Expanding your CI/CD pipeline

The good, the bad and the life ruining

DATAmasterminds

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Documentation · Data Lineage · Change Tracking · Backup

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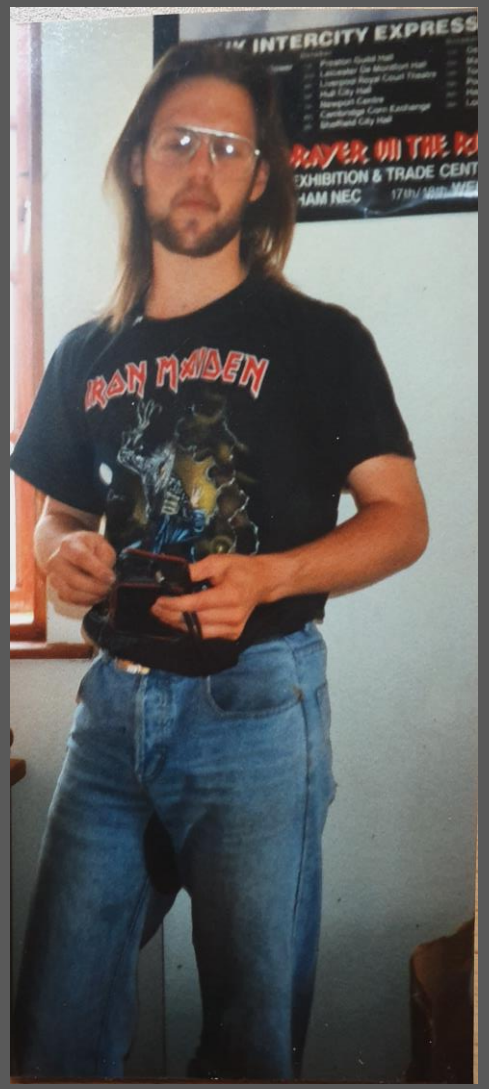
DATABASE CONTROL

Who Are We?


INTERCITY
IRON MAIDEN

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Automator
Sewells Consulting
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Today We Shall

- Expect that you understand CI/CD with data (a bit more…)
- Take a look at SQLPackage
- Examine Publish Profiles
- Talk about and overcome difficulties
- Have a bit of fun along the way – It’s ok to laugh!

SQL Package

Extract

Export

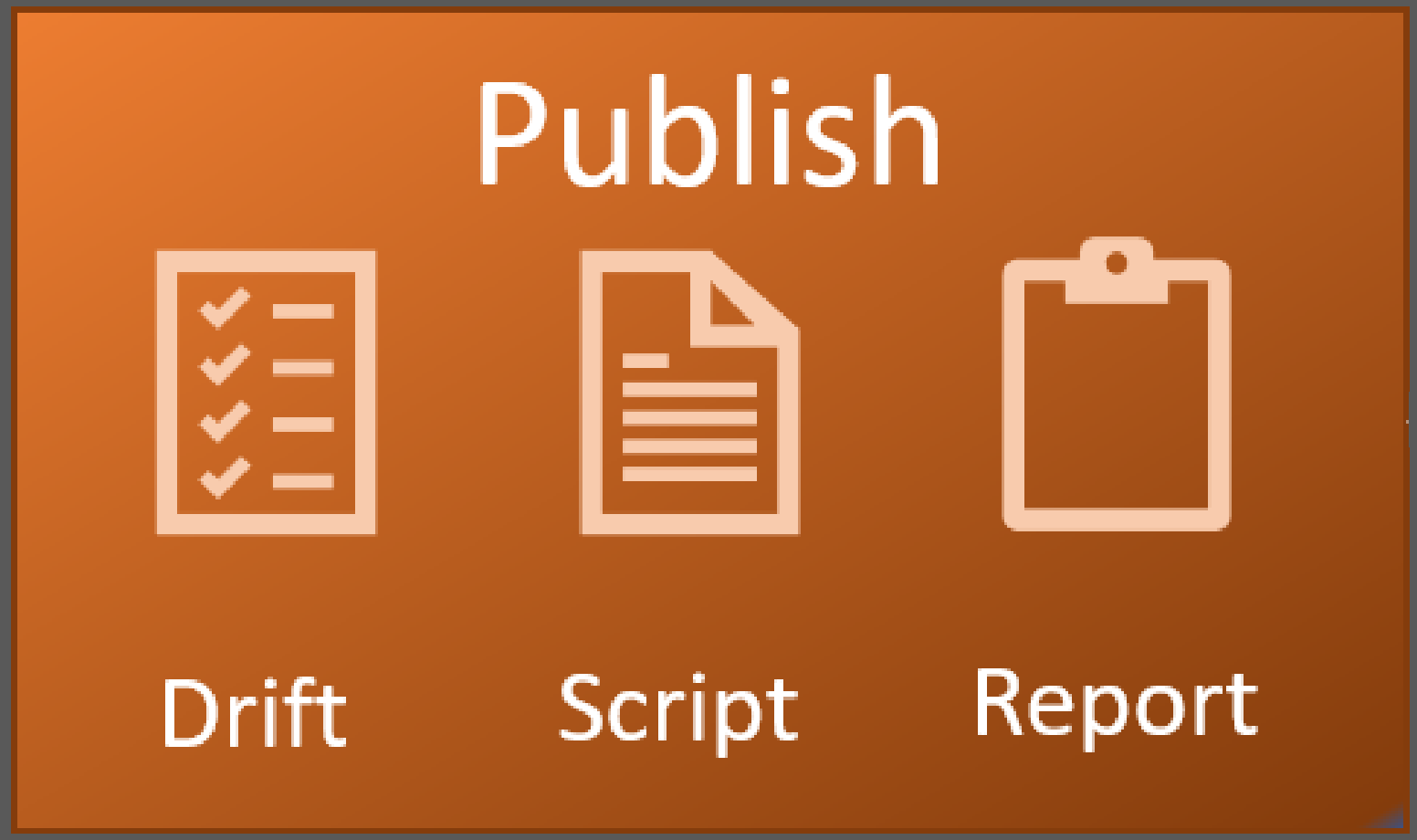
SQLPackage.exe
(Download)

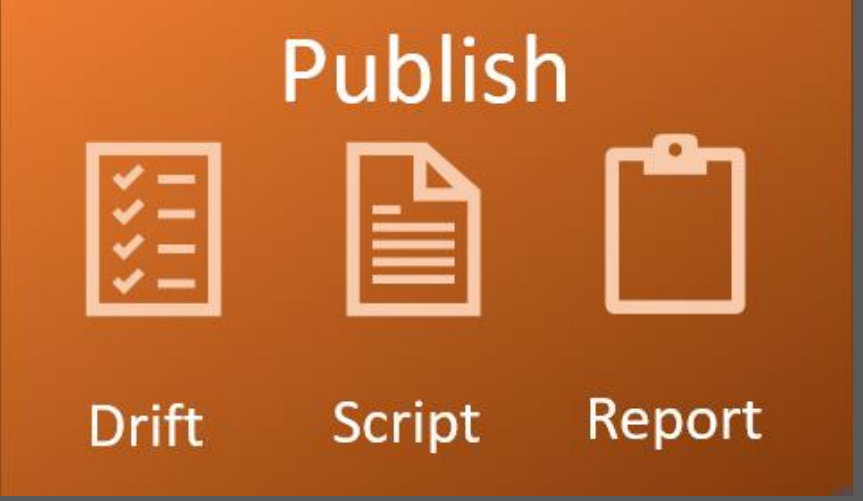
Publish

Drift Script Report

Import

Our focus for today!

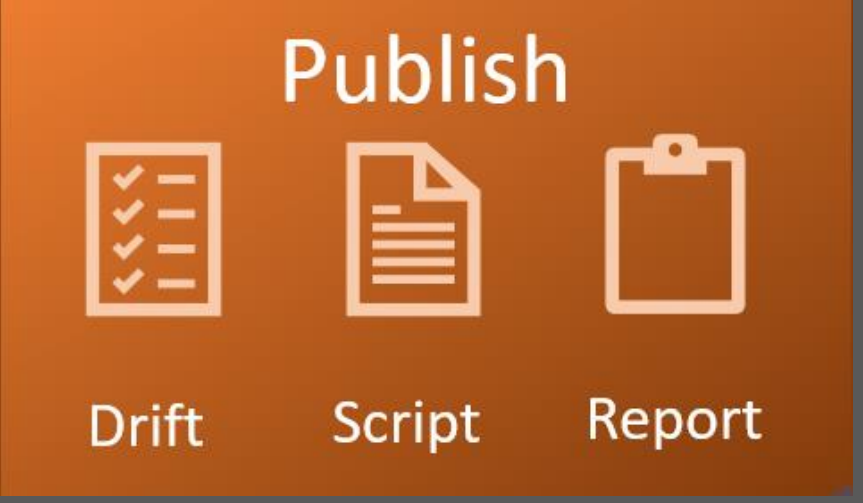

Publish
Drift
Script
Report



Compares the target (SQL Server or Azure SQL DB) or a DACPAC with the source DACPAC.

```
SqlPackage /Action:DriftReport /TargetServerName: <ServerName>
/TargetDatabaseName: <DatabaseName>  /OutputPath
Deploy_DriftReport.xml
```

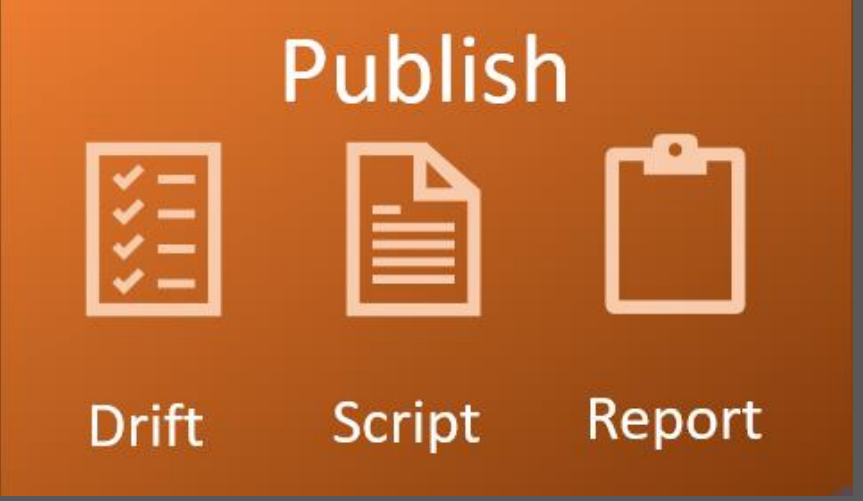
Can create a drift report with all the changes that have been made since registering



Compares the target (SQL Server or Azure SQL DB) or a DACPAC with the source DACPAC.

```
SqlPackage /Action:Script /TargetServerName: <ServerName>
/TargetDatabaseName: <DatabaseName>  /SourceFile: “<DACPAC File
Path>” /OutputPath: “<Path for Output Files>”
```

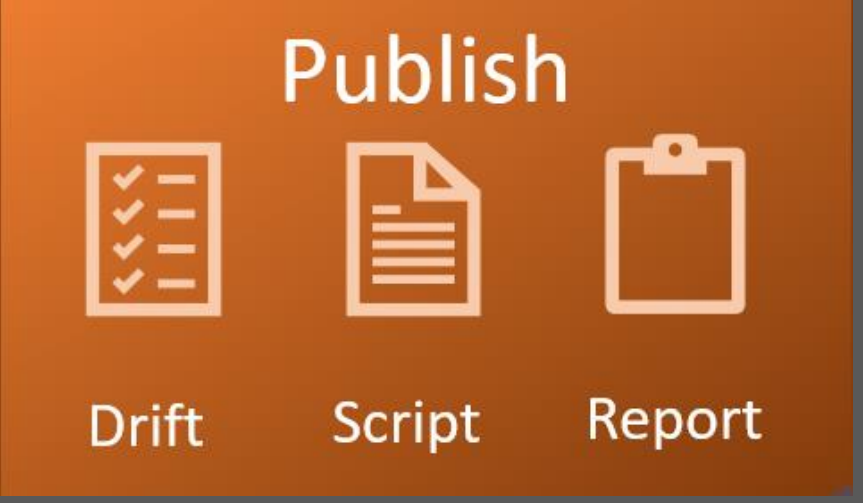
Can create an incremental update script to match source and target



Compares the target (SQL Server or Azure SQL DB) or a DACPAC with the source DACPAC.

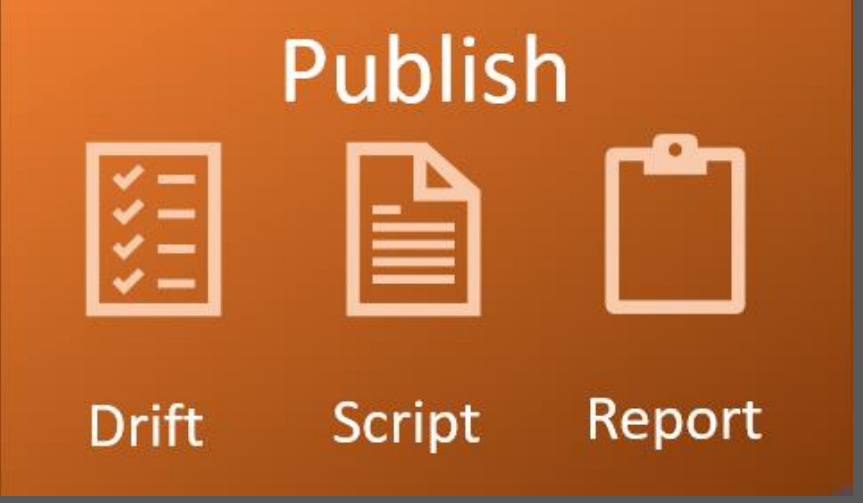
```
SqlPackage /Action:DeployReport /TargetServerName: <ServerName>
/TargetDatabaseName: <DatabaseName>  /SourceFile: “<DACPAC File
Path>” /OutputPath: “<Path for Output Files>”
```

Can create a deploy report with all the changes



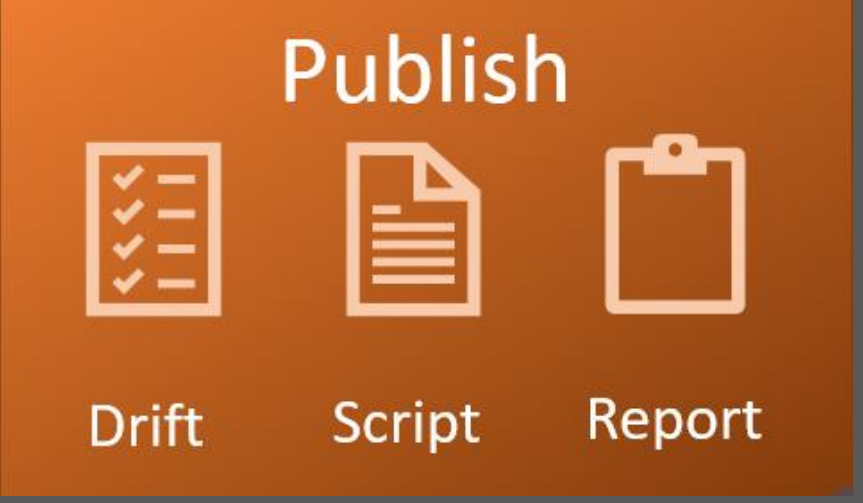
5 steps in the Publish Phase:

Schema Comparison



5 steps in the Publish Phase:

- Schema Comparison
- Schema Difference Generation

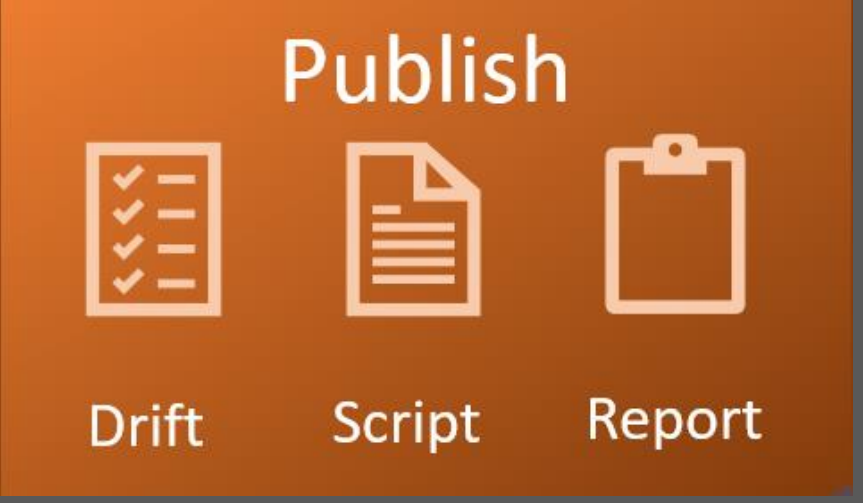


5 steps in the Publish Phase:

Schema Comparison

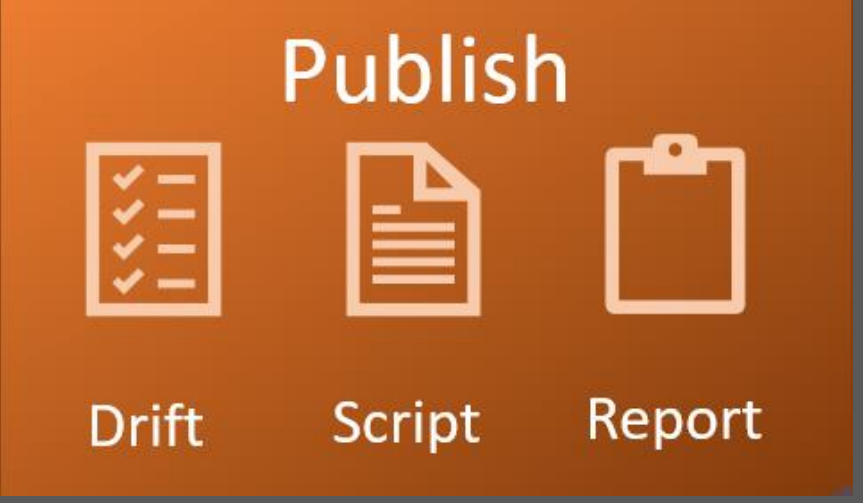
Schema Difference Generation

Execute Pre Deployment



5 steps in the Publish Phase:

1. Schema Comparison
2. Schema Difference Generation
3. Execute Pre Deployment
4. Execute generated script



5 steps in the Publish Phase:

1. Schema Comparison
2. Schema Difference Generation
3. Execute Pre Deployment
4. Execute generated script
5. Execute Post Deployment

Publish

Drift Script Report

Merged into one script
and executed against the target

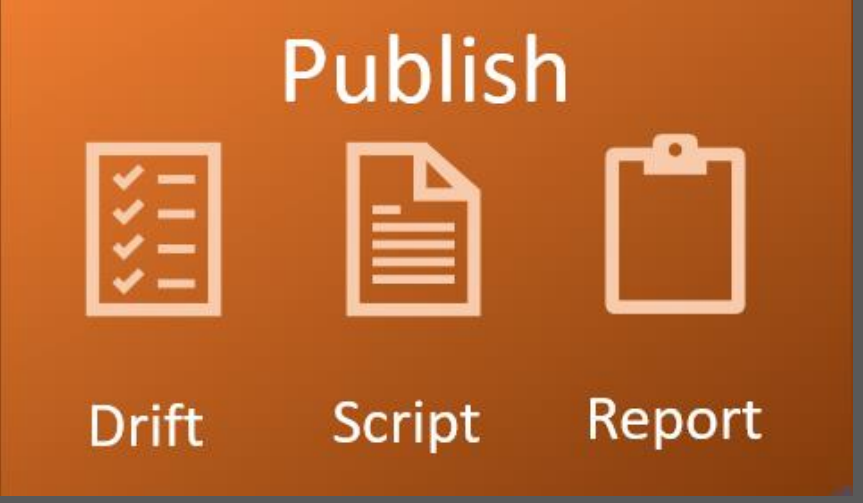
Schema Comparison

Schema Difference Generation

Execute Pre Deployment

Execute generated script

Execute Post Deployment



Pre Deployment scripts have
NO EFFECT on Schema Comparison

Schema Comparison

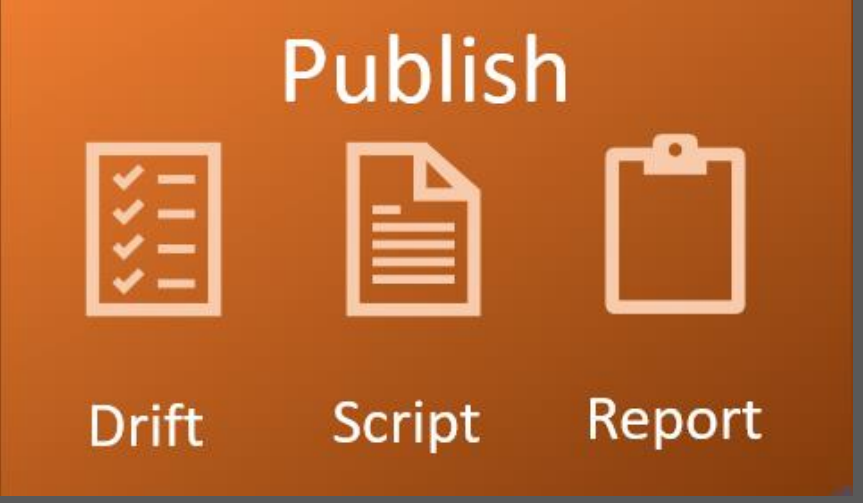
Schema Difference Generation

Execute Pre Deployment

Execute generated script

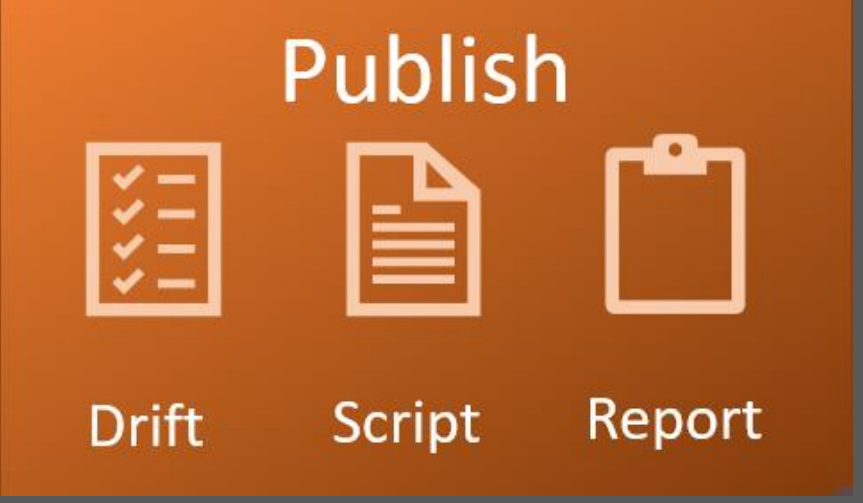
Execute Post Deployment

Options: – Good to know!

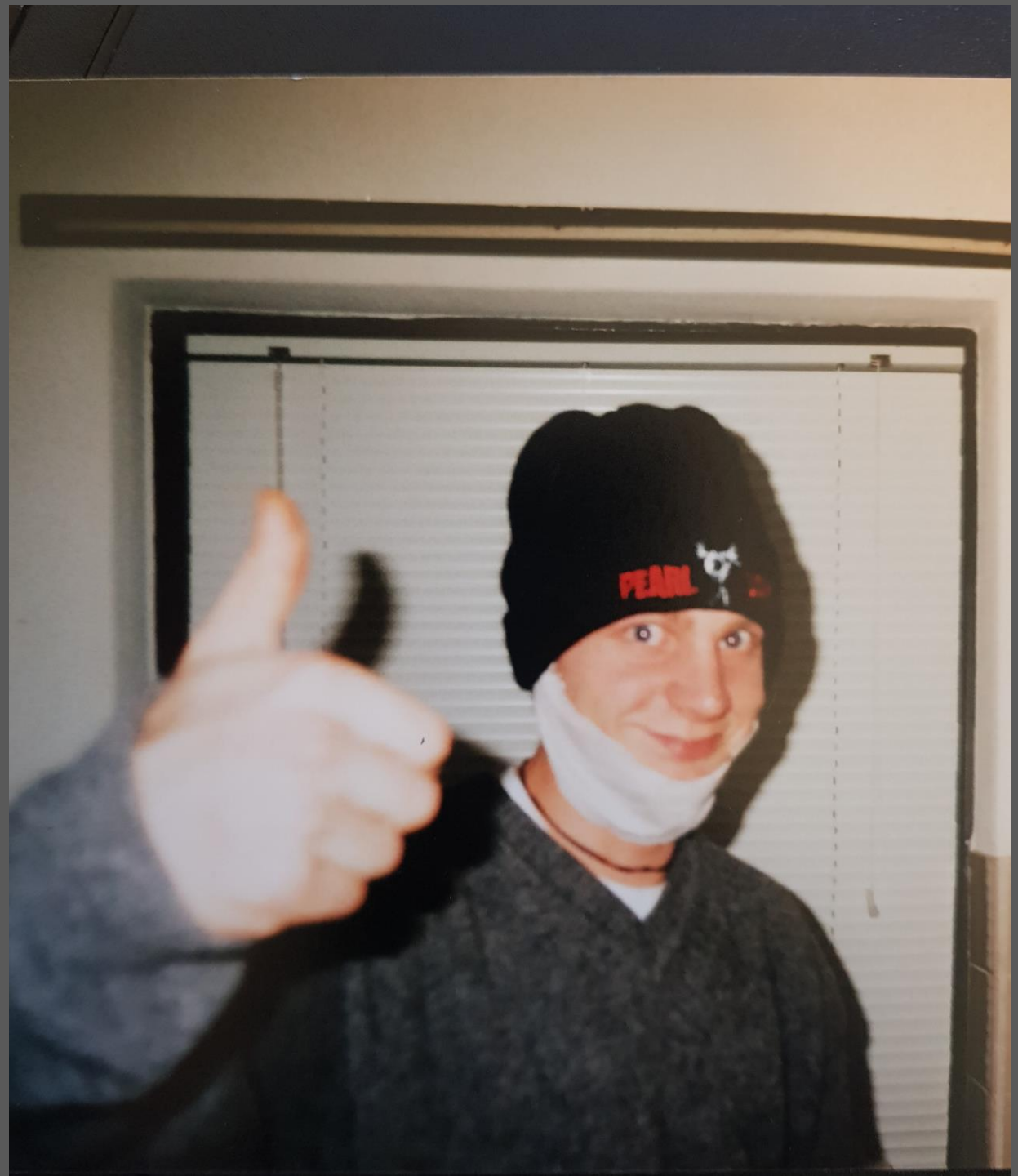


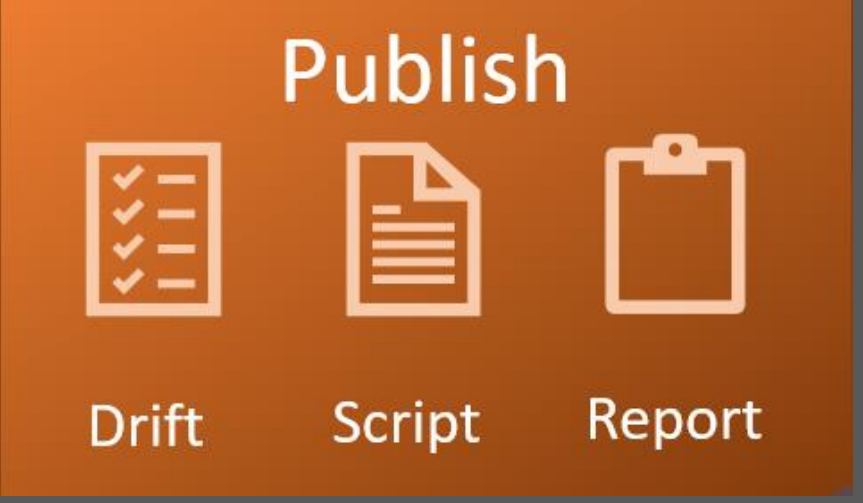
Publish Profile Options only apply here

Schema Comparison	Schema Difference Generation	Execute Pre Deployment	Execute generated script	Execute Post Deployment

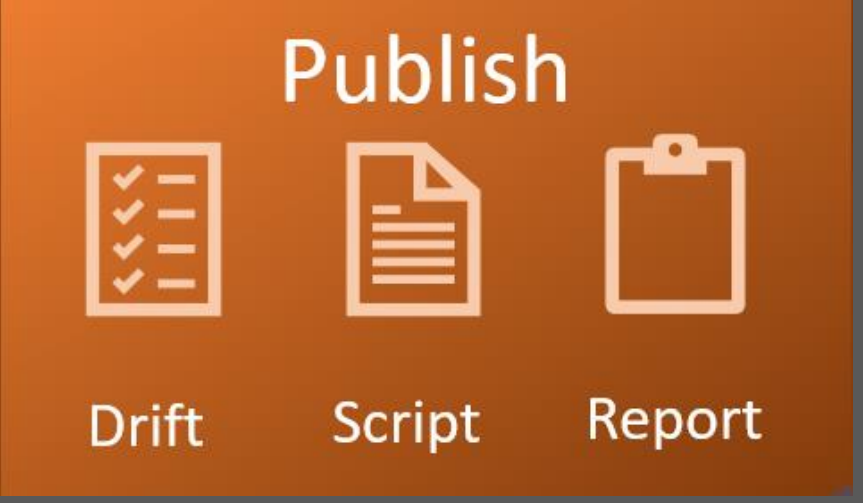


Demo: – Eelco’s Useful Tips
on publish profile options



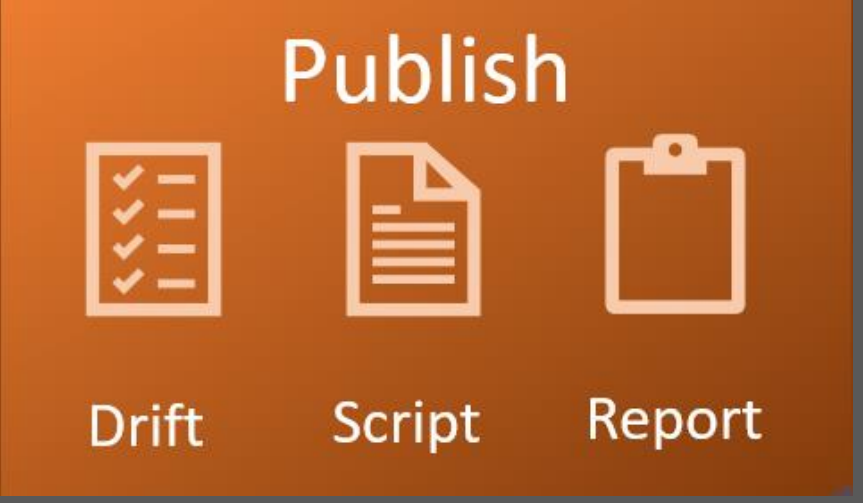


"But I really want to drop that column"



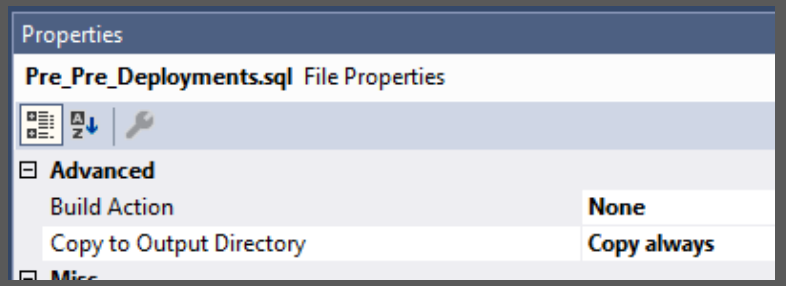
"Yay!"

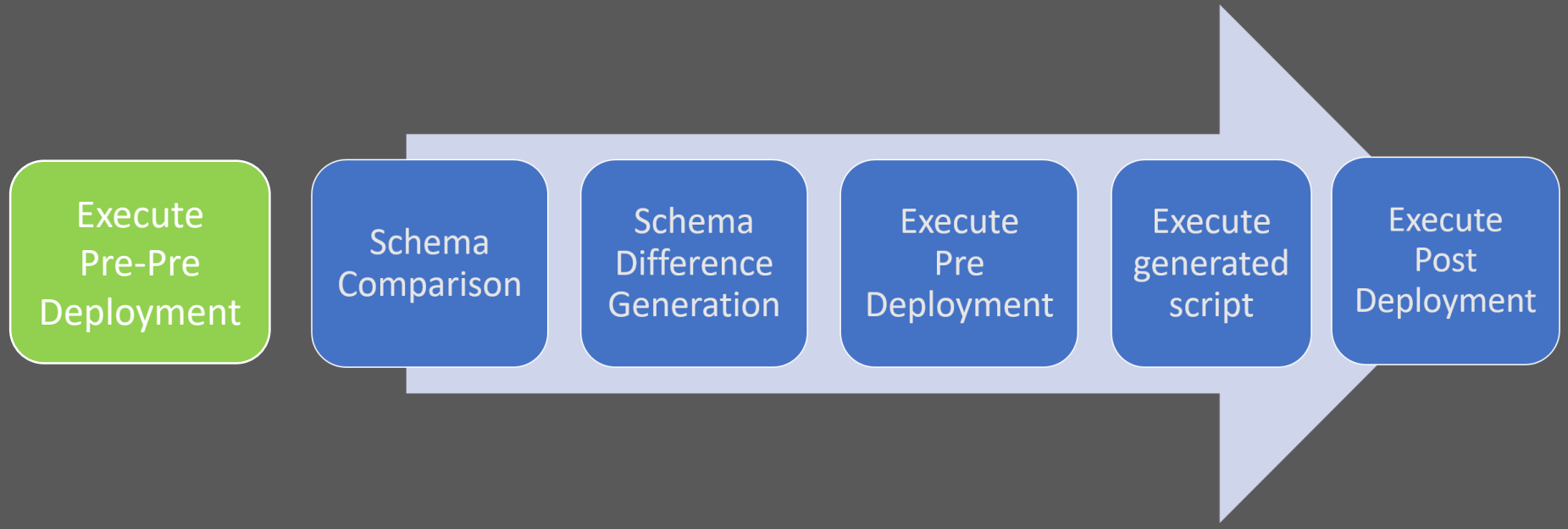
- Use Pre and Post deployment scripts
  (2 publish actions needed)
- Use Publish Profiles
- Turn off "Block on possible data loss" temporarily
- Use a pre-pre deployment script ☺



Pre-Pre-Deploymentscript

(Combining State and Migration based deployment)



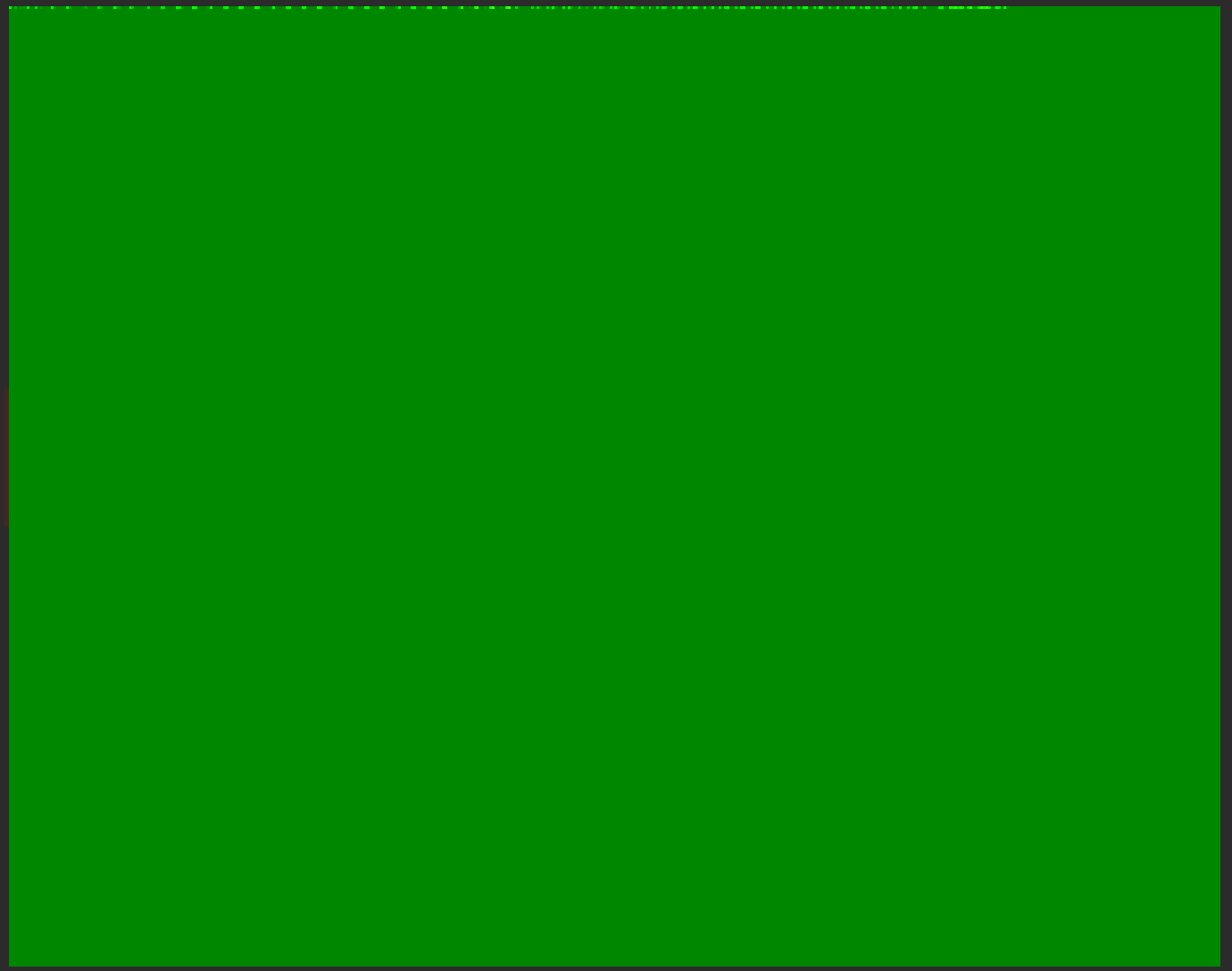


Data in source control

Data in source control

Data in source control

Not For Big Tables!



Data in source control

Perfect
(Recommended)
For lookup
tables

Data in source control

ID	CountryName
1	Germany
2	Netherlands
3	Norway
4	Sweden
5	Slovenia
6	U?n?i?t?e?d? K
7	United States o
8	France
9	Austria
10	Belgium

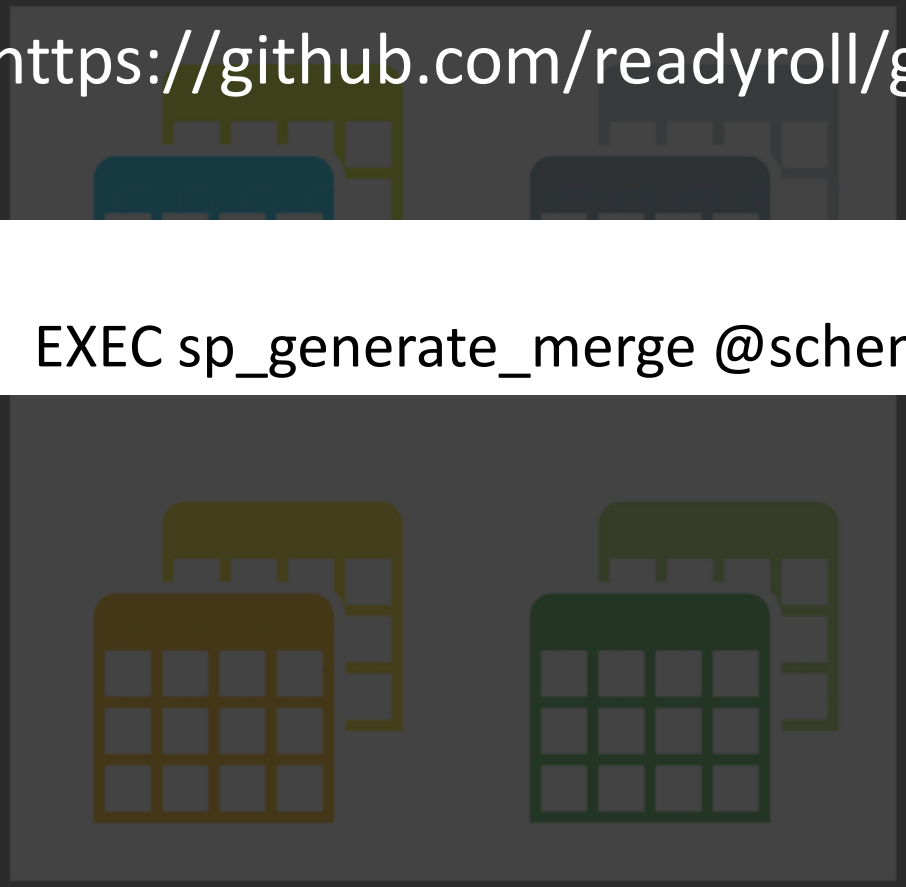
```
MERGE INTO [Country] AS [Target]
USING (VALUES
  (1,N'Germany',N'DE',1)
 ,(2,N'Netherlands',N'NL',1)
 ,(3,N'Norway',N'NO',0)
 ,(4,N'Sweden',N'SE',1)
 ,(5,N'Slovenia',N'SI',1)
 ,(6,N'U?n?i?t?e?d? Kingdom',N'UK',NULL)
 ,(7,N'United States of America',N'US',0)
 ,(8,N'France',N'FR',1)
 ,(9,N'Austria',N'AT',1)
 ,(10,N'Belgium',N'BE',1)
) AS [Source] ([ID],[CountryName],[Code],[EUMember])
ON ([Target].[ID] = [Source].[ID])
WHEN MATCHED AND (
    NULLIF([Source].[CountryName], [Target].[CountryName]) IS NOT NULL OR NULLIF([
    NULLIF([Source].[Code], [Target].[Code]) IS NOT NULL OR NULLIF([Target].[Code]
    NULLIF([Source].[EUMember], [Target].[EUMember]) IS NOT NULL OR NULLIF([Target
 UPDATE SET
  [Target].[CountryName] = [Source].[CountryName],
  [Target].[Code] = [Source].[Code],
  [Target].[EUMember] = [Source].[EUMember]
WHEN NOT MATCHED BY TARGET THEN
 INSERT([ID],[CountryName],[Code],[EUMember])
 VALUES([Source].[ID],[Source].[CountryName],[Source].[Code],[Source].[EUMember])
WHEN NOT MATCHED BY SOURCE THEN
 DELETE;
```

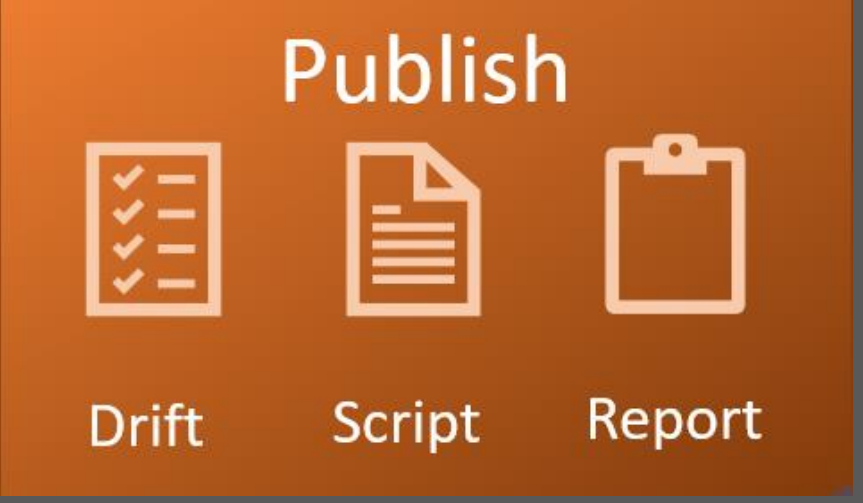
In the Pre or Post Deployment Script

Data in source control

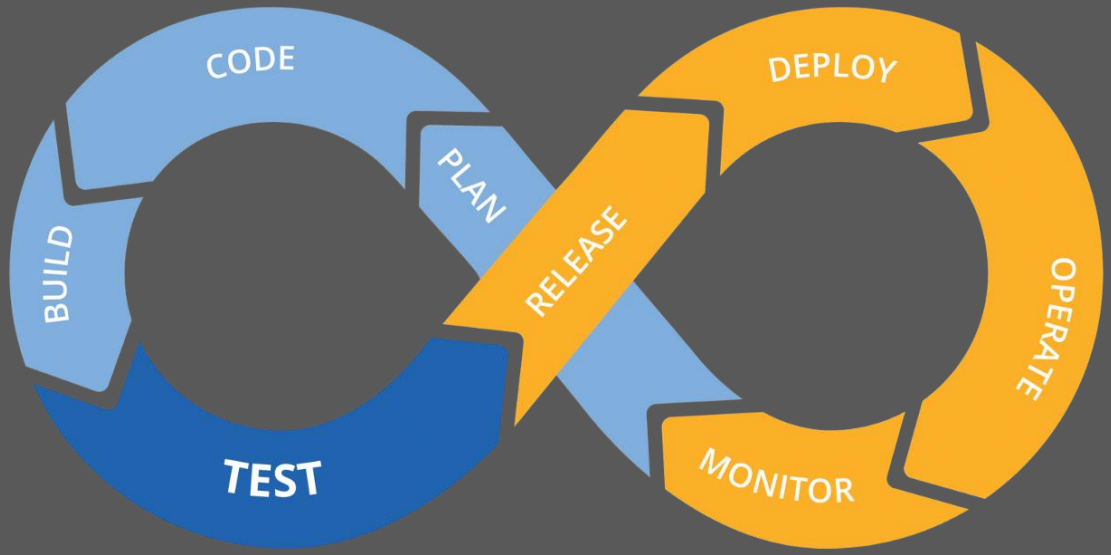
https://github.com/readyroll/generate-sql-merge

```
EXEC sp_generate_merge @schema = 'dbo', @table_name ='ShippingCountry'
```





Demo


CODE
PLAN
BUILD
TEST
RELEASE
DEPLOY
OPERATE
MONITOR

But Sometimes

```
SELECT Total_Rows= SUM(st.row_count)
FROM sys.dm_db_partition_stats st
WHERE object_name(object_id) = 'PurchaseOrderLines' AND (index_id < 2)

SELECT TOP 10 *
FROM BeardCompany.[dbo].[PurchaseOrderLines]
ORDER BY[PurchaseOrderLineID] DESC
```

93 %

Results | Messages

	Total_Rows
1	195000000

	PurchaseOrderLineID	PurchaseOrderID	StockItemID	OrderedOuters	Description	ReceivedOuters	PackageTypeID	ExpectedUnitPricePerOuter	LastReceiptDate	IsOrderLineFinalized	LastEditedBy	LastEdited
1	686729055	1666666	714285	1000000	Drink Order (Wine) for DATA Grillen	1000000	19607	5524.44	2019-06-12	1	5	2019-06-12
2	686729054	1666666	714285	999999	Drink Order (Beer) for DATA Grillen	999999	19607	43968.56	2019-06-12	1	5	2019-06-12
3	686729053	1666666	714285	999999	Drink Order (Soft) for DATA Grillen	999999	19607	74.26	2019-06-12	1	5	2019-06-12
4	686729052	1666665	714285	999999	Food Order (Salat) for DATA Grillen	999999	19607	270.02	2019-06-12	1	5	2019-06-12
5	686729051	1666665	714285	999999	Food Order (Brot) for DATA Grillen	999999	19607	2869.01	2019-06-12	1	3	2019-06-12
6	686729050	1666665	714285	999999	I am a Pogonophile Sticker	999999	19607	55.87	2019-06-11	1	45	2019-06-11
7	686729049	1666664	714284	999998	Anti-Pogonophobe Spray	999998	19607	52.35	2019-06-11	1	45	2019-06-11
8	686729048	1666664	714284	999998	Why Are Beards So Amazing Book	999998	19607	34.22	2019-06-11	1	45	2019-06-11
9	686729047	1666664	714284	999998	I am a Pogonophile Sticker	999998	19607	55.87	2019-06-10	1	45	2019-06-10
10	686729046	1666663	714284	999998	I am a Pogonophile Sticker	999998	19607	55.87	2019-06-10	1	77	2019-06-10

But Sometimes

Results | Messages

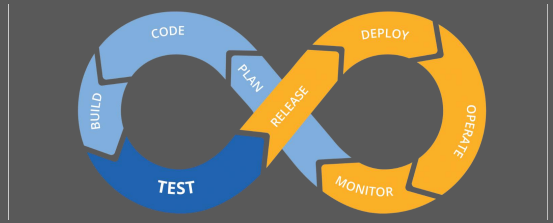
	Total_Rows
1	195000000

NO!
You can't have that much downtime

The Business

Results Messages

	Total_Rows
1	195000000



Dev

Change

Dev

Change

Check Which Objects

DBA

I do more than check which objects Beardy!

Dev

Change

Check Which Objects

View, Stored Procedure or small table

DBA

Dev

Change

Check Which Objects

View, Stored Procedure or small table

DBA

Test and Deploy

Dev

Change

Check Which Objects

DBA

Dev

Change

Check Which Objects

DBA

Big Table

Dev

Change

Check Which Objects

DBA

Big Table

Stop

Wait for Correct Window

Dev

Change

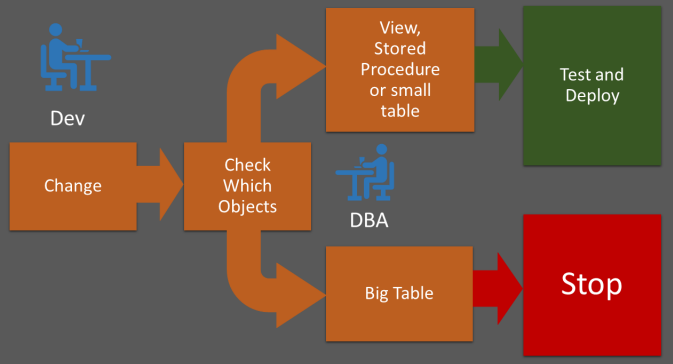
Check Which Objects

View, Stored Procedure or small table

Test and Deploy

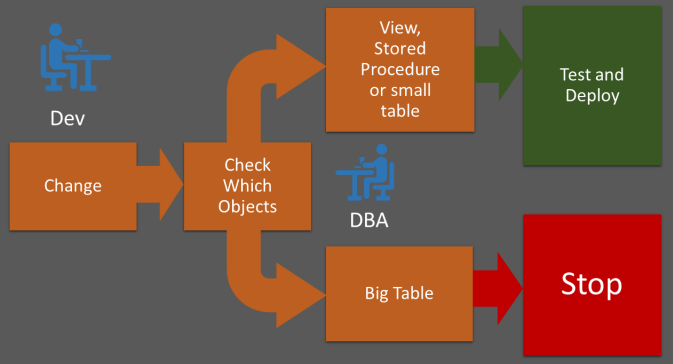
Big Table

Stop


Dev
Change
Check Which Objects
View, Stored Procedure or small table
DBA
Big Table
Test and Deploy
Stop

Demo

I am ted of san dimas. And i bring to you a message of love.


Dev
Change
Check Which Objects
DBA
View, Stored Procedure or small table
Test and Deploy
Big Table
Stop

And that is why we need a triumphant video.

Just like Jimi Hendrix …
We love to get feedback
Please complete the session feedback forms
@EelcoDrost
@SQLDBAWithBeard

Session Feedback (not optional!!)

http://bit.ly/DataGrillen2019Day1

Event Feedback
(not optional!!)

http://bit.ly/DataGrillen2019Event