

ECLIPSE 4 MIGRATION

Eclipse 4 Migration Speaker



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MOTIVATION

Motivation

- ▶ **No active development of 3.x since 2013 (Kepler)**
 - ▶ No bugfixes or improvements in the 3.x code base
- ▶ **„New“ programming model**
 - ▶ Model-Based
 - ▶ Flat Hierarchies (POJOs)
 - ▶ Dependency Injection
 - ▶ Publish & Subscribe (EventBus)

TOOLS

Tools

E34MigrationTooling

► <http://opcoach.github.io/E34MigrationTooling/>

Migration Stats		
Usual Extension points		
views/view:	3	
editors/editor:	1	
preferencePages/page:	1	
propertyPages/page:	0	
commands/command:	1	
handlers/handler:	1	
menus/menuContribution:	1	
newWizards/wizard:	0	
importWizards/wizard:	0	
exportWizards/wizard:	0	
Deprecated Extension points		
acceleratorSets/acceleratorSet:	0	actionSetPartAssociations/actionSetPartAssociation: 0
actionDefinitions/actionDefinition:	0	menus/group: 0
menus/widget:	0	acceleratorConfigurations/acceleratorConfiguration: 0
popupMenus/objectContribution:	0	popupMenus/viewerContribution: 0
editorActions/editorContribution:	0	actionSets/actionSet: 1
commands/keyBinding:	0	commands/keyConfiguration: 0
commands/context:	0	commands/scope: 0
commands/activeKeyConfiguration:	0	acceleratorScopes/acceleratorScope: 0
viewActions/viewContribution:	0	

Extension Points	org.fipro.eclipse.migration.ui	Count
✖ org.eclipse.ui.actionSets	1	1
✖ actionSet	1	1
▼ org.eclipse.ui.commands	1	1
command	1	1
▼ org.eclipse.ui.editors	1	1
editor	1	1
▼ org.eclipse.ui.handlers	1	1
handler	1	1
▼ org.eclipse.ui.menus	1	1
menuContribution	1	1
▼ org.eclipse.ui.perspectiveExtensions	1	1
perspectiveExtension	1	1
▼ org.eclipse.ui.perspectives	1	1
perspective	1	1
▼ org.eclipse.ui.preferencePages	1	1
page	1	1
▼ org.eclipse.ui.views	1	1
view	3	3

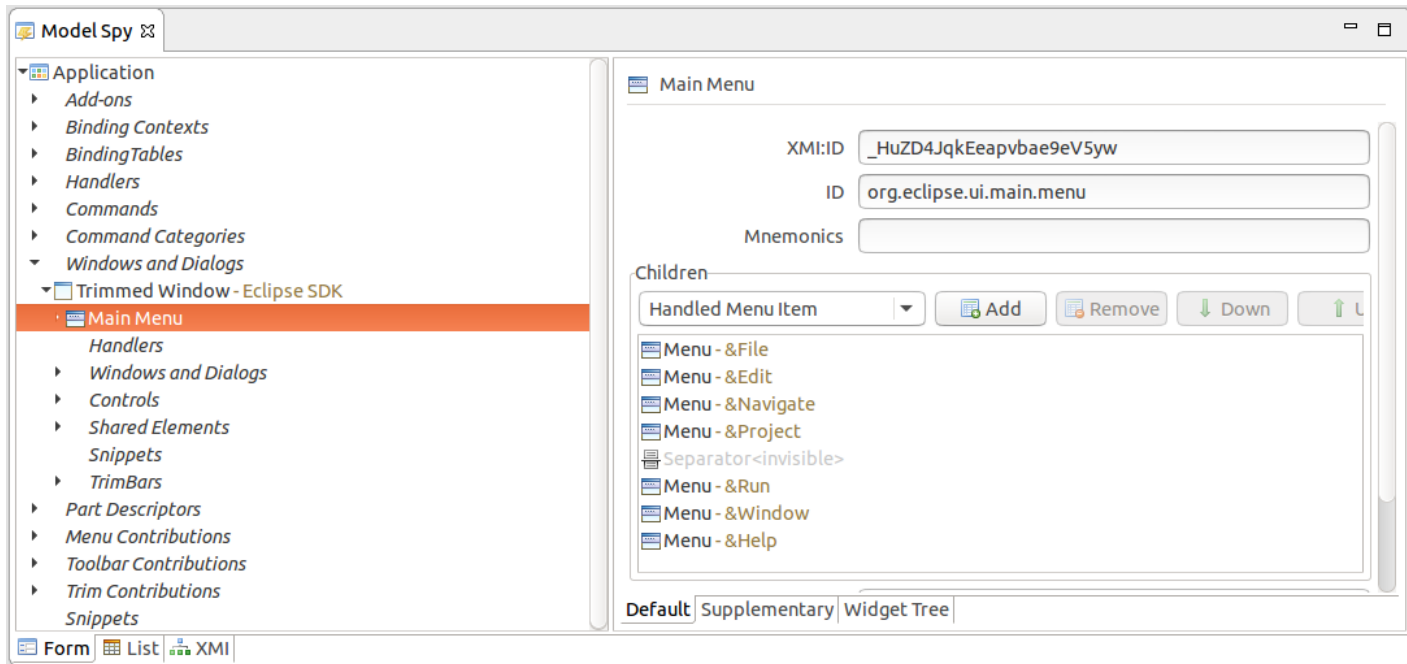


Tools

Model Spy

► e4 Tools

- <http://download.eclipse.org/e4/snapshots/org.eclipse.e4.tools/latest/>

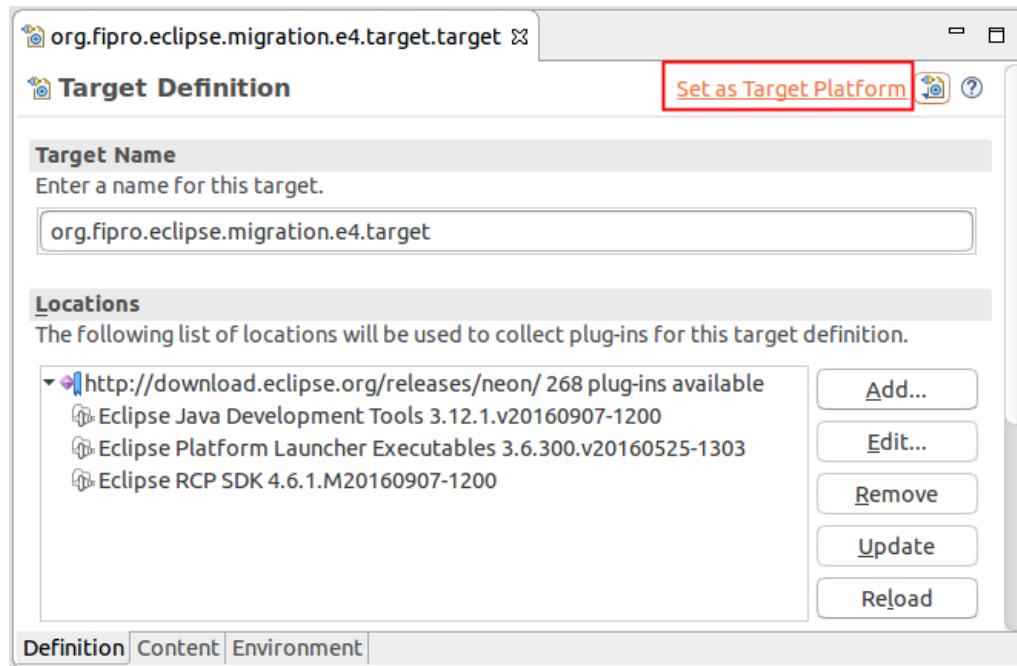


SOFT MIGRATION

Soft Migration

Target Platform

► Updating the Target Platform to Eclipse 4



Soft Migration

Product Configuration

- ▶ Feature based product configuration
- ▶ Add Eclipse 4 Features
 - ▶ *org.eclipse.e4.rcp*
 - ▶ *org.eclipse.emf.ecore*
 - ▶ *org.eclipse.emf.common*
- ▶ Update the version of the *org.eclipse.rcp* feature
- ▶ Add *-clearPersistedState* as Program Argument
 - ▶ Only for the development time

Soft Migration

Migration of ViewParts

- ▶ Class Hierarchy vs. POJO
- ▶ Override vs. Dependency Injection / Annotations
- ▶ *view* vs. *e4view*

```
public class DescriptionView extends ViewPart {
    Text description;

    @Override
    public void createPartControl(Composite parent) {
        parent.setLayout(new FillLayout());
        description = new Text(parent, SWT.MULTI | SWT.WRAP | SWT.READ_ONLY);
    }

    @Override
    public void setFocus() {}

    @Override
    public void dispose() {}
}
```

Soft Migration

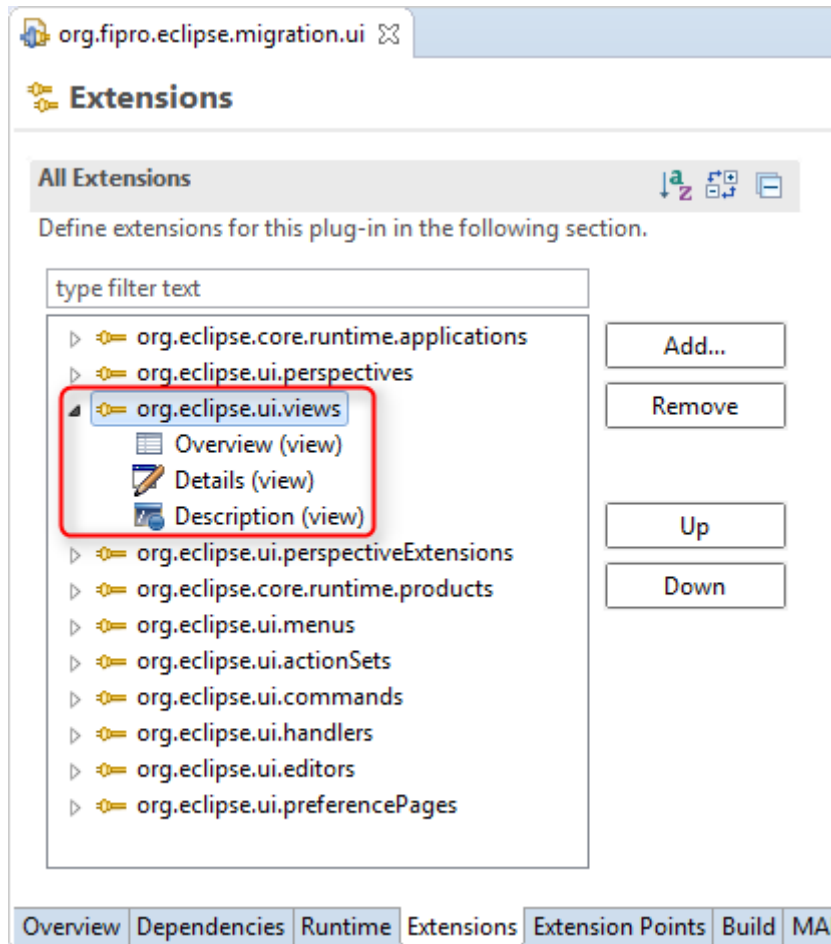
Migration of ViewParts

- ▶ Class Hierarchy vs. POJO
- ▶ Override vs. Dependency Injection / Annotations
- ▶ *view* vs. *e4view*

```
public class DescriptionView {  
    Text description;  
  
    @PostConstruct  
    public void createPartControl(Composite parent) {  
        parent.setLayout(new FillLayout());  
        description = new Text(parent, SWT.MULTI | SWT.WRAP | SWT.READ_ONLY);  
    }  
}
```

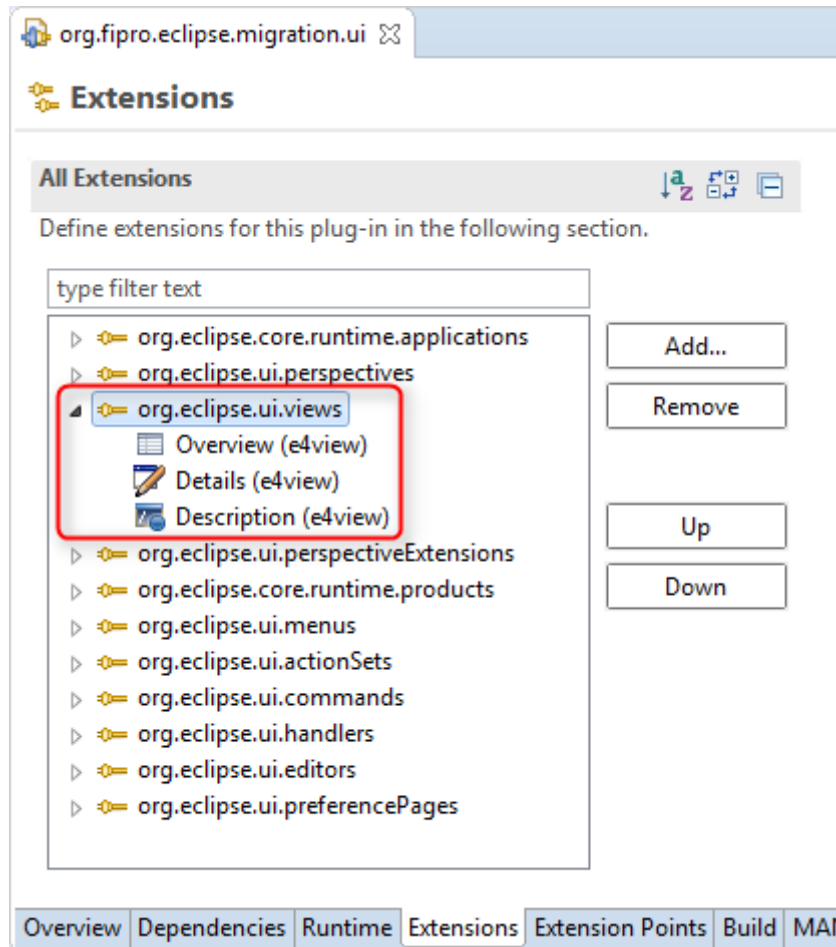
Soft Migration

Migration of ViewParts



Soft Migration

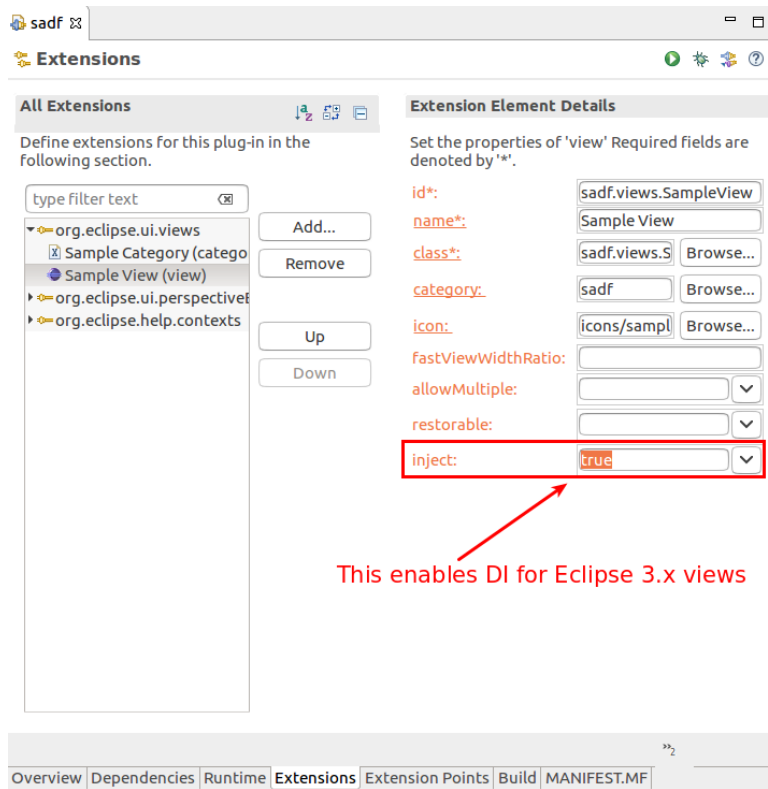
Migration of ViewParts



Soft Migration

Migration of ViewParts

- Since Oxygen M3 – DI support in E3 views

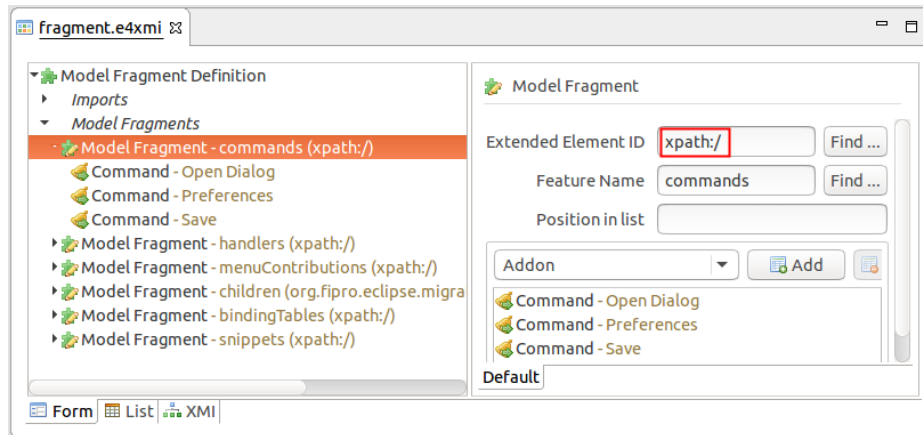


MIXED MODE

Mixed Mode

e4 Legacy Model & Model Fragments

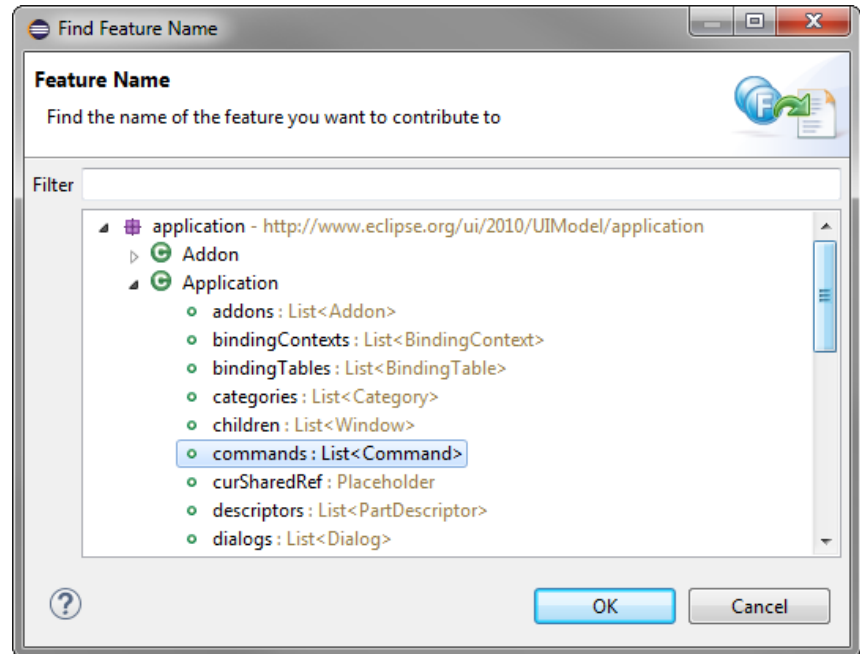
- ▶ *Compatibility Layer* creates an *Eclipse 4 Legacy Application Model* in the background (ID = *xpath:/* or *org.eclipse.e4.legacy.ide.application*)
- ▶ *Application Model* can be extended via *Model Fragments*
- ▶ *Model Fragments* are registered via Extension Point *org.eclipse.e4.workbench.model*



Mixed Mode

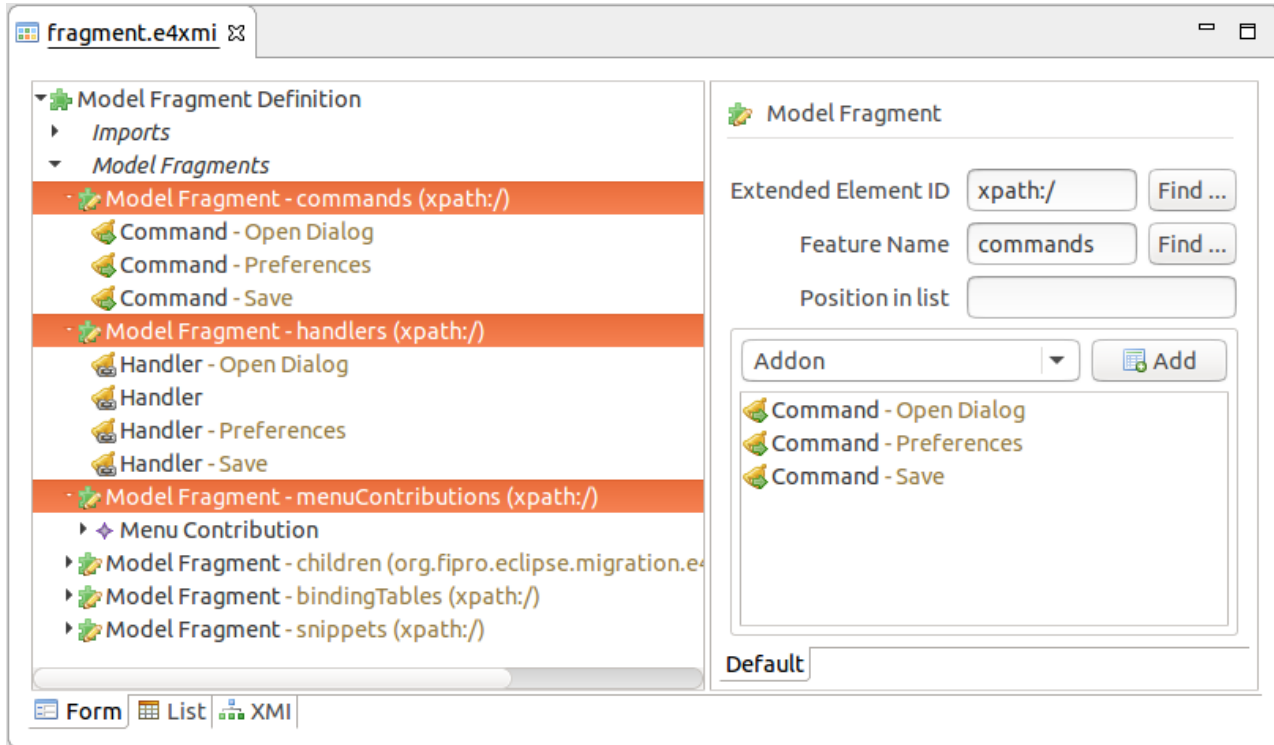
Commands / Handler / MenuContributions

- ▶ Create Model Fragments
 - ▶ ID = *org.eclipse.e4.legacy.ide.application*
 - ▶ Feature Name
 - ▶ *commands*
 - ▶ *handlers*
 - ▶ *menuContributions*
- ▶ Finding the correct feature name is not intuitive!



Mixed Mode

Commands / Handler / MenuContributions



Mixed Mode

Migration of Handlers

- ▶ Class Hierarchy vs. POJO
- ▶ Override vs. Dependency Injection / Annotations

```
public class OpenDialogHandler extends AbstractHandler implements IHandler {  
  
    @Override  
    public Object execute(ExecutionEvent event) throws ExecutionException {  
        MessageDialog.openInformation(  
            HandlerUtil.getActiveShell(event),  
            "Info",  
            "Opened dialog via handler");  
        return null;  
    }  
  
}
```

Mixed Mode

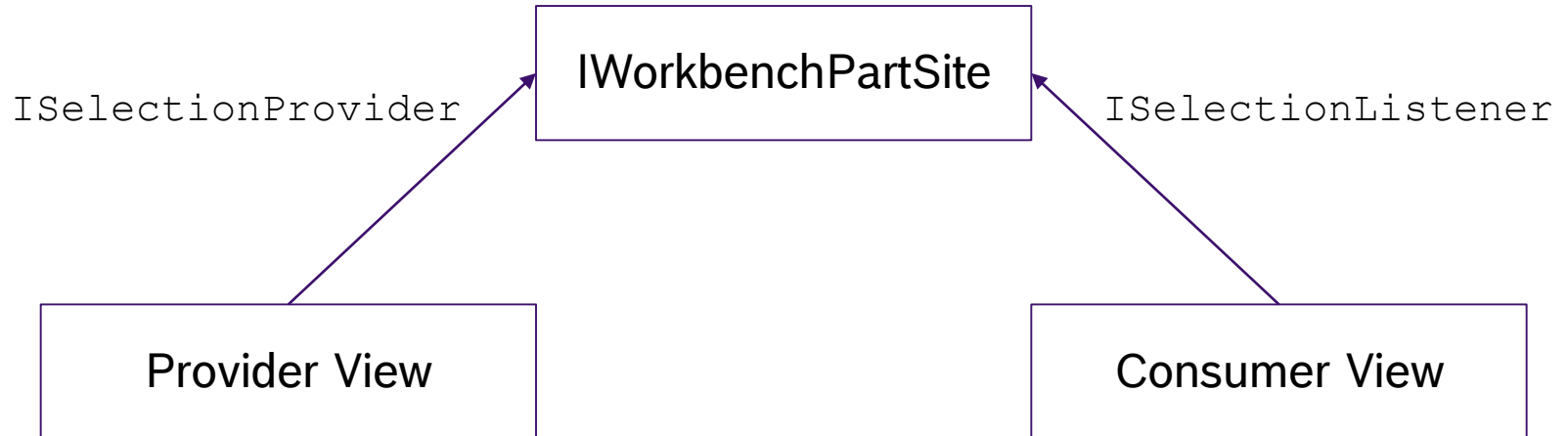
Migration of Handlers

- ▶ Class Hierarchy vs. POJO
- ▶ Override vs. Dependency Injection / Annotations

```
public class OpenDialogHandler {  
  
    @Execute  
    public void execute(Shell s) {  
        ProgressDialog.openInformation(  
            s,  
            "Info",  
            "Opened dialog via handler");  
    }  
  
}
```

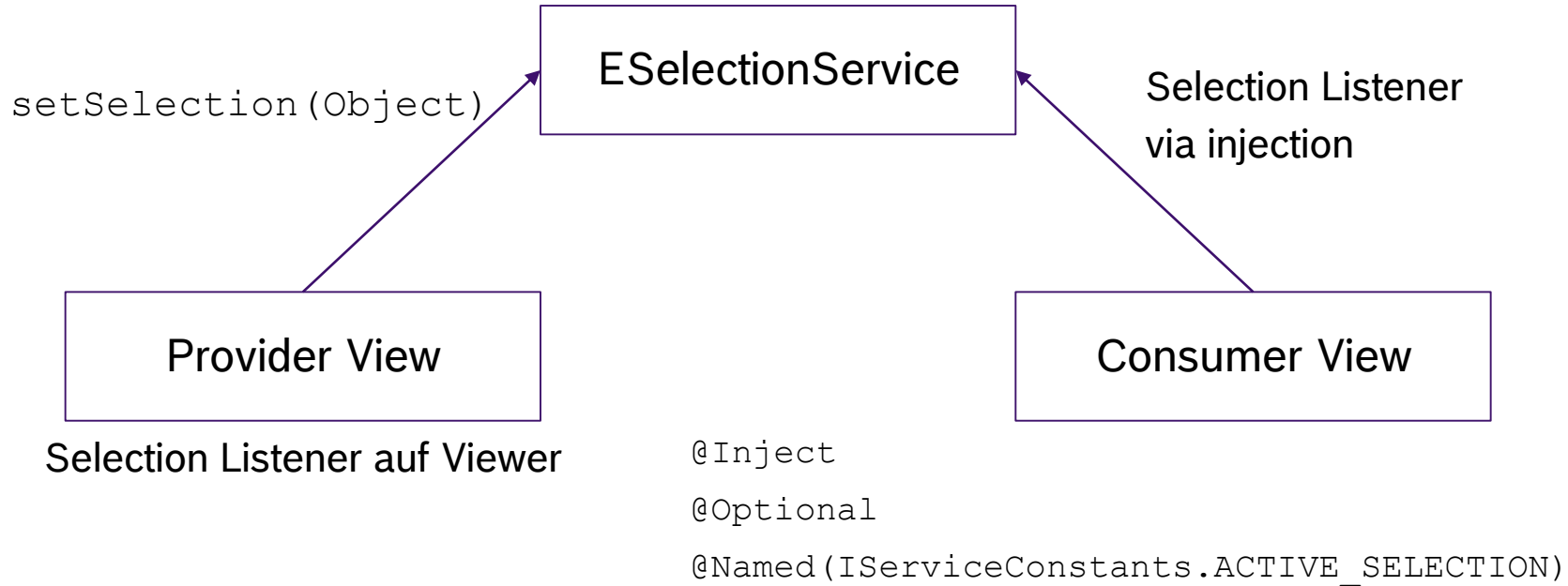
Mixed Mode

Migration of Selection Handling



Mixed Mode

Migration of Selection Handling



Mixed Mode

Migration of Selection Handling

E4 Selection Listener

```
@Inject
@Optional
void updateDescription(
    @Named(IServiceConstants.ACTIVE_SELECTION) List<Person> persons) {

    // do something
}
```

E4 Selection Listener (mixed mode)

```
@Inject
@Optional
void updateDescription(
    @Named(IServiceConstants.ACTIVE_SELECTION) ISelection selection) {

    if (selection instanceof IStructuredSelection) {
        IStructuredSelection isel = (IStructuredSelection) selection;
        updateDescription(List<Person>) isel.toList());
    }
}
```


Mixed Mode

Migration of Editors

- ▶ No technical difference between views and editors in Eclipse 4
- ▶ Editors may contain unsaved state (MDirtyable)
- ▶ @Persist annotated methods are triggered by the Save Command
- ▶ Transfer the object that is edited
 - ▶ Via dynamic (re-)Injection
 - ▶ Via MPart states
transientData vs. persistedState

```
public class PersonEditor {  
  
    @Inject  
    private MPart part;  
  
    ...  
    part.getPersistedState().get("...");  
  
    @Persist  
    public void save(MDirtyable dirtyable) {  
        ...  
        dirtyable.setDirty(false);  
    }  
}
```










Mixed Mode

Migration of Perspectives

Eclipse 3.x

- ▼  org.eclipse.ui.perspectives
 -  RCP Perspective (perspective)
- ▼  org.eclipse.ui.perspectiveExtensions
 - ▼  * (perspectiveExtension)
 -  org.fipro.eclipse.migration.ui.overview (view)
 -  org.fipro.eclipse.migration.ui.descview (view)
 -  org.fipro.eclipse.migration.ui.fileActionSet (actionSet)

Eclipse 4.x

- ▼  Model Fragment - snippets (xpath:/)
- ▼  Perspective - RCP Perspective
 - Handlers*
 - Windows and Dialogs*
 - ▼ *Controls*
 - ▼  Part Sash Container
 - ▼  Part Sash Container
 - ▼  Part Stack
 - ▶  Part - Overview
 - ▼  Part Stack
 - ▶  Part - Description
 - ▶  Part Sash Container

Mixed Mode

Migration of Perspectives

- ▶ In Eclipse 4 perspectives are only specified declaratively
 - ▶ Implementing `IPerspectiveFactory` is not necessary
- ▶ Contributions in Mixed Mode via *Snippets*
 - ▶ Model Fragment Element ID = `org.eclipse.e4.legacy.ide.application`
 - ▶ Model Fragment Feature Name = `snippets`
- ▶ In pure Eclipse 4 a *PerspectiveStack* needs to be created, to which you can directly contribute via Model Fragment
- ▶ Parts are specified to the perspective within the Application Model
 - ▶ No entries in the *plugin.xml* necessary

Mixed Mode

Clean Up

► **IMPORTANT!!!**

Remove all Eclipse 3 Extension Points from the *plugin.xml* that are not needed anymore!

- *org.eclipse.ui.actionSets*
- *org.eclipse.ui.commands*
- *org.eclipse.ui.editors*
- *org.eclipse.ui.handlers*
- *org.eclipse.ui.menus*
- *org.eclipse.ui.perspectives*
- *org.eclipse.ui.perspectiveExtensions*
- *org.eclipse.ui.views*

Mixed Mode

Singletons vs. Extension Points vs. OSGi DS

▶ **Singleton == Anti-Pattern**

- ▶ Tight coupling
- ▶ No mocking
- ▶ Not concurrency friendly

▶ **Extension Points**

- ▶ One-to-many
- ▶ Queried by ID
- ▶ Eclipse only

▶ **Declarative Services**

- ▶ Many-to-many
- ▶ Queried by type
- ▶ OSGi standard

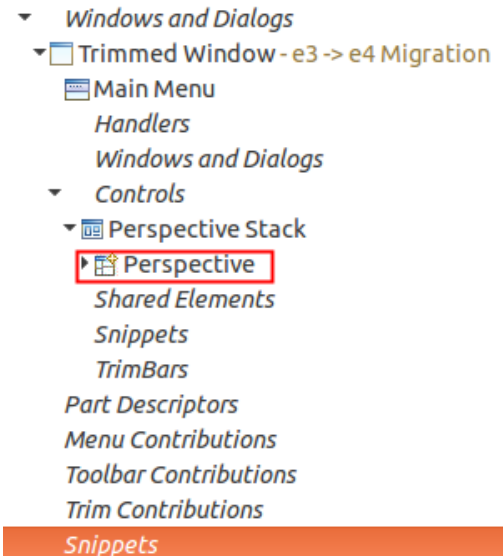
<http://www.eclipsezone.com/articles/extensions-vs-services/>

MIGRATION FINISH

Migration Finish

Create the e4 Application Model

- ▶ Create a new Application Model
- ▶ Move definitions from Model Fragments to the new Application Model
- ▶ Connect Model Fragments to the new Application Model
- ▶ Ensure that the IDs correspond with the Legacy Application Model



Migration Finish

Remove the Compatibility Layer

- ▶ Ensure that **no internal API** is used
- ▶ Ensure that the `PlatformUI` singleton is **not used**
- ▶ **General:** Replace platform singletons with **E4 services**
- ▶ Remove legacy classes
 - ▶ `Application`
 - ▶ `ApplicationActionBarAdvisor`
 - ▶ `ApplicationWorkbenchAdvisor`
 - ▶ `ApplicationWorkbenchWindowAdvisor`
- ▶ **Modify the hierarchy of the `Activator` or delete the `Activator`**
 - ▶ `extends org.eclipse.core.runtime.Plugin`
 - ▶ `implements org.osgi.framework.BundleActivator`

Migration Finish

Remove the Compatibility Layer

- ▶ Remove the dependency to *org.eclipse.ui*
 - ▶ *org.eclipse.swt* and *org.eclipse.jface* need to be added
- ▶ Remove Extension Point *org.eclipse.core.runtime.applications*
- ▶ In the Product Configuration
 - ▶ Remove the feature *org.eclipse.rcp*
 - ▶ Set the value for *Application* to *org.eclipse.e4.ui.workbench.swt.E4Application*

Eclipse 4 Migration

Further Information

► **Der Weg in die neue Welt (German)**

Dirk Fauth & Simon Scholz

- Eclipse Magazin 6.15
- <https://jaxenter.de/tutorial-so-portieren-sie-eclipse-3-anwendungen-auf-eclipse-4-39492>

► **e4 cookbook migration guide**

Dirk Fauth & Simon Scholz

- <https://github.com/fipro78/e4-cookbook-migration-guide>

