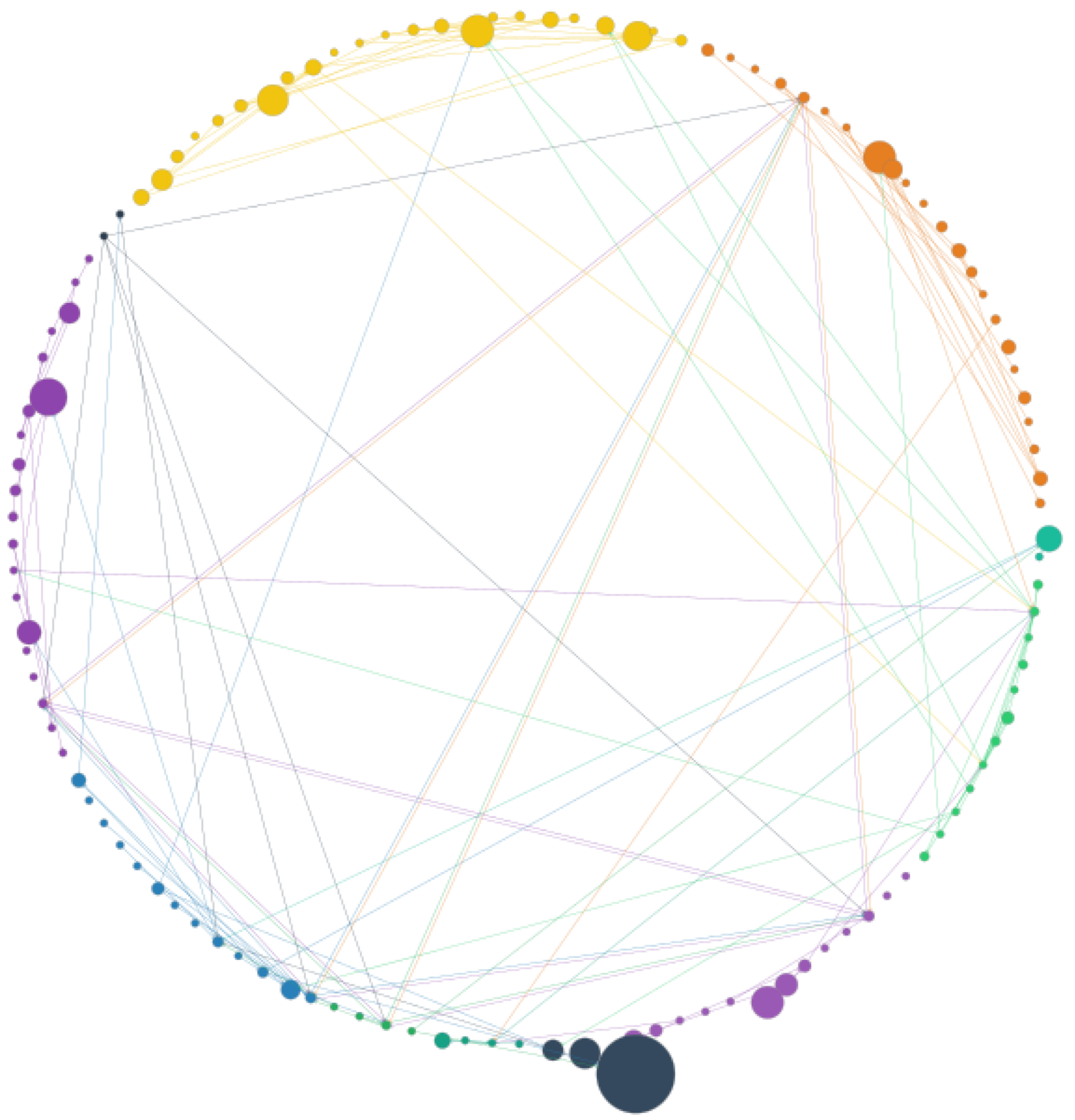
Roassal

- In the Pharo environment
- Data visualization
- A set of tools

```
"Animations"
RSAnimationExamples new example24RoassalPerlinNoise open extent: 800@500.
RSAnimationExamples new example09PerlinParticles open extent: 800@500.
"Charts"
RSChartExample new example24SpineLine open.
RSKiviatExample new example06Chemistry open.
"Images"
RSSVGAnimationExamples new example02Miku open.
"System complexity"
MySystemComplexity new example open extent: 900@600
```



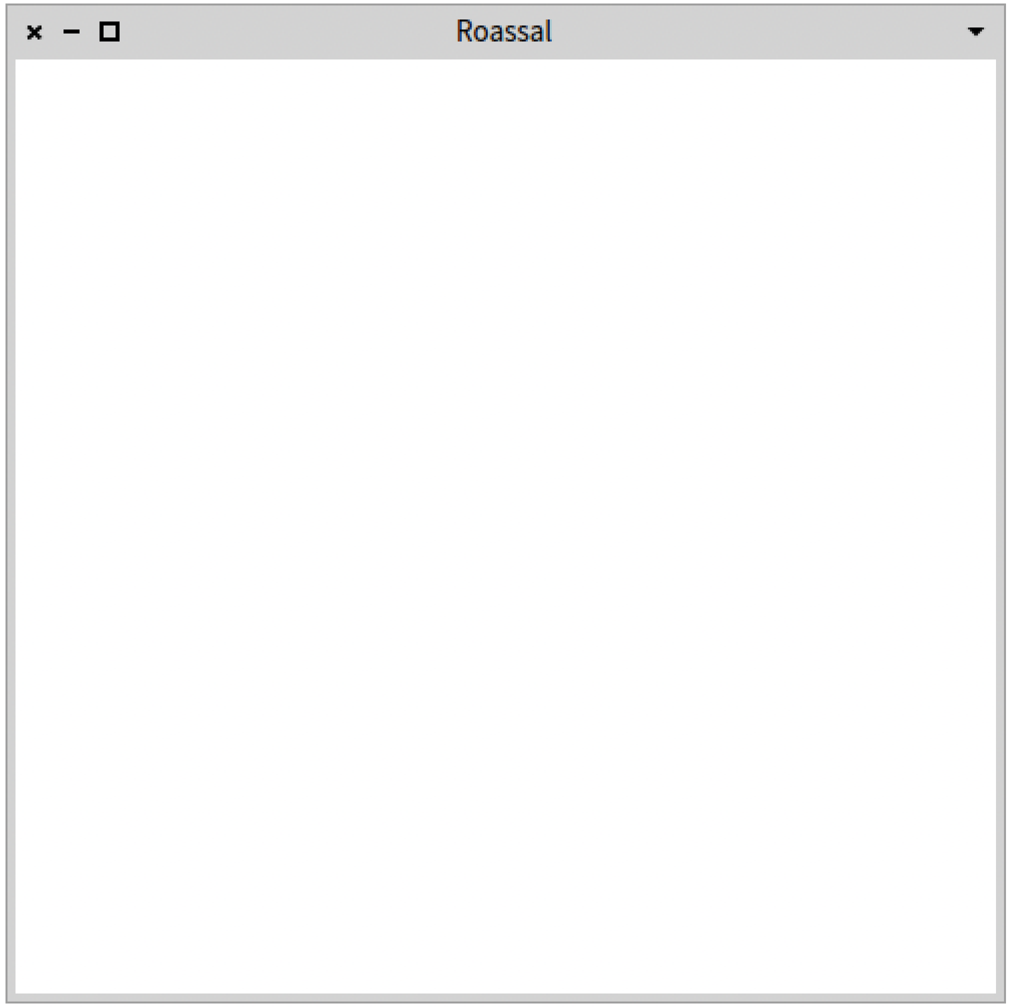
Roassal - Main components

- Canvas
- Shapes
- Layouts
- Color Palettes
- Normalizer
- Links
- Interactions
- Events

The canvas

- Contains and displays shapes
- The origine (0@0) is located at the center

```
canvas := RSCanvas new.
canvas open
```



Shapes

- Subclasses of `RSShape`
  - Rectangle : `RSBox`
  - Cercle : `RSCircle`
  - Ligne : `RSLine`
  - Texte : `RSLabel`
  - etc.

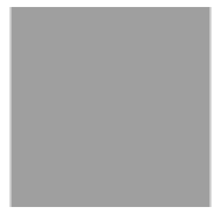
Shapes

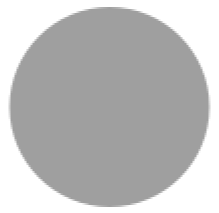
- Rectangle

```
rect := RSBox new.
```

- Cercle

```
circle := RSCircle new.
```

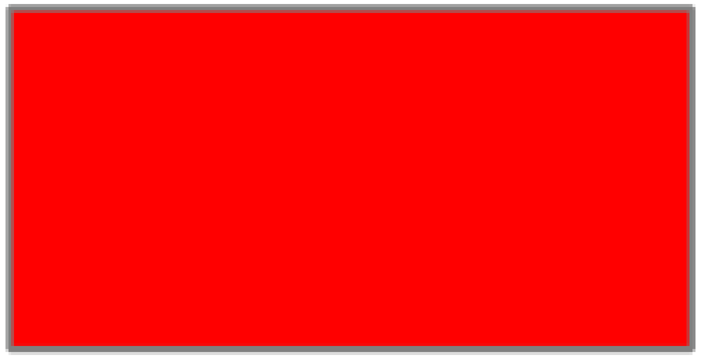




Edit the shapes

Properties : `#height:` , `#width:` , `#size:` , `#color:` , `#border:` , `#borderColor:`

```
rect height: 50;
     width: 100;
     color: Color red;
     border: RSBorder new.
```



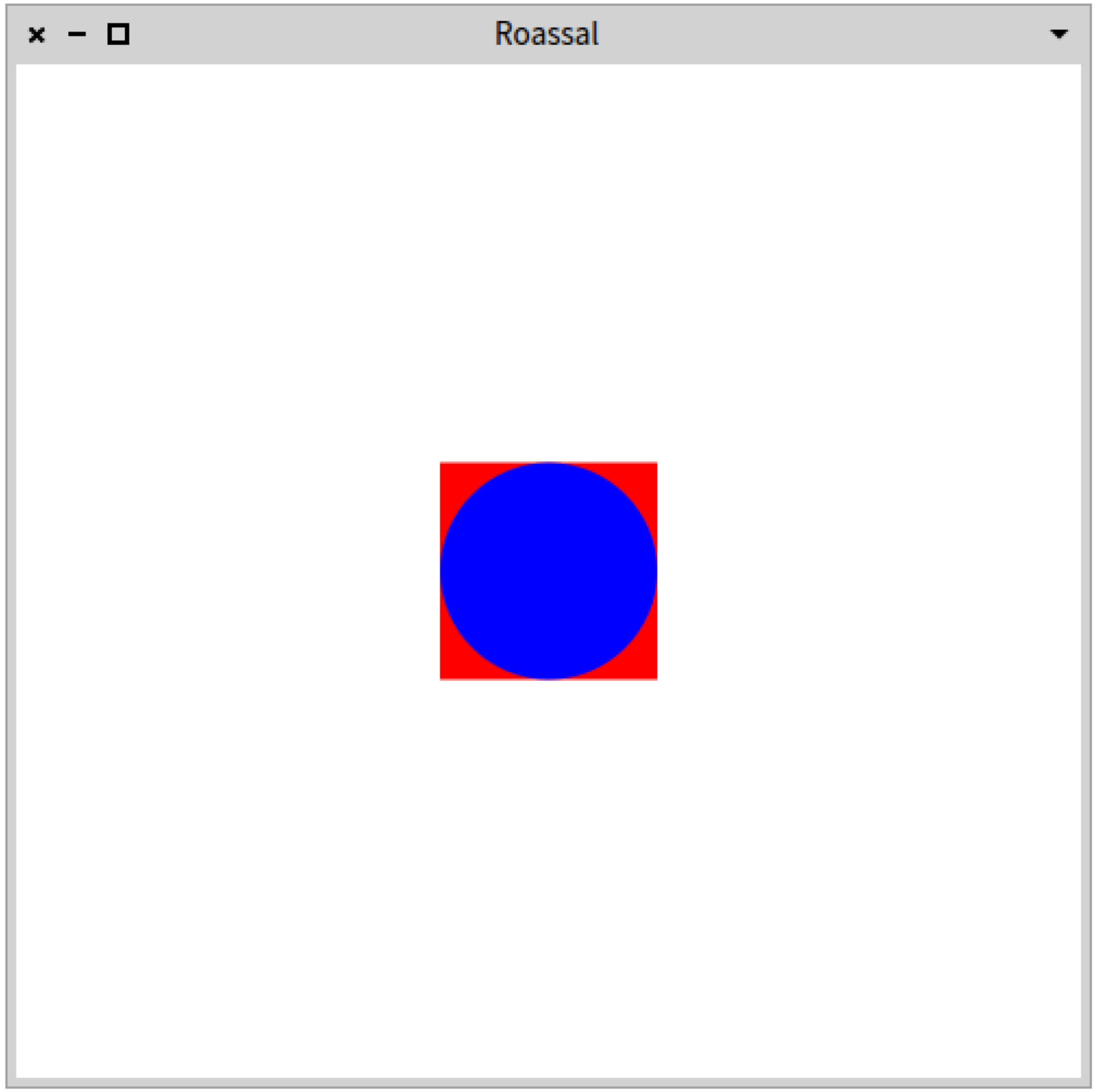
Shapes

- Associate a user data to a shape (model)
  - A shape can represent a Pharo object
  - Actions to a shape according to the represented object

```
shape model: 1
```

Shapes in the canvas

```
canvas add: rect.
canvas add: circle.
"canvas addAll: {rect . circle}"
canvas open
```



Application

For every method of the package `Roassal3-Builders` classes, create a circle that describes it.
The result must be a set of shapes.
Add these shapes to a canvas and open the canvas.

Layouts

Allows to manage the disposition of these objects in the canvas.

The subclasses of the class `RSLayout` :

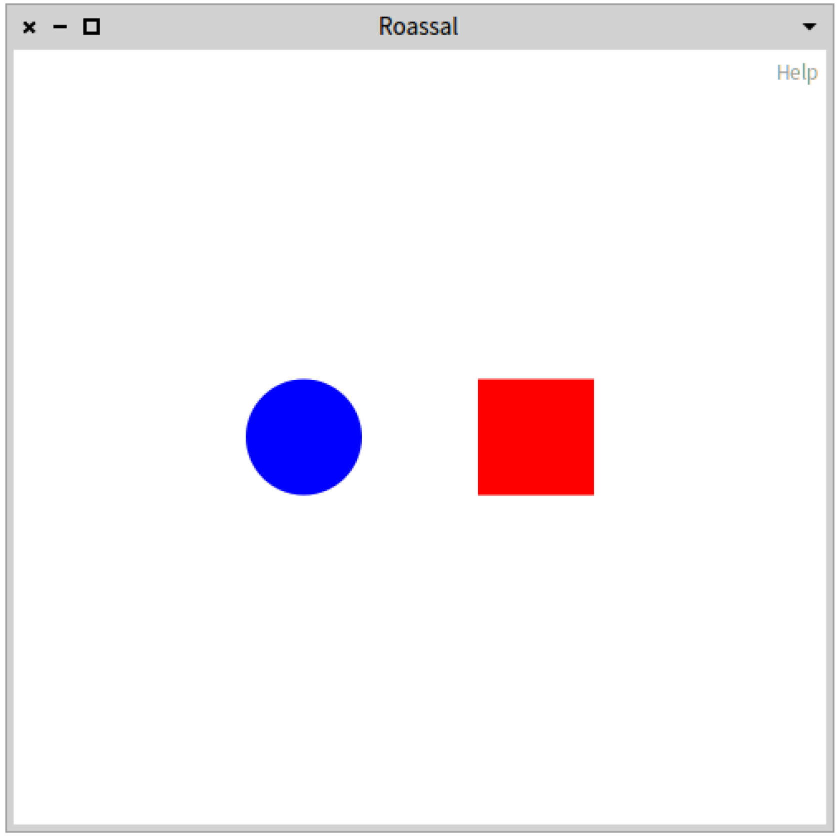
- Horizontal display `RSHorizontalLineLayout`
- Vertical display `RSVerticalLineLayout`
- Hierarchical display `RSTreeLayout`
- Circular display `RSCircleLayout`
- etc.

```
RSAnimationExamples new example33AnimatedLayout open
```

Layouts

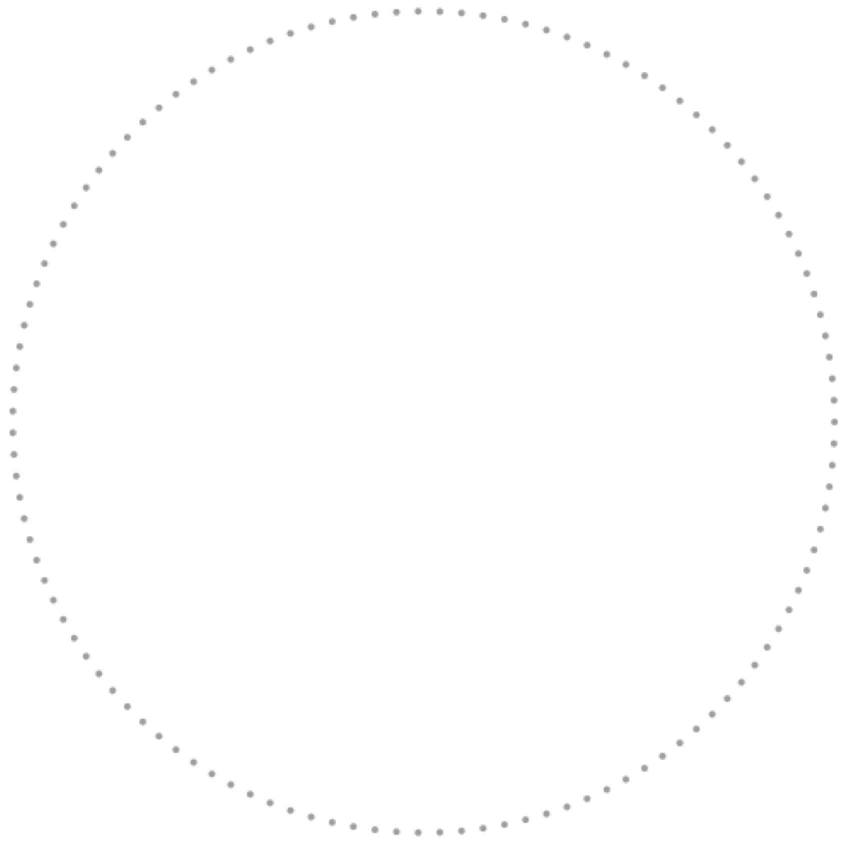
- Horizontal display
  `RSHorizontalLineLayout`

```
RSHorizontalLineLayout on: {circle . rect}.
canvas add: circle;
  add: rect.
canvas open
```



Application

- Add a layout to the canvas shapes.

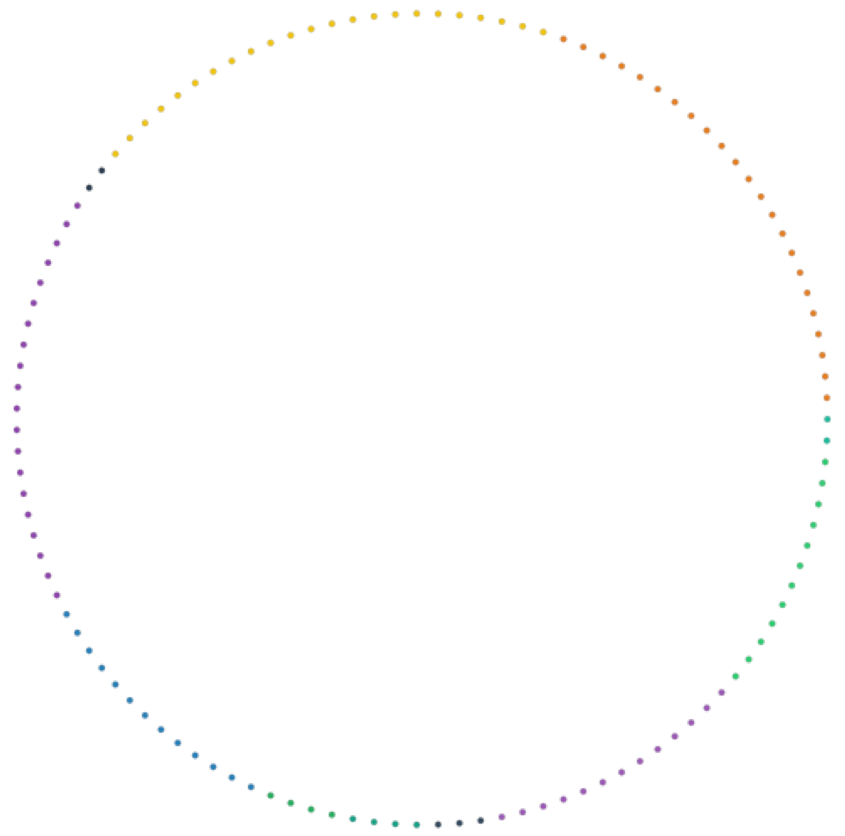


Color Palettes

- Subclasses of the `RSColorPalette` class
- Offers multiple palettes
  - `RSDivergingColorPalette`, `RSQualitativeColorPalette`, `RSSequentialColorPalette`

Application

- Attribute to each class a color describing it.
- Color each methods shape according to its class (methods of the same class must have the same color)
    - To do so, select a color palette with the same number of classes.



Normalizer

- is a tool or mechanism that maps data values from their original range to a standardized range. Scales can be set, useful for transformation (e.g., logarithmic).

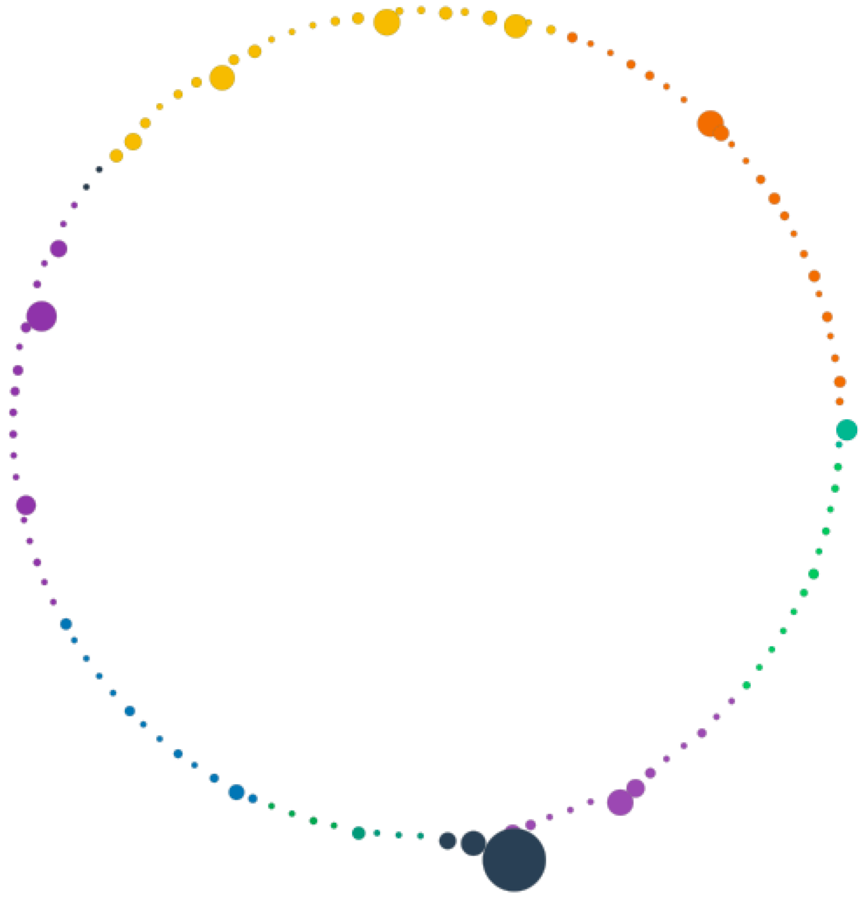
Normalizer

Example:

```
c := RSCanvas new.

(30 to: 100 by: 5) do: [ :nb |
        c add: (RSEllipse new size: nb; model: nb) ].

RSNormalizer size
        shapes: c shapes;
        normalize: #yourself.

RSNormalizer color
        shapes: c shapes;
        normalize: #yourself.
RSFlowLayout on: c shapes.
c shapes @ RSPopup.
c @ RSCanvasController
```

Application

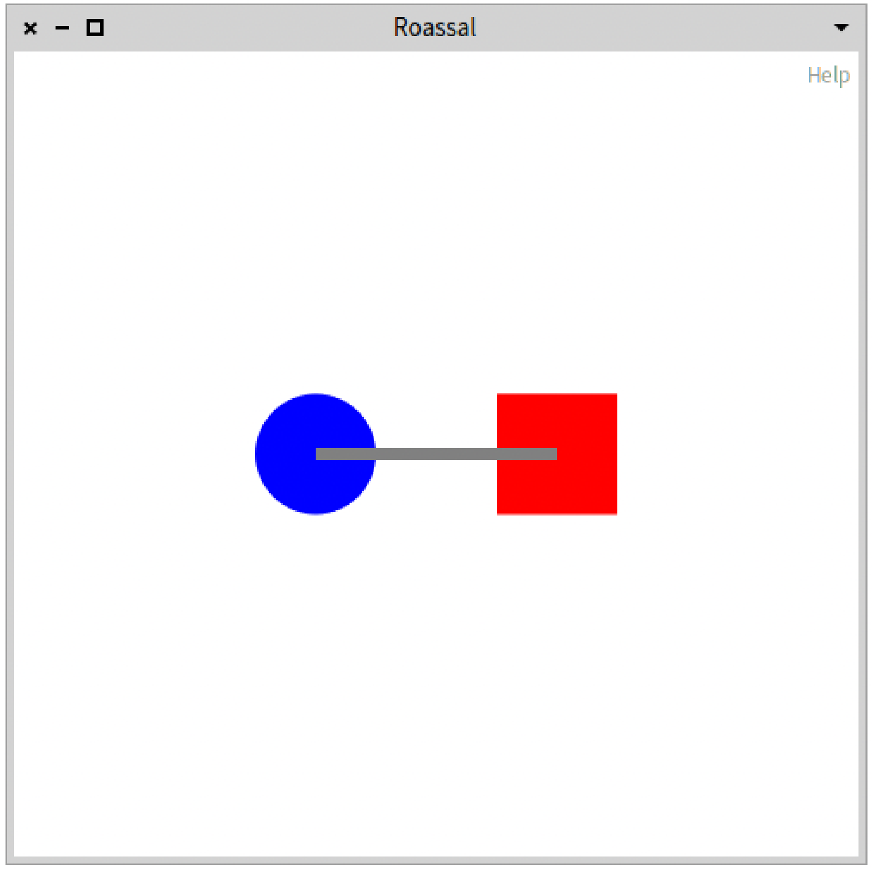
- Normalize the shape of each method according to its number of lines of code.



Links

- Links shapes

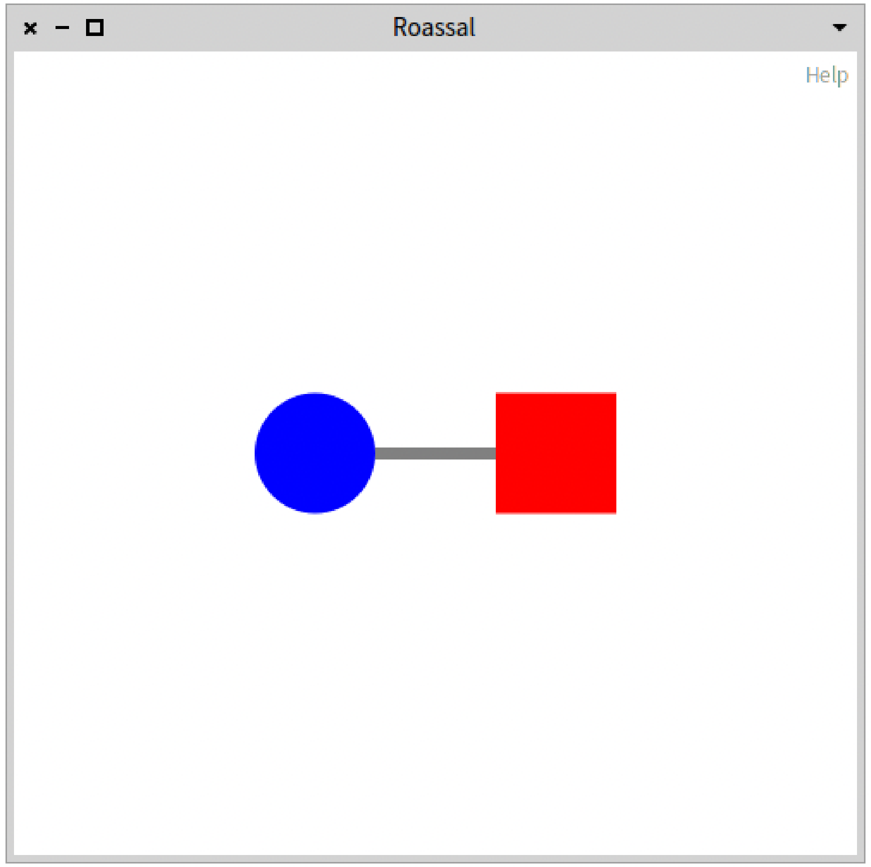
```
line := RSLine new.
line from: rect;
  to: circle.
canvas add: line.
```



Links

- With a different attachment point

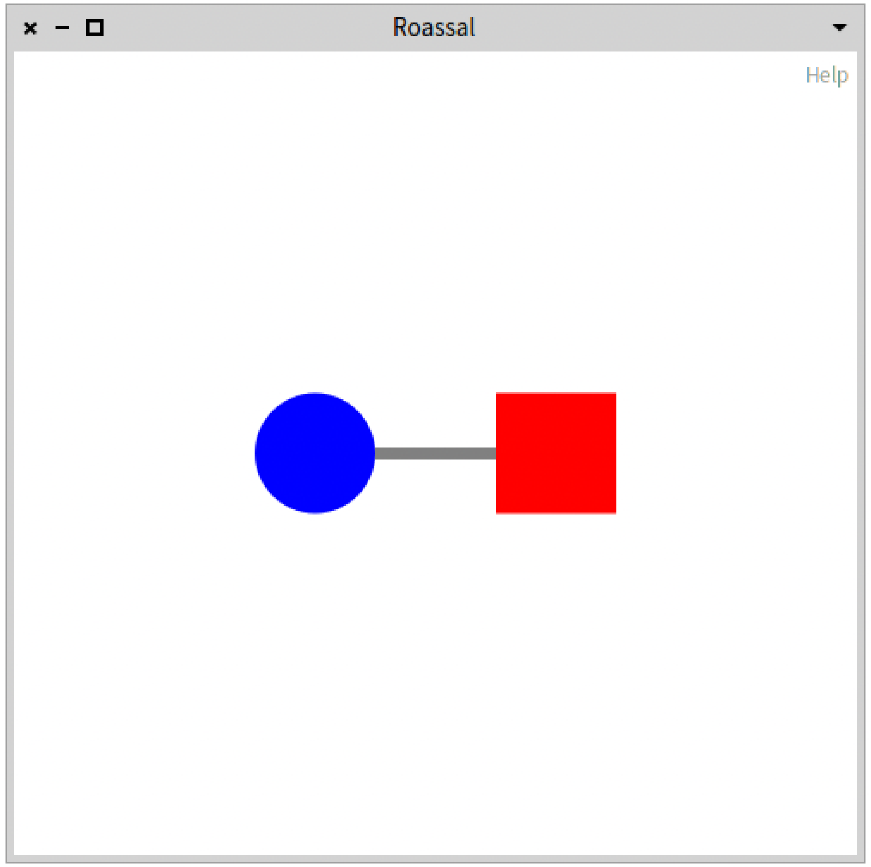
```
line := RSLine new.
line withBorderAttachPoint;
  from: rect;
  to: circle.
canvas add: line.
```



Links

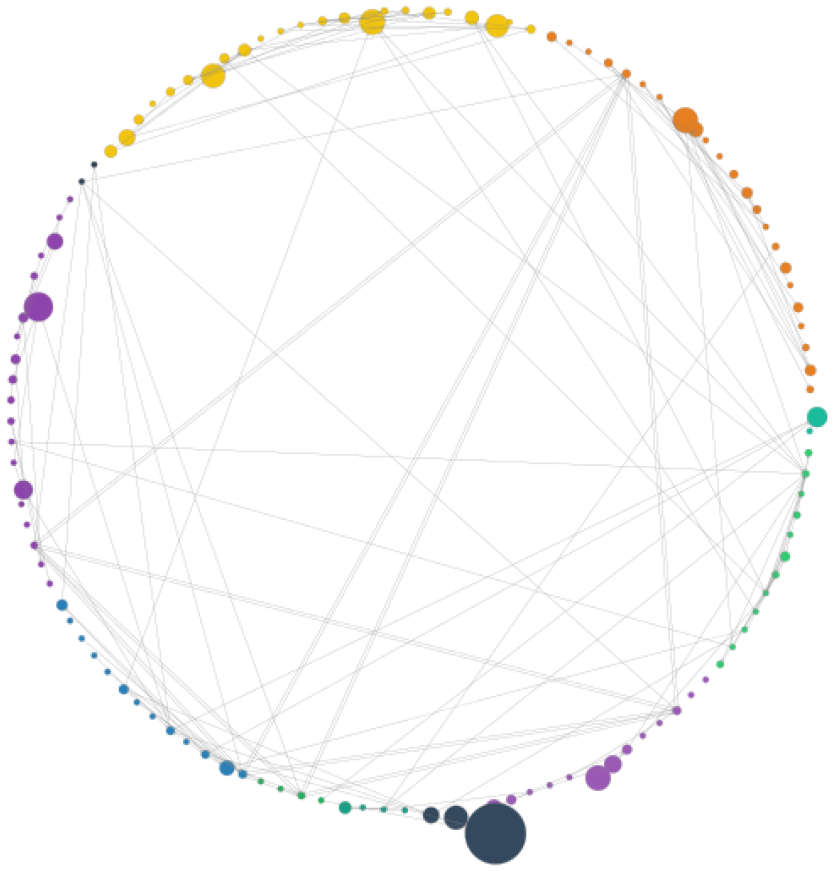
- With a builder

```
RSLineBuilder line
  canvas: c;
  connectFrom: [ :model | ].
```



Application

- Connect methods that call each other



Interactions

Subclasses of the class `RSInteraction` :

- Draggable `RSDraggable`
- Popup `RSPopup`
- Highlight `RSHighlightable`
- Menu `RSMenuActivable`
- etc.

```
shape @ RSPopup "Display the name of the model when a mouse hover"
```

Application

Add an interaction to the methods shapes:

- Make all shapes draggable.
- Create a popup when a mouse hover the shape that displays the name of the method class, the method name, number of lines of code, and the number of senders.

Events

- Subclasses of the class `RSEvent`.
  - `RSMouseClick`, `RSMouseEnter`, `RSKeyDown`, etc.

```
shape on: RSEvent do: [ :evt | "Action à réaliser" ]
```

Application

- Add events to each shape, allowing to inspect the method when a mouse click.
- Color the metdhod and its senders in red when a mouse hover.
- Revert when mouse leaves the shape.

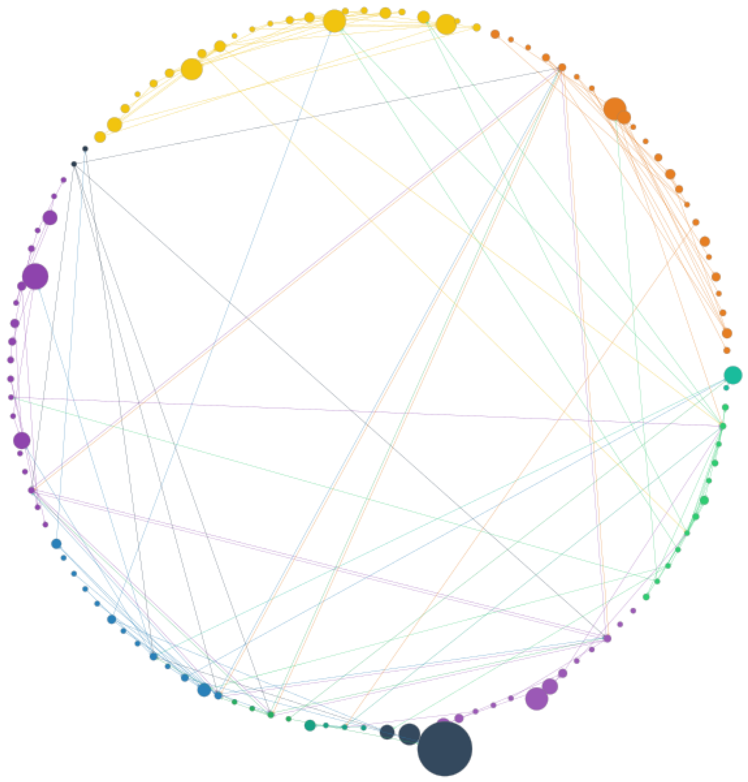
Some Roassal tools

- Exporters (pdf, svg, png, ...)

```
RSPNGExporter new
                canvas: self;
    filname: 'myCanvas';
    export
```

Application

- Color edges the same as their sources.
- Add a green border for abstract methods.



Ressources

- Github (MIT)
  - https://github.com/ObjectProfile/Roassal3
- Documentation
  - https://github.com/ObjectProfile/Roassal3Documentation
- Exporters
  - https://github.com/ObjectProfile/Roassal3Exporters
- Agile Visualization
  - http://agilevisualization.com/