

*SwtFx*

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# GEF4

- **GEF4** was initiated to **develop the next generation Draw2d, GEF (MVC), and Zest API.**
- Development takes place **in parallel to maintenance** of **Draw2D/GEF 3.x / Zest 1.x**
- **Advantages** of this procedure:
  - Clear **distinction** between **GEF proper** as the production and **GEF4** as the provisional component
  - Chance to not only **refactor** GEF components but the **componentization** itself, which is only "historically" justified.



# Status Quo (a year ago)

- **GEF4 Geometry** was finalized before Juno
- **GEF4 Graphics** was initiated before Kepler
  - Idea was to provide a common graphics abstraction over SWT/AWT, and also JavaFX
- **GEF4 'Glyphs'** was planned:
  - Figures/Shapes abstractions inspired by Draw2d, SVG, and JavaFX (SceneGraph)
  - Intended as replacement of Draw2d 'Core'

# GEF4 SwtFX\*

- **Replacement** of **Draw2d** 'Core', making use of **JavaFX key abstractions** (Scene, Parent)
- **Combination of heavyweight** (SWT Controls) and **lightweight nodes** (Figures) **in a scene graph.**
  - **SWT Controls** are wrapped into adapters (so far only leaves)
  - **ShapeFigure** based on GEF4 Geometry planar shapes
  - **CanvasFigure** provides a lightweight node that allows painting on a Graphics\*\*
- **Affine transformations, double-based precision, ...**

\*) aka. GEF4 Glyphs

\*\*\*) based on former GEF4 Graphics code



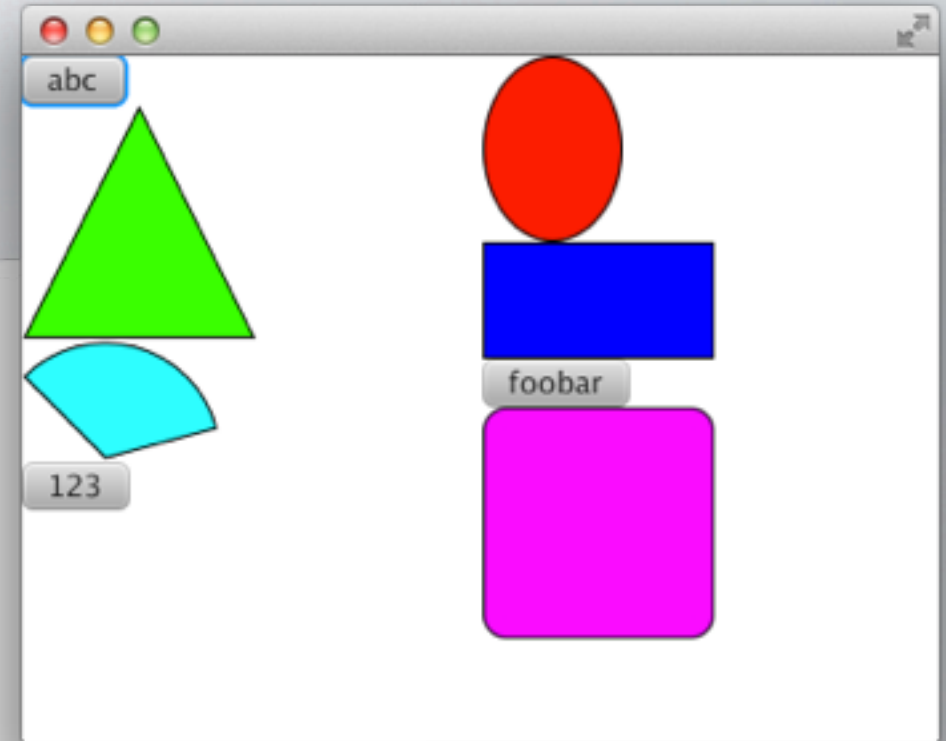
# GEF4 SwtFX - Sample Code

```
HBox hbox = new HBox();
VBox col1 = new VBox();
VBox col2 = new VBox();
hbox.getChildren().addAll(col1, col2);
HBox.setHgrow(col1, Priority.ALWAYS);
HBox.setHgrow(col2, Priority.ALWAYS);

col1.getChildren().addAll(
    new Button("abc"),
    shape(new Polygon(50, 0, 100, 100, 0, 100), 0, 1, 0),
    shape(new Arc(0, 0, 50, 50, 15, 120) {{ setType(ArcType.ROUND); }}, 0, 1, 1),
    new Button("123"));

col2.getChildren().addAll(
    shape(new Ellipse(30, 40, 30, 40), 1, 0, 0),
    shape(new Rectangle(0, 0, 100, 50), 0, 0, 1),
    new Button("foobar"),
    shape(new Rectangle(0, 0, 100, 100) {{ setArcHeight(20); setArcWidth(20); }}, 1, 0, 1));

// create scene (and set scene size)
Scene scene = new Scene(hbox, 400, 300);
stage.setScene(scene);
stage.show();
```



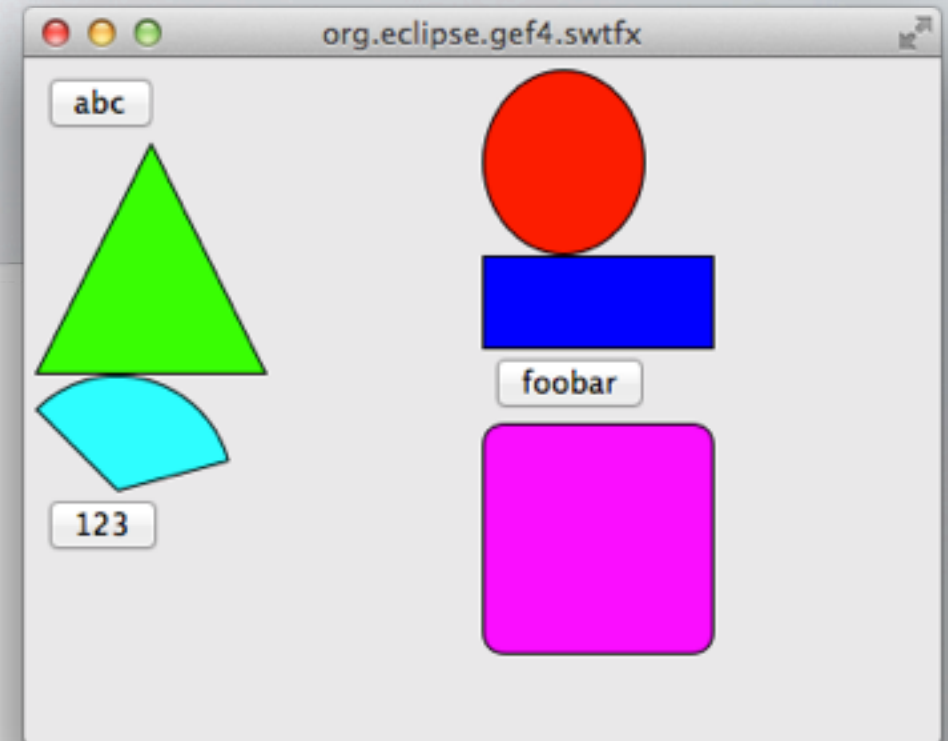
# GEF4 SwtFX - Sample Code

```
HBox root = new HBox();
VBox col1 = new VBox();
VBox col2 = new VBox();
root.addChildNodes(col1, col2);

col1.addChildNodes(
    new SwtButton("abc"),
    shape(new Polygon(50, 0, 100, 100, 0, 100), 0, 1, 0),
    shape(new Pie(0, 0, 100, 100, Angle.fromDeg(15), Angle.fromDeg(120)), 0, 1, 1),
    new SwtButton("123"));

col2.addChildNodes(
    shape(new Ellipse(0, 0, 70, 80), 1, 0, 0),
    shape(new Rectangle(0, 0, 100, 40), 0, 0, 1),
    new SwtButton("foobar"),
    shape(new RoundedRectangle(0, 0, 100, 100, 10, 10), 1, 0, 1));

// set root size and create scene
root.setPrefWidth(400);
root.setPrefHeight(300);
return new Scene(shell, root);
```





# GEF4 SwtFX - Features

	<b>GEF4 SwtFX</b>	<b>JavaFX</b>
<b>Scene graph</b>		
Composite scene graph abstractions	+	+
Shape nodes	+	+
Control Nodes	+/-	+
Views, Charts, etc.	-	+
Transformations	+/-	+
Layouting	+/-	+
Clipping	-	+
<b>Event system</b>		
Event type hierarchy <u>6</u>	+	+
Event bubbling	+	+
Event capturing	+	+
Picking	+	+
Touch and gesture events	-	+

# GEF4 SwtFX - Features (continued)

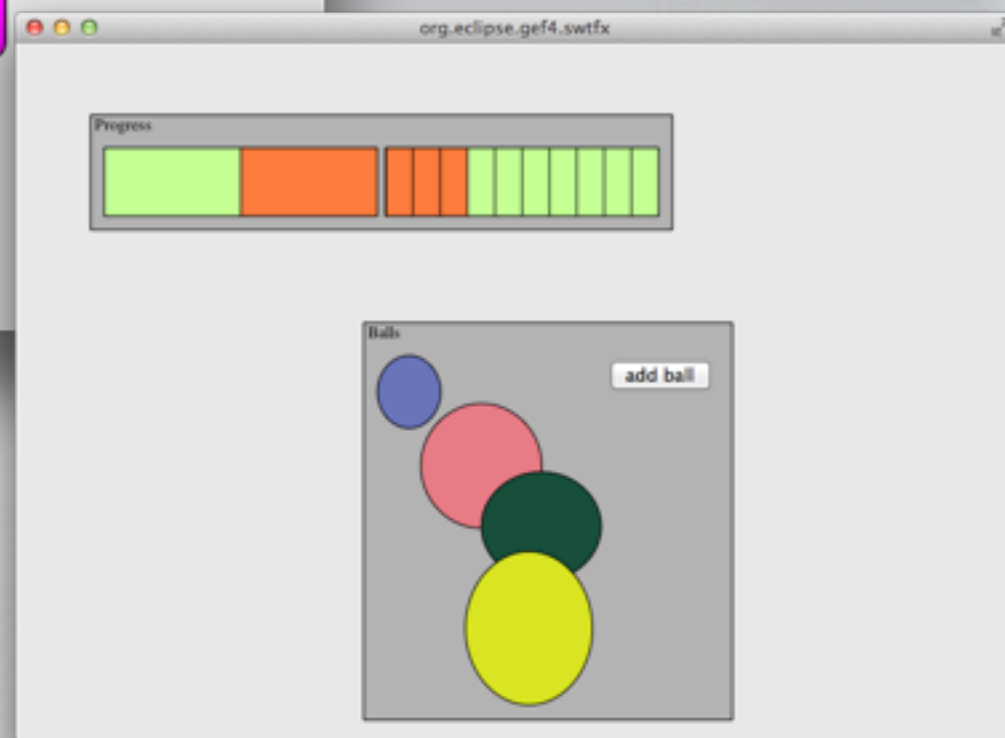
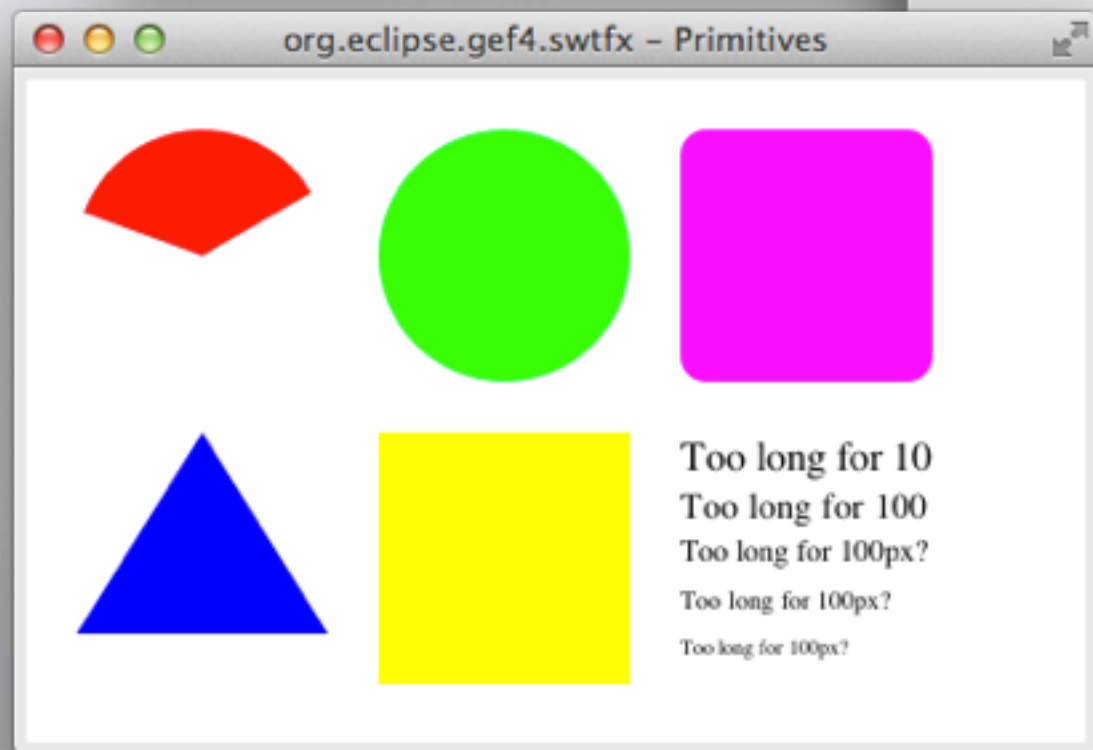
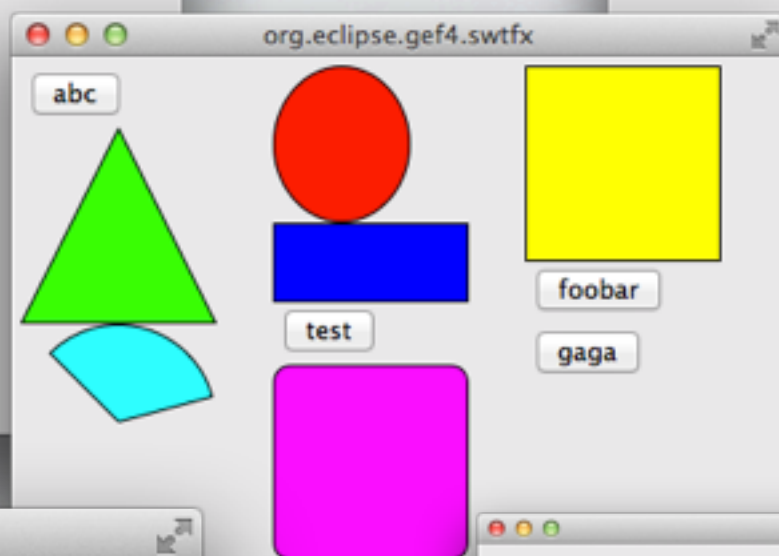
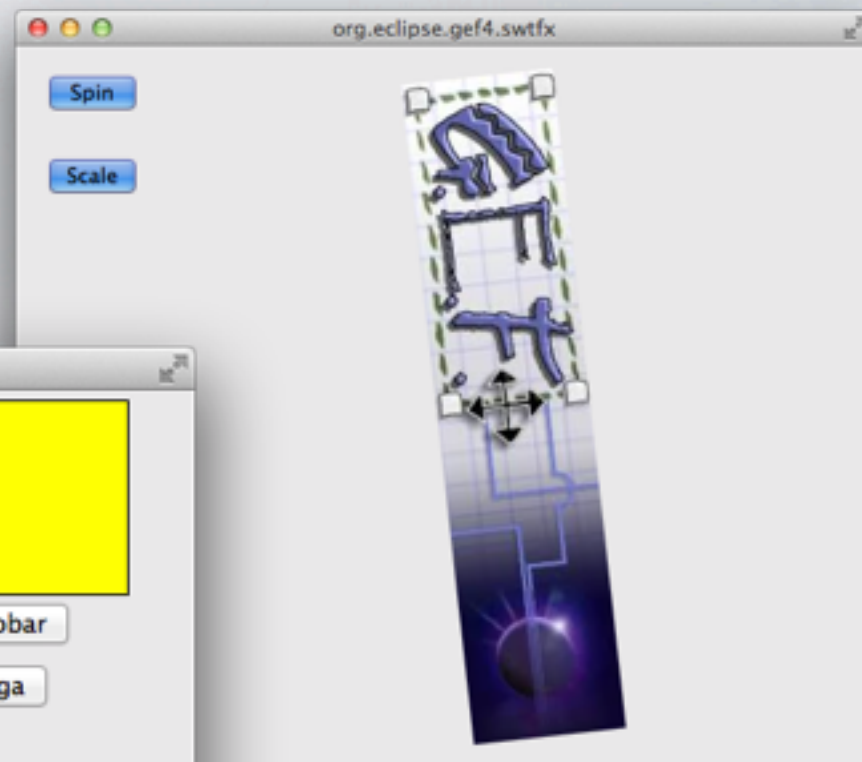
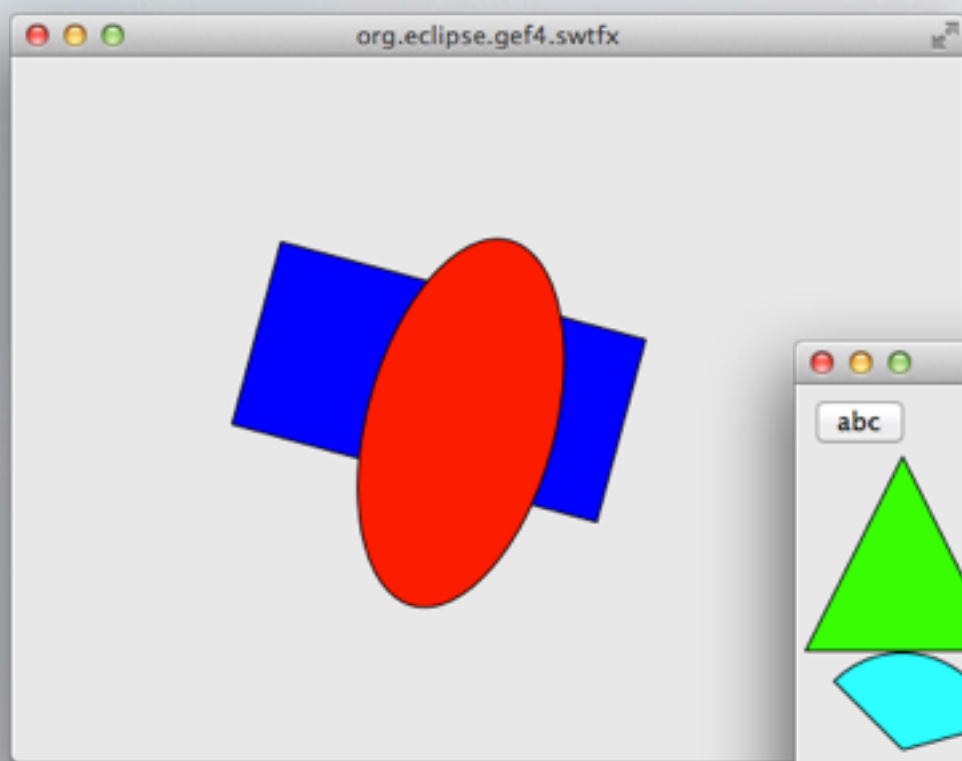
	<b>GEF4 SwtFX</b>	<b>JavaFX</b>
<b>Transitions (animations)</b>		
Rotate, Scale, and Path transitions	+	+
Sequential and parallel transitions	+	+
Custom interpolator	+	+
General transition API	+	+
<b>Canvas (prior Graphics component)</b>		
HTML5-like Canvas node	+	+
States stack	+	+
Gradients, Colors, Images	+	+
Paths and shapes	+	+
Clipping	+	+



# GEF4 SwtFX - Limitations

	<b>GEF4 SwtFX</b>	<b>JavaFX</b>
Caching	-	+
Layout-Roots	-	+
CSS-Styling	-	+
Layout-Panes	+/-	+
3D	-	+
Properties (bindable, observable)	-	+
Concurrency abstractions	-	+
UI-Controls	+/-	+
Effects	-	+

# (SELF-) DEMO - GEF4 SwtFX Examples





Thank You! Questions?

<http://wiki.eclipse.org/GEF/GEF4>