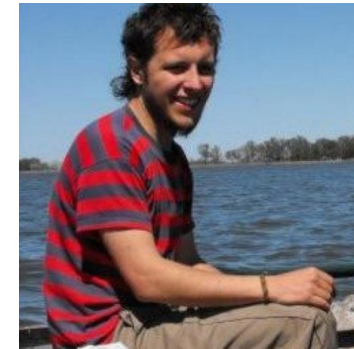


Spec & Toplo

Closing the Gap

Martín Dias & Pablo Tesone | ESUG 2026, Plovdiv



Martín Dias



Pablo Tesone



About the Presenters



Martín Dias

- Pharo Consortium Engineer
- Email: tinchodias@gmail.com
- GitHub: @tinchodias

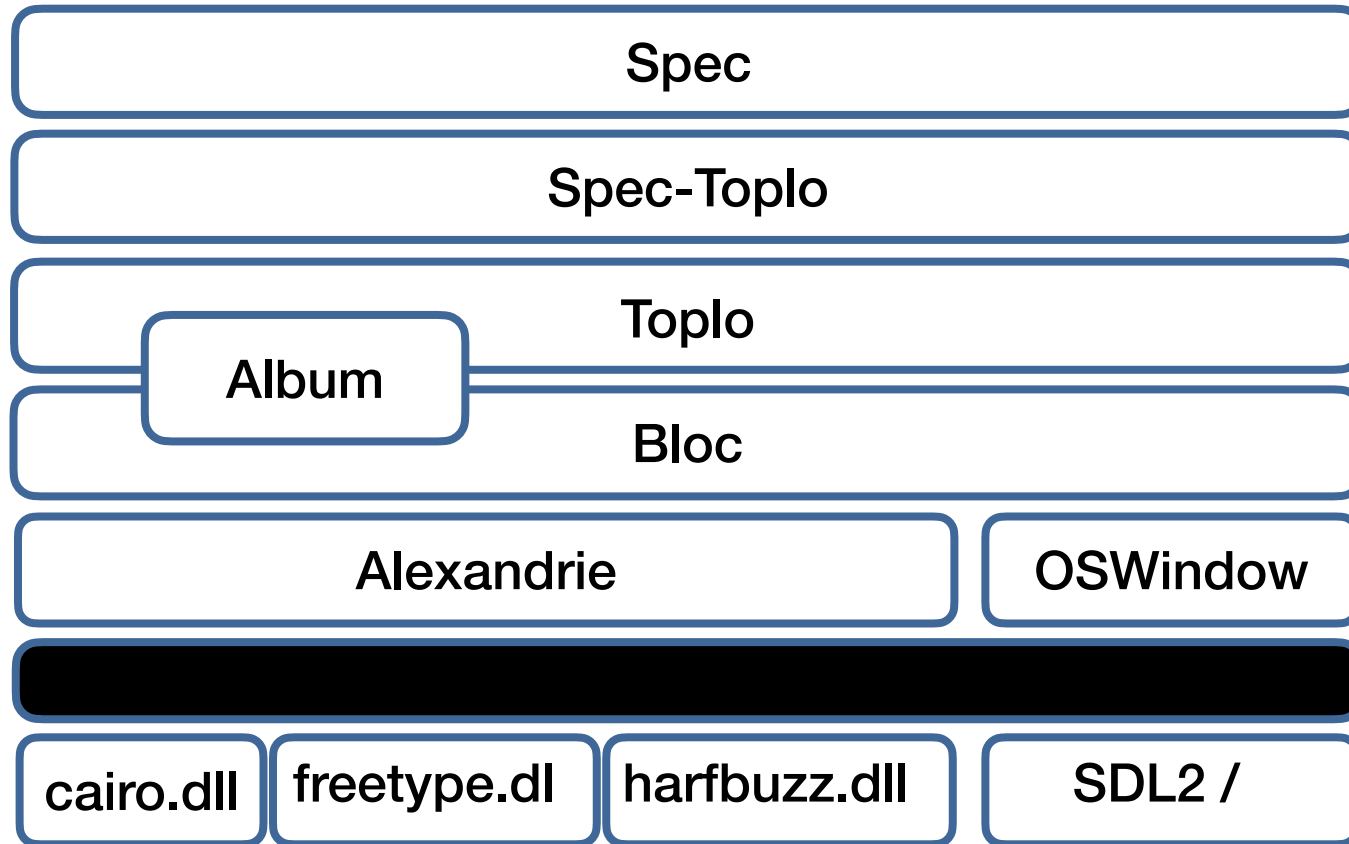


Pablo Tesone

- Pharo Consortium Engineer
- Email: pablo.tesone@inria.fr
- GitHub: @tesonep



What are Toplo & Spec-Toplo?



- **Spec**: Build UI composing "presenters"

A tree of sub-instances of SpPresenter that is opened in a SpApplication that specifies a SpApplicationBackend.

- **Spec-Toplo**: Spec backend in Toplo (the entry point is SpToploBackend)
- **Toplo**: Widget library
- **Album**: Text editor



One Application to run on all Backends.

```
Toplo Test
1 "
2 MiApplication current useBackend: #Morphic.
3 MiApplication current useBackend: #Toplo.
4 "
```

```
Moose Playground
app := SpApplication new
  useBackend: #Morphic;
  yourself.

list := {
  (SpLabelPresenter new
    label: 'Test 1';
    yourself).
  (SpImagePresenter new
    image: (self iconNamed: #smallok);
    yourself).
  (SpButtonPresenter new
    label: 'A button';
    yourself) }.

^ (SpComponentListPresenter newApplication: app)
  presenters: list;
  open
```

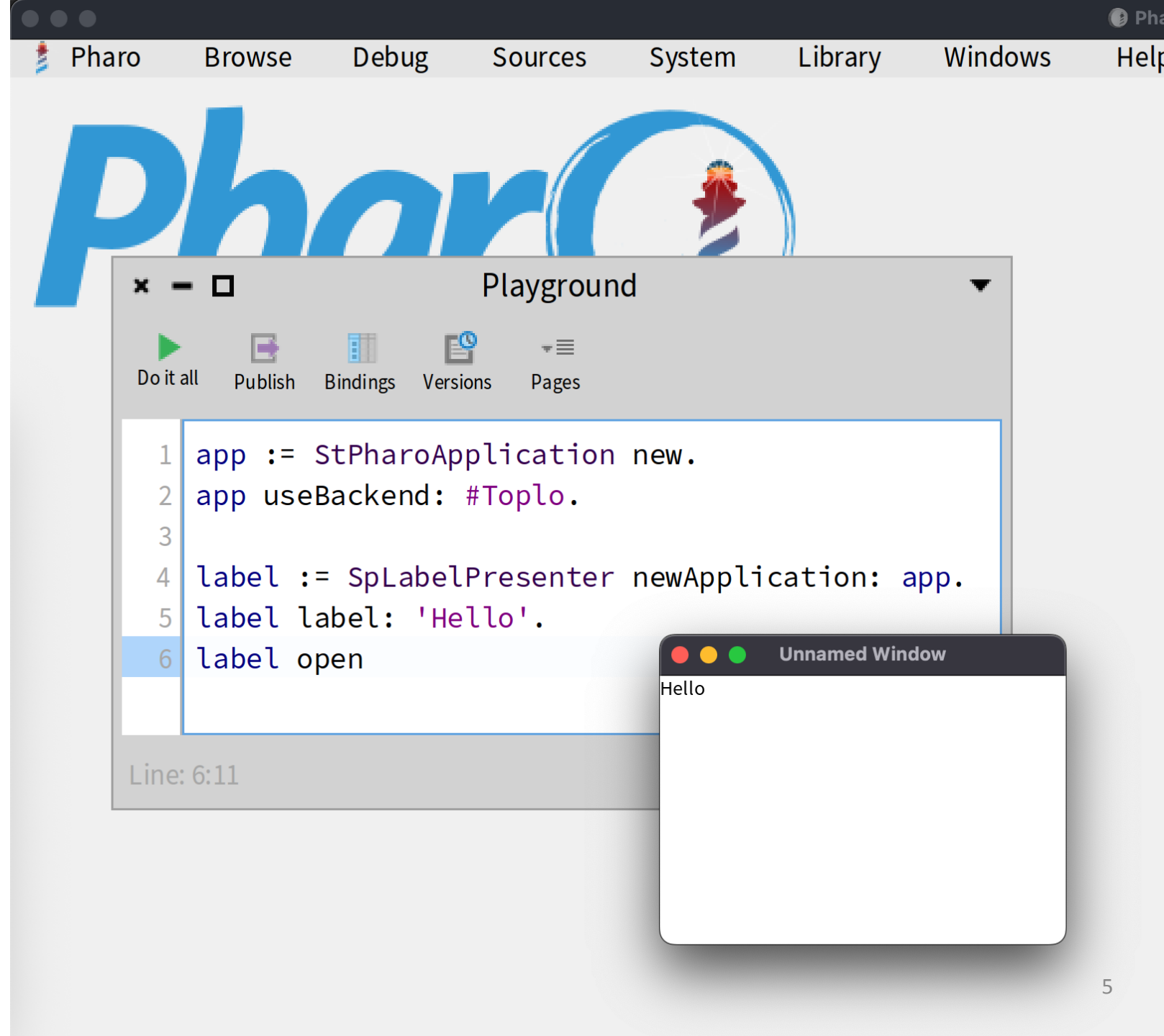
```
4/11 [12]
```



Thanks Benoît!!!

Guided Walkthrough

Little example to
show the
underlying design



Method: SpToploLabelAdapter>>buildWidget

Spec-Toplo
Adapters
Base
DragAndDrop
Presenters
Widgets
Extensions
Spec-Toplo-Examples
Spec-Toplo-Examples-Cho

SpToploDropListAdapter
SpToploImageAdapter
SpToploLabelAdapter
SpToploLinkAdapter
SpToploNotebookAdapter
SpToploPaginatorAdapter
SpToploPopoverAdapter
SpToploProgressBarAdapter
SpToploRadioButtonAdapter

instance side
should be implemented
accessing
factory
initialization
updating widget
overridden
overrides

beJustifyCenter
beWrap
buildWidget
fillContextMenu: (SpToploTWithC
font
label
subscribeToPresenter
updateAll
updateLabel
updateMenu (SpToploTWithCon

Adapt on #open

SpToploLabelAr x ? Comment x buildWidget x + Inst. side methc x

buildWidget

^ ToLabel new

3/3 [15] Edit protocol: factory Extension | Format Line numbers Word Wrap

If Presenter Changes
=>
Toplo Widget Changes

Method: SpToploLabelAdapter>>subscribeToPresenter

Spec-Toplo
Adapters
Base
DragAndDrop
Presenters
Widgets
Extensions

SpToploDropListAdapter
SpToploImageAdapter
SpToploLabelAdapter
SpToploLinkAdapter
SpToploNotebookAdapter
SpToploPaginatorAdapter
SpToploPopoverAdapter
SpToploProgressBarAdapter
SpToploRadioButtonAdapter

instance side
should be implemented
accessing
factory
initialization
updating widget
overridden
overrides

beJustifyCenter
beWrap
buildWidget
fillContextMenu: (SpToploTWidget) font label
subscribeToPresenter
updateAll
updateLabel
updateMenu (SpToploTWidget)

Flat Hier. Traits | Inst. side Class side | Methods Vars | Class refs.

subscribeToPre x + Inst. side methc x

subscribeToPresenter

```
super subscribeToPresenter.  
  
self presenter whenLabelChangedDo: [ self updateLabel ]
```

1/5 [1] Edit protocol: initialization Extension | Format Line numbers Word Wrap

If Presenter Changes
=>
Toplo Widget Changes

Method: SpToploLabelAdapter>>updateLabel

Spec-Toplo
Adapters
Base
DragAndDrop
Presenters
Widgets
Extensions

SpToploDropListAdapter
SpToploImageAdapter
SpToploLabelAdapter
SpToploLinkAdapter
SpToploNotebookAdapter
SpToploPaginatorAdapter
SpToploPopoverAdapter
SpToploProgressBarAdapter
SpToploRadioButtonAdapter

instance side
should be implemented
accessing
factory
initialization
updating widget
overridden
overrides

beJustifyCenter
beWrap
buildWidget
fillContextMenu: (SpToploTWidget) font label
subscribeToPresenter
updateAll
updateLabel
updateMenu (SpToploTWidget)

Flat Hier. Traits | Inst. side Class side | Methods Vars | Class refs.

updateLabel x + Inst. side methc x

```
updateLabel  
  
widget text: self presenter label
```

1/3 [12] Edit protocol: updating widget Extension | Format Line numbers Word Wrap

**Spec Layouts
are essential**

Method: SpToDoListPresenter>>defaultLayout

Presenters | SpToDoListPresenter | instance side | defaultLayout

Filter... | Filter... | actions | deleteAllTasks

All Packages | Scoped View | Projects | Flat | Hier. | Inst. side | Class side | Methods | Vars | Class refs. | Impl

SpToDoListPres x | Comment x | defaultLayout x | Inst. side methc x

```
1 defaultLayout
2
3   ^ SpBoxLayout newTopToBottom
4     borderWidth: 5;
5     spacing: 5;
6     add: (SpOverlayLayout new
7       child: (SpPanedLayout newLeftToRight
8         positionOfSlider: 60 percent;
9         add: (SpScrollableLayout with: (SpBoxLayout newTopToBottom
10           add: #listLabel expand: false;
11           add: #list withConstraints: [ :c | c height: 200 ];
12           add: (SpBoxLayout newLeftToRight
13             add: #toggleCompletedButton;
14             add: #deleteButton;
15             yourself)
16           expand: false;
17           yourself));
18       add: (SpBoxLayout newTopToBottom
```

13/27 [48] | Edit protocol: layout | Extension | Format | Line numbers | Word Wrap

Spec2-Backend-Tests

Generic tests
for all
backends!

Pharo64-13 on windows-latest

failed 1 hour ago in 6m 27s

Load in New Image and Run Tests

```
711 #####
712 # Pharo64-13 #
713 # 1457 Tests with 137 Failures and 205 Errors in 121.57s #
714 #####
715
716 (1115 tests passed)
717
718 SpToploTableAdapterTest
719 ✓ #testTableColumnsNumber (3ms)
720 ✓ #testTableSelectionMultiSelection (2ms)
721 ✓ #testTableSelectionSingleSelection (2ms)
722 ✓ #testChooserSelectAndUnselectSameItem (27ms)
723 ✓ #testChooserSelection (13ms)
724 ✓ #testChooserSelectAll (22ms)
725 ✓ #testTableColumnsNumber (3ms)
726 ✓ #testChooserSelectAll (13ms)
727 ✓ #testTableSelectionSingleSelection (8ms)
728 ✓ #testTableSelectionMultiSelection (2ms)
```

Method: SpLabelAdapterTest>>testSetLabelInPresenterAffectsWidget

Spec2-Adapters-Morpl
Spec2-Adapters-Stub
Spec2-Backend-Tests
Base
Layout
Manifest
TestClasses
Extensions
Spec2-Code
Spec2-Code-Backend-
Spec2-Code-Command

SpLabelAdapterTest
SpMillerColumnAdapterTest
SpNotebookAdapterTest
SpRadioButtonAdapterTest
SpSliderAdapterTest
SpToolBarAdapterTest
SpTreePresenterExpandTest
SpRadioButtonInteractionTest
SpAbstractBackendForTest !
SpMorphicBackendForTest !
SpAbstractLayoutTest

instance side
accessing
tests
overrides

classToTest
testBackgroundColorChangesColor
testSetLabelInPresenterAffectsWidget

All Packages Scoped View Projects | Flat Hier. | Inst. side Class

Comment x setUp x testSetLabelInP x + Inst. side

```
testSetLabelInPresenterAffectsWidget
  presenter label: 'something'.
  self assert: self adapter label equals: 'something'
```

3/3 [53] Edit protocol: tests Extension | Format Line numbers Word Wrap

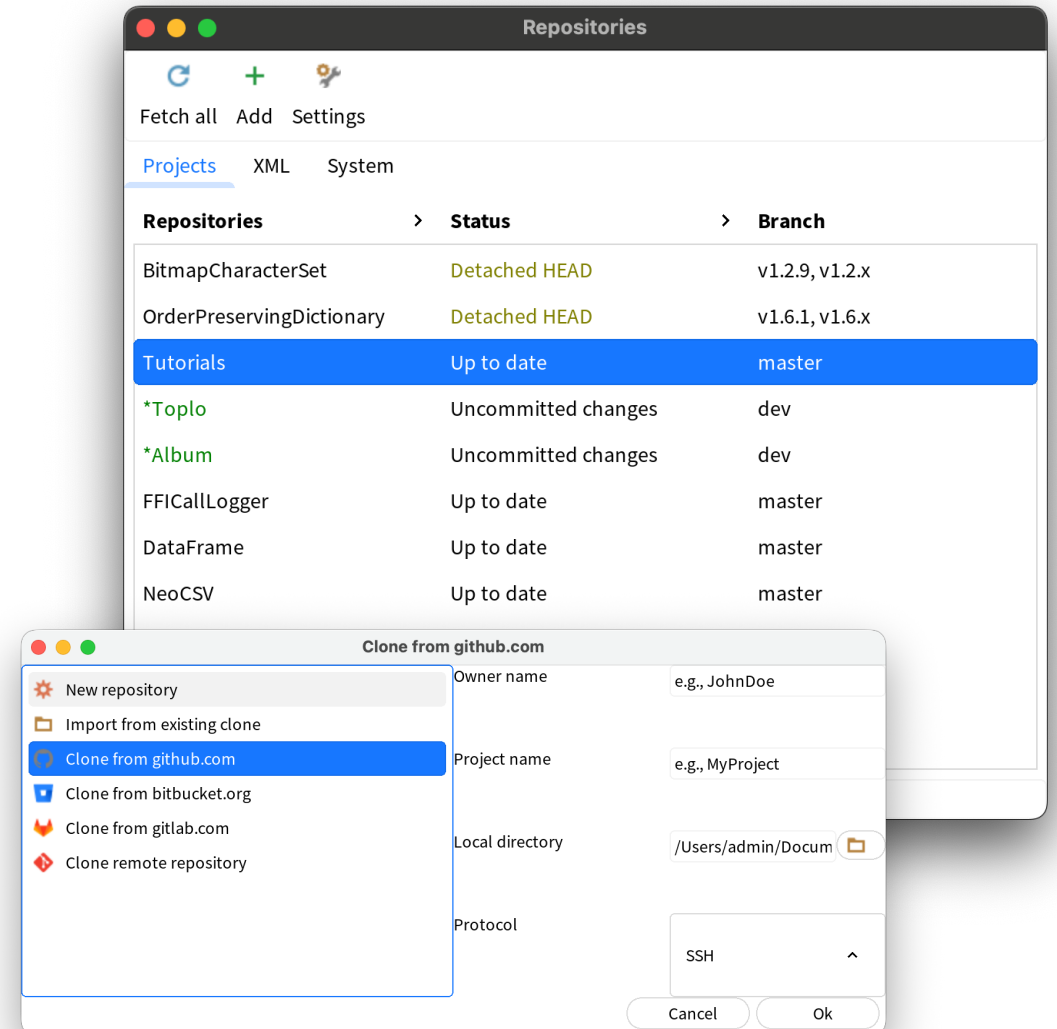
One test,
all backends!

Widgets & Integration



Closing the Gap - Where we are...

- **Goals:**
 - Complete Spec widgets and layouts
 - Tests: All backend tests will pass
 - Styles
 - Make all Pharo tools transmit the application to the opened presenters
 - Pharo World



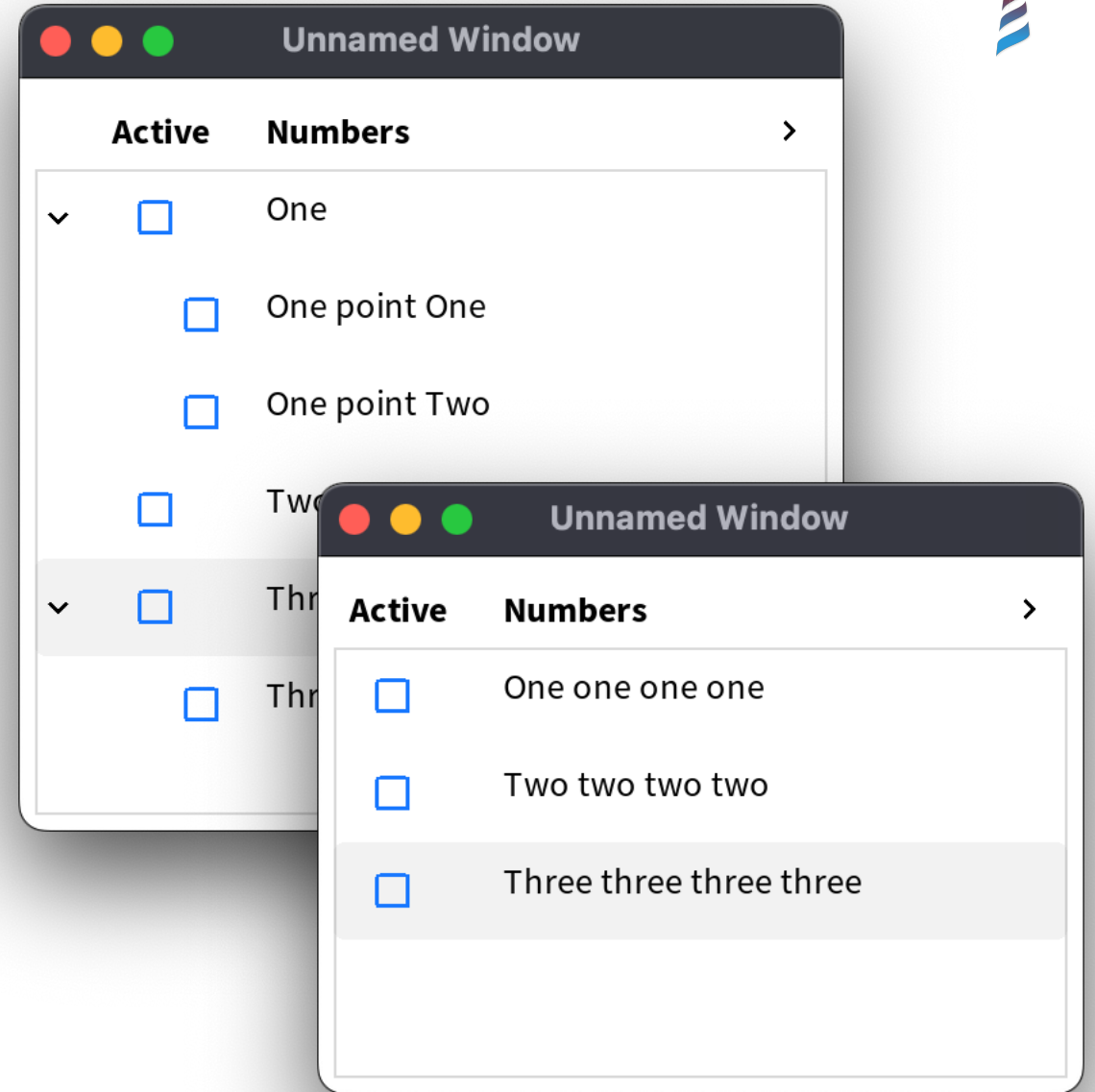


Tables & Tree Tables

Sorting & Resizing: Spec2 column sorting and manual column width resizing

Trees: Hierarchical tree adapters supporting `expandAll` and `expandRoots` API controls

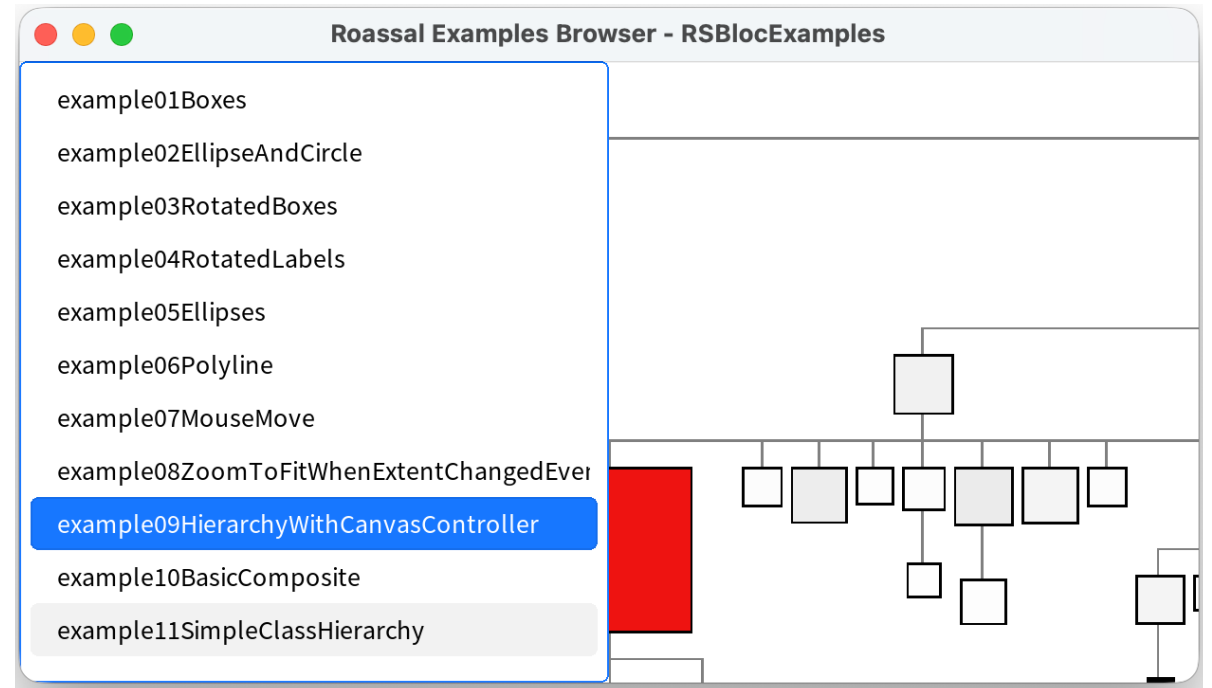
Advanced Cells: Support for image columns, checkboxes column, composite columns





Roassal 3 Canvas Integration

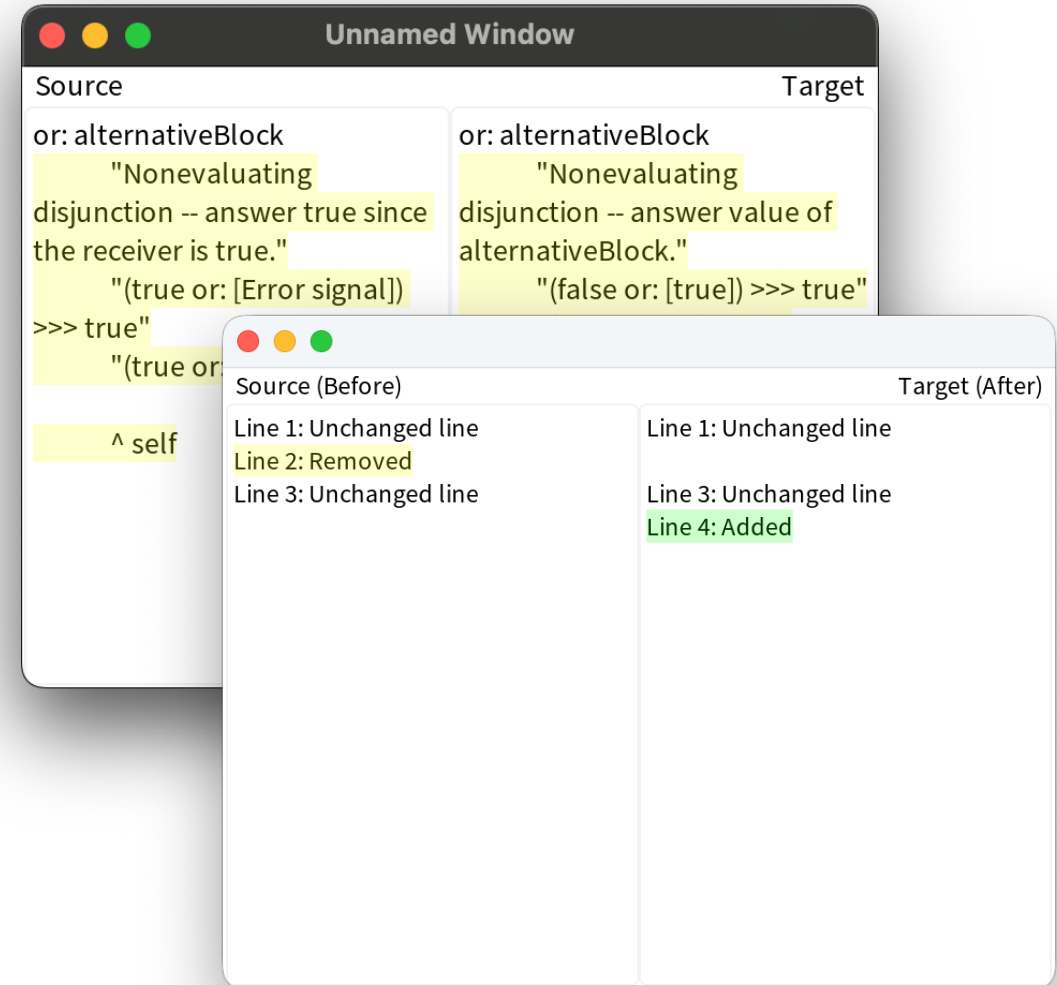
- **SpRoassalPresenter:** Opening Roassal visualisations as presenter with Toplo / Bloc backend
- **Embed Visualisations:** Show interactive Roassal canvases (RSCanvas)





Diff Presenter

- Diff Presenter: SpToDiffPresenter comparison widget using ToDiffElement
- Double-column comparisons with highlighting





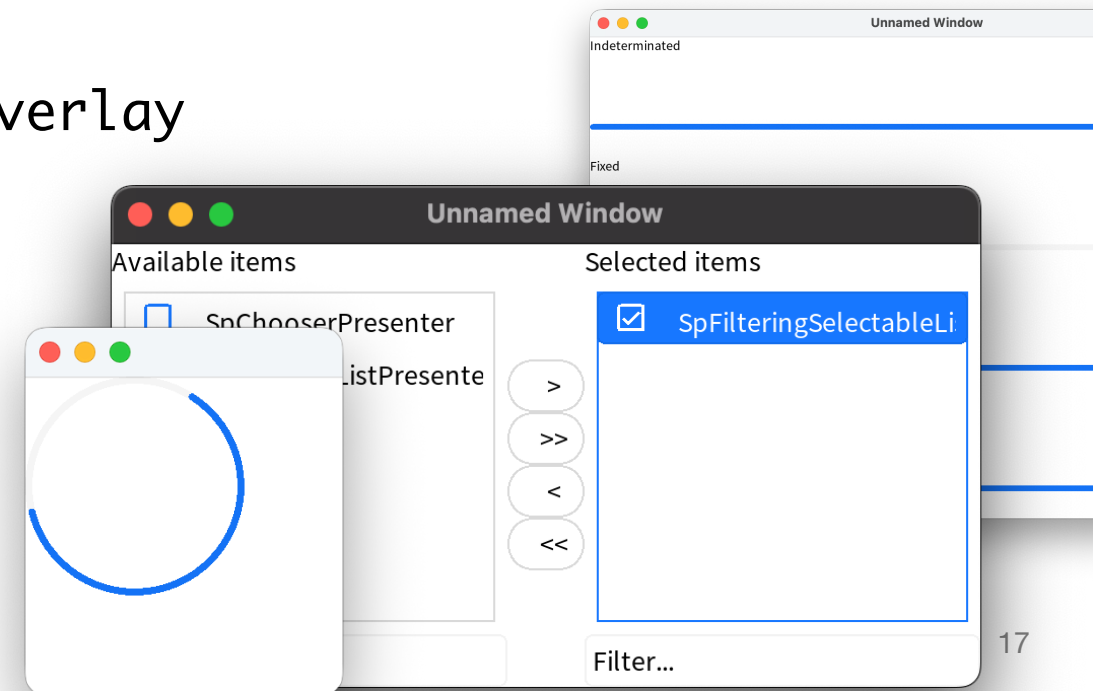
Other New Adapters

Forms: `NumberInputField`, `SearchInputField`, `Link`, `Slider`, `Spinner`, `ProgressBar`

Windows & Popovers: `InnerWindow`, `ModalWindow`, `Popover`, `StatusBar`, `Notebook`, `Tab`, `ActionBar`

Layouts & Structure: `Miller`, `Grid`, `Scrollable`, `Overlay`

Custom: `SpBlocPresenter` to inline `BlElements`



Status: 42 Spec widgets DO have adapter

- SpActionBarPresenter
- SpButtonBarPresenter
- SpButtonPresenter
- SpCheckBoxPresenter
- SpCodePresenter
- SpComponentListPresenter
- SpDialogWindowPresenter
- SpDiffPresenter
- SpDropListPresenter
- SpImagePresenter
- SpLabelPresenter
- SpLinkPresenter
- SpListPresenter
- SpListViewPresenter
- SpMenuBarPresenter
- SpMenuPresenter
- SpMockMenuPresenter
- SpModalWindowPresenter
- SpNotebookPresenter
- SpNumberInputFieldPresenter
- SpPaginatorPresenter
- SpPopoverPresenter
- SpProgressBarPresenter
- SpRadioButtonPresenter
- SpSearchInputFieldPresenter
- SpSliderPresenter
- SpSpinnerPresenter
- SpStatusBarPresenter
- SpTablePresenter
- SpTestWorldPresenter
- SpTextInputFieldPresenter
- SpTextPresenter
- SpToggleButtonPresenter
- SpToolbarButtonPresenter
- SpToolbarPopoverButtonPresenter
- SpToolbarPresenter
- SpToolbarToggleButtonPresenter
- SpTreeListViewPresenter
- SpTreePresenter
- SpTreeTablePresenter
- SpWindowPresenter
- SpWorldPresenter

May be not full support :)

Status: 17 Spec widgets DO NOT have adapter

- SpAthensPresenter
- SpBlockedDialogWindowPresenter
- SpColumnViewPresenter
- SpDiffUnifiedPresenter
- SpDropDownPresenter
- SpEasyDropDownPresenter
- SpMenuButtonPresenter
- SpMenuGroupPresenter
- SpMenuItemPresenter
- SpMorphPresenter
- SpPatchPresenter
- SpPatchSideBySidePresenter
- SpSwitchPresenter
- SpTickingWindowPresenter
- SpToolbarMenuButtonPresenter
- SpTransferPresenter
- SpTreeColumnViewPresenter

Status: Spec Layouts almost completed

7 Toplo adapters DO exist:

- SpBoxLayout
- SpGridLayout
- SpMillerLayout
- SpOverlayLayout
- SpPanedLayout
- SpScrollableLayout
- SpTabLayout

Only 1 Toplo adapter is missing:

- SpFrameLayout

Pharo in Spec-Toplo

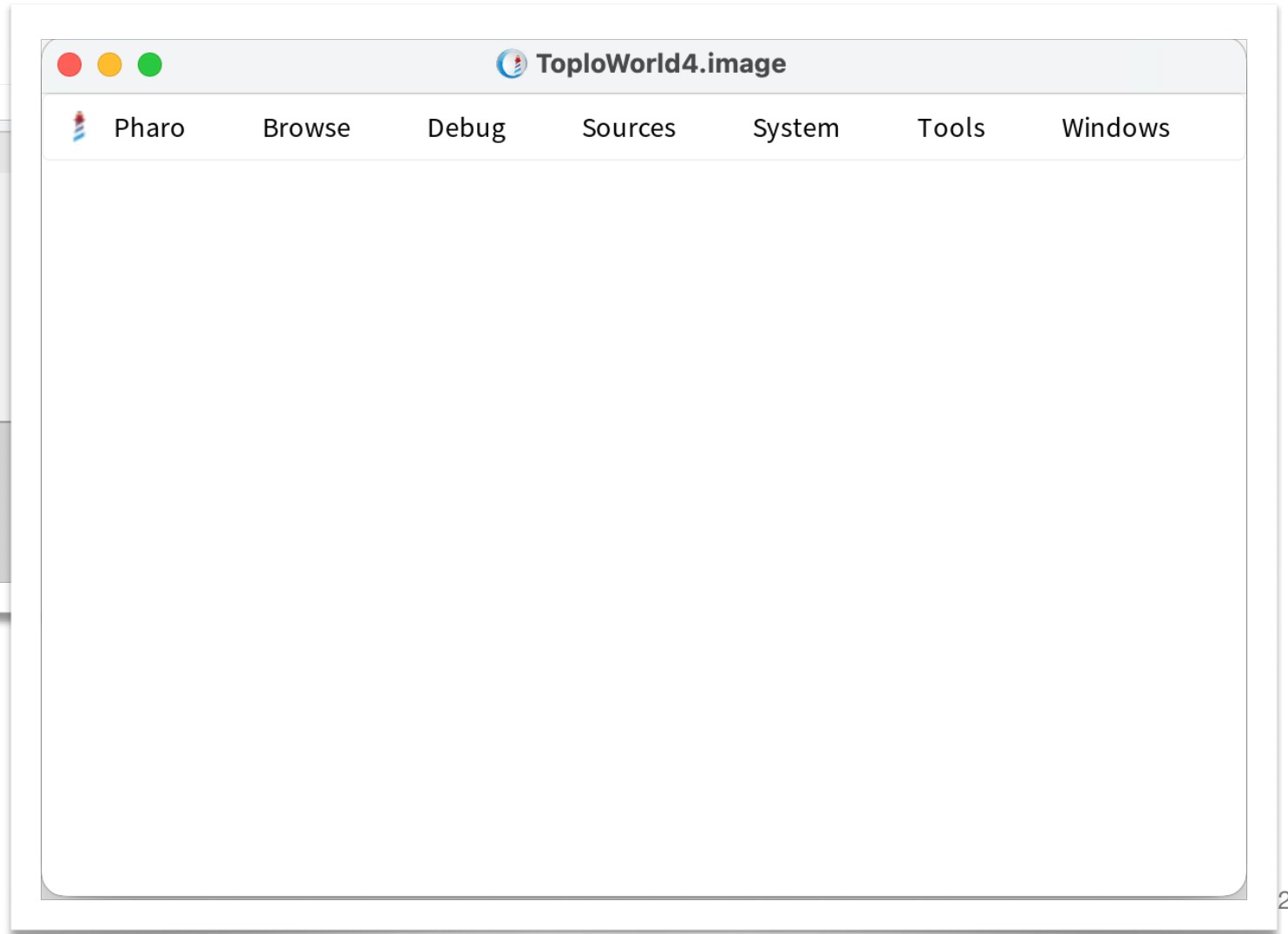
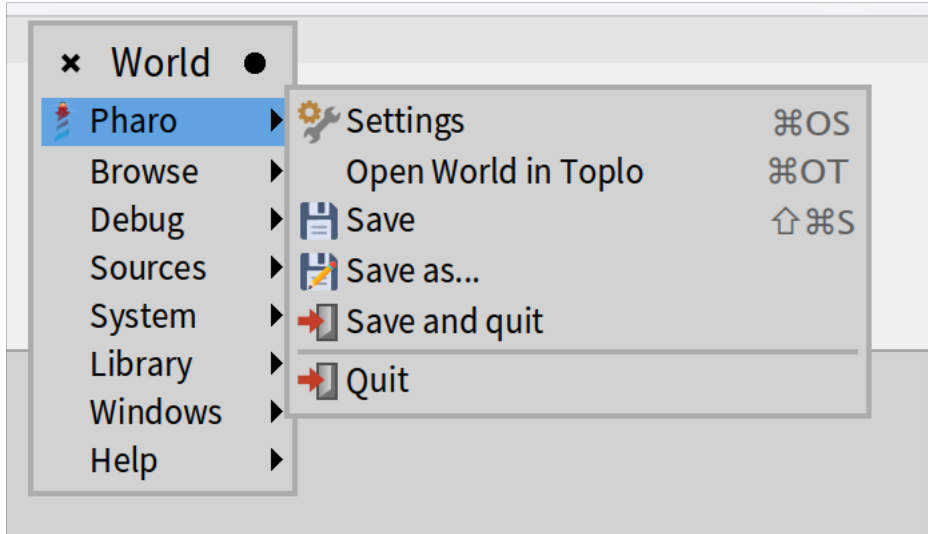


Demo time... if it works...





Opening the world in Spec-Toplo





Playground

×

Playground

⌵

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📊

🕒

☰

Do it all Publish Bindings Versions Page

1 1+1

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🔍

🐛

↺

🔗

📊

Debug Set Scope

Integer

Raw

key

se 2

decir 2

1 self

Pages

Pages⌵1

Preview⌵2

1+1

Today, 6:36 pm

World menubar
Today, 6:28 pm

World menubar
Today, 6:26 pm

WorldState
Today, 6:26 pm

app := StPharoToploApplication new.
Today, 6:14 pm

SpToploExample openToIceberg
Today, 6:06 pm

| space pane iconProvider item |
Today, 6:06 pm

Metacello new

1 1+1

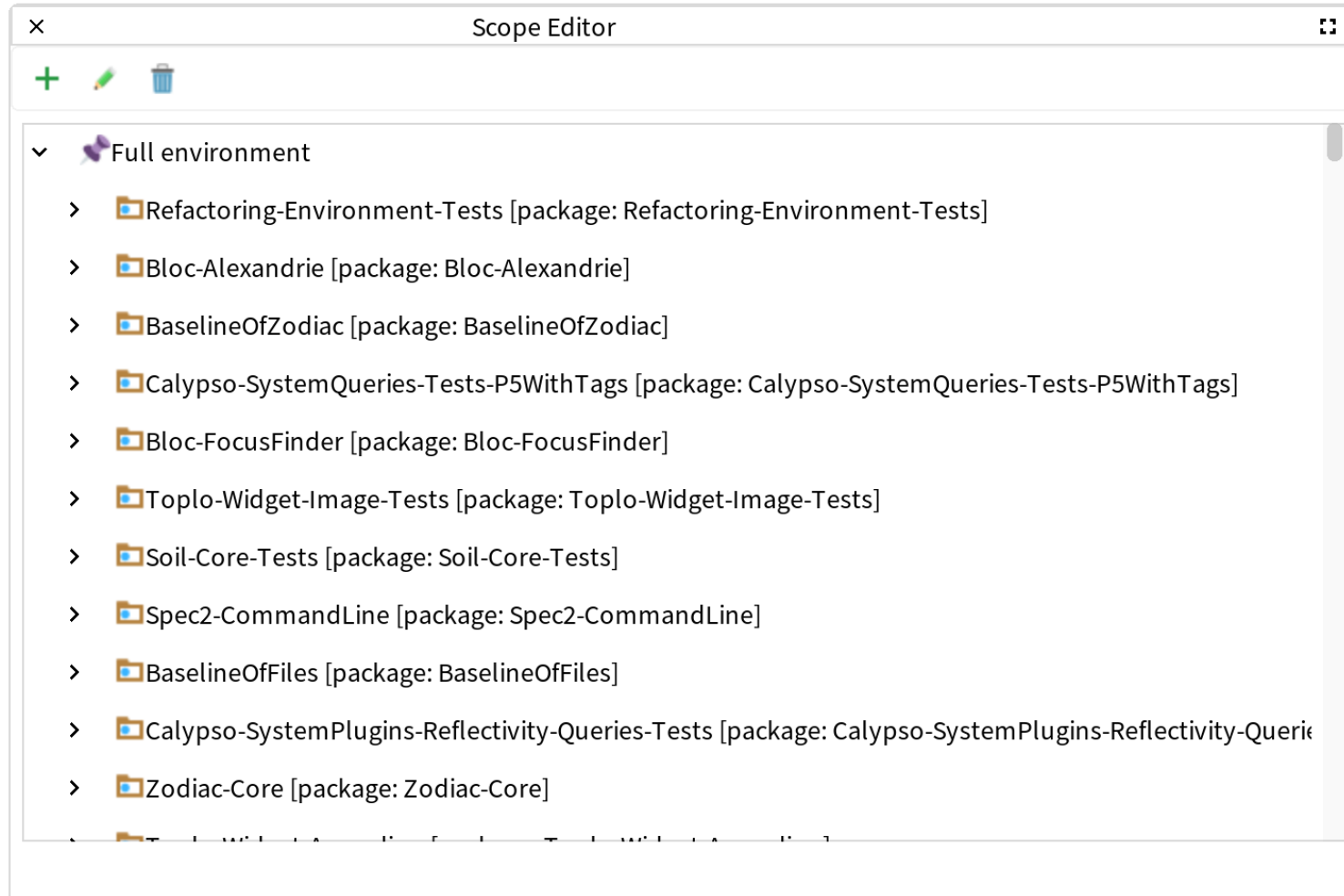
Close

Load

Iceberg

Repositories			
Fetch all Add Settings			
Projects XML System			
Repositories	Status	Branch	Hash
BlocBenchs	Up to date	master	fc2100d
*Bloc	Uncommitted changes	dev	041defd
Alexandrie	Up to date	dev	4083bf8
BitmapCharacterSet	Detached HEAD	v1.2.9, v1.2.x	62ee106
OrderPreservingDictionary	Detached HEAD	v1.6.1, v1.6.x	7b3ab36
Tutorials	Up to date	master	9eedb5e
Toplo	Up to date	dev	685e249
Album	Up to date	dev	a20f74b
FFICallLogger	Up to date	master	202756b
Filter...			

Scope Editor



Test Runner

Tests Runner

⌵ Minimize

Packages (1 selected):

Tests Cases (1 selected):

Grouped by type of result

AI-Algorithms-Graph-Tests

AI-Normalization-Tests

AST-Core-Tests

Album-Examples

Album-Tests

Alexandrie-Base-Tests

Alexandrie-Blur-Tests

Alexandrie-Cairo-Tests

Alexandrie-CairoFreetype-Te

Alexandrie-Canvas-Tests

Alexandrie-FontManager-Tes

Alexandrie-FreeType-Tests

Alexandrie-Harfbuzz-Tests

Alexandrie-NewTools-Tests

AePixelComparisonTe

AePixelMatchTest

Results:

Errors (0)

Failures (0)

Skipped tests (0)

Passing tests (5)

AePixelComparisonTest>>#testEmptyExpectedForm

AePixelComparisonTest>>#testIsMatch

AePixelComparisonTest>>#testMismatchingPixelRatio

AePixelComparisonTest>>#testMismatchingPixels

AePixelComparisonTest>>#testNumberOfMismatchingF

ExpectedFailures (0)

Unexpected passed tests (0)

Filter...

Filter...

Run Tests

2026-07-08 18:43: Tests finished.

System Reporter

×

System Reporter

⌵

Image

Image Parameters

Image Sources

VM General

VM Options

VM Modules

VM Parameters

VM Stats

OS

OS Environment

Loaded VM Modules

/Users/admin/Documents/Pharo/vms/140-x64/Pharo.app/C
/Users/admin/Documents/Pharo/vms/140-x64/Pharo.app/C
/Users/admin/Documents/Pharo/vms/140-x64/Pharo.app/C
/Users/admin/Documents/Pharo/vms/140-x64/Pharo.app/C
B2DPlugin VMMaker.oscog-eem.2480 (e)
BitBlitPlugin VMMaker.oscog-eem.2493 (e)
FileAttributesPlugin FileAttributesPlugin.oscog-akg.49 (e)
FilePlugin VMMaker-tonel.1 (e)
FloatArrayPlugin VMMaker-tonel.1 (e)
LargeIntegers v2.0 VMMaker.oscog-eem.2495 (e)
LocalePlugin VMMaker.oscog-eem.2495 (e)
MiscPrimitivePlugin VMMaker.oscog-eem.2480 (e)
SurfacePlugin VMMaker-tonel.1 (e)
UUIDPlugin
UnixOSProcessPlugin
VMConstruction-Plugins-OSProcessPlugin.oscog-dtl.66 (e)
libc.dylib
libfreetype.dylib
libobjc.dylib

VM Built-in Modules

Special Thanks

- **Alain Plantec:** Led the Toplo widget redesign, unified list/table architectures, and designed circular menus, resizable tables, and tree structures... and more
- **Benoit Verhaeghe:** Pushed a lot the Spec-Toplo adapter development. Mapping Spec presenters to Toplo widgets.



Alain Plantec

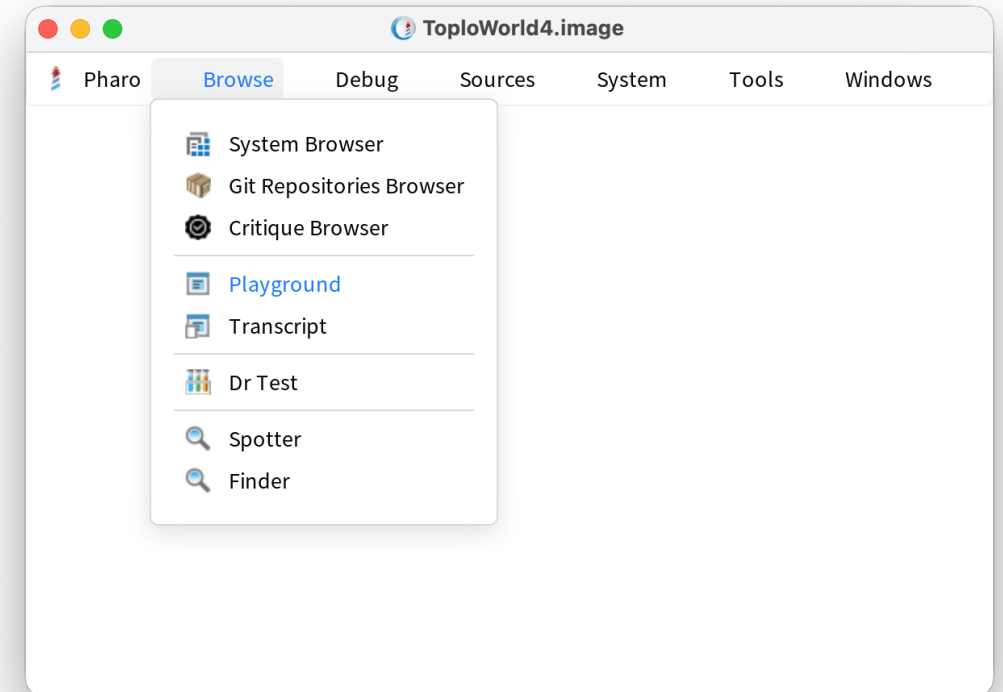


Benoit Verhaeghe



Status & Roadmap

- Core Complete: Most Spec2 presenters now adapted to Toplo widgets.
- Next Steps:
 - Expand widget catalog, and improve Album
 - Implement Missing Adapters and Widgets
- Next Steps in Pharo:
 - World and All Spec applications working
 - Integrate in Pharo Image
 - Nice interaction between Morphic and Toplo worlds.
 - Multiworlds for real



**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!!!**