Please note the following

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion.

Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.
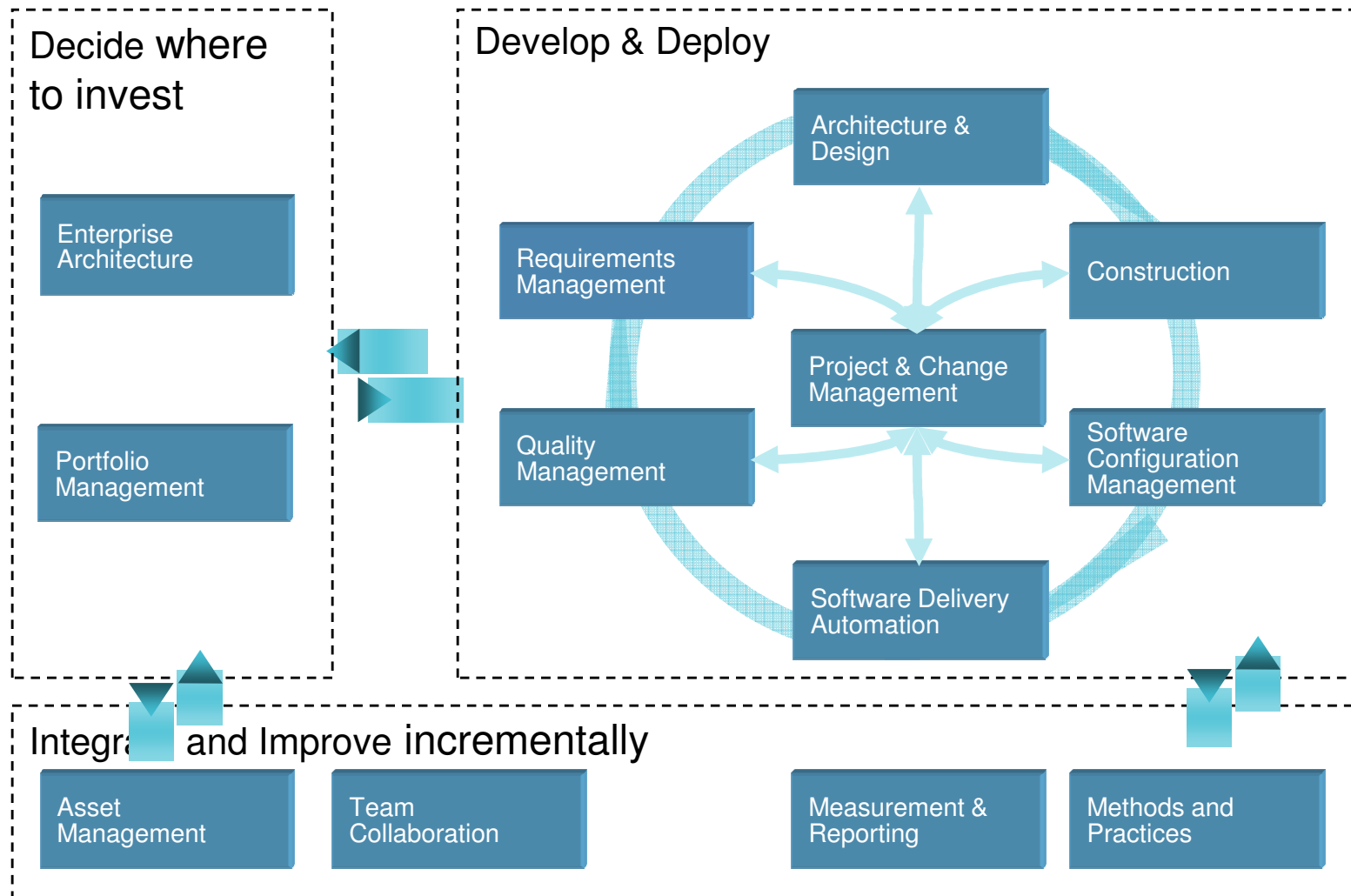
Agenda

1. Introduction to Rational Software
2. Cloud computing adoptions
3. Rational Software examples
4. DevOps in and for the cloud
5. Is Devops simply about automated Software delivery?
6. Path to adopt Devops
7. The tool set and New !! UrbanCode
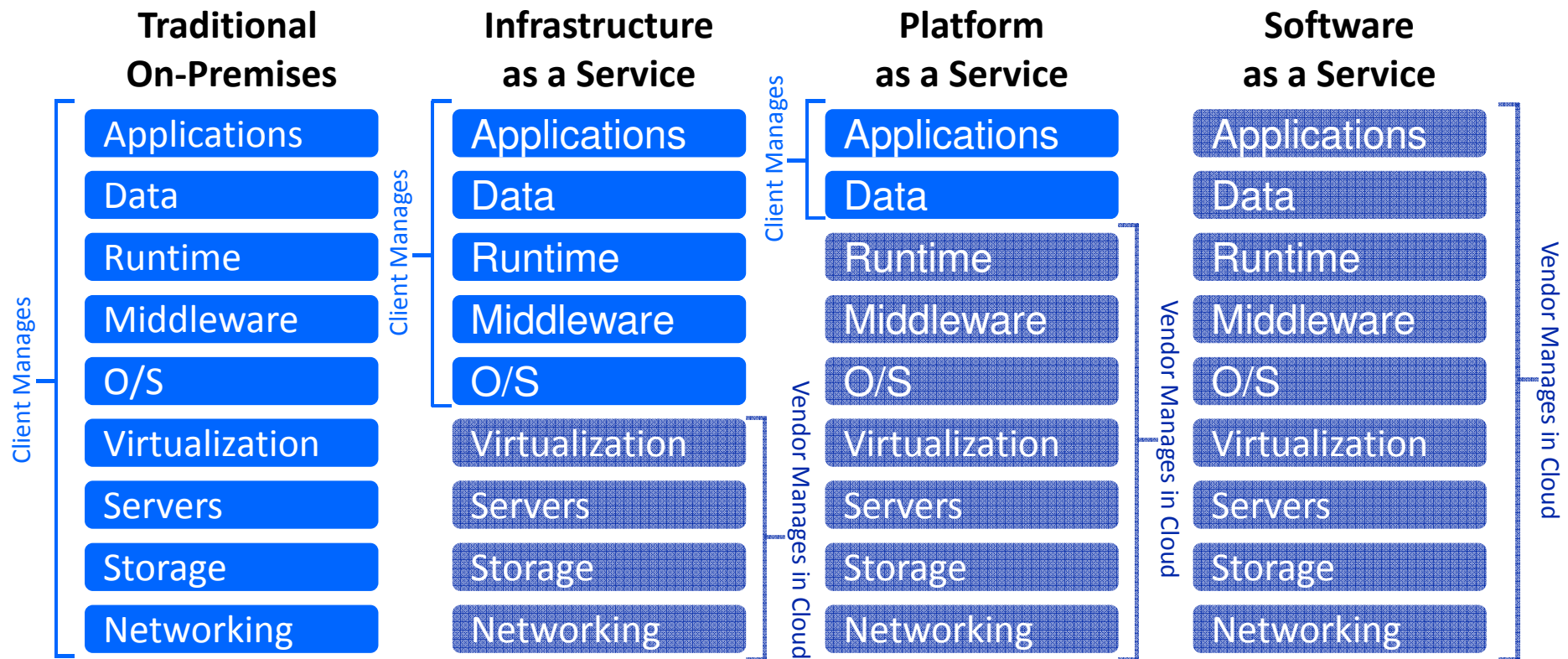8. Licensing flexibility

IBM Rational covers the full lifecycle of Software applications

Decide where to invest

Enterprise Architecture

Portfolio Management

Develop & Deploy

Architecture & Design

Requirements Management

Construction

Project & Change Management

Quality Management

Software Configuration Management

Software Delivery Automation

Integrate and Improve incrementally

Asset Management

Team Collaboration

Measurement & Reporting

Methods and Practices

Jazz.net

Types of cloud adoption

IBM

Traditional On-Premises	Infrastructure as a Service	Platform as a Service	Software as a Service
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

Client Manages

Client Manages

Client Manages

Vendor Manages in Cloud

Vendor Manages in Cloud

Vendor Manages in Cloud

Customization; higher costs; slower time to value

Standardization; lower costs; faster time to value

Cloud-onomics

IBM

VIRTUALIZATION **+** STANDARDIZATION **+** AUTOMATION **=** Cost Flexibility

…leveraging **virtualization, standardization and automation**
to free up operational budget for new investment.

Virtualization of Hardware → **Drives lower capital requirements**

Utilization of Infrastructure → **Virtualized environments only get benefits of scale if they are highly utilized**

Self Service → **Clients who can "serve themselves" require less support and get services**

Automation of Management → **Take repeatable tasks and automate**

Standardization of Workloads → **Less complexity more automation possible Free capacity for innovation and higher-value work**

The wish list

- Self-service, automated provisioning of tools, consistent and efficient

- Don't have to buy high-performance laptops/equipment

- Elastic - Scale up and down as needed

- Centralized delivery - easier to manage patches/upgrade/maintenance

- Easily enable a globally distributed team

Collaboration – RTC on the cloud

- Rational Team Concert (RTC) on private cloud infrastructure

RTC *

2 Customized
preinstalled
templates

3 Developers work with
RTC using web or
rich client interface

1 Provision RTC

Dev Lead
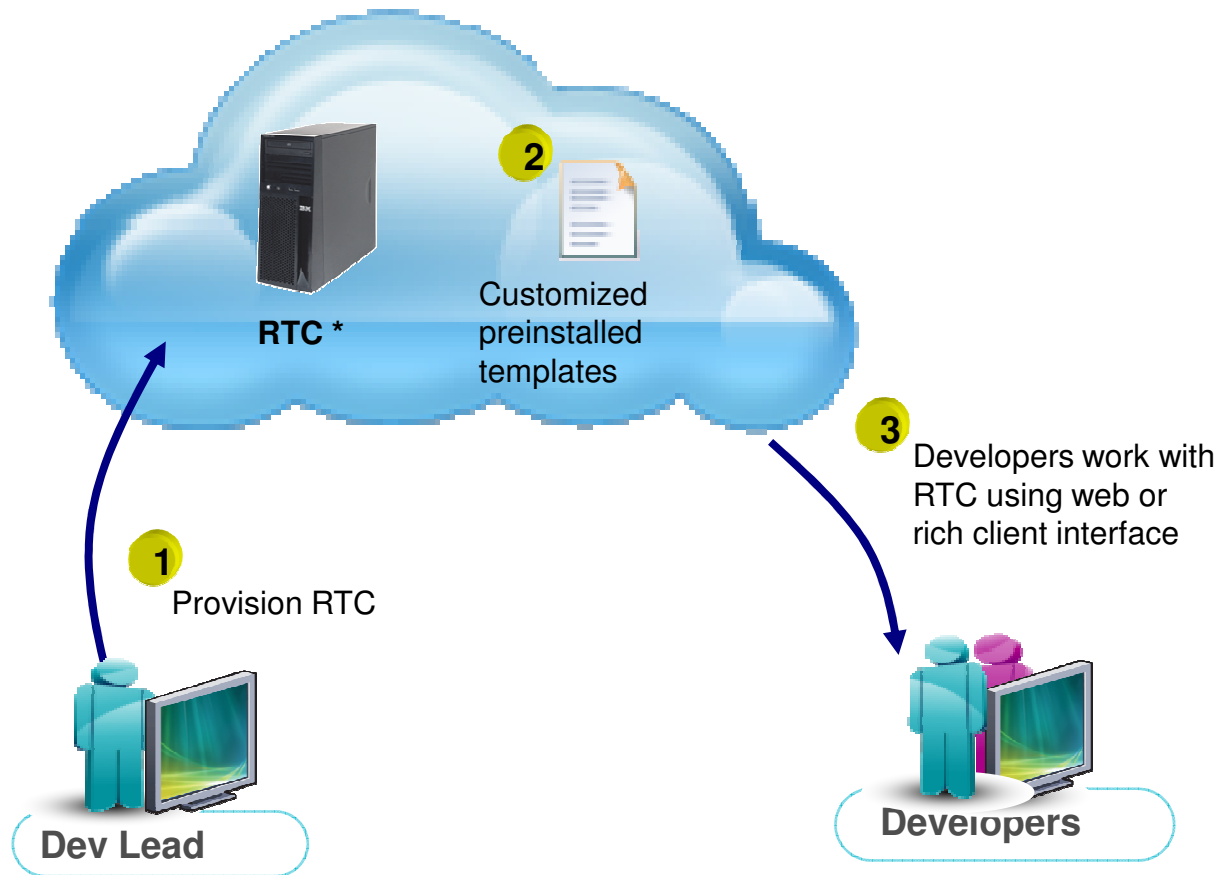
Developers

*** RTC can be replaced with RRC, RQM or RAM in this scenario for
requirements or asset management, respectively**

Development – Rational desktop tools on the cloud

- Empower development teams with new virtual developer desktop solutions, providing the capabilities of Rational Application Developer, Rational Software Architect and more

- Reduce installation, maintenance and governance challenges related to desktop tools

- Equip developers with the tools they need, when they need them
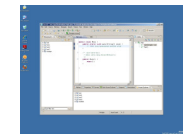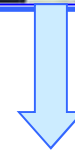
**Role-based desktops**
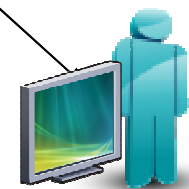
Developer / Tester

Desktops, middleware and team services in the cloud

IBM

Dev / Test — Browser, VNC

Dev / Test — Browser, VNC

Dev / Test — Browser, VNC

Architect — Browser, VNC

Light weight PCs or tablets

1 *Request*

SmartCloud Enterprise

2 *Access*

RAD

RDz

RDp

RSA

Catalog

RAD	
RDz	
RDp	Image
RSA	parameters
CLM	scripts
WAS	terms of use
Portal	"getting started"
...	

3 *Use*

Cloud or traditionally hosted services

WAS Portal CLM RAM ...
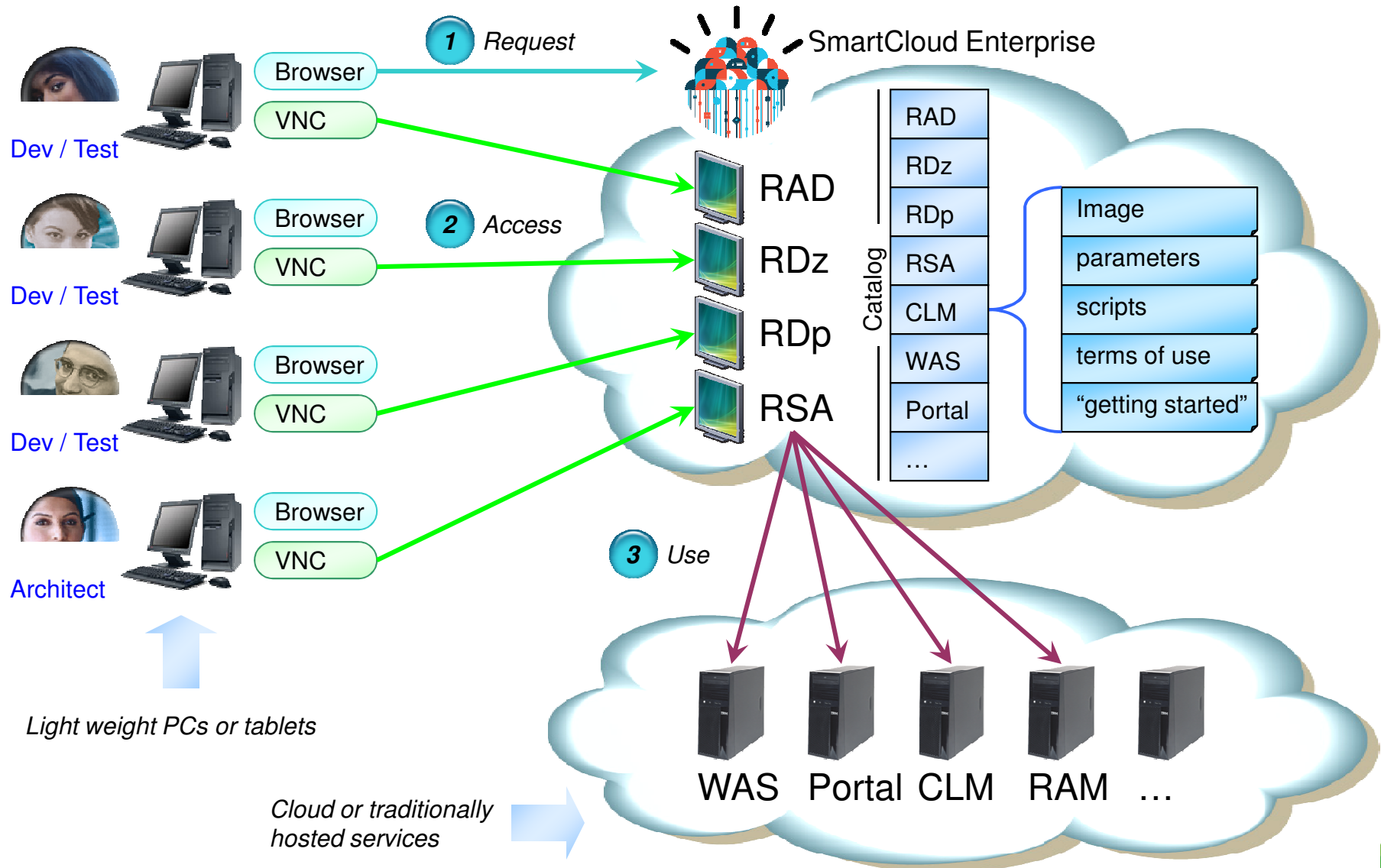
Testing – Automate the test lab in the cloud

IBM

- **Build Optimization**
  - Streamline your build process to continuously integrate, build, and verify changes.
  - Development and QA teams work closely together to schedule builds and plan for the tests required to verify a build.
  - Provide QA the visibility and stability it needs with each build
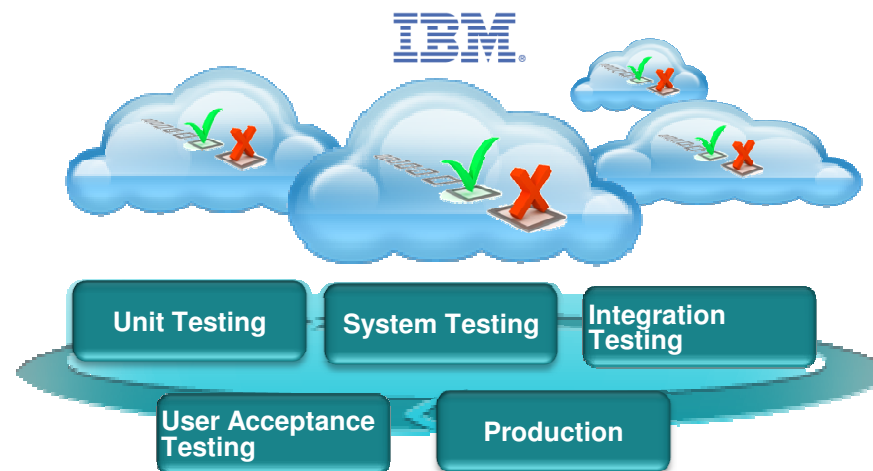
- **Deploy to A Known Configuration**
  - Project build-scripts can explicitly target a particular lab configuration, allowing multiple environments to be fully provisioned and readied for testing at build time.
  - These images reside in a cloud catalog and ensure teams start from a clean set of virtual machines.
  - The Build process can include the initial run of core build verification test suites that include unit tests, load tests and automated UI tests
- **Improved Regression Testing**
  - Automate and streamline tedious regression and smoke tests through the ability to automatically restore exact configurations to a known state and re-run predefined tests.
  - Significantly reduces the effort and time associated with setting up and running regression tests
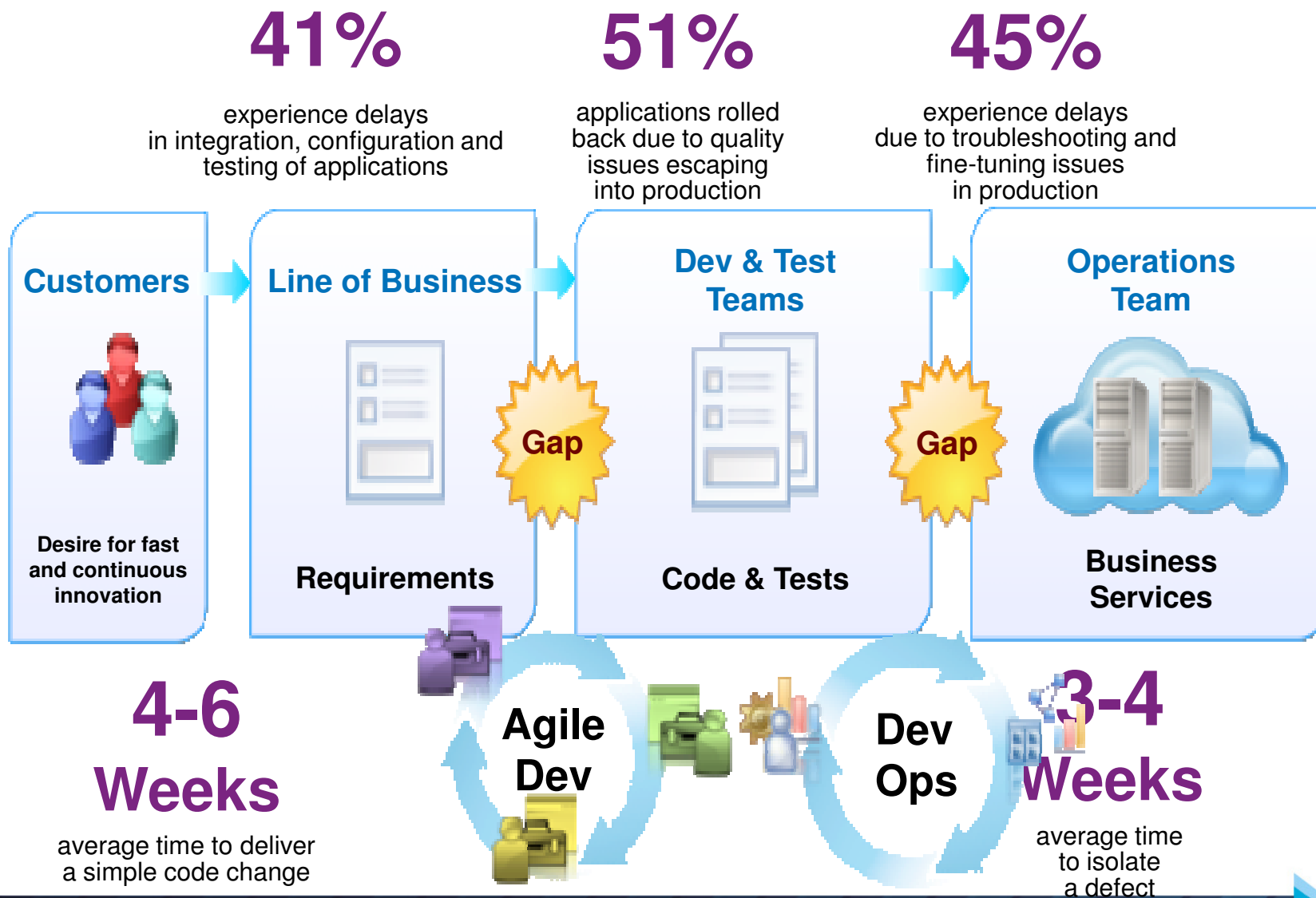
IBM Rational DevOps Offerings

IBM

Integrating and leveraging enterprise ALM and Cloud capabilities

✓ Extending CLM with
Continuous delivery

**Rational
Team Concert**

**IBMSmartCloud
Continuous
Delivery**

✓ Deployment to Cloud
& Virtual Systems

IBM SmartCloud Provisioning

IBM PureSystems

IBM Workload Deployer

Open Services for Lifecycle Collaboration
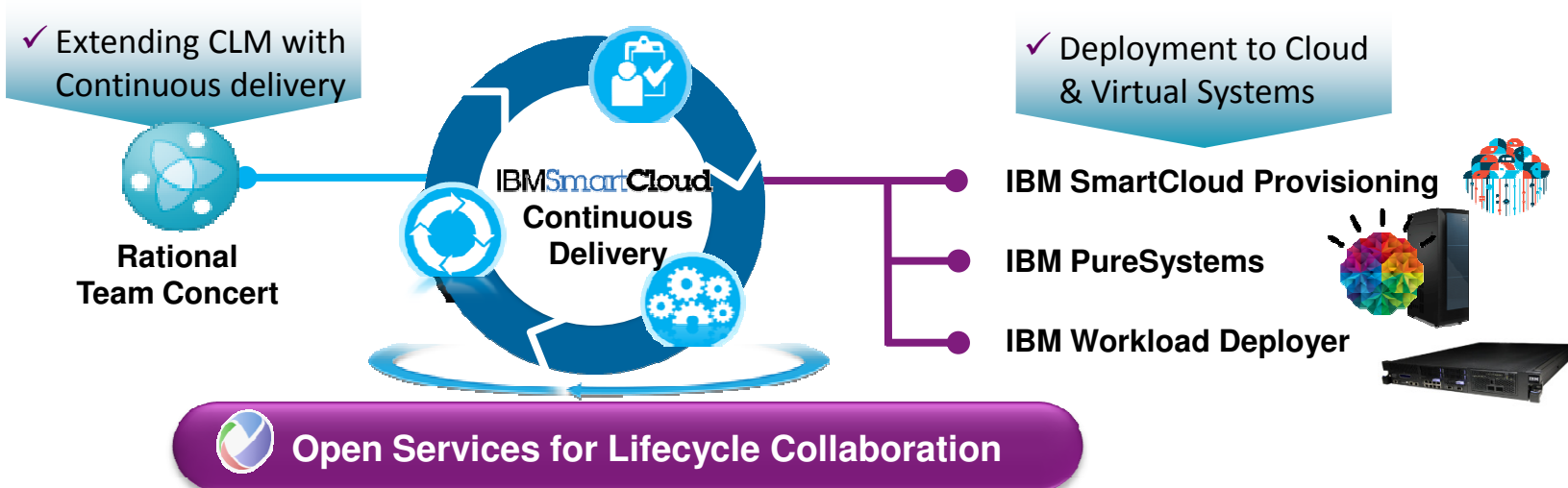
Design Management	*Continuous Integration*	*Test Automation*			*Performance Management* / *Deployment Automation*
IBM Rational Software Architect Design Manager	IBM Rational Build Forge	IBM Rational Quality Manager			IBM SmartCloud Application Performance Management / IBM Rational Continuous Framework
	Hudson	IBM Green Hat			Chef
	Jenkins				

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

Customers

Desire for fast
and continuous
innovation

Line of Business

Requirements

Gap

**Dev & Test
Teams**

Code & Tests

Gap

**Operations
Team**

Business
Services

**4-6
Weeks**
average time to deliver
a simple code change

**Agile
Dev**

**Dev
Ops**

**3-4
Weeks**
average time
to isolate
a defect

Key Concepts

The key technical Capabilities of DevOps

1. Continuous Integration

2. Continuous Delivery

3. Continuous Test
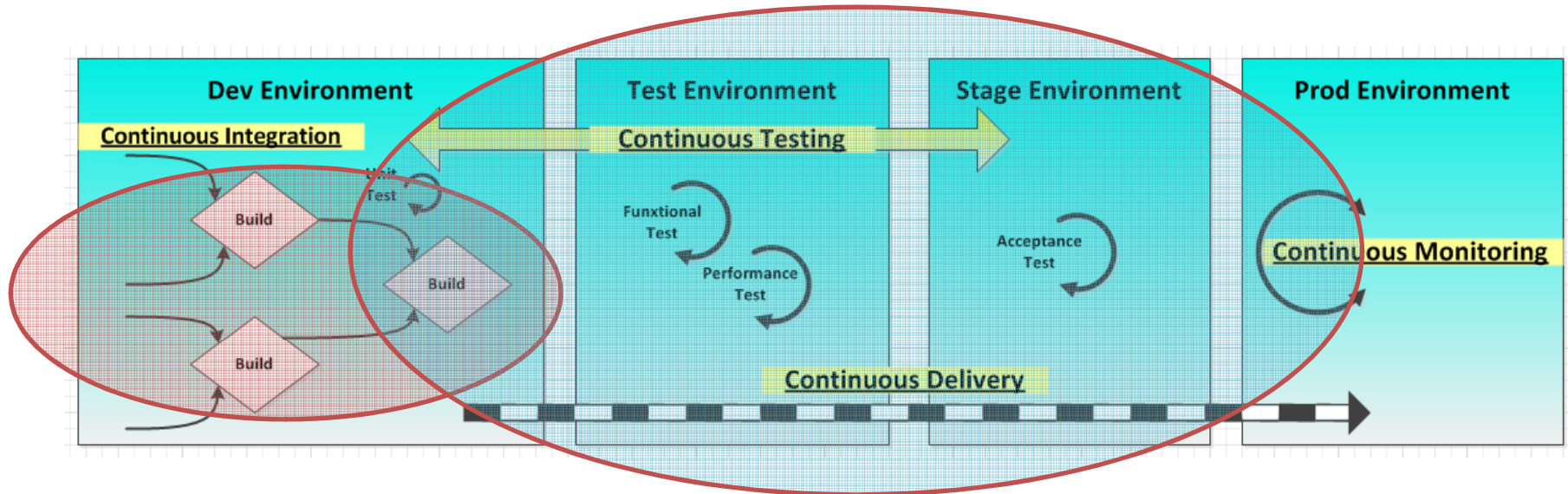
4. Continuous Monitoring

5. Infrastructure as Code

6. Build and Delivery Pipeline

7. Organizational Change

1. Continuous Integration

2. Continuous Delivery

http://bit.ly/PRQ4a7

3. Continuous Test

http://bit.ly/PRQ9dQ
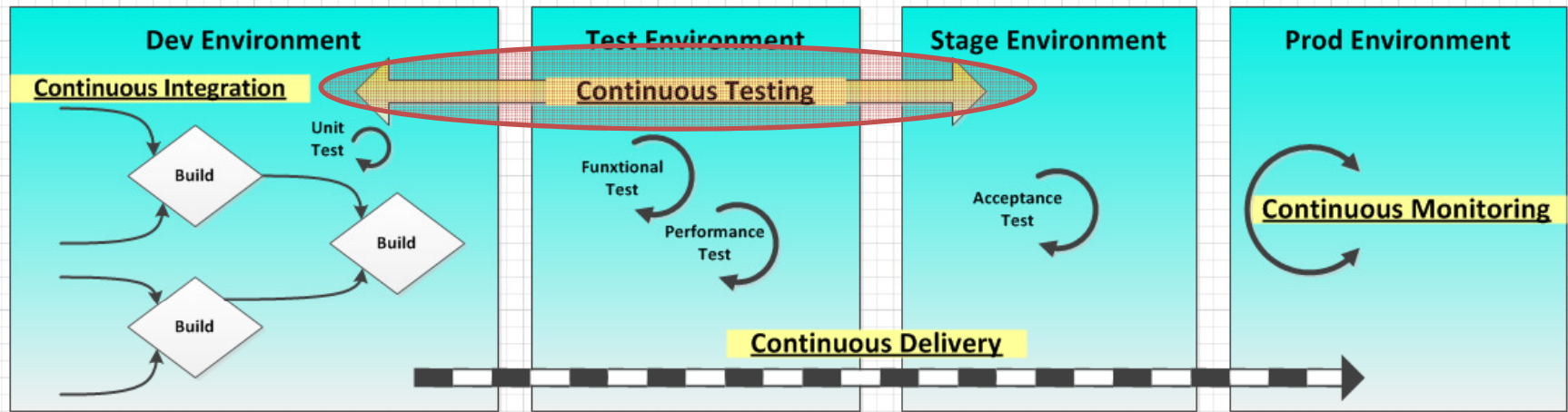
4. Continuous Monitoring
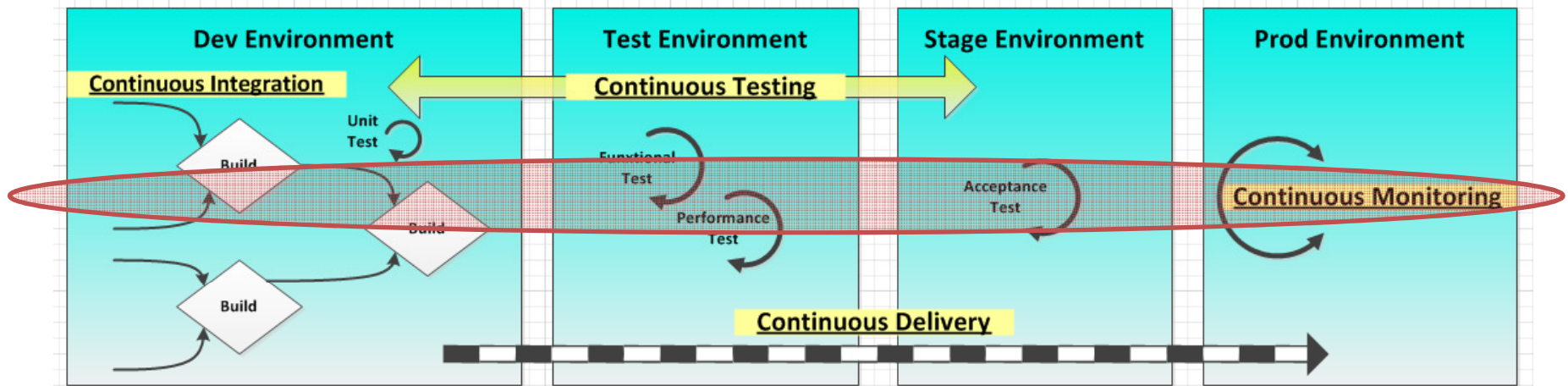
5. Infrastructure as Code/Software Defined Environment

```
package "apache2" do
  package_name node['apache']['package']
end
service "apache2" do
  case node['platform_family']
  when "rhel", "fedora", "suse"
    service_name "httpd"
    # If restarted/reloaded too quickly httpd has a habit of failing.
    # This may happen with multiple recipes notifying apache to restart - like
    # during the initial bootstrap.
    restart_command "/sbin/service httpd restart && sleep 1"
    reload_command "/sbin/service httpd reload && sleep 1"
```

Rational Automation Framework
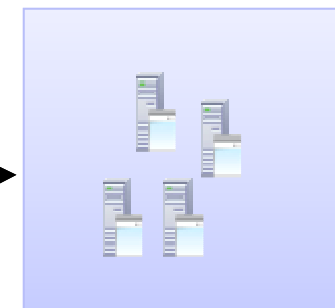(WAS, Commerce, MQ…)

6. Build & Delivery Pipeline

Delivery Pipeline

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

Deploy

.jsp   .html

.java

.sh   chef recipes
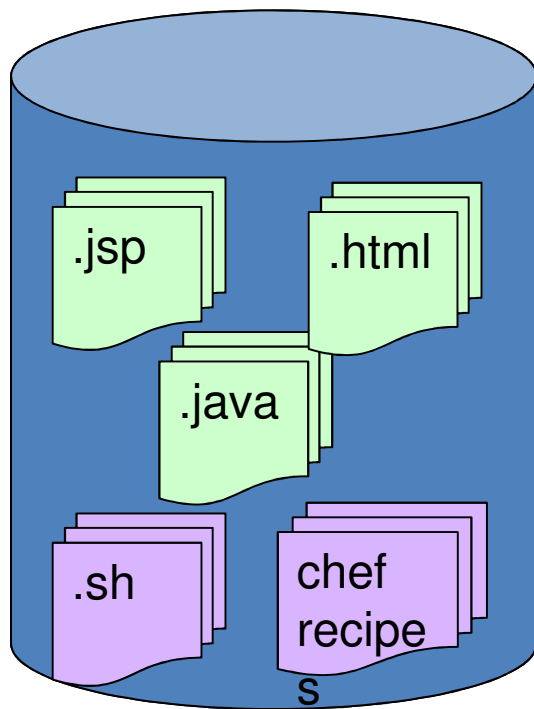
Source Artifacts
Source Control Management
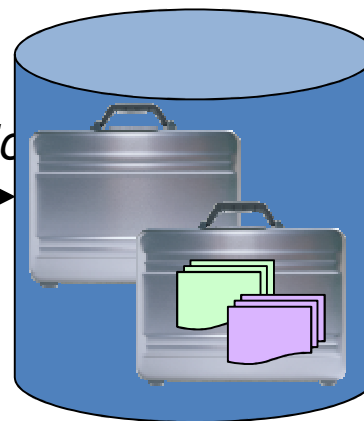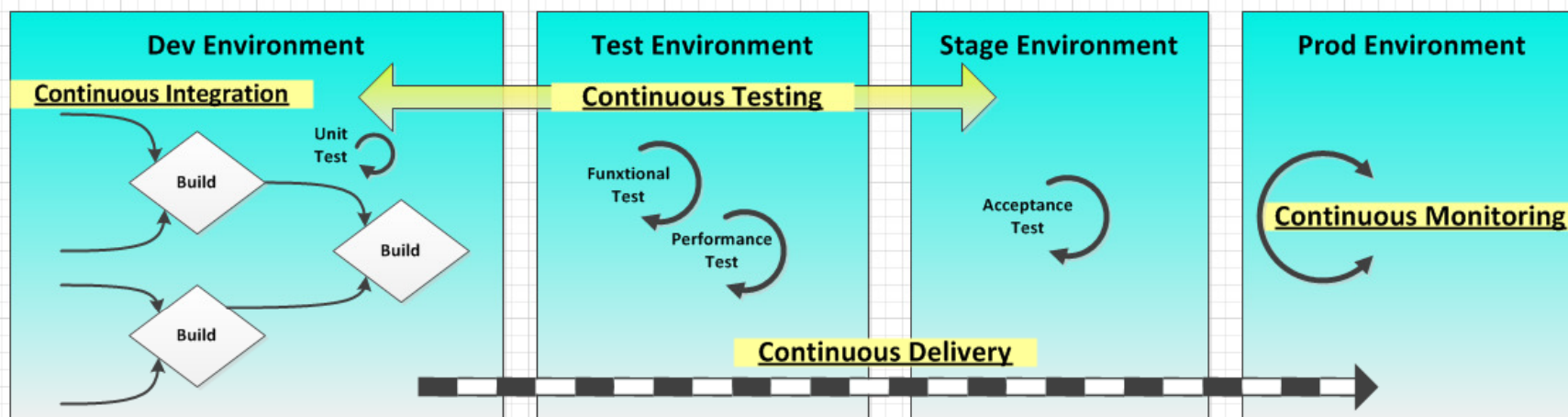
Deployable Artifacts
Library

Environment
Running System

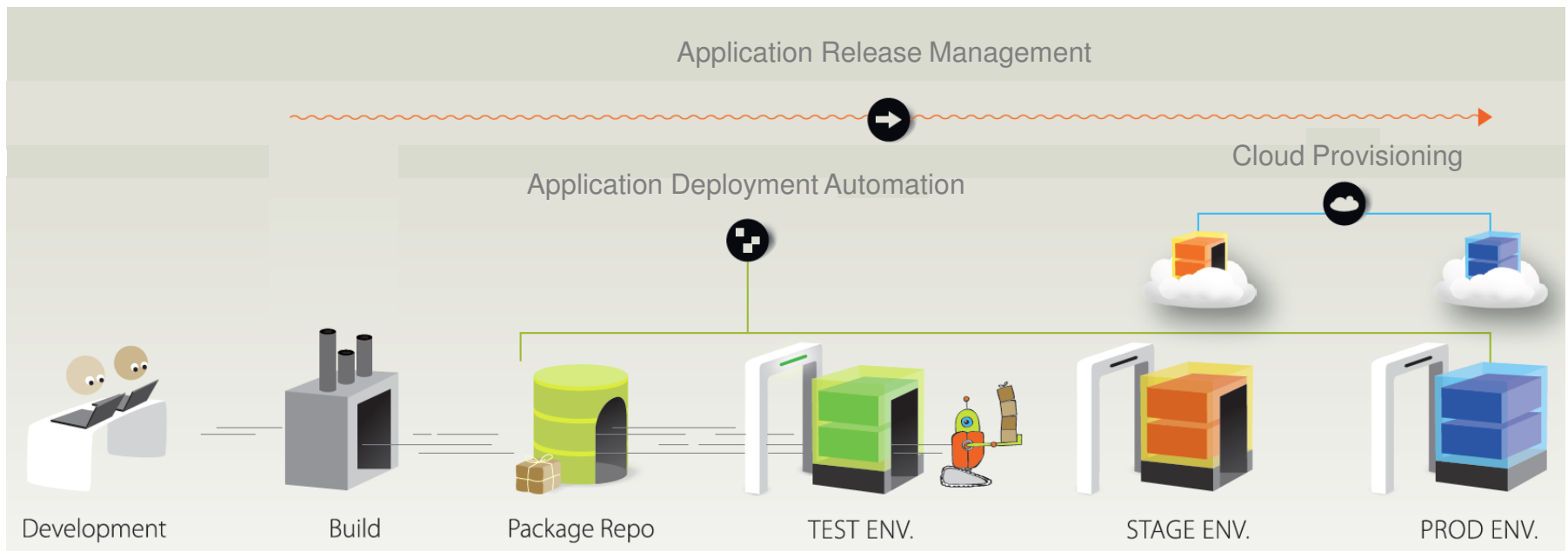CONTINUOUS
DELIVERY

7. Organizational Change

'Shift Left' – Operational Concerns
Build 'Application aware' Environments
Environment Sprints
NOT create a 'DevOps Team'
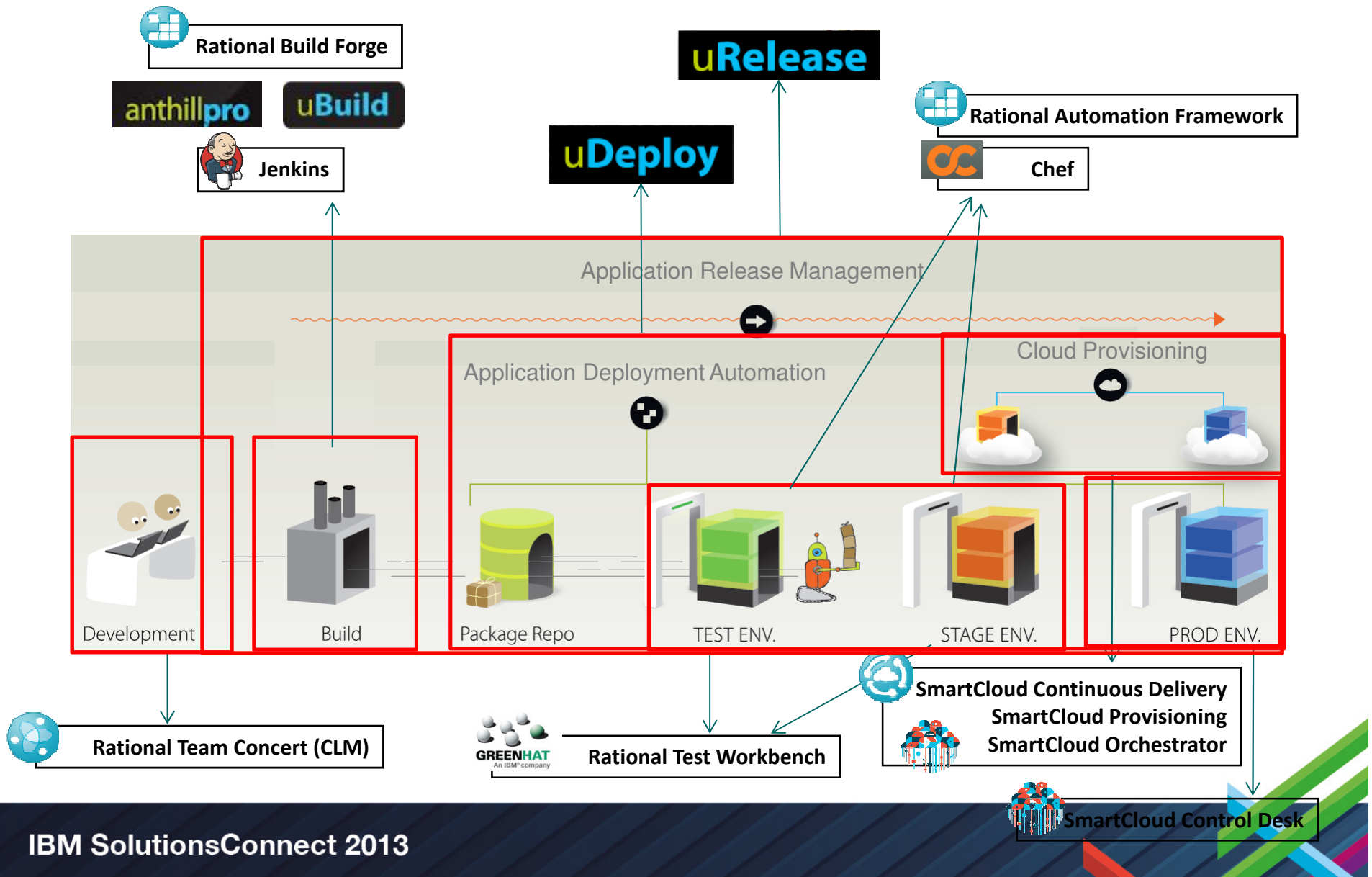
Continuous Delivery Adoption Maturity

➢ **Common Source Control**

   ➢ **Automated Builds (Build Definitions)**

      ➢ **Continuous Integration (CI)**

         ➢ **Automated Delivery**

            ➢ **Continuous Delivery to Test (CD)**

               ➢ **Continuous Delivery to Production-like Systems (Infrastructure as Code)**

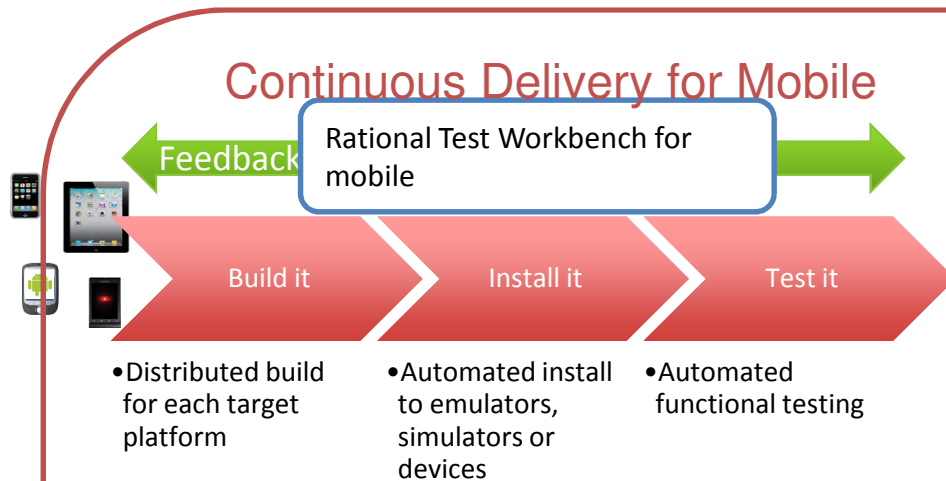   ➢ **Continuous Delivery thru Prod (Cloud based)**

DevOps Tool Chain

IBM DevOps for Mobile Applications

Continuous Delivery for Mobile

Rational Test Workbench for mobile

Feedback

Build it → **Install it** → **Test it**

- Distributed build for each target platform
- Automated install to emulators, simulators or devices
- Automated functional testing

For mobile teams who wish to reduce cycle times by automating the deployment and testing of their multi-tier mobile apps

Bring your own SCM and CI servers, Application Deploy will:
- ✓ Instrument your app for test
- ✓ Deploy your app to device targets
- ✓ Execute automated tests
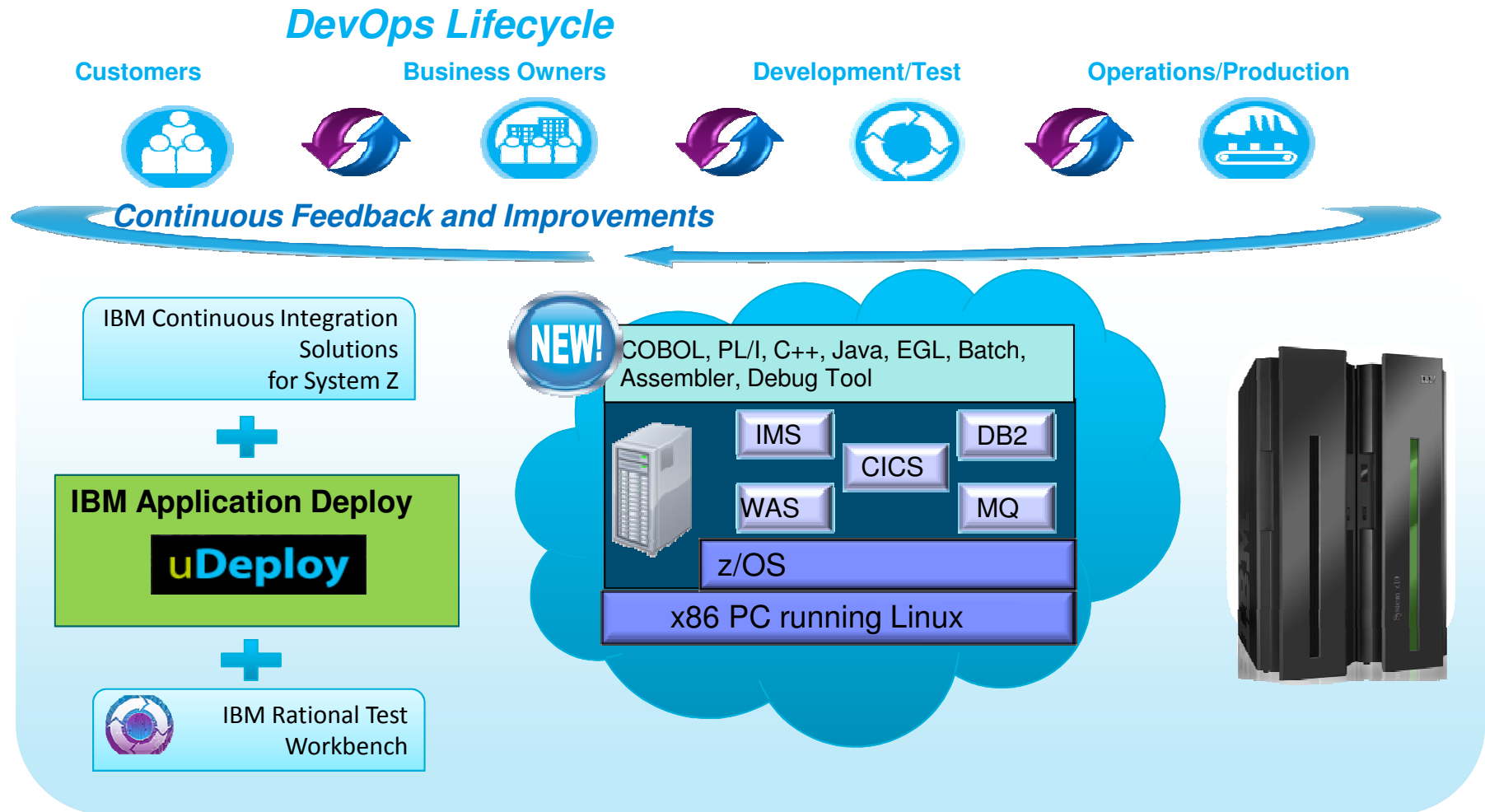- ✓ Give you the results

uDeploy

Application Testing for Mobile

- Author automated tests for iOS, Android, Hybrid, and Worklight
- Drive automated mobile app tests as part of your continuous integration process

Application Deploy for Mobile

- Automates deployments of multi-tier applications and configuration across multiple environments
- Graphical DnD editor replaces scripts
- Models environments and keeps track of what is deployed where
- ~100 Integrations with key MW targets

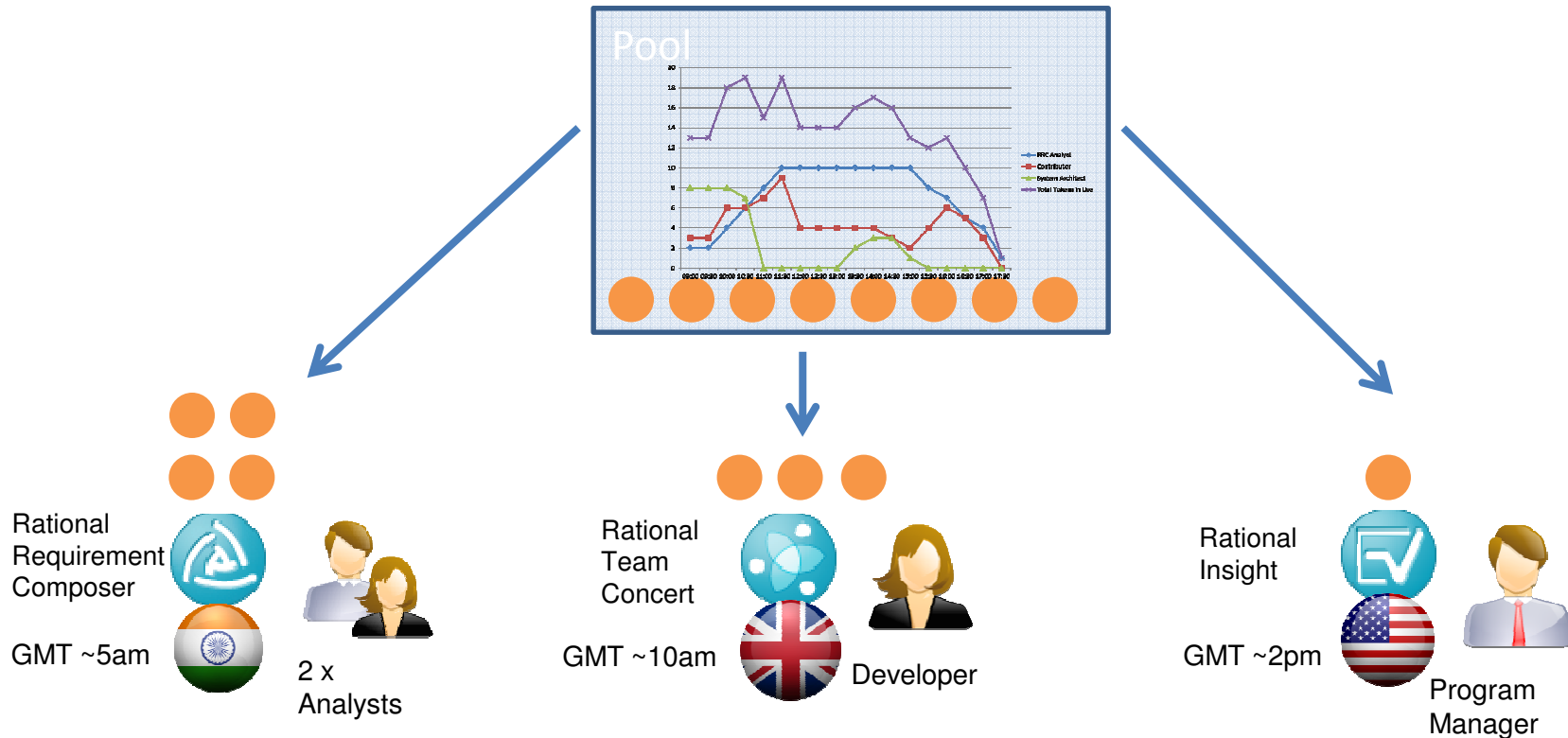# Rational Development and Test Environment for System z

DevOps Lifecycle

Customers   Business Owners   Development/Test   Operations/Production

Continuous Feedback and Improvements

IBM Continuous Integration Solutions for System Z

+

IBM Application Deploy

uDeploy

+

IBM Rational Test Workbench

NEW!

COBOL, PL/I, C++, Java, EGL, Batch, Assembler, Debug Tool

IMS   DB2
CICS
WAS   MQ

z/OS

x86 PC running Linux

Patterns + Tokens = flexibility = cloud friendliness

Users borrow the pool to gain access to whatever tool they need for their job.

Rational Requirement Composer

GMT ~5am

2 x Analysts

Rational Team Concert

GMT ~10am

Developer

Rational Insight

GMT ~2pm

Program Manager

No need to buy licenses for specific roles/tools
High utilization getting the most out of your investment
Remove and add tools to the tool-chest