Our mission to Mars

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GEF4

• Our **approach to develop the next generation API**

• Clear **distinction** between **GEF proper** as the production and **GEF4** as the provisional component

• Development takes place **in parallel to maintenance** of **GEF proper** (Draw2D/GEF 3.x / Zest 1.x), **API is yet provisional**
Concrete Goals for GEF4

- A **technically** (and not historically) **justified modularity**
- Use of **modern rendering technology** (JavaFX)
- Avoiding unnecessary **Eclipse-UI dependencies**
- Integration of **automatic layouts** also within editors
- Support of **touch-gestures**
- Support for „**classical“** and „**handheld-like“** look & feel
GEF4 - Components

GEF4 Cloudio
- GEF4 FX.UI
- GEF4 MVC.UI
- GEF4 MVC
- GEF4 MVC.FX
- GEF4 MVC.FX.UI

GEF4 Zest.FX
- GEF4 Zest.FX.UI

GEF4 Layout

GEF4 Graph

GEF4 Geometry

GEF4 Common

UI ≈ Eclipse UI
FX ≈ JavaFX
Our mission to Mars

• Goal: Join Mars with a first initial release of all GEF4 components, based on yet provisional API.

• Enhance GEF4 FX (✓) and GEF4 MVC (✓) to provide a functionality comparable to Draw2d / GEF (MVC) 3.x.

• Rewrite GEF4 Zest (✓) to ensure GEF4 is fully self-contained (Zest2 depended on Draw2d).
GEF4 - Components

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Image courtesy of Craighton Miller

UI ≃ Eclipse UI
FX ≃ JavaFX
GEF4 MVC

- Intended replacement for GEF (MVC) 3.x
- Dedicated to graphical editors and views (no tree editors)
- Based on JavaFX and GEF4 FX for visualization, no requirements/dependencies on a specific model technology

- Intentionally light-weight:
  - Split into UI-toolkit independent abstractions (MVC), JavaFX-based specializations (MVC.FX), and Eclipse UI-integration (MVC.UI/MVC.FX.UI)
  - Transfers (but revises) approved concepts of GEF (MVC) 3.x
GEF4 MVC - Overview

• **Modern look & feel** using **JavaFX** and GEF4 FX

• **Live interaction-feedback** (by directly manipulating the visuals rather than performing changes through model)

• **Enhanced interaction capabilities** through gesture-support, continuous zoom, (potentially) rotation support

• **Enhanced configurability** (extended adaptable pattern, dependency injection)

• **Eclipse UI independence** within core (MVC, MVC.FX),

• **Eclipse UI integration** as addition (MVC.UI, MVC.FX.UI)
DEMO - GEF4 MVC.FX.UI Example
GEF4 MVC Distilled - Controller Hierarchy

• Controller hierarchy with explicit parts for content, feedback, and handles (and two kinds of relationships):
Implications:

- **No** dedicated connection layer but dedicated layers for contents, feedback, and handles
- **No** dedicated connection parts, but parent ↔ child and/or anchorage ↔ anchored relationships
  - **Content** can be anchored at arbitrary other content
  - **Feedback** and **handles** are anchored at underlying content
GEF4 MVC Distilled - Aspect-Bound Interfaces

- Modularized interaction behavior by providing generic tools and dedicated policies (strategies adapted to visual parts):
  - Tools interface to abstract (interaction) policies
    - FXClickDragTool, …, AbstractFXDragPolicy, …
  - Concrete (interaction) policies delegate to specific (transaction) policies
    - FXRelocateOnDragPolicy, FXZoomOnPinchSpreadPolicy, …
  - Specific (transaction) policies realize semantic operation
    - FXResizeRelocatePolicy, FXRelocateConnectionPolicy, …
GEF4 MVC Distilled - Aspect-Bound Interfaces

- Example: **Relocate On Drag**

[Diagram showing a before and after example of 'Relocate On Drag' with hit testing]
Example: **Resize On (Handle) Drag**

hit testing
• Accessible interaction state via dedicated interaction models (SelectionModel, ContentModel, ZoomModel, …)

• Behaviors (adapted to visual pars) that listen to changes of interaction state and show feedback / create handles

• Example: Select on Click
1. Update selection model on click
2. Create feedback & handles, reacting to selection change
GEF4 MVC - Status Quo / Outlook

• Provides all basic concepts needed to build up graphical viewers and editors (✓)

• Most interaction features already supported (✓):
  • Hover, Click (Select/Marquee-Select), Drag, (Relocate/Resize incl. Re-Connect and Snap-To-Grid), Pinch/Spread (Zoom), Key-Type (Delete)

• Some interaction features still missing (✓):
  • Creation (Palette), Direct-Editing, Transformations (Rotate, Flip), Context-Menu
GEF4 Zest

• Intended replacement for Zest 1.x (and Zest2)
• Provides graph based visualization with auto-layout support
• Based on JavaFX and GEF4 FX for visualization, and GEF4 MVC as underlying model-view-controller framework
• Rewritten from scratch, replacing the former Zest2 code base, which was initially transferred to GEF4
DEMO - GEF4 Zest.FX.UI Example
• Extends GEF4 MVC, using GEF4 Graph as model:
  • Provides **specific visual parts** and **visualizations**, including support for **style-sheet-based rendering**
  • Provides **additional interaction models** (LayoutModel, SubgraphModel)
• **Integrates layout algorithms** provided by **GEF4 Layout**.
• Planned **integration** with **KIELER** framework via GEF4 Graph (aligned with KGraph)
GEF4 Zest - Status Quo / Outlook

• Zest(2).Core
  • Initiated GEF4 Zest FX and Zest FX.UI, still missing some of the original visualization features* (✓)

• Zest(2).UI
  • Transferred DOT GraphViewer to GEF4 DOT (✓)

• Zest(2).JFace
  • No replacement API defined yet (✗)

*) nested graph rendering, animated transitions, curved connections, rotation-support
Mars (3.10.0) Release Plans

• Provide **minor release** for Draw2d/GEF (MVC) 3.x and **Zest 1.x** (3.10.0 / 1.6.0)

• Provide **first release** (0.1.0) of **GEF4 components**:
  
  • **Extend functionality** of **FX** and **MVC** components to close the remaining gap to Draw2d/GEF (MVC) 3.x.
  
  • Finalize **replacement** of former **Zest2 bundles** (depending on SWT/Draw2d) with **Zest.FX** and **Zest.FX.UI**.

• **Investigate integration with KIELER** layout algorithms
Thank You! Questions?

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