

PASS SQLSATURDAY MANCHESTER 2018



Kamil Nowinski

Maintenance of a DB project and Continuous
Delivery using SSDT

Saturday Agenda

Morning

Break 09:30 - 09:45

Break 10:45 - 11:00

Lunch

Sponsor sessions 12:20 - 13:20

Lunch 12:00 - 13:30

Afternoon

Break 14:30 - 14:45

Break 15:45 - 16:00

Prize giving 17:00

Times can be found in the event
booklet / Guidebook

Updates & Amends

- Lighting Talks

- Paul Andrew - Cognitive Services Embedded in Azure Data Lake & U-SQL
- Hugo Kornelis - Managing Execution Plans
- Andrew Pruski - A real world implementation of SQL Server containers
- Alex Yates - "Reflections on a career of writing code... bring low expectations and a good sense of humour. Earplugs optional."

- Current amends to the day

- 4pm – 5pm : Theatre 4 : Steve Morgan (Microsoft) with "Dealing with SQL 2008 end of life & migration options to Azure"

Lunch Sponsor Sessions

12.20-12.50 - Session 1

Overview of the IT Market & Emerging Recruitment Trends

Ahsan Iqbal & Alex Taylor - Robert Walters
in Theatre 1

12.50-13.20 - Session 2

Simplifying SQL Server Data Protection - Protecting Microsoft SQL Server with Rubrik

Tim Hynes - Rubrik
in Theatre 1

Bricking It – A Lightning Tour of Azure Data Bricks

Paul Andrew – Adatis
in Theatre 2

Gold Sponsors

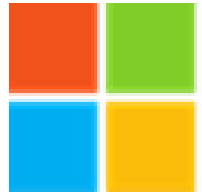


ROBERT WALTERS



@SQLSatMcr

Silver Sponsors



Microsoft



dbWatch
DATABASE CONTROL



FORWARD THINKING ACCOUNTANCY



@SQLSatMcr

Bronze Sponsors



@SQLSatMcr

Thank you, Learn and Enjoy

- If you have any queries, find a Helper (Green shirts) or Organiser (Yellow).
- Please be aware of your own and other peoples opinions around you. We support an open policy, and would love everyone to get on, but realise that doesn't always happen.
- Please thank the Sponsors and visit them, we can not run it without their support. And the helpers, as they make your day happen.
- Thanks SQL Saturday Manchester Team (Shaun, Paul, Martin & Ian)

ABOUT ME

Kamil Nowinski



Microsoft
CERTIFIED
IT Professional



Microsoft
CERTIFIED
Solutions Associate
SQL Server 2012

Speaker, blogger, data enthusiast

Data Engineer at ASOS (www.asos.com)

13+ yrs experience as DEV/DBA

Member of the Data Community PL

Project member of „SCD Merge Wizard“

Founder of blog SQLPlayer (www.SQLplayer.net)

SQL Server Certificates:

MCITP, MCP, MCTS, MCSA, MCSE Data Platform,

MCSE Data Management & Analytics

Moreover: Bicycle, Running, Digital photography

@NowinskiK, @SQLPlayer

 **redgate** **FRIENDS**



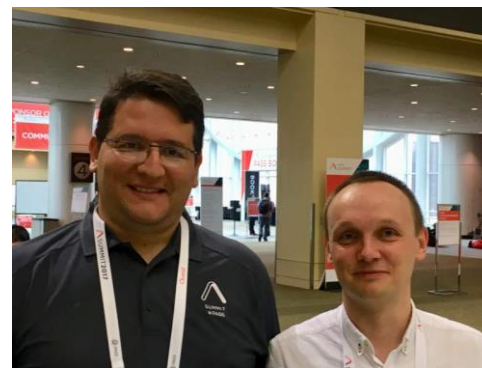
BRAND NEW BLOG



www.SQLPlayer.net



PODCAST – interviews with...



AGENDA

- What is the SSDT?
- Do I need it?
- How to start with DACPAC's?
- (Well) known issues
- Deploy/Publish database to target server
- Circular dependencies!



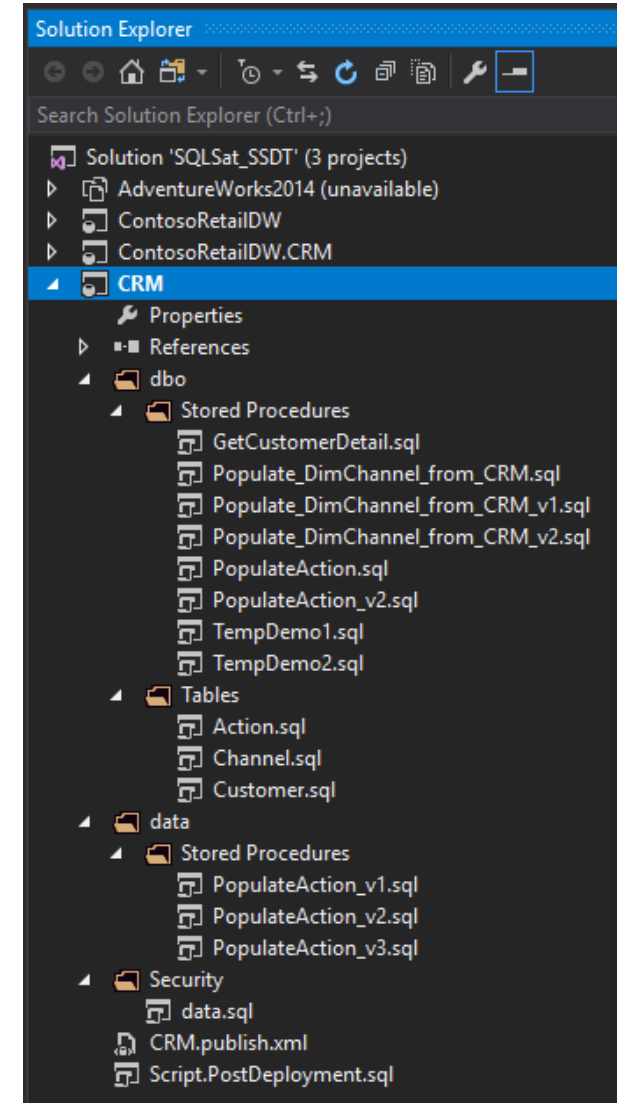
What is the SSDT?

- SQL Server Data Tools
- Now, it's a part of Visual Studio
- Free!
- Database project, including:
 - Schema, Stored Procedures, Functions,
 - Tables, Views, Security, CLR
 - ... and much more!



How to start with database project?

- Install SSDT
- Create new db project and import:
 - From script
 - Directly from SQL server
 - Data-Tier Application (DACPAC)



DEMO #1

- Create first database project (CRM)
- Import database from server



(Well) known issues

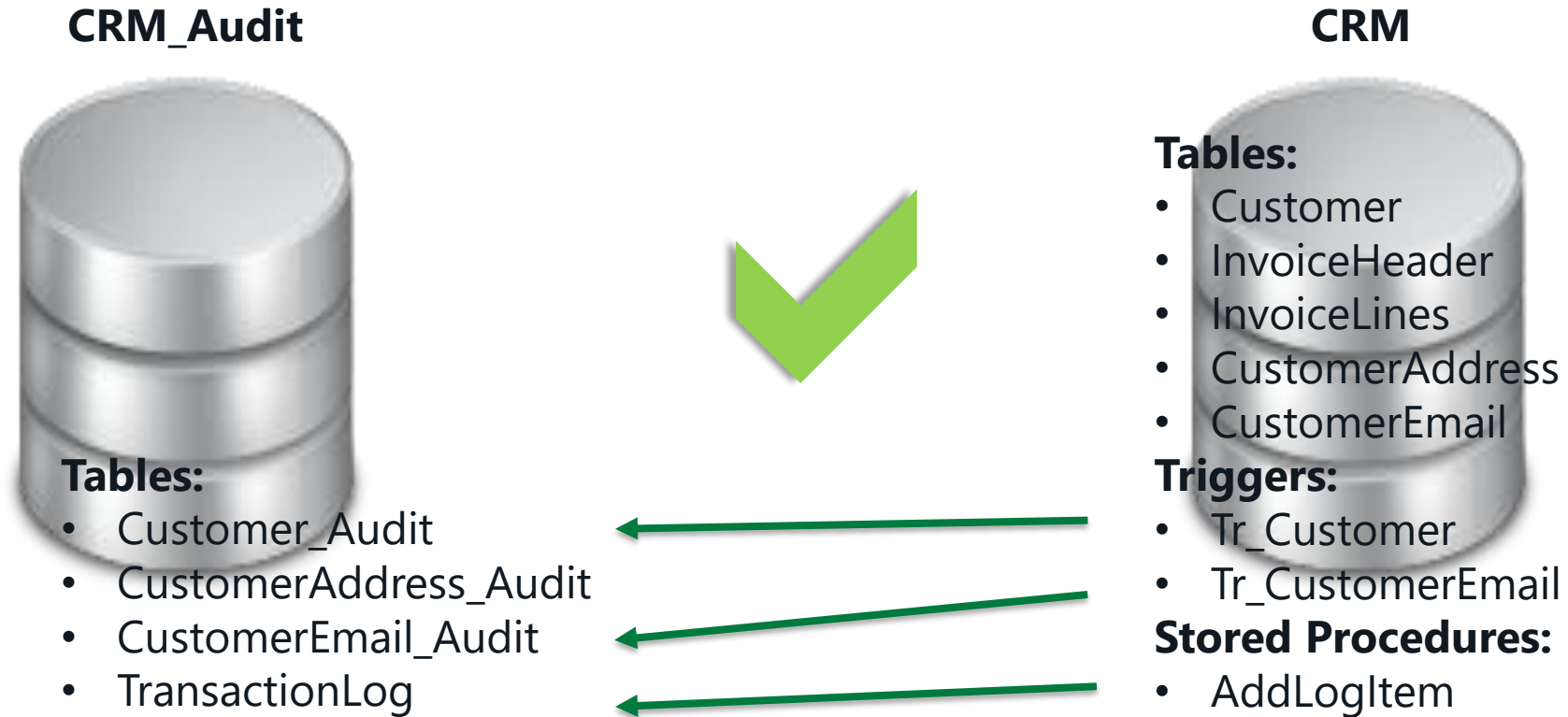


(Well) known issues

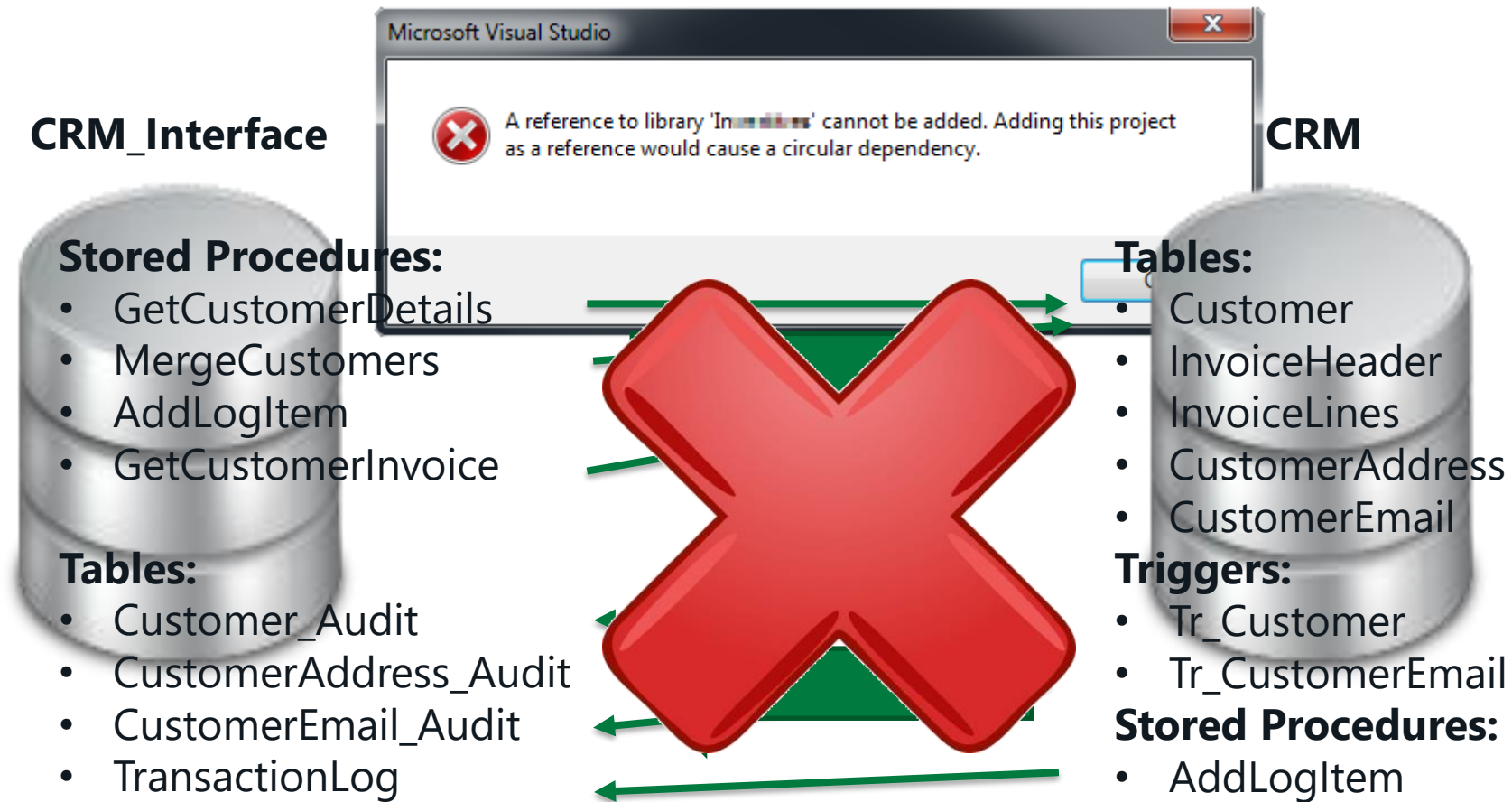
- Circular references/dependencies
- Invisible temp tables
- Disable/Enable trigger across databases
- How to manage of data?
- Can I deploy SQL Jobs?



Database dependencies & references



Circular dependencies



Circular dependencies

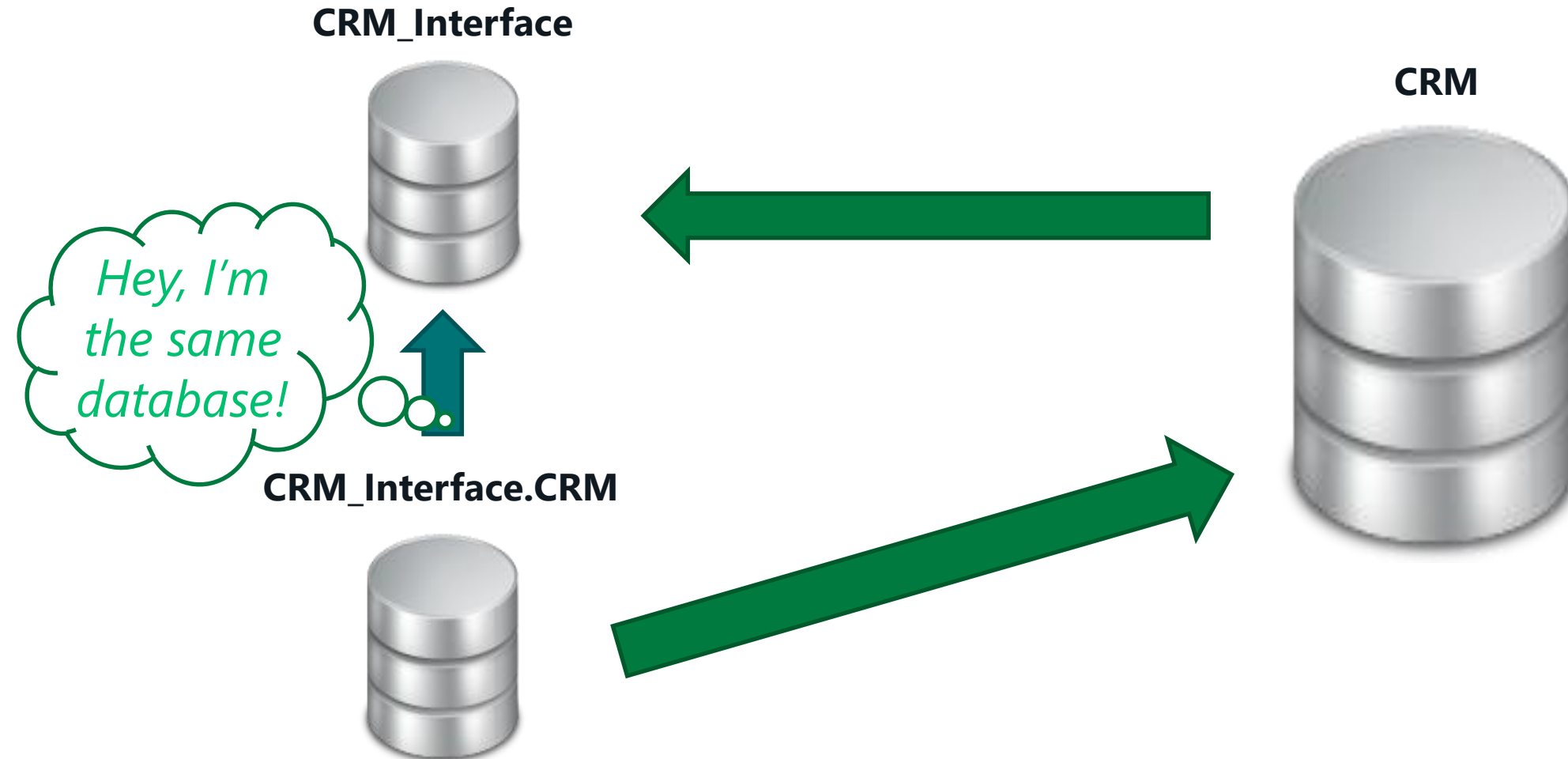
CRM_Interface



CRM



Circular dependencies

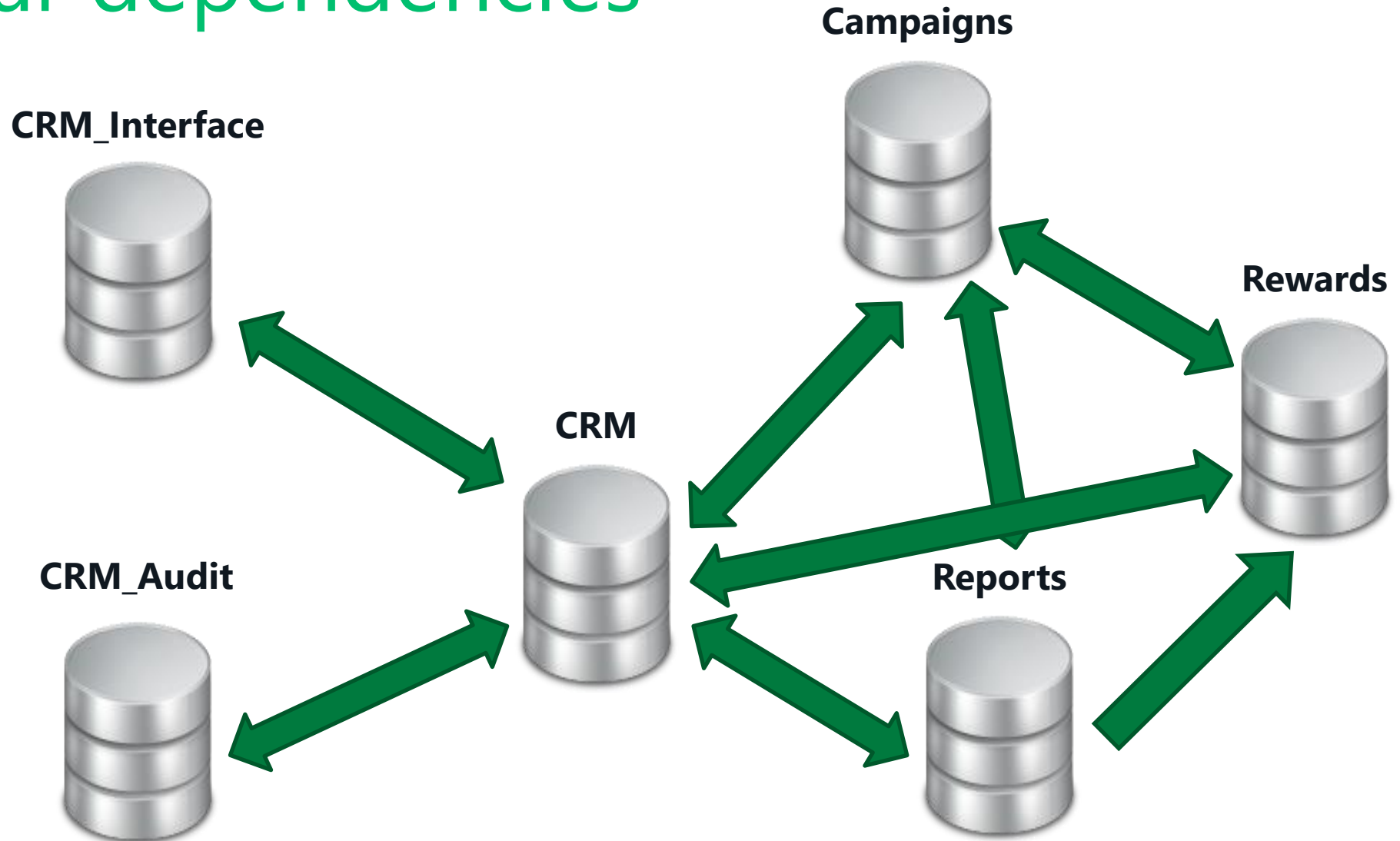


DEMO #2

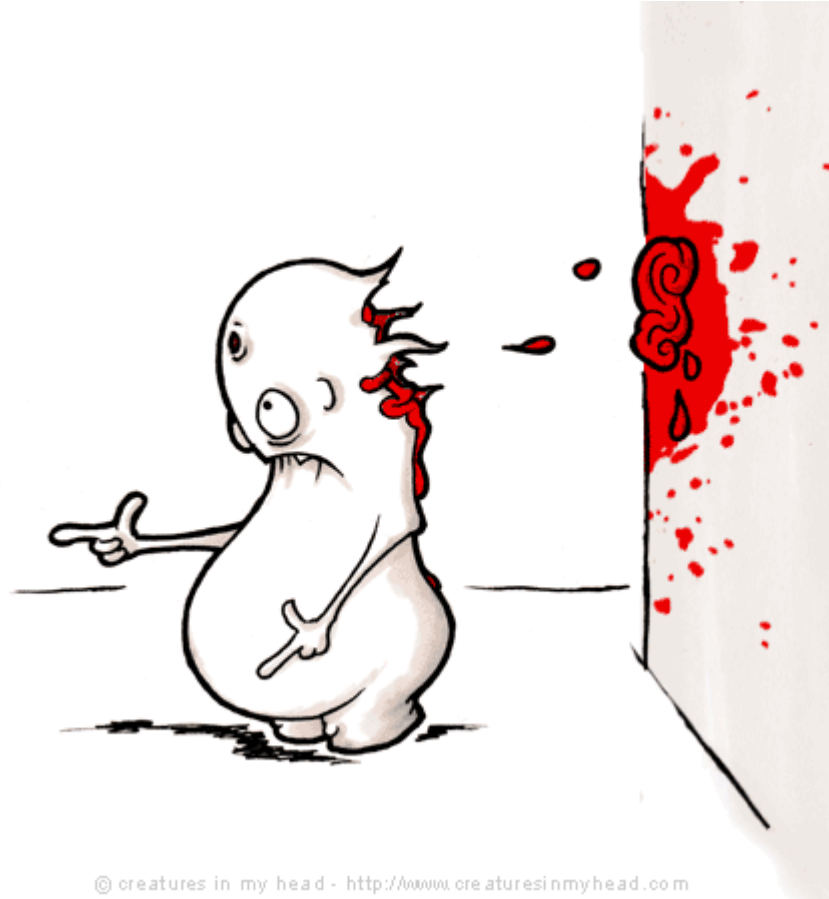
- Create second database project
- Import database from server
- Create references & variables
- Resolve circular references
- Create publish profile
- Deploy manually



Circular dependencies



Circular dependencies



© creatures in my head - <http://www.creaturesinmyhead.com>



Know issue: temp table

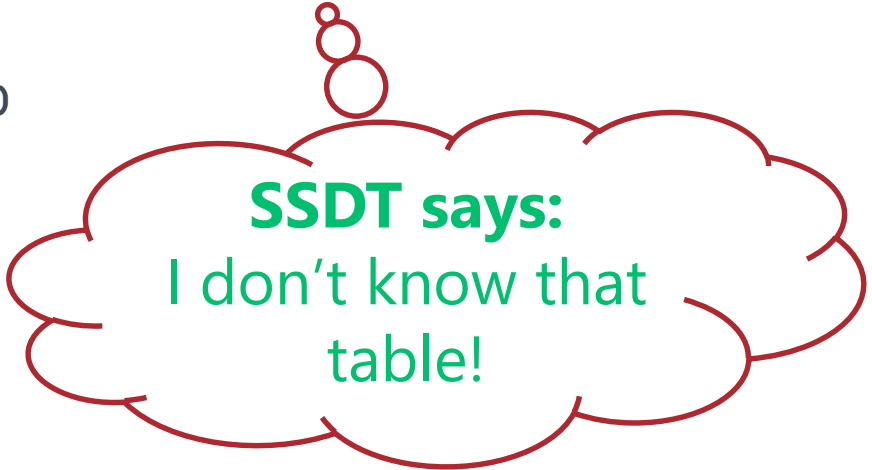
```
CREATE PROCEDURE [dbo].[TempDemo1]  
AS
```

```
CREATE TABLE #TempTable (Id INT);  
EXEC TempDemo2;
```

```
CREATE PROCEDURE [dbo].[TempDemo2]  
AS
```

```
SELECT * FROM #TempTable;
```

```
RETURN 0
```



SSDT says:
I don't know that
table!



Know issue: temp table

```
CREATE PROCEDURE [dbo].[TempDemo1]
AS
```

```
CREATE TABLE #TempTable (Id INT);
EXEC TempDemo2;
```

```
CREATE PROCEDURE [dbo].[TempDemo2]
AS
```

```
IF 0=1
    CREATE TABLE #TempTable (ID int);
```

```
SELECT * FROM #TempTable;
```

```
RETURN 0
```



Know issue: Disable/Enable trigger #1

- Disable/Enable trigger from other database

```
ALTER TABLE [$(ContosoRetailDW)].dbo.DimChannel  
    DISABLE TRIGGER [Trigger_DimChannel];
```

	Code	Description
✖		SQL71502: Procedure: [dbo].[Populate_DimChannel_from_CRM] has an unresolved reference to object [dbo].[Trigger_DimChannel].



Know issue: Disable/Enable trigger #2

- Alternative #1:
 - Use dynamic SQL (not recommended)

```
--Alternative solution in SSDT:  
EXEC sp_executeSQL N'ALTER TABLE [$(ContosoRetailDW)].dbo.DimChannel  
    DISABLE TRIGGER [Trigger_DimChannel];  
'
```



Know issue: Disable/Enable trigger #3

- Alternative #2:
 - Create SP in the second database (locally for the trigger)
 - Call that SP from 'Remote' database

```
CREATE PROCEDURE [dbo].[Toggle_Trigger_DimChannel]
    @enable BIT
AS
    IF @enable = 1
        ENABLE TRIGGER dbo.[Trigger_DimChannel] ON dbo.DimChannel;
    ELSE
        DISABLE TRIGGER dbo.[Trigger_DimChannel] ON dbo.DimChannel;

RETURN 0
```



How to include **data** in a database project?

- SSDT has no built-in solution for including data
- Use Post-Deployment script to populate table
- Wrap the scripts into stored procedures
- Make sure the order of referenced tables



How to include **data** in a database project?

- Scenario #1: initial values only
 - For the very first time (run) only
 - Target table is empty
 - INSERT
 - Example script



How to include **data** in a database project?

- Scenario #2: User has NO access to data
 - Full MERGE statement
 - Include DELETE clause
 - Example script



How to include **data** in a database project?

- Scenario #3: users CAN add values from app
 - MERGE statement
 - Exclude DELETE clause
 - Example script

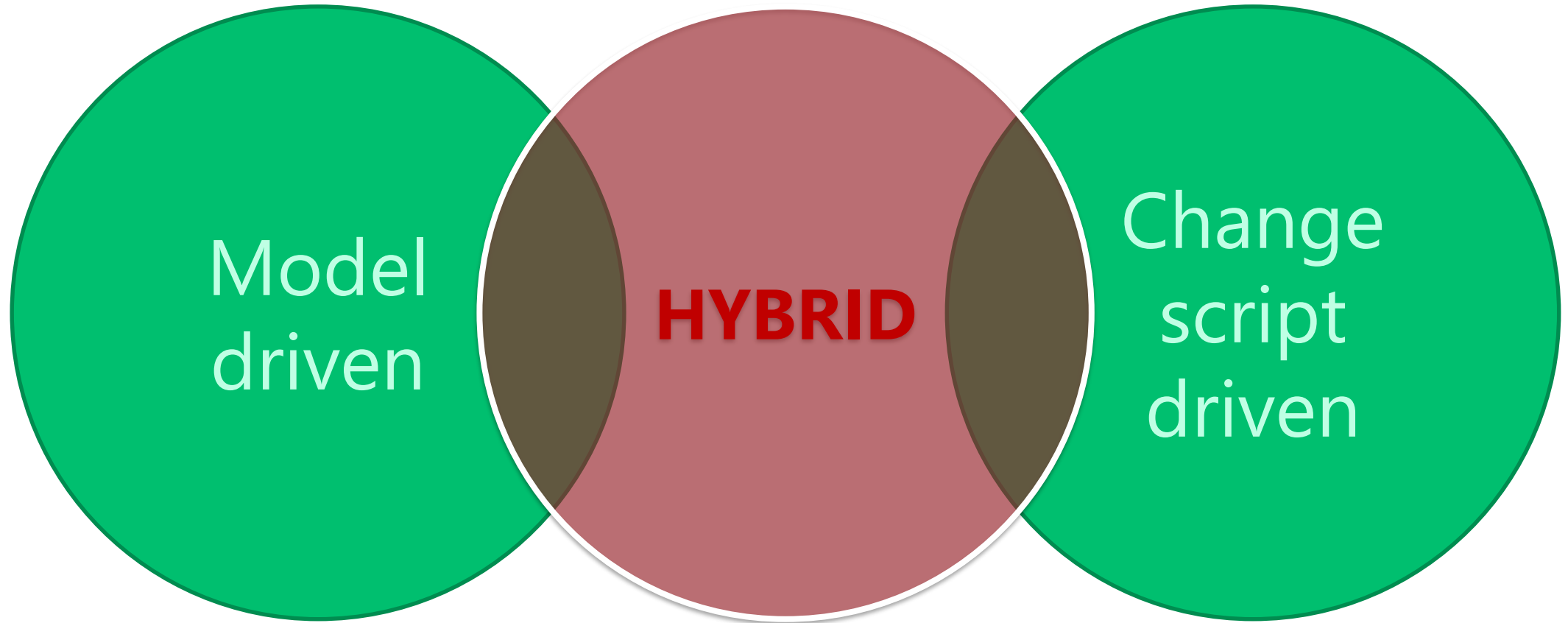


DEMO #3

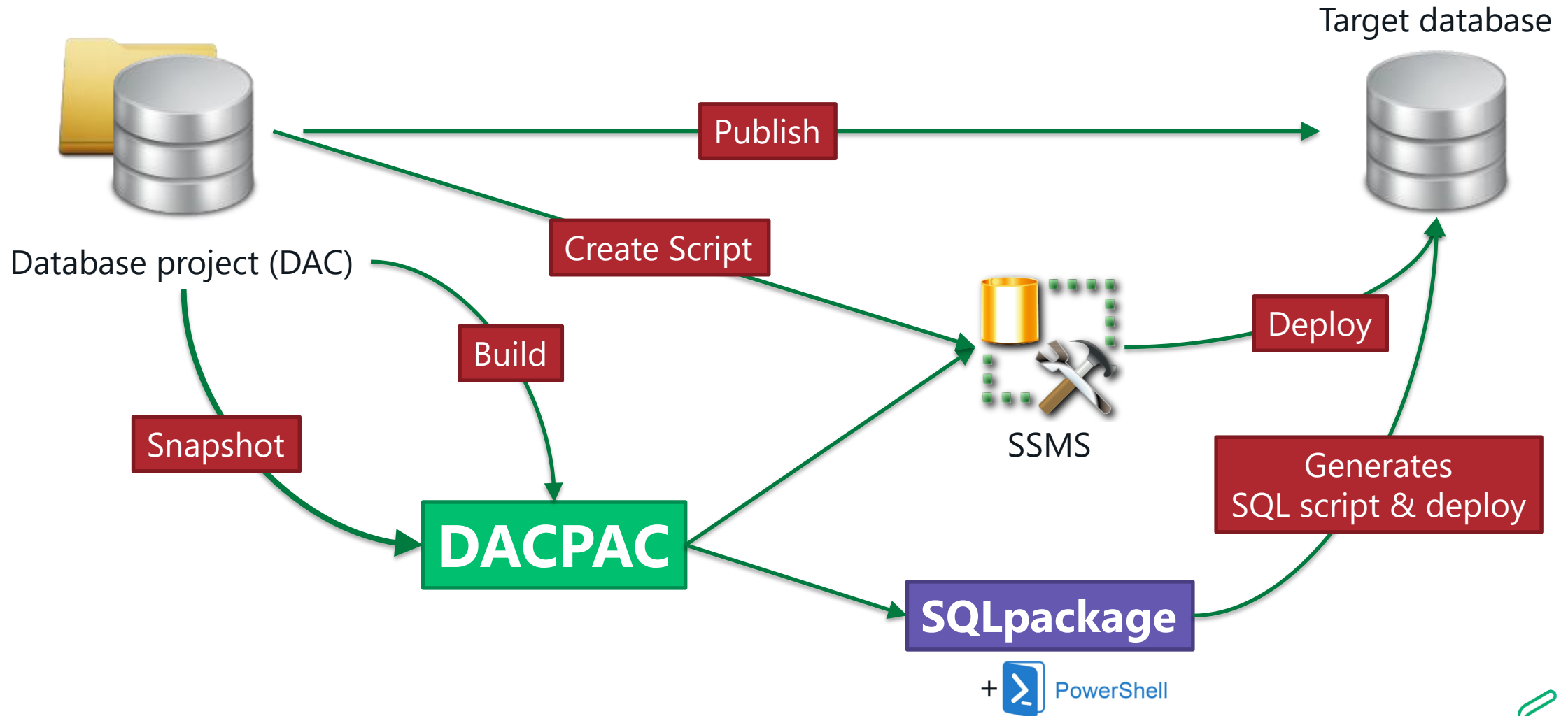
- Data script in Stored Procedure
- Post-Deployment script
- How to change data & deploy it



Database change management approaches



SSDT Deployment Pipeline



sqlpackage.exe

- The **sqlpackage** application can:
 - create script
 - create report
 - create script + report & deploy at the same time
- The libraries (DAC) do exactly the same
 - Microsoft.SqlServer.Dac.DacServices.dll
 - Microsoft.SqlServer.TransactSql.ScriptDom.dll

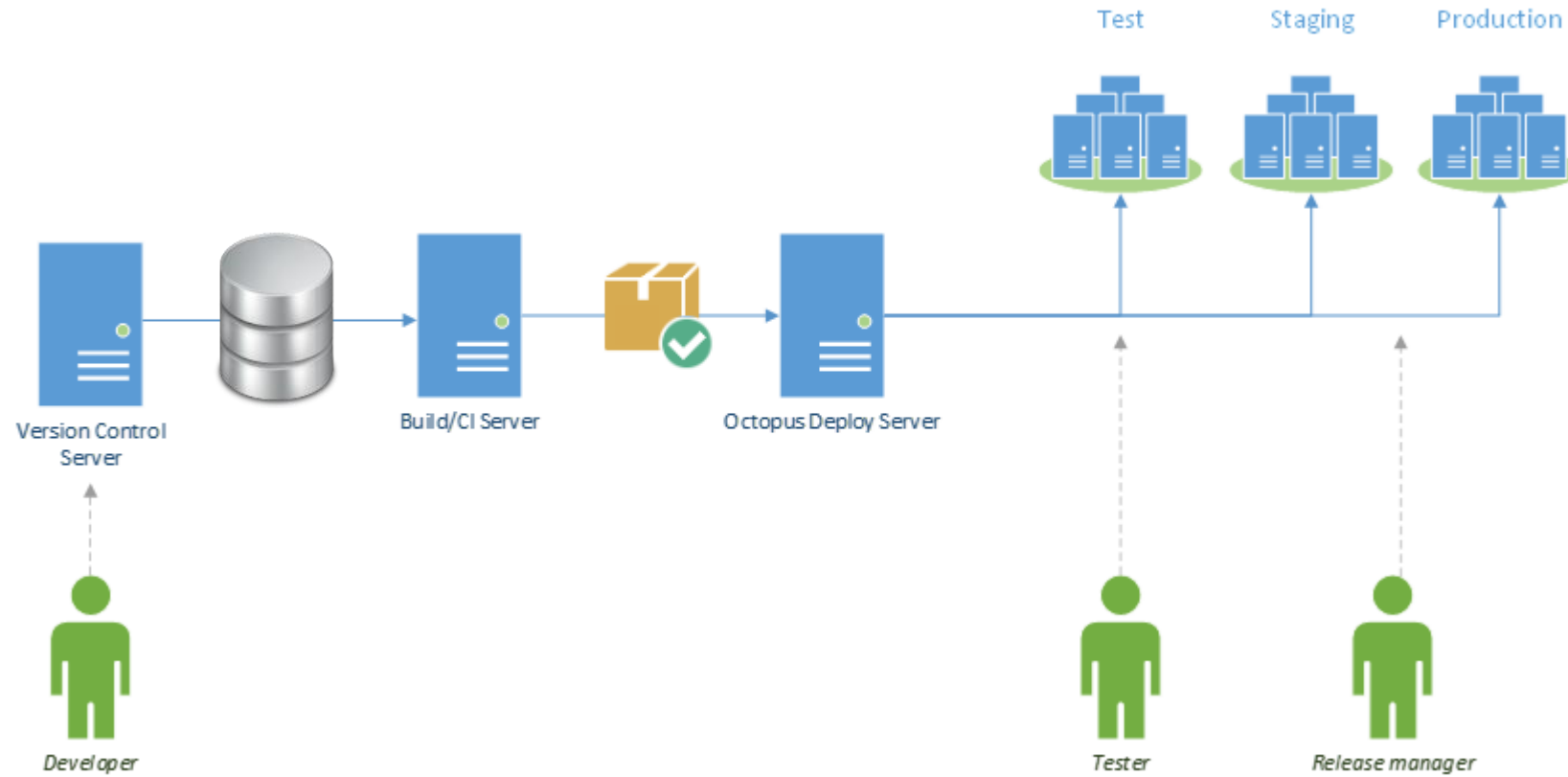


DEMO #4

- Database changes
- Deployment with PowerShell script
 - Report
 - Script
 - Publish action



Deployment process with Octopus



SQL Jobs in database project

- Facts:
 - DACPAC is a database level project
 - SQLJobs are on server-level
- How to cope with:
 - Add separate database project
 - Only T-SQL scripts
 - Pre/Post deployment script to include above



Summary

- Import database
- Avoid creating #temp tables in different SP
- Script data into SP and use MERGE
- Pre/Post-deployment can be only one
- Create many publish profiles (i.e. per environment)
- Automate your deployment with PowerShell



Resources

- [SQL Server Data Tools \(MSDN\)](#)
- [SQLPackage.exe \(MSDN\)](#)
- [Data-tier Application Framework \(DACFx\)](#)
- [Microsoft SQL Server Data Tools Team Blog](#)
- [Octopus](#)
- [Continuous Delivery and the Database \(Redgate\)](#)
- [Alex Yates - model vs mig](#)
- [SQLPlayer.net](#) blog



Thank you



kamil@nowinski.net



@NowinskiK



SQLPlayer.net

Kamil Nowiński

MCSE Data Platform

MCSE Data Management and Analytics