

IBM Software Group

# 使用RTC3.0實行軟體建置與發佈 管理案例分析

## – Build & Release Management

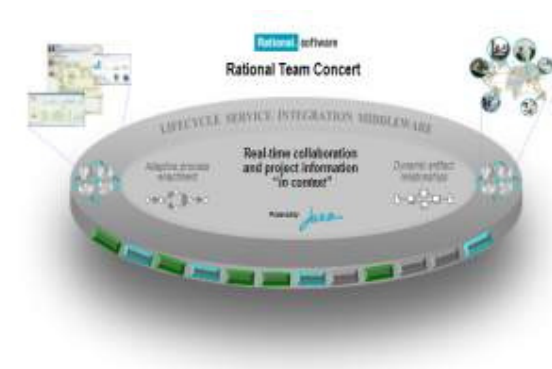


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# Agenda

- 建置管理架構及流程
- 建置佈署關鍵特性
- Q&A



## Jazz Team Build 元件組成及定義

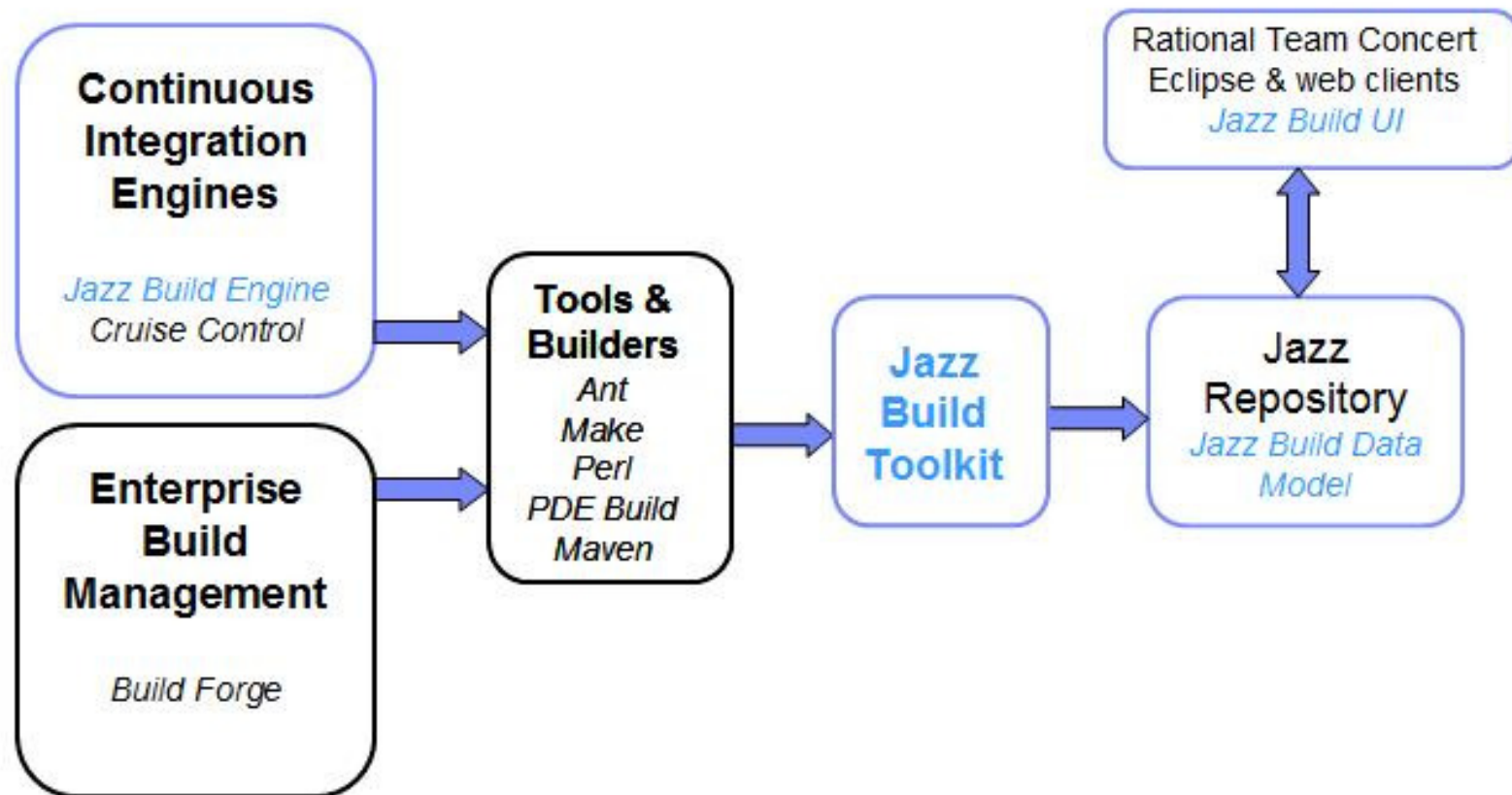
- **Jazz Team Build** 元件可針對團隊的一般建置/佈署，提供自動化、監視和狀態提示支援
- **Jazz Team Build** 提供一個模型來代表團隊的建置定義、建置引擎和建置結果，成員可根據模型之定義提出執行要求：
  - ▶ **建置定義**：\*定義一項建置工作，如每週的專案整合建置(Weekly Build)。
  - ▶ **建置引擎**：代表在建置伺服器上執行的建置系統。
  - ▶ **建置要求**：代表一項「執行建置」要求。
  - ▶ **建置結果**：代表建置的輸出。
- 可使用 **Jazz** 用戶端來執行下列作業：
  - ▶ 提交執行建置定義的要求。
  - ▶ 檢查建置狀態。
  - ▶ 檢視已完成的建置輸出，例如日誌、下載項目和編譯產出物。

\*可使用任何能夠呼叫 **Ant** 的 **Scripting** 技術。或利用 **Perl**、**DOS** 批次檔或 **Make**



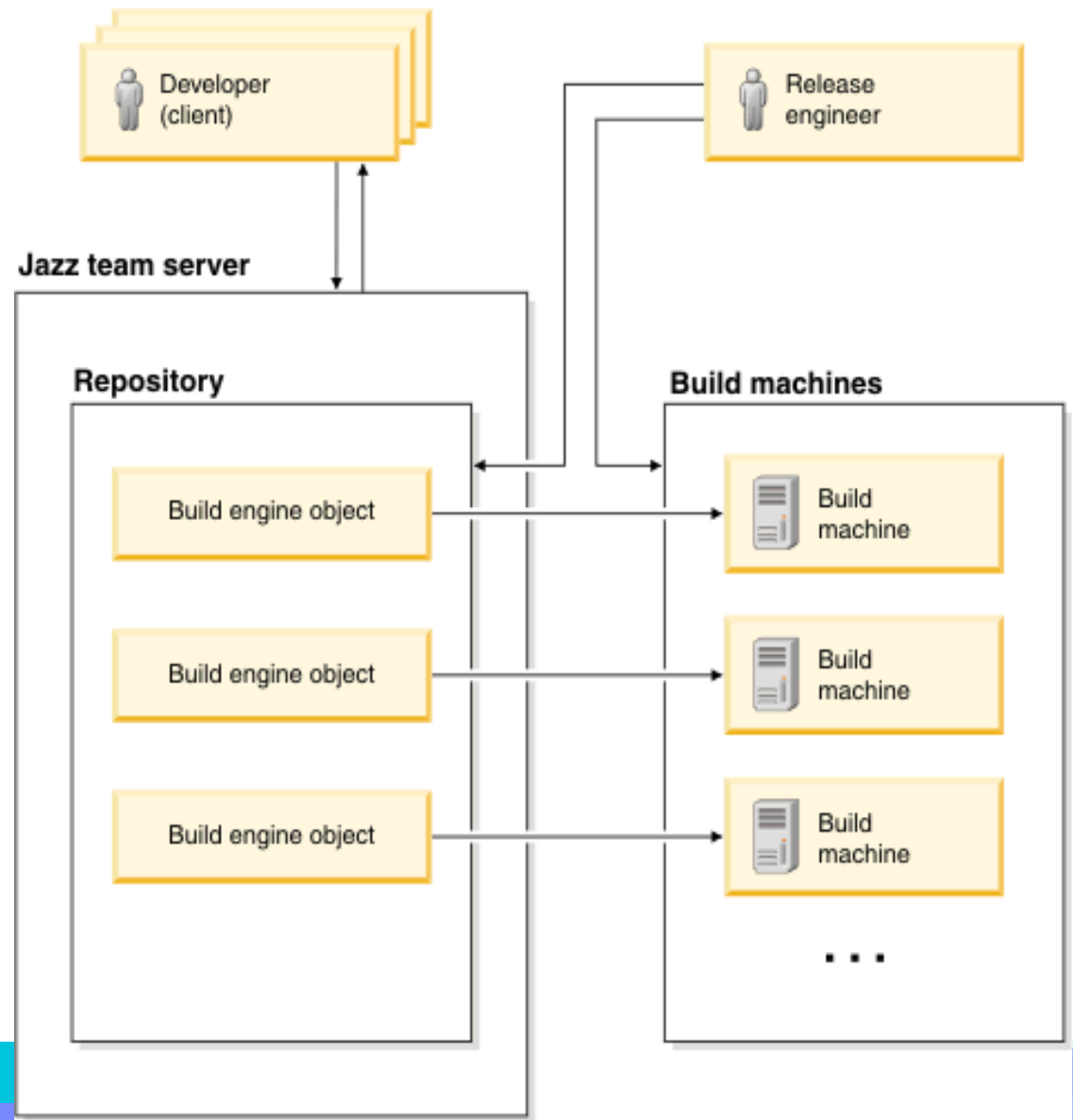
## RTC Jazz Team Build 元件整體性架構

- A Jazz Build Engine, launches the process that will run the build script and collects output



## Jazz Team Build 實際應用示意圖

- **過版工程師**，建立建置引擎和建置定義
- **開發人員**，執行所定義的建置、監視建置進度，以及檢查建置結果
- 建置還可以包括其他步驟，例如，執行**自動化測試**，或在執行**Code Review**等
- 建置定義可以利用**排程**來執行建置
- 可選擇是否根據 Jazz 儲存庫中的**程式碼變更**來建置



## Team Build 建置定義實際應用

- <http://jazz.net/wiki/bin/view/Main/BuildExamples>
- 建置佈署Script應用

可用的建置範本(T)：

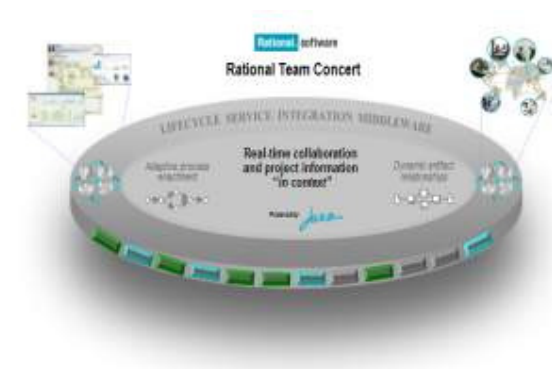
Ant - Jazz Build Engine  
IBM i 建置規格 - Rational Build Agent  
IBM i 指令 - Jazz Build Engine  
IBM i 連續載入 - Jazz Build Engine  
Jazz Build for Microsoft Visual Studio 解決方案 - Jazz Build Engine  
Maven - Jazz Build Engine  
Rational Build Forge  
含企業延伸的 Ant - Rational Build Agent  
指令行 - Jazz Build Engine  
指令行 - Rational Build Agent  
相依關係建置 - Rational Build Agent  
通用

- The simplest possible Jazz-based build
- An Ant build
- An Ant build that publishes ECJ and JUnit results
- A Maven build
- Build with AntRunner
- Build with PDE Build
- Using the buildtoolkit in non-Ant environments
  - C++ / make build
  - Perl build
- Builds not using the Jazz Build Engine
  - A simple Ant standalone build



# Agenda

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- 建置佈署關鍵特性
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## RTC Build System Toolkit

- Build System Toolkit 包含 **Jazz Build Engine**，以及 **Ant 作業工具箱**。Jazz Build Engine 是在建置機器上執行建置的連續建置迴圈。
- Jazz Build Engine 執行三個主要功能：
  - ▶ 處理排程及手動的建置要求
  - ▶ 啟動和完成建置
  - ▶ 發佈建置日誌

如果您有另一個您偏好用來執行建置的建置系統或引擎，便可不需要利用 **Jazz Build Engine** 來執行這些功能。**Ant** 建置工具箱中的作業可以執行任何這些功能。您可以從選定的建置引擎或建置 **Script** 來呼叫 **buildtoolkit** 作業，包括取得下一個建置要求、啟動建置、完成建置和發佈日誌。



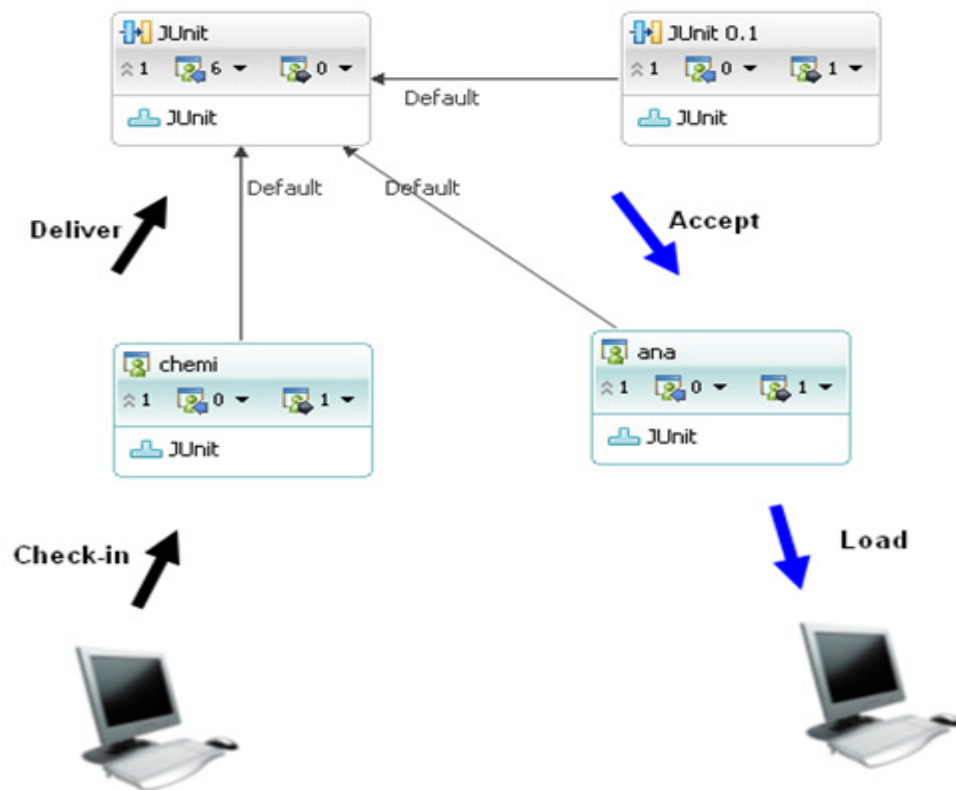


## Build Toolkit -Ant 建置工具箱

- **Ant 建置工具箱**是一組在建置機器和 **Jazz** 儲存庫之間進行通訊的 **Ant** 作業。這些作業可以在建置上執行各種(24項)作業：如
  - ▶ 指示建置進度：使建置能夠提供詳細的進度資訊
  - ▶ 發佈建置構件：讓您的建置發佈這些產出，如可執行檔/Zip等
  - ▶ 發佈建置日誌：利用 **logPublisher** 作業來發佈其他日誌
  - ▶ <!-- Tasks for publishing build results and build contributions. -->
  - ▶ <!-- Tasks for enabling progress monitoring. -->
  - ▶ <!-- Tasks for controlling the build lifecycle. -->
  - ▶ <!-- Tasks for using Jazz Source Control. -->
  - ▶ <!-- Miscellaneous tasks. -->
- 如何使用這些 **Ant** 作業
  - ▶ 請從 `installdir/buildsystem/buildtoolkit/BuildToolkitTaskDefs.xml` 將 `BuildToolkitTaskDefs.xml` 檔中的各筆 `taskdef` 項目複製到專案的 `Ant Script`。



# 整合 Team Build 與 Jazz Source Control / Work Item



- Build engineer build the **change sets** created in a local workspace or a repository workspace
- Builds can be **compared** with other builds or with the contents of a repository workspace or stream
- Build results could be linked to assigned **work item**

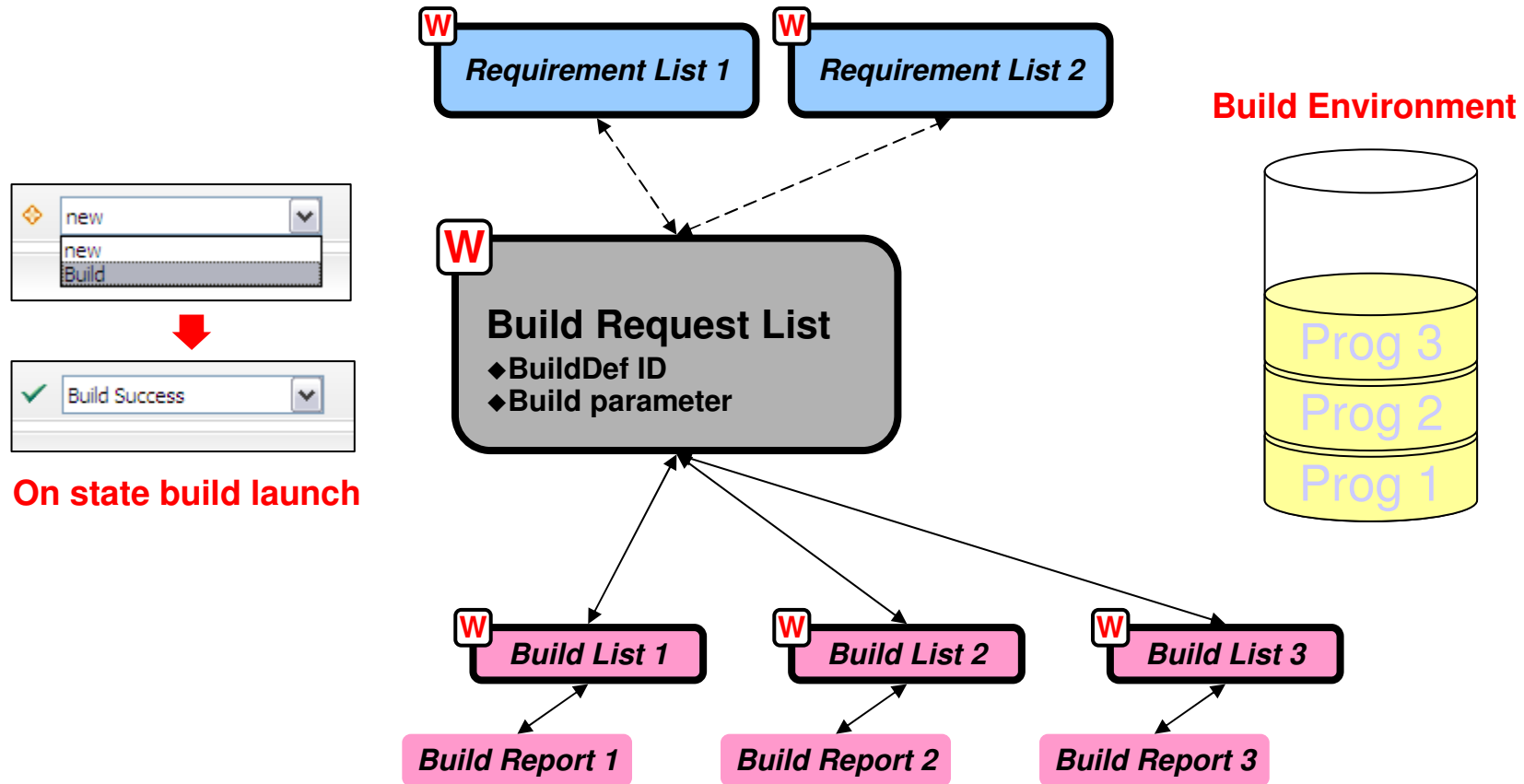
## 接受選項

指定載入前是否要先接受，以及如果沒有變更是否還要建置。

- 載入之前先接受最新的變更 (建立建置工作區的 Snapshot)
- 只有在有變更要接受時才建置

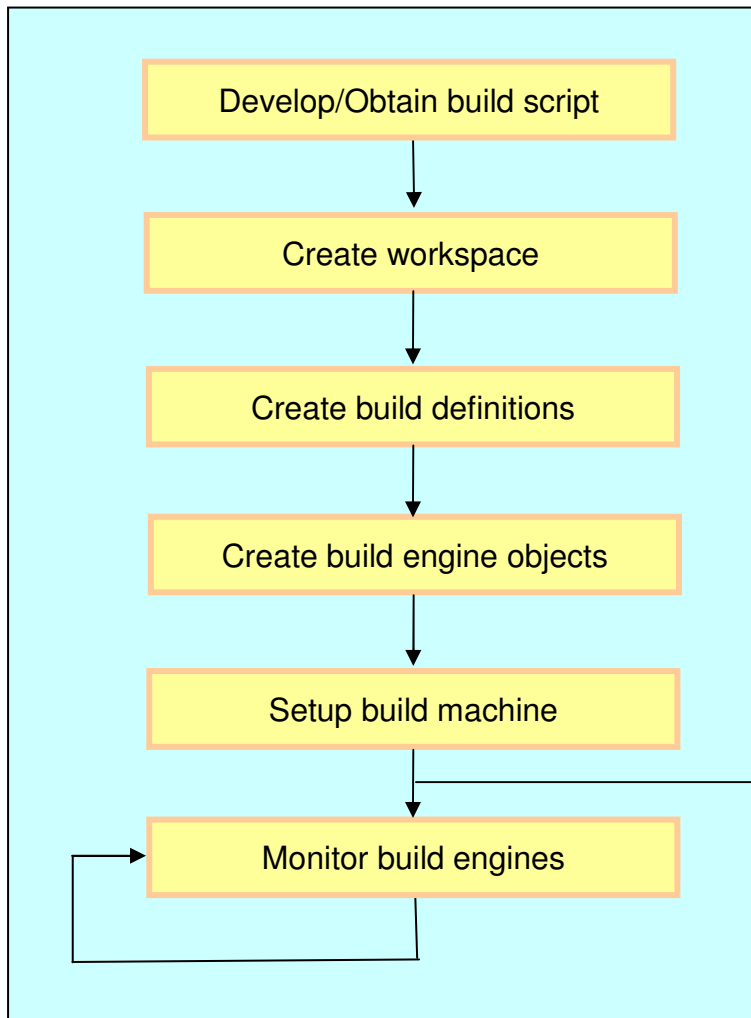
這些選項會當成建置內容 "team.scm.acceptBeforeFetch" 和 "team.scm.buildOnlyIfChanges" 來提供。

# Advanced : Build Management with Customization Work Item

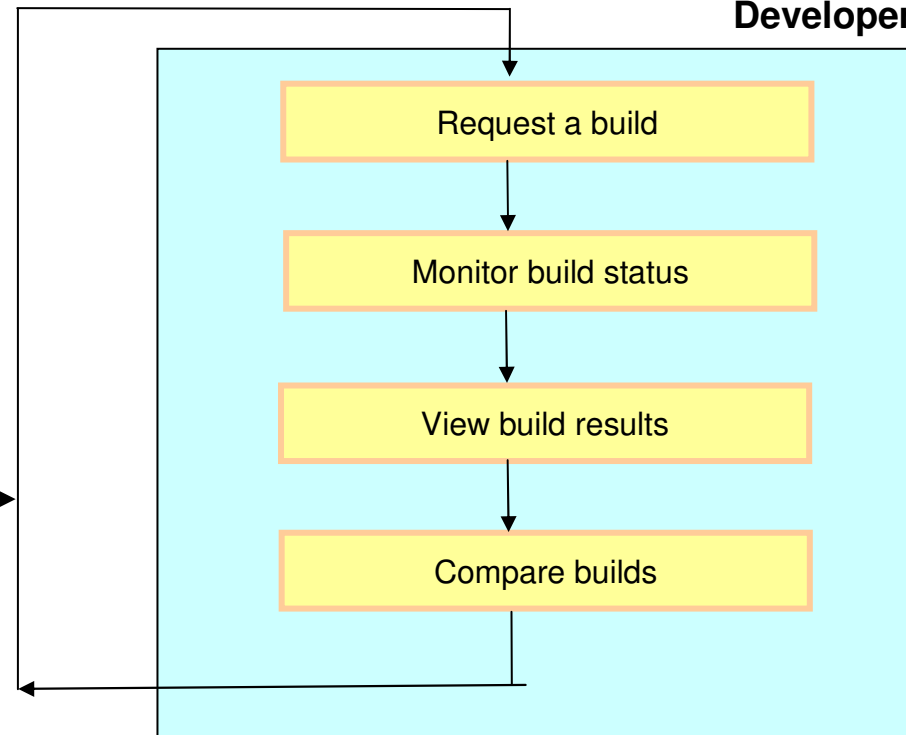


# Jazz Team Build 實際操作流程

## Release Engineer



## Developer



# 一貫化的建置工作環境

The screenshot displays the IBM Rational software interface with several callouts explaining key features:

- Build Engines, Build Queue, Build Definitions:** A callout points to the left-hand navigation tree, highlighting the configuration options for build engines, queues, and definitions.
- 顯示某個 Build 結果的詳細內容:** A callout points to the main view area showing detailed information for a specific build, including its duration, start time, completion time, and status.
- 近期 Build 結果:** A callout points to the right-hand pane, which displays a list of recent build results.
- 查詢 Build 結果列表:** A callout points to the bottom table, which provides a summary list of build results.
- 通知:** A callout points to a notification window in the bottom right corner, indicating that a build has finished successfully.

Build	Label	Progress	Start Time	Duration
✓	workshop.squawk.integration.build	Completed	Wed, 16 Jan 2008 13:...	10 seconds
✓	workshop.squawk.core.continuo...	Completed	Wed, 16 Jan 2008 13:...	24 seconds
✓	workshop.squawk.integration.build	Completed	Tue, 15 Jan 2008 16:3...	11 seconds
✓	workshop.squawk.core.continuo...	Completed	Tue, 15 Jan 2008 16:3...	21 seconds

**Build finished successfully**  
workshop.squawk.core.co  
ntinuous.build  
B20080116-1350-worksh  
op.squawk.core.continuo  
us.build



# 建立建置定義-Build Definition

**新建建置定義**

**一般資訊**  
選擇新定義的 ID、說明和建置範本。

ID(I):

說明(D):

可用的建置範本(T):

- Ant - Jazz Build Engine
- Maven - Jazz Build Engine
- 指令行 - Jazz Build Engine
- 通用

說明:  
使用 Ant 和 Jazz Build Engine 的建置。

? 說明(H) < 上一步(B) 下一步(N) > 完成(F) 取消

**建置定義**

ID:

**排程**  
用於自動執行這項建置的排程。

已啟用

**建置時間**

連續間隔 (分鐘):

在:   :

**建置天數**

- 星期一
- 星期二
- 星期三
- 星期四
- 星期五
- 星期六
- 星期日

概觀 排程 內容 Jazz Source Control Ant JUnit 發佈

**建置定義**

ID:  專案或團隊區域:

**一般資訊**  
這項建置定義的一般相關資訊。

說明:

計算整體狀態時忽略警告

**支援的建置引擎**  
選取將支援這項定義的建置引擎。

- LocalEngine

全選 取消全選 建立引擎

**刪改原則**  
「刪改」是指定期刪除一些不再需要的數目。較舊的建置結果會先刪除。

刪改建置結果

要保留的成功建置結果:

要保留的失敗建置結果:

**建置定義**

ID:  專案或團隊區域:

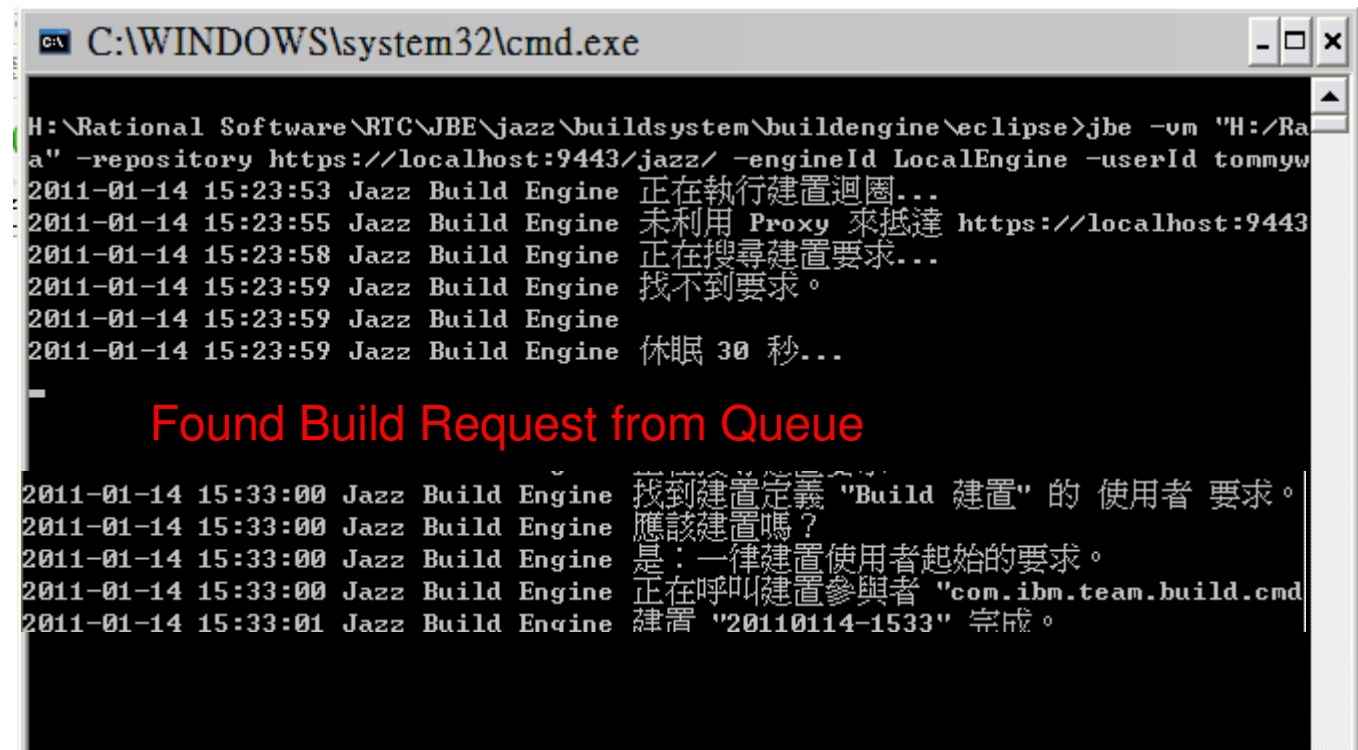
**內容**  
這項建置定義的內容。

名稱	值	說明
Label	2011.01.01	
TestVar	20	

概觀 排程 內容 指令行

## 設置建置引擎-Build Engine

- Install Build System Toolkit at Build machine local
- 啓動JBE (Jazz Build Engine) from command
- 或 Registry JBE as Service



```
C:\WINDOWS\system32\cmd.exe
H:\Rational Software\RTC\JBE\jazz\buildsystem\buildengine\eclipse>jbe -vm "H:/Ra
a" -repository https://localhost:9443/jazz/ -engineId LocalEngine -userId tommyw
2011-01-14 15:23:53 Jazz Build Engine 正在執行建置迴圈...
2011-01-14 15:23:55 Jazz Build Engine 未利用 Proxy 來抵達 https://localhost:9443
2011-01-14 15:23:58 Jazz Build Engine 正在搜尋建置要求...
2011-01-14 15:23:59 Jazz Build Engine 找不到要求。
2011-01-14 15:23:59 Jazz Build Engine 休眠 30 秒...
-
Found Build Request from Queue
2011-01-14 15:33:00 Jazz Build Engine 找到建置定義 "Build 建置" 的使用者 要求。
2011-01-14 15:33:00 Jazz Build Engine 應該建置嗎？
2011-01-14 15:33:00 Jazz Build Engine 是：一律建置使用者起始的要求。
2011-01-14 15:33:00 Jazz Build Engine 正在呼叫建置參與者 "com.ibm.team.build.cmd
2011-01-14 15:33:01 Jazz Build Engine 建置 "20110114-1533" 完成。
```

# 手動要求建置需求

The screenshot displays the IBM Rational software interface with two main windows. The top window, titled "conversion team integration - Found 12 Builds (1156 ms)", contains a table of build records. The bottom window, titled "Team Artifacts", shows a hierarchical tree of project and team areas.

Build	Label	Progress	Estimated Completion	Start Time	Duration
conversion team integ...	T20090710-1207	Completed		July 10, 2009 12:07:...	28 seconds
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	
conversion team integ...				May 14, 2009 :	

The "Team Artifacts" window shows a tree structure with "conversion team integration" selected. A context menu is open over this selection, listing various actions. An orange box highlights the "Request Build..." option in both the context menu and the "Team Artifacts" tree. A callout box labeled "Request Build" points to this option.

**Request Build**





## 建置結果彙整檢視

- 對個人建置的支持：使得開發人員可以在把自己的變更提交到團隊流之前先行建置，從而一定程度上保證它們不會在正式提交時對團隊流的內容造成混亂。

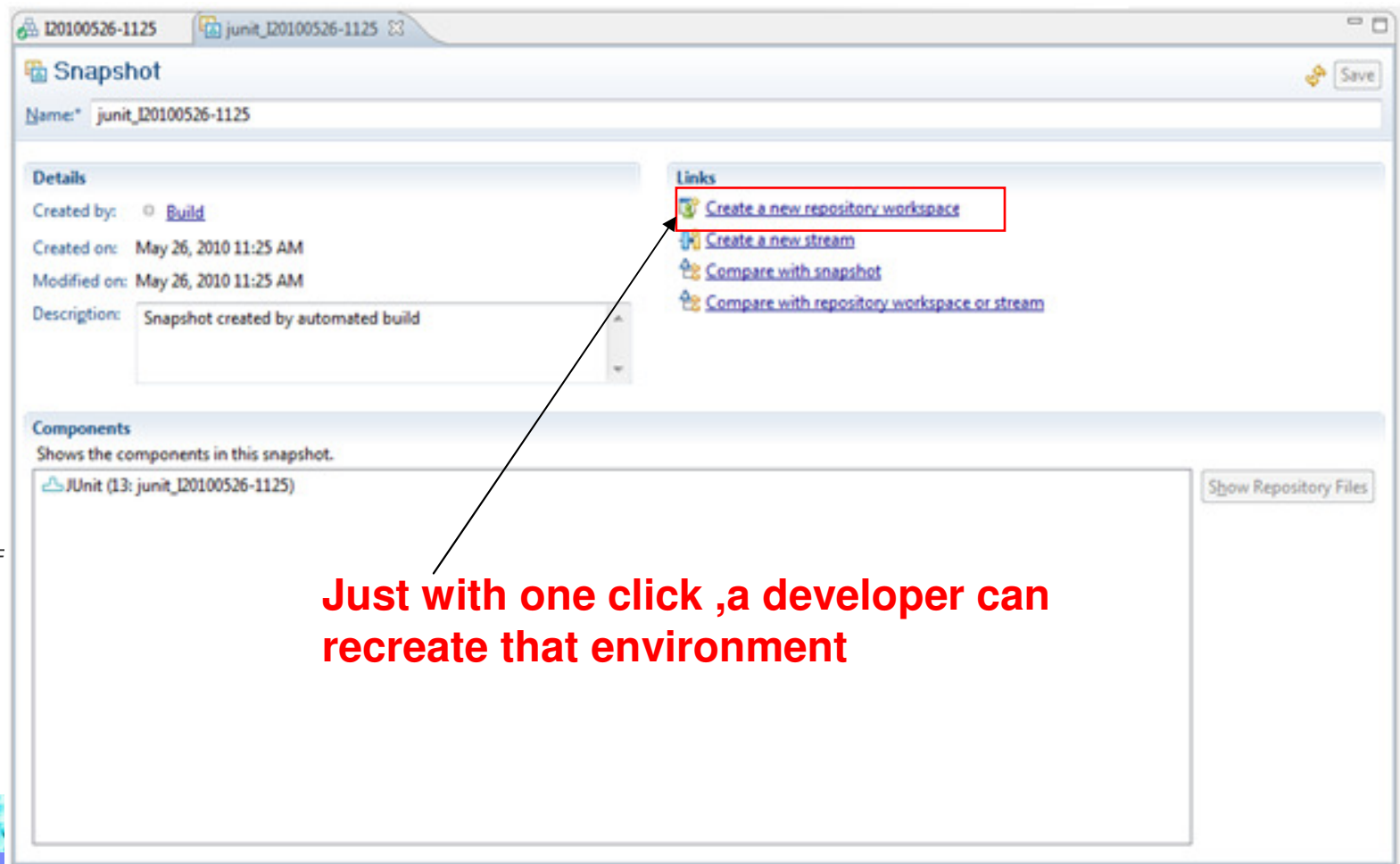
The screenshot displays the 'Build conversion team integration I20090710-1207' page in the IBM Rational software interface. The page is divided into several sections:

- Completed:** A green box indicating the build is finished. It shows a duration of 28 seconds, a start time of July 10, 2009 12:07:25 PM, and a completion time of July 10, 2009 12:07:53 PM. A status trend bar shows a sequence of red and green blocks.
- Reported Work Items:** A section with three items: 'None reported against this build', 'Create a new work item', and 'Associate an existing work item'.
- Contribution Summary:** A list of build metrics: 'Compile: 0 errors, 0 warnings', 'Downloads: 1 download', 'Logs: 1 log', 'External Links: 1 link', 'Repository Workspace: Conversion Team Build Workspace', 'Snapshot: conversion team integration I20090710-1207', 'Changes: Show changes', and 'Work items: 1 included in build'.
- General Information:** A section with fields: 'Requested by: (scheduled build)', 'Build Definition: conversion team integration', 'Build Engine: training.build.engine', 'Build History: 12 builds', 'Tags: [input field]', and a checked 'Deletion allowed' checkbox.
- Associated Release:** A section stating 'Released builds are available as choices in the work item "Found In" field.' and a link to 'Create a release to associate with this build'.

At the bottom of the page, a navigation bar contains the following tabs: Overview, Activities, Compilation, Downloads, Logs, External Links, and Properties. The 'Overview' tab is currently selected and highlighted with a red border.

## Snapshot of Build Result

- The Team Build component creates a snapshot of the build , Jazz Source Control component lets the developer to recreate a Repository Workspace from that snapshot..



The screenshot displays the 'Snapshot' interface in IBM Rational software. The window title is 'I20100526-1125' and the browser tab is 'junit\_I20100526-1125'. The main content area is titled 'Snapshot' and includes a 'Name' field with the value 'junit\_I20100526-1125'. Below this, there are sections for 'Details' and 'Links'. The 'Details' section shows 'Created by: Build', 'Created on: May 26, 2010 11:25 AM', 'Modified on: May 26, 2010 11:25 AM', and 'Description: Snapshot created by automated build'. The 'Links' section contains four actions: 'Create a new repository workspace' (highlighted with a red box and an arrow), 'Create a new stream', 'Compare with snapshot', and 'Compare with repository workspace or stream'. Below these sections is a 'Components' section with the text 'Shows the components in this snapshot.' and a list of components, including 'JUnit (13: junit\_I20100526-1125)'. A 'Show Repository Files' button is visible on the right side of the components list.

**Just with one click ,a developer can recreate that environment**



# Build results review: Compilation

I20090710-1207 Conversion Team

Build conversion team integration I20090710-1207

Save

### Compiles

Name	Errors	Warnings
com.ibm.rtc.test	0	0
Converter.java	0	0
ConverterWindow.java	0	0

### Compile output

Select a compile source to see its compilation errors and warnings.

Errors  Warnings

Overview Activities **Compilation** Downloads Logs External Links Properties









## 專案建置儀表板(Build Dashboard)

- Dashboard 內建 Build 相關之viewlet ,快速檢視專案建置狀態

The screenshot displays the IBM Rational Team Concert interface, specifically the Build Dashboard for the JUnit Team project. The dashboard is viewed in a Mozilla Firefox browser window. The main content area is titled "JUnit Team" and includes a "Reports" tab. The dashboard features several viewlets:

- Build Duration:** A bar chart showing build durations in hours. The y-axis ranges from 0.00 to 0.20. The chart displays several bars, with the tallest one reaching approximately 0.15 hours.
- Build Health:** A bar chart showing the number of tests. The y-axis ranges from 0 to 20. The chart shows a single bar reaching approximately 18 tests.
- Frequent Test Failures:** A viewlet indicating "No test failures were found".
- Frequent Test Regressions:** A viewlet indicating "No test regressions were found".
- JUnit Test Failures:** A viewlet showing a list of test failures, currently empty.
- JUnit Team Builds:** A list of build records showing successful builds for the JUnit Team. The records include build IDs, dates, and times.

The "JUnit Team Builds" list contains the following entries:

Status	Build ID	Date	Time
Succeeded	junit i20100526-1125	May 26, 2010	
Succeeded	junit i20100526-1113	May 26, 2010	
Succeeded	junit i20100526-0742	May 26, 2010	
Succeeded	junit i20100513-1122	May 13, 2010	

The dashboard also includes a sidebar with "Recently Viewed" and "Public Dashboards" sections, and a top navigation bar with "Dashboards", "Project Areas", "Work Items", "Plans", "Source Control", "Builds", and "Reports". The bottom of the screen shows the IBM logo and the word "Done".



# Jazz Team Build Web UI

- 提供Web介面，方便使用者執行,管理及檢視Build Result

The screenshot displays the Rational Team Concert web interface. The top navigation bar includes '儀表板', '專案區域', '工作項目', '計劃', '來源控制', '建置', and '報告'. The main content area shows the '建置定義 > Build 建置 >' path and the specific build '建置 Build 建置 20110111-1701'. A green box indicates the build is '已完成' (Completed) with a start time of 2011/1/11 下午5:01, an end time of 2011/1/11 下午5:01, and a duration of '不到 1 秒鐘'. Below this, there are tabs for '概觀', '日誌', and '工作項目'. The '概觀' tab is active, showing '一般資訊' (General Information) with fields for '要求者' (tommywu), '建置定義' (Build 建置), '建置引擎' (LocalEngine), '建置歷程' (3 項建置), and '標籤'. A '容許刪除' (Allow Deletion) checkbox is checked. The '要素項摘要' (Summary) section shows '1 個日誌' (1 log).

Rational Team Concert

儀表板 專案區域 工作項目 計劃 來源控制 建置 報告

建置定義 > Build 建置 >

建置 Build 建置 20110111-1701

最近檢視的項目

- Build 建置 20110111-1701
  - Build 建置

建置構件

- 建置定義
- 建置佇列
- 建置引擎

概觀 日誌 工作項目

一般資訊

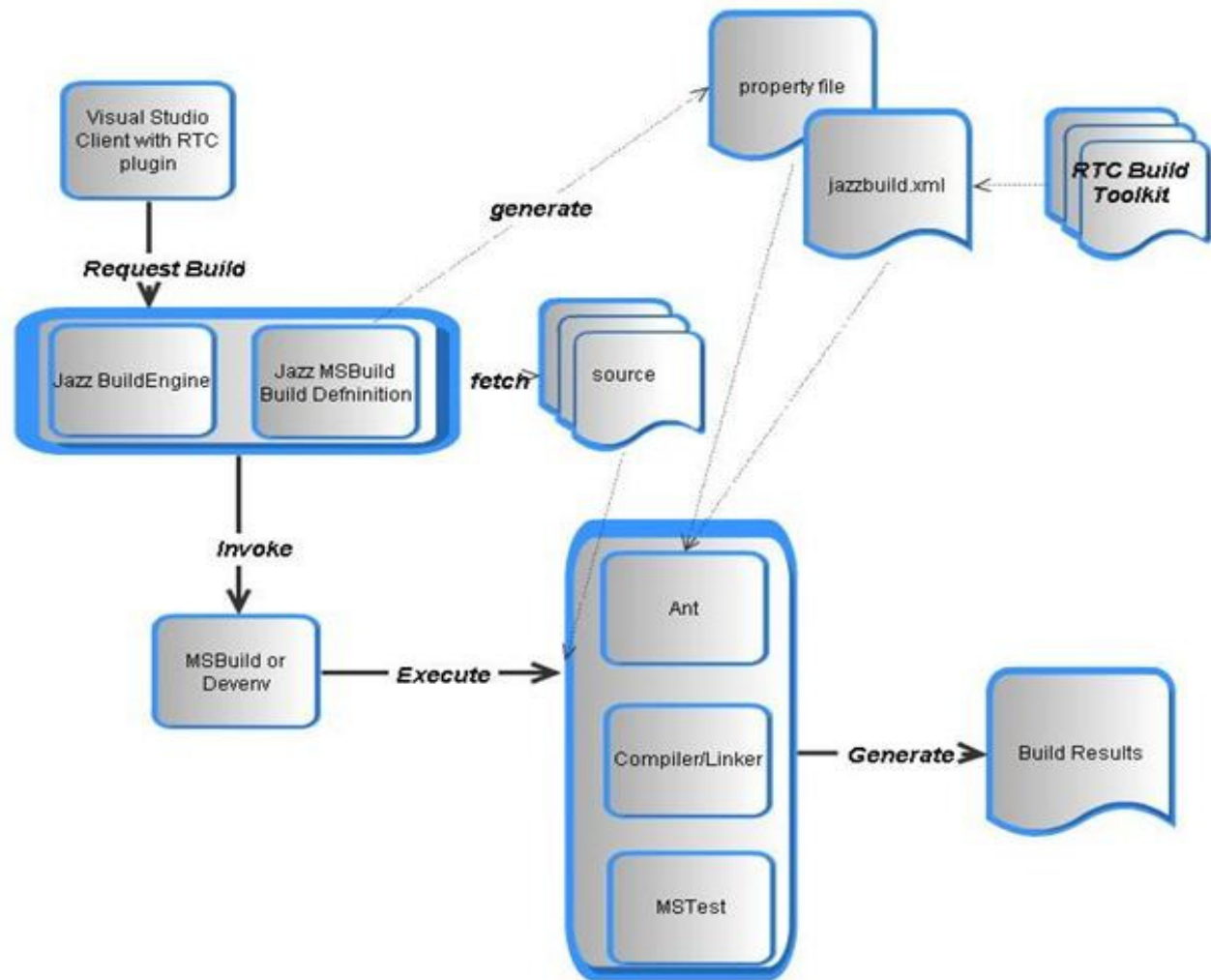
要求者： tommywu  
建置定義： Build 建置  
建置引擎： LocalEngine  
建置歷程： 3 項建置  
標籤：  
 容許刪除

要素項摘要

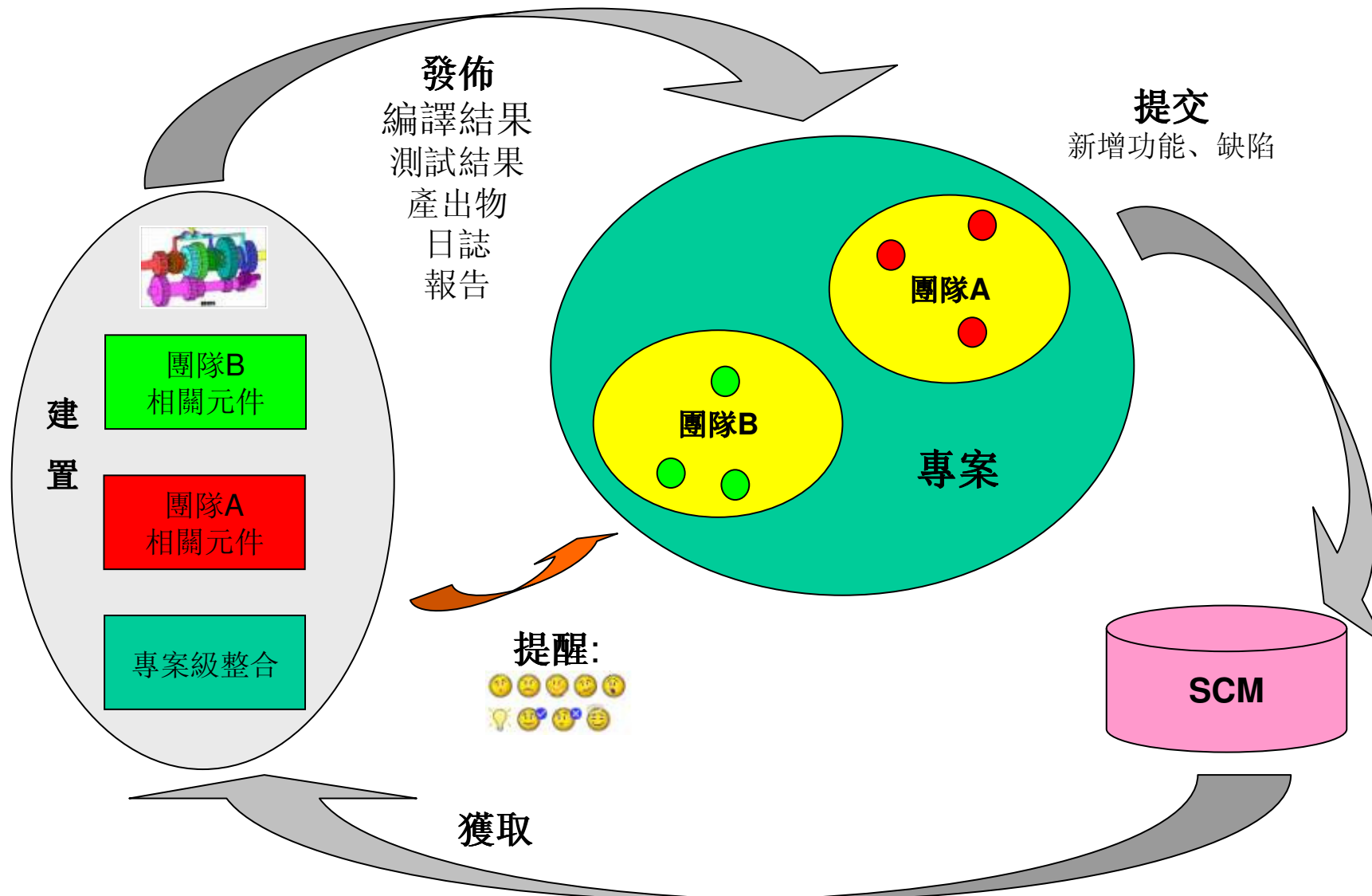
1 個日誌

# Jazz Team Build for VS.Net

- 提供VS.Net IDE 整合
- 提供MSBuild for .NET 應用程式建置



# Summary : Jazz Team Build 協同環境建置流程



# Questions





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