

持續部署，加快交付-- UrbanCode 靈活部署搶先 上市

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2014 IBM 開發者大會
開發速戰，行動速決!




IBM DevOps : 通過軟體驅動創新的產品和軟體持續交付方法

企業通過持續的軟體交付能力，抓住市場機會，縮短獲得客戶回饋的時間。

加快軟體的交付
更快地實現價值

持續的監控 

在速度,成本,品質
和風險間取得平衡
提高創新能力

持續客戶反饋
和優化 

縮短客戶回饋
的時間
改善客戶體驗



持續的業務規劃



協同合作開發



持續的測試



持續的發佈和部署

企業勝出的關鍵— 透過軟體, 驅使商業應用的創新

海量資料

Insights on new products by more efficiently interpreting massive quantities of data



雲端

Demand for apps requires fast, scalable environments for dev and test, as well as production



社群 Business

Broader set of stakeholders collaborates to deliver continuous innovation and value



行動裝置

Modern workforce expects constantly updated software to connect to enterprise systems



物聯網設備

Industry requirements demand faster response to regulations and standards, with traceability and quality



API Economy

Software component in smart products driving increased value and differentiation



Software delivery

加速軟體交付能力, 讓你的企業保持領先優勢, 搶佔市場, 創造更豐富的營收



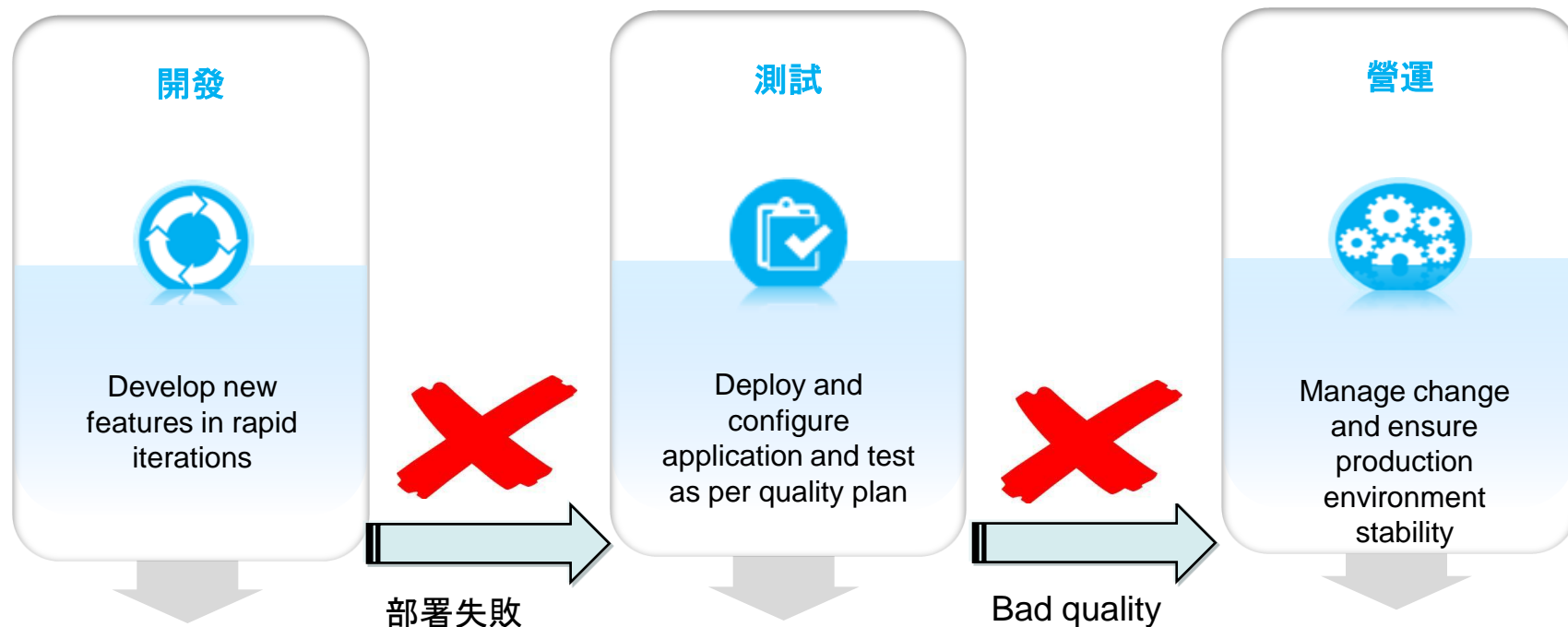
現況--許多企業仍舊依靠手動方式進行部署

- 開發人員與系統管理員透過email及file shares 交接
- Developers, QA, 及 Ops 用不同的方式在維護/部署
- 開發人員與系統人員出了問題時才緊急密切連繫
- 部署步驟寫成厚厚一本文件
- “週末部署” 變成大家習慣的名詞
- 開發人員知道營運環境的 passwords

結果導致:

- 部署非常緩慢
- 在Dev, QA, Prod 環境的執行結果不一致
- 部署到營運環境時失敗
- 權限管控不當, 未管制誰?什麼時間?從什麼工具?發佈了什麼內容?

手動開發、測試 部署所造成的影響



缺乏與營運環境相近的環境，導致在部署到營運環境是不預期的錯誤以致交付延誤

手動設定導致安裝測試環境的時間延誤，讓能夠執行測試的時間變少，因而影響品質

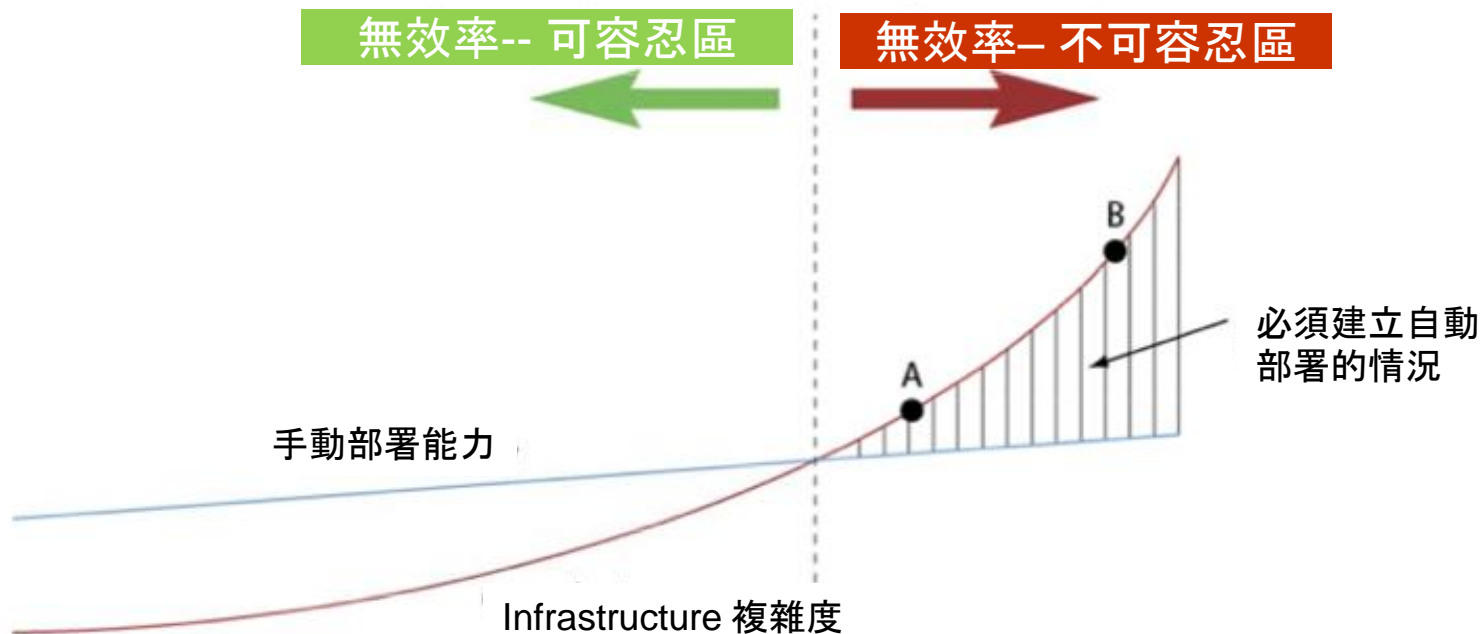
太多測試環境申請請求，減少了系統管理員花在營運環境的時間，影響到線上系統品質

挑戰 -- Infrastructure的複雜性愈來愈高，愈來愈難用手動部署的方式掌控



簡單的環境

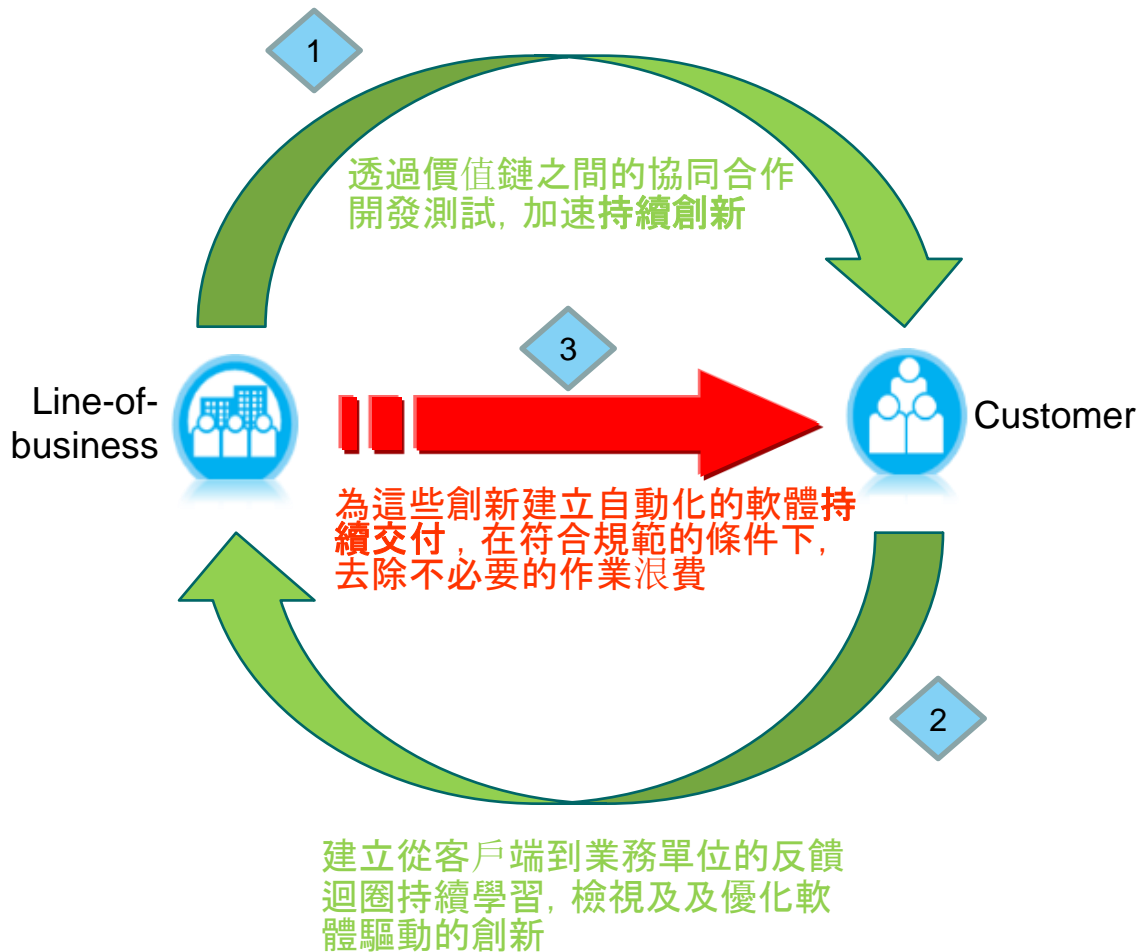
大規模、複雜環境



Gartner 的報告發現大部份的IT 人員他們的環境屬於“非常複雜”(50%), 或“無法控制”(17%)

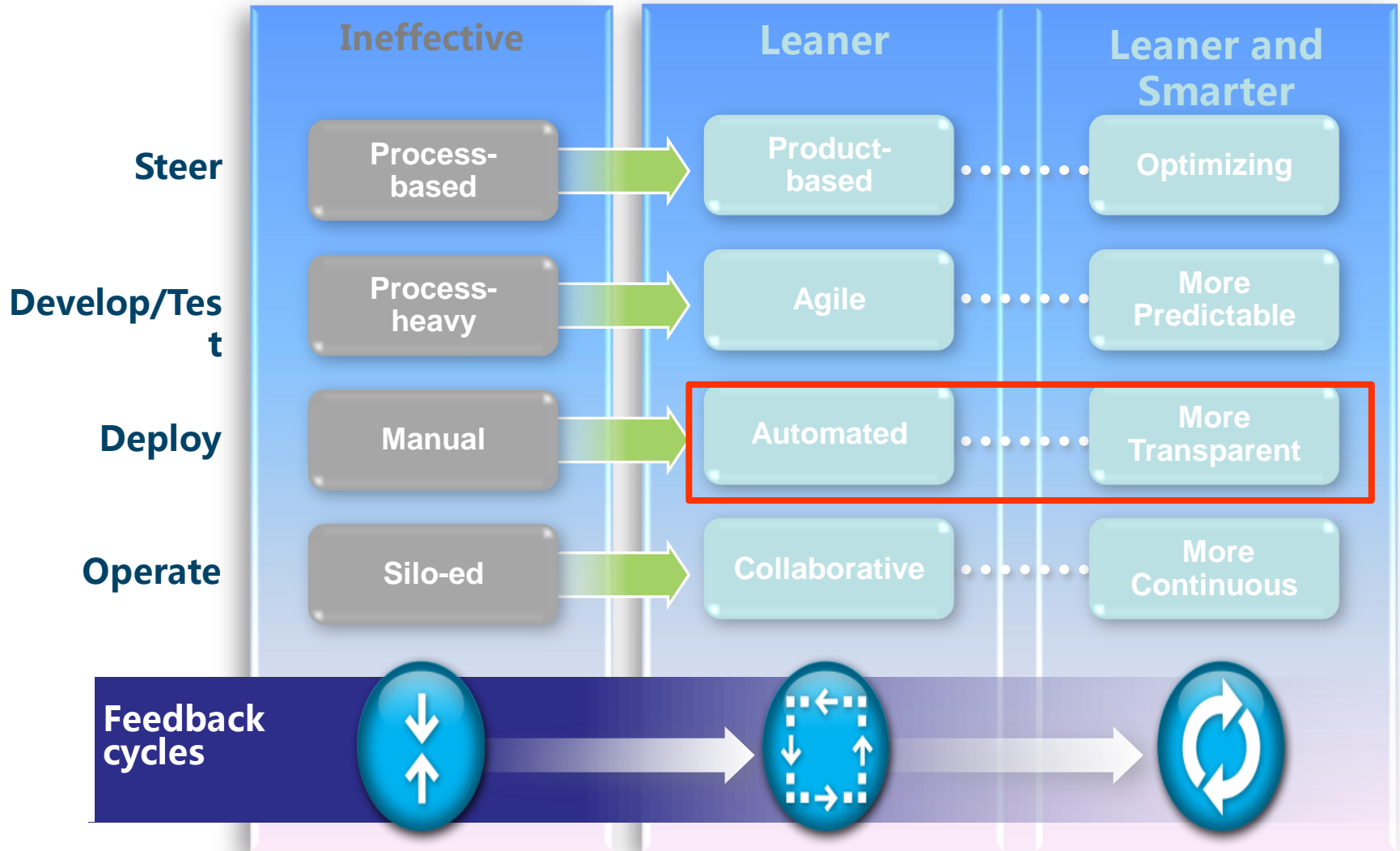
* 資料來源: “Catalysts Signal the Growth of DevOps” Cameron Haight - Gartner Feb 2012 . I performed the calculations.

DevOps approach: Lean 的指導原則

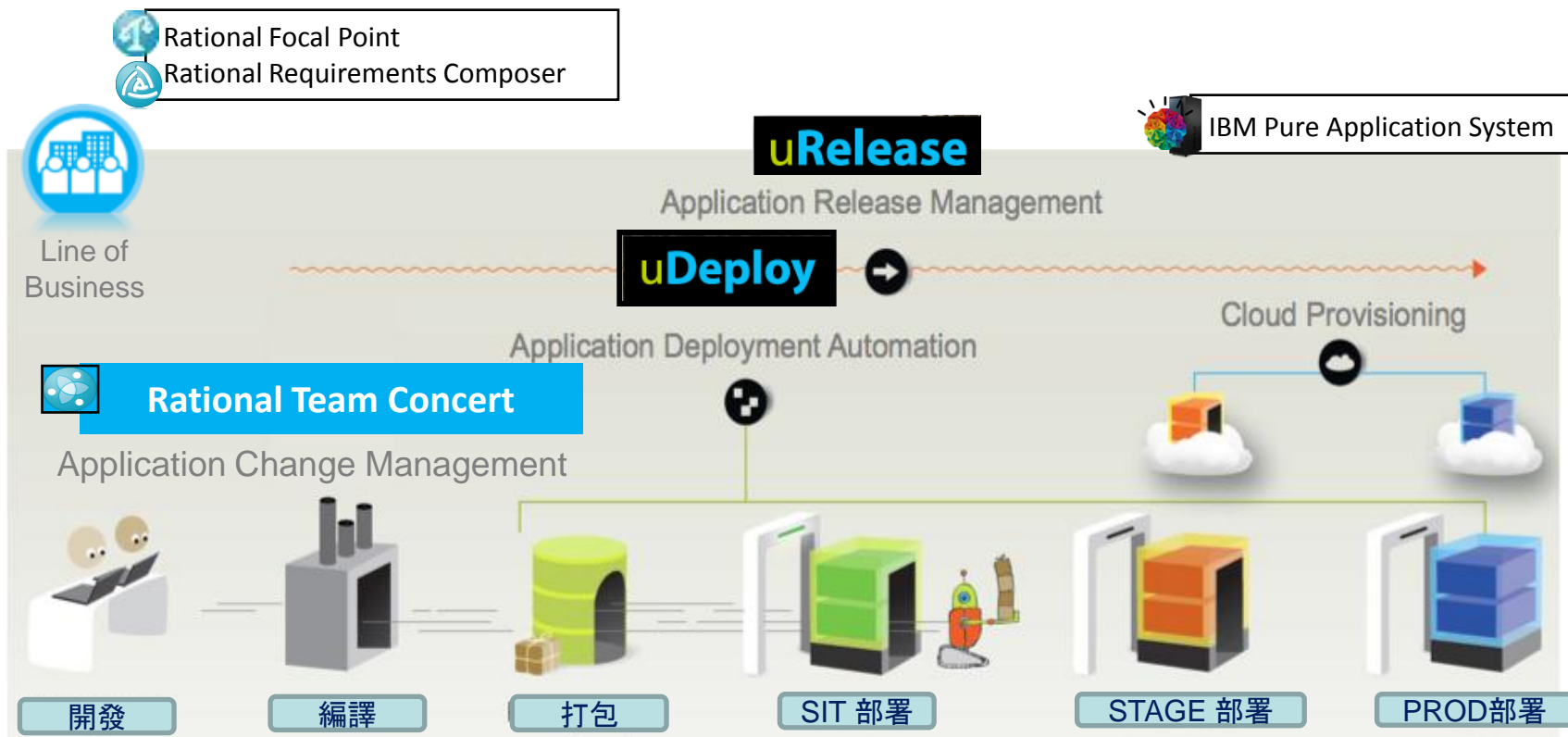


- 去除任何對於學習使用者想要的東西無關的活動。
- 去除因為人工作業等待及耽擱的時間, 以及只靠口耳相傳的技術知識。
- 讓知識工作者, 業務分析師, 開發人員, 測試人員, 及其它領域的專家能夠專注在創造性的工作。

透過持續反饋，改進交付的有效性



實踐DevOps 的工具鏈



Rational Software Architect
 Rational Developer for z
 Rational Developer for I
 Rational Developer for AIX

Rational Quality Manager
 Rational Test Workbench
 Rational Test Virtualization Server

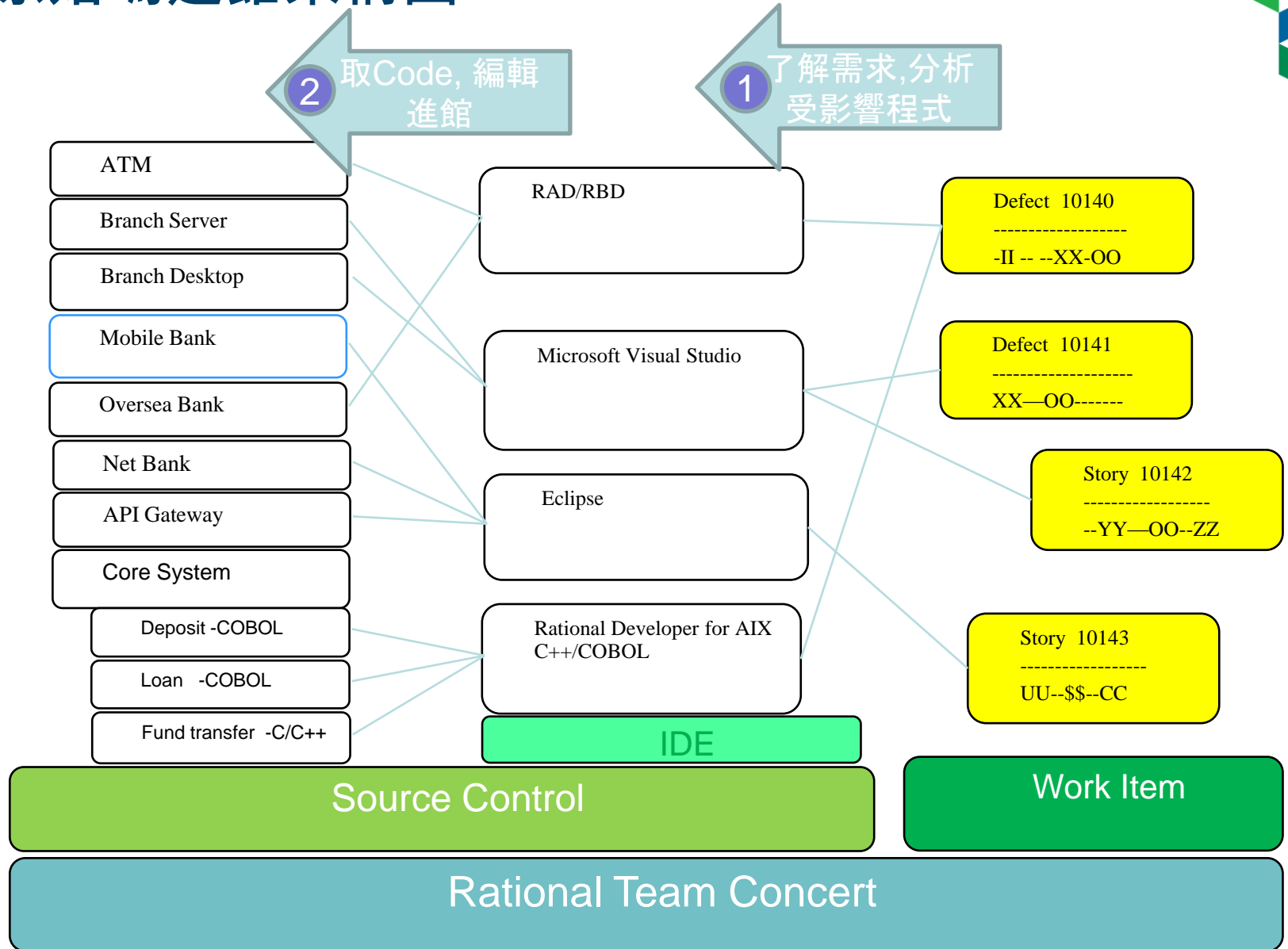
自動化部署工具的考量要件

異動記錄追蹤 Defect/Task Tracking	<ul style="list-style-type: none">▪ Record the original requirement for the change▪ Track the reason why the source code is changed
原始碼版本控管 Source Code Control	<ul style="list-style-type: none">▪ Control the concurrent access to the source▪ Keep the historical version of source code
自動化編譯 Automated Build	<ul style="list-style-type: none">▪ Automatic build in one script▪ Build report with compile/testing log, source changed.
自動化的單元步驟 Automated Process	<ul style="list-style-type: none">▪ Single script reused across environments▪ Controlled access to deployment steps
系統整體的部署流程 Coordinating Tiers	<ul style="list-style-type: none">▪ A model for the entire system▪ Standard deployment based on changes to all pieces and parts
環境定義 Environment Definitions	<ul style="list-style-type: none">▪ Environments as a first-level entity▪ Properties controlled at the environment level
部署標的儲存庫 Artifact Repository	<ul style="list-style-type: none">▪ Definitive library – single source of truth▪ Automated retention policy based on deployments
存取控制 Access Control	<ul style="list-style-type: none">▪ Role-based access control by environment▪ Secure storage of sensitive values (e.g. passwords)
稽核的軌跡 Audit Trail	<ul style="list-style-type: none">▪ Auto record what happened▪ Know “who”, “what”, “where” and “when”

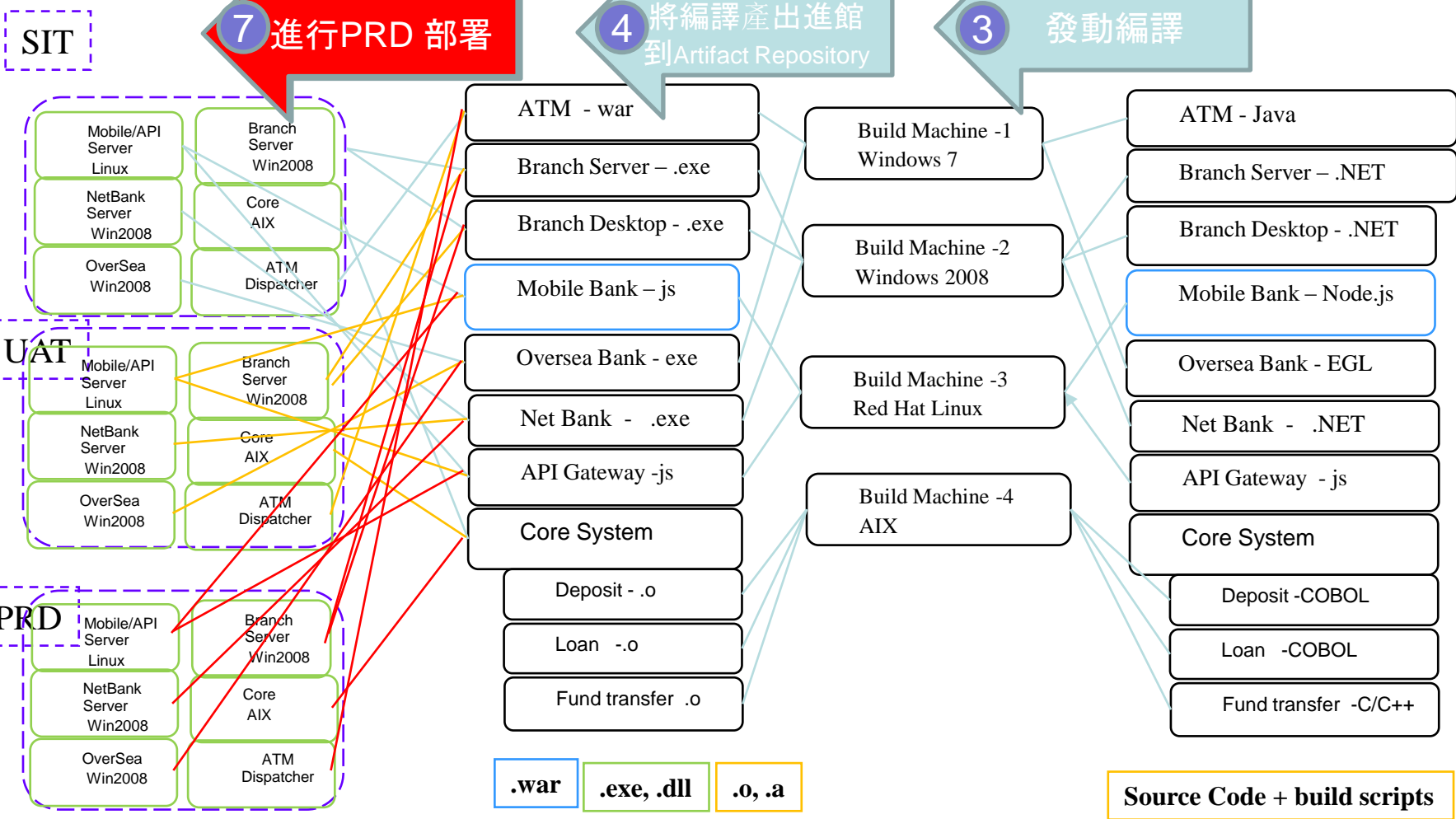


整合變更管理及自動化部署的能力

開發原始碼進館架構圖



上線編譯部署架構圖

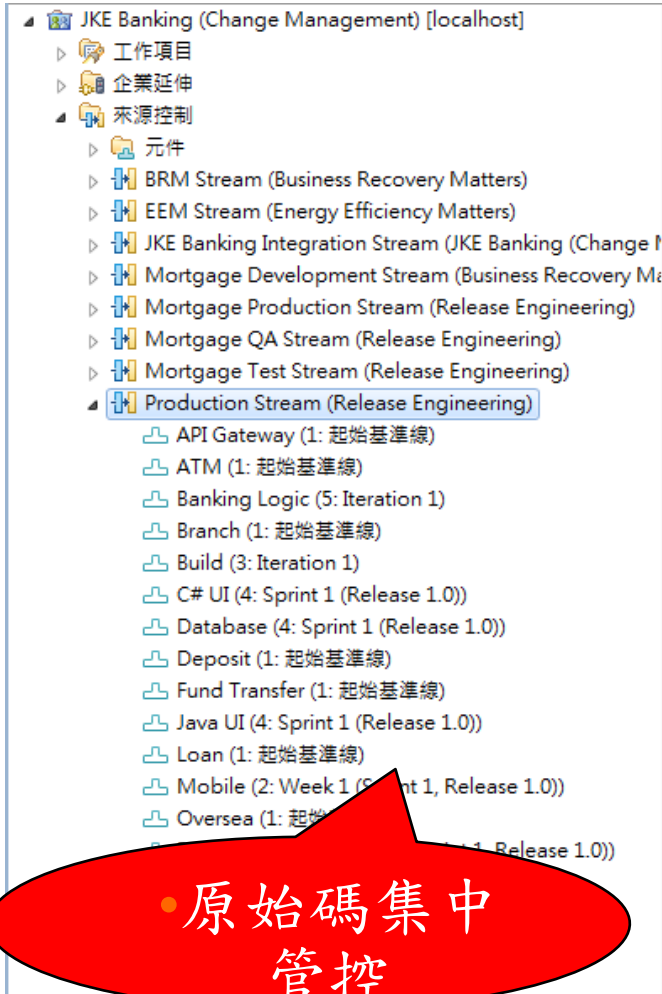


IBM UrbanCode Deploy

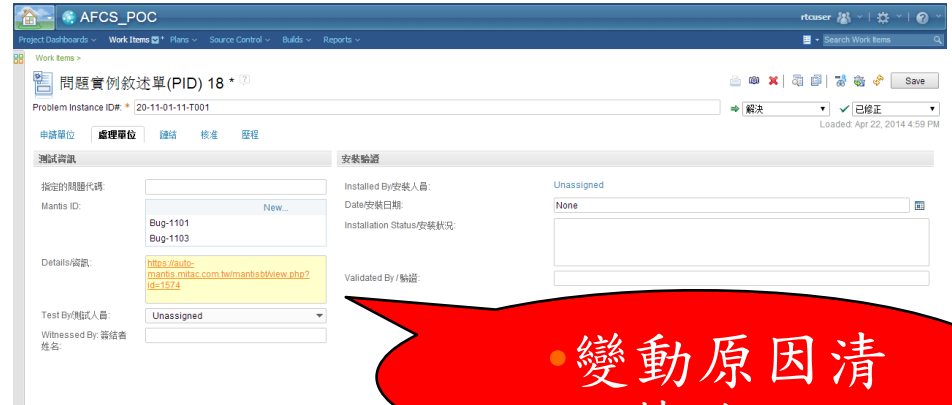
Rational Team Concert

1

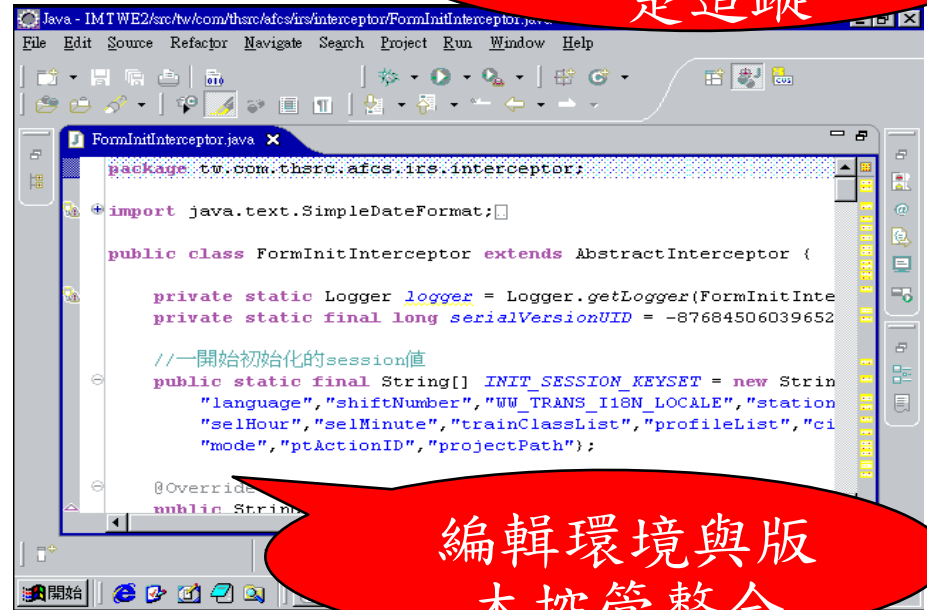
了解需求,分析受影響的程式



• 原始碼集中
管控



• 變動原因清
楚追蹤



編輯環境與版
本控管整合

2

取Code, 編輯, 進館

- 工作項目
- 企業延伸
- 來源控制
 - 元件
 - BRM Stream (Business Recovery Matters)
 - EEM Stream (Energy Efficiency Matters)
 - JKE Banking Integration Stream (JKE Banking (Change Management))
 - Mortgage Development Stream (Business Recovery Matters)
 - Mortgage Production Stream (Release Engineering)
 - Mortgage QA Stream (Release Engineering)
 - Mortgage Test Stream (Release Engineering)
 - Production Stream (Release Engineering)**
 - API Gateway (1: 起始基準線)
 - ATM (1: 起始基準線)
 - Banking Logic (5: Iteration 1)
 - Branch (1: 起始基準線)
 - Build (3: Iteration 1)
 - C# UI (4: Sprint 1 (Release 1.0))
 - Database (4: Sprint 1 (Release 1.0))
 - Deposit (1: 起始基準線)
 - Fund Transfer (1: 起始基準線)
 - Java UI (4: Sprint 1 (Release 1.0))
 - Loan (1: 起始基準線)
 - Mobile (2: Week 1 (Sprint 1, Release 1.0))
 - Oversea (1: 起始基準線)

```
package tw.com.thsrc.afcs.irs.interceptor;

import java.text.SimpleDateFormat;

public class FormInitInterceptor extends AbstractInterceptor {

    private static Logger logger = Logger.getLogger(FormInitInterceptor.class);
    private static final long serialVersionUID = -87684506039652L;

    //一開始初始化的session值
    public static final String[] INIT_SESSION_KEYSET = new String[] {
        "language", "shiftNumber", "UU_TRANS_I18N_LOCALE", "station",
        "selHour", "selMinute", "trainClassList", "profileList", "clientId",
        "mode", "ptActionID", "projectPath"};

    @Override
    public String intercept(ActionInvocation all) throws Exception {
```

History Repository Files Pending Changes Work Items 問題

12 incoming change sets, 1 outgoing change set, 11 component changes

- cm_AFCS_上線區_WS AFCS_PROD
 - ERS
 - Outgoing
 - 17: PID 1-111-T112**
 - ERS/IMTVM2/src/tw/com/thsrc/afcs/irs/irsDataObjects
 - IMCoupon.java
 - IMLineRecord.java

• 程式改動時, 自動產生變更清單, 等待交付

JKE Banking (Change Management) [localhost]

- ▷ 工作項目
- ▷ 企業延伸
- ▷ 來源控制
- ▷ 建置
 - ▷ 建置引擎
 - brm.continuous
 - brm.continuous.vs
 - eem.continuous
 - jke.dev
 - jke.dev.android
 - jke.dev.vs
 - jke.production
 - jke.production.vs
 - jke.qa
 - jke.qa.maintenance
 - jke.qa.maintenance.vs
 - jke.qa.vs

• 自動化測試
功能

I20130322-0057

Build jke.dev I20130322-0057

Test Results

Name	Tests	Failures	Errors	Time Taken	Run Order
com.jke.junit.AllTests	42	0	0	11 s	
com.jke.junit.OrganizationFinderJUnit	1	0	0	9 ms	1
com.jke.junit.AccountLogicJUnit	7	0	0	7 s	2
com.jke.junit.BeanModelJUnit	24	0	0	19 ms	3
com.jke.junit.DBJUnit	4	0	0	1 s	4
testCreateLoadUsers	1	0	0	404 ms	1
testCreateLoadAccountBean	1	0	0	510 ms	2
testCreateLoadTransactionBeans	1	0	0	473 ms	3

Details

Test suite:

Test case:

Time taken:

Overview | Activities | Compilation | Tests | Downloads | Properties

History | Repository Files | Pending Changes | Work Items | 問題 | Team Advisor | Builds | Repository Files

ERS-IMTWE2 - Found 16 Builds (203 ms)

	Build	Label	Progress	Estimate...	Start Time	Duration
✓	ERS-IMTWE2	20140418-1838	Completed		April 18, 2014 6:38:37 PM	14 seconds
✓	ERS-IMTWE2	20140418-1834	Completed		April 18, 2014 6:34:48 PM	16 seconds
✓	ERS-IMTWE2	20140418-1833	Completed		April 18, 2014 6:33:35 PM	12 seconds
✓	ERS-IMTWE2	20140418-1826	Completed		April 18, 2014 6:26:44 PM	15 seconds
✓	ERS-IMTWE2	20140418-1755	Completed		April 18, 2014 5:55:20 PM	16 seconds

4 將自動化編譯結果進館到Artifact Repository



Home > Components > ERS-IMTWE2 > Versions > Version: IMTWE2-20140418-1838

Version: IMTWE2-20140418-1838

Created By admin
Created On 04/18/2014 06:38 下午
Links [add](#) [remove](#)

Main Configuration History

Statuses

Add a Status

Status	Description	Created	By	Actions
No statuses have been assigned to this version.				

[Refresh](#)

Artifacts

Total: 8.5 MB (57 files)

Name	Size	Last Modified	Actions
Show Files			
▶ conf	78 KB (41 files)		
▶ conf_lab	40 KB (8 files)		
▶ conf_trn	38 KB (7 files)		
▼ war	8.3 MB (1 files)		
IMTWE.war	8.3 MB	04/18/2014 06:38 下午	Download

[Refresh](#) [Print](#)

• Compile 產出
結果自動進館，
產生版號

5

佈署到SIT 環境 – 檢視環境

Environments | History | Configuration | Components | Blueprints | Sn

Create New Environment

Drag environments by their names to re-order them.

- ▶ ST | [Play] | [Camera] | More... | Snapshot: None
- ▶ UAT | [Play] | [Camera] | More... | Snapshot: None
- ▶ PRO | [Play] | [Camera] | More... | Snapshot: None

• 選擇目標環境
即可開始部署

• 可檢視目標環
境的運行狀態

Home > Resources

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

Create Top-Level Group | Select All... | Actions... | Show

Expand All Collapse All

<input type="checkbox"/>	Name	Inventory	Status	Description
<input type="checkbox"/>	SCS-FAT			
<input type="checkbox"/>	SCS-Others			
<input type="checkbox"/>	SCS-Hsinchu (View Agent)		Online	
<input type="checkbox"/>	SCS-Taichung (View Agent)		Online	
<input type="checkbox"/>	SCS-Taoyuan (View Agent)		Online	
<input type="checkbox"/>	SCS-Taipei			
<input type="checkbox"/>	SCS-Taipei (View Agent)		Online	
<input type="checkbox"/>	SCS-UAT			
<input type="checkbox"/>	TWE-Taipei			
<input type="checkbox"/>	TWE-Taipei-0001 (View Agent)		Online	
<input type="checkbox"/>	UDeploy Server			
<input type="checkbox"/>	WIN7 (View Agent)		Offline	

6 records - Refresh Print

1 / 1

Rows 10

Run Process on FAT



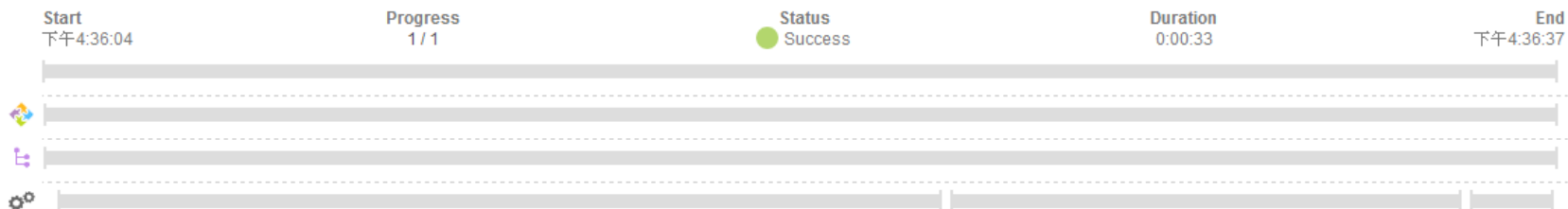
Home > Applications > * ERS-IMTWE2-Express Deploy > Process Request

Application Process Request: * ERS-IMTWE2-Express Deploy

Process

Install ERS-IMTWE2 (Version 3)

Execution

 Dock timeline at top[Expand All](#) [Collapse All](#)

Step	Progress	Start Time	Duration	Status
▼ 1. Install ERS-IMTWE2	1 / 1	下午4:36:04	0:00:33	Success
▼ ERS-IMTWE2	1 / 1	下午4:36:04	0:00:33	Success
▼ ERS-IMTWE2-Express Deploy (ERS-IMTWE2 IMTWE2-20140418-1838)	::	下午4:36:04	0:00:33	Success
1. Backup	::	下午4:36:04	0:00:19	Success
2. Download Artifacts	::	下午4:36:23	0:00:11	Success
3. Install ERS-TWE2	::	下午4:36:35	0:00:02	Success
Total Execution	1 / 1	下午4:36:04	0:00:33	Success

• 部署結果
立即顯示

佈署到UAT 環境 – 發動佈署

Environments | History | Configuration | Components | Blueprints | Sn

Create New Environment

Drag environments by their names to re-order them.

▶ **ST** ▶ ▶ Snapshot: None

▶ **UAT** ▶ ▶ Snapshot: None

▶ ▶ ▶ Snapshot: None

Run Process on FAT

Only Changed Versions

Process *

Select a snapshot, or choose versions for individual components.

Snapshot

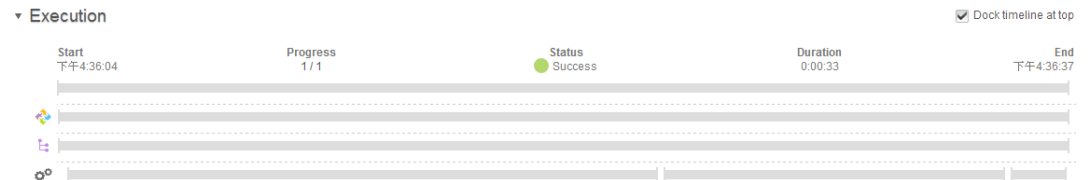
Component Versions

Versions 1 selected (Choose Versions)

Schedule Deployment?

Description

Submit **Cancel**



Expand All Collapse All

Step	Progress	Start Time	Duration	Status
1. Install ERS-IMTWE2	1/1	下午4:36:04	0:00:33	Success
ERS-IMTWE2	1/1	下午4:36:04	0:00:33	Success
ERS-IMTWE2-Express Deploy (ERS-IMTWE2 IMTWE2-20140418-1838)		下午4:36:04	0:00:33	Success
1. Backup		下午4:36:04	0:00:19	Success
2. Download Artifacts		下午4:36:23	0:00:11	Success
3. Install ERS-TWE2		下午4:36:35	0:00:02	Success
Total Execution	1/1	下午4:36:04	0:00:33	Success

• 以相同的流程，相同的部署腳本，部署程式到UAT環境當中

7 佈署到PRD 環境 – 發動佈署

Environments | History | Configuration | Components | Blueprints | Sn

Create New Environment

Drag environments by their names to re-order them.

- ▶ ST | Snapshot: None
- ▶ UAT | Snapshot: None
- ▶ PRO | Snapshot: None

Run Process on FAT

Only Changed Versions

Process * Install ERS-IMTWE2

Select a snapshot, or choose versions for individual components.

Snapshot

Component Versions

Versions 1 selected (Choose Versions)

Schedule Deployment?

Description

Cancel

Execution

Start 下午4:36:04 | Progress 1/1 | Status Success | Duration 0:00:33 | End 下午4:36:37

Expand All Collapse All

Step	Progress	Start Time	Duration	Status
1. Install ERS-IMTWE2	1/1	下午4:36:04	0:00:33	Success
ERS-IMTWE2	1/1	下午4:36:04	0:00:33	Success
ERS-IMTWE2-Express Deploy (ERS-IMTWE2 IMTWE2-20140418-1838)		下午4:36:04	0:00:33	Success
1. Backup		下午4:36:04	0:00:19	Success
2. Download Artifacts		下午4:36:23	0:00:11	Success
3. Install ERS-TWE2		下午4:36:35	0:00:02	Success
Total Execution	1/1	下午4:36:04	0:00:33	Success

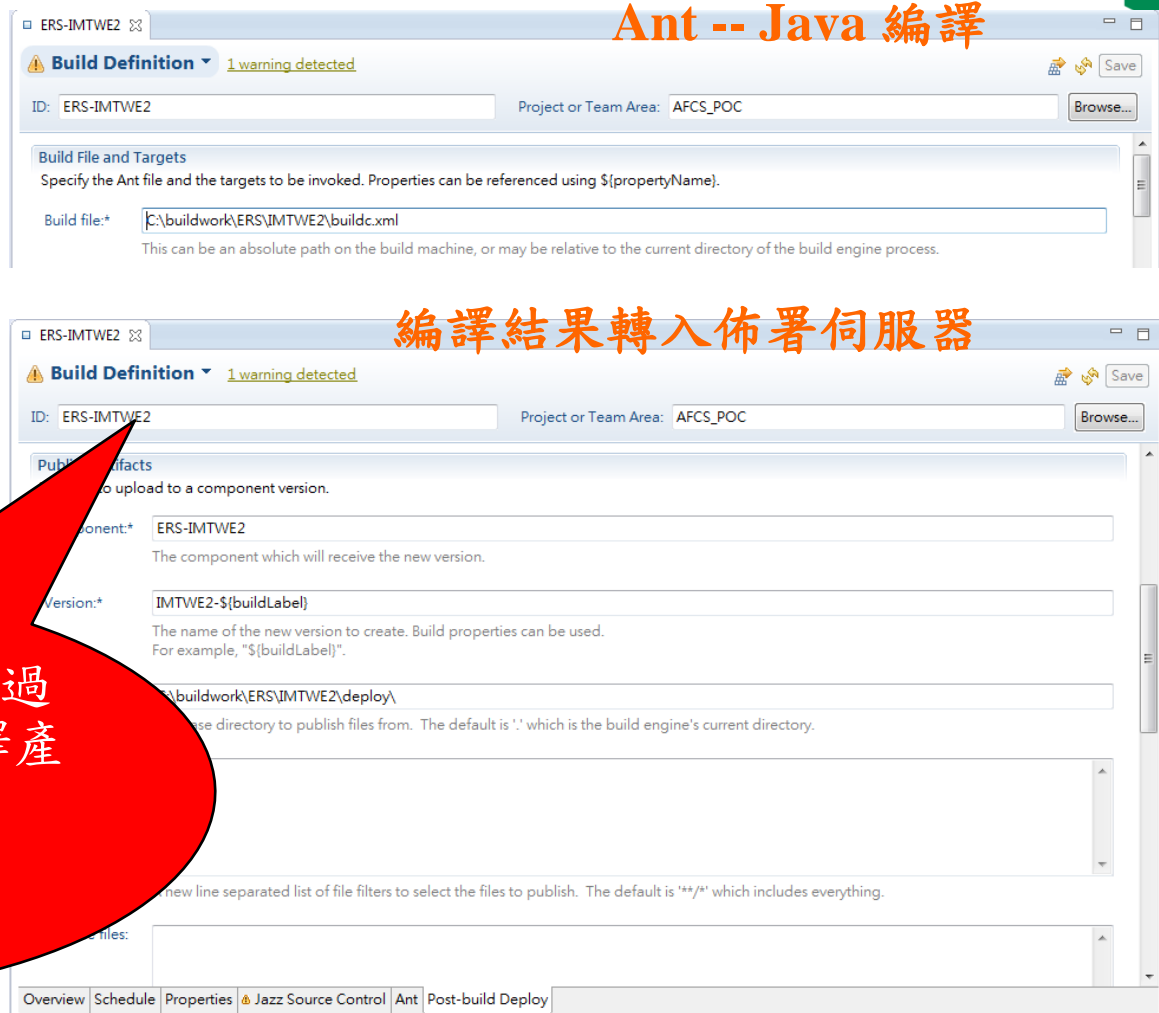
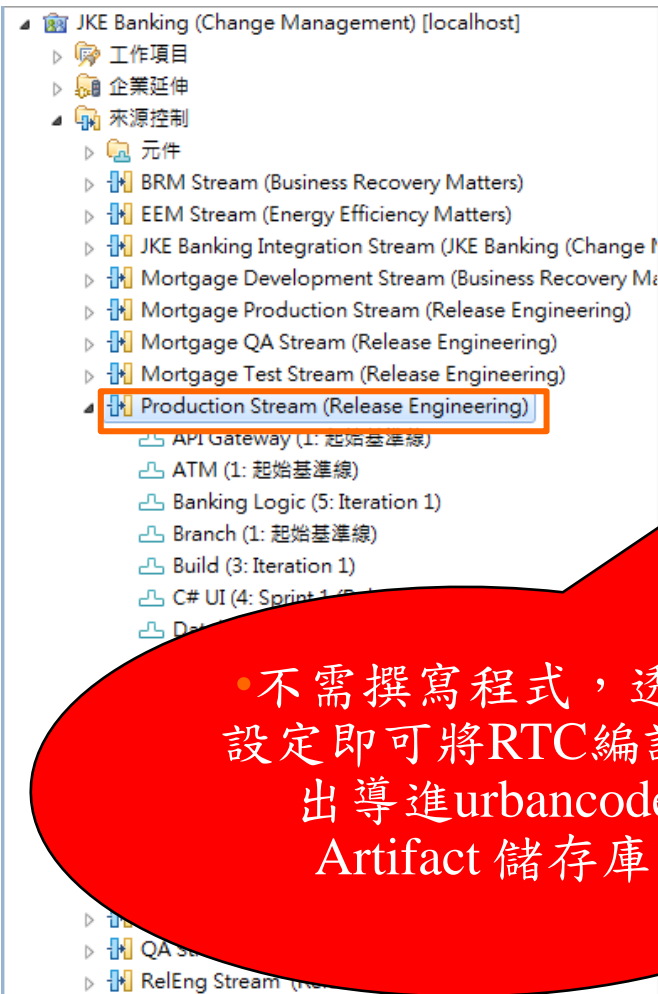
• 以相同的流程，相同的部署腳本，部署程式到PRD環境當中



自動化部署的環境設定

Configuration

編譯及發佈設定



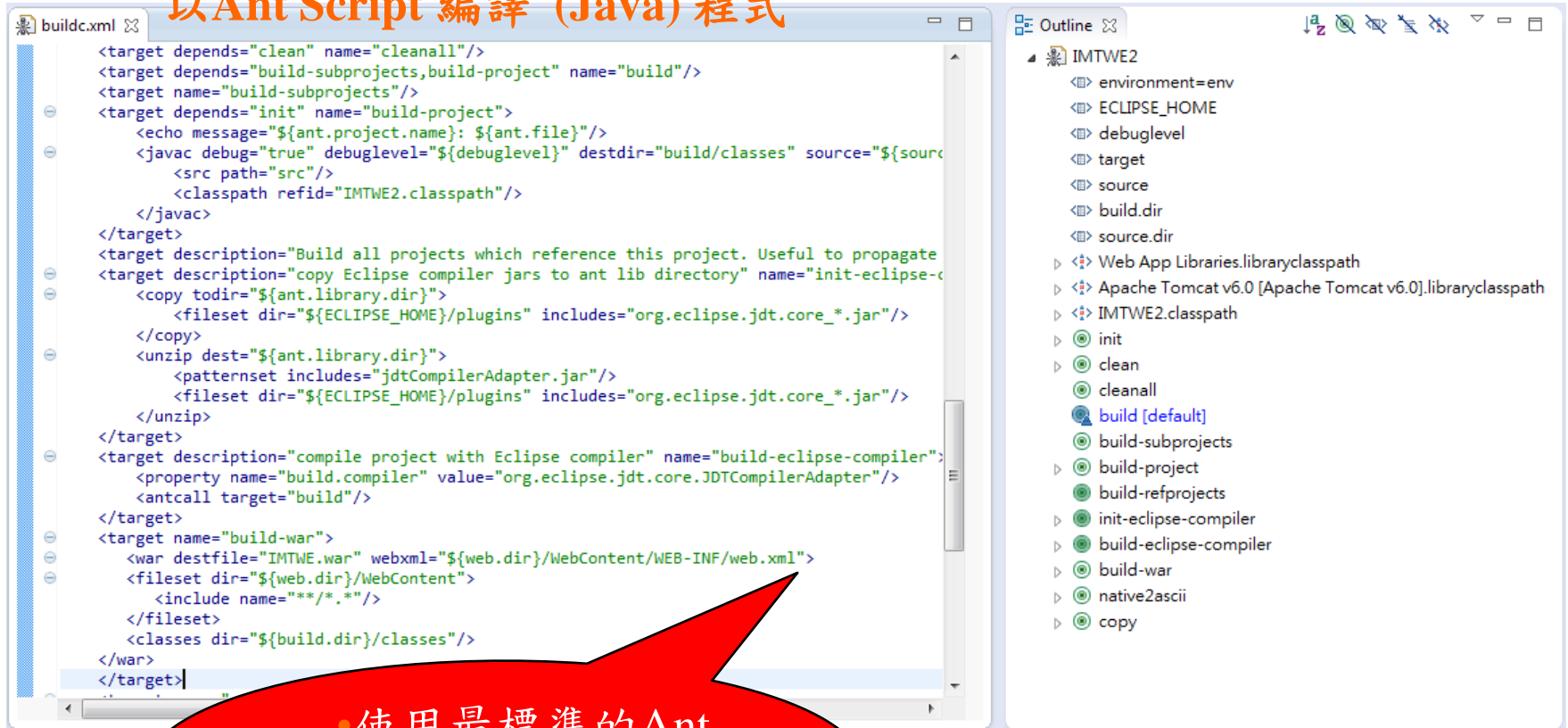
Ant -- Java 編譯

編譯結果轉入佈署伺服器

• 不需撰寫程式，透過設定即可將RTC編譯產出導進urbancode Artifact 儲存庫

編譯腳本撰寫

以Ant Script 編譯 (Java) 程式



```
<target depends="clean" name="cleanall"/>
<target depends="build-subprojects,build-project" name="build"/>
<target name="build-subprojects"/>
<target depends="init" name="build-project">
  <echo message="${ant.project.name}: ${ant.file}"/>
  <javac debug="true" debuglevel="${debuglevel}" destdir="build/classes" source="${source.dir}">
    <src path="src"/>
    <classpath refid="IMTWE2.classpath"/>
  </javac>
</target>
<target description="Build all projects which reference this project. Useful to propagate changes." name="build-subprojects">
  <property name="build.compiler" value="org.eclipse.jdt.core.JDTCompilerAdapter"/>
  <antcall target="build"/>
</target>
<target description="copy Eclipse compiler jars to ant lib directory" name="init-eclipse-compiler">
  <copy todir="${ant.library.dir}">
    <fileset dir="${ECLIPSE_HOME}/plugins" includes="org.eclipse.jdt.core_*.jar"/>
  </copy>
  <unzip dest="${ant.library.dir}">
    <patternset includes="jdtCompilerAdapter.jar"/>
    <fileset dir="${ECLIPSE_HOME}/plugins" includes="org.eclipse.jdt.core_*.jar"/>
  </unzip>
</target>
<target description="compile project with Eclipse compiler" name="build-eclipse-compiler">
  <property name="build.compiler" value="org.eclipse.jdt.core.JDTCompilerAdapter"/>
  <antcall target="build"/>
</target>
<target name="build-war">
  <war destfile="IMTWE.war" webxml="${web.dir}/WebContent/WEB-INF/web.xml">
    <fileset dir="${web.dir}/WebContent">
      <include name="**/*.xml"/>
    </fileset>
    <classes dir="${build.dir}/classes"/>
  </war>
</target>
</target>
```

Outline

- IMTWE2
 - environment=env
 - ECLIPSE_HOME
 - debuglevel
 - target
 - source
 - build.dir
 - source.dir
 - Web App Libraries.libraryclasspath
 - Apache Tomcat v6.0 [Apache Tomcat v6.0].libraryclasspath
 - IMTWE2.classpath
 - init
 - clean
 - cleanall
 - build [default]
 - build-subprojects
 - build-project
 - build-refprojects
 - init-eclipse-compiler
 - build-eclipse-compiler
 - build-war
 - native2ascii
 - copy

• 使用最標準的Ant Script 建立編譯腳本

部署環境設定 (SIT,UAT,PROD)

Statuses [Add New](#)

Name

- Unit Tests Pass
- To PRD: Environment preparation finished
- To ST:ST Approved
- To UAT: SCM Audit Approved
- To UAT: UAT Admin Review Pass
- To PRD: ITIL Order reached change status

Environment Contents and Status

Select an Environment:

Environments | History | Configuration | Components | Blueprints | Sn

[Create New Environment](#)

Drag environments by their names to re-order them.

▶ ST	▶	📷	More...	Snapshot: None
▶ UAT	▶	📷	More...	Snapshot: None
▶ PRO	▶	📷	More...	Snapshot: None

- 可設立關卡，確保變更通過每道測試

部署點之代理程式安裝及設定 (Agent)

Home > Resources

Resources Resource Templates Agents Agent Pools Cloud Connections

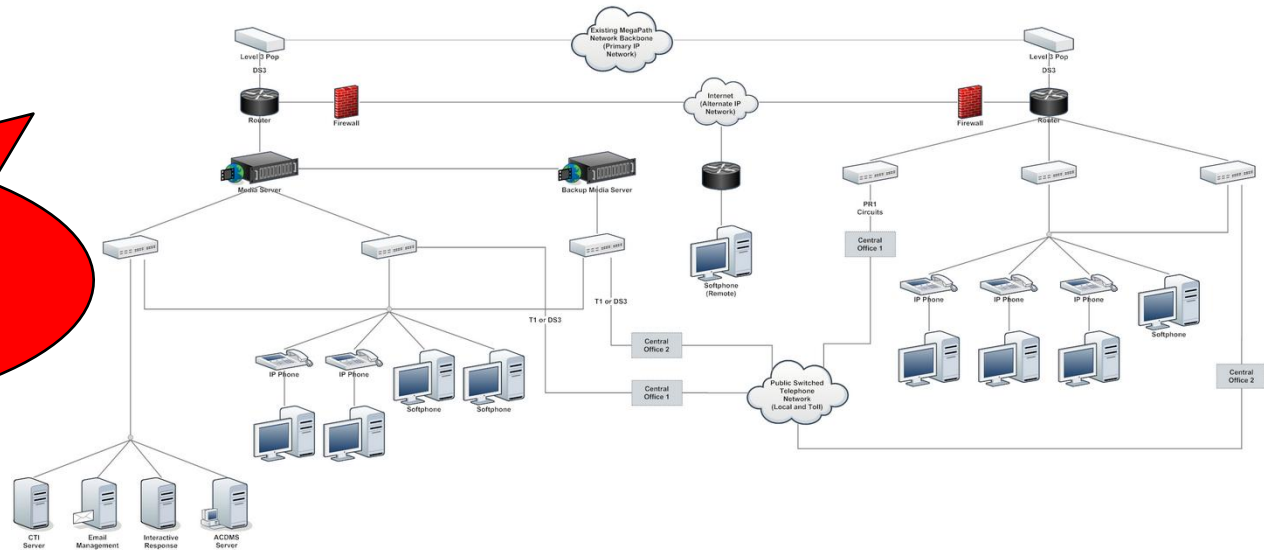
Create Top-Level Group Select All... Actions... Show

Expand All Collapse All

Name	Inventory	Status	Description
Show Filters			
SCS-FAT			
SCS-Others			
SCS-Hsinchu (View Agent)		Online	
SCS-Taichung (View Agent)		Online	
SCS-Taoyuan (View Agent)		Online	
SCS-Taipei			
SCS-Taipei (View Agent)		Online	
SCS-UAT			
TWE-Taipei			
TWE-Taipei-0001 (View Agent)		Online	
UDeploy Server			
WIN7 (View Agent)		Offline	

6 records - Refresh Print

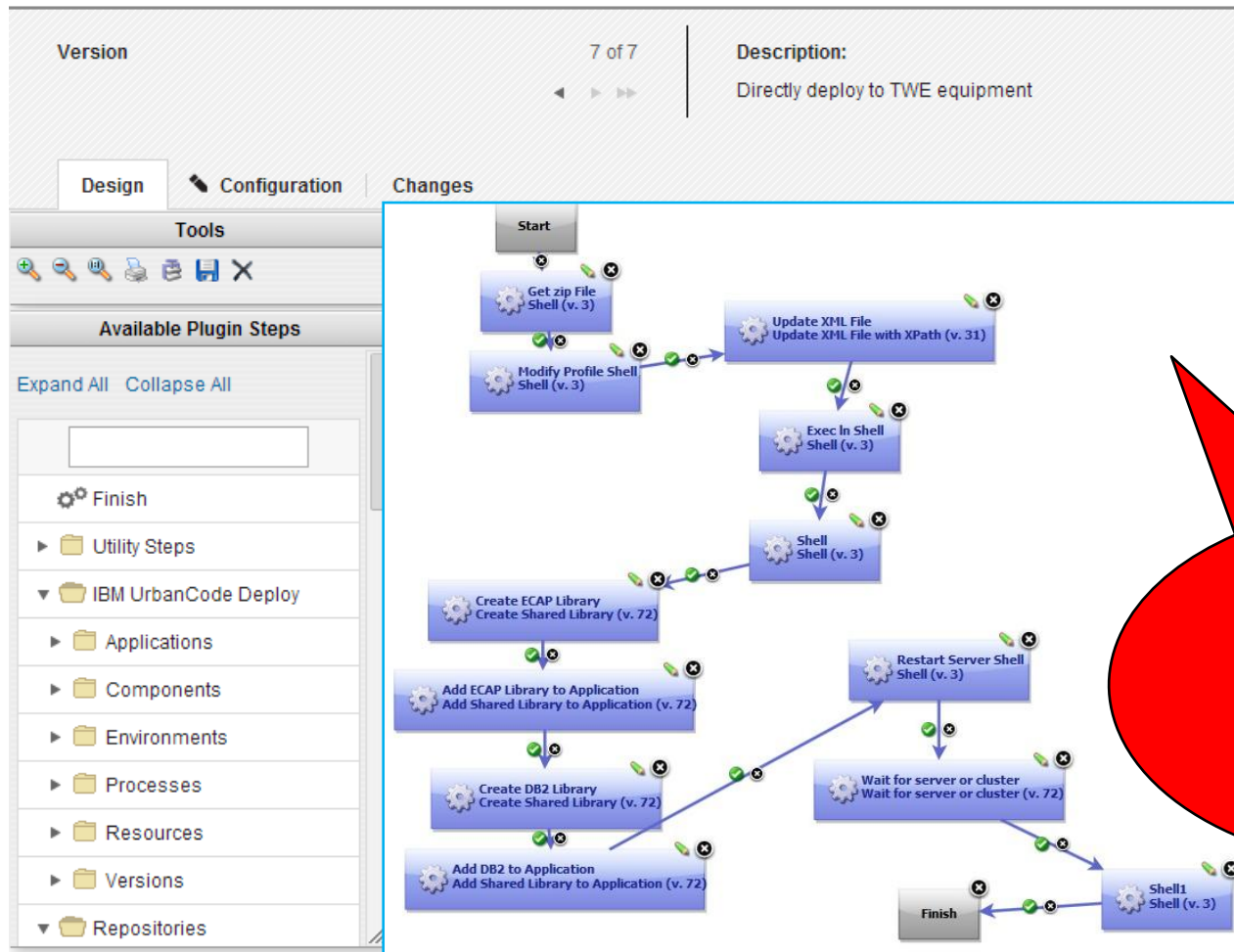
uDeploy 可即時監控部署點的狀態



佈署腳本設定

Home > Components > ERS-IMTWE2 > Processes > Process: ERS-IMTWE2-Express Deploy




Process: ERS-IMTWE2-Express Deploy








• 以圖形化方式
設定部署步驟
及流程

透過預設的Plug-in，節省撰寫佈署腳本時間，提升可維護性

New and Noteworthy

<p>IBM WebSphere Commerce</p> <p>504470</p>  <p>IBM UrbanCode Deploy</p>	<p>DataPower Configuration Manager</p> <p>1</p>  <p>IBM UrbanCode Deploy</p>	<p>Google Android SDK</p> <p>1</p>  <p>IBM UrbanCode Deploy</p>	<p>Category</p> <p>Mobile</p> <p>Description</p> <p>View a demo of this plug-in here The Android SDK plug-in includes steps to achieve continuous delivery of Android applications by interacting with emulators and physical devices.</p> <p>Go To Plugin</p>
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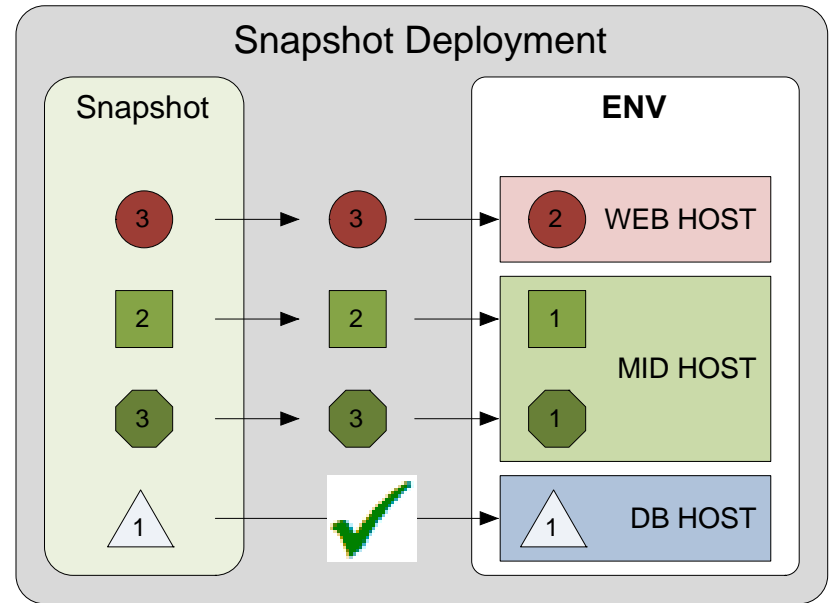
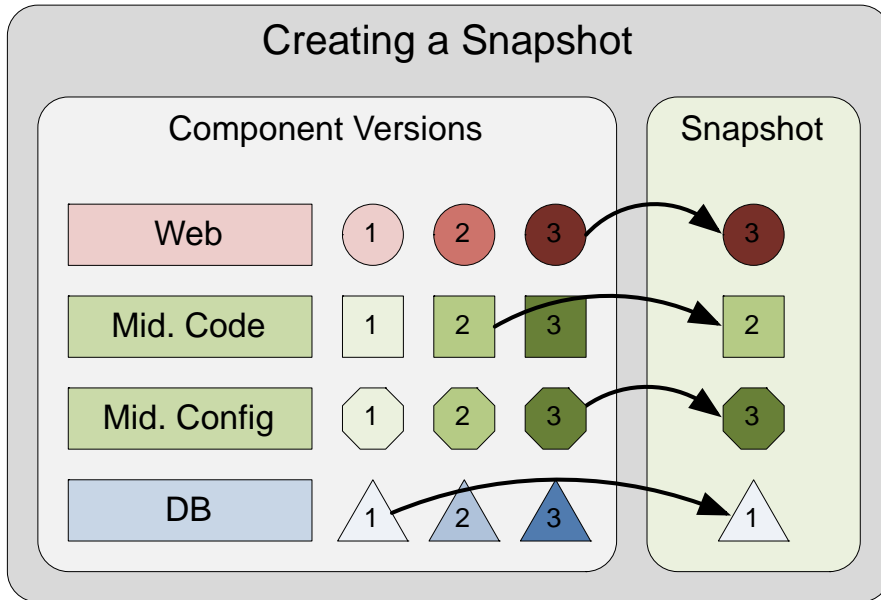
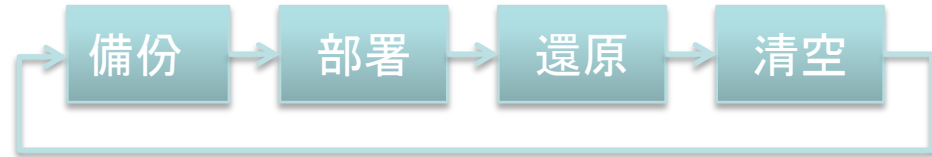
Most Popular

<p>IBM Middleware Configuration for WebSphere</p> <p>6.140530</p>  <p>IBM UrbanCode Deploy</p>	<p>Tomcat</p> <p>4.455075</p>  <p>IBM UrbanCode Deploy</p>	<p>IIS AppCmd</p> <p>2.423623</p>  <p>IBM UrbanCode Deploy</p>	<p>F5 BIG-IP</p> <p>8</p>  <p>IBM UrbanCode Deploy</p>	<p>IBM WebSphere – Application Deployment</p> <p>72.508186</p>  <p>IBM UrbanCode Deploy</p>
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內建數十種平台的部署精靈，只須設定，不須撰寫部署腳本

Snapshot上版

當多個元件的版本有相依性時
可用Snapshot
上版



uRelease – Release 計劃與跨部門協調

如果遇到大規模上版時，可能需要AP Team, 作業部, 網路部, 資安部, 管制部門的配合，這時可透過uRelease來協助。

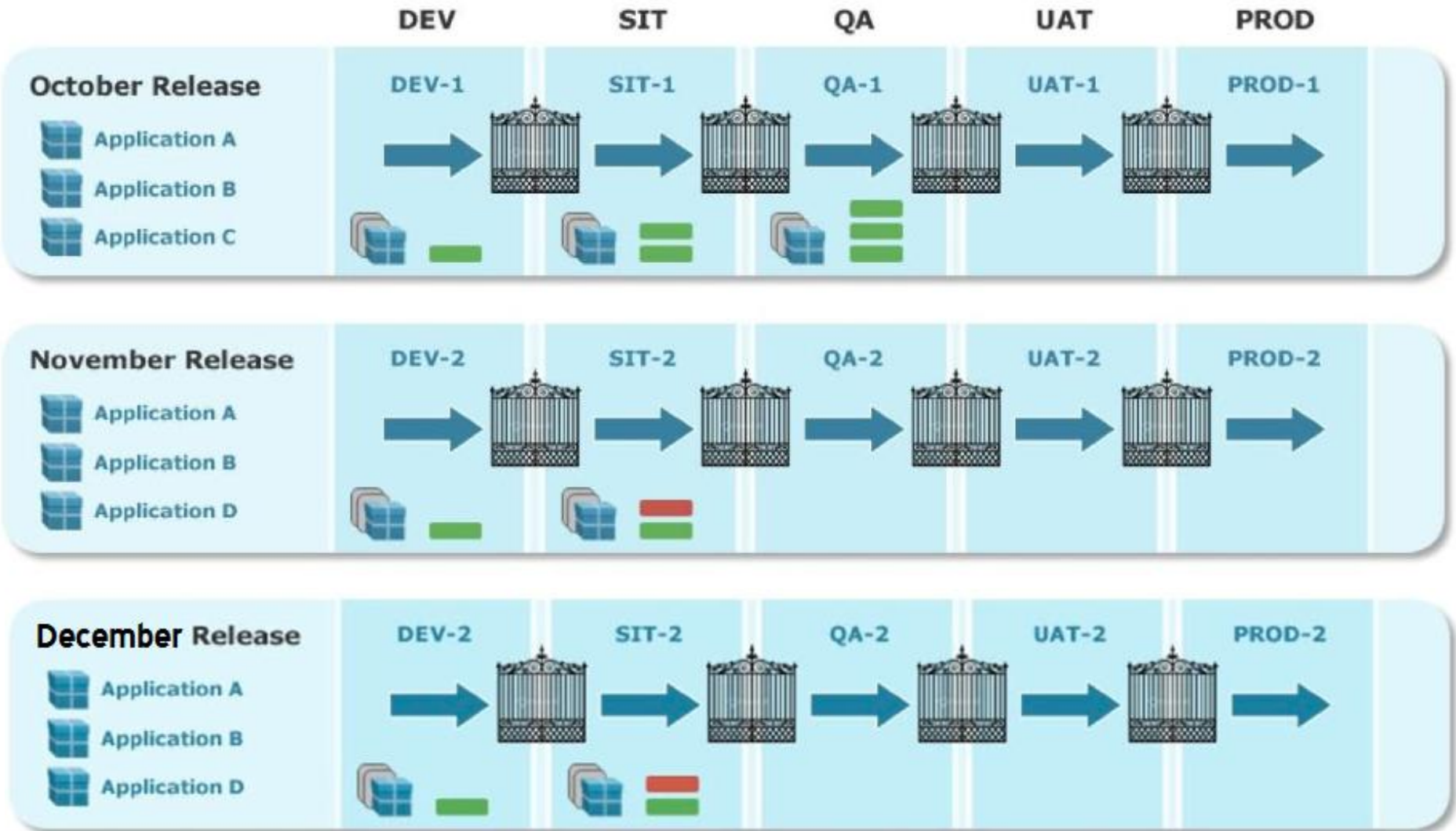
The screenshot displays the uRelease interface for a deployment plan. At the top, it shows 'uRelease Deployments' and user information 'Otto Ops help logout'. The main heading is 'Home > Scheduled Deployments > Pets Online 1.1.x:PROD-1 at Mon Jun 03 04:00:00 UTC 2013'. Below this, there are two tabs: 'Execution & Deployment Plan' (selected) and 'Contents & Notifications'. The 'Deployment Plan' section includes an 'Abort Deployment' button and status filters: Empty, Not Started, In Progress (selected), Failed, Aborted, and Complete. A 'Time Remaining' counter shows 00:01:04. A 'Percent Complete' pie chart shows 29%. 'Waiting / Late Tasks' lists 'Configure Something' (2 Mins Late) and 'Update server.properties' (Waiting). 'Task Count' shows: Planned: 13, Waiting: 1, In Progress: 1, Total Remaining: 15, Not Applicable: 0, Skipped: 0, Complete: 3, Failed: 0. Below this, a table lists tasks:

Start Time	Plan	Actual	Name	Application	Type	Role	User	Actions
(Not-Applicable)	0h-15m	0h-00m	Convert-Datasources to-use-Oracle-RAC syntax	None	Manual	Operations	otto_ops	-Reopen
6/2/13, 12:44 AM	0h 00m	0h 01m	Configure Something	None	Manual	Operations	otto_ops	Complete Skip Fail
6/2/13, 12:44 AM	0h 03m	-	Update server.properties	None	Manual	Operations	None (Claim)	Start Skip

Other tasks shown include 'Bleed Over Sequence' (0% complete, 0h 40m, Not Started) and 'Deploy Database Changes' (0% complete, 0h 00m, Not Started).

• 透過uRelease功能，可以建立需求多部門配合的上版排程計劃

uRelease 可協助計劃性上版

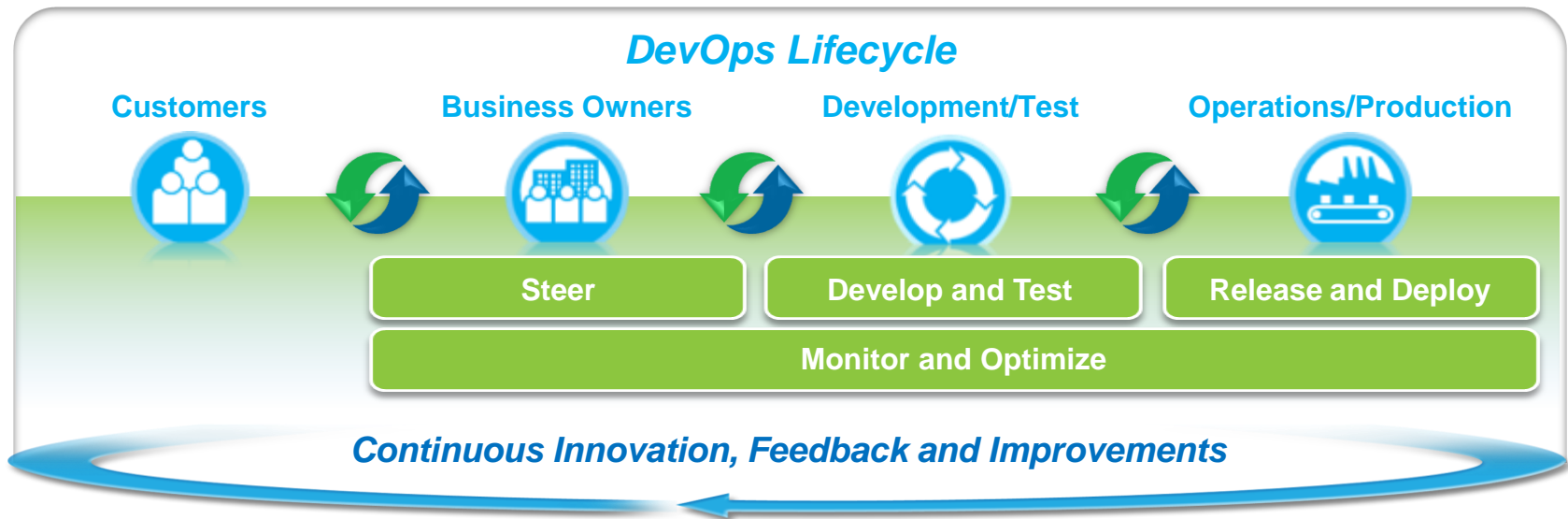




IBM DevOps 解決方案的效益

Recap: DevOps 能支持創新，讓維持企業領先優勢

持續軟體交付--讓客戶抓位市場機會，縮短客戶反饋時間，是企業必須具備的能力



加速 軟體交付

Expanding collaboration to include customers, LOB and others to eliminate organization silos

平衡速度成本品質與風險

Automating manual processes across delivery lifecycle to eliminate waste/delays and compliance tracking

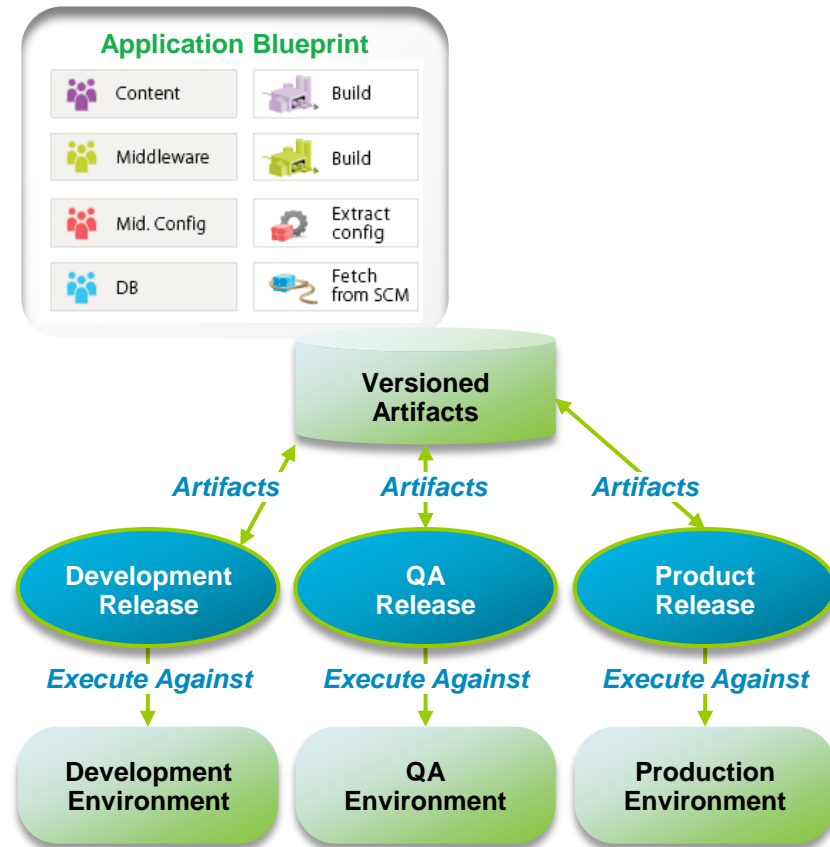
縮短客戶反饋的時間

Enabling a customer feedback loop for continuous improvement

IBM DevOps平台效益

Team Concert + UrbanCode 能協助客戶:

- 減少錯誤: Automated software release and deployment
- 提升生產力: Push-button deployments for developer and operations
- 加速產品上市: Automated release and deployment with built-in best practices provides
- 遵循法規及稽核要求: Enforced Security and traceability



Thank You

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