



W13

Test Transformation

Wednesday, May 2nd, 2018

3:00 PM

Building a Modern DevOps Enterprise Testing Organization

Presented by:

Adam Auerbach

Lincoln Financial Group

Brought to you by:



350 Corporate Way, Suite 400, Orange Park, FL 32073
888-268-8770 · 904-278-0524 - info@techwell.com - <http://www.stareast.techwell.com/>

Adam Auerbach

Lincoln Financial Group

Vice president of quality and DevOps engineering at Lincoln Financial Group, Adam Auerbach is responsible for leading the implementation of continuous testing and continuous delivery across the organization. Previously Adam was the senior director of technology for advanced testing and release services at Capital One Financial Corporation. Adam led Capital One's enterprise performance and automated testing departments as well as enterprise release management and test data management. He provided leadership for the agile transformation of Capital One's quality assurance group and led the enterprise adoption of DevOps and acceptance test-driven development.

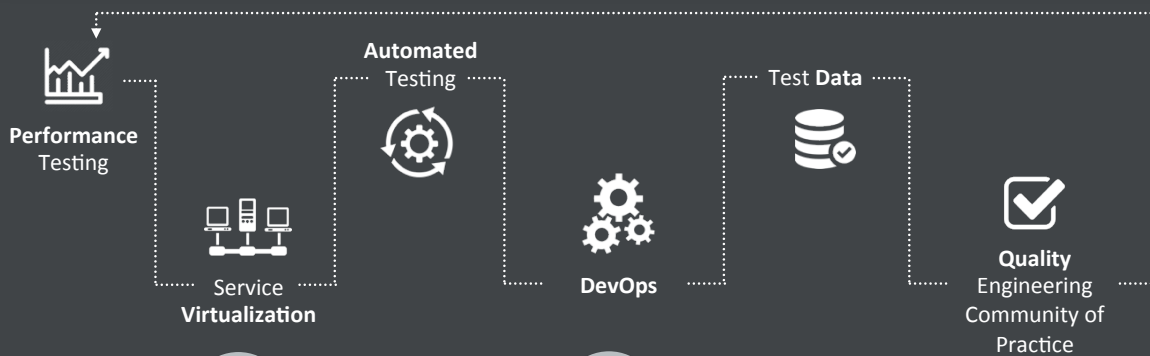
Testing and DevOps

Building a Modern DevOps Enterprise Testing Organization

Adam Auerbach

VP Quality and DevOps Engineering

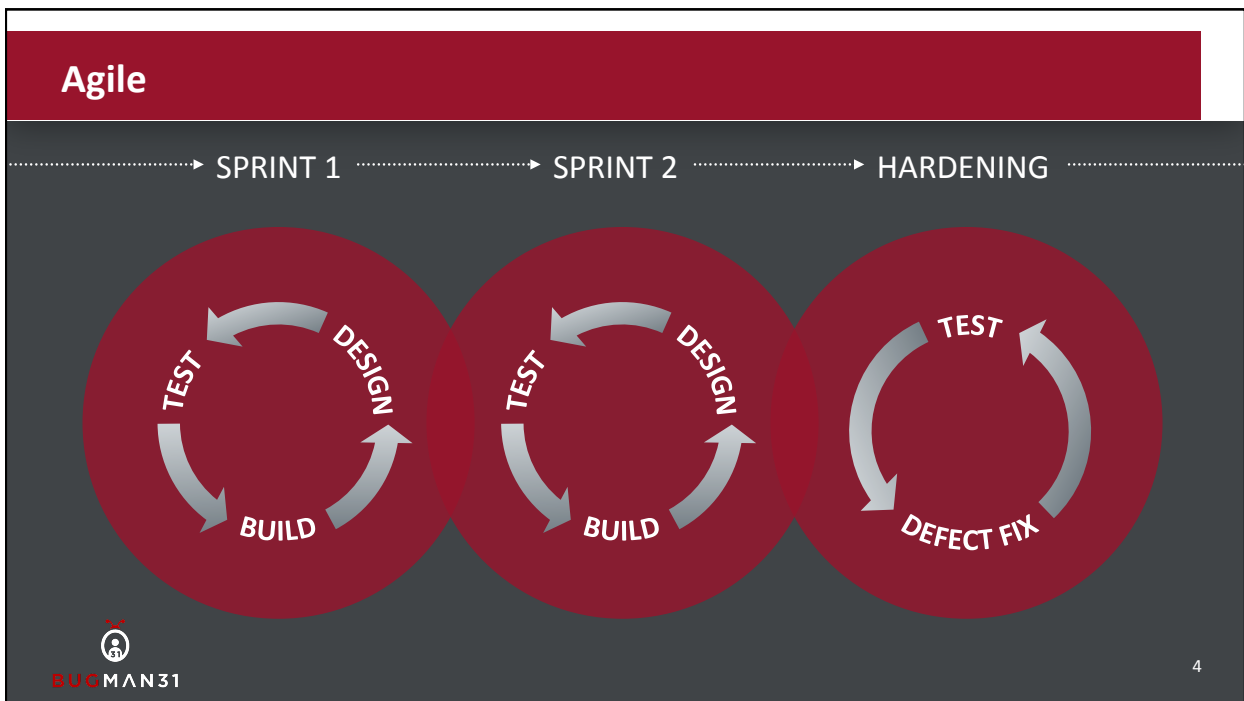
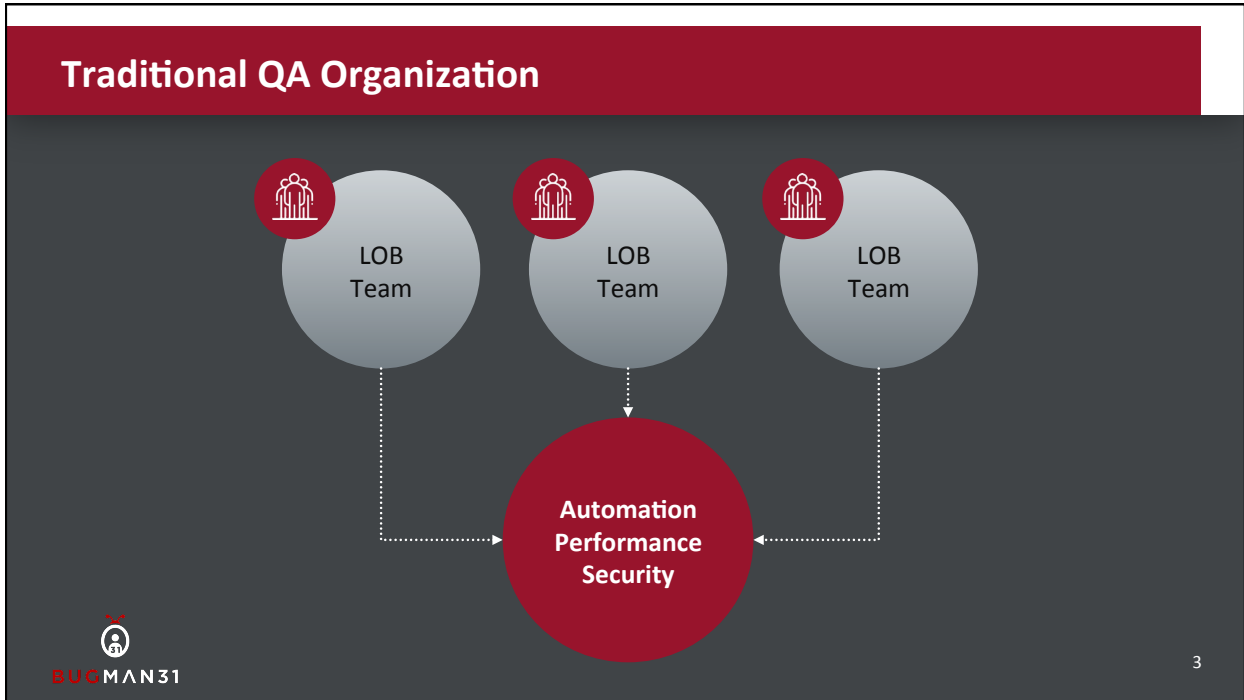
Quality and DevOps Engineering @ Lincoln Financial




@BugMan31



@ AdamAuerbach




What is DevOps?



5


DevOps is a Philosophy Change

DELIVER HIGH QUALITY WORKING SOFTWARE FASTER




Agile Pod
(Dev, QA, PO, BSA)







Infrastructure



Arch.




Prod Support

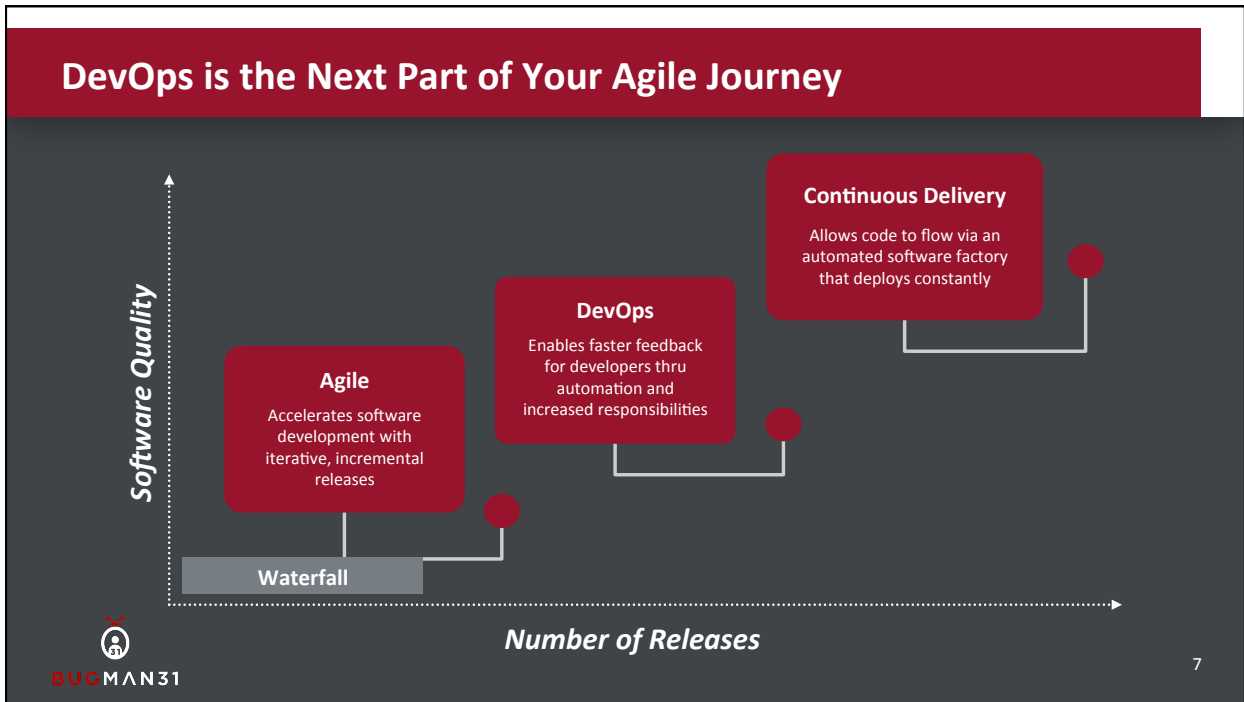


Shared Services (e.g. Security Testing, Perf Testing)

DevOps is a philosophy where teams are accountable for everything required to get their code developed, tested and deployed to production, while shared service teams provide the automation and tools to enable them.

“You Build it You Own it”


6



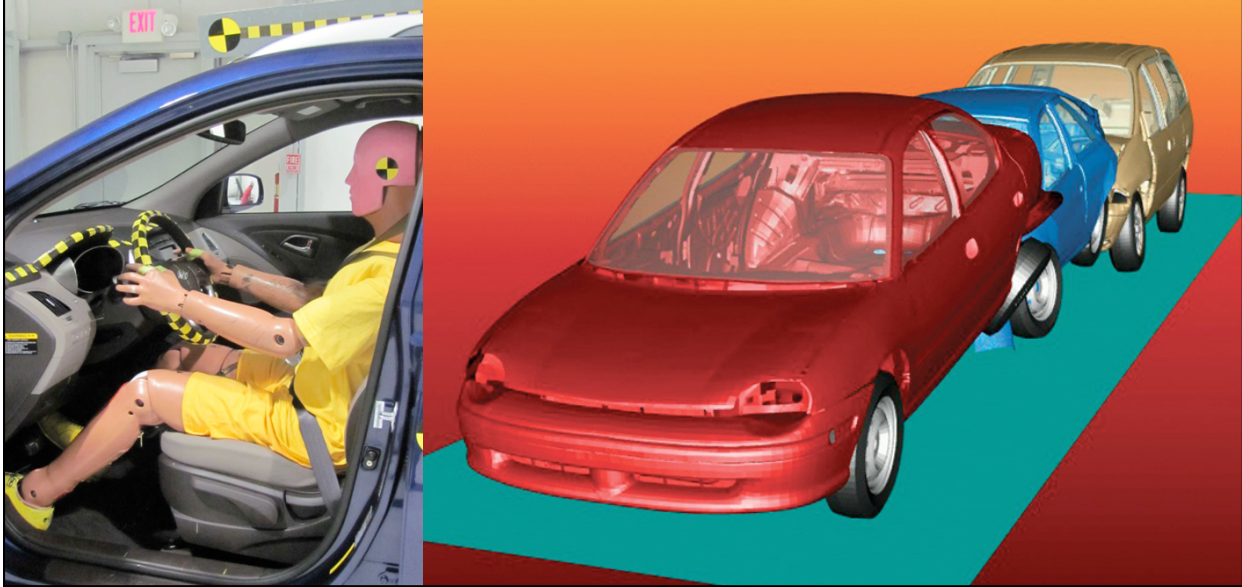
Automate Everything



Fast Feedback

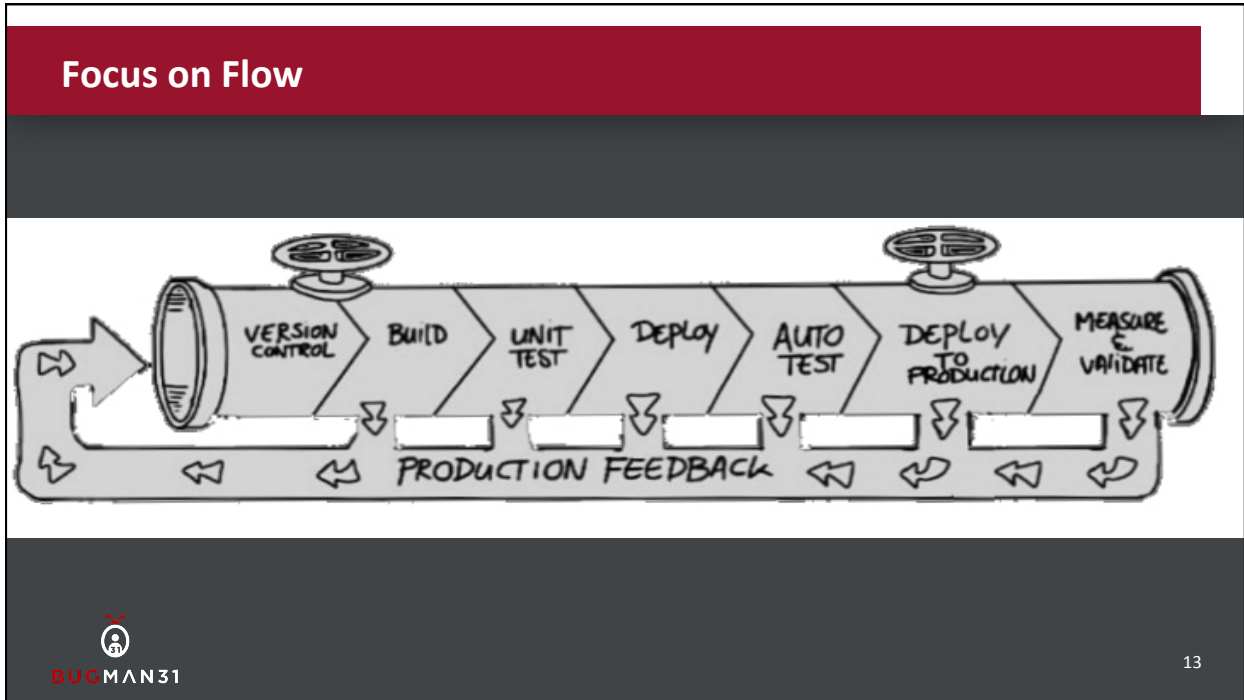


Remove Constraints



Collaboration Early and Often





What is Continuous Testing?



Pipelines



Real-Time Automation

BEHAVIOR-DRIVEN DEVELOPMENT (BDD)

- Team Focused
- Stress on Stories
- Add a Test
- Run all Tests
- Write Code
- Refactor Until Added Test Passes

TEST-DRIVEN DEVELOPMENT (TDD)

- Developer Focused
- Closer to Unit Level
- Add a Test
- Run all Tests
- Write Code
- Refactor Until Added Test Passes

ACCEPTANCE TEST-DRIVEN DEVELOPMENT (ATDD)

- Team Focused
- Stress on Acceptance Criteria
- Add a Test
- Run all Tests
- Write Code
- Refactor Until Added Test Passes

The diagram on the MacBook shows a circular testing cycle with 8 steps: 1. User Story (PO BSA), 2. Failing Acceptance Test (Tester), 3. Failing Unit Test (Pair of Developers), 4. Application Code, 5. Passing Unit Test, 6. Refactor Application Code, 7. Passing Acceptance Test, 8. Refactor Acceptance Test. A note indicates '* Multiple Cycles'.

17

Testing Approach

CURRENT

Manual Tests (top layer)

Automated GUI Tests

Integration Tests

Unit Tests

Software Testing Ice-cream Cone Anti-Pattern
watermelon.com

DESTINATION

Manual Session Based Testing (top layer)

Automated GUI Tests

Automated API Tests

Automated Integration Tests

Automated Component Tests

Automated Unit Tests

Ideal Software Testing Pyramid
watermelon.com

Open Source Tools

USABILITY

- Good solution for agile or waterfall automation
- Can be executed early allowing for:
 - Build validation
 - Functional Automation
 - Regression testing
- Helps to shift automation left

SKILLS

- Developers and Testers
 - Selenium/Java/Cucumber
 - Subversion or GitLab
 - Cloud
- POs and BSAs
 - ATDD and Gherkin for

CAPABILITIES

- Lightweight, expandable open source framework
- Easy to use English based steps (Gherkin) for ATDD/BDD
- Plugins for CI tools and reporting

AGILITY

- Allows for fast implementation and continuous testing
- Can be integrated with Jenkins

TestNG
Se
Java

MacBook

Environments

20

Test Data Management

EFFECTIVE DATA
Building the right data

1

EFFICIENT DATA
Getting it right the first time

2



PRODUCTION

Reduce Security and Configuration Dependency

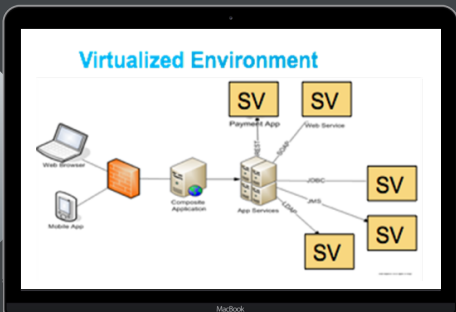
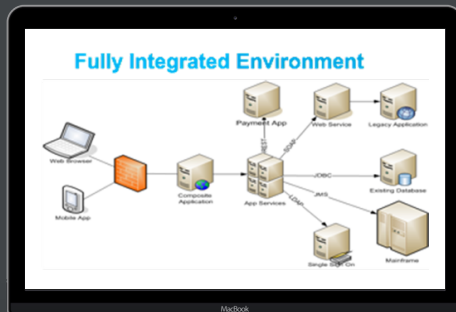
DATA



Service Virtualization

INTEGRATED ENVIRONMENT

VIRTUALIZED ENVIRONMENT



Dashboards



Dashboard Cont'd

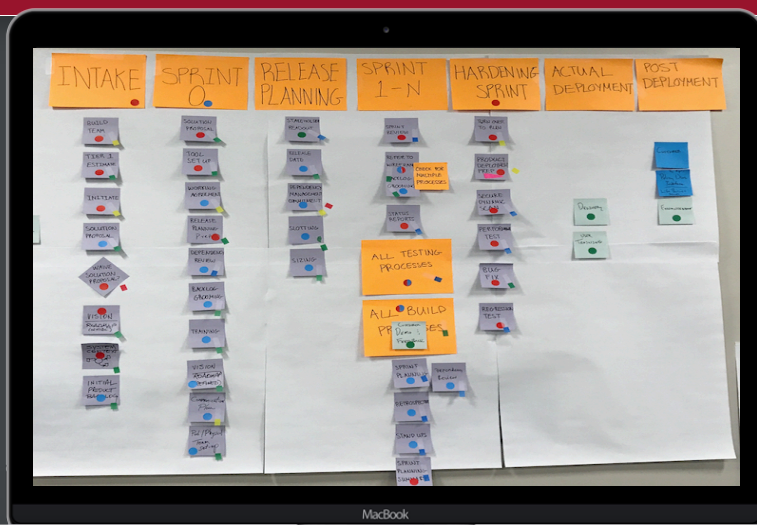


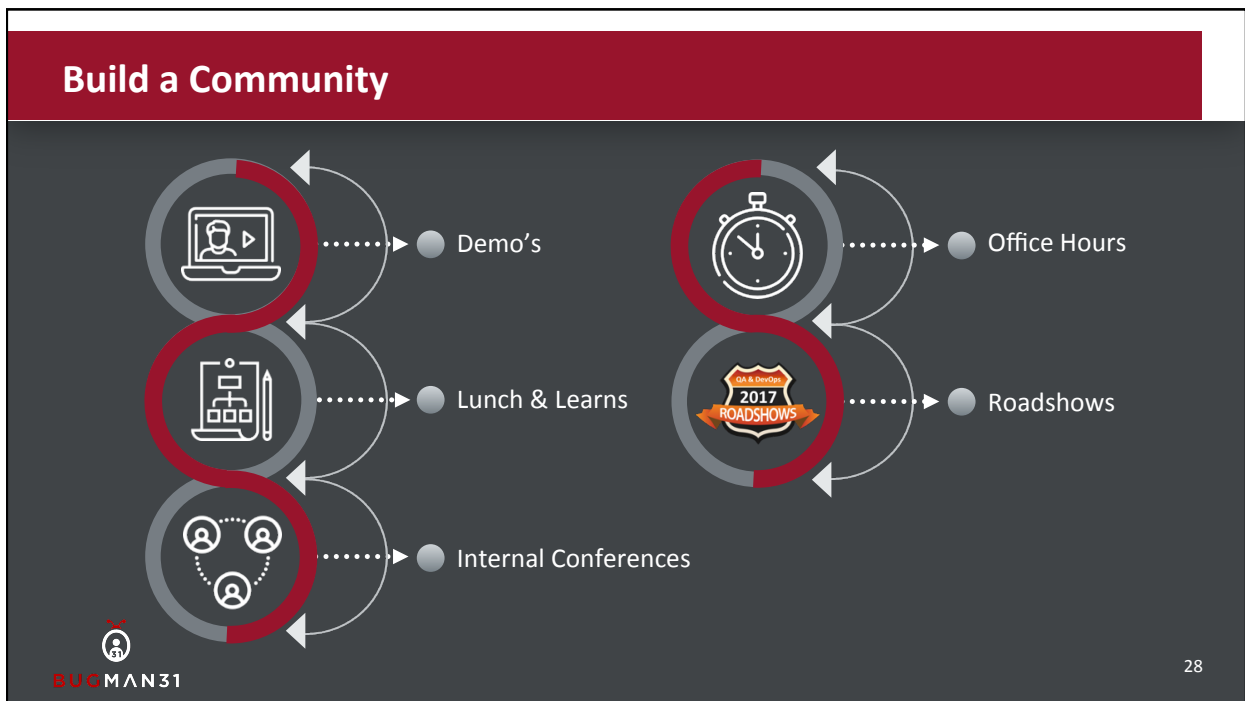
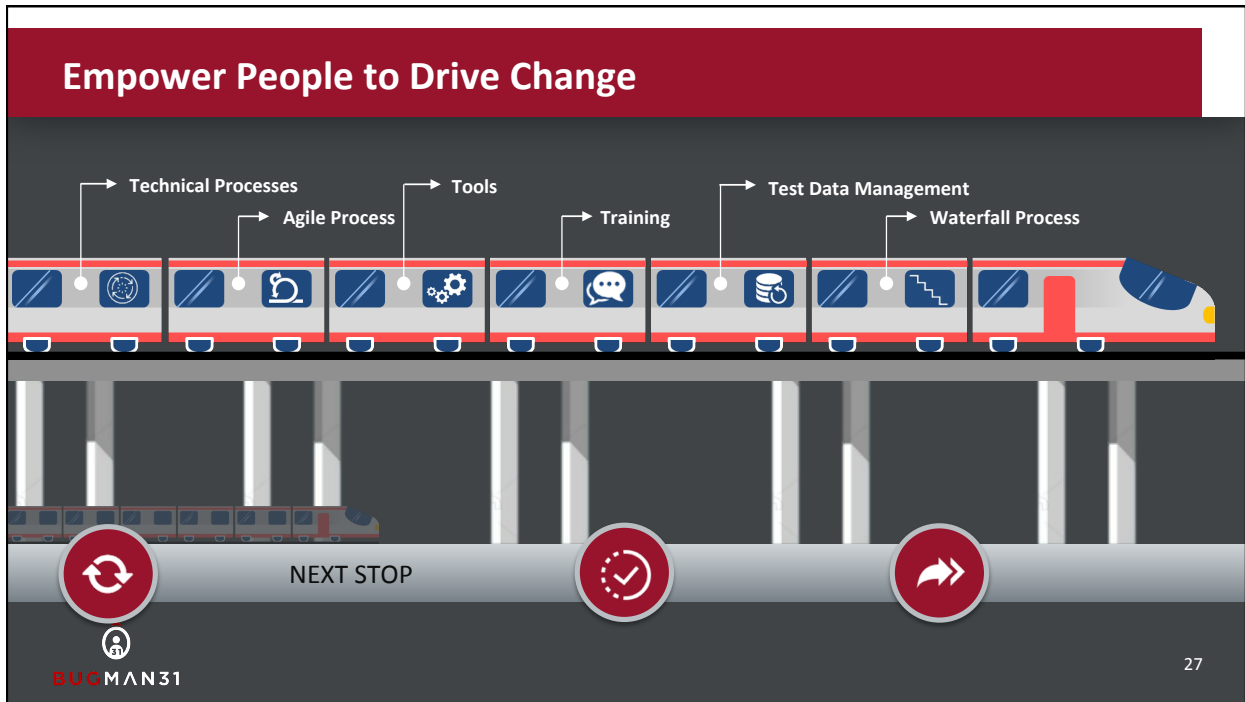


How Do You Start?



Identify Areas for Improvement





Common Challenges

Lack of funding

Project delivery mindset

3rd party dependencies

Questions on direction

Lack of Technical resources

Top down and bottom up support is critical

BUGMAN31

29

Take Inventory of Your Team

YOUR TEAM

SME

Business Focus

Agile

Innovative

Waterfall

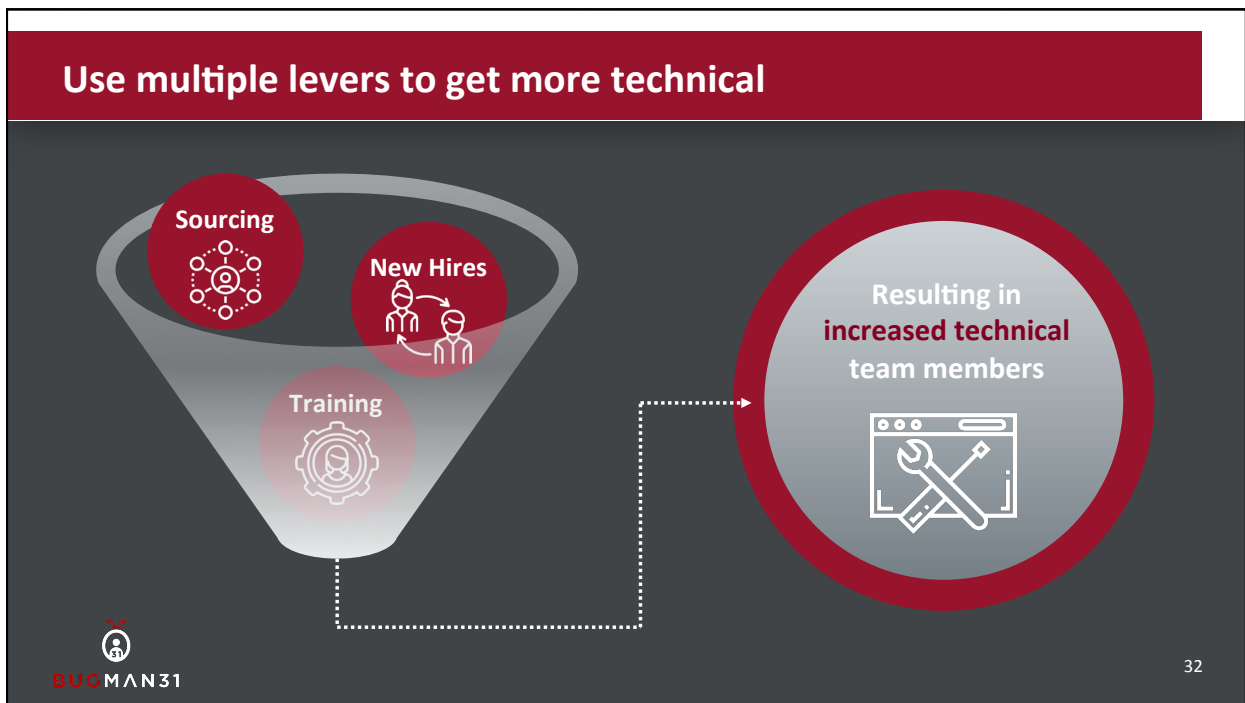
Process Driven

Programming

DevOps

BUGMAN31

30



Enterprise Groups Focus on Enablement

The diagram compares the focus areas of Enterprise Teams and Team Members. Enterprise Teams focus on Technology & Support, while Team Members focus on Shippable code. Both are represented by magnifying glasses over their respective focus areas.

Group	Focus On:
Enterprise Teams	Technology & Support
Team Members	Shippable code

BUGMAN31 33

Embrace DevOps for Testing

The diagram illustrates the DevOps for Testing cycle. It features a central 'AGILE TEAM' icon with a circular arrow around it. The cycle includes Performance Testing, Automation, and Test Data, all connected by a large circular arrow.

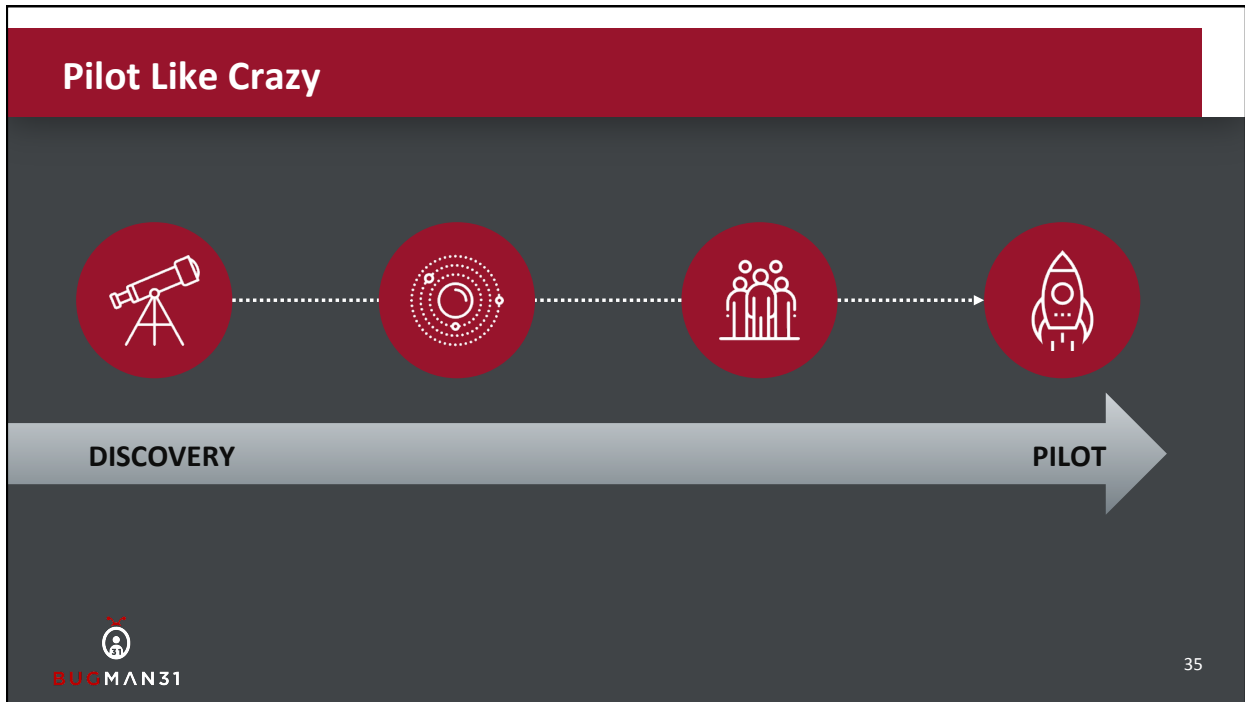
Performance Testing

Automation

Test Data

AGILE TEAM

BUGMAN31 34



Proven Metrics

	<p>LEAD TIME From code commit to code successfully running in production or in a releasable state</p>	<p>DEPLOY FREQUENCY How often code is deployed</p>	<p>MEAN TIME TO RESTORE (MTTR) How long it takes to restore service when a service incident occurs</p>	<p>CHANGE FAIL PERCENTAGE The percentage of changes that result in degraded service or remediation</p>
High Performers	Less than one hour	On Demand (multiple deploys per day)	Less than one hour	0 - 15%
Medium Performers	Between one week & one month	Between once per week & once per month	Less than one day	31 - 45%
Low Performers	Between one month & 6 months	Between once per month & once every 6 months	Less than one day	16 - 30%

36


Continuous Testing Results I've Experienced

4x Deployment Speed

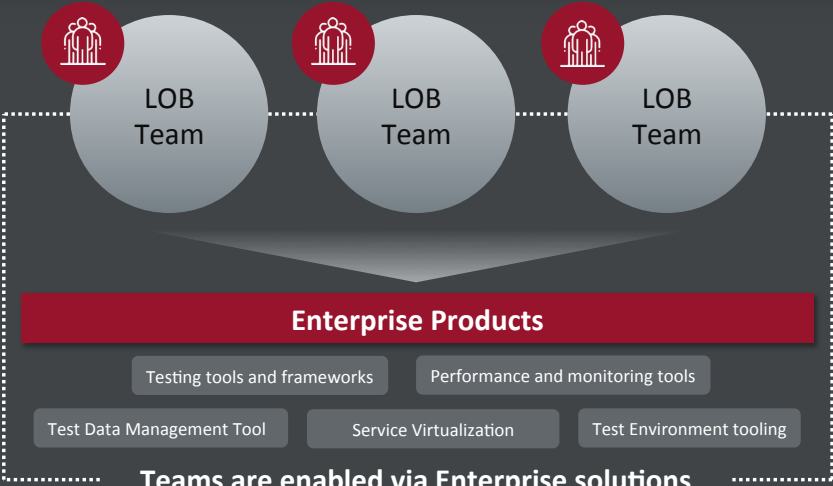
90% Decrease in Incidents

1hr Lead time from check-in to prod deployment

- Teams who adopted Continuous Testing and eventually Continuous Delivery improved deployment frequencies by over 4x
- The incident rate per production deployment fell 90% to less than 5%
- Elimination of manual testing tools due to the rollout of CT
- Over 100k test data requests able to be provided in a given month
- Elimination of Hardening phase for agile teams


37

Destination




Enterprise Products

Testing tools and frameworks Performance and monitoring tools

Test Data Management Tool Service Virtualization Test Environment tooling

Teams are enabled via Enterprise solutions


38

Thank You



Testing and DevOps

Building a Modern DevOps Enterprise Testing Organization

Adam Auerbach

VP Quality and DevOps Engineering