A stylized lighthouse graphic on the left side of the slide. The lighthouse is composed of several horizontal bands of color: a blue top section, an orange section with a sunburst effect, a red section, and a blue section. The lighthouse is positioned on the left side of the slide, with its light beam extending towards the right.

Toplo, Bloc & Spec

A Graphic Layer for the Present and Future



THALES



Pablo Tesone & Martín Dias - ESUG 2025 - Gdansk

In this presentation:

Pablo Tesone
Pharo Consortium
Engineer



@tesonep 

Martín Dias
Pharo Consortium
Engineer



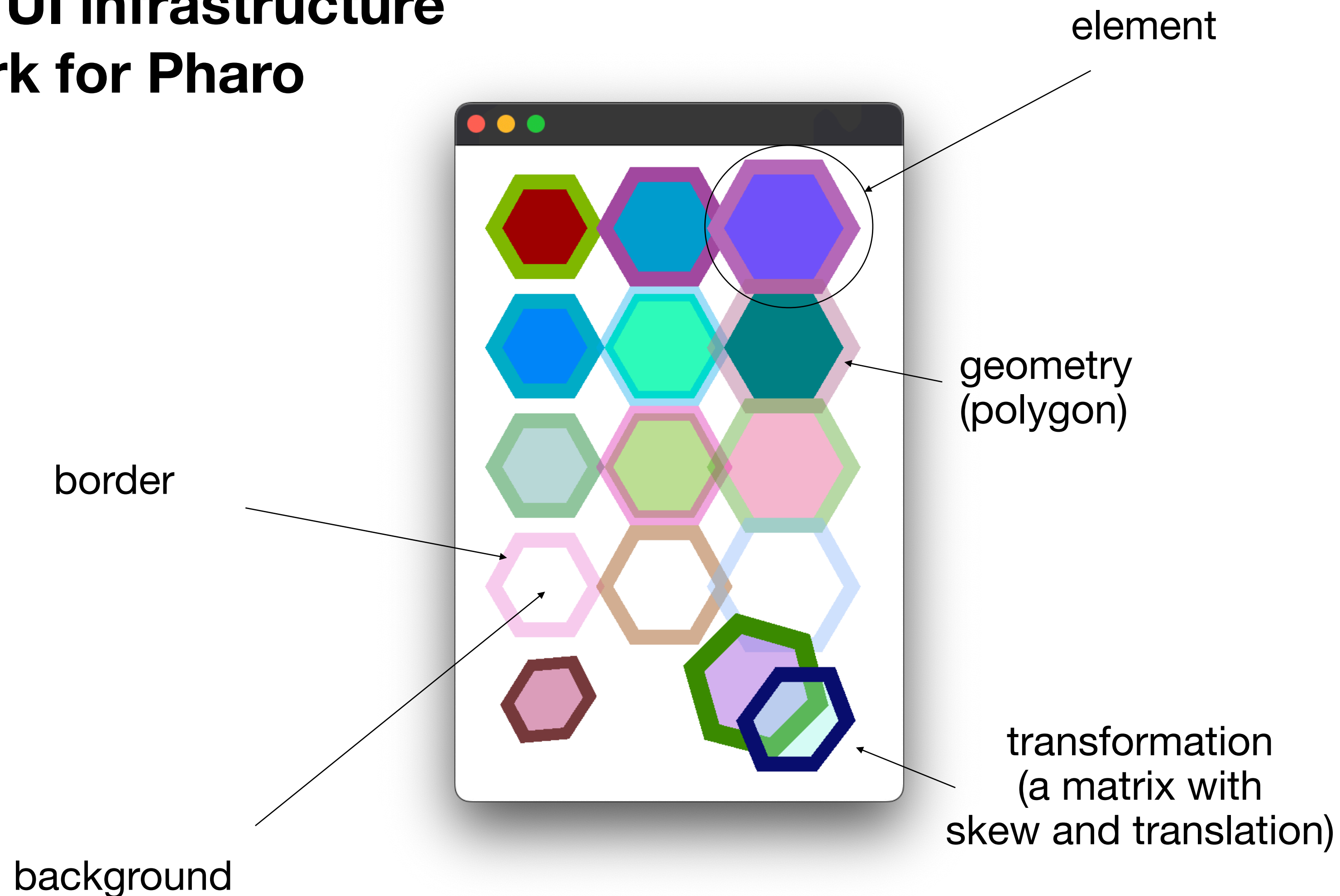
@tinchodias 

Just in the
presentation effort...
a lot of development
behind



What is Bloc?

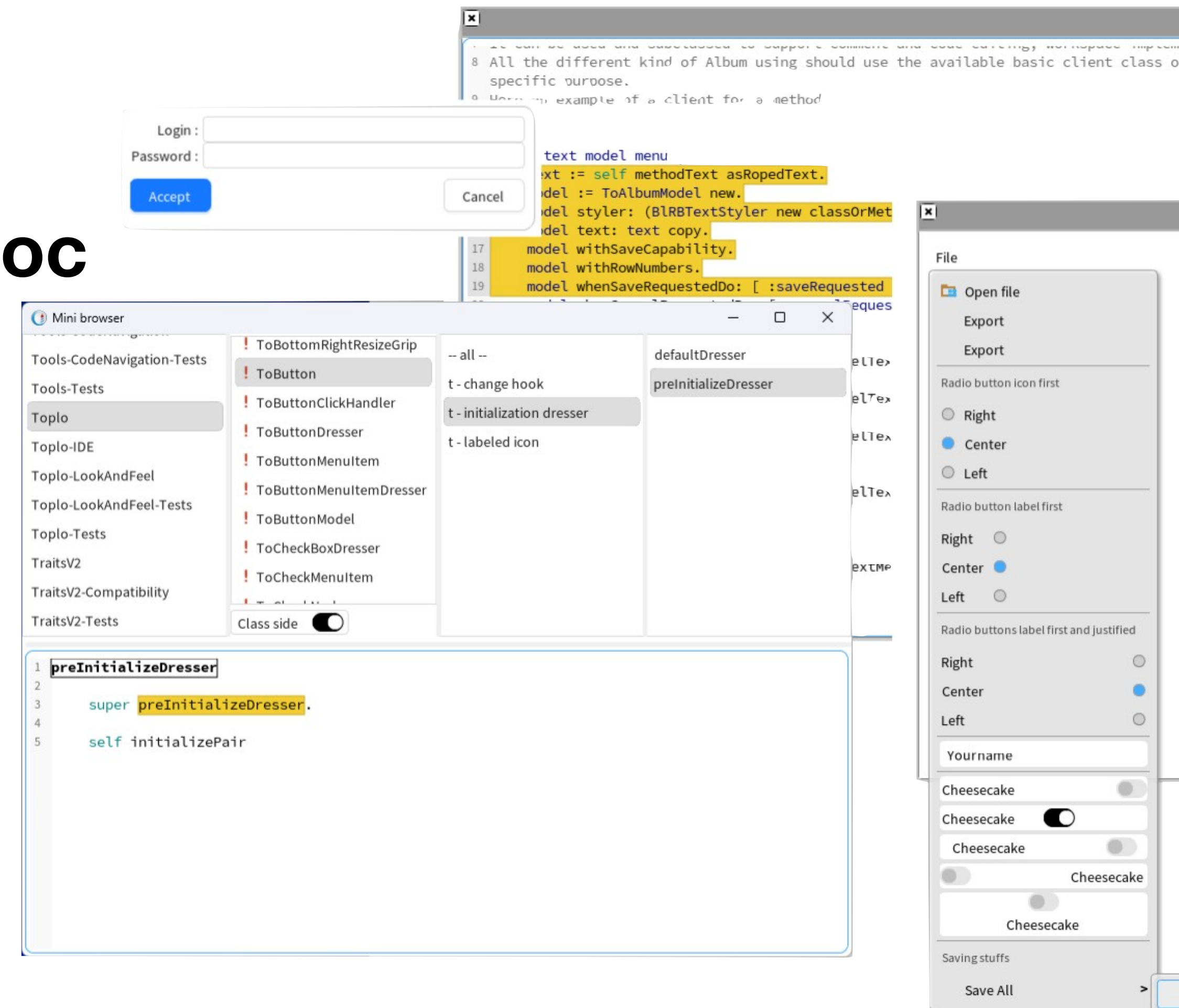
A low-level UI infrastructure & framework for Pharo



What is Toplo?

A widget library on top of Bloc

- No New Revolutionary Concepts
 - Keep it Simple
 - Bloc has many of the features
- Bloc + Element States and Skins
- + 25 Widgets ready to use
- Collaboration with



THALES



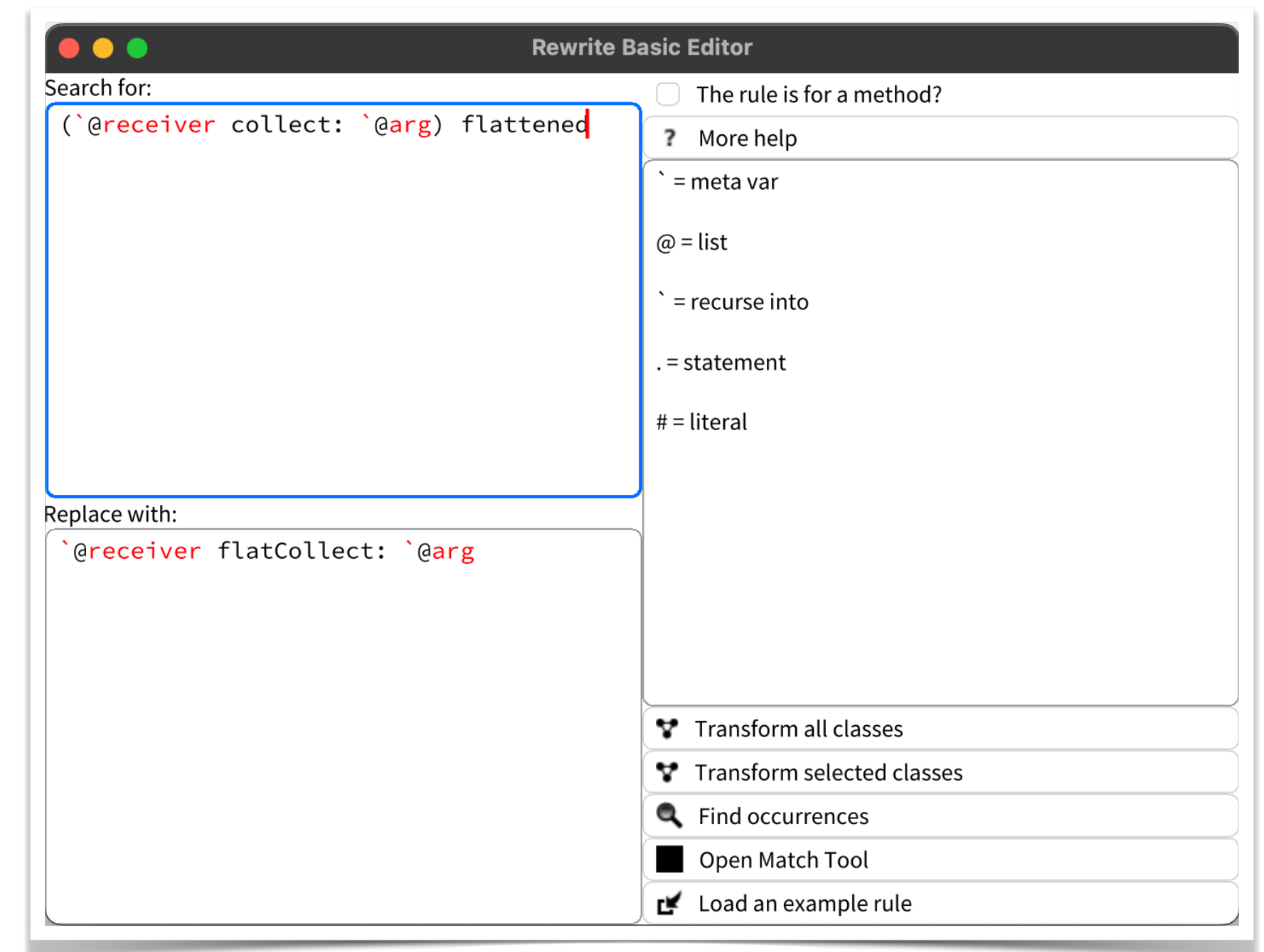
UBO
Université de Bretagne Occidentale



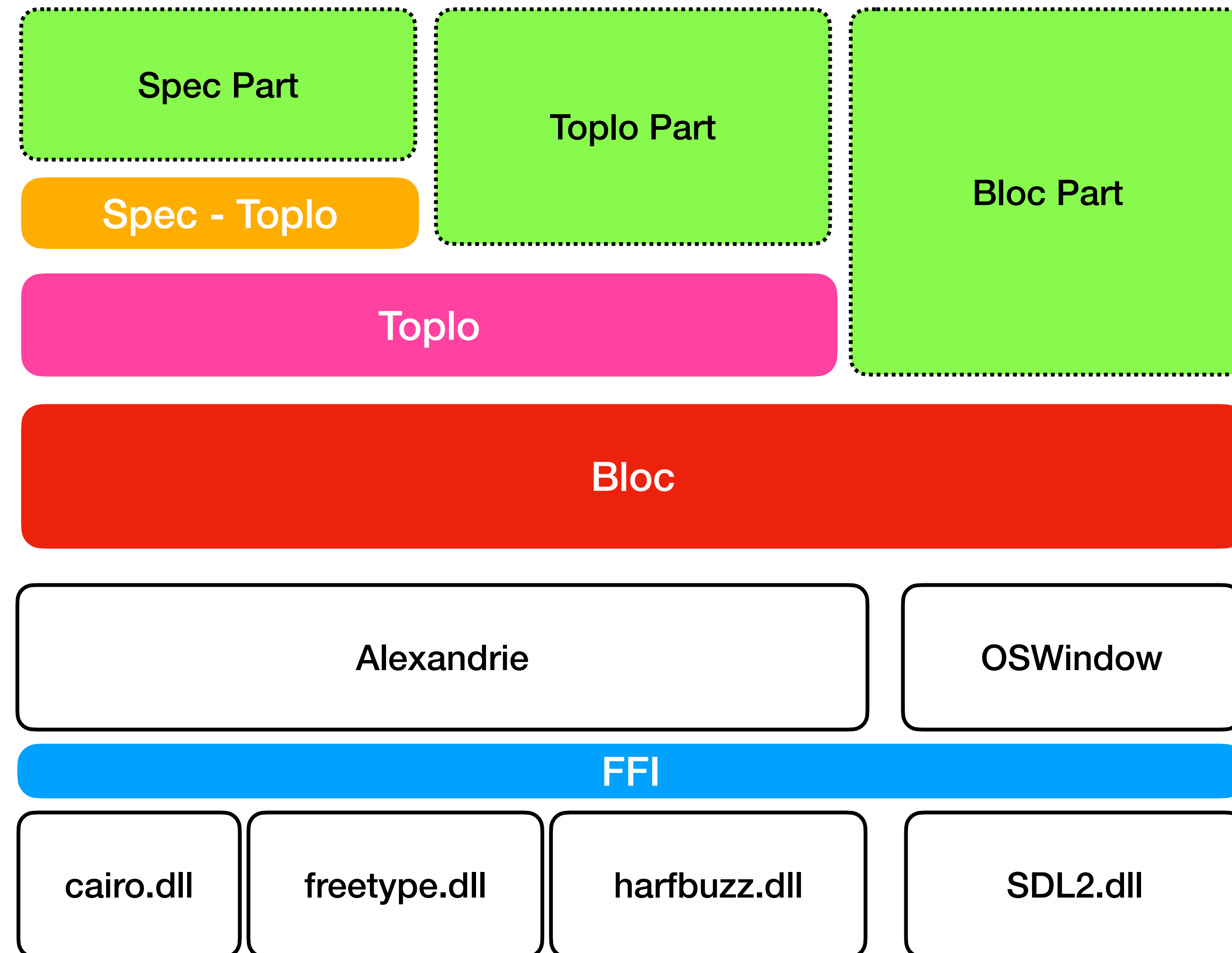
What about Spec?

The power of Toplo, the ease of Spec

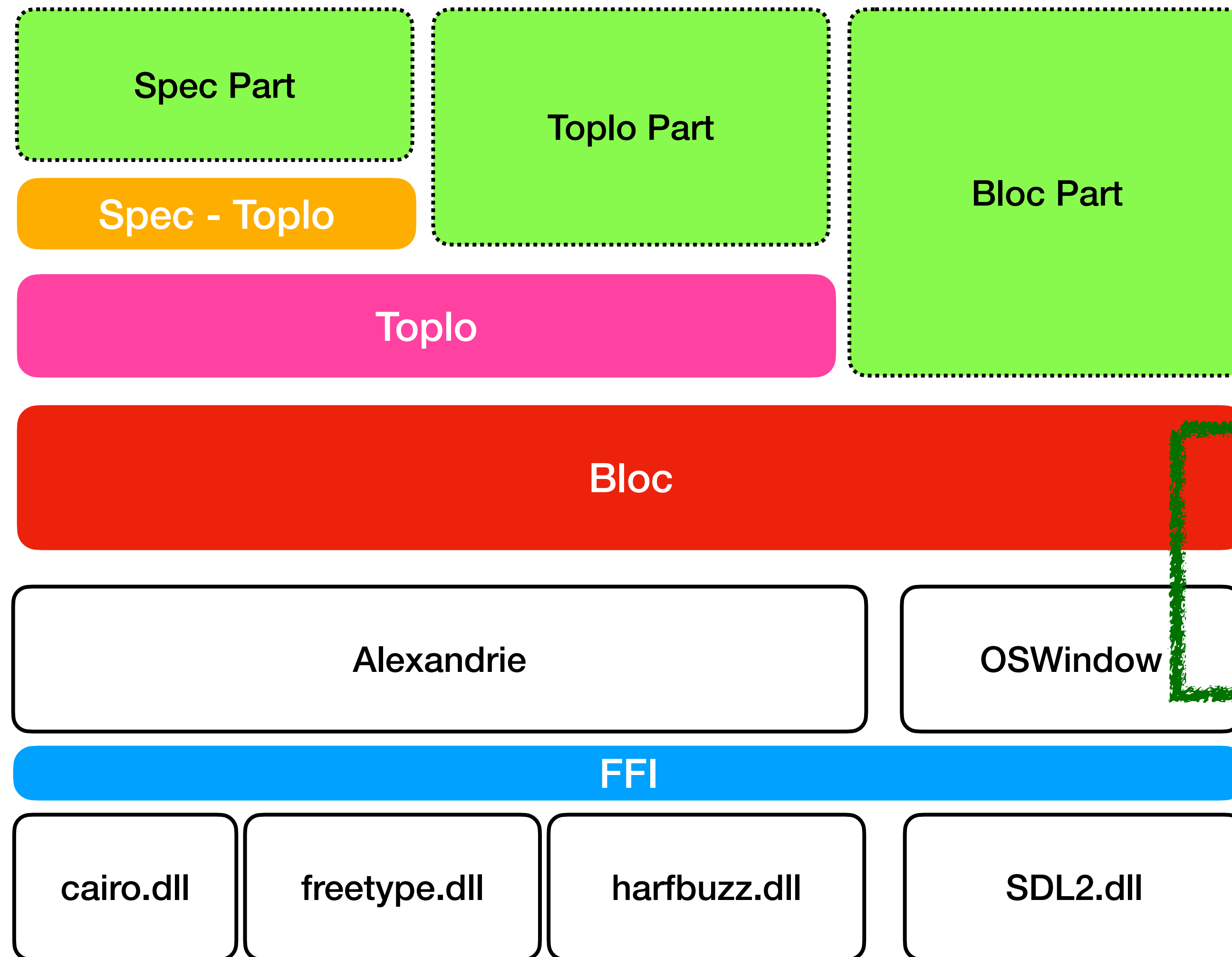
- Toplo backend for Spec
- Switch backend transparently
- Full support



An Application Stack for Everyone



An Application Stack for Everyone



Use what you
need when you
need it



Why Cairo and SDL2 / SDL3?

Simple FFI bindings to C libraries



- Works on all Pharo's platforms
- GPU acceleration (and especially in SDL3)
- Active game-development community



- Stable with active development. Support by gnome community (it's the way to draw custom widgets in GTK 3 and GTK 4).
- Not GPU-optimized but we can use buffering, layer composition and other techniques to mitigate.



Releases

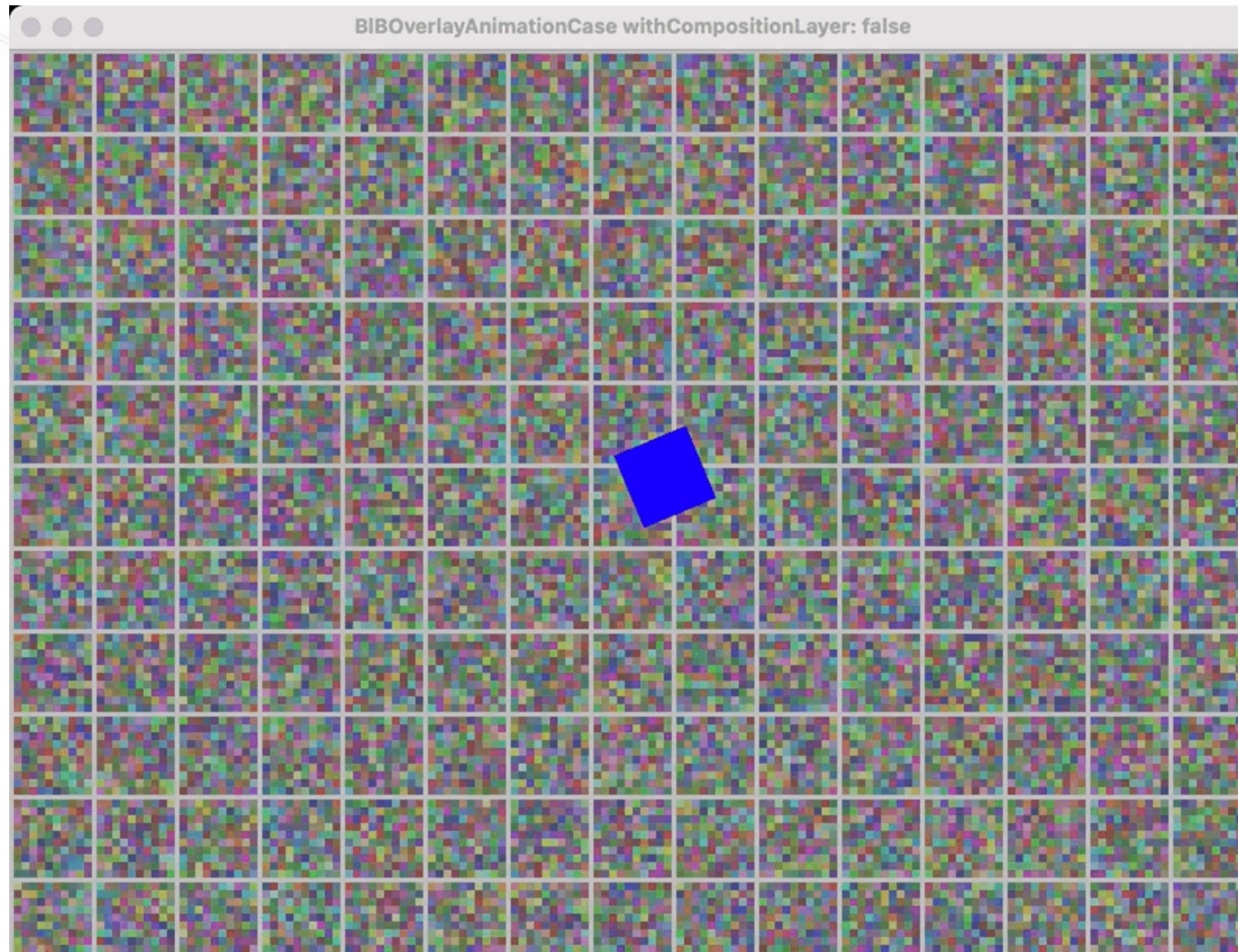
New Versions Available

- Bloc v2.5.0
- Toplo v0.6.0
- Spec-Toplo v0.6.0
- Alexandrie v2.5.0
- Album v0.6.0

Release policy:
~ every 2 months

Bloc

Damaged Areas - Bounds Optimizations

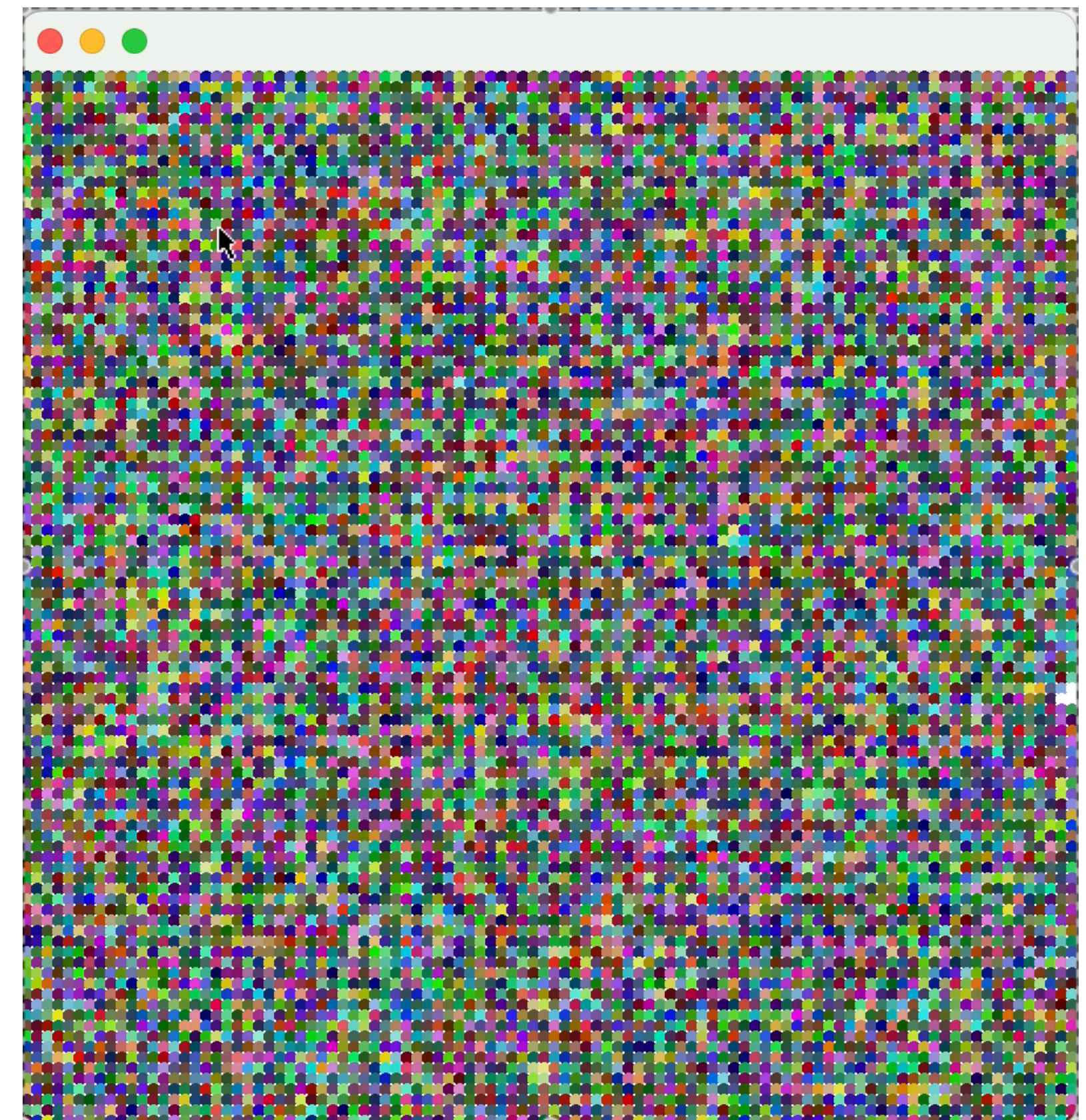


Overlays where
not performant,
we were drawing
all

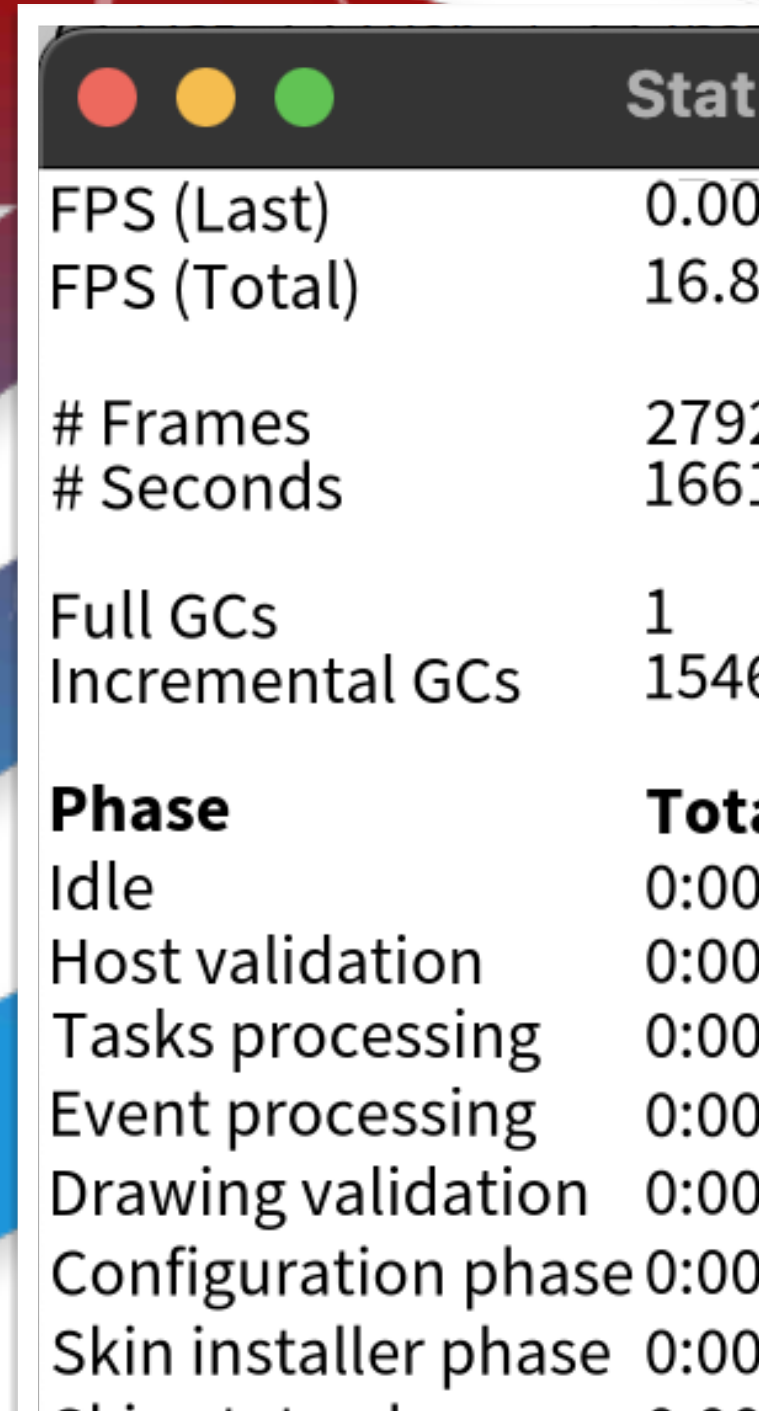
Damaged Areas - Bounds Optimizations

- Overlay benchmarks ~ 15x faster
- Heavy drawing benchmarks ~ 30% improvement
- Other benchmarks ~ 15% improvement

**10k elements in the space,
handling the mouse over
~ 25x faster**



Benchmarks & Metrics

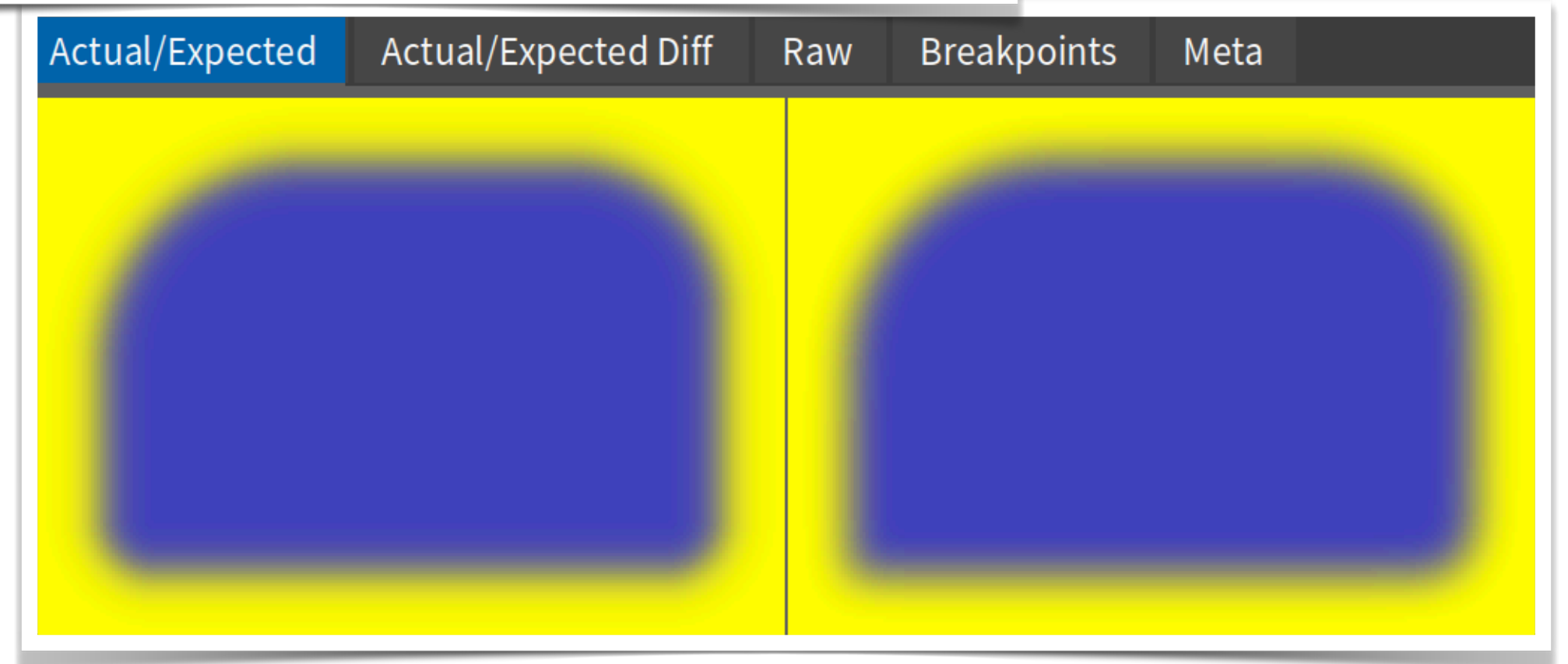
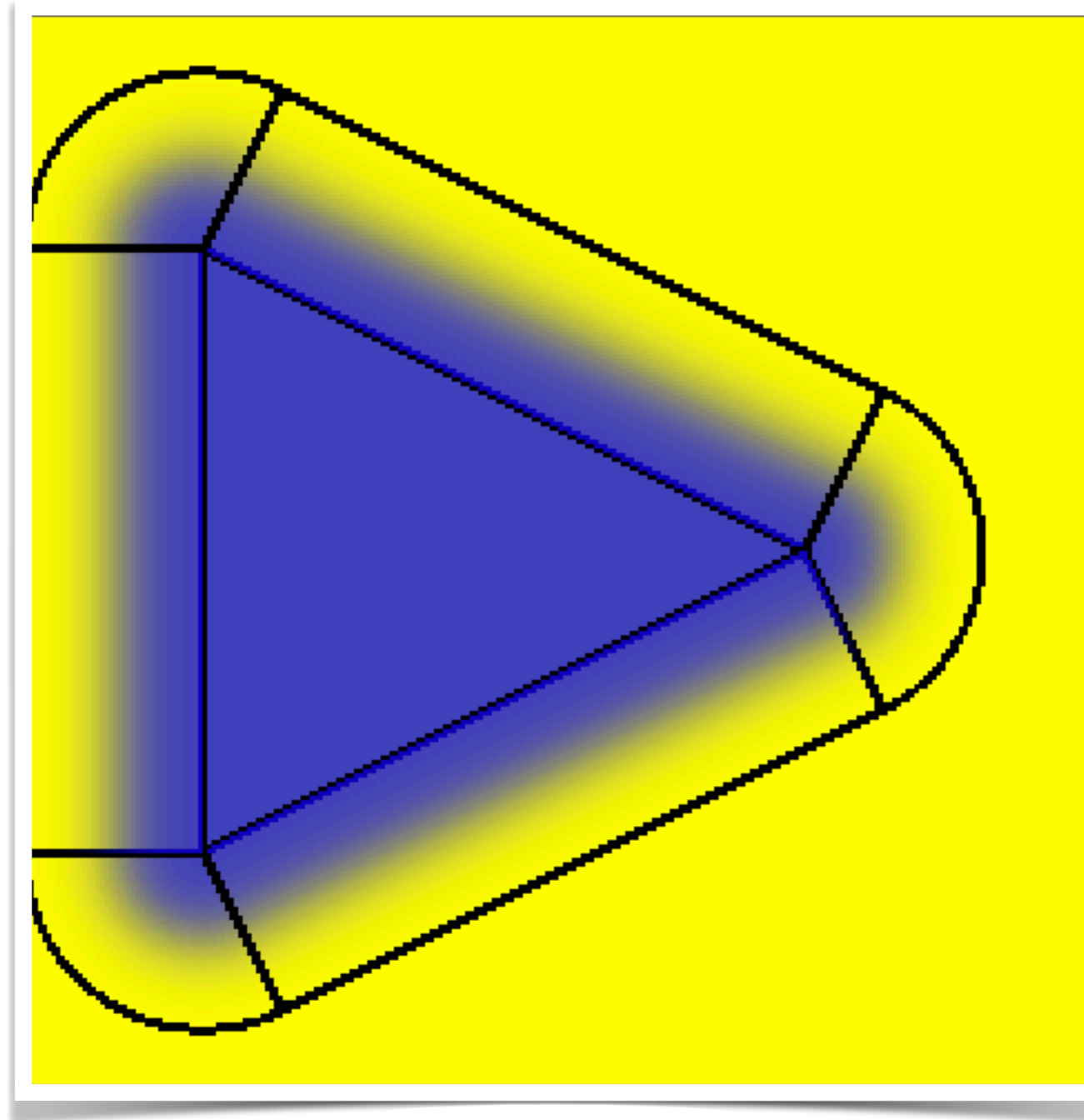


Statistics	
FPS (Last)	0.00
FPS (Total)	16.81
# Frames	27929
# Seconds	1661
Full GCs	1
Incremental GCs	1546
Phase	Total Time (ms)
Idle	0:00:00:00 [0 %]
Host validation	0:00:00:00 [0 %]
Tasks processing	0:00:00:00.088 [0 %]
Event processing	0:00:00:06.828 [42 %]
Drawing validation	0:00:00:00.014 [0 %]
Configuration phase	0:00:00:00.006 [0 %]
Skin installer phase	0:00:00:00 [0 %]
Skin state phase	0:00:00:00.051 [0 %]
Layout	0:00:00:00.762 [4 %]
Drawing	0:00:00:08.226 [51 %]

- 55 Benchmarks
- Running in All platforms
- Automated Execution
- Covering most of the functionalities
- Realtime Measuring Tools

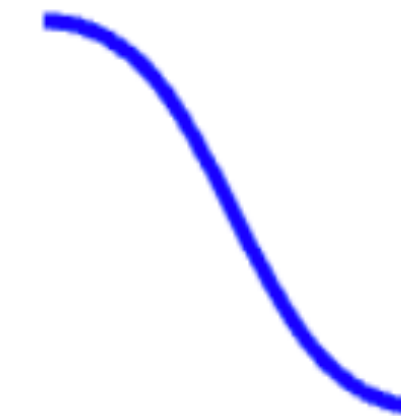
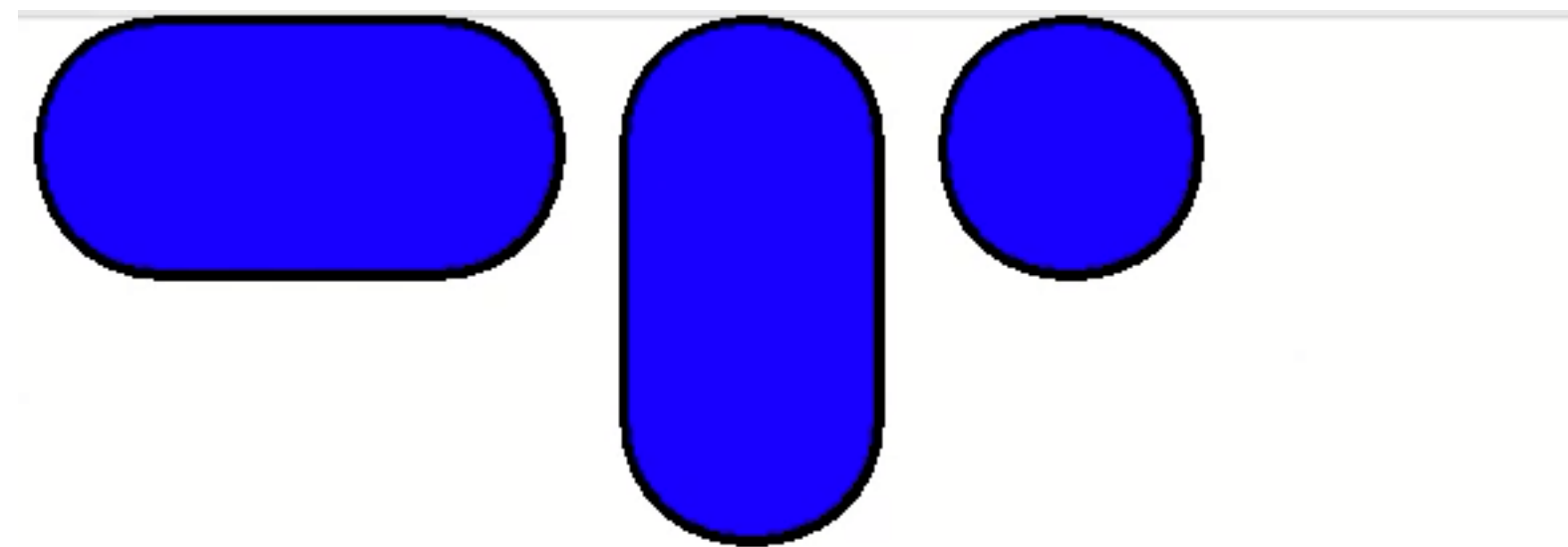
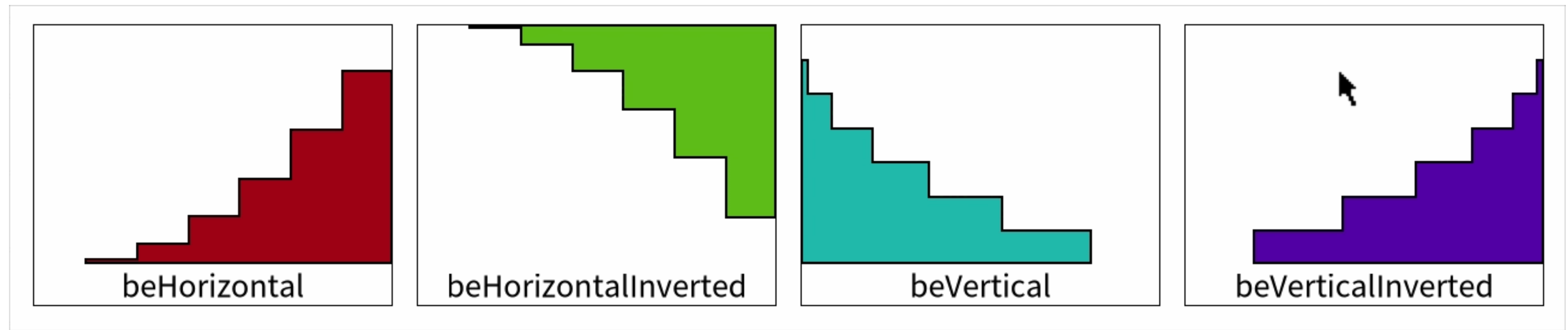
Optimized Shadows

Use gradients to emulate shadows



More Geometries

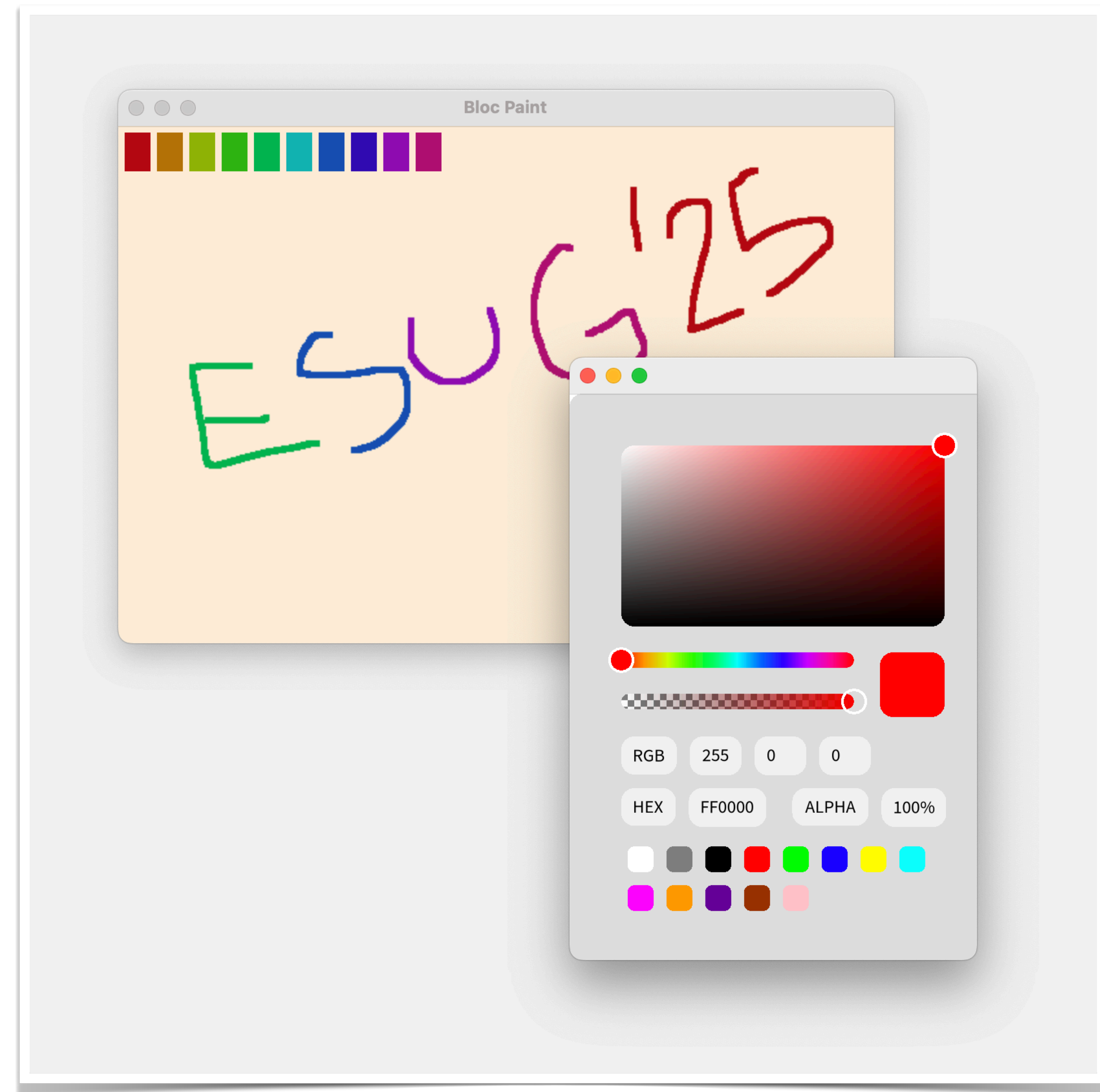
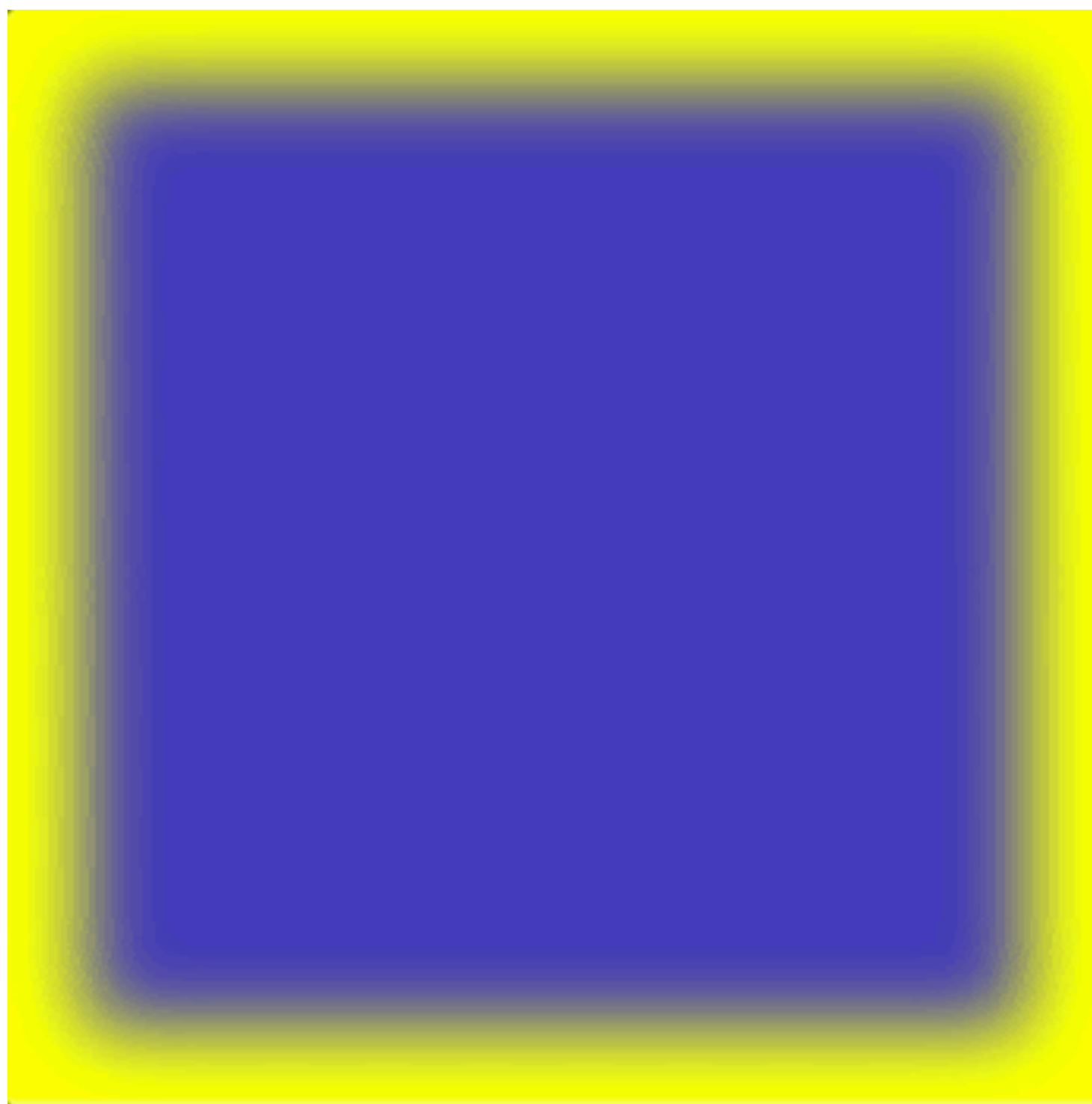
Histogram, Stadium and Sigmoid



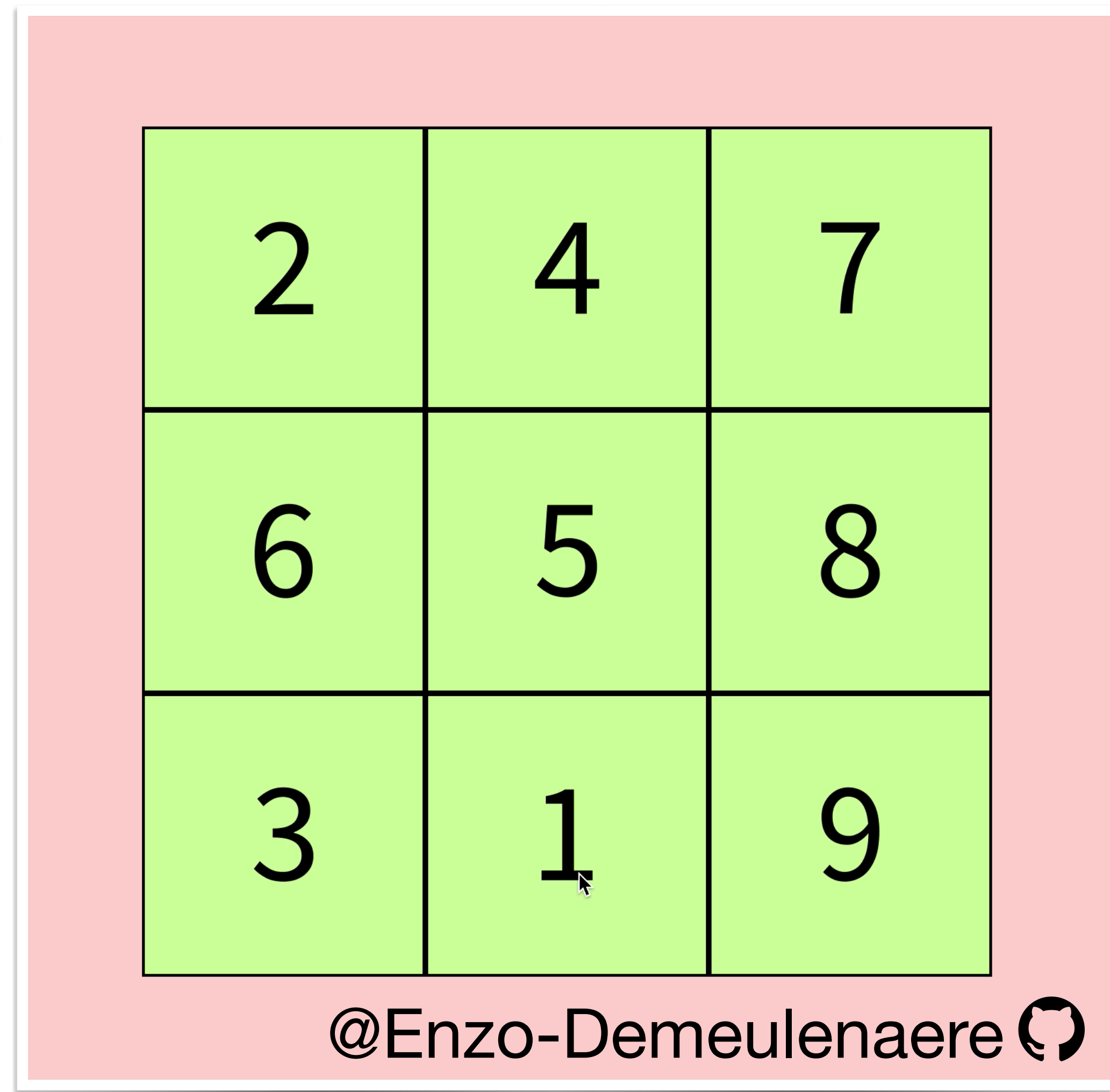


New Demos

Color Picker + Paint & Gradients

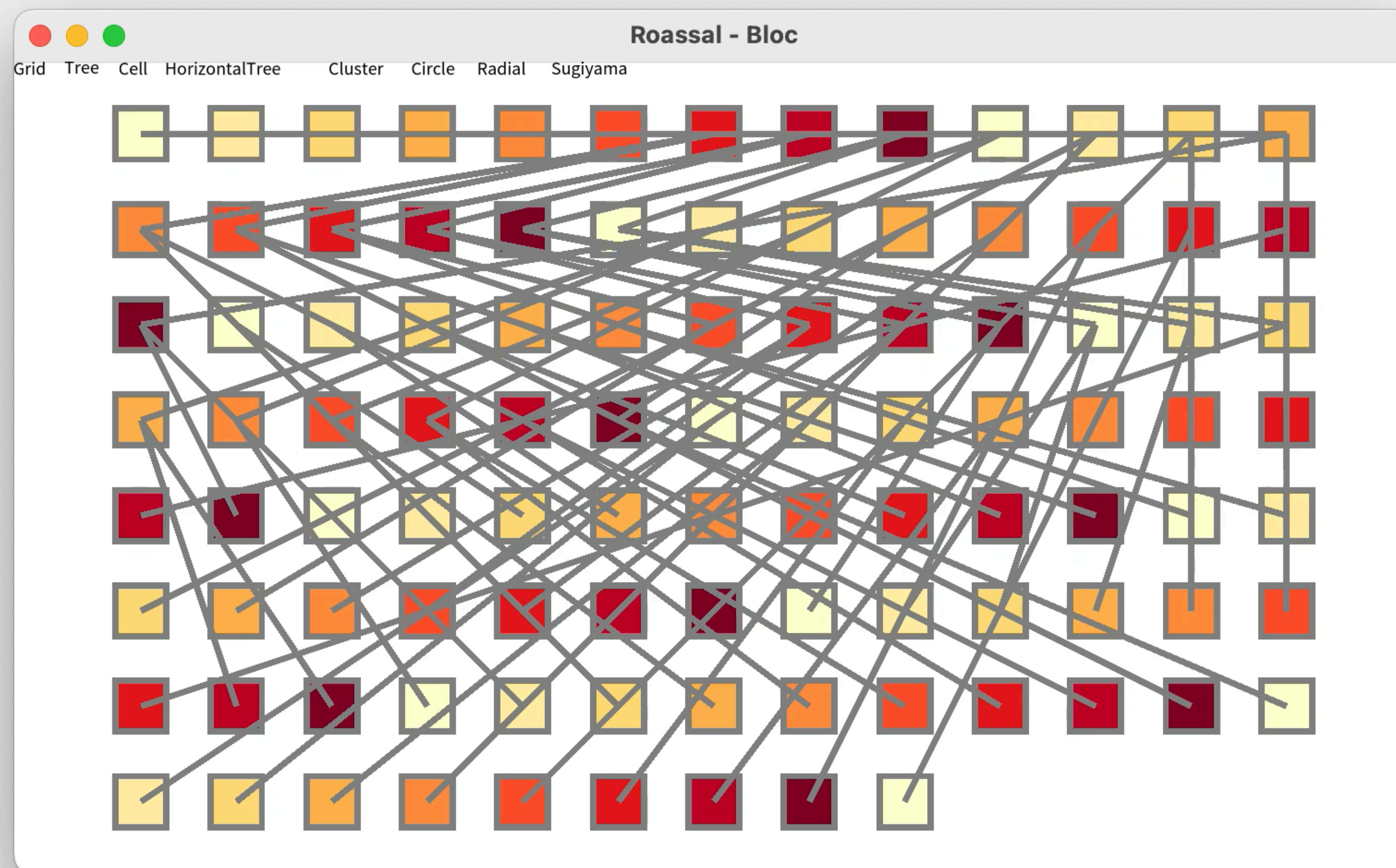


New Demos: Drag & Drop game





Roassal in Bloc





Other Improvements in Bloc

- Clean ups & Simplifications
- Documentation and Comments
- Better Scaling in HDPI Screens
- Better naming conventions
- Bug-fixing
- Saving / Restoring image keeps open spaces
- Improvements in Animations, Texts
- Fix Text Styler
- Fix Set Cursor
- More Tests

+500 Commits
12 Contributors


Toplo



@plantec 

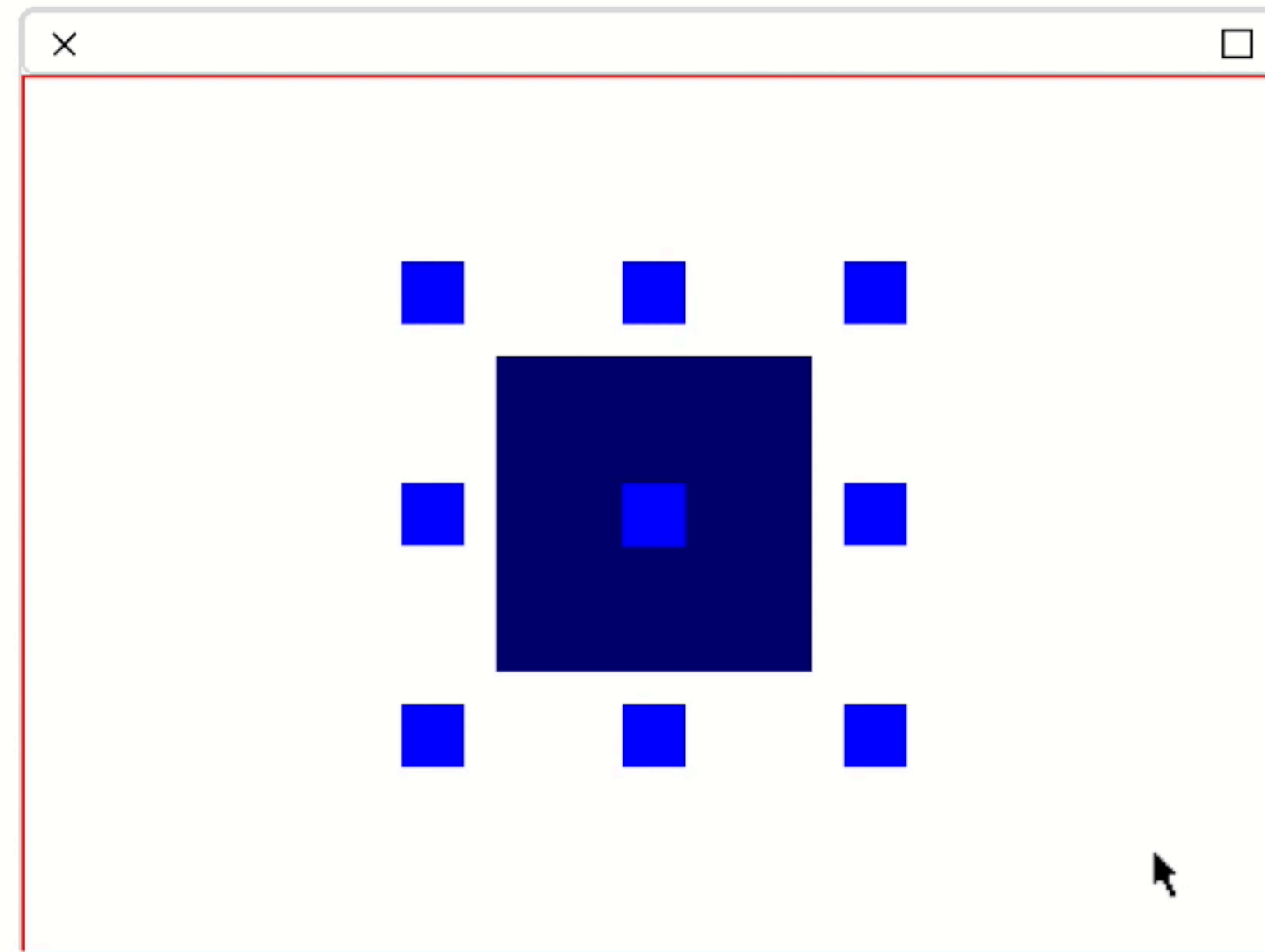


Better Menus and Tooltips



```
1 example_CodeEditor
2
3   | pane menuPane text album menuBuilder disabox inspectBtn
  showStatisticsBtn fileMenu |
4   pane := ToPane vertical matchParent.
5
6   text := self methodText asRopedText.
7   album := ToAlbum new.
8   album styler: (BlPharoCodeStyler new
9                 classOrMetaClass: self class;
10                yourself).
11  album text: text copy.
12  album withSaveCapability.
13  album withRowNumbers.
14  album whenSaveRequestedDo: [ :saveRequested |
15    saveRequested accepted: true ].
16  album whenCancelRequestedDo: [ :cancelRequested |
17    cancelRequested editorElement text: text copy ].
18
```

Anchor Layout & Floats



Tree



The screenshot displays the 'Mini browser' interface, which is divided into several panels. On the left, a sidebar shows a tree view of the class hierarchy, with 'Space' selected under the 'Bloc' category. The main area is split into two columns. The left column shows the class hierarchy for 'Space', including 'BLAttachedCachedSpaceReference', 'BLAttachedSpaceReference', 'BLDetachedSpaceReference', 'BLNullSpaceReference', and 'BLSpace'. The right column shows the methods for 'Space', including 'event handling', 'children dispatching', 'initialization', 'cursor managing', 'change - rendering', 'api - displaying', 'accessing', 'window - properties', 'event management accessing', 'shortcut management', 'event management', and 'debug - asserting'. The 'enqueueTasksFrom:' method is highlighted in the right column. Below the main area, a code editor shows the implementation of the 'enqueueTasksFrom:' method, which is a block of code that enqueues tasks from a task queue.

Mini browser

- BaselineOfBloc
- BaselineOfBlocBenchs
- BaselineOfBlocSerializatio
- BaselineOfBlocTutorialsBc
- ▼ Bloc
 - Space**
 - Effect
 - Utilities - Equalizer
 - DataStructure - Rope
 - Utilities - Selection
 - Events
 - Basic-Math

bloc

- BLAttachedCachedSpa
- ▼ BLAttachedSpaceRefer
- BLAttachedCached:
- BLDetachedSpaceRefe
- BLNullSpaceReference
- BLSpace**
- ▼ BLSpaceReference
 - BLAttachedSpaceR
 - BLDetachedSpaceR
 - BLNullSpaceRefere
 - TBLSpaceProperties

☐ Class side

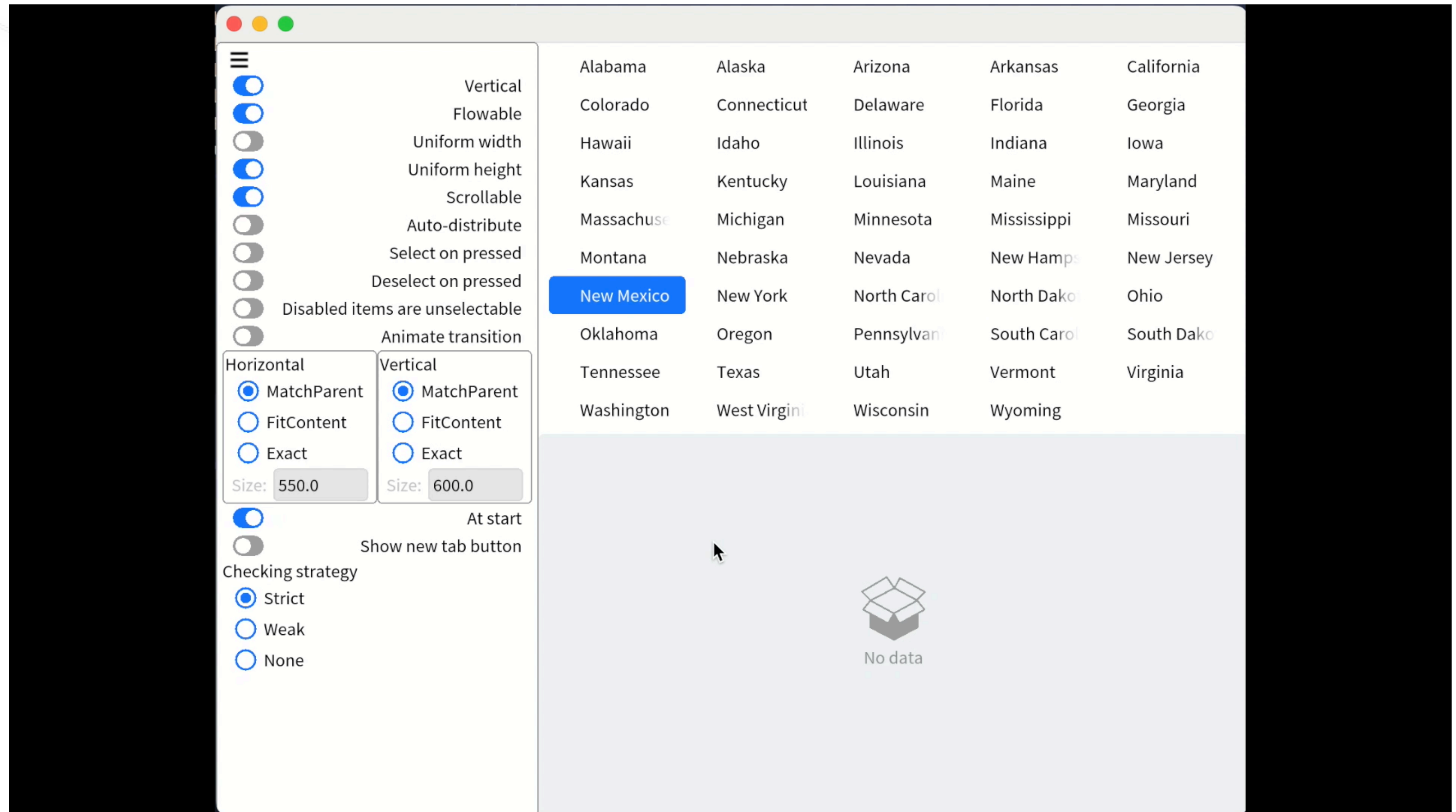

- event handling
- children dispatching
- api - tasks**
- initialization
- cursor managing
- change - rendering
- api - displaying
- accessing
- window - properties
- event management accessing
- shortcut management
- event management
- debug - asserting

- dequeueTask:
- enqueueTask:
- enqueueTasksFrom:**
- taskQueue

```

1 enqueueTasksFrom: aTaskQueue
2
3     aTaskQueue isEmpty ifTrue: [ ^ self ].
4     aTaskQueue tasks do: [ :eachTask | eachTask onEnqueued: self ].
5     self taskQueue enqueueFrom: aTaskQueue.
6     self requestNextPulse
  
```


Tab Pane Improvements



The screenshot displays a software interface for a tab pane. On the left is a settings panel with the following options:

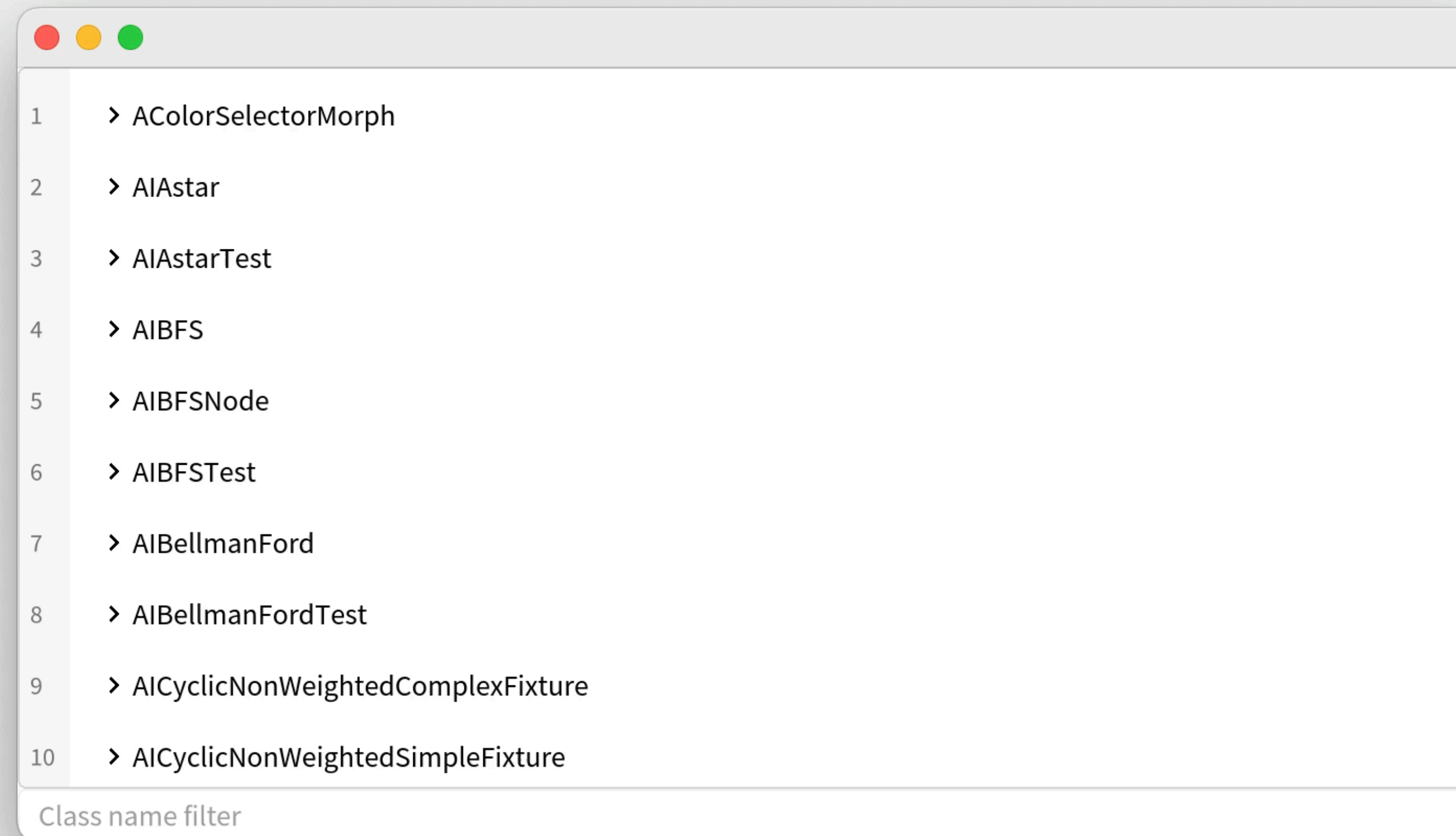
- ☒ Vertical
- ☒ Flowable
- ☐ Uniform width
- ☒ Uniform height
- ☒ Scrollable
- ☐ Auto-distribute
- ☐ Select on pressed
- ☐ Deselect on pressed
- ☐ Disabled items are unselectable
- ☐ Animate transition
- Horizontal:
 - ☒ MatchParent
 - ☐ FitContent
 - ☐ ExactSize: 550.0
- Vertical:
 - ☒ MatchParent
 - ☐ FitContent
 - ☐ ExactSize: 600.0
- ☒ At start
- ☐ Show new tab button
- Checking strategy:
 - ☒ Strict
 - ☐ Weak
 - ☐ None

The main area shows a list of US states arranged in a 5x5 grid:

Alabama	Alaska	Arizona	Arkansas	California
Colorado	Connecticut	Delaware	Florida	Georgia
Hawaii	Idaho	Illinois	Indiana	Iowa
Kansas	Kentucky	Louisiana	Maine	Maryland
Massachusetts	Michigan	Minnesota	Mississippi	Missouri
Montana	Nebraska	Nevada	New Hampshire	New Jersey
New Mexico	New York	North Carolina	North Dakota	Ohio
Oklahoma	Oregon	Pennsylvania	South Carolina	South Dakota
Tennessee	Texas	Utah	Vermont	Virginia
Washington	West Virginia	Wisconsin	Wyoming	

The 'New Mexico' tab is selected and highlighted in blue. Below the list is a large light blue area with a 'No data' icon and text.

Accordion



The logo features a stylized sun with a blue and orange gradient at the top, emitting rays. Below the sun is a red, jagged shape resembling a mountain or a stylized letter 'T'. A blue and purple wavy ribbon-like shape flows downwards from the red shape.

Other Toplo Improvements

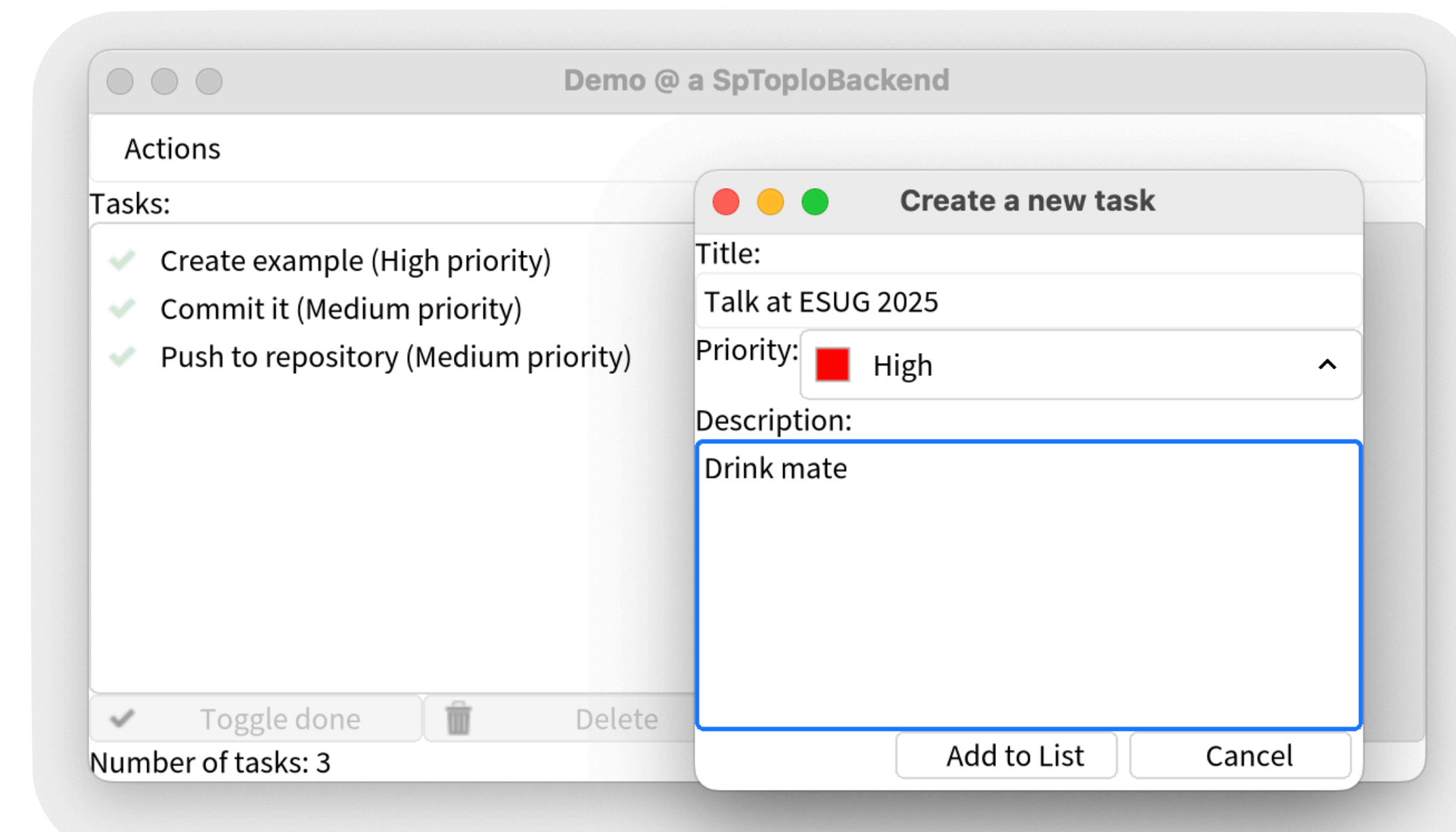
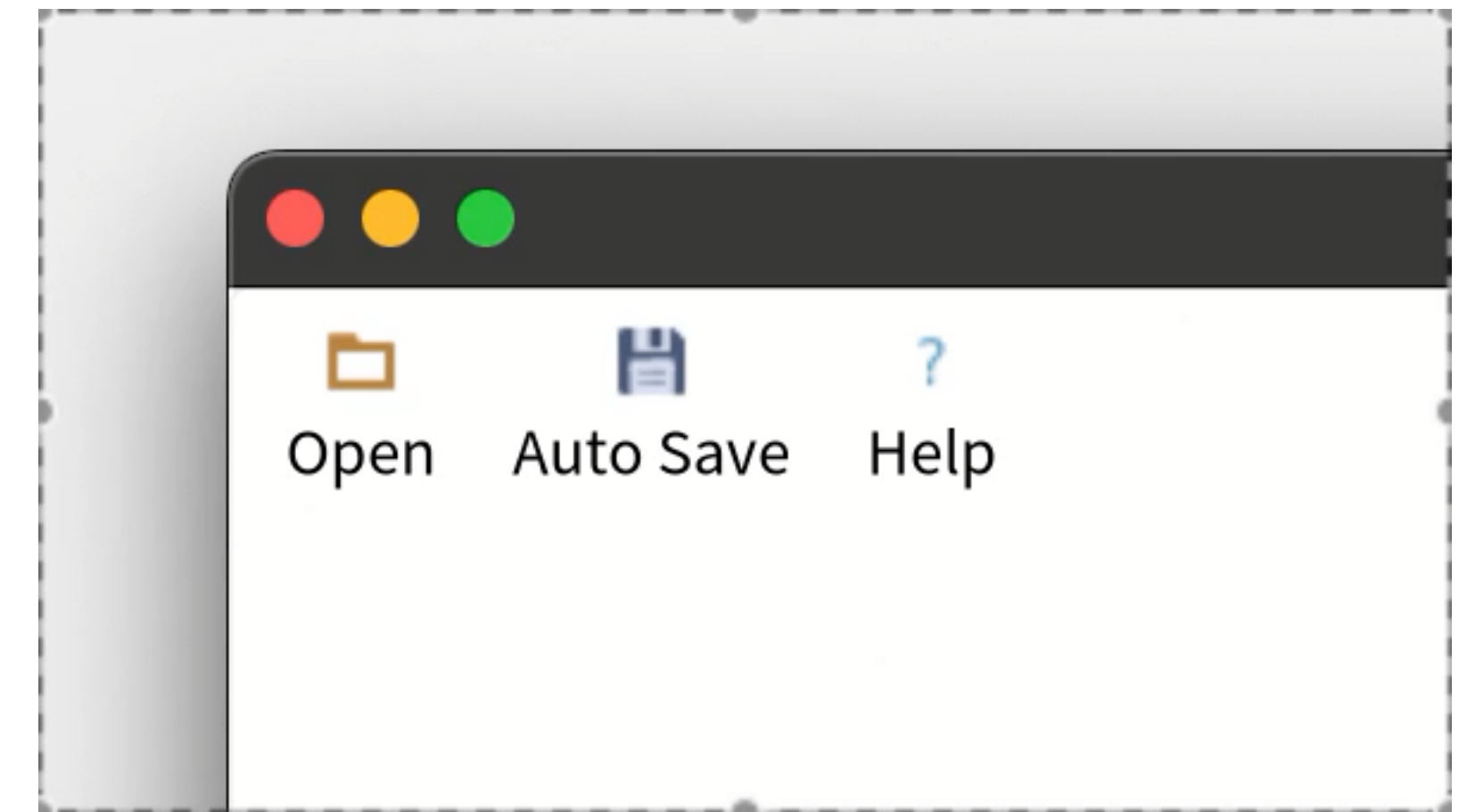
- Cleaning
- Bugfixing
- Progress Bar
- Improving Performance in Lists
- Tag Element
- Tree
- Improvements in Selection Modes
- Improvements in Skins
- Overlays

~1000 Commits
7 Contributors

Spec-Toplo

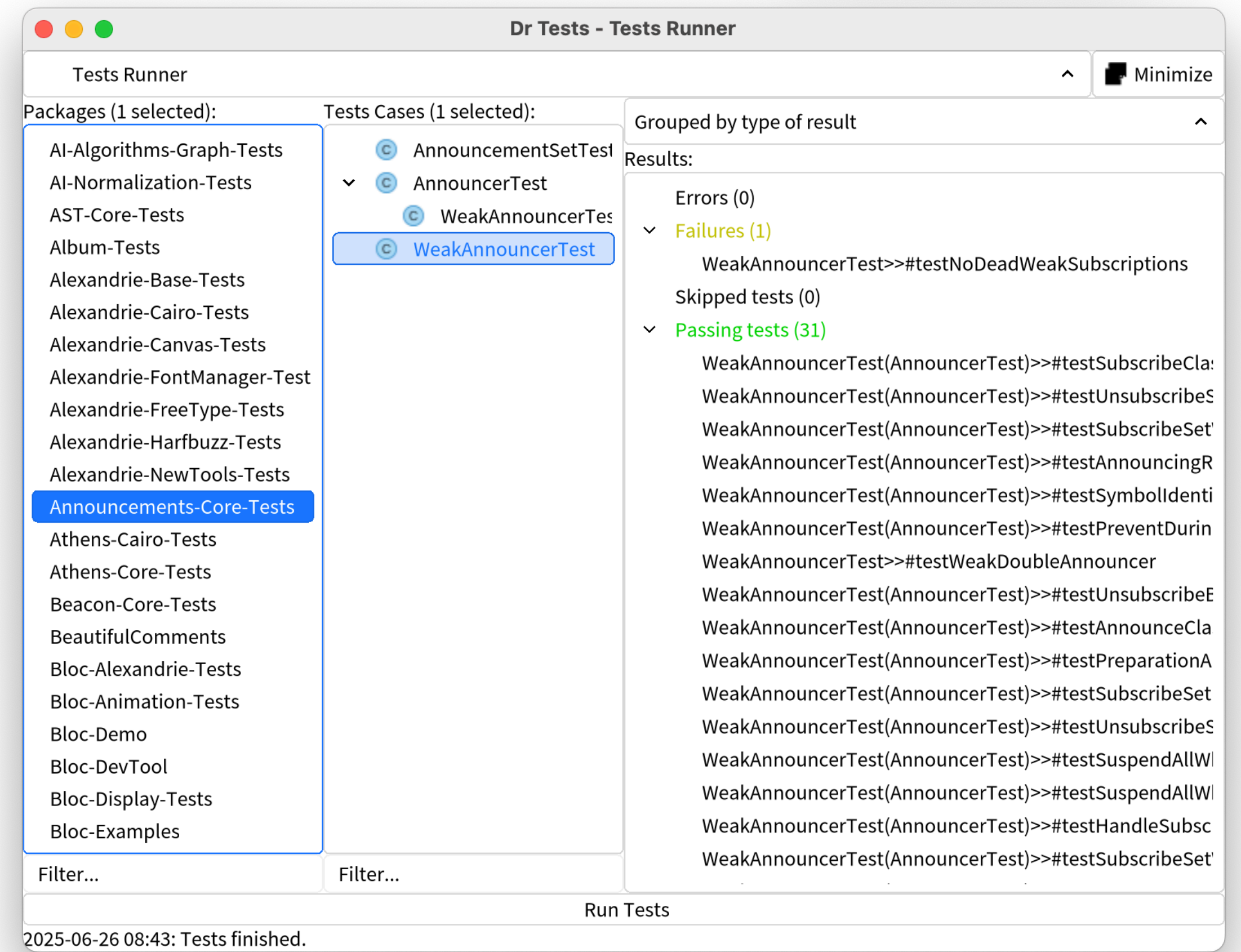
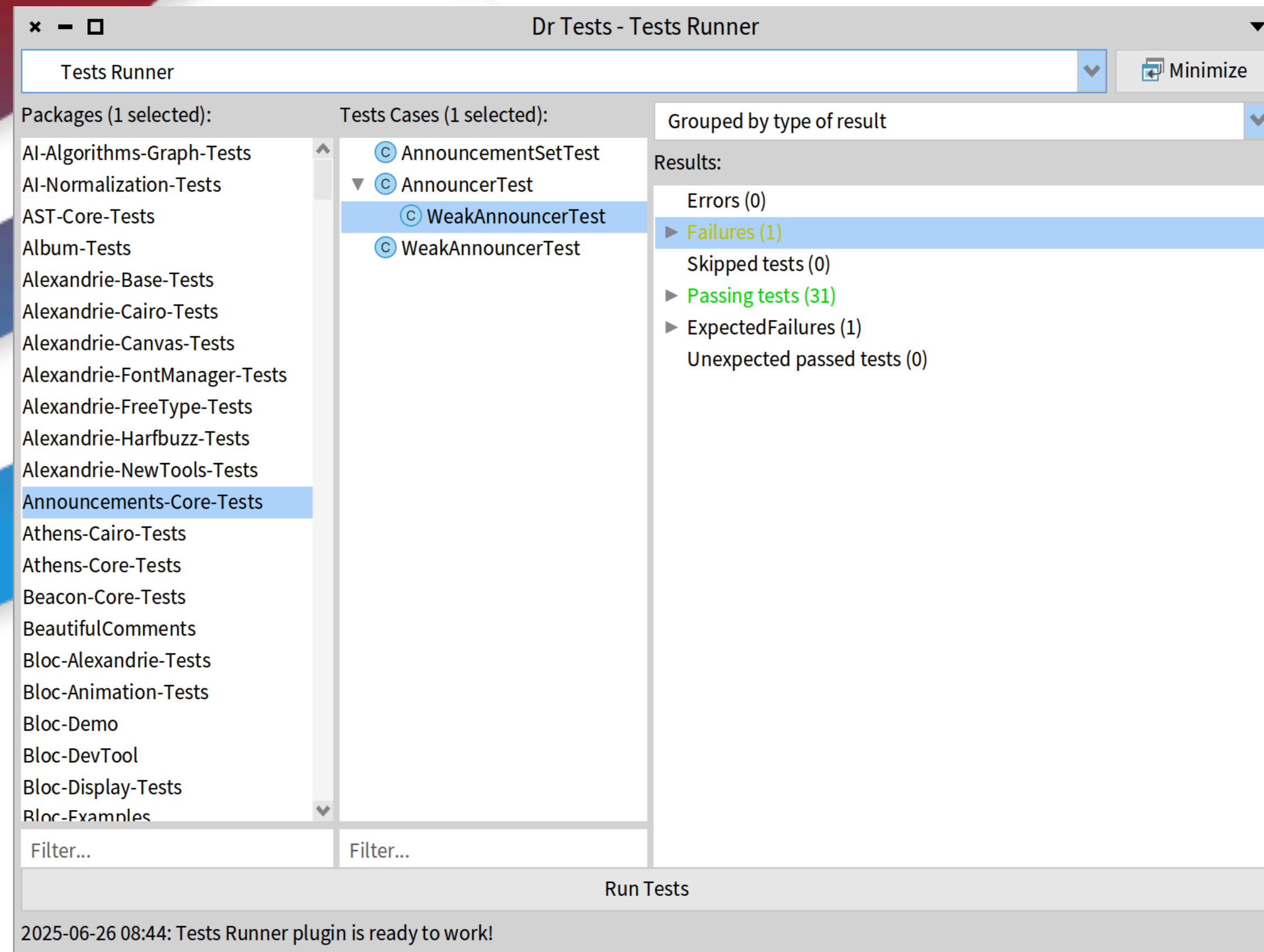
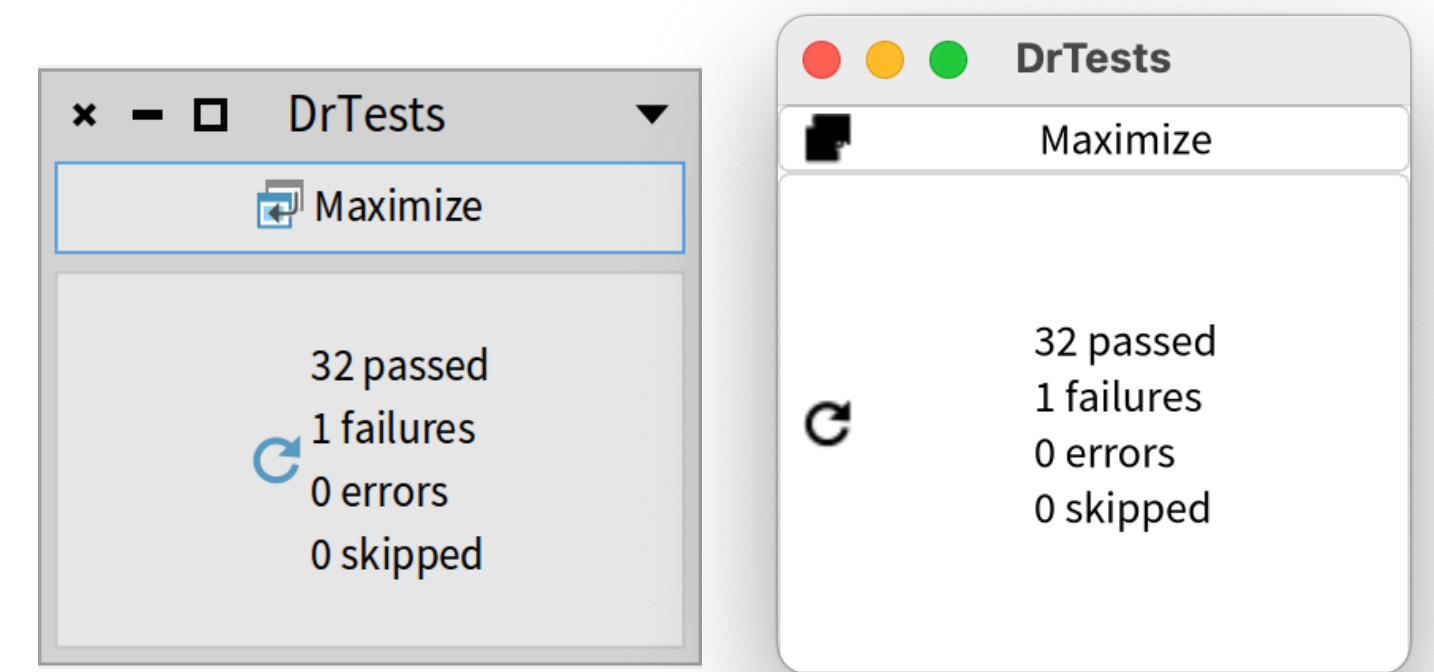
More Widgets in Spec-Toplo

- Tree
- Toolbar
- Menus
- Password text field
- Dropbox icons



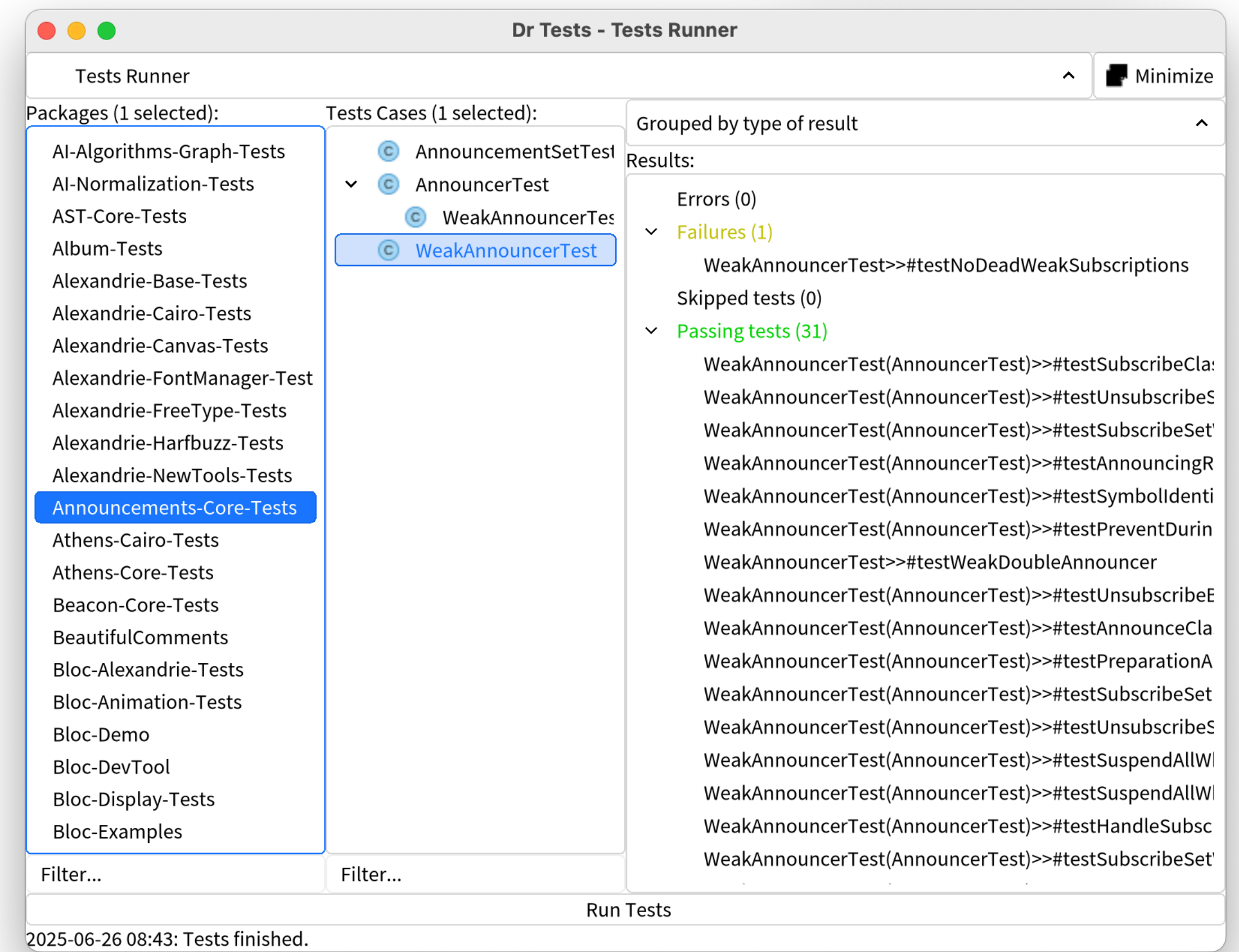
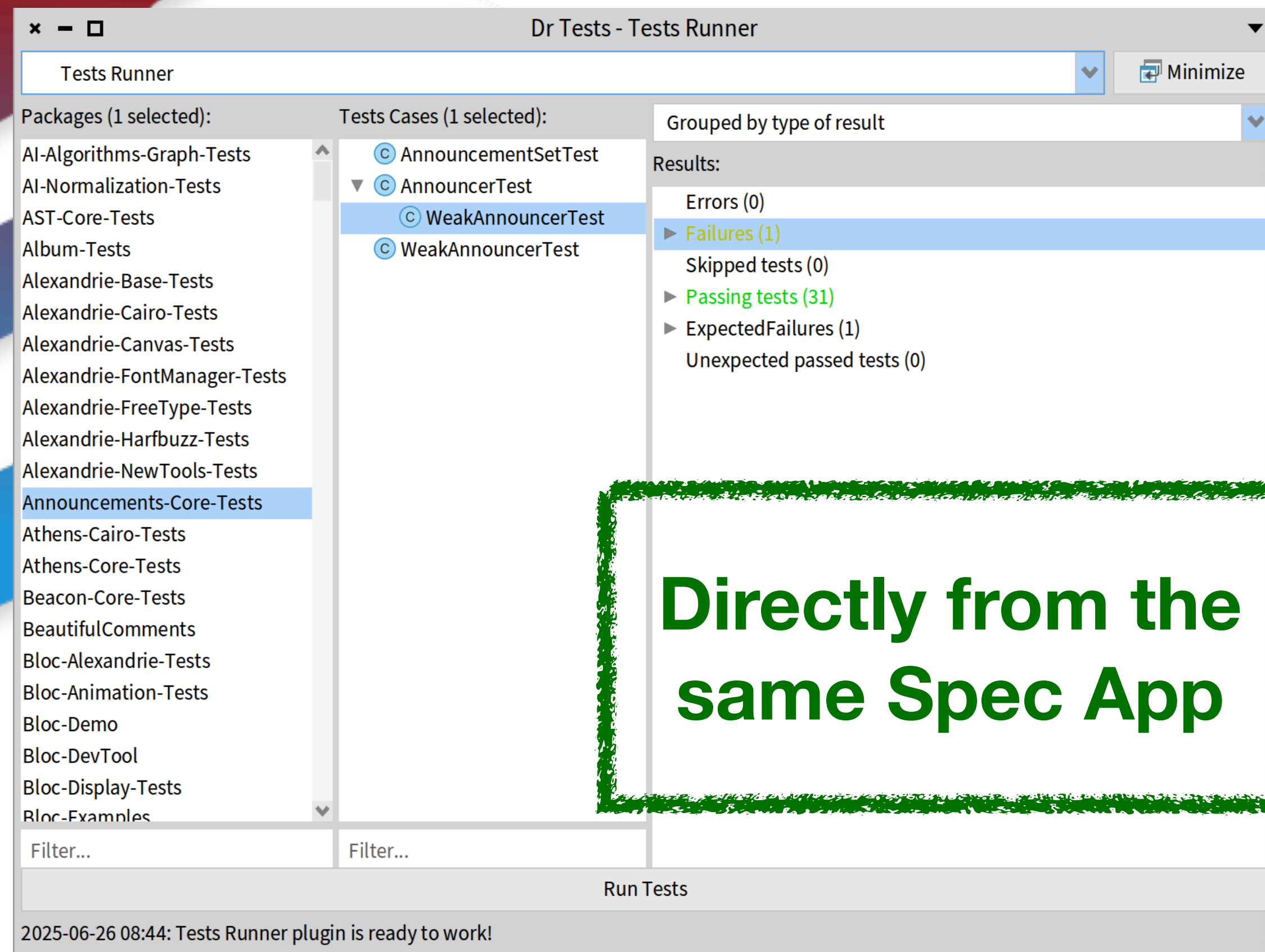
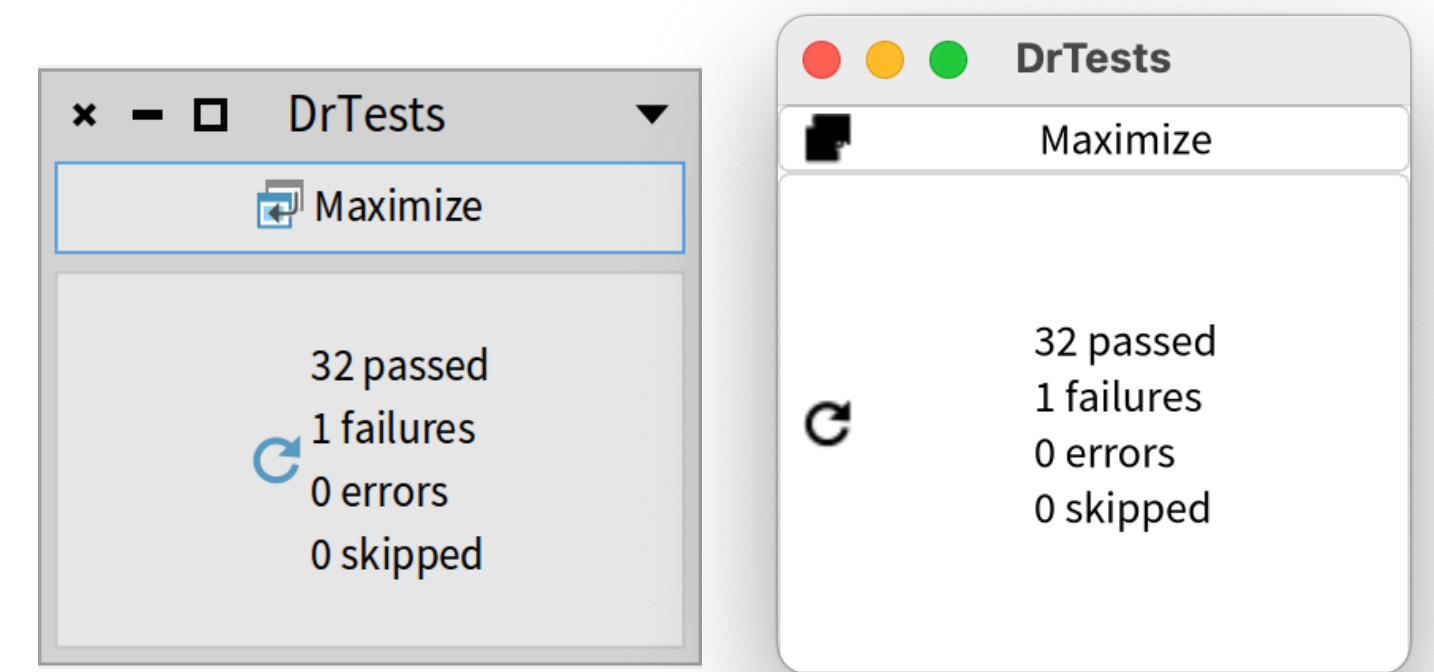
Pharo Tools in Toplo

We can eat our own food



Pharo Tools in Toplo

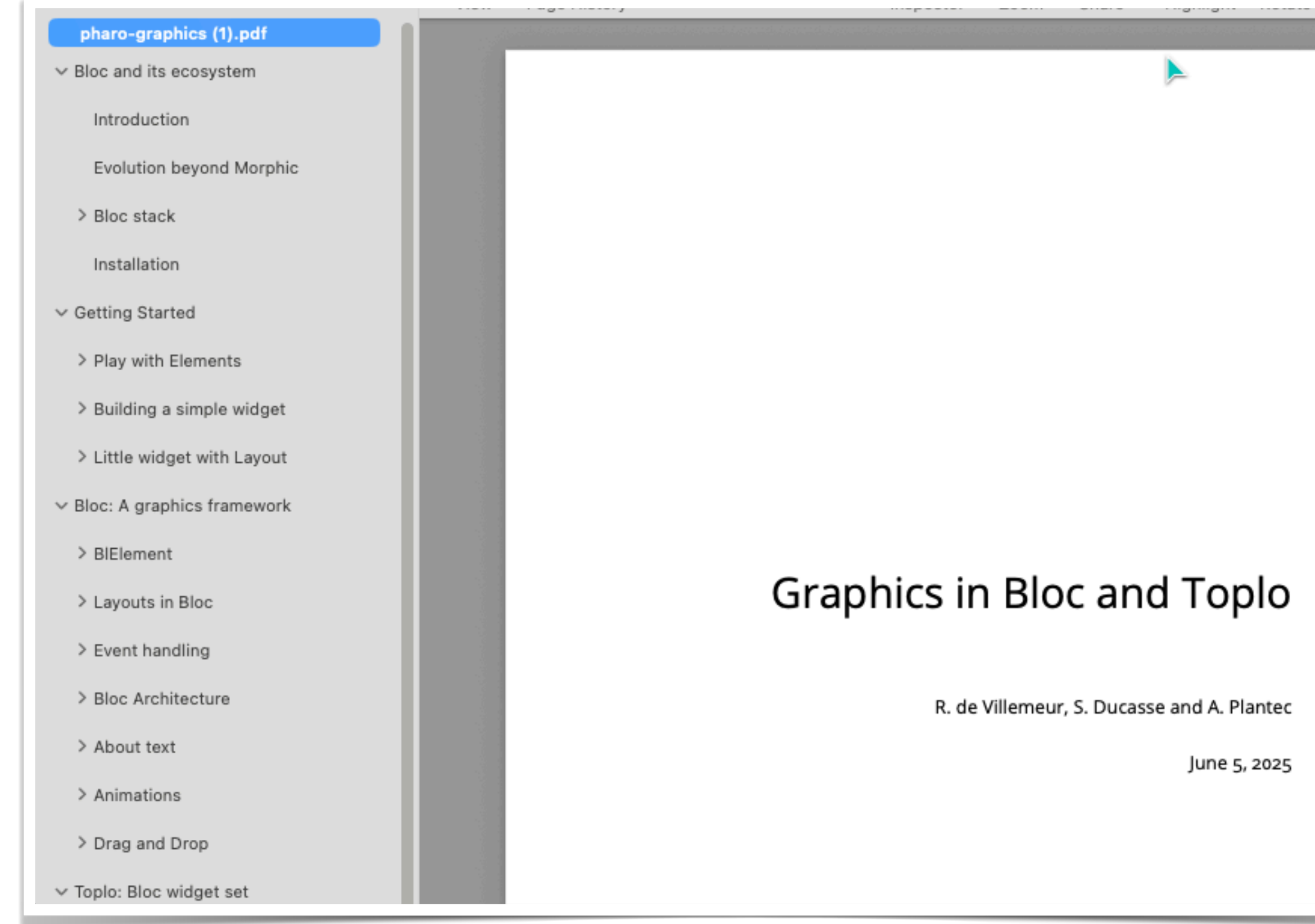
We can eat our own food





More and More....

- SDL2
 - Updated to latest version
 - Contributing / Bug-fixing
- SDL3
 - New Bindings (thanks CIG)
 - Future Backend
- Documentation Booklet <https://github.com/SquareBracketAssociates/Booklet-Graphics>





Future

We keep the same objectives

- Faster & More Stable Bloc
- More Widgets in Toplo
- Full Implementation of Spec-Toplo
- More Pharo Tools in Spec-Toplo
- Tests & Documentation



**STAY
TUNED!**

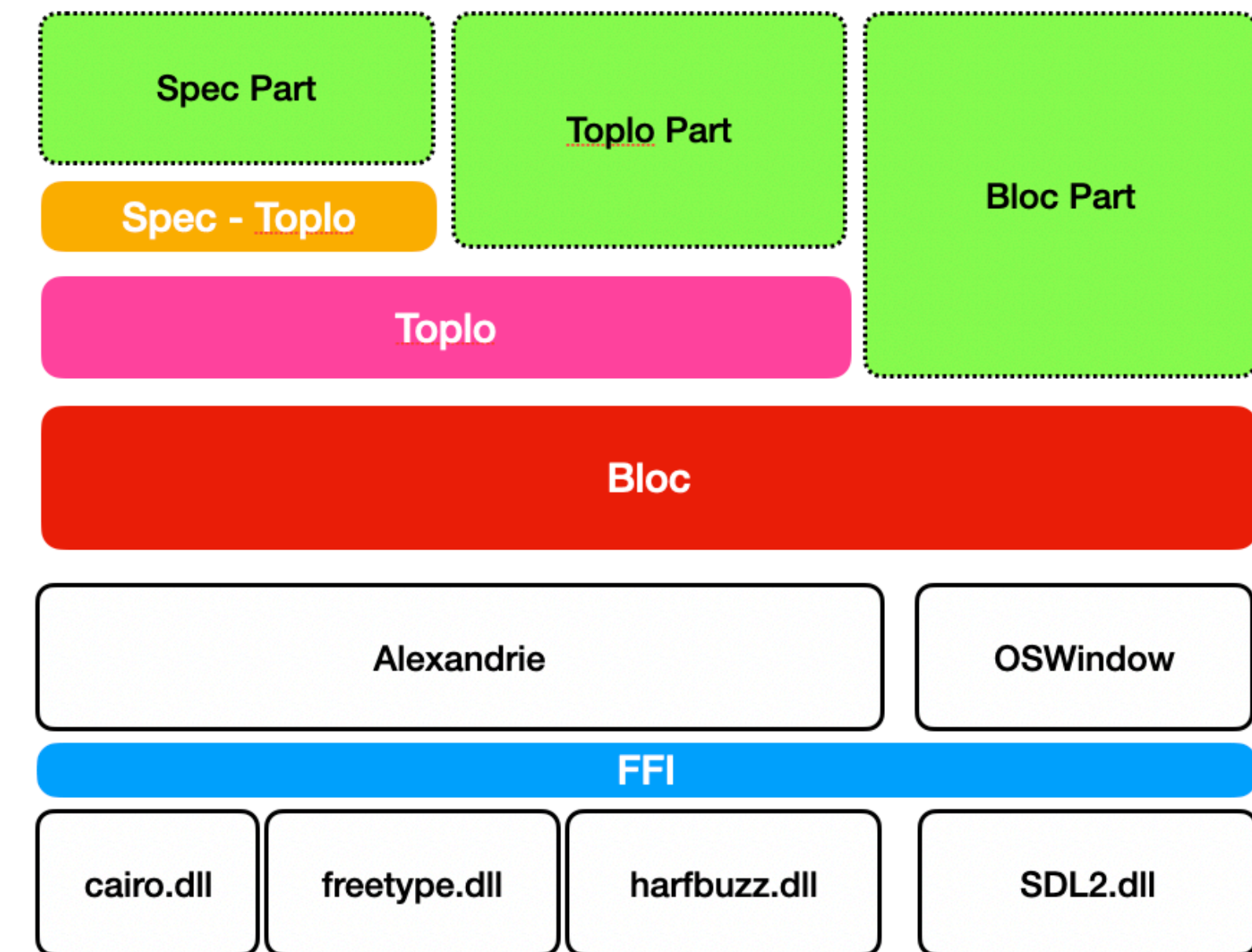
Mailing-list: lse-openbloc@inria.fr
(subscribe at: <http://sympa.inria.fr>)

Discord: Pharo server / #bloc channel

Bloc: <https://github.com/pharo-graphics/Bloc>

Toplo: <https://github.com/pharo-graphics/Toplo>

Spec-Toplo: <https://github.com/pharo-graphics/Spec-Toplo>



**Check Released
Versions!!!**

THALES

UBO

Université de Bretagne Occidentale

Lab-STICC

Phar Consortium