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Integrating Team Tools into Eclipse

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Overview

- Introduction
- History of VCM/Team
- Current Team Related (2.0/2.1) Support
  - Both Team and other components
- What's new in 3.0
- What does the future hold

What are Team Tools

- Working with a repository
  - CVS, ClearCase, etc.
  - This has been the main focus of Eclipse Platform Team
- Bug reporting
  - Bugzilla, ClearQuest, etc.
- Deploying
  - FTP, WebDAV, etc.
  - Experimental support in Eclipse
- Collaborating
  - Chat, SameTime, Jazz, etc
- Configuration Management
- Release Engineering

History: Eclipse 1.0

- A single comprehensive VCM API
  - All repository venders must implement the API to integrate
- UI provided on top of API
  - Did allow some tailoring by individual repositories
- Advantages
  - Compelling since repository vendors would get UI for free
  - API can be used by 3rd party tools
- Disadvantages
  - API was lowest common denominator
  - Impractical because repository systems differ in form and function
  - Repository vendors had to bend to conform to API and could not surface unique functionality

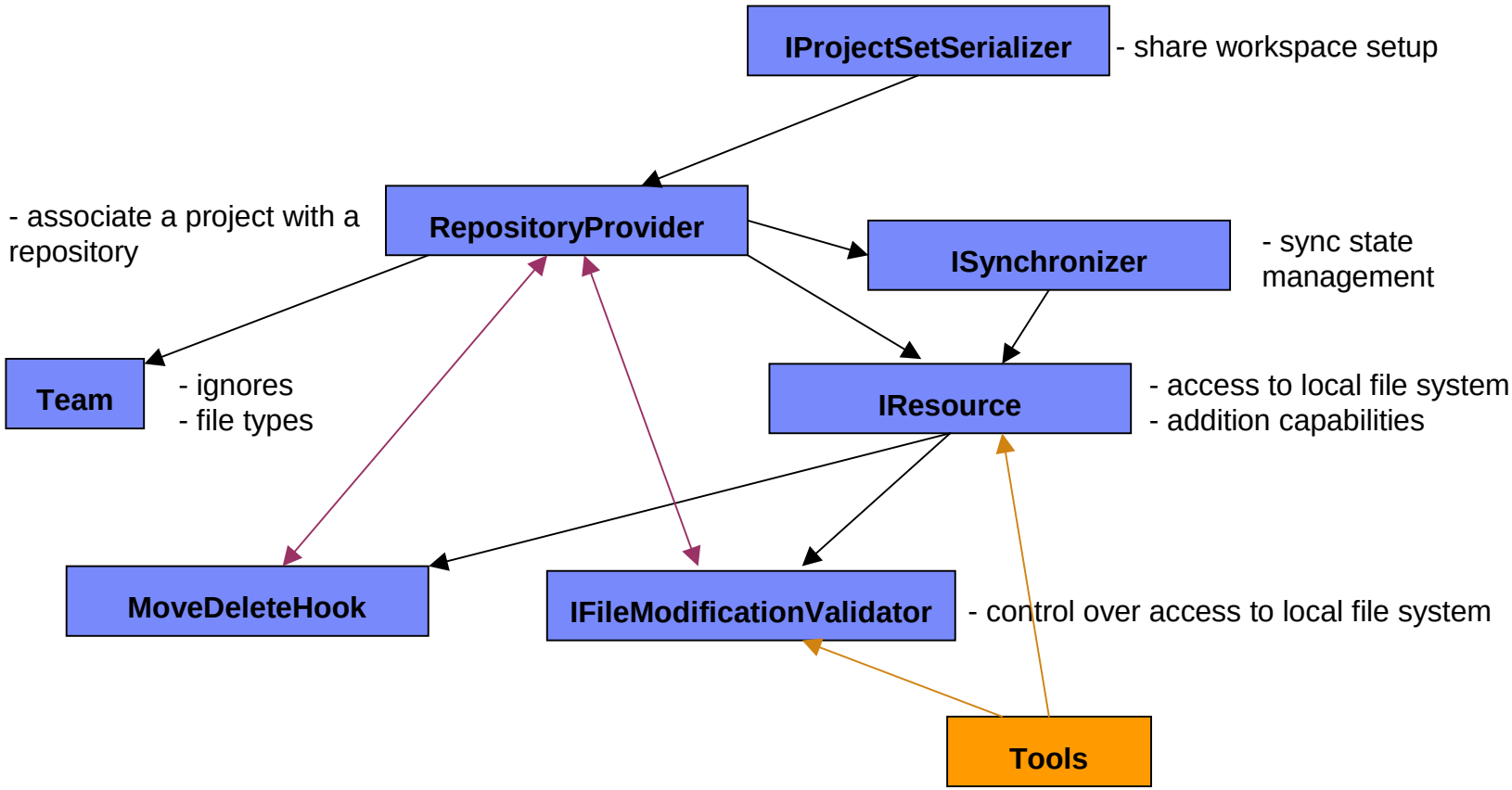
History: Eclipse 2.0

- Minimalist approach to Team API
  - Provide integration points where repository functionality could be accessed
  - After that, just get out of the way
- Advantages
  - Provides the possibility of rich integration into Eclipse
- Disadvantages
  - Cost of rich integration is high
  - No 3rd party access to repository functionality

What Team Core Provided in Eclipse 2.0/2.1

- Associate a project with a repository
  - RepositoryProvider and IConfigurationWizard
- Enhanced local resource API
  - IResource: local history, session and persistent properties, etc.
- Cache state of corresponding remote resource
  - ISynchronizer: can cache for non-existent local resources
- Control access to resources in local file system
  - IMoveDeleteHook and IFileModificationValidator
- Share workspace setup
  - IProjectSetSerializer
- Resource management
  - Ignore and file type lists

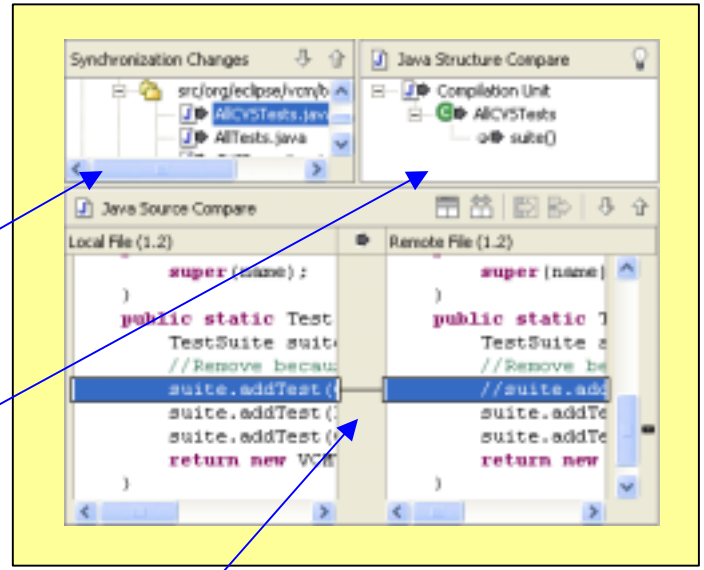
Team Core Architecture



Relevant UI Support in Eclipse 2.0/2.1

- SWT/JFace/Workbench
- Presence in workspace views
  - Context menu object contributions
  - Decorations
- Compare framework
  - 2-way and 3-way file content comparison
  - Structure compare
  - Tools provide support for their file types (e.g. JDT)

Compare Archritecture



CompareEditorInput

DiffTreeViewer

is-a

StructuredDiffViewer

ContentMergeViewer

Tools

IDiffElement

IStructureComparator

IRangeComparator

How to be a Team Friendly Tool

- For operations that modify one or more files
  - Call IWorkspace#validateEdit(IFile[], Object)
  - This gives pessimistic repository provides a chance to ensure that the modification will succeed ahead of time.
- Include workbench menu and decorations in your resource views
  - Use a DecoratingLabelProvider
  - Use IWorkbenchPartSite#registerContextMenu()
- Provide ignore and file type entries for your file types
  - contributions in plugin.xml
- Provide compare viewers for your file types
  - If you provide an editor for a file type, you should consider providing a compare viewer

Motivation for 3.0

- Focus in Eclipse has been Repository tool integration
- CVS reference implementation has been a success
  - And have had lots of feedback on how to improve it
  - Want to allow others to gain from that work
- Want to encourage rich integration of team tools in developers daily workflows.
  - maintaining synchronization between workspace and remote location
  - Provide developer with responsive UI during remote synchronization

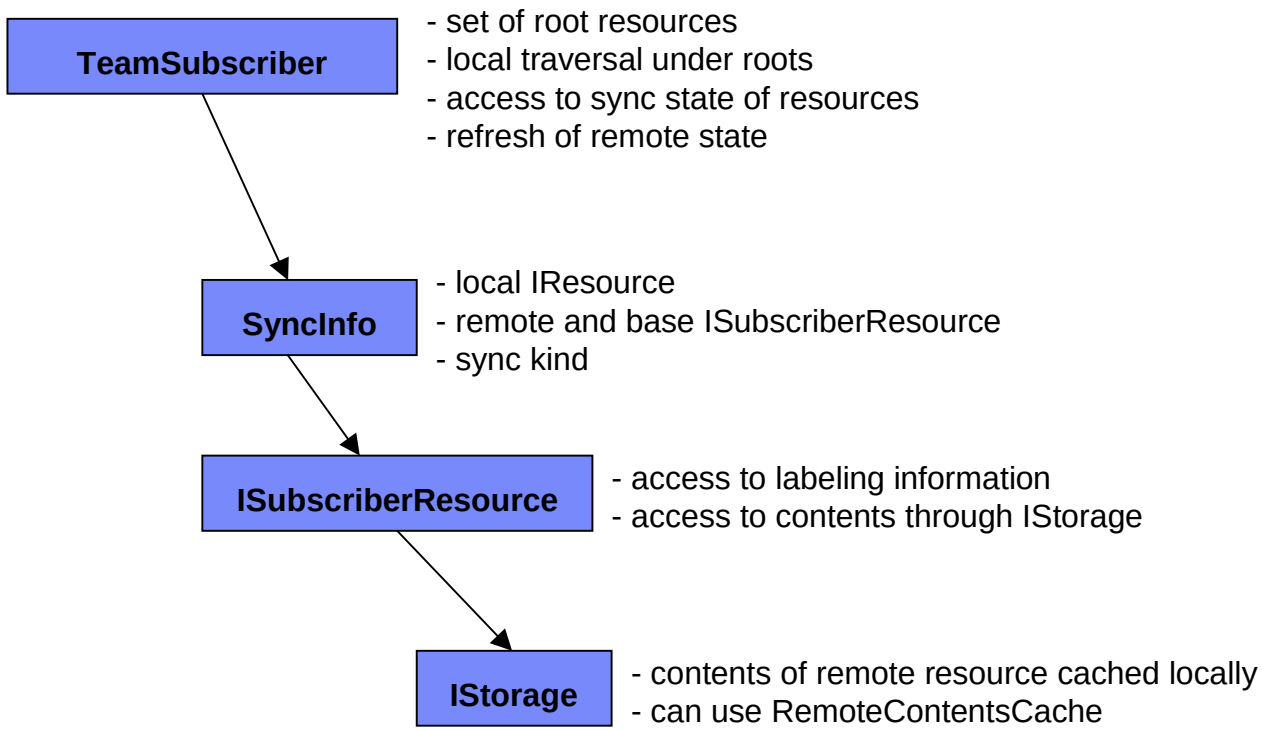
What is Being Done in 3.0

- Provide infrastructure to aid in local workspace management
  - Optional but helpful infrastructure
  - Pieces are as independent as possible
    - can be used by RepositoryProvider, DeploymentProvider or other
- Synchronization framework
  - Complements compare framework
  - Single view that contains synchronization pages for each subscriber
  - Ability to embed synchronization page in other views/dialogs
- UI Responsiveness
  - Remote communications done in a background thread
- Deployment provider
  - Associates a folder with a remote deployment location

Team Core Synchronization Support

- Access to synchronization state between workspace and remote
  - TeamSubscriber
    - Defined via extension point
    - SyncInfo for local resources
      - in-sync
      - incoming, outgoing or conflict
      - addition, deletion or change
    - Refresh of remote state
    - Change events for changed sync state
      - Due to refresh or local delta
- Additional helper API
  - Remote contents caching
  - Sync state management

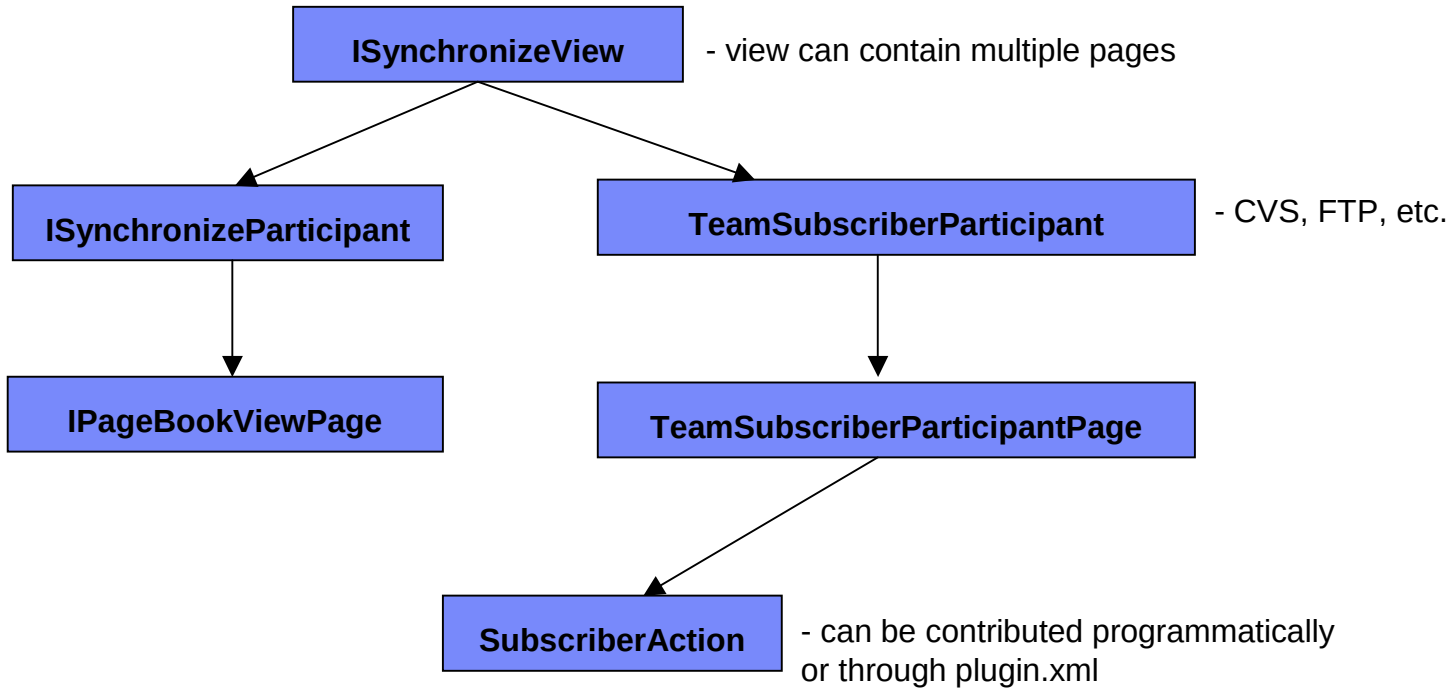
TeamSubscriber Architecture



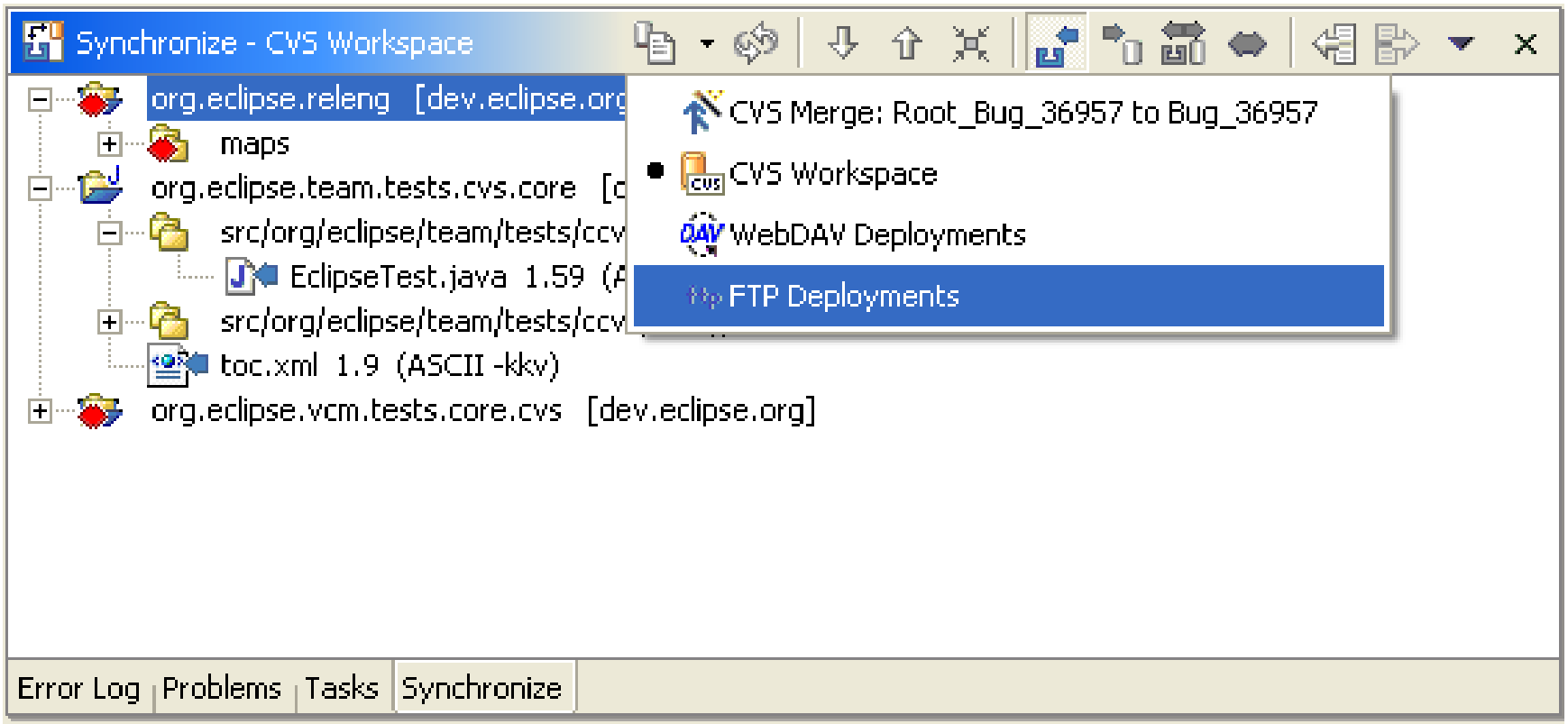
Team UI Synchronization Related API

- Multi-page synchronize view
  - ISynchronizeParticipant:
    - Contributed via extension point
    - General integration into synchronize view
  - TeamSubscriber specific support
    - TeamSubscriberParticipant
    - TeamSubscriberParticipantPage
    - SubscriberActions
    - label provider, content provider, etc.
- Embeddable in Compare framework
  - SyncInfoSetCompareInput
  - Diff tree viewer and diff tree nodes

Synchronize View Architecture



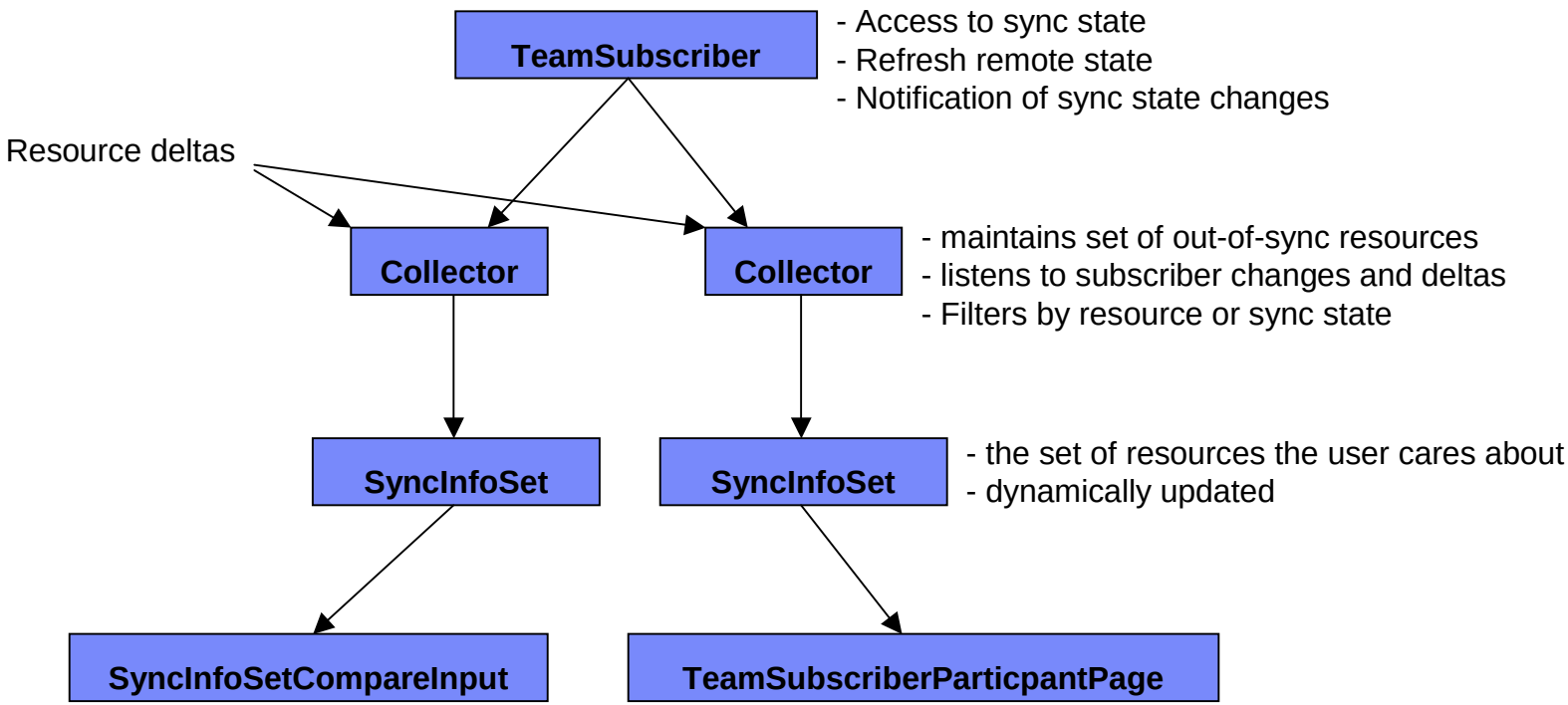
Synchronize View with Multiple Participants



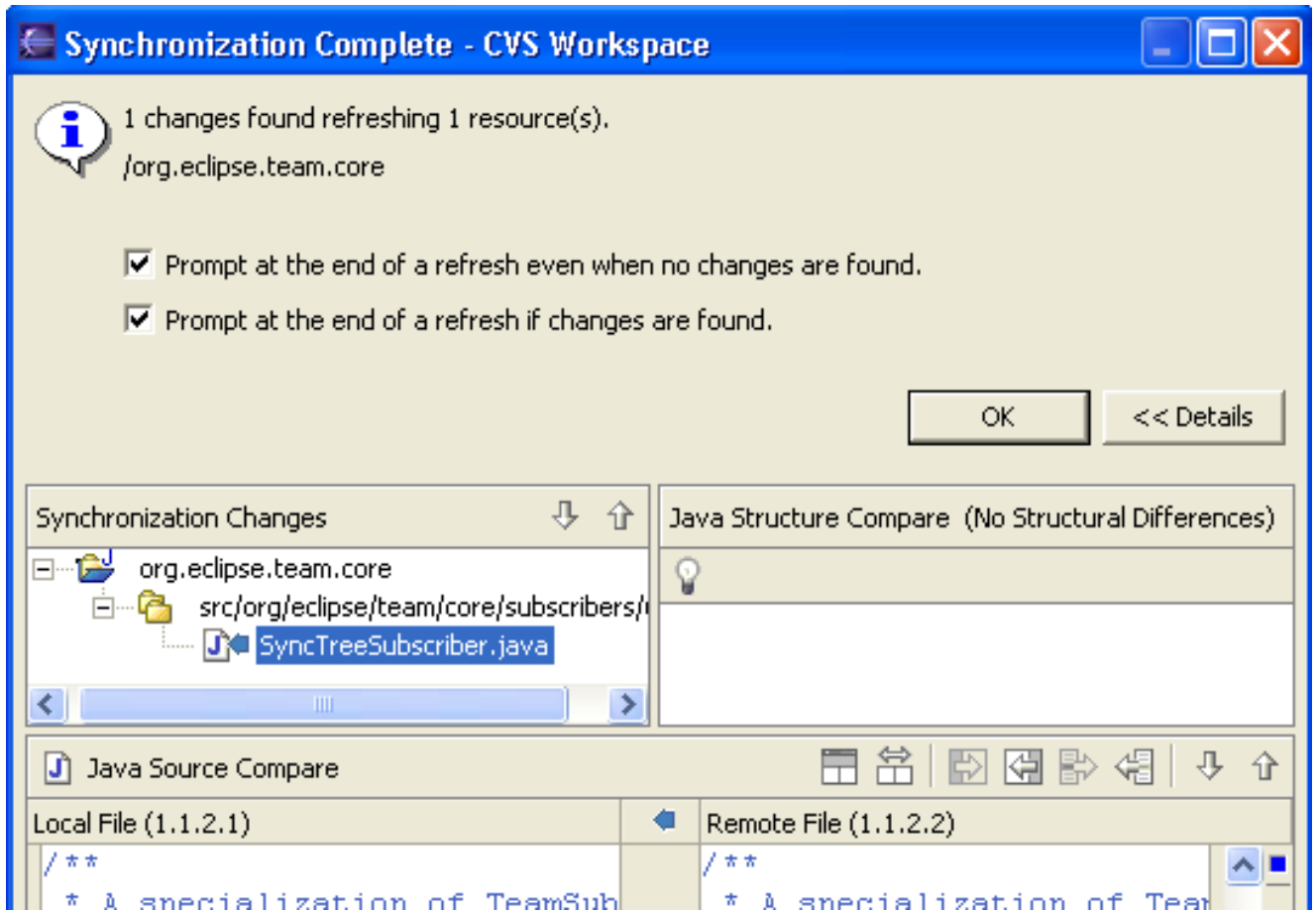
Additional Team Core Facilities

- Dynamic maintenance of sets of out-of-sync resources
  - SyncInfoSet
    - Set of out-of-sync resources
    - Change notification
  - SyncInfoSet Collectors
    - Dynamically updates a sync set in response to input changes from a subscriber or another set
    - Filters by working set and sync kind
    - Support for background event processing

Dynamic Synchronization Views



Synchronization Viewer in a Dialog



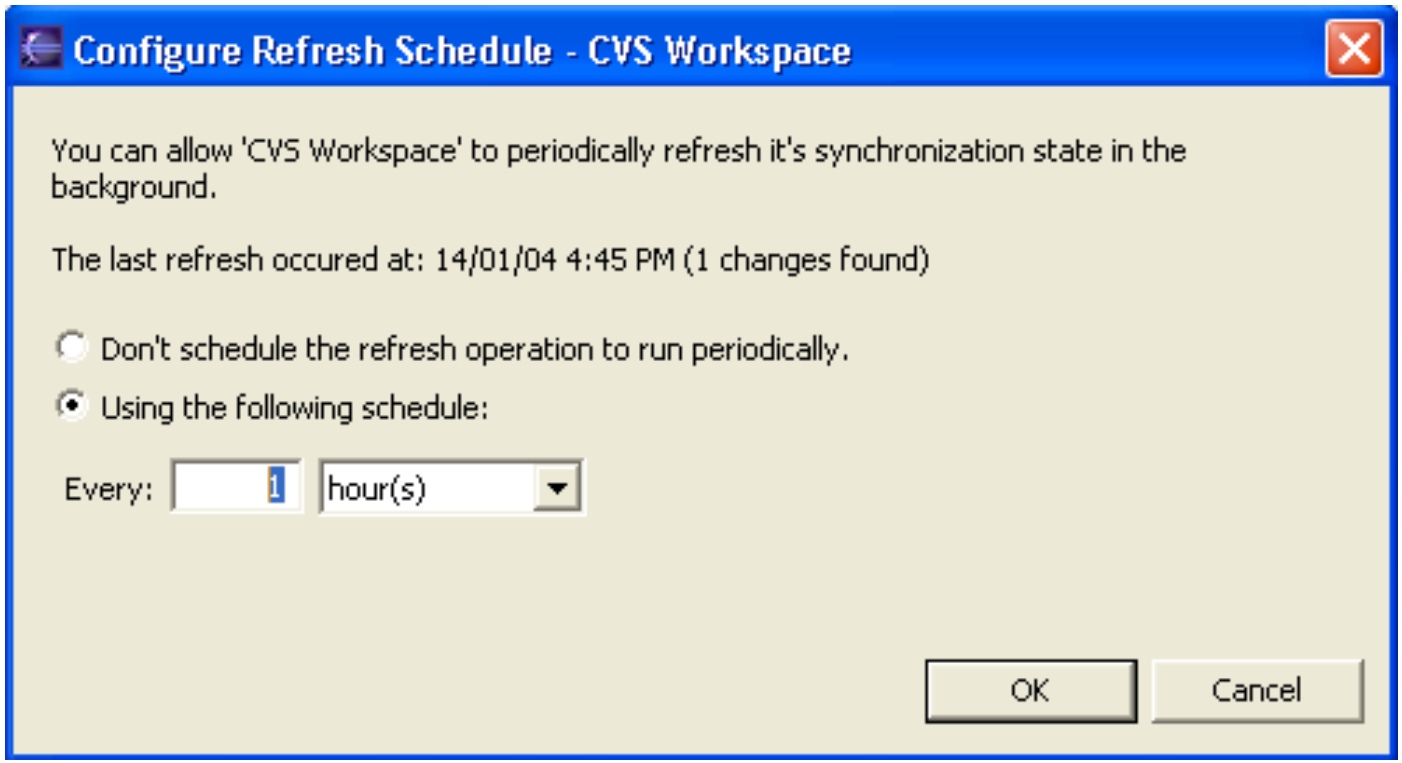
What do Team Tools need to provide

- Implement a TeamSubscriber
  - this is where most of the work is required
- Subclass team subscriber participant classes as needed
  - Must override TeamSubscriberParticipant
    - To create the TeamSubscriberParticipantPage
    - To save and restore state
  - Probably need to override TeamSubscriberParticipantPage
    - To add modes and other custom toolbar actions
- Implement SubscriberActions
  - which modify sync state accordingly
  - Inherently tool specific
  - Can make use of SyncInfoSetCompareInput in dialogs to improve usability

Concurrency Considerations

- Issues covered in talk on Responsive UIs
- Background operation built into some synchronization components
  - TeamSubscriber refresh
  - SyncInfoSet state maintenance
  - Subscriber actions
- Requirements for TeamSubscriber implementors
  - must be thread safe
  - should use an appropriate level of locking granularity
    - Project level is good enough in most cases

Scheduling a Background Refresh



Conclusion: Levels of Tool Integration

- Coexistence of multiple tools
  - Views from multiple tools exist in the same application window
  - Menu items of one tool available in context menus on another
  - Decorations of one tool in views of another
- Common look and feel of similar tools
  - Compare framework
  - Synchronization framework
  - Are there other areas where integration effort can be eased
    - Remote browsing?
- Integrated Workflows of multiple tools
  - Something to shoot for

Towards Integrated Workflows

- Specific combinations
  - Requires each component to have an API
    - May be proprietary
  - ClearCase and ClearQuest
  - CVS, and Bugzilla
  - Possible today but not ideal
- General interoperability
  - Requires standard APIs to the various components
  - Repositories: JSR 147 (WVCM)
  - Bug tracking: ?
  - Work in this area is in its early stages

References

- The Team component webpage is:

  http://dev.eclipse.org/viewcvs/index.cgi/%7Echeckout%7E/platform-vcm-home/main.html

- The Team 3.0 component plan can be found at:

  http://dev.eclipse.org/viewcvs/index.cgi/%7Echeckout%7E/platform-vcm-home/docs/online/team3.0/milestone-plan.html

- The latest version of the slides can be found at:

  http://dev.eclipse.org/viewcvs/index.cgi/%7Echeckout%7E/platform-vcm-home/docs/online/team3.0/EclipseCon2004TeamTalk.ppt