



## 新世代IBM 主機軟體開發 Open開發環境--提升開發效率更有利

鄭宇珊

台灣IBM公司 軟體事業處  
Rational 業務顧問

張向昇

台灣IBM公司 軟體事業處  
Rational 高級技術顧問



# Agenda

場景 1- 新人不愛綠畫面開發

場景 2- 想要深入了解主機，卻重重受限

場景 3- 平台隔閡，開發流程無法統一

# 場景 1- 新人不愛綠畫面開發

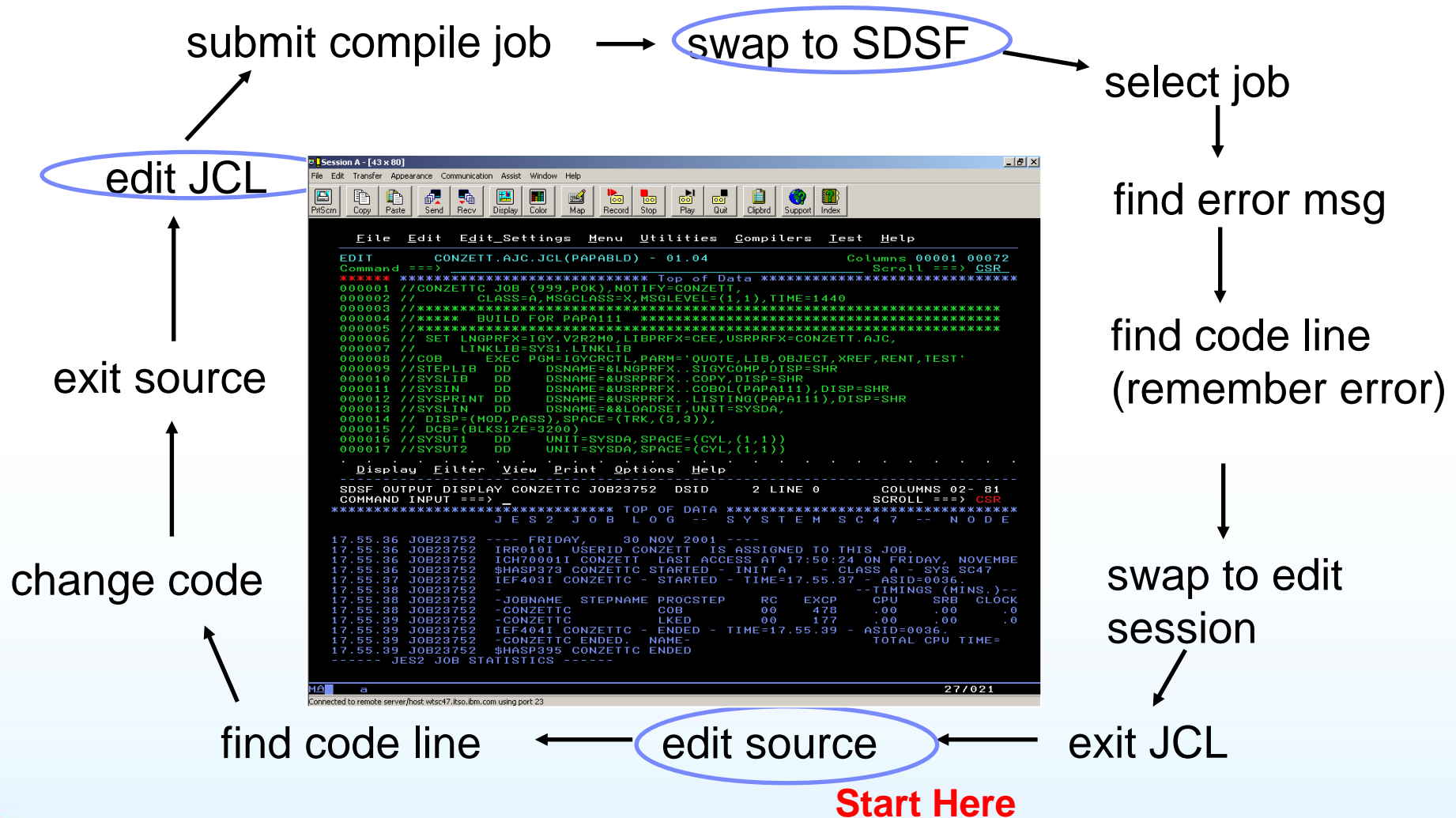
# 人物及場景

**Amy:** 剛考上某大銀行的資訊人員，因為有商科的背景，被安排**IBM**主機程式的維護工作。

**Joseph :** **Amy** 的學長，在**IBM** 任職技術工作。

**Amy :** 因為不適應綠畫面主機程式開發，所以找學長請教是否該換工作。

# ISPF based Development



```

Session A - [43 x 80]
File Edit Transfer Appearance Communication Assist Window Help
PrtScm Copy Paste Send Recv Display Color Map Record Stop Play Quit Clipbrd Support Index

EDIT CONZETT.AJC.JCL(PAPABLD) - 01.04 Columns 00001 00072
Command ==> Scroll ==> CSR
*****
000001 //CONZETTIC JOB (999,POK),NOTIFY=CONZETT,
000002 // CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),TIME=1440
000003 //*****
000004 //***** BUILD FOR PAPA111 *****
000005 //*****
000006 // SET LNGPRFX=IGV.V2R2M0,LIBPRFX=CEE,USRPRFX=CONZETT.AJC,
000007 // LINKLIB=SYS1.LINKLIB
000008 //COB EXEC PGM=IGYORCTL,PARM='QUOTE,LIB,OBJECT,XREF,RENT,TEST'
000009 //STEPLIB DD DSN=SYS1.LINKLIB,DISP=SHR
000010 //SYSLIB DD DSN=SYS1.LINKLIB,DISP=SHR
000011 //SYSIN DD DSN=SYS1.LINKLIB,DISP=SHR
000012 //SYSPRINT DD DSN=SYS1.LINKLIB,DISP=SHR
000013 //SYSJCL DD DSN=SYS1.LINKLIB,DISP=SHR
000014 // DISP=(MOD,PASS),SPACE=(TRK,(3,3)),
000015 // DCB=(BLKSIZE=3200)
000016 //SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(1,1))
000017 //SYSUT2 DD UNIT=SYSDA,SPACE=(CYL,(1,1))

Display Filter View Print Options Help
-----
SDSF OUTPUT DISPLAY CONZETTIC JOB23752 DSID 2 LINE 0 COLUMNS 02- 81
COMMAND INPUT ==> SCROLL ==> CSR
*****
J E S 2 J O B L O G -- S Y S T E M S C 4 7 -- N O D E
17.55.36 JOB23752 --- FRIDAY, 30 NOV 2001 ---
17.55.36 JOB23752 IRR010I USERID CONZETT IS ASSIGNED TO THIS JOB.
17.55.36 JOB23752 ICH7001I CONZETT LAST ACCESS AT 17:50:24 ON FRIDAY, NOVEMBE
17.55.36 JOB23752 SHASP373 CONZETTIC STARTED - INIT A - CLASS A - SYS SC47
17.55.37 JOB23752 IEF403I CONZETTIC - STARTED - TIME=17.55.37 - ASID=0036.
17.55.38 JOB23752 ---TIMINGS (MINS.)---
17.55.38 JOB23752 -JOBNAME STEPNAME PROCSTEP RC EXCP CPU SRB CLOCK
17.55.38 JOB23752 -CONZETTIC COB 00 478 .00 .00 .0
17.55.39 JOB23752 -CONZETTIC LKED 00 177 .00 .00 .0
17.55.39 JOB23752 IEF404I CONZETTIC ENDED - TIME=17.55.39 - ASID=0036.
17.55.39 JOB23752 -CONZETTIC ENDED. NAME- TOTAL CPU TIME=
17.55.39 JOB23752 SHASP395 CONZETTIC ENDED
----- JES2 JOB STATISTICS -----
MA a 27/021
Connected to remote server host: wtsc17.its.ibm.com using port: 23
  
```

# Rational Developer for z

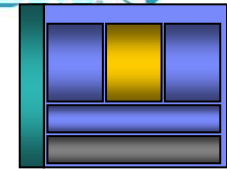
# 圖形化的主機程式開發介面

The screenshot displays the IBM Rational Software Development Platform interface for z/OS development. The main editor window shows the source code for 'PrintApp.cbl', which includes sections for Identification, Data, Linkage, and Procedure divisions. The interface is annotated with several callouts:

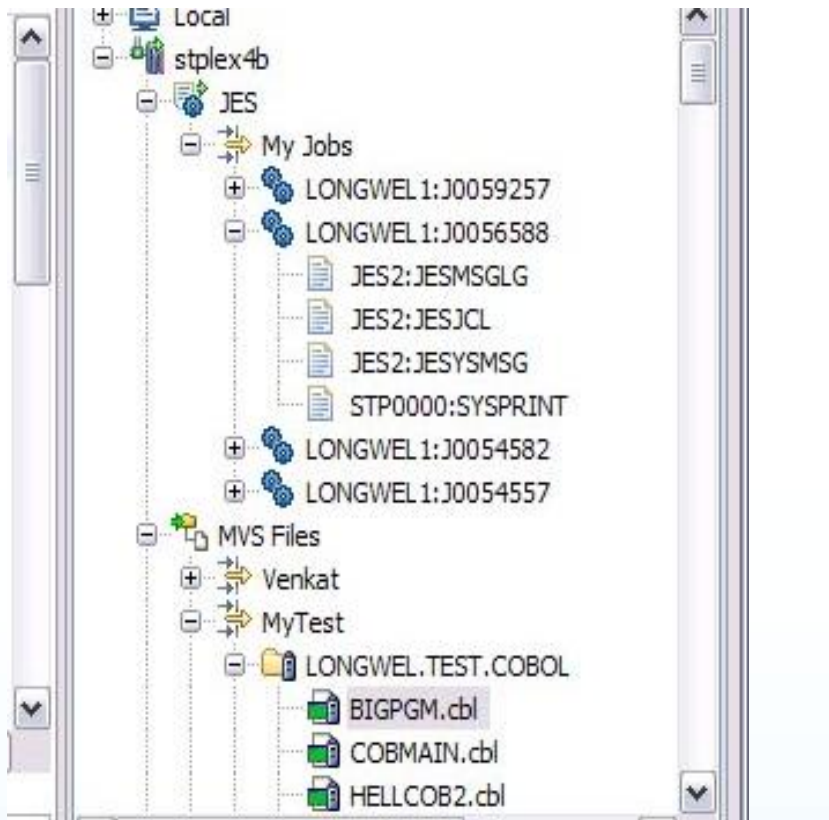
- Remote -vs- Local:** A blue box with arrows pointing to the 'Remote System Explorer' and 'z/OS Projects' views on the left side of the IDE.
- MVS Projects - able to work offline / online:** A blue box with an arrow pointing to the project tree in the 'z/OS Projects' view.
- Language sensitive Editor:** A blue box with an arrow pointing to the central code editor window.
- System Navigator:** A blue box with an arrow pointing to the 'Remote Systems' view on the right side of the IDE.
- Source outline:** A blue box with an arrow pointing to the 'Outline' view at the bottom left of the IDE.

At the bottom of the interface, there is a table for 'z/OS File System' connections:

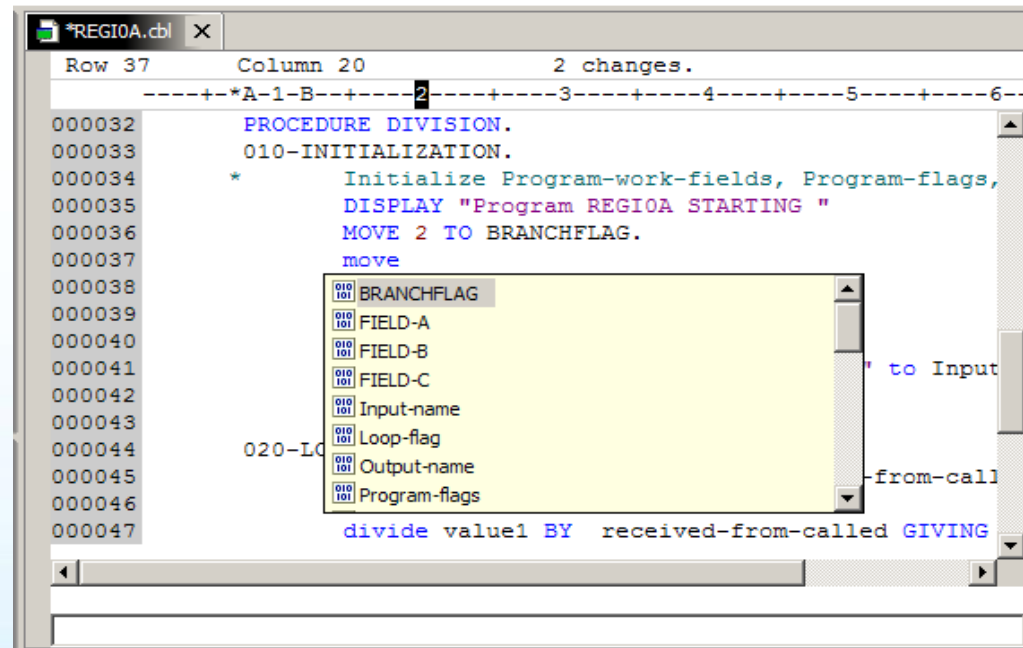
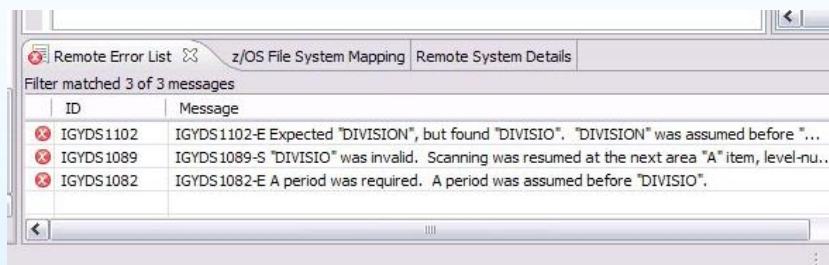
Name	Parent profile	Connection status	Host name
Local	sawdust	Some subsystems connected	LOCALHOST
CTFMVS07	sawdust	Some subsystems connected	CTFMVS07.RTP.RALE
CTFMVS08	sawdust	No subsystems connected	CTFMVS08.RTP.RALE



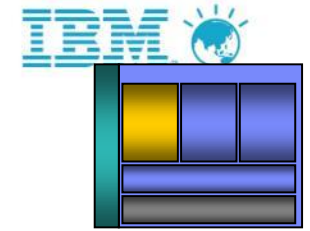
# COBOL, PL/1 語法檢查及執行 JCL 結果查詢



- 可同時存取多個 LPARs 及執行環境
- 使用類似 Windows 的介面，操作 zOS 上的指令
- 使用先進的編輯技術：
  - 可以同時開啟多個 member 做編輯
  - 使用不同顏色呈現宣告、變數、指令，讓程式更容易閱讀
  - 提供程式範本，可快速產生程式
  - 提供 COBOL/PL1 語法檢核，減少編譯錯誤所浪費的 MIPS







# 圖形化的除錯介面

- 提供端到端跨平台的除錯環境，可以支援的平台有：
  - ▶ CICS
  - ▶ IMS
  - ▶ DB2
  - ▶ Batch
  - ▶ WAS
  - ▶ Native LUW
- 從Eclipse工作平台，開發人員可以：
  - ▶ 檢視執行中的source code
  - ▶ Step by step 逐行執行主機上的COBOL/PL1程式
  - ▶ 設立中斷點
  - ▶ 改變 working storage 的值
  - ▶ 改變register中的值
  - ▶ Etc...
- 在同一界面中對 zOS 及分散式環境執行除錯，即使跨執行環境，跨平台也不用間斷。
- 主機端需要安裝 IBM Debug Tool

Line	Column	Insert	Browse
86		A000-MAINLINE.	
87		MOVE DFHCOMMAREA TO DFHCOMMAREA-LINK	
88		PERFORM A100-OBTAIN-CURRENT-DATE	
89		PERFORM A200-CALCULATE-DAY-DIFFERENCE	
90		PERFORM A300-FORMAT-DATE	
91		MOVE DFHCOMMAREA-RETURN TO DFHCOMMAREA	
92		GOBACK	
93		.	
94		*	
95		A100-OBTAIN-CURRENT-DATE.	
96		MOVE FUNCTION CURRENT-DATE(1:8) TO W-CURRENT-DATE	
97		COMPUTE W-CURRENT-DATE-INT = .	

# RDz 8.0 加強了對 EXEC SQL 語的支援

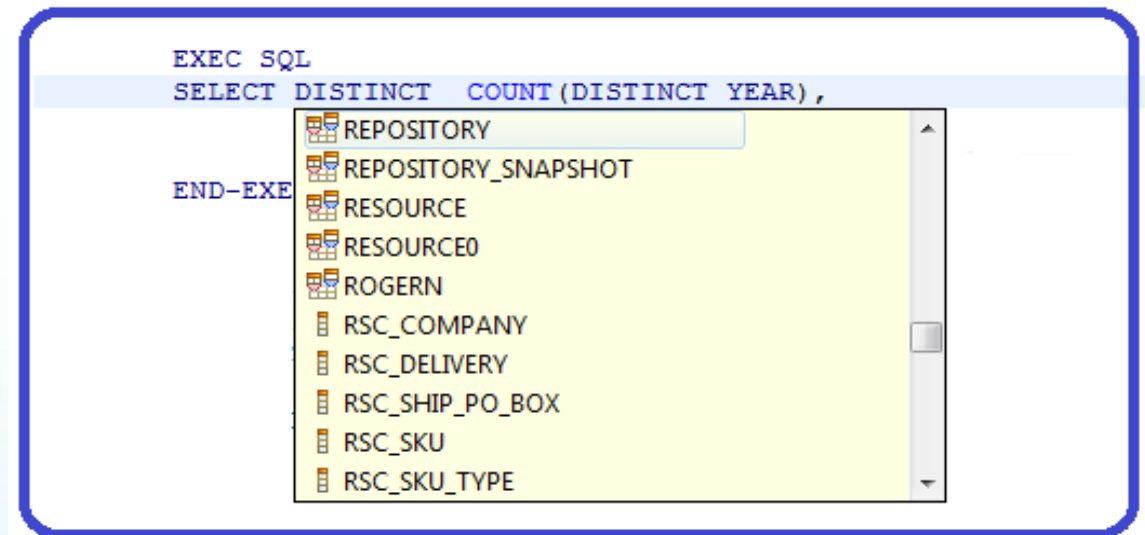


Version 8.0 of RDz offers improved productivity for developers editing programs which use EXEC SQL statements:

**More content-assist proposals** are offered:

- SQL statement names and syntax keywords
- Database objects (schema, table, column names)

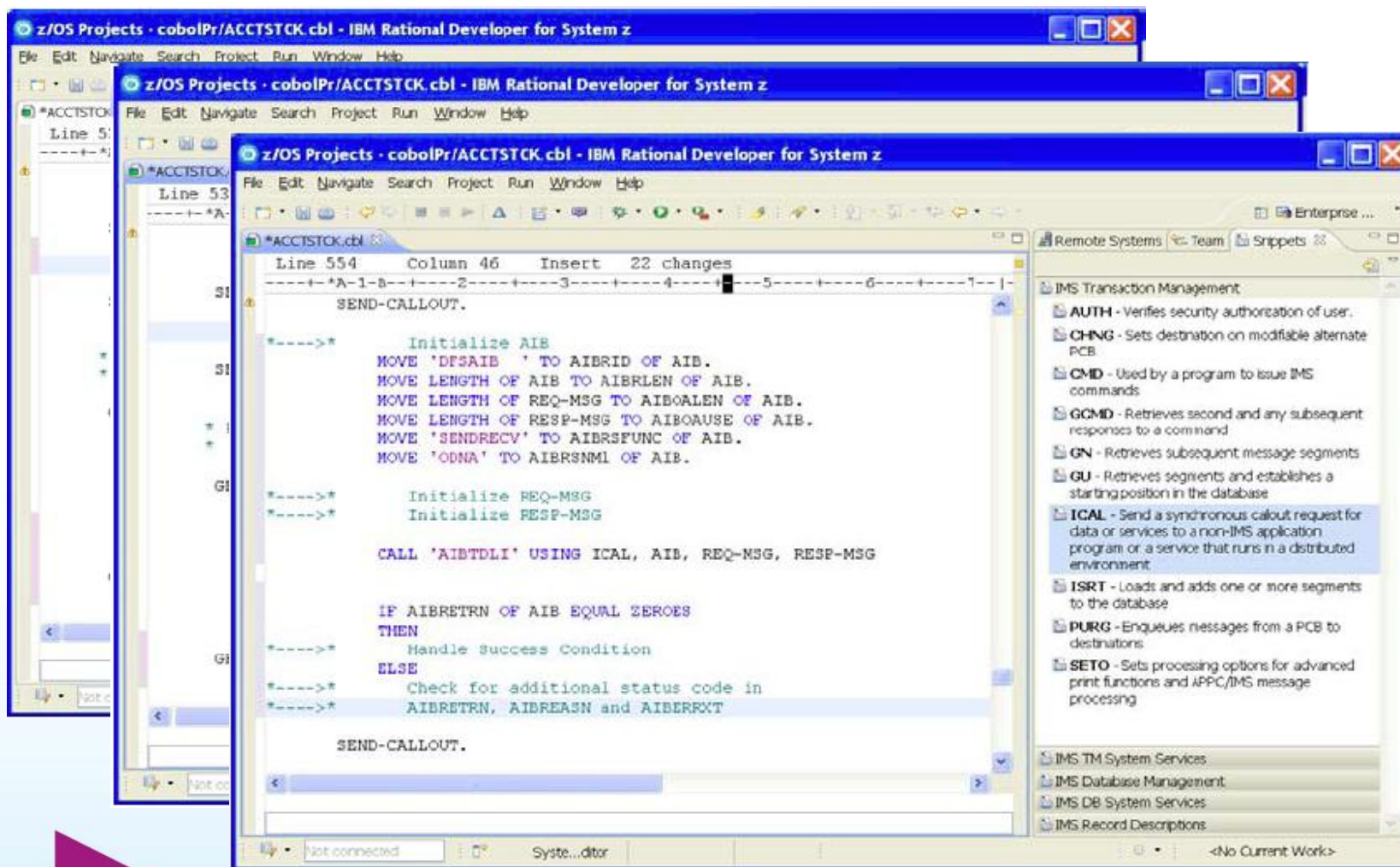
Uses a “live” or “offline” database connection or a DECLARE TABLE statement (which can be generated by DCLGEN) to retrieve possible proposals



Applies to both COBOL and PL/I development

# RDz IMS Snippets

讓RDz 替你寫程式



# Dialog 1

**Amy:** 開發工具變的很Fancy, 可是End User 愈來愈常抱怨綠色文字的操作界面

# 3270 Screen

```

ITEM 00 13 41180 ACTIVE      ITEM INQUIRY ITEM _      ISRL  WHSE SCREEN 1 OF 4
VNDR 409003 13 0 PROCTER & GAMBLE      ITRI  ICLI  MQUN  IDSC
DESC DRYEL REFILL      --VNDR PACK-- --WHSE PACK-- -----UNIT RETAILS-----
      DRYEL              QTY      8      QTY      8      STD      9.97 MU%      24.9
VSK# 3700031044      CUBE 1.3 CUBE 1.3 CP 0.00 PROD 005079929
SIZE 6CT      COLOR DRYEL WGT 4.8 WGT 4.8 CUSTITM D SP RTLS Y TRT Y
UNIT-MEAS EA HAZRD Z      COST 59.92 COST 59.92 --UPC INFORMATION--
IT/ST: 33/00 EXC-% 0.00 WM/HM/BOTH B      SELL 59.92 DESC DRYEL REFILL
R/S#      VND-LEAD 0 DSD      PRICE Y      CODE 0003700031044 0
ORD-DEPT 13 VND-MIN 15 FOODSTAMP N      WHSE ON-HAND ON-ORD RESV      LEAD
ACT-DEPT 13 MAX-QTY 0 STK STATUS      00000 0 0 0 30
FINE-LINE 16 02      INTERNATL      06006 0 15 0 3
WKSHT-SEQ 0 OPP N PNT-SALE Y      06009 0 0 0 4
----PROCESSING FLAGS----- -----DATES----- 06010 0 0 0 4
COST-AVG A HANDLE      NEW-ITEM 06/28/01 06011 0 0 0 4
DISC-TRK N PROMO-OB N SEND-STR      06012 0 15 0 5
GUAR-SALE N OB-STARS 2 ITEM-EFF 03/28/05 06016 0 15 0 4
PACK-TYPE C NEVER-OUT N ITEM-EXP 12/31/49 06017 0 30 0 4
MBM CD M CANCEL N PRIC-EFF 06/28/01 06018 0 0 0 4
EVENT      XRF-CHAIN Y LAST-CHG 06/22/05 06019 0 30 0 6
RESV-MDSE N SECURITY N BY Dat 06021 0 15 0 8
CATALOG N TEMP-ITEM Y STAT-CHG      06023 0 0 0 3
CONVEYABL Y STR-TYP      MODULAR CATEGORIES 06024 0 30 0 4
SPEC-ONHD N WH ALIGN F0 CNT 0 MIN      06025 0 15 0 6
  
```

# 使用者介面現代化 *Web 2.0 built in*

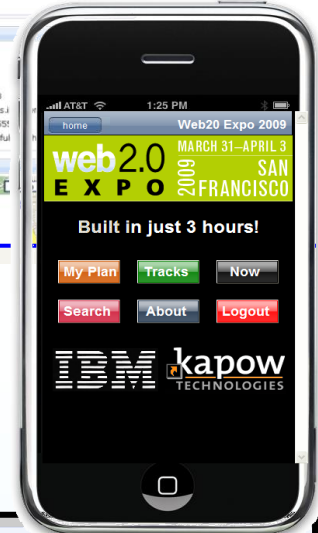
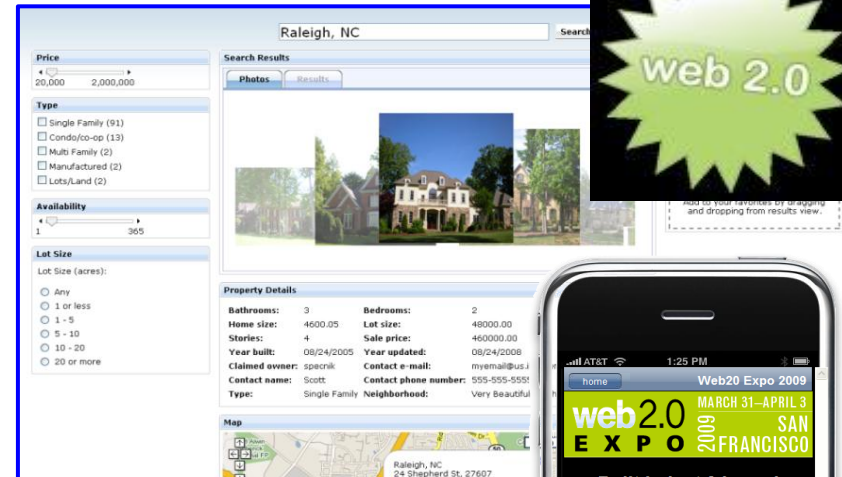
利用最新的 *Web 2.0*, *Ajax* 技術及視覺化開發方式，快速建立友善的互動圖形操作介面

**搭配工具**

**JSF – Java Server Faces**

**HATS -- Host Access Transformation Service**

**EGL --Enterprise Generation Language**



Welcome to the sMash Employee demo with EGL Rich UI front end.

The grid below contains a list of employees served up using REST services written in Groovy and hosted by sMash. You can edit each cell by clicking in it. You can save the changes, create a new employee, or delete the currently selected employee using the buttons that are provided below.

The entire UI is written in EGL Rich UI, and no JavaScript, HTML, or dojo is needed.

Username	First name	Last name	Location	Phone Number
Chris	Chris	Laffra	East	555-3345
Saul	Ben	Margolis	East	555-9932
		dhajkdhaksj	West	555-3321
		Ramsey	West	555-3321

Buttons: Save Changes, Delete Employee

**Analyzer Details**

@lecsys\_2010

RECALLS

All tests...

**Results for this test**

Result	Low	High	Mean	Std.Dev.
92.0000	72.8000	95.2000	84.0000	5.6000

**Corrective Action**

Date: 06/28/2002  
Time: 60602  
Tech: [dropdown]  
Action: QC ACCEPTABLE, WITHIN MFG LIMIT

**Archive Action**

Date: 06/06/2002  
Time: 74645  
Technician: [dropdown]

**Result Specifics**

Result Date: 06/28/2002  
Result Time: 74700  
Material: CO2/ALC/NH  
Level: 1  
Origination: MANUAL

**Lot Results**

Lot 360440 contains 16 tests

See Westgard Rules explanation

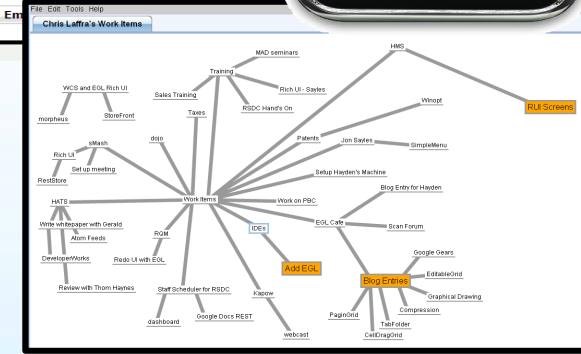
EGL RichUI Twitter Client

User: laffra

Friends

- David Charboneau (dcharbon)
  - Location: North Carolina
  - About: Founder of Goalmarker.com
  - URL: <http://goalmarker.com/>
- Chris H. (Hexzero)
  - Location: Durham, NC
  - About: Nocturnal engineer with no time and so much to do.
  - Got motivation?
  - URL: <http://www.hexzero.com>

Followers



# What's new in HATS V8.0



- Web 2.0
  - Dojo
    - HATS Dojo widgets
    - Transform for Dojo editing
    - Dojo for IOs
  - New templates
  - RESTful web services
- JSR286 Portlet support
- iPad support
- Support for the latest runtimes
- Support for the latest development
- And more....



# HATS v8.0 Dojo widgets

## New widgets

- New HATS Dojo widgets:

- Combo box
- Date Text box
- Enhanced Grid

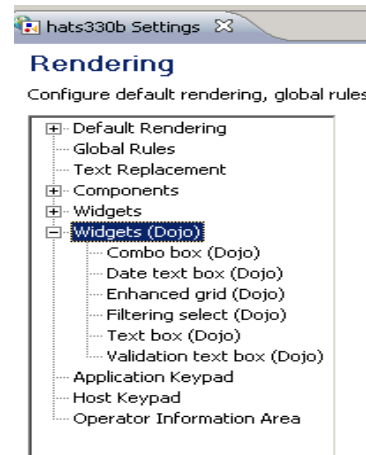
- Sorting
- Drag and drop columns

- Filtering select
- Text box
- Validation text box

## Enhanced Grid

- Benefits:

- New, built-in UI transformation options
  - No programming skills required
- Enhanced usability



Expiration date:



Date text box

Opt	Subsystem/Job	User	Type	CPU%	Function	Status
	ZENDCORE	QTMHHTTP	BCI	.0	PGM-QZSRHHTTP	DEQW
	QZSHSH	ASH	BCI	.0	PGM-QZSHSH	TIMW
	QPADEV0001	SANSU	INT	.0	PGM-QCMD	DSPW
	QPADEV0004	WEBGUI	INT	.0	CMD-WRKACTJOB	RUN
	QPADEV0007	WEBGUI	INT	.0	MNU-MAIN	DSPW
	QPADEV0009	ASH	INT	.0	CMD-QSH	DEQW
	QINTER	QSYS	SBS	.0		DEQW
	QMQM	QSYS	SBS	.0		DEQW
	QSERVER	QSYS	SBS	.0		DEQW

Filtering select



Validation text box





# HATS v8.0 iPad Support

- iPad has been added to the growing line up of mobile devices that HATS supports
  - Windows Mobile devices
  - iPod Touch
  - iPhone
  - iPad
- The larger display size of iPad works especially well for customer facing roles
- Mobile devices open up possibilities:
  - An employee on the department store floor needs to check stock in the warehouse and make an order
  - A distributor of products to car dealers needs to track product availability and order products while at the dealer
  - Hospital personnel need to take inventory across a large campus
  - Service personnel need to order products and mark work complete



# Rational Developer for System z (RDz)

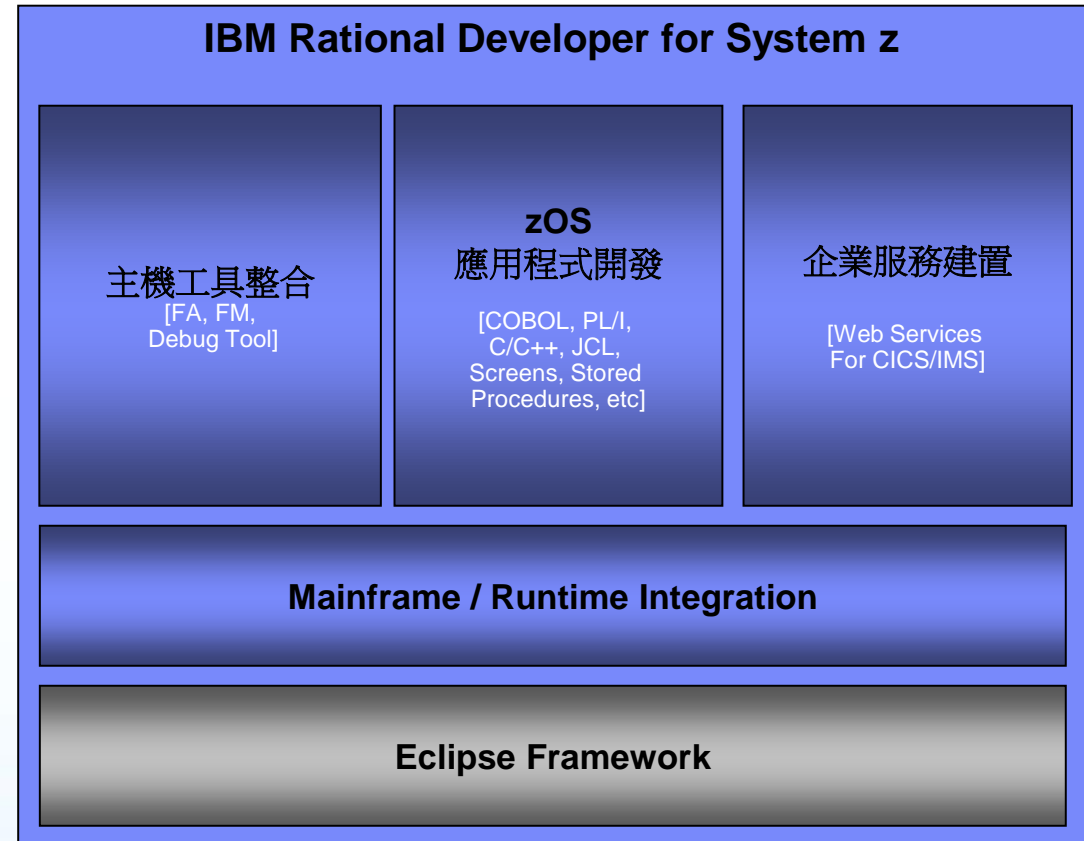


## ▶ RDz的功能

- Eclipse為基礎的整合開發環境
- z/OS 應用程式開發工具的整合點

## ▶ RDz的效益

- 更友善的使用者介面
- 支援COBOL/PL1/JCL 開發
- 開啟主機應用程式現代化之路
  - Reuse existing applications
  - Extend with new UI's
  - Bridge technology gap
- 提升生產力及品質
- Reduces 降低開發成本



## 場景 2- 想要深入了解主機，卻重重受限

# Dialog 2

**Amy:** 希望對主機有更深入的了解，但是公司開放的權限很低，也擔心不常的操作會影響其他人的工作。

# 當今主機開發人員常遇到的限制

*Which limits the amount of System z production workload coming online*



*“Operations tell me it will take two months to get my test system allocated.”*

建測試環境要很久



*“I can only test my batch applications in offline hours. Online apps consume the 9-5 cycles.”*

營業時間不准測大程式



*“It is difficult for my developers to learn the mainframe. Operations controls can prevent experimentation by developers..”*

權限太低，很難測新功能



*“I want to try out creating Event Processing and ATOM apps, but my system isn't scheduled for a CICS update till 2012.”*

IBM 推的新版Middleware,要等主機z/OS升級之後才能開始測



*“My development capacity charge-back is consuming my entire budget. I can't spend on tools.”*

開發之MLC 分擔到開發部門，把預算都佔滿了



*“We don't have the capital budget to obtain more mainframe test resources for my developers. It's easier and cheaper to get a Windows or Unix box.”*

我們沒有預算買更多主機capacity, 所以新系統都選擇建在 Windows/Linux 環境



*“I can't even work on Mondays! Production workload kicks me off.”*

週一營業量大時，開發只好停擺

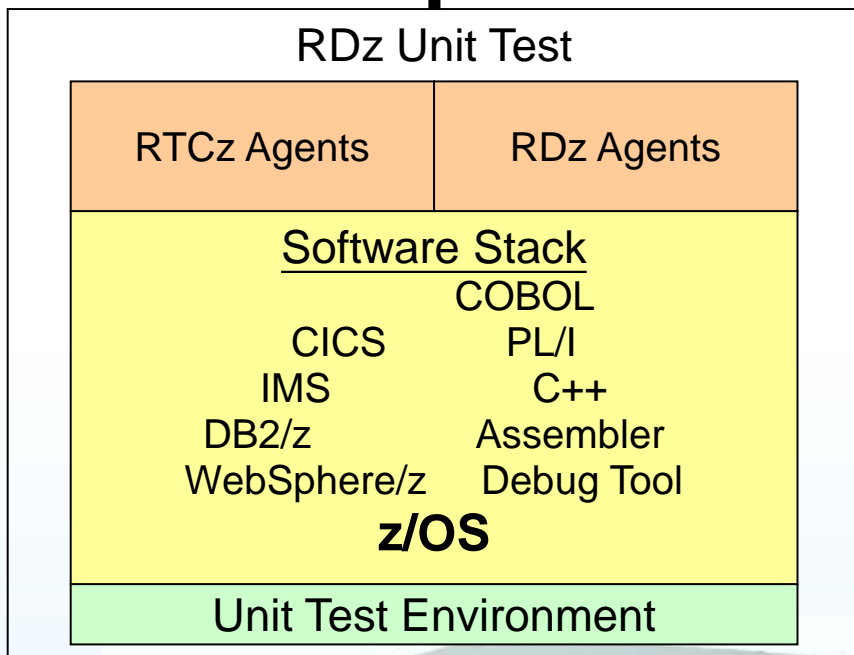
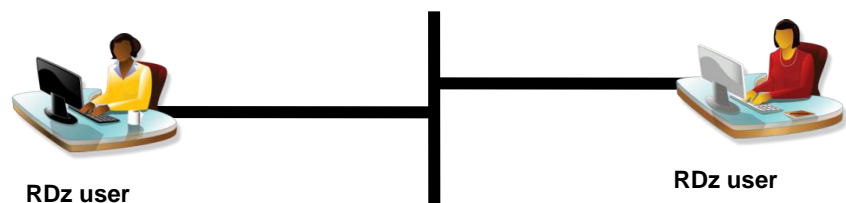


*“The Mainframe isn't cool anymore. It's faster and cheaper to develop on a Unix platform.”*

主機的功能不如Unix 酷炫，又比較貴

# RDz Unit Test

# RDz Unit Test 包含的軟體及授權



SuSE or RedHat Linux



x86 伺服器

## The RDz Unit Test 產品具備以下特性:

- Unit Test - Unit Test 執行於Linux 作業系統
  - 在PC 上提供 System z development 開發環境，能夠執行z/OS 程式.
  - Note: IBM 對於RDz UT產品的使用授權僅限於開發環境，不可用於正式營運環境，設計上的容量及效能也不適合營運環境
  - 提供了主機開發絕佳的彈性 可針對新的業務客制化所需環境
- 內建了多項IBM 中介軟體的測試環境授權
  - **Actual** middleware software (包括 z/OS)
  - **Actual** Enterprise compilers
  - no API simulation
- RDz and RTCz agents
  - 減化安裝工作
  - 仍需另外購買 RTC client 授權才能啟動此功能



# RDz Unit – at a glance



The screenshot displays a Linux desktop with a sidebar on the left containing icons for Computer, ibmsys2's Home, Trash, and various Open Client for Linux applications. Two terminal windows are open:

- Terminal (B):** (B) TN3270 (mstcon) [mstcon] - PowerTerm Interconnect. It shows system messages such as:
  - \*07.19.07 \*IFB081I LOGREC DATA SET IS FULL,07.19.07, \* DSN=SYS1.LOGREC
  - \*07.20.04 STC00575 \*BPXP022E ONE OR MORE JOBS ARE WAITING FOR UNIX SYSTEM \* SERVICES AVAILABILITY.
  - 26- 07.20.39 STC00575 +DFHMN0110I CICS CICS Monitoring is inactive.
  - 07.20.39 STC00596 BPXF024I (FTPD) Aug 29 13:20:39 ftpd 65565 : EZYFT25I Using //'TCP/IP.STANDARD.TCPXLBIN' for FTP translation tables for the control connection.
  - 07.20.39 STC00575 +DFHMB0110I CICS Web domain initialization has ended.
  - 07.20.39 STC00575 +DFHSI1502I CICS CICS startup is Initial.
  - 07.20.39 STC00575 +DFHEP0101I CICS Event Processing domain initialization has started.
  - 07.20.39 STC00575 +DFHEP0102I CICS Event Processing domain initialization has ended.
  - dspFixLevel: Fix level: " Data: EZAFTP61 EZAFTPXC EZAFTPBU EZAFTPDPF
  - 07.20.40 STC00595 BPXF024I (FTPD) Aug 29 13:20:40 ftpd 65568 : dspFixLevel: Fix level:
  - IEE612I CN=L700 DEUNUM=0700 SYS=ADCD
  - IEE163I MODE= RD
- Terminal (A):** (A) TN3270 (localhost) - PowerTerm Interconnect. It shows system initialization and user login instructions:
  - z/OS Z111S Level 1003 IP Address = UTAM Terminal = LCL701
  - Application Developer System
  - // 000000 SSSSS
  - // 00 00 SS
  - 222222 // 00 00 SS
  - 22 // 00 00 SSSS
  - 22 // 00 00 SS
  - 22 // 00 00 SS
  - 222222 // 000000 SSSS
  - System Customization - ADCD.Z111S.\*
  - ===> Enter "LOGON" followed by the TSO userid. Example "LOGON IBMUSER" or
  - ===> Enter L followed by the APPLID
  - ===> Examples: "L TSO", "L CICS", "L INS3270"



## Software Stack for as-is usage

### z/OS MLC Products

- IMS V10.1 Database Manager
- IMS V10.1 Transaction Manager
- DB2 for z/OS V9.1
- WS MQ Base for z/OS V7.0
- Enterprise COBOL V4.2
- Enterprise PL/I z/OS V3.9
- CICS TS for z/OS V4.1
- CICS TS for z/OS V3.2
- z/OS V1.11 Base
  - z/OS V1.11 C/C++ without Debug
  - z/OS V1.11 DFSMS dss
  - z/OS V1.11 DFSMS rmm
  - z/OS V1.11 DFSORT
  - z/OS V1.11 RMF
  - z/OS V1.11 SDSF
  - z/OS V1.11 Security Server
  - z/OS V1.11 ISPF
  - ... (all sub features)
- z/OS V1.10 Base
  - ... (all sub features)

### z/OS OTC Products

- WebSphere for z/OS 7.0
- DB2 Utilities Suite V9
- WebSphere Portal Enable z/OS
- Debug Tool

### Other Tools pre-installed

- RTCz file/build agents
- RDz RSE and Job Monitor

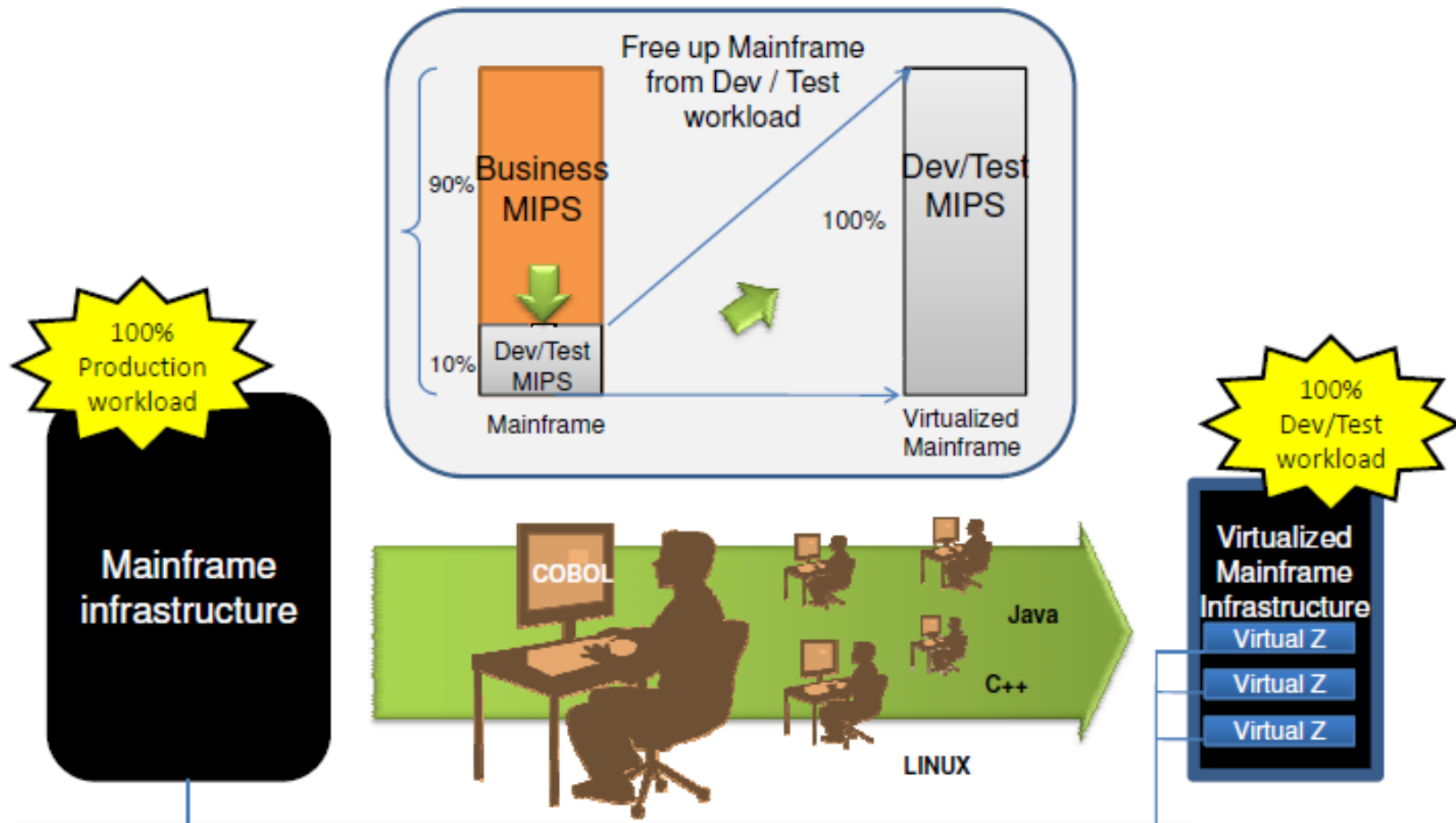
# RDz-UT – zEnterprise 196 Technology Comparison

Technology	RDz-UT	zEnterprise 196
Maximum I/O devices	1024	9999
Architecture types	64 bit, z10-z11	370, 31 bit, 64 bit, z9-z11
I/O definition	devmap	IODF
Real storage	1-32 GB	32 GB – 3 TB
Processor	1-3 GPU, 1-2 ZIIP, 1-2 ZAAP	1-80 GPU, 1-40 ZIIP, 1-40 ZAAP
Crypto	3 features	4 features
Hypersockets	Not supported	1-32
Channels	OSA/ Express 2	ESCON, FICON, OSA/ Express 2-3
OS	z/OS 1.10, 1.11	z/OS 1.12, z/VM 5.4, Linux RHEL 5, Linux SuSE 10.3, z/VSE 4.2, z/TPF 1.1

# RDz-UT minimum hardware requirements

- Processor
  - RDz-UT Standard - Minimum practical configuration is 2.4 Ghz Core 2 Duo
  - RDz-UT Specialty - Minimum practical configuration is 2.0 Ghz i5 / i7 4 core
- RAM
  - 3 GB minimum
  - Recommended is 2 GB for base Linux + 2 GB per processor core enabled for RDz-UT
- Disk space
  - 20 GB for base Linux / zPDT install
  - 50-120 GB for z/OS install
- Network
  - 100MB / 1GB Ethernet adapter (shared by Linux and z/OS)
  - Wireless (OK for Linux, not recommended for z/OS)
- USB
  - Required for 1091 hardware key

# Move development and Test Workload to RDz-UT



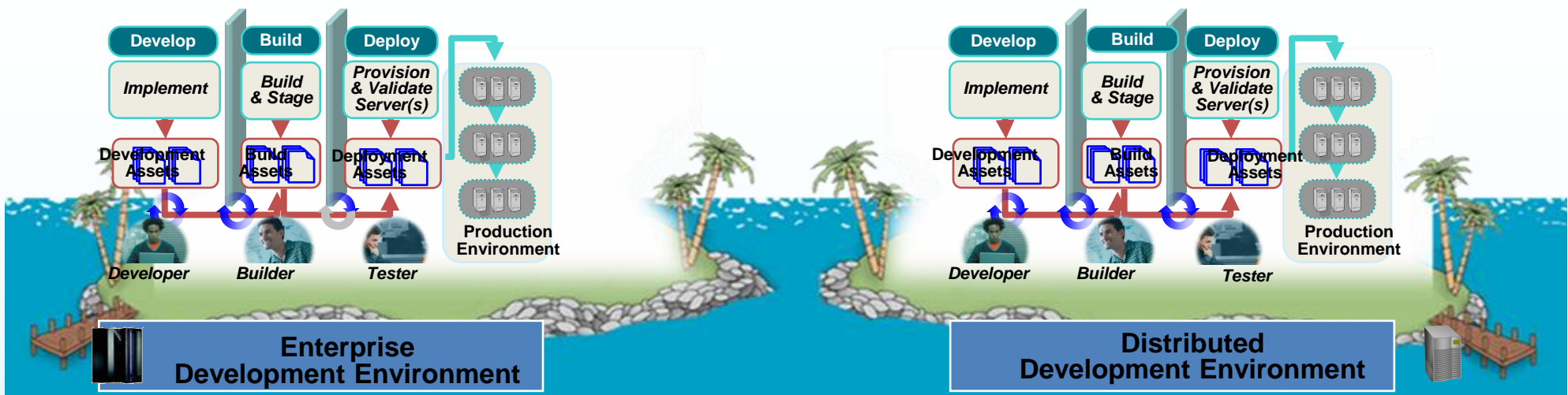
# 場景 3- 平台隔閡，開發流程無法統一

# Dialog 3

**Amy:** 因為工作表現優異，**Amy** 很快的晉升為組成，被指主管指派他擔任，新系統的開發**leader**，不同於過去只要把自己的程式寫好，**Amy** 發現帶領一個團隊開發延伸了許多非技術性的問題。

# 主機與開放平台的開發鮮少溝通

- ▶ Duplicate infrastructures limit IT and skills flexibility, introduce errors, reduce productivity
- ▶ Constrained IT flexibility due to skills islands
- ▶ Multiple infrastructures increases costs, less available for new projects
- ▶ Lack of traceability inhibits end-to-end governance



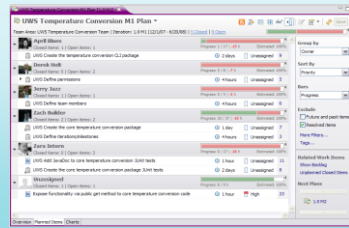
# Rational Team Concert for z



# Rational Team Concert 功能總覽

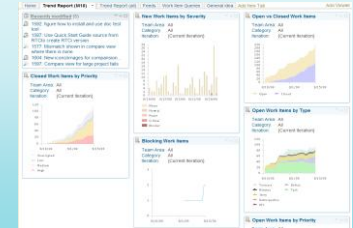
## 專案計劃

- 整合專案疊代計劃及執行管理
- 連結工時估算及專案哩程牌
- 內建敏捷開發流程模版



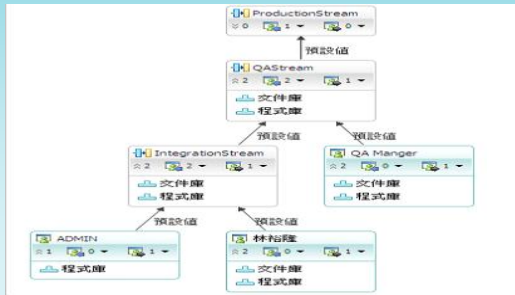
## 專案監控

- 可客製化的儀表板
- 即時的工作追跡資訊及報告
- 專案里程碑及工作狀態追跡



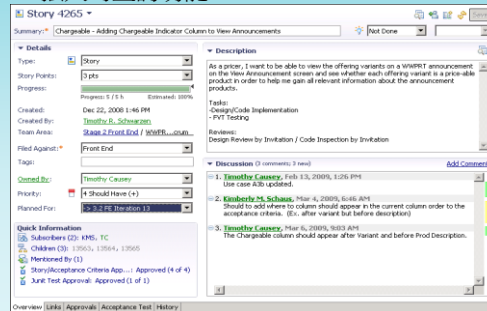
## 版本管控

- 整合的stream, Component, baselines 功能，提供完整的版本(version) 追跡資訊
- 支援Server-based sandboxes



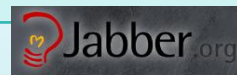
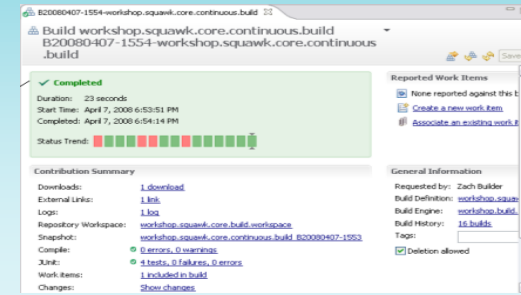
## 表單及流程管理

- 內建 缺陷單、新需求功能單, 工作單及客製表單, 及連結, 簽核, 稽核記錄
- 強大的查詢功能



## 建置管理

- 過版記錄可與工作表單、變更記錄追溯
- 支援本端及遠端編譯

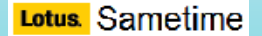


- 單一基礎平台支援全生命週期開發
- 世界級的專案開發組織架構，成員快速上手
- 依角色身分的權責管理，依專案規模、性質選擇專案流程模板

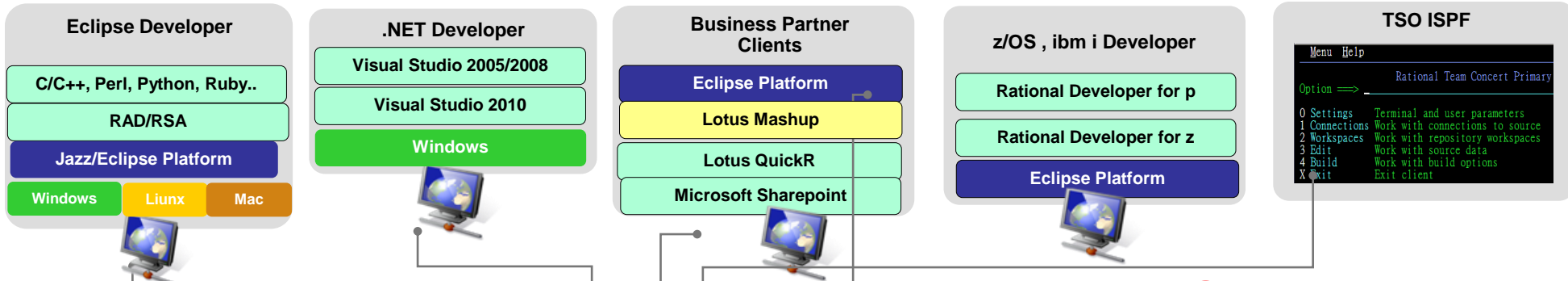
## Jazz 團隊伺服器



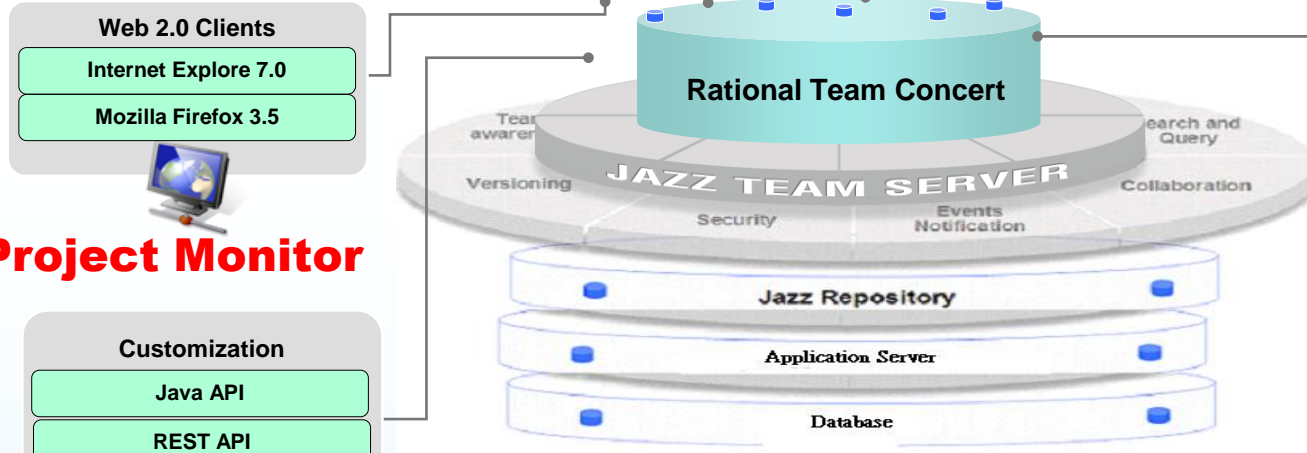
- Team advisor 功能，可定義專案流程規則，持續改善專案交付品質
  - 可定義專案流程並強制流程落實
- 以工作產出為基礎的協同合作，即時顯示成員的狀況及進行中的工作



# Rational Team Concert 架構概觀



## Smart Build



## Teamwork Development

**Messenger:**  
Jabber, Google  
Talk, Lotus  
Sametime

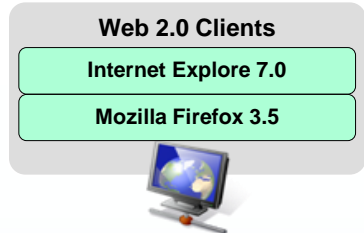
**Application Server:**  
Tomcat (Websphere)

**Database:** Derby, DB2  
Express, (DB2 Enterprise,  
Oracle, SQL Server)

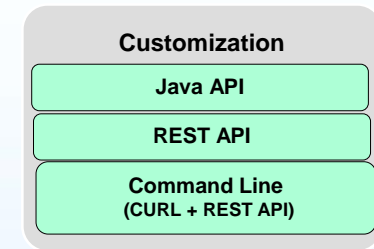
**Operation System:**

Windows, Linux, AIX,  
i5/OS, z/OS

## Project Monitor



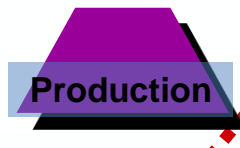
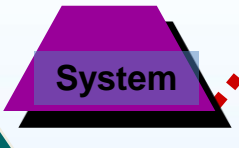
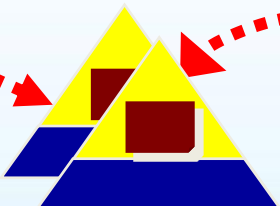
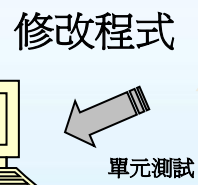
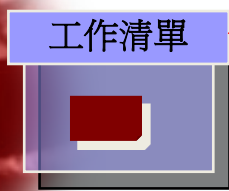
## Link to Other System



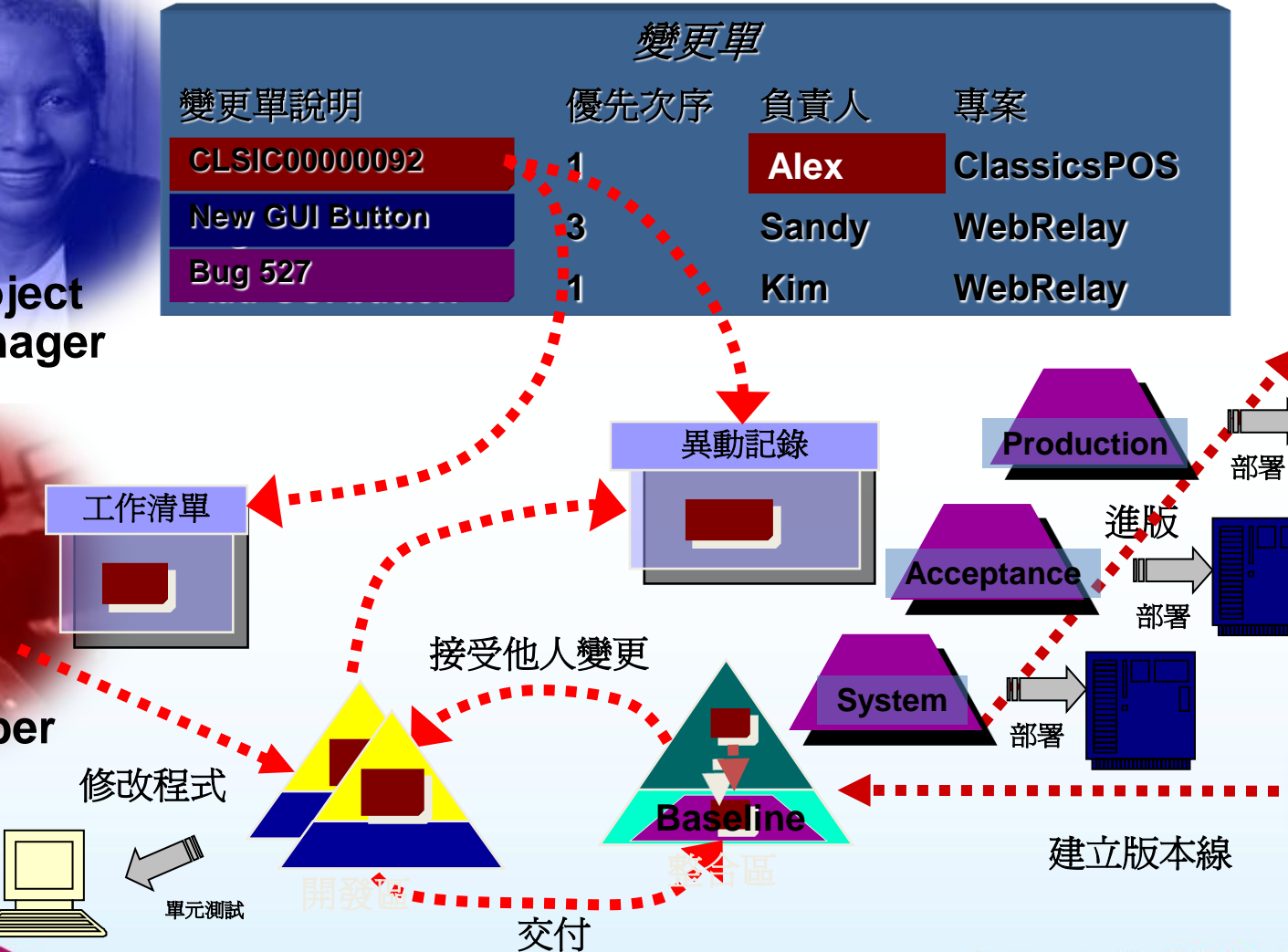
# IBM Rational Team Concert : 變更作業流程概念圖



變更單			
變更單說明	優先次序	負責人	專案
CLSIC00000092	1	Alex	ClassicsPOS
New GUI Button	3	Sandy	WebRelay
Bug 527	1	Kim	WebRelay



Release



# 開立RTC程式變更請求單

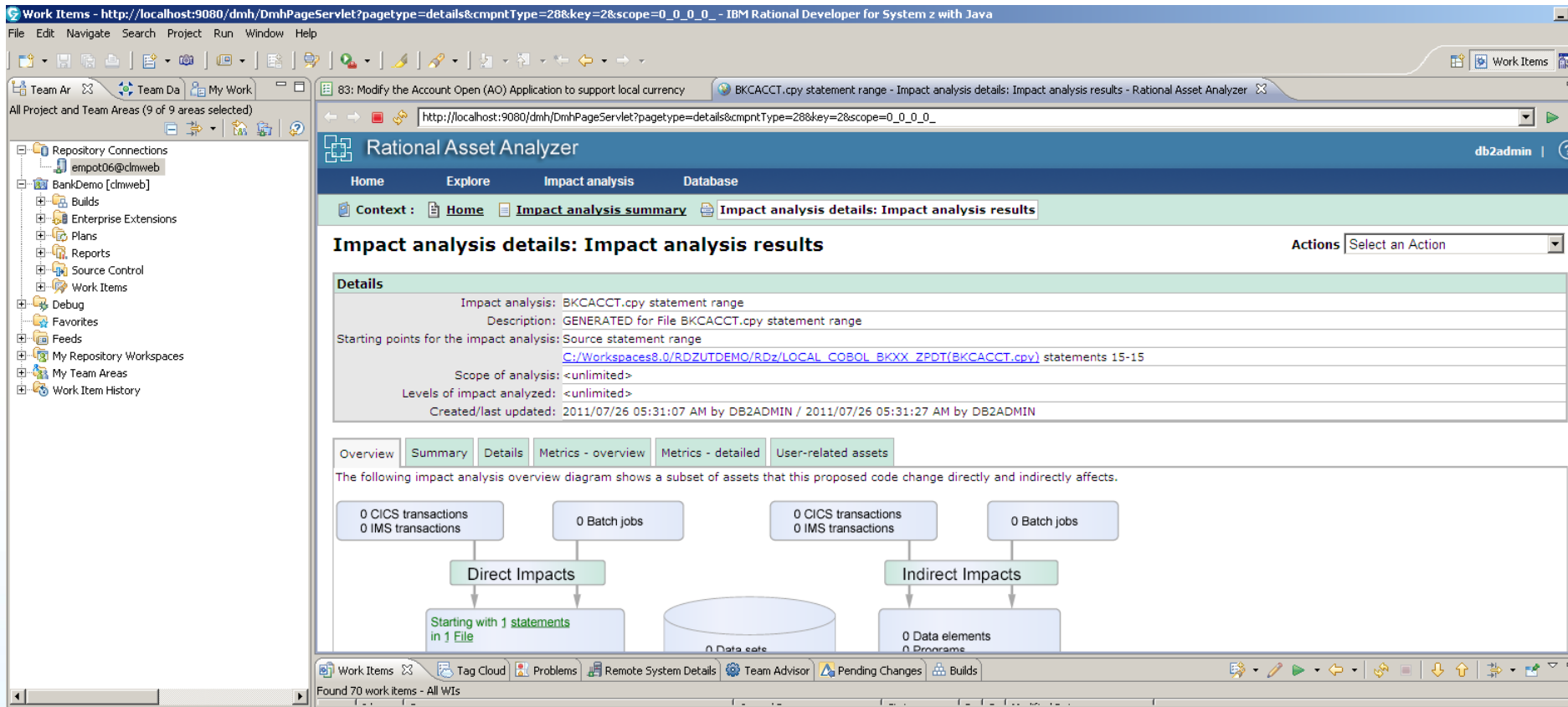
The screenshot shows the Rational Team Concert (RTC) web interface in a Mozilla Firefox browser. The browser title is '作業 59: 修改Mortgate 程式 - Rational Team Concert - Mozilla Firefox: IBM Edition'. The page URL is 'Change and Configuration Management (/ccm)'. The user is logged in as 'rtcuser'.

The main content area displays a 'Work Item' form for '作業 59'. The summary field contains '修改Mortgate 程式' and the status is '進行中'. The form includes several tabs: '概觀', '鏈結', '核准', and '歷程'. The '詳細資料' (Details) section contains the following fields:

- 類型: 作業
- 歸類依據: 未指派
- Project Area: RTC30 on Z
- Team Area: RTC30 on Z
- 建立日期: Mar 1, 2011 1:20 PM
- 建立者: rtcuser
- 標籤: (empty)
- 擁有者: Jazz
- 優先順序: (empty)
- 取消指派: (dropdown)
- 規劃目標: 待辦事項
- 預估值: (empty)
- 剩餘時間: (empty)
- 到期日: (calendar icon)

The '快速資訊' (Quick Info) section shows '交付前檢閱: Pending (0 of 0)' and '訂閱者 (1): r'. A 'Preview' button is visible at the bottom right of the form area. The browser status bar at the bottom left shows '完成' (Done).

# 透過Rational Assets Analyzer 可分析修改程式的影響層面



The screenshot displays the Rational Asset Analyzer web interface. The browser address bar shows the URL: `http://localhost:9080/dmh/DmhPageServlet?pagetype=details&cmpntType=28&key=2&scope=0_0_0_0_`. The page title is "Rational Asset Analyzer" and the user is logged in as "db2admin".

The main content area is titled "Impact analysis details: Impact analysis results". It includes a "Context" bar with "Home", "Impact analysis summary", and "Impact analysis details: Impact analysis results".

**Details**

- Impact analysis: BKCACCT.cpy statement range
- Description: GENERATED for File BKCACCT.cpy statement range
- Starting points for the impact analysis: Source statement range [C:/Workspaces8.0/RDZUTDEMO/RDz/LOCAL\\_COBOL\\_BKXXX\\_ZPDT\(BKCACCT.cpy\)](#) statements 15-15
- Scope of analysis: <unlimited>
- Levels of impact analyzed: <unlimited>
- Created/last updated: 2011/07/26 05:31:07 AM by DB2ADMIN / 2011/07/26 05:31:27 AM by DB2ADMIN

**Overview**

The following impact analysis overview diagram shows a subset of assets that this proposed code change directly and indirectly affects.

```

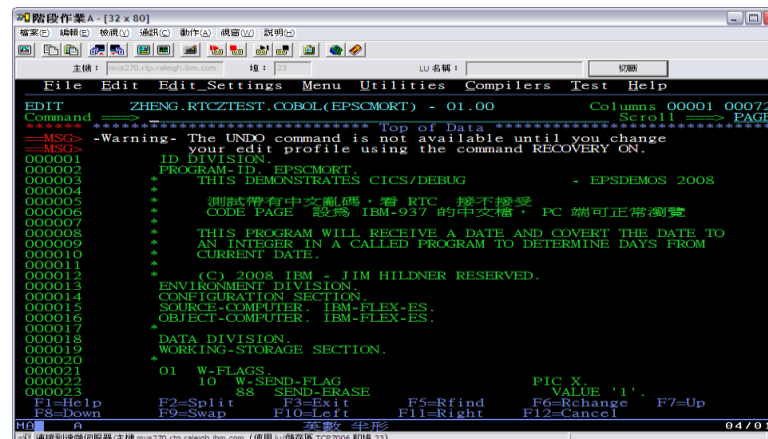
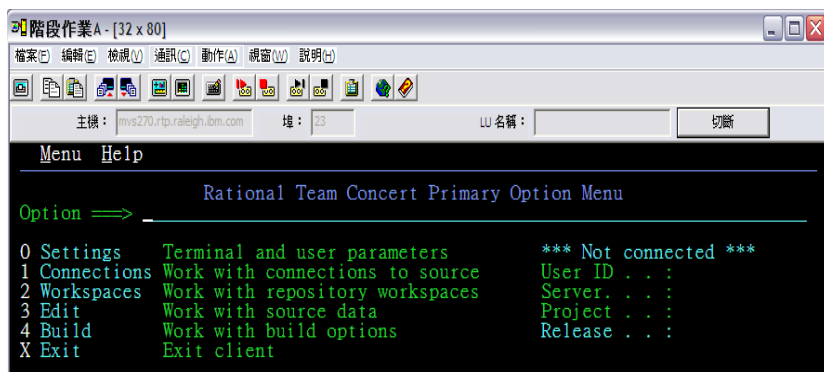
    graph TD
      subgraph Direct_Impacts [Direct Impacts]
        D1["0 CICS transactions  
0 IMS transactions"]
        D2["0 Batch jobs"]
        D1 --> S1["Starting with 1 statements  
in 1 File"]
        D2 --> S1
      end
      subgraph Indirect_Impacts [Indirect Impacts]
        I1["0 CICS transactions  
0 IMS transactions"]
        I2["0 Batch jobs"]
        I1 --> S2["0 Data elements  
0 Programs"]
        I2 --> S2
      end
      S1 --- DS["0 Data sets"]
      DS --- S2
  
```

The diagram illustrates the impact of the code change. Direct impacts include 0 CICS transactions, 0 IMS transactions, and 0 Batch jobs, which result in starting with 1 statement in 1 file. Indirect impacts include 0 CICS transactions, 0 IMS transactions, and 0 Batch jobs, which result in 0 data elements and 0 programs. The data sets are also shown as 0 Data sets.

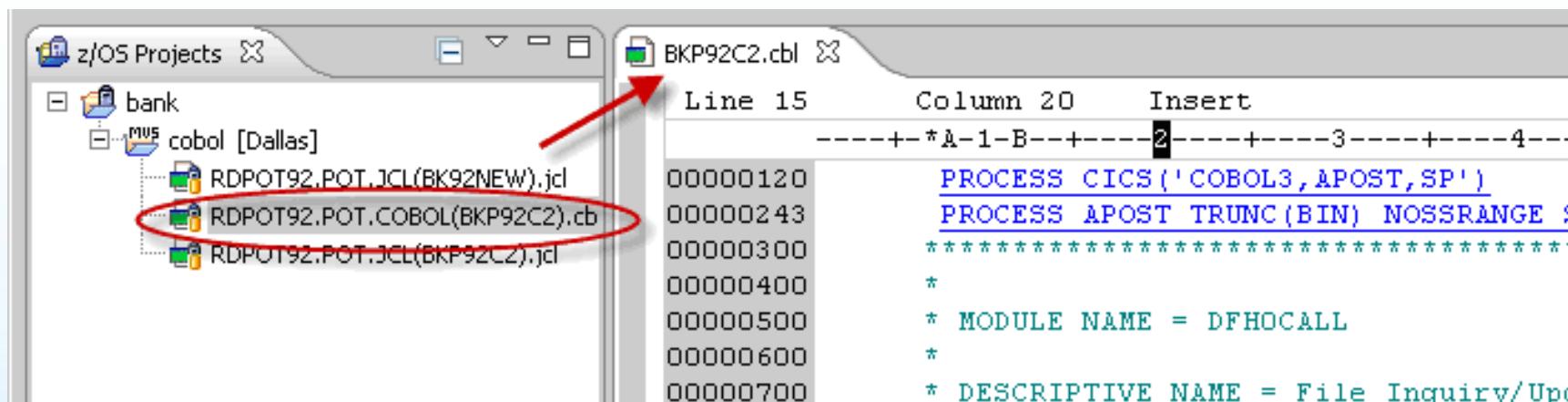
The bottom status bar indicates "Found 70 work items - All WIs".

# 使用RTC Client 進行修改程式

## 使用 RTCz ISPF 修改程式



## 使用 RDz Client 修改程式



# 使用RTCz 進程式開發

## 使用ISPF Client Check-in 程式

```

Member List Actions

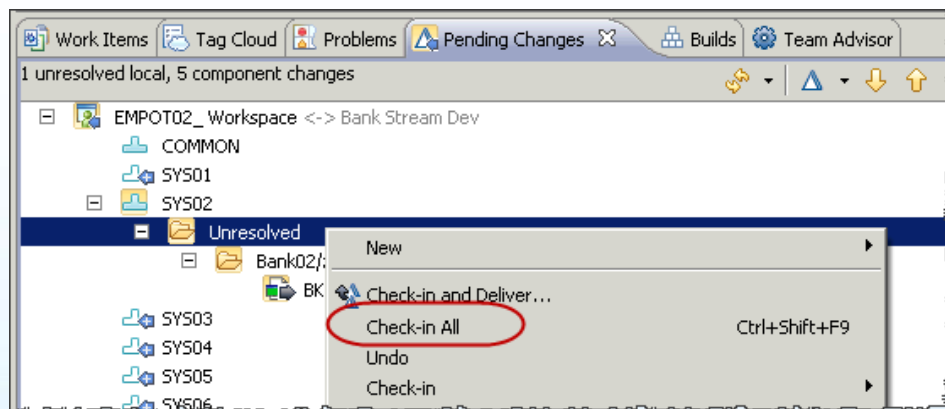
MEMBER : DDS0123.MG3WS.COBOL(EPSMPMT)

Member Action
— 1. Edit                6. Unlock
   2. Check-in           7. Info
   3. History            8. Revert
   4. Share              9. Delete
   5. Lock               10. Move

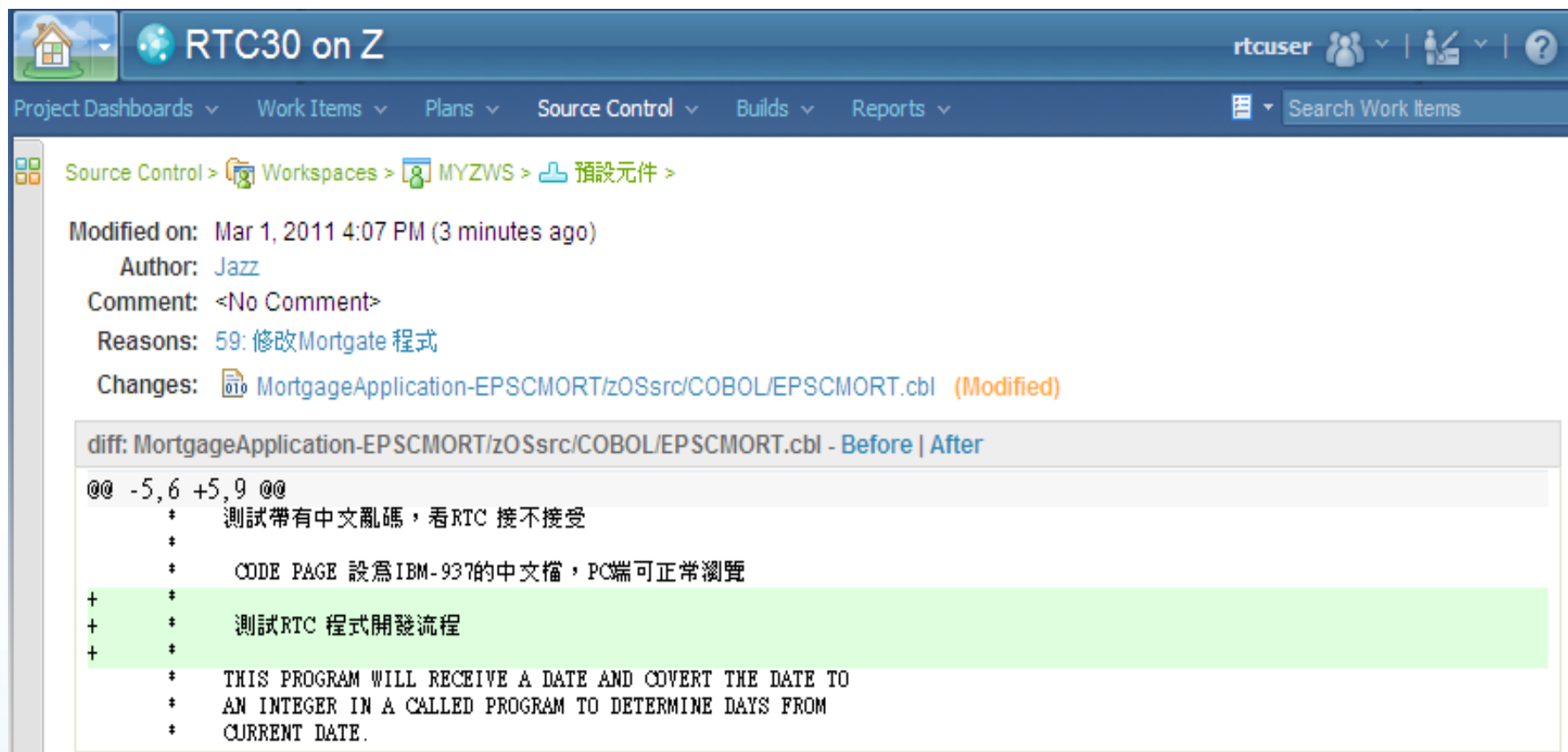
Select a choice and press ENTER to process action.

F1=Help      F2=Split    F3=Exit      F7=Backward  F8=Forward
F9=Swap      F12=Cancel
  
```

## 使用RDz Check-in 程式



# 查看差異明細



The screenshot displays the IBM RTC30 on Z web interface. The top navigation bar includes a home icon, the title "RTC30 on Z", and the user "rtcuser". Below the navigation bar are tabs for "Project Dashboards", "Work Items", "Plans", "Source Control", "Builds", and "Reports". A search bar for "Search Work Items" is also present.

The main content area shows the source control path: "Source Control > Workspaces > MYZWS > 預設元件 >". The change details are as follows:

- Modified on:** Mar 1, 2011 4:07 PM (3 minutes ago)
- Author:** Jazz
- Comment:** <No Comment>
- Reasons:** 59: 修改Mortgate 程式
- Changes:** MortgageApplication-EPSCMORT/zOSsrc/COBOL/EPSCMORT.cbl (Modified)

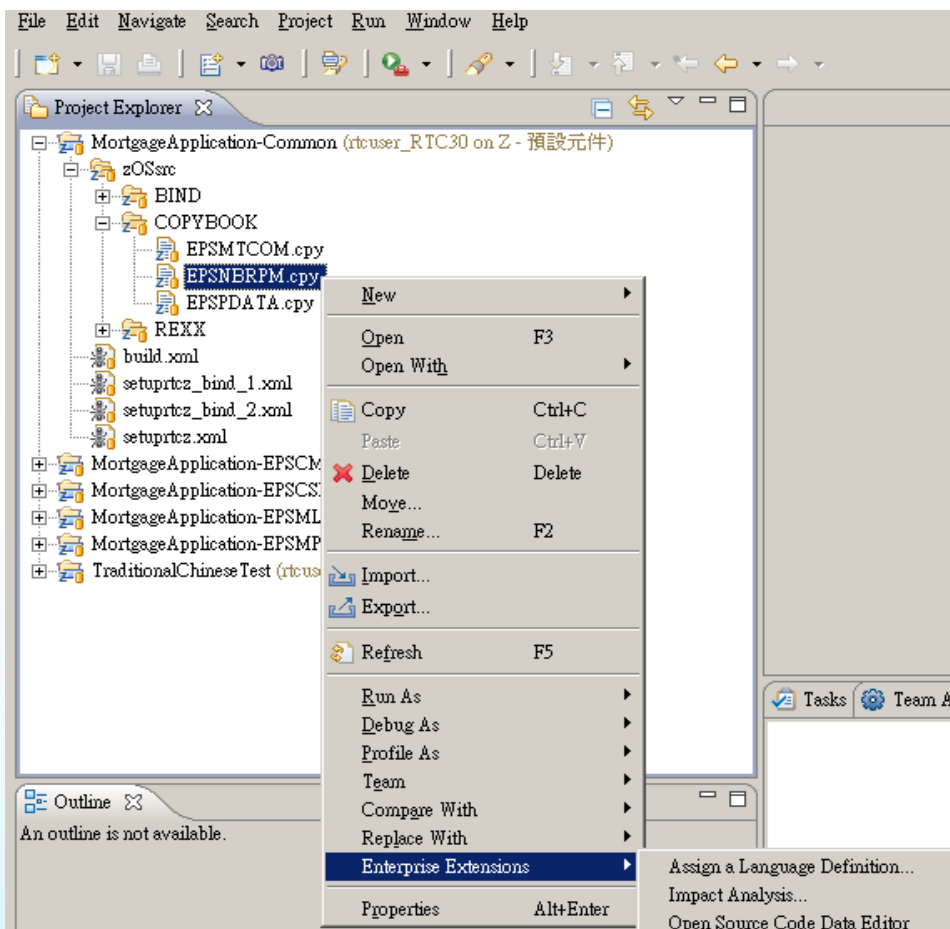
The diff view shows the following changes to the file "MortgageApplication-EPSCMORT/zOSsrc/COBOL/EPSCMORT.cbl":

```
diff: MortgageApplication-EPSCMORT/zOSsrc/COBOL/EPSCMORT.cbl - Before | After
@@ -5,6 +5,9 @@
+ * 測試帶有中文亂碼，看RTC 接不接受
+ *
+ *   CODE PAGE 設為IBM-937的中文档，PC端可正常瀏覽
+ *
+ * 測試RTC 程式開發流程
+ *
+ * THIS PROGRAM WILL RECEIVE A DATE AND COVERT THE DATE TO
+ * AN INTEGER IN A CALLED PROGRAM TO DETERMINE DAYS FROM
+ * CURRENT DATE.
```

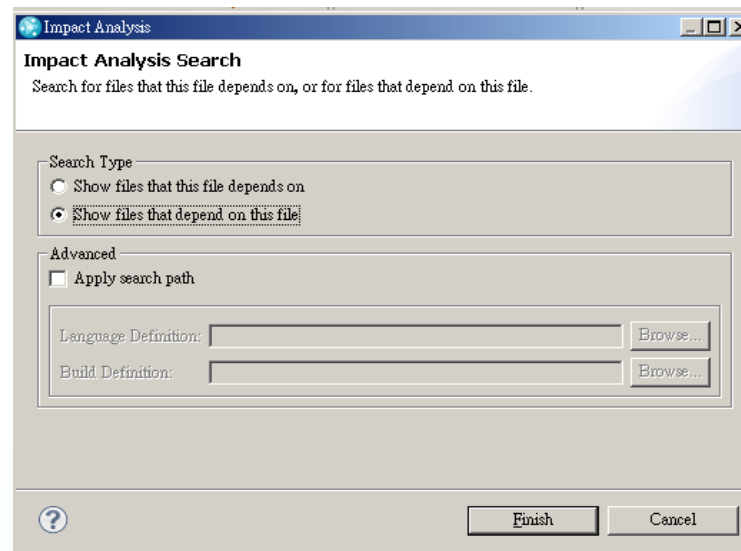


# Impact Analysis & Dependency Build

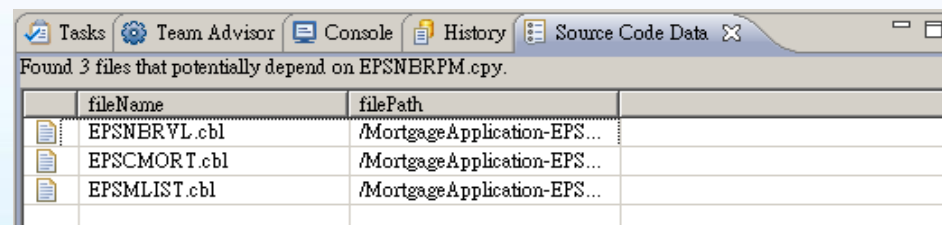
- 選擇要分析的檔案按右鍵開啟Impact Analysis 工具。



- 選擇有用到此COPY BOOK的程式。



- RTC 顯示有3 隻程式用到此Copy Book。



# 使用RTCz 進行整合程式編譯及上線

## RTCz 編譯環境設定

## RTCz 編譯報告

Enterprise Extensions | Data Set Definition

20110302-1422340359

Build Mortgage DEV Build 20110302-1422340359

Log Files

File Name	Text-name Library (Member)	File name (DDNAME) (Dataset name)	Concat Level	ISPF statistics Created	Changed
build-1299046					
SYSPRINT.log					
SYSPRINT.log	DFHAID	SYSLIB CICSTS.V3R2M0.CICS.SDFHCOB	1		
SYSPRINT.log	EPSCMORT	SYSLIB ZHENG.RTCZTEST.COPYBOOK	0		
SYSPRINT.log	EPSMTCOM	SYSLIB ZHENG.RTCZTEST.COPYBOOK	0		
SYSPRINT.log	EPSNBRPM	SYSLIB ZHENG.RTCZTEST.COPYBOOK	0		
SYSPRINT.log	PP 5655-S71	IBM Enterprise COBOL for z/OS 4.1.0	EPSCMORT	Date 03/02/2011	Time 02:26:37 Page 19

LineID Message code Message text

IGYDS0139-W Diagnostic messages were issued during processing of compiler options. These messages are located at the beginning of the listing.

Messages	Total	Informational	Warning	Error	Severe	Terminating
Printed:	5	1	4			

\* Statistics for COBOL program EPSCMORT:  
 \* Source records = 821  
 \* Data Division statements = 356  
 \* Procedure Division statements = 109

End of compilation 1, program EPSCMORT, highest severity 4.

Return code 4

完成

# RTC 3.0.1 新功能 --Build Map Report

Summary of buildReport.xml contents

https://red006.rtp.raleigh.ibm.com:9443/jazz/teamz\_buildmap/buildReport/\_buildResultUUID=\_TaYhQKGfEeCzV5fgMYZ5kg

This is a summary of the information in buildReport.xml. View the file source to see additional details, it is available on the downloads tab of the build results.

If the reason to build is less than 6, you can click on a Source to display the dependency set for that source. Also, you can click on an Output to jump to the previous build map if it exists.

**Component name: Demo Component**

Project	Source	Reason to build	Code	Language Definition	Output
MortgageApplication-EPSMLIST	HUNGLAM.DEMO.DEV.COBOL (EPSMLIST)	1	COB	COBOL compilation (CICS) and link-edit	HUNGLAM.DEMO.DEV.LOAD (EPSMLIST)

Dependency Resource	Project	Path	Type	Timestamp
HUNGLAM.DEMO.DEV.COBOL (EPSMLIST)	MortgageApplication-EPSMLIST	zOSsrc/COBOL/EPSMLIST.cbl	SELF	1309277353118
HUNGLAM.DEMO.DEV.COPYBOOK (EPSNBRPM)	MortgageApplication-Common	zOSsrc/COPYBOOK/EPSNBRPM.cpy	COPY	1298047226000
HUNGLAM.DEMO.DEV.COPYBOOK (EPSMTCOM)	MortgageApplication-Common	zOSsrc/COPYBOOK/EPSMTCOM.cpy	COPY	1298047226000
HUNGLAM.DEMO.DEV.COPYBOOK (EPSMORTF)	MortgageApplication-EPSMLIST	zOSsrc/COPYBOOK/EPSMORTF.cpy	COPY	1298047228000
HUNGLAM.DEMO.DEV.COPYBOOK (EPSMLIS)			COPY	1309277267000

**Reason Description**

- 1 Full build is requested or no previous successful build results were found.
- 0 Rebuild is not needed.
- 1 The source itself has changed.
- 2 One or more dependencies stored in the repository have changed.
- 3 One or more dependencies not in the repository, such as generated input files, have changed.
- 4 A build map for this resource was not found.
- 5 Build related information (such as language definitions, data set definitions, translators, properties) have changed.
- 6 One or more output files are modified or deleted on the build machine.

# RTC 3.0.1 新功能—工作單為基礎的 Promotion & Deploy/Rollback

**Promote Work Items**

**Work Item Selection**  
Select the work items to be promoted and specify any additional options.

Definition:

**Promotion options**

- Promote source and outputs
- Promote source only
- Include children of selected work items

Select Work Items:

ID	Summary
<input checked="" type="checkbox"/> 71	Demo Sample Work Item

Open summary work item

**Package Work Items**

**Work Item Selection**  
Select the work items to be packaged and specify any additional options.

Definition:

Include children of selected work items

Select Work Items:

ID	Summary
<input checked="" type="checkbox"/> 71	Demo Sample Work Item

Open summary work item

# 總結

# 建立現代化、整合的全生命週期協作開發基礎平台

提供開發人員觀點的企業現代化開發平台



透過IBM 服務團隊，協助您建立

- ✓ 建立現代化, 高生產力的開發平台
- ✓ 透過標準程序導入系統，確保導入品質，簡化初次安裝及設定
- ✓ 通用的使用案例及整合情境.
- ✓ 實作小範圍的特定使用模式 確認成功再行擴展

# Thank You

[www.ibm/software/rational](http://www.ibm/software/rational)

© Copyright IBM Corporation 2010. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, these materials. Nothing contained in these materials is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software. References in these materials to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates. Product release dates and/or capabilities referenced in these materials may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way. IBM, the IBM logo, Rational, the Rational logo, Telelogic, the Telelogic logo, and other IBM products and services are trademarks of the International Business Machines Corporation, in the United States, other countries or both. Other company, product, or service names may be trademarks or service marks of others.