

SCRIPTING INTERACTIVE VISUALIZATIONS  
EXTENDING THE ENVIRONMENT  
Milton Mamani 02/03/2022 Lille, France

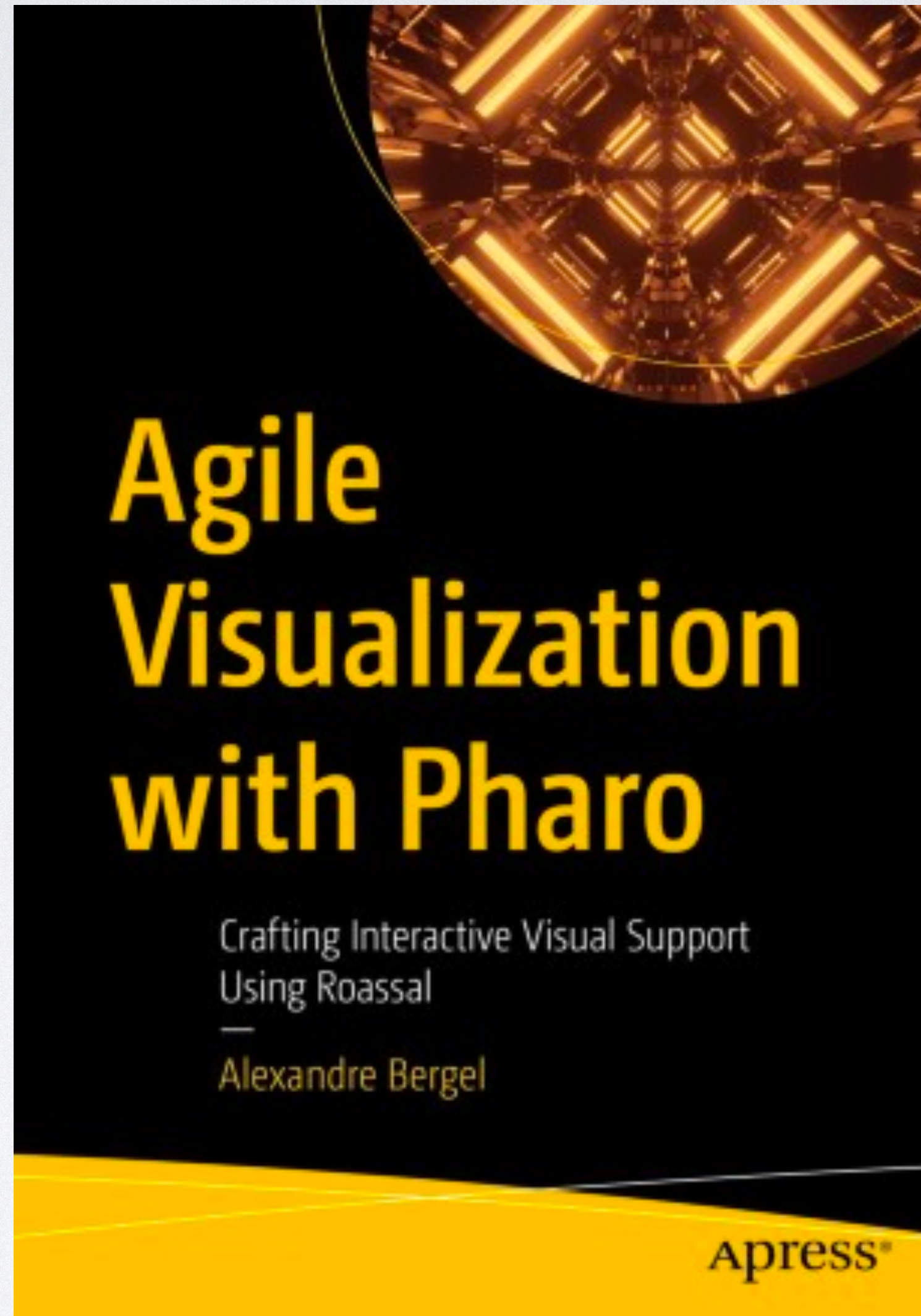
# WHO AM I?

- Milton Mamani Torres
- Bolivian
- Rmod Software Engineer
- Roassal developer for 7 years



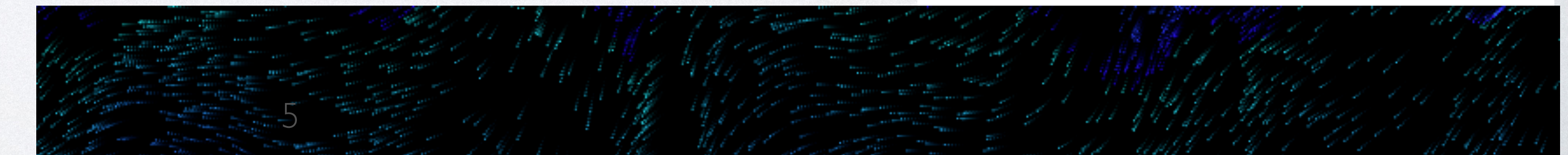
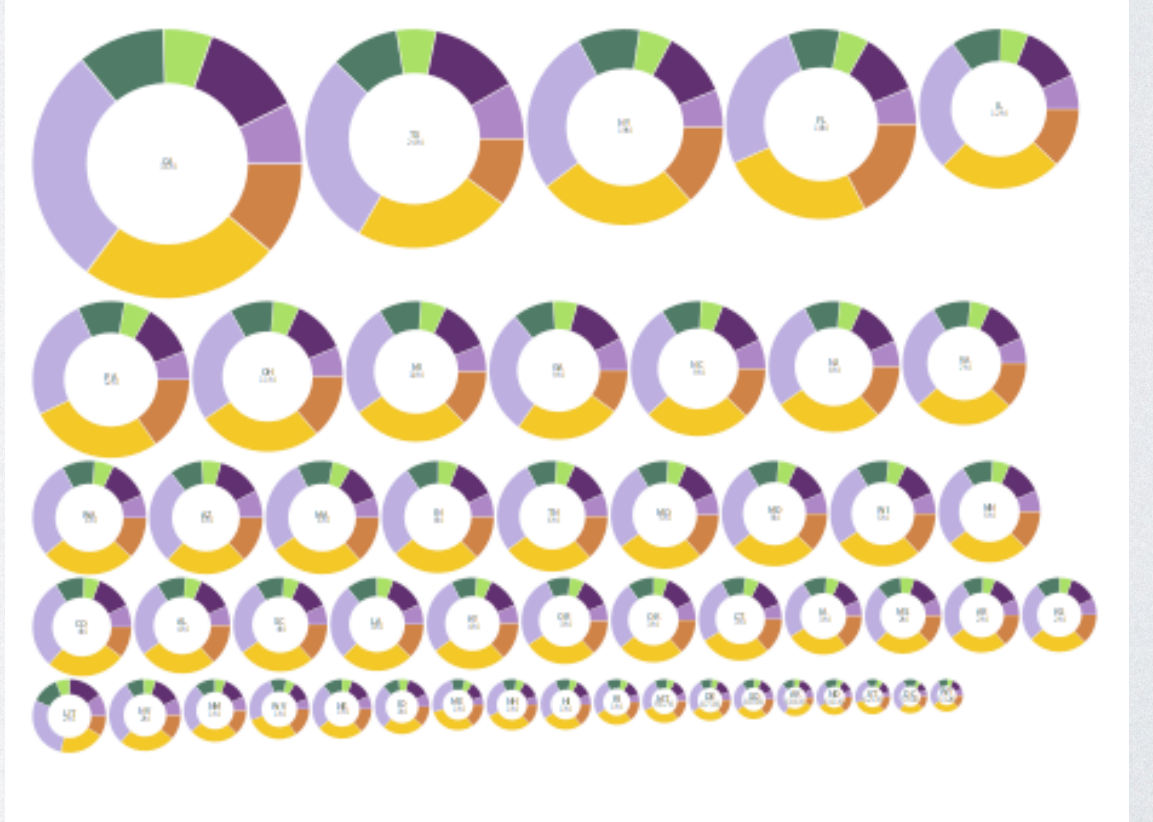
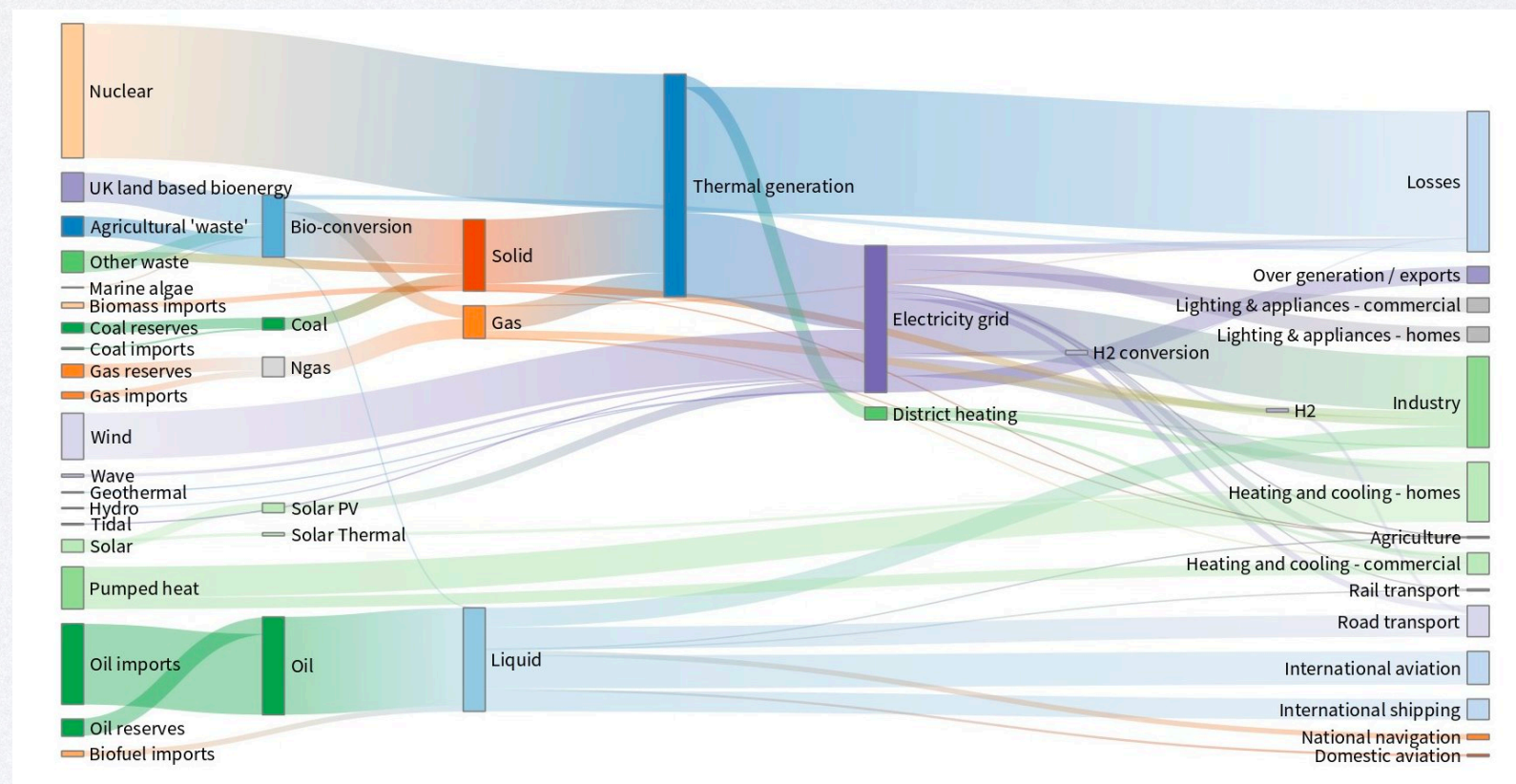
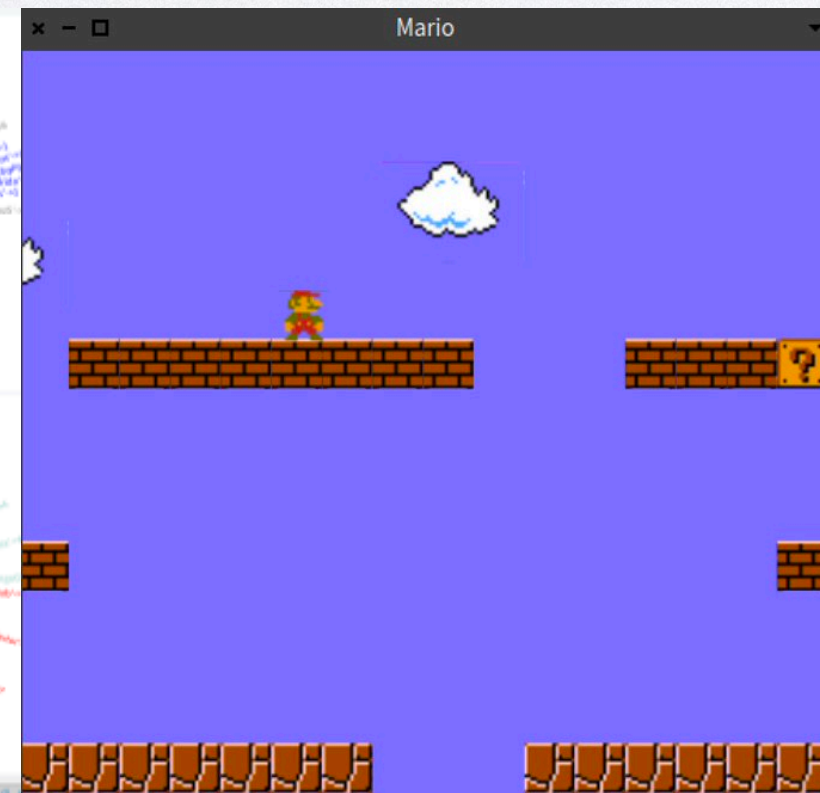
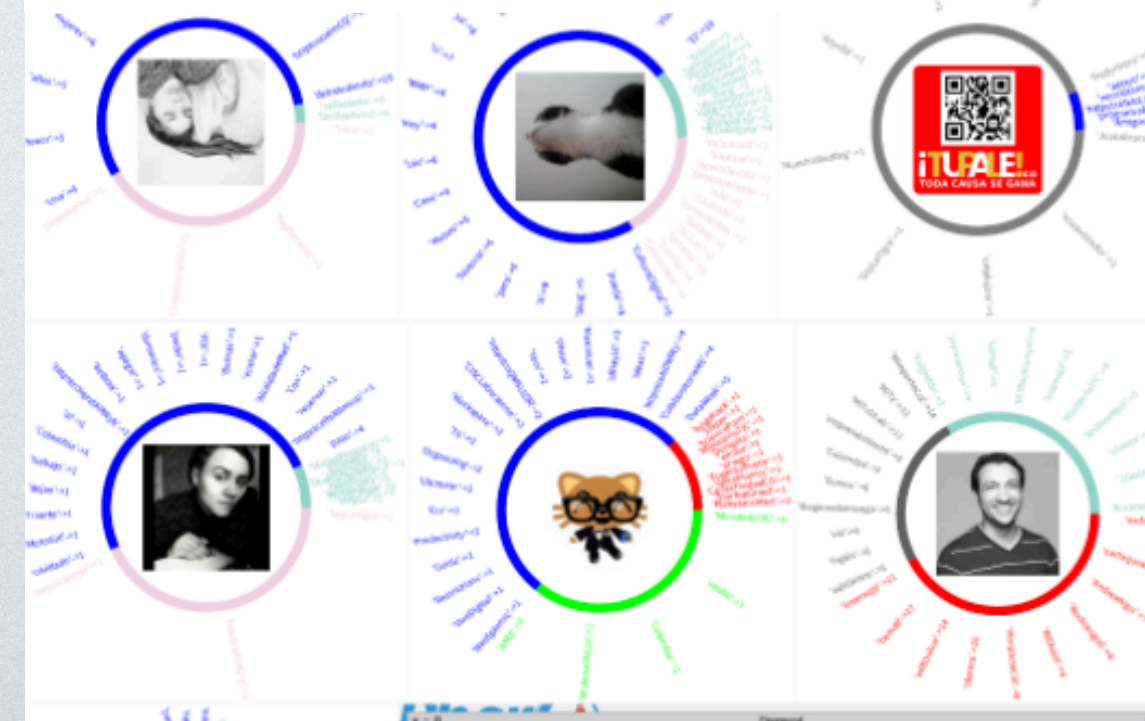
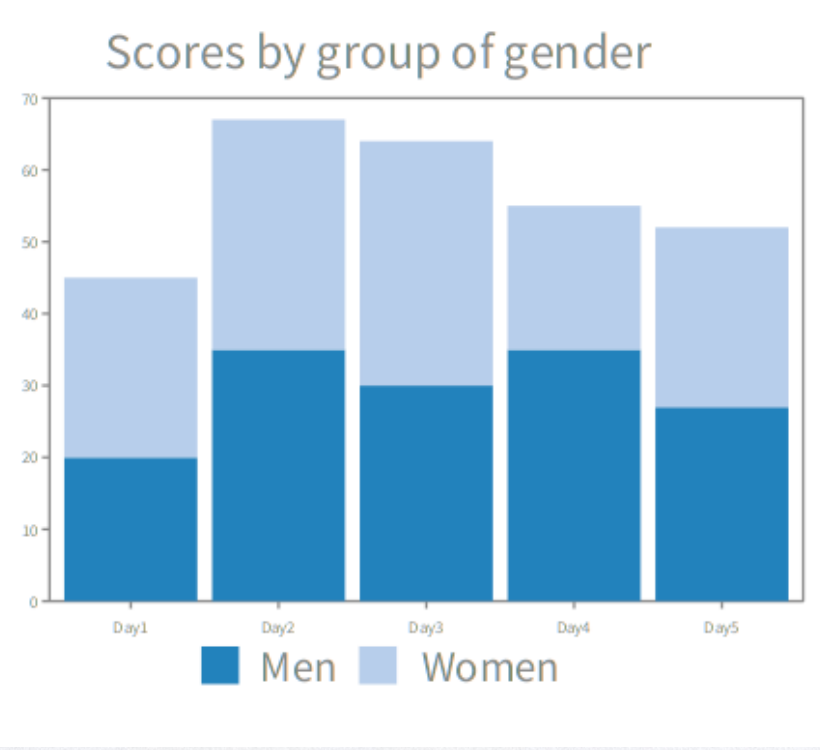
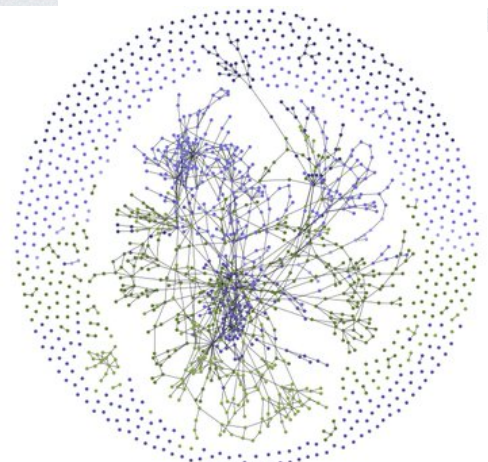
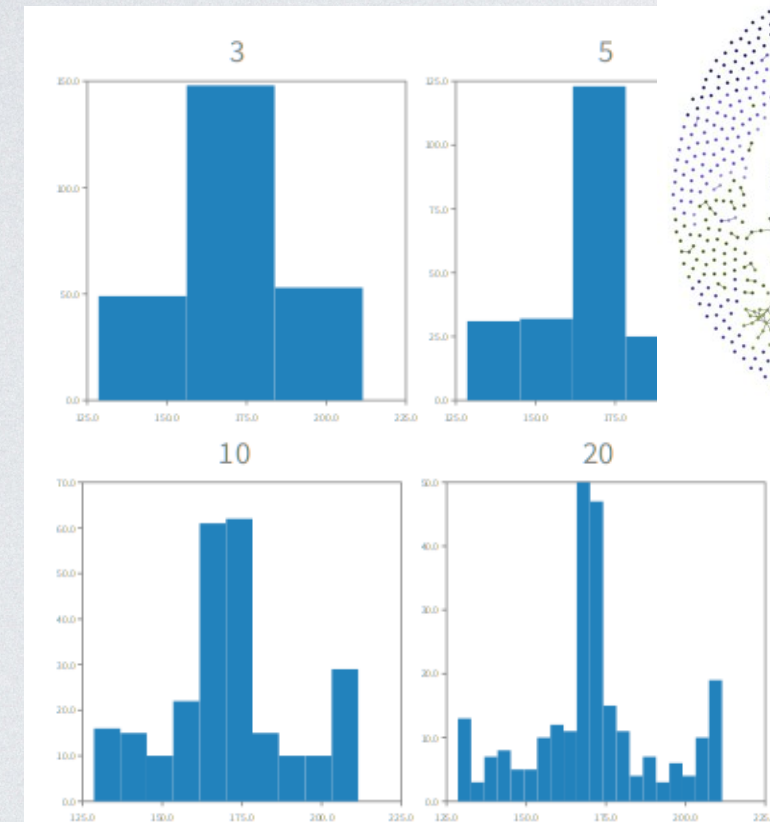
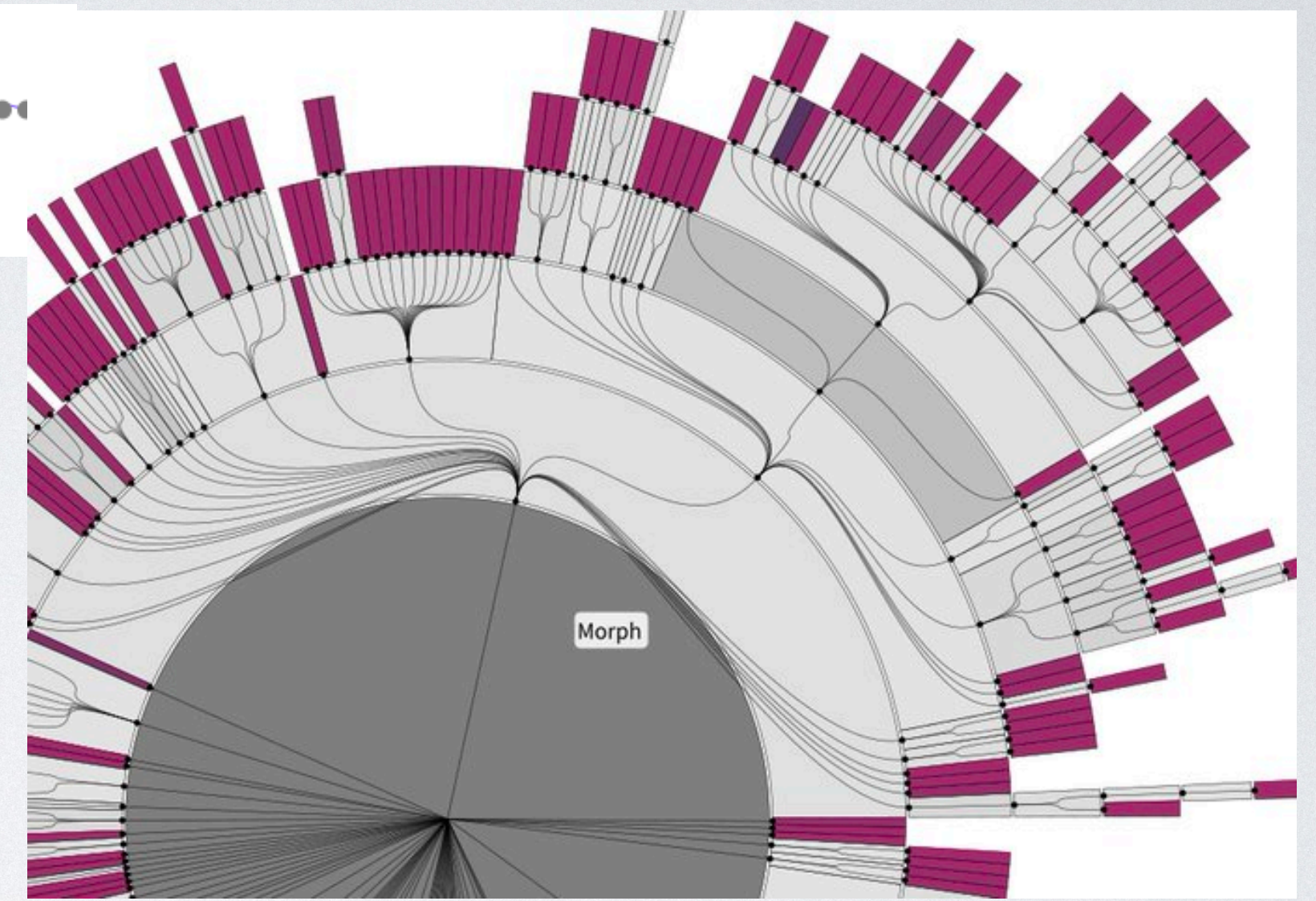
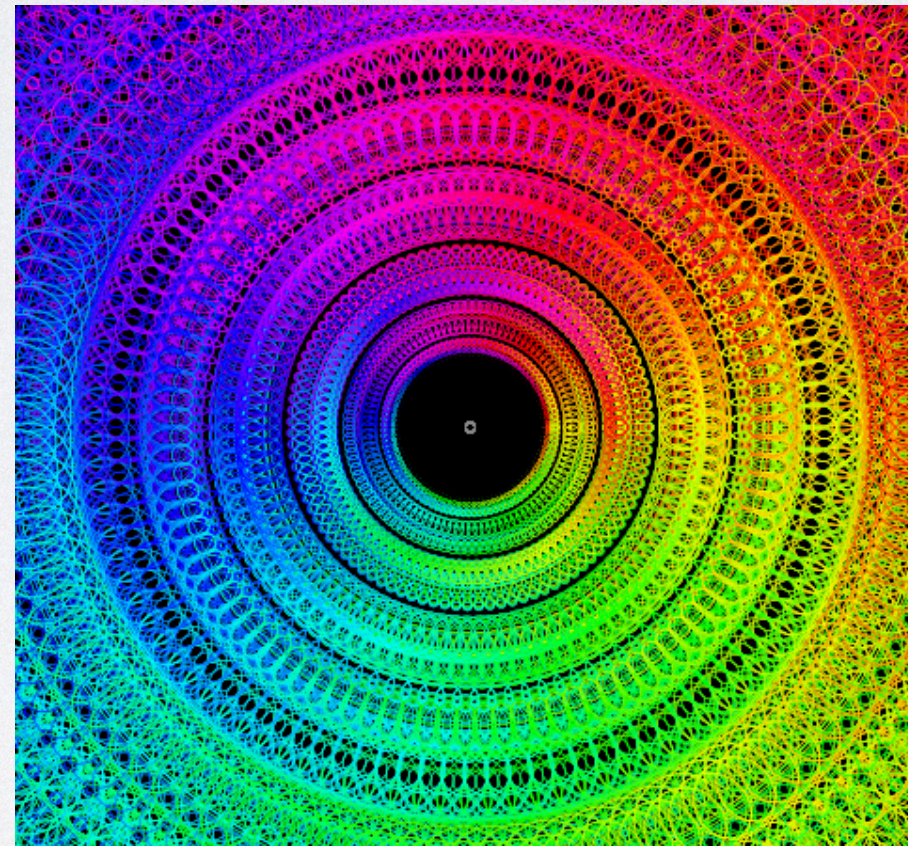
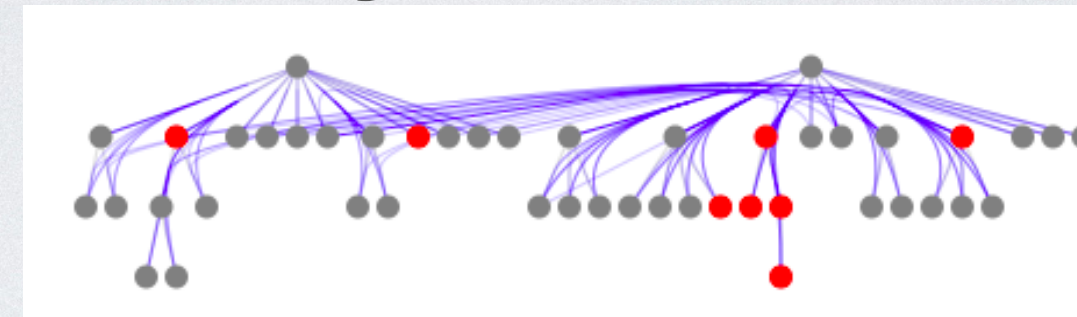
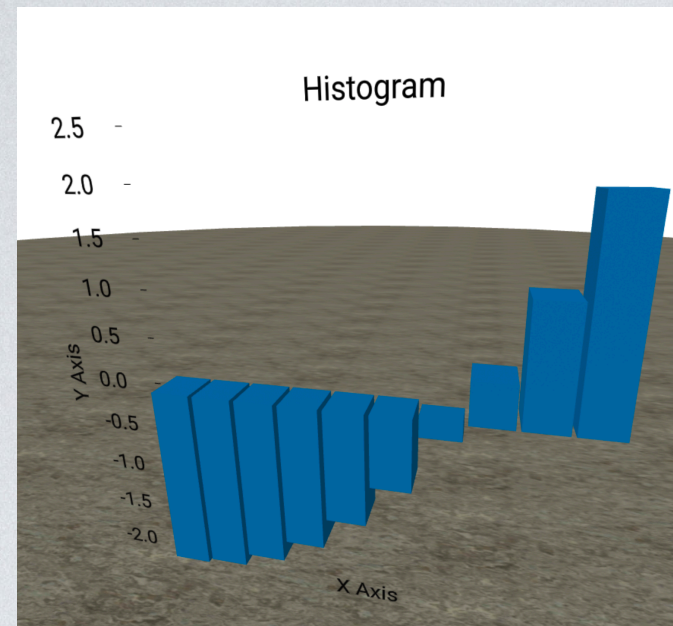
# ROASSAL

- Named in honor of Clement Roassal.
- Created by Alexandre Bergel as Roassal, then Roassal2 and finally Roassal3.
- Roassal is a versatile visualization framework for developing dedicated advanced interaction visualization.
- Roassal uses Cairo vector graphics as backend, it can be exported as SVG, PNG, PDF, and MP4.
- Main repository <https://github.com/ObjectProfile/Roassal3>
- Exporters repository <https://github.com/ObjectProfile/Roassal3Exporters>



- <https://link.springer.com/book/10.1007/978-1-4842-7161-2>

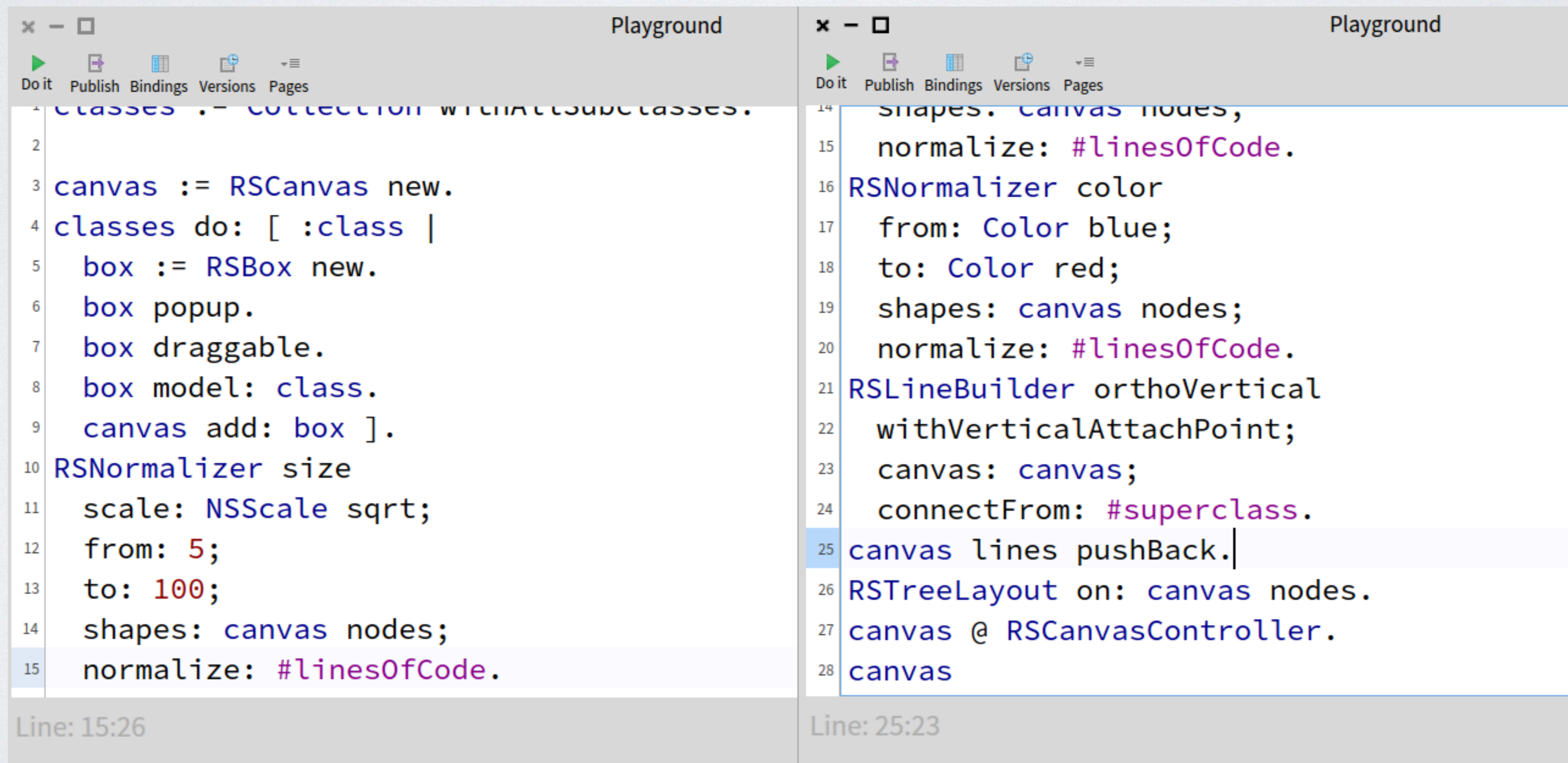
# PROJECTS



# SCRIPT DEMO

# NAVIGATION

- From the script view, I convert it into ...



The image shows two side-by-side screenshots of a code editor window titled "Playground". The left screenshot shows a script view with the following code:

```
1 classes := collection withAllSubclasses.  
2  
3 canvas := RSCanvas new.  
4 classes do: [ :class |  
5   box := RSBox new.  
6   box popup.  
7   box draggable.  
8   box model: class.  
9   canvas add: box ].  
10 RSNormalizer size  
11   scale: NSScale sqrt;  
12   from: 5;  
13   to: 100;  
14   shapes: canvas nodes;  
15   normalize: #linesOfCode.
```

The right screenshot shows the same code converted into a class-based structure:

```
14 shapes: canvas nodes,  
15   normalize: #linesOfCode.  
16 RSNormalizer color  
17   from: Color blue;  
18   to: Color red;  
19   shapes: canvas nodes;  
20   normalize: #linesOfCode.  
21 RSLineBuilder orthoVertical  
22   withVerticalAttachPoint;  
23   canvas: canvas;  
24   connectFrom: #superclass.  
25 canvas lines pushBack.|  
26 RSTreeLayout on: canvas nodes.  
27 canvas @ RSCanvasController.  
28 canvas
```

At the bottom of each screenshot, the current cursor position is displayed: "Line: 15:26" on the left and "Line: 25:23" on the right.

# NAVIGATION

- A new tool for the system. With this new tool I can navigate into my data model

The screenshot displays a software development environment titled "Playground" with three tabs open: "a Collection class (Collect...", "a SequenceableCollection cl...", and "a ByteArray class (ByteArray)". The leftmost tab is active and shows a "Collection" class with a "Hierarchy" view. The "Hierarchy" view is a tree diagram where nodes are represented by colored squares (blue, purple, red, magenta) connected by lines. A "self" node is visible at the bottom of the hierarchy. The interface includes a toolbar with icons for "Do it", "Publish", "Bindings", "Versions", and "Pages". The status bar at the bottom left shows "Line: 1:11" and a "+" icon. The bottom center of the window has a small icon set.



# NAVIGATION

- It is possible to create new visualizations with all objects, for example: an array with its histogram

The screenshot shows a Jupyter Notebook Playground interface. The main area displays a code cell with the following code:

```
1 # (1 2 3 4 5 6 5 6 7 5 8 8 9 )
```

The output of the code cell is a histogram. The x-axis represents the values from the array (1 to 9), and the y-axis represents the frequency of each value. The histogram shows the following distribution:

Value	Frequency
1	1
2	1
3	1
4	1
5	3
6	2
7	1
8	2
9	1

The histogram is displayed in the 'Histogram' tab of the 'an Array [13 items] (1 2 3 ...)' object. The 'Raw' tab shows the array elements: 1, 2, 3, 4, 5, 6, 5, 6, 7, 5, 8, 8, 9. The 'Breakpoints' and 'Meta' tabs are also visible. The 'an Association (1->(9/5)->1)' object is also shown, with its 'Raw' tab displaying the following data:

Variable	Value
Σ self	1->(9/5)->1
Σ key	1->(9/5)
Σ value	1

# ROASSAL EXAMPLES

# CONCLUSION

- You can interactively design from scratch a new visualization.
- Roassal provides a set of tools(shapes, layouts, interactions, transformation, animations) that allows you create powerful visualizations.
- And with this view you can navigate into your domain.
- And define specific views on your data.
- Roassal-Chart library, is versatile and open to new plots.

THANK YOU!