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# Collaborative DevOps – Learn the magic of Continuous Delivery

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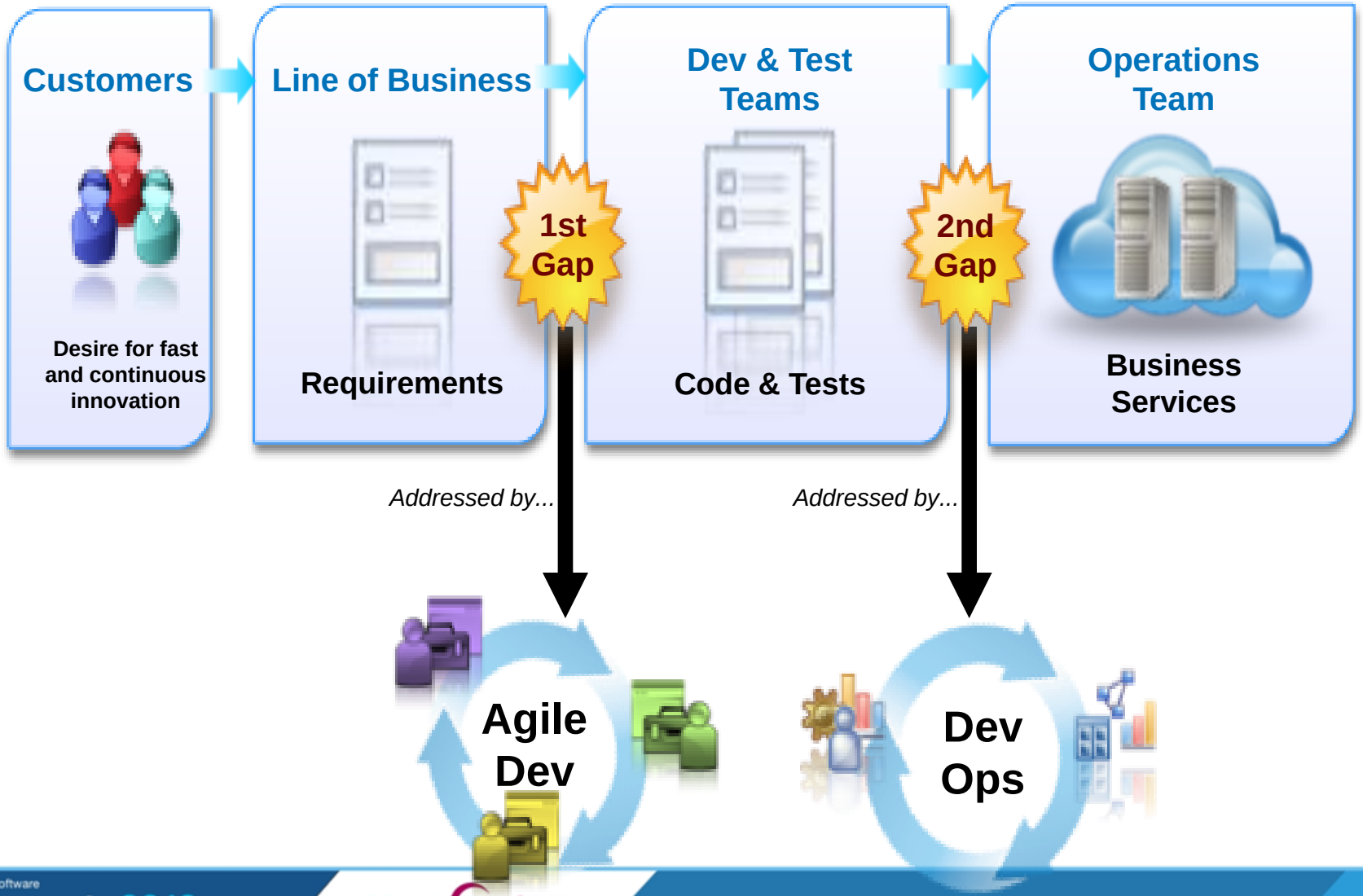
# Addressing Application Lifecycle Management gaps

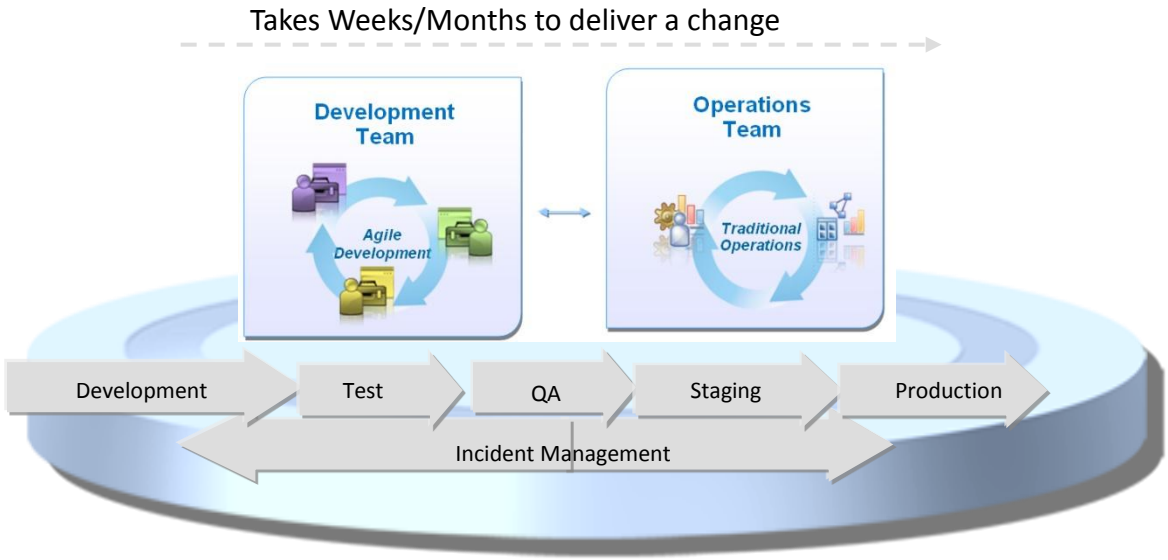


# Software Delivery Challenges: what we hear from customers

**Needs:**

- Reduce cycle time and delays
- Improving software delivery efficiencies with standardization and automation
- Improving Quality of Delivery and reducing roll-backs

*Simplified view of a single-release pipeline. In general, there are multiple projects, releases, and technologies at play*




### *Quality Challenges*

- Difficulties in reproducing production defects
- Long time to fix defects
- Poor Test coverage

### *Release Challenges*

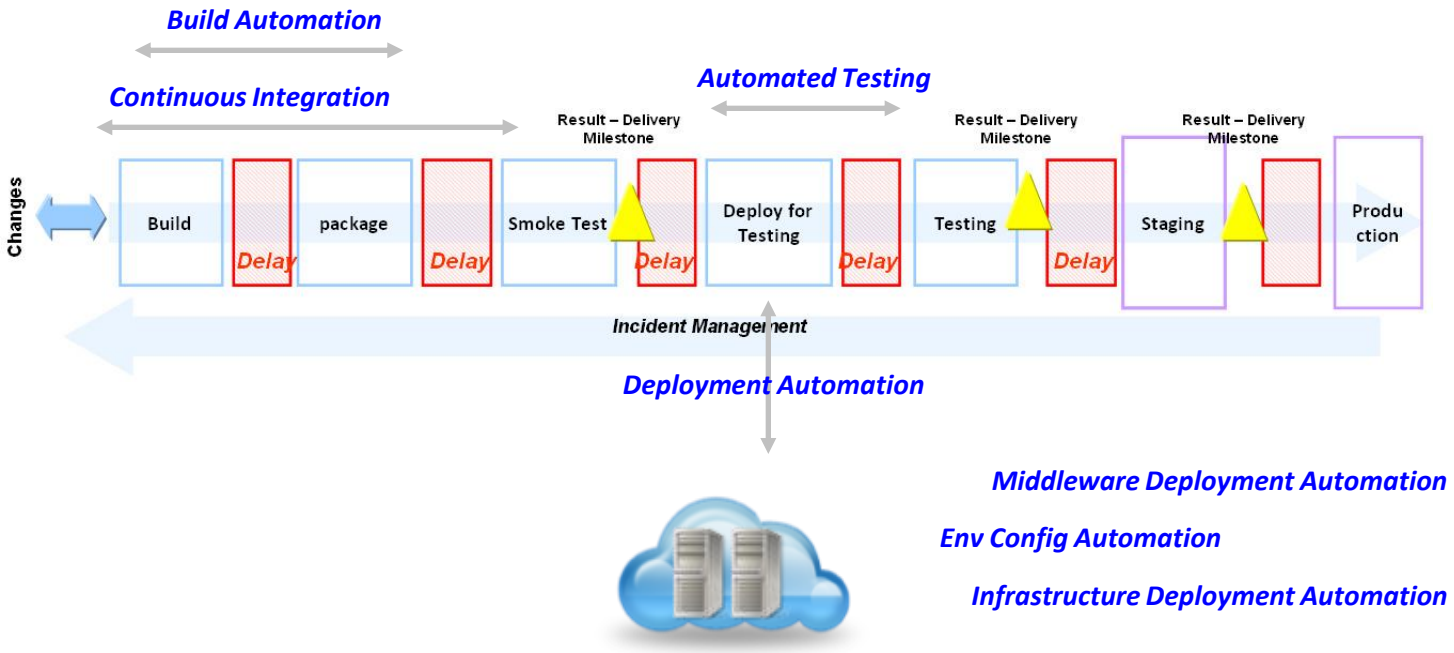
- Differences in Dev/Ops environments
- Siloed / Limited automation
- Long set up time

### *Process and Cultural challenges*

- Point-Point, adhoc and Fragile integration of tools
- Poor visibility, stability and extensibility
- Cultural barriers limiting collaboration

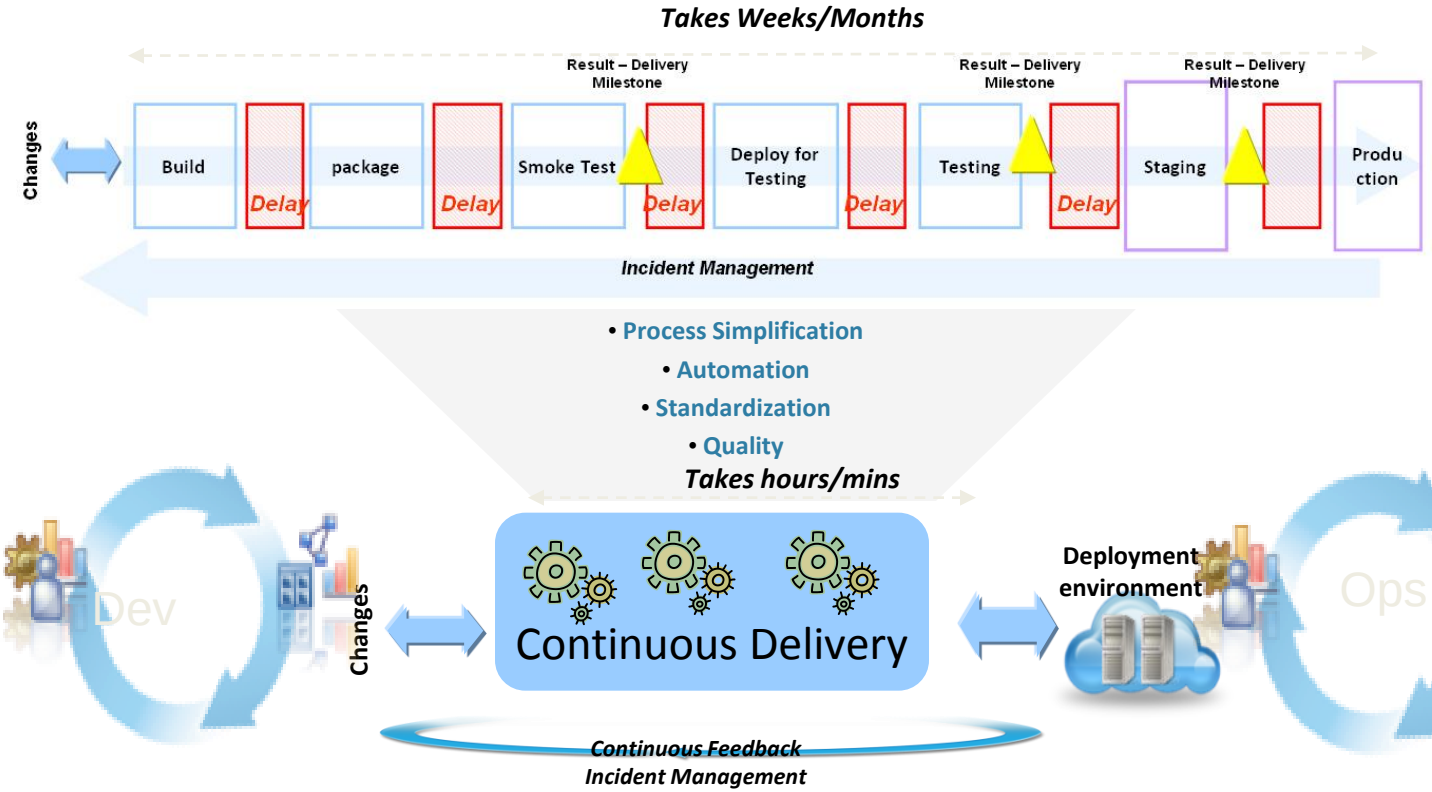
# Current Customer approaches addressing these challenges..

- Selective & Siloed automation of the delivery process with limited benefits
- Poor visibility and control impacting cycle time



# Need for a Simple approach to bringing agility across the lifecycle

*Continuous and automated delivery of changes leveraging Cloud*

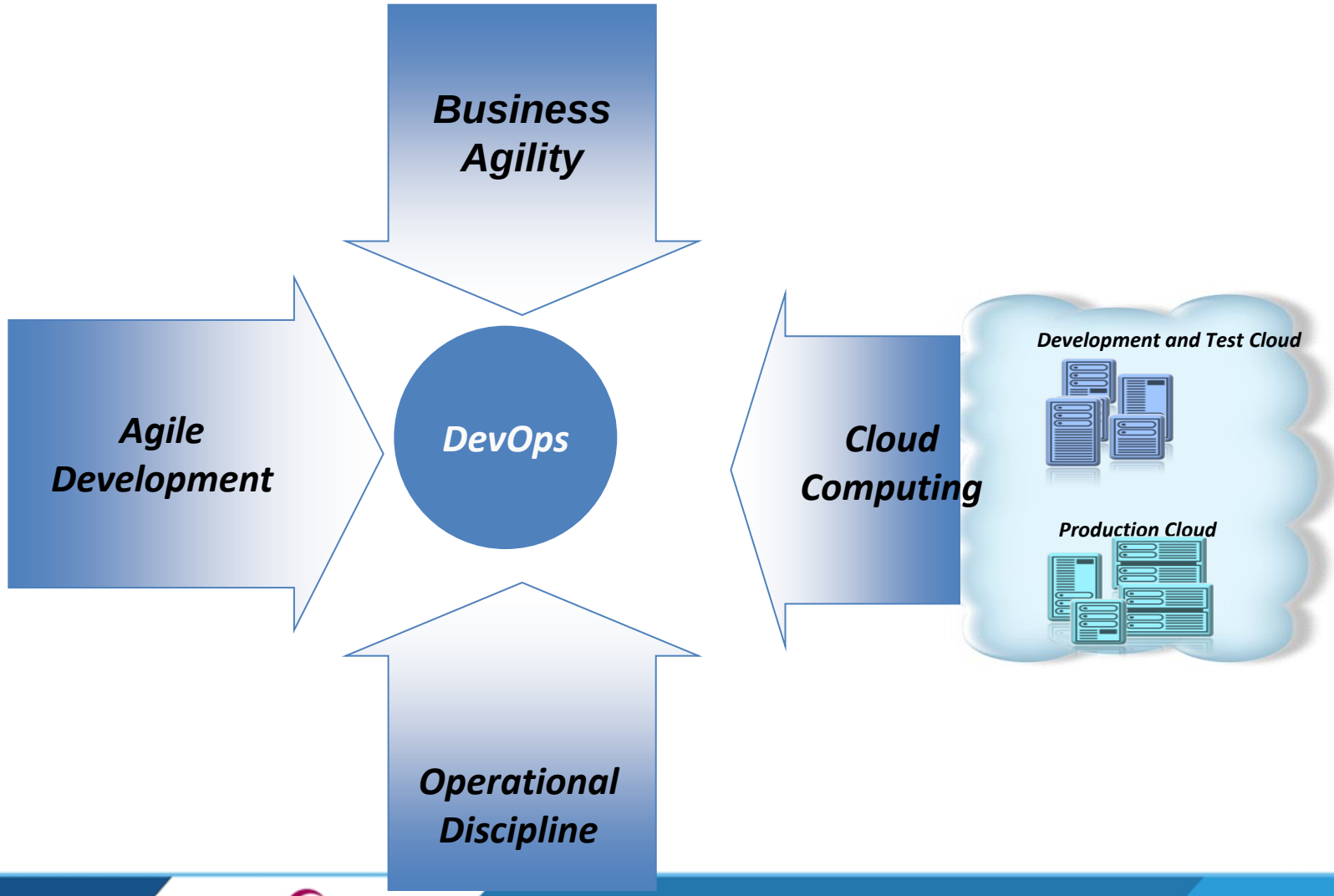



- Long Cycle Time
- Poor Visibility and Control

- Reduced cycle time
- Control, Agility and scalability

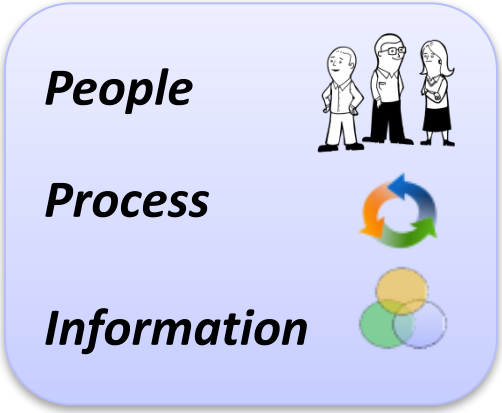
# Time is now for DevOps

*Trends accelerating the need for Continuous Delivery*



# DevOps Principles & Values

- Collaborate across disciplines
- Develop and test against a production-like system
- Deploy frequently
- Continuously validate operational quality characteristics



# How do we make this happen?

**Automate** *Everything*

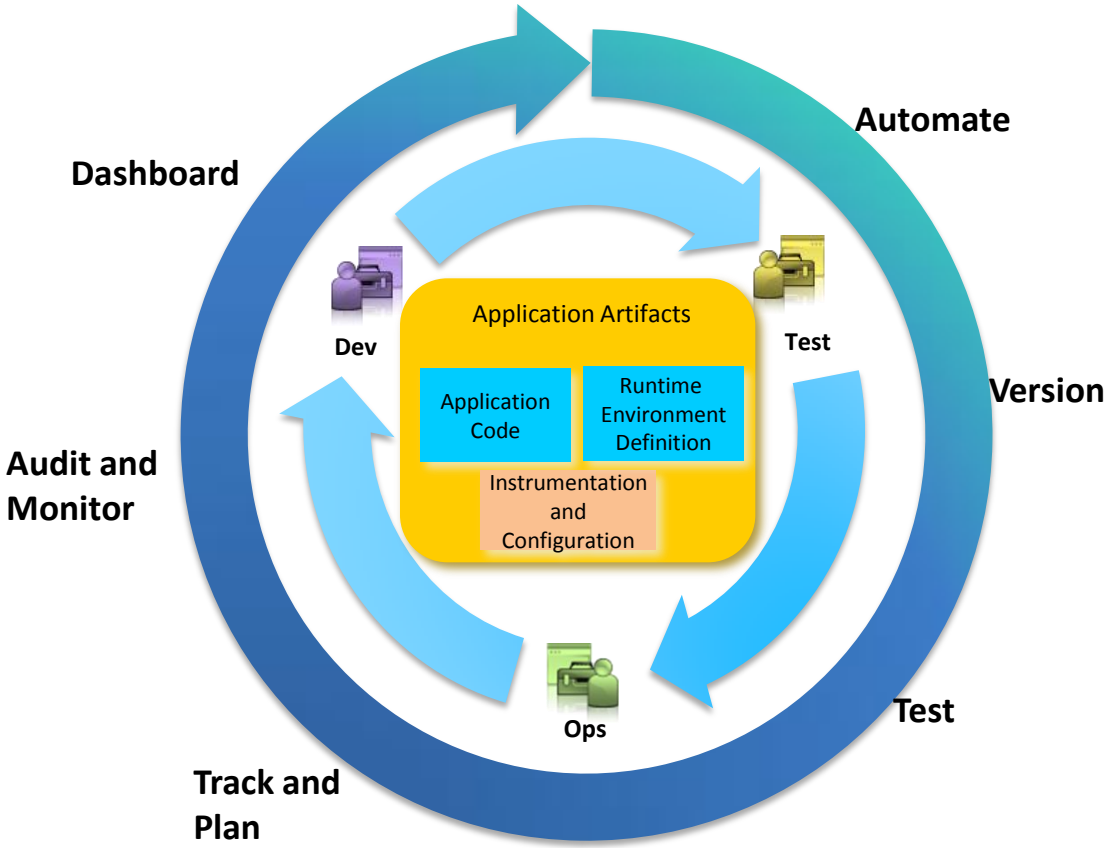
**Version** *Everything*

**Test** *Everything*

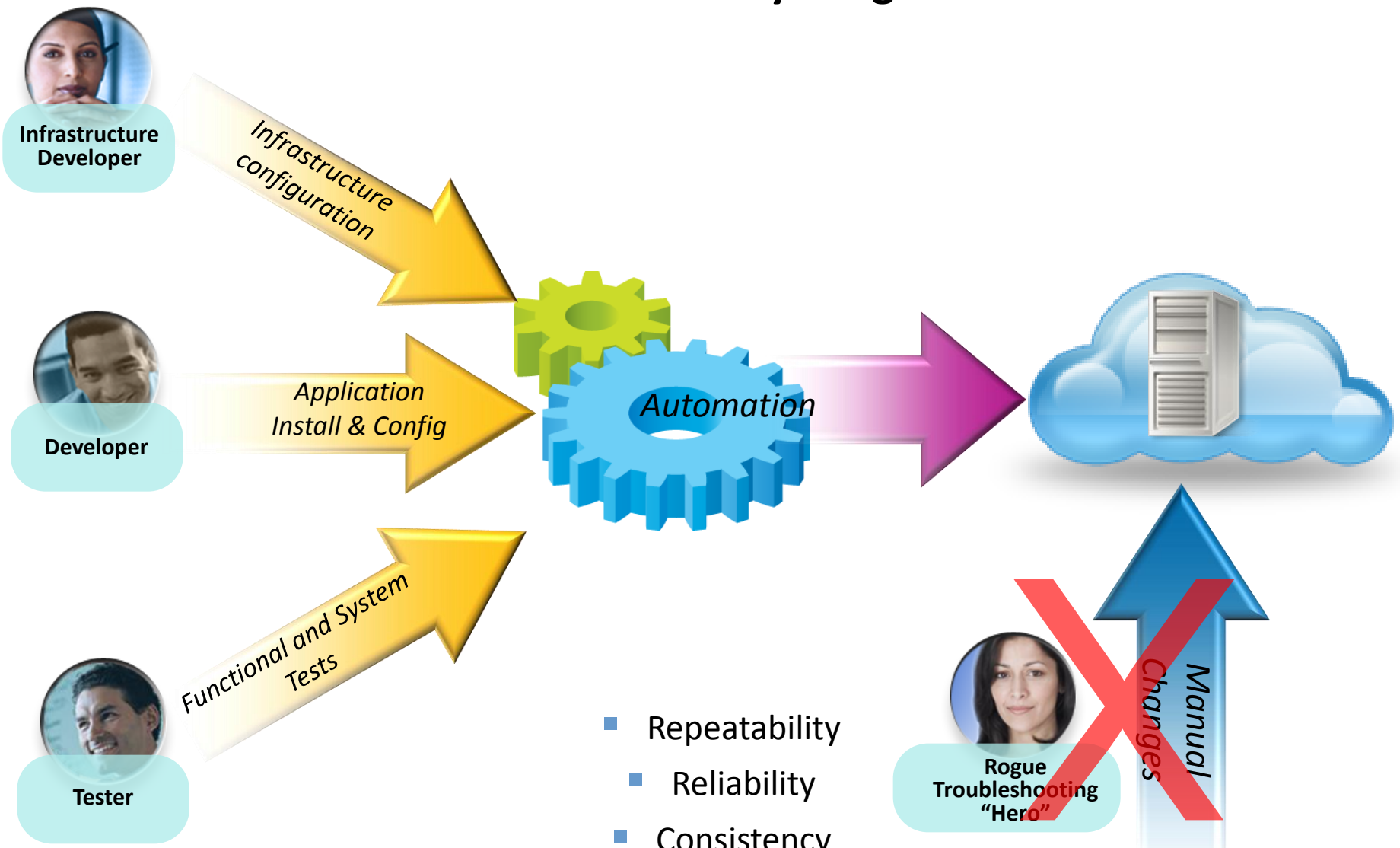
**Track and Plan** *Everything*

**Audit and Monitor** *Everything*

**Dashboard** *Everything*

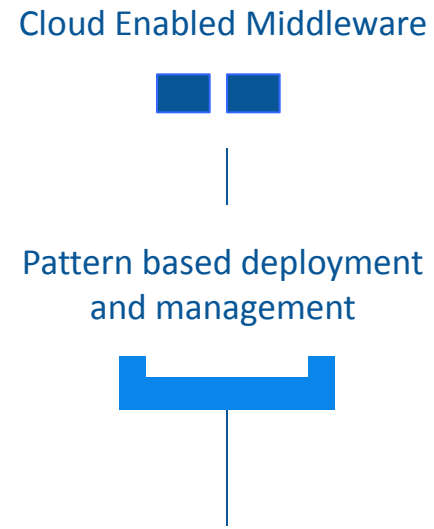


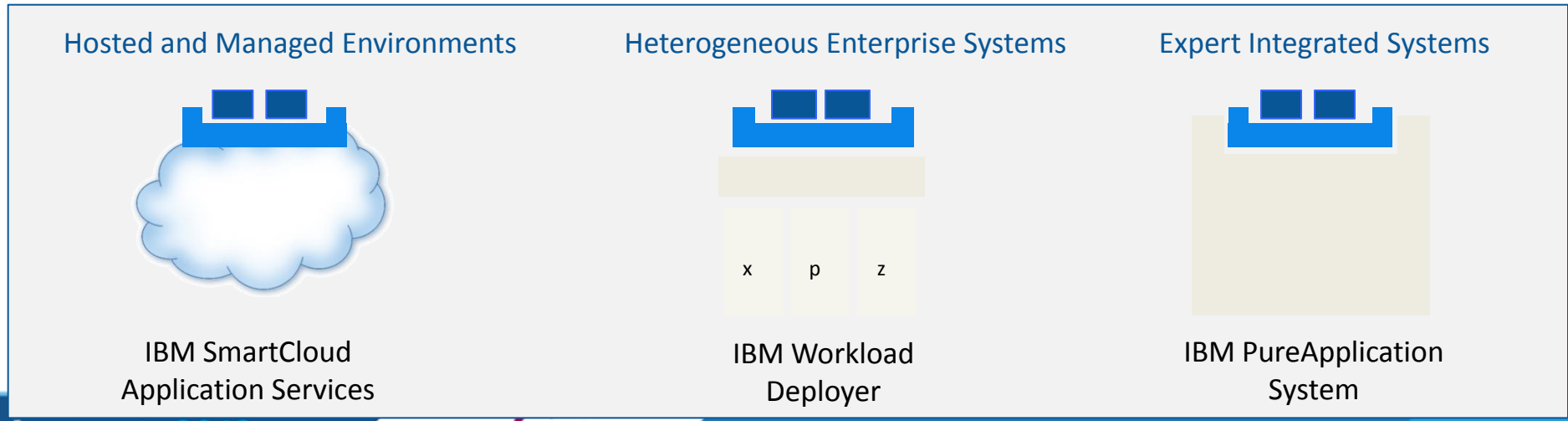
# Automate Everything



# DevOps leverages IBM's Pattern Strategy for Workload-Aware Cloud

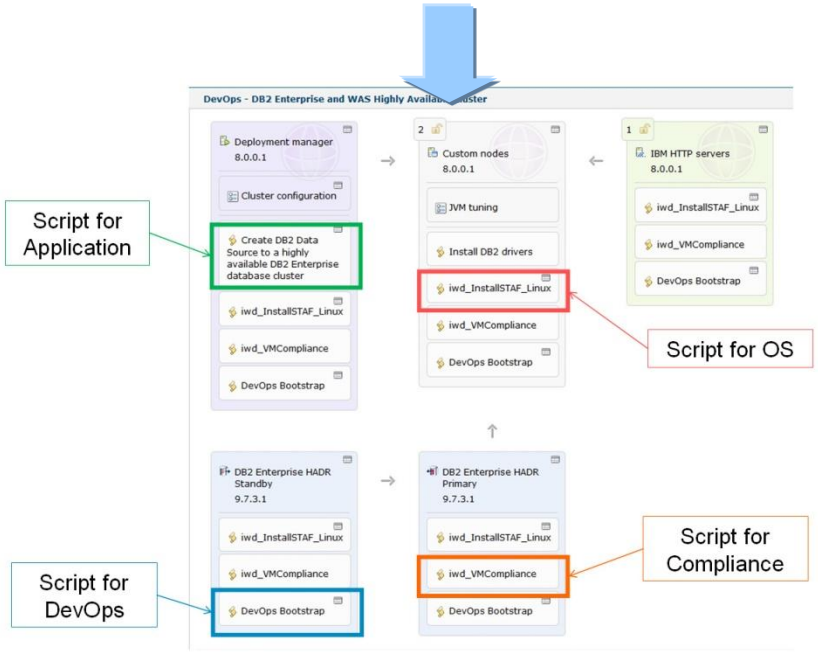
- **Workload Awareness**
  - Consistent framework for deploying and managing middleware and applications in cloud environments
    - Standardized patterns capturing best practices
    - Automated, workload aware deployment and management
    - Virtualized middleware content for cloud deployment
- **Deployment Flexibility**
  - Portable across deployment environments
    - Hosted and Managed environments
    - Heterogeneous Enterprise Systems
    - Expert Integrated Systems



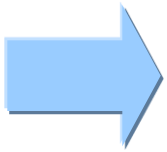



# Virtual System Patterns to standardize and automate deployments

Dev & Ops Work together to create patterns



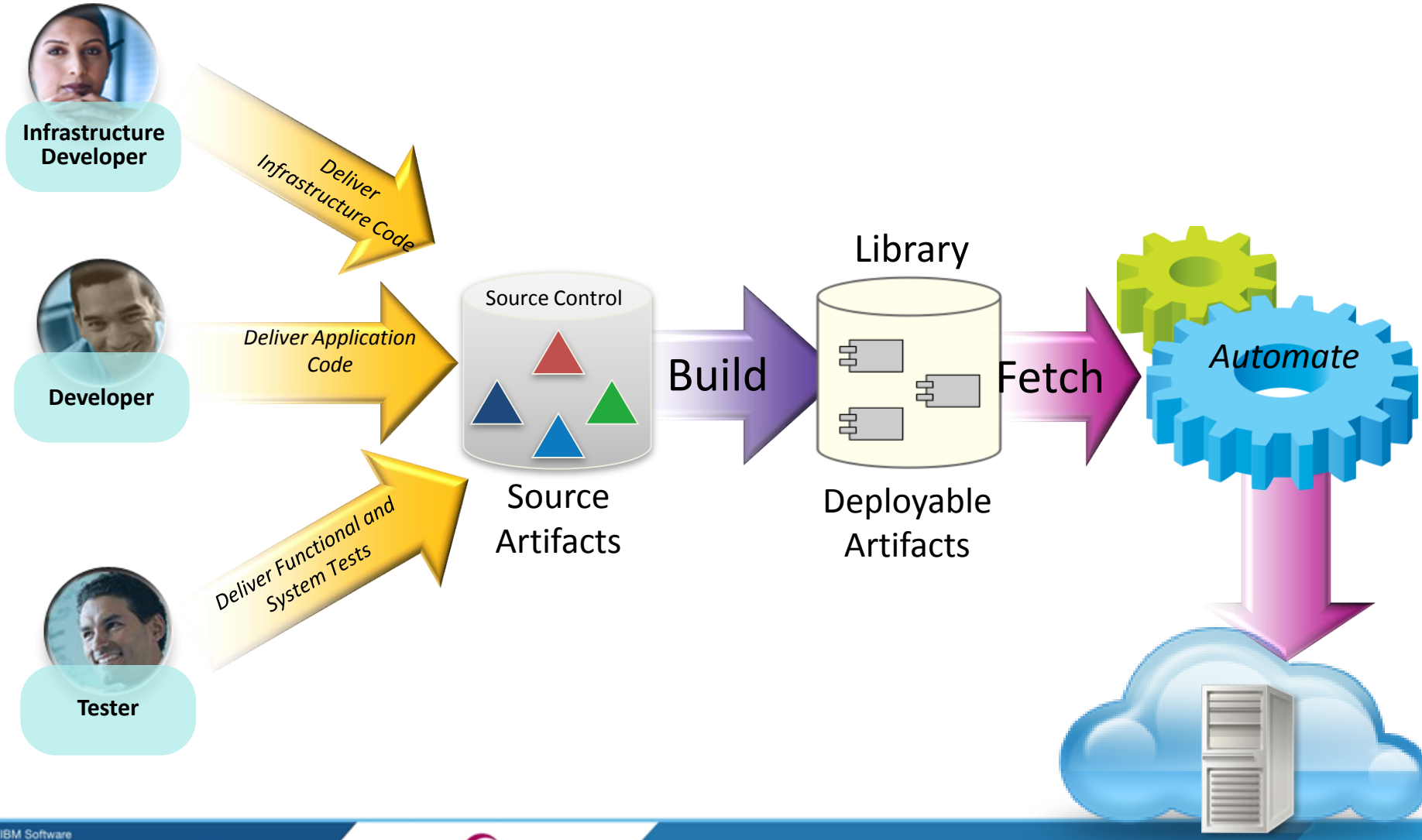

Provisions to the Cloud



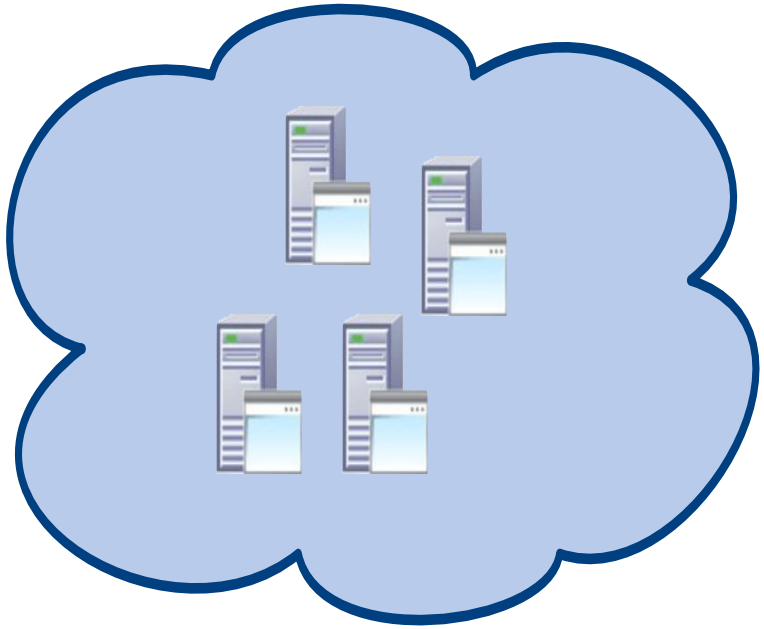
- ✓ IBM SmartCloud provisioning
- ✓ IBM Integrated Workload Deployer
- ✓ IBM PureSystem

- Consistent framework for deploying and managing middleware and applications in cloud environments
- Standardized patterns capturing best practices
- Portable across deployment environments

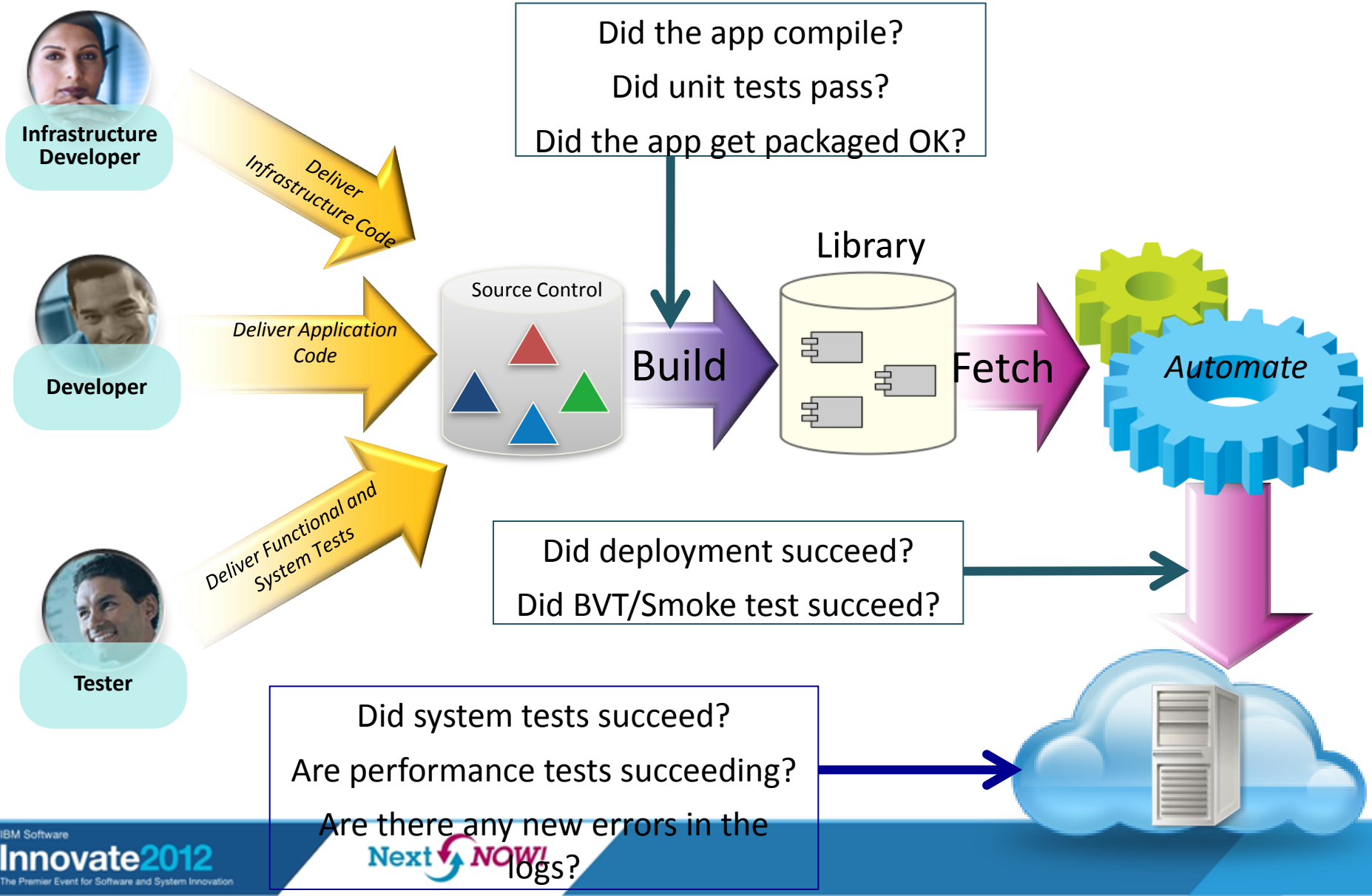
# Version *Everything:*
# Library of Deployable Artifacts



```
#!/usr/bin/env ruby

class DevopsDeployer
  def initialize(build_url, build_id)
    @log = Logger.new(LOG_FILE)
    @log.level = LOG_LEVEL

    @iaas_gateway = IaasGateway.new(HsltProvider.new(),
LOG_FILE, LOG_LEVEL)
    @server_instance = nil

    rtc_build_system_provider = RtcBuildSystemProvider.new(
RTC_REPOSITORY_URL, RTC_USER_ID, RTC_PASSWORD_FILE)
    @build = rtc_build_system_provider.resolve_build(
build_url, ENV['buildResultUUID'], build_id)
    @build_system_gateway = BuildSystemGateway.new(
rtc_build_system_provider, LOG_FILE, LOG_LEVEL)
  end

  def add_build_stamp
    template_file = WEB_APP_ROOT +
"/app/templates/pages/page.html"
    @log.info "Adding build ID stamp #{@build.id} to \
#{template_file}"

    # Read in the file's contents as a string, replace
    # the build_id, then overwrite the original contents
    # of the file
    text = File.read(template_file)
    new_text = text.gsub(/\{\{ build_id \}\}/,
"<a href=\"#{@build.uri}\">#{@build.id}</a>")
    File.open(template_file, "w") { |file|
      file.puts new_text
    }
  end

# ...
```



# Test *Everything:*
# Continuous, automatic testing across the lifecycle



# Consistent monitoring deployed throughout lifecycle

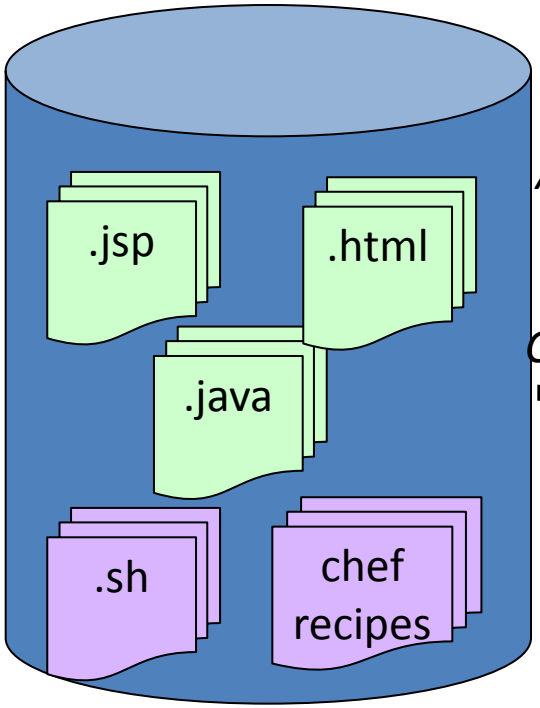
# Delivery Pipeline

*Integrated Change Management*

*Automated Delivery Task Execution*

*Delivery Library*

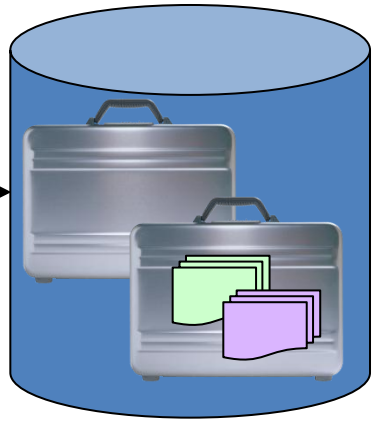
*Pattern driven Provisioning of deployment environment*




Source Artifacts

Source Control Management

*Build, Package, & Unit Test Application Binaries & Platform Configuration*



Deployable Artifacts

Library

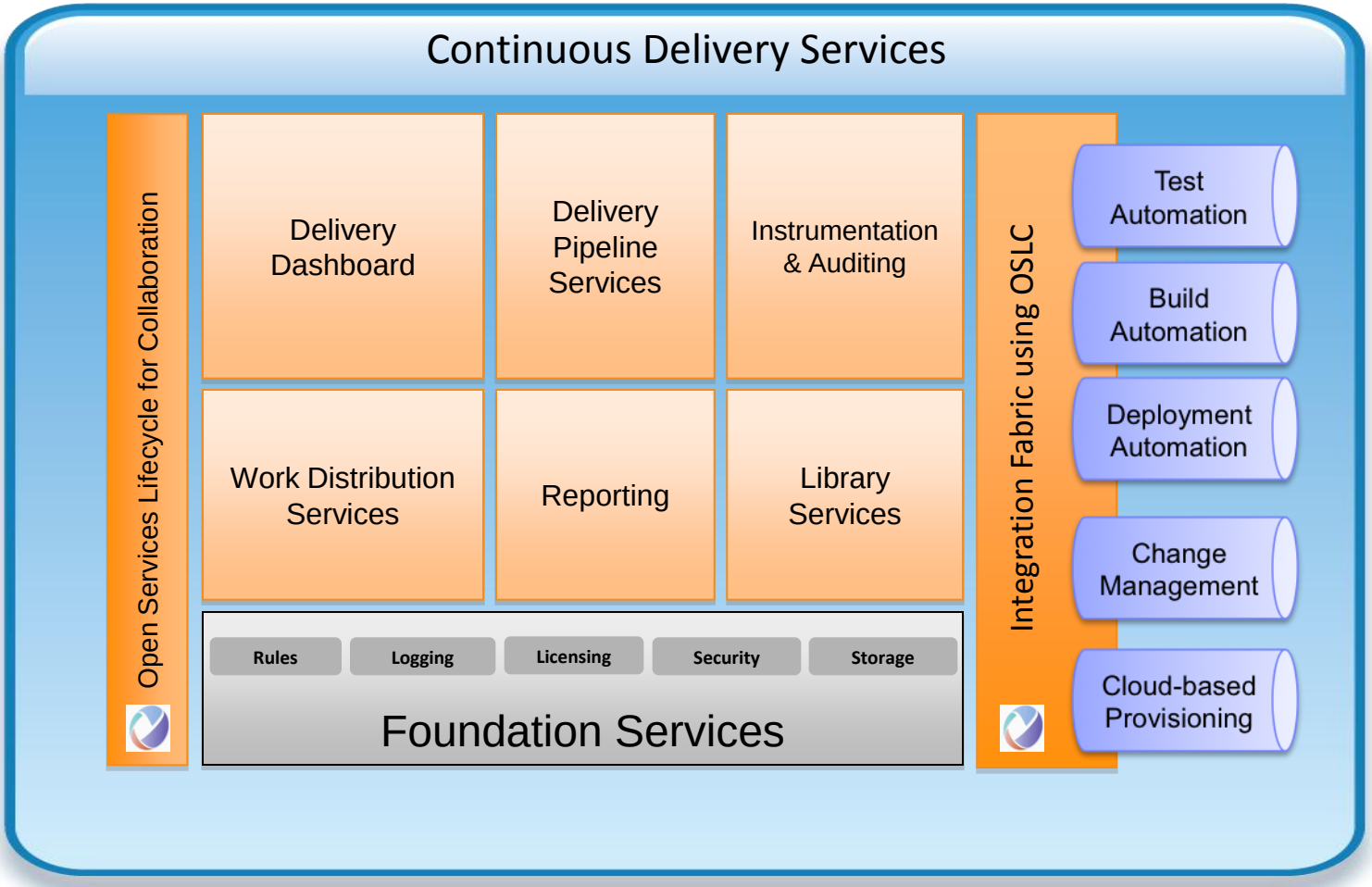
- ✓ IBM SmartCloud Enterprise
- ✓ IBM PureSystem
- ✓ IBM Integrated Workload Deployer

Deployment Environment

*Using the same tools and methodologies to manage and deliver software and deployment configuration changes.*

# DevOps Integrated Architecture

*Built on open standards allowing plug-in components from IBM products, open source, and third party*

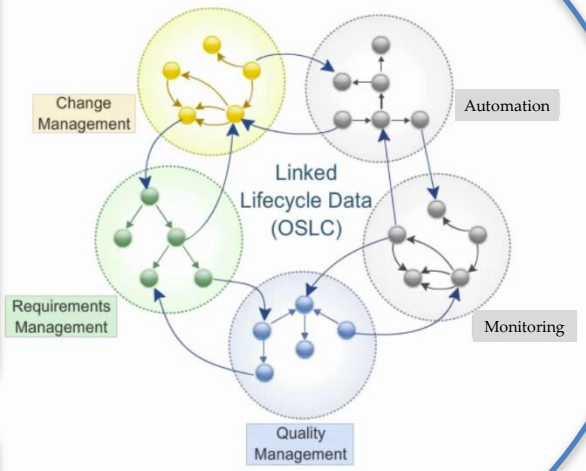


# Open Services for Lifecycle Collaboration (OSLC)

*Working to standardize the way software lifecycle tools share data*

**Open Services for Lifecycle Collaboration**
Lifecycle integration inspired by the web

- Community Driven – @ **open-services.net**
  - Specifications for numerous disciplines
    - Such as, ALM, PLM and DevOps
    - Defined by scenarios – solution oriented
      - Inspired by Internet architecture
- A different approach to industry-wide proliferation
  - Ba W3C® n Linked Data




**Inspired by the web**

**Free to use and share**

**Changing the industry**

## GET INVOLVED AND CONTRIBUTE!

# Introducing IBM SmartCloud Continuous Delivery

Beta

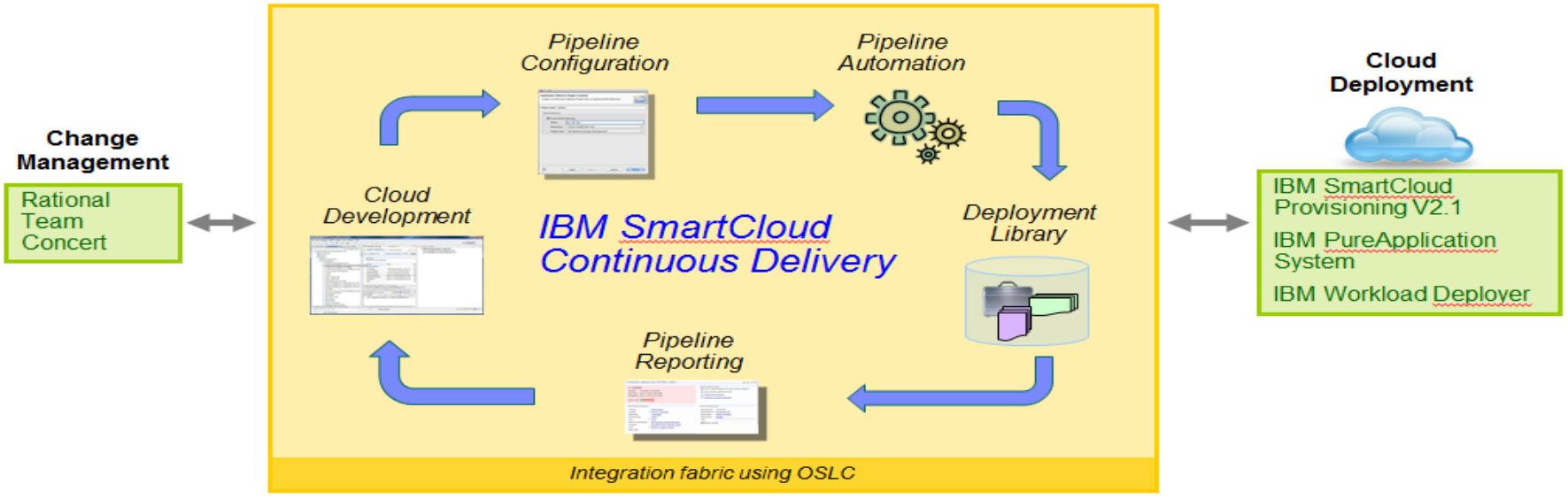
***Collaborate:*** Dev and Ops co-develop app environment definitions and patterns

Dev and Ops use the same metrics in Dev/Test/Prod

***Integrate:*** Continuously integrate , test & automate build changes onto standard cloud environments

Continuously deploy app changes into multiple (distributed and mainframe) environments

***Optimize:*** Measure velocity of change based on agile processes supported by DevOps



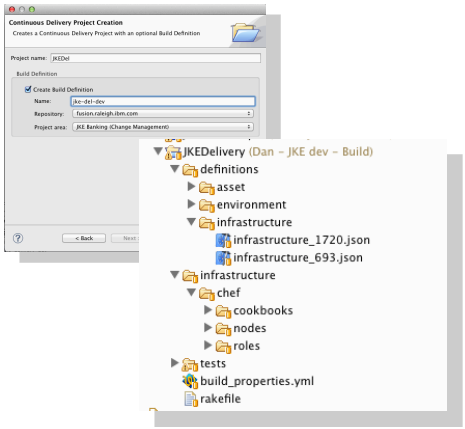
# Scenario

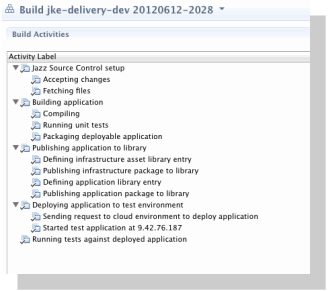
1 **Collaborate**
Dev and Ops collaborating together to create deployment patters

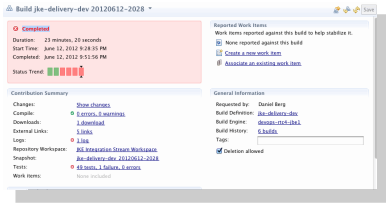
2 **Define**
Define the DevOps project with tasks for build, deploy, test

3 **Execute**
Changes from dev/test/Ops automatically deploy changes to the Cloud

4 **Measure**
Measure against desired metrics for continuous improvement

# IBM helps ease adoption of DevOps Journey

**Assess**

- Pains, metrics, culture, technologies for DevOps adoption

**Adopt**

- Roadmap aligning with business goals, metrics, milestones

**Acquire**

- Solution capability mapping to Continuos Delivery roadmap driven by IBM SmartCloud Continuous Delivery

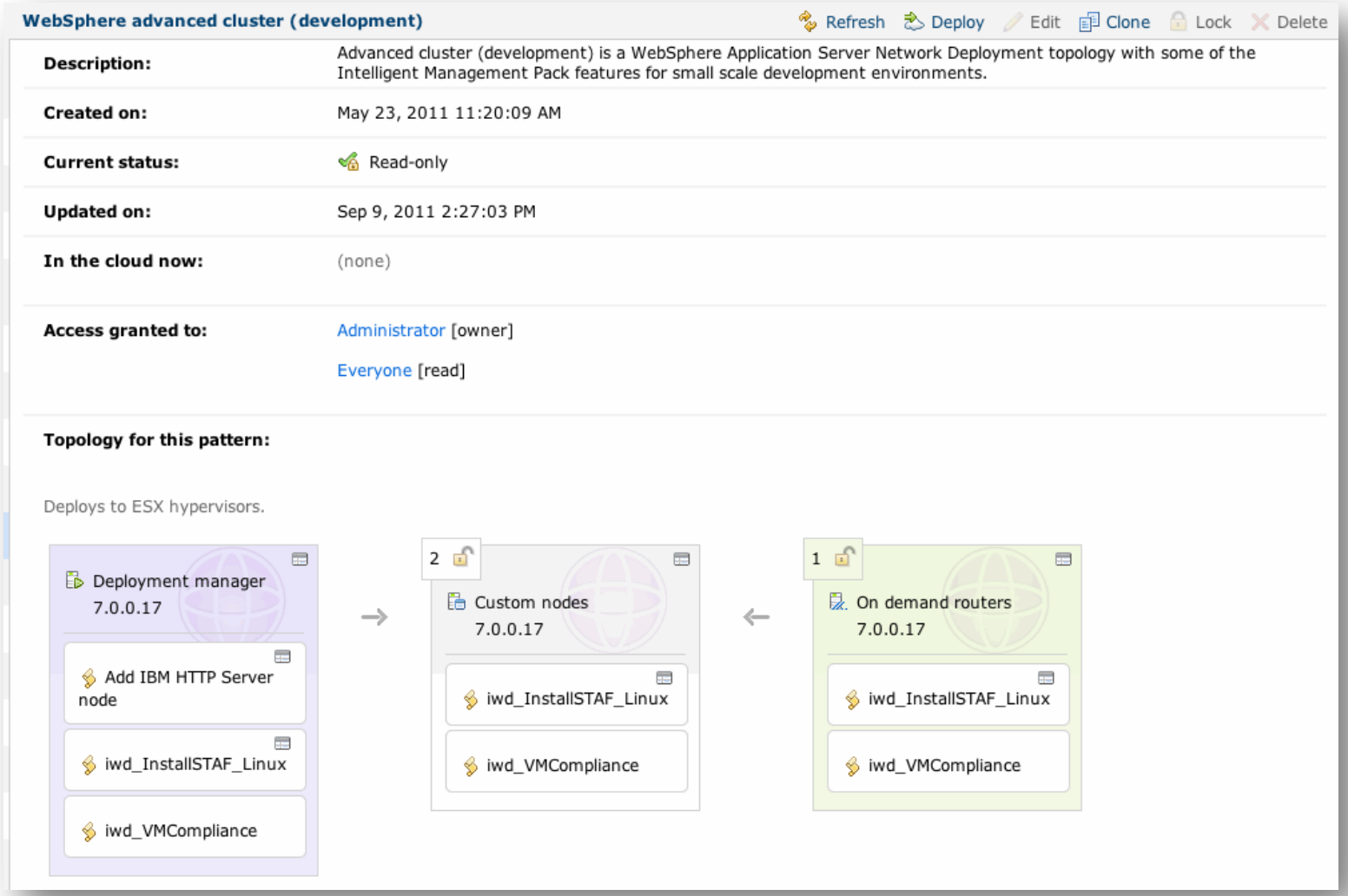
**Implement**

- Install, Integrate, Implement, Skills transfer

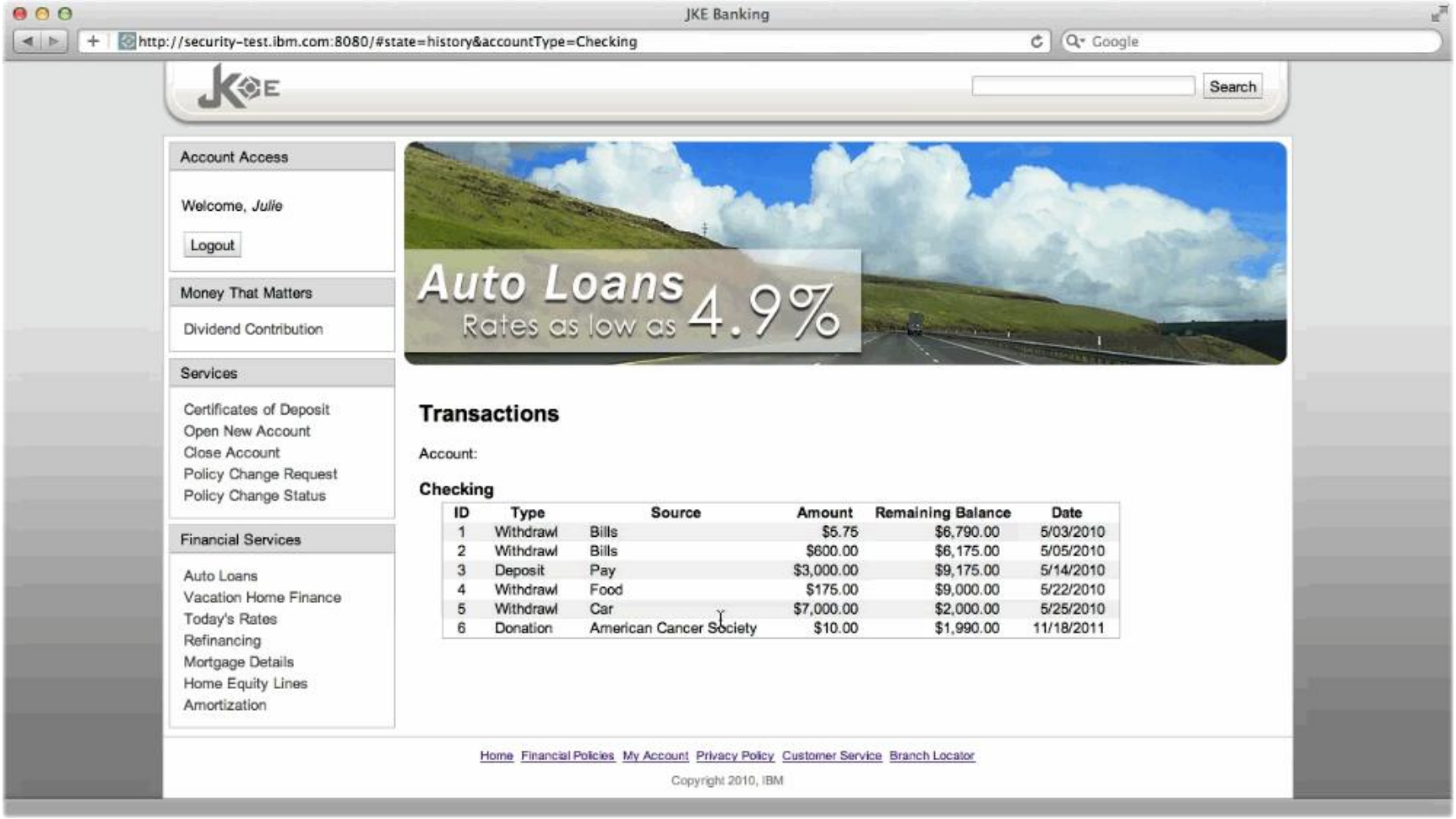
**Grow**

- Grow, Scale with your needs

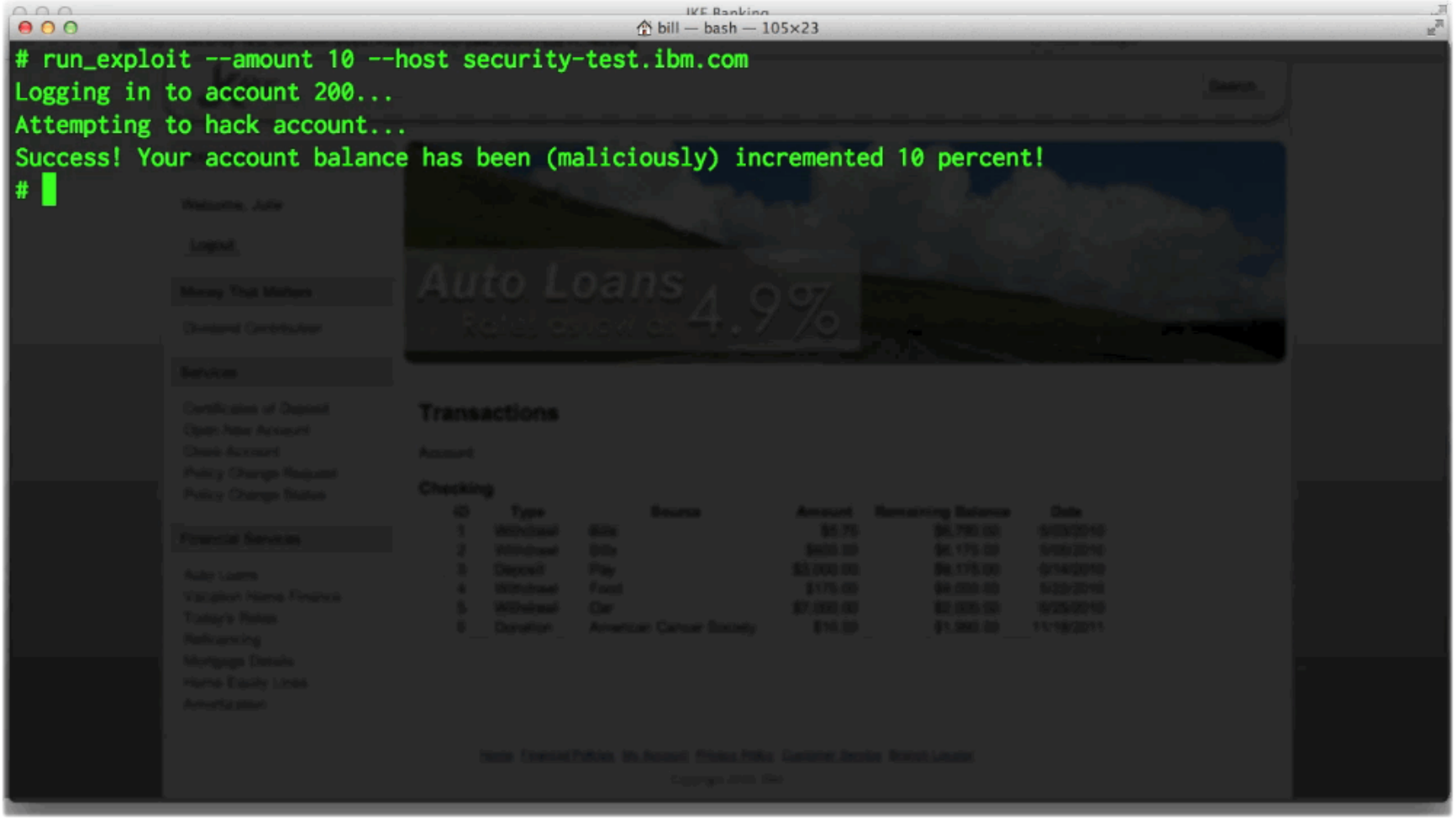
# Creating standard workload patterns



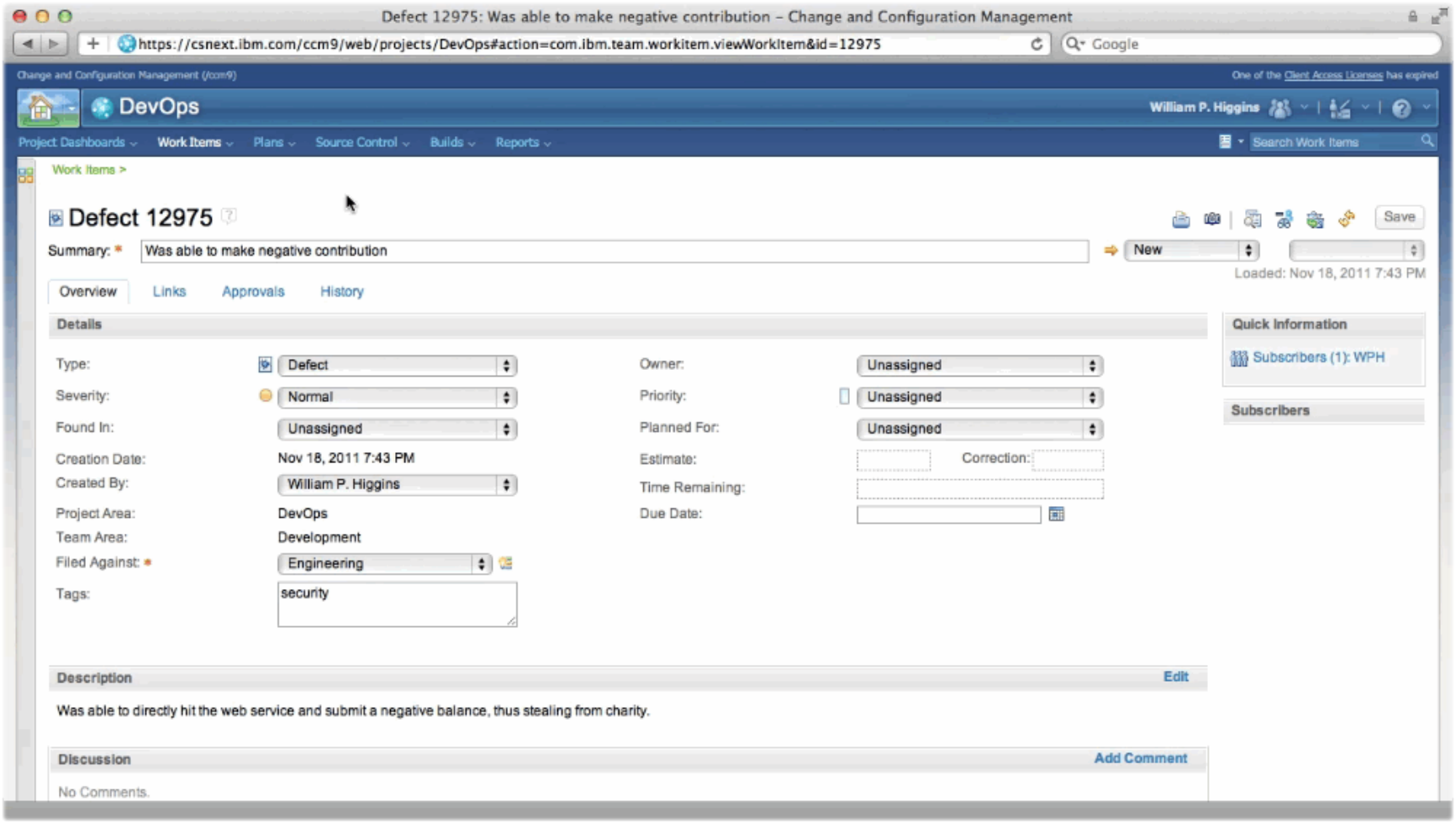
# Demo: Application



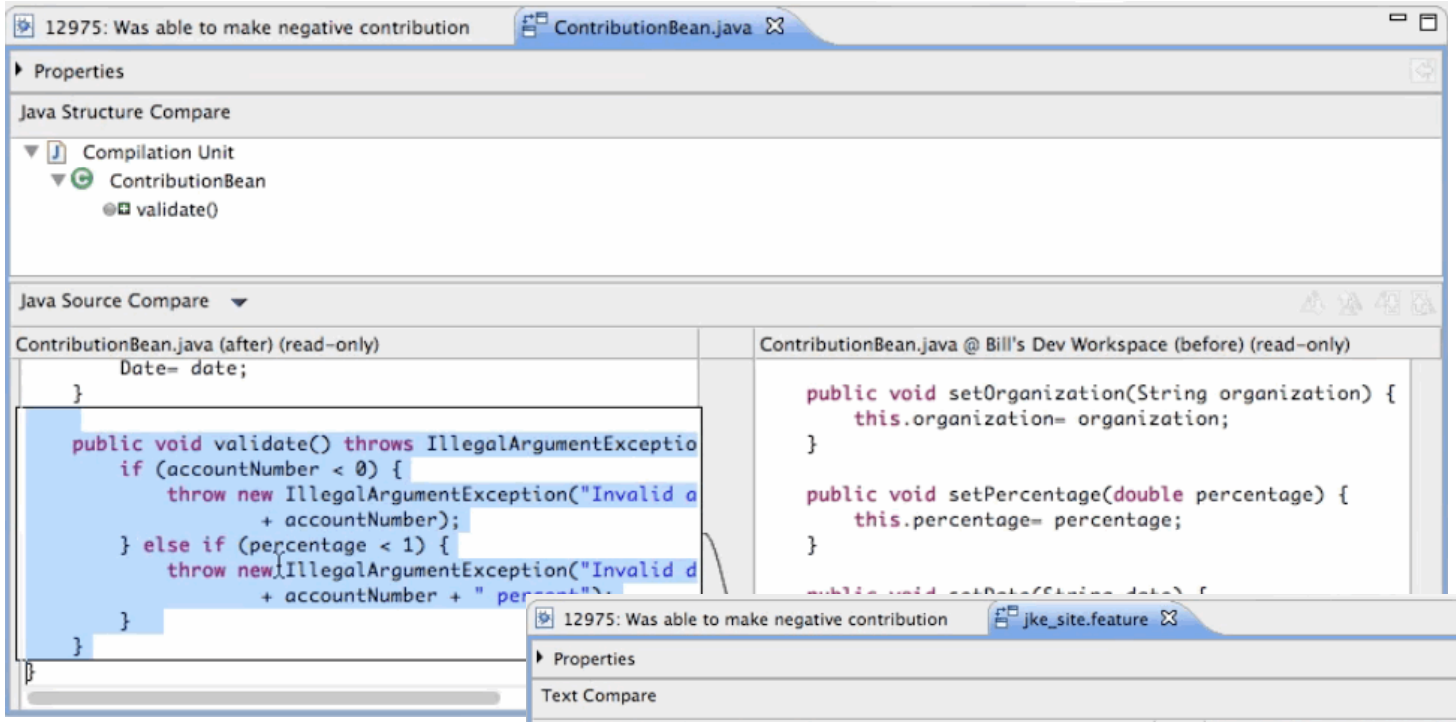
# Demo: Security Test



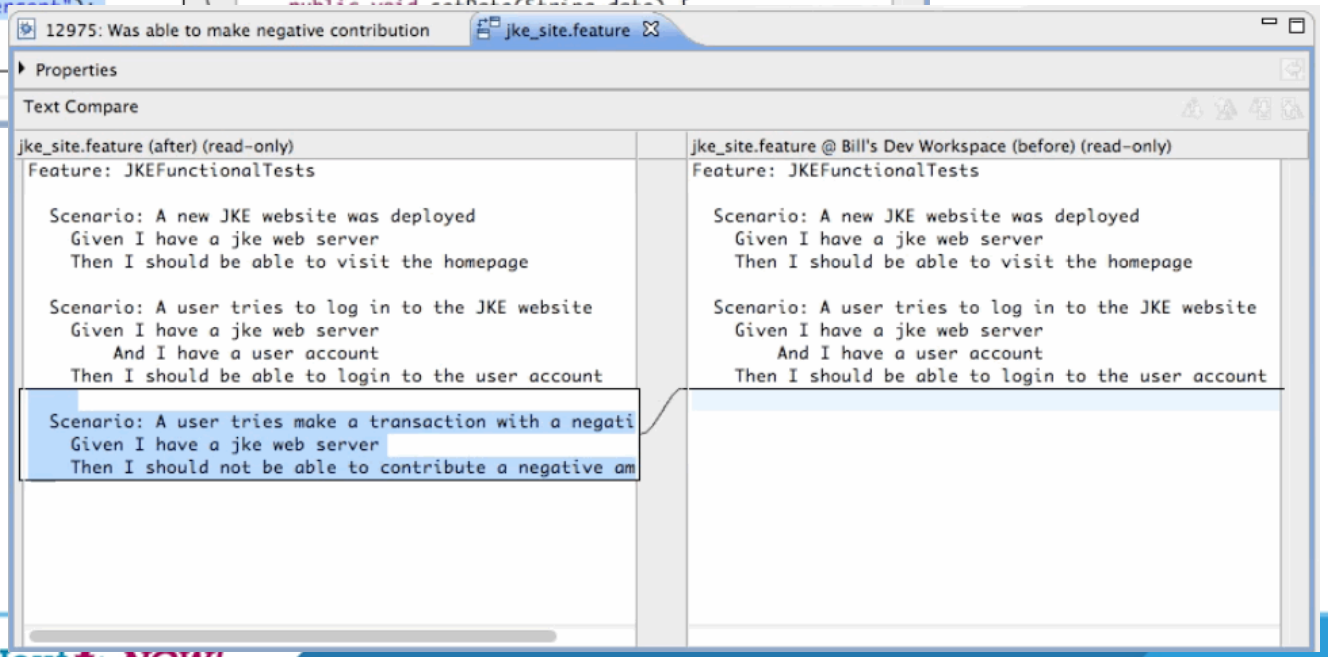
# Demo: Defect created



# Demo: Fix the defect

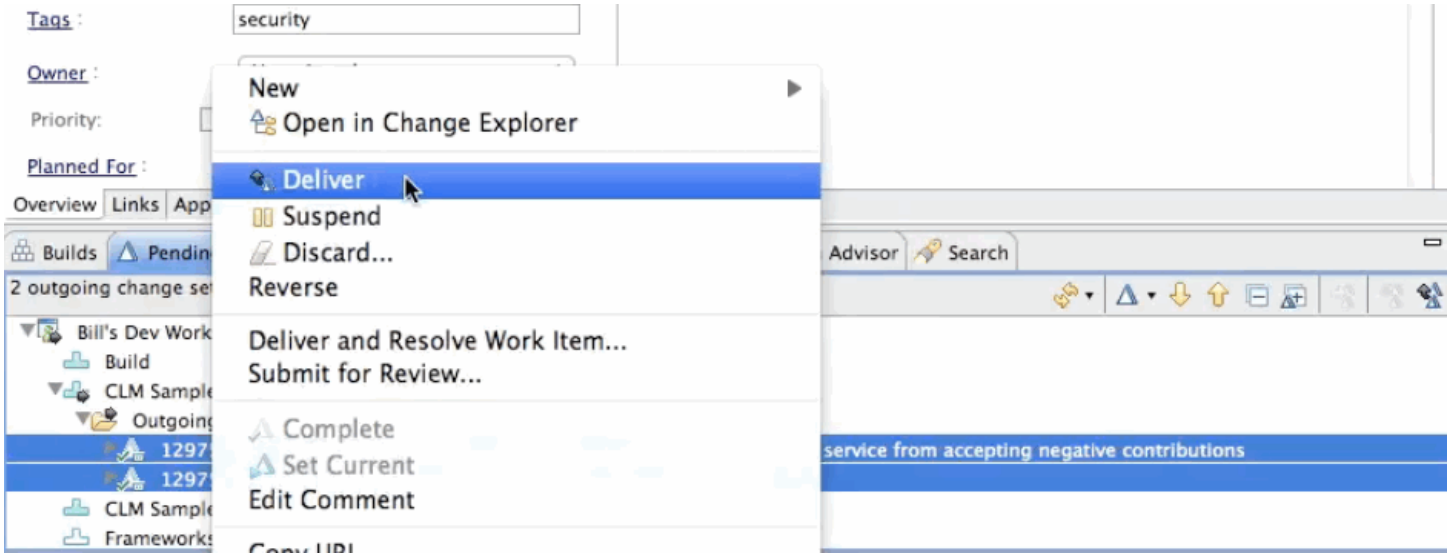


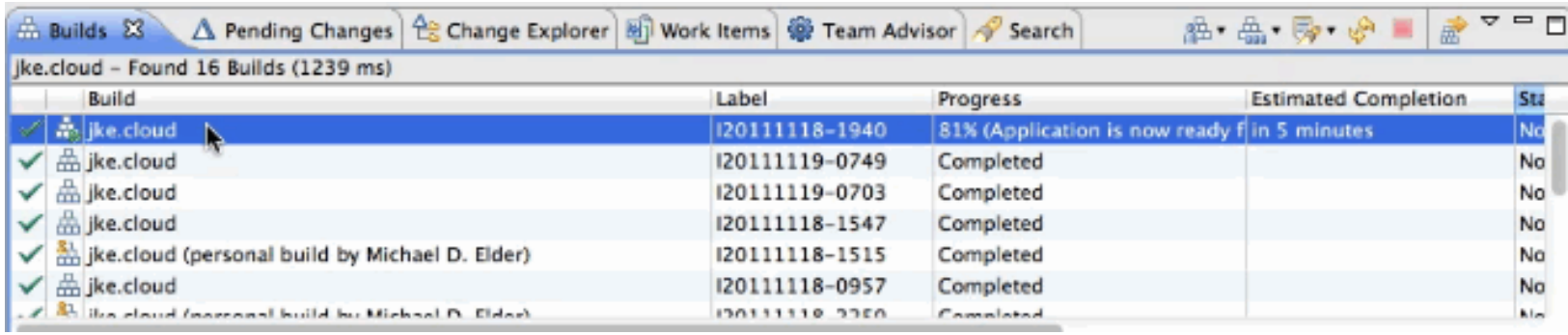

**Fix**



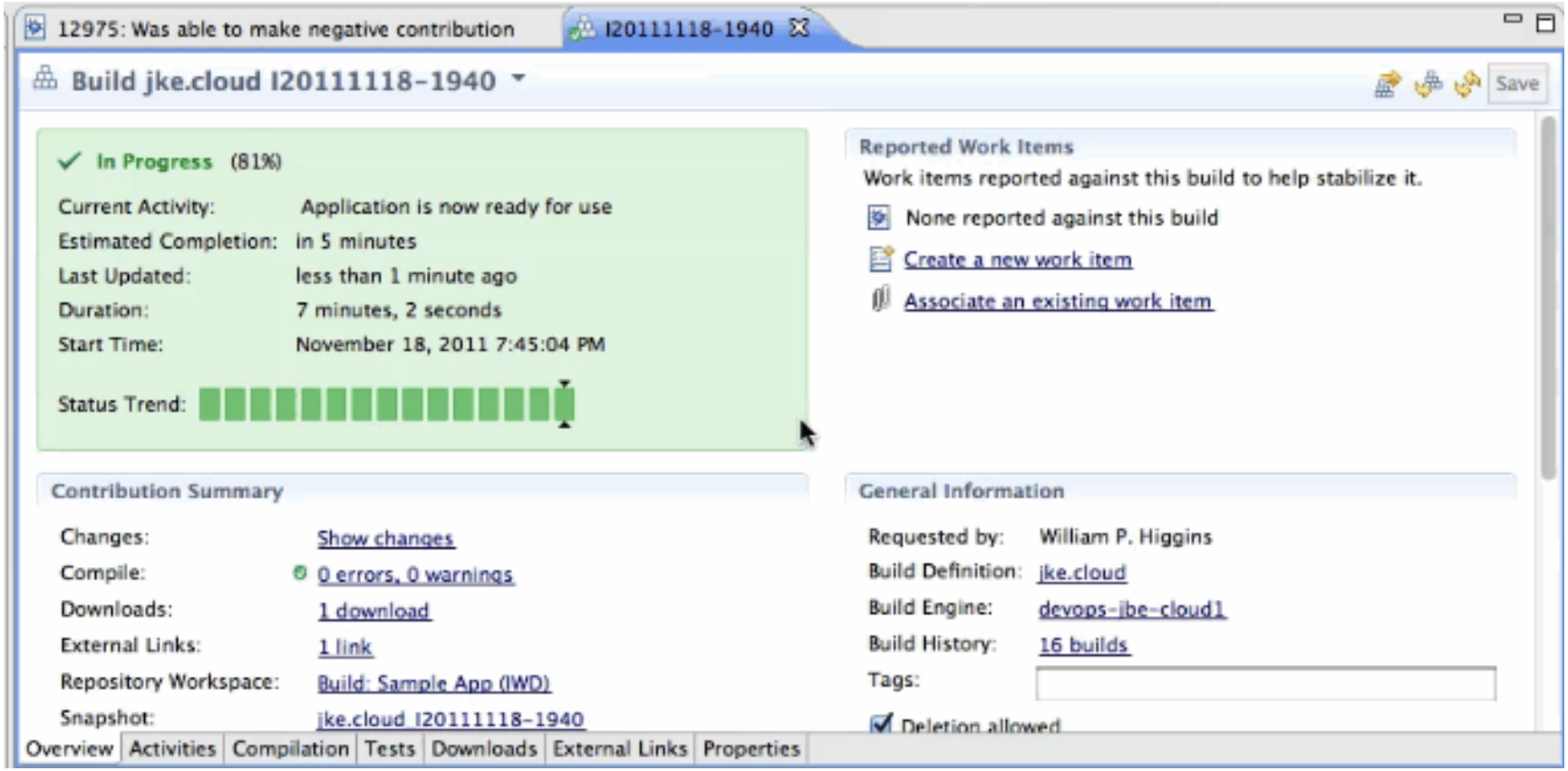

**New Test**

# Demo: Deliver the fix

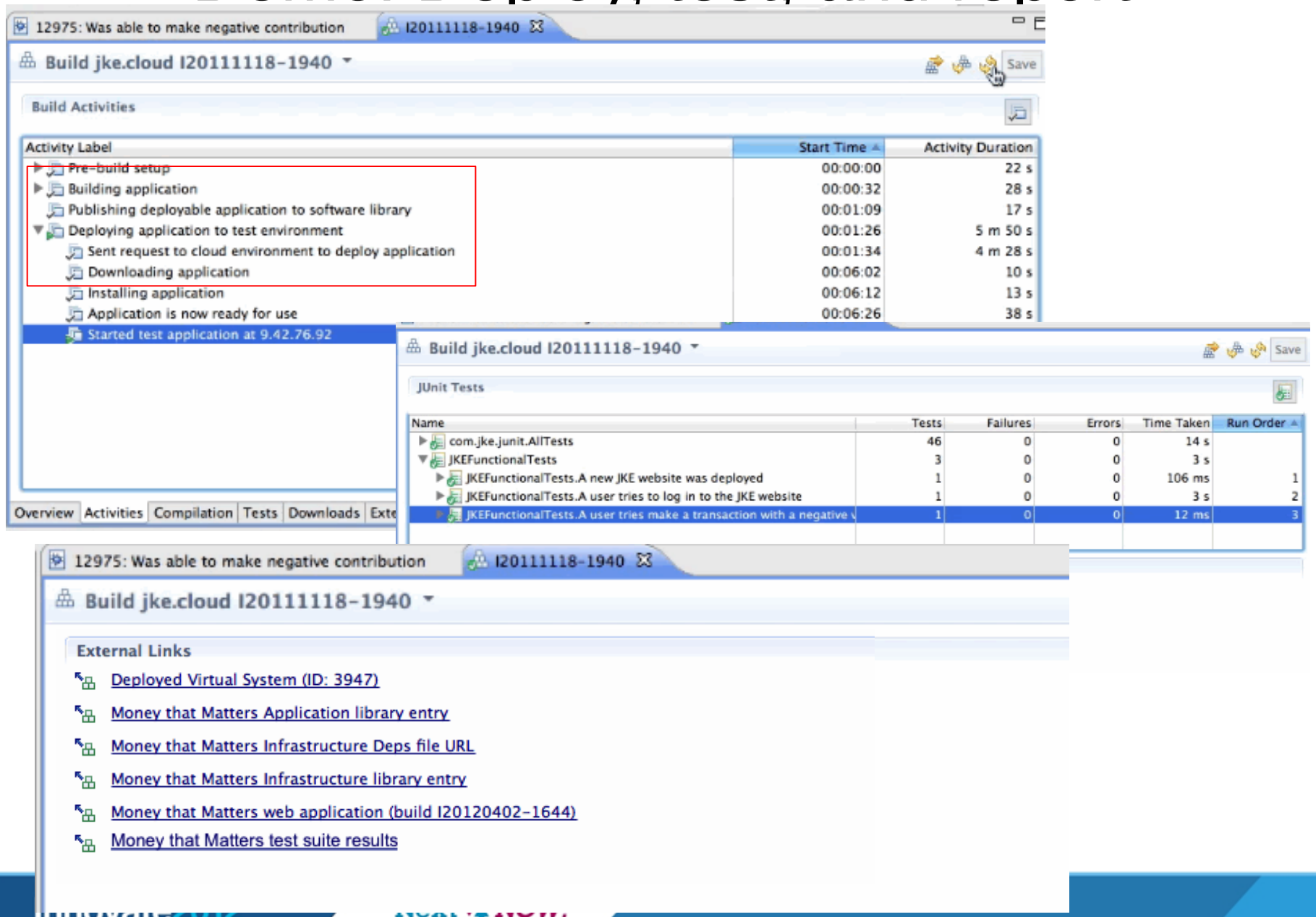


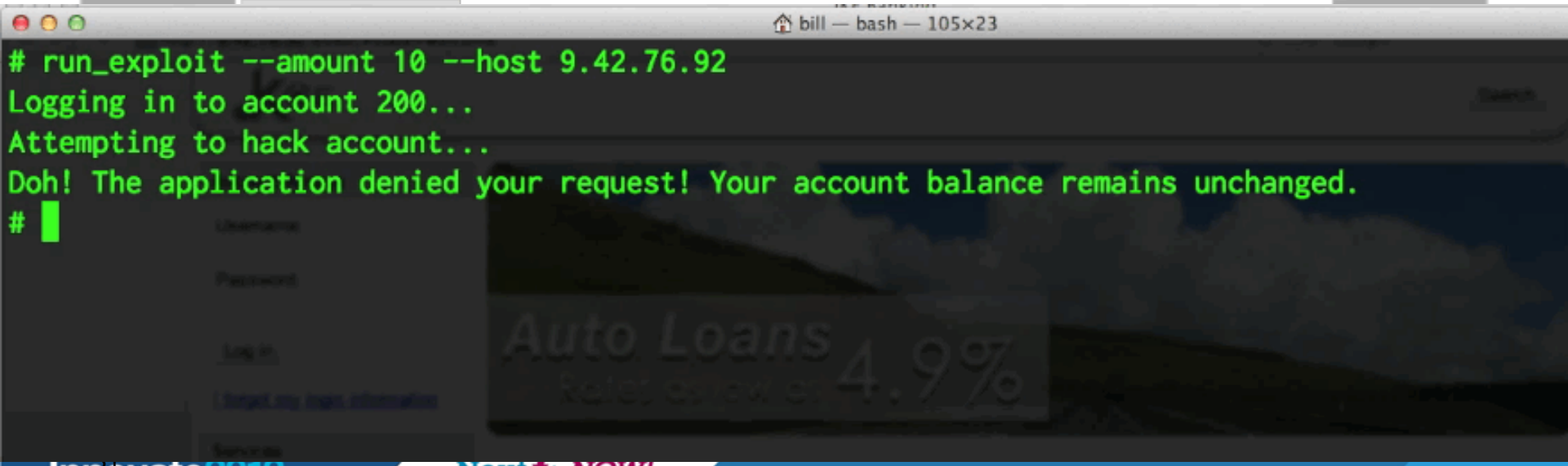
# Demo: Build starts



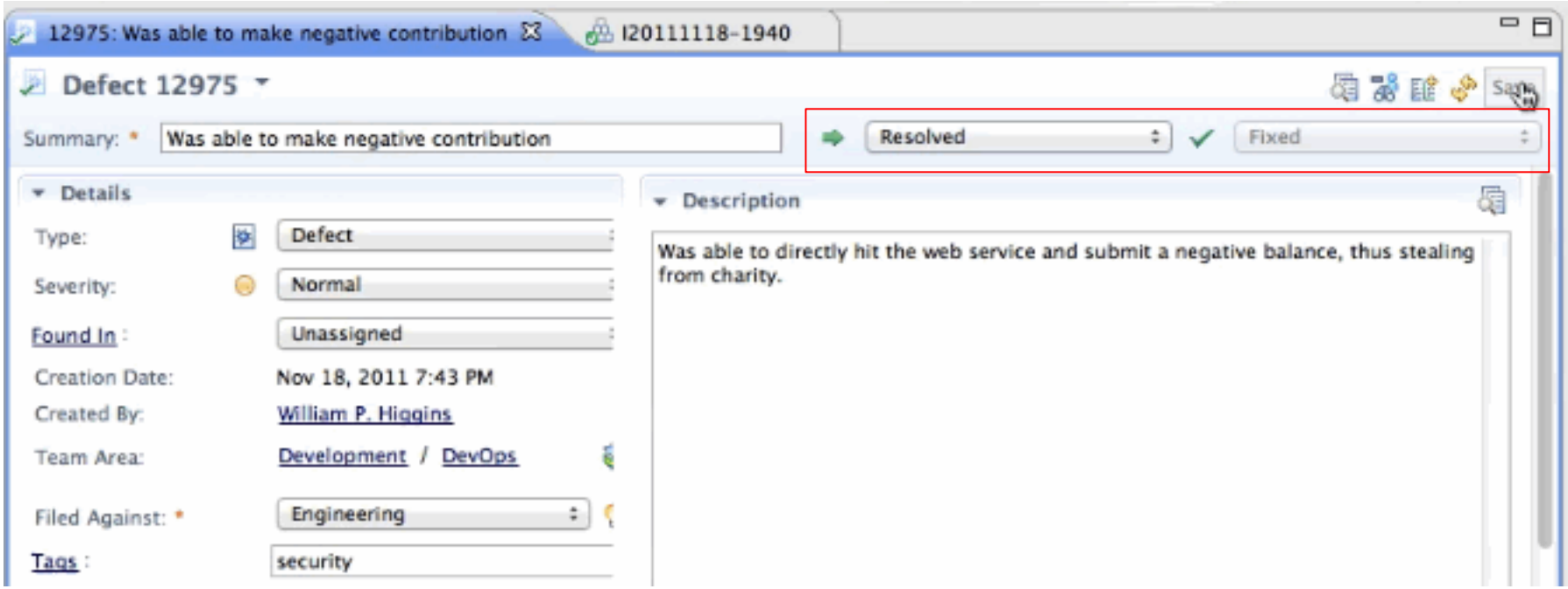
# Demo: Deploy, test, and report



# Demo: Test with fix

# Demo: Resolve the defect



# Better Business Outcomes with DevOps


| | |
|---|---|
| ***The need*** | To reduce costs through improved management of its testing environment. |
| ***The solution*** | IBM Rational software to enhance management of its testing environments by providing collaboration and automation capabilities. |
| ***The benefit*** | Enabled costs to remain flat as demand for services has increased 35 percent. Reduce the time required to begin working on a new project from three months to four weeks. |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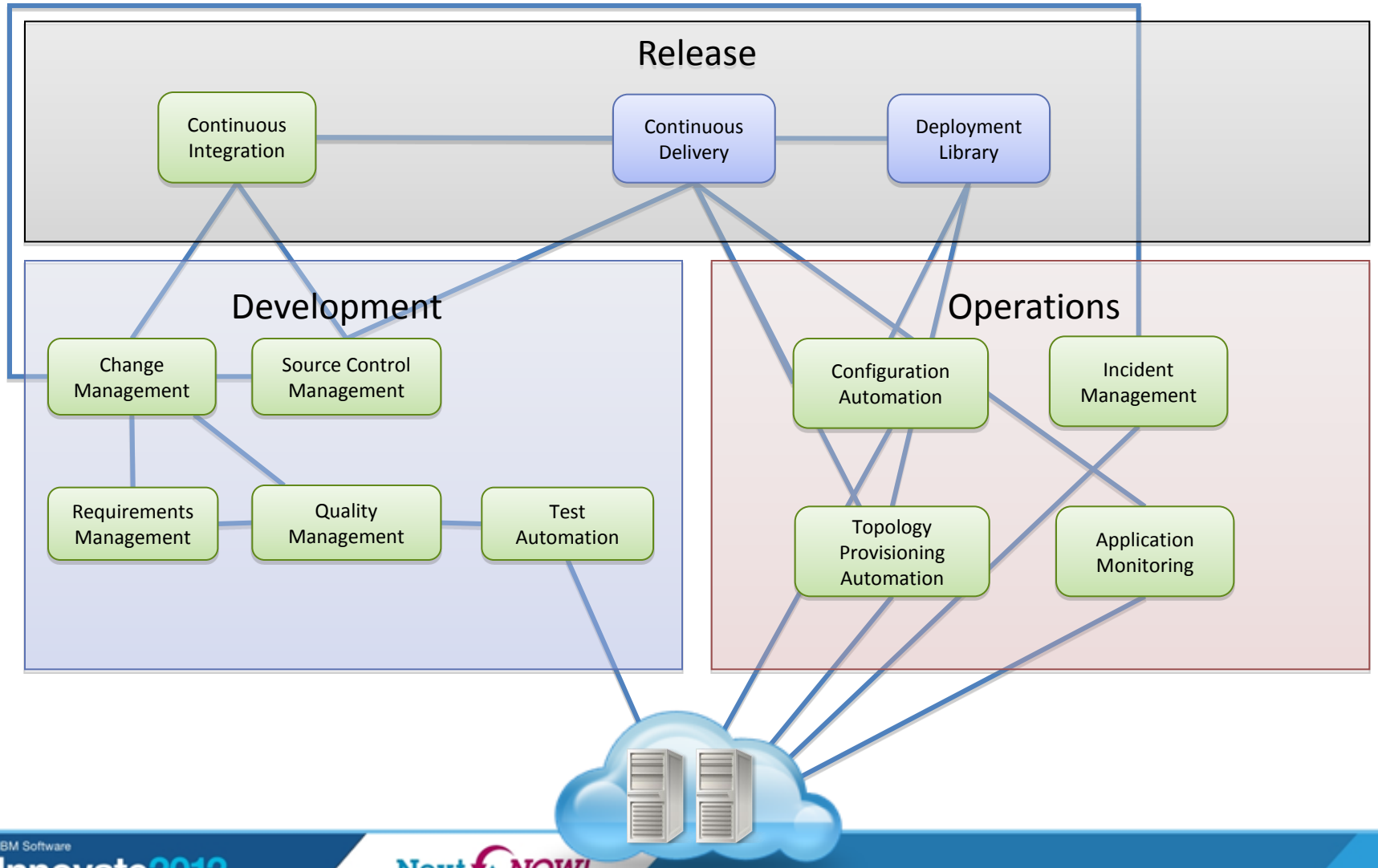
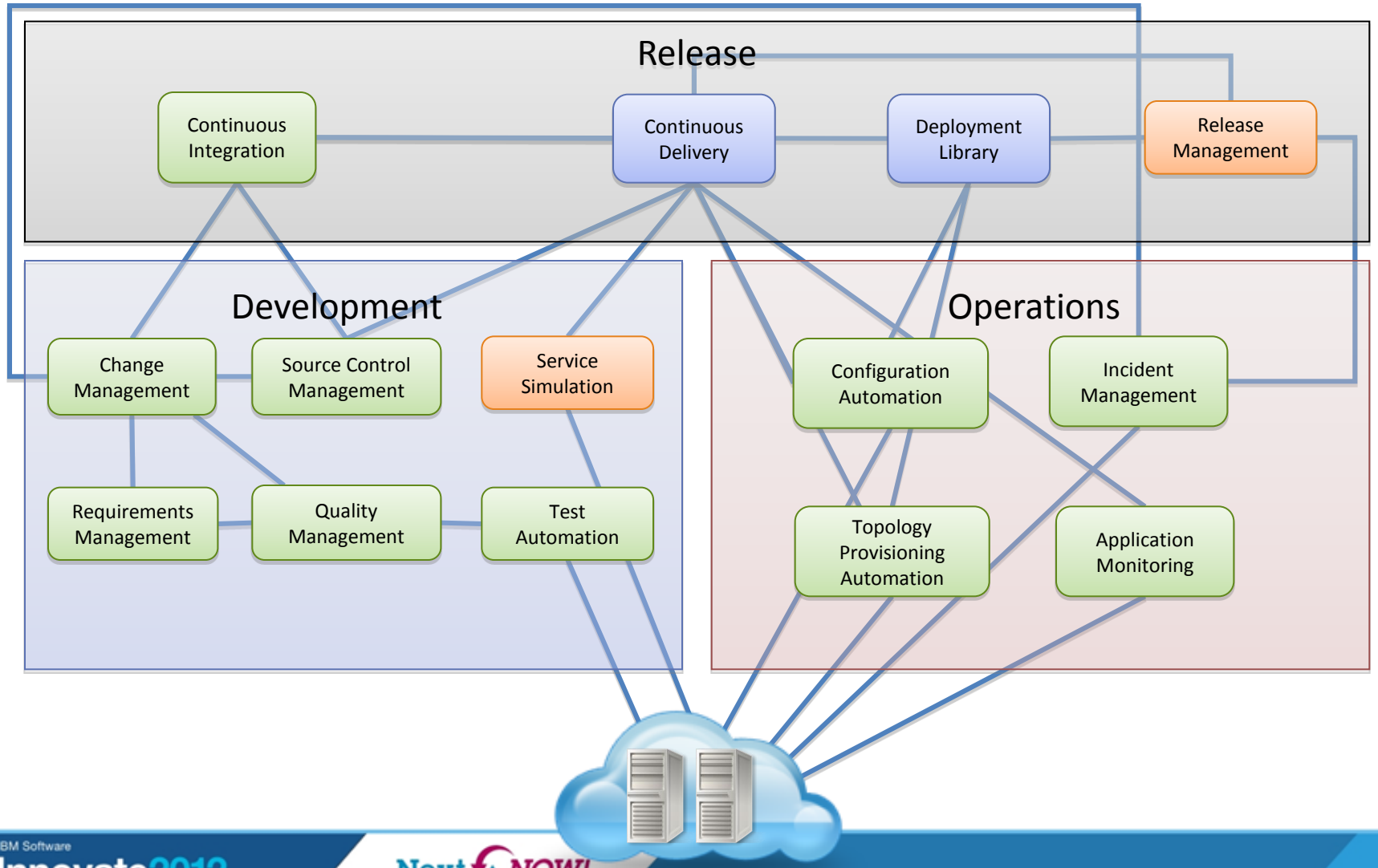
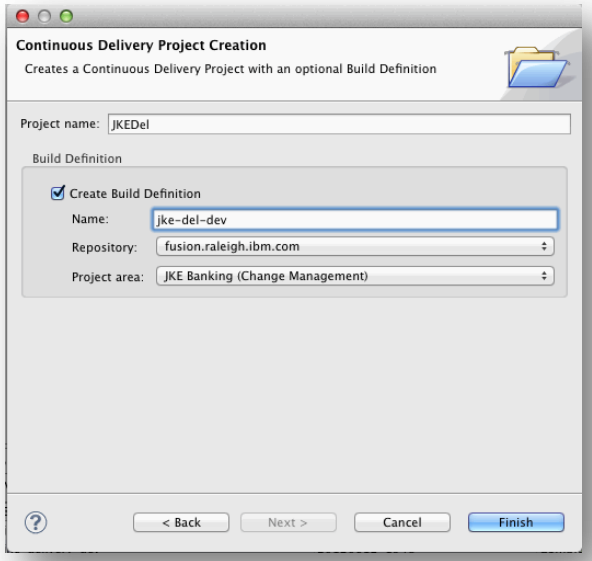
# DevOps 2012 Capabilities

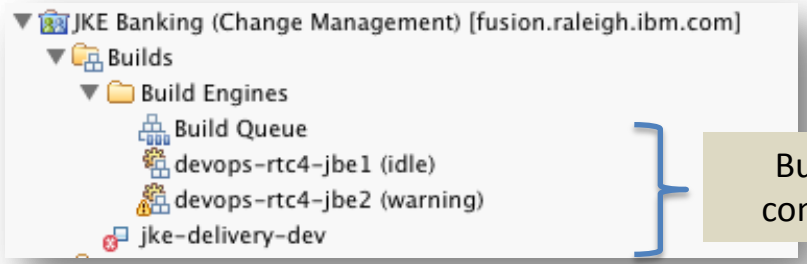


## DevOps 2013 Capabilities

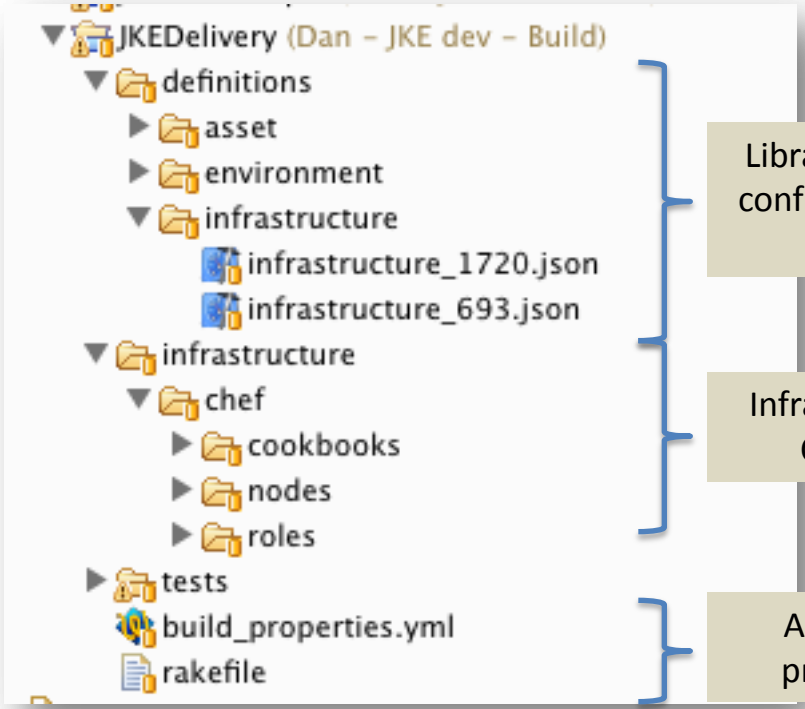


# Define Delivery Project




Build system configurations

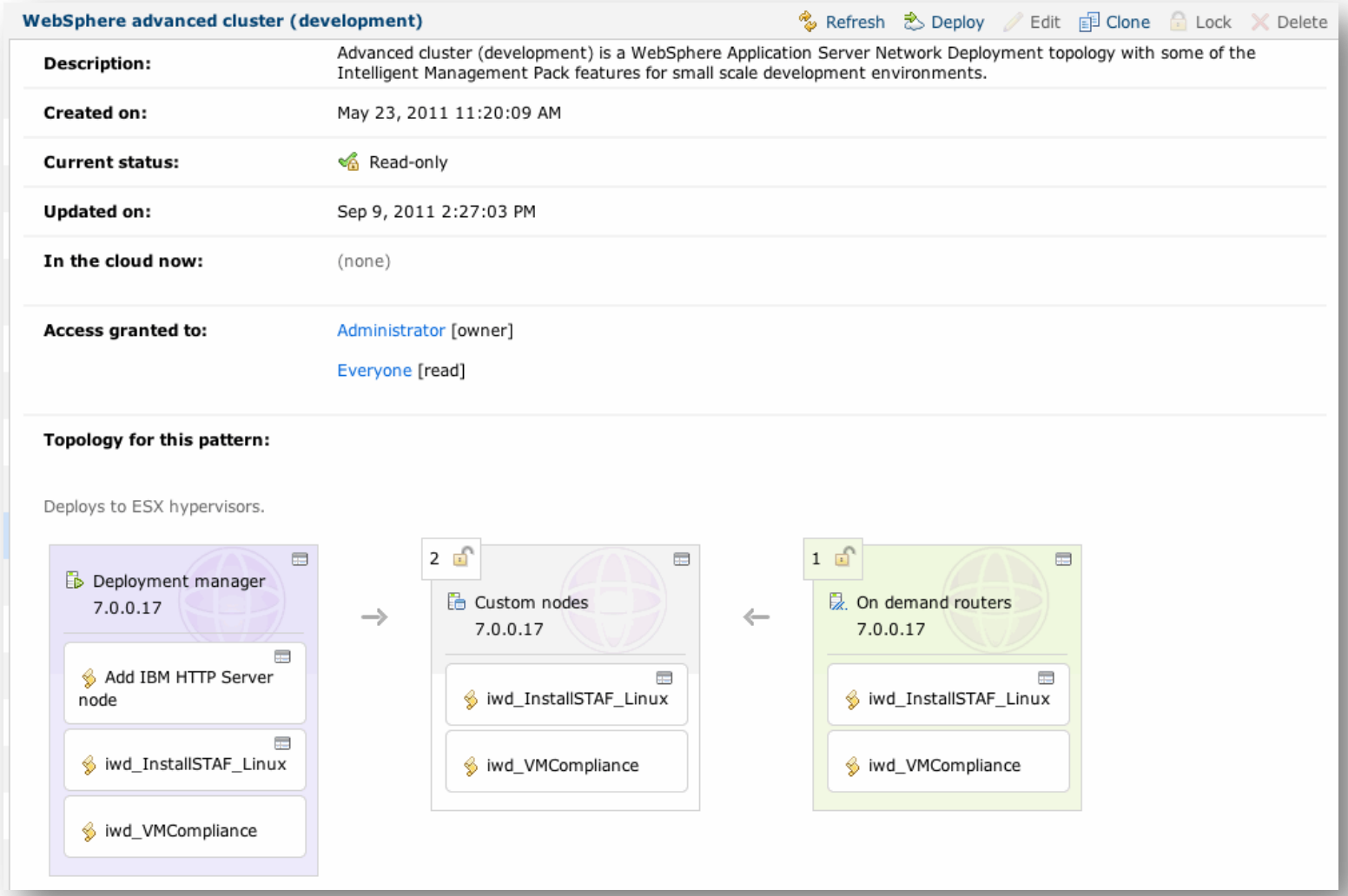



Library & pattern configuration files

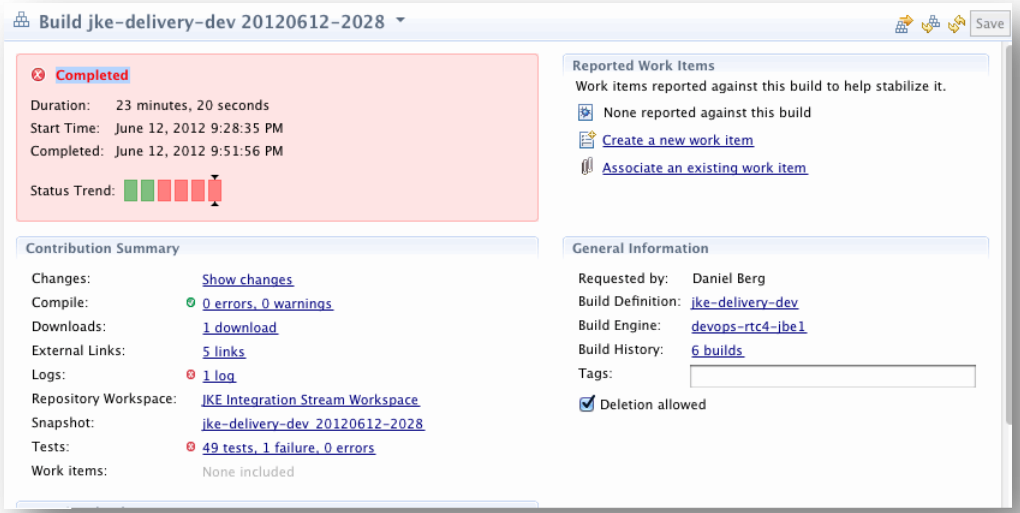
Infrastructure as Code files

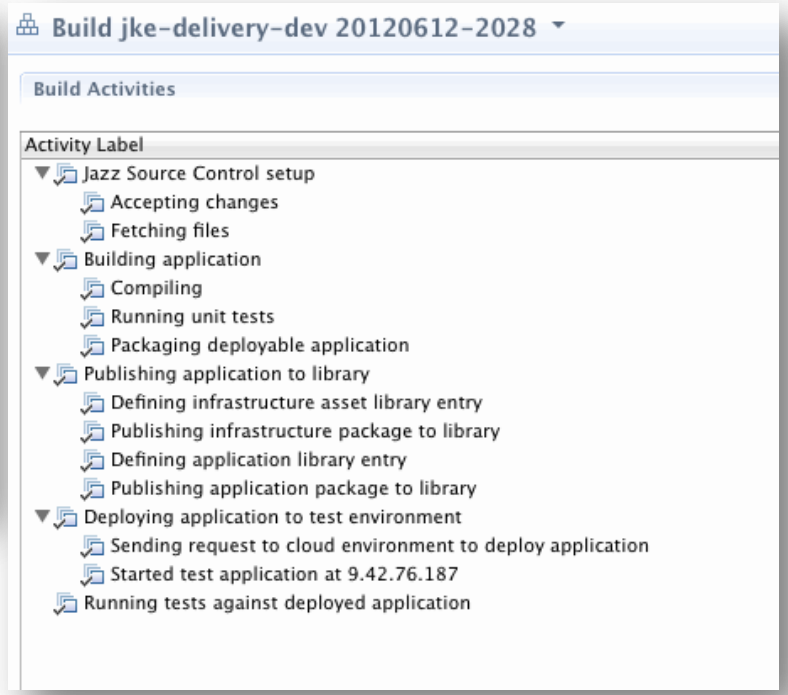
Automation process files

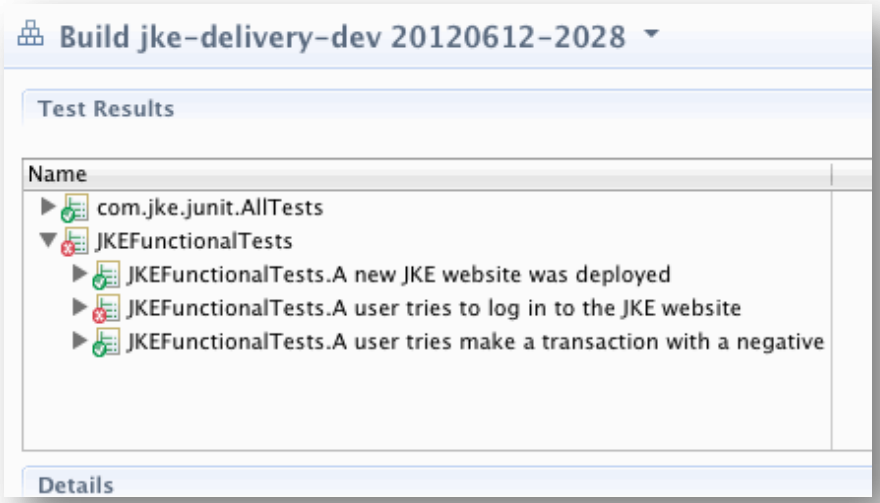
# Creating standard workload patterns



# Delivering Changes




# DevOps Adoption Strategy

1. **Acquire** a cloud platform that supports PaaS (ideally support for virtual patterns)
2. **Define** standard, production-like virtual patterns that will be used for dev/test (and possibly production)
3. **Identify** a well contained project for adoption
4. **Define** infrastructure code for platforms and the project application
5. **Define** automated configuration for middleware services
6. **Define** automated tests for the infrastructure and application
7. **Adopt** a single-stage continuous delivery process to support continuous build, deploy, and test for dev and test virtual environments

***Growth***

- Inject monitoring as part of the standard pattern and use the data in the delivery process to improve feedback
- Adopt a multi-stage delivery process that supports promotion of changes from one stage to the next (e.g., Dev to QAT)
- Adopt a delivery process with promotion to production
- Track and manage incidents in production linked to work/tasks in development

# Large Insurance Company

**The need**

Continuous delivery to support demand to deliver business value rapidly at **lower cost** while **improving quality**

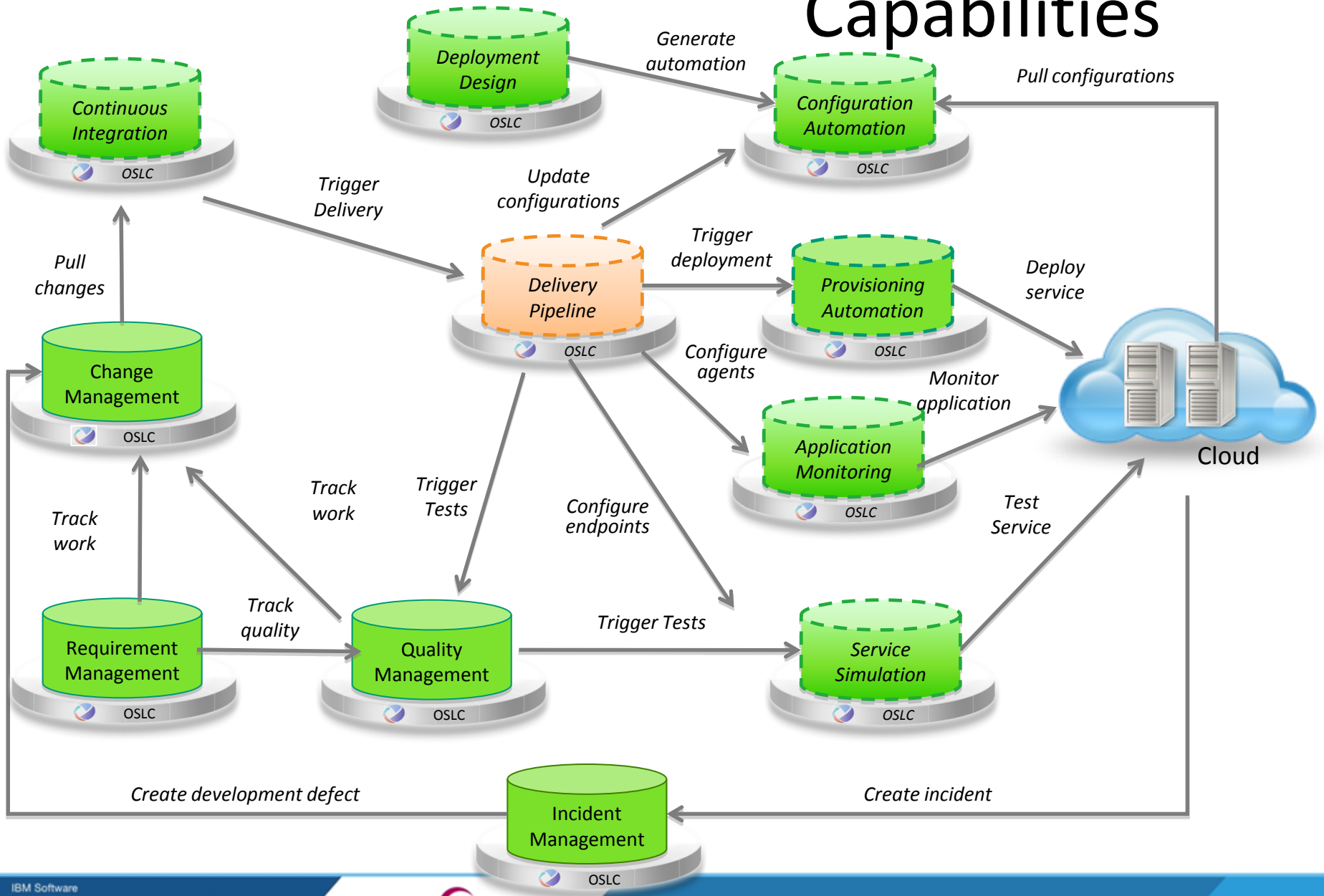
**The solution**

- **Collaboration** between Operations and Development
- **Infrastructure as Code** to maximize automation
- **Governance:** Monitoring, Metrics, Optimization

**The benefit**

- Upwards of **1000 deploys per week** to be performed without requiring additional Operations personnel
- Provides an **average turn-around time** to the developer of under **5 minutes**

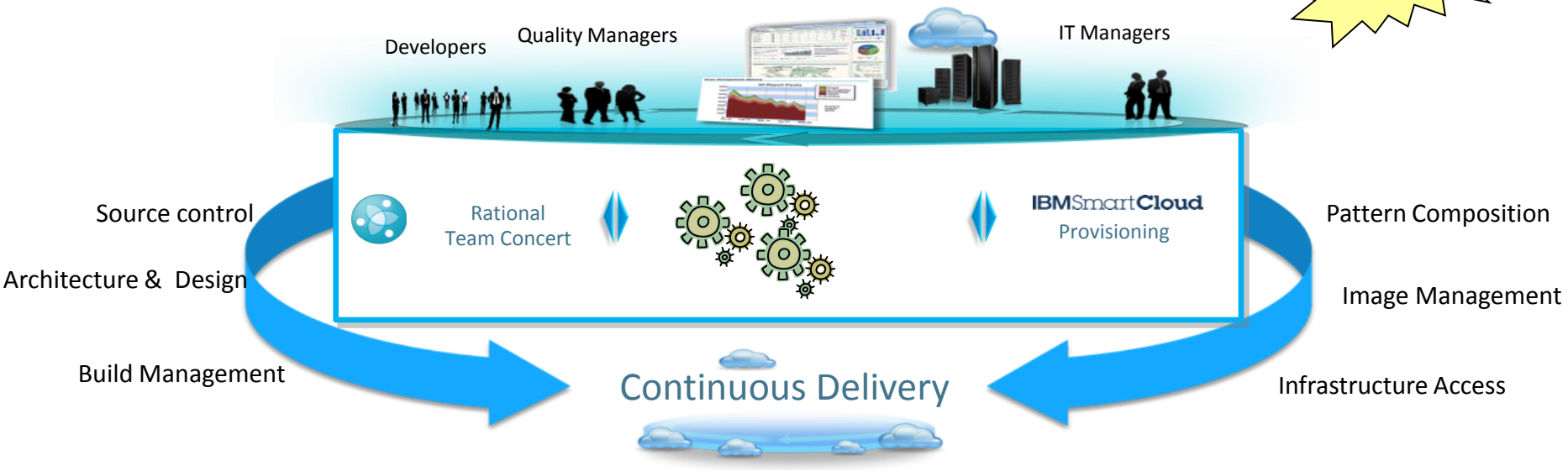
# Integrated Capabilities



# Introducing IBM SmartCloud Continuous Delivery

*A simple approach to bringing agility across the lifecycle*

Beta




Improved ***Cycle Time***:

- Improved efficiency, accelerated delivery; automated hand-off between processes

Improved ***Quality***:

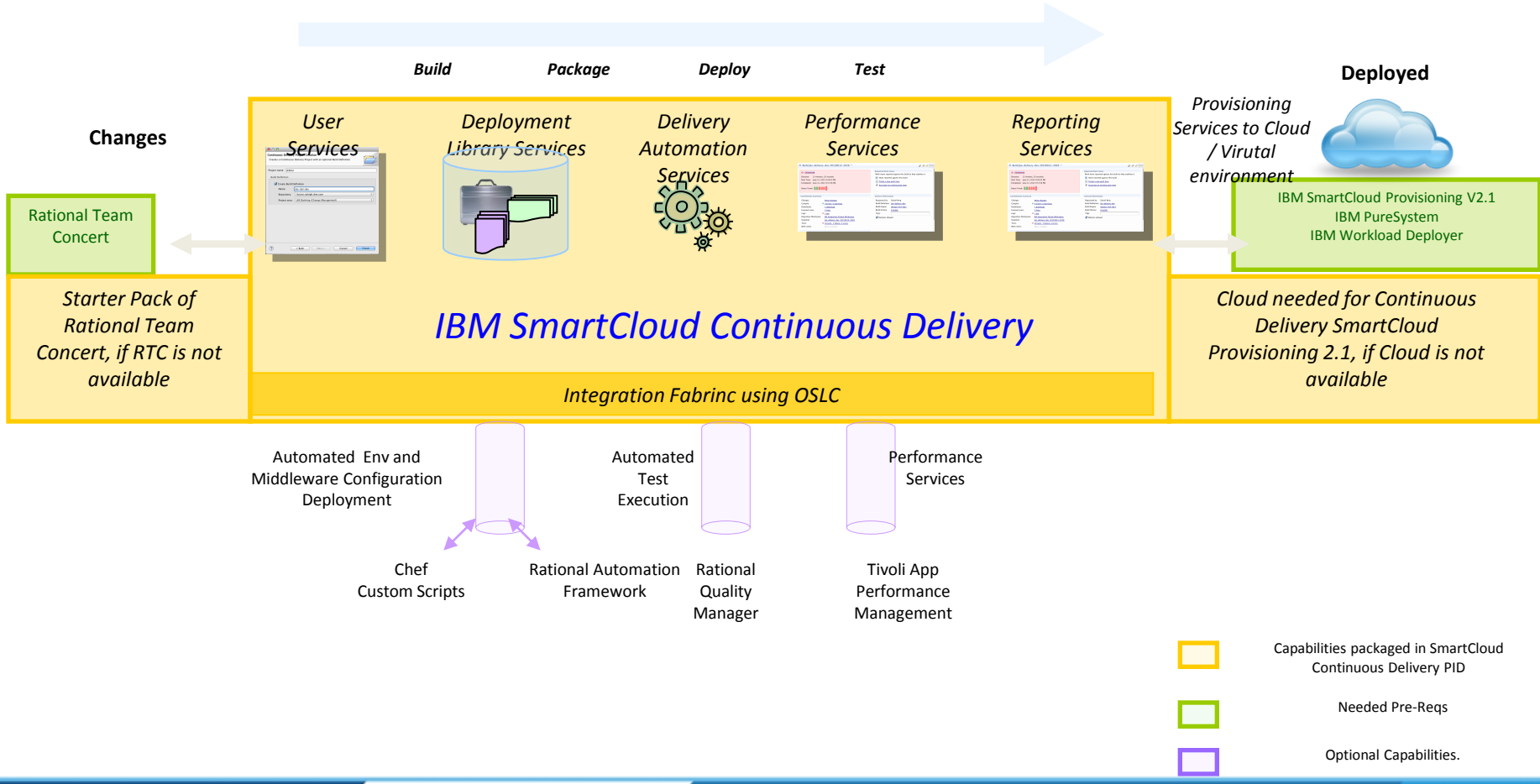
- Reduced risk, improved quality; Managed change from development to deployment

Improved ***Control***:

- Standardization, Visibility and Governance

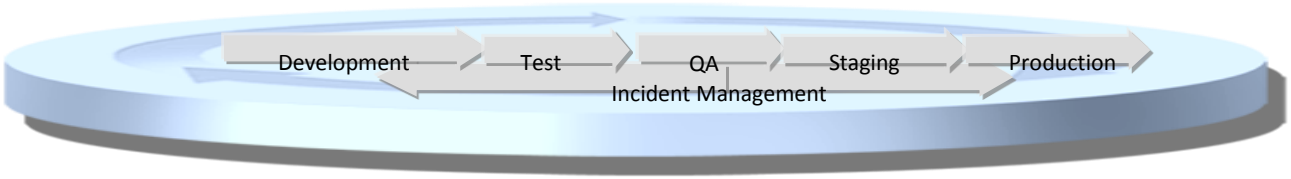
# Capabilities Offered

- Self-sufficient, Ready-to-deploy solution with plug-in capabilities
- Leverages virtual environment and cloud



# Extending ALM to Cloud and virtual environments – Bridging the Gap

**Dev**




Rational Team Concert

IBM SmartCloud Continuous Delivery

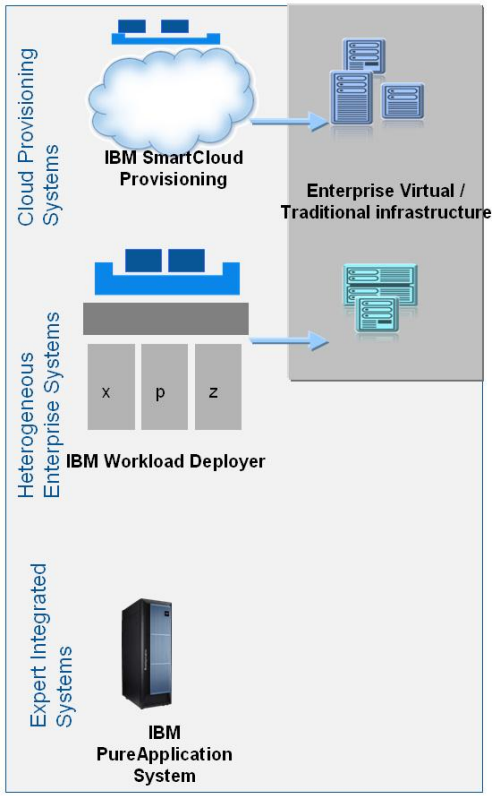
Automatically deploys to Cloud / Virtual environment

- Continuously Deploy Changes to the Cloud
- Automated execution of Build, Test, Deployment tasks with Performance Characteristics
- Deployment library for Versioning and traceability
- Integration with enterprise Dev/Test processes

**Ops**

**Virtual System Pattern driven Deployment environment**

**IaaS**




**PaaS- pre-built middleware deployment**

# Applying Continuous Delivery – Select scenarios

| Scenario | Value |
|---|---|
| Dev/Test teams continuous Delivery of changes with automated testing in production-like environments | ▪ Improved Cycle Time with automated tasks<br>▪ Consistency and Quality of deliverables<br>▪ Savings from automated test, deployments, labor, improved efficiencies, and leveraging existing tools and processes |
| Operations teams delivering scalable, continuous services to the development organization, and ultimately to the business | ▪ Improved Quality from automation and standardized deployments<br>▪ Faster time and low cost to fix defects |
| Enterprise Incubators/ Depts/Teams developing new business/growth market Apps using a self-contained environments | ▪ Faster time-to-market with reduce cost<br>▪ Self-Service, easy-to-manage integrated Continuous Delivery Environment in the Cloud |

# Continuous Delivery architecture flow