Implementing Mondrian in Glamorous Toolkit

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Goal of the thesis

- Implement an easier to use Mondrian within GT
- Find out if GT is a better platform for Mondrian than normal Pharo
What is Mondrian?

• Developed in 2006 by Michael Meyer and Tudor Gîrba

• Lightweight tool to create interactive visualizations with simple scripts
Mondrian key features

• Interactive visualizations
• Ability to accommodate any data model
• Small overhead
• Infinite nesting
• Ability to easily change the shape of the nodes
• Ability to add interactions to the nodes
• Ability to create polymetric views
How could GtMondrian be better?

• Changing the node shape should be easier

• Ability to add Actions

• Builders to make difficult graphs easier
CRMondrian

• Very similar to original Mondrian
• Ability to create new shapeBuilder to make complicated scripts easier
• Support for multiple shapeBuilders
• Support for Actions
m := CRMondrian new.

m nodes box with: (1 to: 10).

m edges connectFrom: [:x | x // 2].

m layout tree.

m
Feature Demo
Challenges

- Poor Documentation
- Changes in GT break implementation
- BIElements can’t be copied
- GT is slow
Is it easier to use than GtMondrian

GtMondrian

CRMondrian
## Is GT better for Mondrian

<table>
<thead>
<tr>
<th>PRO</th>
<th>CONTRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy nesting because of One Rendering Tree</td>
<td>Graphic Elements can’t be copied</td>
</tr>
<tr>
<td>Graph-logic is already implemented and ready for use</td>
<td></td>
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<tr>
<td>Deep integration of visualization within the environment</td>
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</tbody>
</table>
Is GT better for Mondrian

• Glamorous Toolkit is definitely a suitable environment to implement Mondrian within

• Since it is very visualization focused it is easier to implement certain parts of Mondrian
Summary

What is Mondrian?
- Developed in 2006 by Michael Meyer and Tudor Girba
- Lightweight tool to create interactive visualizations with simple scripts

CRMondrian
- Very similar to original Mondrian
- Ability to create new shapeBuilder to make complicated scripts easier
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- Support for Actions

Is GT better for Mondrian
- Glamorous Toolkit is definitely a suitable environment to implement Mondrian within
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Is it easier to use than GtMondrian

GtMondrian

CRMondrian
Backup
Edge Builder creation

1. new

2. edges

3. edge specification

4. create EdgeBuilder

5. add EdgeBuilder
Create Graph

1. getView
2. getNodes
3. for each object do
   3.1 create shape
   3.2 create node from shape
4. return nodes
5. pass nodes
6. create edges
7. for each node do
   7.1 gather connecting nodes
   7.2 create graph constraints
   7.3 create lines
8. return edges
9. add nodes and edges
10. paint
11. canvasForView
12. return view
What is Glamorous Toolkit

• Entirely new Pharo environment
• Based on Moldable Development
• New graphical stack: One rendering tree
What is the one rendering tree

- Graphical stack
- All elements live within the same graphical stack
- No difference between graphs and UI
  => good interaction between the two