

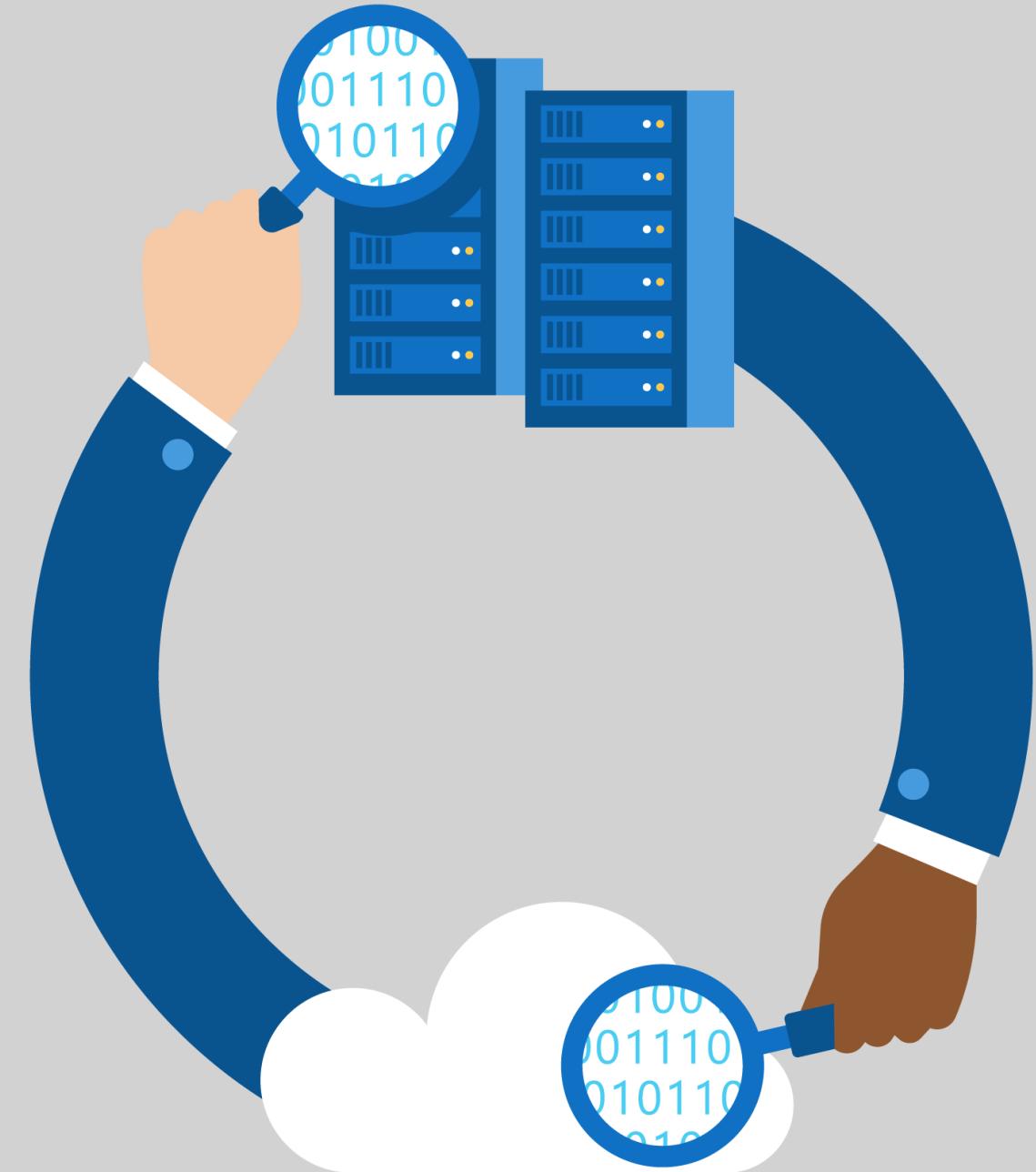


Database DevOps



SQL Server Testing

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Introductions

Franck Théolade

Application Development Manager at
Microsoft UK
Data Engineering
Azure DevOps



Introductions



What is your name?



What is your job role?



What would you like
to learn about?

Agenda

SQL Testing
Core Concepts
and tSQLt



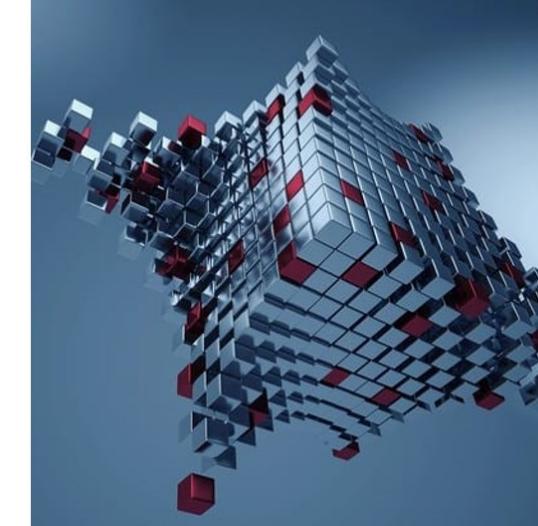
Test Driven Design
for SQL Server



Hands-on Lab #1
tSQLt Unit testing



SQL Server
Management Studio



BREAK



Azure
Pipeline
Integration



Hands-on Labs #2
Deploying & Testing
Database Changes
with Azure DevOps



LUNCH



Your Feedback Matters...



aka.ms/RedBullDBTesting

SQL Testing Core Concepts and tSQLt



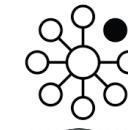
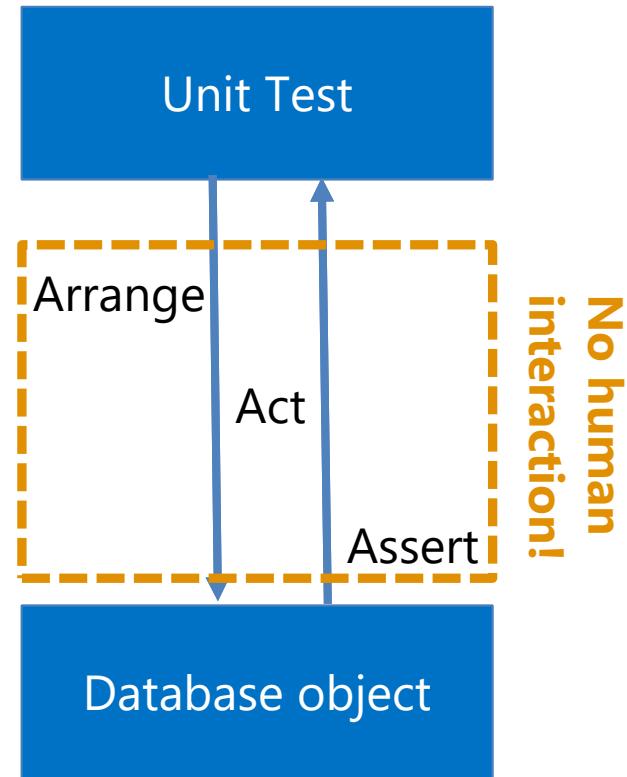
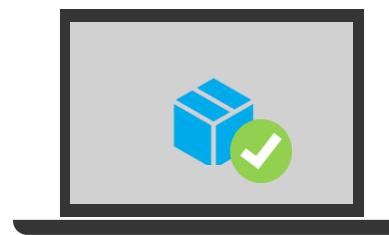
What is SQL Unit Testing?

“

*...Is the process of looking for discreet chunks of code that make for convenient “**units of work**”, to which to **apply automated low-level tests** both for existing **legacy** and **greenfield applications**.*”



Database Developers



Isolation



Low-level



Database Units



Prevents regression

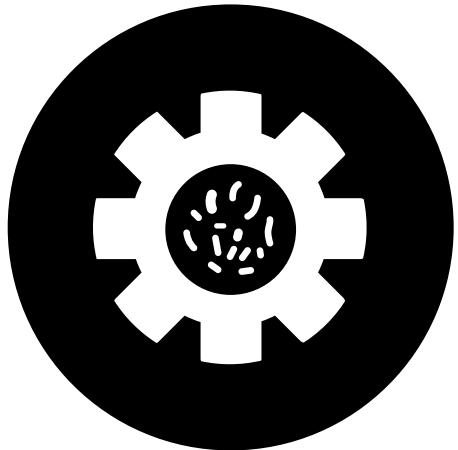


Safety net

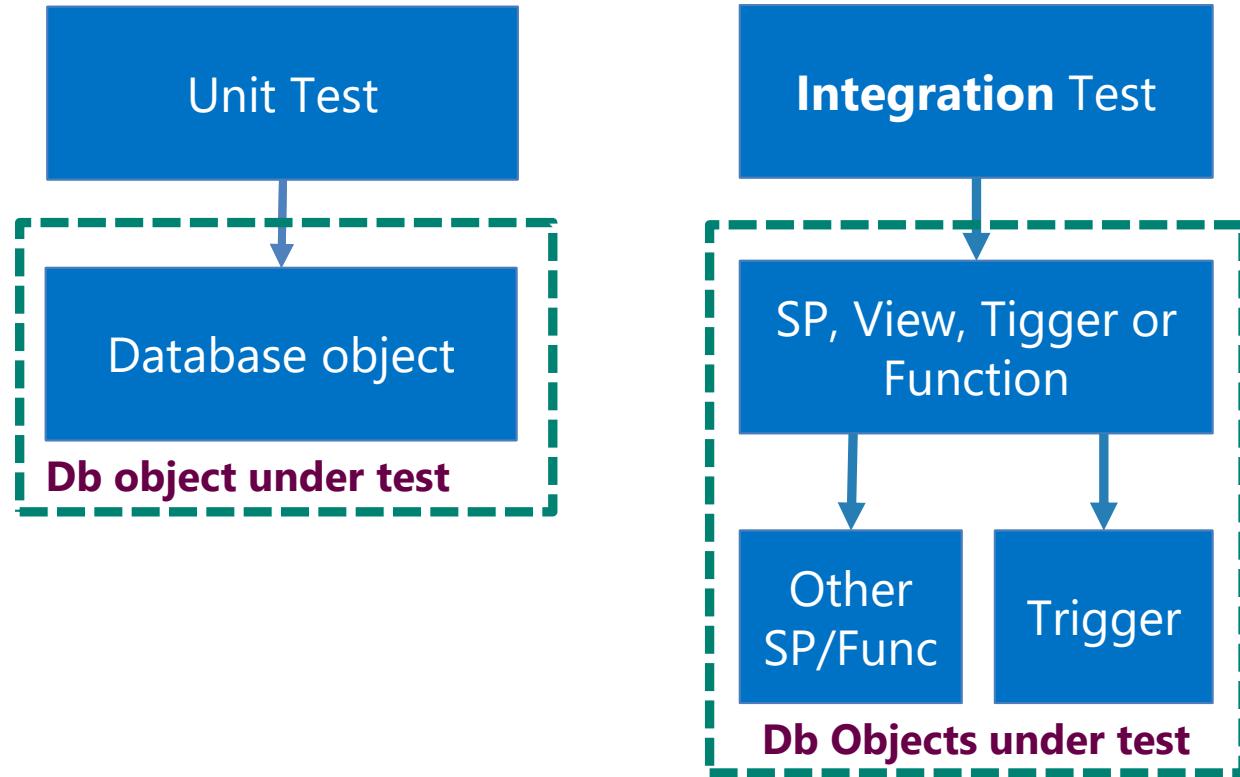


Executable Specification

Flavours of Unit Tests



What's different between unit & integration tests?



Db Objects integration



Bigger Picture



External interactions

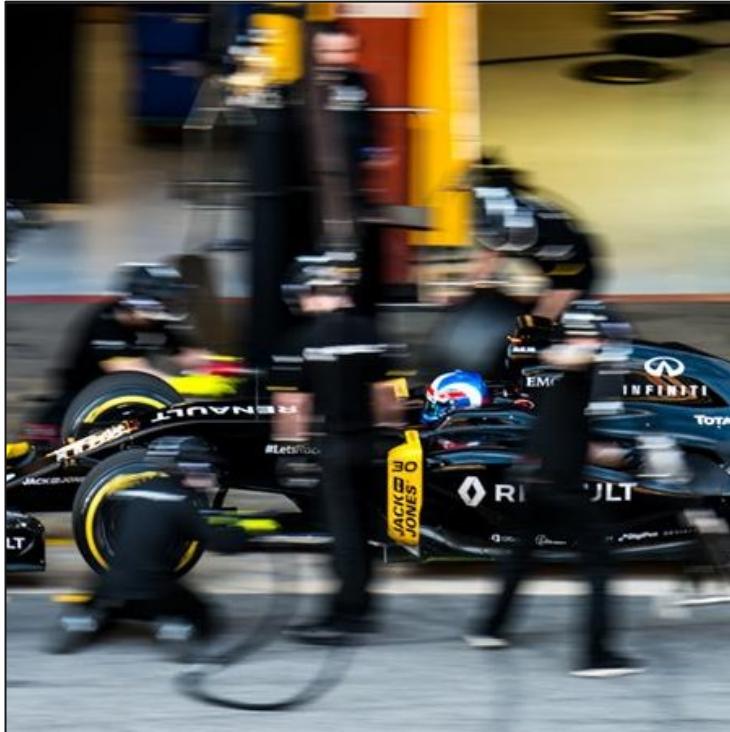


Slower to run

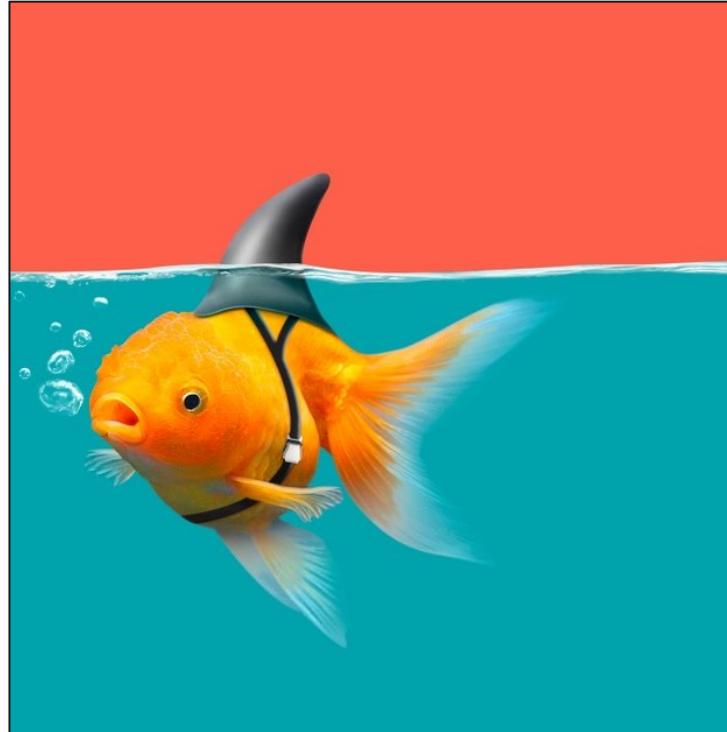


Configuration &
Maintenance

SQL Unit Testing Best Practices



F.I.R.S.T. & Best Practices

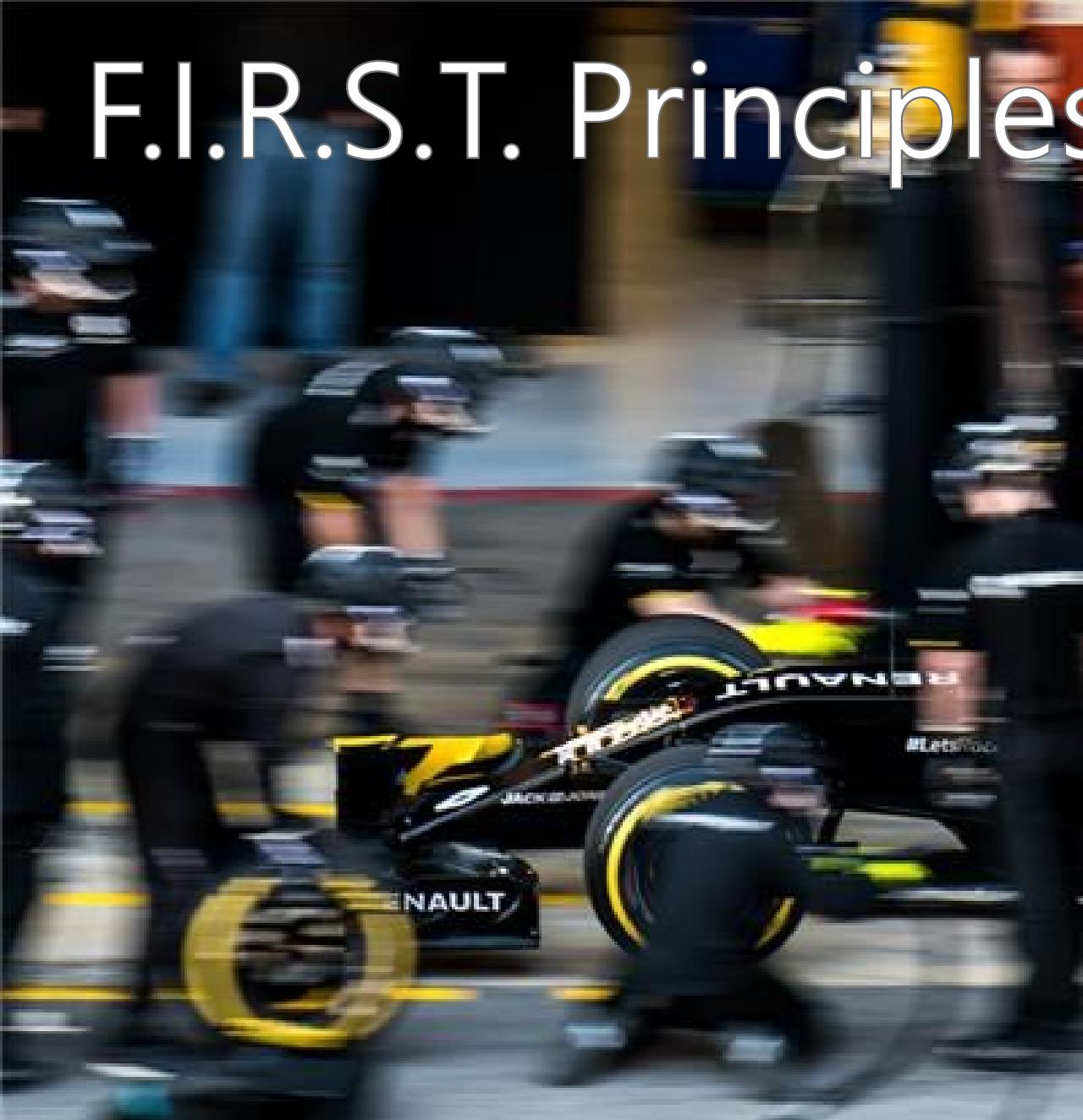


Test Doubles &
Test Data generation



Pipeline CI/CD & IDE
Integration

F.I.R.S.T. Principles



Fast / False
Outcome

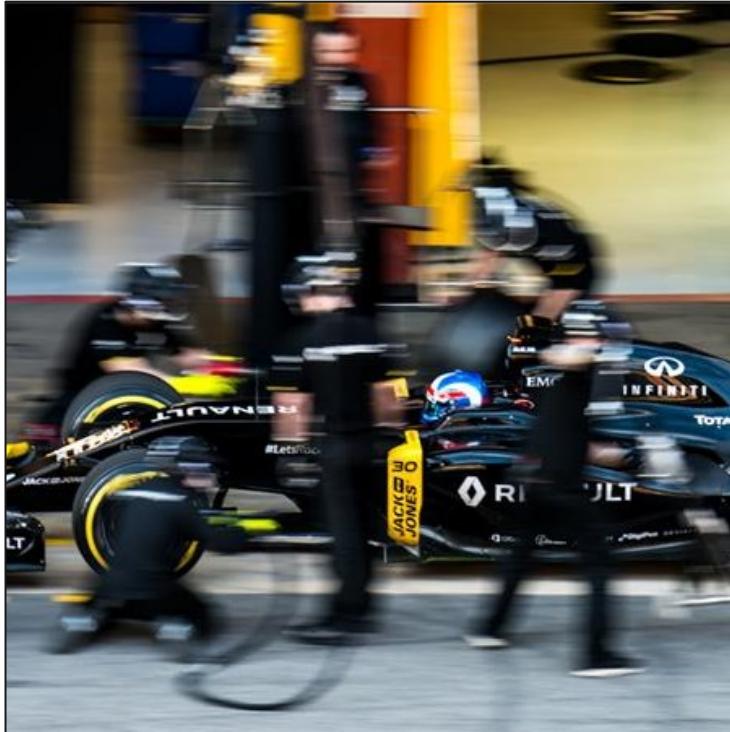
Independent

Repeatable /
Readable

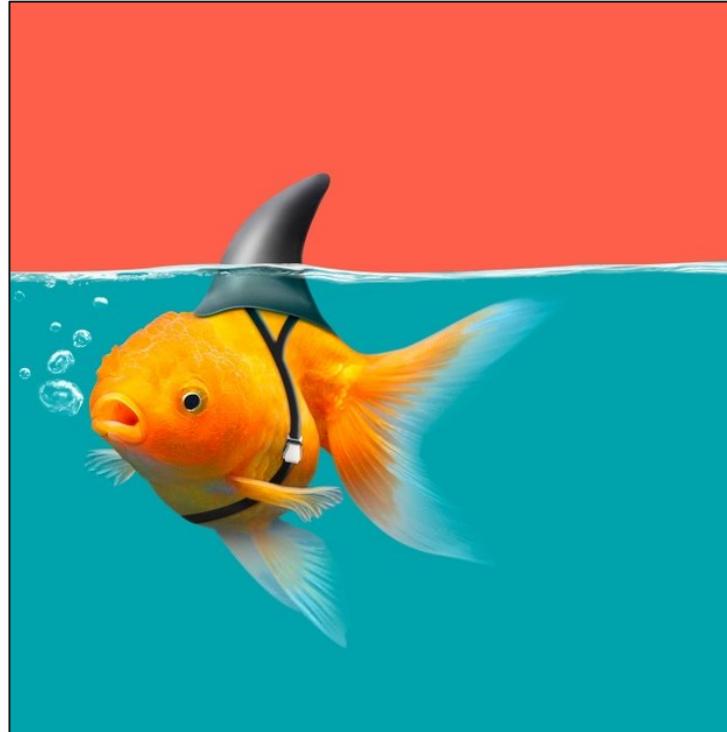
Self-validating

Timely / TDD

SQL Unit Testing Best Practices



F.I.R.S.T. Principles



Test Doubles &
Data generation



Pipeline CI/CD & IDE
Integration

Mocks aren't stubs!



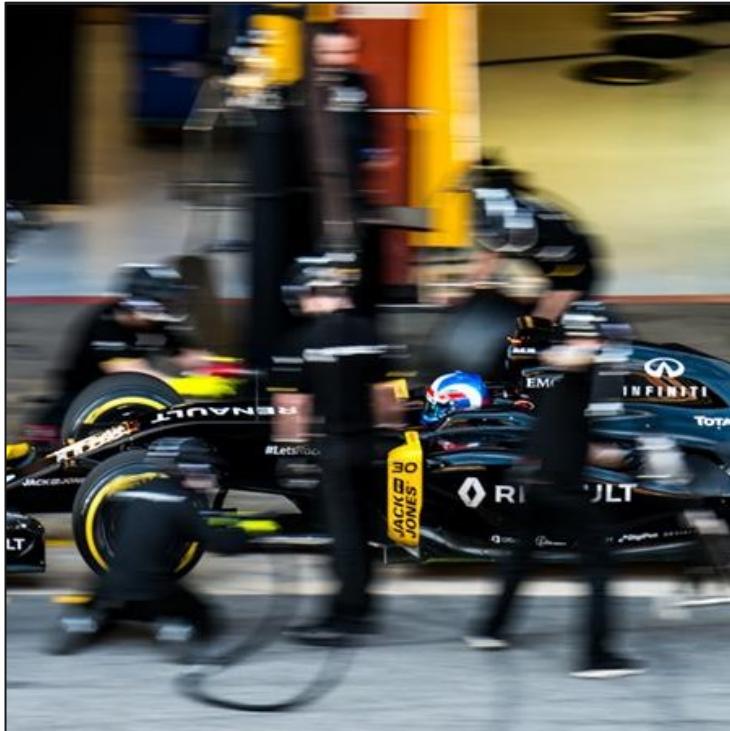
Dummies

Stubs

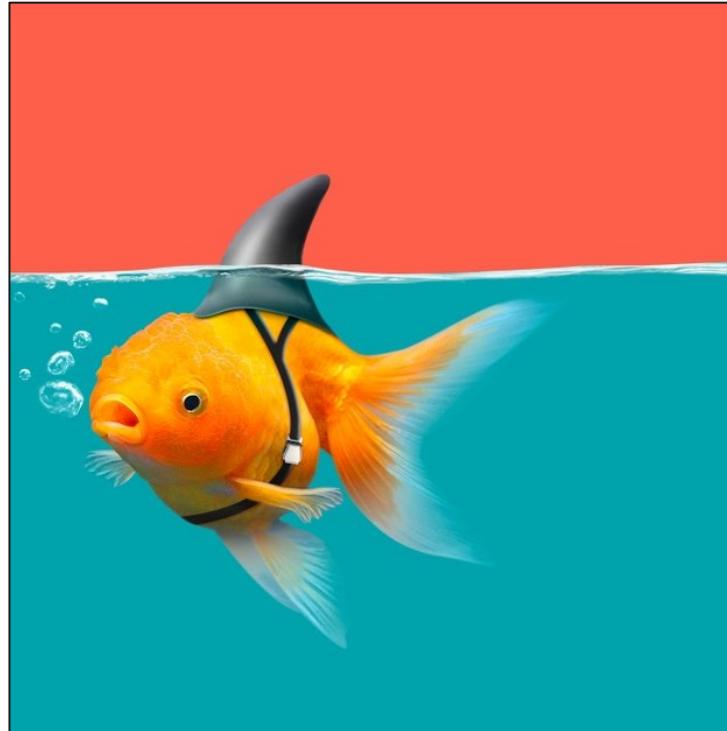
Spies

Mocks

SQL Unit Testing Best Practices



F.I.R.S.T. Principles



Test Doubles &
Data generation



Pipeline CI/CD & IDE
Integration



Source Control

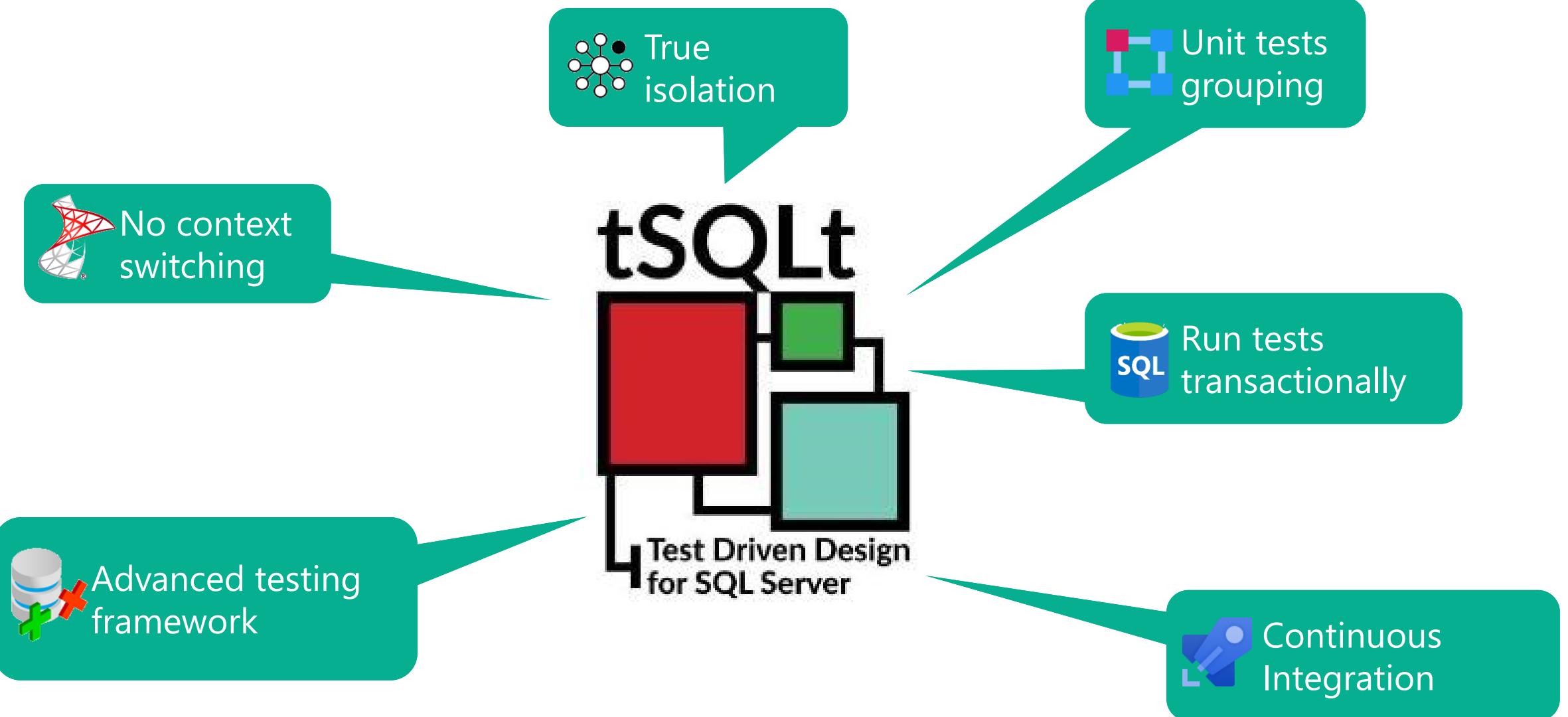
Setup Test Data

Run Tests

Tests result
Reporting

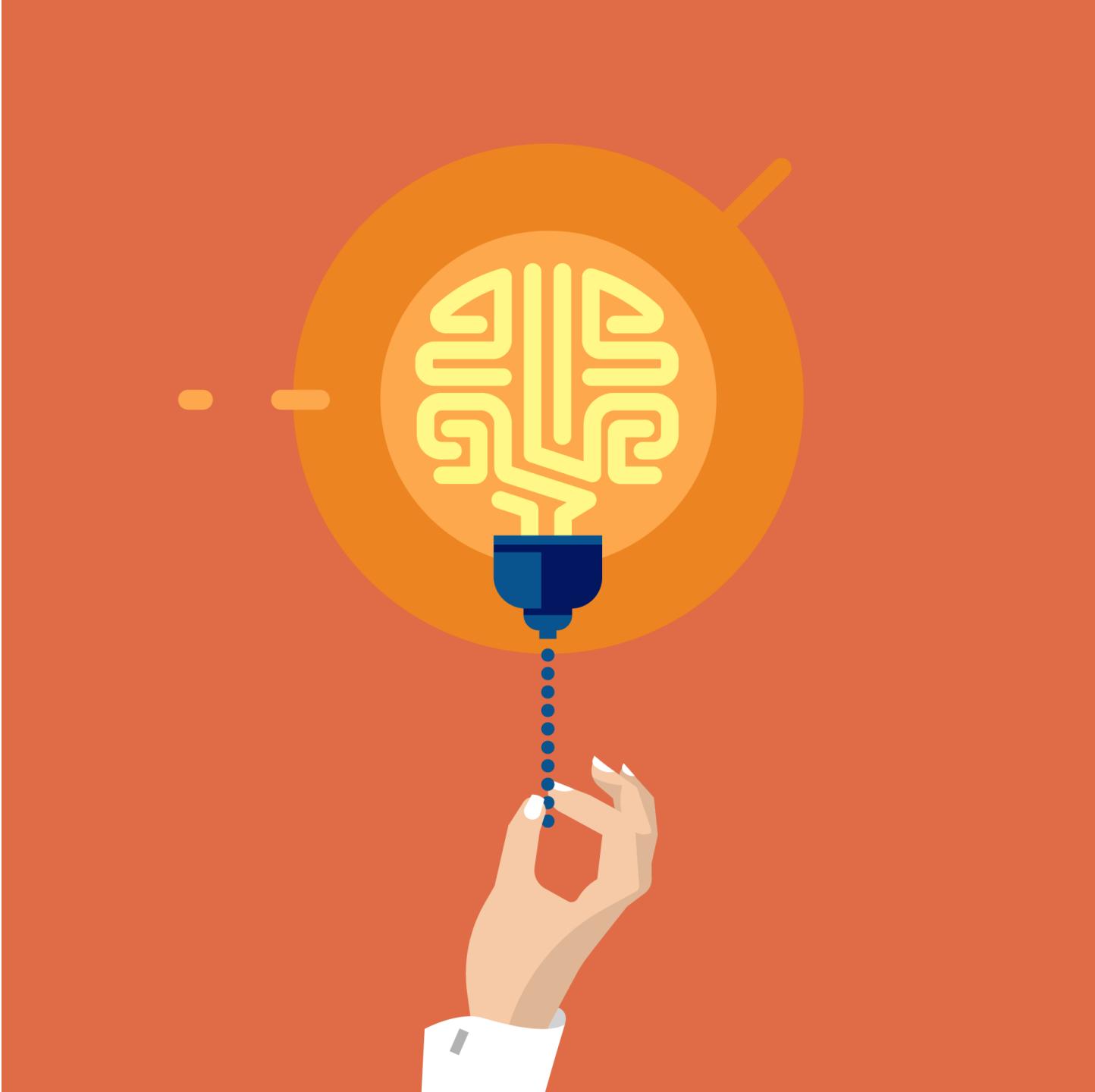
Code Coverage
Reporting

Introducing tSQLt

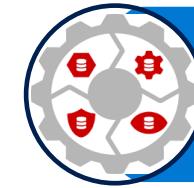
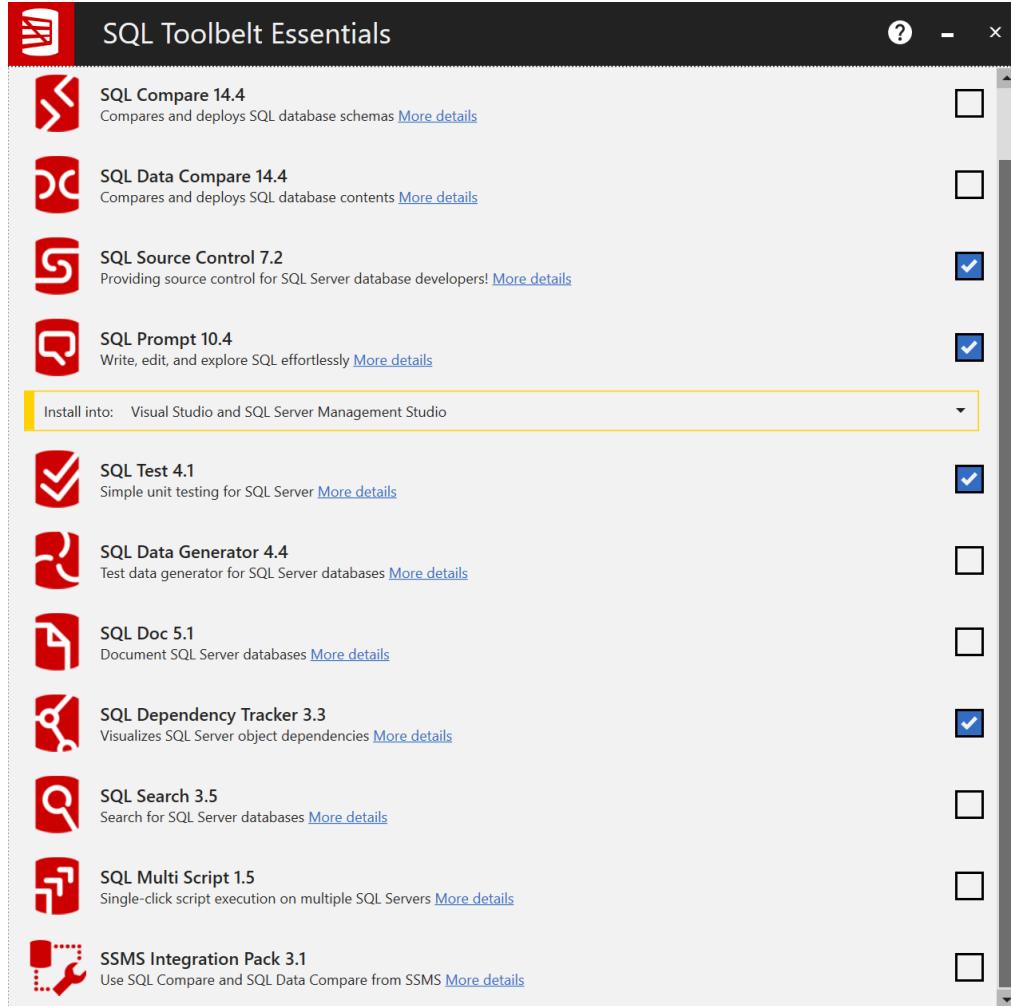


tSQLt Demo

<https://tsqlt.org/user-guide/quick-start/>



Enhancing SSMS Developer experience



Nice to have 3rd party licenced tool



Better IDE Developer Experience & Adoption



Better Test management

<https://www.red-gate.com/products/sql-development/sql-test>

<https://www.devart.com/dbforge/sql/unit-test/>



Enforcing development standards

Identify
consistent
conventions

Write a tSQLt
unit test to
enforce it

```
EXEC tSQLt.NewTestClass @ClassName = N'DevelopmentStandards'
GO
CREATE PROC DevelopmentStandards.[test Naming Convention - test
classes correspond to object in database] AS
--Assemble
--Act
SELECT Name,
SchemaID,
OBJECT_ID('dbo.' + name) AS ObjectID
INTO DevelopmentStandards.Actual
FROM tSQLt.TestClasses
WHERE OBJECT_ID('dbo.' + name) IS NULL
AND NAME != OBJECT_SCHEMA_NAME(@@ProcID)
ORDER BY NAME

--Assert

EXEC tSQLt.AssertEmptyTable 'DevelopmentStandards.Actual'

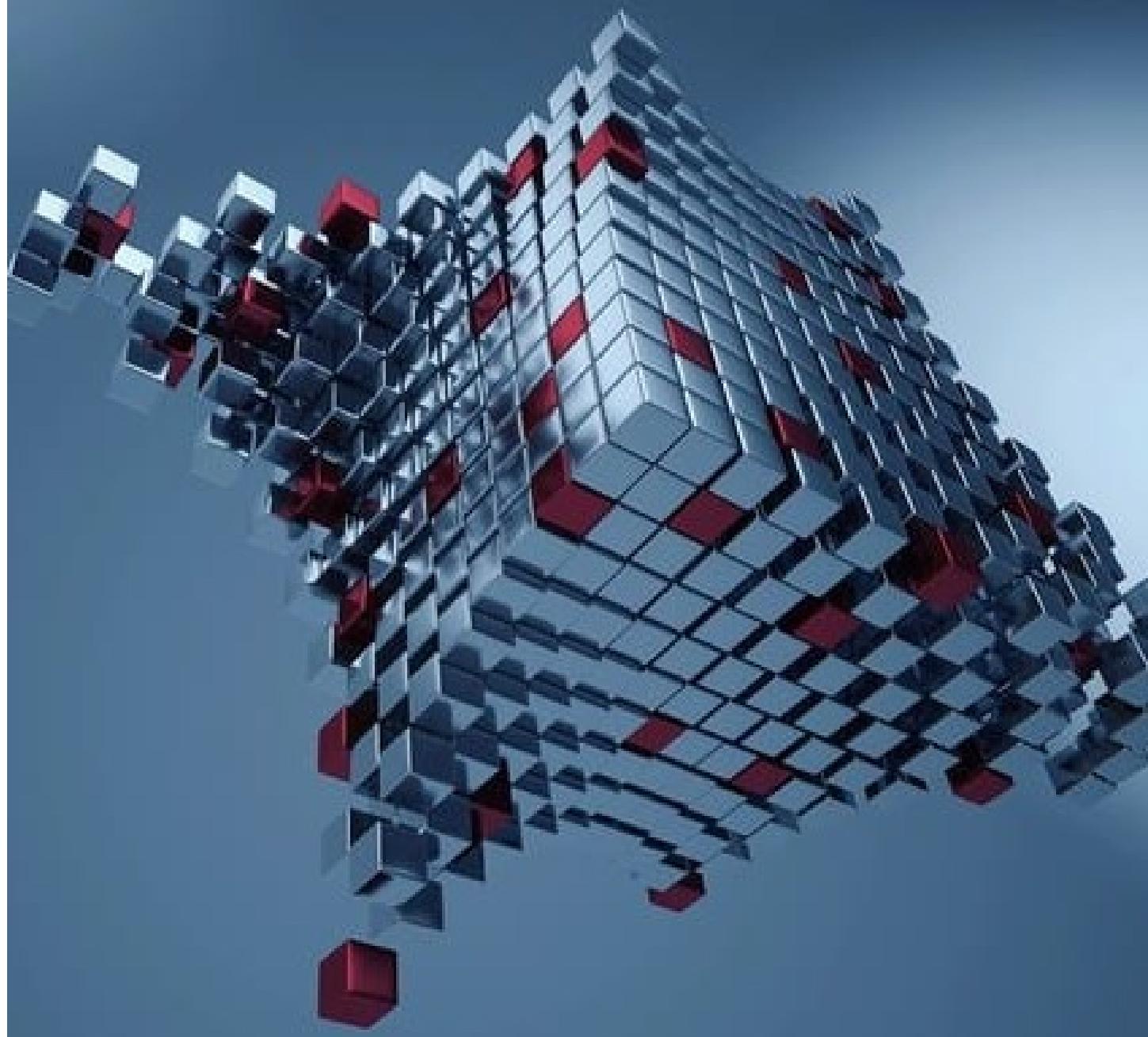
GO
```

Hands-on Lab #1

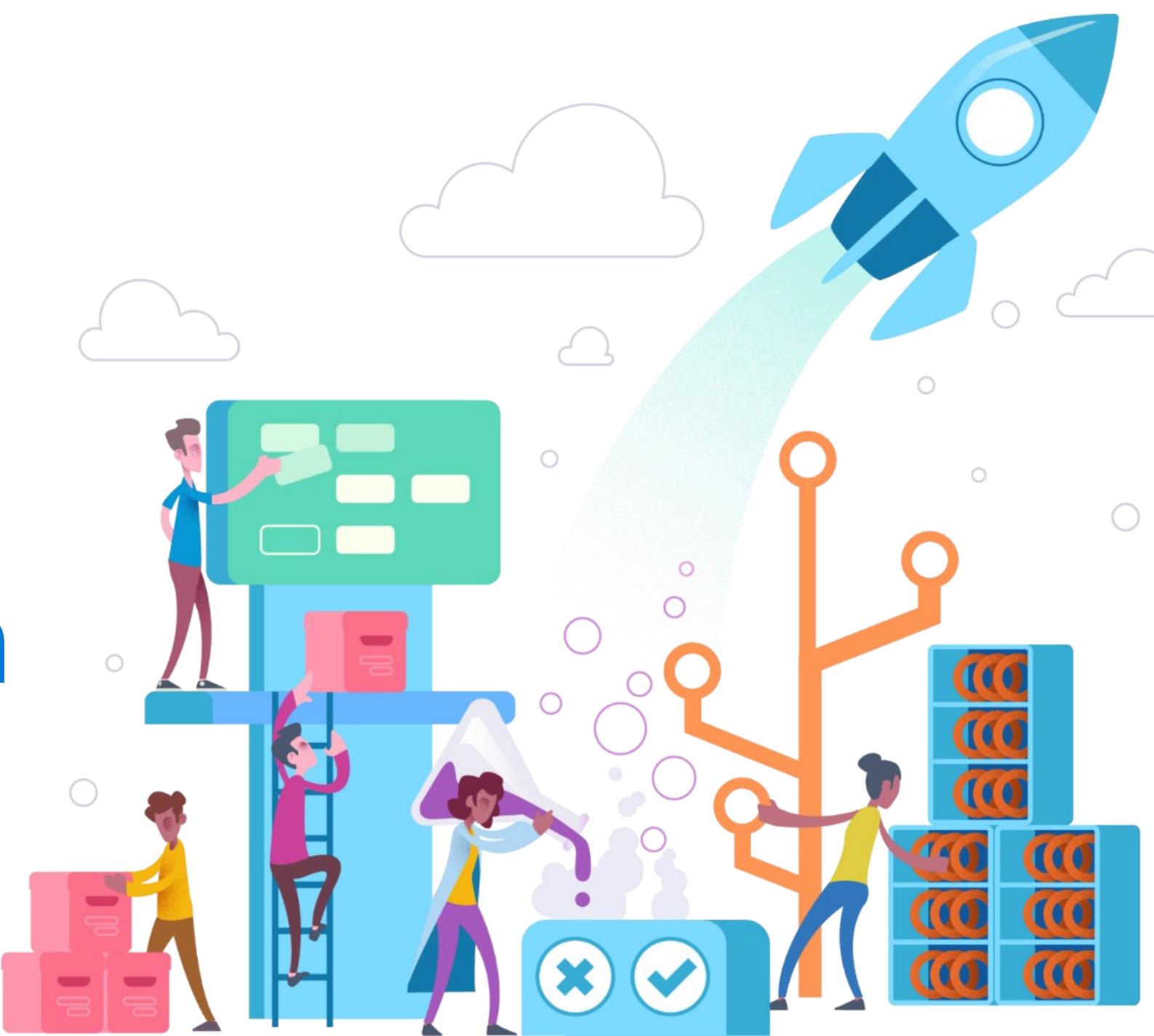
tSQLt Unit testing



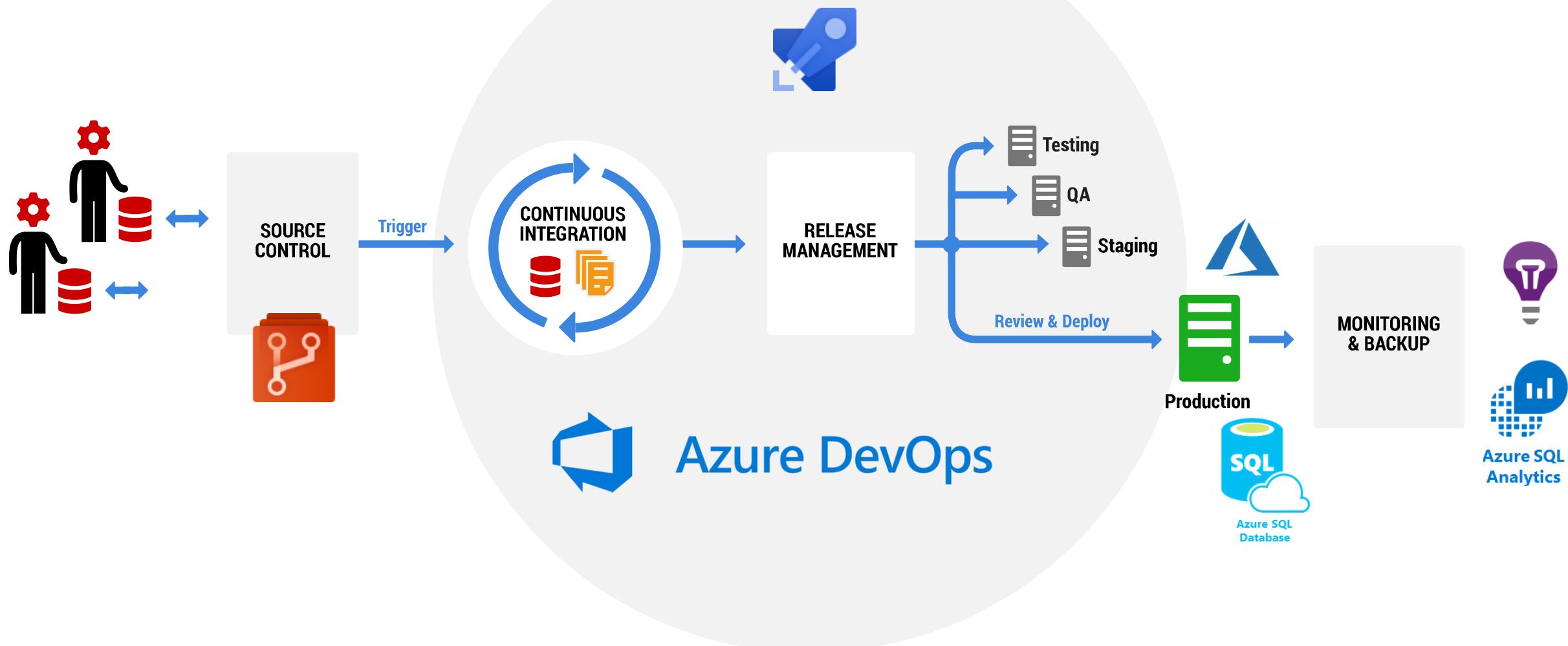
SQL Server
Management Studio



Azure Pipeline Integration



Bringing the Database to Azure DevOps



A large blue industrial pipeline, likely made of steel, runs diagonally across the frame. It is supported by concrete pillars and features a series of rivets along its side. The background shows a range of mountains under a clear sky.

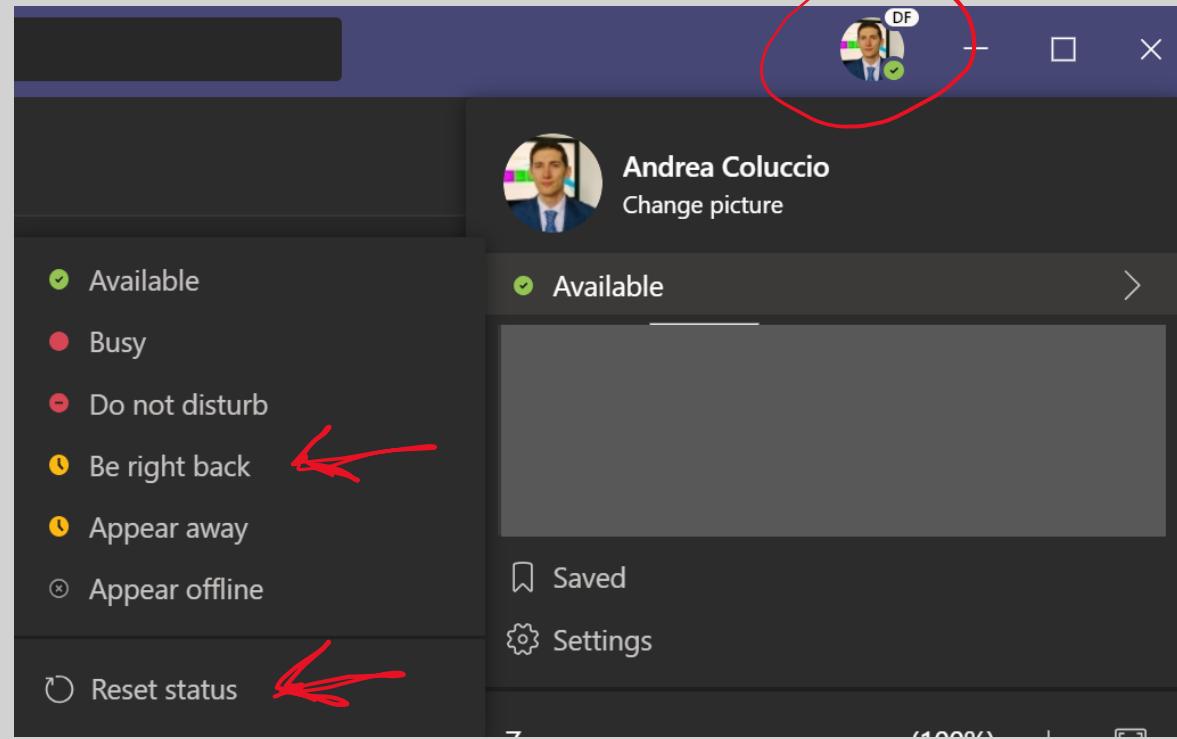
Hands-on Labs #2

Deploying & Testing

Database Changes

with Azure DevOps

BREAK



Remember to update your status presence when leaving and when getting back!

LUNCH



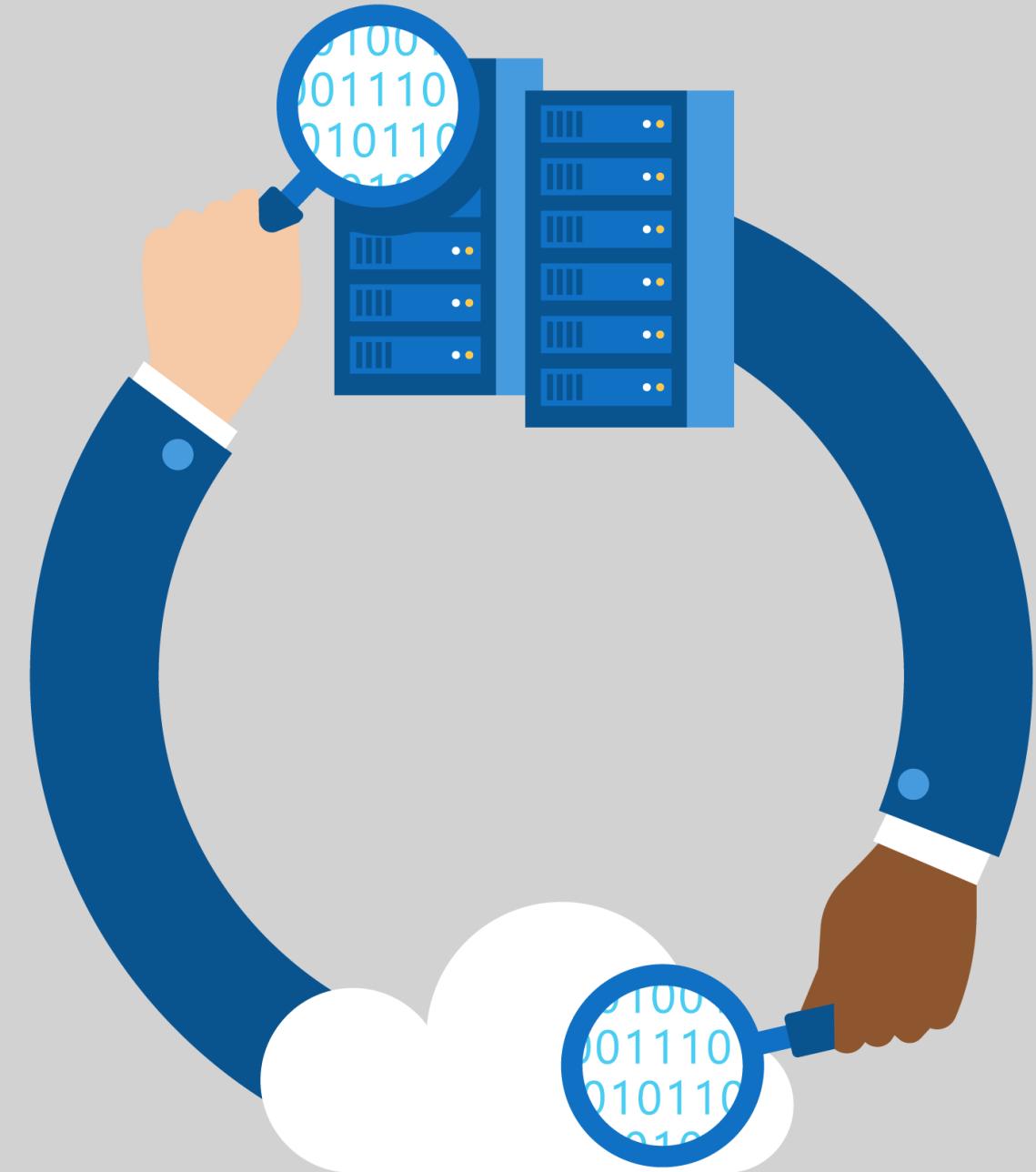
A screenshot of a Windows taskbar. At the top right, there is a user profile icon with a red circle drawn around it. Below the taskbar, a status dropdown menu is open for a user named Andrea Coluccio. The menu shows the following options: Available (checked), Busy, Do not disturb, Be right back (with a red arrow pointing to it), Appear away, Appear offline, and Reset status (with a red arrow pointing to it). To the right of the status menu, there are links for Saved and Settings.

Remember to update your status presence when leaving and when getting back!

Your Feedback Matters...



aka.ms/RedBullDBTesting



Q&A

You have
Questions We have
Answers

Thank You

ευχαριστώ Salamat Po متشرّم شكرًا Grazie

благодаря ありがとうございます Kiitos Teşekkürler 谢谢

ឃុំបញ្ជីលទ្ធផល Obrigado شكريه Terima Kasih Dziękuję

Hvala Köszönöm Tak Dank u wel дякую Tack

Mulțumesc спасибо Danke Cám ơn Gracias

多謝晒 Ďakujem הודה לך යුත්මි Děkuji 감사합니다