



# C&SI Continuous Delivery

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**Innovate2013**

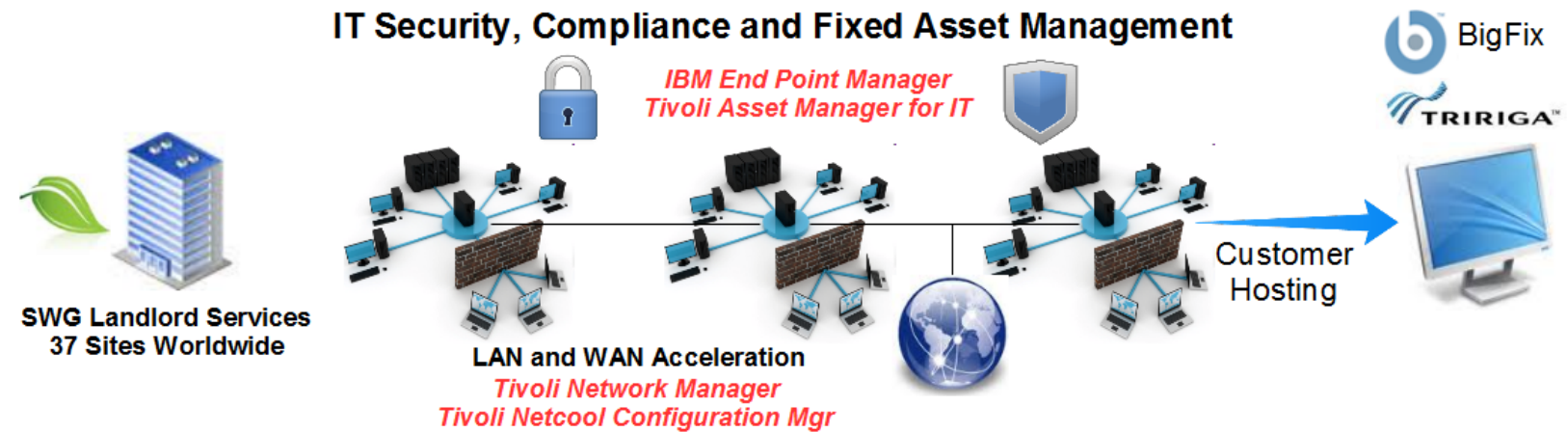
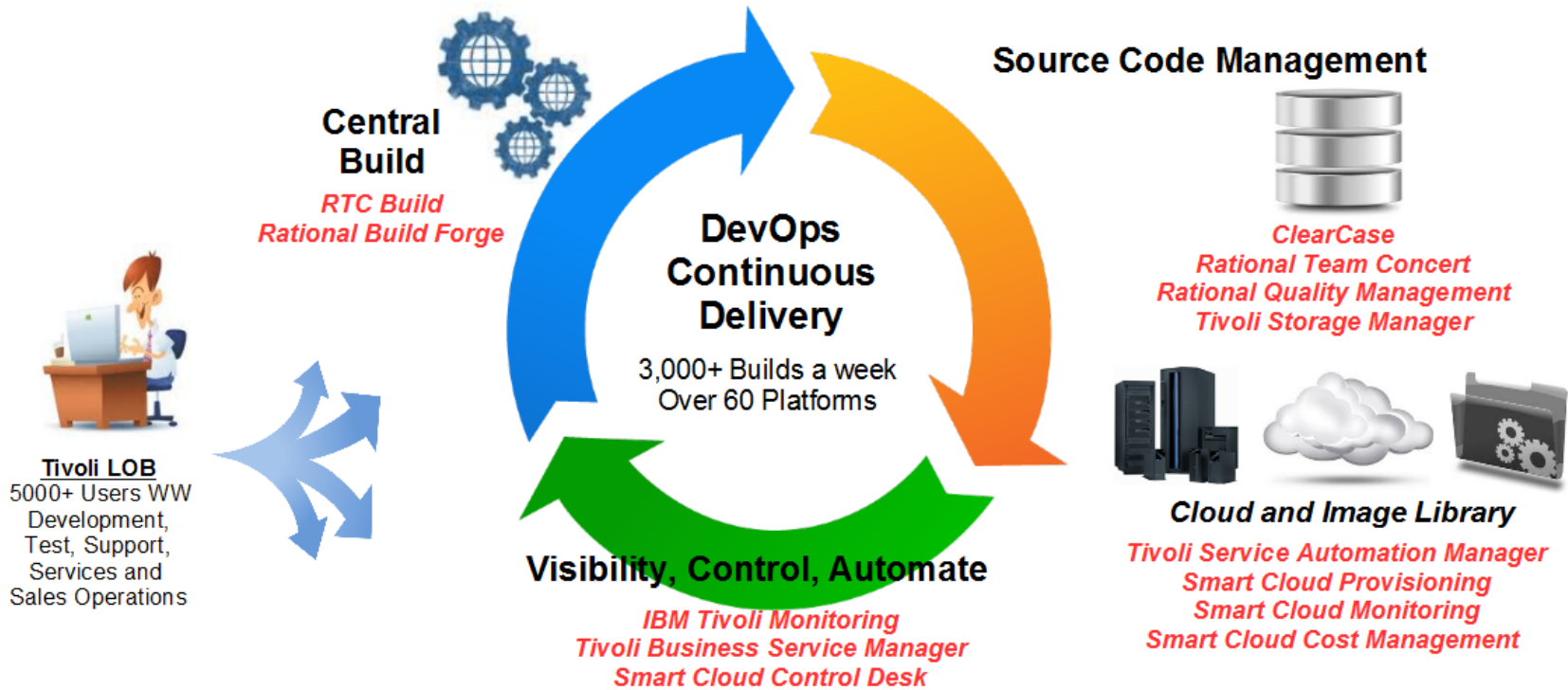
The IBM Technical Summit

**Cloud & Smarter Infrastructure**

# Agenda

- C&SI IT Overview
- Case Study
- DevOps
- Continuous Delivery Sample
- Future Plans
- Questions





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# Cloud & Smarter Infrastructure Case Study

## Business Background

- Provide IT services for various test, development, and support teams in IBM Software Group
- Number of source code management and build tooling
- Centralized build versus department build
- Inconsistent test, dev, support environments
- Overcome virtualization sprawl and entrenched processes

## Business Challenges

- Organizational cultural changes: enterprise virtualization, automation, shorten test/dev cycles
- Reduce CSI's IT infrastructure footprint and consolidate IT pillars
- Learn to effectively manage resources and IT services in the cloud enabling visibility, control, and automation to the business
- Empower end users in the new IT service consumption model

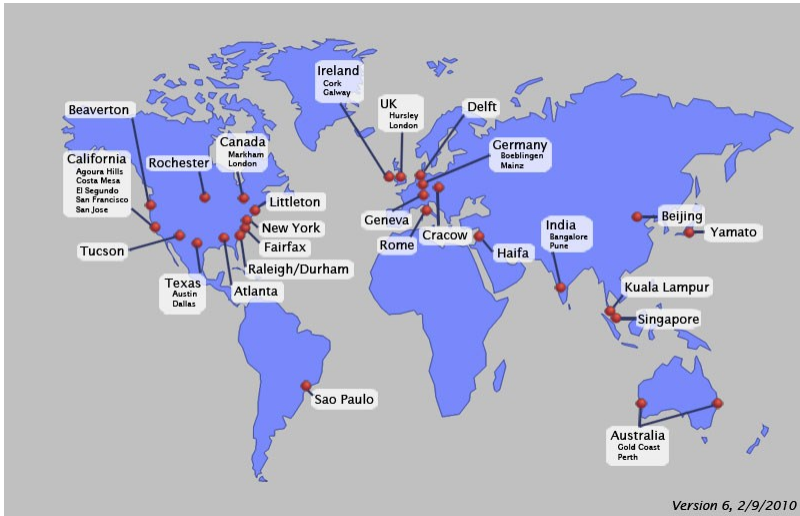
## Solution Overview

- Implemented with Rational Team Concert, Rational Asset Manager, SmartCloud Orchestrator, IBM UrbanCode uDeploy, IBM Tivoli Monitoring, Identify Endpoint Manager
- Standardization of lifecycle change and release management processes
- Decrease environment set up time while improving efficiencies, reducing costs, and reducing support requests



# C&SI World View in 2013

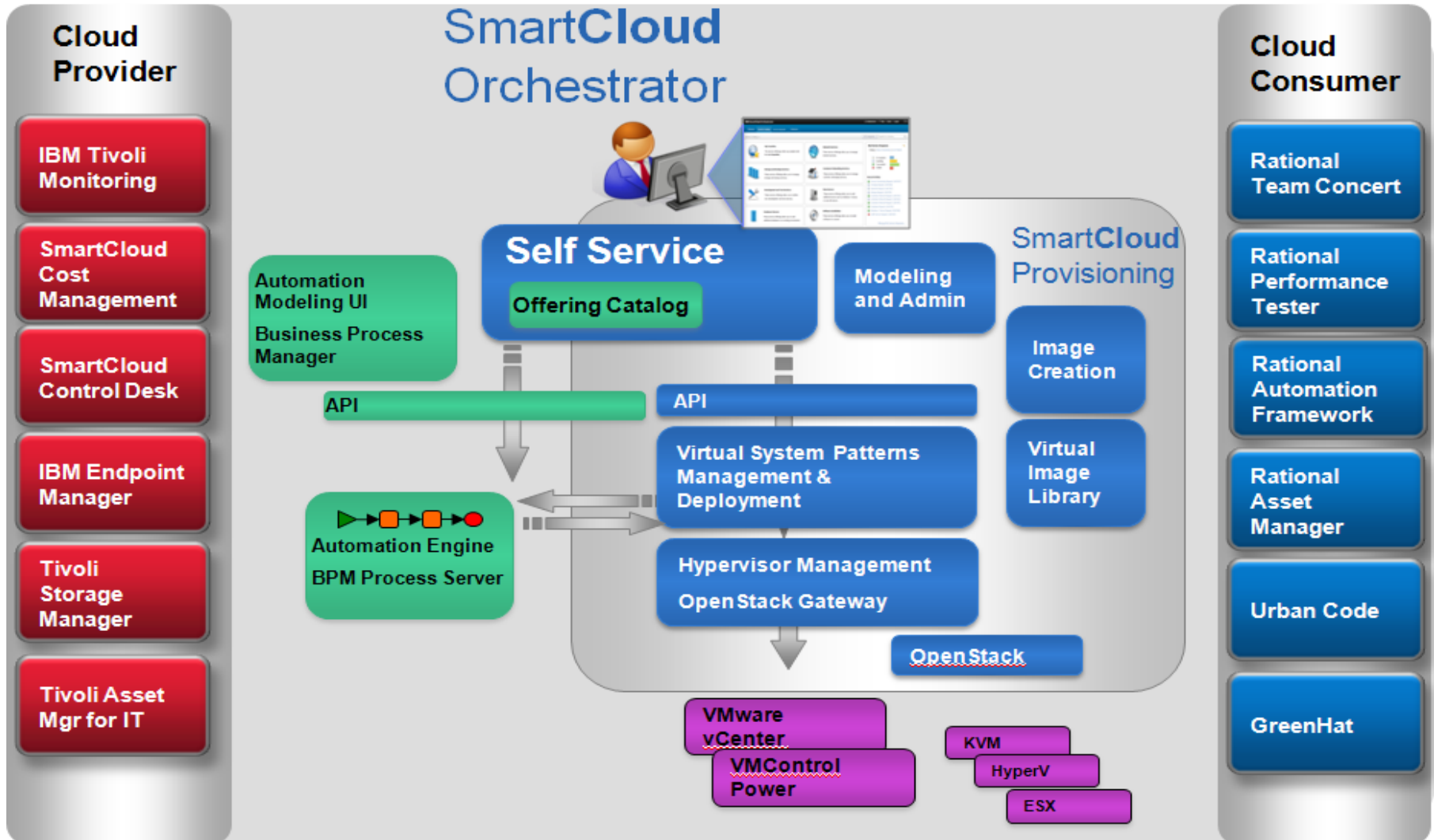
## Test & Development



## IT Infrastructure Anchor Sites



# C&SI Cloud Architecture



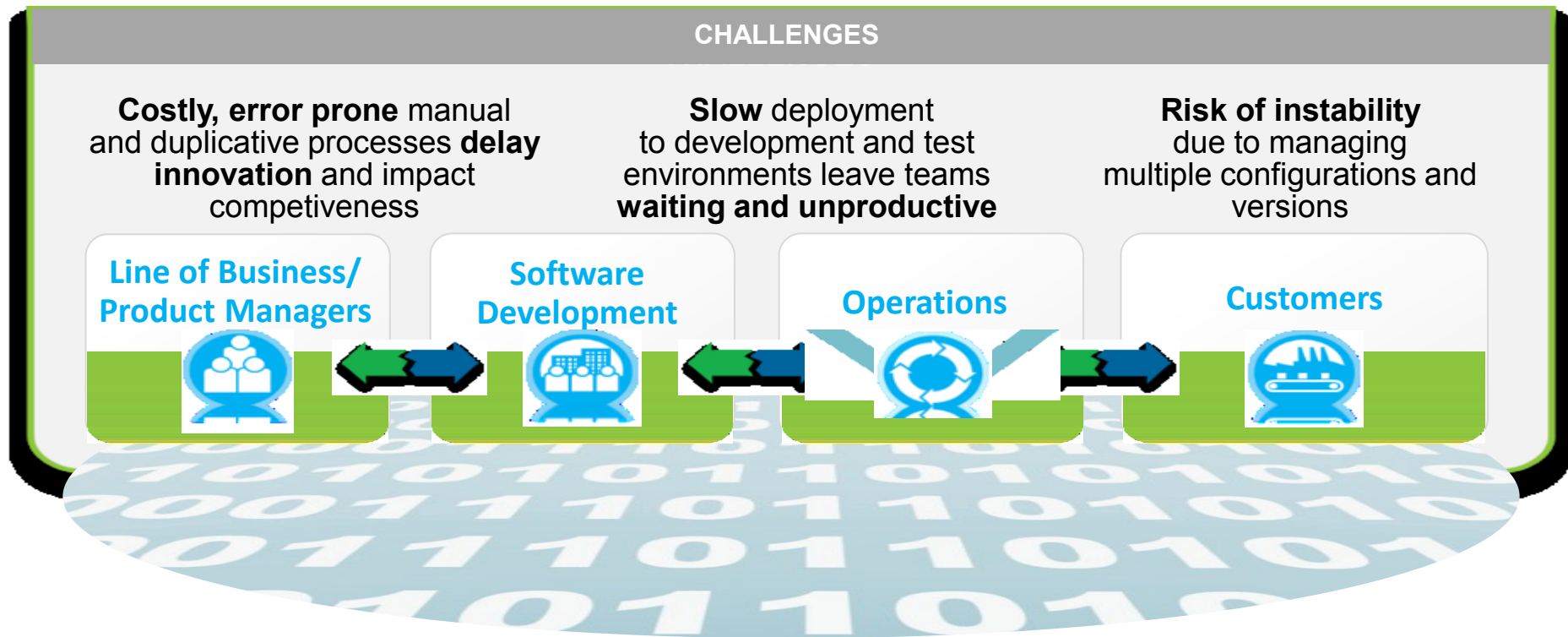
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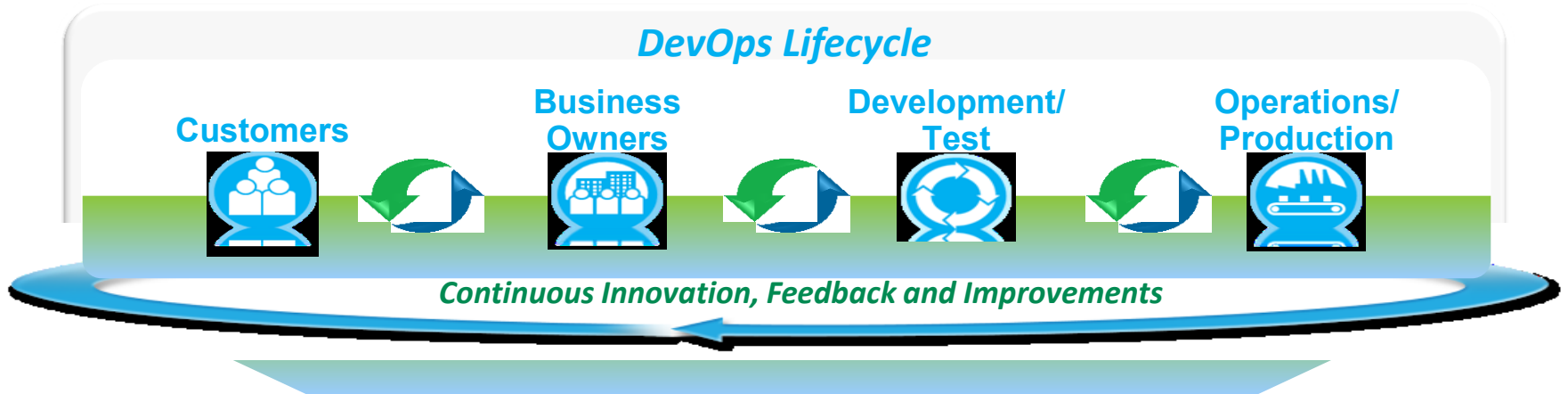
# A lack of continuous delivery impacts the entire business



# DevOps

*Enterprise capability for continuous software delivery that enables clients to seize market opportunities and reduce time to customer feedback*

## DevOps Lifecycle

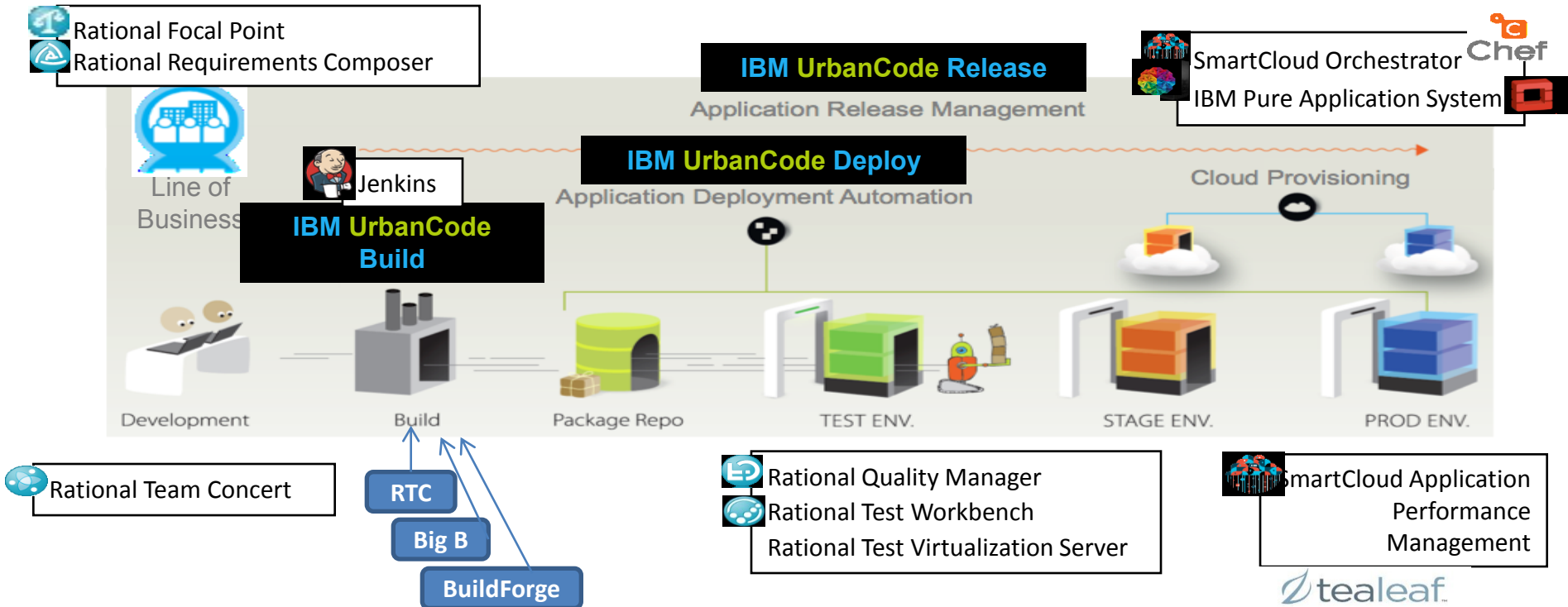


**Accelerate Software Delivery**

**Balance speed, cost, quality and risk**

**Reduce time to customer feedback**

# Delivery Pipeline

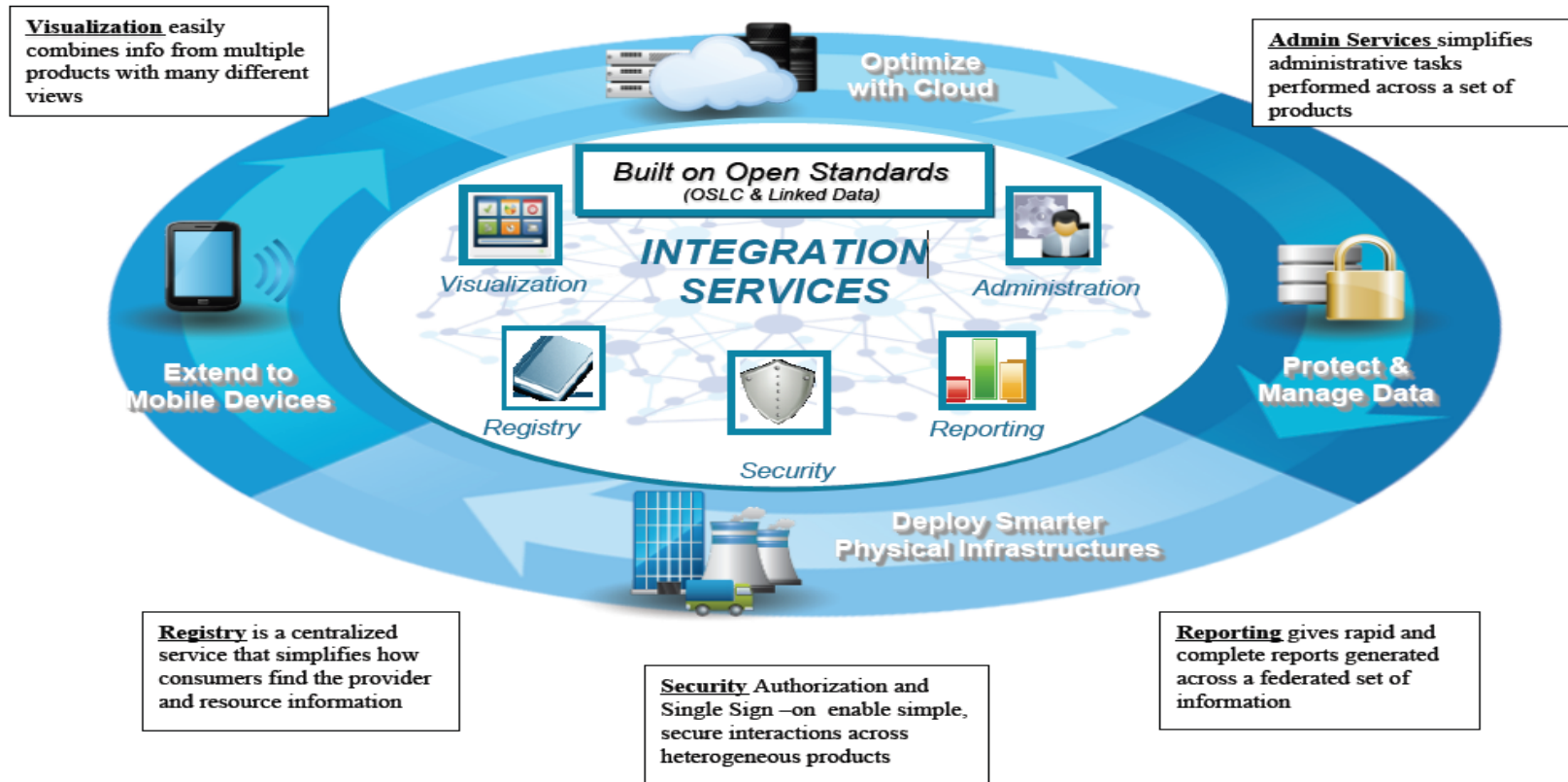


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# Jazz for Service Management



# Continuous Delivery and JazzSM



- Registry
- WAS
- DASH
- TCR
- DB2
- Admin Srvs

- Federated IVT Test
- OSLC Family Hosted beta
- SMC beta image download
- Pre-sales POCs (Jaguar)
- Sales/BP (SkyTap)

<p><b>Continuous Integration</b></p> <p><i>Automated, repeatable execution of build processes</i></p> <ul style="list-style-type: none"> <li>▪ Automated build of image components</li> <li>▪ Automated creation of JazzSM Server image</li> </ul>	<p><b>Continuous Deployment</b></p> <p><i>Continuous provision, configure middleware and deploy code</i></p> <ul style="list-style-type: none"> <li>▪ Deploy JazzSM as a virtual machine in the cloud</li> <li>▪ Deploy JazzSM in a virtual system pattern</li> </ul>	<p><b>Continuous Testing</b></p> <p><i>Automate testing in production like environments</i></p> <ul style="list-style-type: none"> <li>▪ Leverage automated testcases to validate JazzSM operational integrity</li> <li>▪ Verify that JazzSM continues to work with OSLC family products</li> </ul>	<p><b>Continuous Monitoring</b></p> <p><i>Monitor application infrastructure for performance</i></p> <ul style="list-style-type: none"> <li>▪ Monitor the system performance of JazzSM</li> </ul>
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2Q 2013  
2-3 week cycles



Now  
Nightly

# Dashboard

Built on DASH. Data aggregated from RTC, SCO, ICCT & GSA

Quick View on Overall progress

Application Consoles

The dashboard is divided into two main sections: 'Continuous Delivery' and 'Operations'.

**Continuous Delivery Section:**

- Start Time:** 2013-08-24 06:05
- End Time:** 2013-08-24 06:05
- Progress Bar:** A horizontal bar showing 53% completion.
- Details Table:**

Category	Progress	Status	Start	End	Actual	Rem	Estimated Start	Estimated End
Build	100%	OK	2013-08-23 06:0	2013-08-23 09:35	02:30	-	-	-
Package	100%	OK	2013-08-23 09:3	2013-08-23 11:35	02:00	-	-	-
Deploy	75%	Running	2013-08-23 11:3	-	01:25	00:30	-	2013-08-23 13:40
Test	0%	Inactive	-	-	-	02:00	2013-08-23 13:4	2013-08-23 15:40
Publish	0%	Inactive	-	-	-	01:00	2013-08-23 15:4	2013-08-23 16:40
Overall	53%	Running	-	-	05:55	03:50	-	2013-08-23 16:40

**Operations Section:**

Category	Status	Description
GSA	Warning	86 percent utilized
ICCT	OK	Server is online
ICCT	Warning	90 percent utilized
ICCT	Critical	2 IP addresses available
ICCT	OK	13 Images in use
IWD	OK	Server is online
IWD	Critical	98 percent utilized
RTC	OK	Source code servers are online
SCO	OK	SCO servers are online
SCO	OK	4 Images in use
SCO	OK	14 VMs in use
SCO	OK	2 Patterns in use
Tickets	OK	5 open tickets

See next page

History Reports

Progress of each phase of process

Health of back end cloud

# Accomplishments

## Key to continuous delivery – automation and frequent integration

Goal – Enable and enhance **agility** and **rapid delivery**, with development **efficiency** and **quality**

### ★ Accomplishments ★

- ✓ **JazzSM integrated nightly build setup with continuous delivery platform**
  - ✓ JazzSM **nightly** integrated build w/ **continuous delivery** process
  - ✓ **Install** expand **30%** automation on BVT and CVT, saved **6PD** per BVT and **6.5PD** per CVT regression
  - ✓ **SVT** automated **20%** test case in initial test suite
  - ✓ **Consistent** UI automation tool -- **xFast/Selenium**
- ✓ **JazzSM services/component enhanced automation to achieve efficiency**
  - ✓ **Registry 100%** test automation on each build
  - ✓ **TWL** test automation enables **~42%** test saving
  - ✓ **Security** test automation saves **4 days** per CVT regression and **6 hrs** per BVT
  - ✓ **TCR** enables **50%** BVT resource saving and add **20%** CVT coverage
  - ✓ **PRS** regression automation enables **8 days** test saving per sprint, with additional platform coverage

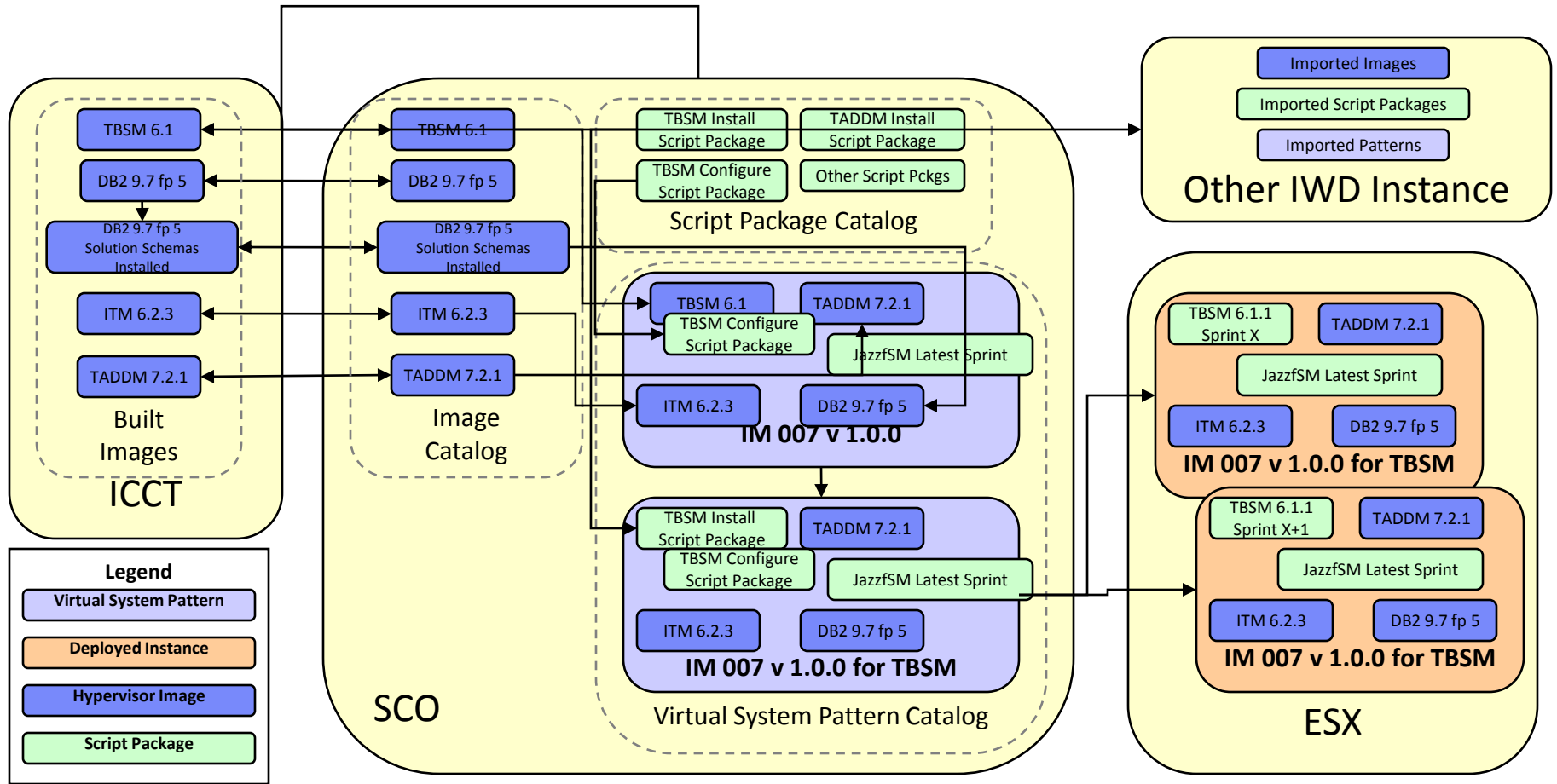
### Next Steps

**YE 2013** - Expand automated BVT and integrate SVT regression into continuous delivery platform

**2014** - Enrich automation suites and expand IVT automation into continuous delivery platform



# Continuous Integration Test (CIT) Architecture



# CIT Pattern in SCO

SATlab\_DEMO\_201308200000\_v2

Refresh Deploy Edit

CSI\_POC\_TBSM 1.0.2

- iw\_d\_Registrati
- iw\_d\_VMComplian
- PocConfigXMLKit

CSI\_POC\_OMNibus 1.0.3

- TivCIT\_Config\_DE
- iw\_d\_Registrati
- iw\_d\_VMComplian

CSI\_POC\_TADDM722 1.0.4

- iw\_d\_Registrati
- iw\_d\_VMComplian
- TivCIT\_TADDM\_POC

CSI\_POC\_Eolas 1.0.1

- iw\_d\_Registrati
- iw\_d\_VMComplian

CSI\_POC\_ITMCore 1.0.3

- iw\_d\_Registrati
- iw\_d\_VMComplian
- TivCIT\_POC\_ConfigTopology

CSI\_POC\_ITCAMADms 1.0.3

- iw\_d\_Registrati
- iw\_d\_VMComplian


CSI\_POC\_Trade 1.0.4

- CSI\_POC\_START\_DB2inst3


IBM SmartCloud Orchestrator

Home Self-Service My Requests Instances Images & Patterns Components

Self-Service > Continuous Delivery Patterns > Deploy SATlab Demo

 Deploy SATlab Demo

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 **Deploy RedHat**

**Pattern**

Pattern Instance Name: RHEL-5cf06 Flavor: Scorpio.Linux.2CPU.4GB Selected Pattern: SATlab\_DEMO\_2013082000

Start Date: 10/30/2013 5:51 AM

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**Pattern Details**

PartId	Label	Description
1	JazzSM	JazzSM
3	CSI_POC_Trade	OS Part
5	CSI_POC_ITCAMADms	OS Part
7	CSI_POC_ITMCore	OS Part
9	CSI_POC_Eolas	OS Part
11	CSI_POC_TADDM722	OS Part

# Preparing the Cloud – Update the Script Package on each Part

- Import the IBM UrbanCode Agent Script Package into the catalog
- Add the agent to each image part in the virtual system pattern

The screenshot displays the IBM UrbanCode interface. On the left, a file explorer shows a folder named 'CIPY0EN' containing a sub-folder 'ibm-ucd-agent-script-package'. Inside this folder are files: 'ibm-ucd-agent-6.0.0.428559.zip', 'agent.install.pr...', 'cbscript.json', 'install\_agent.sh', 'template.groov...', and 'ibm-ucd-agent-scr...'. The main area shows the details for the 'IBM UCD Agent v3' script package. The description is 'Install and Start an IBM UrbanCode Deploy agent.' The script package file is located in 'ibm-ucd-agent-script-package.zip'. The environment variables are: UCD\_Agent\_Name = ibm-ucdagent, UCD\_Hostname = (no default va, and UCD\_Port = 7918. The working directory is '/tmp/install\_ucd\_agent', the logging directory is '/tmp/install\_ucd\_agent', the executable is '/bin/sh', and the arguments are '/tmp/install\_ucd\_agent/install\_a'. On the right, a preview of an 'OS Part 1.0' is shown, which includes the 'iwd\_LeaseAndOwnerCustomization' and the 'IBM UCD Agent v3' script package.

IBM UCD Agent v3	
<b>Description:</b>	Install and Start an IBM UrbanCode Deploy agent.
<b>Script package file:</b>	The script package is in ibm-ucd-agent-script-package.zip. <a href="#">Download</a>
<b>Environment:</b>	UCD_Agent_Name = ibm-ucdagent UCD_Hostname = (no default va UCD_Port = 7918
<b>Working directory:</b>	/tmp/install_ucd_agent
<b>Logging directory:</b>	/tmp/install_ucd_agent
<b>Executable:</b>	/bin/sh
<b>Arguments:</b>	/tmp/install_ucd_agent/install_a

**OS Part 1.0**

- iwd\_LeaseAndOwnerCustomization
- IBM UCD Agent v3

# Prepare Reusable Infrastructure in UrbanCode Deploy

- Release Manager “imports” information about the pattern into UrbanCode Deploy
  - Creates a new “Resource Template” which is a subtree with information from the pattern
  - Each image in the pattern becomes a potential “Agent prototype” to run behavior on behalf of a deployment process

The screenshot shows the 'Import Resource Template' dialog in UrbanCode Deploy. The dialog has a 'Name' field, a 'Cloud Connection' dropdown menu (set to 'devopsbuild@fit-iwd-gss4.rtp.raleigh.ibm.com'), and a 'Cloud Resource' dropdown menu. A 'Team' dropdown menu is also visible, showing a list of patterns including 'UCD Dual Node Pattern v1' through 'v5', 'UCD Single Node Pattern v2', and 'UrbanCode Deploy'. A 'New Connection...' button is located to the right of the 'Cloud Connection' dropdown. Three callout boxes provide additional information: one on the left side of the dialog, one pointing to the 'Cloud Connection' dropdown, and one pointing to the 'Team' dropdown.

Resources | Resource Templates | Agents | Agent Pools | Cloud Connections

UCD Dual Node Pattern v5  
WebSphere cluster (large toolc...)

+ Create New Template  
+ Import Template from Cloud

**Import Resource Template**

Name:

Cloud Connection \* devopsbuild@fit-iwd-gss4.rtp.raleigh.ibm.com

Cloud Resource \*

Team:

- UCD Dual Node Pattern
- UCD Dual Node Pattern v2
- UCD Dual Node Pattern v3
- UCD Dual Node Pattern v4
- UCD Dual Node Pattern v5
- UCD Single Node Pattern v2
- UrbanCode Deploy

Define Connections against the cloud

Select an available Virtual System Pattern

Resource Templates are global, available for all Applications

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# What's Next

- Increase number of products to the pipeline
- Decrease number of build servers
- Increased automated testing and feedback
- Continuous delivery to System p and z architecture



# Questions



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# Questions





# Thank You

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