SKIL up DAYS

by: DevOps Institute
ADVANCING THE HUMANS OF DEVOPS

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Test Automation Practices

A practical guide to successful adoption

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Introduction

Steen Brahe
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- Product Manager for Compuwares Test Automation tools.

- Worked with mainframe test automation the last 18 years

- Experienced adoption challenges from the inside and the outside in many large organizations.

- Will share these experiences and will explain from adoption point of view what works and what does not work

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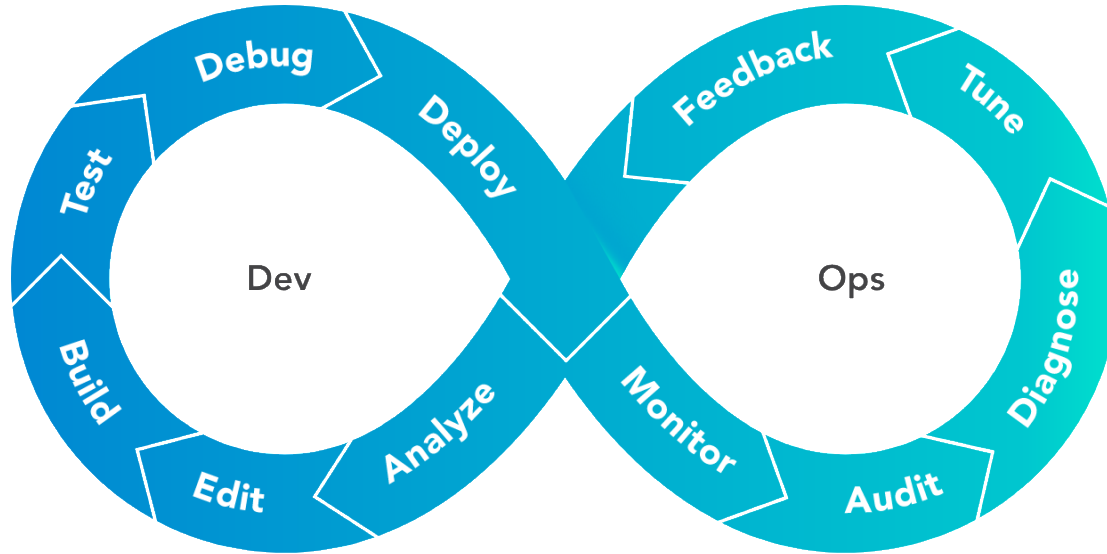
Mainstream the Mainframe

Enabling DevOps Across the Enterprise

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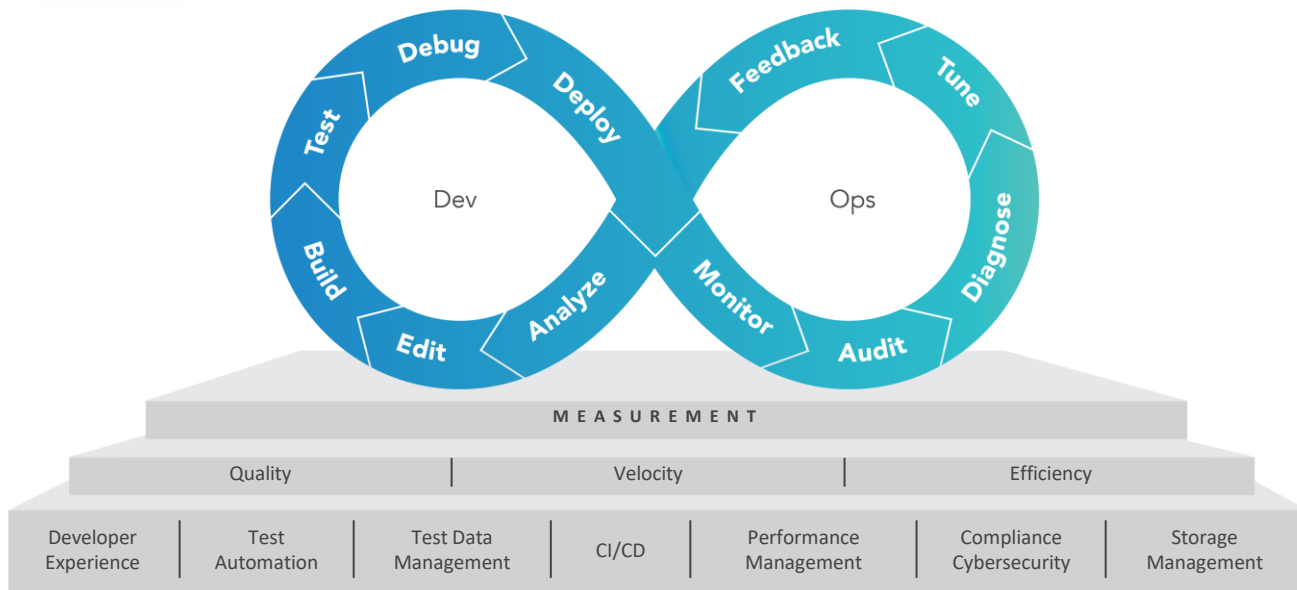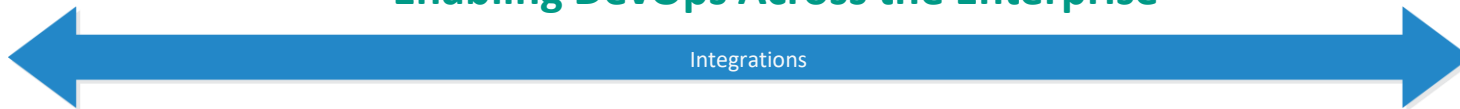
Agenda

- Why Test Automation

- Adoption Challenges

- Best practices

- Adoption Example

- Summary

Why Automated Testing

Velocity
Deliver products faster

Quality
Ensure high quality with visibility

Efficiency
Reduce manual rework

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IT Pressured to Deliver Innovation Faster

According to a recent survey of mainframe app dev managers:

- 85% of organizations find it difficult to deliver faster without compromising quality, security, customer experience and operational efficiency
- Test automation is cited as single most important factor in overcoming these risks
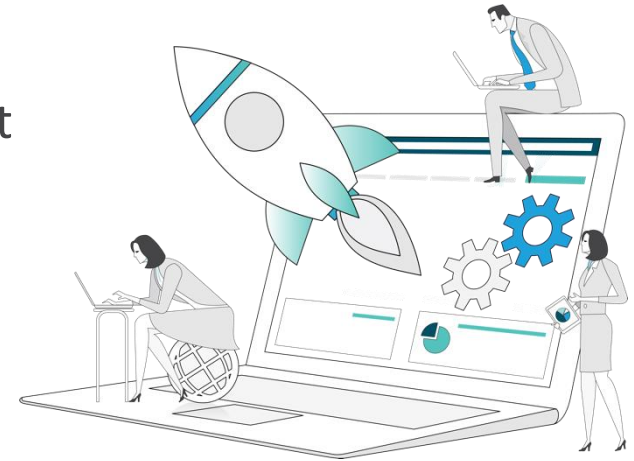
Research conducted by Vanson Bourne on behalf of Compuware.
Based on a global survey of 400 senior IT leaders responsible for application development in organizations with a mainframe.
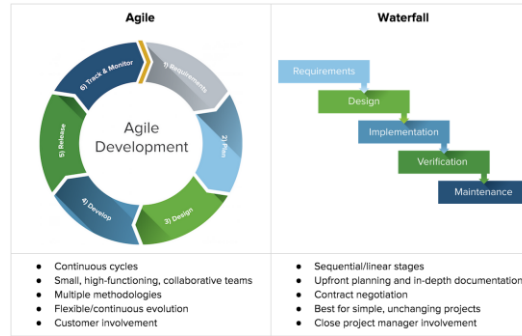
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ADOPTION CHALLENGES

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Adoption Challenges

Organizational Level

Engineering Practices

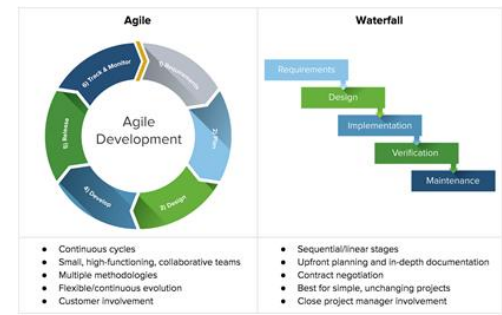### Using new Technology

Organizational Challenges

- How do we quickly impact velocity, quality & efficiency?

- How do we change an organization to focus on automated testing as a natural part of development?

- How do we measure adoption?

- What is our current testing practice?
  - How should out future testing practice be?

- Where and how should we start?

Engineering Practices Challenges

- Where do we start to automate testing?

- What is a sufficient test of a program?

- How do we collaborate in a team?
  - How to do concurrent development?
  - How should we share test cases?

- How can we use pipeline technologies for automated test execution?

- How do we refactor programs for better testing?

Using New Technology Challenges

- How do I learn to use a test automation tool

- How to deal with relationship between program and test cases?
    - How to find relevant test cases for a program?

- How do I learn Git?

The Path to Failure!

- Big bang approach for complete development organization
- Define processes be
- Don't involve m development organization
- Give dev t them to start testing
- Train all up front
- Don't listen to experiences from other companies

DONT DO THIS

# BEST PRACTICES

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How to Adopt as an Organization

- Commitment from senior leadership

- Understand that change take time

- Start Small, Learn, Educate, Standardize, Expand

- Pick a small motivated team with a mix of young and older developers
  - Baseline: Measure velocity and bugs before adoption
  - Team follows "How to adopt test automation as a user"
  - Expect it will take some time to change habits – focus on learning in the team
  - Compare: Measure velocity and bugs after adoption

- Use the empowered and motivated team as internal advocates

- Expand to other teams

- Measure adoption

How to Adopt a Test Automation Process

- Start to establish practices and processes for the organization
  - Decide how to share test cases
  - Examine how test automation fits into other DevOps initiatives like Continuous Integration and Deployment (CI/CD)
- Establish a Test Automation Knowledge Center
- Roll out gradually to more teams
- Recognize teams success and keep <u>motivating</u> them
- Note:
  - Most important is to create automated test cases
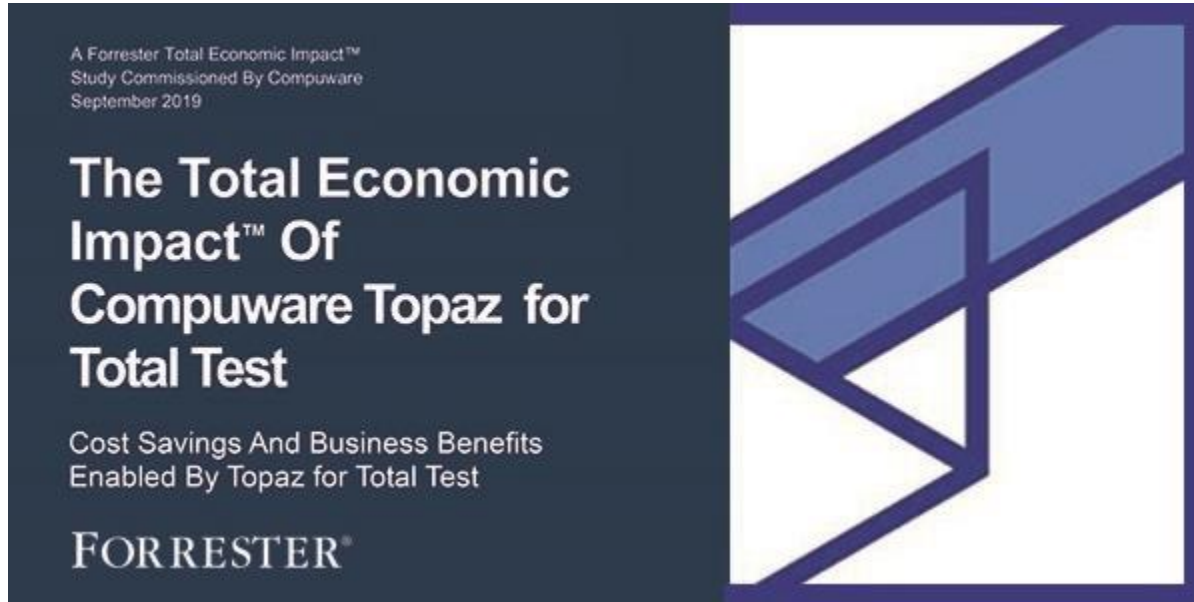 - An Automated pipeline with test execution is secondary
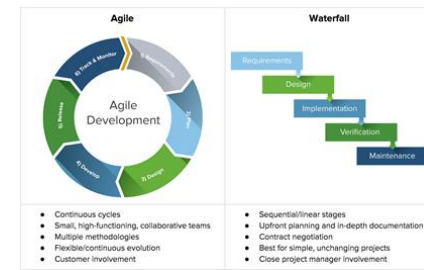
How to Adopt Test Automation as a User

- **Start simple, learn, then increase complexity**
  - Find a simple (Batch) program, record a test case and execute
  - Modify test case and see result
  - Move to a more complete program
  - Start using Code Coverage and use it actively to create more tests
  - Copy test case and stubs and manually edit for testing other code paths
  - Build a suite of regression tests for one or several programs
  - Understand that there are several tools in the toolbox. Different problems need different tools
- Understand different testing types
  - Positive testing, negative testing and boundary value testing
- Understand to pick the right programs for testing
- Understand Test Driven Development / Maintainence
- Use a Version Control System
  - Share test cases
  - Experiment with collaboration
- Integrate into a CI/CD pipeline
  - This might not be needed at all for individual developers

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Adoption Example

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Example of Successful Adoption

A Forrester Total Economic Impact™
Study Commissioned By Compuware
September 2019

The Total Economic Impact™ Of Compuware Topaz for Total Test

Cost Savings And Business Benefits Enabled By Topaz for Total Test

FORRESTER®

https://resources.compuware.com/forrester_tei_topaz_for_total_test_lp

Customer Shared Experiences Before and After Adopting Test Automation

Key Drivers

- DevOps transformation

- Value stream mapping identified areas of opportunity

- Manual testing was slow and error prone

Pilot Results

- 6-month pilot

- Set aspirational target for 20% improvement in developer productivity

- Actual results: 233% increase in dev productivity

- 83% decrease in bugs

- Reduced time to setup unit tests by 80%

Business Results

- Enabled DevOps culture change

- Reenergized workforce

- More work with same resources

- Virtually bug free

- Payback of initial investment <3 months

- 4-month reduction in developer ramp up time to productivity

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Summary

- Automated testing enables business **agility** by improving **velocity and quality** of delivering software

- Path to Failure
  - Big bag approach
  - Dont involve developers
  - All training up front

- Path to Success
  - Start Small, Learn, Educate, Standardize, Expand

- Developer efficiency has been measured to increase **233%** while number of bugs decreased by **83%** and **ROI** of nearly **500%**

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Resources

- Vanson Bourne Global Study: compuware.com/testing-survey

- Forrester Total Economic Impact report: compuware.com/tei

- Best Practices Guide: https://devops.api.compuware.com/guidelines/ttt/ttt_best_practices.html#unit-functional-and-integration-testing

- Topaz for Total Test: compuware.com/topaz-for-total-test

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THANK YOU!

**Meet me in the Network
Chat Lounge for questions**