



Pharo 9 Status

Consortium Meeting

25 February 2021



Original Roadmap for Pharo 9

- Headless VM
- FFI improvements
- Spec 2: Morphic & GTK Backend
- Sista Bytecodes w/ Full Block Closures
- Memory Management Configuration
- Integration with Windows
- Tools migration (with improvements)
 - Debugger
 - Inspector
 - Playground
- Clean-ups / Bugfixes / Improvements



VM Status (Done Dec 2020)

Headless VM

- SDL2 World Renderer (Done)
- Remove old VM code for handling graphics & events (Done)
- Idle VM (Done)
- Threaded FFI backend for UFFI (Done)
- Different running strategies (Worker / Same Thread / Main Thread) (Done)
- Consider using Lowcode to replace part of the machinery (Done / Discarded)
- Replace memory access with machine code primitives (Done)
- Improve FFI speed on Callbacks & Callouts (Done)
- JIT Testing Infra (Done)
- Replace Old FFI Backend (Done)
- Use headless VM as default for Pharo 9 (Done)



VM Status

ARM v8 (NEW)

- ARMv8 JIT VM (JIT + Libraries)
 - Ubuntu / Raspbian / Manjaro Linux (Done)
 - Amazon EC2 - ARM Machine (Done)
 - Windows ARM (Done)
 - Apple M1 Stack VM (Done)
 - Apple M1 JIT VM (Ongoing)

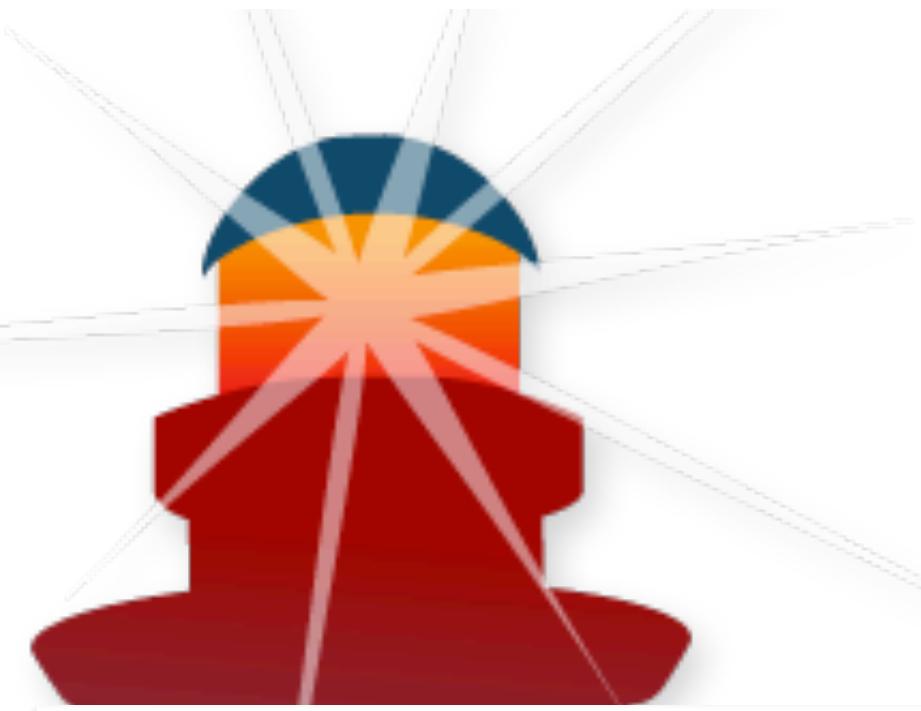
Soon to be publish as
stables!



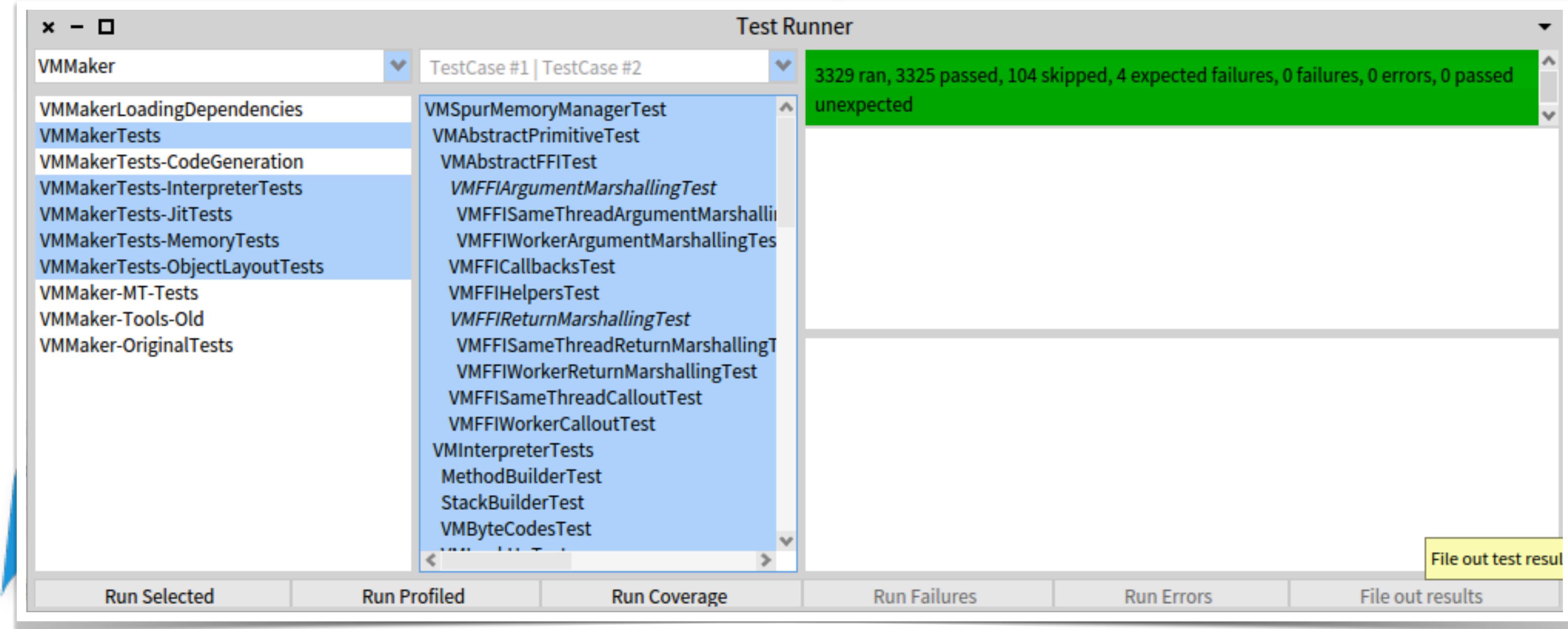
Build process improvements

Simple VM Building

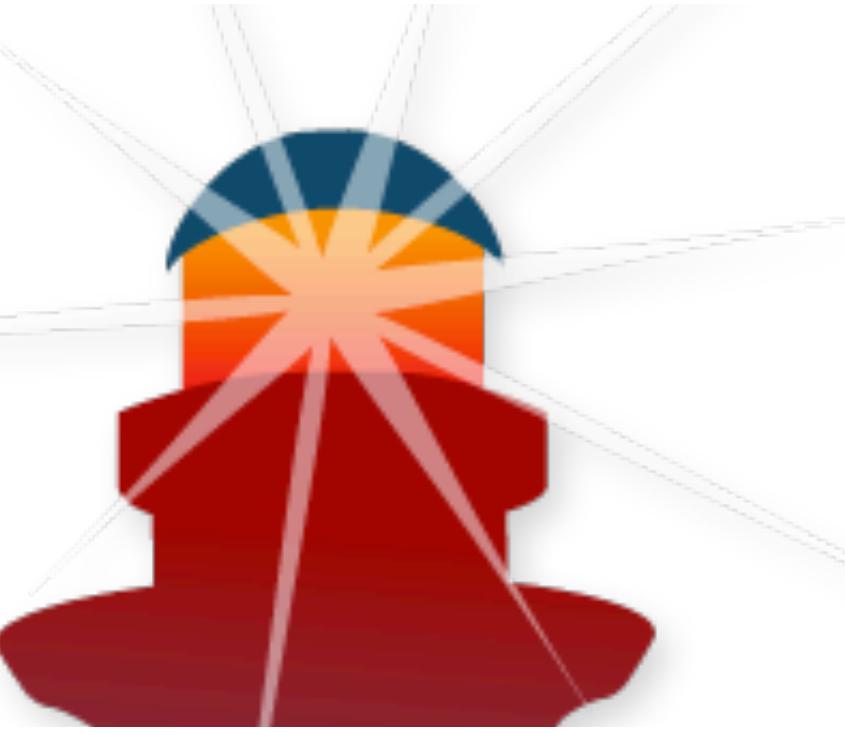
- Better integration with System libraries
- Better integration with IDEs (Visual Studio / Eclipse / Xcode)
- Better support for compiler toolchains (gcc / clang / MSVC)
- Selectable Features at build time



Testing VM Tests



- FFI
- Interpreter
- JIT
- Memory Model
- Code Translation
- Machine Code generation
- ...



Open Build Service

Better Support for Linux Distributions

	Arch	Debian_10	Debian_9.0	Debian_Testing	Fedora_31	Fedora_32	Fedora_33	Raspbian_10	Raspbian_9.0			
	↑↓	📦 x86_64↓	📦 x86_64↓	📦 x86_64↓	📦 x86_64 ↑↓	📦 x86_64↓	📦 x86_64↓	📦 x86_64↓	📦 aarch64↓	📦 x86_64↓	📦 aarch64↓	📦 x86_64↓
libffi7		succeeded	succeeded		succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	
libgit2-1		succeeded			failed							
pharo9	failed	succeeded	failed	failed	failed	failed	failed	succeeded	succeeded	failed	failed	
pharo9-ui	succeeded	succeeded	succeeded	failed	succeeded	succeeded	succeeded	succeeded		succeeded		

	Raspbian_9.0		openSUSE_Leap_15.1		openSUSE_Leap_15.2		openSUSE_Tumbleweed		xUbuntu_18.04	xUbuntu_19.04	xUbuntu_20.04		
	↑↓	arch64↓	📦 x86_64↓	📦 x86_64	↑↓	📦 x86_64	↑↓	📦 x86_64	↑↓	📦 x86_64	↑↓	📦 aarch64↓	📦 x86_64↓
libffi7	succeeded	succeeded		succeeded		succeeded		succeeded	succeeded	succeeded	succeeded	succeeded	
libgit2-1			succeeded		succeeded				succeeded	succeeded		succeeded	
pharo9	failed	failed	failed	failed	failed	failed	failed	failed	succeeded	succeeded	succeeded	succeeded	
pharo9-ui		succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	

Multiple Architectures

Supporting system
packagings

Building using existing
system libraries

Available:

- Arch / Manjaro
- Debian 9/10
- Raspbian 9/10
- Ubuntu 18.04-20.10

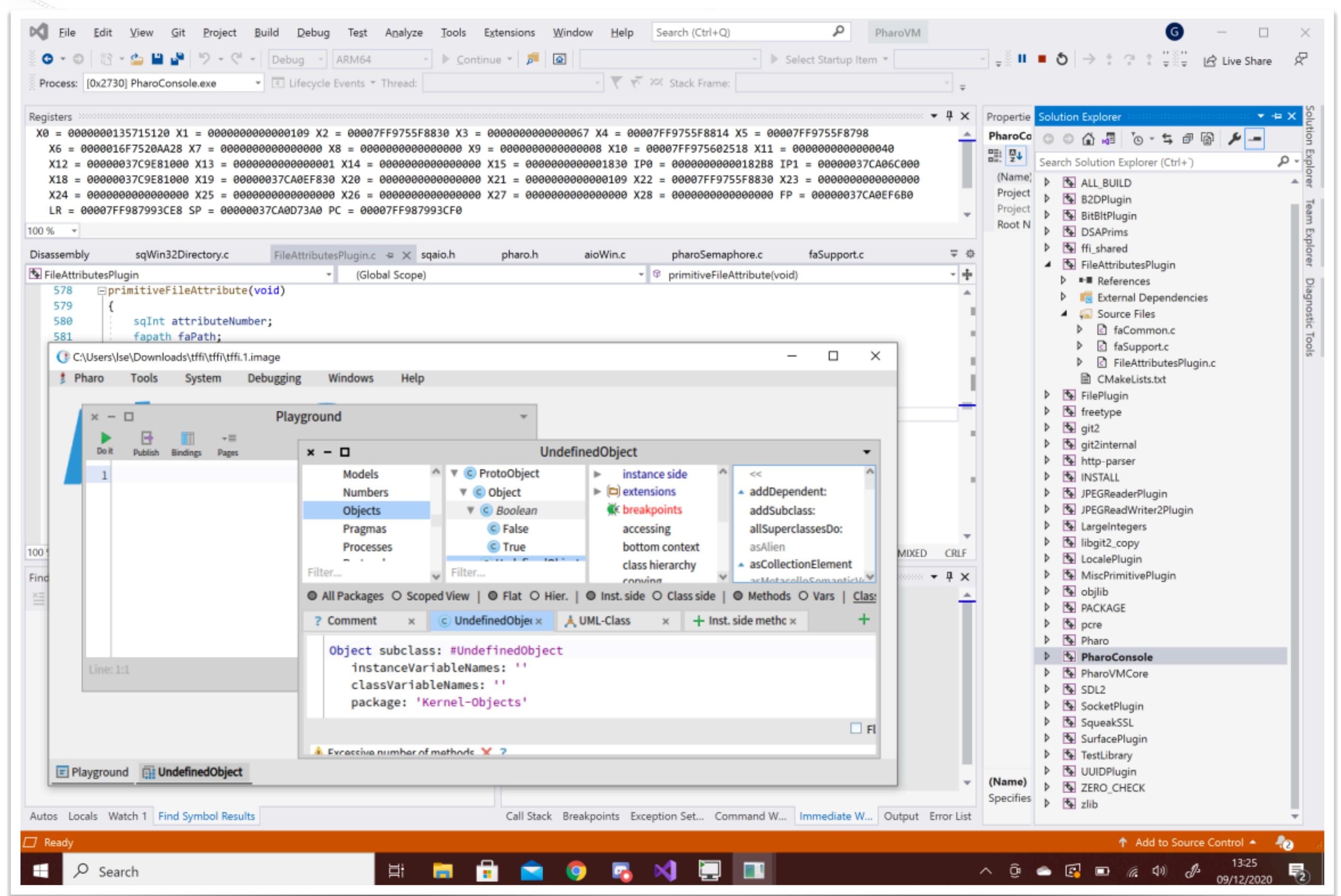
On going:

- Fedora 31/32/33
- RHEL 6/7
- openSuse Leap/Tumbleweed

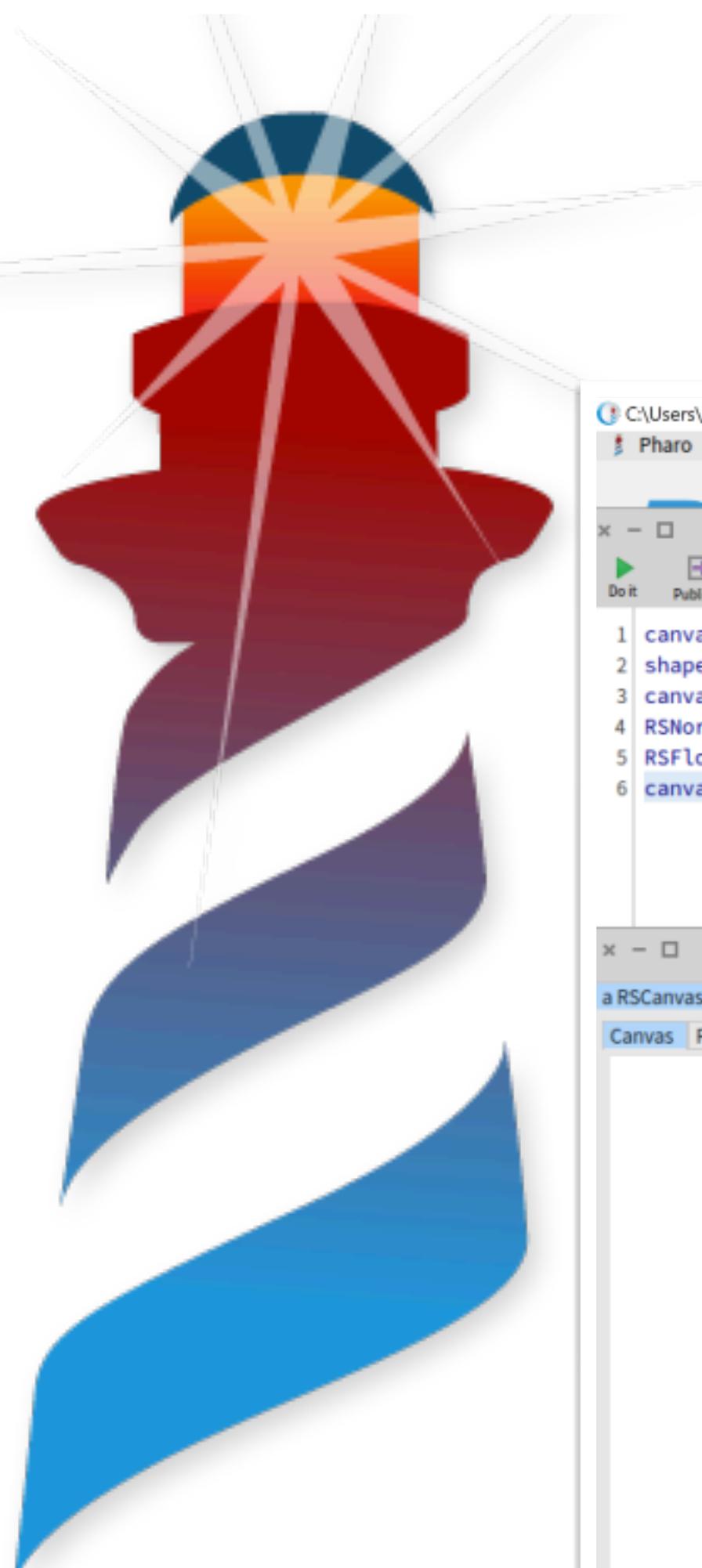


Visual Studio Support

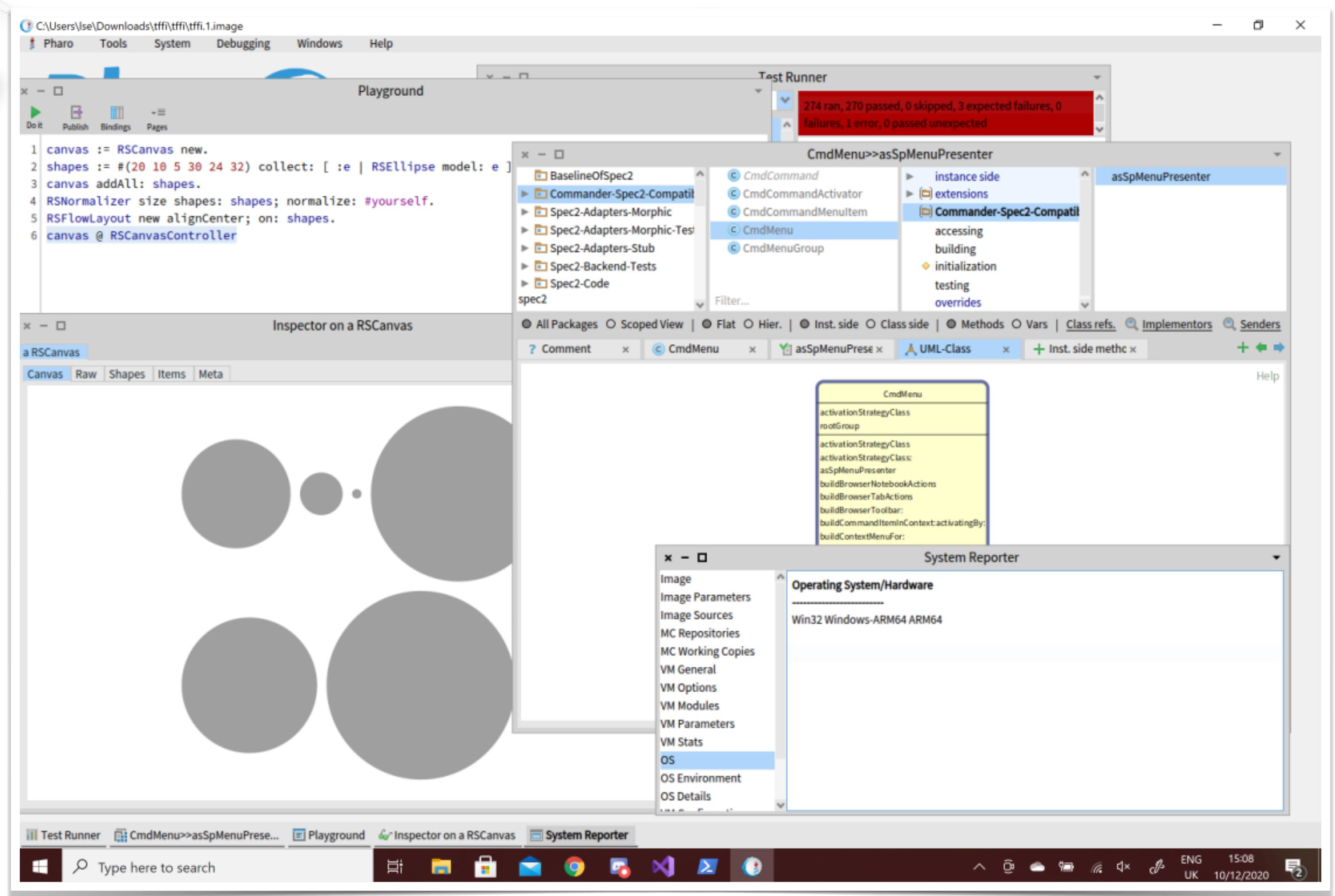
Building & Debugging



MSVC - No cygwin

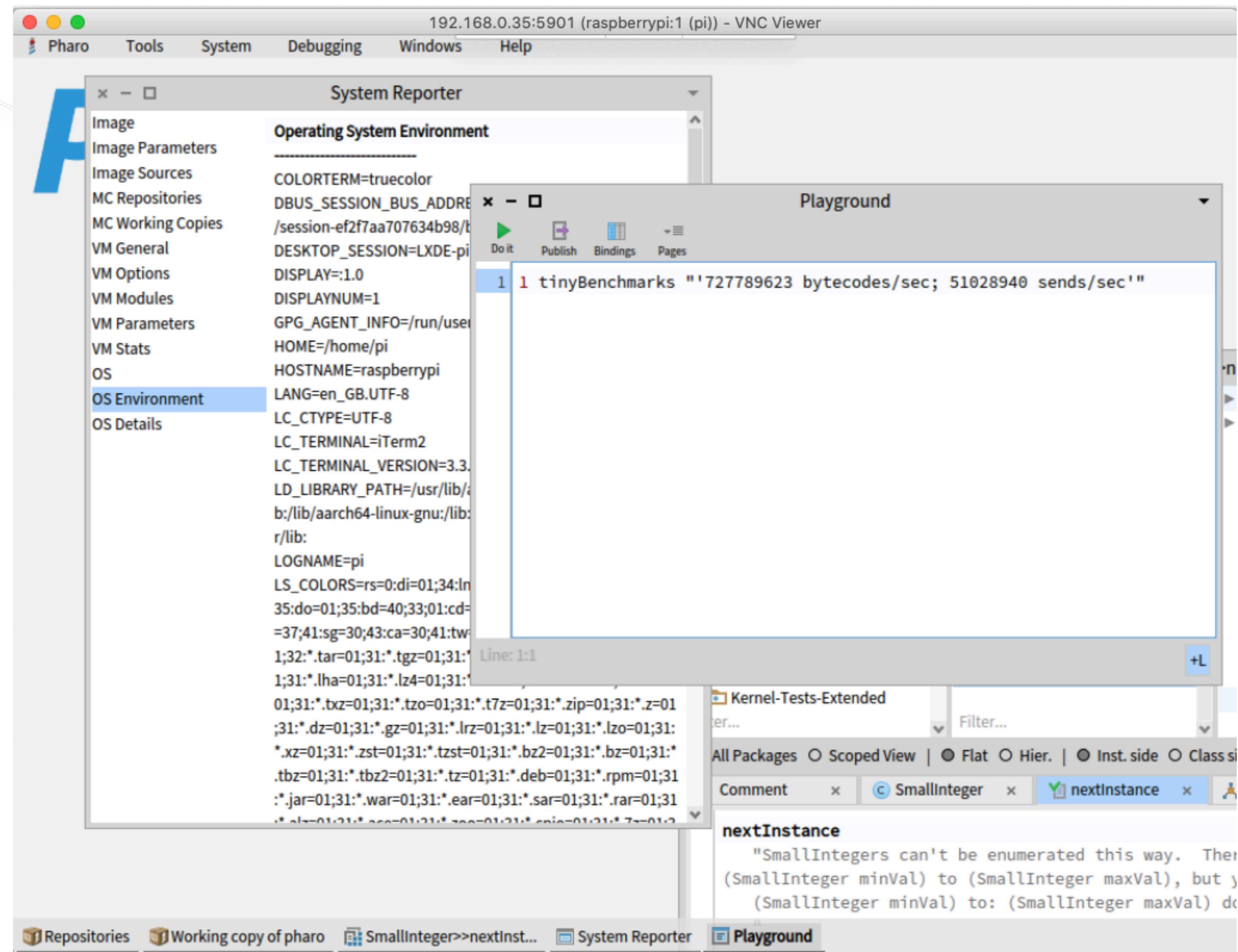


Windows ARM



MSVC - No cygwin

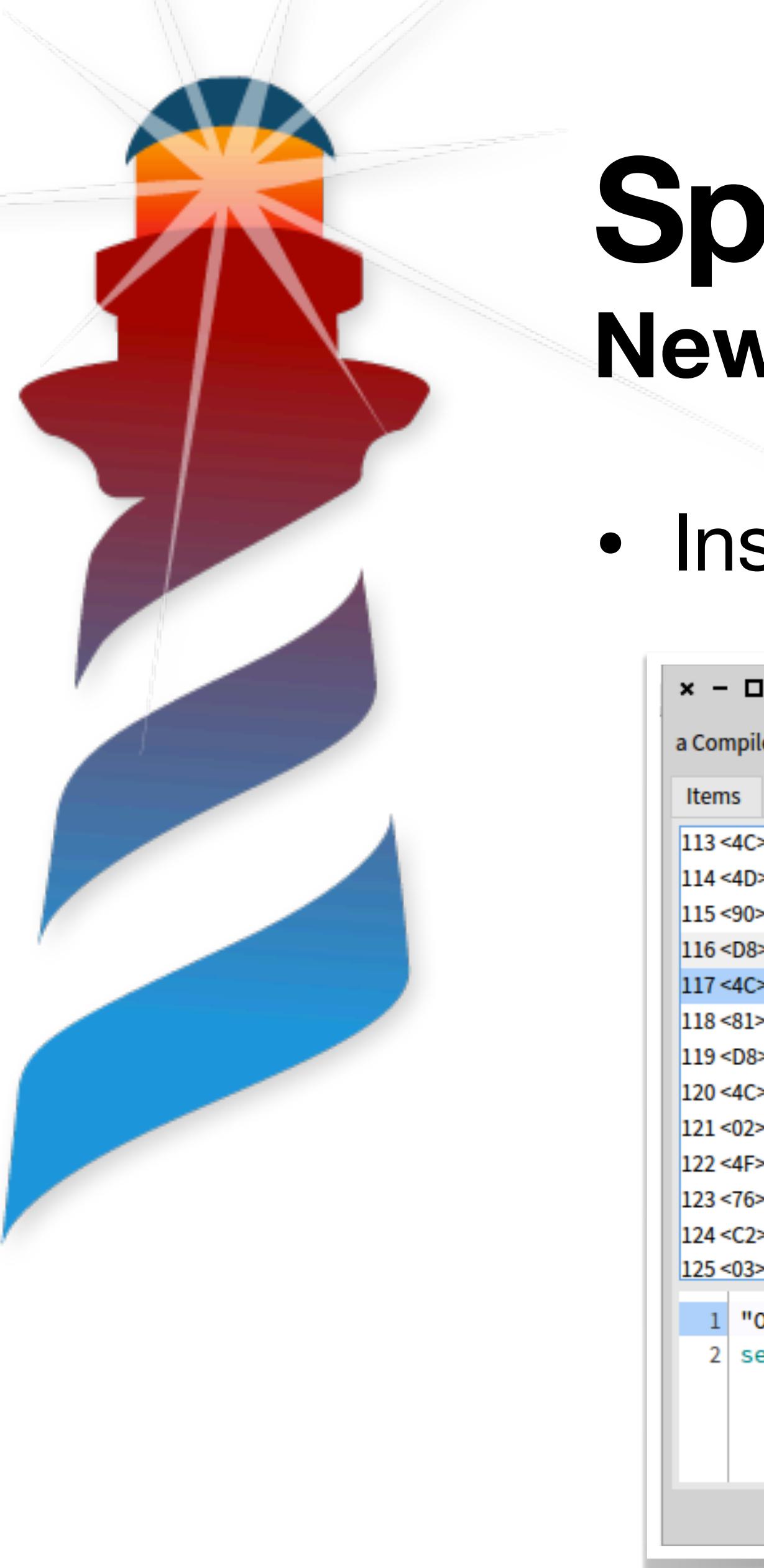
Raspbian





Spec 2 & NewTools Status (Done Dec 2020)

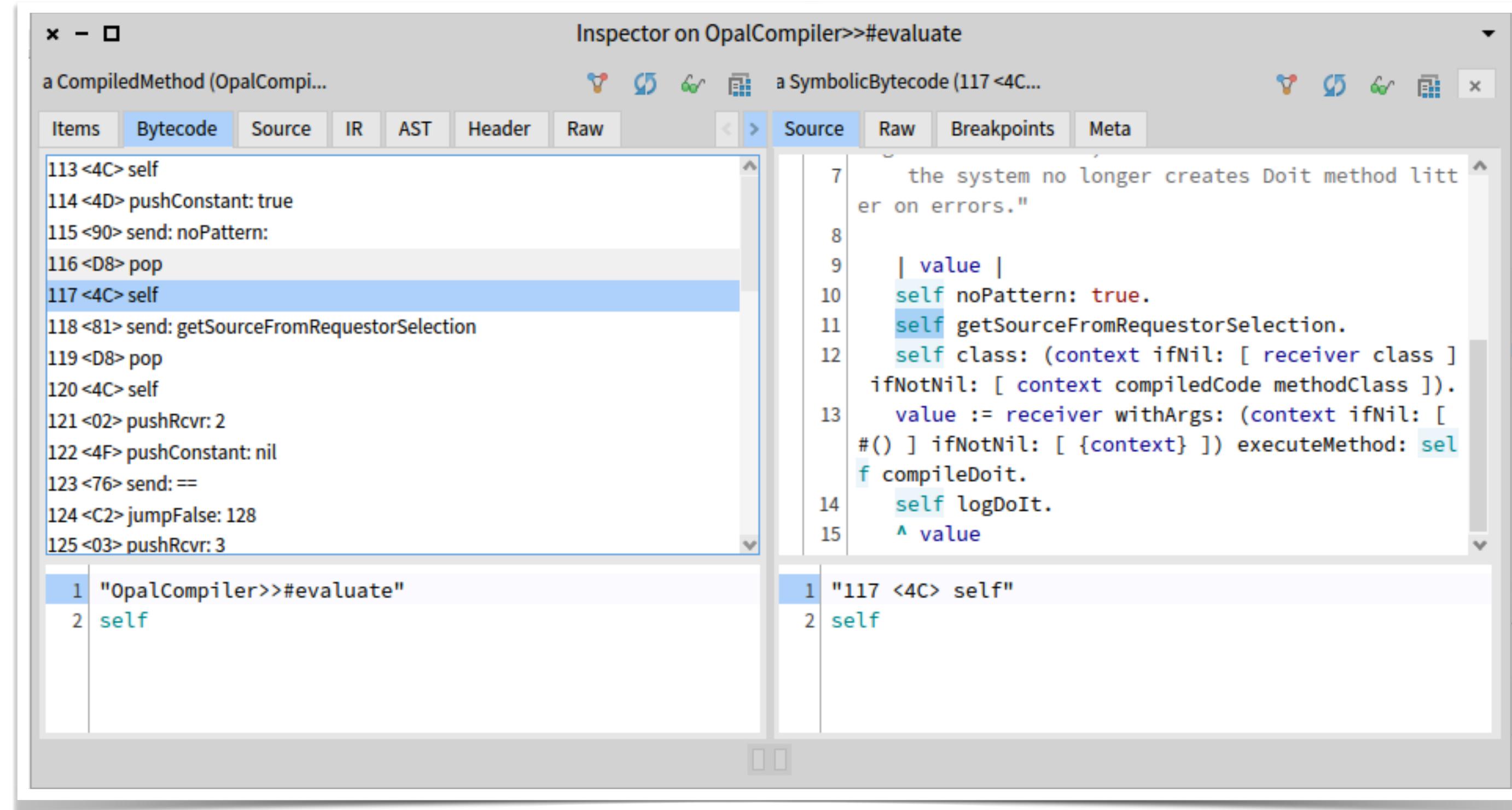
- Core & Basic Layouts (Done)
- Basic Presenters (Done)
- Application Support (Done)
- Styles / Themes (Done)
- Code Presenter (Done)
- Spec Core Documentation (Done)



Spec 2 & NewTools Status

New Tools in Spec2

- Inspector (Done)



The screenshot shows the Inspector tool interface with two panes. The left pane displays a list of bytecode instructions, and the right pane shows the corresponding source code.

Left Pane (Bytecode View):

```
113 <4C> self
114 <4D> pushConstant: true
115 <90> send: noPattern:
116 <D8> pop
117 <4C> self
118 <81> send: getSourceFromRequestorSelection
119 <D8> pop
120 <4C> self
121 <02> pushRcvr: 2
122 <4F> pushConstant: nil
123 <76> send: ==
124 <C2> jumpFalse: 128
125 <03> pushRcvr: 3
```

Right Pane (Source View):

```
7   the system no longer creates Doit method litter on errors."
8
9   | value |
10  self noPattern: true.
11  self getSourceFromRequestorSelection.
12  self class: (context ifNil: [ receiver class ]).
13  ifNotNil: [ context compiledCode methodClass ].
14  value := receiver withArgs: (context ifNil: [
15  #() ] ifNotNil: [ {context} ]) executeMethod: self.
f compileDoit.
self logDoIt.
^ value
```

Bottom Left:

```
1 "OpalCompiler>>#evaluate"
2 self
```

Bottom Right:

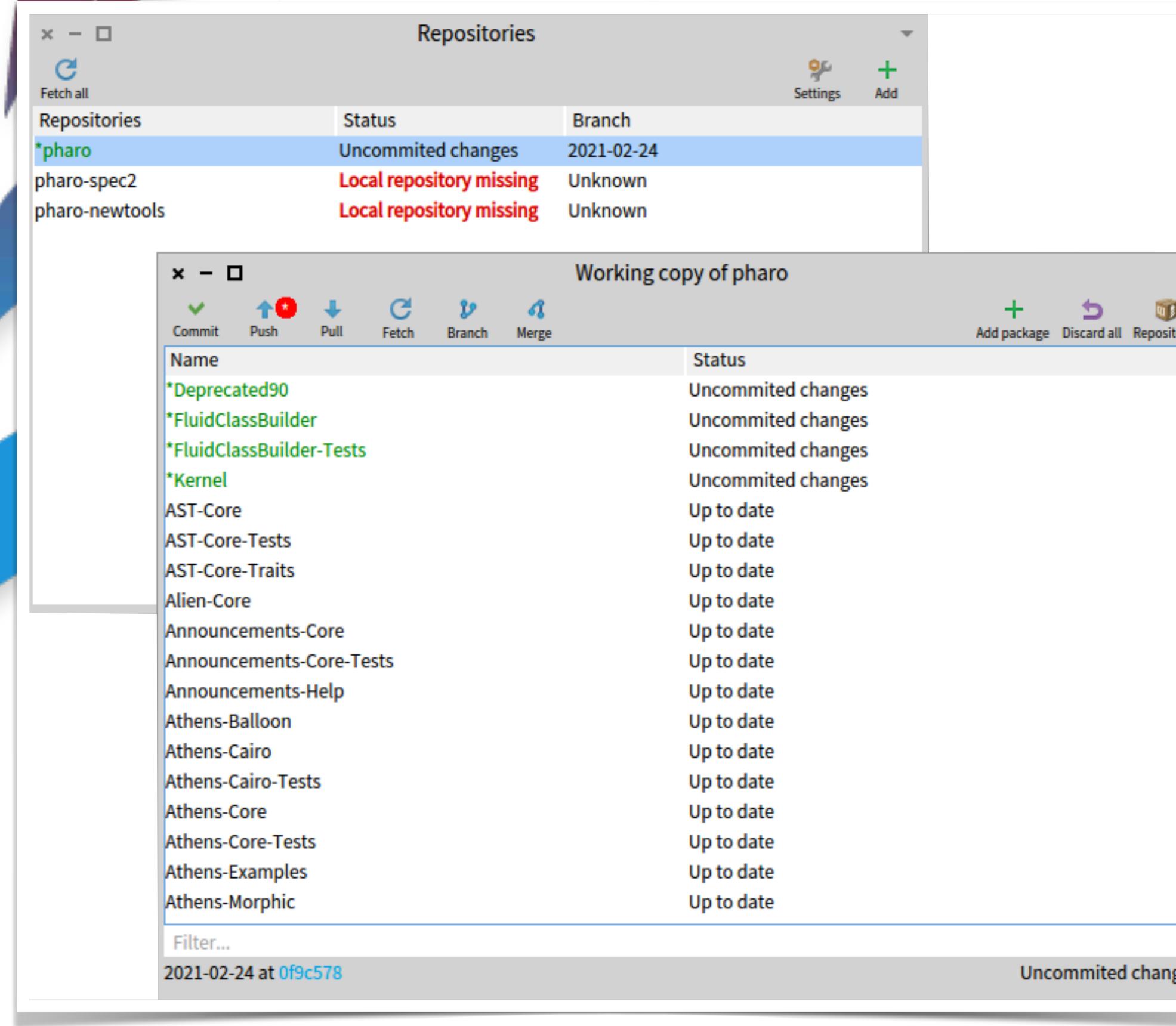
```
1 "117 <4C> self"
2 self
```



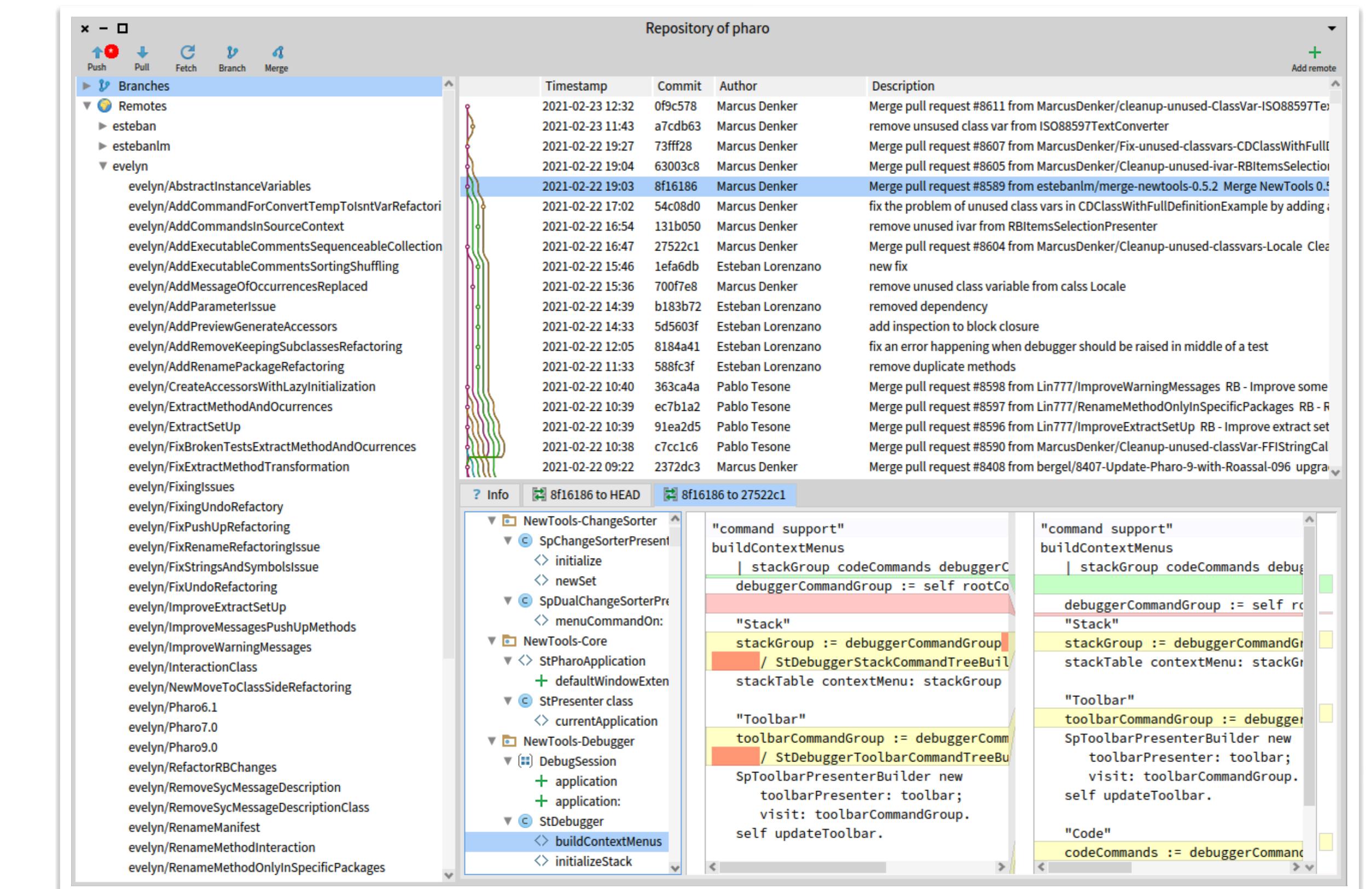
Spec 2 & NewTools Status

New Tools in Spec2

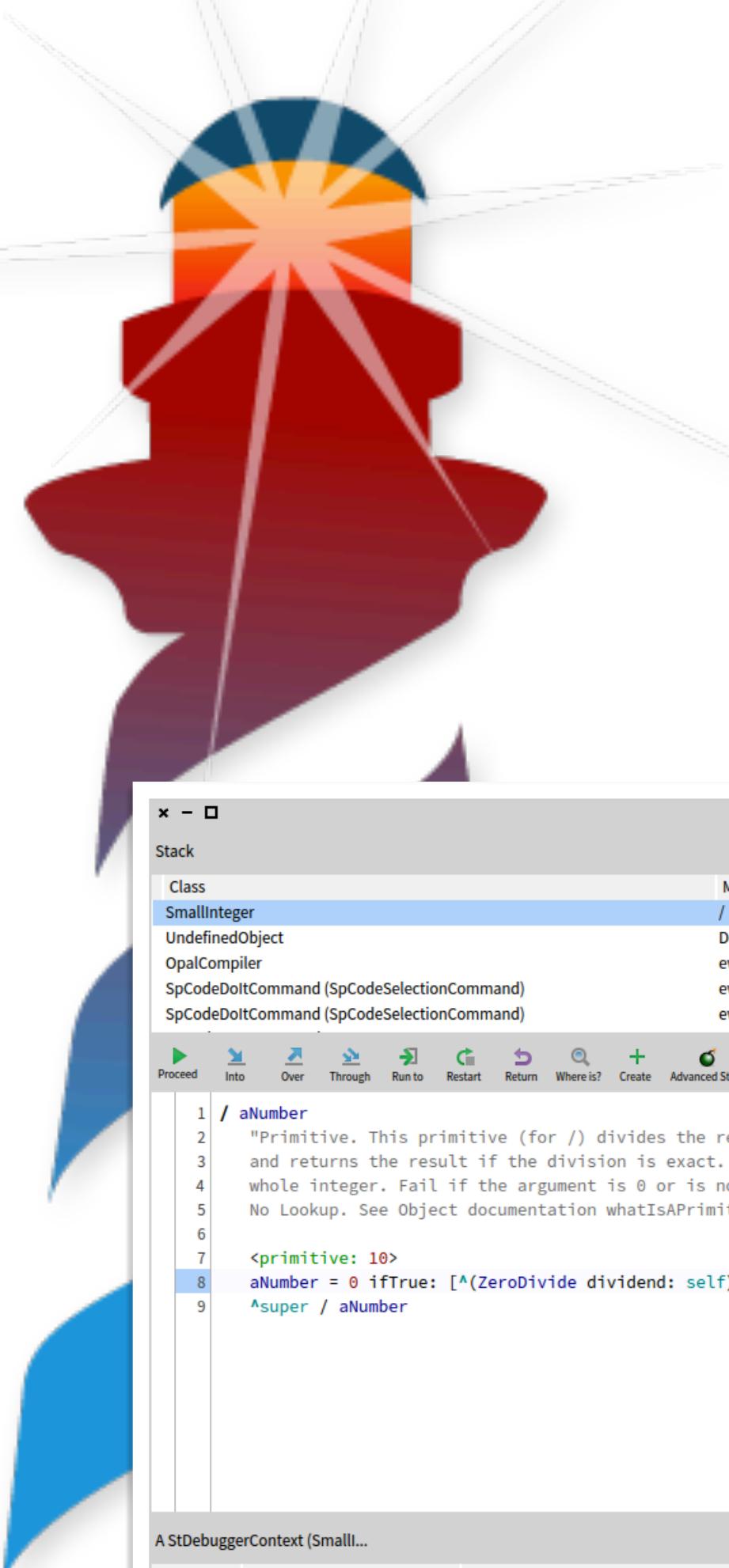
- Iceberg migration to Spec2 (Ongoing)



The screenshot shows the Pharo IDE interface. The top pane, titled 'Repositories', lists three entries: 'pharo' (Status: Uncommitted changes, Branch: 2021-02-24), 'pharo-spec2' (Status: Local repository missing, Branch: Unknown), and 'pharo-newtools' (Status: Local repository missing, Branch: Unknown). The bottom pane, titled 'Working copy of pharo', shows a list of packages with their status: 'Deprecated90' (Uncommitted changes), 'FluidClassBuilder' (Uncommitted changes), 'FluidClassBuilder-Tests' (Uncommitted changes), 'Kernel' (Uncommitted changes), 'AST-Core' (Up to date), 'AST-Core-Tests' (Up to date), 'AST-Core-Traits' (Up to date), 'Alien-Core' (Up to date), 'Announcements-Core' (Up to date), 'Announcements-Core-Tests' (Up to date), 'Announcements-Help' (Up to date), 'Athens-Balloon' (Up to date), 'Athens-Cairo' (Up to date), 'Athens-Cairo-Tests' (Up to date), 'Athens-Core' (Up to date), 'Athens-Core-Tests' (Up to date), 'Athens-Examples' (Up to date), and 'Athens-Morphic' (Up to date). A footer at the bottom indicates 'Uncommitted changes' and the date '2021-02-24 at 0f9c578'.



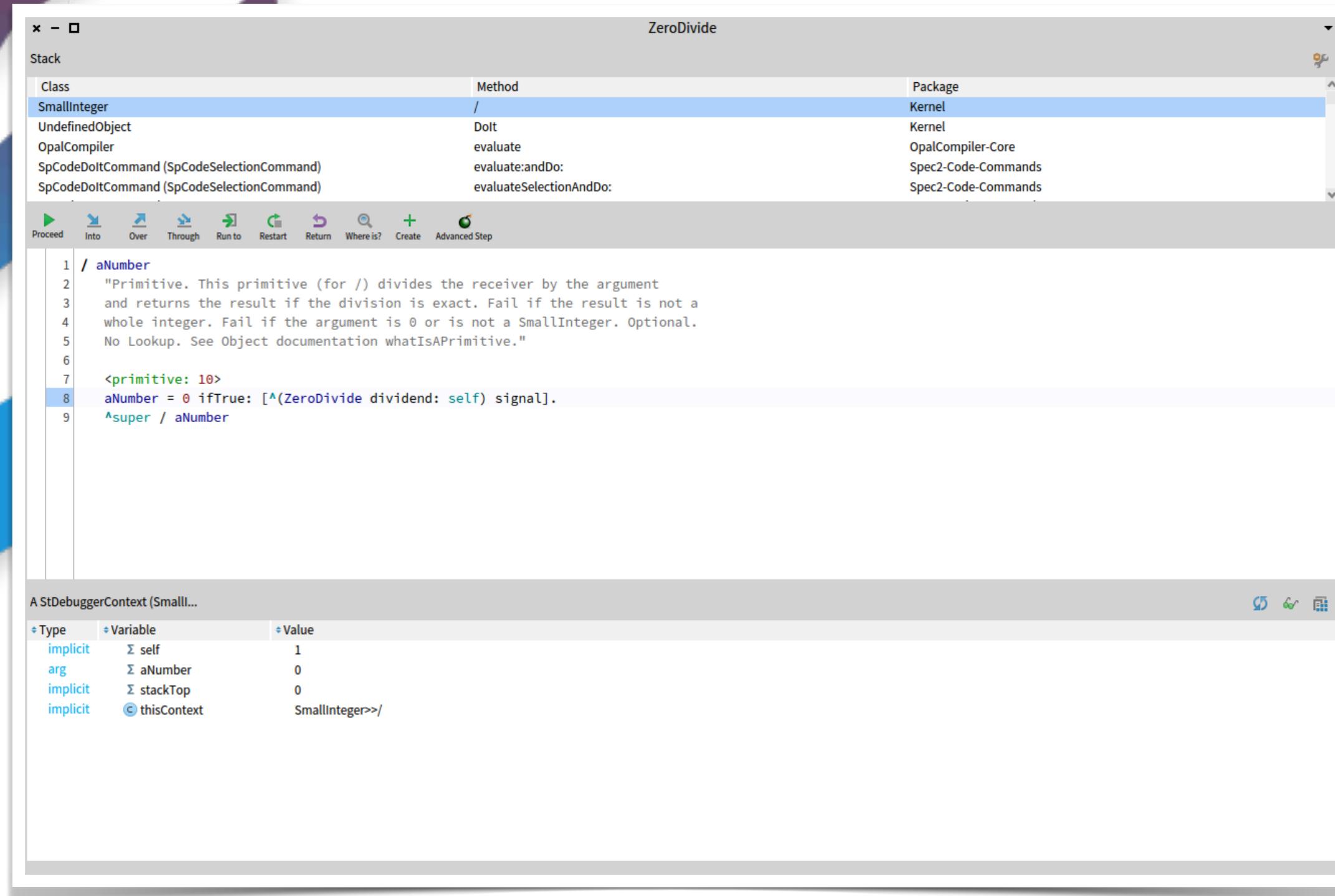
The screenshot shows the Pharo IDE interface with the title 'Repository of pharo'. The left pane displays a list of branches: 'Remotes' (esteban, estebanlm), and 'evelyn' (evelyn/AbstractInstanceVariables, evelyn/AddCommandForConvertTempToInstVarRefactori, evelyn/AddCommandsInSourceContext, evelyn/AddExecutableCommentsSequenceableCollection, evelyn/AddExecutableCommentsSortingShuffling, evelyn/AddMessageOfOccurrencesReplaced, evelyn/AddParameterIssue, evelyn/AddPreviewGenerateAccessors, evelyn/AddRemoveKeepingSubclassesRefactoring, evelyn/AddRenamePackageRefactoring, evelyn/CreateAccessorsWithLazyInitialization, evelyn/ExtractMethodAndOccurrences, evelyn/ExtractSetUp, evelyn/FixBrokenTestsExtractMethodAndOccurrences, evelyn/FixExtractMethodTransformation, evelyn/FixingIssues, evelyn/FixingUndoRefactory, evelyn/FixPushUpRefactoring, evelyn/FixRenameRefactoringIssue, evelyn/FixStringsAndSymbolsIssue, evelyn/FixUndoRefactoring, evelyn/ImproveExtractSetUp, evelyn/ImproveMessagesPushUpMethods, evelyn/ImproveWarningMessages, evelyn/InteractionClass, evelyn/NewMoveToClassSideRefactoring, evelyn/Pharo6.1, evelyn/Pharo7.0, evelyn/Pharo9.0, evelyn/RefactorRBChanges, evelyn/RemoveSyncMessageDescription, evelyn/RemoveSyncMessageDescriptionClass, evelyn/RenameManifest, evelyn/RenameMethodInteraction, evelyn/RenameMethodOnlyInSpecificPackages, evelyn/RenameMethodOnlyInSpecificPackages). The right pane shows a detailed view of a commit log entry for '8f16186 to 27522c1', with a code editor displaying the 'SpChangeSorterPresent' class definition. The code editor highlights several sections of the code in green and red, indicating differences between the two versions of the class.



Spec 2 & NewTools Status

New Tools in Spec2

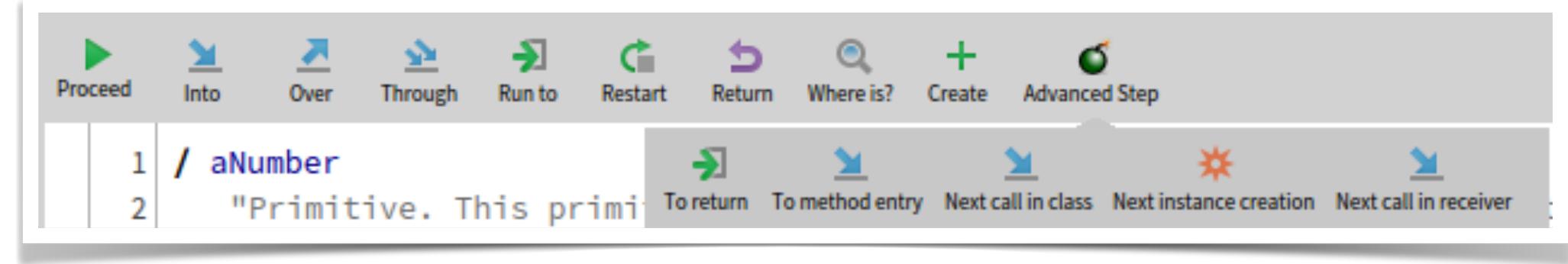
- Spec2 Debugger (Ongoing)



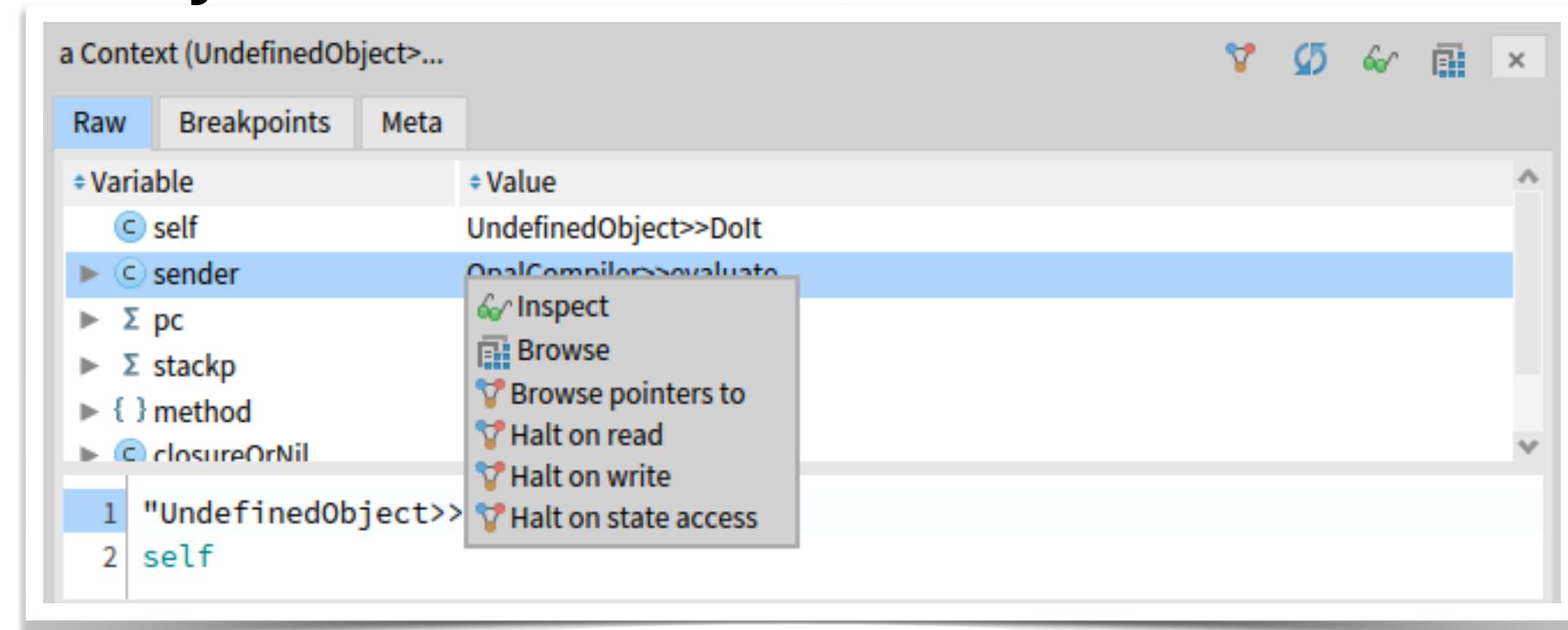
The screenshot shows the Spec2 Debugger interface with the following sections:

- Stack:** Displays the call stack with frames for SmallInteger, Dolt, Kernel, OpalCompiler-Core, Spec2-Code-Commands, and Spec2-Code-Commands.
- Code Editor:** Shows the source code for the `/ aNumber` primitive. The code handles division by zero and provides documentation for the primitive.
- Variable Inspector:** Shows the current context variables: `self` (value: 1), `arg` (value: 0), `stackTop` (value: 0), and `thisContext` (value: SmallInteger>/).

Advanced Stepping Operations



Object-Centric Halts





Spec 2 & NewTools Status

- Documentation
 - Layouts (**Ongoing**)
 - Widgets (**Done**)
 - Tutorial (**Ongoing**)
 - Book (**Ongoing / Delayed**)
- Spotter (**Ongoing**)
- Diff Presenter (**Ongoing**)



Image Status (Done Sept 2020)

- Sista Bytecodes w/ Full Block Closures (Done)
- Memory Management Configuration (Done)
- Integration with Windows (Done)
- Roassal3 Integrated (Done)



Image Status

Compiler Improvements

- Unifying objects variables into a single Hierarchy (Done)
- Improved Semantic Analysis (Done)
 - use Class and the Environment to lookup the variables
 - use Variable Hierarchy to model variables for name analysis.
- Improved AST Visitor(Done)
- Pragma lookup speed-up (Done)
- Compiler Speed Improvements (Done)
- Clean Block Improvements (Ongoing)
- Literal Sharing (Ongoing)



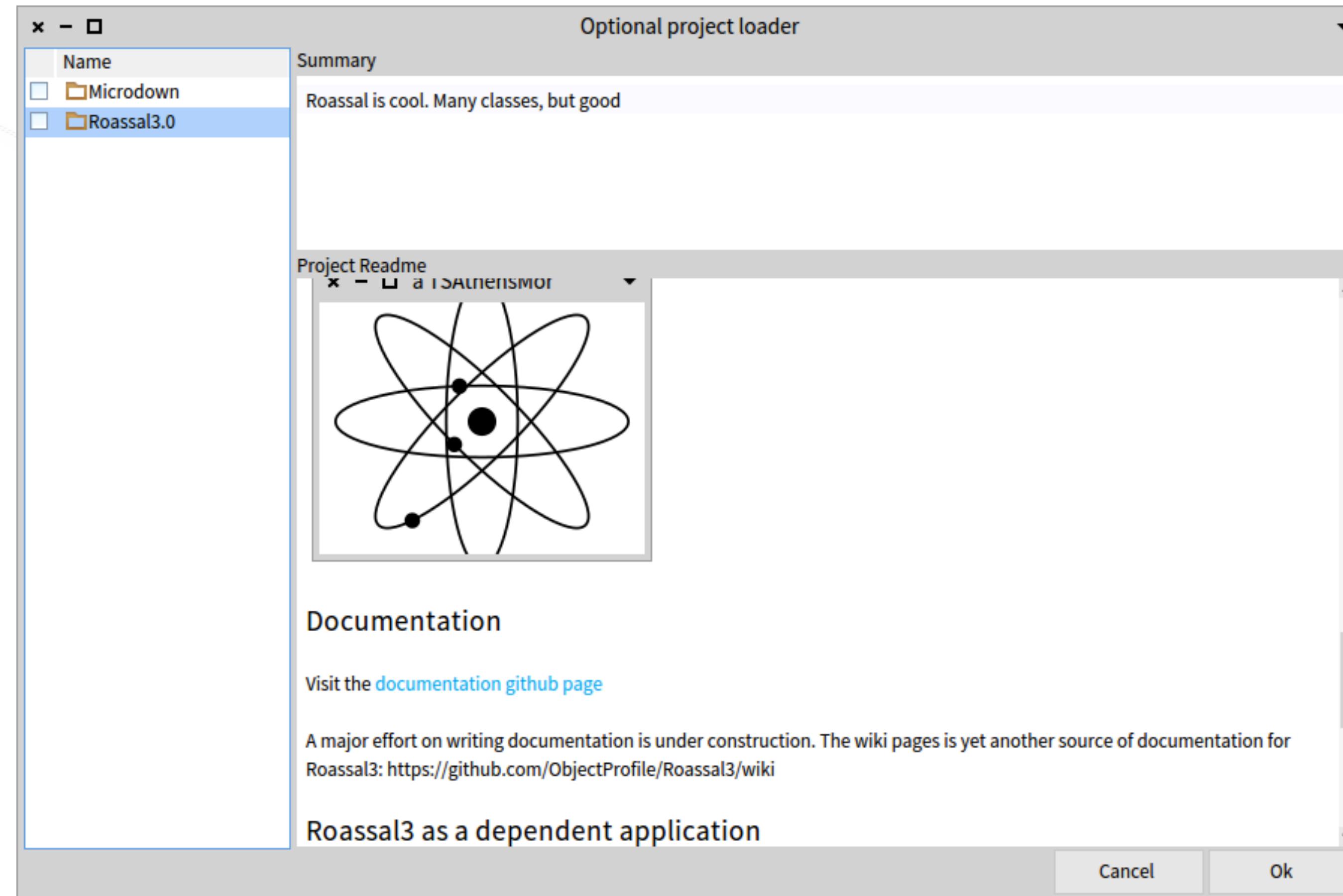
Image Status

Other Big Goals

- Microdown ([Done](#))
- Parser Improvements ([Done](#))
- .NET: FFI / UI Embedding ([First Stage done](#))
- Fluid Class Parser ([Ongoing](#))
- Image Distributions - Optional Project Loader ([Ongoing](#))
- Distributed Test Runner ([First Stage done](#))
- Debugger Backend Improvements ([Done](#))
- High DPI support / Scalling ([Ongoing](#))
- Implementing World renderers to use Idle VM ([ToDo](#))



Image Distributions - Optional Project Loader



Optional Projects Loader - NewTools



Parser Improvements

example

```
| presenter |
))|
((|
(presenter := SpPresenter new)
layout: (SpBoxLayout newVertical
add: (presenter newButtonBar
add: presenter newButton;
)).
^ true.
^ true
```

Pharo 8

example

```
| presenter |
))|
((|
(presenter := SpPresenter new)
layout: (SpBoxLayout newVertical
add: (presenter newButtonBar
add: presenter newButton;
)).
^ true.
^ true
```

Pharo 9

Microdown Comments & Renderer



MicroDownParser

Manifest Model ModelInline Parser Extensions Microd

MicInLineEmphasisProcessor ! MicInLineSplitter Old MicInLineSplitterOld MicParsingError ! MicroDownParser

instance side accessing initialization markups node creation parsing

anchorMarkup annotatedParagraphMarkup argumentListStartDelimiter blockStarterClassFrom: blockStarterClassFromOld: boldMarkup

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

? Comment × (c) MicroDownPars × + Inst. side methc ×

```
Raw for your other code (inline) >>> {{ some code }}
```

```
Link >>> [link's name](url|key1=value1&key2=value2)
```

```
Figure >>> ![figure's name](url|key1=value1&key2=value2)
```

```
! [Pharo logo](https://files.pharo.org/media/logo/logo.png)  
produces
```

A large, semi-transparent watermark of the Pharo logo, which consists of the word "Pharo" in a stylized blue font with a 3D effect, and a circular icon containing a red lighthouse-like symbol.

Distributed Test Runner



Dr Tests - Remote Runner

Remote Runner

items(6 selected): items(26 selected):

- AST-Core-Tests
- Announcements-Core-Tests
- Athens-Cairo-Tests
- Beacon-Core-Tests
- Calypso-NavigationModel-Te
- Calypso-SystemPlugins-Critic
- Calypso-SystemPlugins-Depr
- Calypso-SystemPlugins-FFI-Q
- Calypso-SystemPlugins-Flags
- Calypso-SystemPlugins-Inher
- Calypso-SystemPlugins-Refle
- Calypso-SystemPlugins-Refle
- Calypso-SystemPlugins-SUni
- Calypso-SystemPlugins-Trait
- Calypso-SystemPlugins-Unde
- Calypso-SystemQueries-Test:
- Calypso-SystemTools-FullBrc
- Calynso-SystemTools-QuervF

Results:

- Remaining Tests(0)
- Execution Errors(0)
- Errors(0)
- Failures(0)
- Skipped tests(0)
- Passing tests(415)

Run Remote

2020-09-10 13:14: Finished: 0:00:00:20.094051

Integration with Dr. Test

Start Instances and Watchdog

Root Directory: /Users/admin/dev/Pharo/lifeware/secondPass/worker

Creation Strategy: Create Template from Current Pharo Commit

Original Zip File: /Users/admin/dev/Pharo/lifeware/secondPass/worker

Number of instances: 3

Start Watchdog

Distributed Runner Instances

Number	ID	Host	State	Last Pong
1	599f2476-556b	MacBook-Pro	Running	1 second
2	8745	Pro	Running	1 second
3	c346	Pro	Running	1 second

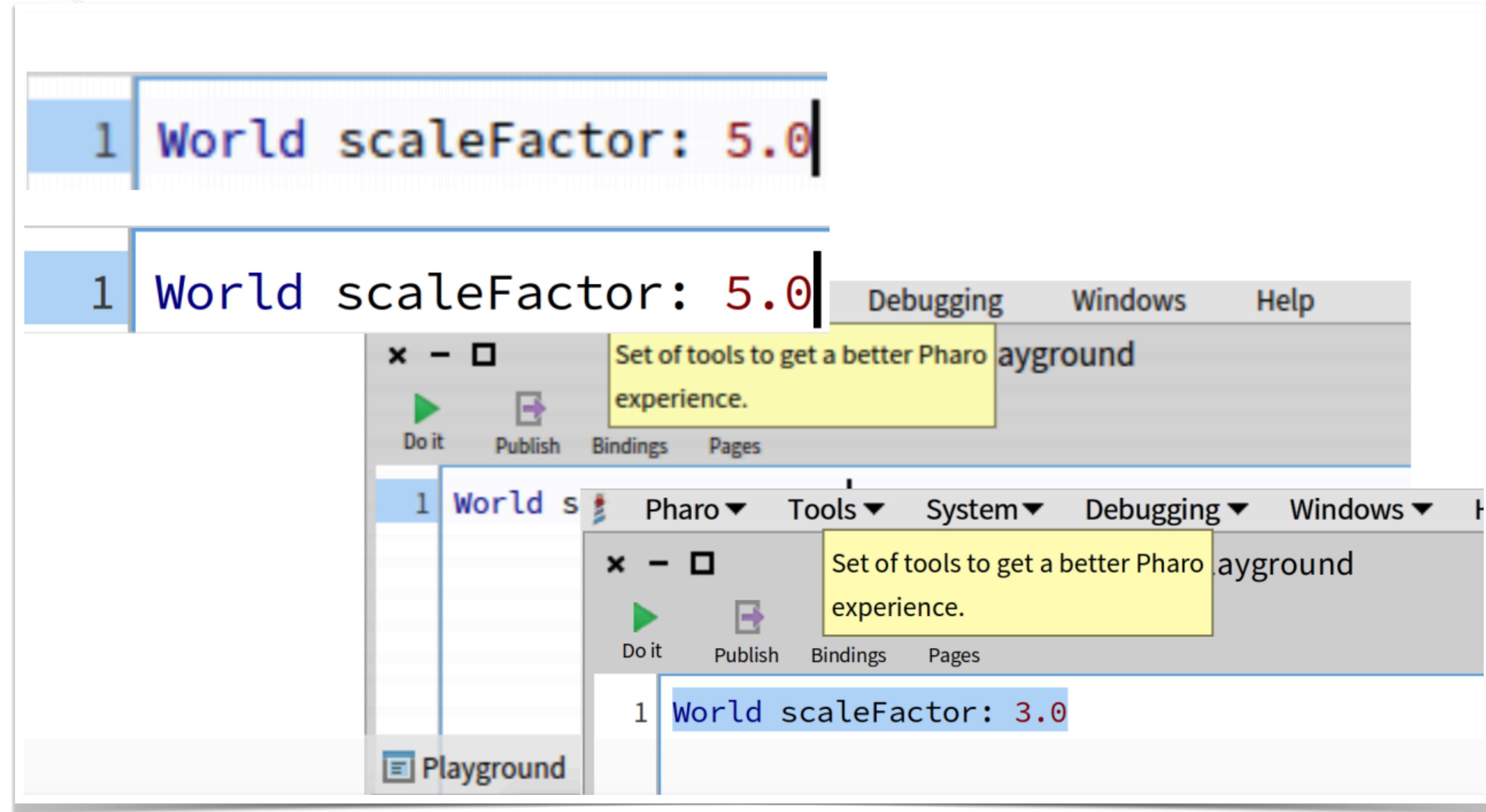
Stop Instance Start Instance

Start Instances Stop Instances

Controlling Instances



Scaling & HDPI Support - Ongoing





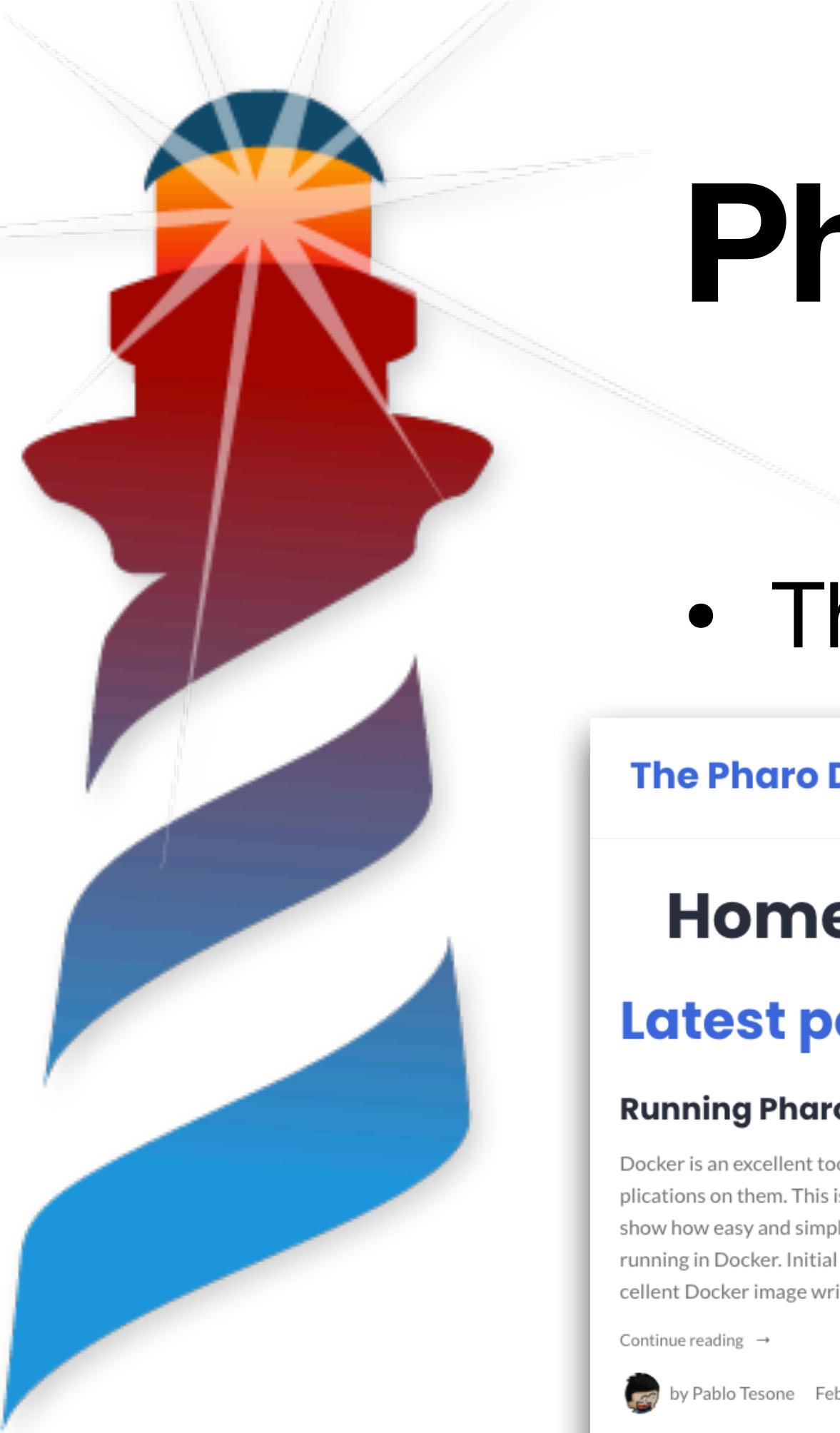
Pharo Promotion

- Mooc with Pharo 8:
 - New 74 videos in French and English
 - New session in November
 - Everything in Youtube
- Pharo Master Class (INRIA Academy / INRIA Chile)
 - 100+ participants
- Pharo By Example - Updated Edition



Pharo Promotion

- Presence in Virtual FOSDEM 2021
 - <https://stands.fosdem.org/stands/pharo/>
 - Preparing Videos
 - Static Content
- Organising Existing presentations and talks
 - <http://talks.pharo.org/>
- Access to books and materials
 - <https://books.pharo.org/>



Pharo Promotion

- The PharoDev open collaboration blog - <https://the-pharo.dev/>

The Pharo Dev: Mastering Objects

Home Blog Team

Home

Latest posts

Running Pharo 9 in Docker

Docker is an excellent tool to manage containers, and execute applications on them. This is not a discovery!! The idea of this post is to show how easy and simple is to have a Pharo 9 Seaside application running in Docker. Initial Considerations This post is based in the excellent Docker image written by the

Continue reading →

by Pablo Tesone February 24, 2021

First Apple M1 Pharo Version

After receiving the new Apple Mini with the M1 processor, we are producing the first version of the Pharo VM. This version, is a base version that lacks JIT optimizations and requires external libraries

ast breakpoints class-model code completion compiler continuous integration data structures debugging deployment gcc generators heuristics IDE morphic names native code object-centric optimizations oswindow pharoFeatures prototyping reflection reflectivity spotter testing thisContext tools trie ubiquitous-language undefined behavior

- API Design (1)
- data structures (12)
 - indexes (2)
- ...

15 Different Authors

Different subjects & levels

Open to all the community



Mooc

[Home](#) • [All courses](#) • [Programmation objet immersive en Pharo / Live Object Programming in Pharo](#)

Programmation objet immersive en Pharo / Live Object Programming in Pharo

Thematics

Informatique

Numérique, technologie

Programmation

Cette nouvelle version du Mooc est basée sur **Pharo 8.0**, github,
et mise à jour avec 70 nouvelles vidéos.

This new version of the Mooc is based on **Pharo 8.0**, github,
and comes with 70 new videos.

Langue / Language

Ce cours est entièrement bilingue français/anglais
et sous-titré en français , anglais , espagnol et japonais

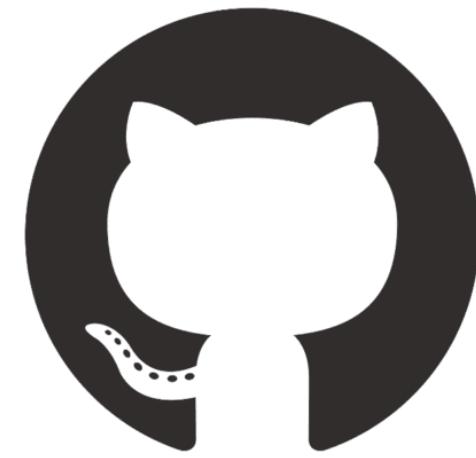
This course is fully dubbed in french and english
Subtitles in french , english , spanish and japanese



Thanks!!!



pharo.org



[pharo-project/pharo](https://github.com/pharo-project/pharo)



discord.gg/QewZMZA



thepharo.dev