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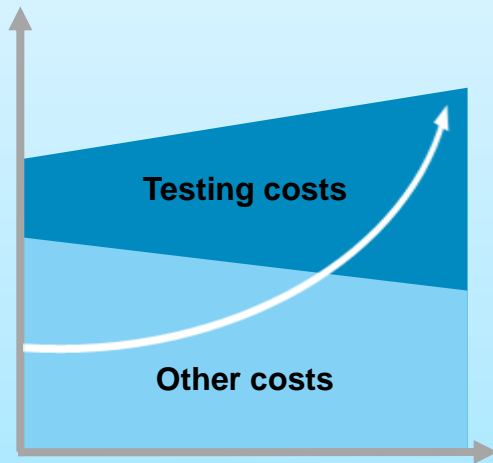
**Accelerate Software Delivery - IBM Rational Test Virtualization**



# Cost, complexity and velocity make today's quality paradigm impractical

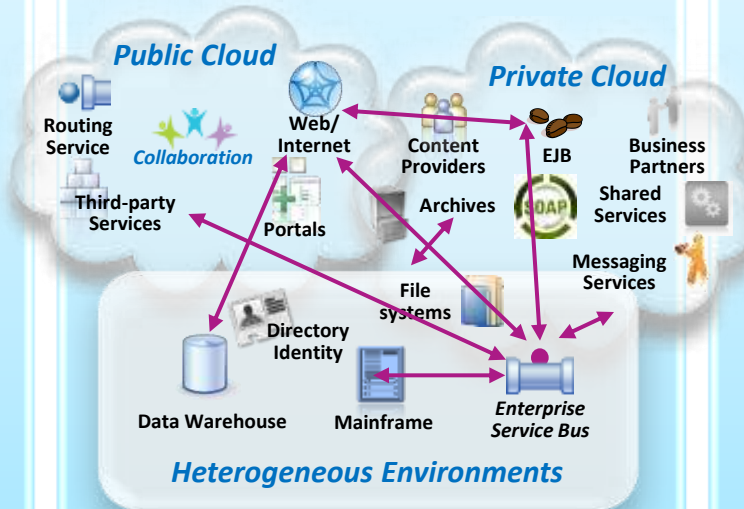
*An estimated 60 - 80 percent of the cost of software development is in rework*

## Increasing Cost of Quality



Outsourcing **labor** is no longer a sustainable model as global wages are increasing

## Increasing Development Complexity



Product and application **complexity** and size are increasing

## Balancing Quality and Speed



**Productivity is inhibited** as test teams can no longer keep up with agile development

# IBM Rational Test Virtualization Solution

*A Smarter Solution for Better Quality*

## Significantly Lesser Test Lab costs

- Test lab infrastructure costs can be reduced significantly
- Labor involved in setting up test environments can be significantly reduced
- Reduced or eliminated the cost of invoking 3rd party systems for non-production use, fee-based web services

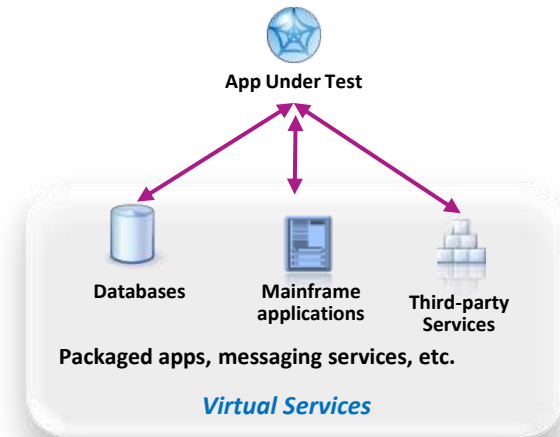
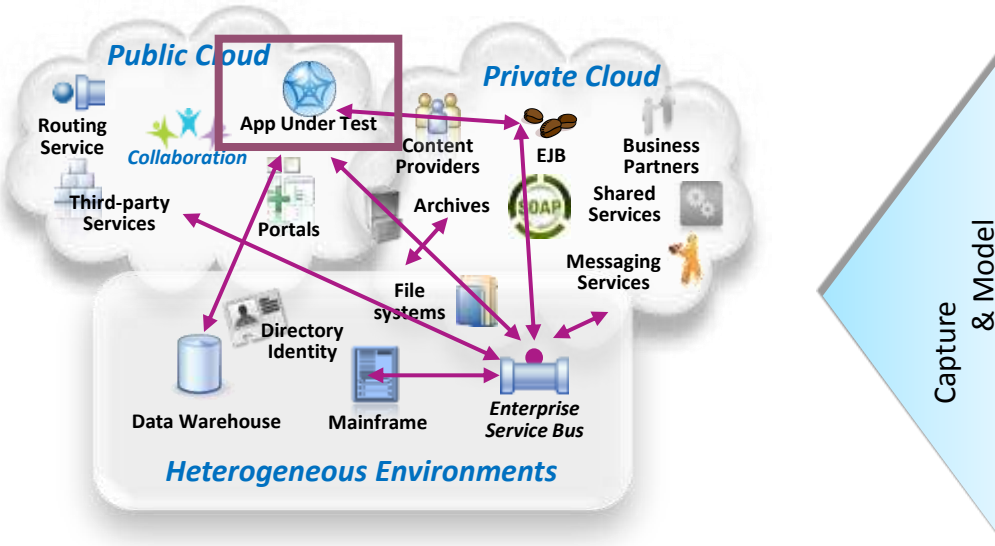
## Reduced Cycle Time

- Test environments can be configured in minutes vs weeks
- More testers can be focused on testing, rather than configuring test environments
- More regression testing can be done independently from the User Interface, during development

## Lower Risk

- Developers have the means to test software earlier at the Service/API level
- Large teams working on different parts of an application or system can effectively do parallel development by virtualizing different parts of the system

# What is Test Virtualization?



System *dependencies* are a key challenge in setting up test environments:

- ▶ **Unavailable/inaccessible:** Testing is constrained due to production schedules, security restrictions, contention between teams, or because they are still under development
- ▶ **Costly 3rd party access fees:** Developing or testing against Cloud-based or other shared services can result in costly usage fees
- ▶ **Impactical hardware-based virtualization:** Systems are either too difficult (mainframes) or remote (third-party services) to replicate via traditional hardware-based virtualization approaches

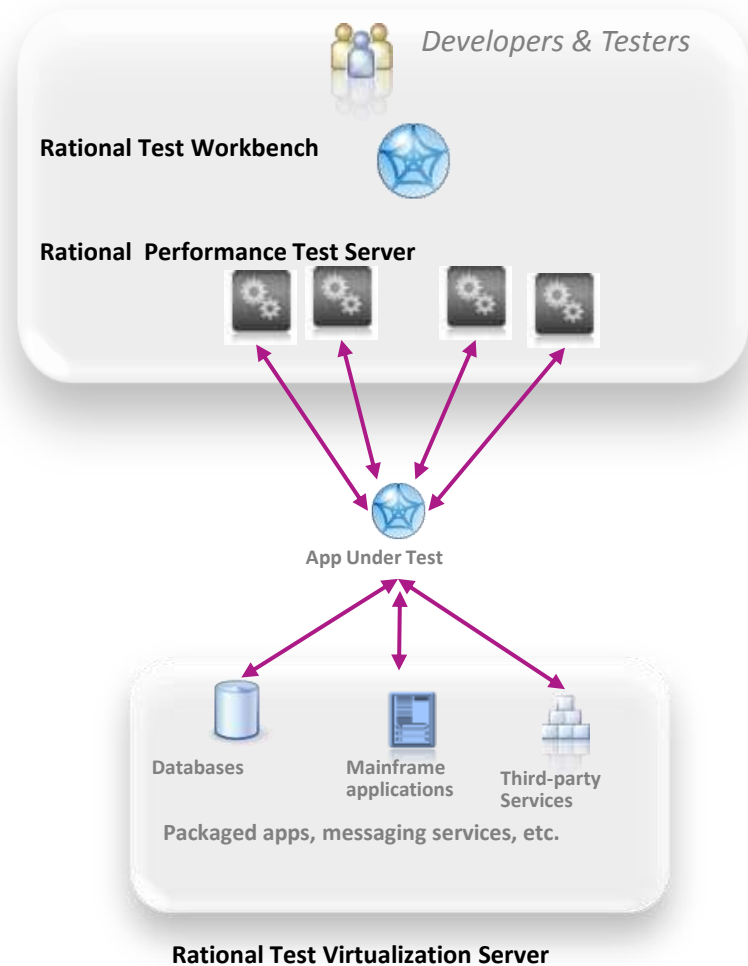
Test Virtualization enables to create “*virtual services*”:

- *Virtual Services simulate the behavior of an entire application or system during testing*
- *Virtual Services can run on commodity hardware, private cloud, public cloud*
- *Each developer, tester can easily have their own test environment*
- *Developer and testers continue to use their testing tools (Manual, Web performance, UI test automation)*

# IBM Rational Test Virtualization Solution

## *A smarter solution to better quality*

- **Rational Test Workbench** is a desktop solution that enables testers/developers to:
  - Capture and model virtual services
  - Test services and applications long before their user interfaces becomes available and do integration testing
  - Virtual Services can be built from the interface definition of the system for a wide variety of protocols, including HTTP, web services, SOA, JMS, TIBCO, IBM WebSphere MQ, Oracle, etc.
- **Rational Test Virtualization Server** is a server solution that:
  - Provides a central environment to virtualize heterogeneous software and services to provide 24x7 testing capabilities
  - Reduces infrastructure costs of traditional testing environments
- **Rational Performance Test Server** enables Rational Test Workbench users to reuse test scripts to drive performance testing
  - Can be used in combination with Virtual Services
  - Probe for identification of system bottlenecks

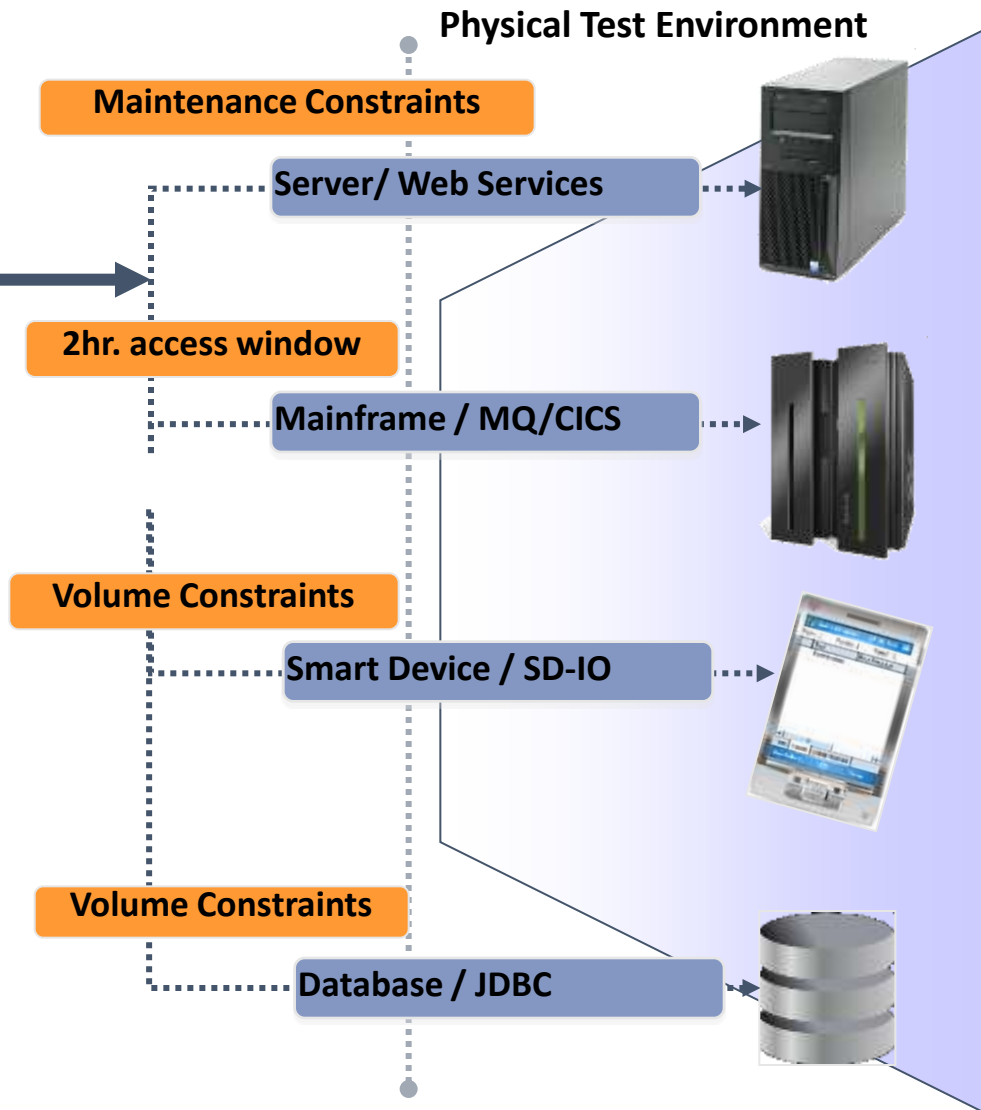


# Challenge: Constraints in the development and testing lifecycle



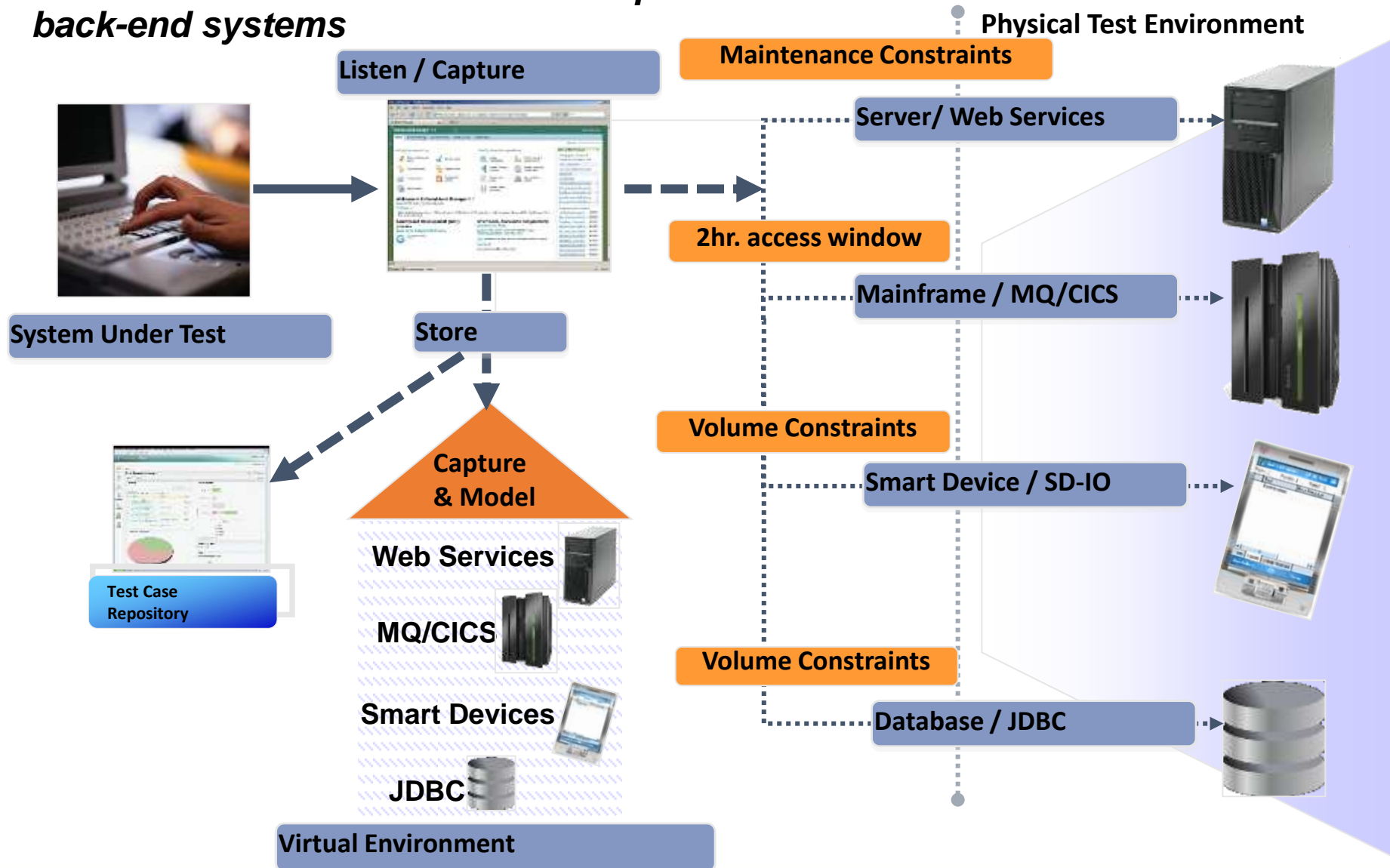
System Under Test

**Problem:**  
Pervasive constraints on development and testing limit productivity



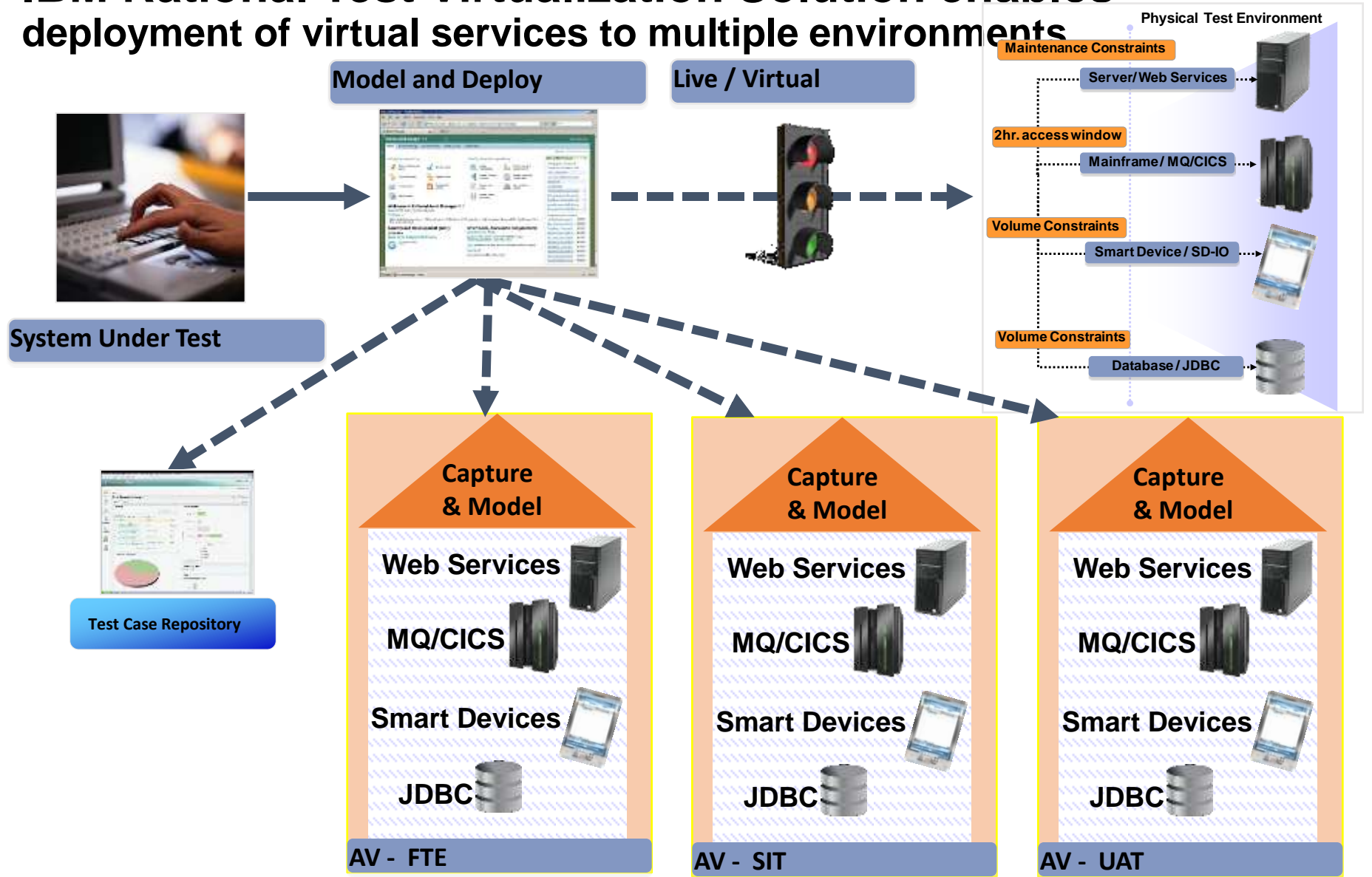
# Solution: IBM Rational Test Virtualization Solution

*Test Virtualization listens to and captures the behavior and characteristics of back-end systems*





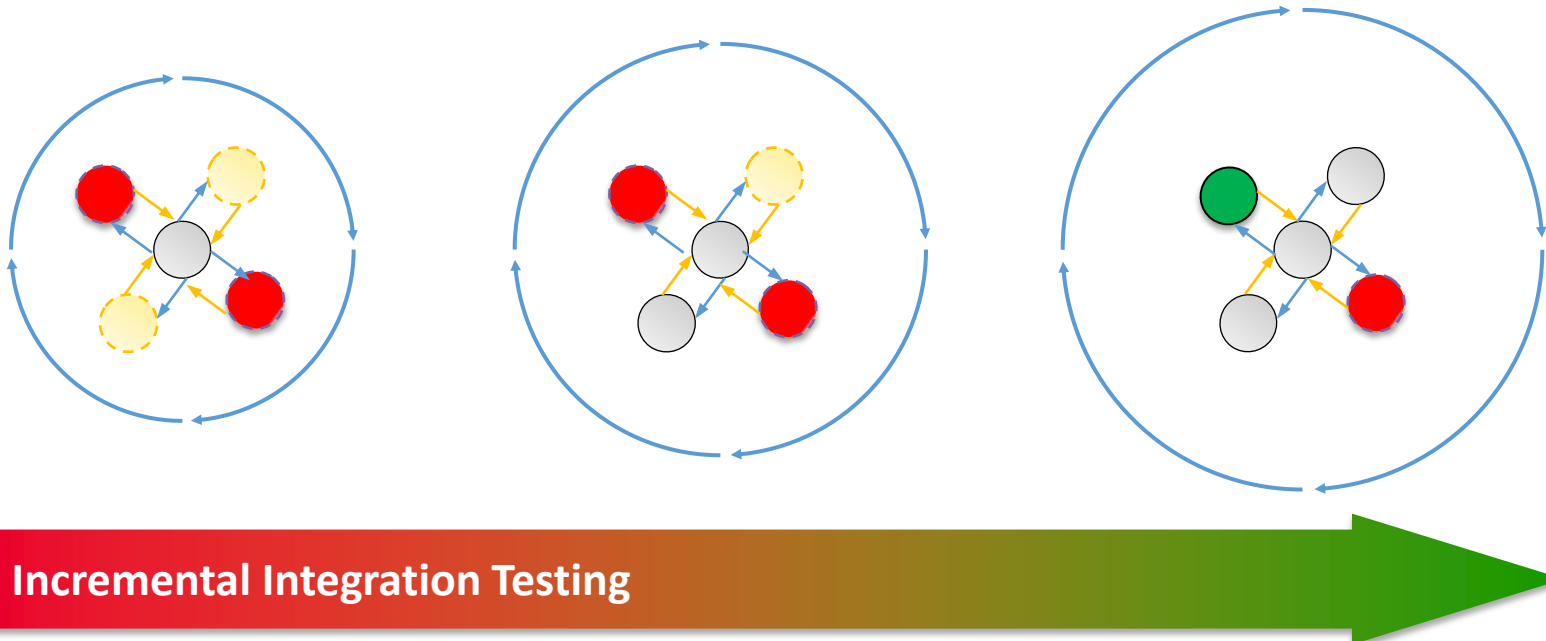
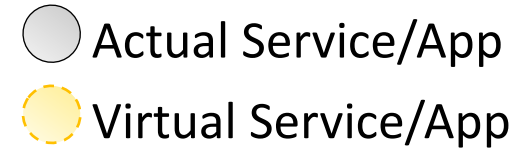
# IBM Rational Test Virtualization Solution enables deployment of virtual services to multiple environments



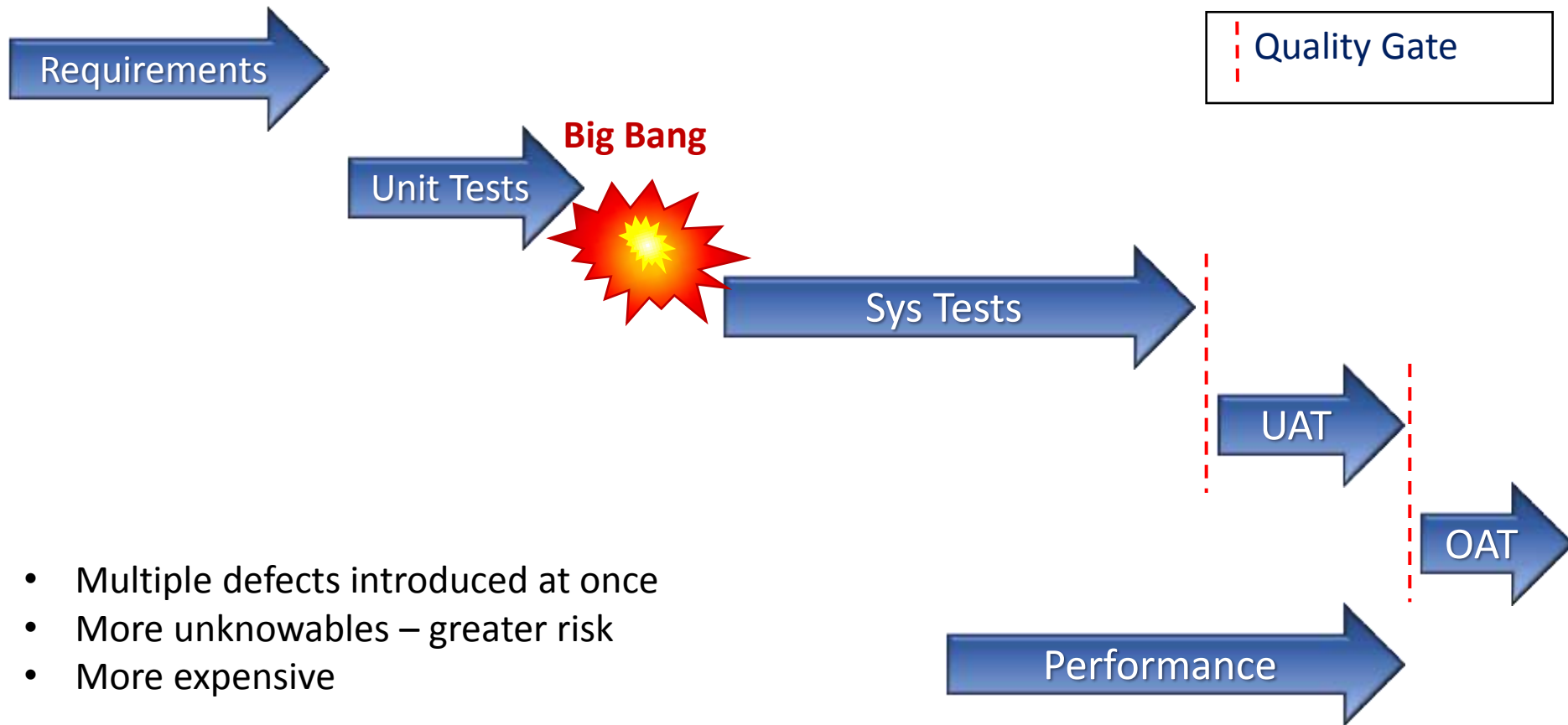


# IBM Rational Test Virtualization Solution is a key enabler for Continuous Integration Testing

- ✓ Test Virtualization is an enabler for continuous Integration Testing
- ✓ Services, applications, systems are introduced into the continuous integration cycle in a prioritized, controlled fashion.

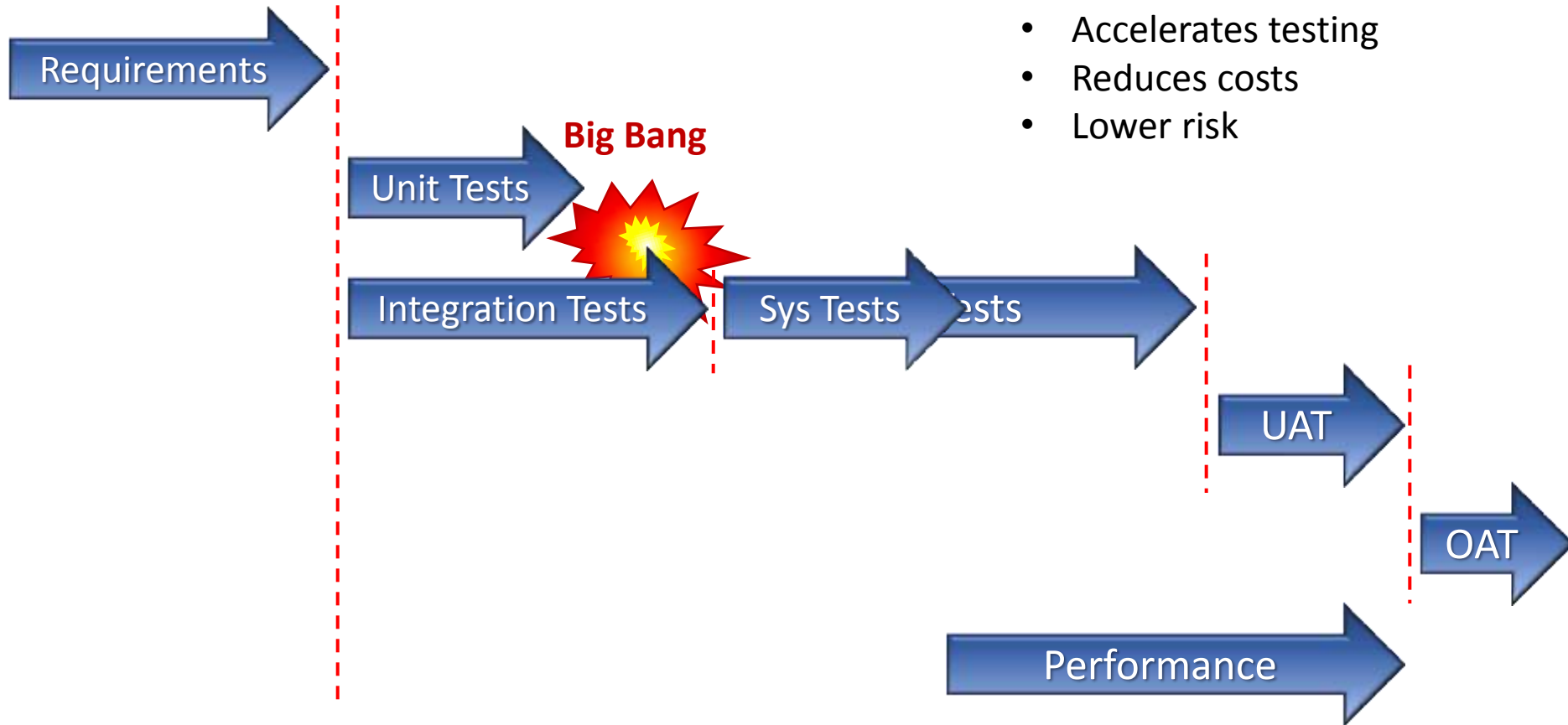


# The Old World



- Multiple defects introduced at once
- More unknowables – greater risk
- More expensive

# The New World



# Supported Environments and Technologies

## Messaging Protocols

- ActiveMQ
- Email (SMTP, IMAP)
- Files
- FTP/S
- HTTP/S
- JMS (JBoss et al)
- IBM WebSphere MQ
- JBoss MQ
- SAP IDoc, BAPI, RFC & XI/PI
- Software AG's IB & IS
- Solace
- Sonic MQ
- TCP
- TIBCO Rendezvous, Smart Sockets & EMS
- Custom

## SOA, ESB, Others

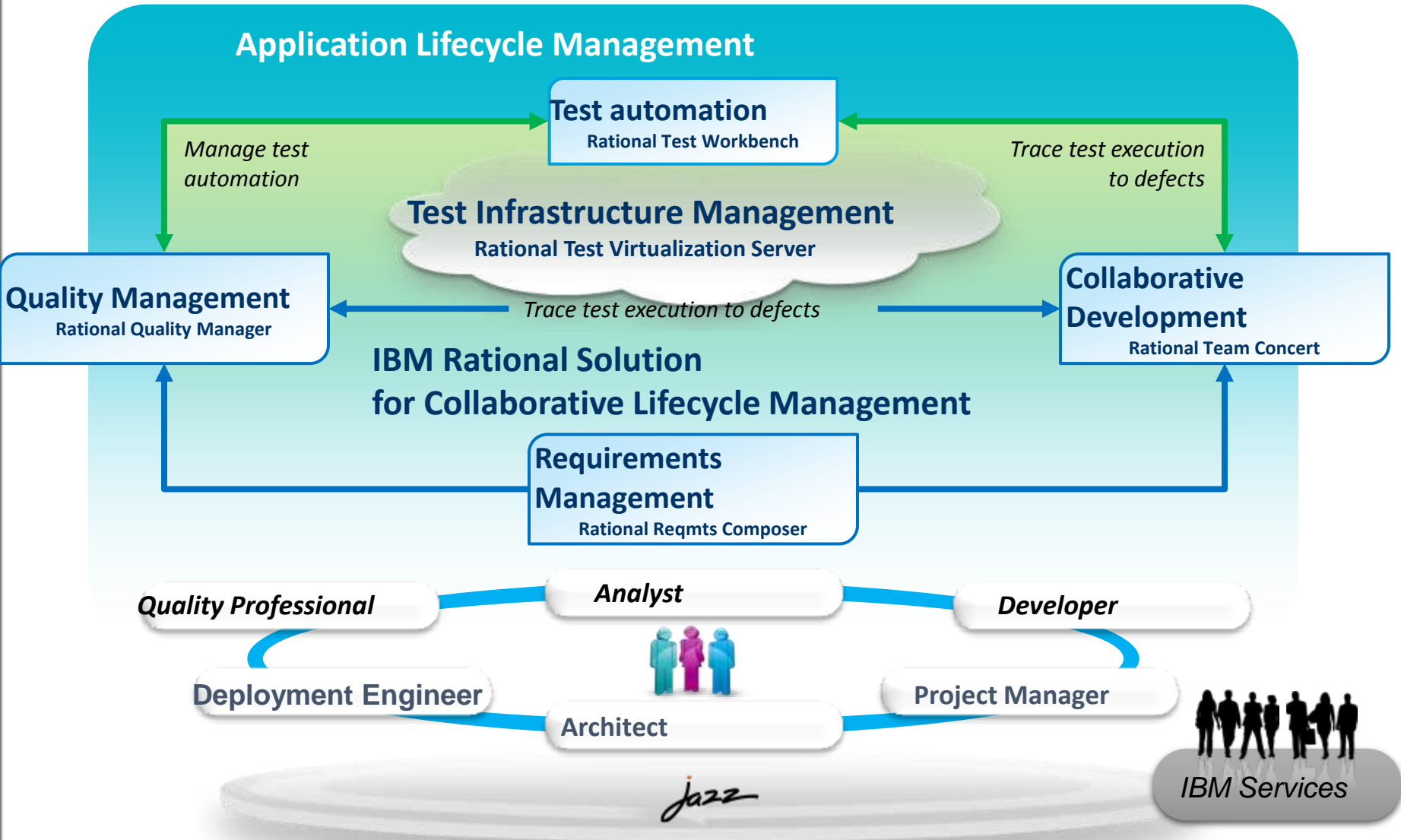
- CentraSite
- Oracle Fusion
- SCA Domain
- Software AG IS, BPMS
- Sonic ESB
- TIBCO ActiveMatrix
- UDDI
- Web Services
- WebSphere RR
- WSDL
  
- BPM
- Databases
- Log Files

## Message Formats

- .Net Objects
- Bytes
- COBOL Copybook
- ebXML
- EDI
- Fixed Width
- HL7
- IATA
- Java Objects
- MIME
- OAG
- SOAP
- Software AG Broker Docs
- SWIFT
- TIBCO ActiveEnterprise
- XML (DTD, XSD, WSDL)
- Custom

Note: Custom protocol support can be developed

# IBM Rational Integrated Quality Management Solution





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