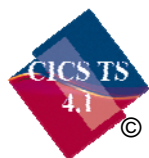# CICS and Rational: Increase business agility through innovative tooling

David Chadwick **Testing Evangelist, Rational**
John Knutson **Marketing Manager, CICS Tools**
Tim Hahn **IBM Distinguished Engineer, Chief Architect for Enterprise Modernization Tools**

Agenda

- **Agile Performance Testing**

- **CICS Performance Analysis**

- **Agile Development**

Agile Performance Testing

David Chadwick
Testing Evangelist, Rational

Agile Performance Testing

- **Define a Performance Requirement**

- **Write the Test Case**

- **Capture the Test**

- **Set the Performance Metric**

- **Run the Test**

- **Analyze the Results**

- **Contact the CICS guru for help!**

Define a Performance Requirement

- **The user story says: "The website user shall be able to access and update the user's profile information."**

- **The performance requirement –**
  - For user profile update operations,
  - 90 percent of the responses must return
  - in less than 2 seconds

- **The expected peak workload –**
  - During the busy hour along with other operations,
  - User profile updates may occur at 2,000 / min

Rational Quality Manager

- **Enter the performance requirement in RQM**

Requirement 23   Save

Summary: Performance - Update User Profile   ⇒ New

Overview   Links   Approvals   History   Saved: Jul 12, 2009 2:46 PM

Details

Type:	Requirement	Severity:	Normal
Creation Date:	Jul 5, 2009 12:23 PM	Owned By:	Pete Planner
Created By:	ADMIN	Tags:	performance, shopping_cart

Description   Edit

The performance of the update user profile operation must be able to handle 2000 transactions per minute during the busy hour workload and maintain a 2 second response time at 90th percentile.

Performance Test Case in RQM

Home | View Test Cases | 📄 Performance - Update...

Manage Sections

Table Of Contents 📌

Summary
Test Case Design
Formal Review
Requirements
Pre-Condition
Post-Condition
Test Scripts
Test Execution Records
Attachments

☐ Show All Sections

Performance - Update User Profile ?

🖨 ▶ 🔓 | Discard Changes | Save

Test Case Overview | View Snapshots

☑ *Saved successfully at: 21:08:39*

Originator: ADMIN   Action: Select Action ▼   ⇨ State: Draft

Test Case Design ?

✖ ⊗

Work Item: Create

Define the overall design for the current test case. This can include any background setup information or topologies.

Edit

- The user profile information is saved on the mainframe database
- The SAVE button for the profile update web page causes a POST of the profile information
- The user scenario is as follows:
  - Login as a random registered user
  - Click on the update user profile link
  - Enter some new information in the form
  - Click the SAVE button

Capture the Test and Set the Metric

- **Capture the user scenario**
- **Add the 90th percentile < 2 seconds requirement for update response time**

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Run the Test

Performance Requirement Margins

Performance Requirements -- Margin Percentage

Y-axis: 0, -50, -100, -150, -200

X-axis: -220

■ HTTP Page UserProfileUpdated 90th Percentile Response [ms][for Run]
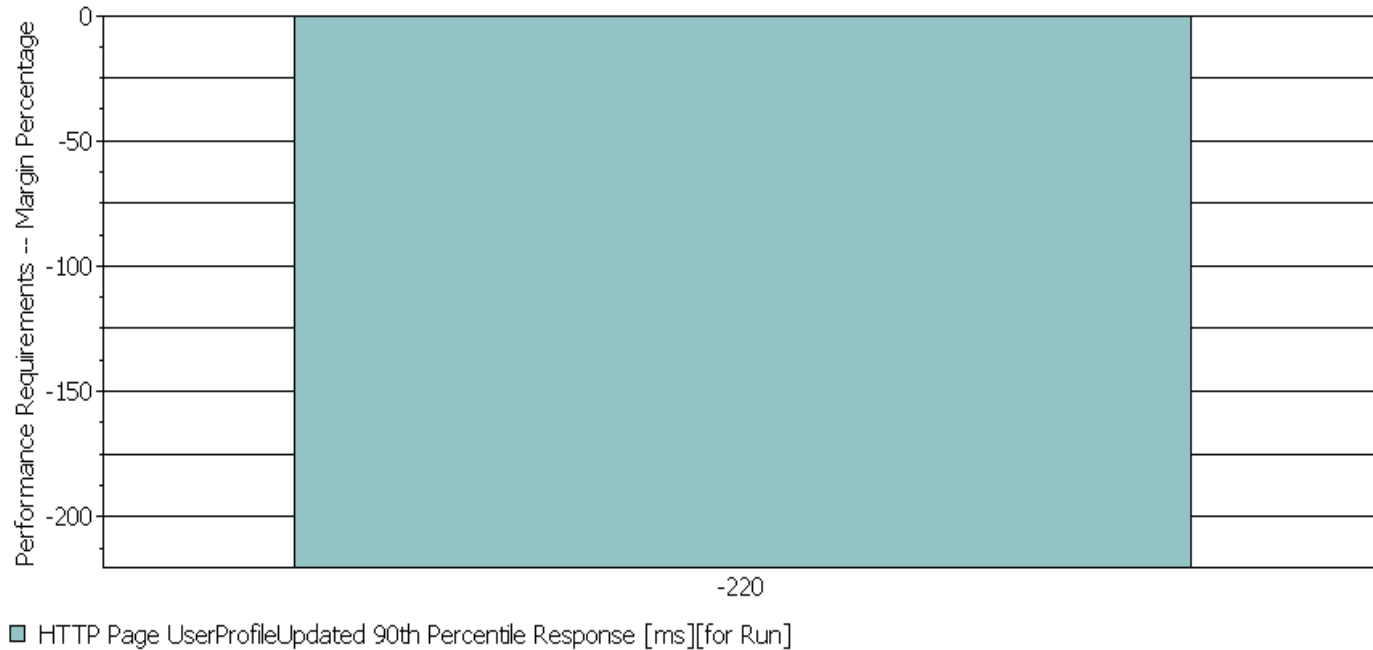
Performance Requirement Details

			Performance Requirements -- Margin Percentage	Performance Requirements -- Observed Results	Performance Requirements -- Specification	Performance Requirements -- Status
HTTP Page	UserProfileUpdated	90th Percentile Response [ms][for Run]	-220	6,400	<= 2000	Failed

9

Analyze the Result

Page Performance

Average Page Response Time for Run (4 filters applied)

	LoggedInHomePage	LoginForm	UpdateForm	UserProfileUpdated
Response Time [ms] – Average	458.75	379.91	832.04	2,741.72
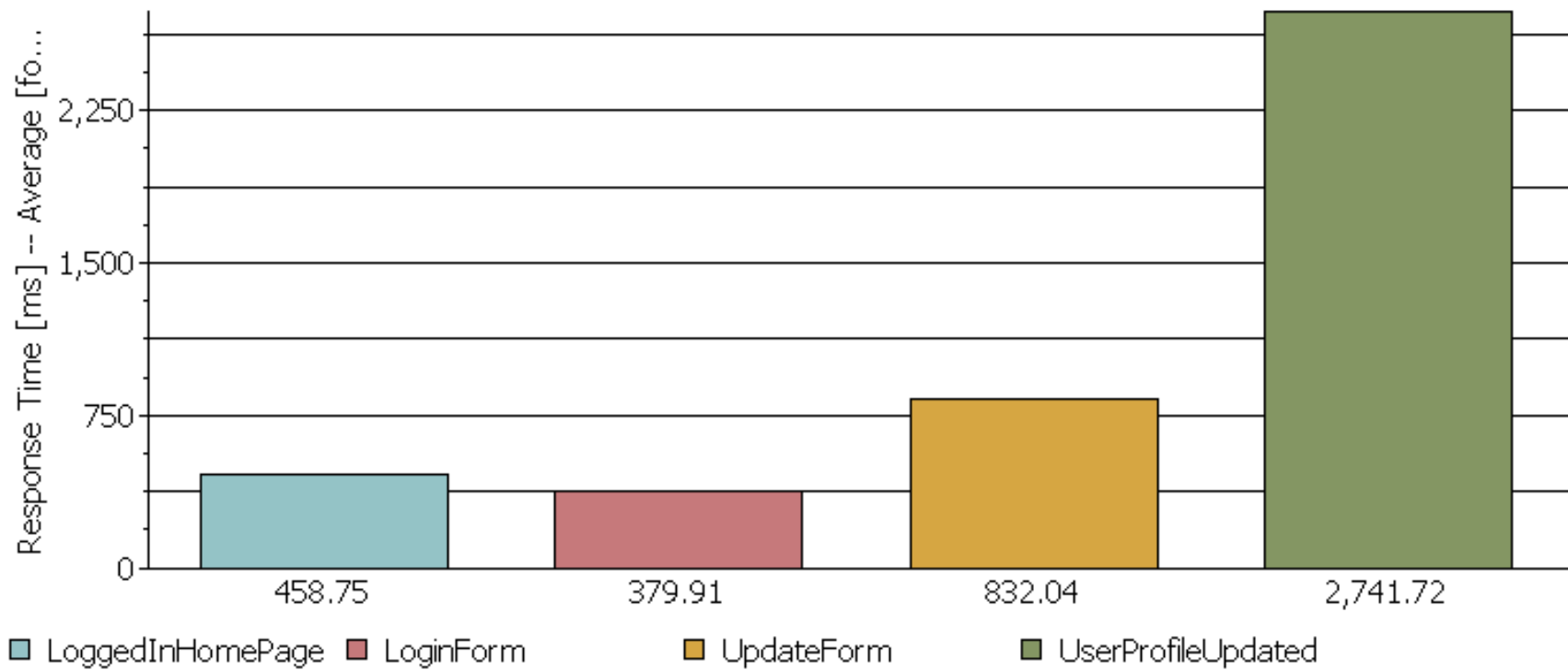
Ask the Expert

- **Fill out a work item for CICS analysis**

| Summary: * | Update User Profile Transaction is too slow | ⇨ | New ▾ | ⇨ | Unresolved ▾ |

| Overview | Links | Approvals | History | | Loaded: Jul 13, 2009 11:42 PM |

Details

Type:	📋	Task ▾		Owned By:		Pete Planner ▾
Severity:	⚪	Normal ▾		Priority:	🔒	Medium ▾
Found In:		Unassigned ▾		Planned For:		Unassigned ▾
Creation Date:		Jul 13, 2009 11:42 PM		Estimate:			Correction:
Created By:		ADMIN		Due Date:		
Project Area:		Quality Manager
Team Area:		RPT Web 2.0 Feature Test Team
Filed Against:		Quality Manager ▾
Tags:		

Description   Edit

The update user profile operation should take less than 2.0 seconds. Currently it is averaging almost 3 seconds. Upon analysis of the transaction breakdown using RPT and ITCAM for WAS, 2.8 seconds on average is attributed the CICS operation to update the user profile information in the zSeries backend system.

Contact the CICS expert to figure out why the operation is so slow.

CICS Performance Analysis

John Knutson
Marketing Manager, CICS Tools

Performance analysis outline

- **Identify target transactions and programs**
- **Look for out of line metrics**
  - Spikes may be intermittent
  - Resource usage, e.g. file, DB2, TS Queue
  - Response time
  - Wait time
  - CPU usage
  - Storage
  - TCB switches
- **Make recommendations**
  - Program changes
  - Resource definition changes

Look for out of line metrics

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Drilling down into performance data

Choose time interval

And select drill-down view
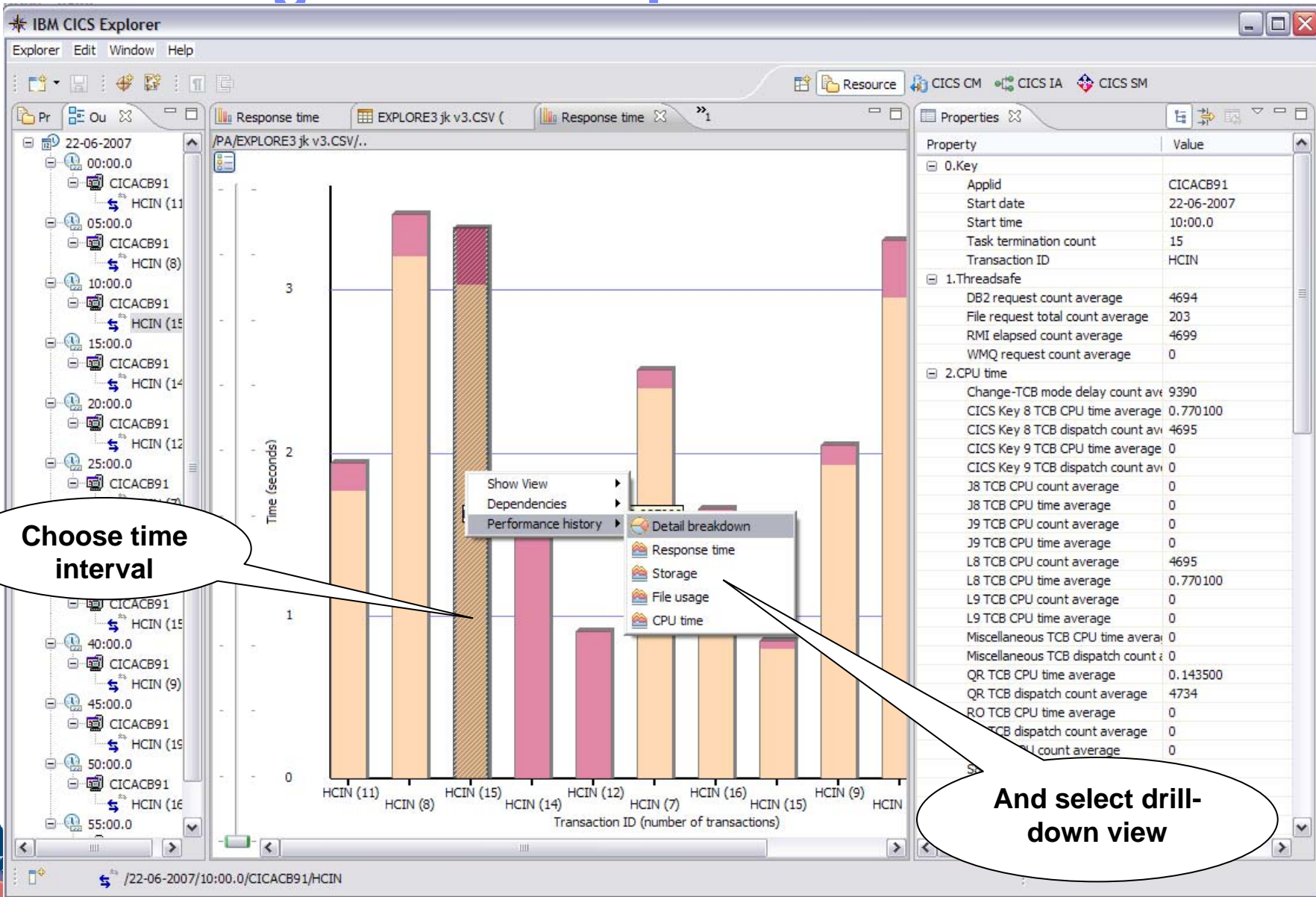
Drill down in context into dependency data

Many TCB switches

Very high DB2 count

Context menu to use CICS IA to show resource dependencies …

Including DB2 table names, VSAM file names
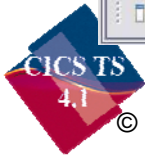
Confirm no threadsafe integrity issues

Customized version of standard query

No threadsafe issues!

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Compare two test periods
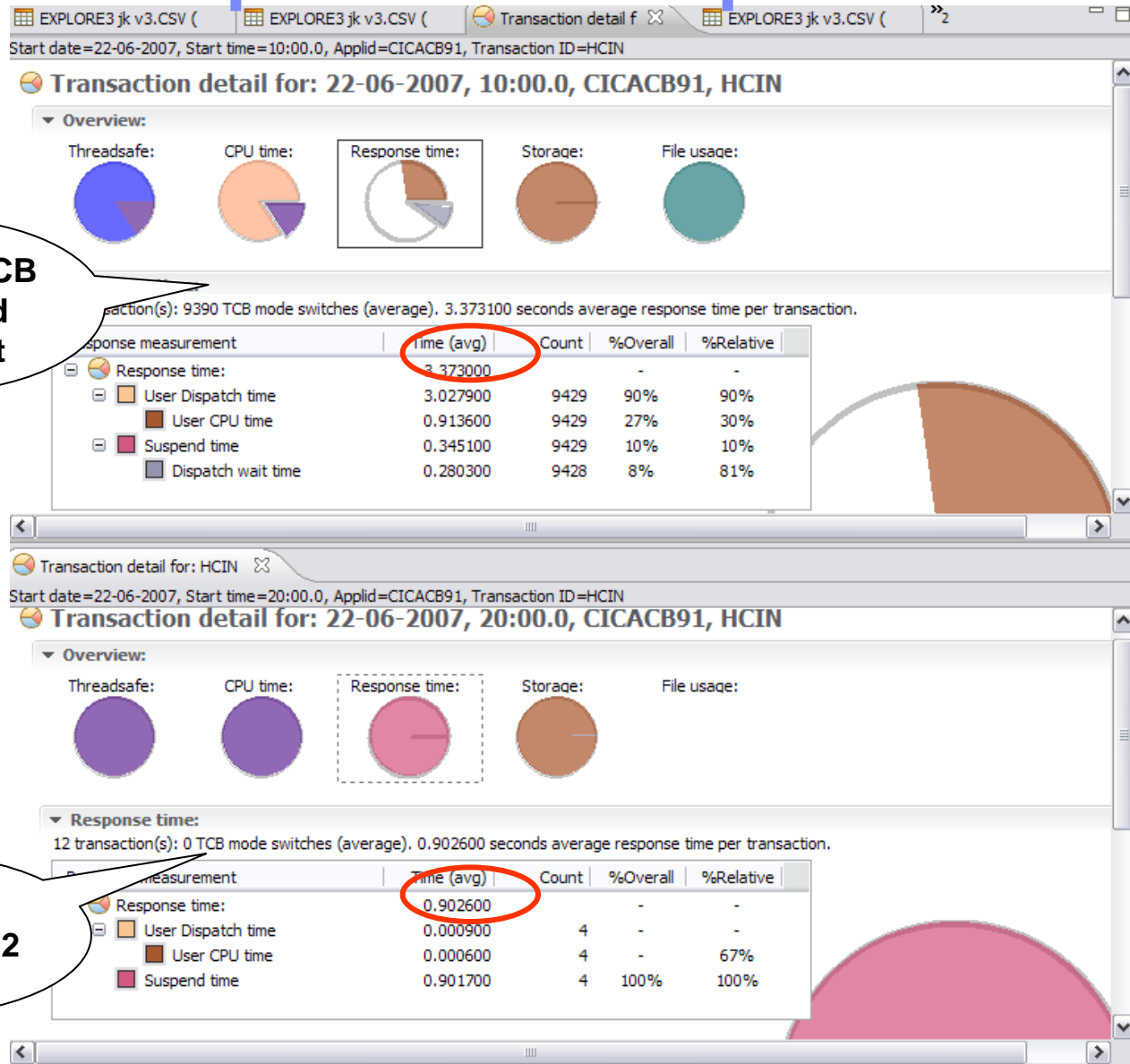
Very high TCB switch and DB2 count

No TCB switch or DB2 access

Update Work Item with recommendations

1. **Confirm that it is reasonable for this transaction to be issuing so many DB2 calls**

    - Rework application or reset expectations

2. **Consider defining constituent programs as Threadsafe, to avoid high number of TCB switches and associated CPU time and redispatch wait time**

    - CICS IA indicates no potential integrity issues so could re-run performance test having made simple resource definition changes

Application Developer tasks

Tim Hahn

IBM Distinguished Engineer

Chief Architect for Enterprise Modernization Tools

Steps taken

▶ **Open an existing work item**

▶ **Work on the work item**

▶ **Edit and change some source code**

▶ **Find the code in the source code repository**

▶ **Evaluate the differences in the before and after source code**

▶ **Check in the source code**

▶ **Resolve the work item**

Open an existing work item

Work on the work item

Edit and change some source code

Edit and change some source code

Find the code in the source code repository

Evaluate differences - before and after code

Check in the source code

Resolve the work item

CICS and Rational Tools in Action

- **Agile Performance Testing**
  - Rational Quality Manager http://www-01.ibm.com/software/awdtools/rqm/
  - Rational Performance Tester http://www-01.ibm.com/software/awdtools/tester/performance/

- **CICS Performance Analysis**
  - CICS Explorer http://www-01.ibm.com/software/htp/cics/explorer/
  - CICS Performance Analyzer http://www-01.ibm.com/software/htp/cics/panaly/
  - CICS Interdependency Analyzer http://www-01.ibm.com/software/htp/cics/ianaly/

- **Agile Development**
  - Rational Team Concert http://www-01.ibm.com/software/awdtools/rtc/index.html
  - Rational Developer for System z http://www-01.ibm.com/software/awdtools/rdz/

Learn More About Rational

- IBM Rational software http://www-01.ibm.com/software/rational/

- IBM Rational Software Delivery Platform http://www-01.ibm.com/software/rational/strategy/

- Process and portfolio management http://www-01.ibm.com/software/rational/offerings/ppm/

- Change and release management http://www-01.ibm.com/software/rational/offerings/crm/

- Quality management http://www-01.ibm.com/software/rational/offerings/quality/

- Architecture management http://www-01.ibm.com/software/rational/offerings/architecture/

- Rational trial downloadsa http://www.ibm.com/developerworks/rational/downloads/?S_TACT=105AGX23&S_CMP=RCD

- developerWorks Rational http://www.ibm.com/developerworks/rational

- IBM Rational TV http://www-01.ibm.com/software/info/television/index.jsp?cat=rational&item=xml/M259765N40519Z80.xml&media=video

- IBM Rational Business Partners http://www-01.ibm.com/software/rational/partners/

Learn More About CICS

- **CICS TS V4.1 Generally Available June 26th 2009**
  - Announcement letter (April 28th 2009) http://tinyurl.com/cjc9oj
  - http://ibm.com/cics/tserver/v41/
- **CICS Tools**
  - Home page http://ibm.com/cics/tools
- **CICS Explorer**
  - Home page http://ibm.com/cics/explorer
  - Downloads http://ibm.com/cics/explorer/download
  - Forum http://tinyurl.com/68bndw
- **Watch great new CICS videos on YouTube**
  - CICS Explorer - Videos, demos and other cool stuff http://www.youtube.com/CICSExplorer
  - CICSFluff - Other CICS videos http://www.youtube.com/CICSfluff
- **New! CICS Hub on the Rational COBOL Café**
  - http://ibm.com/software/rational/cafe/community/cobol/cics
- **Subscribe to CICS eNews for news about CICS and related products http://www-01.ibm.com/software/htp/cics/enews/**
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