Test Automation: Agile Enablement for Data Warehousing and Business Intelligence Teams

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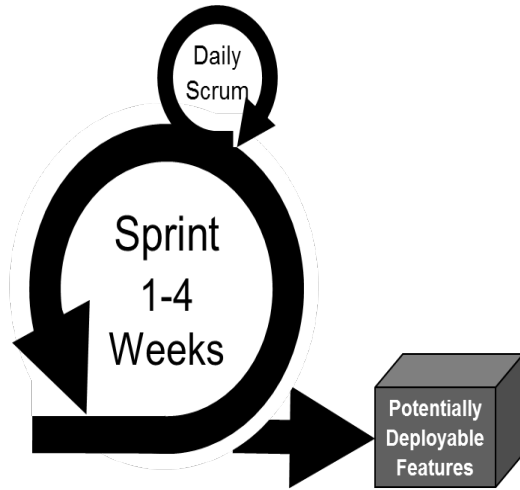
Agenda

- Why is test automation important for agile data teams?

- Why aren't all data teams automating their tests today?

- What is the path to test automation?

- What does simple DW test automation look like?

Why is test automation important to agile data teams?
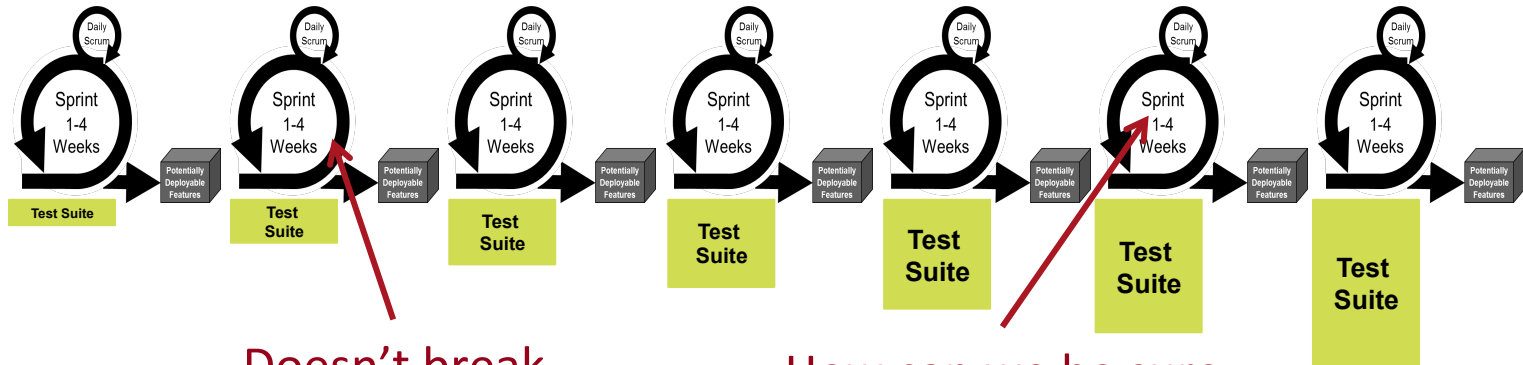
Agile Demands Something Different

Agile calls for small increments of "potentially shippable code".

That means QA is essential on a regular, frequent basis.

The test suite grows larger each iteration.

Manual testing quickly becomes infeasible.

Doesn't break something we did back here

How can we be sure that something we do here

Testing is Central to Agile

Agile BI development is driven by tests

Acceptance criteria are the definition of "done"

Passing tests are the measure of "done"

Regression tests are the measure of "still done"

Agile Teams Understand…

… that test automation is

a key technical enabler

to "being agile"

Why aren't all data teams automating their tests today?

DW/BI Test Automation Challenges

Data industry does not focus on testing as much as other disciplines:

Education

Team Members

Skills & Discipline

DW/BI Test Automation Challenges

Existing tools are not easily adapted to the data world:

Development Languages

Web, Mobile and UI Focus

DW/BI Test Automation Challenges

Good test data sets are hard to come by:

Large volumes (on small environments)

Shared test environments

Data sensitivity

Small sets need extra planning and design

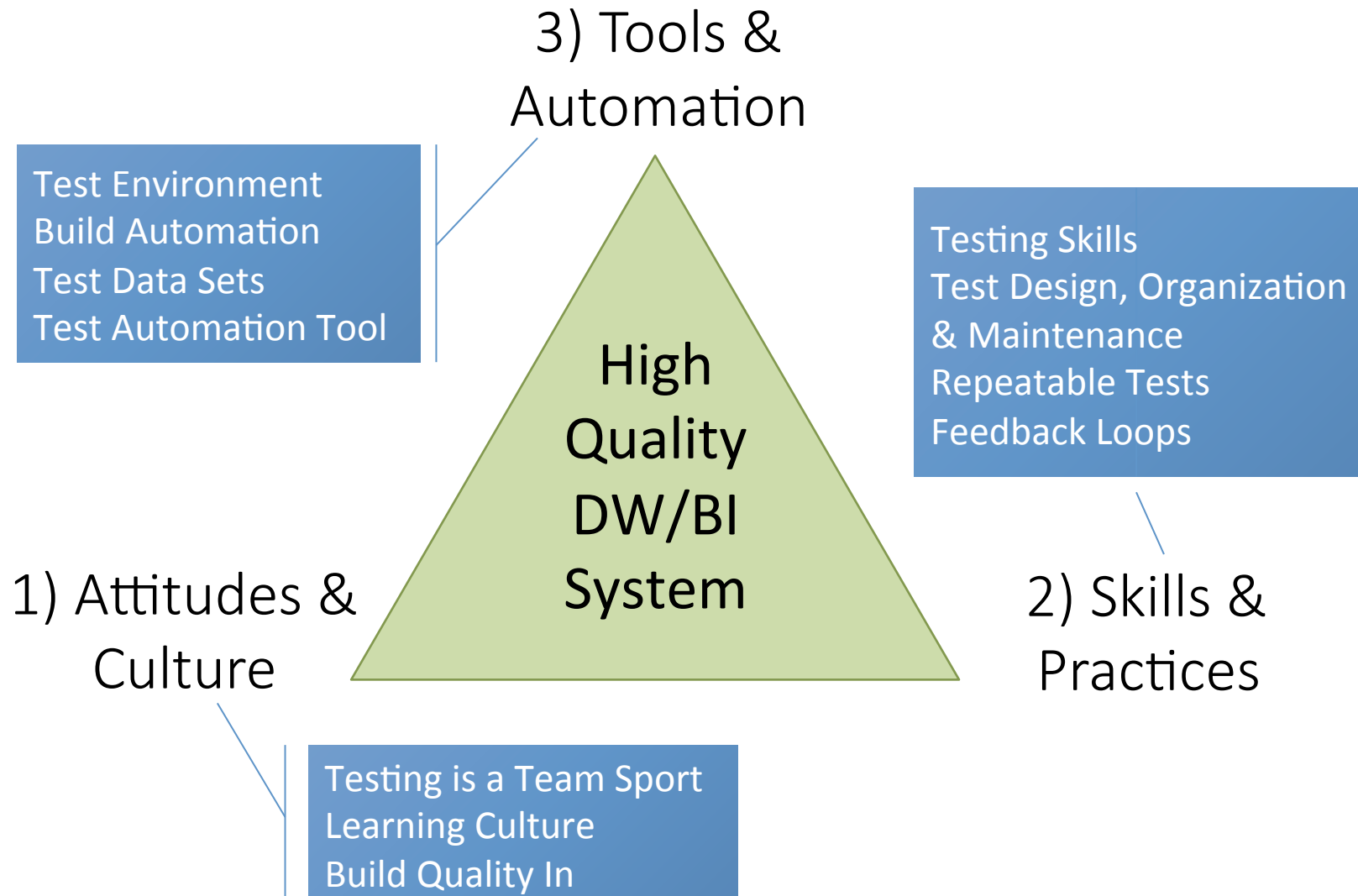# What is the path
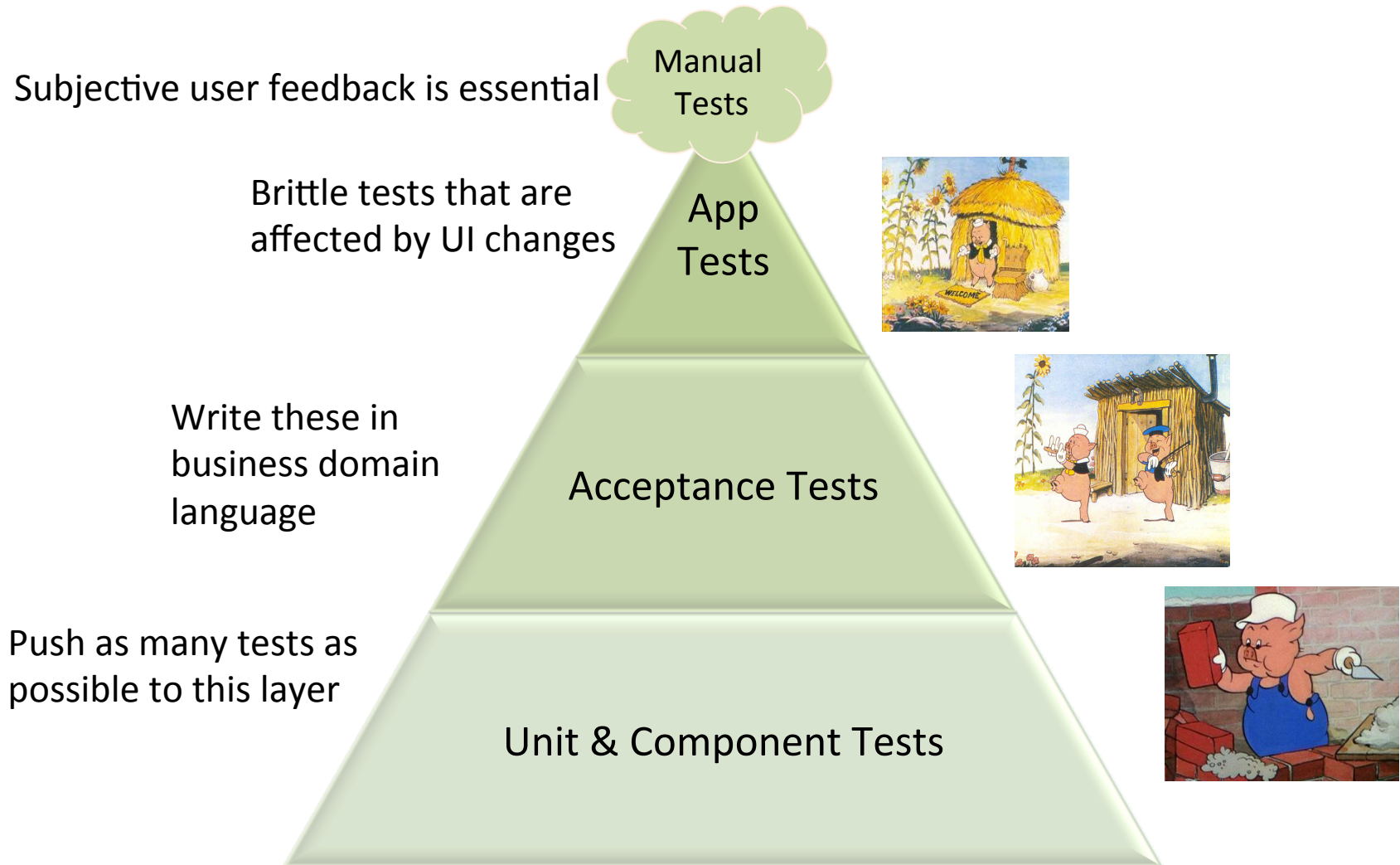# to test automation?

Exercise: Path to test automation

In small groups, discuss the following pre-requisites to test automation and decide on the first three steps a DW/BI team should take toward test automation:

Business Domain Knowledge	Learning Culture	Test Maintenance	Repeatable Tests
Test Design	Test Feedback Loops	Dedicated Testers	UI Tests
Exploratory Testing	Testing Skills	Test Data Sets	Unit Tests
Test Environment	Automated Builds	Testing is a Team Sport	Test Organization
Manual Tests	Build Quality In	Acceptance Tests	Test Automation Tool

Agile Testing Perspectives

3) Tools & Automation

Test Environment
Build Automation
Test Data Sets
Test Automation Tool

High Quality DW/BI System

Testing Skills
Test Design, Organization & Maintenance
Repeatable Tests
Feedback Loops

1) Attitudes & Culture

2) Skills & Practices

Testing is a Team Sport
Learning Culture
Build Quality In

Test Automation Pyramid

Subjective user feedback is essential

Manual Tests

Brittle tests that are affected by UI changes

App Tests

Write these in business domain language

Acceptance Tests

Push as many tests as possible to this layer

Unit & Component Tests

Lisa Crispin & Janet Gregory, Agile Testing: A Practical Guide for Testers and Agile Teams

Good Places to Start

- Unit tests on new development

    AGILE TEAMS WRITE TESTS BEFORE WRITING ANY CODE

- Regression tests you wish you had, before building something new

- Deployment tests to ensure each build migrated correctly

- Painful test setup or test execution prone to error

What does simple data warehousing test automation look like?

Basic Approach

What Constitutes a Test?

Actual Result (from test)

Expected Result (queried or pre-calculated)
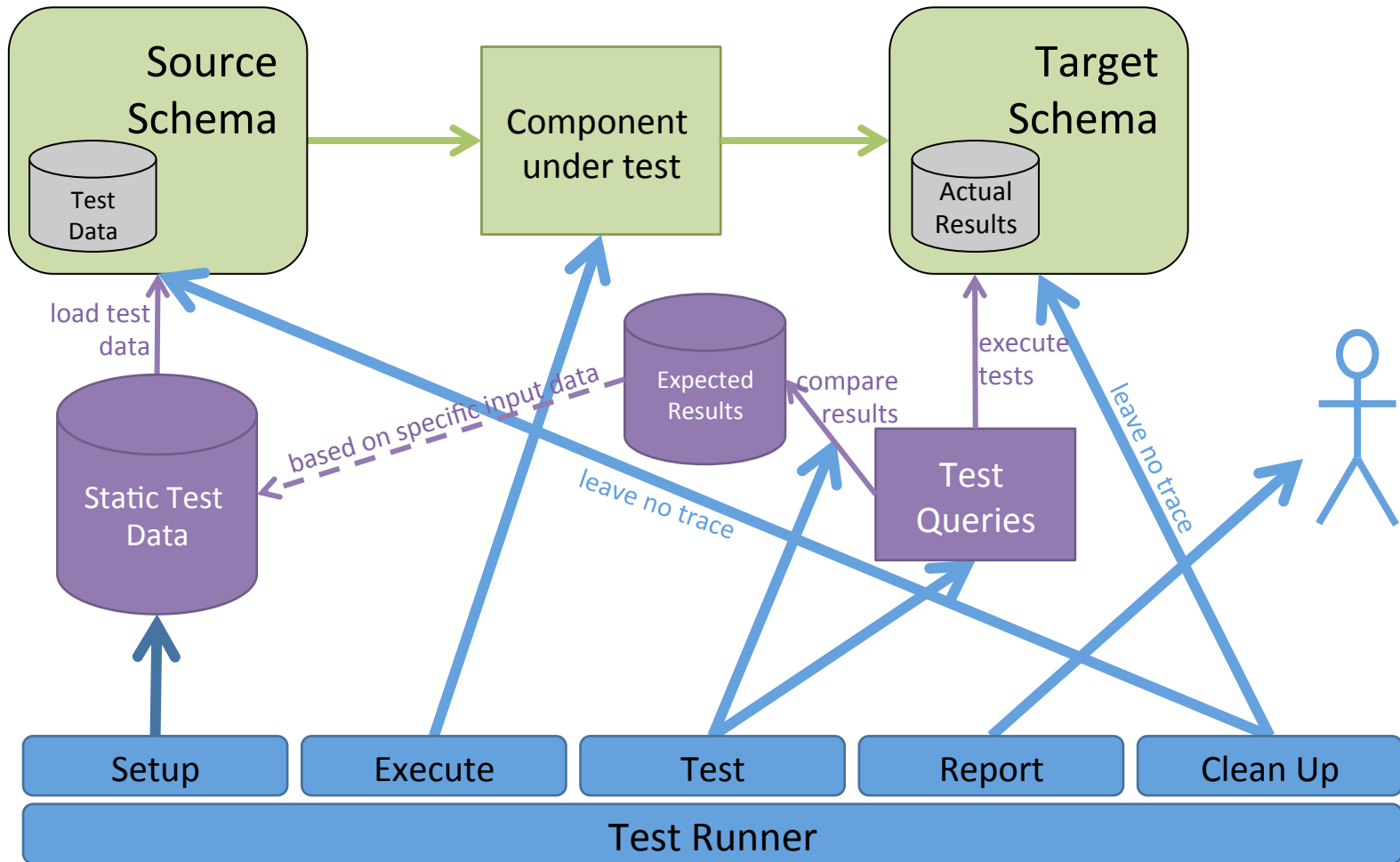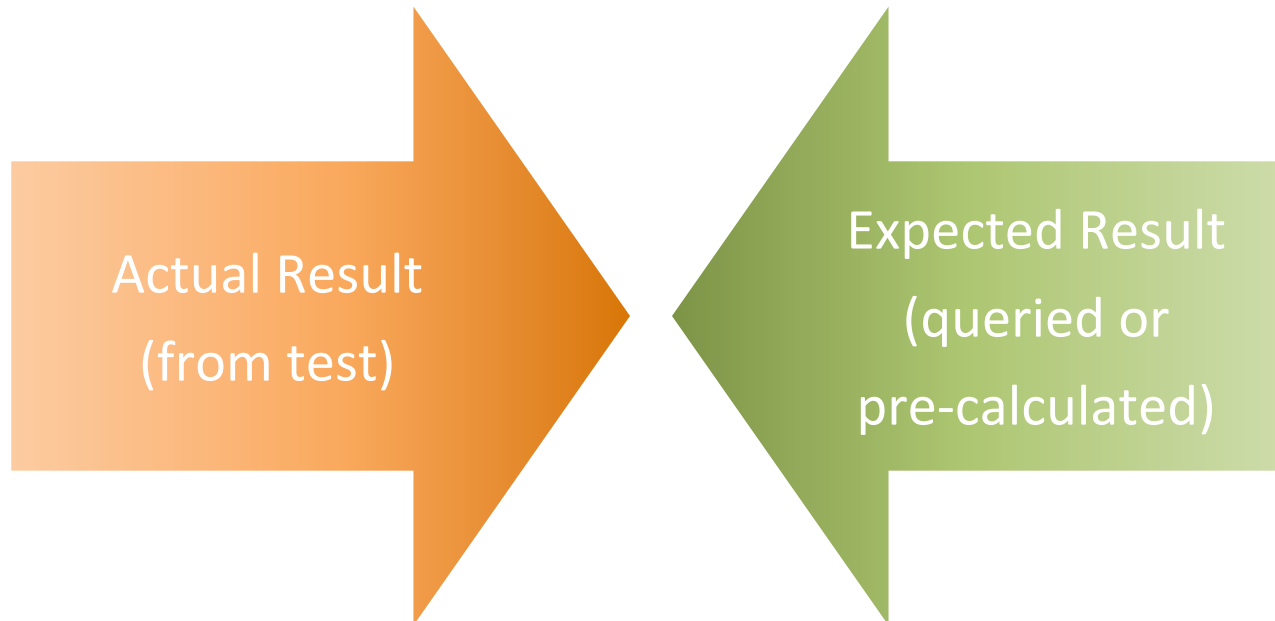
Exercise: Test Data & Expected Results

In small groups, define at least one test, with a description of the test data set and how you would determine the expected results, for the following user story:

As a Sales Manager,

I want to know the $ total of orders that have successfully shipped, by sales rep and sales region,

So that I can manage the sales team's progress toward quarterly revenue goals.

Demonstration

Testing Framework

Functionality and Components:

- Example source system
  - SQL Server and related model ("AdventureWorks")
- Screens for describing and creating test cases
  - Microsoft Access form
- Test execution
  - SQL Server stored procedures (individual tests)
  - Power Shell scripts (batch execution)
- BI Reports and Dashboards for monitoring
  - MS Power BI

Demo Workflow

1) Define a test (MS Access form)

2a. Execute a single test (SQL Server stored procedure)

2b. Execute a batch of tests (PowerShell scripts)

3. Report on test results (MS Power BI)
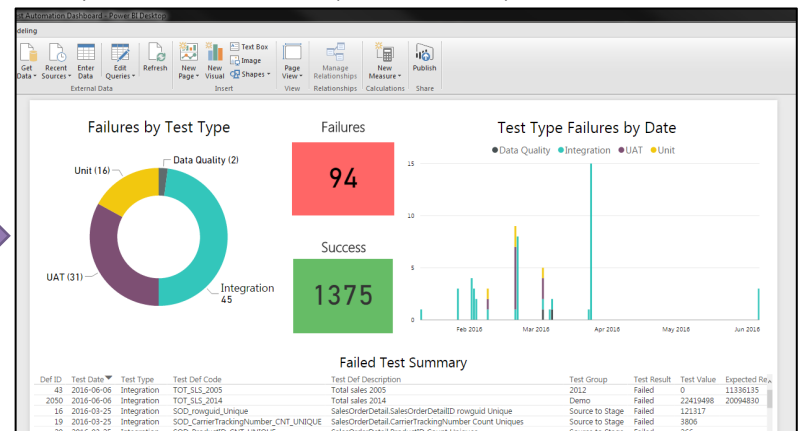
Summary and Resources

Session Intent

1) Why:

Test Automation is key to DW/BI agile success

2) How:

Automate a solid testing practice; don't automate chaos

3) Show:

DW/BI test automation is not that hard

DW/BI Test Automation References

Reference	Description
Agile Analytics: A Value-Driven Approach to Business Intelligence and Data Warehousing by Dr. Ken Collier	Chapter 7: Test-Driven Data Warehouse Development
Agile Data Warehousing for the Enterprise: A Guide for Solution Architects and Project Leaders By Ralph Hughes	Part V: Agile EDW Quality Management Planning
Automated Data Warehouse Testing: Beginner's Step-by-Step Guide by G. Suden	Java-based test automation for simple data warehousing tests
Agile Testing: A Practical Guide for Testers and Agile Teams by Lisa Crispin and Janet Gregory	Great introduction to agile testing for any type of development
More Agile Testing: Learning Journeys for the Whole Team by Lisa Crispin and Janet Gregory	Includes several chapters on test automation as well as one dedicated to agile testing for DW/BI

DW/BI Test Automation Tools

Tool	Description
DBFit dbfit.github.io/dbfit/	Open source database testing tool
iCEDQ icedq.com **QuerySurge** QuerySurge.com **Zuzena** Zuzena.com	Test automation tools designed specifically for Data Warehousing and related projects.
Informatica Data Validation www.informatica.com/etl-testing	Accelerate and automate Informatica ETL testing in both production environments and dev/ test
Analytix Data Services analytixds.com **WhereScape** wherescape.com **TimeXtender** timeXtender.com	DW automation tools that include test automation capabilities.
Tricentis Tosca www.tricentis.com/tricentis-tosca-testsuite/	DW-friendly test automation tool

Questions?

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