

Tom Schindl

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Innsbruck, Austria

e4 - The platform of the future

DemoCamp Hamburg
Friday, December 4th, 2009

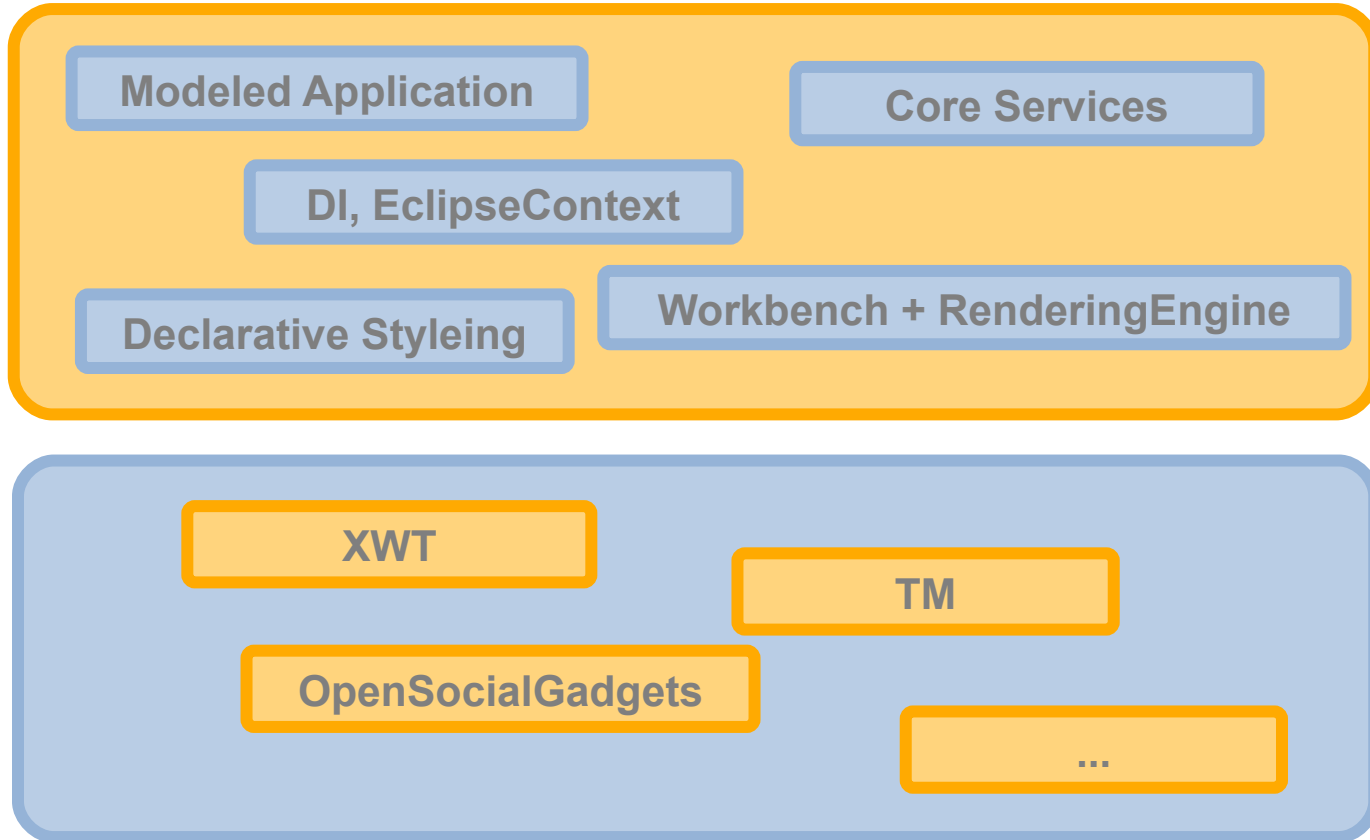
e4 – About Me

- **Founder and Owner of BestSolution.at**
- **Eclipse Committer**
 - e4
 - Platform UI
 - EMF
- **Projectlead**
 - Nebula
 - UFaceKit

e4 – The model a short history

- **EclipseCon 08**
- **First Prototype**
 - May 20th 2008: Mail to e4-dev „A radical approach to explore new paths for e4“
 - Platform designed from Scratch
 - Based upon an EMF-Application-Model
 - No statics, no singletons, usage of DI
 - Based on OSGi-Services

e4 – Component Overview



e4 – Anatomie of an E4-App

- **Main Building Blocks**
 - Application model instance
 - POJO to fill the parts of the UI with content
- **Additional Building Blocks**
 - CSS – Theming your application
 - IEclipseContext – Accessing services, ...

e4 – The application model

■ Central Of the e4-Application

Application-Model

UI-Structure-Elements

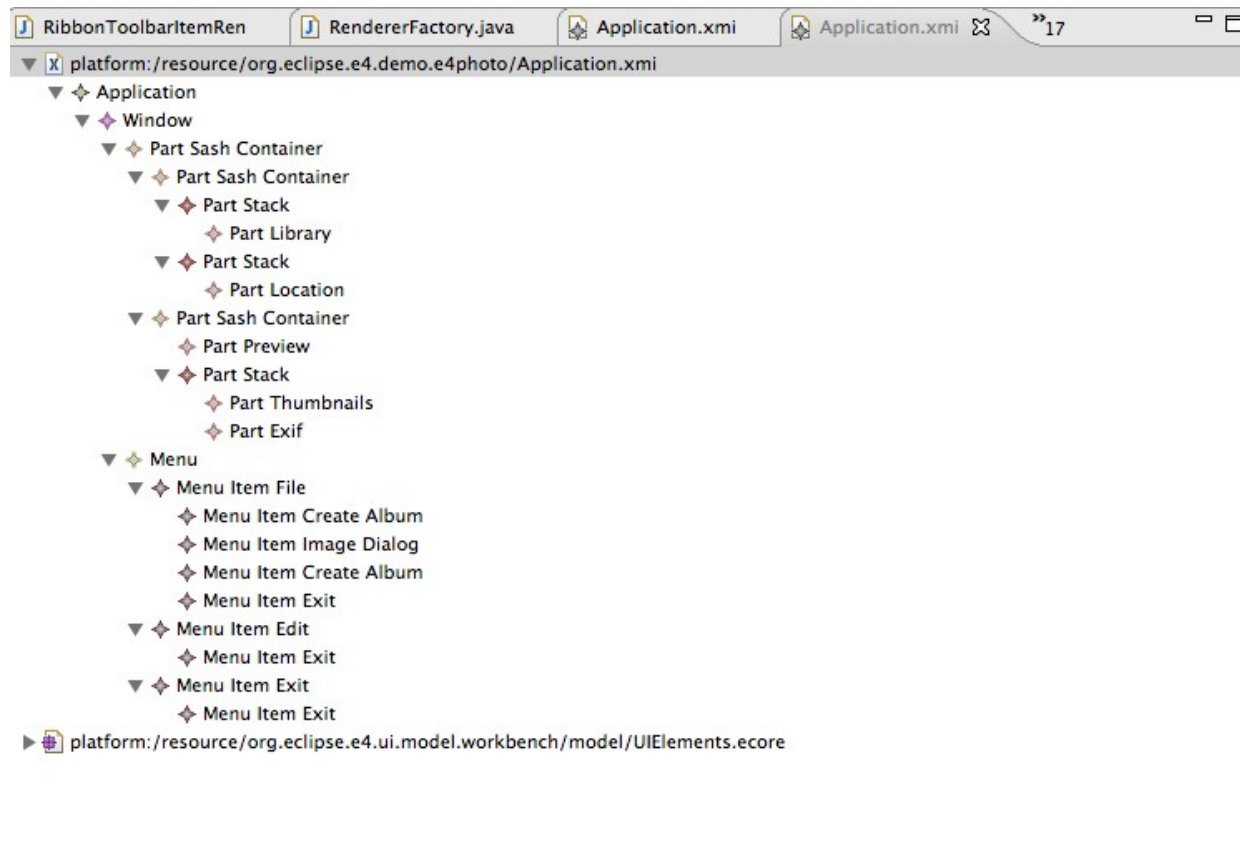
- Window
- StackPart
- SashPart
- CompositePart
- Part
- ...

UI-Action-Elements

- Command
- MenuItem
- ToolItem
- ...

e4 – Anatomie of an E4-App

■ Application model



e4 – Anatomie of an E4-App

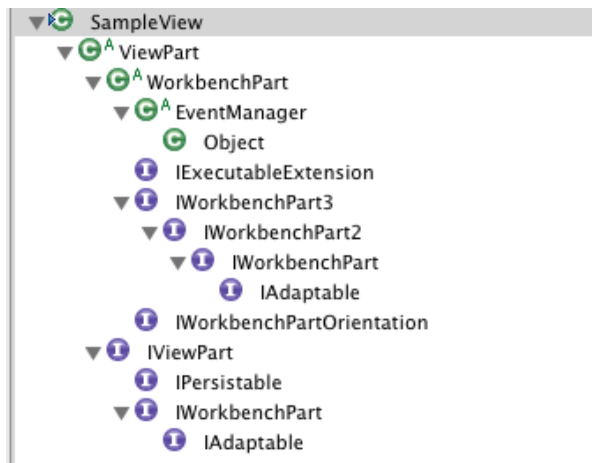
▪ Application Logic/UI-Code in POJO

```
public class Preview {  
    public Preview(Composite parent, Realm workspace) {  
        // Create UI ...  
    }  
  
    @In  
    public void setSelection(final IFile input) {  
        // React on Selection Changes  
    }  
}
```

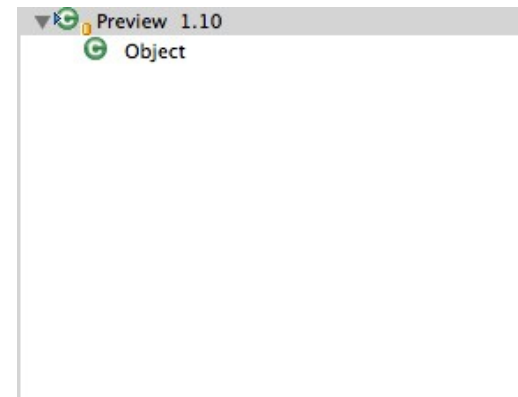
e4 – Anatomie of an E4-App

- DI to flatten the Hierarchy

3.x

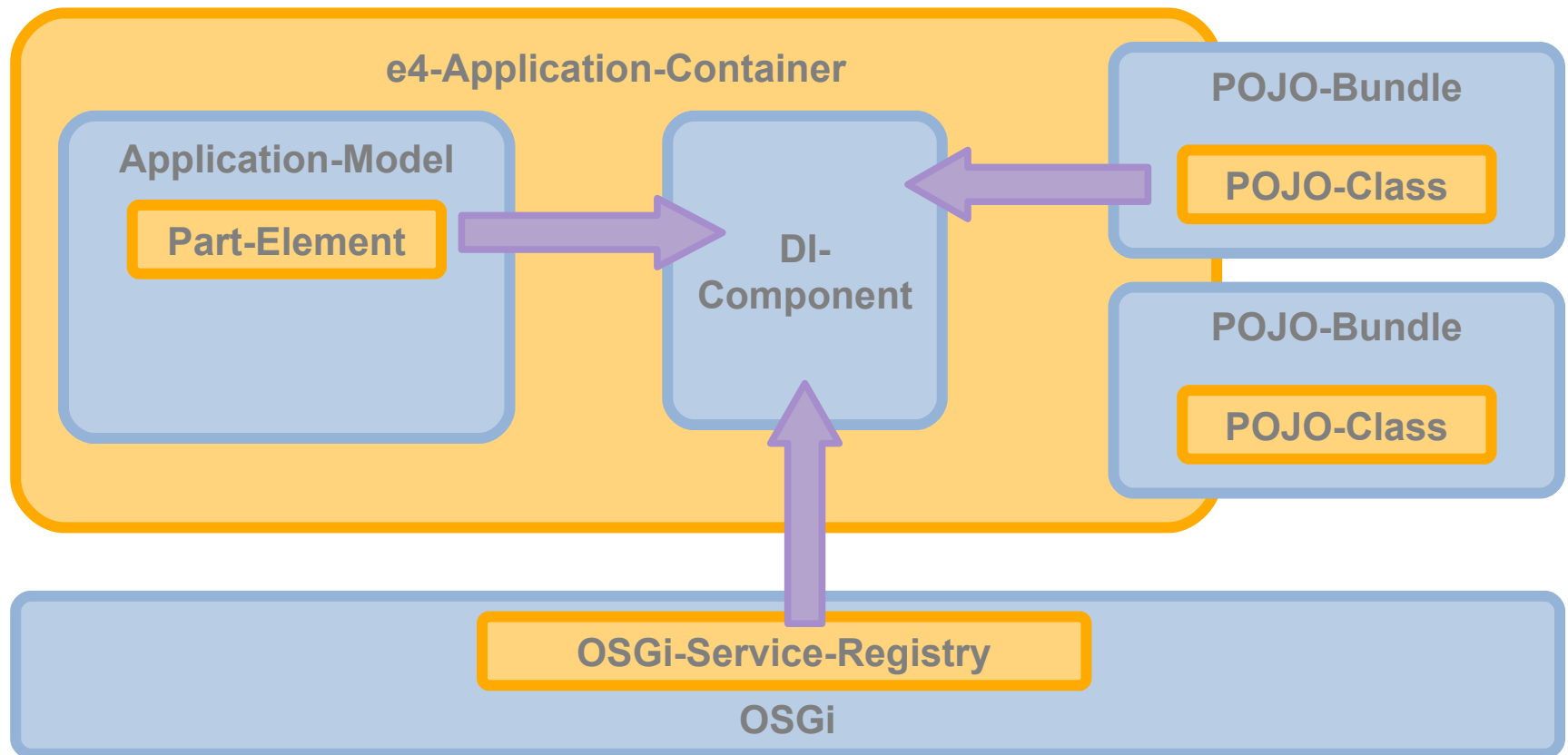


e4



e4 – Anatomie of an E4-App

■ Application-Container



e4 – Anatomie of an E4-App

- **Wiring the part POJO into the Application Model**

The screenshot shows the Eclipse IDE interface. The Outline view on the left displays the following tree structure:

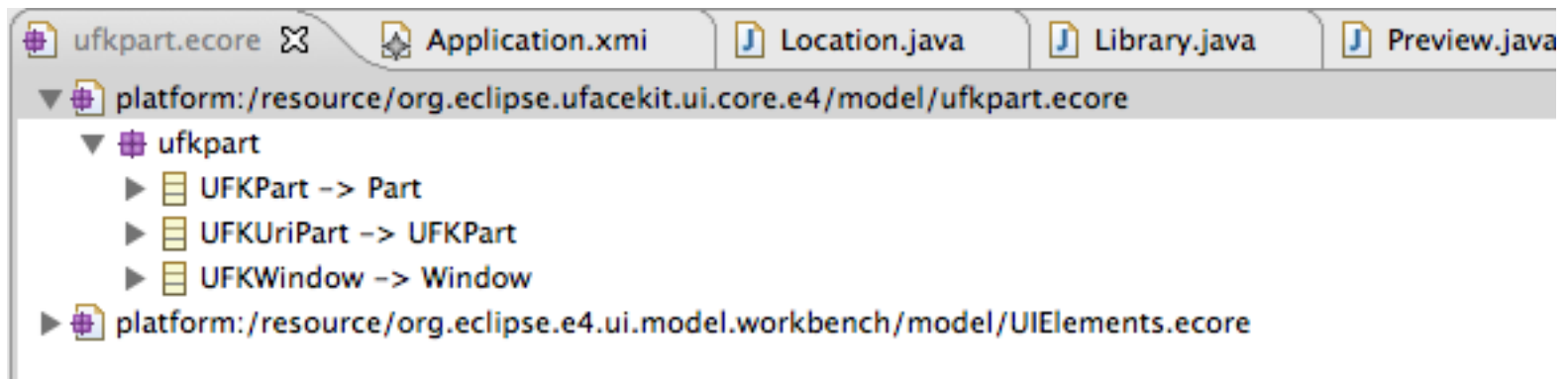
- Application
 - Window
 - Part Sash Container
 - Part Sash Container
 - Part Stack
 - Part Library

The Properties view at the bottom shows the following table:

Property	Value
Context	
Factory	
Icon URI	
Id	
Menus	
Name	Library
Object	
Parent	Part Stack
Persisted State	
Toolbar	
Tooltip	
URI	platform:/plugin/org.eclipse.e4.demo.e4photo/org.eclipse.e4.demo.e4photo.Library
Variables	
Visible	true
Widget	

e4 – Extending the App-Model

- **Derive form base and add own features**



e4 – Extending the App-Model

```
public class DetailPart {
    public DetailPart(UIComposite parent, Resource resource,
        IAddressSelectionBroker addressSelection, Store store) {

        UIFactory<?> factory = parent.getFactory();
        UIDesktop desktop = parent.getDesktop();
        UFaceKitBuilder builder = new UfaceKitBuilder(
            factory,
            new DefaultBindingStrategy(desktop.getRealm(), Type.DOMAIN_TO_UI)
        );
        builder.buildPart(
            parent,
            (IUIComposite) resource.getContents().get(0)
        );
    }
}
```

e4 – Extending the App-Model

The screenshot shows the Eclipse IDE interface. The top toolbar includes icons for Tasks, Problems, Console, Properties, Search, Plug-ins, Target Platform, Progress, SVN Properties, Debug, Call Hierarchy, JUnit, CDO Sessions, and CDO Watch. The main workspace is divided into several panes:

- Left Pane (Project Explorer):** Shows the project structure for 'platform:/resource/org.eclipse.ufacekit.ui.core.model.example.e4/Application.xmi'. The tree includes:
 - Application
 - U FK Window
 - Part Sash Container
 - Part Stack
 - U FK Uri Part (selected)
 - Part Stack

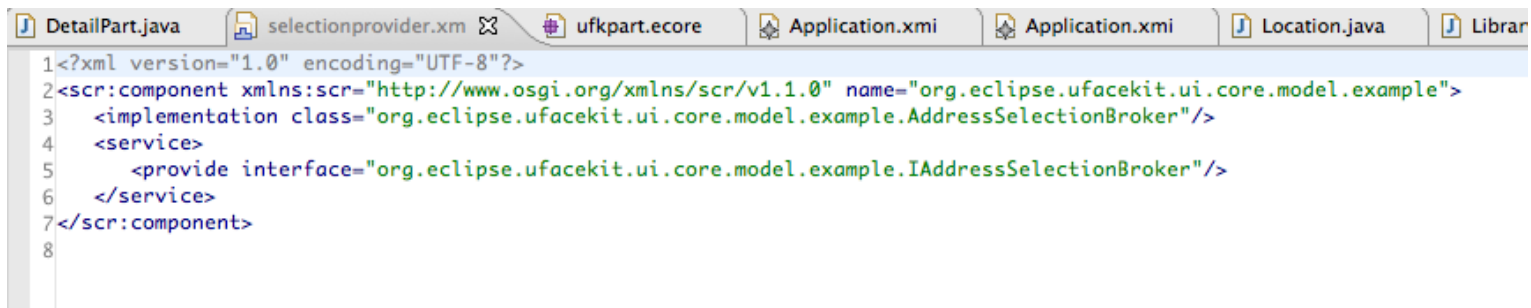
- Right Pane (Text Editor):** Shows the content of 'test.txt' with the following text:


```
1/contactlistpart
2/contacttreepart
3/detailpart
4/e4cdo
5platform:/plugin/o
```
- Right Pane (Outline):** Displays the message "An outline is not available."
- Bottom Pane (Properties):** A table showing the properties of the selected 'U FK Uri Part'.

Property	Value
Context	
Factory	
Icon URI	
Id	
Menus	
Name	
Object	
Parent	Part Stack
Persisted State	
Toolbar	
Tooltip	
Typeid	xmi
Ufkuri	org.eclipse.ufacekit.ui.core.model.example/ContactListPart.xmi
URI	platform:/plugin/org.eclipse.ufacekit.ui.core.model.example/org.eclipse.ufacekit.ui.core.model.example.ContactL
Variables	
Visible	true
Widget	

e4 – IEclipseContext and OSGi

- IEclipseContext is a hierarchical data structure
- E4 injects services of the local context into your POJO
 - Root of the IEclipseContext is the Equinox Service Registration



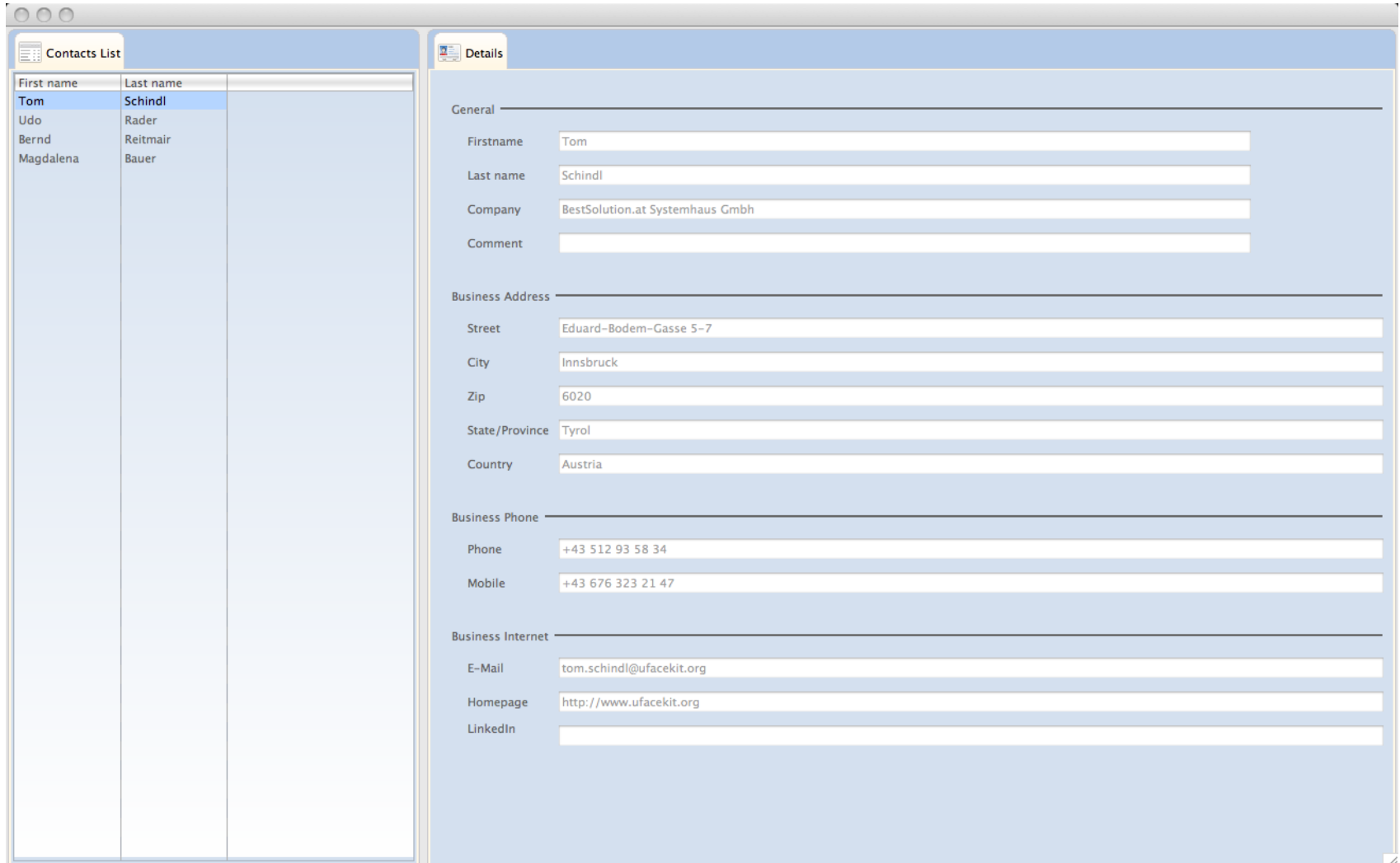
```
1<?xml version="1.0" encoding="UTF-8"?>
2<scr:component xmlns:scr="http://www.osgi.org/xmlns/scr/v1.1.0" name="org.eclipse.ufacekit.ui.core.model.example">
3  <implementation class="org.eclipse.ufacekit.ui.core.model.example.AddressSelectionBroker"/>
4  <service>
5    <provide interface="org.eclipse.ufacekit.ui.core.model.example.IAddressSelectionBroker"/>
6  </service>
7</scr:component>
8
```

e4 – IEclipseContext and OSGi

```
public class DetailPart {
    public DetailPart(UIComposite parent, Resource resource,
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        UIFactory<?> factory = parent.getFactory();
        UIDesktop desktop = parent.getDesktop();
        UFaceKitBuilder builder = new UfaceKitBuilder(
            factory,
            new DefaultBindingStrategy(desktop.getRealm(), Type.DOMAIN_TO_UI)
        );
        builder.buildPart(
            parent,
            (IUIComposite) resource.getContents().get(0)
        );
    }
}
```

e4 – Example Application



The screenshot displays the e4 application interface, which is split into two main panes. The left pane, titled "Contacts List", contains a table with two columns: "First name" and "Last name". The right pane, titled "Details", shows the information for the selected contact, Tom Schindl, organized into sections: General, Business Address, Business Phone, and Business Internet.

First name	Last name
Tom	Schindl
Udo	Rader
Bernd	Reitmair
Magdalena	Bauer

Details

General

Firstname: Tom
Last name: Schindl
Company: BestSolution.at Systemhaus Gmbh
Comment:

Business Address

Street: Eduard-Bodem-Gasse 5-7
City: Innsbruck
Zip: 6020
State/Province: Tyrol
Country: Austria

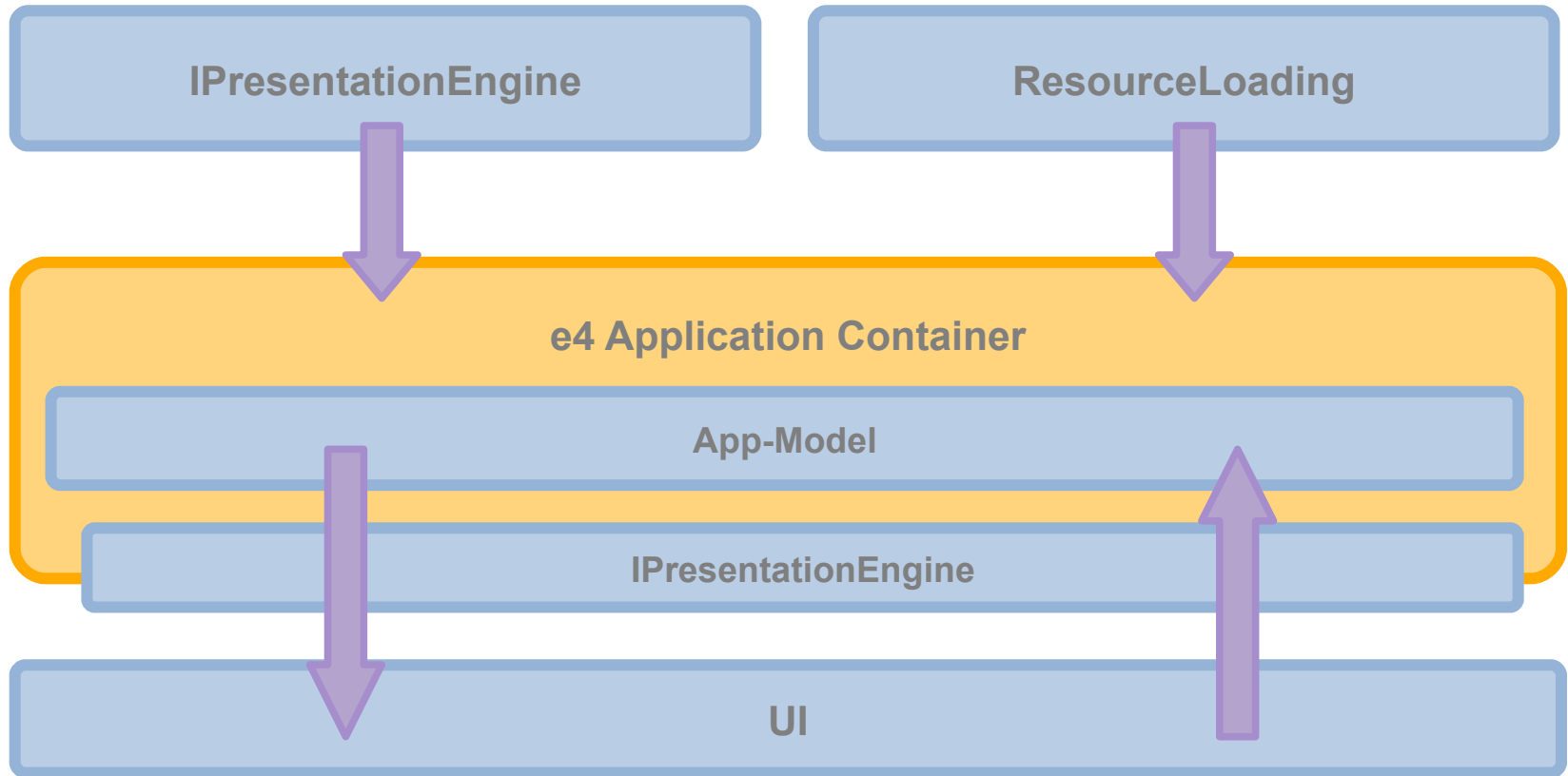
Business Phone

Phone: +43 512 93 58 34
Mobile: +43 676 323 21 47

Business Internet

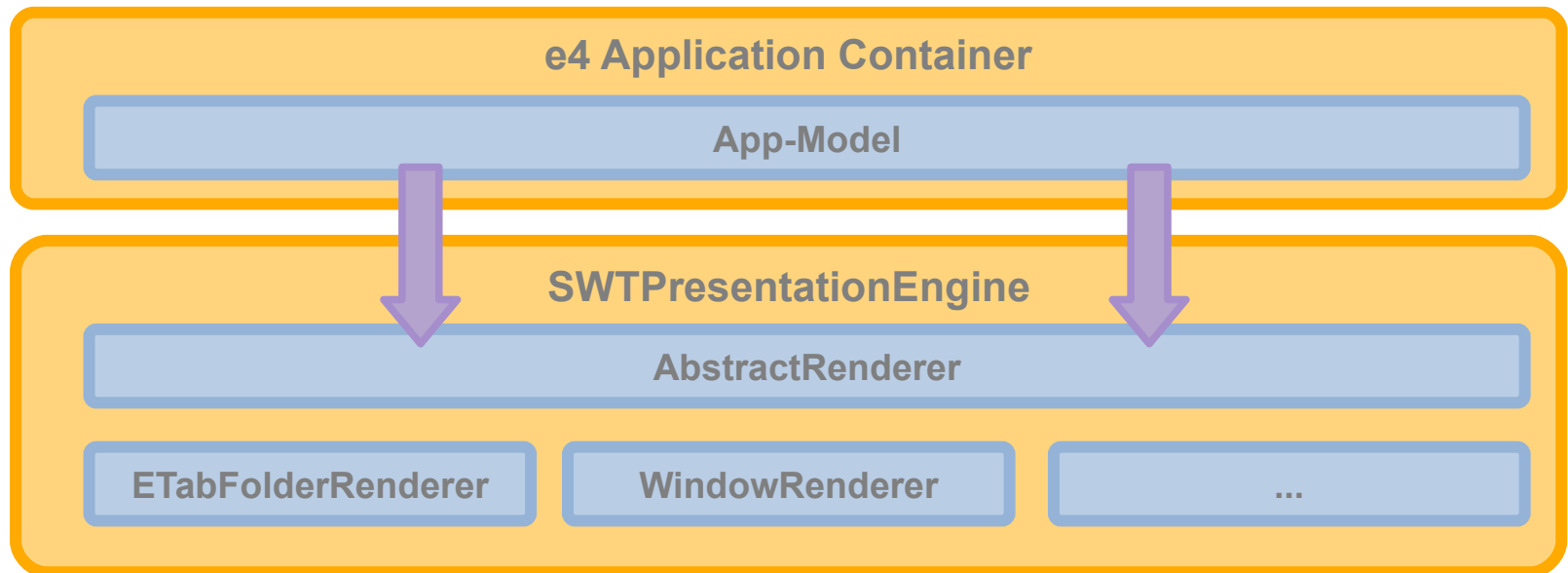
E-Mail: tom.schindl@ufacekit.org
Homepage: http://www.ufacekit.org
LinkedIn:

e4 – UI as a service



e4 – UI as a service

- The presentation engine and renderer concept

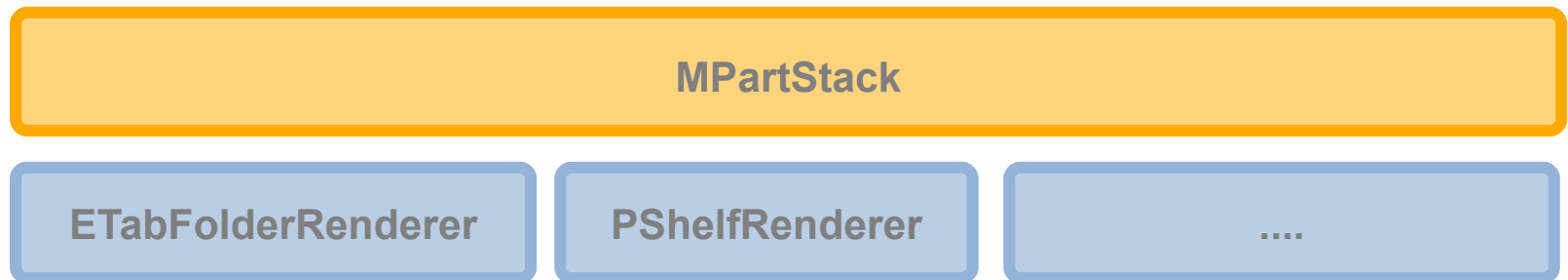


e4 – UI as a service

- **Tasks of the renderer**
 - Manage Lifecycle of UI-Element
 - Creation
 - Dispose
 - Synchronize attributes between both
 - Value changes
 - Structural changes (add/move/remove of children)

e4 – SWT Renderer

- **Default Presentation Engine provided by E4**
 - Based on SWT
 - Extensible by plug in your own renderers
- **One Appmodel Element multiple renderers**

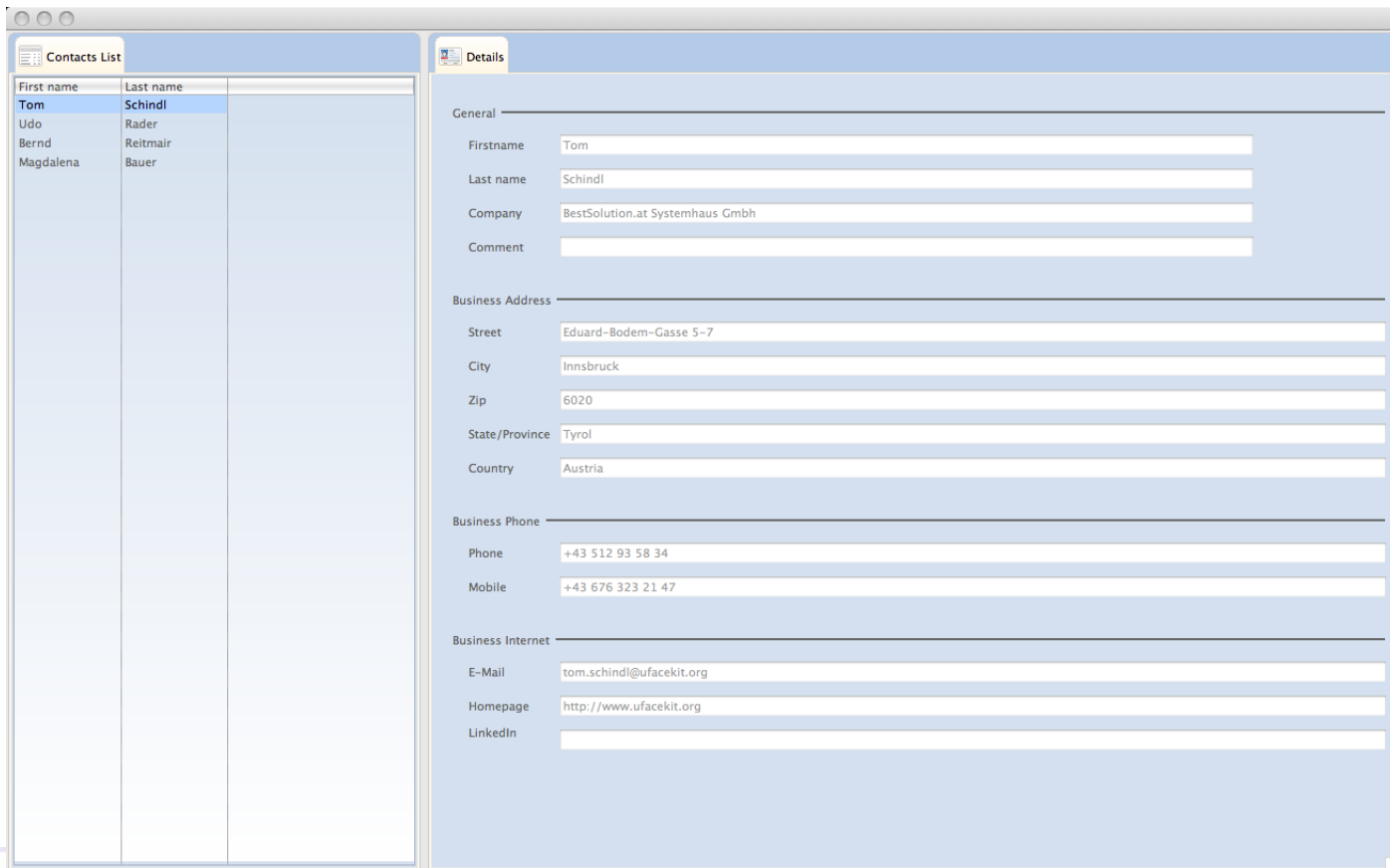


e4 – SWT Renderer

```
public class RendererFactory extends WorkbenchRendererFactory {  
  
    @Override  
    public AbstractPartRenderer getRenderer(MUIElement uiElement,  
        Object parent) {  
  
        if (uiElement instanceof MPartStack && usePShelfRenderer() ) {  
  
            if( stackRenderer == null ) {  
                stackRenderer = new PShelfStackRenderer();  
                initRenderer(stackRenderer);  
            }  
  
            return stackRenderer;  
        }  
  
        return super.getRenderer(uiElement, parent);  
    }  
}
```

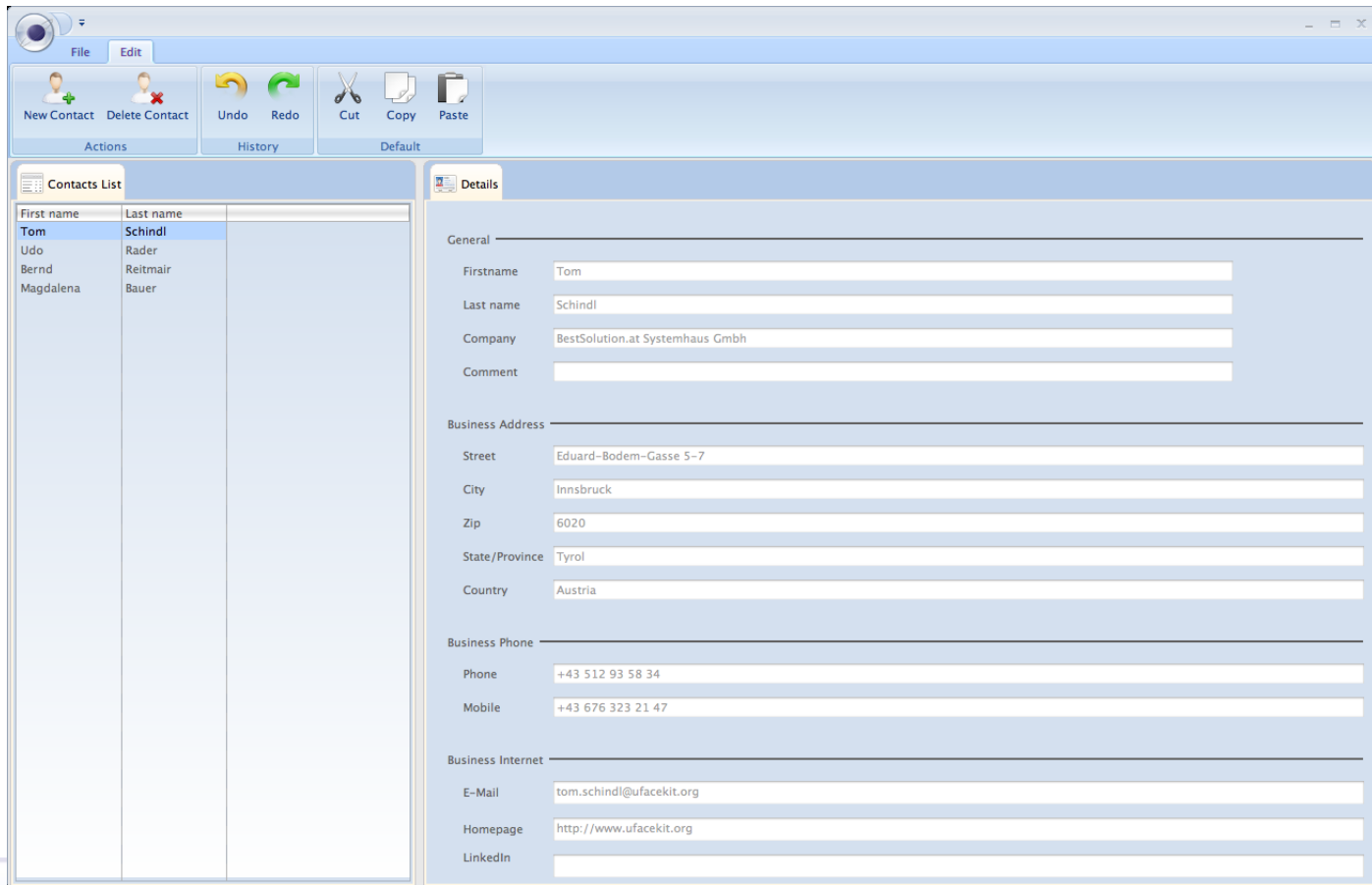
e4 – SWT Renderer

- Enhancing the renderers



e4 – SWT Renderer

▪ Enhancing the renderers



e4 – Open Social Gadgets

▪ What are OpenSocialGadgets

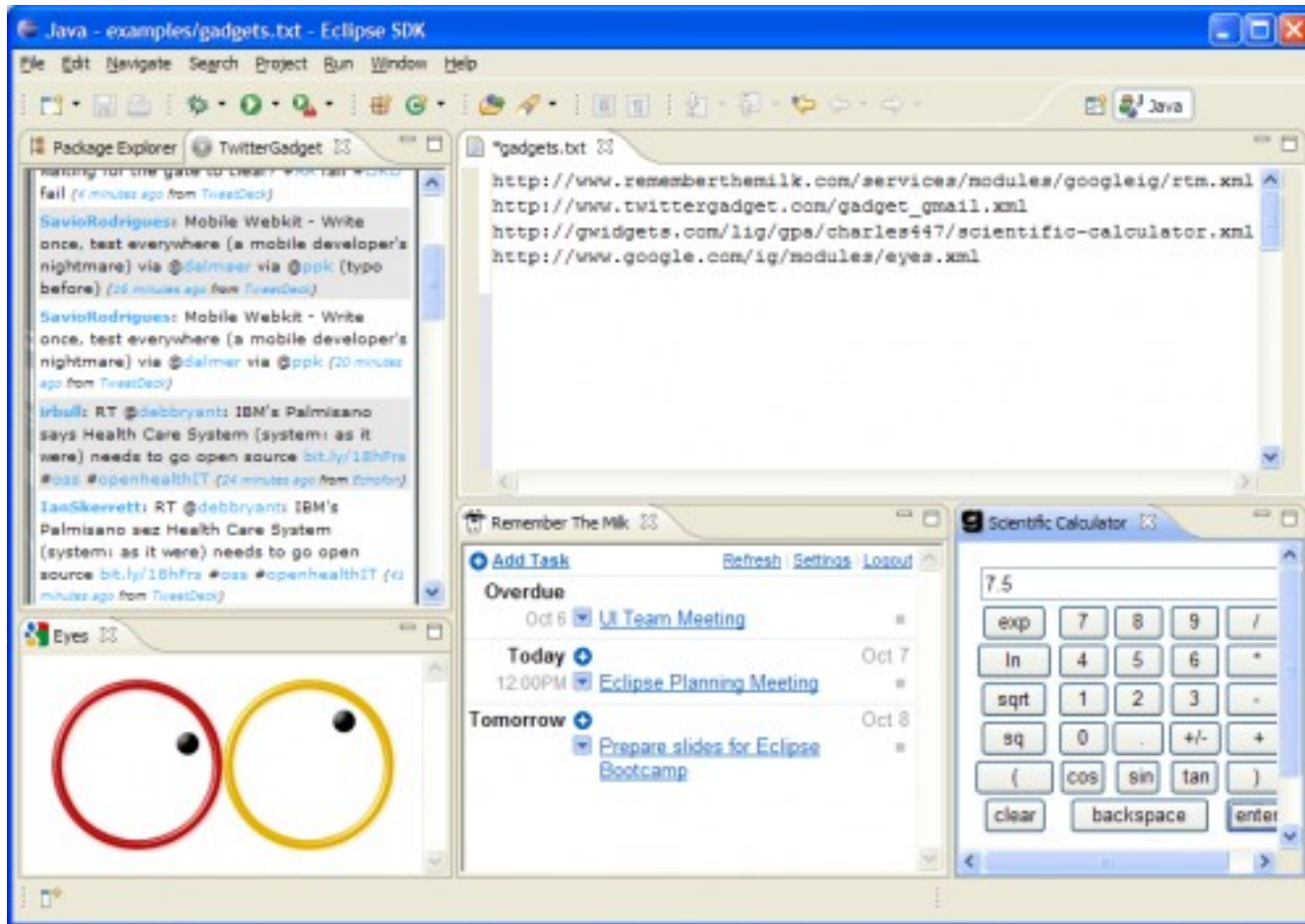
Gadgets are web-based software components based on HTML, CSS, and JavaScript.

▪ Open Eclipse for a new set of developers

▪ Examples

- Remember the Milk <http://www.rememberthemilk.com>
- Twitter Gadget
- ...

e4 – Open Social Gadgets



e4 – Additional Areas

- **XWT**
 - Based upon XAML concepts
 - Provides Visual Designers
- **TM**
 - Modeled UI exploration
- **Language support**
 - Write bundles e.g. in JavaScript

e4 – Online Resources

- **e4 wiki**

<http://wiki.eclipse.org/E4>

- **E4 whitepaper**

<http://www.eclipse.org/e4/resources/e4-whitepaper.php>

- **Personal Blog**

<http://tomsondev.bestsolution.at/>



THE END