
# e(fx)clipse - JavaFX Tooling and Runtime

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# About Tom

- CEO BestSolution Systemhaus GmbH
- Eclipse Committer
  - e4
  - Platform UI
  - EMF
- Main developer of e(fx)clipse

# What is JavaFX

- modern Graphics Toolkit for Java
  - uses OpenGL and DirectX (when possible)
- Is almost cross-platform (Mac is beta, Linux is alpha)
- Will get part of the OpenJDK one day
- Successor of Swing

# What technologies are needed?

- Minimum
  - Java or any other VM-Language (Scala, Groovy, ...)
- Optimal
  - Java or any other VM-Language
  - CSS
  - XML (FXML)

# Why do we need e(fx)clipse

## For Java we have JDT

```
package bsp;

import javafx.application.Application;
import javafx.stage.Stage;

public class Example extends Application {

    @Override
    public void start(Stage primaryStage) {
        HBox root = FXMLLoader.load(getClass().getResource("Example.fxml"));
        Scene s = new Scene(root);
        s.getStylesheets().add(getClass().getResource("example.css").toExternalForm());
        primaryStage.setScene(s);
    }

    public static void main(String[] args) {
        launch(args);
    }
}
```

# What does e(fx)clipse provide

- Enhancements for Java Tooling
  - Wizards to create JavaFX projects (e.g. a specialized Classpath-Container)
- Packageing support for JavaFX applications

# Why do we need e(fx)clipse

## For CSS we have WST

```
#root {
    -fx-background-color:
      linear-gradient(#686868 0%, #232723 25%, #373837 75%, #757575 100%),
      linear-gradient(#020b02, #3a3a3a),
      linear-gradient(#b9b9b9 0%, #c2c2c2 20%, #afafaf 80%, #c8c8c8 100%),
      linear-gradient(#f5f5f5 0%, #dbdbdb 50%, #cacaca 51%, #d7d7d7 100%);

}

#button {
    -fx-padding: 10;
    -fx-background-color: red;
}
```

# What does e(fx)clipse provide

- CSS
  - Provides auto-completion for JavaFX css properties
  - Provides validation for JavaFX css properties
  - Supports CSS 3 Selectors (which JavaFX itself doesn‘t fully)
  - CSS-Editor based upon xtext
  - Can be extended to teach it css new properties

# Why do we need e(fx)clipse

## For XML we have WST

```
<?xml version="1.0" encoding="UTF-8"?>

<?import java.lang.*?>
<?import javafx.scene.control.Button?>
<?import javafx.scene.layout.HBox?>

<HBox xmlns:fx="http://javafx.com/fxml">

    <children>
        <Button text="Hello World"/>
    </children>

</HBox>
```

# What does e(fx)clipse provide

- FXML
  - Is a serialization of an object graph (similar to XAML)
  - Has fixed Schema or DTD
- FXML-Editor based upon Xtext
  - provides auto-completion for attributes
  - provides live preview of result
- SVG / FXG to FXML Converter

# What does e(fx)clipse provide

- fxgraph
  - JSON like object graph definition
  - reduces the noise created by XML in FXML
  - „compiles“ to FXML
    - no runtime libraries needed
    - interopability with other tools like Scenebuilder, Netbeans, ...
  - **No Expressions**

# Basic Structure

```
package bsp

import javafx.scene.layout.HBox
import javafx.scene.control.Button
import bsp.ExampleController

component Example controlledby ExampleController styledwith "example.css" {
    HBox {
        children : [
            Button {
                text : "Hello World"
            }
        ]
    }
}
```

# Demo Time

# DEMO TIME Tooling

# e(fx)clipse runtime

- Integration in Eclipse Databinding

```
TextField f = new TextField();
IEMFValueProperty mProp = EMFProperties.value(MEDIA__TITLE);
IJFXBeanValueProperty tProp = JFXBeanProperties.value("text");
dbc.bindValue(
        tProp.observe(f),
        mProp.observeDetail(currentSelection)
);
```

- Adapting to FX-Observable

```
ObservableValue<Double> fxValue = AdapterFactory.adapt(EMFProperties.value
(PHOTO_AREA__X).observe(eObject))

ObservableList<PhotoArea> fxList = AdapterFactory.adapt(EMFProperties.list
(PHOTO__AREAS).observe(eObject));
```

# e(fx)clipse runtime

- Adapting to FX-Observable is very nice e.g. for Tables

```
photoAreas = new TableView<PhotoArea>();

TableColumn<PhotoArea, String> col = new TableColumn<PhotoArea, String>();
col.setText("Description");
col.setCellValueFactory(new Callback<TableColumn.CellDataFeatures<PhotoArea,String>, ObservableValue<String>>
() {

	@Override
	public ObservableValue<String> call(CellDataFeatures<PhotoArea, String> param) {
		IObservableValue v = EMFProperties.value(PHOTO_AREA__DESCRIPTION).observe(param.getValue());
		return AdapterFactory.adapt(v);
	}
});

ObservableList<PhotoArea> list = AdapterFactory.adapt(EMFProperties.list(PHOTO__AREAS).observeDetail
(currentSelection));
photoAreas.setItems(list);
```

# e(fx)clipse runtime

- Integration into Equinox-OSGi

# e(fx)clipse runtime

- Integration into Equinox-OSGi

```
public class Example extends Application {

    @Override
    public void start(Stage primaryStage) {
        // TODO Implement
    }
}
```

# e(fx)clipse runtime

- Integration into Equinox-OSGi

```
public class Example extends Application {

    @Override
    public void start(Stage primaryStage) {
        // TODO Implement
    }
}
```

```
public class Example extends AbstractJFXApplication {

    @Override
    protected void jfxStart(IApplicationContext context,
            javafx.application.Application jfxApplication,
            Stage primaryStage) {
        // TODO Implement
    }
}
```

# e(fx)clipse runtime

- How does the integration work
  - JavaFX does not directly support OSGi
  - JavaFX 2.1 improved by providing the possibility to set classloaders e.g. when loading stuff using FXML
- Current integration uses „Equinox Classloader Hooks“
  - Locate javafx.jar on the filesystem
  - Bundle javafx.jar inside a bundle

# Eclipse 4.1 Application Platform

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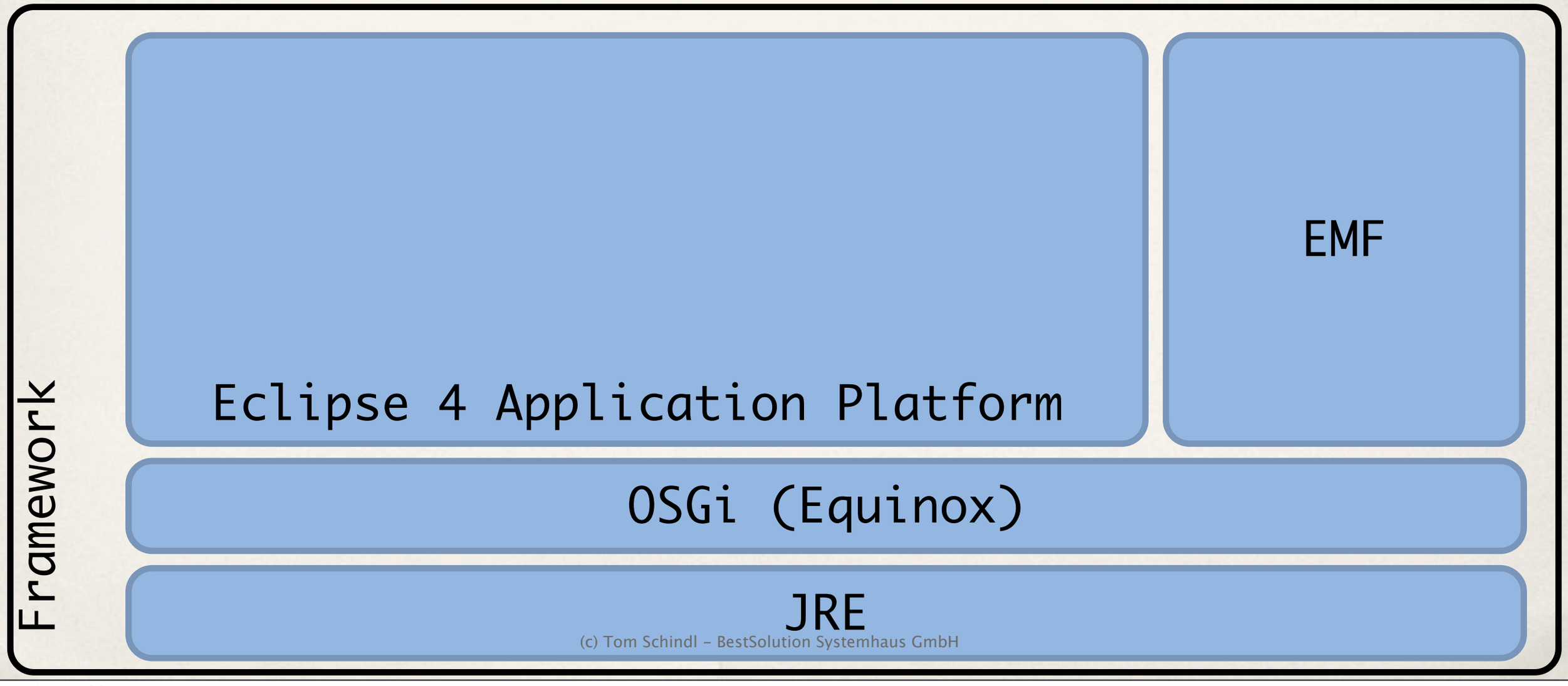
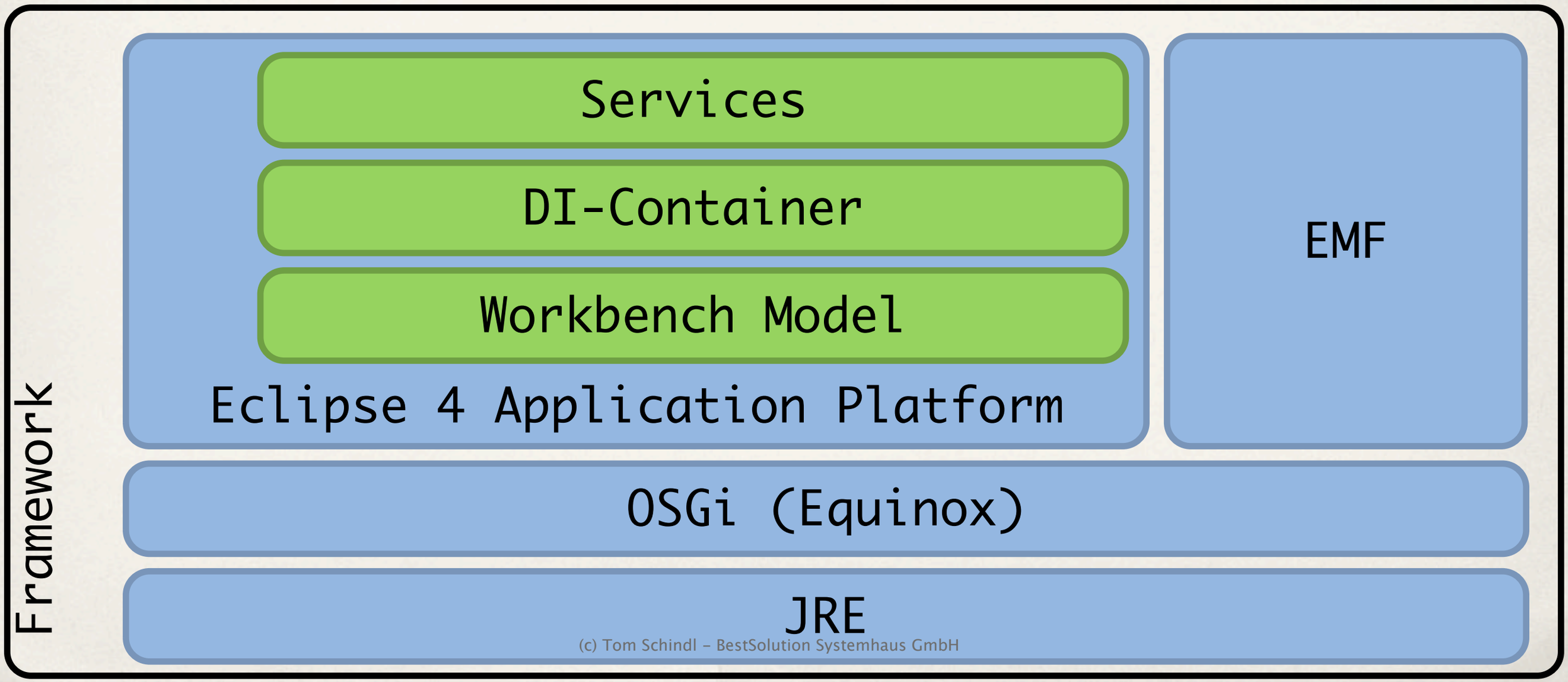


# Eclipse 4.1 Application Platform



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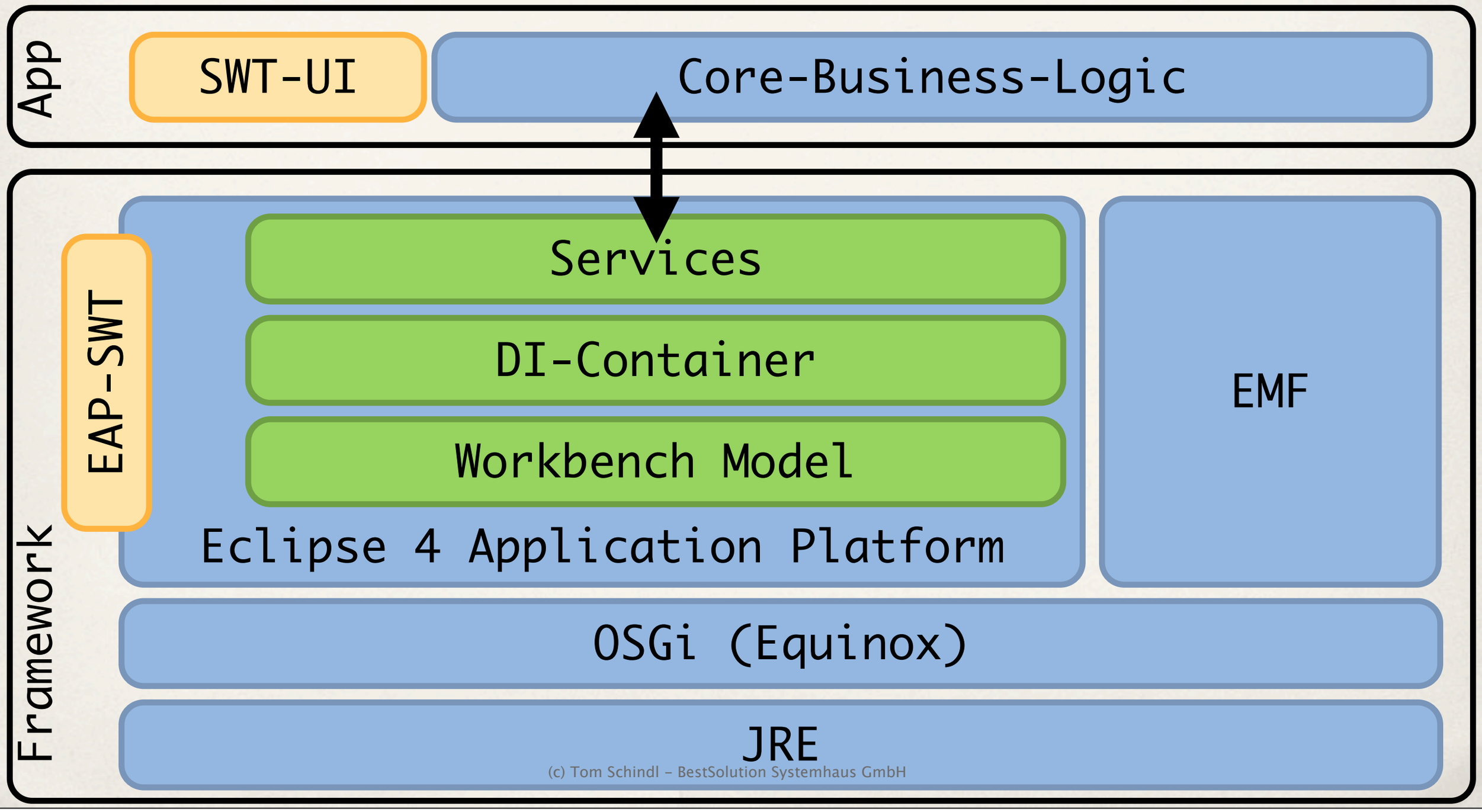

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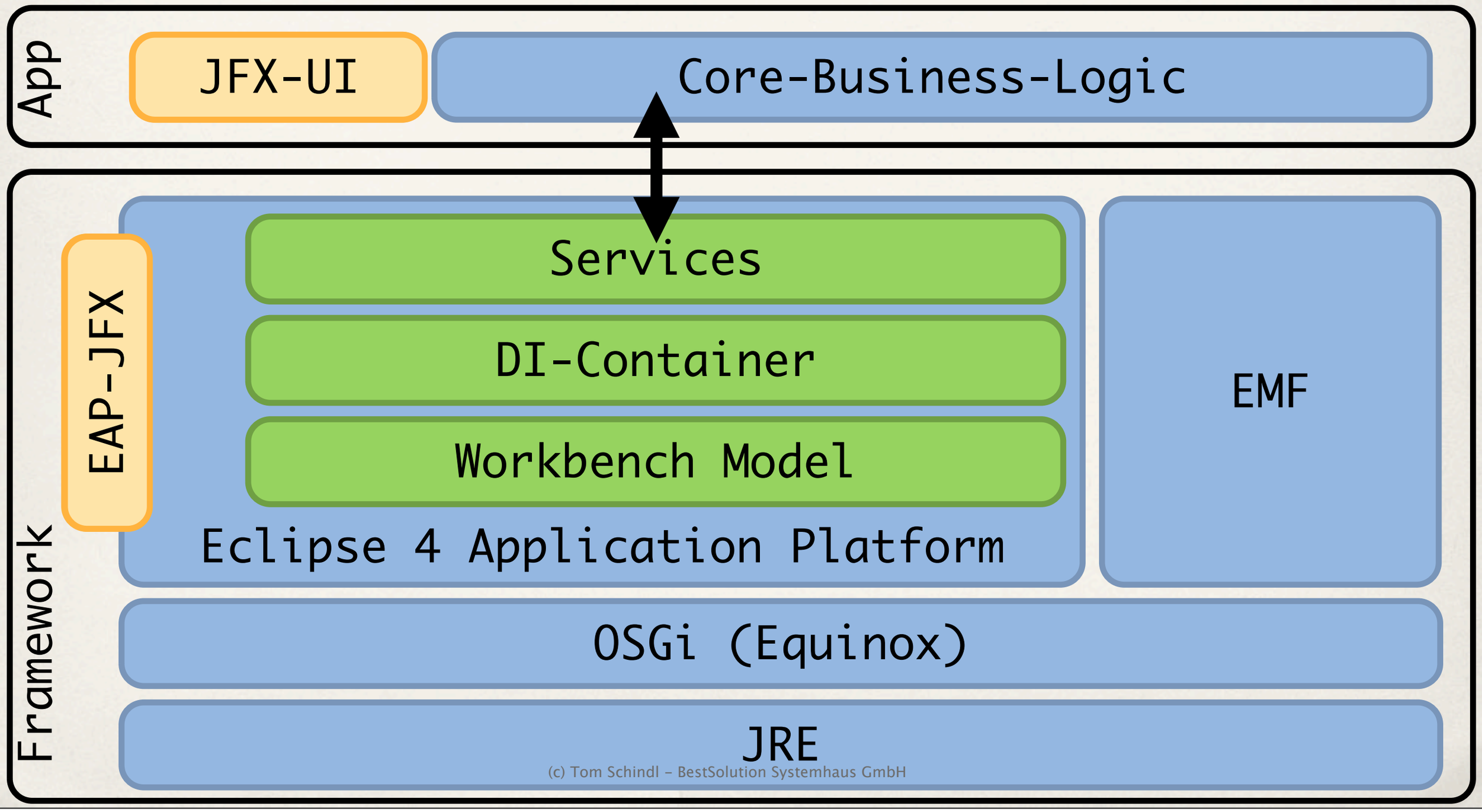

# What does the future hold?

- All major tooling feature are done with 0.0.13
  - CSS-Editor
  - FXML and fxgraph-Editor (SVGPath-Editor in the queue for 0.0.14)
- Integration with external tools (Scenebuilder, FXperience-Tools)
- Release Tooling 1.0 with Juno
- All runtime features are done
  - Maybe Felix support?
- e4 integration will stay in prototype stage longer

# What does the future hold?

- Moveing to Eclipse
- Maybe after Juno Release done
  - Freeing our bandwidth (last release ~1.200 downloads in 6 weeks)
- Problem that PDE has to be patched for now

# Resources

- Homepage: http://www.efxclipse.org
- My blog: http://tomsondev.bestsolution.at
- e4-Wiki: http://wiki.eclipse.org/e4
- e4-newsgroup: eclipse.e4
- e4-mailinglist: e4-dev@eclipse.org
- Twitter: @tomsontom