DevOps Adoption: How do you Compare?

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InterConnect 2017
Agenda

Introduction
IBM’s DevOps Workshops
Workshop Results
Addressing DevOps Challenges
Summary

“Without data you’re just another person with an opinion.”

- W. Edwards Deming, Data Scientist
IBM’s DevOps Workshops
The DevOps Landscape we Consider

Enterprise

Product Flow

Business Idea

Dev Ops

Product

End User

Feedback

Improvement
DevOps Innovation and Optimization Workshop

Over 100 workshops conducted to date, in just about every industry and geography

Objectives
• To examine all aspects of an organization’s DevOps landscape
• To identify challenges that the organization is experiencing
• To explain concepts and showcase relevant case studies
• To prioritize challenges and develop a DevOps transformation roadmap
• To produce a detailed report within a week of the workshop, together with recommendations

See the workshop in action! https://www.youtube.com/watch?v=U9SnBeKlO0I

Logistics
• For senior IT and LOB executives and managers in Dev and Ops
• Led by a qualified workshop facilitator
• Facilitators are available around the world
• Typical workshop duration is between 4 and 6 hours
• Conducted using nothing but a whiteboard
Sample Whiteboard
Report Format

- MS Word or (usually) Powerpoint
- A summary of the workshop, using the whiteboard for most graphics
- Contains (IBM) analysis of challenges
- Challenges grouped into themes
- Each theme described in detail
  - Purpose
  - Alignment with challenges
  - Steps to undertake
  - How IBM can help
  - Benefits
  - Quick wins

- A “roadmap” is defined based on priority and feasibility

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**Theme: Efficient Test Platform**

<table>
<thead>
<tr>
<th>Purpose</th>
<th>To improve the approach to test definition, management and execution</th>
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<tbody>
<tr>
<td>Alignment with challenges / outcomes</td>
<td>- Testing is not valued as a practice</td>
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<tr>
<td></td>
<td>- There is variable coverage of unit testing</td>
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<td></td>
<td>- Test Data Management</td>
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<td></td>
<td>- There is no service virtualization in place to “shift left” testing</td>
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<tr>
<td>Steps</td>
<td>Document the current test approach within Acme Inc.</td>
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<td>Define the detailed challenges with respect to testing</td>
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<td>Analyze industry best practices with regard to testing in all of the areas of concern</td>
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<td>Agree on the resolution to the identified challenges based on industry experience</td>
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<td>Define and document Acme Inc.’s approach to test definition, management and execution</td>
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<td>“Prior” the approach on initiatives and refine based on lessons learned</td>
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<tr>
<td>How IBM can help</td>
<td>IBM can bring experienced practitioners to help define the approach, based on our own internal testing capabilities as well as our experiences with other clients</td>
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<tr>
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<td>IBM can help document the approach to testing</td>
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<td></td>
<td>IBM can assist with the specific areas of testing considered to be challenging (such as test data management and service virtualization)</td>
</tr>
<tr>
<td>Benefits</td>
<td>The quality of Acme Inc.’s solution will be improved due to a more consistent and more thorough level of testing</td>
</tr>
<tr>
<td>Quick wins</td>
<td>Organize briefings for both Test Data Management and Service Virtualization</td>
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</tbody>
</table>
Workshop Results
Analysis of Reports

25 Reports

306 Unique challenges

75 Recurring

50 Common

This deck
Major Themes

People

Process

Technology
Top 10 Challenges

#1 – Environment Provisioning
#2 – Manual Testing
#3 – No DevOps Centre of Excellence
#4 – Test Data
#5 – Manual Deployments
#6 – Planning in a DevOps Environment
#7 – DevOps and Suppliers
#8 – DevOps and Governance
#9 – No Integrated Tools Architecture
#10 – Manual Releases
Top 20 Challenges

#11 – No DevOps Metrics

#12 – DevOps and Team Composition

#13 – DevOps and Regulatory Compliance

#14 – No Service Virtualization

#15 – DevOps and Specialist Skills

#16 – Traceability Across the DevOps Landscape

#17 – Large Releases

#18 – Inconsistent Environments

#19 – Agile is Confined to Developers

#20 – Limited Transparency
Top 30 Challenges

#21 – Manual Processes

#22 – Collaboration Between Dev and Ops

#23 – No DevOps Vision or Strategy

#24 – No Production-Like Environments

#25 – Waste in Existing Processes

#26 – Limited Customer Feedback

#27 – Elicitation of Non-Functional Requirements

#28 – Collaboration Across All IT Disciplines

#29 – Collaboration Between Business and IT

#30 – No Standard SCM Repository
Addressing DevOps Challenges
# Sources of Principles and Practices

<table>
<thead>
<tr>
<th>Period</th>
<th>Various</th>
<th>Unified Process</th>
<th>Agile</th>
<th>Lean</th>
</tr>
</thead>
</table>
Bookshelf

2015 - date

2010 - 2014

2005 - 2009

2000 - 2004

1994 - 1999
Challenges
Practices
embrace
Principles
resolve
Challenges
References
Concepts
Practice Taxonomy

Enterprise

Organizational Change
Organizational Structure
Product Ideation
Enterprise Architecture
Portfolio Management

Planning
Requirements
Design
Build
Deployment
Testing
Release

Product Flow

Business
Idea
Dev
Ops
Product
End User

Feedback

Improvement
Enterprise Practices

Organizational Change Practices
- Business Model Canvas
- Guiding Coalition
- Incremental Change
- Sense of Urgency
- Shared Change Vision
- Short-Term Wins

Product Ideation Practices
- Design Thinking

Organizational Structure Practices
- Communities of Practice
- Delivery Center of Excellence
- Product Focus

Enterprise Architecture Practices
- Domain Modeling
- Incremental Architecture

Portfolio Management Practices
- Business Value Assessment
- Prioritized Portfolio Backlog
Product Flow Practices (1 of 2)

Planning Practices
- Continuous Delivery
- Daily Stand-Up
- Definition of Done
- Iteration Planning
- Iteration Retrospective
- Kanban
- Pay Off Technical Debt
- Prioritized Backlog
- Risk-Value Lifecycle
- Short-Term Contracts
- Sustainable Pace

Planning Practices
- Team Structure Practices
  - Architecture Owner
  - Operations Owner
  - Product Owner
  - Whole Team

Requirements Practices
- Behavior-Driven Development
- Shared Product Vision
- Technical Story-Driven Development
- User Story-Driven Development

Design Practices
- Incremental Design
- Loose Coupling
### Product Flow Practices (2 of 2)

**Build Practices**
- Continuous Integration
- Feature Toggles
- Pair Working
- Refactoring
- Shared Code
- Test-Driven Development
- Trunk-Based Development
- Unit Testing

**Deployment Practices**
- Automated Deployment
- Continuous Deployment
- Incremental Deployment
- On-Demand Environments
- Production-Like Environments

**Release Practices**
- Blue-Green Deployment
- Canary Release
- Dark Launch

**Testing Practices**
- Acceptance Testing
- Automated Testing
- Continuous Testing
- Functional Testing
- Integration Testing
- Non-Functional Testing
  - Performance Testing
  - Security Testing
- Regression Testing
- Service Virtualization
- Smoke Testing
- System Testing
Feedback, Improvement and Supporting Practices

<table>
<thead>
<tr>
<th>Feedback Practices</th>
<th>Improvement Practices</th>
<th>Supporting Practices</th>
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<tbody>
<tr>
<td>• A/B Testing</td>
<td>• Continuous Improvement</td>
<td>• Holistic Change Management</td>
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<tr>
<td>• Iteration Demo</td>
<td>• Planned Disruption</td>
<td>• Holistic Configuration Management</td>
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<tr>
<td>• Real-Time Monitoring</td>
<td>• Stop the Line</td>
<td>• Standardized DevOps Ecosystem</td>
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<tr>
<td>• Real-Time Visibility</td>
<td>• Value Stream Mapping</td>
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</table>
#1 – Environment Provisioning, #18 – Inconsistent Environments, #24 – No Production-Like Environments
Environment-Related

Principles
- Eliminate Waste
- Eliminate Risk

Challenges
- #1 – Environment Provisioning
- #18 – Inconsistent Environments
- #24 – No Production-Like Environments

Practices
- On-Demand Environments
- Production-Like Environments

Capabilities
- Cloud
- Environment-as-a-Service
- Software-Defined Environments
#2 – Manual Testing  
#5 – Manual Deployments  
#9 – No Integrated Tools Architecture  
#10 – Manual Releases  

#16 – Traceability Across the DevOps Landscape  
#21 – Manual Processes  
#25 – Waste in Existing Processes

<table>
<thead>
<tr>
<th>Development</th>
<th>Deployment</th>
<th>Testing</th>
<th>Release</th>
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<tbody>
<tr>
<td>Ideal</td>
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<td></td>
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<td>Over-capacity</td>
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<td>Bottleneck</td>
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Automation-Related

**Challenges**
- #2 – Manual Testing
- #5 – Manual Deployments
- #9 – No Integrated Tools Architecture
- #10 – Manual Releases
- #16 – Traceability
- #21 – Manual Processes
- #25 – Waste in Existing Processes

**Principles**
- Automate Where Appropriate
- Eliminate Waste
- Eliminate Risk

**Practices**
- Automated Testing
- Automated Deployments
- Standardized DevOps Ecosystem
- Value Stream Mapping

**Capabilities**
- Testing Automation
- Deployment Automation
- Integrated Tools Architecture
- DevOps Workshop
- Lean Study
#3 There is no DevOps Center of Excellence in Place

[Diagram showing the relationship between Center of Excellence, Delivery Project, Delivery Environment, and Application]

- **Center of Excellence** creates and maintains the Delivery Environment.
- **Delivery Project** creates and maintains the Application.

Summary
Summary

The DevOps landscape is broad, covering business, development and operations (BizDevOps)

4 focus areas are the enterprise, product flow, feedback and improvement

An analysis of DevOps workshop reports reveals common challenges and their resolution

IBM’s DevOps Innovation and Optimization Workshop can help accelerate your DevOps journey

“It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.”

- Charles Darwin
References

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