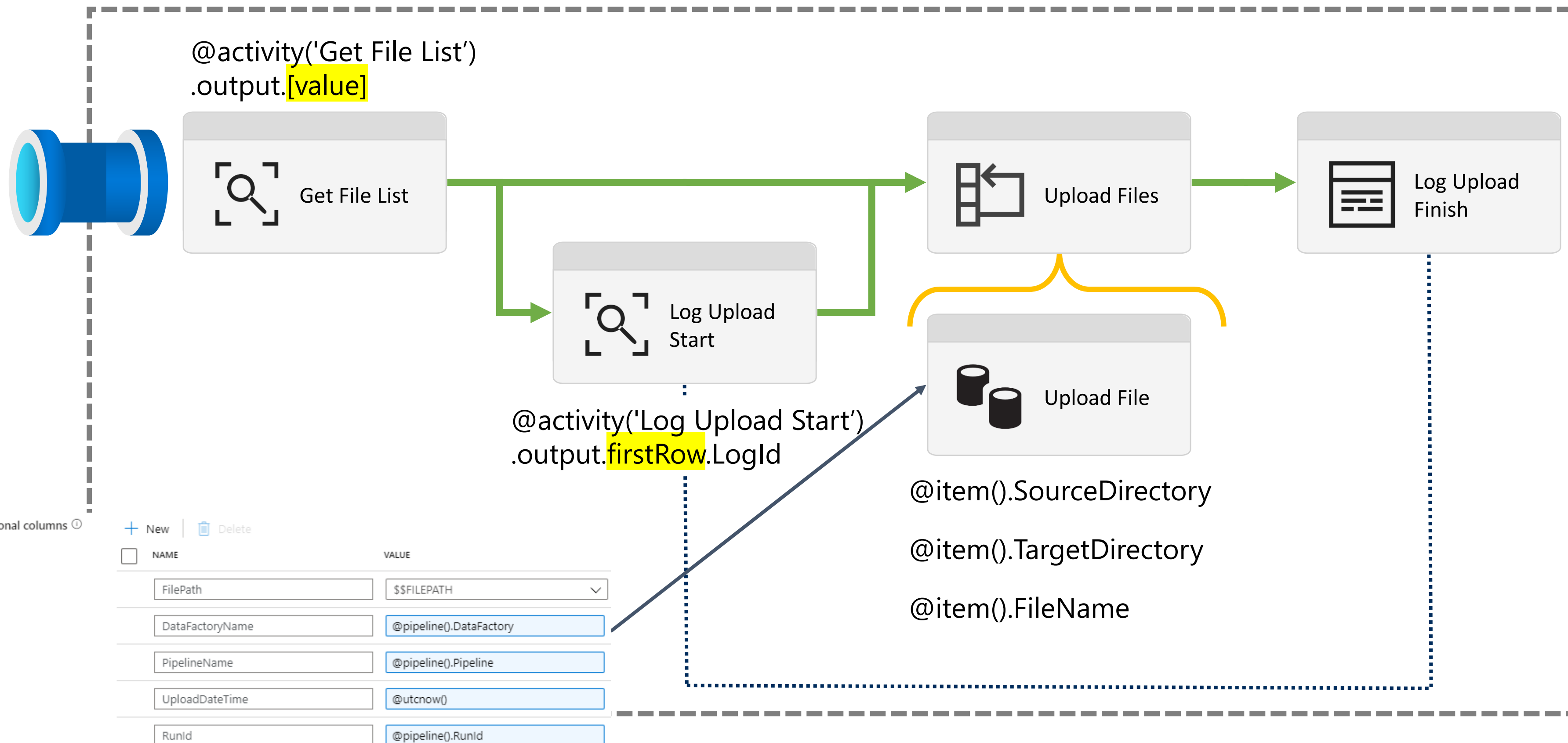
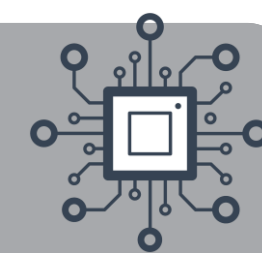
@activity('Get File List')
.output.[childItems]



@item().name

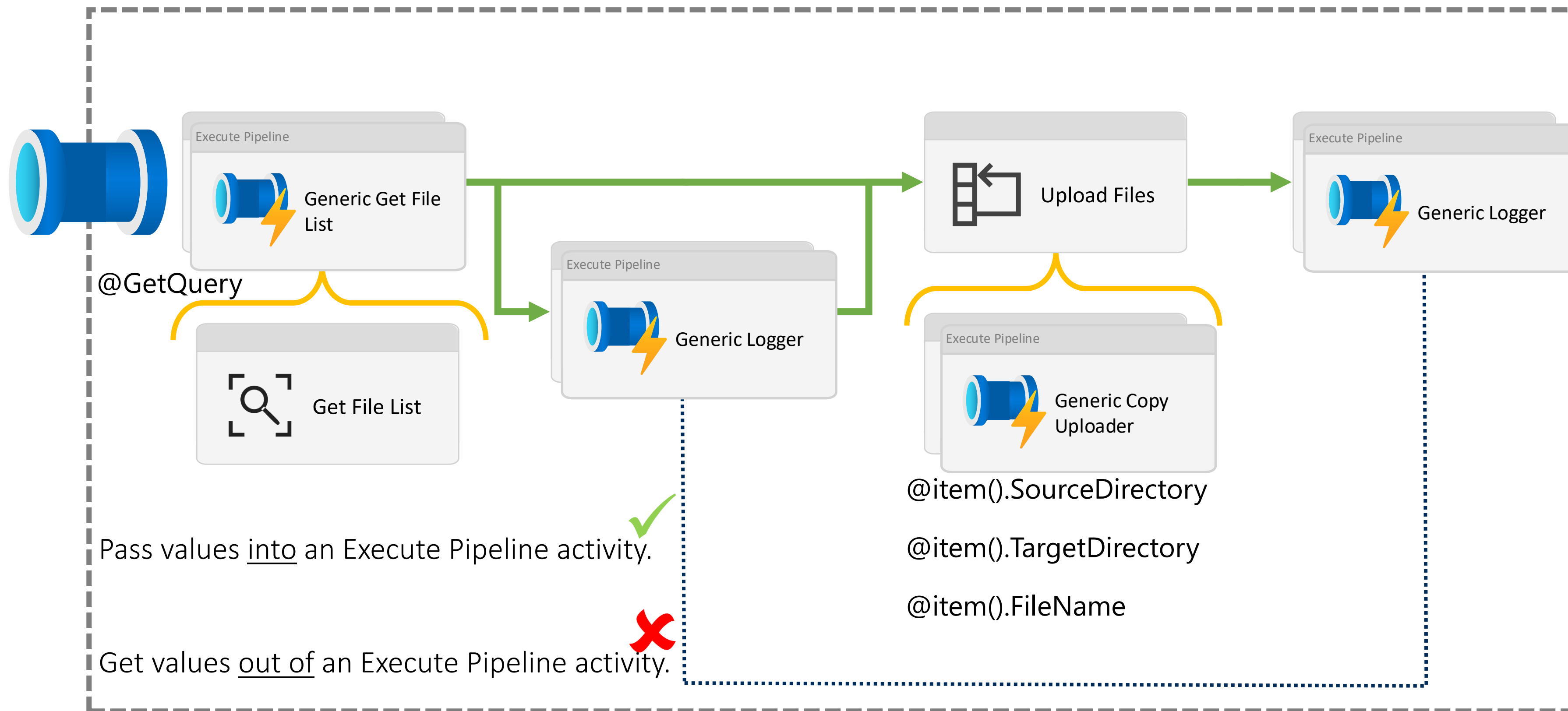


Simple Metadata and Upload

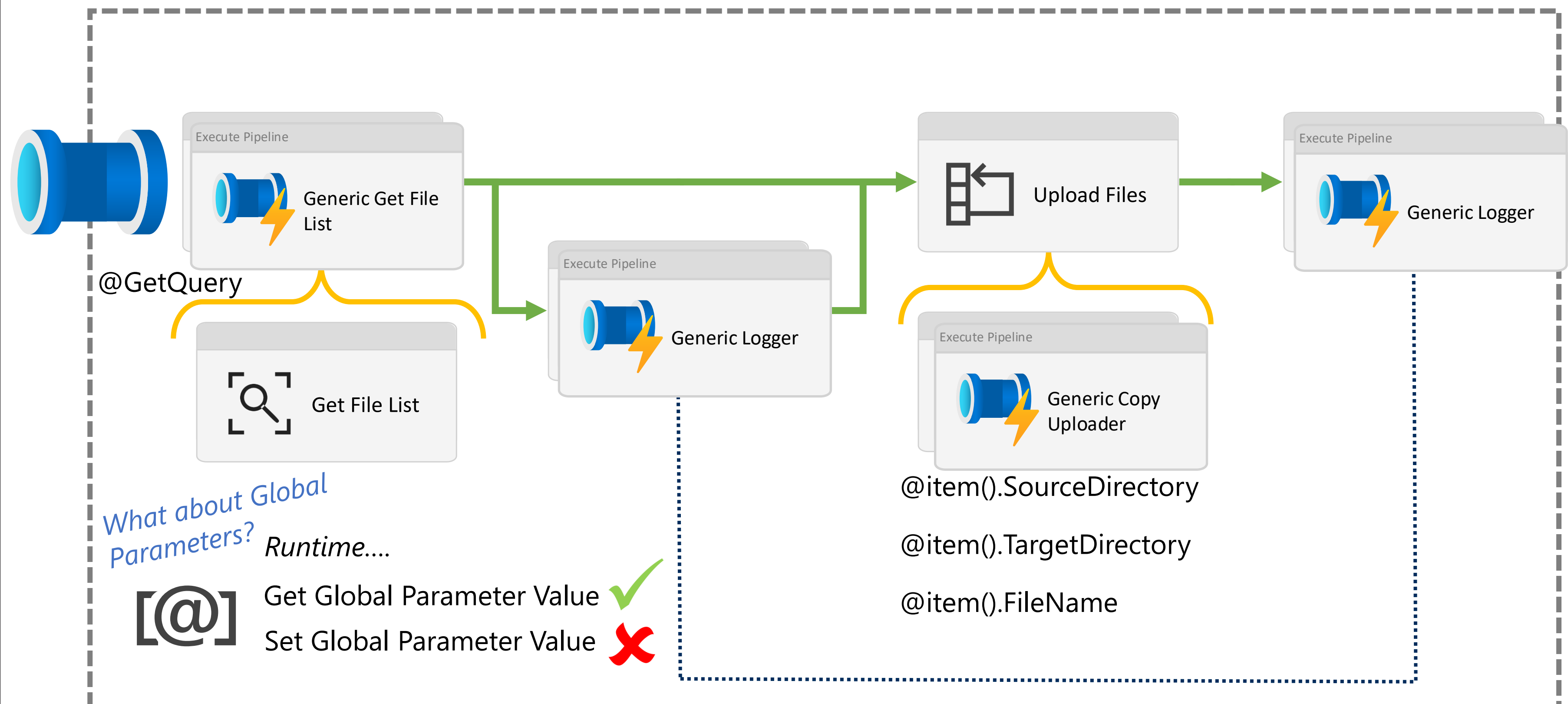




Using Pipelines as Worker Components



With a Global Parameters

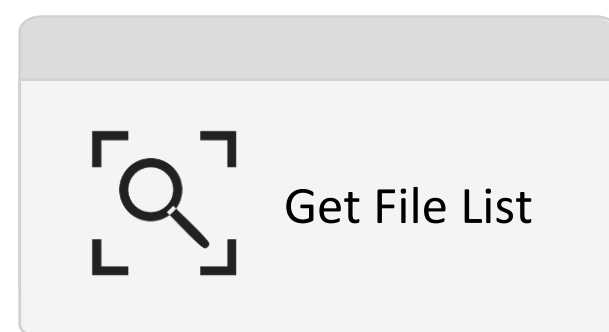
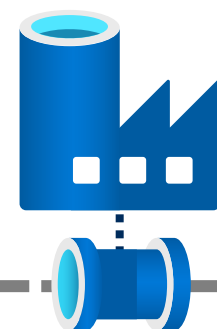




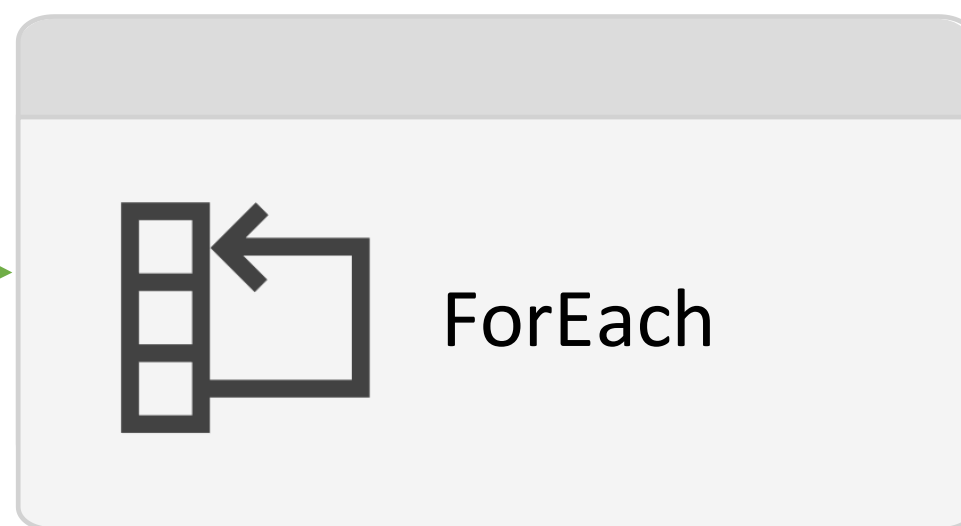
Variable Scope



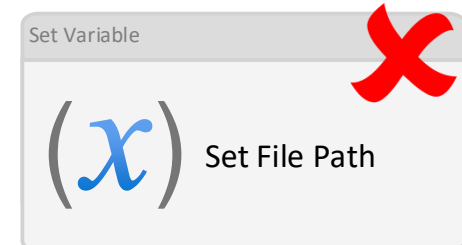
Thread Safe



Get File List



ForEach



Set Variable

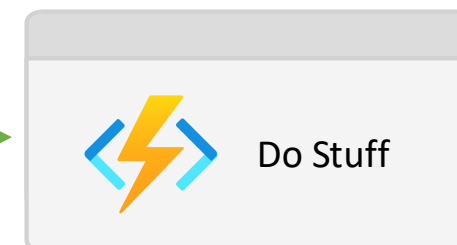
(x)

Set File Path



Copy Data

@FilePath



Do Stuff

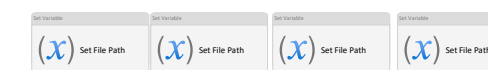
```
@concat(  
  'C:\Data\  
  pipeline().globalParameters.Environment,  
  '\',  
  item().FileName,  
  '.csv')
```

@FilePath



[array]

[0] [1] [2] [3] [4] [5] [6] [i]



(x)

Set File Path



(x)

Set File Path



(x)

Set File Path



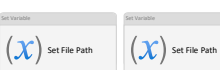
(x)

Set File Path



(x)

Set File Path



(x)

Set File Path

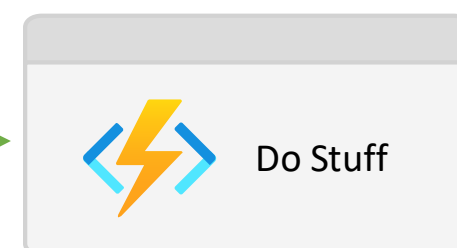
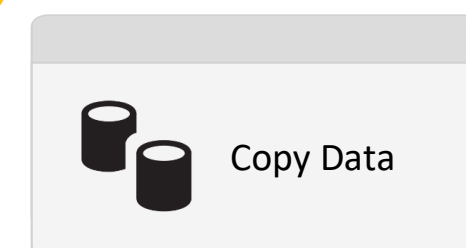
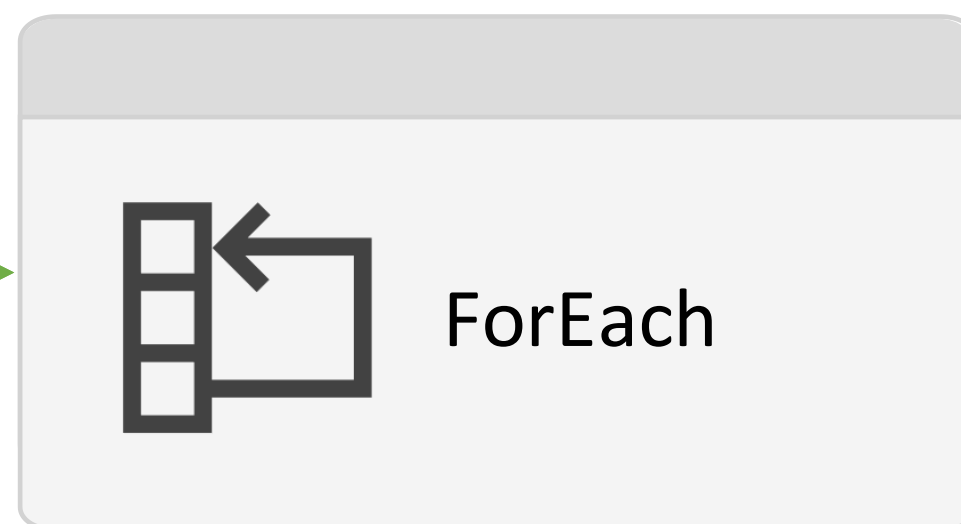
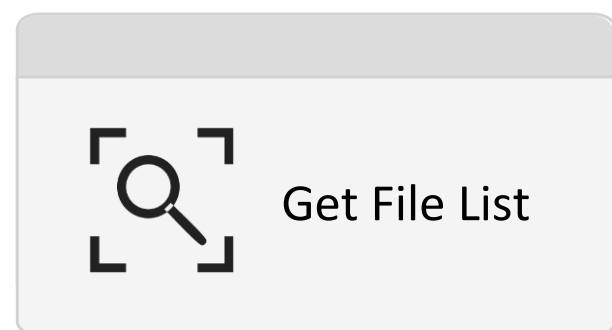
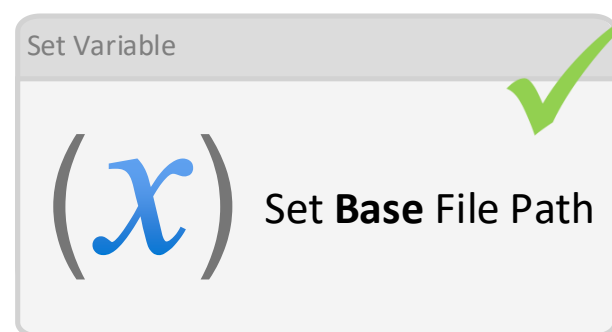
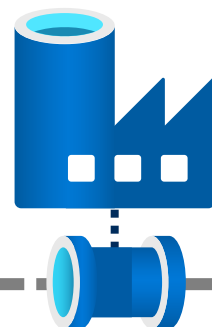


Variable Scope



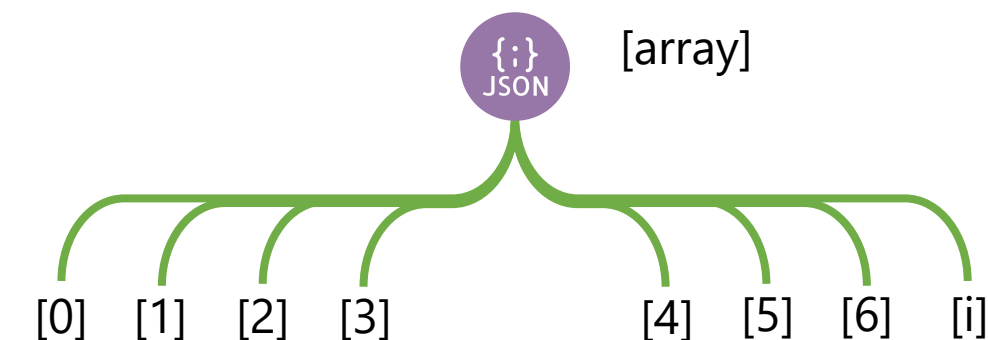
Layering Expressions

```
@concat(  
  'C:\Data\  
  pipeline().globalParameters.Environment,  
  '\')
```



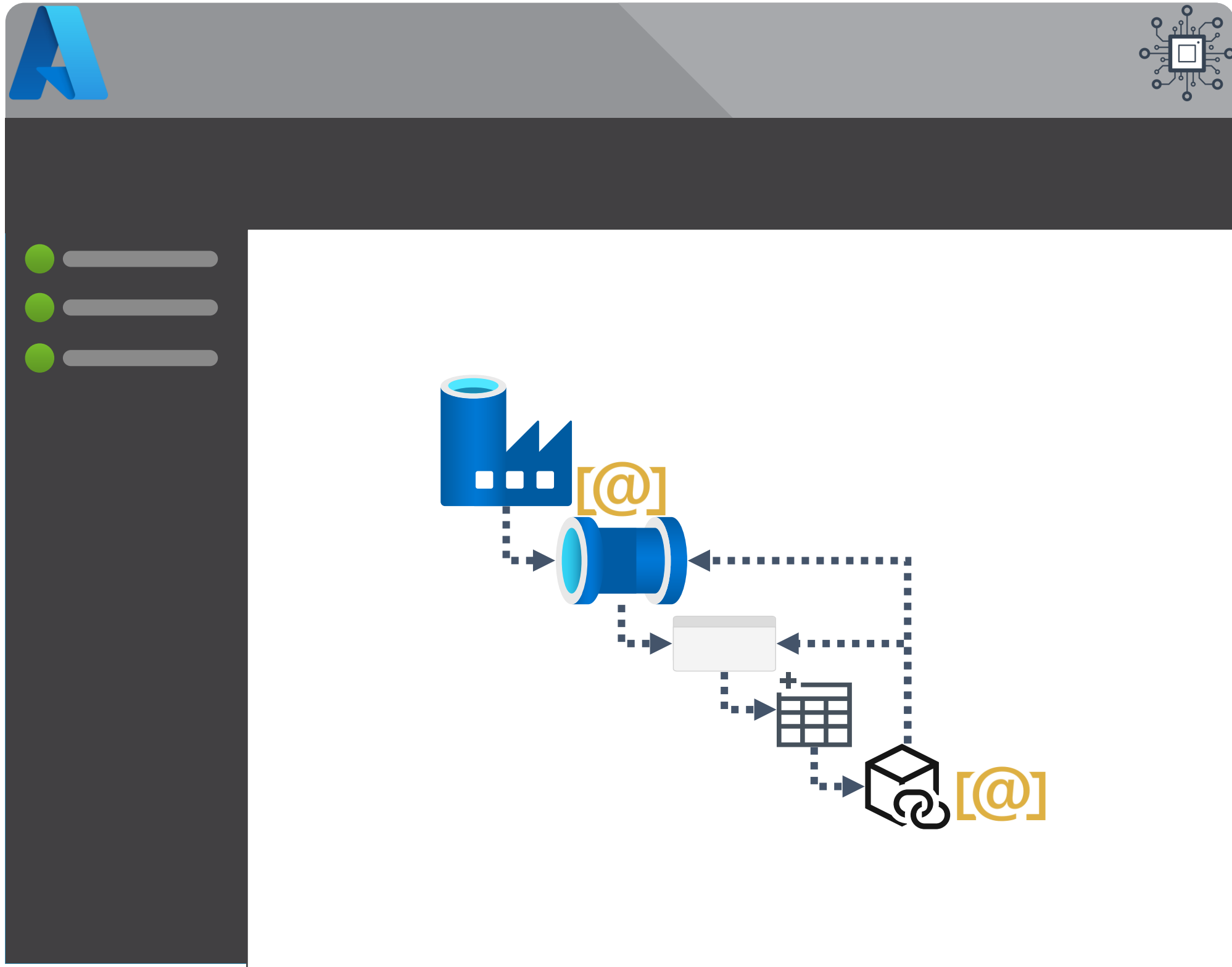
```
@concat(  
  variables('BasePath')  
  item().FileName,  
  '.csv')
```

(x) Set File Path @FilePath

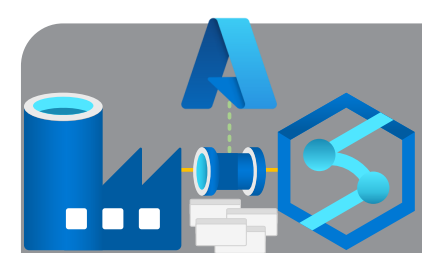


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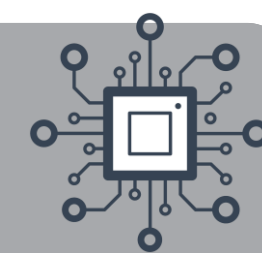
Dynamic Pipelines



- Expressions & Interpolation
- Simple Metadata Driven Execution
- **Dynamic Content Chains**
- Reference Names



Lazy SQLDB Replication



```
SELECT s.name AS SchemaName, o.name AS TableName FROM sys.objects o
INNER JOIN sys.schemas s ON o.schema_id = s.schema_id WHERE o.[type] = 'U'
```

@pipeline().parameters.TableLookupQuery

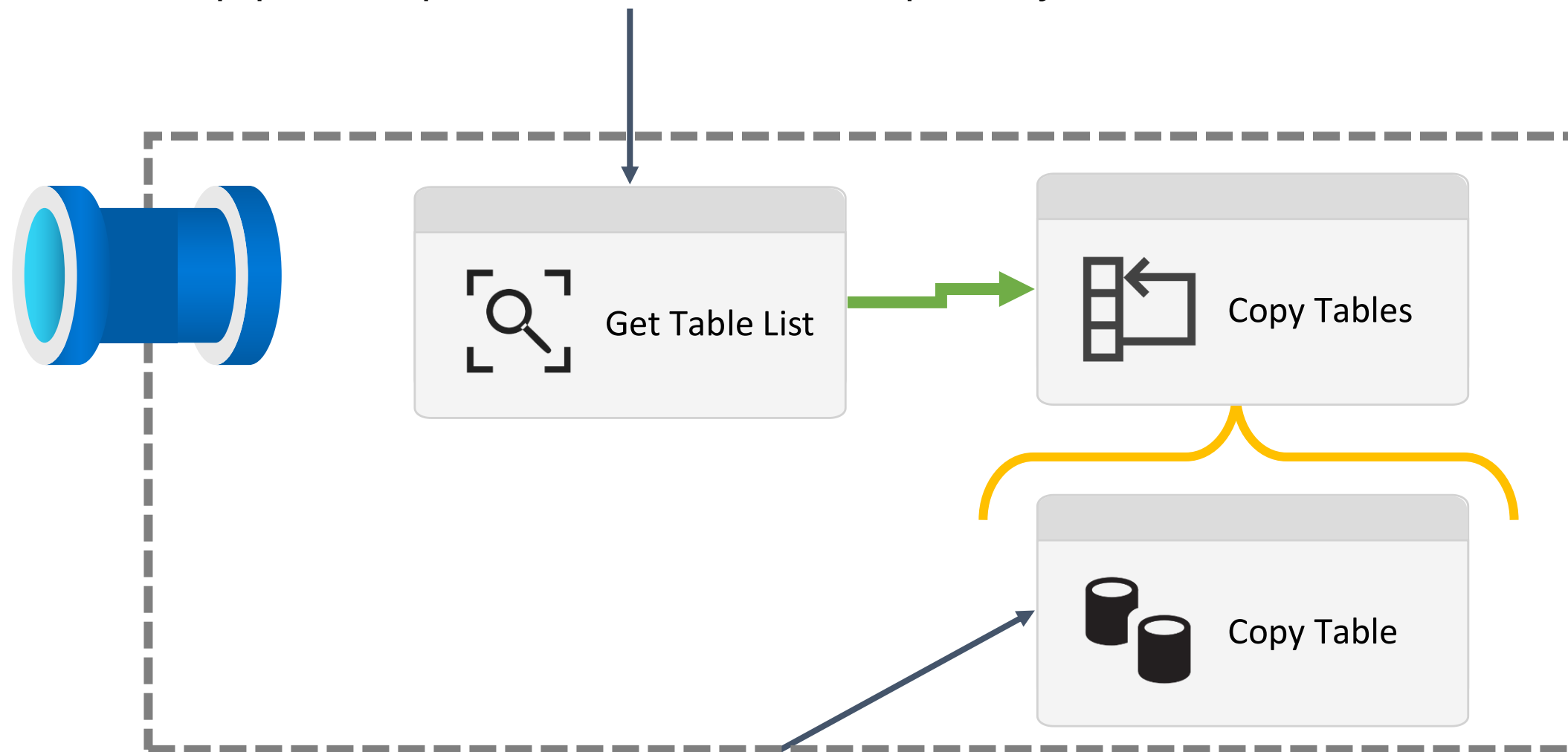


Table option

☐ None ☒ Auto create table ⓘ

1x



```
IF OBJECT_ID(
    '{@item().SchemaName}.@{item().TableName}'
) IS NOT NULL
```

1x



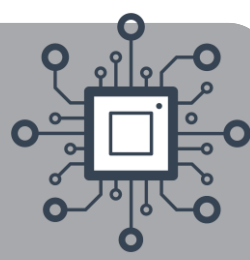
```
TRUNCATE TABLE @item().SchemaName.@{item().TableName}
```

@pipeline().parameters.SourceConnectionSecret

@pipeline().parameters.TargetConnectionSecret

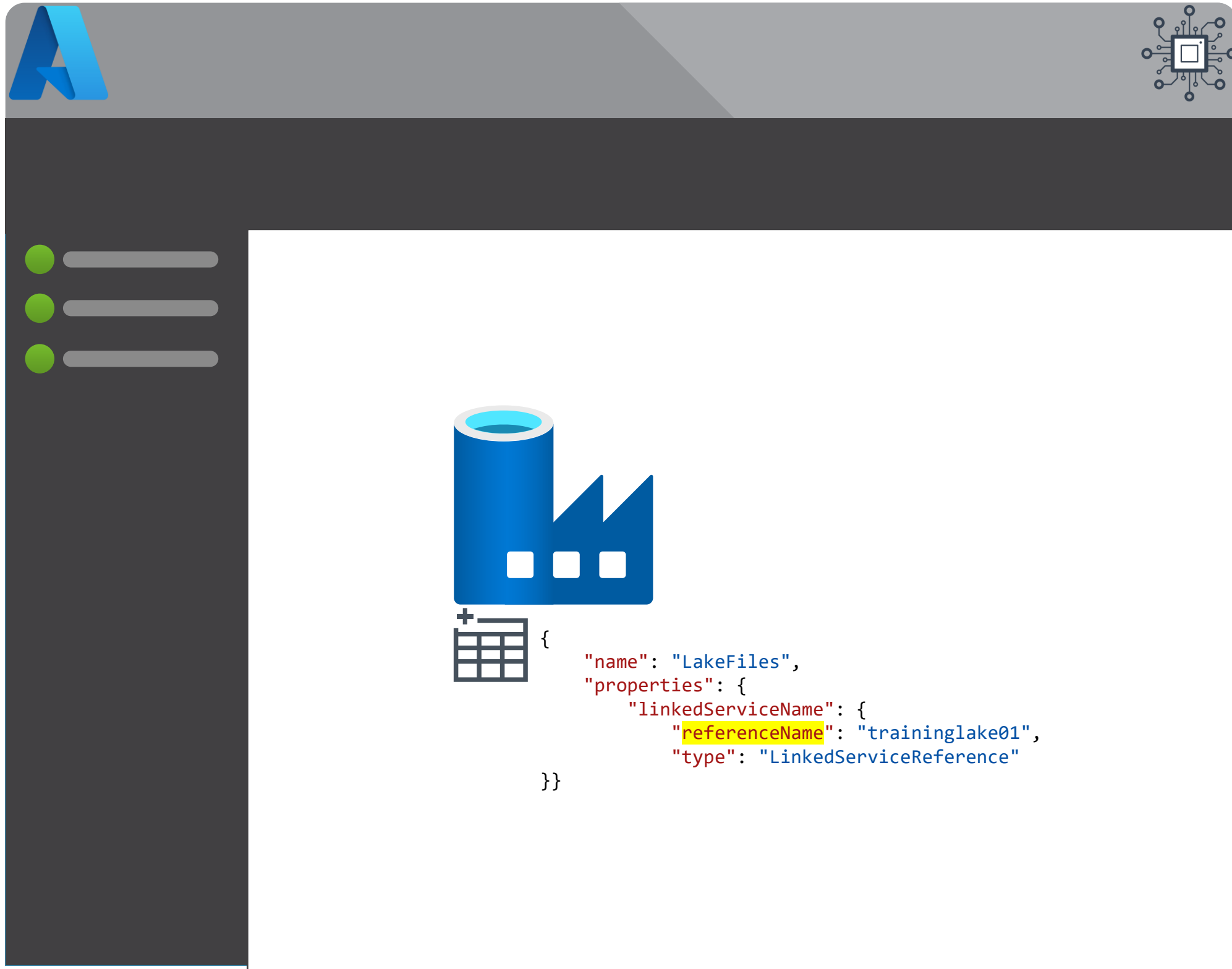
@dataset().LinkedServiceConnectionSecret

@linkedService().DBConnectionSecret



Module 4

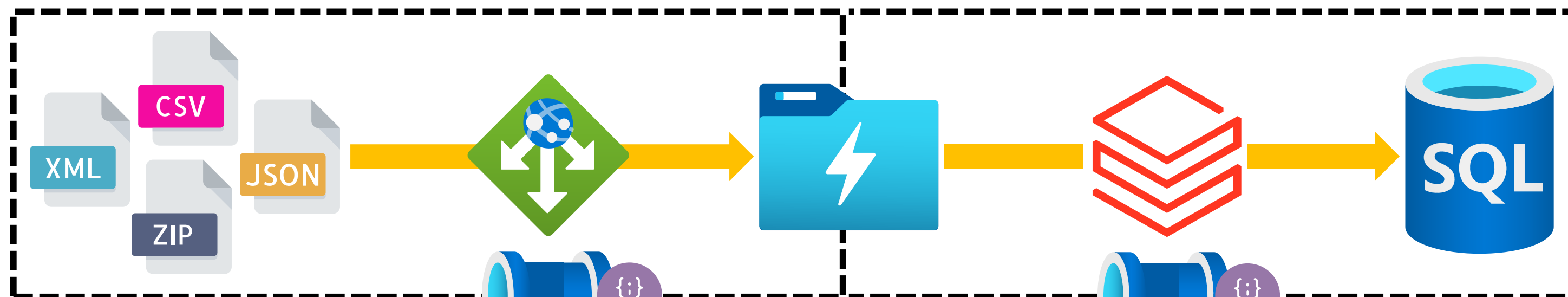
Dynamic Pipelines



- Expressions & Interpolation
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Reference Names



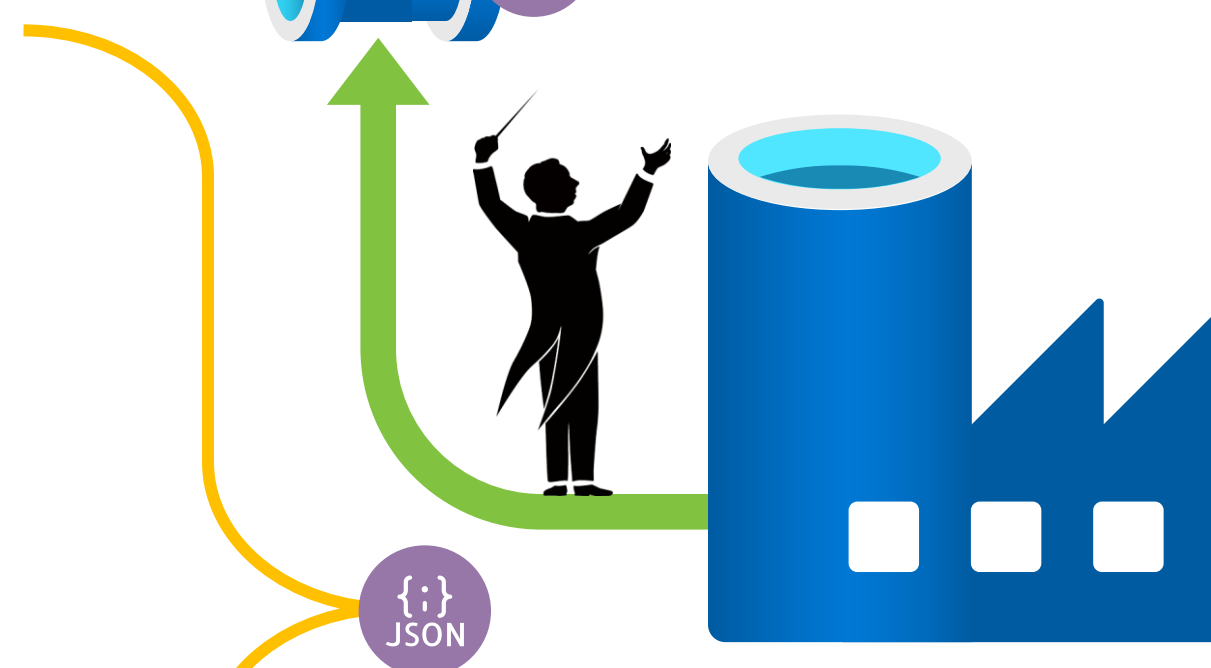
1 Linked Services

2 Datasets

3 Activities

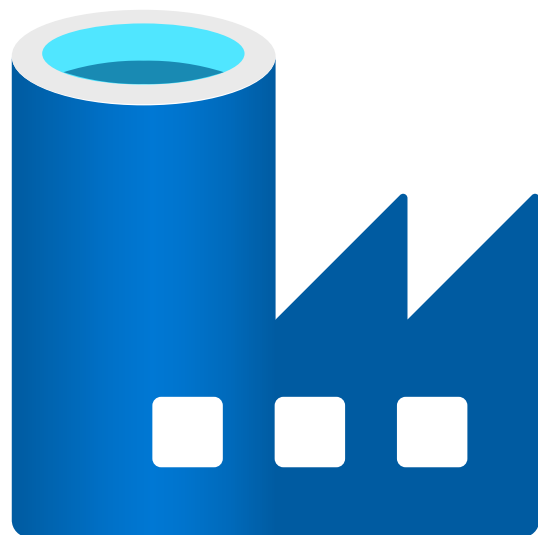
4 Pipelines

5 Triggers





Reference Names



1

Linked Services



2

Datasets



3

Activities



4

Pipelines



5

Triggers



```
{  
  {  
    "name": "TrainingKeys01",  
    "type": "Microsoft.DataFactory/factories/linkedservices",  
    "properties": {  
      "annotations": [],  
      "type": "AzureKeyVault",  
      "typeProperties": {  
        "baseUrl": "https://TrainingKeys01.vault.azure.net/"  
      }  
    }  
  }  
}
```



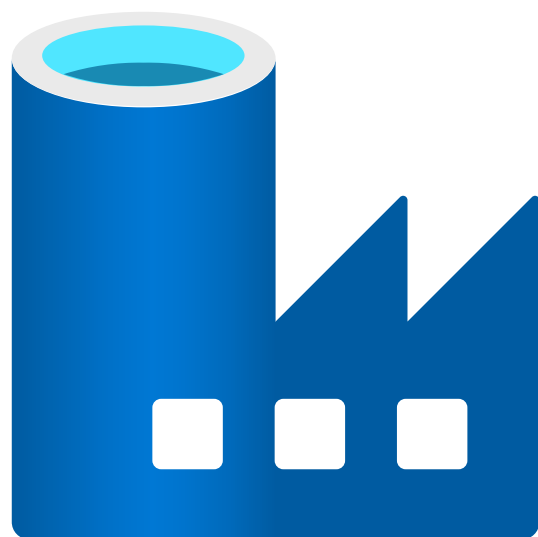
```
{  
  {  
    "name": "traininglake01",  
    "properties": {  
      "typeProperties": {  
        "accountKey": {  
          "type": "AzureKeyVaultSecret",  
          "store": {  
            "referenceName": "TrainingKeys01",  
            "type": "LinkServiceReference"  
          }  
        }  
      }  
    }  
  }  
}
```



```
{  
  {  
    "name": "LakeFiles",  
    "properties": {  
      "linkedServiceName": {  
        "referenceName": "traininglake01",  
        "type": "LinkServiceReference"  
      }  
    }  
  }  
}
```



Reference Names



1 Linked Services



2 Datasets



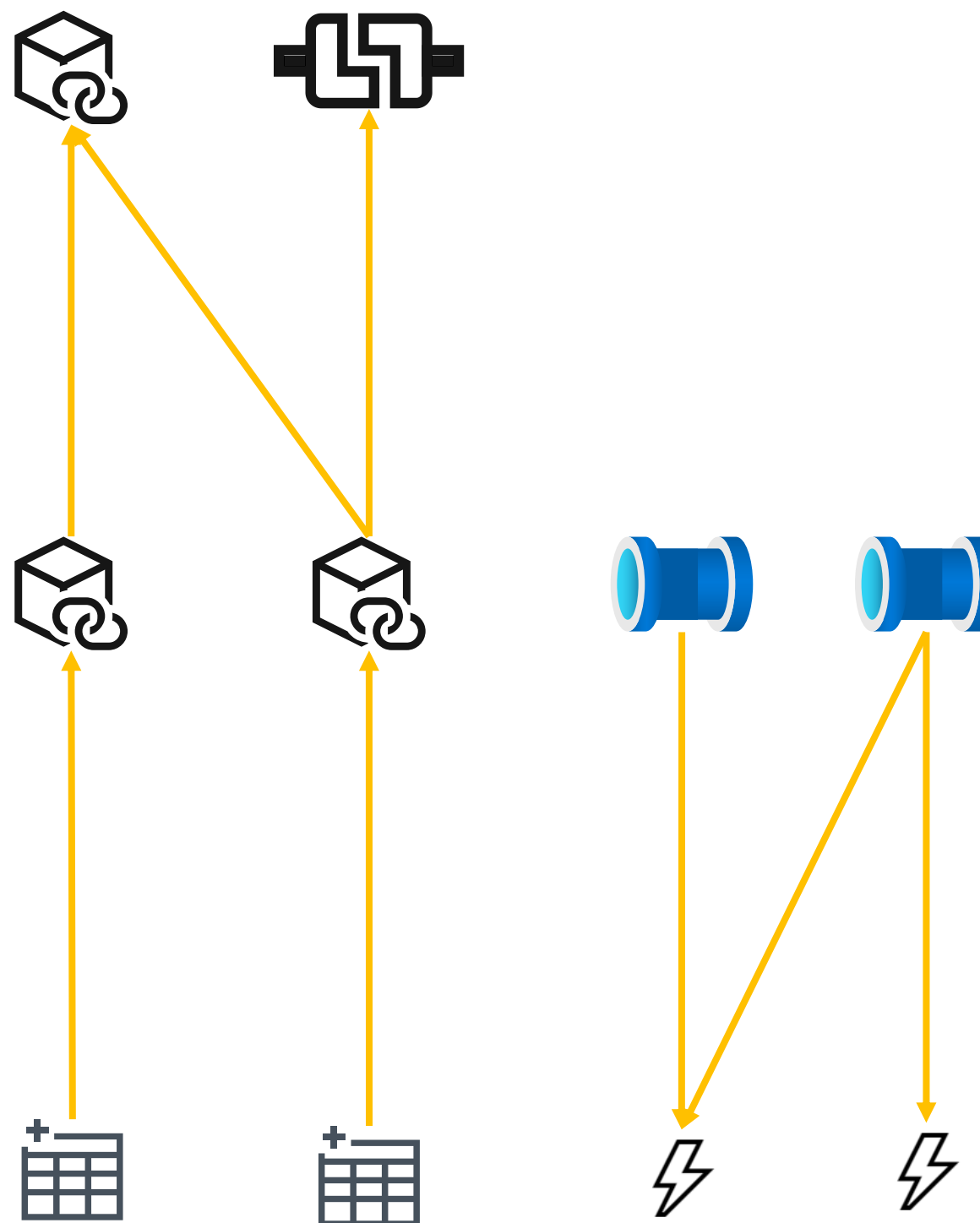
3 Activities



4 Pipelines



5 Triggers



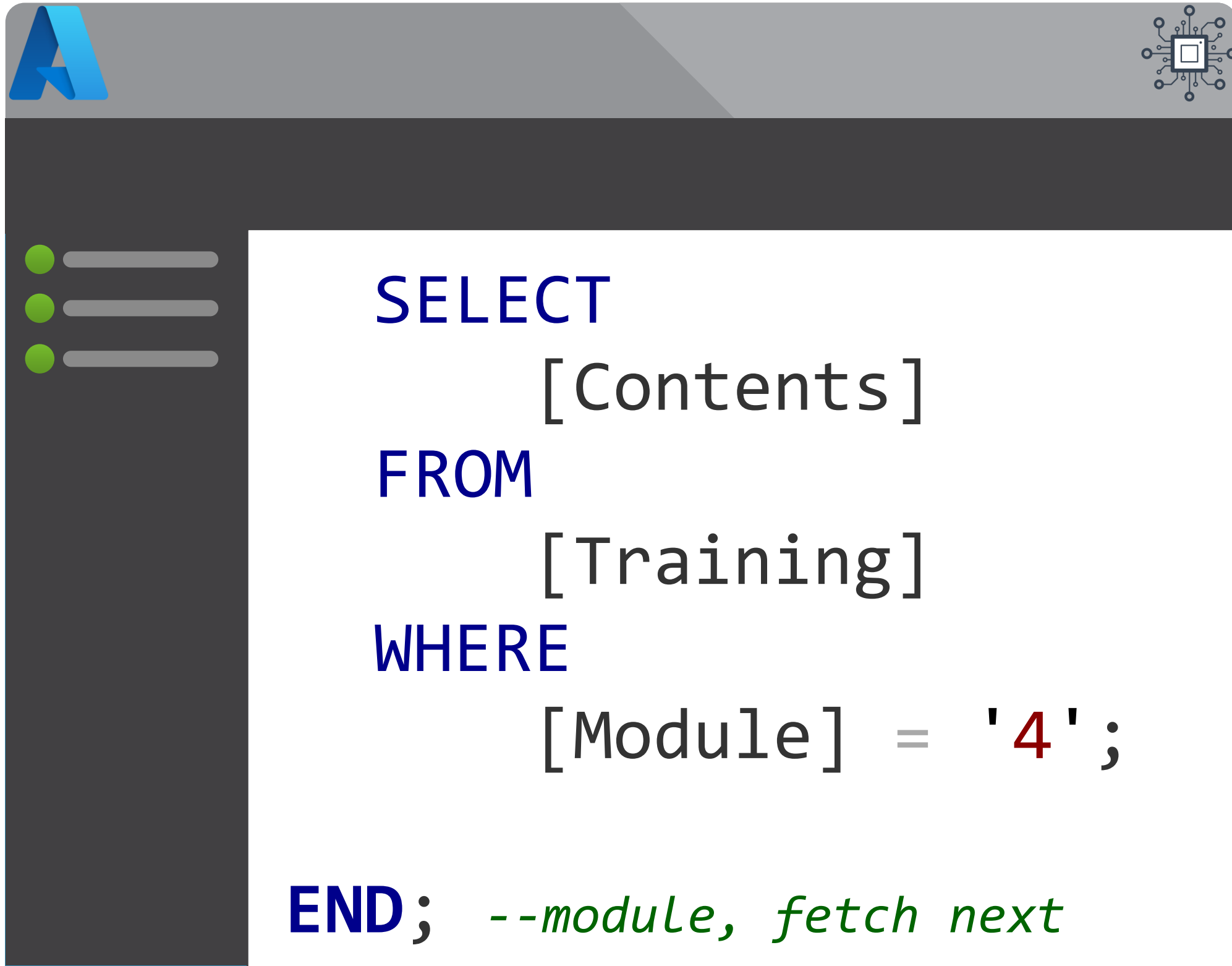
Reference Names **cannot** be dynamic.

- Not at development time.
- Not at runtime.
- At deployment time if being careful.

They are used internally by Data Factory to validate artifact dependencies.

Module 4

Dynamic Pipelines



- Expressions & Interpolation
- Simple Metadata Driven Execution
- Dynamic Content Chains
- Reference Names