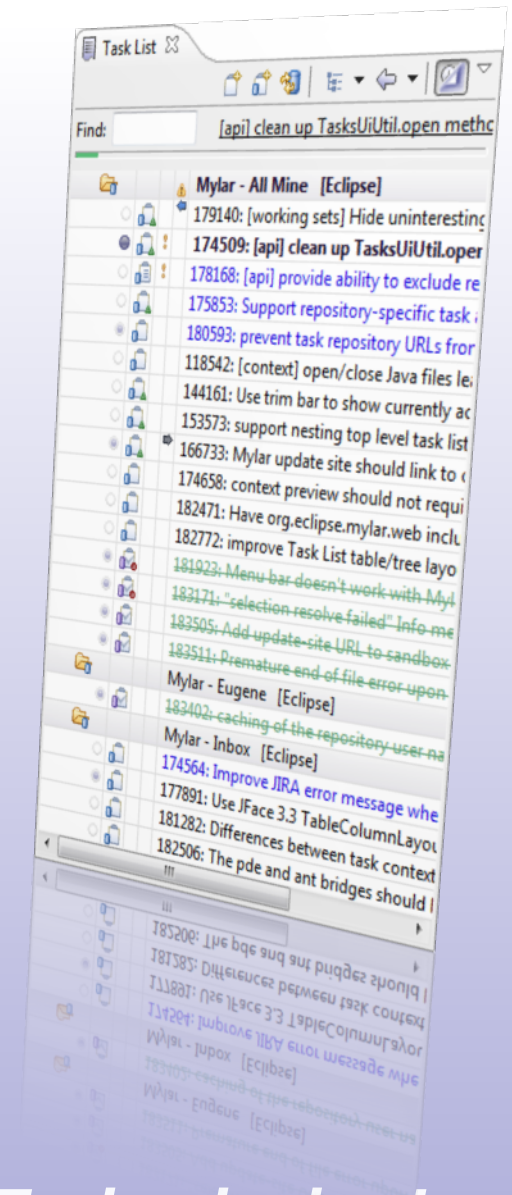


# Myllyn

## Connector Crash Course

### Master the Tasks Framework

- Create task repositories
- Bring tasks into the task list
- Provide offline editing for tasks



**Steffen Pingel, Tasktop Technologies Inc.**

EclipseCon, March 2009

# Overview

## Introduction

- Mylyn APIs and the Tasks Framework

## Step 1: Creating a Repository

## Step 2: Receiving Tasks

## Step 3: The Task Editor

## Outlook

- Planned features for Mylyn 3.2

# Mylyn APIs

Jazz

Exchange

FogBugz

Mantis

Rally

CollabNet

XPlanner

JIRA

Trac

Bugzilla

Tasks

SpringIDE

PyDev

DLTK

CDT

PDE

Ant

Java

Files

Context

Subversive

Subclipse

CVS

Team

Tasktop™

Browser

Usage

Monitor

TWiki

TracWiki

Textile

MediaWiki


WikiText





# Tasks Framework


## What kind of connectors exist?


- Bug Repositories
- Knowledge Bases
- Code Review Tools
- Planning Tools
- Email Protocols
- RSS Feeds


 Bamboo


 Bugzilla (supports uncustomized 2.18-3.2)


 Crucible

 Generic IMAP (Advanced)

 Gmail (also supports Google Apps)

 JIRA (supports 3.4 and later)

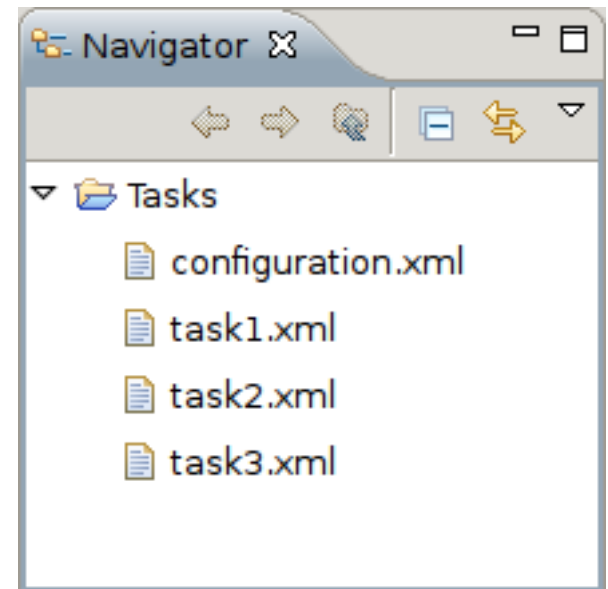
 Trac (supports 0.9 or 0.10 through Web and XML-RPC)

 Web Template (Advanced)

# Demo Connector

## File-based XML Tasks

- One XML file per task
- Simple task schema:  
summary, description and project
- All task files are in a single  
directory in the workspace



***What do I need to get started?***

***Step 1 - Connector Essentials***

# Pre-requisites

## Development Environment

- J2SE-1.5 or later
- Eclipse 3.3 or later (3.5 recommended)
- Mylyn SDK, available from update site

Demo: **Eclipse SDK 3.4.2, Mylyn SDK 3.1**

More Information:

[http://wiki.eclipse.org/index.php/Mylyn/Contributor\\_Reference](http://wiki.eclipse.org/index.php/Mylyn/Contributor_Reference)

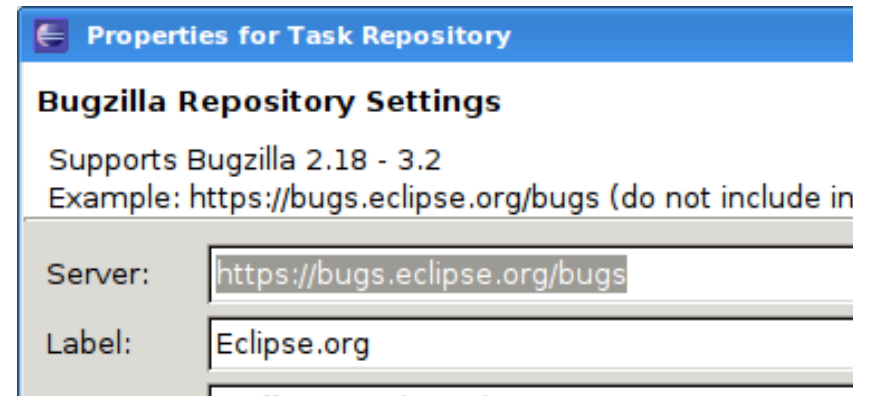
# Concepts: Repositories

## Task Repository

- Holds information for connecting to a repository: URL, credentials, proxy information, etc.
- Implemented as a key-value map in **TaskRepository**
- Configured in Task Repositories view

## Connector

- State-less **behavior** of a repository
- Every connector has a **unique kind**





# Connector Structure

## Core

- Builds on `org.eclipse.mylyn.tasks.core` plug-in
- Provides network connection to repository and data mapping
- Reusable in headless standalone environments

## UI

- Builds on `org.eclipse.mylyn.tasks.ui` plug-in
- Provides repository specific implementations of the UI components

## Tests



***1 extension***

***2 plug-ins***

***3 classes***

# Connector Core

## XmlConnector

- Extends **AbstractRepositoryConnector**
- Specifies the connector **kind** and a **label**
- Use plug-in ID for kind

# Connector UI

## XmlConnectorUi

- Extends **AbstractRepositoryConnectorUi**
- Entry point for UI contributions

## XmlSettingsPage

- Extends **AbstractRepositorySettingsPage**
- Wizard page with foldable sections
- Capabilities to enable UI for common settings
- Validation for testing repository connection

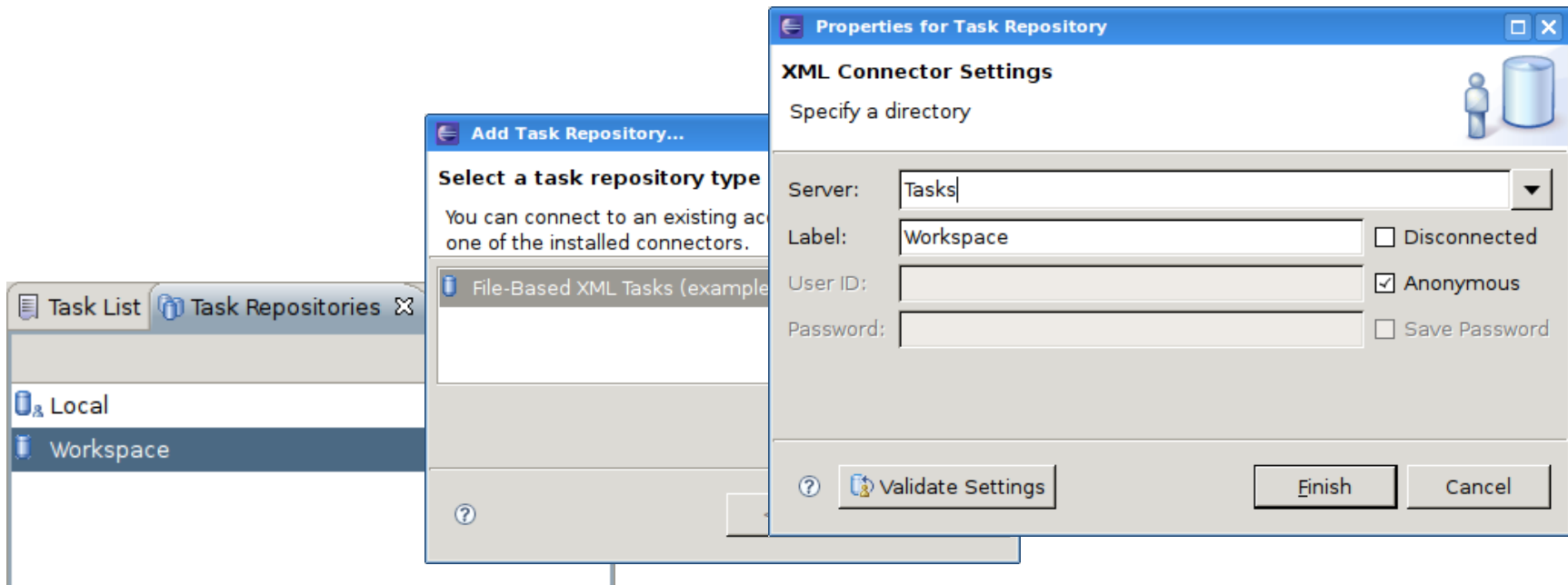
## **o.e.m.tasks.ui.repositories**

- Extension point for **registering connector core and ui**

*Demo*

# Summary: Connector Essentials

- **Connector Core** for specifying behavior
- **Connector UI** for contributing UI elements
- **Settings page** for configuring a **task repository**



***How do I get my tasks into  
the Task List?***

***Step 2 - Tasks***

# Concepts: Queries

## Query

- Implemented in **IRepositoryQuery**
- Specifies information to retrieve tasks from a repository
- Running a query returns **TaskData** objects

## Task Data

- Implemented in **TaskData**
- Full task details: attributes, comments, etc.
- Each task is identified by a **repository unique ID**

# Creating Queries

## XmlQueryPage

- Extends **AbstractRepositoryQueryPage2**
- Stores query parameters on an **IRepositoryQuery** object
- Contributed through **XmlConnectorUi.getQueryPage()**

**Edit Repository Query**

**Enter query parameters**

Select the Bugzilla query parameters. Use the Update Attributes button to retrieve updated values from the repository.

Query Title: Mylyn - Steffen

Summary:  all words

Comment:  all words

Email: steffen.pingel  owner  reporter  cc  commenter substring

Email 2:   owner  reporter  cc  commenter substring

Keywords: all Select...



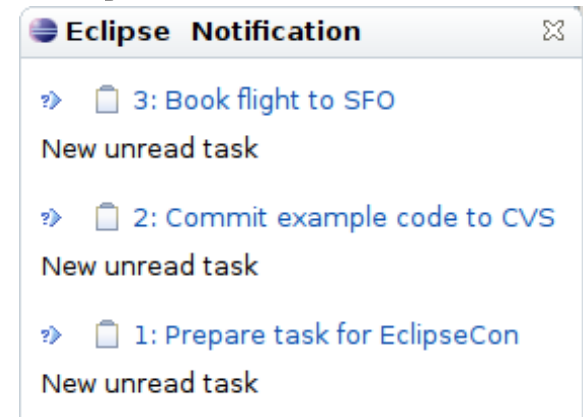
# Executing Queries

## XmlConnector.performQuery()

- Runs a query specified in an **IRepositoryQuery** object
- Returns results through the **TaskDataCollector** callback

## Creating TaskData objects

- Data is stored in a tree of **TaskAttribute** objects
- Task attributes are identified by **unique keys**
- The tasks framework defines common keys for description, summary, etc.

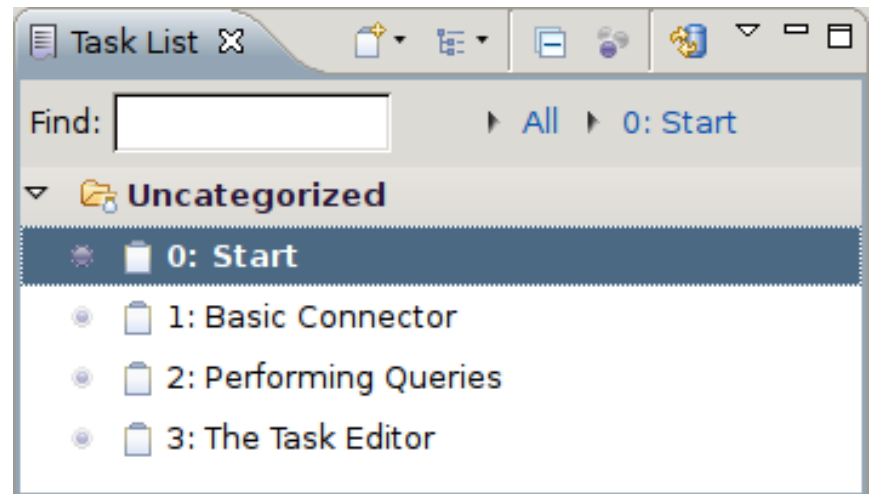


*Demo*

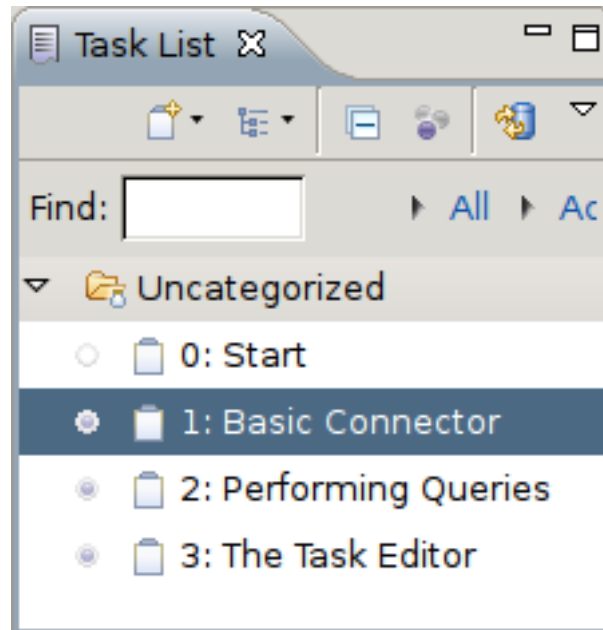
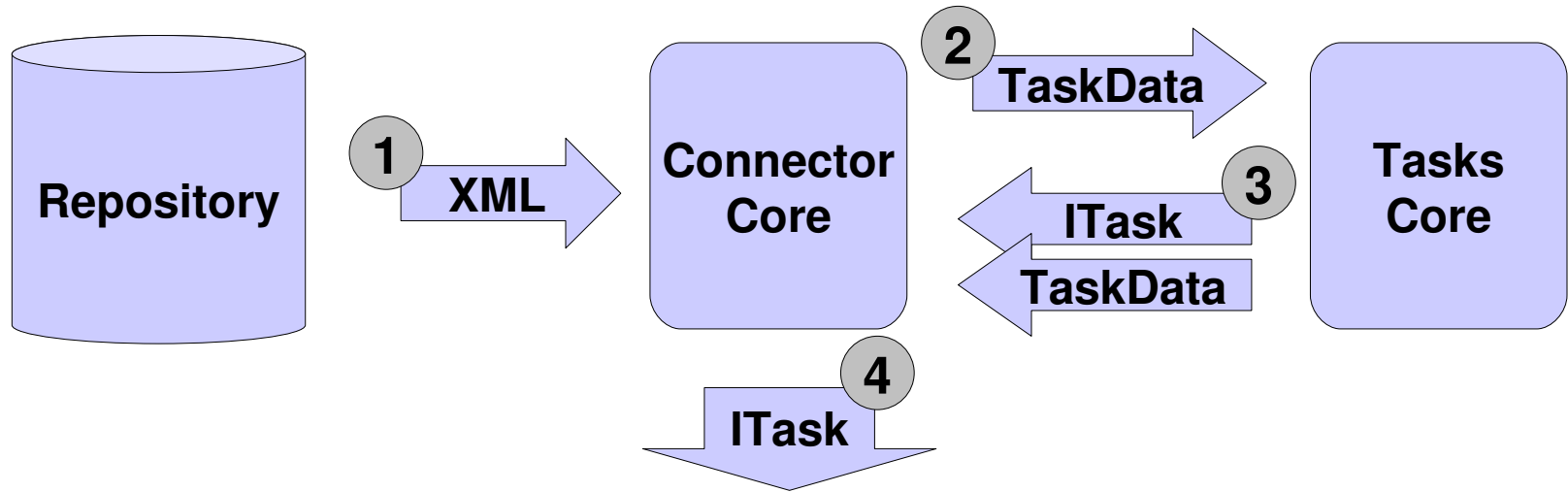
# Concepts: Task

## Task

- Implemented in **ITask**
- Created and updated from **TaskData**
- Managed by the tasks framework
- Every task has a repository unique id



# Synchronization



# From Task Data to ITask

1. `performQuery()` sends a `TaskData` object
2. `hasTaskChanged()` checks if an update is required
3. `updateTaskFromTaskData()` updates `ITask` from `TaskData`

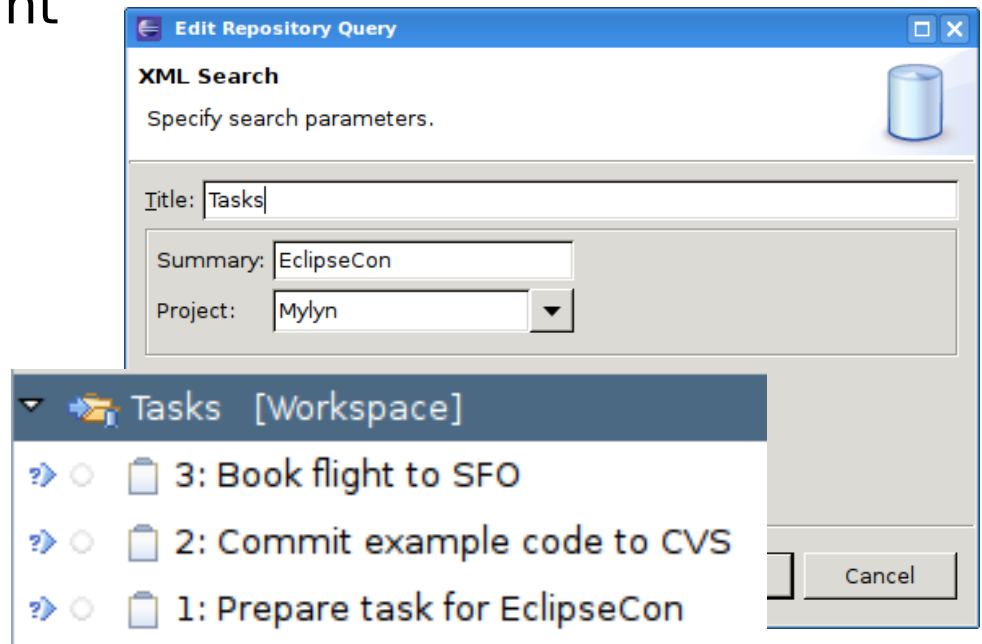
## Synchronization

- ⇒ New task, open to view
- ➡ Incoming changes, open to view
- ← Outgoing changes
- ↔ Unsubmitted outgoing changes
- ⚠ Synchronization failed, mouse over for details
- ◆ Conflicting changes, need to synchronize

*Demo*

# Summary: Tasks

- Queries return **task data**
- **Task data** is a **connector specific** representation
- **Task data** is **heavyweight**
- **Tasks** have a **Mylyn specific** schema
- **Tasks** are **lightweight**



***What do I need to  
implement a rich editor?***

***Step 3 - Rich Editor***

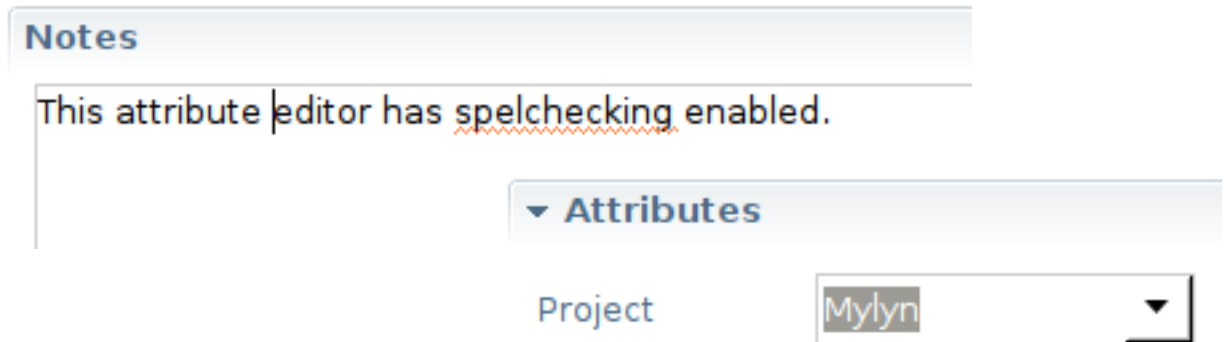
# Task Editor Structure

The screenshot displays the Eclipse IDE's Task Editor for a task named "1: Prepare task for EclipseCon". The editor is divided into several sections: a title bar, a text input field for the task name, a metadata section with "Attributes" (including a project dropdown and location), an "Attachments (0)" section, and a "Description" section containing the text "Hello Mylyn.". Three callout boxes with arrows identify the underlying components: "Attribute Editor" points to the task name field and the project dropdown; "Part" points to the "Attributes" and "Description" sections; and "Page" points to the bottom tab bar showing "Planning" and "XML" tabs.

# Concepts: Task Editor

## Attribute Editor

- Implemented in `AbstractAttributeEditor`
- Created based on `TaskAttribute` properties:
  - Type: String, Date, Integer, Url, Boolean, Single-Select, Multi-Select, Person, Rich Text...
  - Label
  - Read-only
- The framework provides attribute editors for common types







***1 extension***

***2 classes***

# Task Editor

## XmlTaskEditorPage

- Extends **AbstractTaskEditorPage**
- Composed of parts
- Each attribute is modified through an **AbstractAttributeEditor**

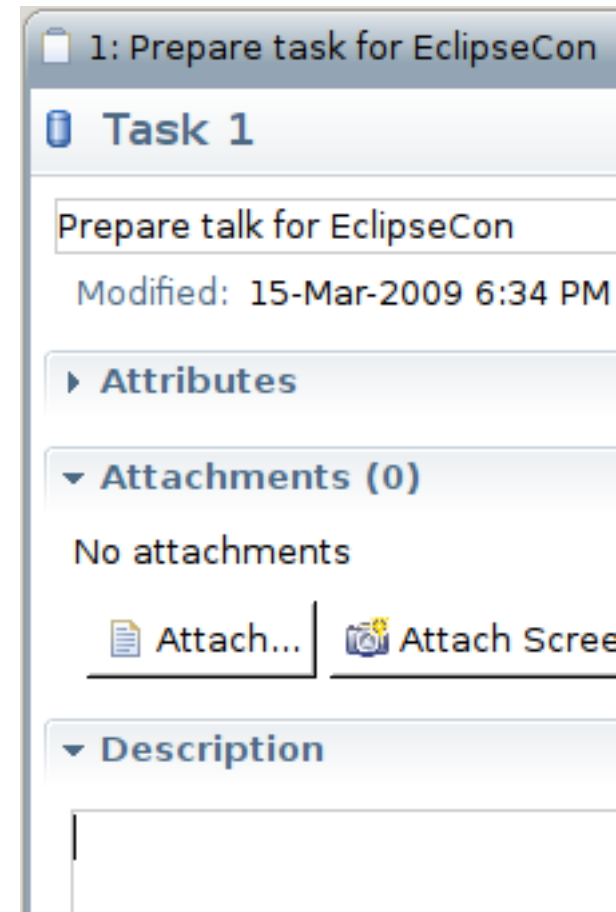
## XmlTaskEditorPageFactory

- Contributes task editor pages

## o.e.m.tasks.ui.editors

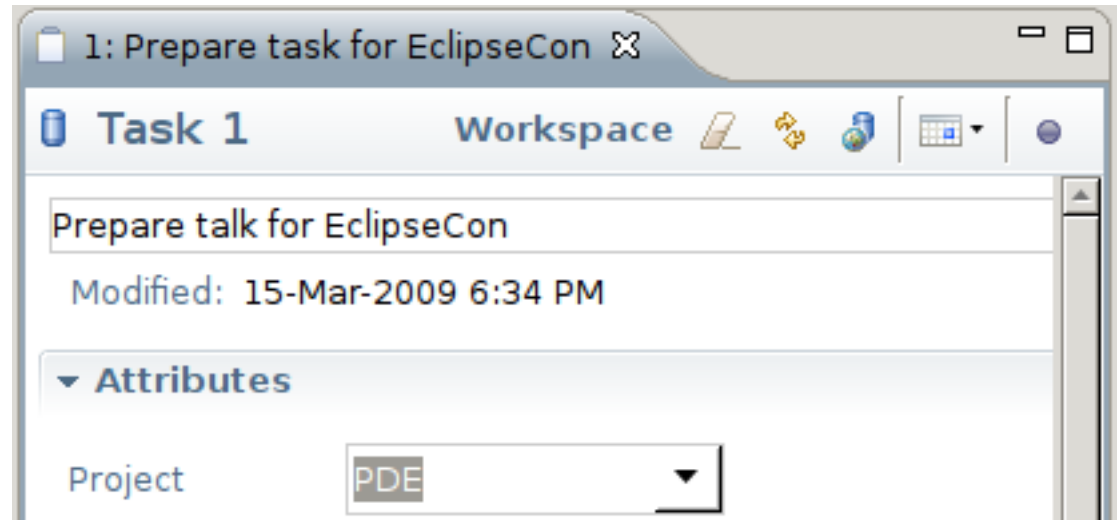
- Extension point for registering page factory

*Demo*



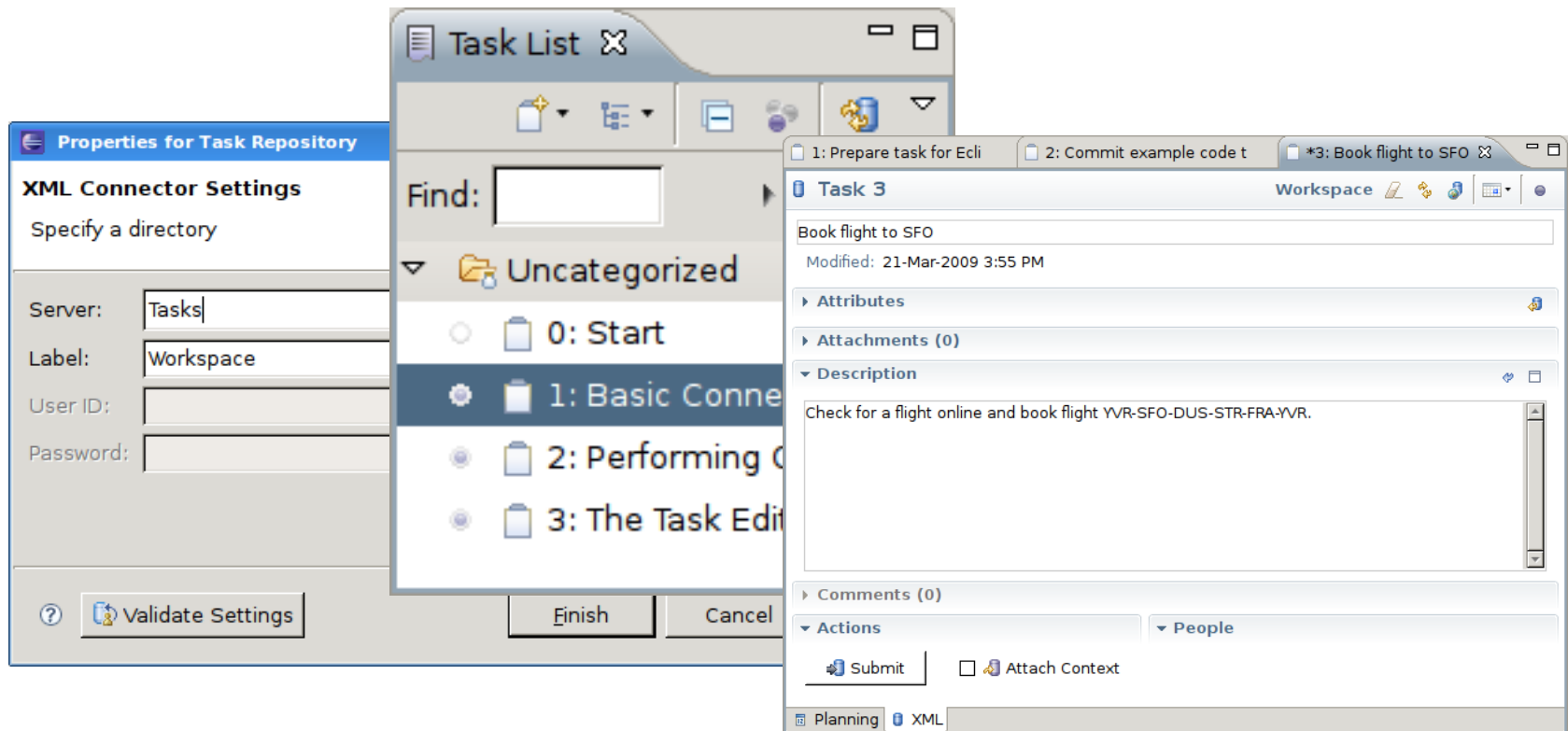
# Summary: Task Editor

- **Page factory** for contributing task editor pages
- **Task editor page** for editing task details
- **Attribute editors** for modifying attributes



# Building a Connector in 3 Steps

- Advanced topics: submitting tasks, capabilities, subtasks, hyperlinks, attachments, task editor extensibility, duplicate detection, commons, performance, deployment



# ***Outlook***

# API Roadmap

## **Planned features for 3.2 (June 2009, Galileo)**

- Generic OSLC compliant connector
- Integrated bug reporting
- Improved task editor extensibility
- Improved context management

# *Questions?*

## **eclipse.org/mylyn**

- Get the source and slides
- Get involved with the community
- Subscribe to [mylyn-dev@eclipse.org](mailto:mylyn-dev@eclipse.org)

## **tasktop.com/mylyn**

- Browse tutorials and guides
- Get Tasktop Pro for additional connectors
- Mylyn consulting available



*Steffen Pingel, Tasktop Technologies Inc.  
steffen.pingel@tasktop.com*