# Single Sourcing

## The Rich Ajax Platform

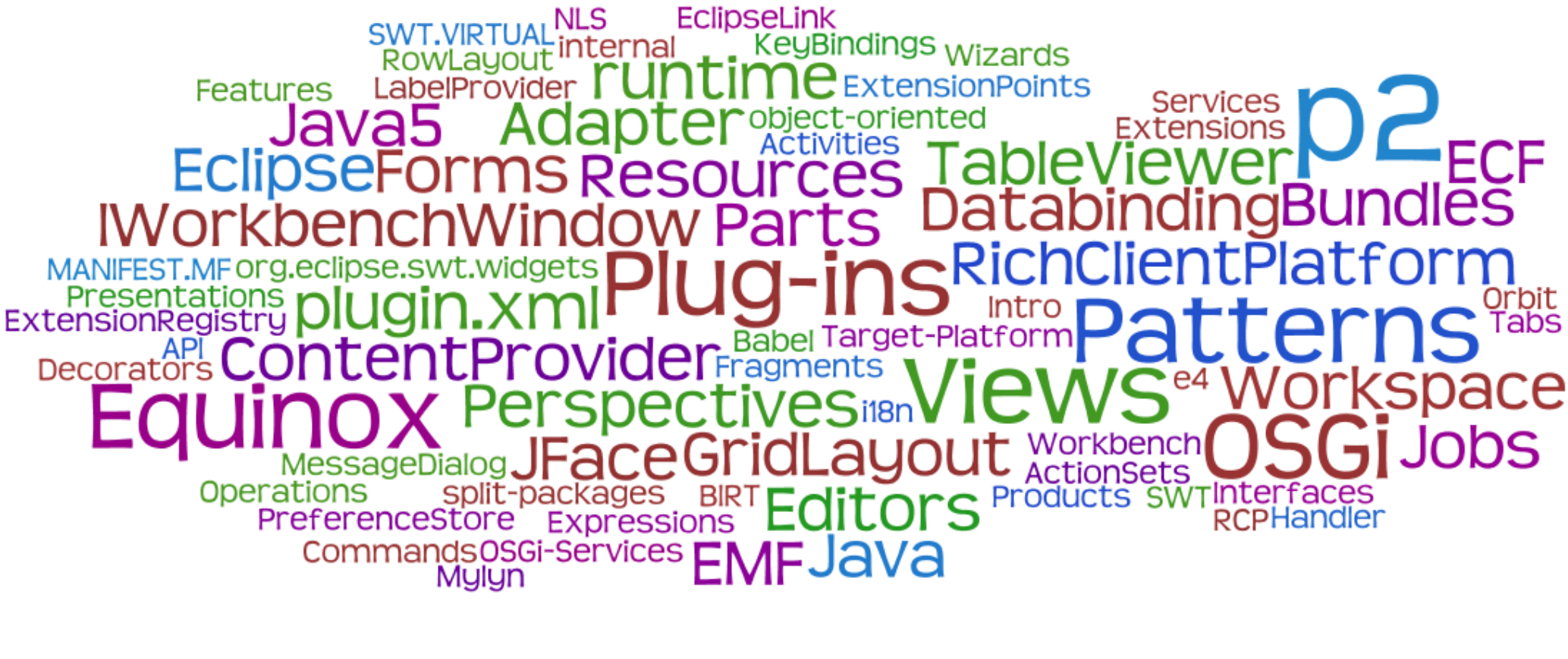
**Benjamin Muskalla**
RAP Development Team

# Who We Are

EclipseSource

RAP Development Core Team
Karlsruhe, Germany

# Knowledge?


NLS
EclipseLink
SWT.VIRTUAL
internal
KeyBindings
Wizards
RowLayout
runtime
Features
LabelProvider
ExtensionPoints
Java5
Adapter
object-oriented
Services
Extensions
p2
Activities
EclipseForms
Resources
TableViewer
ECF
IWorkbenchWindow
Parts
DatabindingBundles
MANIFEST.MF
org.eclipse.swt.widgets
Plug-ins
RichClientPlatform
Presentations
plugin.xml
Intro
Orbit
ExtensionRegistry
Patterns
Tabs
API
Babel
Target-Platform
ContentProvider
Decorators
Fragments
Equinox
Perspectives
Views
e4
Workspace
i18n
OSGi
Jobs
MessageDialog
JFace
GridLayout
Workbench
ActionSets
Operations
split-packages
BIRT
Editors
Products
SWT
Interfaces
PreferenceStore
Expressions
RCP
Handler
Commands
OSGi-Services
EMF
Java
Mylyn

# Web 2.0?


errors
embed
browser
mashups
font-family
JSF
XHTML1.0
SVG
w3c
Webtools
Response
keep-alive
Gecko
Webkit
browserdetection
Frames
margin-left
HTTP1.1
JSP
Aptana
Tables
JIT
CSS
Silverlight
URL
Request
no-cache
unbeforeunload
REST
padding-top
Flex
Firebug
YUI
XML
DOM
ExtJS
SQL-Injection
qooxdoo
RIA
Flash
asyncronous
Grails
Jquery
Javascript
Dojo
prototype
Chrome
Soap
ETag
Safari
IE
cross-site-scripting
RSS
incompatibility
Comet
Ajax
Gears
Connection
Struts
Firefox
Web2.0
HTML5
MooTools
script.aculo.us
Selenium
AdobeAIR
JSON
YAML
GWT
GET
Acid3
Performance
HTML4
XSLT
Canvas
roundedcorners
Servlets
FileUpload
XHR
Parameter
User-Agent
synchronous
favicon
XHTML
cross-browser
Bespin
Mozilla

# A solution?

# single sourcing *[ˈsɪŋ.gl sɔːrsɪŋ]*

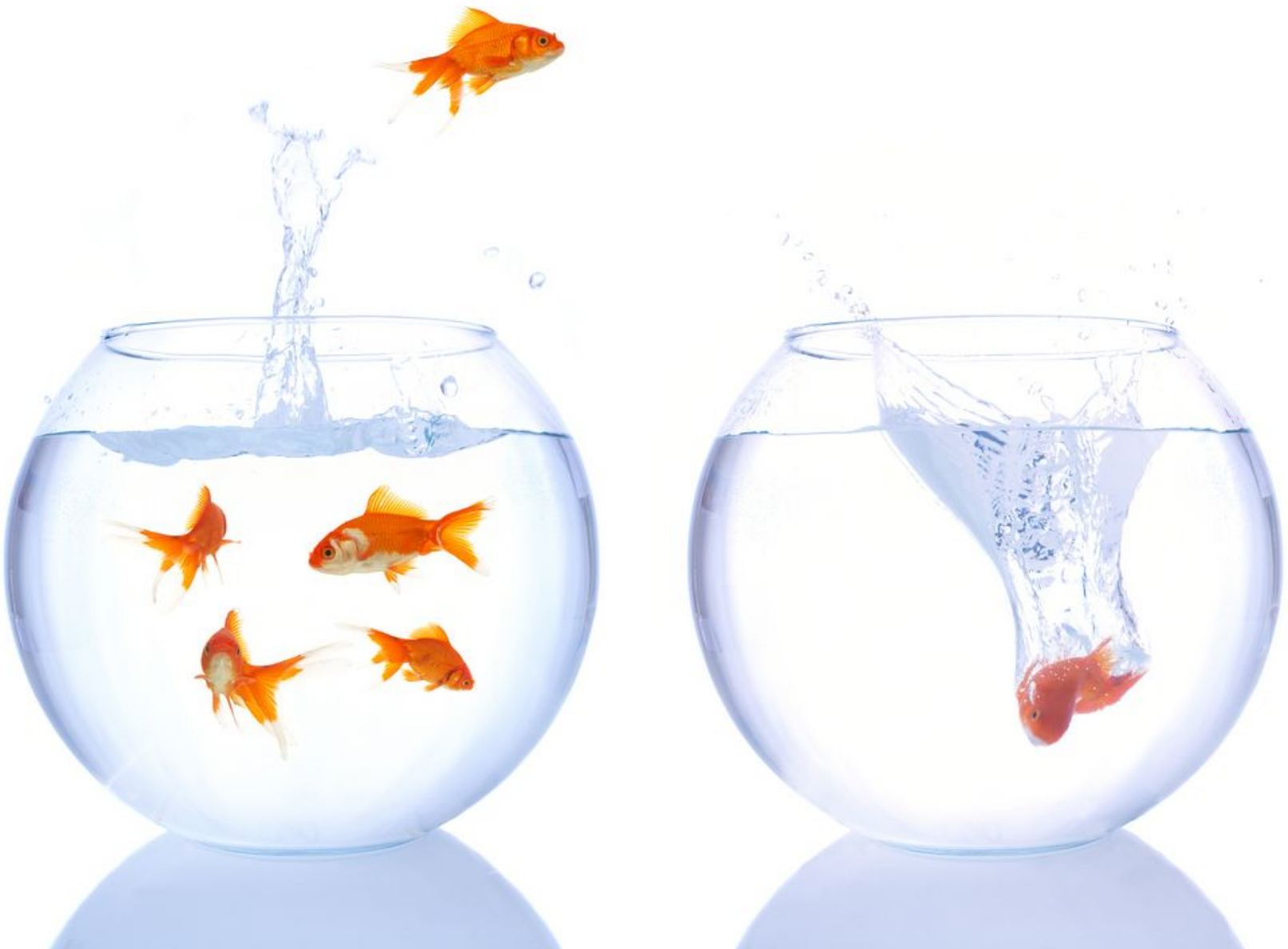
Single source publishing, also known as single sourcing, allows the same content to be used in different documents or in various formats.

# single sourcing *[ˈsɪŋ.gl sɔ:rsɪŋ]*

Single source publishing, also known as single sourcing, allows the same content to be used in different documents or in various formats.

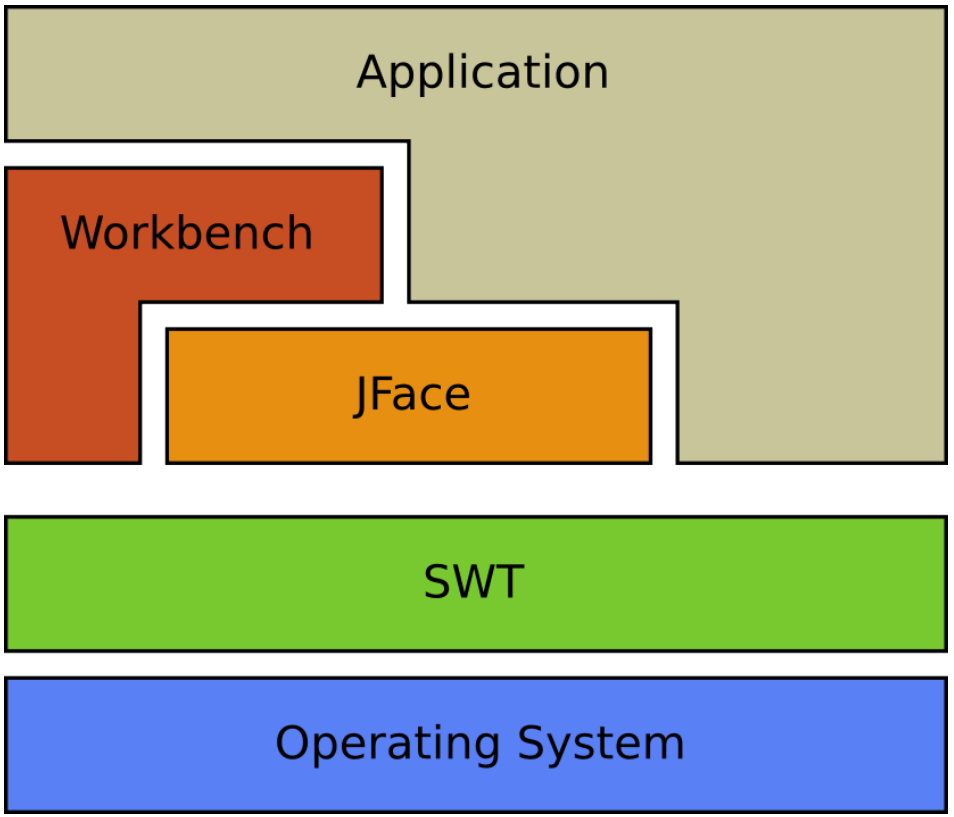
*source* *runtime environments*

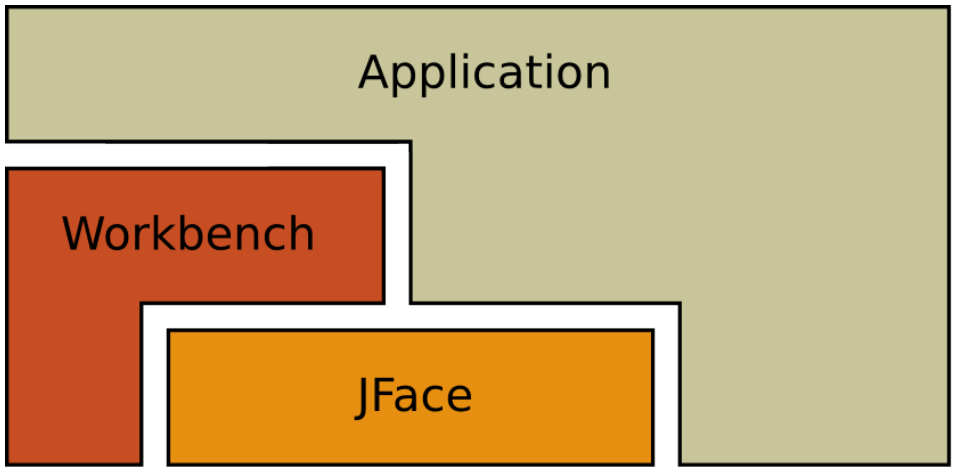
# Impossible?

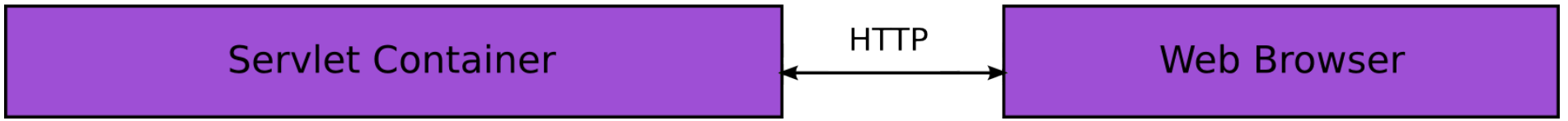


# Exchange the runtime!

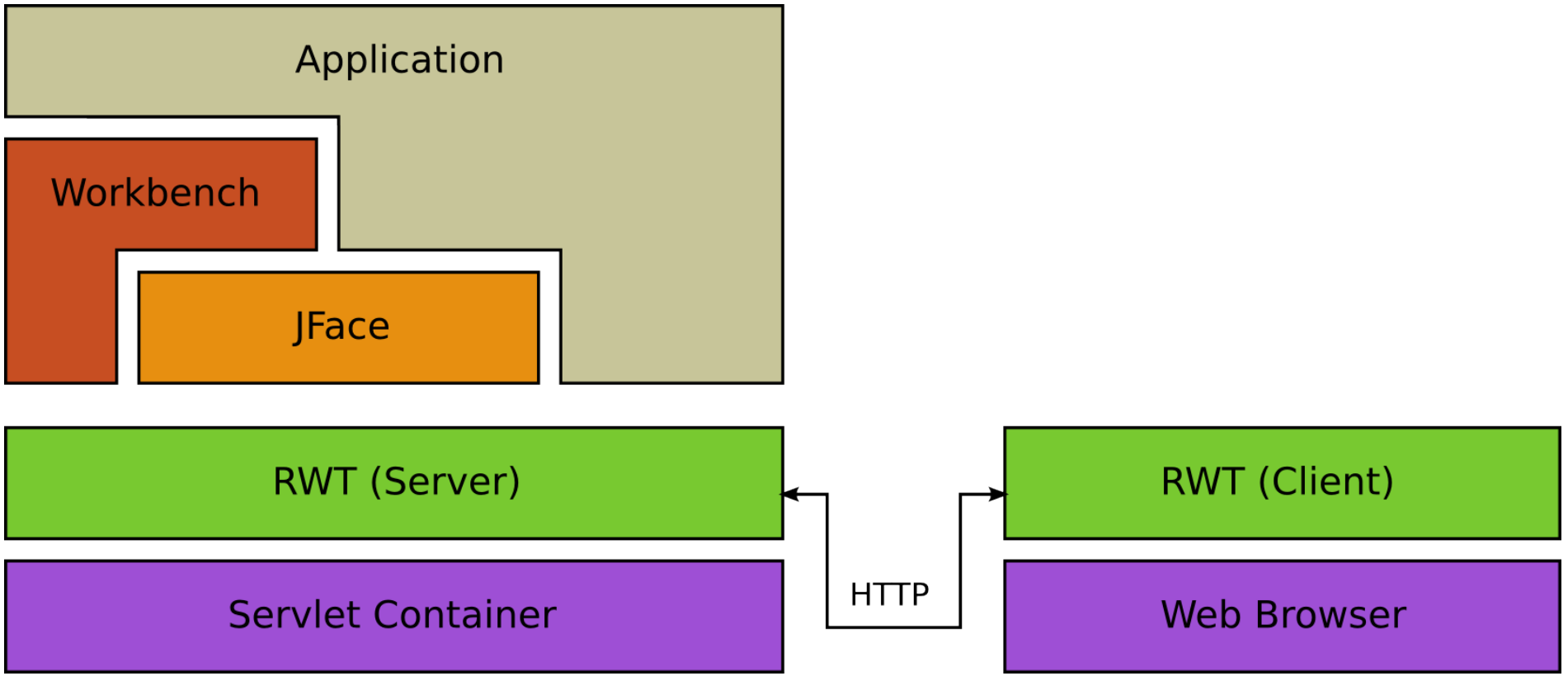
# Layers of RCP



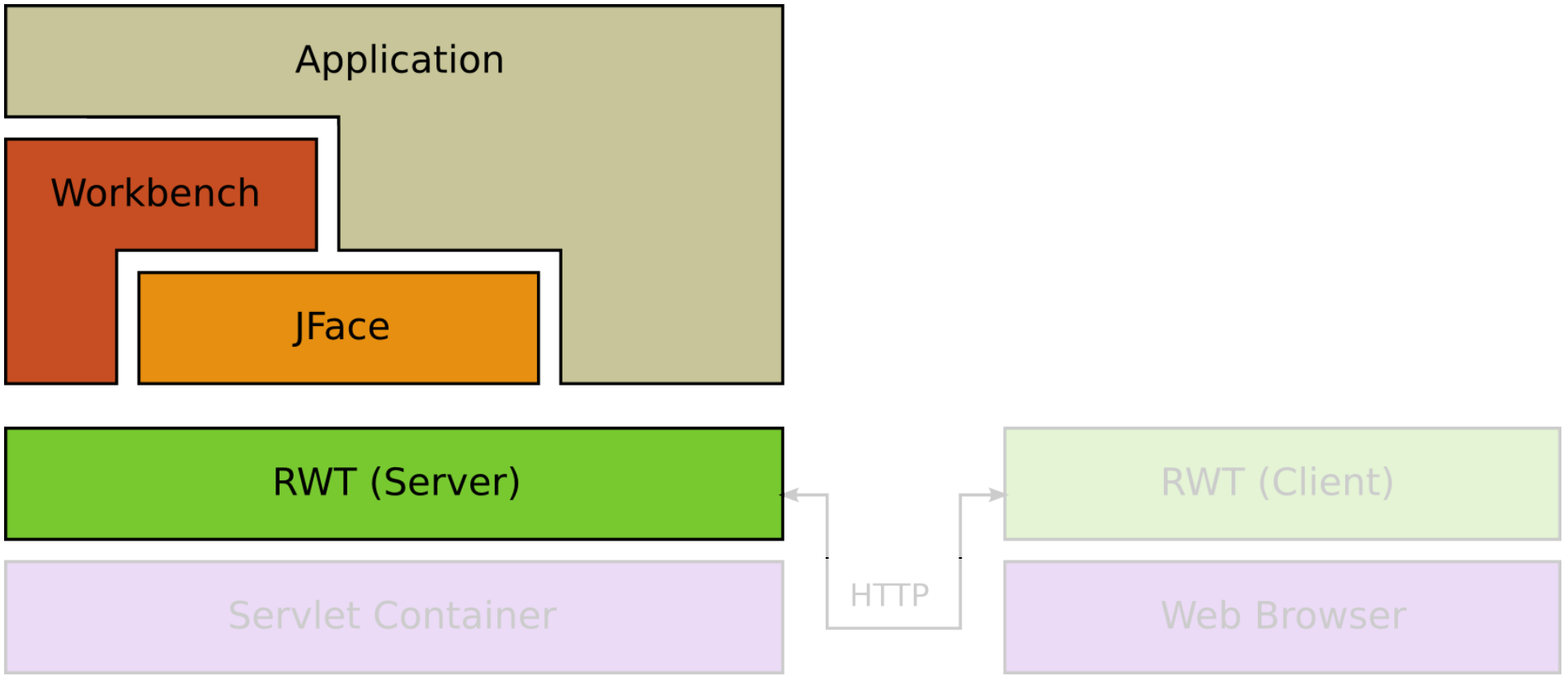

Application
Workbench
JFace


Servlet Container
HTTP
Web Browser

# RAP Layers


Application
Workbench
JFace
RWT (Server)
RWT (Client)
HTTP
Servlet Container
Web Browser

# On the Surface




WHY?

# It's possible!

# It saves time...

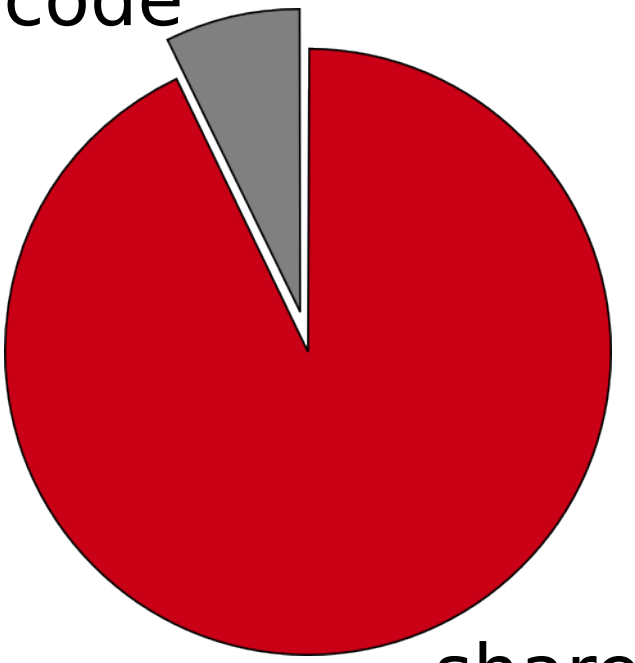
# ...and money!

# How much can we reuse?

# Code Reuse

**80%–98% is possible**

platform specific code

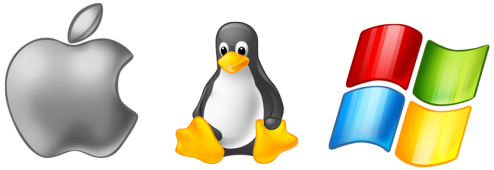


shared code

# What about the 2-20%?

# RAP Runs in a Browser

File system
GraphicsContext



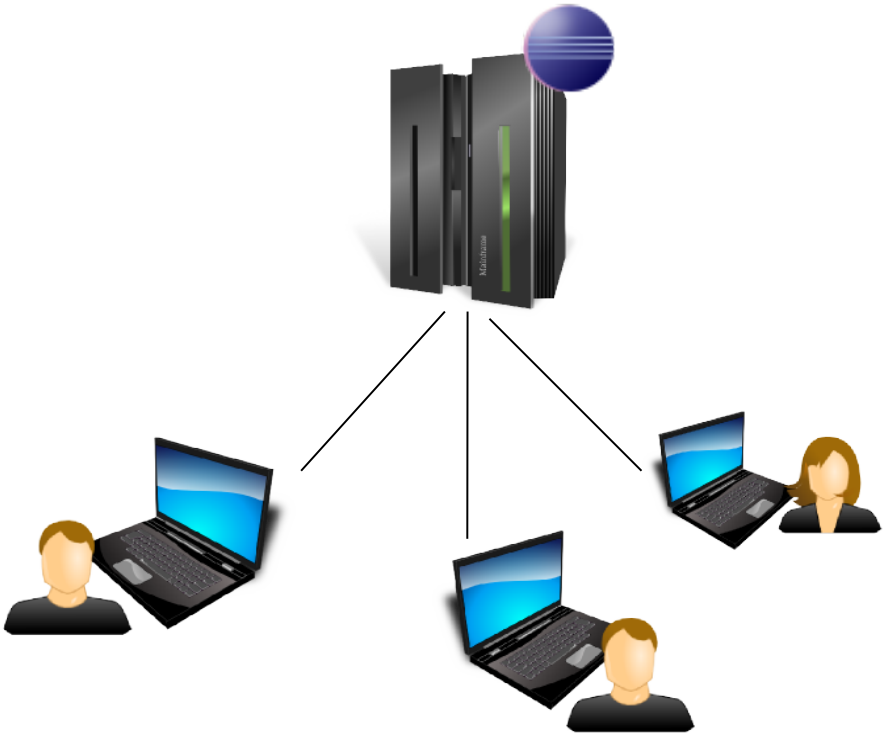
**RCP**

File upload

**RAP**

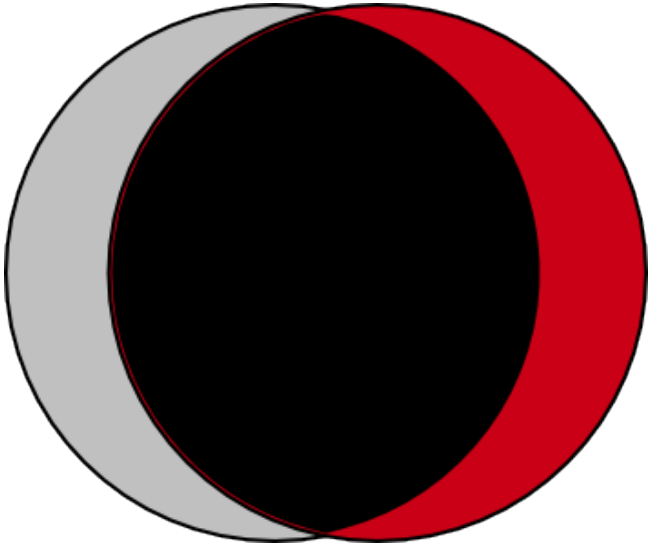
# RAP is Multi-User!

RCP



RAP

# API Differences



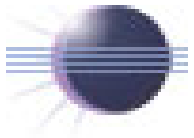

Desktop-only features

Web-specific features


MESSAGE
Demo
DATE
SCENE
TAKE

# Techniques

# Hand Tools

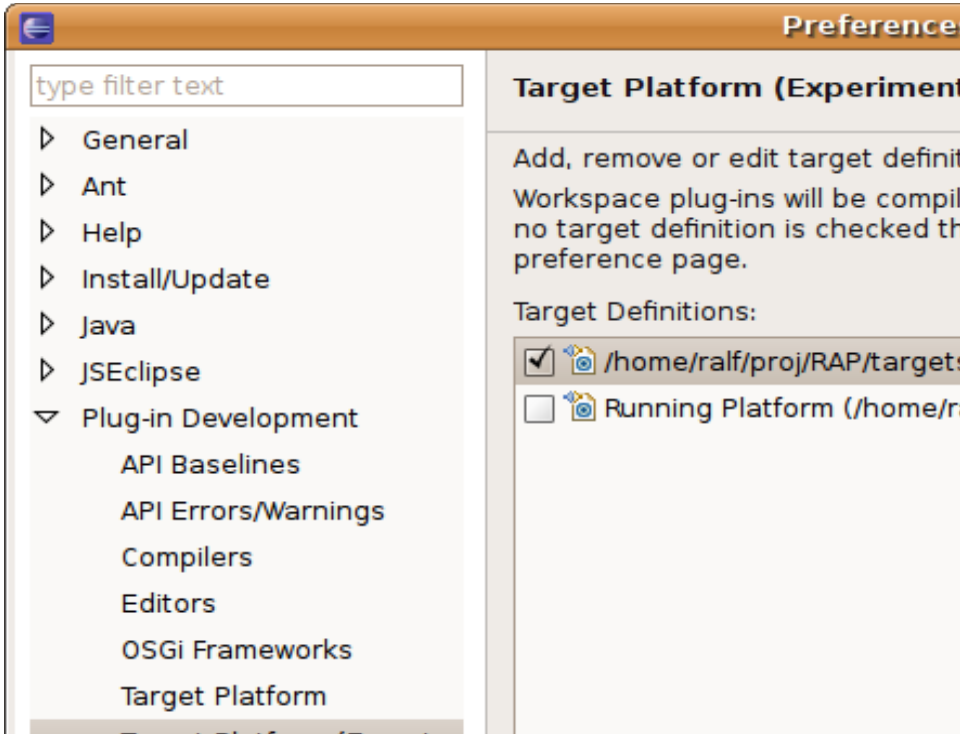


**Eclipse SDK**

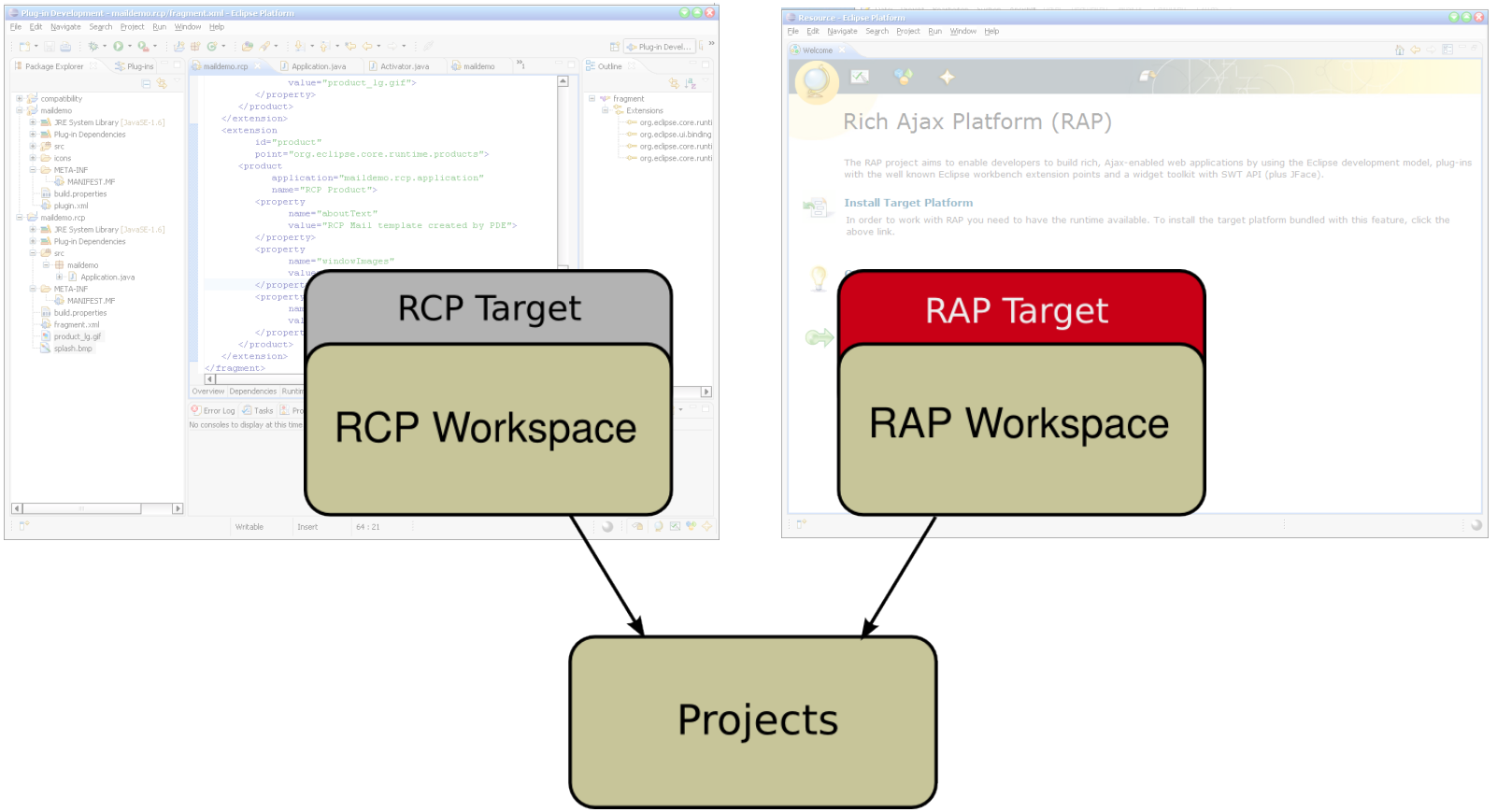
**RAP SDK**

includes

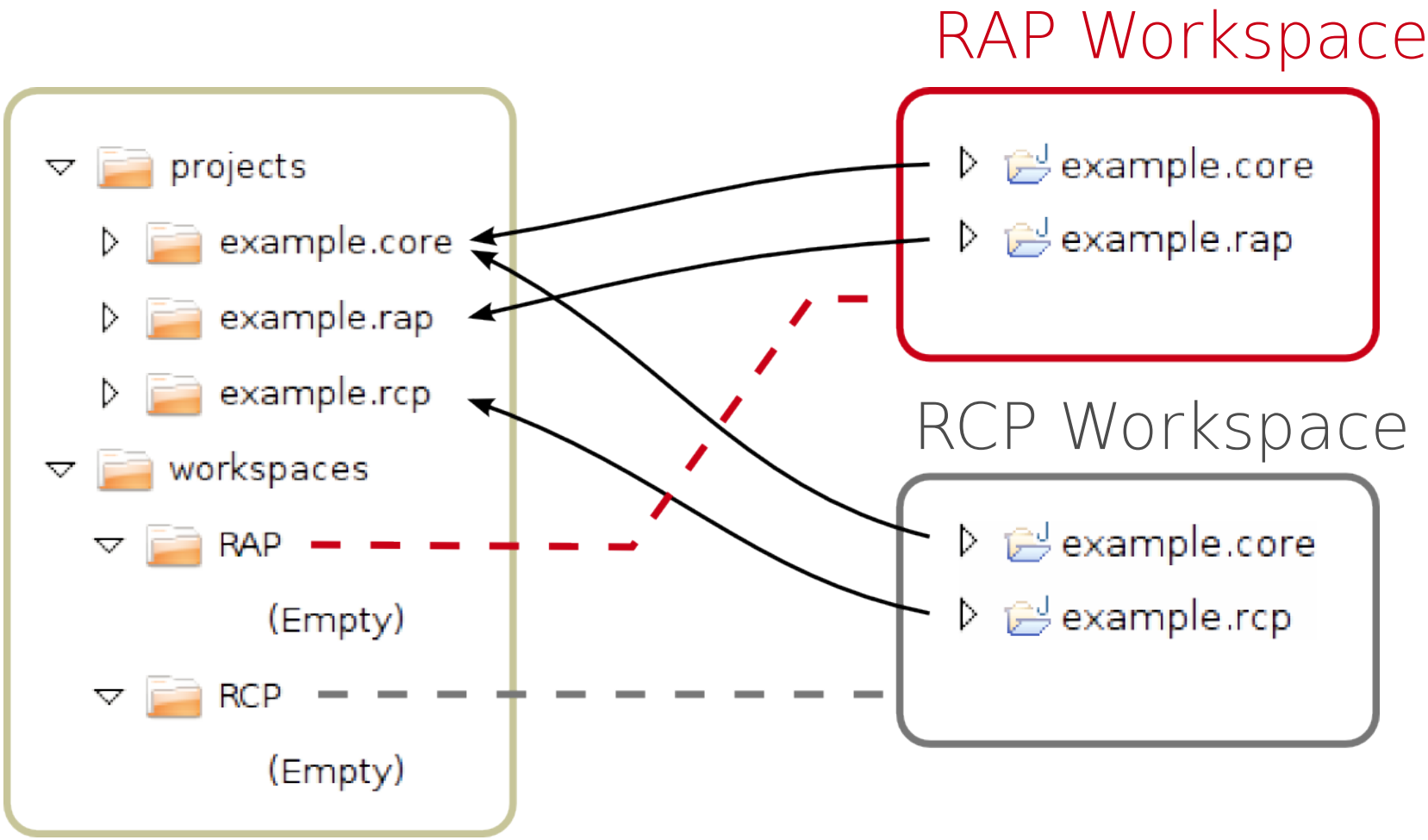
- RAP Runtime
- Tooling
- Help



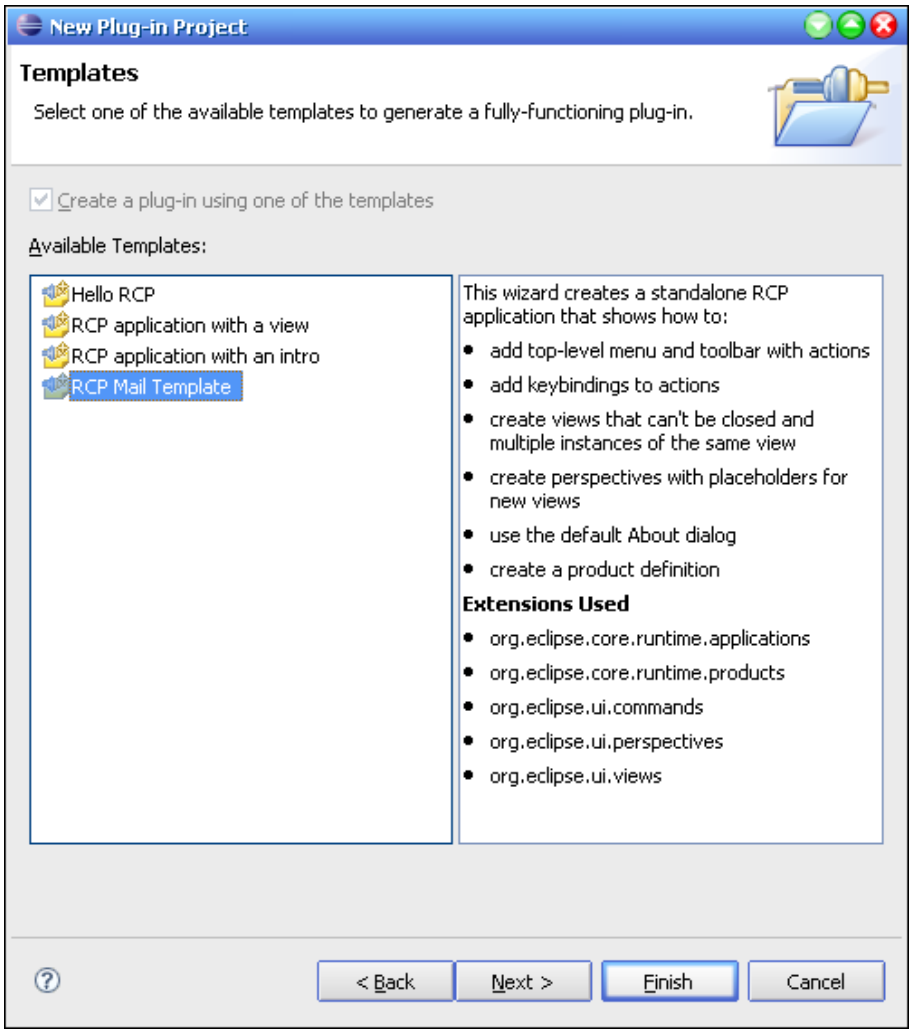
# Workplace


RCP Target
RCP Workspace
RAP Target
RAP Workspace
Projects

# Shared Projects

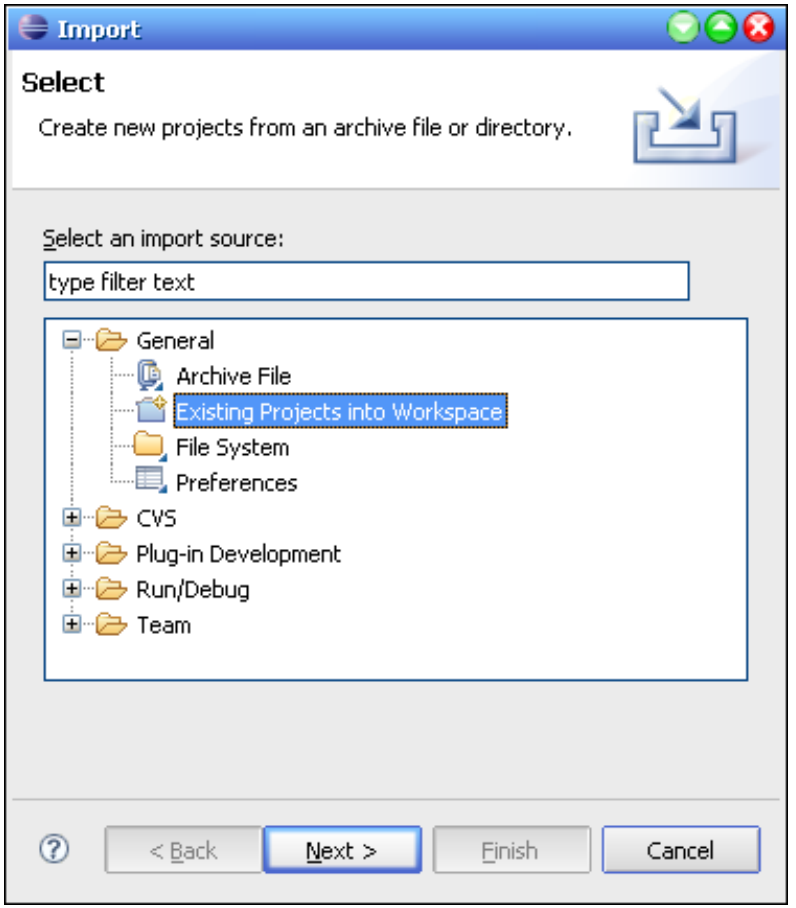


# Example Application

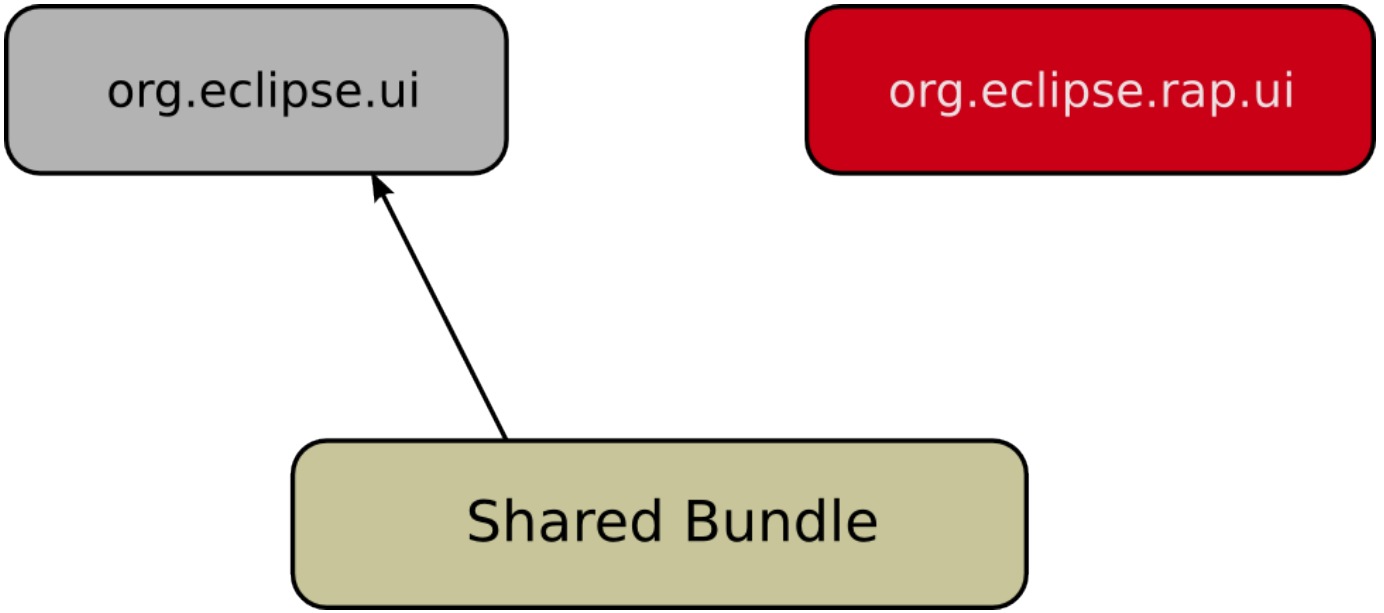



RCP Mail Demo

# Import into RAP Workspace



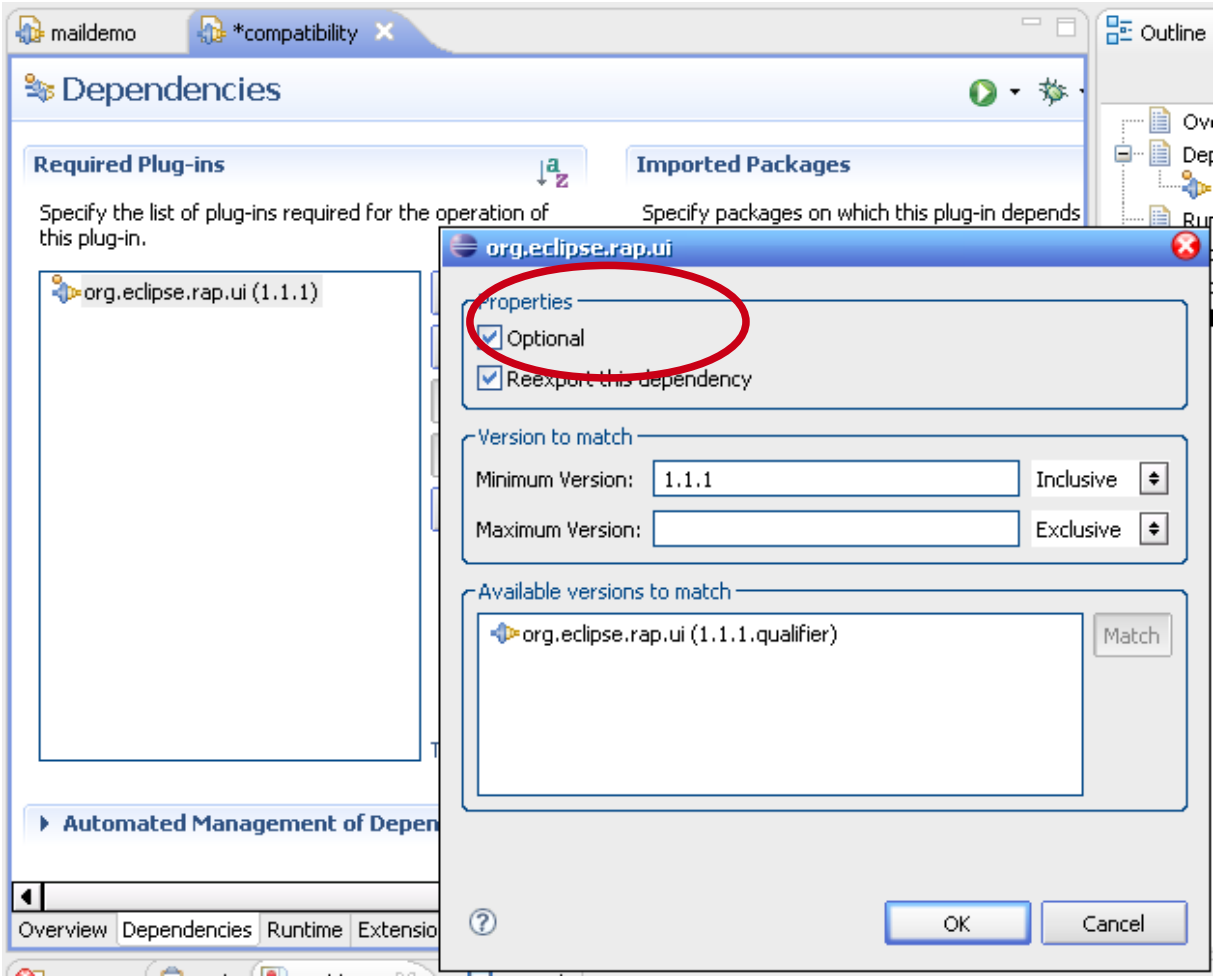
# Dependencies



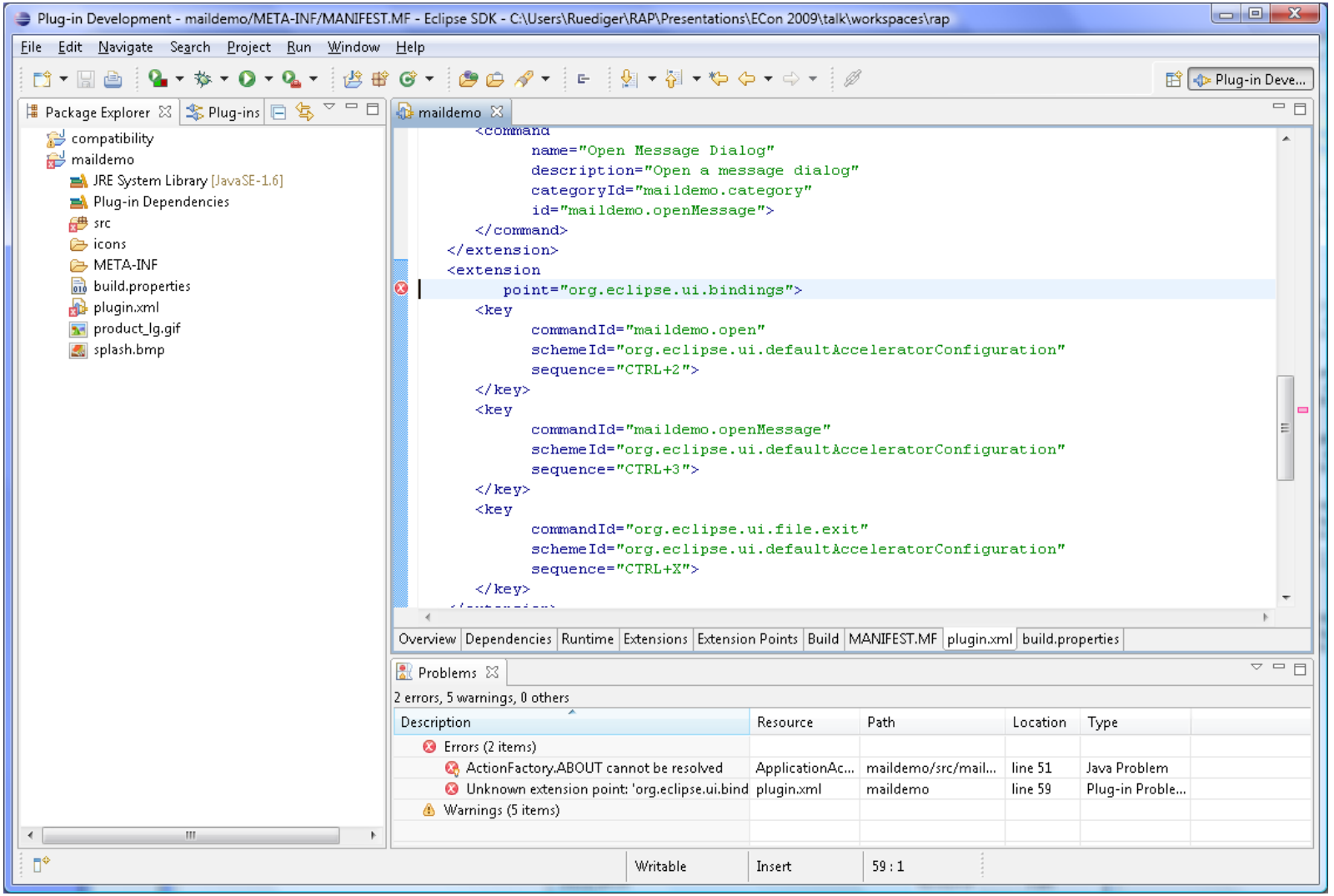

Package Imports

Optional Dependencies

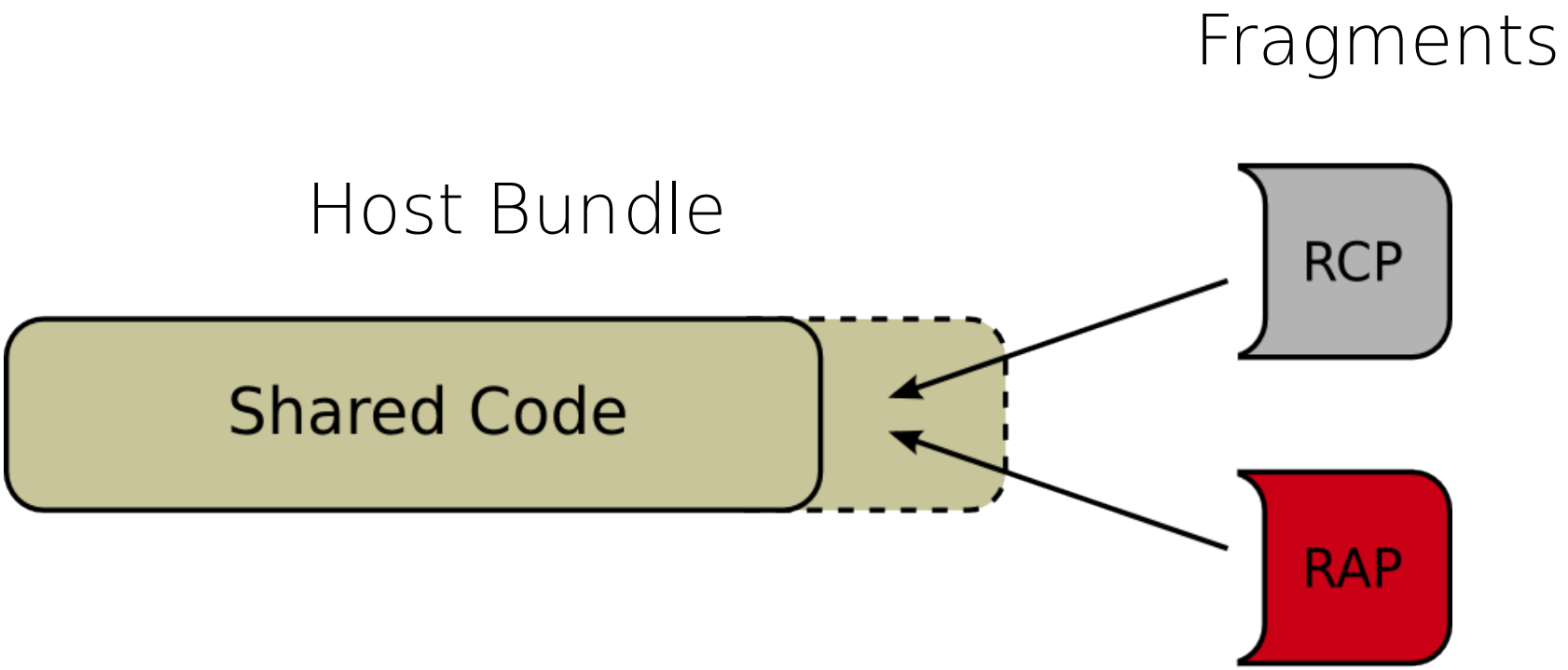
# Optional Dependencies



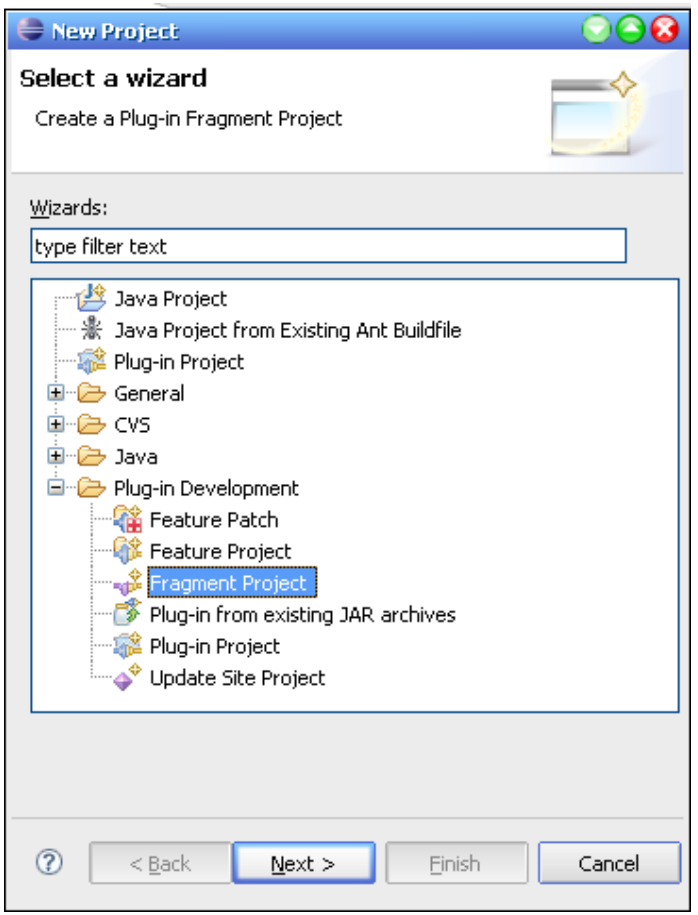
# Only Two Errors Left



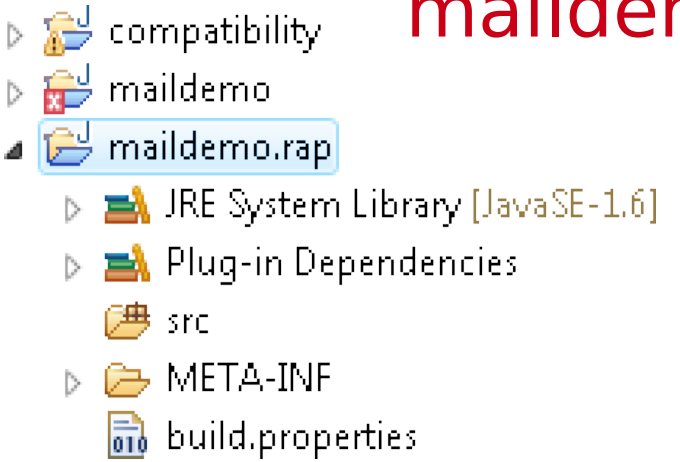
# Fragments



# Create Fragments

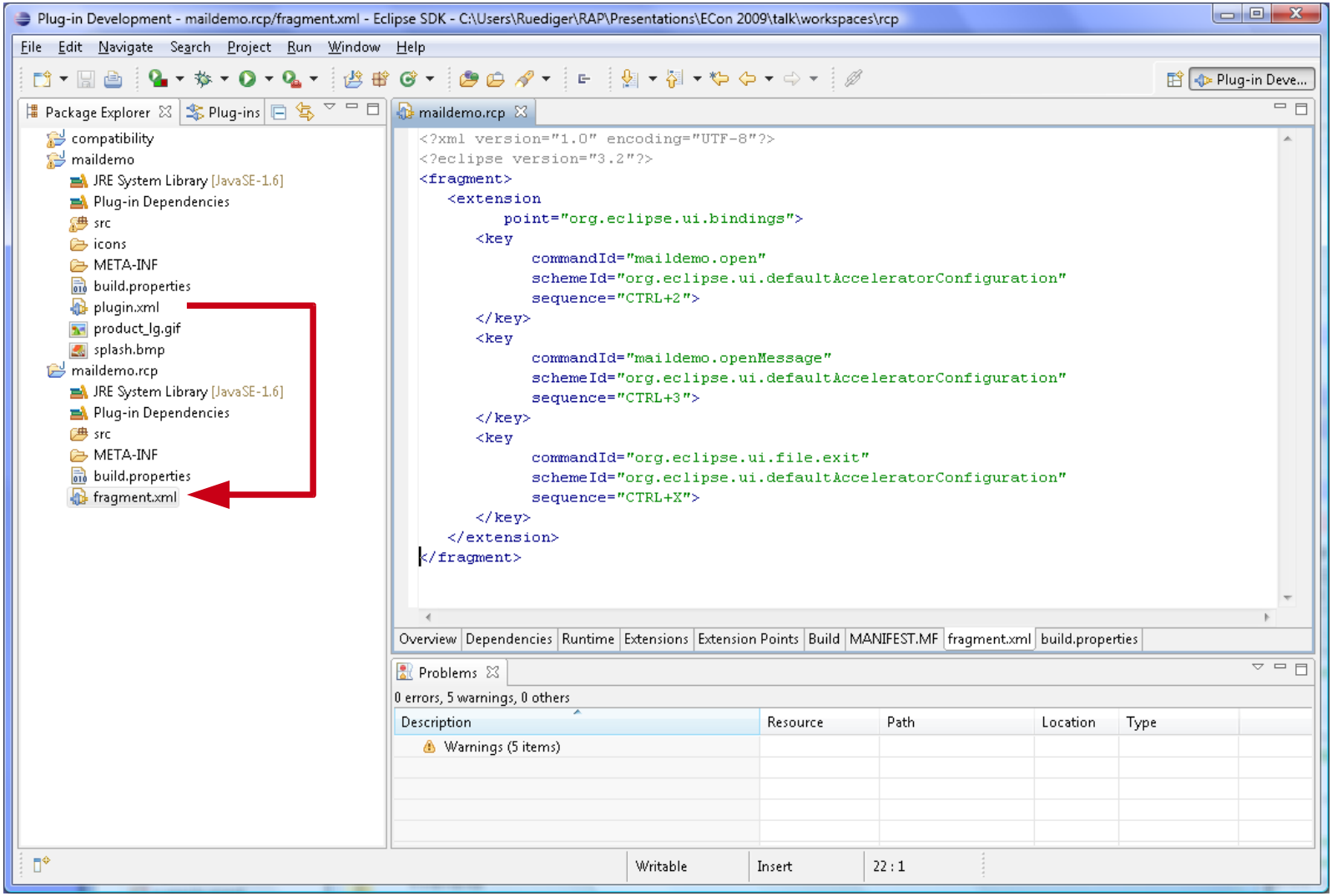



maildemo.rap

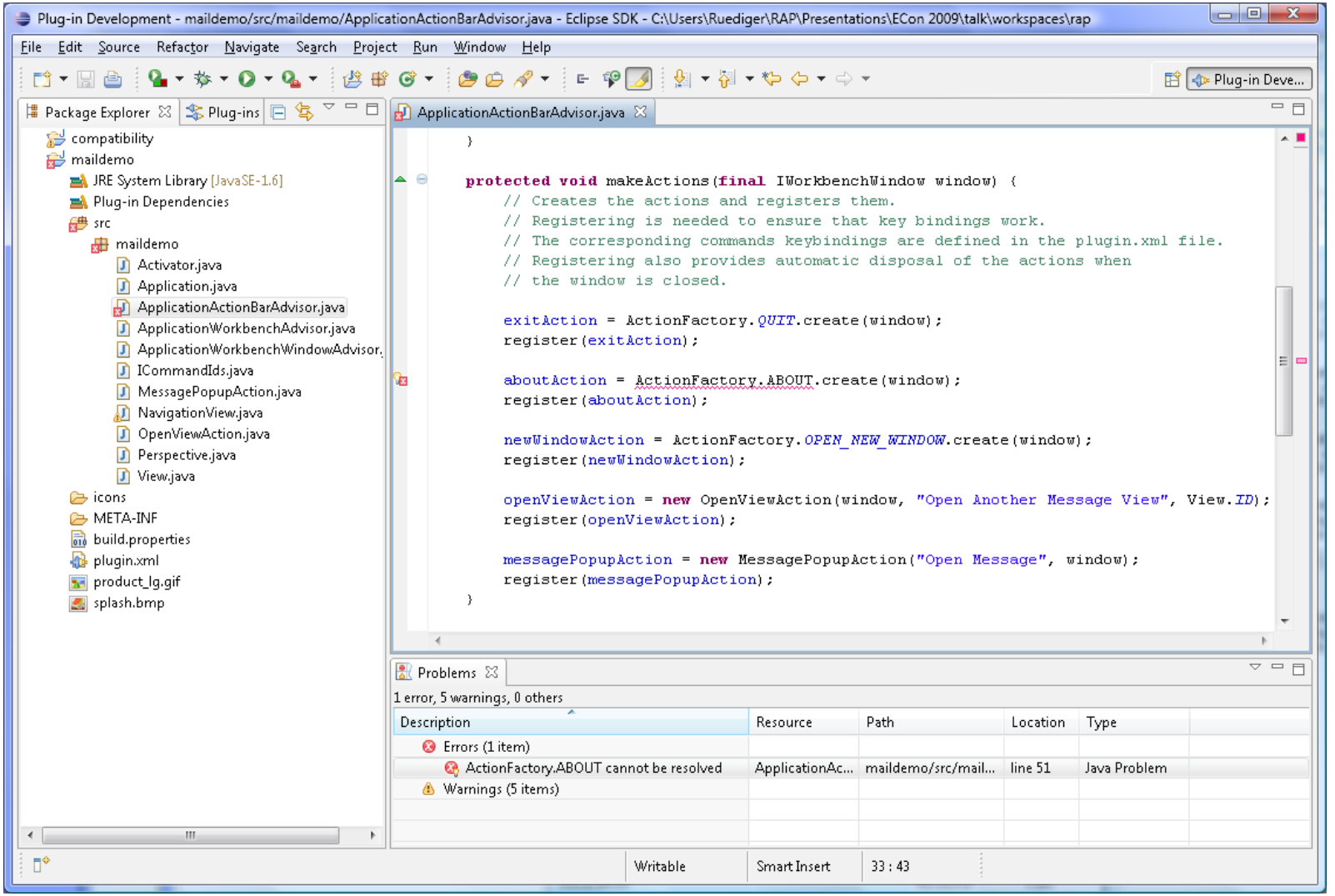



maildemo.rcp

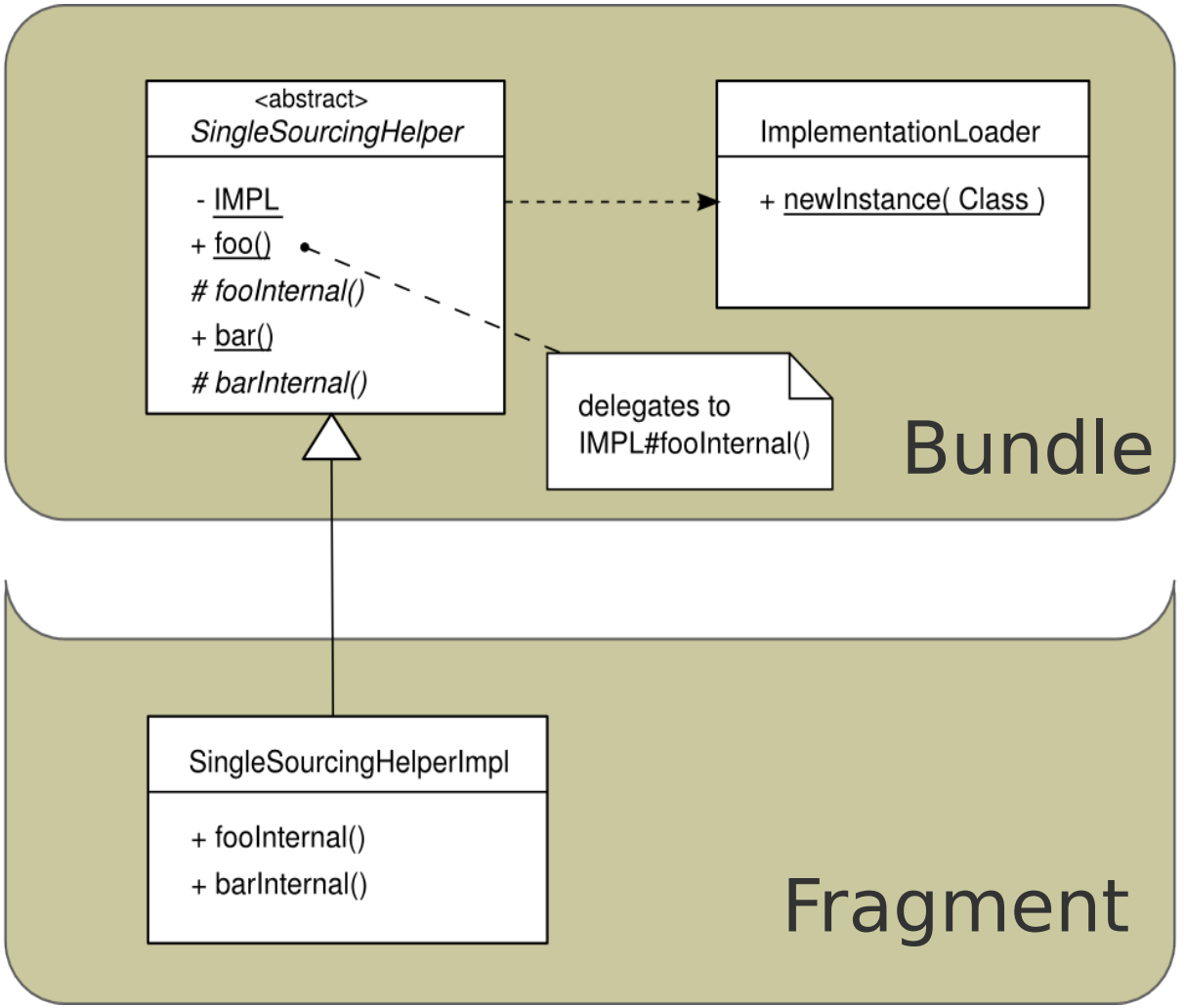
# Move extensions



# Only One Error Left



# Delegation


<abstract>
SingleSourcingHelper
- IMPL
+ foo()
# fooInternal()
+ bar()
# barInternal()
ImplementationLoader
+ newInstance( Class )
delegates to
IMPL#fooInternal()
Bundle
SingleSourcingHelperImpl
+ fooInternal()
+ barInternal()
Fragment

# API Differences

**RCP**

```
exitAction = ActionFactory.QUIT.create(window);
register(exitAction);

aboutAction = ActionFactory.ABOUT.create(window);
register(aboutAction);
```

**RAP**

```
aboutAction = new AboutAction(window);
register(aboutAction);
```

**RCP + RAP**

```
aboutAction = AboutActionHelper.create(window);
register(aboutAction);
```

# Helper Class

```
public abstract class AboutActionHelper {

    private static final AboutActionHelper IMPL;
    static {
        IMPL = (AboutActionHelper) ImplementationLoader.newInstance( AboutActionHelper.class );
    }

    public static IWorkbenchAction create( IWorkbenchWindow window ) {
        return IMPL.createInternal( window );
    }

    abstract IWorkbenchAction createInternal( IWorkbenchWindow window );
}
```

# ImplementationLoader

```
public class ImplementationLoader {

    public static Object newInstance( Class type ) {
        String name = type.getName();
        Object result = null;
        try {
            result = type.getClassLoader().loadClass( name + "Impl" ).newInstance();
        } catch( Throwable throwable ) {
            // TODO handle exception
        }
        return result;
    }
}
```

# Implementations

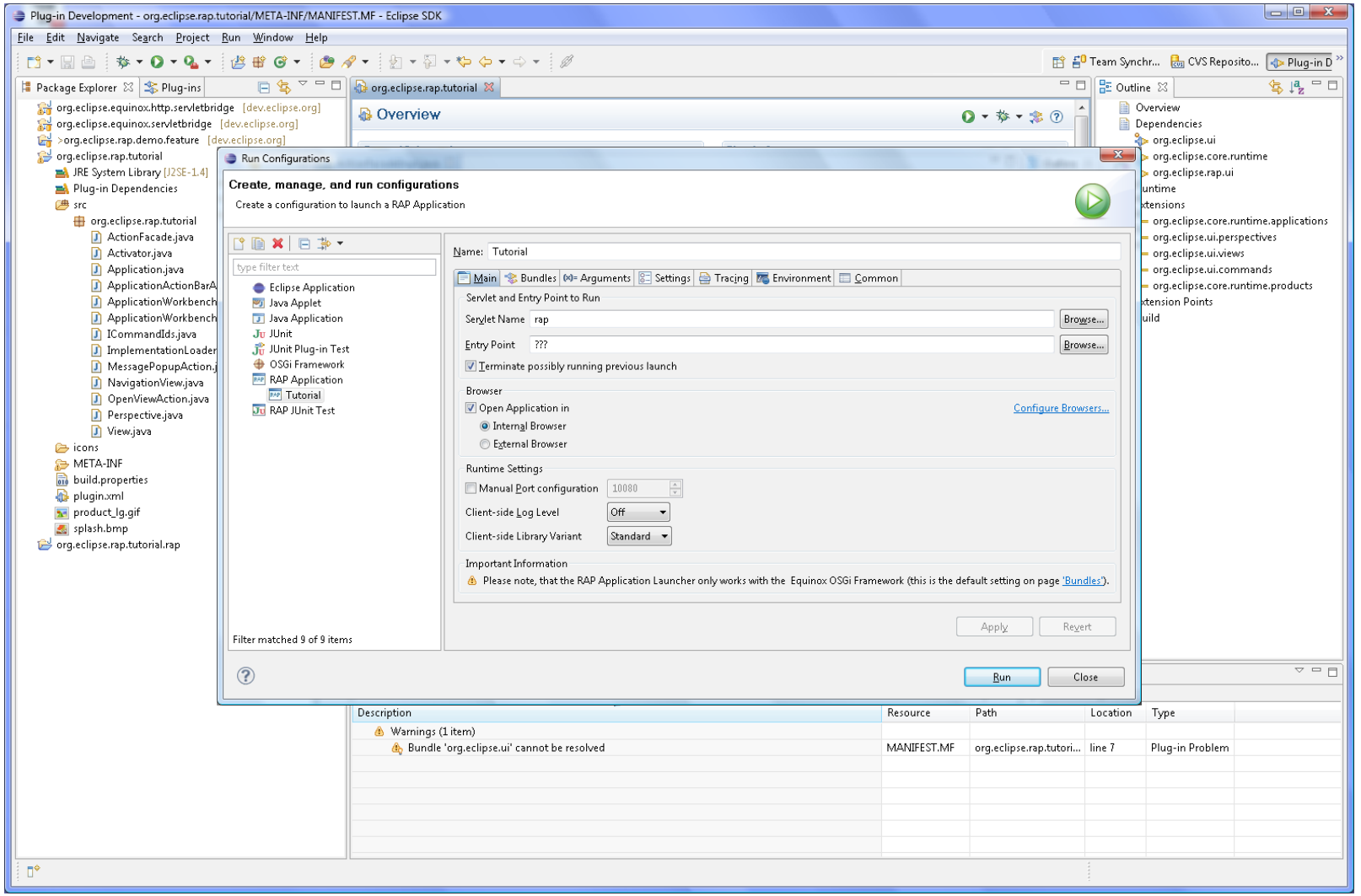
## RCP

```
public class AboutActionHelperImpl extends AboutActionHelper {

    IWorkbenchAction createInternal( IWorkbenchWindow window ) {
        return ActionFactory.ABOUT.create( window );
    }
}
```

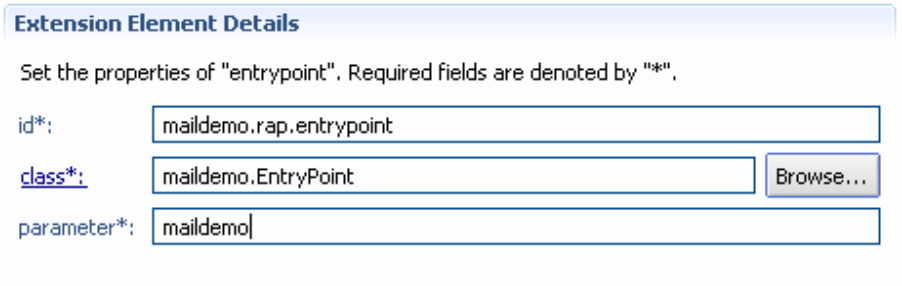
## RAP

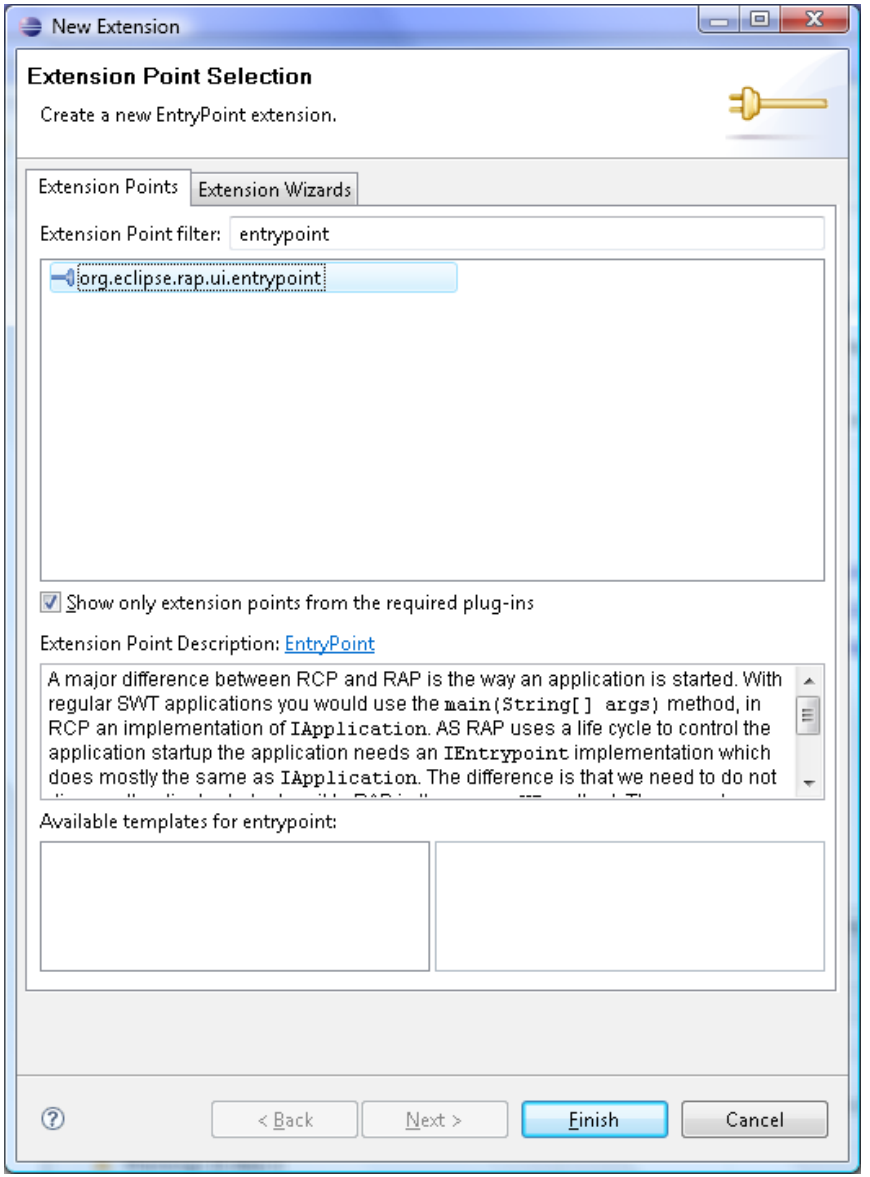
```
public class AboutActionHelperImpl extends AboutActionHelper {

    private final class AboutAction extends Action implements IWorkbenchAction {..

    IWorkbenchAction createInternal( IWorkbenchWindow window ) {
        return new AboutAction( window );
    }
}
```

# Zero Errors


Plug-in Development - org.eclipse.rap.tutorial/META-INF/MANIFEST.MF - Eclipse SDK
File Edit Navigate Search Project Run Window Help
Package Explorer
Plug-ins
org.eclipse.rap.tutorial
Overview
Outline
Run Configurations
Create, manage, and run configurations
Create a configuration to launch a RAP Application
Name: Tutorial
Main Bundles Arguments Settings Tracing Environment Common
Servlet and Entry Point to Run
Servlet Name rap
Entry Point ???
Terminate possibly running previous launch
Browser
Open Application in
Internal Browser
External Browser
Configure Browsers...
Runtime Settings
Manual Port configuration
Client-side Log Level
Client-side Library Variant
Important Information
Please note, that the RAP Application Launcher only works with the Equinox OSGi Framework (this is the default setting on page 'Bundles').
Apply
Revert
Run
Close
Filter matched 9 of 9 items
Eclipse Application
Java Applet
Java Application
JUnit
JUnit Plug-in Test
OSGi Framework
RAP Application
Tutorial
RAP JUnit Test
Description
Resource
Path
Location
Type
Warnings (1 item)
Bundle 'org.eclipse.ui' cannot be resolved
MANIFEST.MF
line 7
Plug-in Problem

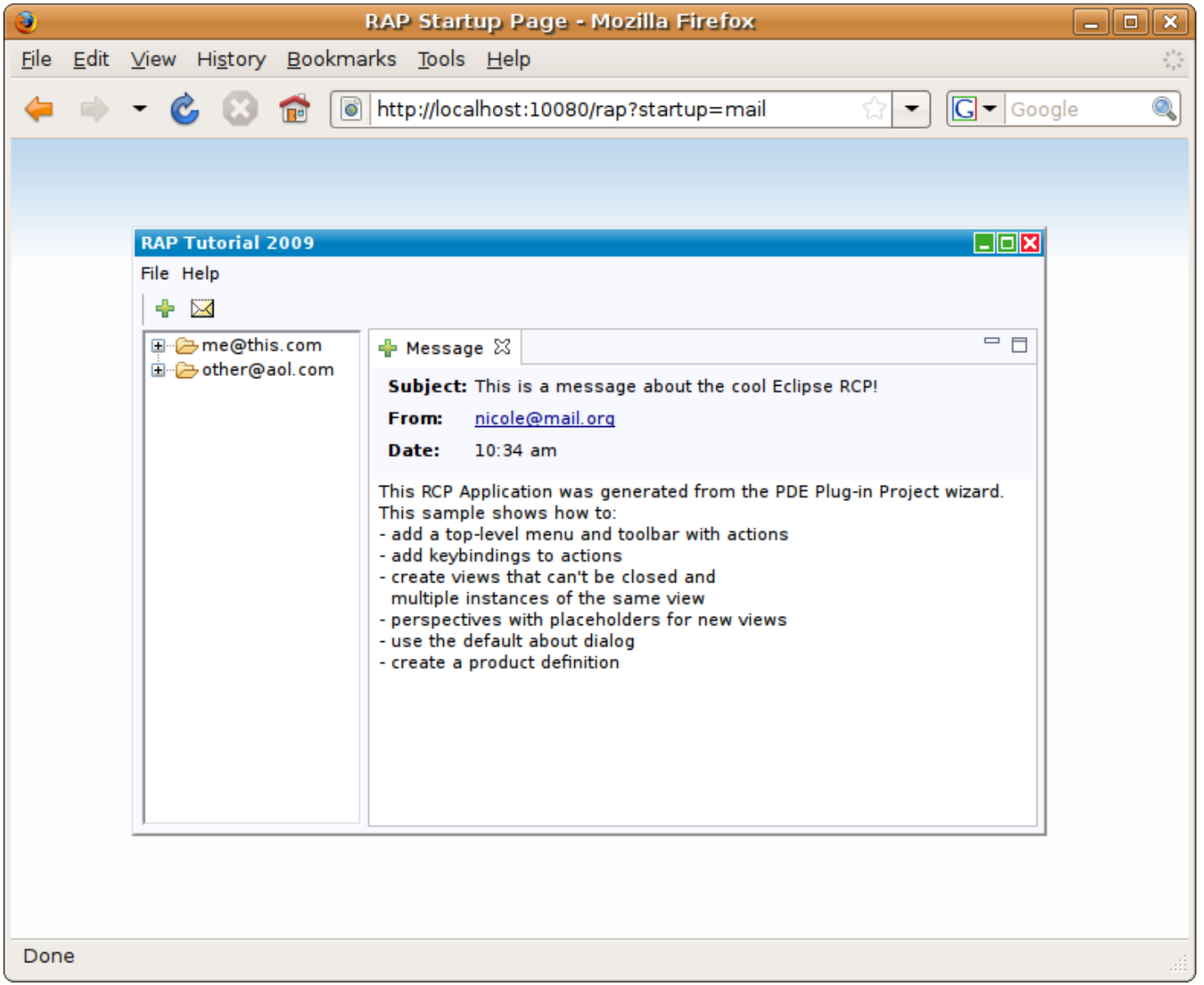
# Entry Point




```
public class EntryPoint implements IEntryPoint {

    public int createUI() {
        Display display = PlatformUI.createDisplay();
        return PlatformUI.createAndRunWorkbench(display, new ApplicationWorkbenchAdvisor());

    }

}
```

# Lift Off

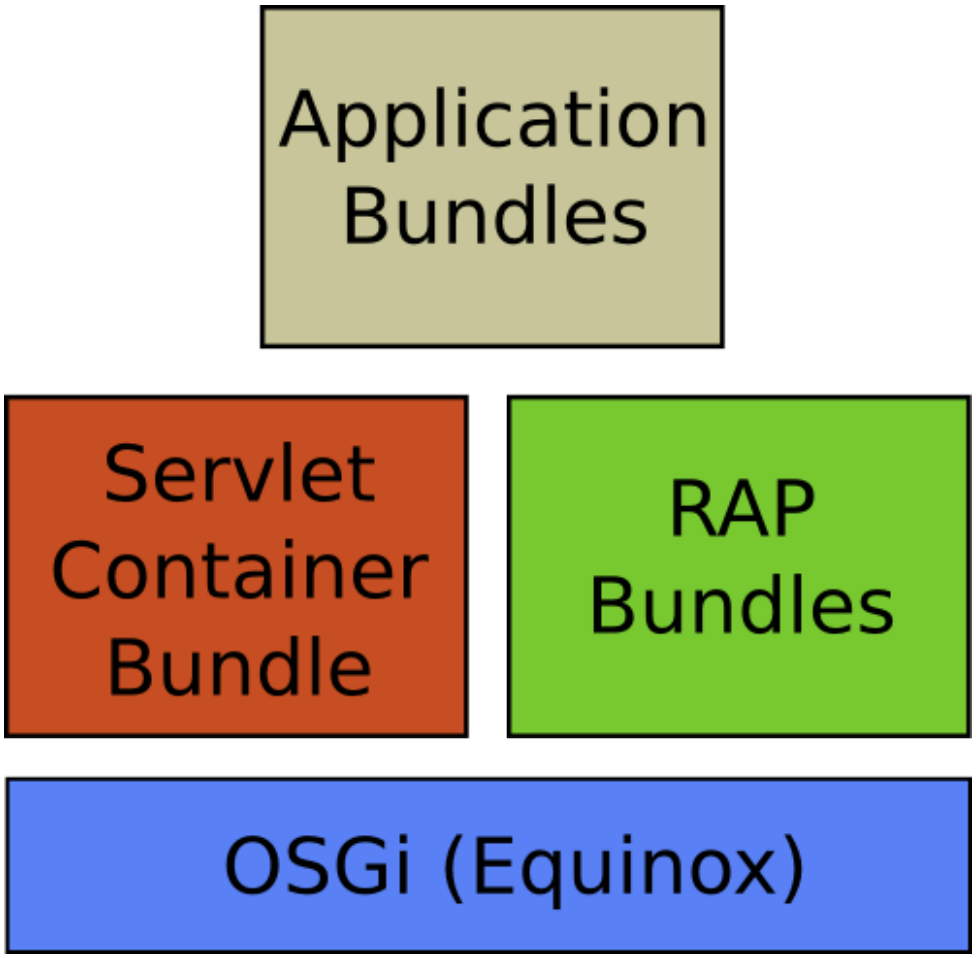

RAP Startup Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:10080/rap?startup=mail
Google
RAP Tutorial 2009
File Help
me@this.com
other@aol.com
Message
Subject: This is a message about the cool Eclipse RCP!
From: nicole@mail.org
Date: 10:34 am
This RCP Application was generated from the PDE Plug-in Project wizard.
This sample shows how to:
- add a top-level menu and toolbar with actions
- add keybindings to actions
- create views that can't be closed and
multiple instances of the same view
- perspectives with placeholders for new views
- use the default about dialog
- create a product definition
Done


MESSAGE
Demo
DATE
SCENE
TAKE

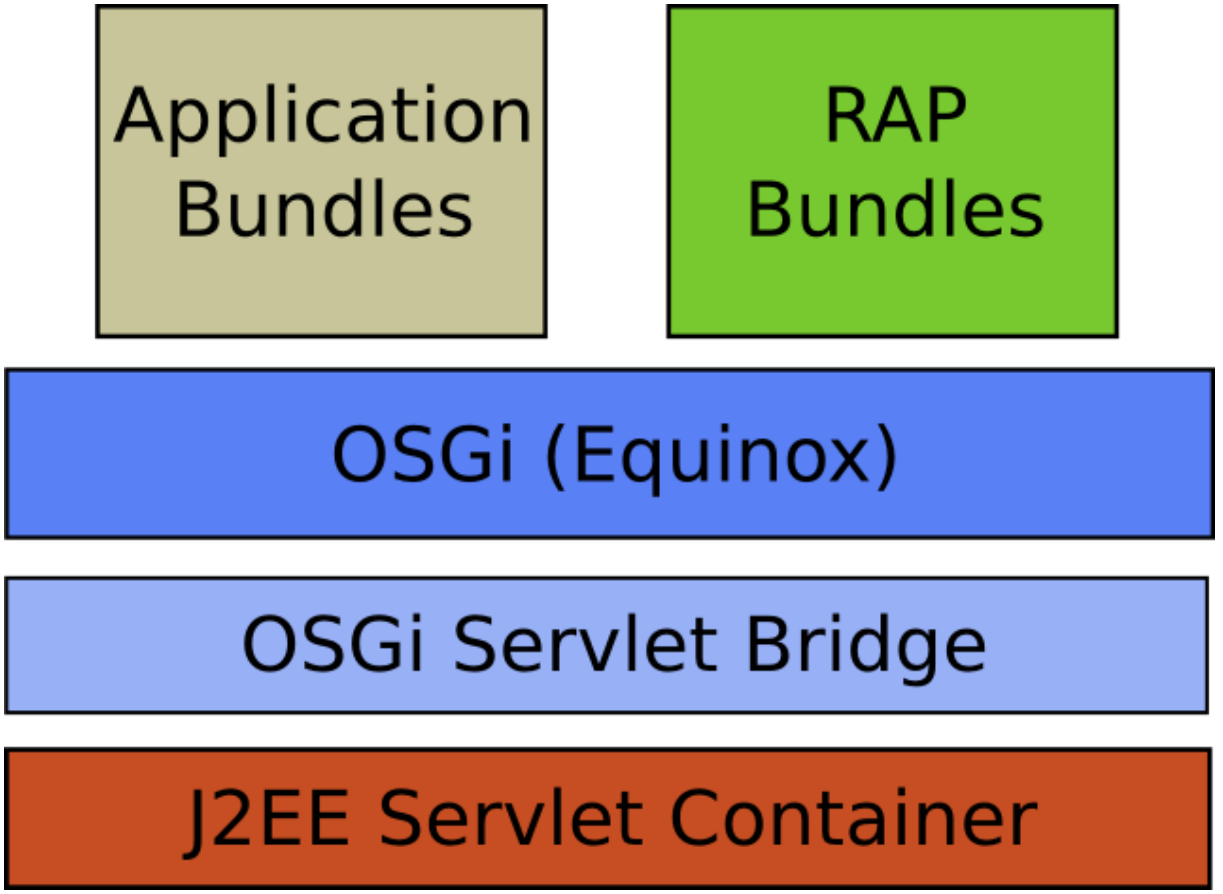
# Deployment?

# OSGi vs. J2EE ?

# As server...


Application Bundles
Servlet Container Bundle
RAP Bundles
OSGi (Equinox)

# ..or embedded


Application Bundles
RAP Bundles
OSGi (Equinox)
OSGi Servlet Bridge
J2EE Servlet Container

# Conclusion?

“Cool, one runtime to rule them all.”

Chris Aniszczyk, EclipseSource

# The actors

**RAP**

http://www.eclipse.org/rap/

**RCP**

http://www.eclipse.org/rcp


# Thanks for listening!

www.eclipsesource.com/rap
www.eclipse.org/rap