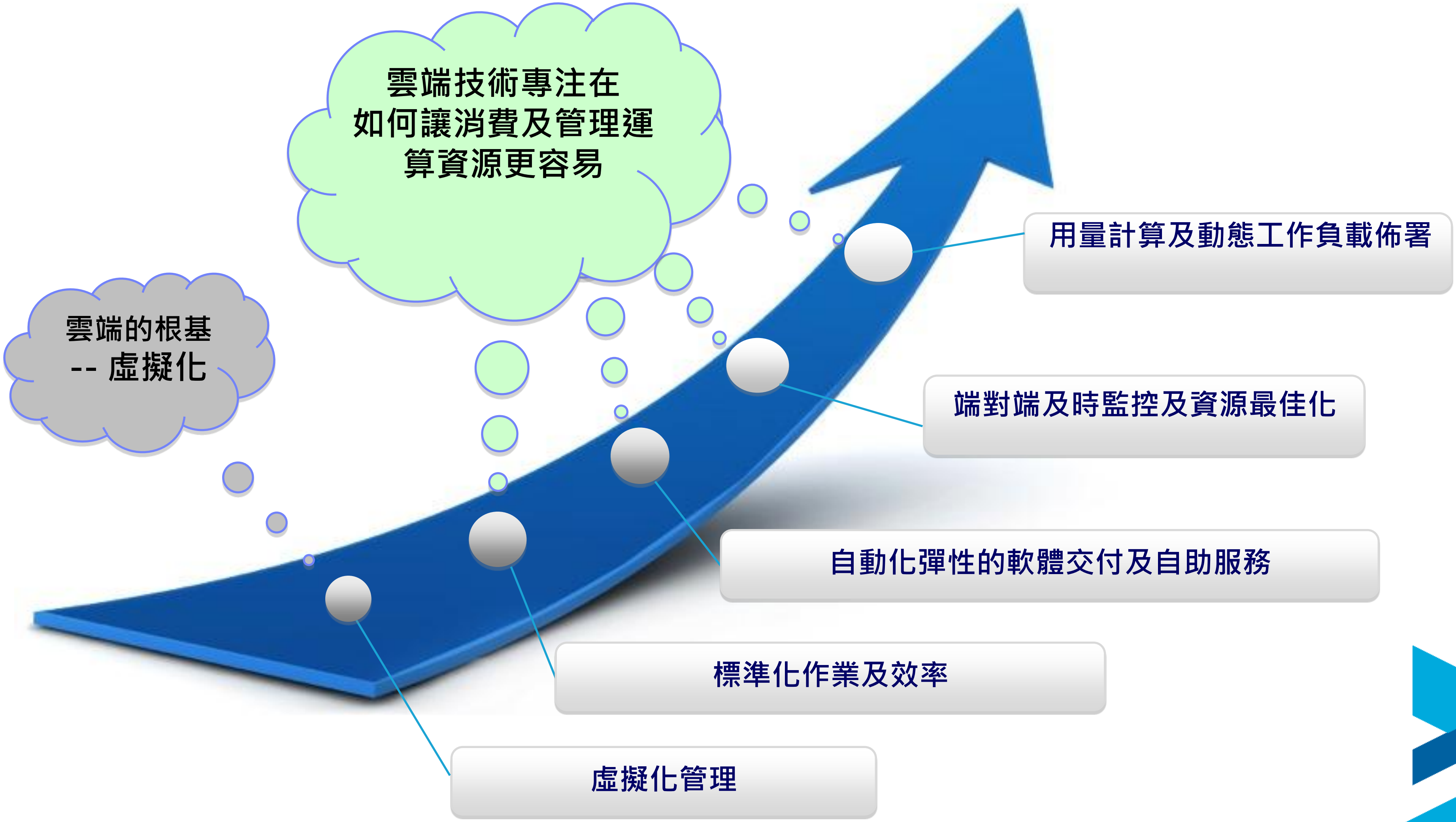
[2012 IBM 開發者大會]

- 流程優化大解密
- -- 彈性交期 流暢開發

Joseph Chang,
Rational Specialty Architect
IBM SWG Rational

IT 趨勢 – 多許多企業組織正朝比虛擬化更高價值的雲計算邁進



雲端的根基
-- 虛擬化

雲端技術專注在
如何讓消費及管理運
算資源更容易

用量計算及動態工作負載佈署

端對端及時監控及資源最佳化

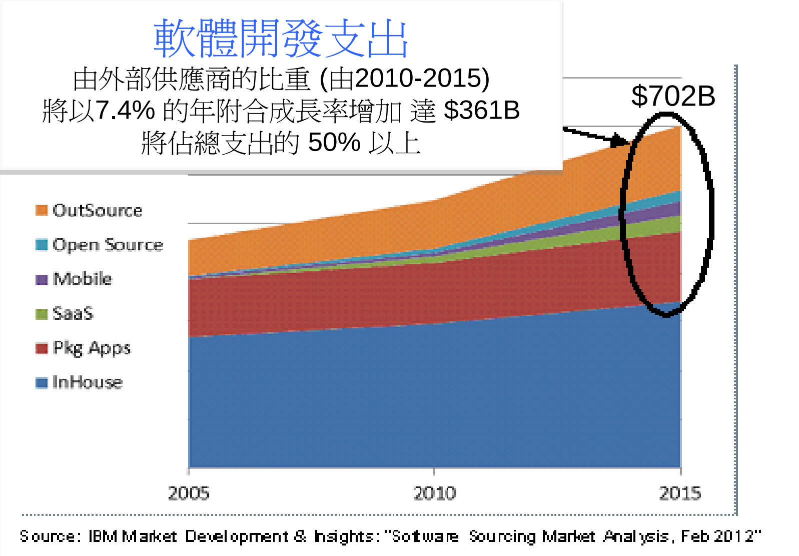
自動化彈性的軟體交付及自助服務

標準化作業及效率

虛擬化管理

IT 挑戰 – 大部份的企業關心維持創新能力的同時還得考慮成本及風險的控制

Investment



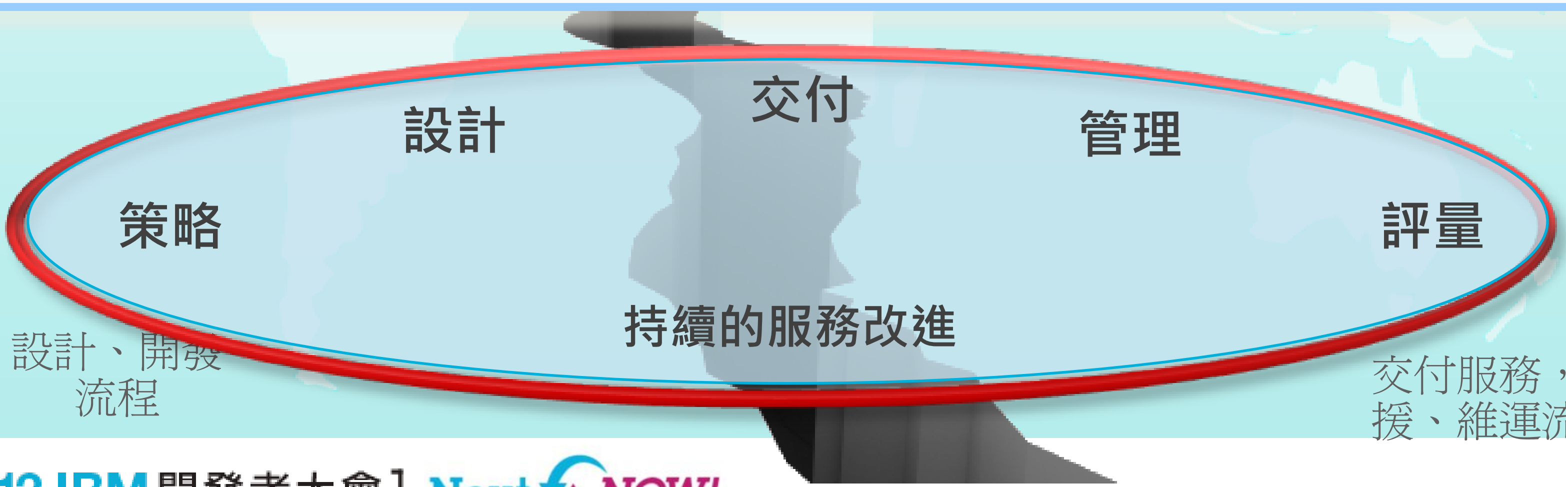
軟體開發支出

由外部供應商的比重 (由2010-2015)
將以7.4% 的年附合成長率增加 達 $361B
將佔總支出的 50% 以上

Source: IBM Market Development & Insights: "Software Sourcing Market Analysis, Feb 2012"

Challenge

- 65% 的客戶缺乏自動化技術，讓軟體發佈延遲
- 39% 的應用系統發佈需要花費 1-7 天進行部署
- 應用程式部署到營運環境之後常因不可預測的原因需要退回重新發佈
- 37% 的專案支出超出了預算

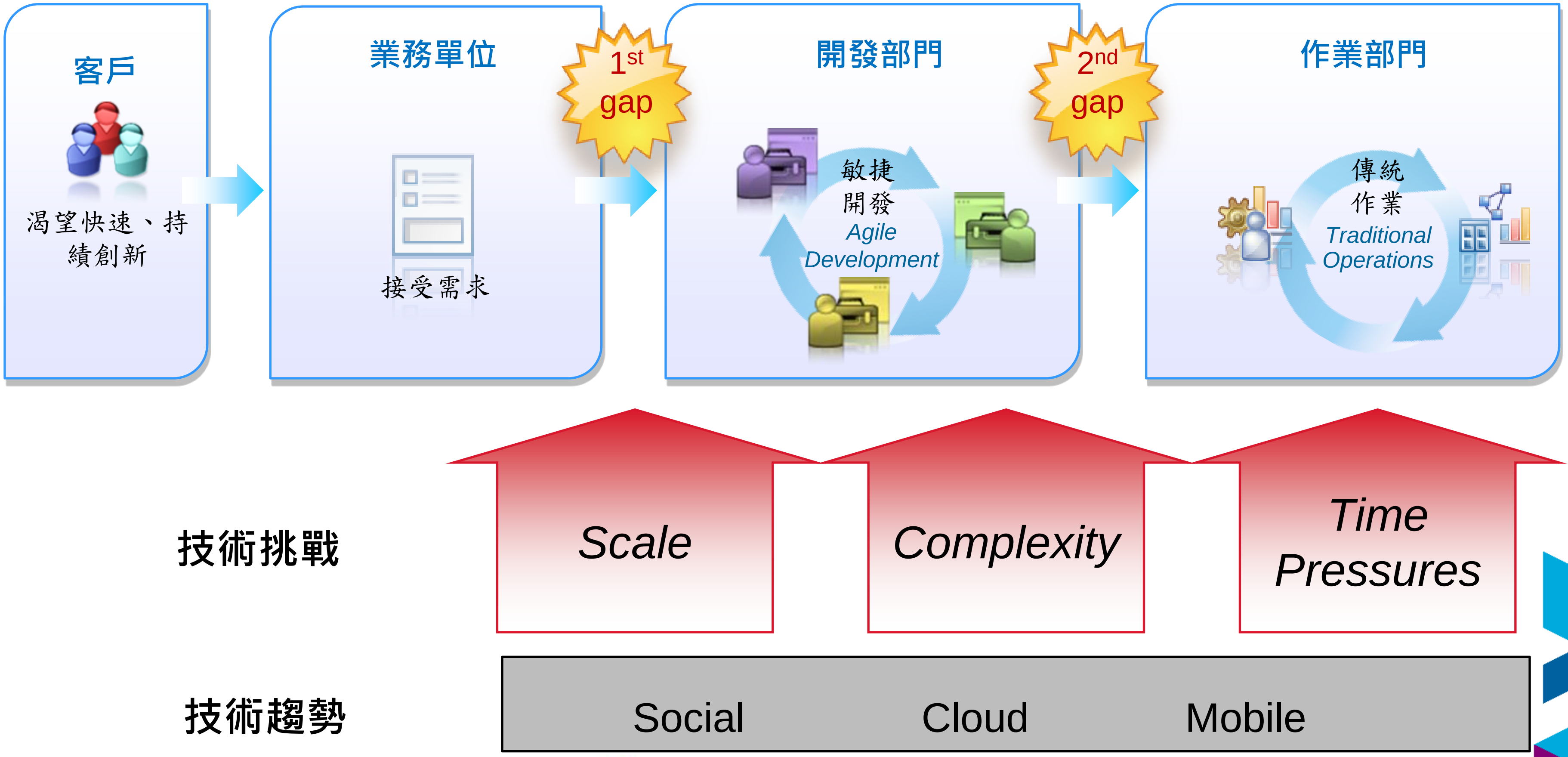


設計、開發
流程

交付服務，支援、維運流程

軟體交付的挑戰

今日業務和技術的需要促使用傳統交付方法需要突破



客戶

渴望快速、持續創新

業務單位

接受需求

1st gap

開發部門

敏捷開發 Agile Development

2nd gap

作業部門

傳統作業 Traditional Operations

技術挑戰

Scale

Complexity

Time Pressures

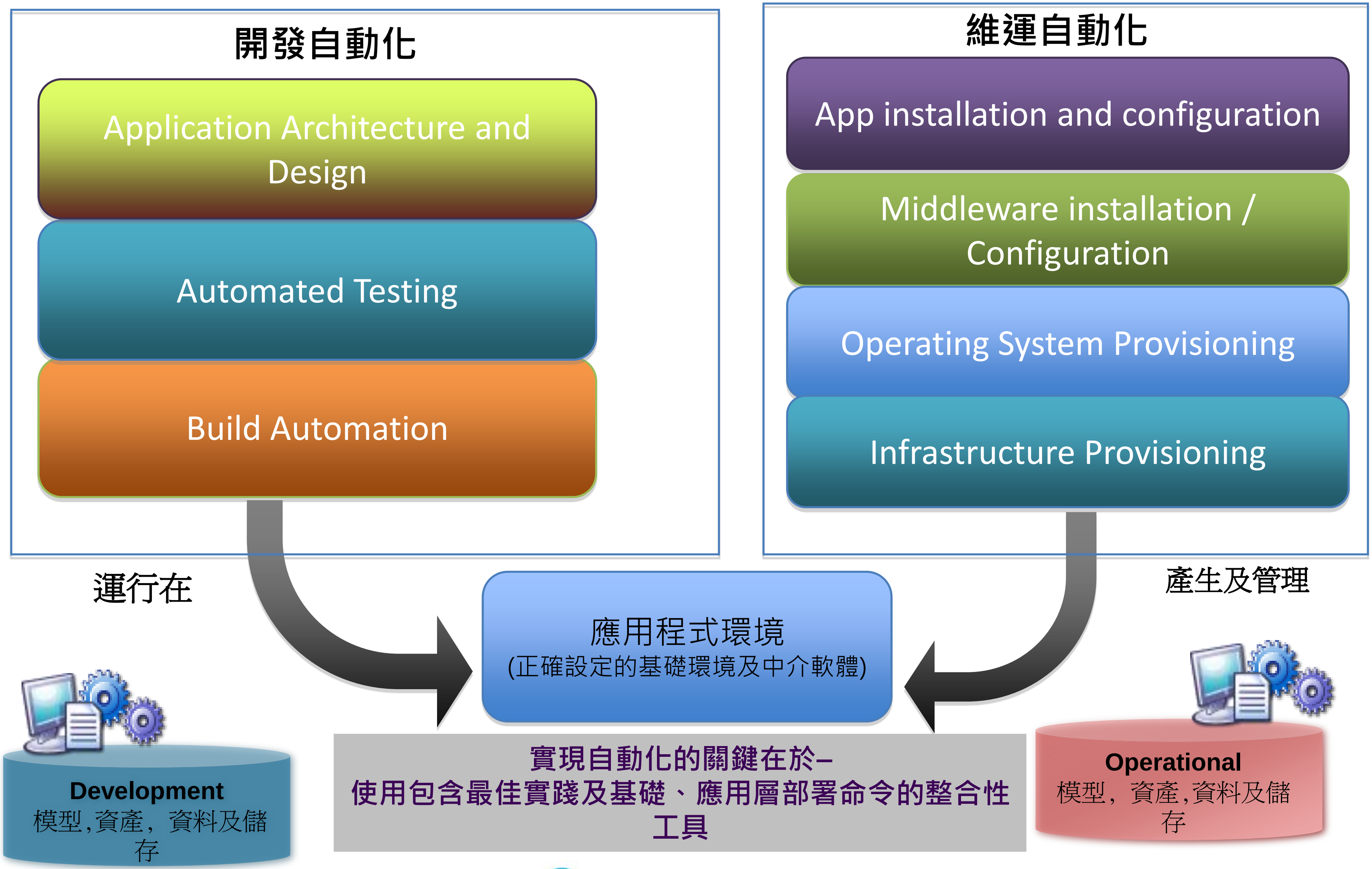
技術趨勢

Social

Cloud

Mobile

當今的跨部門開發維運作業 -- 人員, 流程及技術皆不同



開發自動化

Application Architecture and Design

Automated Testing

Build Automation

維運自動化

App installation and configuration

Middleware installation / Configuration

Operating System Provisioning

Infrastructure Provisioning

運行在

產生及管理

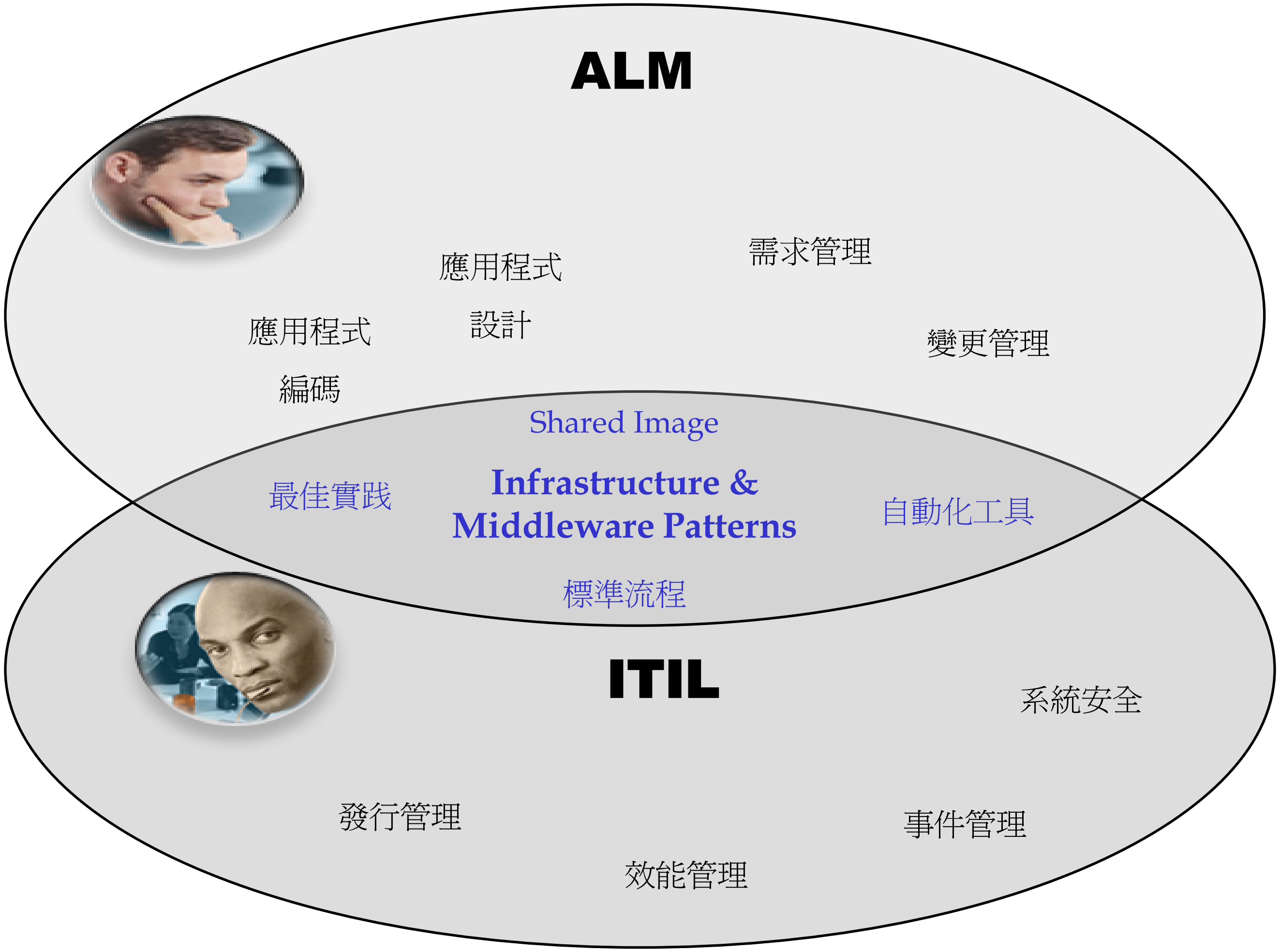
應用程式環境
(正確設定的基礎環境及中介軟體)

Development
模型,資產，資料及儲存

Operational
模型，資產,資料及儲存

實現自動化的關鍵在於–
使用包含最佳實踐及基礎、應用層部署命令的整合性工具

人員協作, 標準化流程及自動化工具提供最佳業務成果



ALM

應用程式
設計

需求管理

應用程式
編碼

變更管理

Shared Image

最佳實踐

**Infrastructure &
Middleware Patterns**

自動化工具

標準流程

ITIL

系統安全

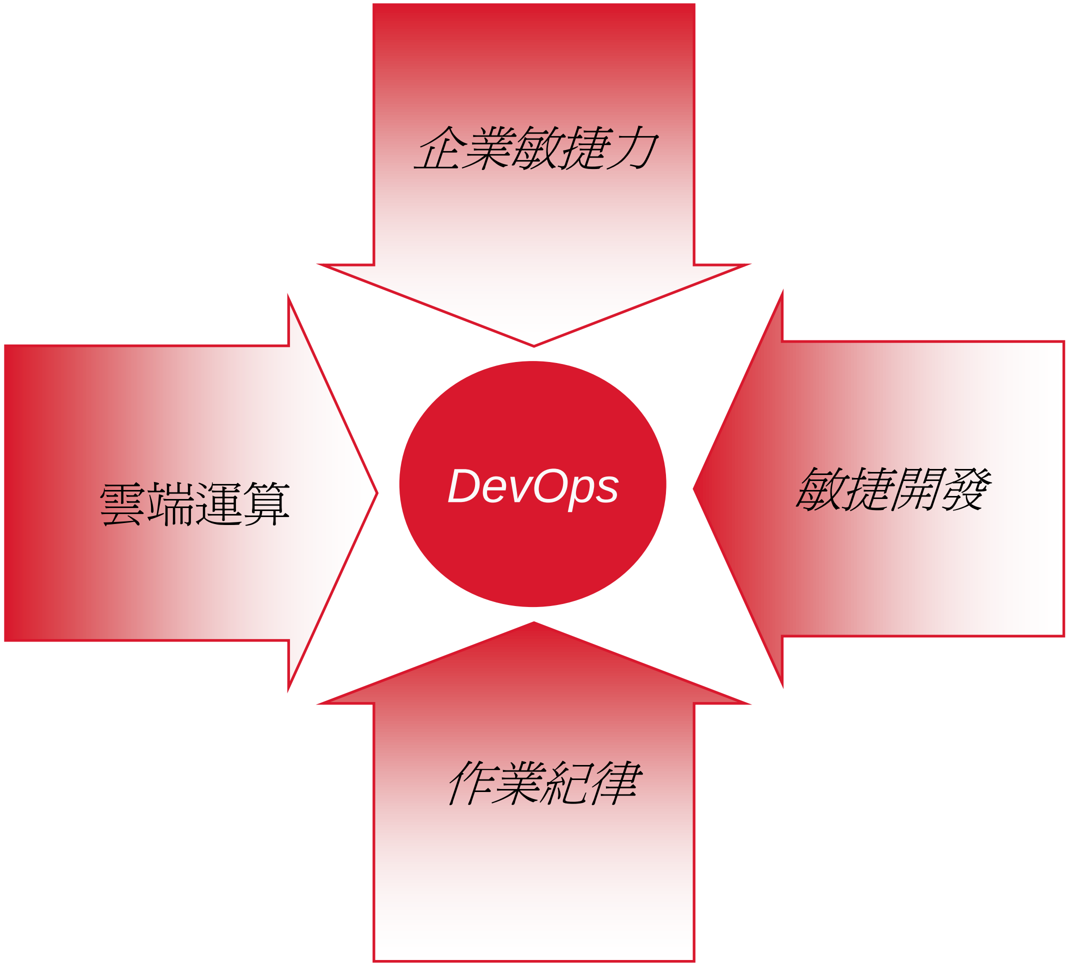
發行管理

事件管理

效能管理

DevOps: 就是現在

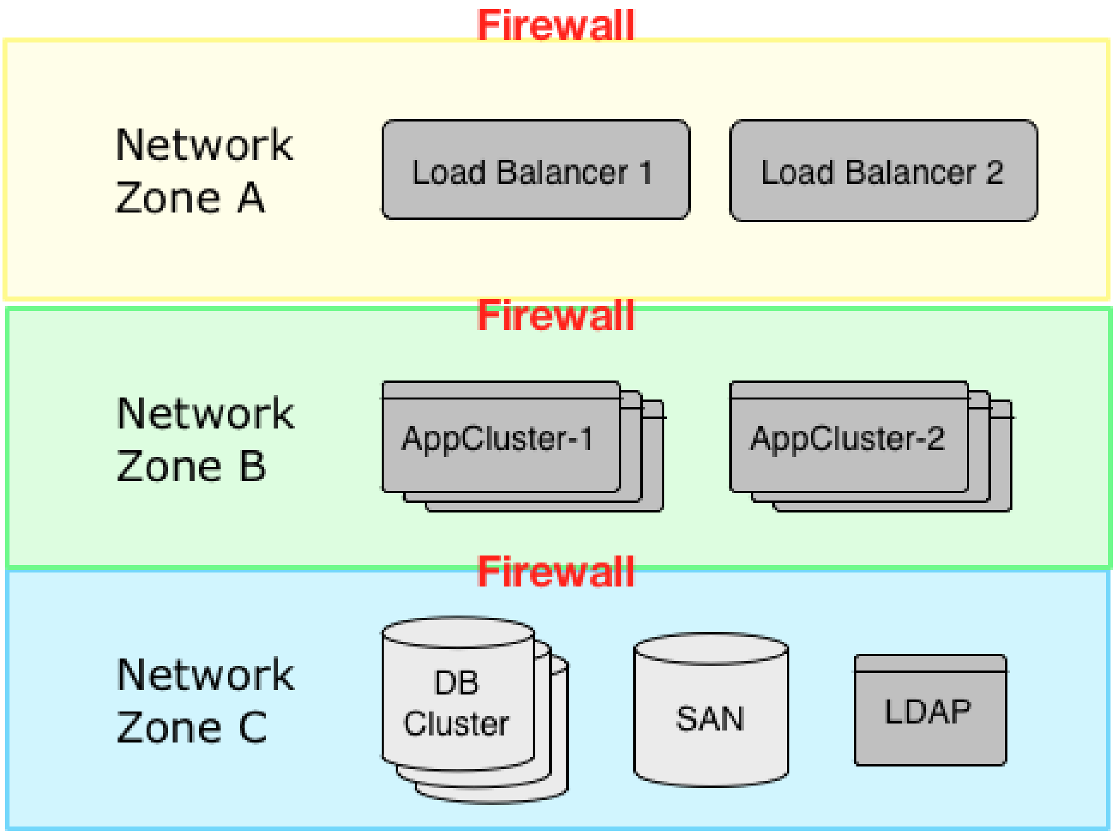
四個關鍵的驅動力讓 DevOps 成為 2012 各企業組關注的焦點

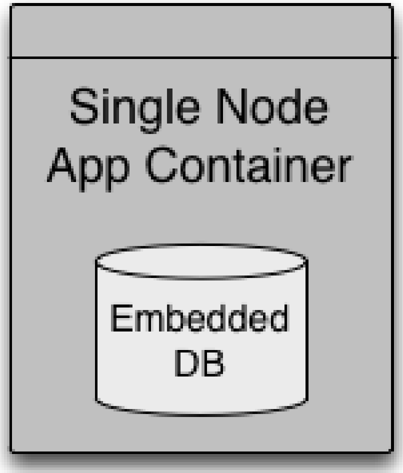


問題 一：營運環境與測試環境不相同

營運環境

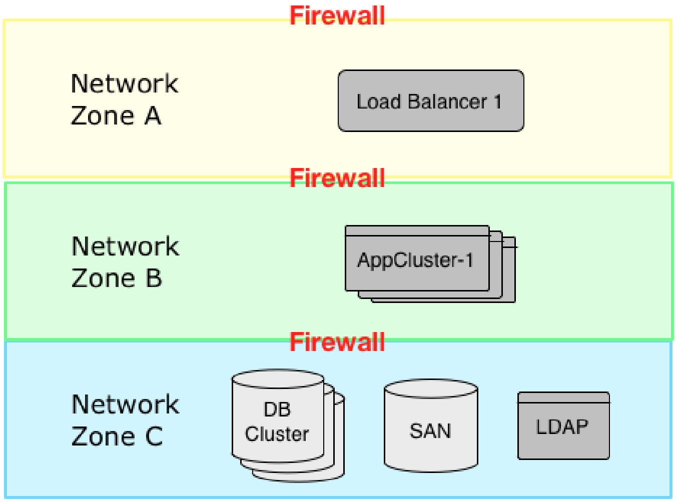
開發&測試

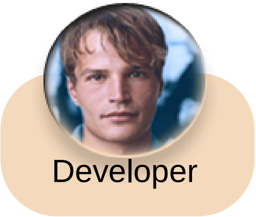




解決方案一: 開發人員及系統管理員使用相同的自動化部署樣版

System Pattern





Web App WAR file

問題二: 一旦應用程式佈署完畢， 預期的問題才正準備發生，並馬上進入” 危機狀態”

Developer

- 應用系統 A 已經成的的佈署到營運環境
- 我現在要開始進行 B 專案

Ops

- 應用系統 A已經成的的佈署到營運環境
- 我需要可見的效能資訊來確認應用系統 A 滿足SLAs
- 我要如何確認應用系統的可用性以及擴充性如何?

解決方案二：在系統樣版中加入自動化效能管理監控機制

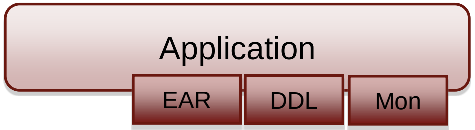
Developer

Collaboration via patterns gives Visibility and Control throughout the application Lifecycle

Ops

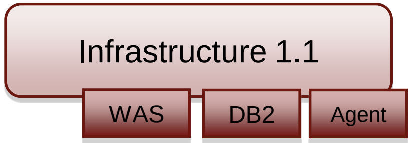
在編寫程式碼時，定義應用系統專屬的監控設定

定義包含監控代理的標準基礎架構樣版



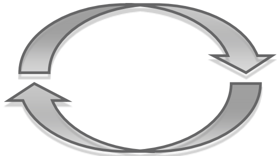
Application

EAR DDL Mon

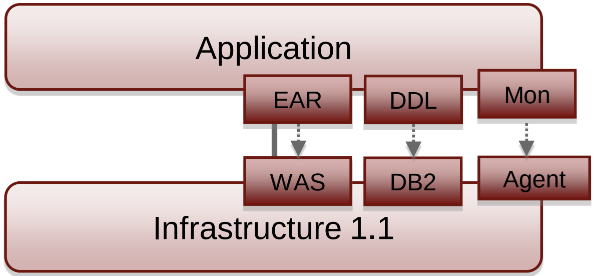


Infrastructure 1.1

WAS DB2 Agent



將應用程式與基礎架構樣版接合



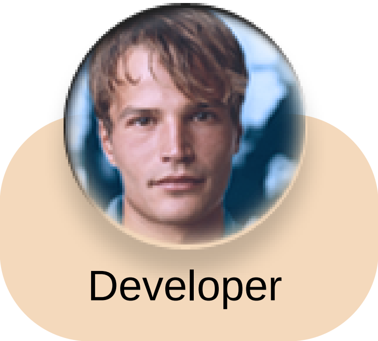
Application

EAR DDL Mon

WAS DB2 Agent

Infrastructure 1.1

問題三之一: 對品質認定的標準不同



程式通過編譯嗎?

程式通過單元測試嗎?

程式通過包版作業嗎?

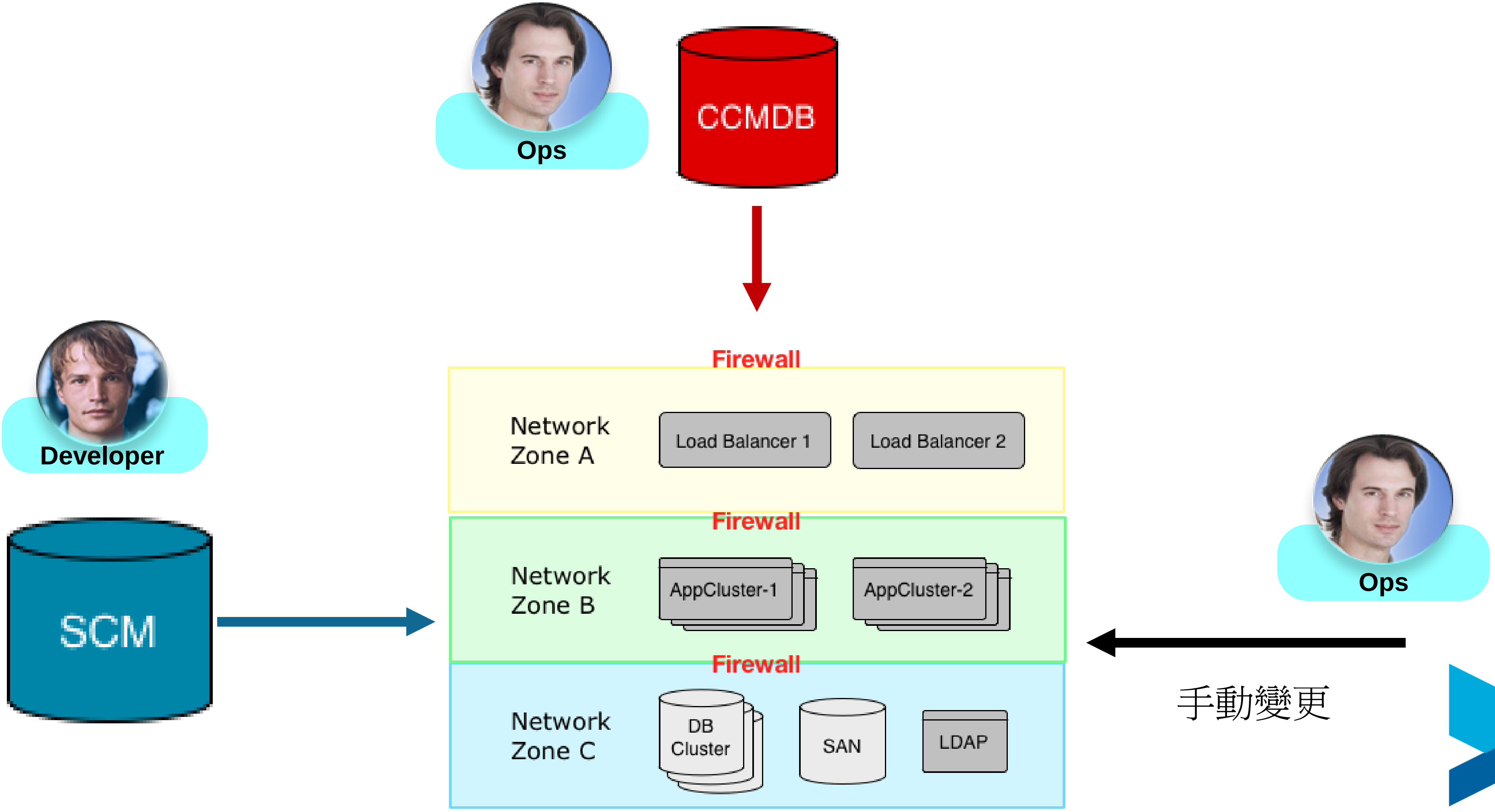
佈署成功了嗎?

交易成功運行嗎?

效能可接受嗎?

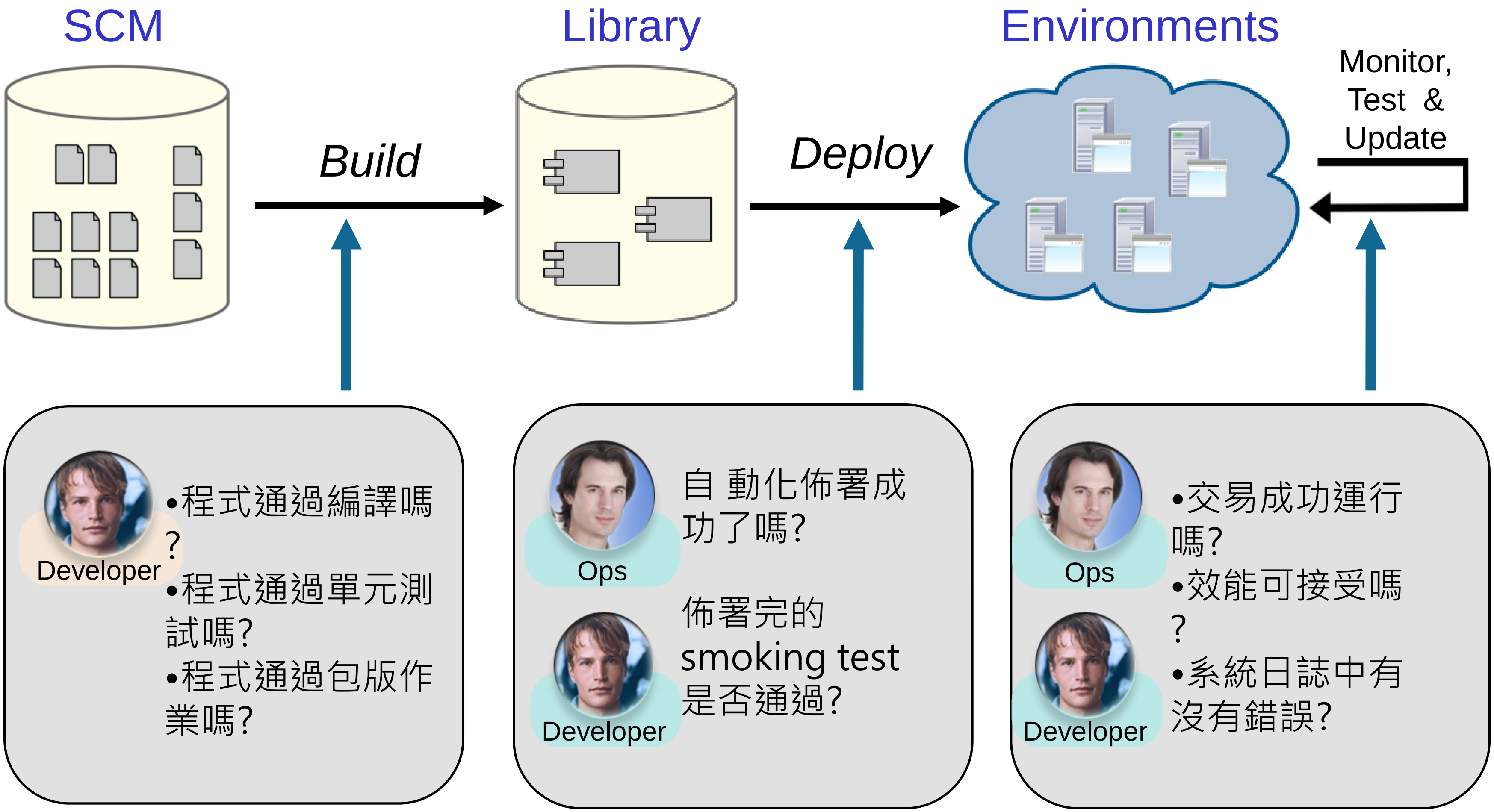
系統日誌中有沒有錯誤?

問題三之二: 不同的變更管理工具



手動變更

解決方案三: 持續檢核品質要項做為開發生命週期的一環



SCM

Build

Library

Deploy

Environments

Monitor, Test & Update

Developer

- 程式通過編譯嗎?
- 程式通過單元測試嗎?
- 程式通過包版作業嗎?

Ops

自 動化佈署成功了嗎?

Developer

佈署完的 smoking test 是否通過?

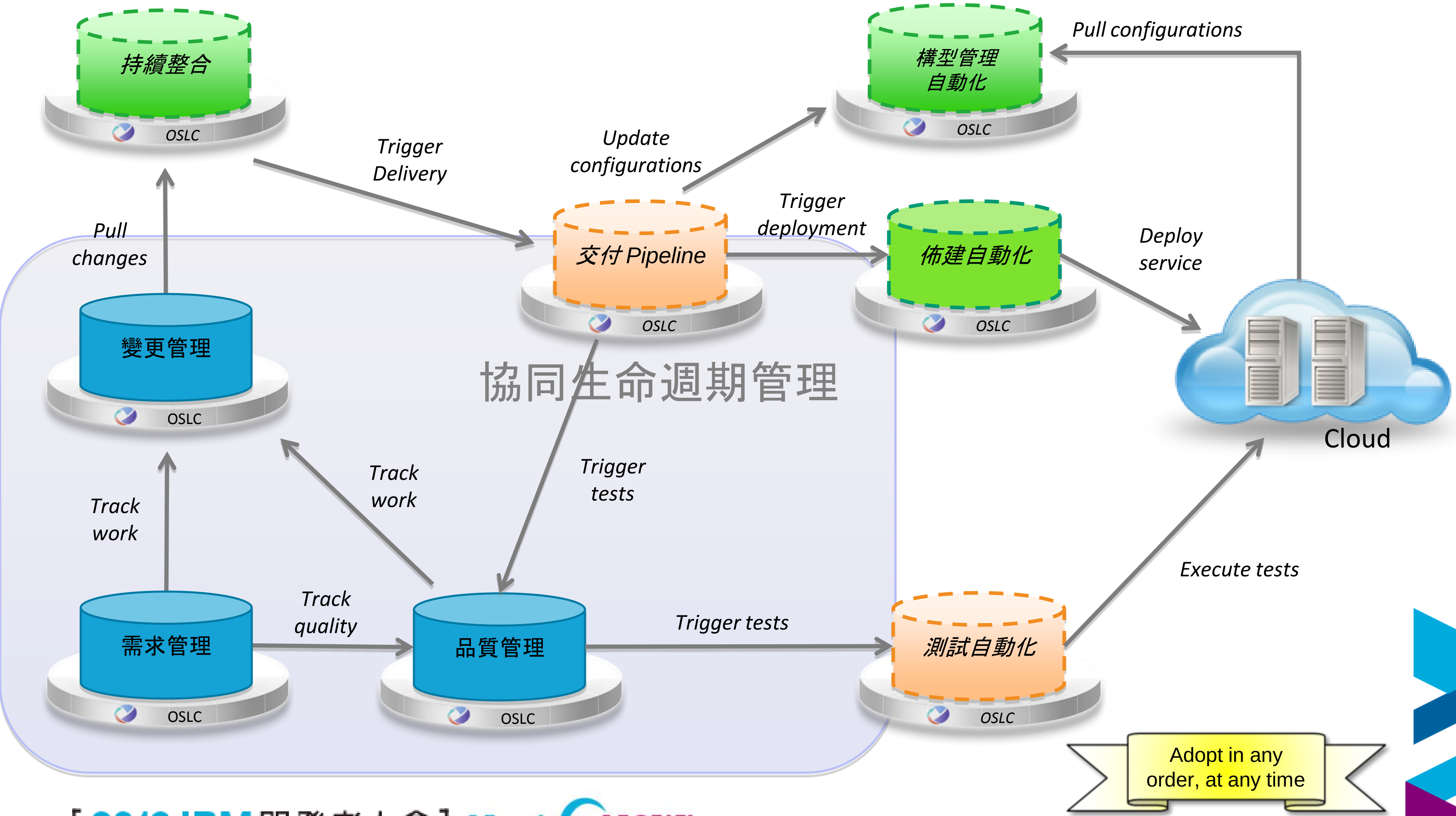
Ops

- 交易成功運行嗎?
- 效能可接受嗎?

Developer

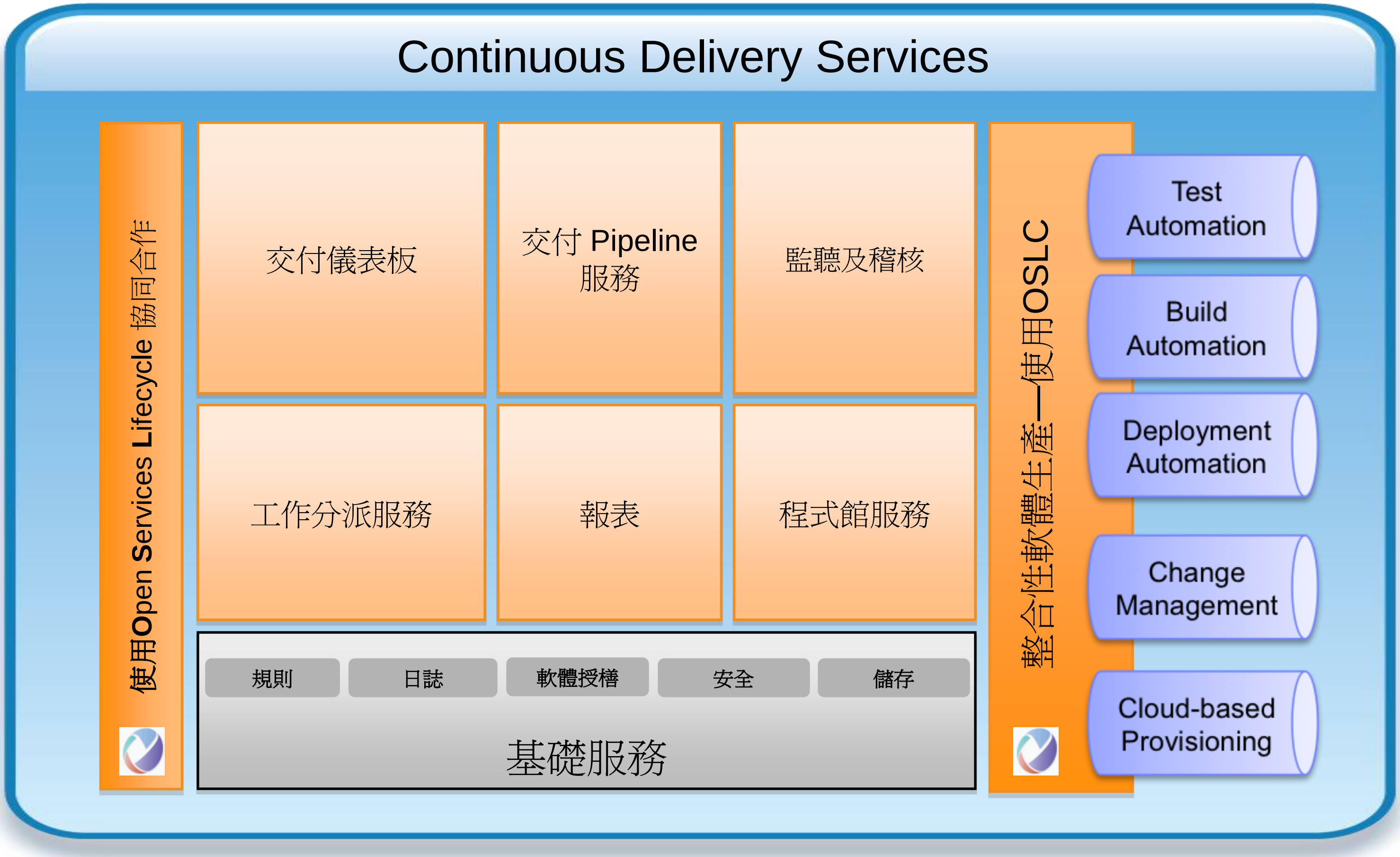
- 系統日誌中有沒有錯誤?

開發生命週期管理參考架構



DevOps 整合架構

建構於標準技術之上 ，允許由 IBM 產品, open source, 及 third party提供的插件


Continuous Delivery Services

使用Open Services Lifecycle 協同合作

交付儀表板

交付 Pipeline 服務

監聽及稽核

工作分派服務

報表

程式館服務

規則

日誌

軟體授權

安全

儲存

基礎服務

整合性軟體生產—使用OSLC

Test Automation

Build Automation

Deployment Automation

Change Management

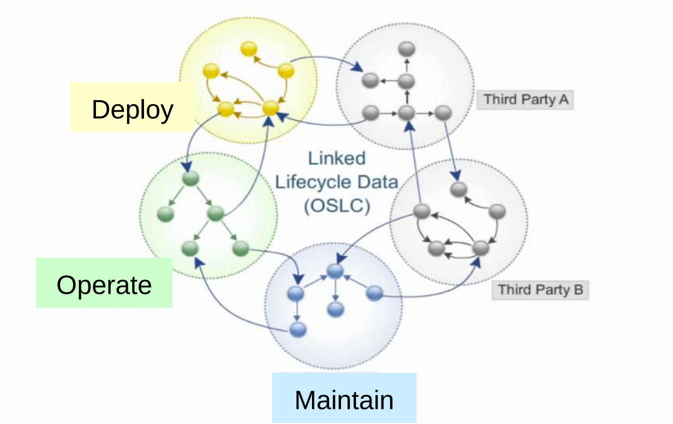
Cloud-based Provisioning

基於開放平台的整合架構

Open Services for Lifecycle Collaboration (OSLC)

- Open Architecture
- Federated Data
- Dynamic Interaction
- Common Services

- 社群驅動 open-services.net
- Current 目前專注在制定整合運作規格
- 使用Loosely coupled 的整合方式
- 構想來自 Internet 架構
- 基於 W3C® Linked Data



New!! OSLC Performance Monitoring work group

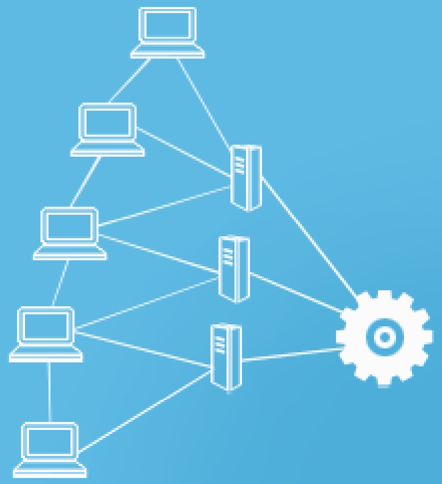
IBM SmartCloud Provisioning

打造一個操作簡單，擴充性極高的雲端環境

IBM SmartCloud Provisioning 是一個真實的Infrastructure-as-a-Service 的雲，可以降低成本並提供高可擴充性,在幾乎不停機的條件下快速佈署環境，並在跨平台上遇問題自動recover

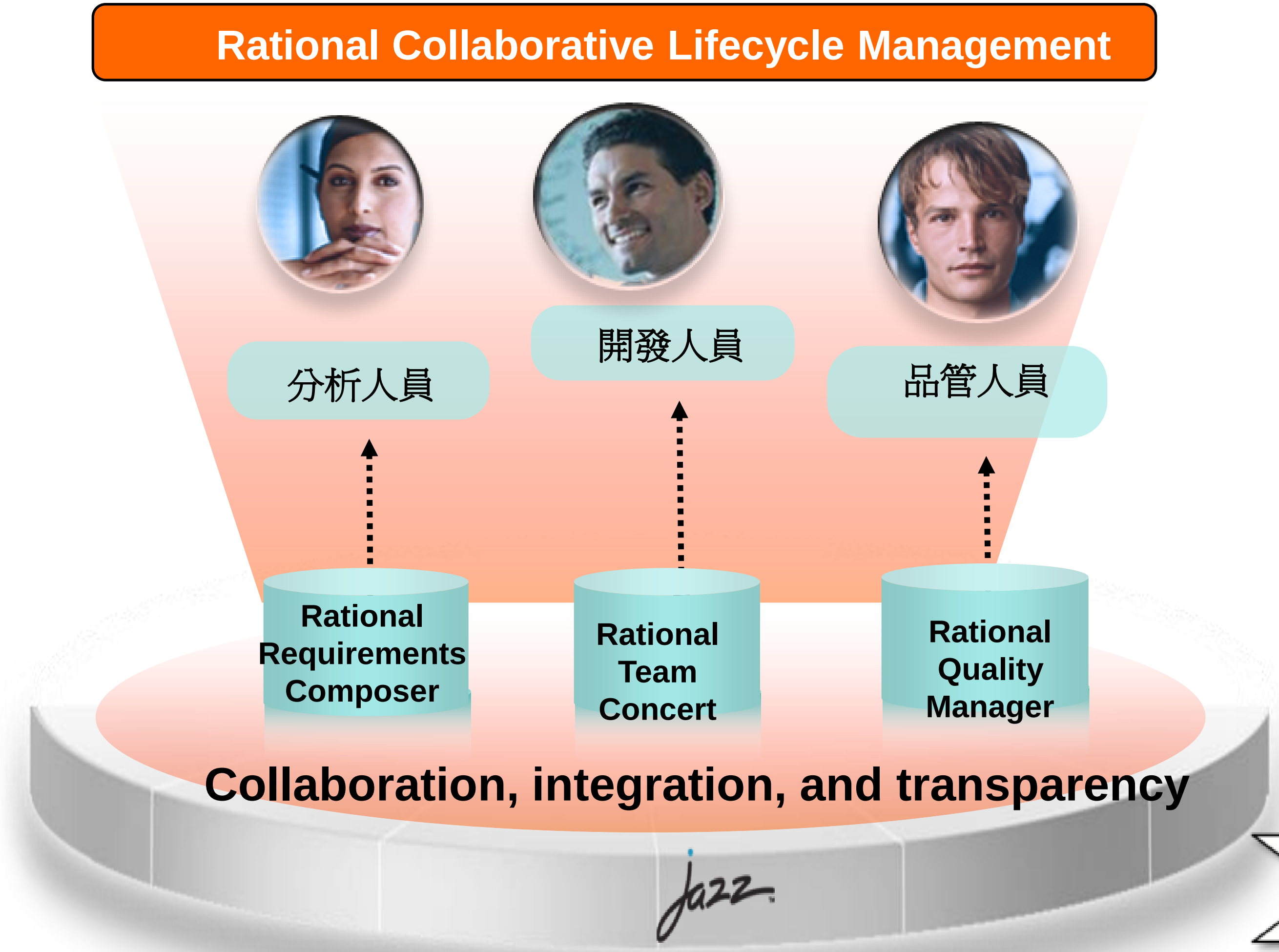
Key benefits:

- 快速且可擴充的佈署
- 可控制 image 任意擴散
- 提供Image 建構及組合工具
- 可靠，不停機
- 在達到一定規模時，可以節省IT人力資源
- 減少複雜性



為IT 敏捷力所打造的開發生命週期管理平台

Deliver greater value through integration


Rational Collaborative Lifecycle Management
分析人員
開發人員
品管人員
Rational Requirements Composer
Rational Team Concert
Rational Quality Manager
Collaboration, integration, and transparency
Jazz

✓降低成本

✓縮短交付時間

✓增加價值

✓改善品質

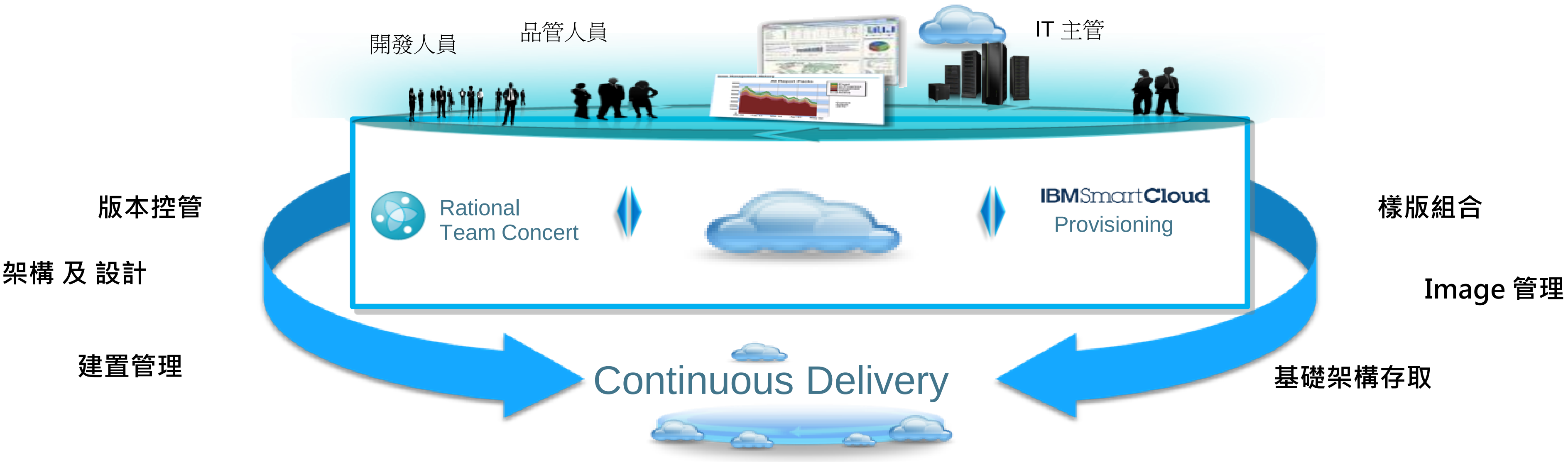
✓提升可預測性

✓擴充及整合現有系統

Adopt in any order, at any time

透過IBM SmartCloud 實現持續交付

A simple approach to bringing agility across the lifecycle



開發人員

品管人員

IT 主管

版本控管

架構 及 設計

建置管理

Rational Team Concert

IBMSmartCloud Provisioning

樣版組合

Image 管理

基礎架構存取

Continuous Delivery

客戶價值

- 改善效能, 加速交付; 在不同流程之間自動交接
- 減少風險, 改善品質; 從開發到部署全面管理
- 資源最佳化; 透過工作負載樣版提供最佳實踐

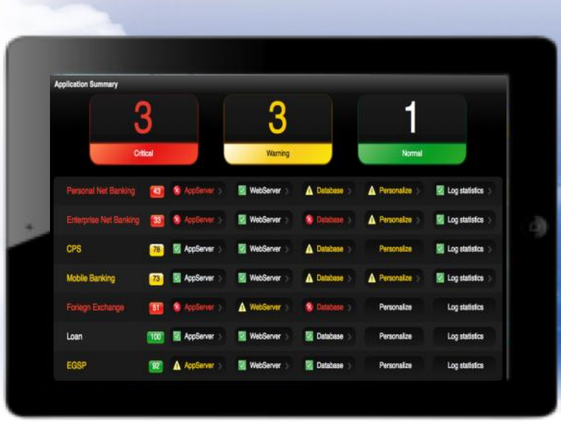
內部價值

•開發團隊透過雲端環境實現敏捷，加速軟體交付

•作業團隊交付可擴充，持續性服務給開發團隊，進而提升業務服務

IBMSmartCloud 應用程式效能管理

最佳化的終端使用者效能，避免服務中斷



Application Summary

3	3	1
Critical	Warning	Normal

Personal Net Banking	43	✖ AppServer	✓ WebServer	⚠ Database	⚠ Personalize	✓ Log statistics
Enterprise Net Banking	33	✖ AppServer	✓ WebServer	✖ Database	⚠ Personalize	✓ Log statistics
CPS	78	✓ AppServer	✓ WebServer	⚠ Database	Personalize	✓ Log statistics
Mobile Banking	73	✓ AppServer	✓ WebServer	⚠ Database	⚠ Personalize	✓ Log statistics
Foriegn Exchange	51	✖ AppServer	⚠ WebServer	✖ Database	Personalize	Log statistics
Loan	100	✓ AppServer	✓ WebServer	✓ Database	Personalize	Log statistics
EGSP	92	⚠ AppServer	✓ WebServer	✓ Database	Personalize	Log statistics

Rapid Time-to-Value

- 內建的 **儀表板** 提供一目了然的績效指標KPI
- 利用最新的 交易追蹤技術，無需裝代理程式

Comprehensive Coverage

- 提供最新的**DataPower, DB2, WAS, SAP** …支援
- 可同時監控傳統及雲端環境

Leverage IBM Expertise

- 內建 **IBM 專家建言** 指出根源問題及建議採取行動
- **影響性分析儀表板** 讓問題快速被找出， 並顯示受影響的業務

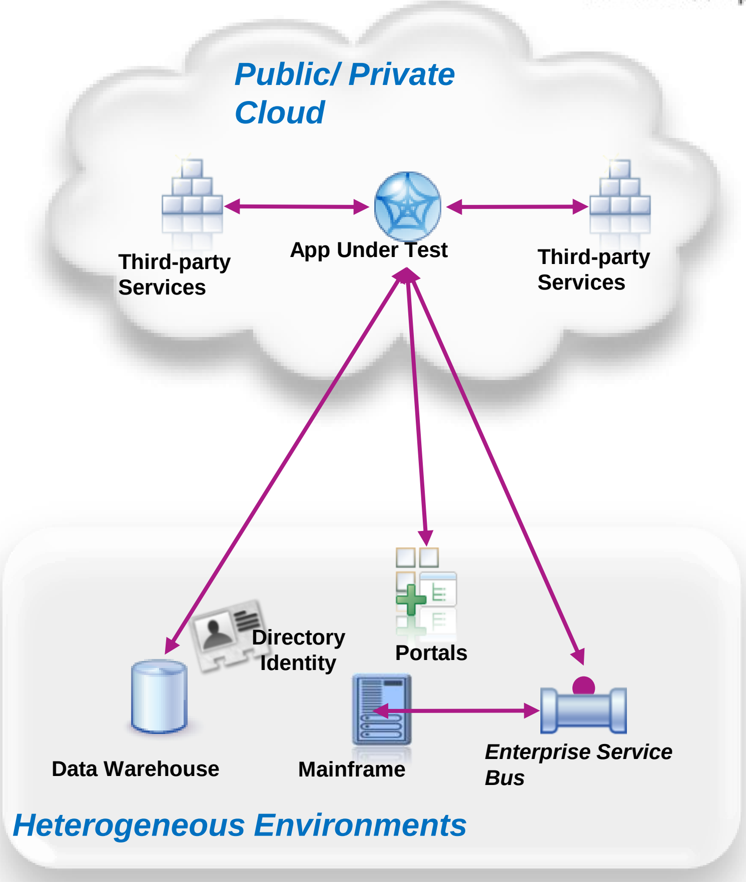
DevOps 整合片段的測試單元

*使用 Green Hat 服務模擬*改善測試

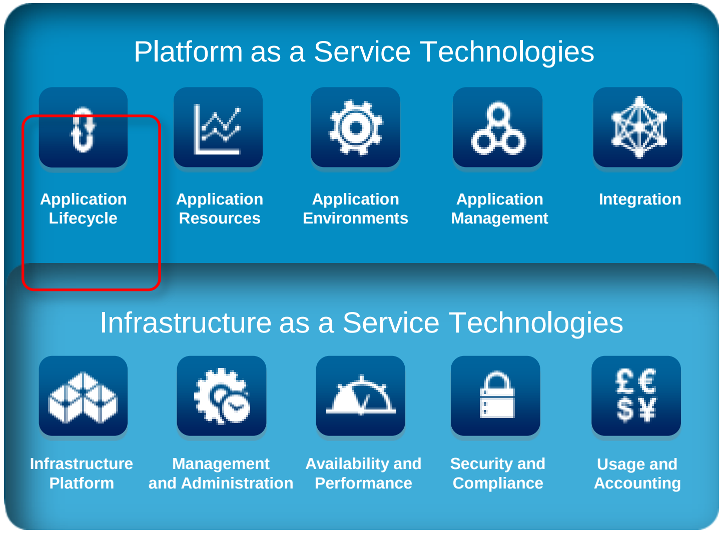
- 模擬相依的服務
  - 測試網路延遲
  - 測試沒有服務沒有回應時應用程式的反應

- 產生穩定的測試環境
  - 模擬 ”公共”服務
  - 減少對雲端基礎架構容量的需求
  - 減外存取外部服務提升安全性

- 支援持續性測試及交付



IBMSmartCloud 基礎平台



Client Success

SunTrust

Increased business agility without sacrificing operational discipline, quality, customer satisfaction, or governance using IBM's DevOps Solution; Resulted in application build times of up to five times faster.

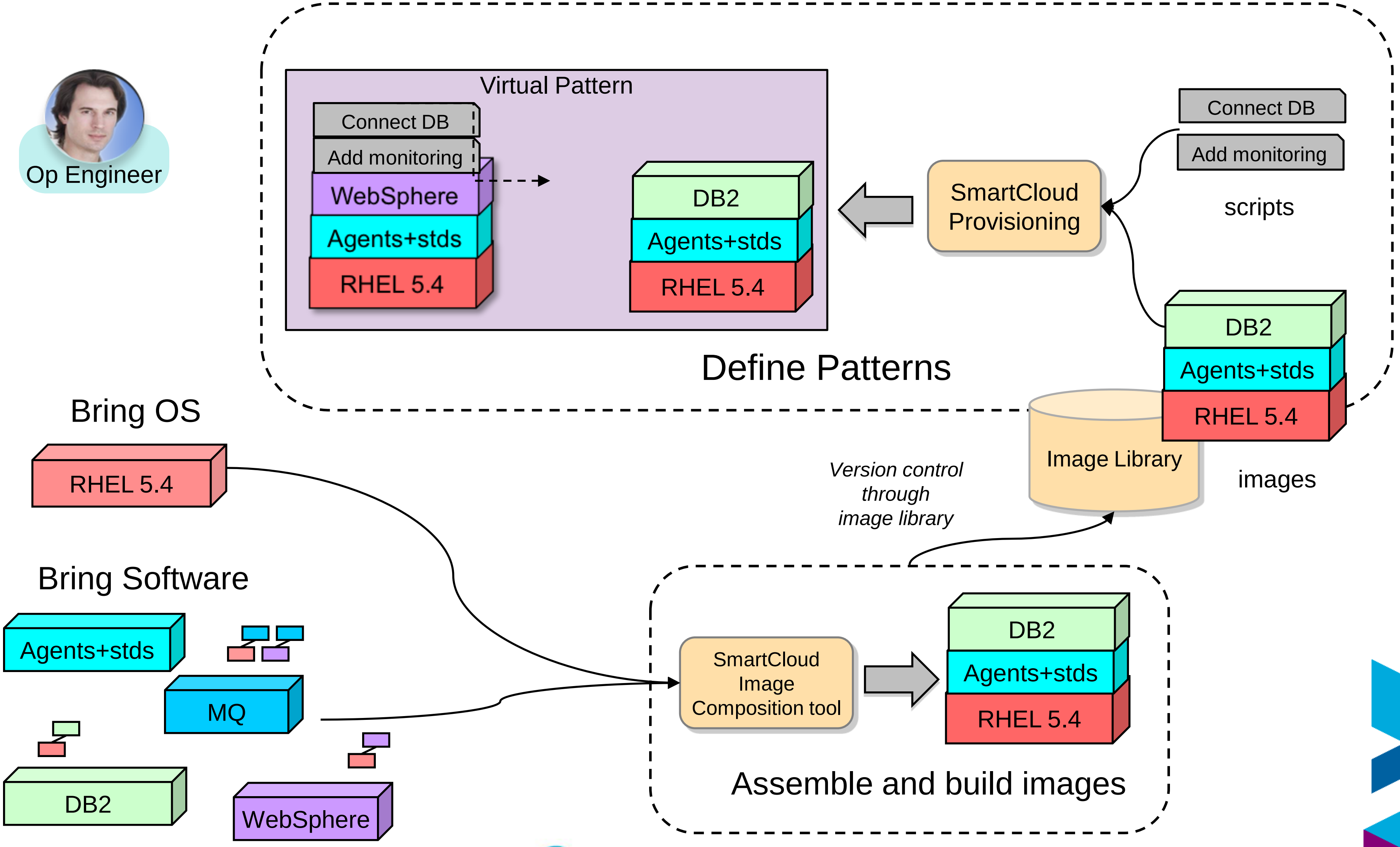
加速服務之開發及佈署同時提升品質

業務成效

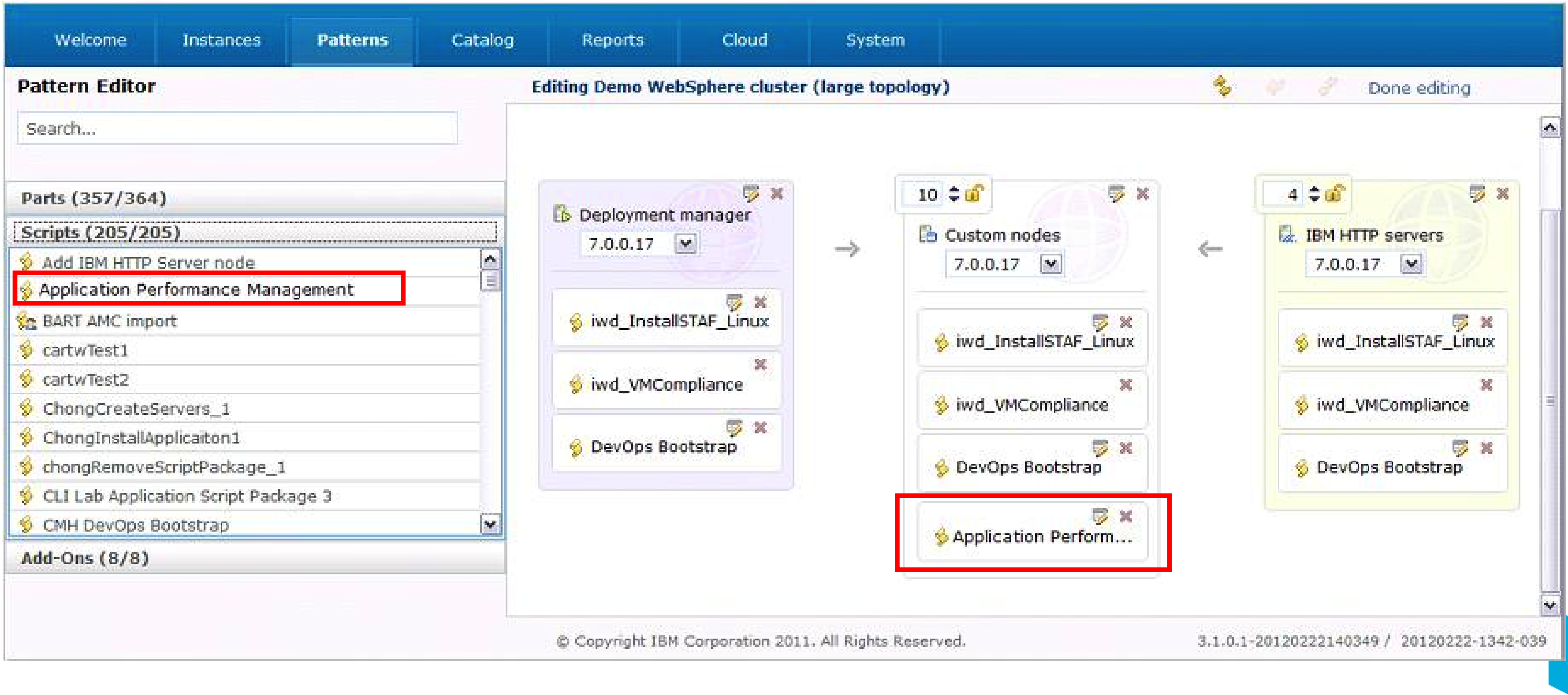
- 利用端對端的自動化、標準化及重用性， 將交付時間 由數月縮短為數週
- 20% 資源成本的減少，並同時利用簡單易用的自助服務提升佈署作業的可預測性
- 透過開發與作業部門流程銜接以及資訊的互通， 提升40% 以上的敏捷力
- 透過改善專案相關人員、開發人員、 測試人員，作業人員的聯繫，提升20% 服務可用性及效能

www.ibm.com/software/rational

Building standard pattern definitions in the cloud



Add standard monitoring within the pattern



Pattern Editor

Search...

Parts (357/364)

Scripts (205/205)

- Add IBM HTTP Server node
- Application Performance Management
- BART AMC import
- cartwTest1
- cartwTest2
- ChongCreateServers_1
- ChongInstallApplicaiton1
- chongRemoveScriptPackage_1
- CLI Lab Application Script Package 3
- CMH DevOps Bootstrap

Add-Ons (8/8)

Editing Demo WebSphere cluster (large topology)

Done editing

Deployment manager 7.0.0.17
- iwd_InstallSTAF_Linux
- iwd_VMCompliance
- DevOps Bootstrap

10 Custom nodes 7.0.0.17
- iwd_InstallSTAF_Linux
- iwd_VMCompliance
- DevOps Bootstrap
- Application Perform...

4 IBM HTTP servers 7.0.0.17
- iwd_InstallSTAF_Linux
- iwd_VMCompliance
- DevOps Bootstrap

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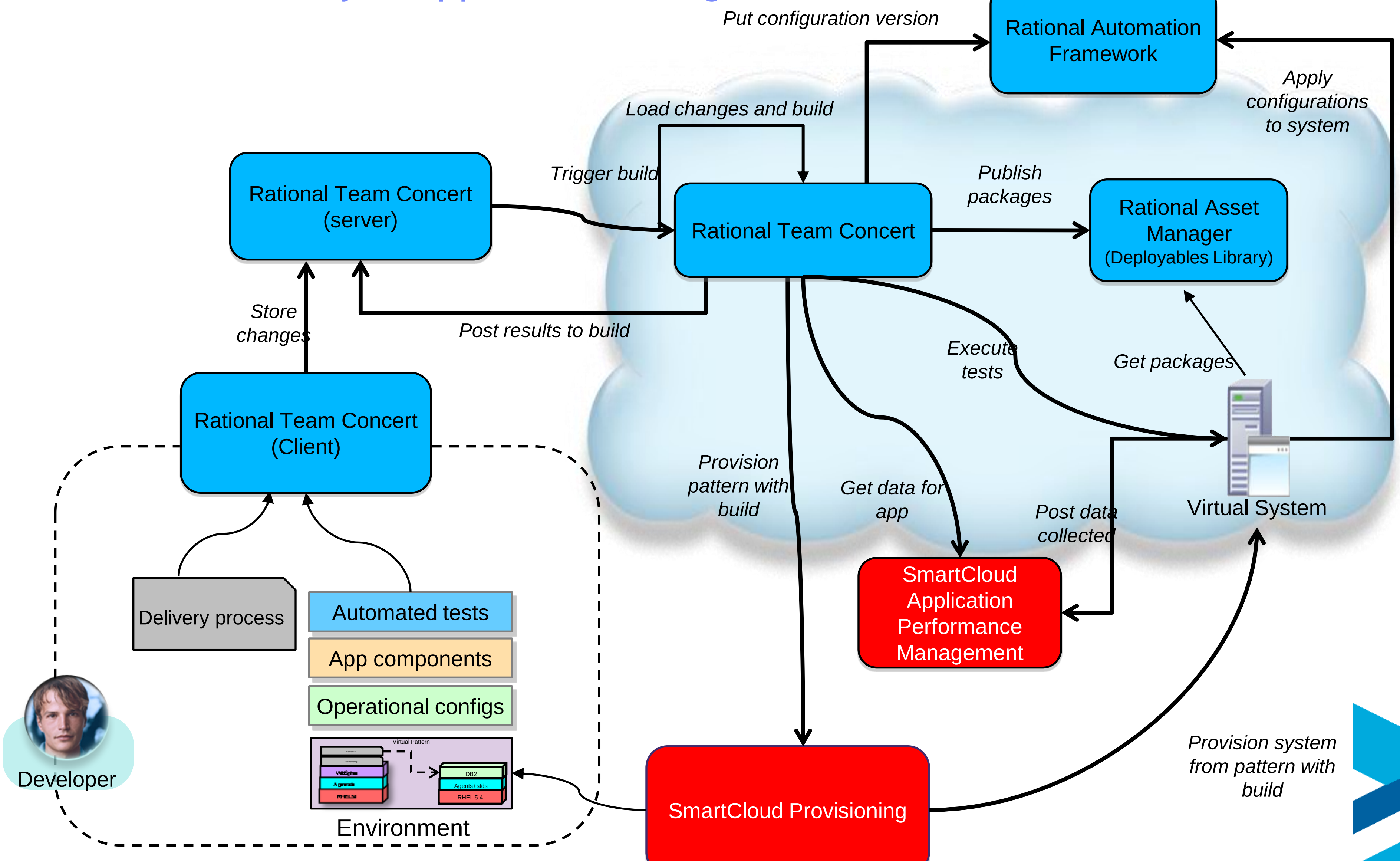
3.1.0.1-20120222140349 / 20120222-1342-039

Continuous Delivery of application changes



Put configuration version

Rational Automation Framework

Apply configurations to system

Load changes and build

Trigger build

Rational Team Concert (server)

Rational Team Concert

Publish packages

Rational Asset Manager (Deployables Library)

Store changes

Post results to build

Execute tests

Get packages

Rational Team Concert (Client)

Provision pattern with build

Get data for app

Post data collected

Virtual System

Delivery process

Automated tests

App components

Operational configs

SmartCloud Application Performance Management

Environment

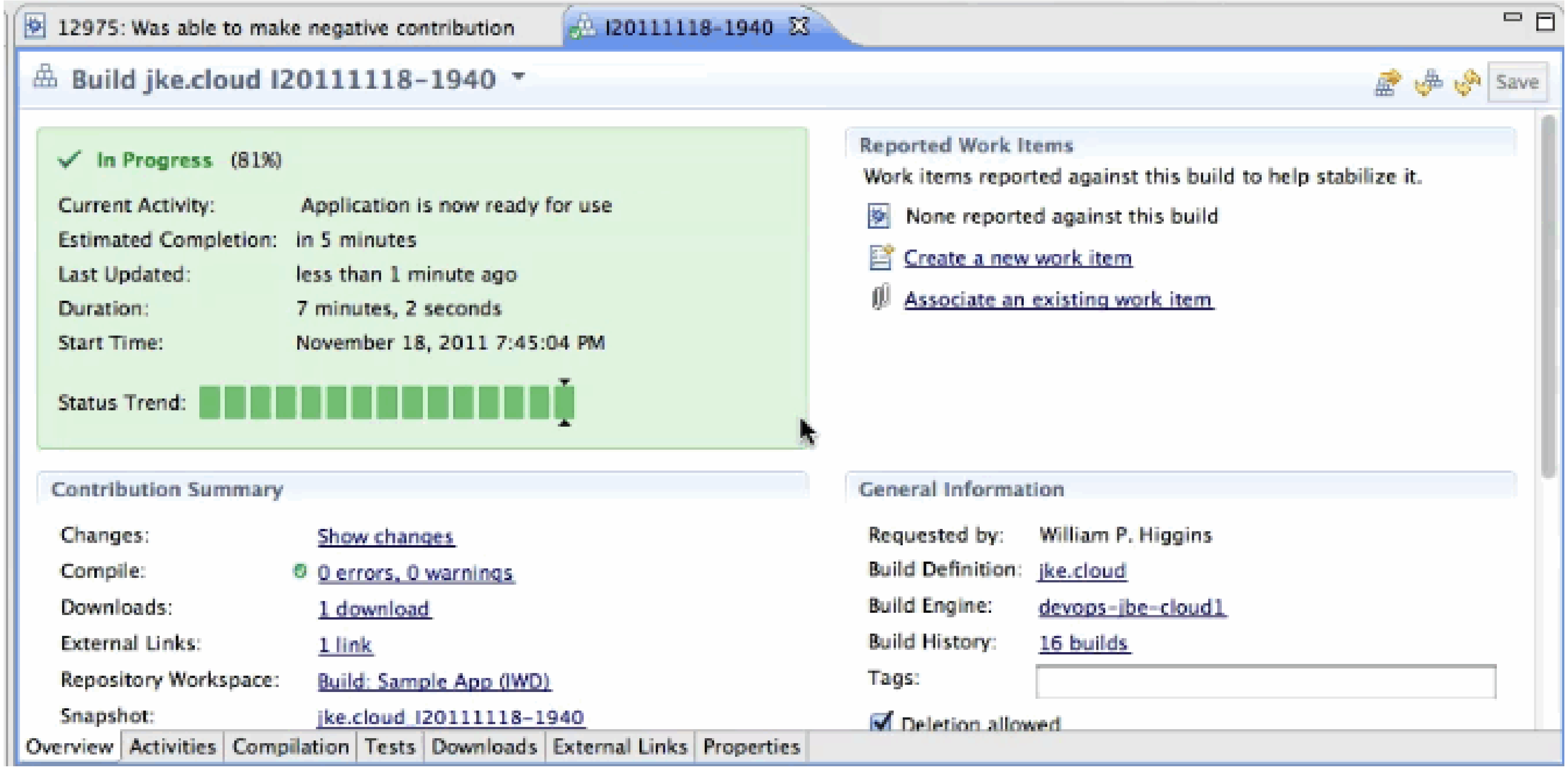
Developer

SmartCloud Provisioning

Provision system from pattern with build

Define application continuous delivery

Trigger Build



Build jke.cloud I20111118-1940

✓ 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:	🟩🟩🟩🟩🟩🟩🟩🟩🟩🟩🟩🟩🟩🟩🟩

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

Contribution Summary

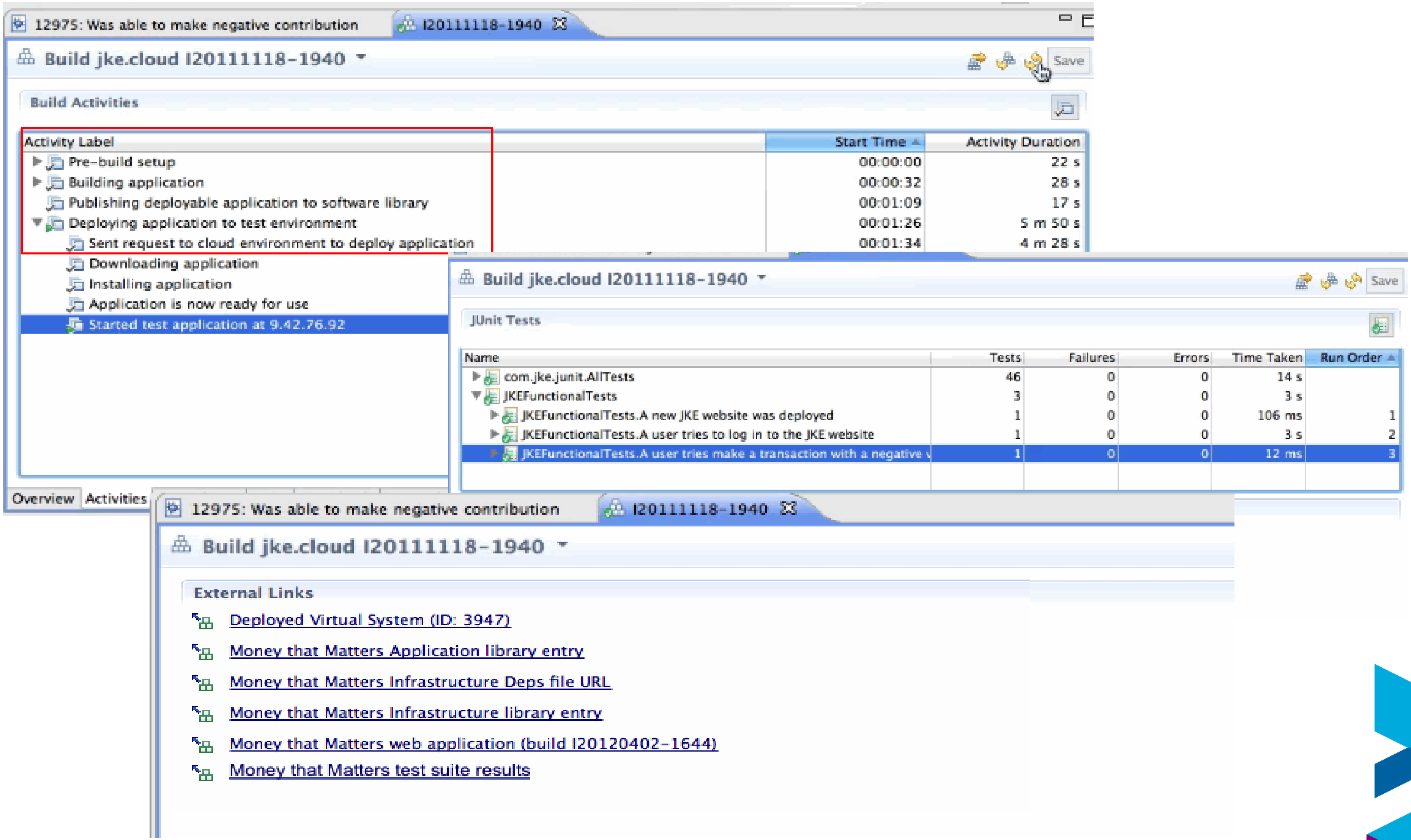
Changes:	Show changes
Compile:	0 errors, 0 warnings
Downloads:	1 download
External Links:	1 link
Repository Workspace:	Build: Sample App (IWD)
Snapshot:	jke.cloud_I20111118-1940

General Information

Requested by:	William P. Higgins
Build Definition:	jke.cloud
Build Engine:	devops-jbe-cloud1
Build History:	16 builds
Tags:	

☑ Deletion allowed

Delivery feedback on the build result



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		
Installing application		
Application is now ready for use		
Started test application at 9.42.76.92		

Build jke.cloud I20111118-1940

JUnit Tests

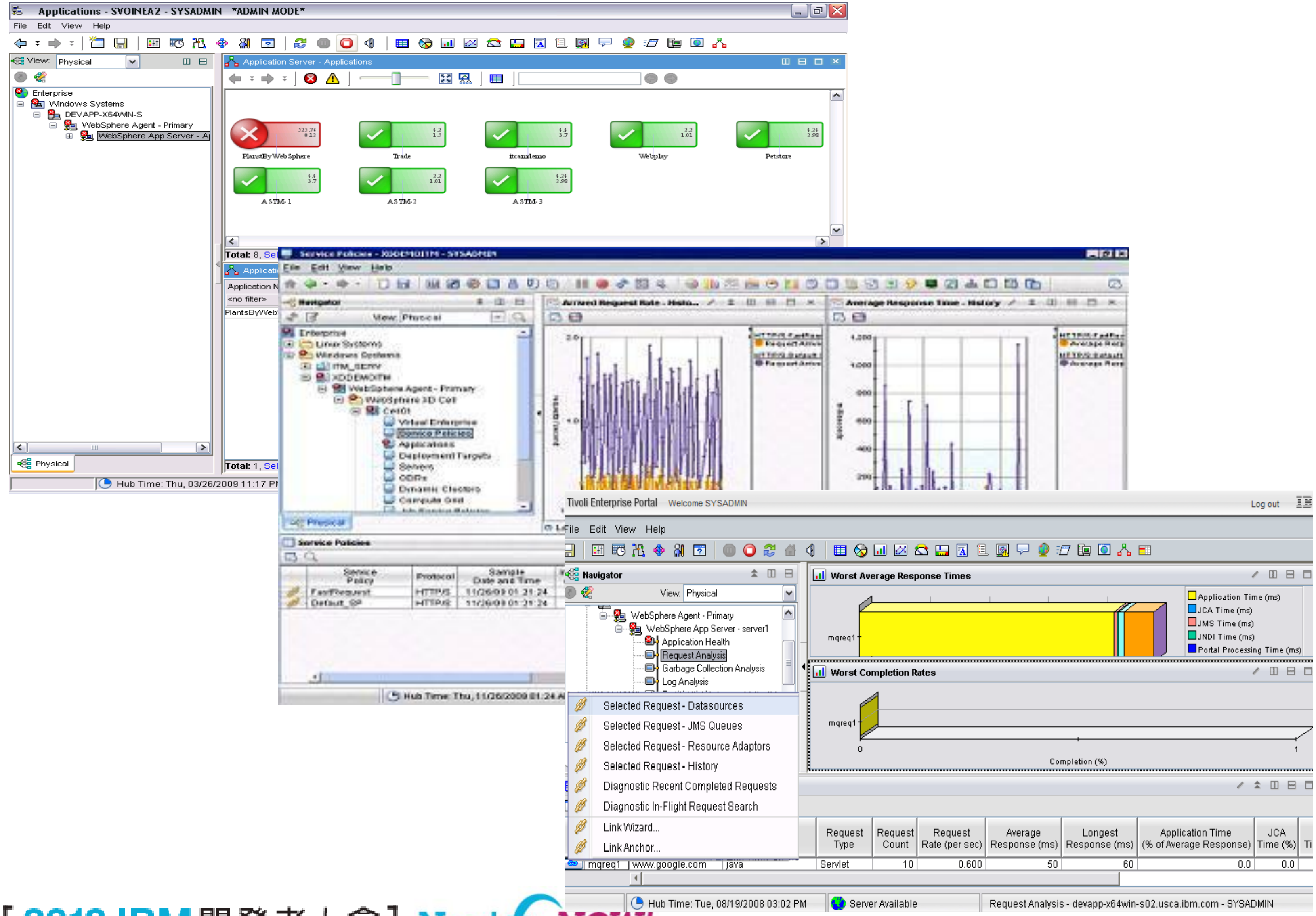
Name	Tests	Failures	Errors	Time Taken	Run Order
com.jke.junit.AllTests	46	0	0	14 s	
JKEFunctionalTests	3	0	0	3 s	
JKEFunctionalTests.A new JKE website was deployed	1	0	0	106 ms	1
JKEFunctionalTests.A user tries to log in to the JKE website	1	0	0	3 s	2
JKEFunctionalTests.A user tries make a transaction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

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

Review performance metrics for running application



			Request Type	Request Count	Request Rate (per sec)	Average Response (ms)	Longest Response (ms)	Application Time (% of Average Response)	JCA Time (%)	Ti
mqreq1	www.google.com	java	Servlet	10	0.600	50	60	0.0	0.0	

Hub Time: Thu, 03/26/2009 11:17 PM

Hub Time: Thu, 11/26/2009 01:24 A

Hub Time: Tue, 08/19/2008 03:02 PM | Server Available | Request Analysis - devapp-x64win-s02.usca.ibm.com - SYSADMIN

Summary

- The time for DevOps is now!
- Successful DevOps requires a cultural change, standardization of processes, and implementation of automation technologies
- Cloud Computing is often the catalyst for DevOps projects

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