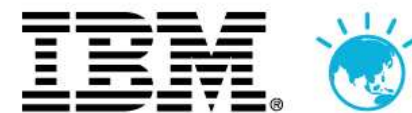


IBM Rational 软件创新论坛

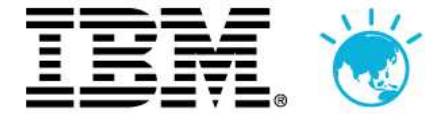


Let's **build** a  
smarter planet.

开发有道  
创新“智”造

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# 基于Rational Team Concert 为分布式开发构建配置管理系统

**IBM**中国软件开发中心

高级软件工程师： 孙志强

**Innovate2010**



# 分布式开发



地理分布  
流程敏捷

Innovate2010

Let's build a smarter planet.



IBM 

# 分布式开发中常见的问题

开发环境是什么？

我们的团队在哪儿？

我是什么角色??  
我这个角色做什么？

我该遵循什么流程？

我们该怎么进行迭代与产品发布计划？



# Rational Team Concert是什么？ — 站在用户的视角

## 敏捷计划

- 集成的 发布/迭代 计划
- 工作量评估以及进度追踪面板
- 完备的敏捷流程模板

## 项目透明化

- 可定制的状态面板
- 实时更新的图表及报告
- 项目里程碑跟踪与状态报告

## SCM

- 先进易用的客户端操作
- 组件、流、基线、快照管理
- 极易维护的服务器设计
- 支持可扩展的架构
- 与其它SCM的集成SVN, Git, CC bridge, connector

## Work Items

- 任务, 缺陷, enhancements 及其它可定制的工作项
- 展现与共享查询结果
- 支持审批与讨论机制
- 与ClearQuest的集成 bridge, connector

## Build

- 可追踪工作项与变更集
- 针对个人与团里的Build定义
- 本地或者远程的Build服务器
- 支持Ant与命令行工具
- 与Build Forge集成

## Jazz Team Server

- Single structure for project related artifacts
- World-class team on-boarding / offboarding including team membership, sub-teams and project inheritance
- Role-based operational control for flexible definition of process and capabilities
- Team advisor for defining / refining “rules” and enabling continuous improvement
- Process enactment and enforcement
- In-context collaboration enables team members to communicate in context of their work

# 配置管理系统如何高效的支持分布式开发？

- 开发人员
  - ▶ 易用性
  - ▶ 产品性能
  - ▶ 提高效率
- 项目经理
  - ▶ 项目开发流程管理
  - ▶ 提高产品质量，提升开发效率
- 运行维护管理员
  - ▶ 易于维护
  - ▶ 高可靠性，可扩展性

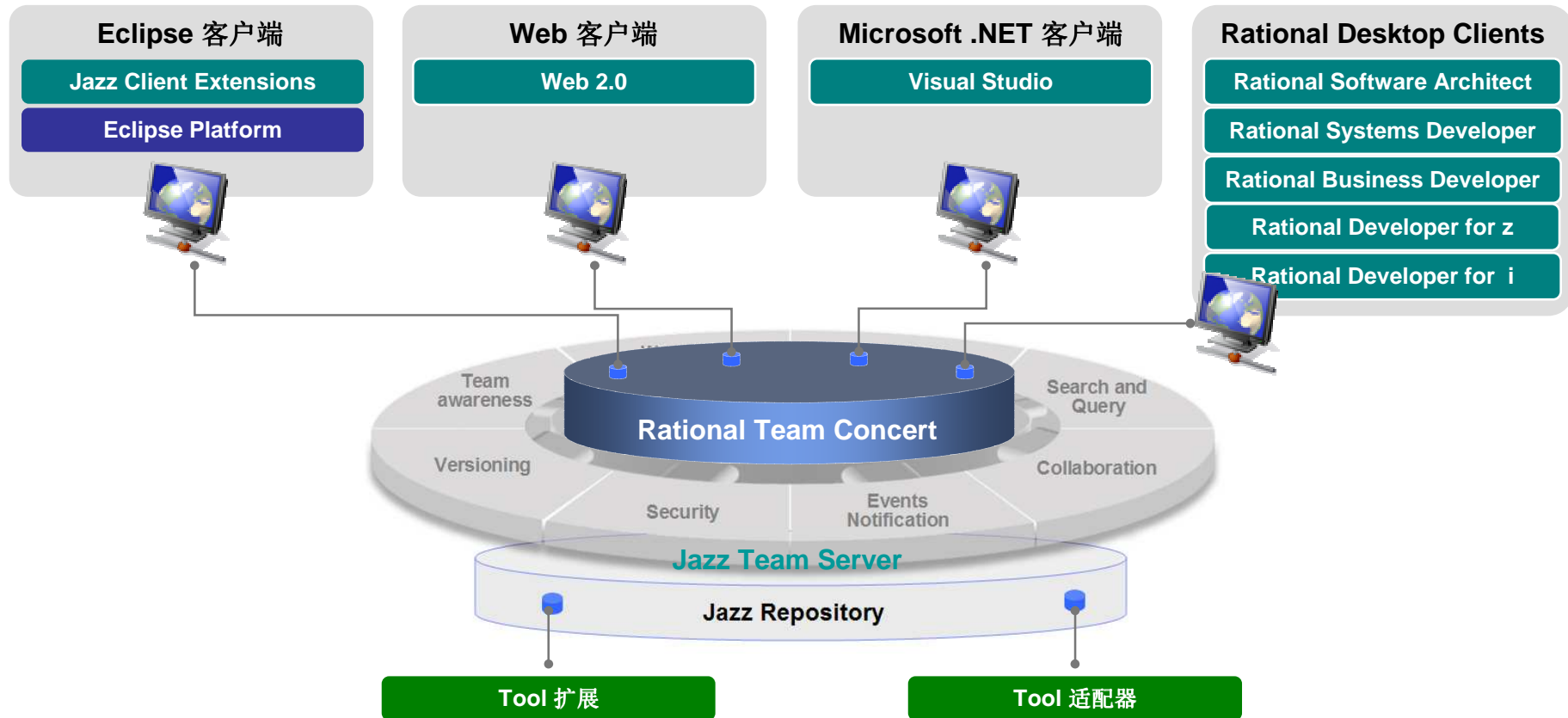


# 开发人员对配置管理的要求

- 易于使用
  - ▶ 建立开发环境与工作区
  - ▶ 简捷的日常操作：下载，更新，提交
  - ▶ 与开发平台无缝集成
- 性能足够好
  - ▶ 严格的流程控制不至于影响开发效率
- 功能丰富，有利于
  - ▶ 提高个人生产效率
  - ▶ 提升团队合作水平

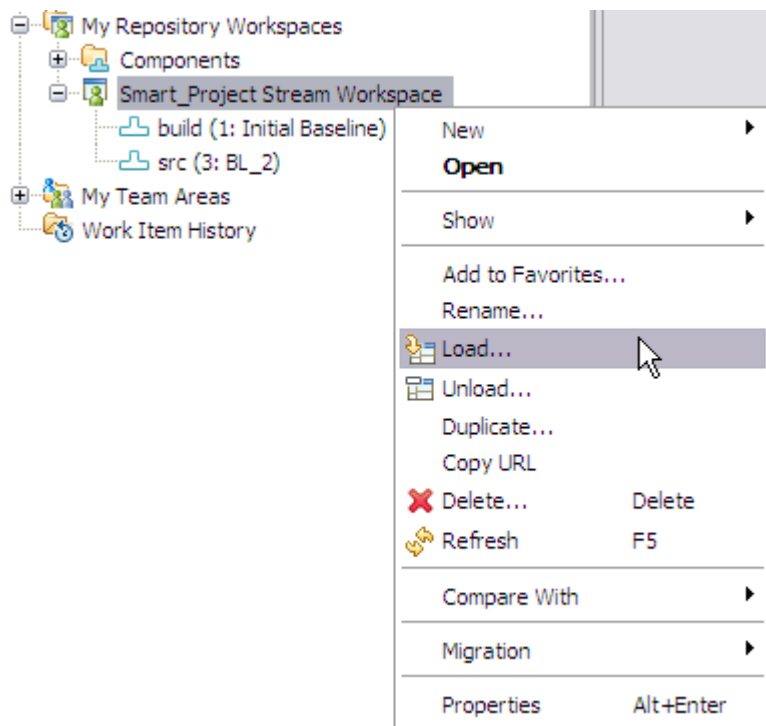


# RTC无缝集成于主流软件开发平台

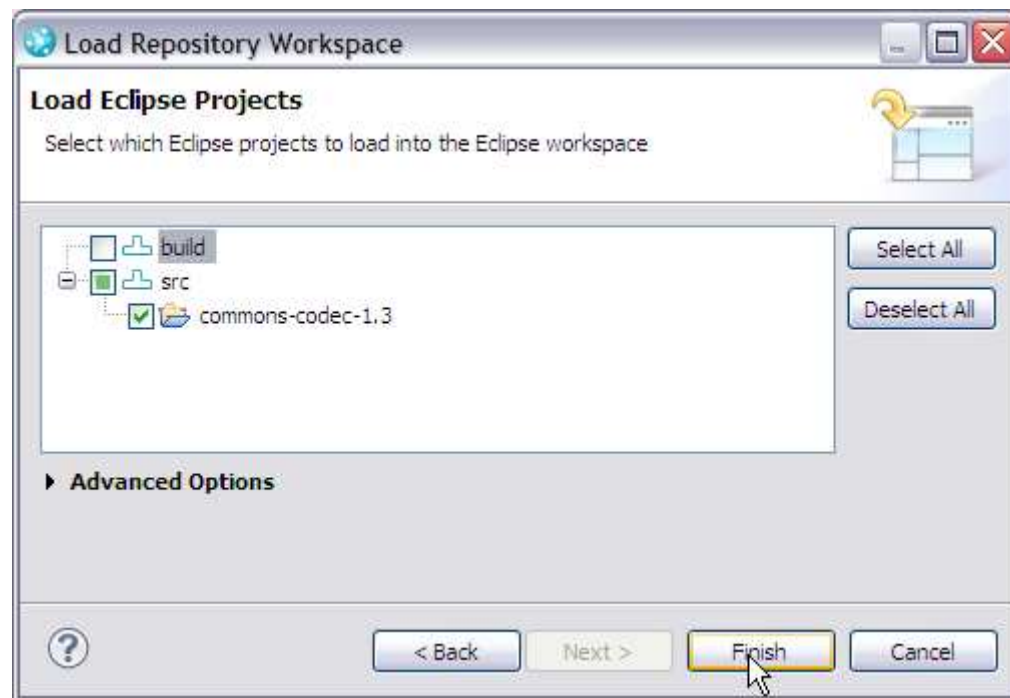




# 创建工作空间

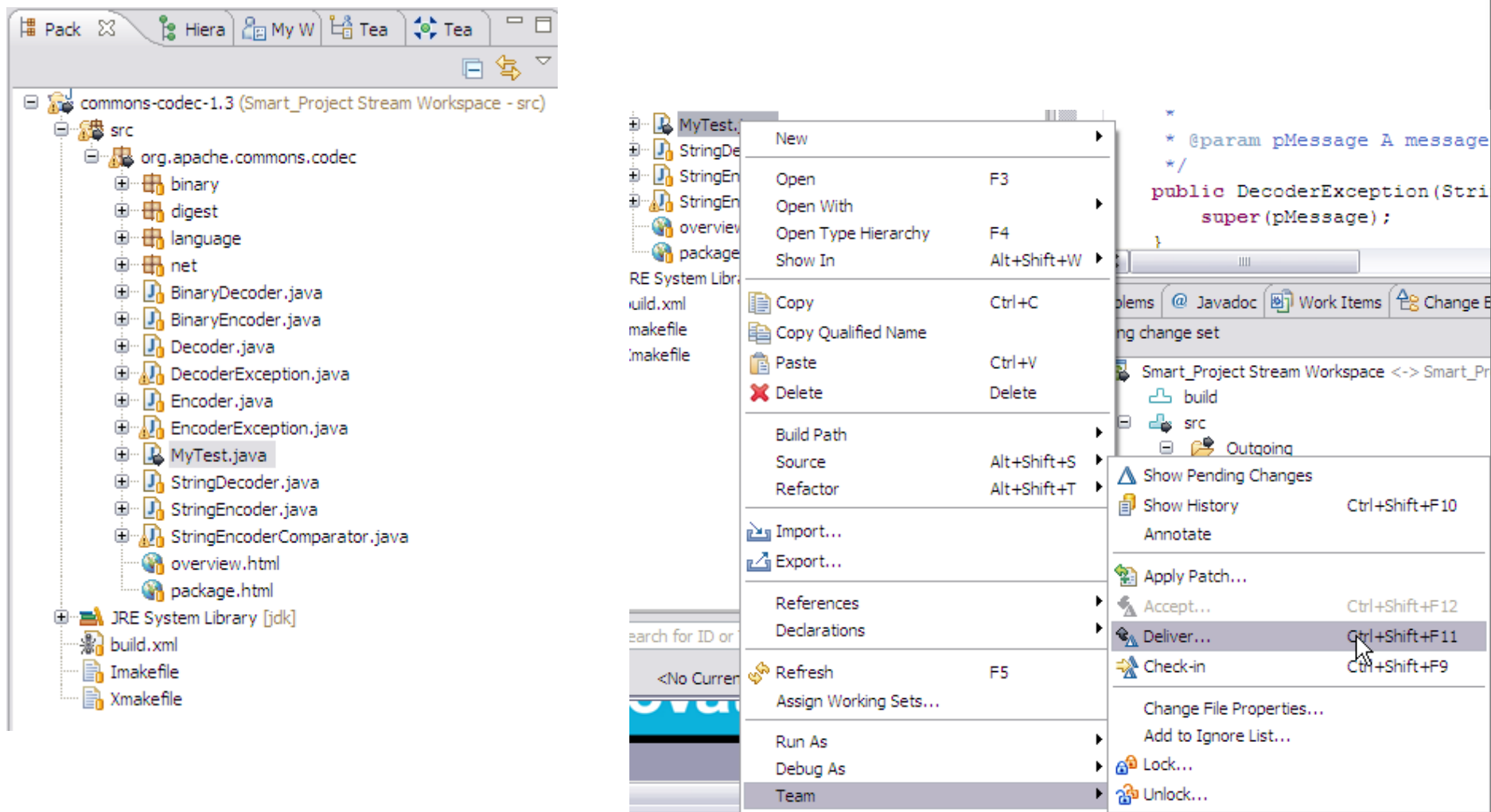


新建/重用工作空间

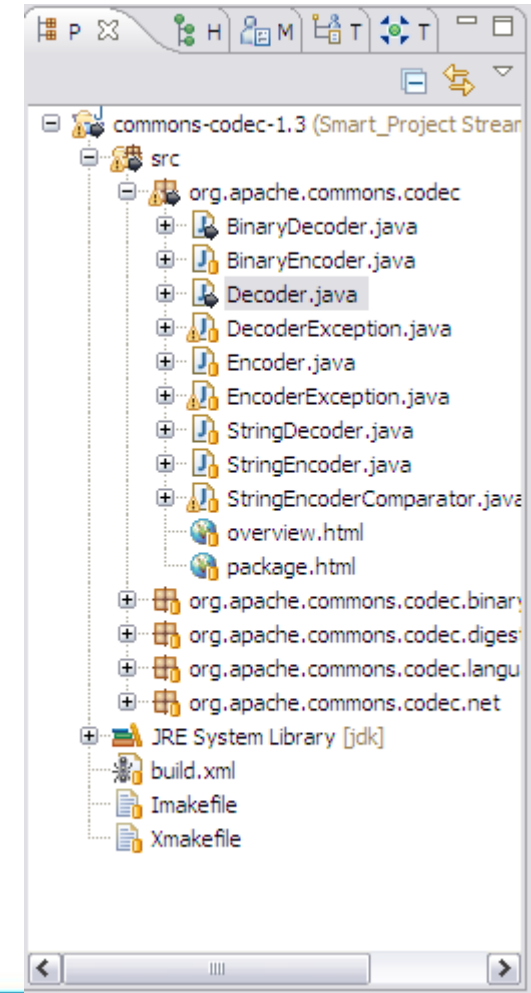
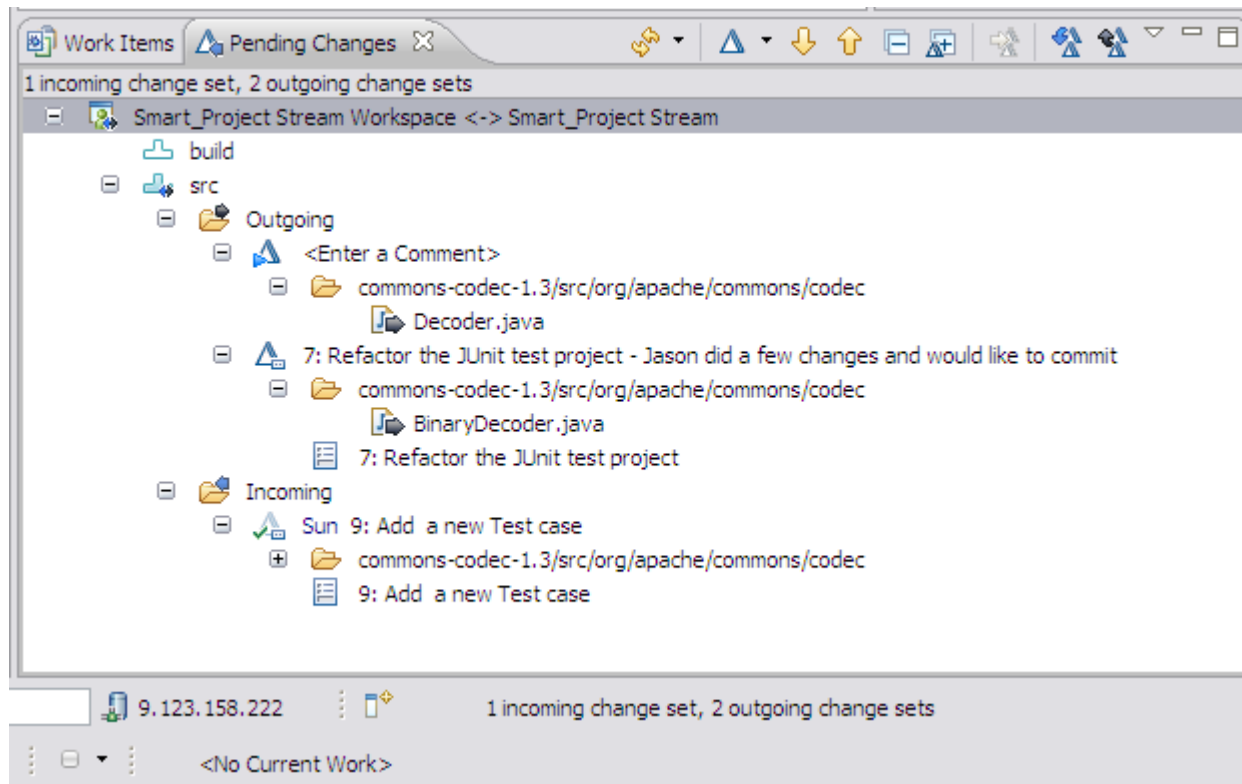


下载并装载工作项目

# 本地文件操作，性能表现出色



# 感知变化



# 变更历史

Merges	Comment	Creator	Date Created
	7: Refactor the JUnit test project	jason	2010-8-13 下午4:25
	8: Add more comments to existing source code	jason	2010-8-11 下午4:28
	Share projects	Sun	2010-8-11 下午3:52

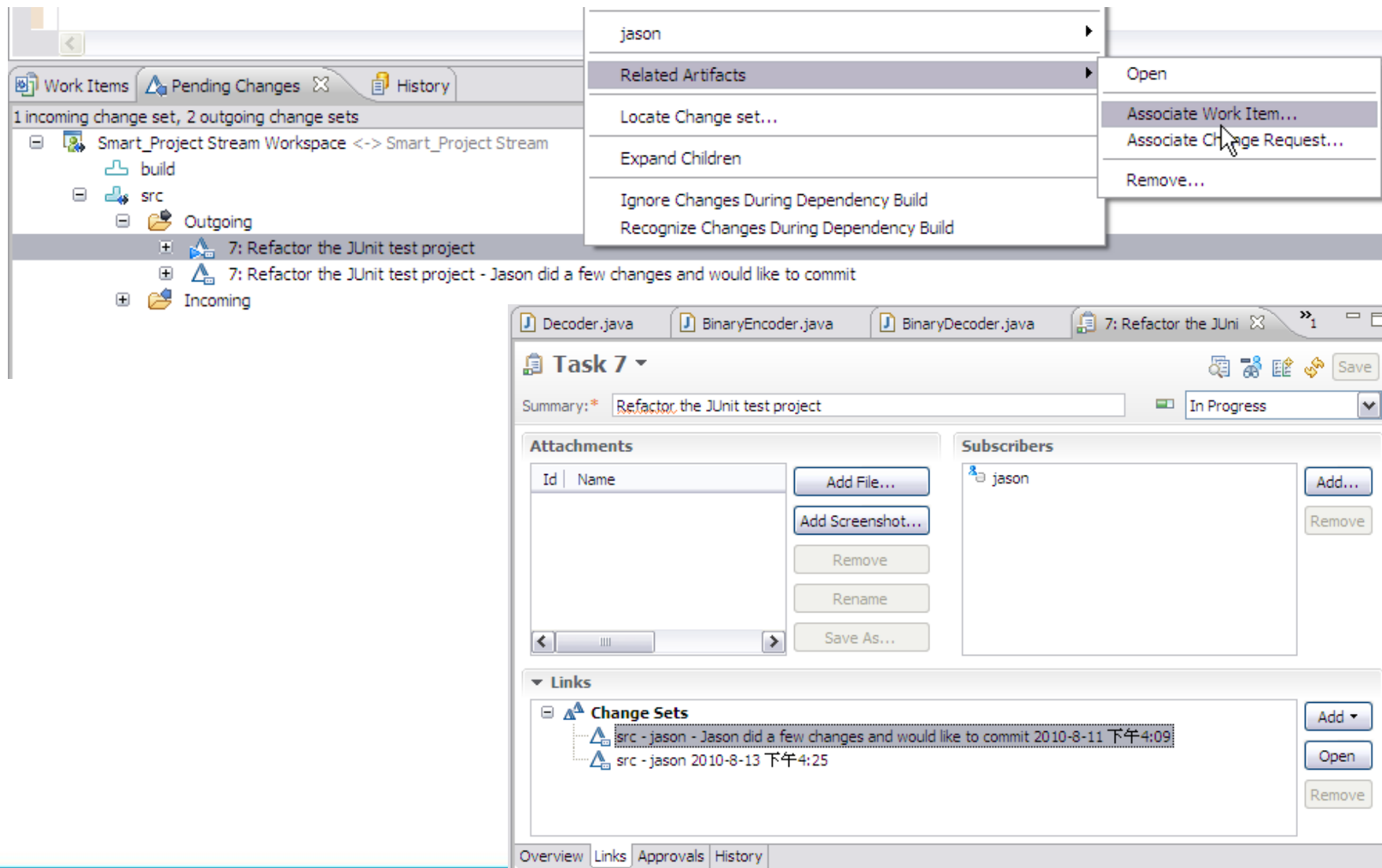
```
* @return a "decoded" object
*
* @throws DecoderException a decoder exception can
* be thrown for any number of reasons. Some good
* candidates are that the parameter passed to this
* method is null, a param cannot be cast to the
* appropriate type for a specific encoder.
*/
Object decode(Object pObject) throws DecoderException;

// Jason added a few comments for this file.
//
```

**Author:** jason  
**Date:** 2010-8-13 下午4:25  
**Comment:** No Comment  
**Reasons:** 7: Refactor the JUnit test project

Press 'F2' for Focus

# 同变更系统的无缝集成



# 代码复审

The screenshot displays an IDE interface for code review. A context menu is open over a work item, with the following options:

- Deliver and Resolve Work Item...
- Submit for Review...** (highlighted)
- Complete
- Set Current
- Edit Comment
- Copy URL
- Copy Text
- jason
- Related Artifacts
- Locate Change set...
- Expand Children

The background shows a project tree with the following structure:

- Smart\_Project Stream Workspace <-> Smart\_Project Stream
  - build
  - src
    - Outgoing
      - 7: Refactor the JUnit test project**
        - commons-codec-1.3/src/org/ap
          - Decoder.java
        - 7: Refactor the JUnit test proje
      - Incoming
        - 7: Refactor the JUnit test project - Ja

The 'Task 7' window is open, showing the following details:

- Task 7
- Summary: Refactor the JUnit test project
- Status: In Progress
- Approvals table:

Approver	State	Due
<input checked="" type="checkbox"/> Please take a code review	⌚ Pending	
<input type="checkbox"/> Sun	⌚ Pending	

Buttons on the right side of the Approvals table:

- New Approval...
- Edit Approval...
- Add Approver...
- Edit State
- Remove
- Add Comment

# 项目管理人员

- 项目组织
  - 组件
  - 流
- 并行开发支持
  - 相对独立的开发空间
  - 有效的集成机制
- 同变更管理的无缝集成
- 里程碑管理
- 方便的持续集成



# 里程碑控制

- 基线管理
- 历史恢复



# 持续集成

- Flexible, Continuous Integration with RTC Build
  - Jazz Build Toolkit
  - (N)Ant, Command Line, Generic, Maven
- Build Management for developers
  - Build Request
  - Build History view
  - Build queue view
  - Build activity view

The screenshot displays the RTC Build integration interface for a build named 'Build integration.rtcnet I20081104-2350'. The interface is divided into several sections:

- Completed:** Shows the build status as 'Completed' with a green checkmark. It includes the duration (3 hours, 31 minutes, 28 seconds), start time (November 4, 2008 1:40:41 PM), and completion time (November 4, 2008 5:12:09 PM). A status trend bar shows a sequence of red and green bars.
- Reported Work Items:** Indicates that no work items were reported against this build. It provides links to 'Create a new work item' and 'Associate an existing work item'.
- Contribution Summary:** Lists various metrics: 7 downloads, 1 log, Repository Workspace: RTC.NET Client Workspace For Build, Snapshot: integration.rtcnet I20081104-2350, Changes: Show changes, and Work items: 3 included in build.
- Associated Release:** Explains that released builds are available as choices in the work item 'Found In' field. It includes a link to 'Create a release to associate with this build'.
- Build Definitions:** Lists several build definitions: ProjectOne build - Generic, ProjectOne build Ant, ProjectOne build-Command Line, and ProjectOne build.
- General Information:** Provides details such as 'Requested by: (scheduled build)', 'Build Definition: integration.rtcnet', 'Build Engine: RTC.NET Client Build Engine', 'Build History: 27 builds', and 'Tags:'. It also has a 'Deletion allowed' checkbox checked.

On the left side, there is a 'Team Artifacts' tree view showing a hierarchy of folders: Repository, Project, Build, and Work Items. A context menu is open over the 'ProjectOne build' folder, listing actions: Request Build, Show Build Results, Open Latest Build Details, Search for Tagged Builds..., and Refresh.

# 在RTC内实现构建

## 定义构建

- 名称
- Build engine
- Workspace repository
- Target directory for extract files
- A build file for Ant

## 请求构建

Request that a build be executed on the first available build engine.

Build: NV-Preprod-Local

**Build Options**

Personal Build

Check this option to make this a personal build. The build will run using a workspace you specify, and will not impact the build definition status. Personal build alerts will only be received by you, not other members of your team.

Repository workspace: RWS-NV-PKG-PreProduction

Component load rules:

**Build Properties**

After submitting the request: Show builds of the requested type

## 查看构建结果

Build NV-Preprod-Local PPRD-20091028-1951

**Completed**

Duration: 1 minute, 49 seconds  
Start Time: October 28, 2009 7:51:00 PM  
Completed: October 28, 2009 7:52:49 PM

Status Trend:

**Contribution Summary**

Logs: [1 log](#)  
Repository Workspace: [RWS-NV-BLD](#)  
Snapshot: [NV-Preprod-Local\\_PPRD-20091028-1951](#)  
Changes: [Show changes](#)  
Work items: [4 included in build](#)

**General Information**

Requested by: Nikola Vanevski  
Build Definition: NV-Preprod-Local  
Build Engine: nino-mac  
Build History: [24 builds](#)  
Tags: pprd-20091028-1944

Deletion allowed

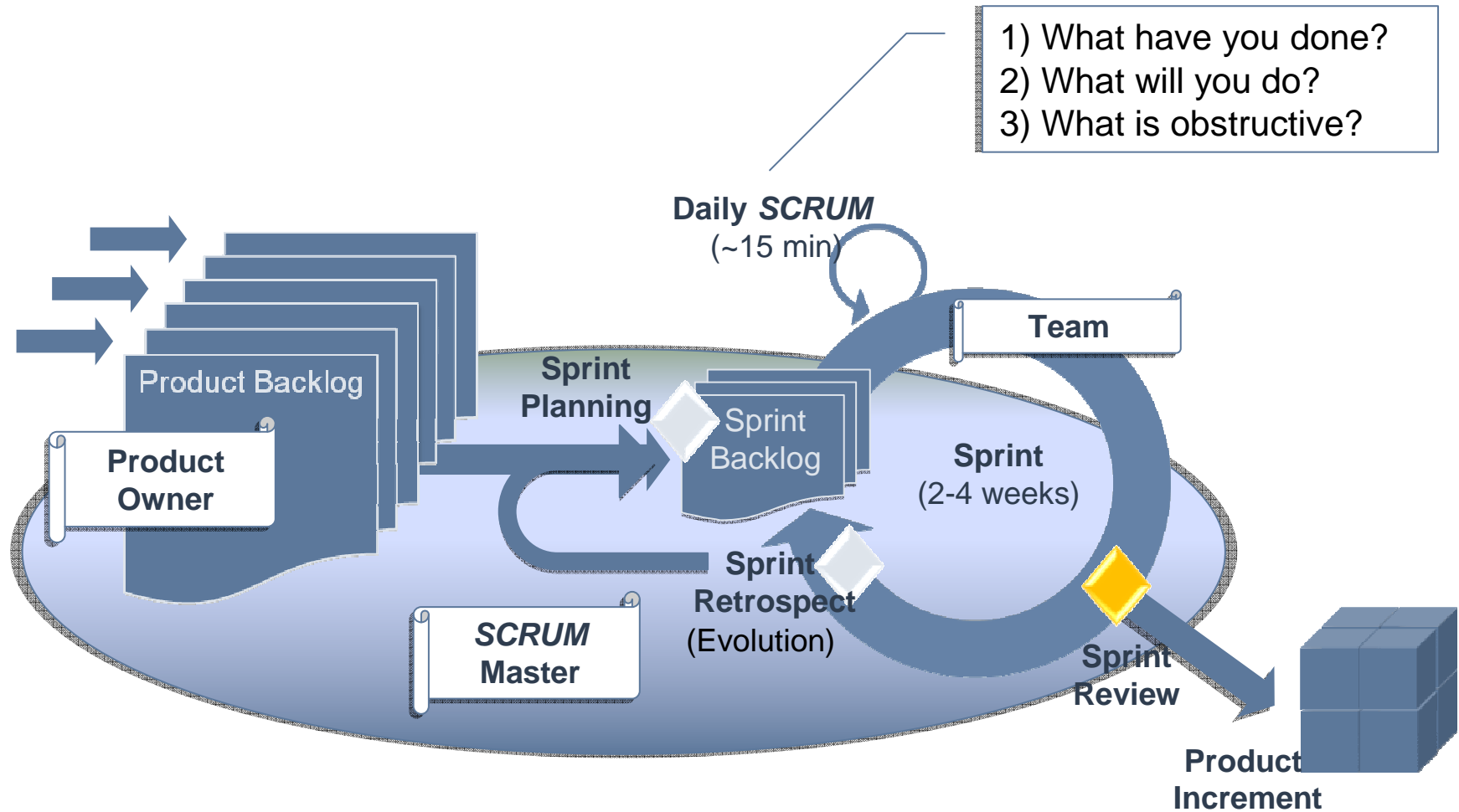
**Associated Release**

Released builds are available as choices in the work item "Found In" field.

[Release PPRD-20091028-1944](#)

Overview | Activities | Logs | Properties

# 在RTC平台内实现真正的敏捷开发



# 针对系统管理人员

- 易于管理
  - 有效的用户管理
  - 灵活的安全管理
- 高可靠性与伸缩性

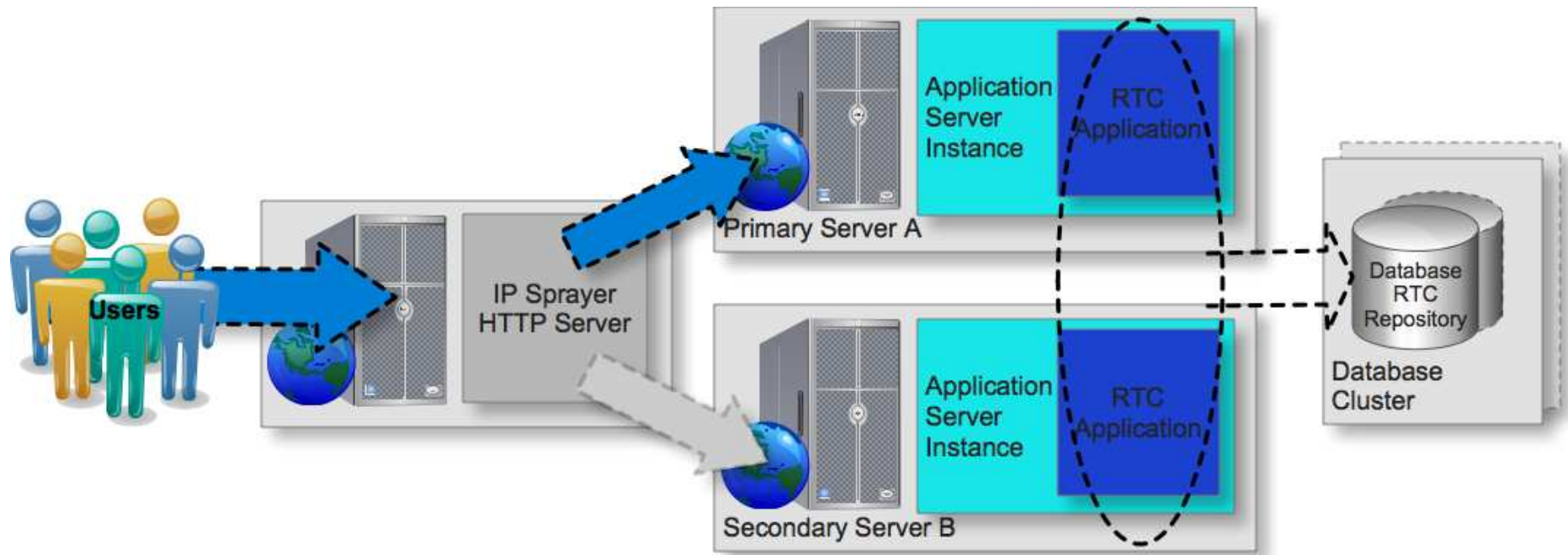


# 灵活有效的安全管理

- 读访问控制
  - 对整个项目区域控制
  - 只允许访问源代码控制之外的资产
  - 只允许访问指定的组件
  - 建立自己的私密空间
- 写访问控制
  - 阻止未授权人员对指定流进行交付
  - 将流置为只读状态
  - 只允许向特定组件交付变更
  - 将流删除，保存快照
  - 锁定流中特定的文件

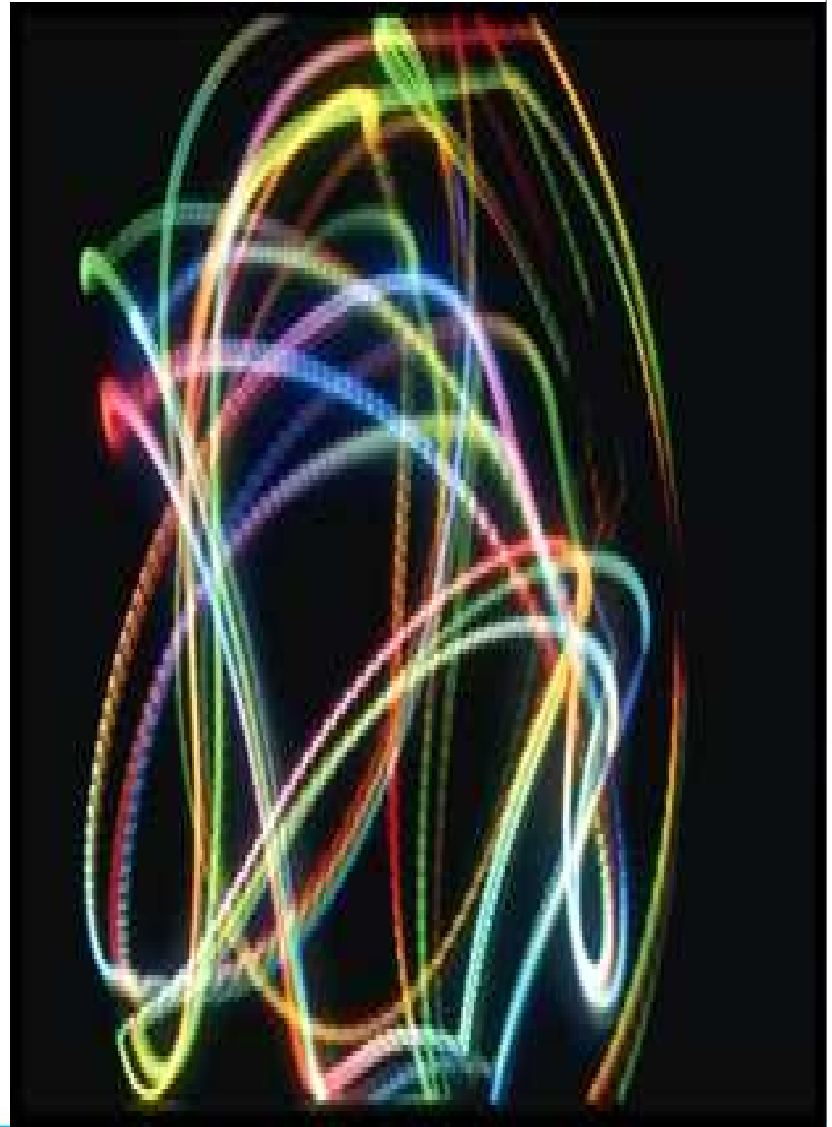


# 可靠性与伸缩性

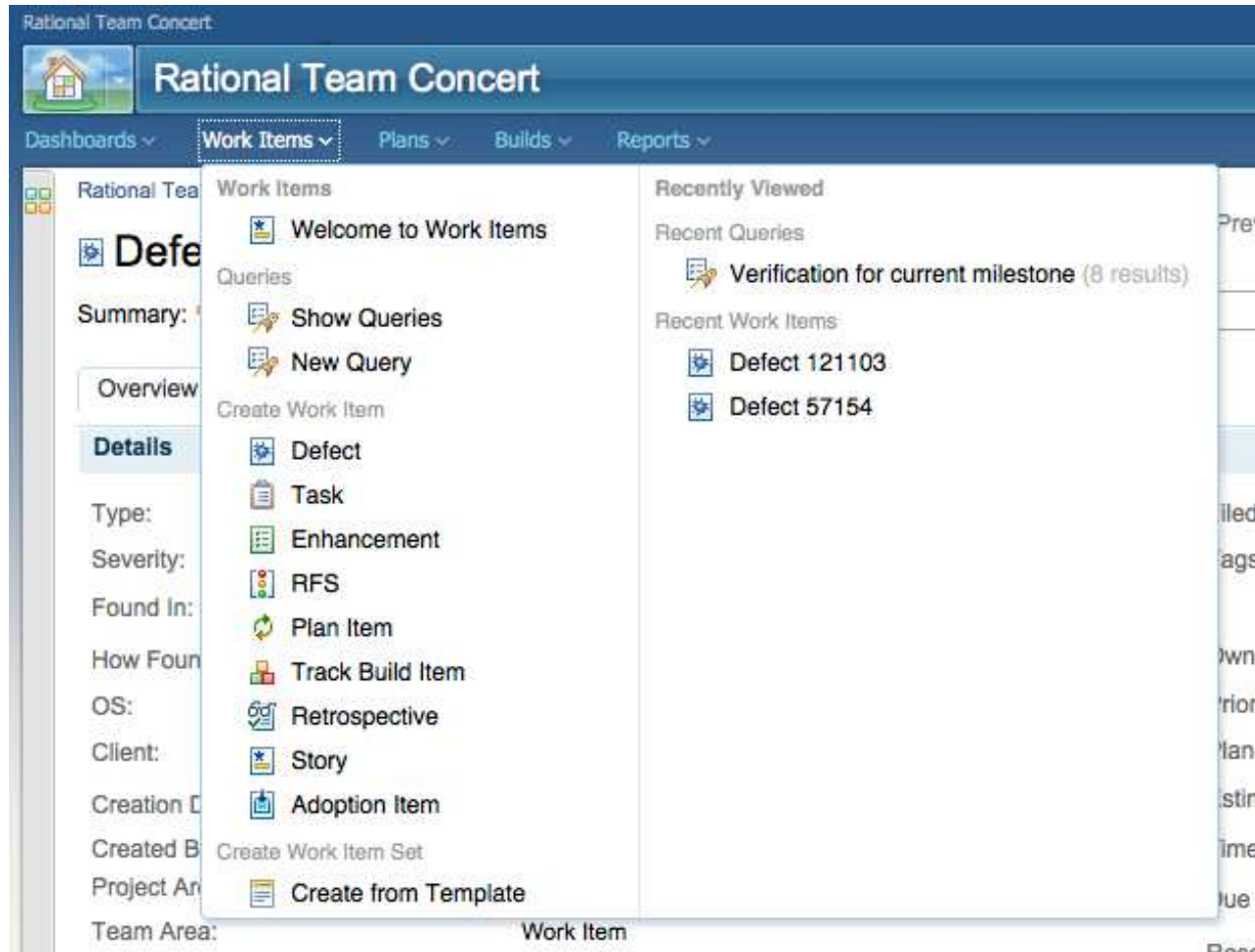


热备份/负载均衡系统

# RTC 3.0 新功能 预览



# WorkItem – 全新设计的Web浏览





# 通过Web客户端定制工作流程

Overview Timelines Roles Permissions Access Control Configuration Data **Work Items** Releases

## Configuration Data

Work Items

Types and Attributes

Enumerations

Editor Presentations

➔ **Workflows**

Change Management Type Binding

## Workflows

Define work item state transitions (workflows). Workflows are built of States, Actions and Resolutions. To add an Action, define at least two States in the States table. Then select 'Add Action...' in the desired combo of the Transitions table. Specify one of the groups (open, in progress, closed) to the states to provide the necessary context to the system.

Choose the Workflow to edit:

Task Workflow

### Details

Name:

ID:

Description:

Start Action:  Resolve Action:  Reopen Action:

### Transitions

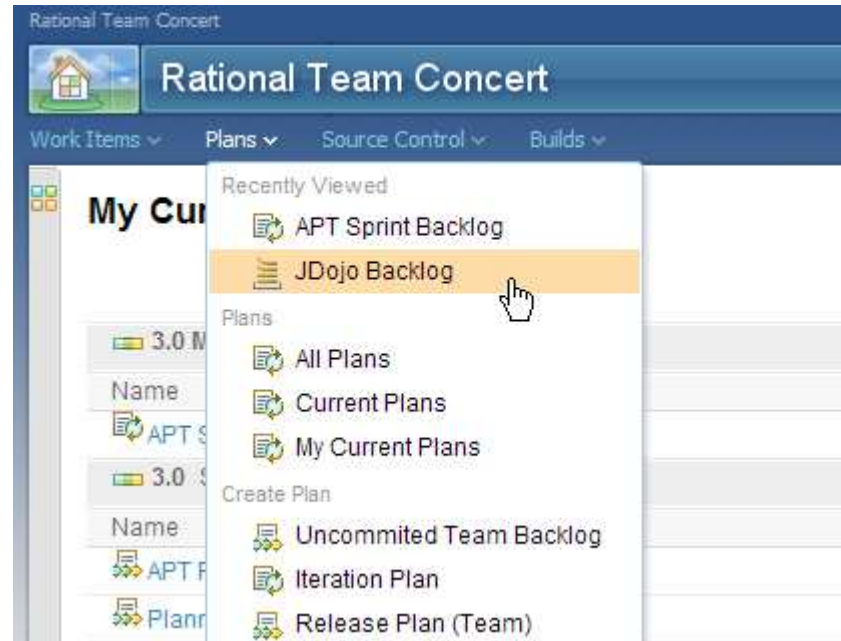
From	To	➔ Done	⊘ Invalid	➔ New	▣ In Progress
➔ Done		<None>	<input type="text" value="None"/>	<input type="text" value="None"/>	<input type="text" value="Reopen"/>
⊘ Invalid		<input type="text" value="None"/>	<None>	<input type="text" value="None"/>	<input type="text" value="None"/>
➔ New		<input type="text" value="Complete"/>	<input type="text" value="Invalidate"/>	<None>	<input type="text" value="Start Working"/>
▣ In Progress		<input type="text" value="Complete"/>	<input type="text" value="Invalidate"/>	<input type="text" value="Stop Working"/>	<None>

# Work Items

- 针对必须审批的控制











# Planning – 实现了Web浏览









# 优化的列表设计

Planned Items   Links   Snapshots   Notes

View As: Work Breakdown  

Bill Cassavelli Closed Items: 3   Open Items: 2		←  → Estimate	Priority	Status
Actions	Summary			
	▶  Improve documentation for 4.4	-	 High	 New
	 timeout doesn't work properly for >=2 cases in junit4.3?	2 hours	 Medium	 New

Jason Mitchell Closed Items: 2   Open Items: 14		Estimate	Priority	Status
Actions	Summary			
	 assertEquals throws NPE while comparing null elements	3 weeks	 High	 New
	←  Improve documentation for 4.4	-	 High	 New

# 风险发现

Markus Kent Closed Items: 4   Open Items: 23			
Actions	Summary	Completion Probability	Priority
	Tempo Story	11%	Unassigned
	assertArrayEquals misses differences	100%	High
	assertThat fails with Class tests (documentation problem)	100%	Unassigned
	16	100%	Unassigned
	1	98%	Unassigned
	2	95%	Unassigned
	3	93%	Unassigned
	4	80%	Unassigned
	5	48%	Unassigned
	6	37%	Unassigned
	7	33%	Unassigned
	8	24%	Unassigned

# 丰富的迭代计划显示

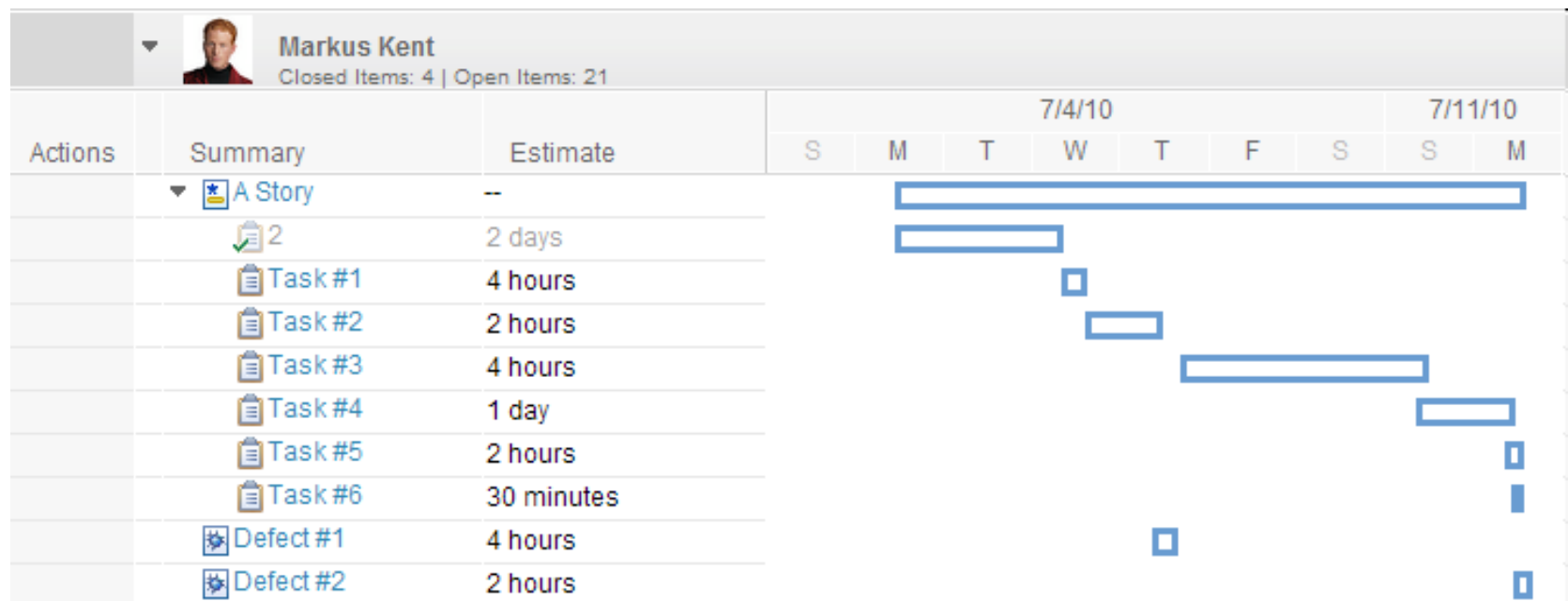
Bill Cassavelli Closed Items: 3   Open Items: 2				
Actions	Summary	Estimate	Severity	Priority
	Improve documentation for 4.4	--	Normal	High
	Documentation javadoc updates for @Ignore in 4.3	1 hour	Normal	Unassigned
	timeout doesn't work properly for >=2 cases in junit4.3?	2 hours	Normal	Medium
Jason Mitchell Closed Items: 2   Open Items: 13				
Actions	Summary	Estimate	Severity	Priority
	Important Too Long assertEquals throws NPE while comparing	13 weeks	Critical	High
	Improve documentation for 4.4	--	Normal	High
	Too Long assertEquals array comparison doesn't handle null el	2 days	Normal	Unassigned
	assertThat signature does not match Matcher			
	CompositeRunner.filter incorrect if child throws N			
	Tempo Story			
Markus Kent Closed Items: 4   Open Items: 23				
Actions	Summary	Estimate	Severity	Priority
	Important Too Long assertEquals misses differences	2 days	Major	High

	Label	Expression
<input checked="" type="checkbox"/>	Important	severity> Normal
<input checked="" type="checkbox"/>	Documentation	filedAgainst:Doc
<input checked="" type="checkbox"/>	Too Long	estimate>7



# 对计划日程的支持



# 支持与Microsoft Project 计划的导入/导出

The screenshot displays two panels in the IBM Project Workbench interface, demonstrating the integration with Microsoft Project. Both panels show a plan titled "M8 Iteration Plan" and "Reports and Integration M8 Plan" respectively, with details for Owner (FVT & GVT) and Iteration (Testing). The top panel includes an "Import XML file" button, while the bottom panel includes an "Export Plan to XML file" button. Both panels also feature tabs for "Planned Items", "Links", "Snapshots", and "Notes", and a "View As" dropdown menu set to "Work Breakdown & Schedule".

**M8 Iteration Plan** Import XML file Auto-Save Save

Plan Details Edit

Owner: FVT & GVT

Iteration: Testing

Planned Items Links Snapshots Notes

View As: Work Breakdown & Schedule +

**Reports and Integration M8 Plan** Export Plan to XML file Auto-Save Save

Plan Details Edit

Owner: FVT & GVT

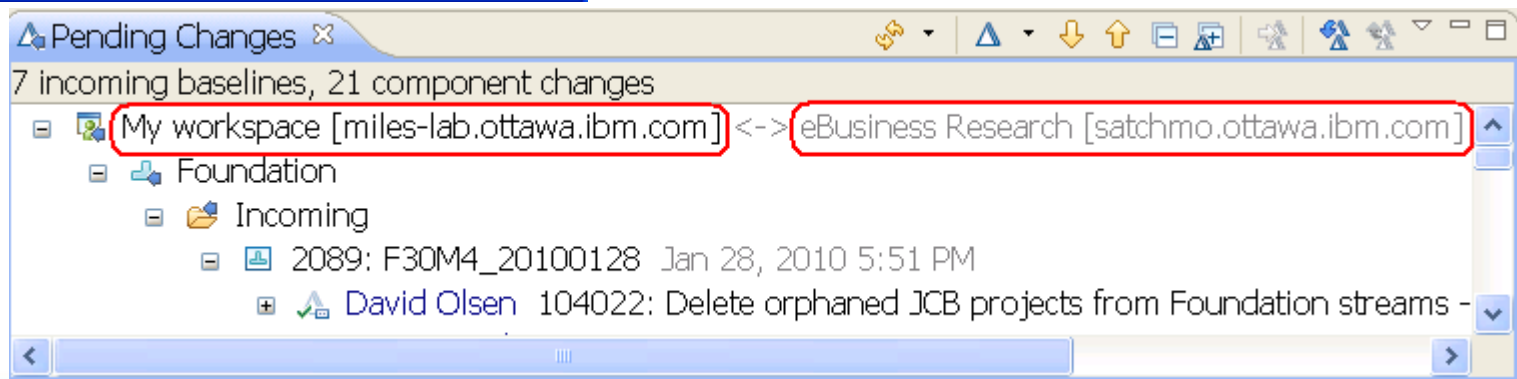
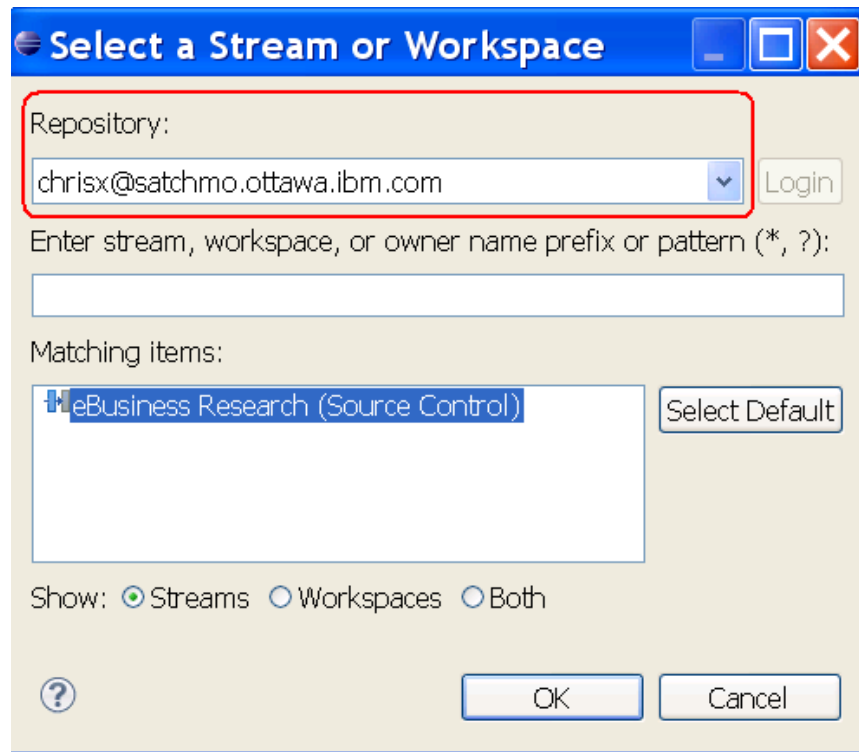
Iteration: Testing

Planned Items Links Snapshots Notes

View As: Work Breakdown & Schedule +



# 支持分布式的Source Control



# 扩展的命令行支持分布式工作流程

```
scm login -r https://miles-lab.ottawa.ibm.com:9443/jazz/ -u userName -P userPassword -n
scm login -r https://satchmo.ottawa.ibm.com:19443/jazz/ -u userName -P userPassword -n
scm create workspace MyWorkspace@miles -s "eBusiness Research@satchmo"
Workspace (1033) "MyWorkspace" successfully created
```

```
scm accept -s "eBusiness Research@satchmo" -t MyWorkspace@miles
scm deliver -s MyWorkspace@miles -t "eBusiness Research@satchmo"
```

# Web界面建议

test.txt



Upload new content

'Deliver' failed. Preconditions have not been met: User is not authorized to deliver changes to the following component(s) in the stream PA1 Stream: PA1 Default Component

Save

Cancel

Add file:

Name:	Size	Last modified by:	Action
test.txt (Locked by me)	2 KB	TestJazzAdmin1 Jul 6, 2010 2:49 PM (Yesterday)	

Add comment:

new specification

Associate work item...

1: Define an iteration plan

# 变更历史即时显示

```
using com.ibm.team.repository.common;
using com.ibm.team.feeds.utils;
using com.ibm.team.foundation.preference.data;

namespace com.ibm.team.feeds.notifications
{
    class NewsEventNotifier
    {
        private const string SINGLE_NEWS_NOTIFICATION_ID = "com.ibm.team.feed.core.IncomingNews"
        private const string MULTIPLE_NEWS_NOTIFICATION_ID = "com.ibm.team.feed.core.IncomingMultiNews"
        private const HashSet<string> CATEGORIES_TO_SKIP = new HashSet<string>
        {
            FeedsConstants.MESSAGES_CATEGORY,
            FeedsConstants.MESSAGES_CATEGORY,
        };

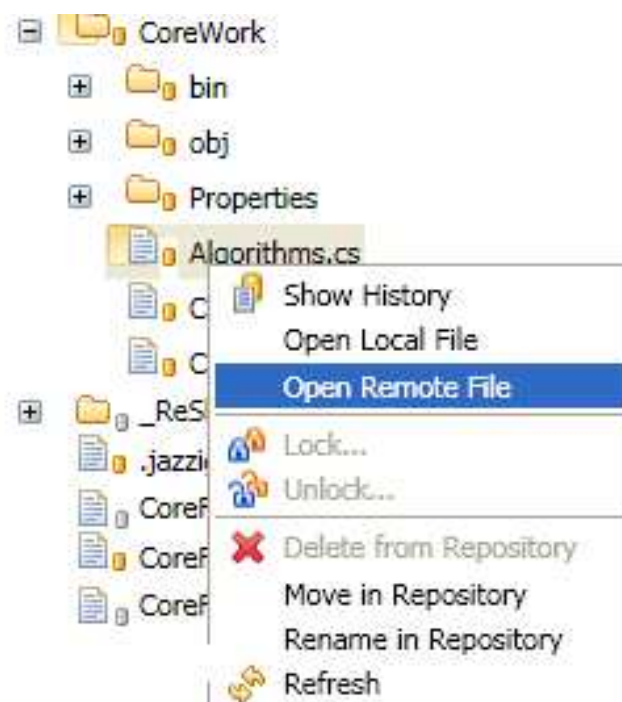
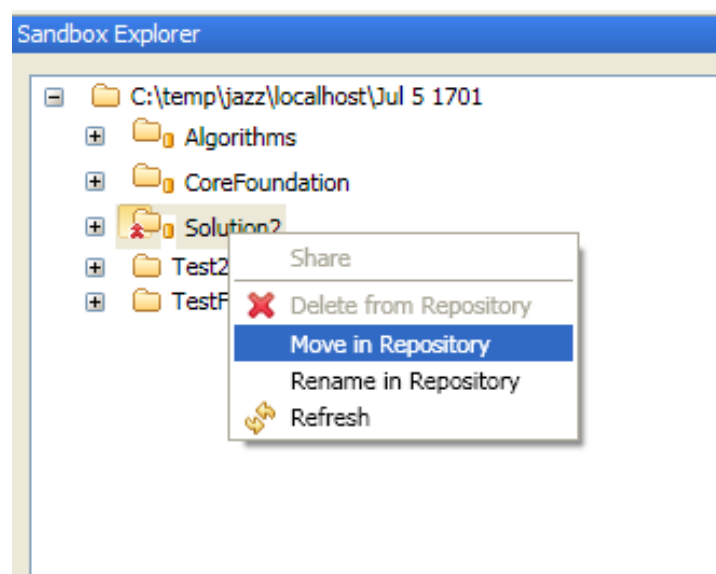
        public static void RegisterNewsEventNotifier()
        {
            FeedsEventMediator mediator = FeedsEventMediator.DefaultInstance;
            mediator.NewsStatusChanged += NewsStatusChanged;
        }
    }
}
```

Author: Prabodh Mairh  
Date: Feb 11, 2010 4:49 PM  
Comment: Adding notification  
Reasons: 94689: Toast popups for the RTC for Visual Studio Client

History - '\_Pe4woBSfEd-mIOGhZar0nA' in workspace 'RTC.NET Client 3.0 Workspace\_28062010' (7 entries)

Merges	Comment	Creator
	94689: Toast popups for the RTC for Visual Studio Client - Removed duplicate notification for Message At Me	Prabodh Mairh
	94689: Toast popups for the RTC for Visual Studio Client - Refactored code for options page	Prabodh Mairh
	94689: Toast popups for the RTC for Visual Studio Client - Clicking on a notification event should open correspondin	Prabodh Mairh
	107110: No notification popups get generated except when I clear preferences - Fixed the issue where notification fi	Prabodh Mairh
	94689: Toast popups for the RTC for Visual Studio Client - Provide option to enable/disable notification alerts	Prabodh Mairh
	94689: Toast popups for the RTC for Visual Studio Client - Feed download timestamp is persisted, is used at the tim	Prabodh Mairh
	94689: Toast popups for the RTC for Visual Studio Client - Adding notification support in RTC.NET - in progress	Prabodh Mairh

# 对远程文件的直接操作



# 参考资源



- 下载基于Jazz的产品试用版并参与商业化的开源项目  
<http://jazz.net>
- 了解更多RTC的信息  
<http://ibm.com/rational/rtc>
- 在IBM developerWorks中浏览RTC的参考教程、演示以及其它学习资源  
<http://www.ibm.com/developerworks/rational/products/rtc/>
- 学习更多的关于Jazz的技术以及IBM Rational未来的产品规划  
<http://ibm.com/rational/jazz/roadmap>



Questions



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Let's build a smarter planet.



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