

**IBM SolutionsConnect 2013**

Turning Opportunity into Outcomes.



# Increase your agility with continuous delivery of software

Richard Bakker



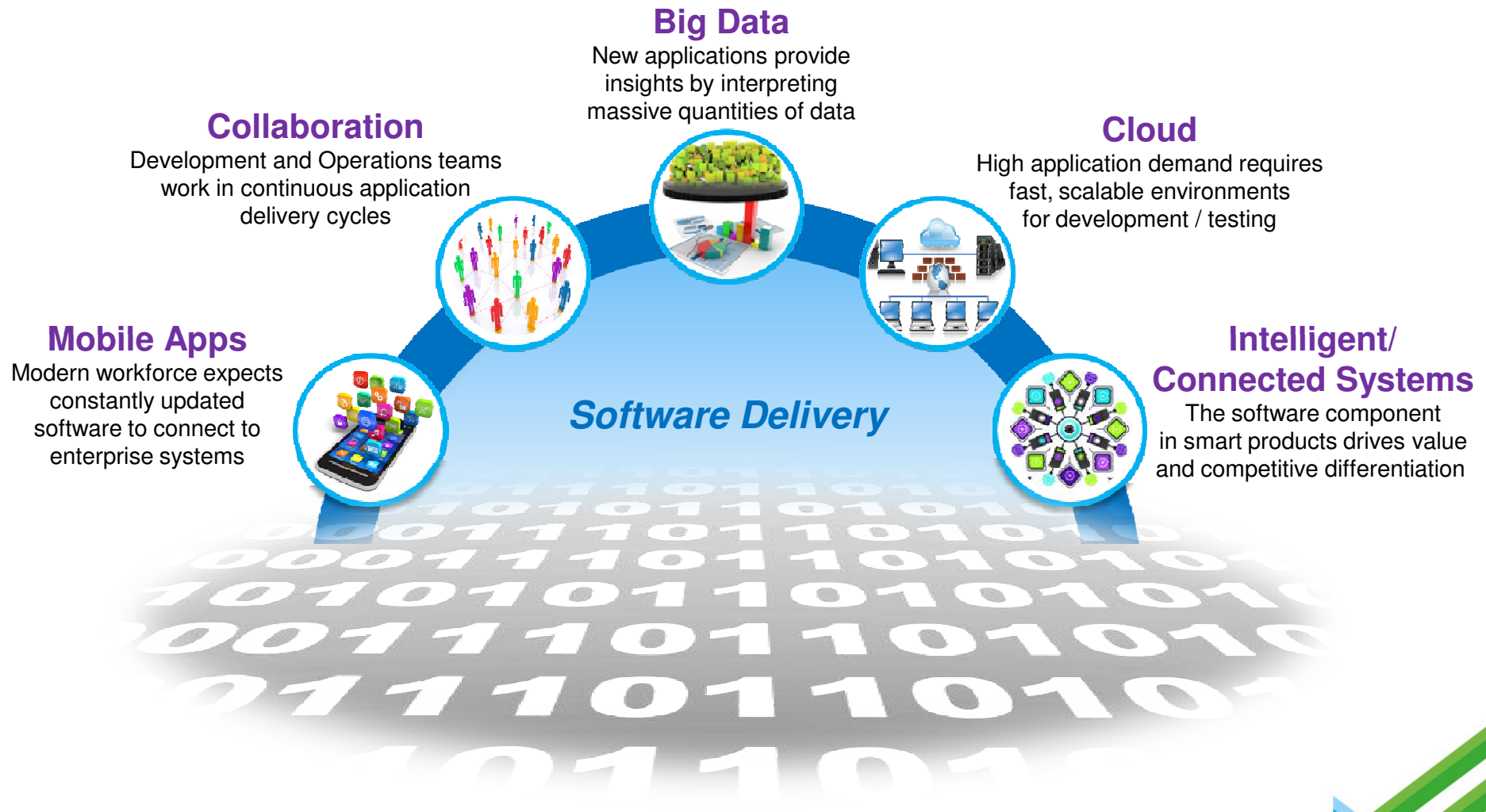


# Agenda

1. Promise of DevOps
2. Practices in Continuous Delivery
3. Plan to utilize the Cloud



# Software delivery is at the heart of today's top technology trends



# It's about gaining competitive advantage through software innovation



## Differentiated and engaging customer experiences

Build customer loyalty and increase market share by continuously obtaining and responding to customer feedback

## Quicker time to value

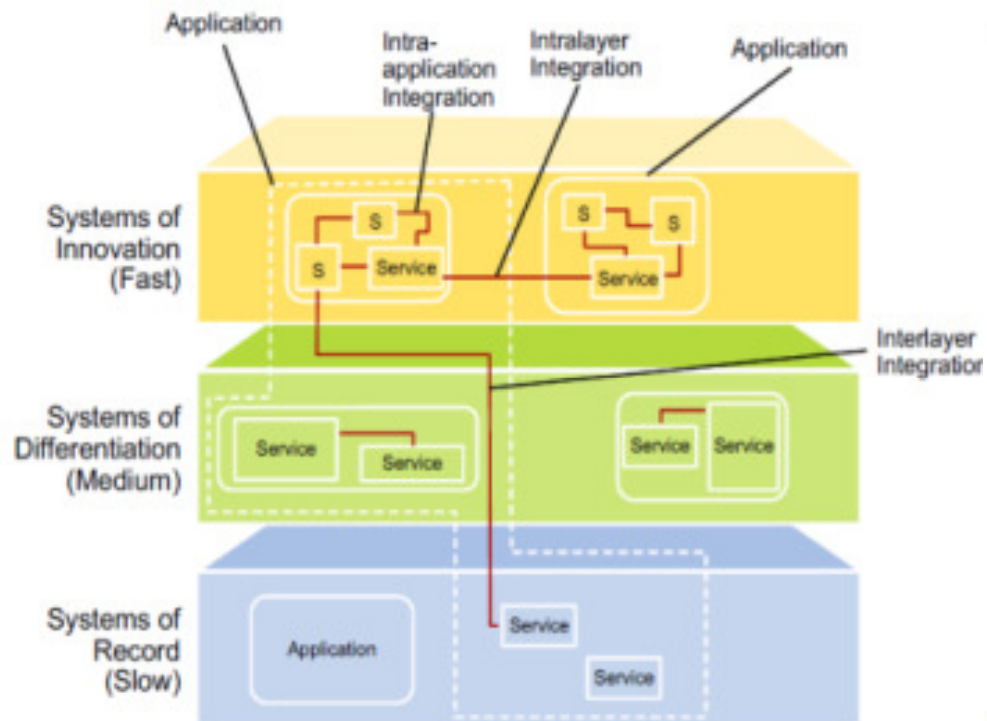
Obtain fast-mover advantage and capture markets with software-based innovation, with improved predictability and success

## Increased capacity to innovate

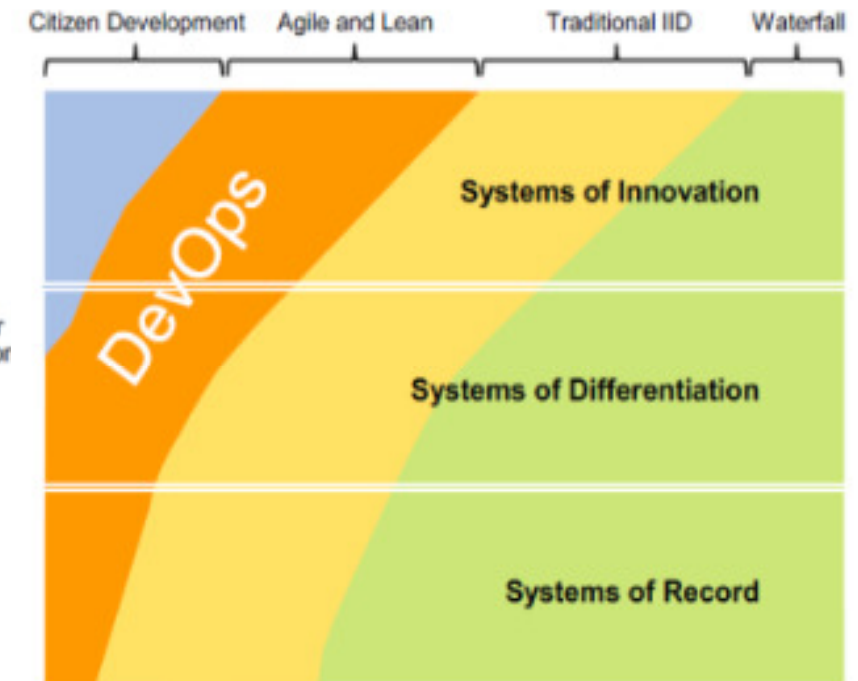
Reduced waste and rework in software delivery and enables a shift of resources to higher value activities



# Evolving customer and market expectations



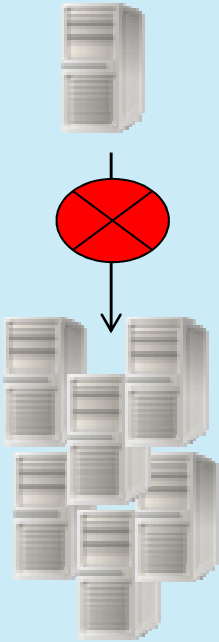
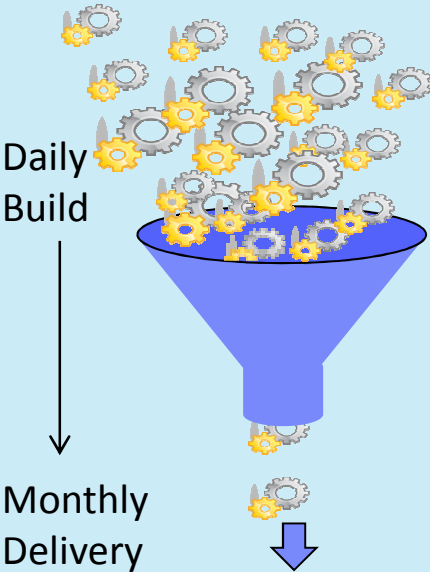

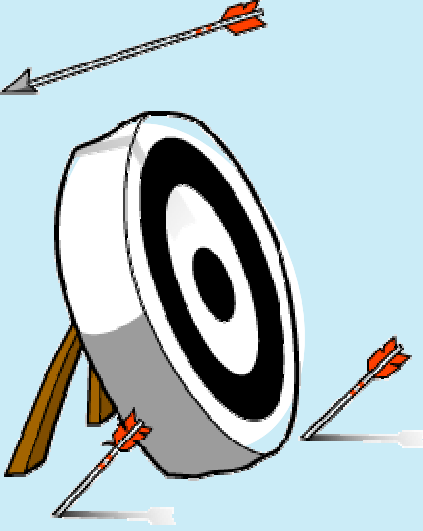
Source: Gartner (October 2012)



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# Patterns of challenges from client experiences



Differences in dev and ops environments cause failures	Backlog of agile releases that Ops cannot handle	Manual tribal processes for release lack repeatability/speed	Lack of stakeholder feedback leads to missed opportunities
 <p>Dev</p> <p>Prod</p>	 <p>Daily Build</p> <p>Monthly Delivery</p>	 <p>Who did this last time?</p> <p>Dave...</p> <p>Dave's not here man...</p> <p>Where's my self-service option? I thought Cloud is supposed to make this easy for me to develop and test ...</p>	

# DevOps answers the following challenges



41%

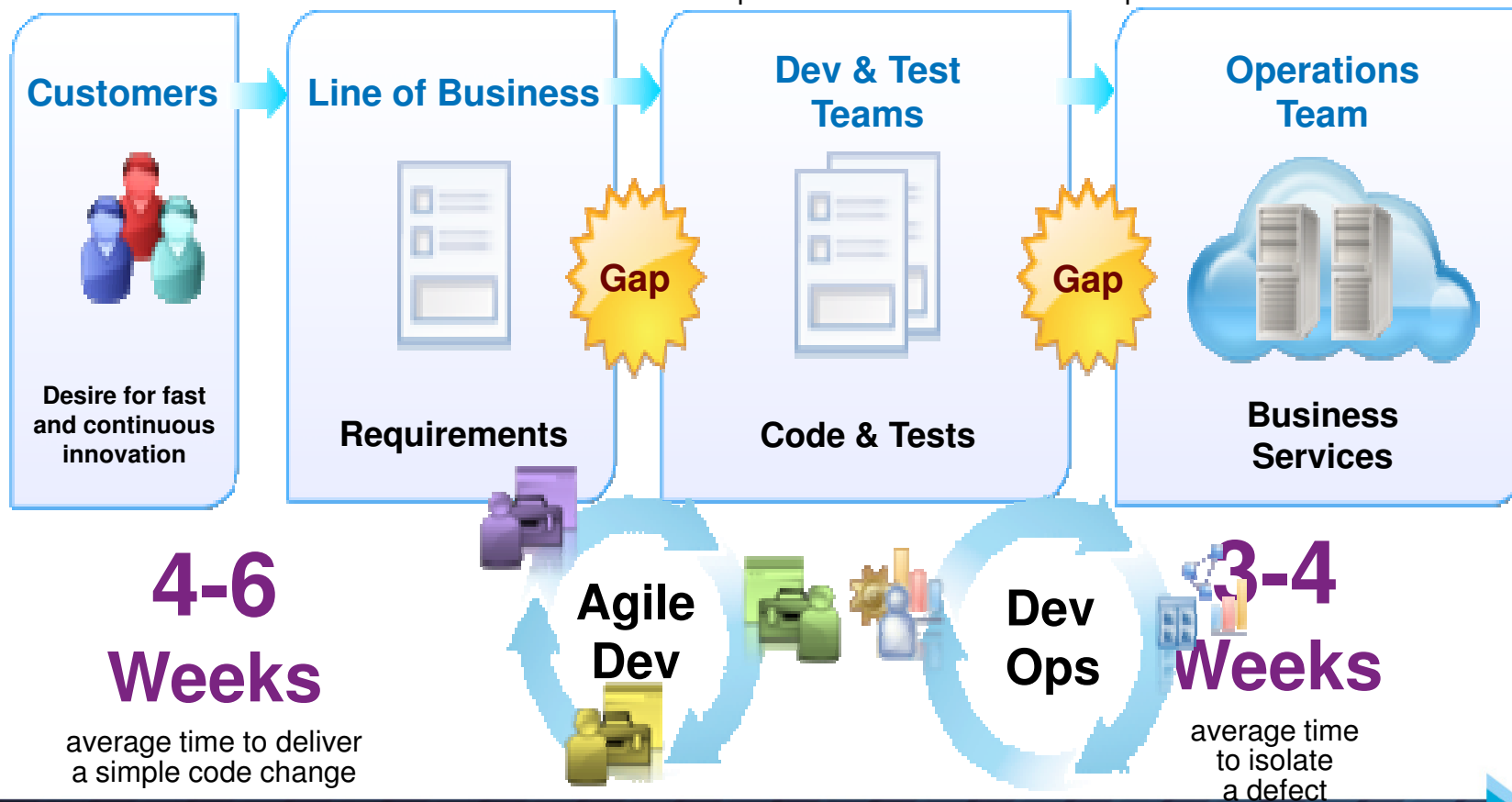
experience delays in integration, configuration and testing of applications

51%

applications rolled back due to quality issues escaping into production

45%

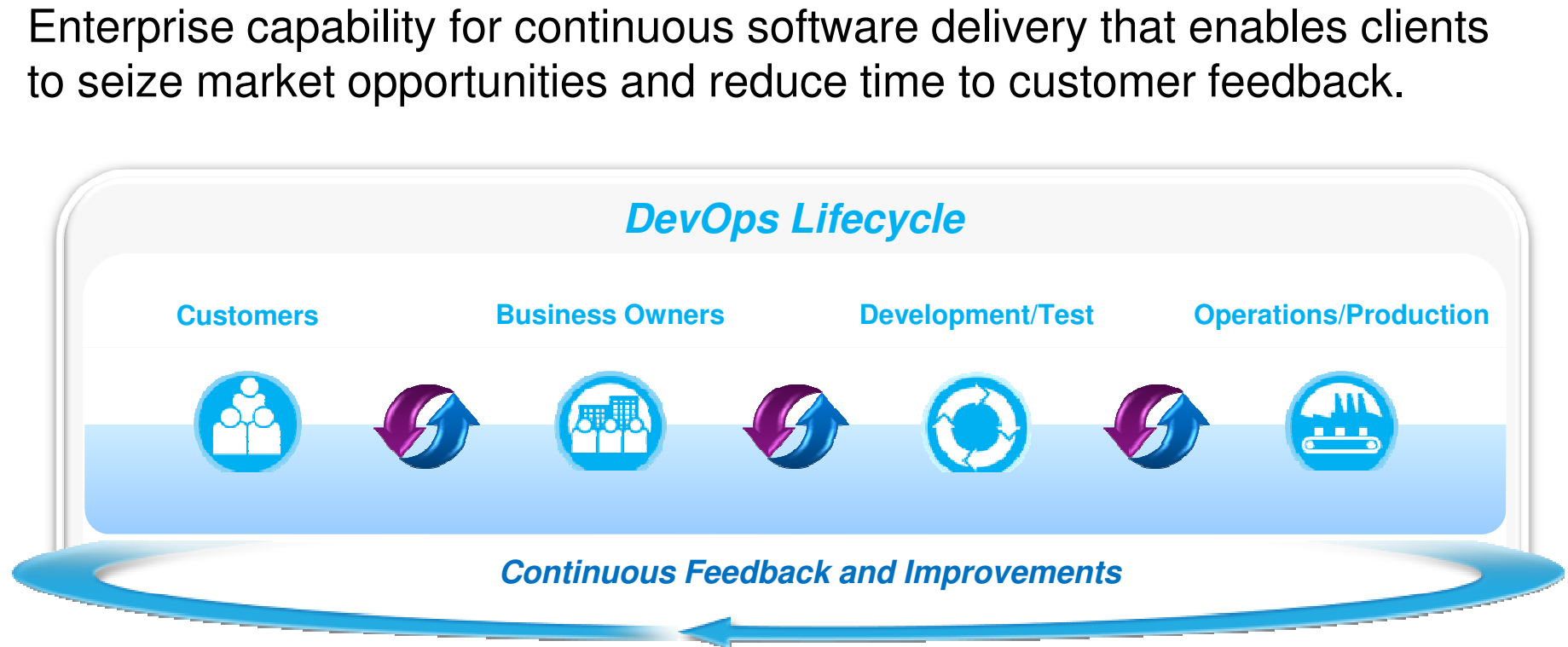
experience delays due to troubleshooting and fine-tuning issues in production



# DevOps: A blueprint for continuous delivery



dev-ops noun \dev-aps\  
Enterprise capability for continuous software delivery that enables clients to seize market opportunities and reduce time to customer feedback.



- Accelerated software delivery
- Improved governance across the lifecycle
- Reduced time to gather and analyze customer
- Balanced quality, cost and speed





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# IBM SmartCloud Continuous Delivery

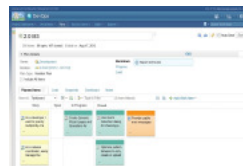
Extend agile development to enable enterprise DevOps

**Download 2.0 Release**  
October 30, 2012

## Standardize



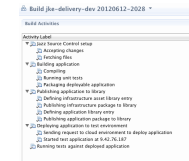
## Plan & Track



## Manage Changes



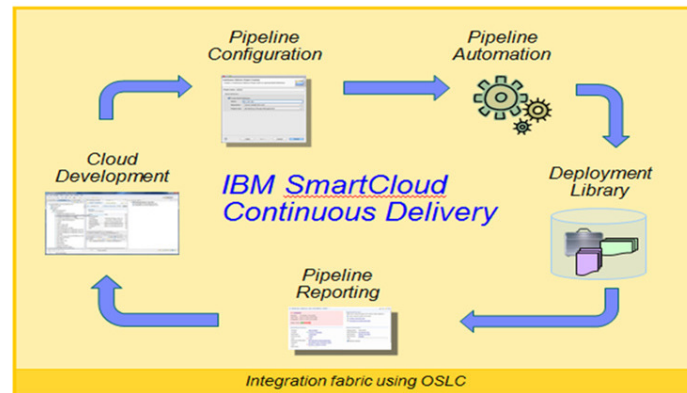
## Automate Delivery



## Feedback



**Rational Team Concert**



**IBM SmartCloud Provisioning**



**IBM Workload Deployer**  
**IBM PureApplication Systems**

Agile Development

Deployment of Virtual Systems

# Standardize: *Communicate and share environment patterns*



## Issues

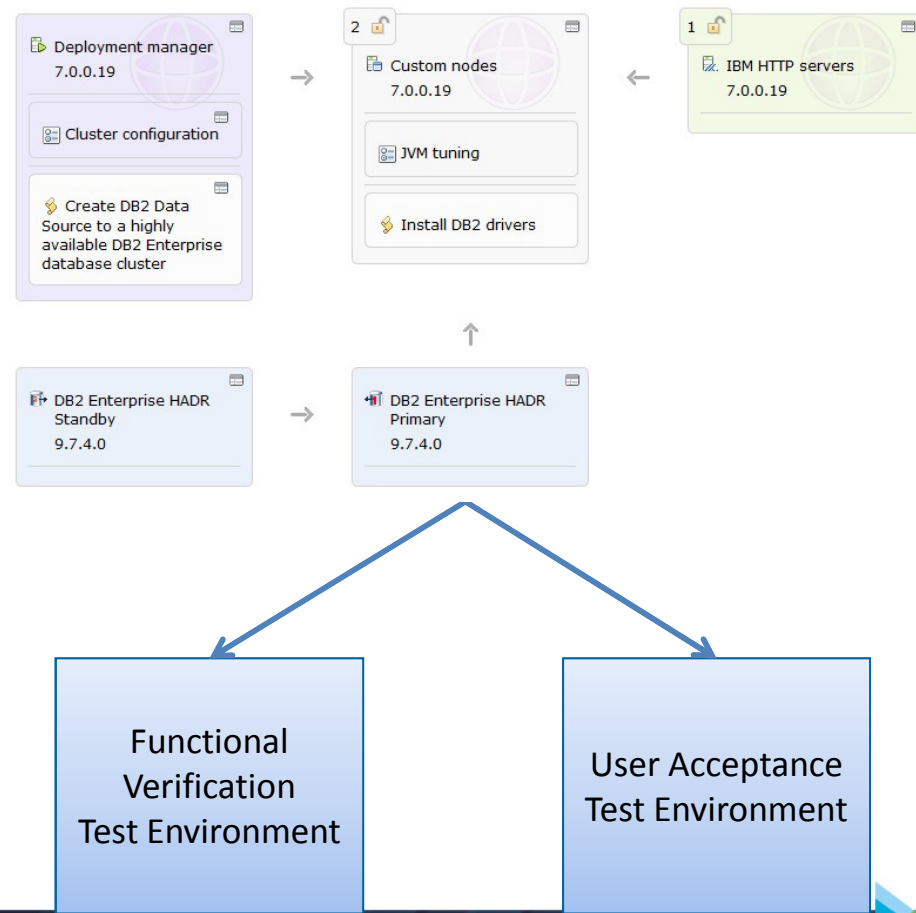
- Dev environments different from production environments
- Difficult to provision test environments
- Environment provisioning creates new “snowflakes”

## Solution

- Define standard Virtual System Patterns for environments
- Share patterns between Dev and Ops to improve communications
- Repeatable and reliable process to provision base environments (rubber stamps)

Topology for this pattern:

Deploys to ESX hypervisors.



# Plan and Track Changes:



## *Common tools across Dev and Ops*

### Issues

- Configuration tasks are not planned or tracked
- Different tools/processes for tracking work

### Solution

- Use collaborative development tools to track and plan application and configuration changes
- Ensures work is properly planned in the proper order
- Ensures audit trail for planned changes to environments

The screenshot displays the IBM DevOps Change and Configuration Management (CCM) interface. The main view is for a plan titled "2.0 M3", which contains 265 items (98 open, 167 closed) and ended on August 17, 2012. The plan details show it is owned by "Development" and is an "Iteration Plan" for the iteration "2.0 M3 [7/2/12 - 8/17/12]". A "Burndown" chart is present, but the report is not found. The "Planned Items" section is shown in a "Taskboard" view, displaying a Kanban-style board with columns for "Story", "Open", "In Progress", and "Closed". The board shows several items, including "As a developer, I want to specify multiplicity of a", "Create Dynamic Wizard pages and Operations for", "Use Quick Selection dialog for choosing a", "Provide usable error messages", "As a release coordinator, easily manage the", and "Optimize publish behavior to only create or upload".

# Manage Changes: *Application and configuration changes versioned*

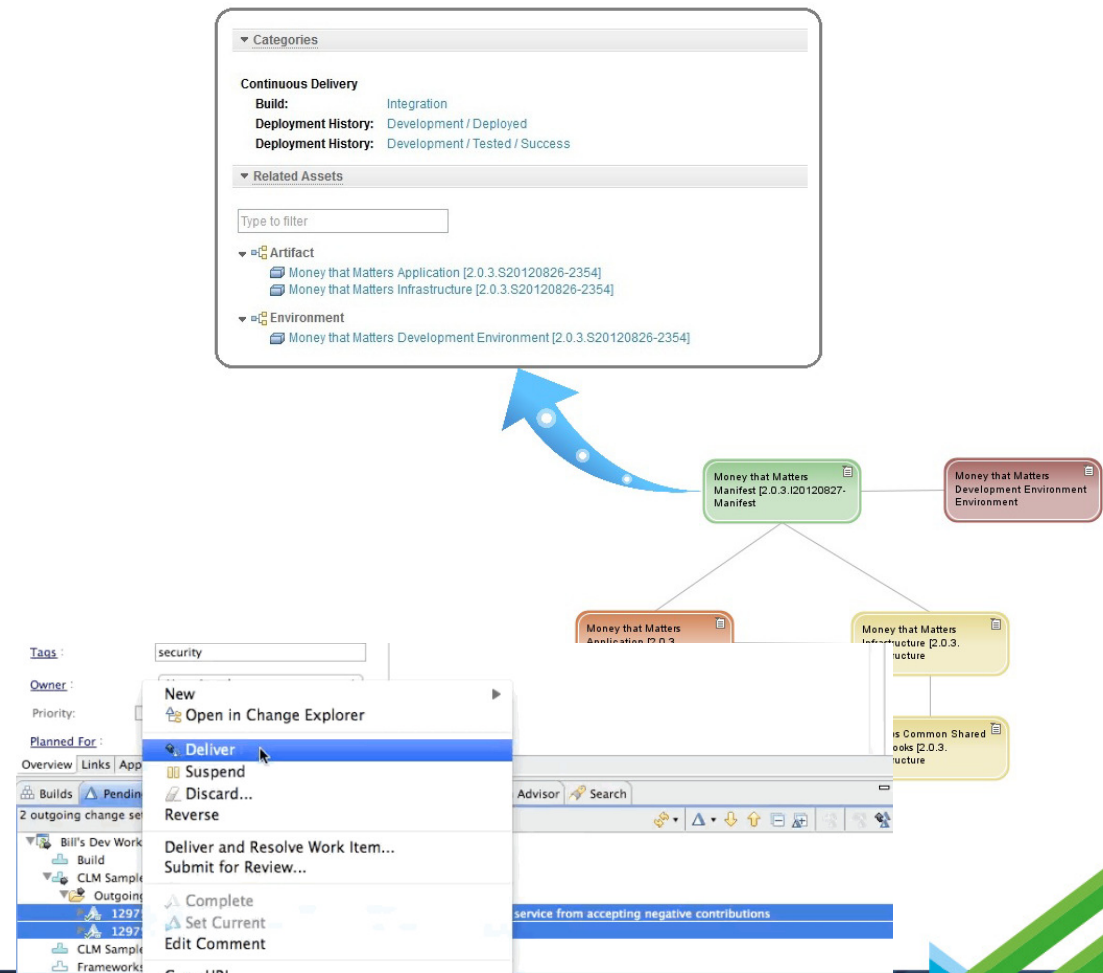


## Issues

- Configuration changes vary between environments
- Configuration changes are not well managed
- Release artifacts are randomly created and applied

## Solution

- Version control configuration changes as code in an SCM close to the application changes
- Version and track release artifacts in an Artifact Library
- Track release dependencies





# Automate Delivery: *Repeatable and reliable processes*



## Issues

- Application deployment is generally an unreliable, manual process
- Difficult to replicate
- Slow to execute
- Long delays between deployments increases size of change sets making problem determination difficult

## Solution

- Tooling to define and configure an automated delivery process
- Reliable and repeatable delivery process
- Deploy early and often to “fail fast” and resolve even faster

The screenshot shows the Rational Team Concert interface. The main window displays a list of build activities with columns for Activity Label, Start Time, and Activity Duration. Below this, there is a summary table for builds.

Activity Label	Start Time	Activity Duration
Jazz Source Control setup	00:00:00	1 m 01 s
Accepting changes	00:00:01	7 s
Fetching files	00:00:08	53 s
Publishing Manifest asset to asset library	00:01:27	6 s
Building application	00:01:44	42 s
Compiling	00:01:46	10 s
Running unit tests	00:01:57	14 s
Packaging deployable application	00:02:11	15 s
Defining application library entry	00:02:29	4 s
Publishing application to library	00:02:33	19 s
Publishing application package to library	00:02:34	9 s
Defining infrastructure asset library entry	00:02:44	1 s
Publishing infrastructure package to library	00:02:45	6 s
Publishing Environment asset to asset library	00:02:54	4 s
Deploying application to test environment	00:03:01	15 m 02 s
Validating Weaver environment definition	00:03:03	11 s
Sending request to cloud environment to deploy application	00:03:14	14 m 39 s
Started test application at fit-vm8-062.rtp.raleigh.ibm.com	00:17:54	9 s
Running tests against deployed application	00:18:05	10 s

Build	Label	Progress	Estimated Completion	Start Time	Duration	Tags
✓	integration.jke.weaver.rake	I20120824-1556	Completed	August 24, 2012 3:56:08 PM	18 minutes, 16 seconds	

# Feedback: *Immediate feedback of changes*

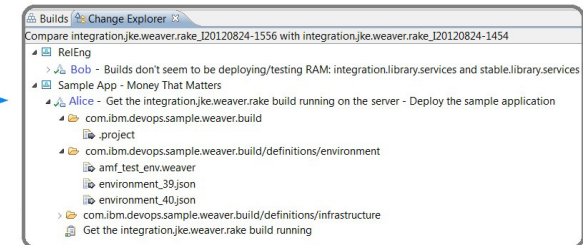
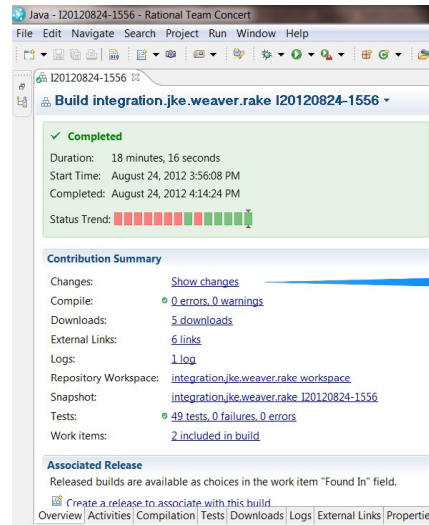


## Issues

- Weeks, months pass before getting any feedback of a change (if any)
- Often cannot determine where/if a build was deployed
- Long delays in feedback makes problem determination more difficult

## Solution

- Report results of automated delivery process directly in context of development tools
- Preserve traceability of delivery output with build process
- Report automated tests results in a timely fashion





# Agenda

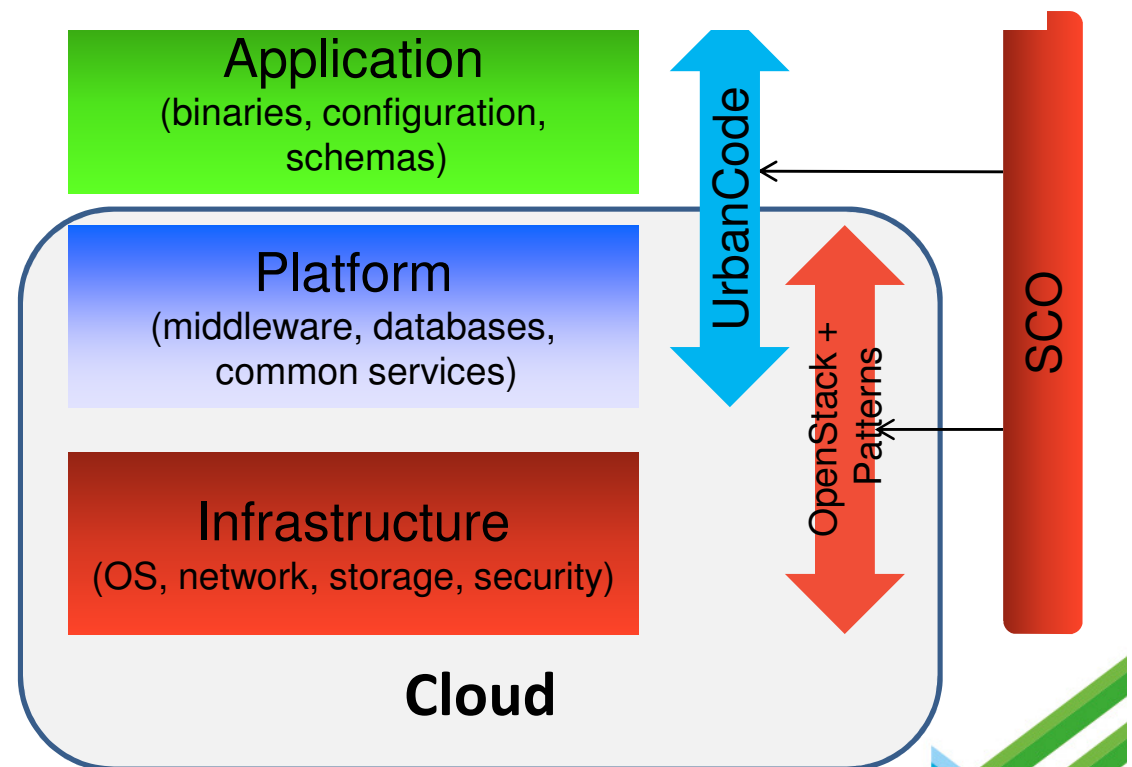
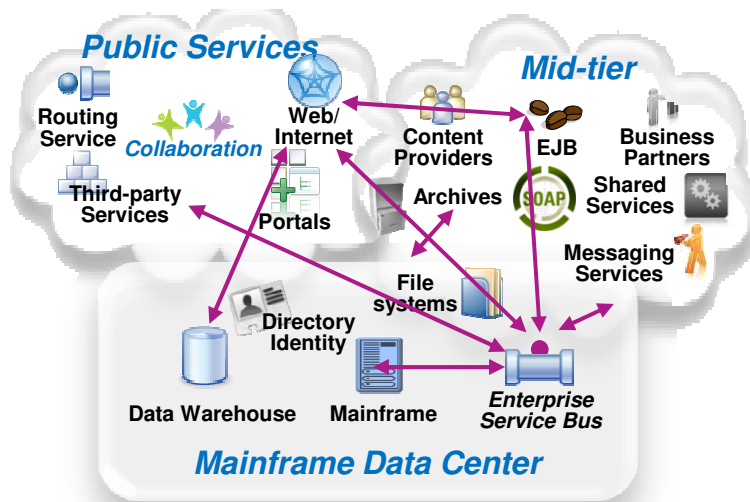
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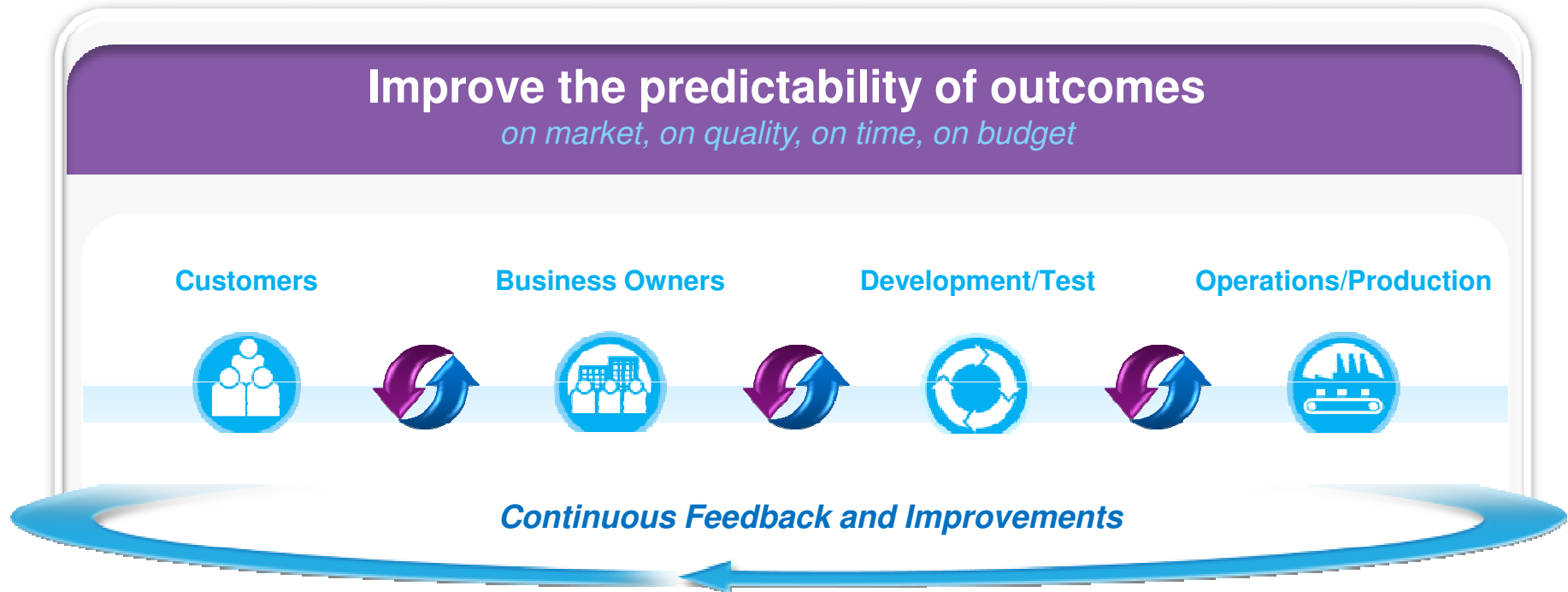
# Cloud only gets you part of the way



- Cloud (software defined environment) drives speed and consistency of infrastructure & platform
- Applying application and configurations changes is the next complexity bottleneck



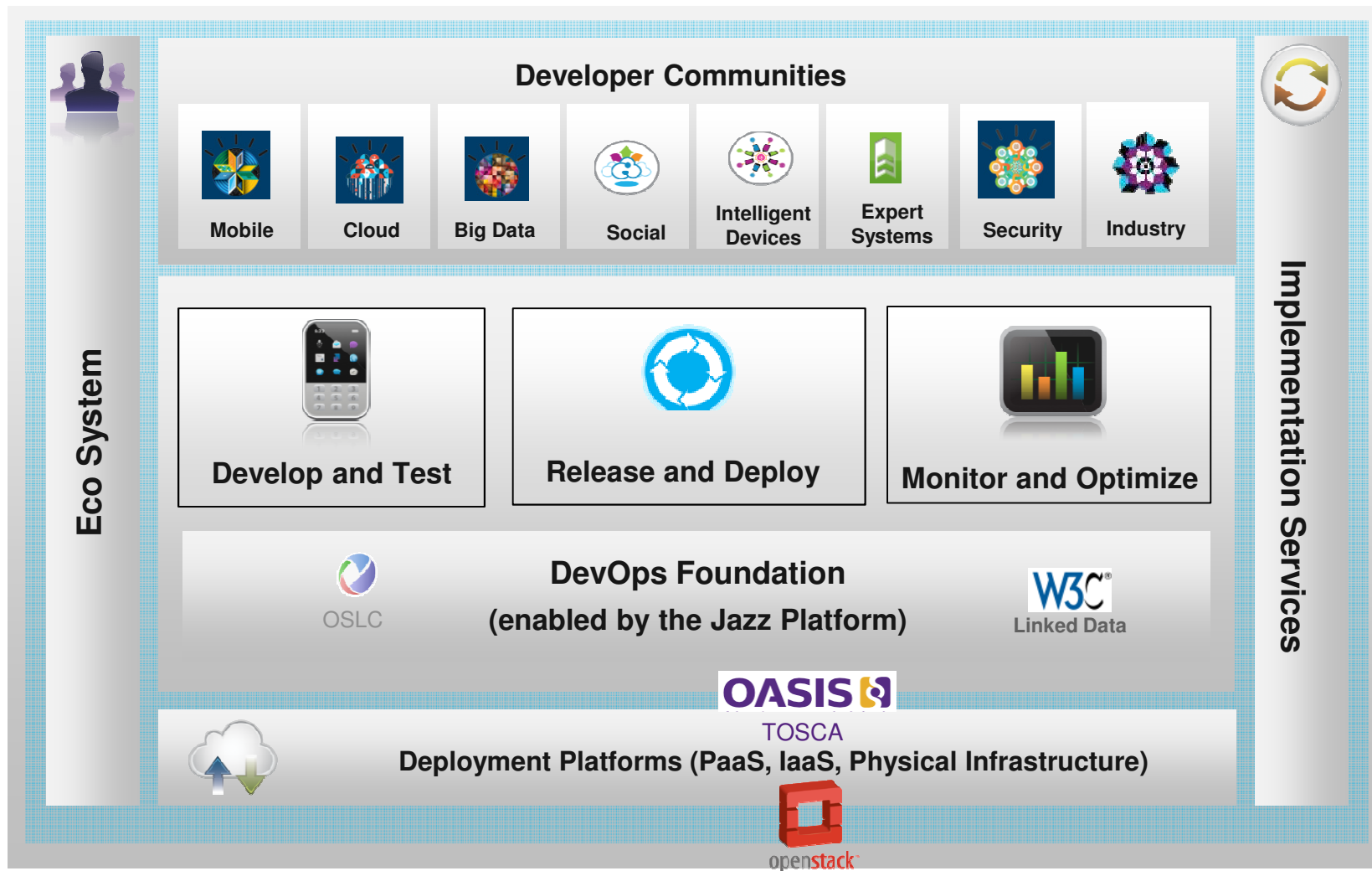
# IBM provides expertise across the DevOps lifecycle



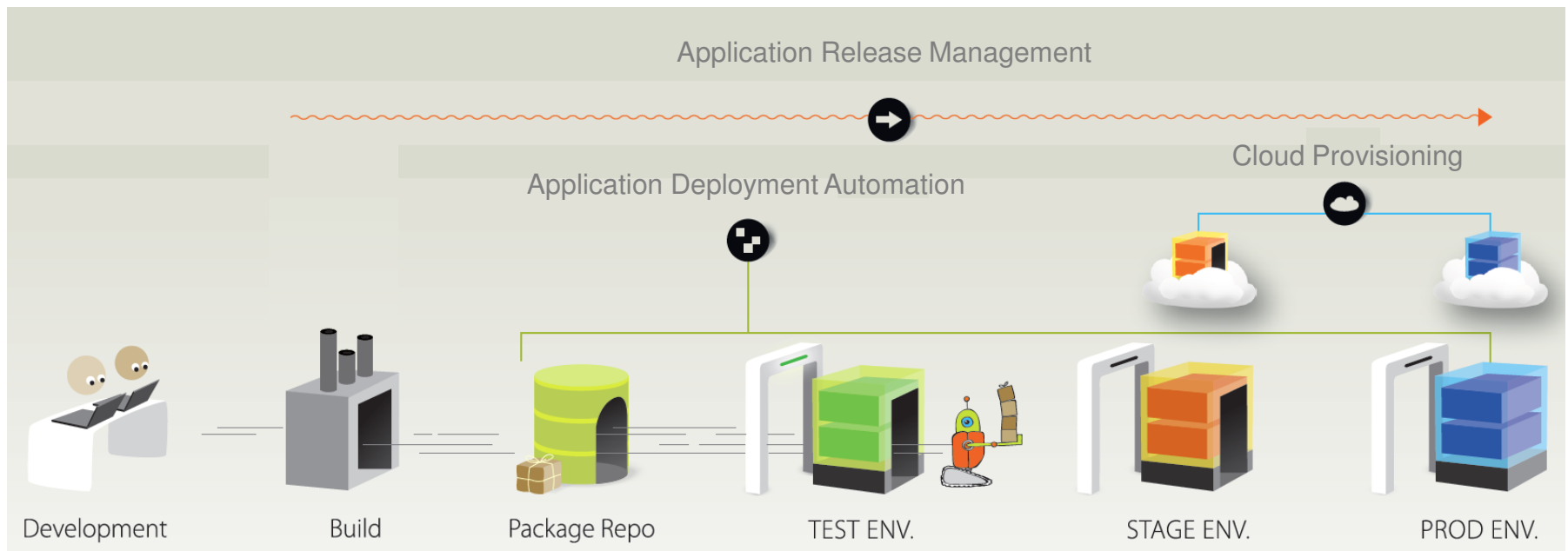
- Continuous feedback across heterogeneous environments
- Expertise in enterprise-scale data, security, analytics and instrumentation
- Open-standards-based innovation delivery platform that leverages existing investments
- End-to-end capabilities for managing all aspects of delivery
- Client partnership leveraging know-how and industry expertise to deliver quick ROI
- Solutions that support incremental adoption based on delivery process maturity



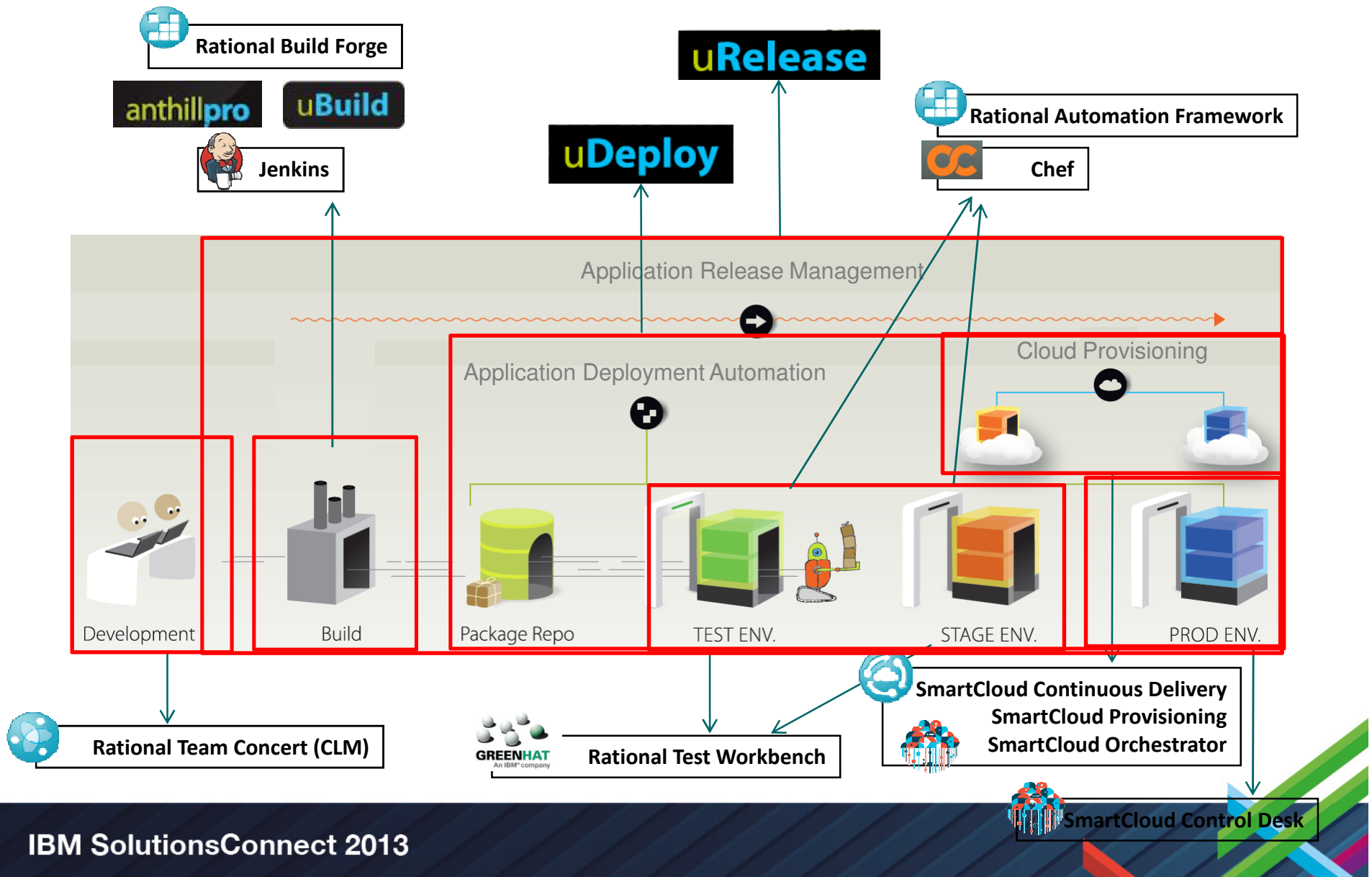
# IBM DevOps Reference Architecture



# DevOps Tool Chain



# DevOps Tool Chain



# Delivering real-world results



## **International Investment Firm** *Driving Down Costs*



Release process required considerable effort and delayed by manually-introduced errors

- Solution: Automated release process
- Results: Cost avoidance of over \$2.3M/year, reduced release time from 2-3 days to 1-2 hours and virtually eliminated test team “down-time”

## **Online Retailer** *Speeding Time-to-Market*



Significant delays getting application changes to production

- Solution: Scaled up continuous deployment
- Results: Deployment time reduced by over 95% with easy scale and deploying to over 250 servers within 2 months of implementation

## **Higher Education** *Speeding Time-to-Market*



Agile development teams constrained by slow deployment to dev and test environments

- Solution: Accelerate deployment by enabling development teams to self deploy with automation
- Results: Deployments cut from hours to minutes and a greater number of servers with fewer resources

## **SaaS Software Provider** *Reducing Risk*



Difficulty managing multiple customer configurations and versions of software deployed across servers

- Solution: Automate managing configuration and version deployment
- Results: Execute customer specific releases, reduced deployment outages by over 90%



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# Reduce Cycle-time to deliver business changes across dev/test/ops lifecycles



	Dev	Test	Ops
<b>Value</b>	<ul style="list-style-type: none"> <li>Self-Service Deployment with reduced overheads to design and test changes</li> <li>Faster Production feedback with context and fix defects</li> <li>Early performance insights</li> </ul>	<ul style="list-style-type: none"> <li>Improved Test coverage</li> <li>Reduced setup overheads</li> <li>Heterogeneous environments</li> </ul>	<ul style="list-style-type: none"> <li>Self-service to Dev/Test</li> <li>Faster time to deploy Apps</li> <li>Reduced time to stabilize and post-production defects</li> <li>Reduced setup and deployment overheads</li> </ul>
<b>Incremental Improvements and What can you do with it?</b>	<ul style="list-style-type: none"> <li>More features delivered</li> <li>More time for Innovation and experimentation</li> </ul>	<ul style="list-style-type: none"> <li>More test coverage and test iterations</li> </ul>	<ul style="list-style-type: none"> <li>More Apps deployed supporting business</li> <li>Supporting Dev to innovate more</li> </ul>
<b>Metric</b>	<ul style="list-style-type: none"> <li>Avg time to deliver a story</li> <li># of Sprints per release</li> <li># of defects from test / production</li> </ul>	<ul style="list-style-type: none"> <li>% of Test coverage</li> <li># of test iterations</li> <li># of defects opened from production</li> </ul>	<ul style="list-style-type: none"> <li># of Apps Deployed</li> <li># of Dev/Test projects supported / person <sup>24</sup></li> <li>Time to Stability</li> <li>Time to fix hot defects</li> </ul>
	Business Metrics: Time to deliver a change - Predictability and Variance, Quality metrics		



# Who should be interested ?



	Primary interest	Extended interest
Development (VP Dev/Test, CTO)	<p><b>Continuous Integration</b></p> <p>Target: Development teams using RTC to do continuous integration today, or to become more agile in their delivery of services.</p> <p>Pain: Struggling to quickly spin-up a test environment and deploy application code and associated middleware including configuration.</p> <p>Customer Value: Reduce cycle time from 3 weeks to a few hours</p>	<p><b>Continuous Testing</b></p> <p>Target: QA / Test teams using Rational Quality portfolio</p> <p>Pain: Teams struggling with setting up test environments for functional, integration and performance test coverage.</p> <p>Customer Value: Setup test environments 90% faster</p>
Operations (CIO, Enterprise Architect)	<p><b>Continuous Deployment</b></p> <p>Target: Operations or release teams using IBM private cloud or virtual environments</p> <p>Pain: Unable to keep up with Dev/Test requests to setup and configure environments – infrastructure, middleware and applications.</p> <p>•Customer Value: Deliver environments 3X faster</p>	<p><b>Continuous Monitoring</b></p> <p>Target: Operations teams experiencing a high rate of production rollbacks</p> <p>Pain: Application defects and performance impacting production release readiness and efficiencies</p> <p>Customer Value: 30 - 40% reduction in outages</p>