Migration to Eclipse 4

Be aware of the pitfalls
by Philip Wenig

Enjoy the good stuff
by Wim Jongman and Lars Vogel
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Nebula, e4, ECF
ALM AS/400
Co-Founder of Industrial-TSI
and Remain Software

Lars Vogel
Eclipse platform and e4
committer
Eclipse and Android
developer
Founder of vogella GmbH

Philip Wenig
OpenChrom developer and
project founder
Why do you want to migrate?
Eclipse 3.x deprecated

Eclipse 4 is now officially the new programming model at the Eclipse foundation. While Eclipse 3.x can still be used it is recommended that developers switch to the new platform and saved significant money in their later development efforts. New companies like Remain Software and vogella have immediately followed.
Eclipse 4 RCP is better

Flexible

Dependency injection

Extendable
Migration to e4
be aware of the pitfalls
by Philip Wenig
OpenChrom 0.7.0 – 3.x application
How to start?
Migration to e4 - be aware of the pitfalls

Eclipse RCP / Application Platform

3.x (native)

3.x (+)
4.x functionality by using additional plug-ins

4.x (native)

4.x (+)
3.x views by using the compatibility layer
Most important ...

- Application.e4xmi (application)
- fragment.e4xmi (plug-ins)
<xml version="1.0" encoding="UTF-8"/>
<plugin>
  <extension
    id="product"
    point="org.eclipse.core.runtime.products">
    <product
      application="net.openchrom.rcp.application"
      name="OpenChrom Community Edition Mattauch - Preview Release">
      <property
        name="applicationXMI"
        value="net.openchrom.rcp.app.ui/Application.e4xmi"/>
      <property
        name="applicationCSS"
        value="platform:/plugin/net.openchrom.rcp.app.ui/css/openchrom.css"/>
    </product>
  </extension>
</plugin>
fragment.e4xmi in plugin.xml

```xml
<?xml version="1.0" encoding="UTF-8"?>
<?eclipse version="3.4"?>
<plugin>
  <extension
    id="net.openchrom.chromatogram.msd.report.supplier.openchrom.ui.modelContribution"
    point="org.eclipse.e4.workbench.model">
    <fragment
      uri="fragment.e4xmi"/>
  </extension>
</plugin>
```
What could go wrong?
Things to take care of …

- Views: Project Explorer, …
- Dialogs: Preferences, …
- Perspective and View Switcher
- Property Sheet
- Annotated Functions
Things to take care of ...

- Status Line
- Eclipse Editors 3.x / 4.x
- Set Standard Perspective
- Min/Max Buttons
- Extensions: Menu and Toolbar
Panic?
Keep calm :-)
Views: Project Explorer, ...
Views: Project Explorer, ...

- **Project Explorer** (org.eclipse.ui.navigator.ProjectExplorer)
- **Console View** (org.eclipse.ui.console.ConsoleView)
- **Progress View** (org.eclipse.ui.console.ProgressView)
- **Properties** (org.eclipse.ui.console.PropertySheet)
- **Welcome Page** (org.eclipse.ui.internal.introview)
Dialogs: Preferences, ...

```java
import org.eclipse.core.commands.ParameterizedCommand;
import org.eclipse.e4.core.commands.ECommandService;
import org.eclipse.e4.core.commands.EHandlerService;
import org.eclipse.e4.core.di.annotations.Execute;
import org.eclipse.e4.core.services.log.Logger;

@SuppressWarnings("restriction")
public class PreferencesHandler {

    @Execute
    void execute(ECommandService commandService, EHandlerService handlerService,
                 Logger logger) {

        ParameterizedCommand command =
            commandService.createCommand("org.eclipse.ui.window.preferences", null);

        if (handlerService.canExecute(command)) {
            handlerService.executeHandler(command);
        } else {
            logger.warn("Can't handle to open the preference dialog.");
        }
    }
}
```
Dialogs: Preferences, ...

- **Preferences** *(org.eclipse.ui.window.preferences)*
- **Marketplace** *(org.eclipse.epp.mpc.ui.command.showMarketplaceWizard)*
- **Update Dialog** *(org.eclipse.equinox.p2.ui.sdk.update)*
- **Import Wizard** *(org.eclipse.ui.file.import)*
- **Export Wizard** *(org.eclipse.ui.file.export)*
public void changePerspective(String perspectiveId) {
    MUIElement element = modelService.find(perspectiveId, application);
    if (element instanceof MPerspective) {
        MPerspective perspective = (MPerspective)element;
        partService.switchPerspective(perspective);
    }
}

public void focusView(String viewId) {
    MUIElement element = modelService.find(viewId, application);
    if (element instanceof MPart) {
        MPart part = (MPart)element;
        if (!partService.getParts().contains(part)) {
            partService.createPart(part getElementId());
        }
        partService.showPart(part, PartState.ACTIVATE);
    }
}
Property Sheet

• ESelectionService works, but
• getSite().setSelection(viewer) is not available anymore → View/Part (POJO) doesn't extends ViewPart

• Solution: Use Compatibility Layer to include old-style View
Annotated Functions

- `@Inject`
- `@PostConstruct`
- `@PreDestroy`
- `@Focus`
- ...

**Required Plug-ins**

Specify the list of plug-ins required for the operation of this plug-in.

- org.eclipse.core.runtime
- net.openchrom.numeric (0.8.0)
- net.openchrom.logging (0.8.0)
- org.eclipse.ui (3.5.1)
- net.openchrom.support (0.8.0)
- org.eclipse.e4.core.services (1.0.0)
- javax.inject (1.0.0)
- org.eclipse.e4.core.di (1.2.0)

**Imported Packages**

Specify packages on which this plug-in depends without explicitly identifying their originating plug-in.

- javax.annotation (1.1.0)
- org.eclipse.core.commands.operations

Total: 10

EclipseCon Europe 2013
Doesn't work.
Eclipse Editors 3.x / 4.x

- See tutorials by
  - Lars Vogel
  - Dirk Fahland

- `editMenu.add(new GroupMarker(IWorkbenchActionConstants.FIND_EXT));` in `ApplicationActionBarAdvisor.class`
Set Standard Perspective

- Eclipse 4.3.0 “Kepler”
- Bug #377981
- Doesn't work properly

- Fixed in Eclipse 4.4 M1 “Luna”
Min/Max Buttons

Extensions: Menu and Toolbar

- Sometimes not visible
- Bundles are loaded too early
- Add a dependency to the base plug-in
- Use a unique id in the extension
- Use the OSGi console for debugging
Eclipse 4 migration strategies

Shake that FUD and enjoy the good stuff
Migration story

- Act 1: Create a plan of attack
- Act 2: Execute
What to migrate

- Core and Util
- User Interface
- Server stuff
What to migrate

Mixed mode
● Allows to use Eclipse 3.x plug-ins in Eclipse 4 applications
Let's look at an example from Eclipse
ECF Salvo newsgroup reader

- 32 bundles
- 2 user interface bundles
- Development started 2010
- 5 committers
- 85275 lines of code (says Git)
Act 1: Plan of Attack

**PRODUCTION**

| Shake that Fud |

**DIRECTOR**

| Vogel/Jongman | DATE |

| Act. 1: Plan |

**SCENE**

| Act. 1: Plan |

**TAKE**

| 1 |

**CAMERA**

| That same guy |

fodey.com
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<td>SCENE</td>
<td>Act 1 : Convince</td>
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<tr>
<td>CAMERA</td>
<td>That guy in the back</td>
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foday.com
Compatibility mode

You don't change a single bit!

(if you've been a good citizen*)

* Except for the internal API which you illegally used for so many years
This does not feel natural
Embrace the new programming model
The code is sooo much nicer...
Things that are replaced

- EditorPart
- ViewPart
- AbstractHandler
- HandlerUtil
- Actions
- Extension based UI contributions
- Advisor classes
- Old Theming
- AbstractUIPlugin
So in summary....

- POJOs
- Dependency injection
- Application model
Happy!
Act 2: Execute

PRODUCTION
Shake that Fed

DIRECTOR
Vogel Longman

DATE
25/3

SCENE
Act 3: Execute

TAKE
1

CAMERA
That same guy

fodey.com
So far we have the all or nothing approach.
Use (the official...) combined approach

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POJOs in extension points with Eclipse 4.4
(or the e4 bridge before that)
Allow you to use POJO for your parts in Eclipse 3.x API based extensions

Also available for Eclipse IDE extensions (standard in Eclipse 4.4)
Summary

- You have an easy way with compatibility layer
- You can migrate full way
- You can use existing 3.x plug-ins
- You can also migrate step by step
What more

• Blogs we referenced
  • http://industrial-tsi-wim.blogspot.de/2013/08/a-giant-leap-for-eclipse-rcp.html
  • http://www.vogella.com/articles/Eclipse4MigrationGuide/article.html
  • http://industrial-tsi-wim.blogspot.de/2012/10/why-eclipse-e4-egg-laying-woolmilkpig.html

• RCP 4 Training
  • Industrial-TSI (Wim Jongman)
  • vogella (Lars Vogel)
OpenChrom (source code) 0.9.x

- https://wiki.openchrom.net/index.php/Development
Sources: https://github.com/ECF/Newsreader

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Twitter http://www.twitter.com/vogella
Google+ http://gplus.to/vogella

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