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## Current Trends and Future Directions in Technology for DevOps

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# Outline

- Business promise of tools
- Business and Development
- Development and Operation

# The Business Promise of Tools Is Widely Anticipated

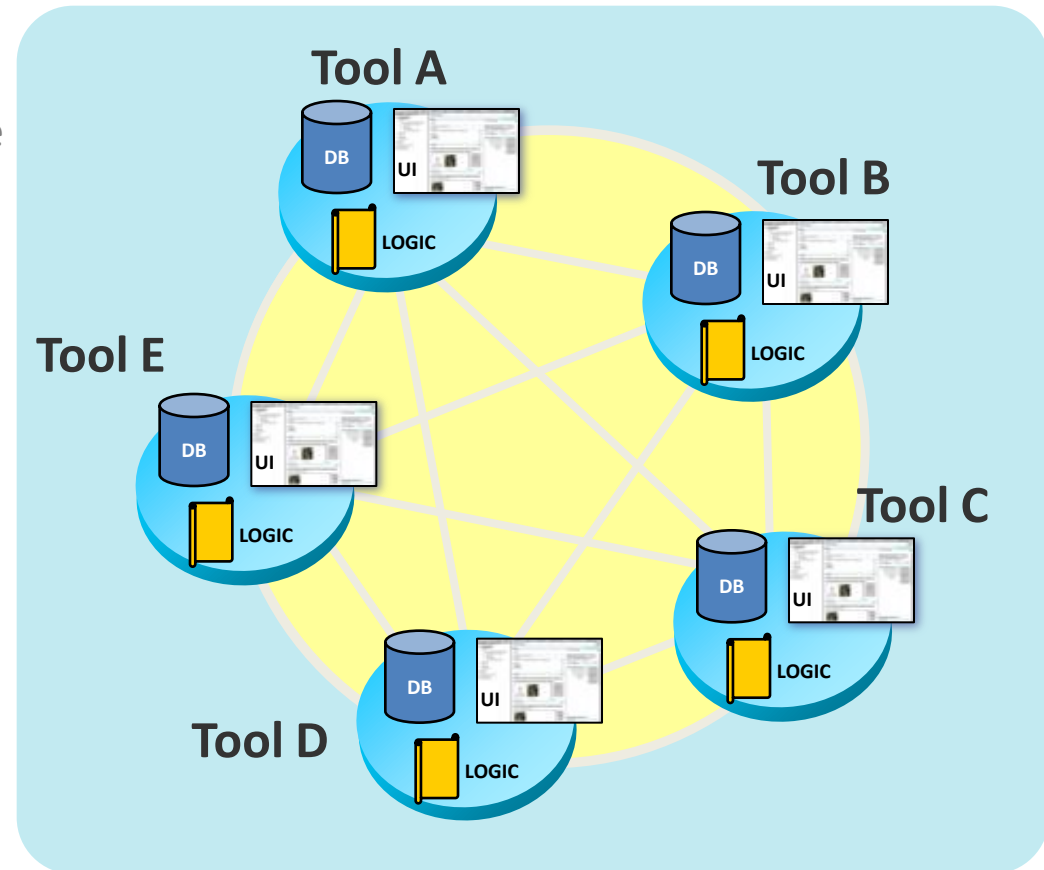
Companies acquire tools with the best of business-centric aspirations

- Higher quality
- More customer satisfaction
- Aligning business and IT
- Faster time to market
- Lower costs/higher productivity
- More predictable delivery



# Reality adds significant complexity

- Many tools from many vendors
  - ▶ **Heterogeneous environments** that are flexible for partners and suppliers
- Many teams in many places
  - ▶ **Distributed** development, cross site product development
  - ▶ Many levels of teams
    - PMO, Bus, dev teams, ops teams, etc
- Coherent process
  - ▶ **Flexible** and **robust** process supporting Lifecycle / Agile Methods
  - ▶ **Measure** and **improve** effectiveness



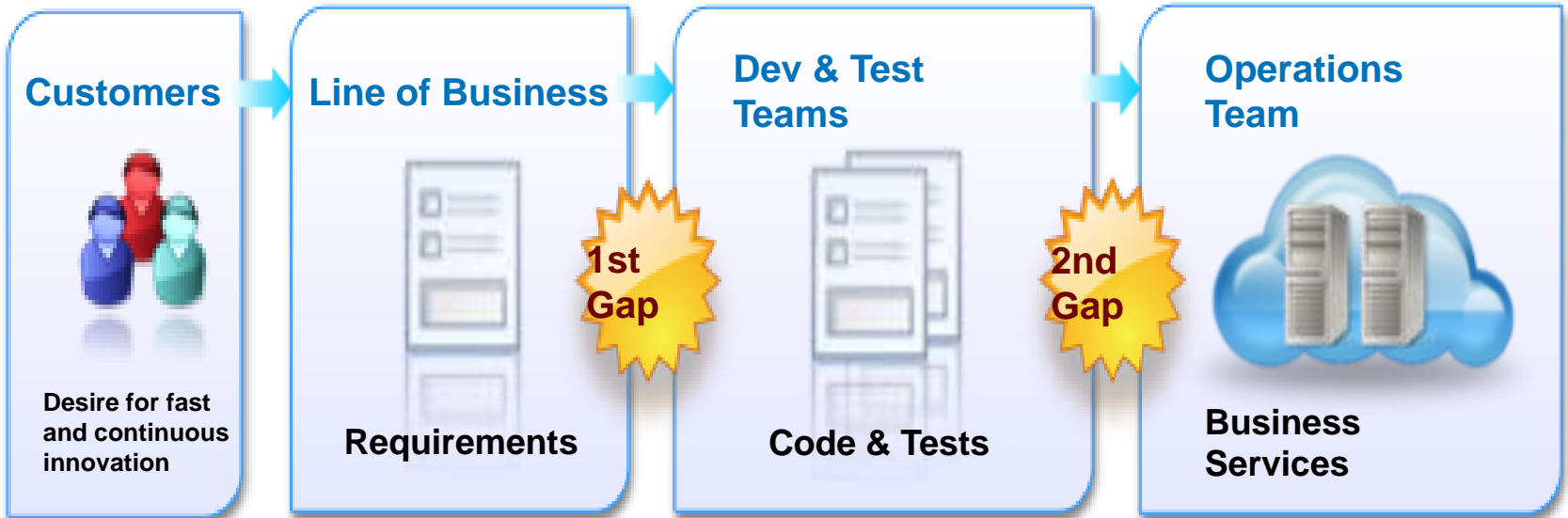
# Delivery Challenges

*Today's business and technical needs are pushing traditional delivery approaches to the breaking point*

**People**

**Process**

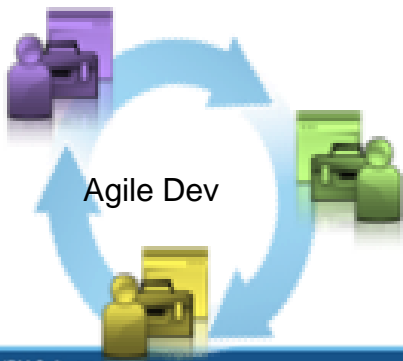
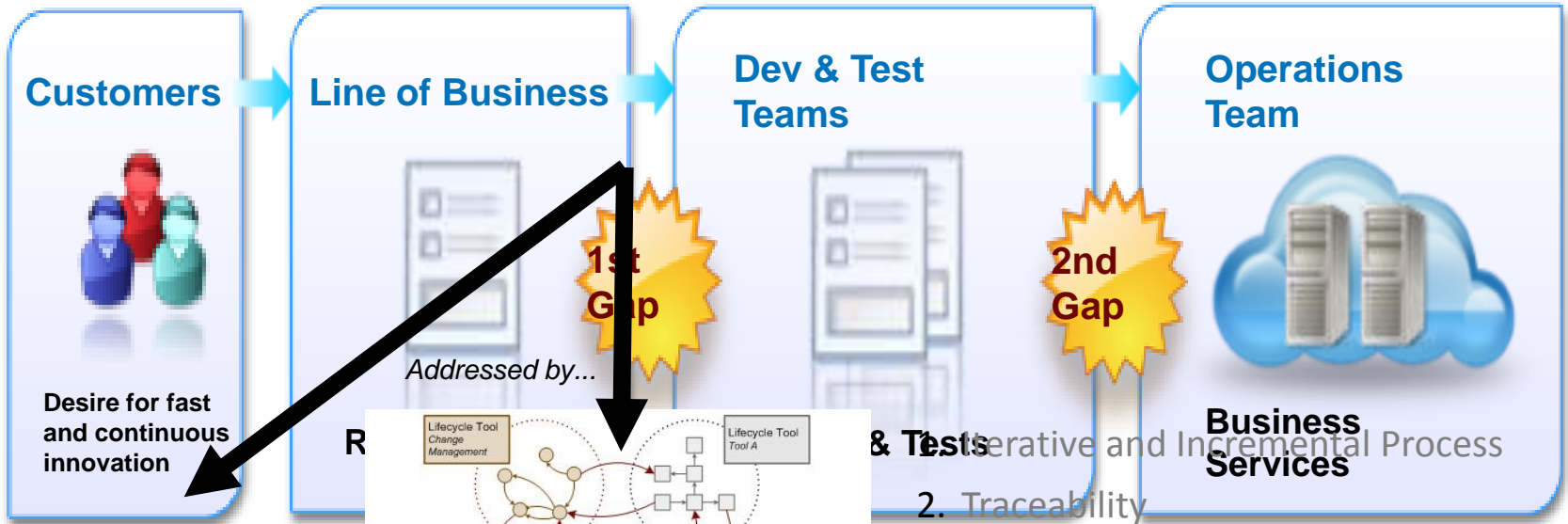
**Information**



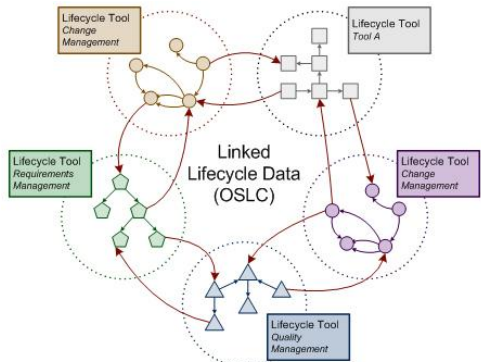
“At some point, you take a step back, and you realize you have an awful lot of **siload systems** that are **limiting transparency** across strategic projects.”

- Development Director  
Temenos, Inc.

# Addressing *BusDev* gaps

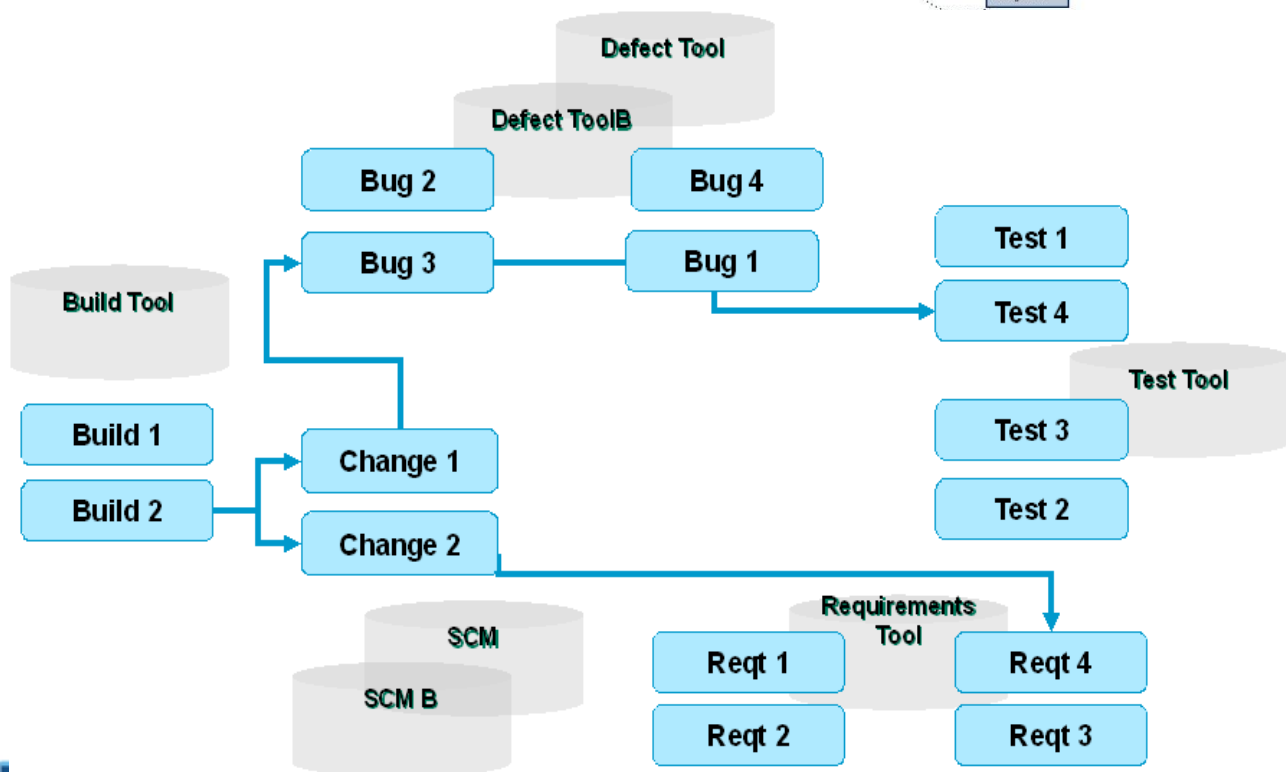


# Linked Lifecycle Data



- **The data is the thing**
  - Resources and relationships
  - Tools operate on the data
  - Tools execute the process
  - Tools expose their data in a common way (REST)
  
- **Lifecycle integration:**

Tracing, indexing, analyzing the web of lifecycle data where it lives
  
- **Utilizes architecture of the internet**
  - All data are resources with URLs
  - Open standards
  - Loosely coupled
  - Technology neutral
  - Scalable, extensible








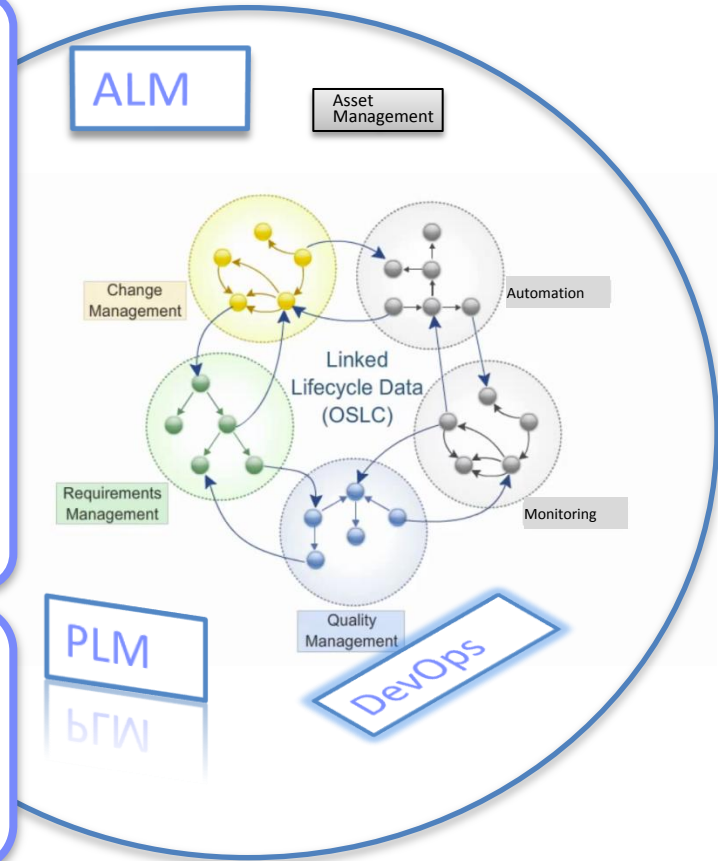
# Open Services for Lifecycle Collaboration (OSLC)

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



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

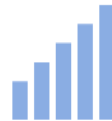
- Community driven and governed
  - 400+ registered community members
  - Workgroup members from 34+ [organizations](#)
- Wide range of interests, expertise, & [participation](#)
- Open specifications for numerous disciplines
- Defined by scenarios – solution oriented
- Implementations from IBM, BPs, and Others
- Based on  nked Data



Inspired by the web  
**Proven**



Free to use and share  
**Open**

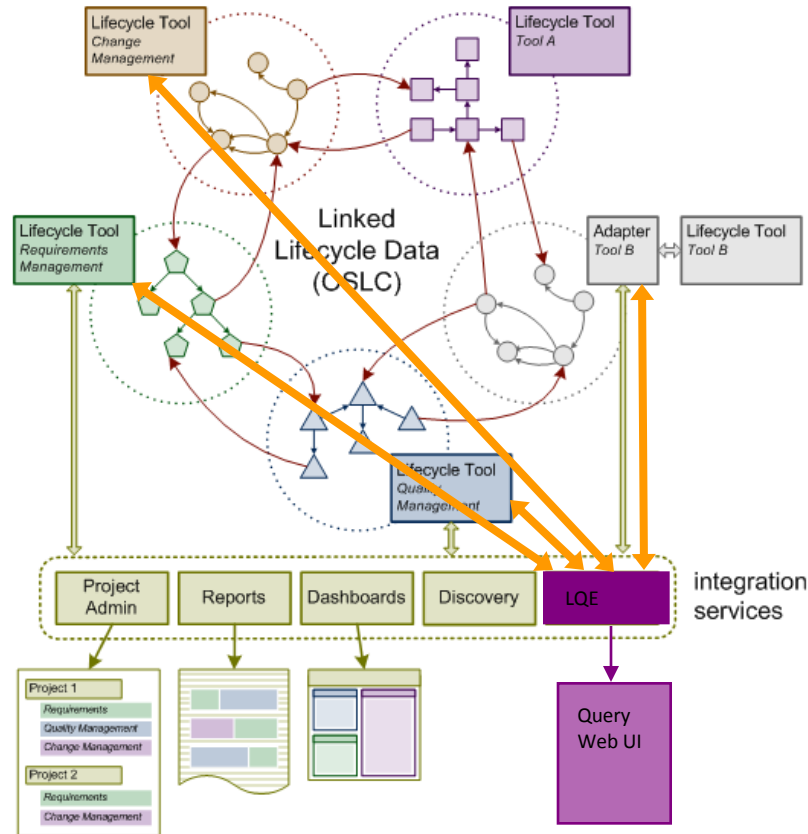


Changing the industry  
**Innovative**

[open-services.net](http://open-services.net)

## GET INVOLVED AND CONTRIBUTE!

# New Integration Service - Lifecycle Query



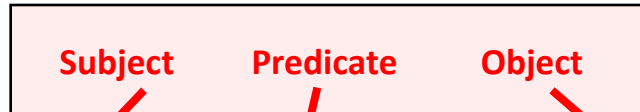
*Provides ability to run queries over linked lifecycle data aggregated from multiple lifecycle tools*

# Linked Lifecycle Data (LLD)

Resource URI

RDF statement ("triple")

Resource representation  
RDF data graph



<http://reqs.com/req/1234>

```

<http://reqs.com/req/1234> rdf:type oslc_rm:Requirement .
<http://reqs.com/req/1234> dcterms:title "Smooth upgrade path" .
<http://reqs.com/req/1234> oslc_rm:elaboratedBy <http://reqs.com/req/7772> .
<http://reqs.com/req/1234> oslc_rm:validatedBy <http://tests.com/test/521> .
    
```

<http://tests.com/test/521>

```

<http://tests.com/test/521> rdf:type oslc_qm:TestCase .
<http://tests.com/test/521> dcterms:title "verify compatibility" .
<http://tests.com/test/521> oslc_qm:usesTestScript <http://tests.com/script/13> .
    
```

RDF standard [www.w3.org/RDF/](http://www.w3.org/RDF/)

# SPARQL Query Language

- SPARQL is standard query language for RDF datasets

## SPARQL query

```
SELECT ?x ?title1 ?y ?title2 WHERE {
  ?x   rdf:type           oslc_rm:Requirement .
  ?x   dcterms:title      ?title1 .
  ?x   oslc_rm:validatedBy ?y .
  ?y   rdf:type           oslc_qm:TestCase .
  ?y   dcterms:title      ?title2 . }
```

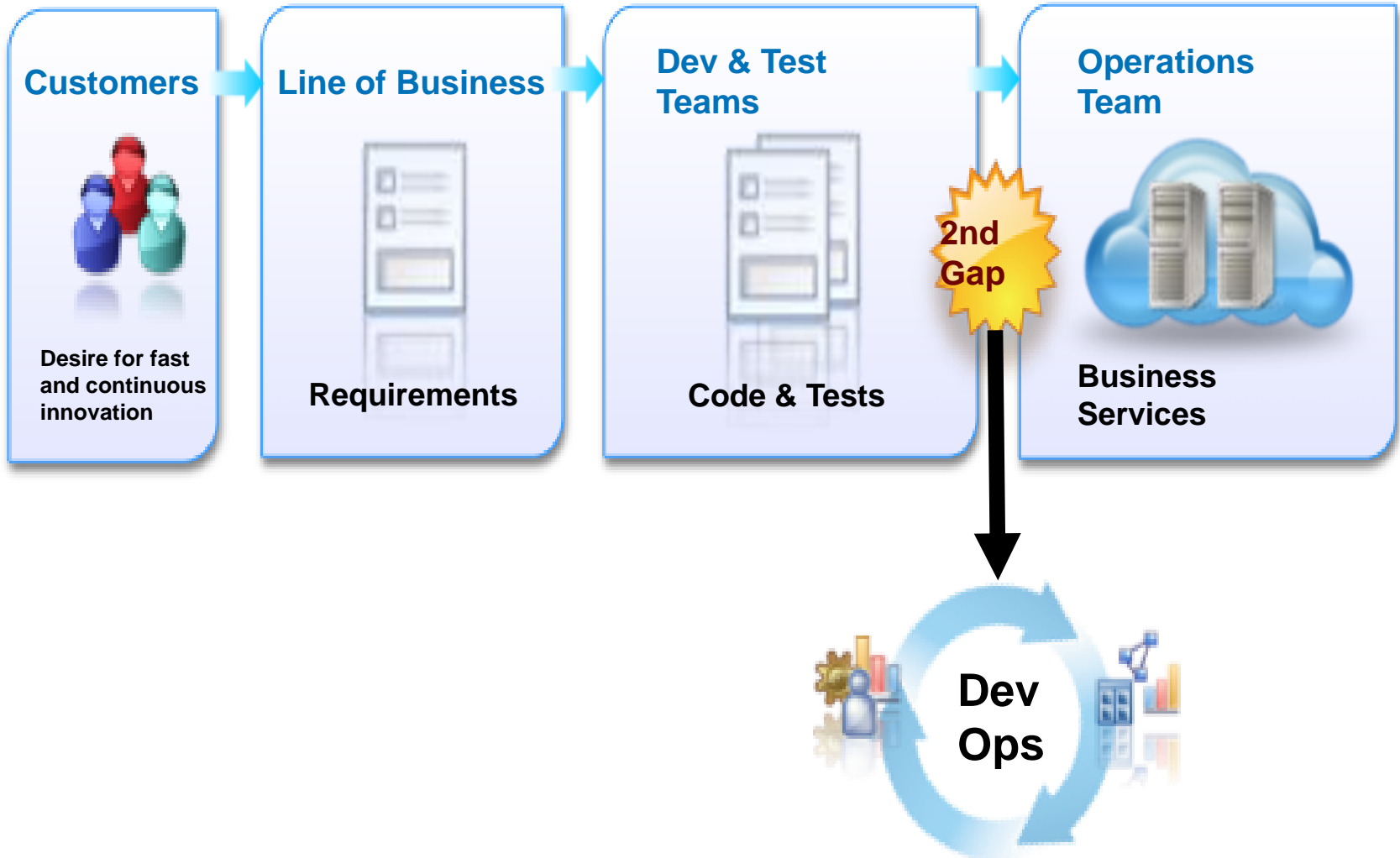
## Query results

x	title1	y	title2
<http://reqs.com/req/1234>	“Smooth upgrade path”	<http://tests.com/test/521>	“Verify compatibility”

- Queries can mine linked lifecycle data aggregated from multiple lifecycle tools

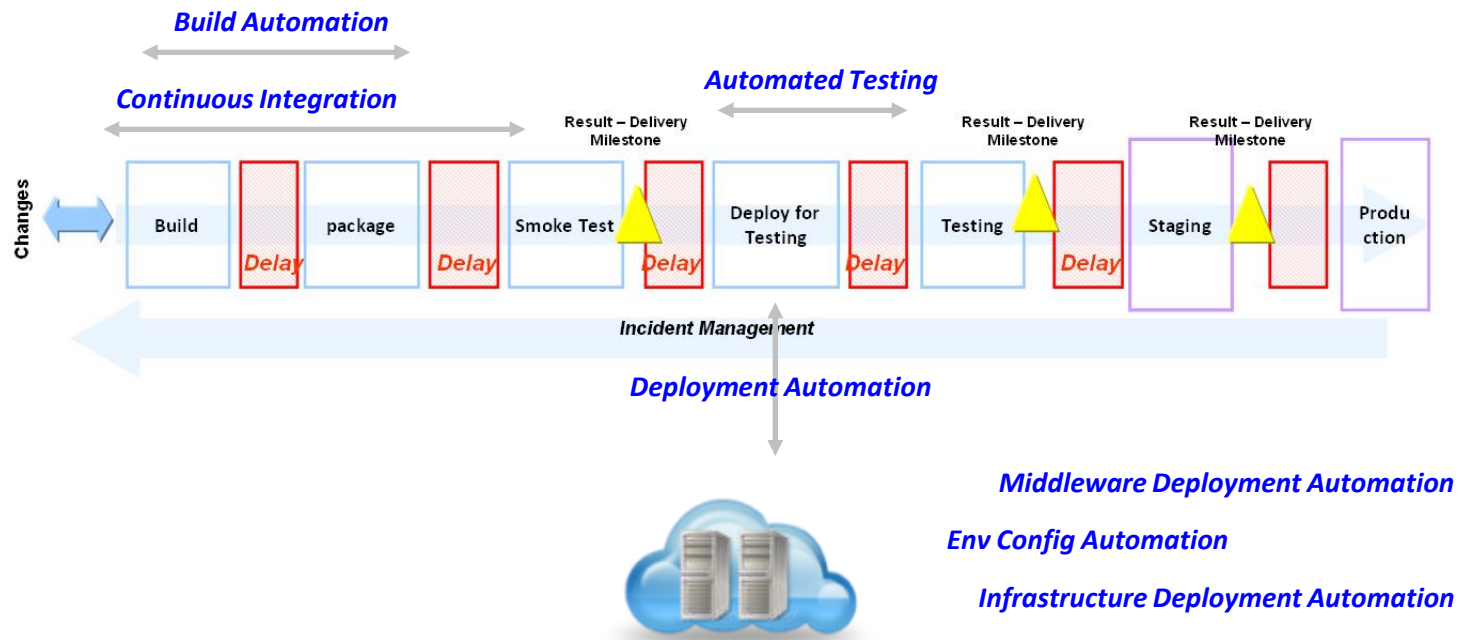
SPARQL standard [www.w3.org/TR/rdf-sparql-query/](http://www.w3.org/TR/rdf-sparql-query/)

# Addressing Application Lifecycle Management gaps

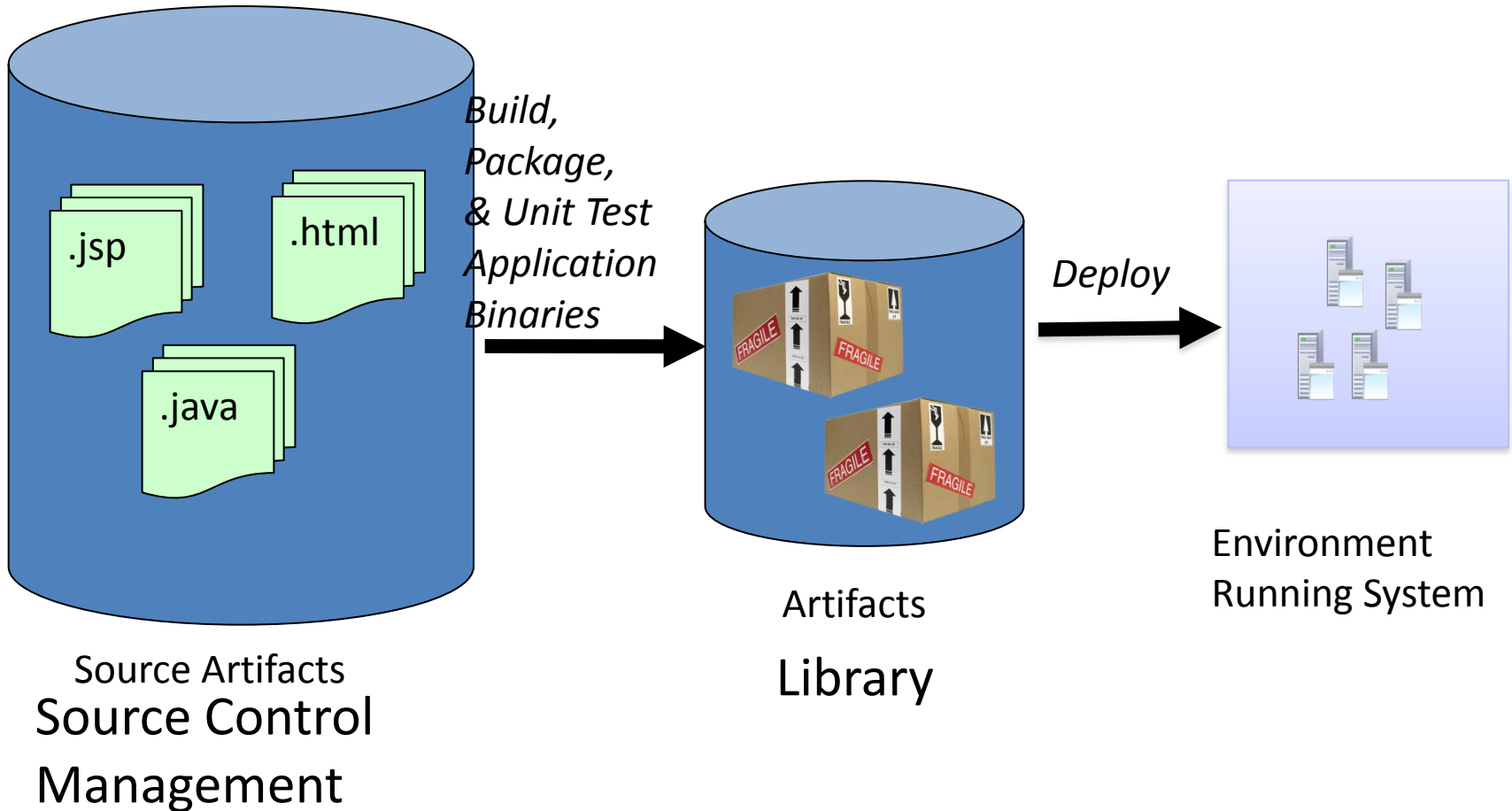


# Current Customer approaches addressing these challenges..

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

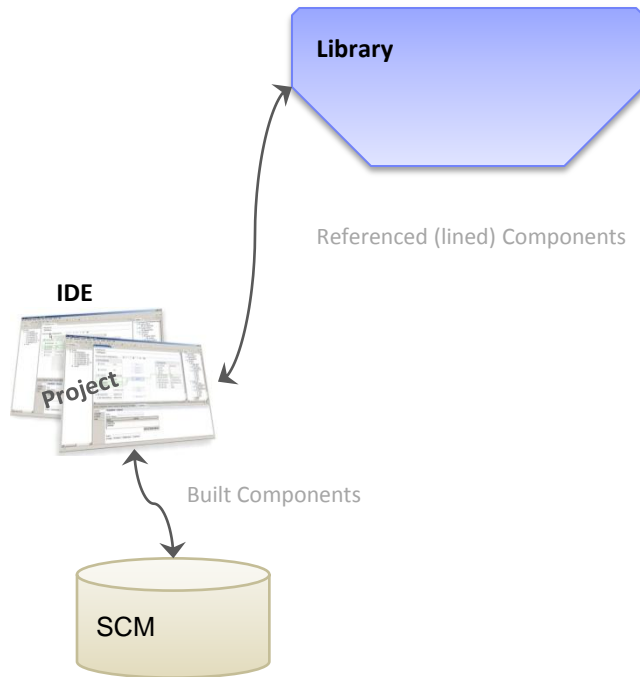


# Automating development hand off today



# Development phase

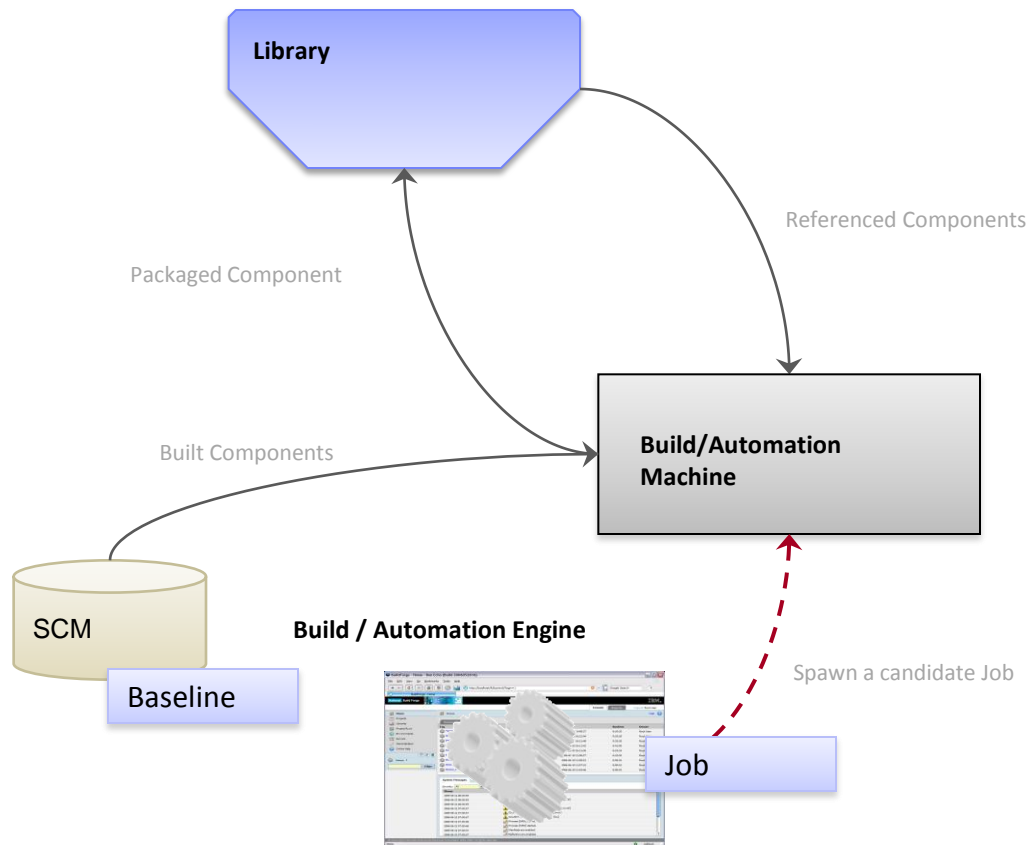
1. Use SCM / CM to manage the things you build.
2. Use a Library to link with the thing other have built.





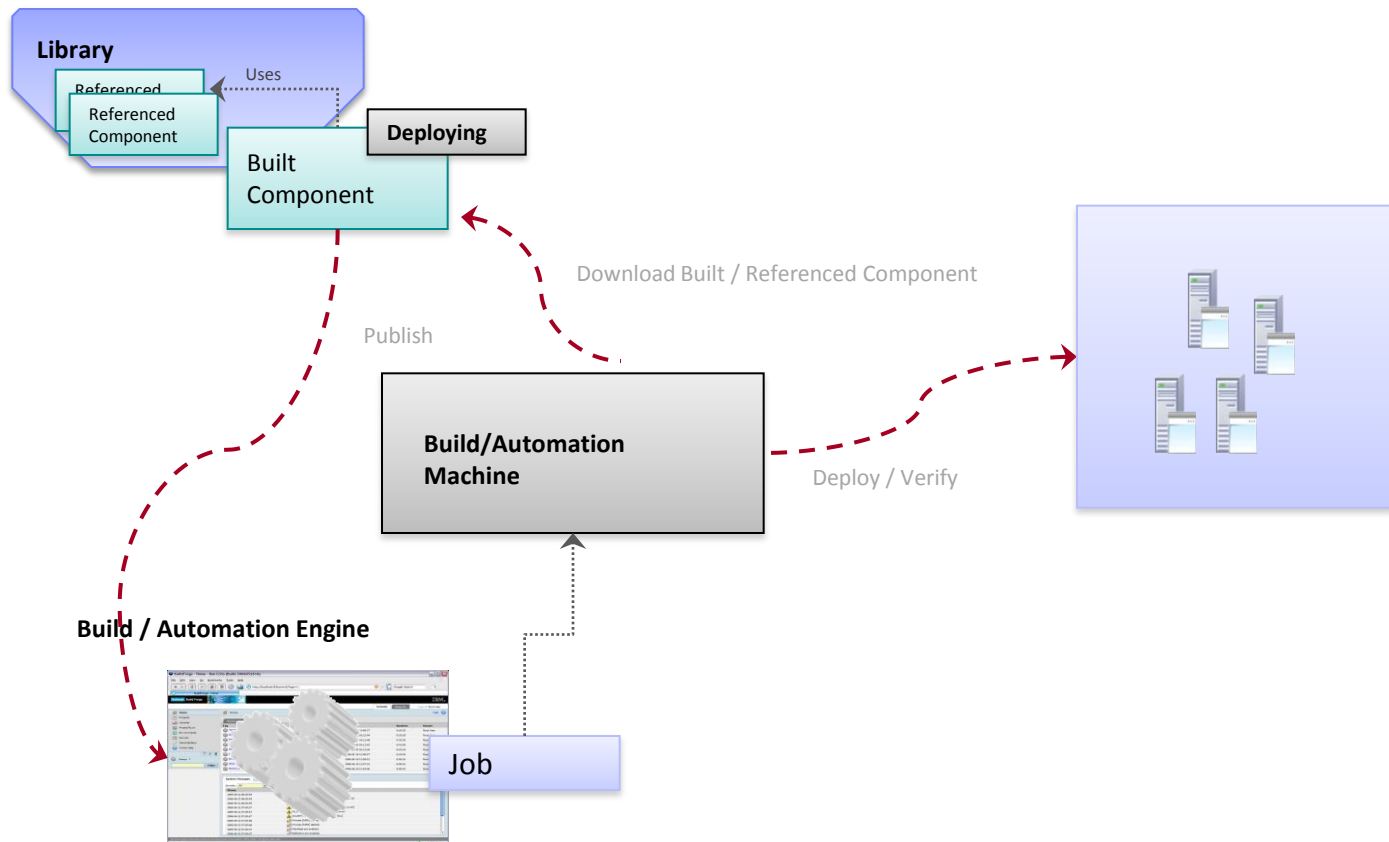
# Build / Automation Phase

1. Track the Bill of Materials used in a build
2. Manage which build move onto the next stage

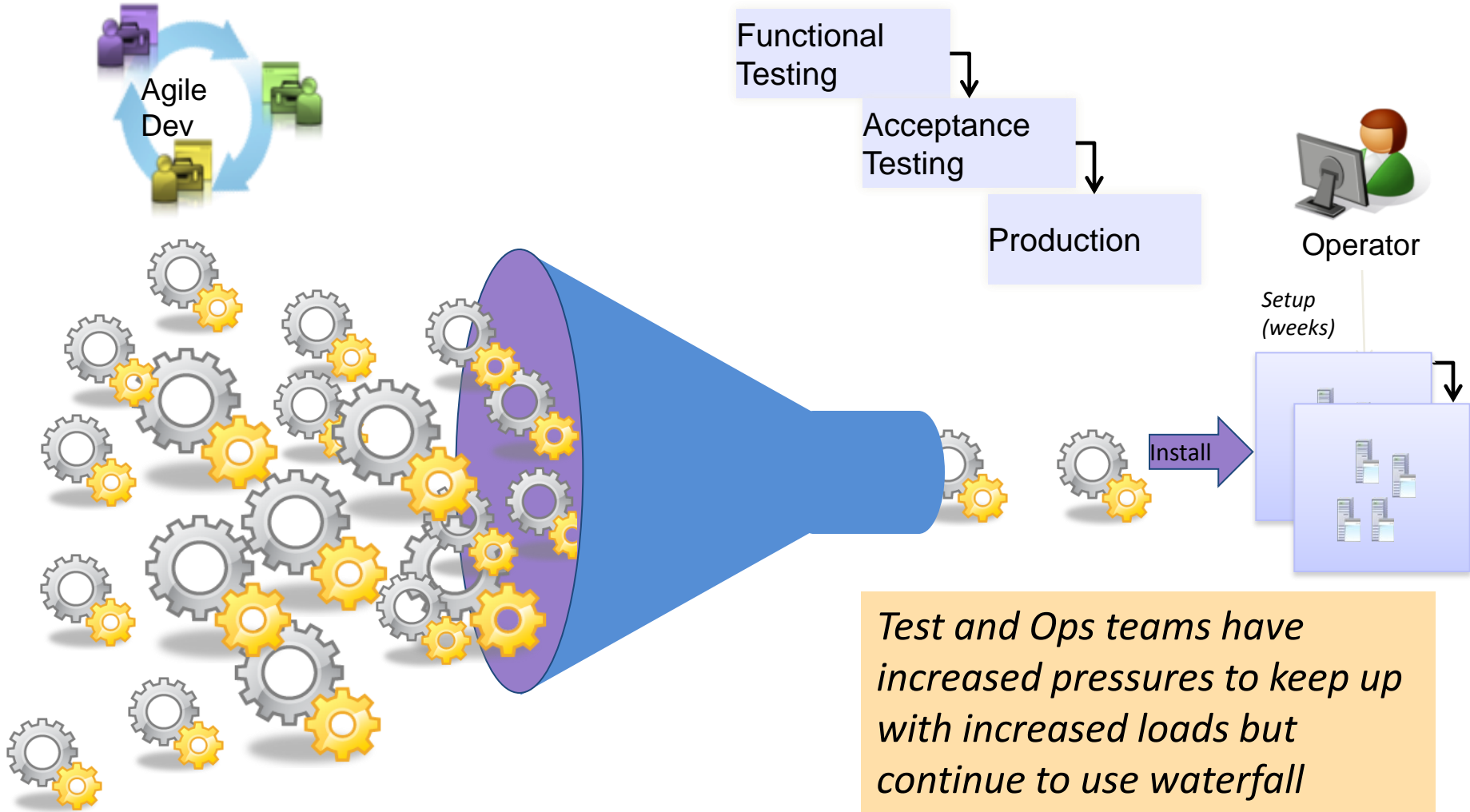


# Deploy Automation Phase

1. Control what is deployed
2. Track the Bill of Materials used to deploy



# With only Agile Development improvements...



*Test and Ops teams have increased pressures to keep up with increased loads but continue to use waterfall approaches and traditional tools.*

**CI builds are piling up**

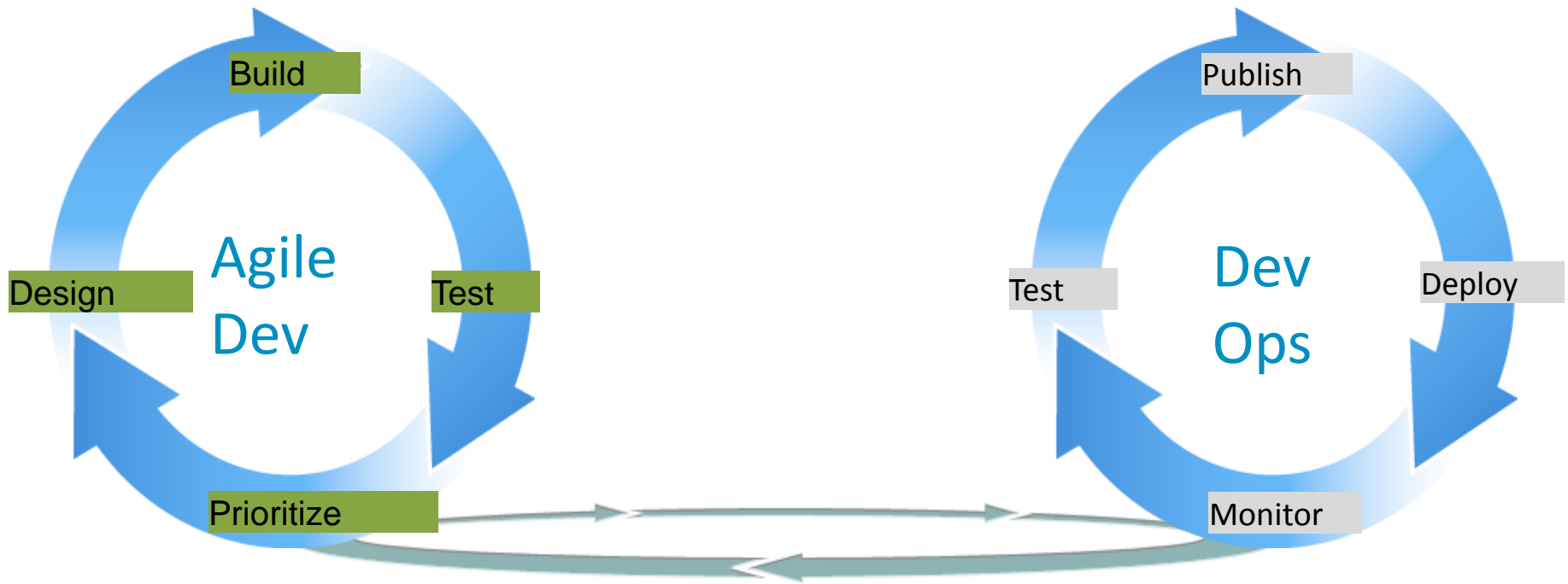
## Adjusting Delivery Mindset

- Infrastructure Developer vs. Operator/Administrator
  - Need to bring a software development mindset to the operational areas
  - Replicate, where appropriate, standard architecture/development tools and methodologies
- Use an Agile approach to delivery of routines
  - Continuous, incremental improvements and delivery of new functionality
  - Automated unit and integration testing improves operational runtimes
- Source Control Management
  - Automation routines and scripts are fundamental to Operations
  - Managing Operations routines like source code offers several benefits:
    - Central point of truth as routines and environments change
    - Backup in case of loss
    - Identify possible regressions by comparing with prior versions
- Example Managed Assets:
  - Perl, Jython, WSADMIN, ANT scripts, Service orchestration routines (opsware, k...
  - Infrastructure Gold copies components



# Agile Development and Delivery

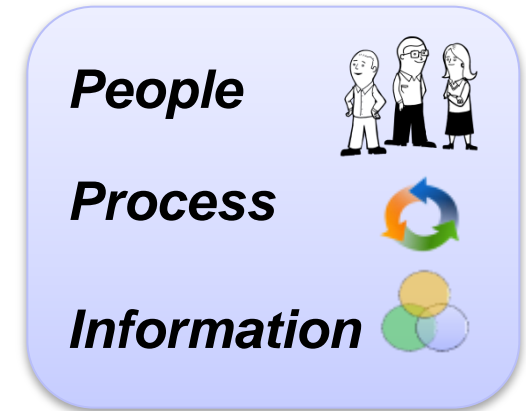
## Continuous Integration extends to Continuous Delivery



## Continuous Feedback

DevOps: Tighter alignment between Development & Operations to increase application velocity with managed risk

# DevOps Principles & Values



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

# 12 Principles for Better DevOps\*

## Collaborate

1. Do your developers and operators communicate the production realities and the application's requirements?
2. Do you have patterns for platforms and applications, designed jointly by development and operations?
3. Do you have a delivery pipeline exposed through a summary dashboard to assess delivery velocity?

## Automate

4. Are your patterns based on reusable deployment configuration scripts?
5. Can you deploy an environment (platform and application) in one step?
6. Can your developers launch and destroy production-like environments from those patterns?

# 12 Principles for Better DevOps

## Validate

- 7. Do you have automated tests to validate your application and platform function and characteristics?
- 8. Do you monitor software against expectations after deploying your application?
- 9. Do you deploy your applications daily into production-like environments and verify them?

## Manage and Control

- 10. Do you version deployment configuration and scripts along with your source code?
- 11. Do you link bugs and work items to changes in the application and configuration?
- 12. Do you associate tickets for production issues with relevant bugs opened for development to fix?



## Installation Instructions

### RedHat Linux

1. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.
2. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

### Apache Web Server

1. Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo.
2. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consectetur,
3. adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem.

### Python

1. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur?
2. Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur,
3. vel illum qui dolorem eum fugiat quo voluptas nulla pariatur?



```
#!/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(HsiltProvider.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}"

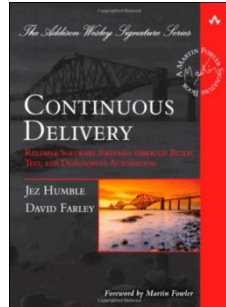
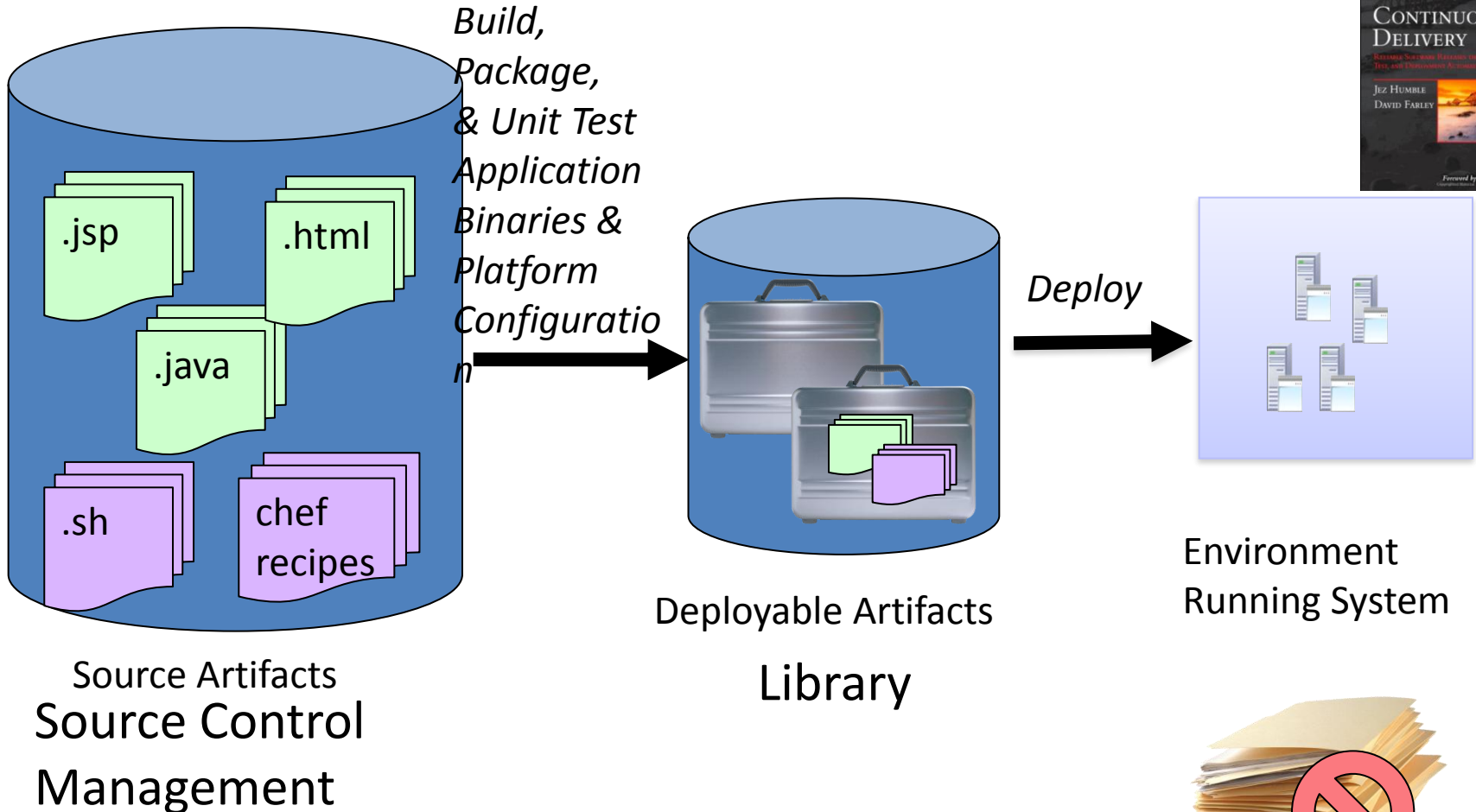
    # Read in the file's contents as a string, replace
    # the build_id, then overwrite the original contents
    # of the file
    text = File.read(template_file)
    new_text = text.gsub(/{\{ build_id \}\}/,
    "<a href=\"#{@build.uri}\">#{@build.id}</a>")
    File.open(template_file, "w") { |file|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

  # ...
end
```



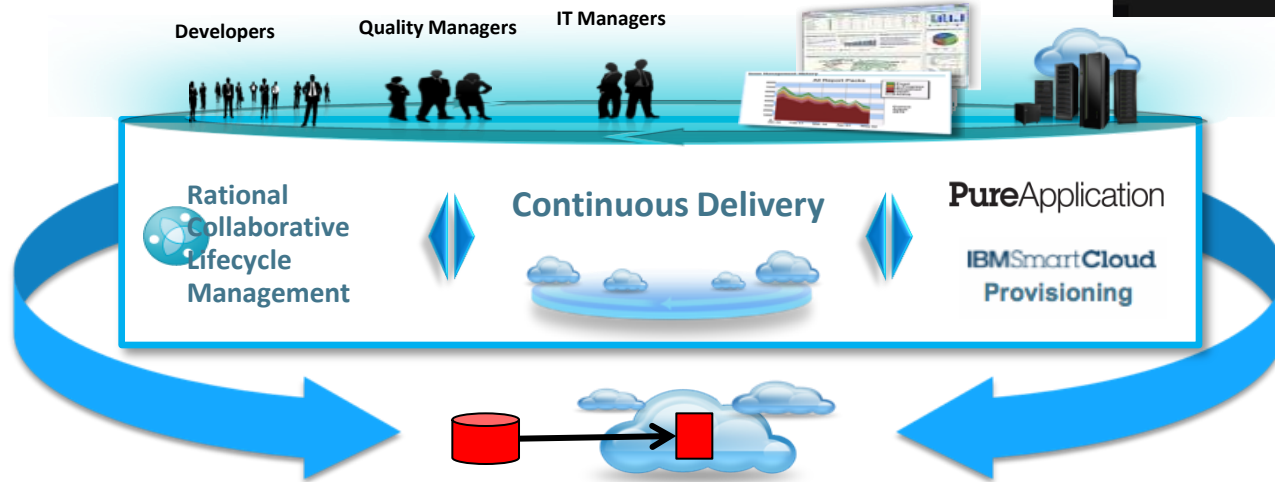
De

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



# IBM SmartCloud Continuous Delivery

*Extending Agile disciplines through delivery*



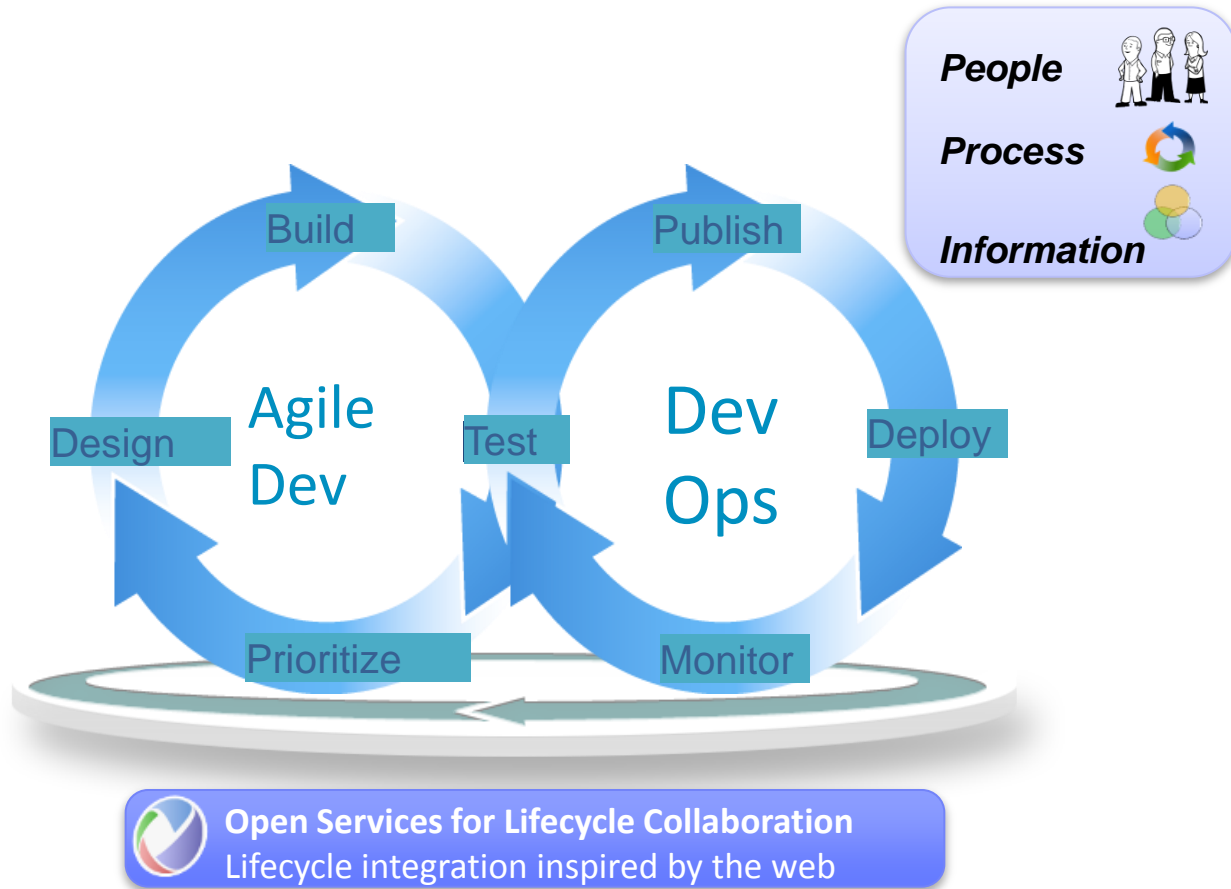
## Client Value

- Reduce risk, improve quality; manage change from development to deployment
- Improve efficiency, accelerate delivery; automated handover between processes
- Optimize resources; workload pattern composition delivery

## Targeted Entry

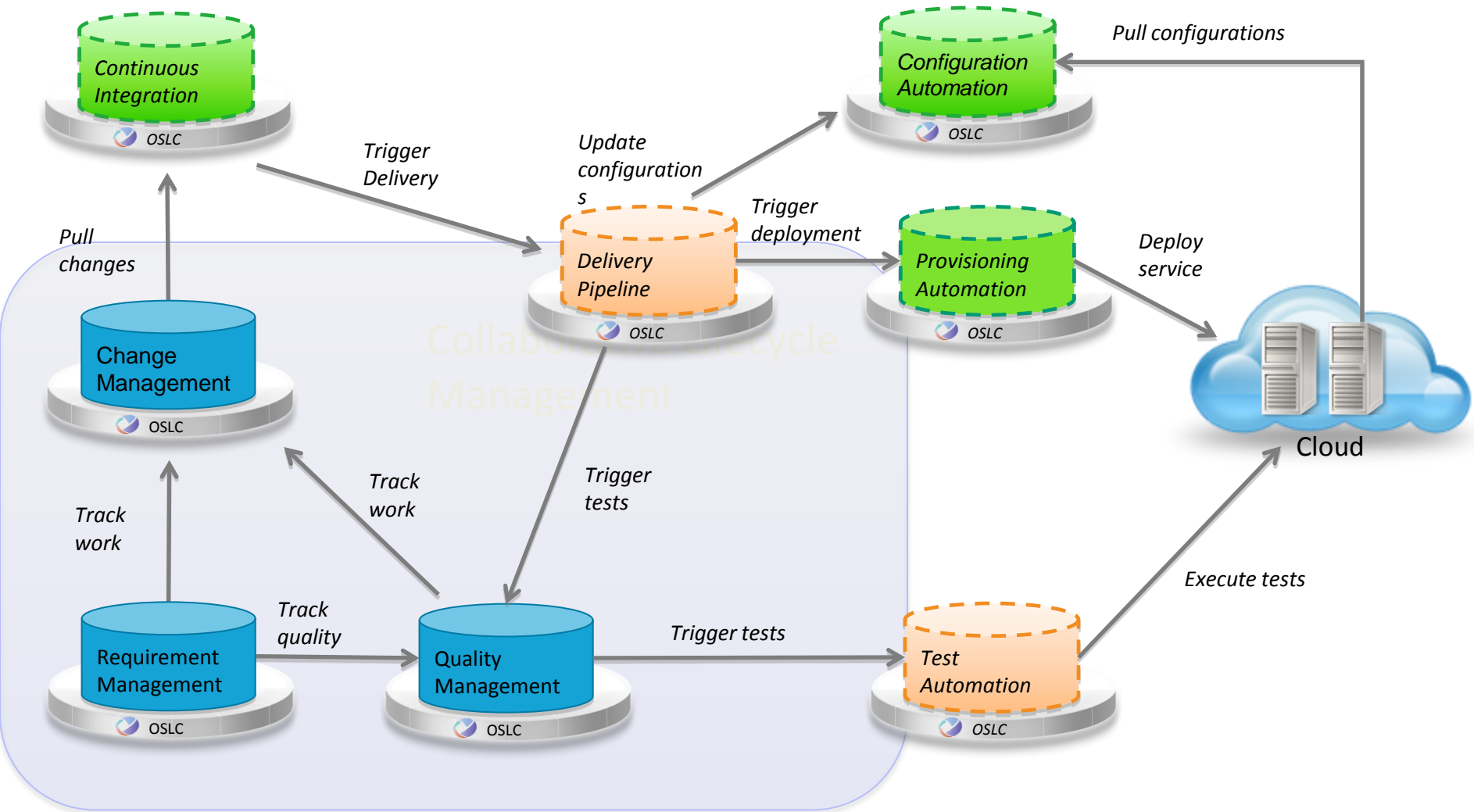
- Development team extending Agile into rapid workload deployment in the cloud
- Operation teams delivering scalable, continuous delivery services to the development organization

# End-to-End Lifecycle Optimization



*Follow us on the Enterprise DevOps and Jazz Team Blogs*

# Lifecycle Management Reference Architecture



Adopt in any order,  
at any time




# Creating standard workload patterns

**WebSphere advanced cluster (development)** Refresh Deploy Edit Clone Lock Delete

**Description:** Advanced cluster (development) is a WebSphere Application Server Network Deployment topology with some of the Intelligent Management Pack features for small scale development environments.

**Created on:** May 23, 2011 11:20:09 AM

**Current status:**  Read-only

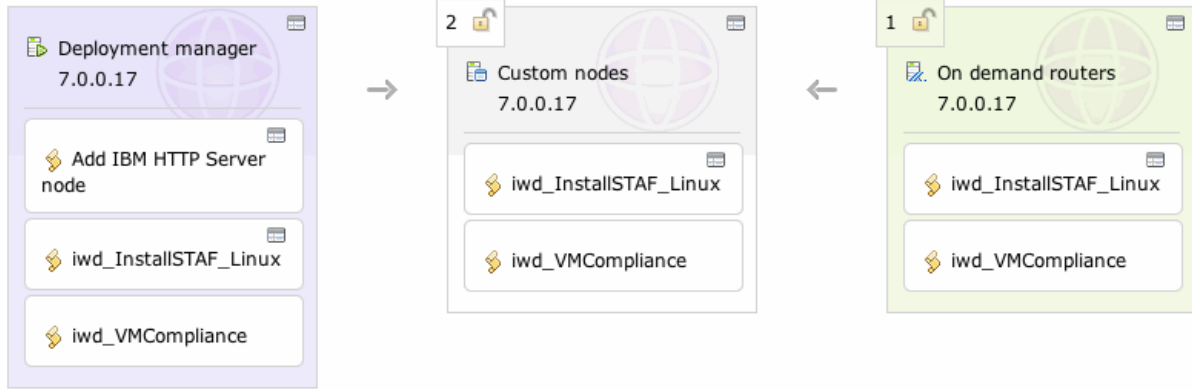
**Updated on:** Sep 9, 2011 2:27:03 PM

**In the cloud now:** (none)

**Access granted to:** Administrator [owner]  
Everyone [read]

**Topology for this pattern:**

Deploys to ESX hypervisors.



The diagram illustrates the topology for this pattern, showing three main components connected by arrows. The first component is the **Deployment manager** (7.0.0.17), which includes tasks for adding an IBM HTTP Server node, installing STAF on Linux, and ensuring VM compliance. This component is linked to the **Custom nodes** (7.0.0.17), which also include STAF and VM compliance tasks. The **Custom nodes** are in turn linked to the **On demand routers** (7.0.0.17), which also include STAF and VM compliance tasks. The components are numbered 2 and 1 respectively, indicating their sequence in the deployment process.

# Demo: Application



JKE Banking

http://security-test.ibm.com:8080/#state=history&accountType=Checking

Search

**JKE**

Account Access

Welcome, Julie

Logout

Money That Matters

Dividend Contribution

Services

- Certificates of Deposit
- Open New Account
- Close Account
- Policy Change Request
- Policy Change Status

Financial Services

- Auto Loans
- Vacation Home Finance
- Today's Rates
- Refinancing
- Mortgage Details
- Home Equity Lines
- Amortization

**Auto Loans**  
Rates as low as 4.9%

**Transactions**

Account:

**Checking**

ID	Type	Source	Amount	Remaining Balance	Date
1	Withdrawal	Bills	\$5.75	\$6,790.00	5/03/2010
2	Withdrawal	Bills	\$600.00	\$6,175.00	5/05/2010
3	Deposit	Pay	\$3,000.00	\$9,175.00	5/14/2010
4	Withdrawal	Food	\$175.00	\$9,000.00	5/22/2010
5	Withdrawal	Car	\$7,000.00	\$2,000.00	5/25/2010
6	Donation	American Cancer Society	\$10.00	\$1,990.00	11/18/2011

[Home](#) [Financial Policies](#) [My Account](#) [Privacy Policy](#) [Customer Service](#) [Branch Locator](#)

Copyright 2010, IBM



# Demo: Security Test

```

IKE Rankins
bill — bash — 105x23
# run_exploit --amount 10 --host security-test.ibm.com
Logging in to account 200...
Attempting to hack account...
Success! Your account balance has been (maliciously) incremented 10 percent!
# █
  
```

The background image shows a banking website interface with a search bar, a navigation menu, and a 'Transactions' section. A prominent banner for 'Auto Loans' with a 4.9% rate is visible. The 'Transactions' table is as follows:

ID	Type	Source	Amount	Remaining Balance	Date
1	Withdrawal	Bill	\$1.75	\$6,750.00	5/29/2010
2	Withdrawal	Bill	\$200.00	\$6,550.00	5/29/2010
3	Deposit	Pay	\$2,000.00	\$8,550.00	6/14/2010
4	Withdrawal	Food	\$175.00	\$8,375.00	6/22/2010
5	Withdrawal	Car	\$7,000.00	\$1,375.00	6/26/2010
6	Deposit	American Cancer Society	\$15.00	\$1,390.00	11/19/2011

# Demo: Defect created



The screenshot shows a web browser window displaying the IBM DevOps interface for a defect. The browser address bar shows the URL: `https://csnext.ibm.com/ccm9/web/projects/DevOps#action=com.ibm.team.workitem.viewWorkItem&id=12975`. The page title is "Defect 12975: Was able to make negative contribution - Change and Configuration Management".

The interface includes a navigation bar with "DevOps" and a user profile for "William P. Higgins". Below the navigation bar, there are tabs for "Overview", "Links", "Approvals", and "History". The "Overview" tab is active.

The main content area is titled "Defect 12975" and contains a summary field with the text "Was able to make negative contribution". To the right of the summary field, there are buttons for "New", "Save", and a search icon. The page is loaded on "Nov 18, 2011 7:43 PM".

The "Details" section is divided into two columns. The left column contains fields for "Type" (Defect), "Severity" (Normal), "Found In" (Unassigned), "Creation Date" (Nov 18, 2011 7:43 PM), "Created By" (William P. Higgins), "Project Area" (DevOps), "Team Area" (Development), "Filed Against" (Engineering), and "Tags" (security). The right column contains fields for "Owner" (Unassigned), "Priority" (Unassigned), "Planned For" (Unassigned), "Estimate" (empty), "Correction" (empty), "Time Remaining" (empty), and "Due Date" (empty).

On the right side of the page, there is a "Quick Information" section showing "Subscribers (1): WPH" and a "Subscribers" section below it.

The "Description" section contains the text: "Was able to directly hit the web service and submit a negative balance, thus stealing from charity." There is an "Edit" link next to the description.

The "Discussion" section is currently empty, showing "No Comments." and an "Add Comment" link.

# Demo: Fix the defect



12975: Was able to make negative contribution ContributionBean.java

Properties

Java Structure Compare

- Compilation Unit
  - ContributionBean
    - validate()

Java Source Compare

ContributionBean.java (after) (read-only)	ContributionBean.java @ Bill's Dev Workspace (before) (read-only)
<pre>Date= date; } public void validate() throws IllegalArgumentException if (accountNumber &lt; 0) {     throw new IllegalArgumentException("Invalid a     + accountNumber); } else if (percentage &lt; 1) {     throw new IllegalArgumentException("Invalid d     + accountNumber + " percent"); } }</pre>	<pre>public void setOrganization(String organization) {     this.organization= organization; } public void setPercentage(double percentage) {     this.percentage= percentage; } public void setDate(String date) {</pre>

**Fix**

**New Test**

12975: Was able to make negative contribution jke\_site.feature

Properties

Text Compare

jke_site.feature (after) (read-only)	jke_site.feature @ Bill's Dev Workspace (before) (read-only)
Feature: JKEFunctionalTests	Feature: JKEFunctionalTests
Scenario: A new JKE website was deployed Given I have a jke web server Then I should be able to visit the homepage	Scenario: A new JKE website was deployed Given I have a jke web server Then I should be able to visit the homepage
Scenario: A user tries to log in to the JKE website Given I have a jke web server And I have a user account Then I should be able to login to the user account	Scenario: A user tries to log in to the JKE website Given I have a jke web server And I have a user account Then I should be able to login to the user account
Scenario: A user tries make a transaction with a negati Given I have a jke web server Then I should not be able to contribute a negative am	

# Demo: Deliver the fix



Tags: security

Owner:

Priority:

Planned For:

Overview Links App

Builds Pending

2 outgoing change sets

Bill's Dev Work

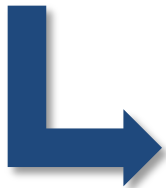
- Build
- CLM Sample
- Outgoing
- 1297
- 1297
- CLM Sample
- Frameworks

New

- Open in Change Explorer
- Deliver**
- Suspend
- Discard...
- Reverse
- Deliver and Resolve Work Item...
- Submit for Review...
- Complete
- Set Current
- Edit Comment

Advisor Search

service from accepting negative contributions



Builds Pending Changes Change Explorer Work Items Team Advisor Search

jke.cloud - Found 16 Builds (1239 ms)

Build	Label	Progress	Estimated Completion	Status
✓ jke.cloud	i20111118-1940	81% (Application is now ready for in 5 minutes)		No
✓ jke.cloud	i20111119-0749	Completed		No
✓ jke.cloud	i20111119-0703	Completed		No
✓ jke.cloud	i20111118-1547	Completed		No
✓ jke.cloud (personal build by Michael D. Elder)	i20111118-1515	Completed		No
✓ jke.cloud	i20111118-0957	Completed		No
✓ jke.cloud (personal build by Michael D. Elder)	i20111118-0350	Completed		No

# Demo: Build starts

12975: Was able to make negative contribution I20111118-1940

**Build jke.cloud I20111118-1940** Save

**✓ In Progress (81%)**

Current Activity: Application is now ready for use

Estimated Completion: in 5 minutes

Last Updated: less than 1 minute ago

Duration: 7 minutes, 2 seconds

Start Time: November 18, 2011 7:45:04 PM

Status Trend:

**Contribution Summary**

Changes: [Show changes](#)

Compile: 0 errors, 0 warnings

Downloads: [1 download](#)

External Links: [1 link](#)

Repository Workspace: [Build: Sample App \(IWD\)](#)

Snapshot: [jke.cloud I20111118-1940](#)

**Reported Work Items**

Work items reported against this build to help stabilize it.

None reported against this build

[Create a new work item](#)

[Associate an existing work item](#)

**General Information**

Requested by: William P. Higgins

Build Definition: [jke.cloud](#)

Build Engine: [devops-ibe-cloud1](#)

Build History: [16 builds](#)

Tags:

Deletion allowed

Overview | Activities | Compilation | Tests | Downloads | External Links | Properties

# Demo: Deploy, test, and report



12975: Was able to make negative contribution I20111118-1940

Build jke.cloud I20111118-1940

Build Activities

Activity Label	Start Time	Activity Duration
Pre-build setup	00:00:00	22 s
Building application	00:00:32	28 s
Publishing deployable application to software library	00:01:09	17 s
Deploying application to test environment	00:01:26	5 m 50 s
Sent request to cloud environment to deploy application	00:01:34	4 m 28 s
Downloading application	00:06:02	10 s
Installing application	00:06:12	13 s
Application is now ready for use	00:06:26	38 s

Started test application at 9.42.76.92

JUnit Tests

Name	Tests	Failures	Errors	Time Taken	Run Order
com.jke.junit.AllTests	46	0	0	14 s	
JKEFunctionalTests	3	0	0	3 s	
JKEFunctionalTests.A new JKE website was deployed	1	0	0	106 ms	1
JKEFunctionalTests.A user tries to log in to the JKE website	1	0	0	3 s	2
JKEFunctionalTests.A user tries make a transaction with a negative v	1	0	0	12 ms	3

Overview Activities Compilation Tests Downloads Exte

12975: Was able to make negative contribution I20111118-1940

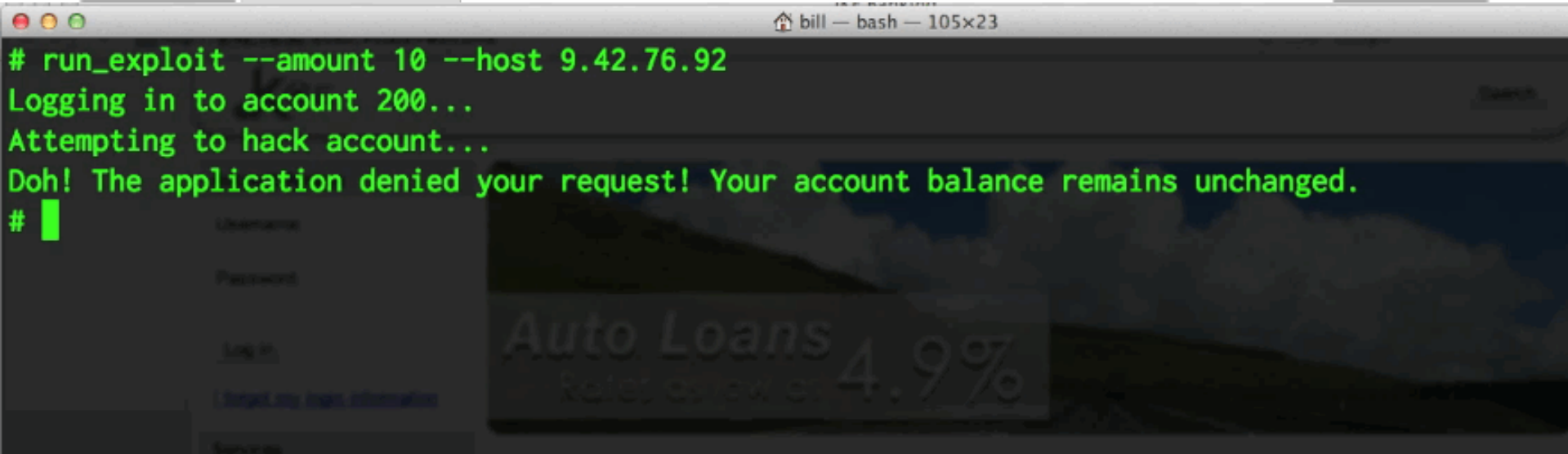
Build jke.cloud I20111118-1940

## External Links

- [Deployed Virtual System \(ID: 3947\)](#)
- [Money that Matters Application library entry](#)
- [Money that Matters Infrastructure Deps file URL](#)
- [Money that Matters Infrastructure library entry](#)
- [Money that Matters web application \(build I20120402-1644\)](#)
- [Money that Matters test suite results](#)



# Demo: Test with fix



# Demo: Resolve the defect

The screenshot displays the IBM Rational Defect Manager interface for defect 12975. The title bar shows the defect ID and name: "12975: Was able to make negative contribution". The main header area includes a "Defect 12975" dropdown, a "Summary" field with the text "Was able to make negative contribution", and a status bar with a green arrow icon, a "Resolved" dropdown menu, a green checkmark, and a "Fixed" dropdown menu. A red box highlights this status area. The left sidebar contains a "Details" section with the following information: Type: Defect, Severity: Normal, Found In: Unassigned, Creation Date: Nov 18, 2011 7:43 PM, Created By: William P. Higgins, Team Area: Development / DevOps, Filed Against: Engineering, and Tags: security. The right pane shows the "Description" field with the text: "Was able to directly hit the web service and submit a negative balance, thus stealing from charity."



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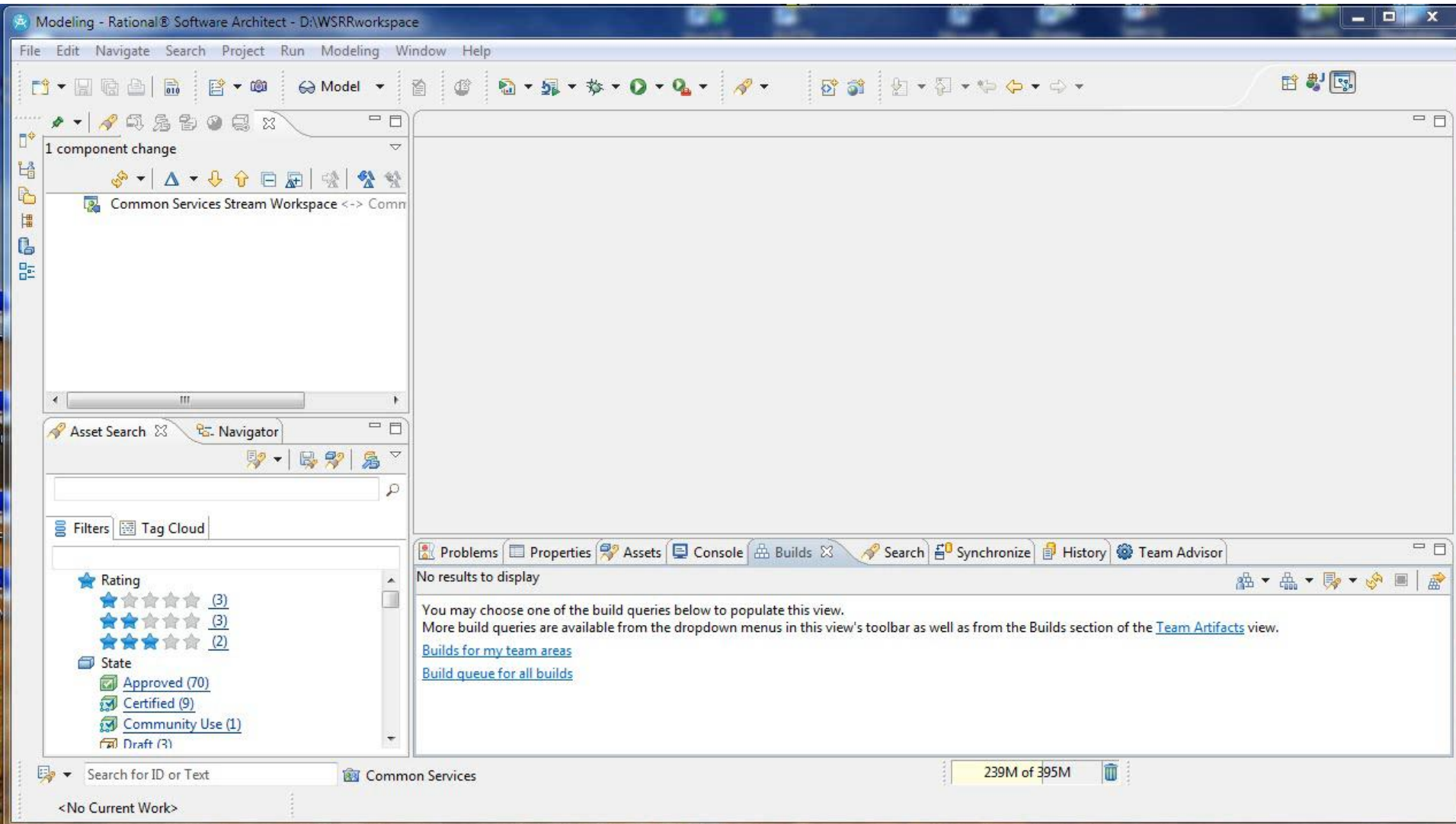
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# Development phase



# Build Deploy automation

The screenshot shows the Rational Asset Manager web interface. The browser address bar shows a URL with a GUID. The page title is 'Credit Verification Service Impl [1.5]'. The interface includes a navigation menu, a search results section, and a main content area with tabs for 'Instructions' and 'State Summary'. The 'Instructions' tab is active, showing 'No instructions have been provided for this state.' Below this, there is a 'Place Holder' section with 'Build ID: TBD'. A 'Contact' section lists support contact, owners, community, and manufacturer. A 'Defects' section lists two issues: '650: Memory Leak: clear session data at the end of a service call' and '651: Slow / Performance issues on'. A 'Categories' section is also visible, with a warning message at the bottom: 'This asset has invalid categories that might have been renamed or removed from the repository. To remove them, modify the asset.'

# BACKUP

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## What companies want to achieve

1. Communication of Knowledge and Integration of People
2. Better Process
3. Reality-based Measurements



## What companies encounter instead

1. Distracted by day-to-day delivery pressures – 78%
2. Tools don't integrate properly – 62%
3. Lack the necessary internal expertise – 56%



Source: Forrester study commissioned by Wipro, 2008



# *Demo*

- Download and configure DevOps CLI
- Generate continuous delivery project with content
- Develop infrastructure as code
- Update continuous delivery properties
- Update and customize delivery process file
- Configure RTC build definition for continuous delivery
- Request build and delivery



## Installation Instructions

### RedHat Linux

1. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.
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### Apache Web Server

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### Python

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3. vel illum qui dolorem eum fugiat quo voluptas nulla pariatur?



# Engineering

## Robot's Obstacle Detection System

**Favorite Products**

- [-] YoyoBot A
  - [+] HMI small robot
  - [+] Mobility small robot
  - [-] Obstacle Detection small robot
    - [+] Obstacle Detection Kit [1.0]
    - [+] Mobility Function Design
    - [+] YoyoBot A Obstacle Detection Test Plan
    - [+] Direction Change Requirement Module
  - [+] Power Management small robot

**Recently Viewed Products**

**Rational Asset Manager**

Home My Dashboard Communities Assets Administration

Search Results >

Obstacle Detection Kit [1.0] <sup>?</sup> Kit for detecting obstacles in a single direction

Ultrasonic Range Finder [1.0] <sup>?</sup> The sensor provides very accurate readings of 0 to 255 inches (0 to 6.45m) in 1 inch increments

Download this Asset

Yoyodyne Small Robot Platform DM

Project Dashboards Designs Reviews Analysis Import

Explorer SmallRobotPlatform YoyoboB YoyoBAnalysisView YoyoBFun

**Block Definition Diagram: mobility\_function**

Properties Related Elements Diagram Links Source

Quality Management (/qm)

Yoyodyne

Project Dashboards Requirements Planning Construction Lab Management Builds Execution Reports Defects

Manage Sections

Overview \* 14: YoyoBot A Obstacle Detection <sup>?</sup>

**Rational DOORS Web Access**

Database Explorer

- [-] DOORS Database
  - [+] Adaptive Cruise Control
  - [+] Hybrid SUV
  - [+] Infusion Pump
  - [+] Other Projects
  - [+] Small Robot Platform
  - [+] Unmanned Air Vehicle

Obstacle Detection

ID	Description	YoyoBot A	YoyoBot B
OD2	<b>1 Obstacle detection</b>		
OD3	<b>1.1 Obstacle detection range</b> Robot shall be able to detect obstacles <= 1M in front	True	True
OD4	<b>1.2 Obstacle size</b> Robot shall detect any obstacle > 2 cm high X 2 cm wide	True	True
OD5	<b>1.3 Obstacle detection angle</b> Robot shall detect an obstacle that intrudes with 10 degrees of robot's forward direction	True	True
OD6	<b>2 Obstacle Avoidance</b>		
OD7	<b>2.1 Forward obstacle avoidance</b> Robot shall perform a direction change on detection of forward obstacle	True	True

Link

Engineering Lifecycle Manager (/realm)  
Yoyodyne  
Products ▾ Views ▾ Queries ▾ Analysis ▾

Views > Shared Views >

## Yoyobot B

100%

### Design Elements

mobility\_function

### Requirement

velocity

terrain

MR9: Terrain

incline

MR10: Incline

direction change

MR3: Direction Change

### Asset Catalog

Ostacle Detection Kit [1.0]

Prototype

Description

Queries

Query ID: sam

SPARQL Definition

```
SELECT ?resource ?title ?version ?type (COUNT(?passedTestResult) AS ?passedTestCount) WHERE { ?resource a oslc_assetAsset; rdf:type ?type; oslc_assetguid ?{assetid}'; oslc_assetversion ?{assetversion}'; dcterms:title ?title; oslc_assetversion ?version.
```

Query Parameter

Parameter Name	Parameter Value
----------------	-----------------

Layout

```
<layout columns="4" layout="GridLayout" margin="30" spacing="20"> <!-- <text text="Asset"/> <text text="Test Execution Record"/> <text text="Requirements"/> <text text="Design Model Element"/> <!-- --> <container baseQueryId="sam" columns="1" layout="GridLayout" margin="5" r="5" spacing="5" stroke=" </container>
```



# Continuous Delivery architecture flow

