

Pharo

A roadmap to solid evolution



About me

- Pharo architect since 2012
- Owned a company to develop in Pharo back in 2008
- Java senior architect for 7 years (and 15 years overall java experience)
- Web, microprocessors, etc., etc., etc.
- JavaScript, C++, ObjC, C#, Delphi, ASM and lots of languages no longer exist or have been long-time forgotten
- 25 years (!) programming experience



This talk will be about coherence.



This talk will be **mostly** about coherence.



The Pharo Vision

1.2 General goals

Pharo's goal is to deliver a clean, *robust, innovative*, free open-source Smalltalk *inspired* environment. We want to provide a stable and small core system, excellent development tools, maintained libraries and releases, and to continue making Pharo an attractive platform to build and deploy mission critical Smalltalk applications.

Robust. We want Pharo to be a really robust and tested system. We have already developed an infrastructure based on an integration server that automatically generates new images, tests them and notifies its results. We will also put in place automatic rule-checking based on integration servers.

Innovative and Smalltalk inspired. We want to stress the fact that Pharo will certainly derive from ANSI and other Smalltalks. We will not change for the sake of change. What we want to say is that if there is something that can be improved but does not conform the ANSI Smalltalk, we will do it anyway. We favor innovation and better systems. We want, for example, first class instance variables because they will open a wide range of possibilities for metamodeling, optimization at the compiler level, expressing all kinds of information in a more compact form . . .

(extract from the Pharo Vision document)



The Pharo Vision

- Clean, robust, innovative.
- Free and Open-source.
- An attractive platform to build and deploy mission critical Smalltalk applications.
- Smalltalk *inspired* environment.



In one way or another, behind each Pharo version, there were always the same persistent story: modularisation.

This focus moved a bit for Pharo 7.



The story behind Pharo 7 is about process.



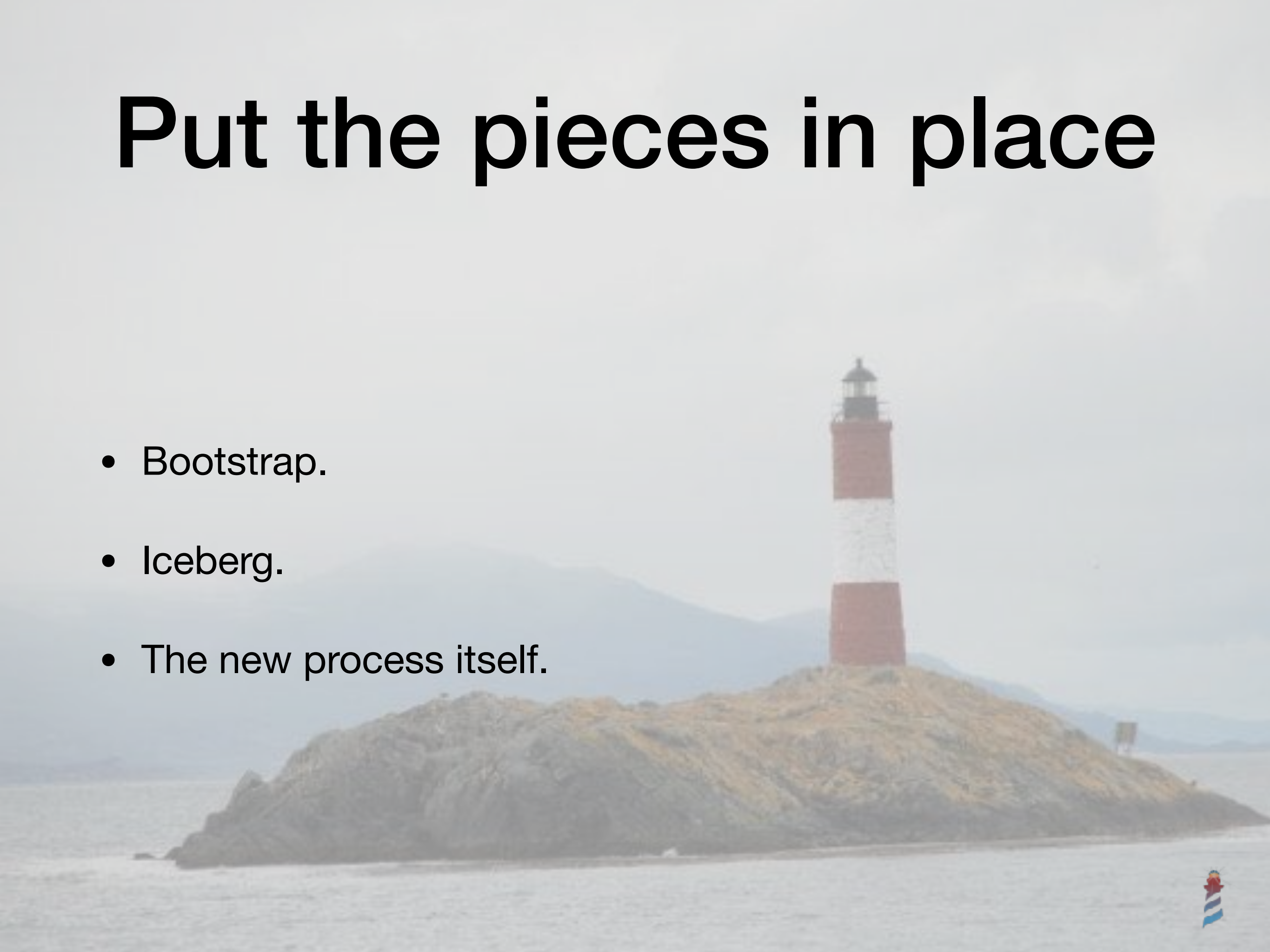
Why to focus on process?

- Our process was not scaling anymore.
- “Technical debt” needed to be solved. Both for Pharo itself and for its users.



Put the pieces in place

- Bootstrap.
- Iceberg.
- The new process itself.



Bootstrap

- This is a major effort that took several years of studies (and even two PhD) to get it working.
- Bootstrapping: Build a full image from scratch.
 - ▶ Just with the packages you need (you can produce small or big images as you need).
 - ▶ Verifiable and repeatable process.



Bootstrap your own image

Bootstrapping Pharo from sources

To bootstrap a new Pharo image you need the latest stable version of Pharo. For more information about bootstrapping, refer to [guillep/PharoBootstrap](#).

The bootstrapping can be done using the following script:

```
BUILD_NUMBER=42 BOOTSTRAP_ARCH=32 bash ./bootstrap/scripts/bootstrap.sh
```

This will generate and archive images at various stages of the bootstrap process up to the full image in Pharo7.0-32bit-hhhhhh.zip where hhhhhh is the identifying hash.

Additional information on the stages of the bootstrap and how to snapshot during the process are provided as comments in bootstrap.sh.

Tip: You can set `BOOTSTRAP_REPOSITORY` and `BOOTSTRAP_CACHE` environment variables to do the bootstrap outside of the source repository.

<https://github.com/pharo-project/pharo#bootstrapping-pharo-from-sources>



You can build your own image!



Iceberg*

- We showed a preview on P6.1 but P7 has a complete revamp (UI and backend)
- We also developed “tonel” format to fit better in this “file based world”.
 - ▶ One file per class.
 - ▶ A “readable” format to browse.
 - ▶ Scales better.
- New UI developed is also meant to be the basis of our new tools L&F.



17 matches

kernel

Done

4 contributors 

822 lines (650 sloc) | 19.4 KB

Raw

Blame

History




```
1  "
2  I represent a character by storing its associated Unicode. The first 256 characters are created uniquely, so that all instance
3
4      The code point is based on Unicode. Since Unicode is 21-bit wide character set, we have several bits available for oth
5
6      The other languages can have the language tag if you like. This will help to break the large default font (font set) i
7
8  I represent a character by storing its associated ASCII code (extended to 256 codes). My instances are created uniquely, so th
9  "
10 Class {
11     #name : #Character,
12     #superclass : #Magnitude,
13     #type : #immediate,
14     #classVars : [
15         'CharSet',
16         'CharacterTable',
17         'DigitValues'
18     ],
19     #category : #'Kernel-BasicObjects'
20 }
21
22 { #category : #'instance creation' }
23 Character class >> allByteCharacters [
24     "Answer all the characters that can be encoded in a byte"
25     ^ (0 to: 255) collect: [:v | Character value: v] as: String
26
27 ]
28
29 { #category : #'instance creation' }
30 Character class >> allCharacters [
```



pharo70-64.image

Pharo Tools System Debugging Windows Help



Working copy of pharo

Commit Push Pull Fetch Branch Merge

Name Status

FileSystem-Tests-Memory Up to date

FileSystem-Zip Up to date

Files

Files-Prompt

Files-Tests

Flashback-Decompiler

Flashback-Decompiler-Tests

FontInfrastructure

FontInfrastructure-Tests

Fonts-Abstract

Fonts-Chooser

FreeType

FreeType Help

FreeType-Tests

Fuel-Core

Fuel-Platform-Core

Fuel-Platform-Pharo-07

Fuel-Platform-Pharo-Core

development at a5ada9e

Refresh

Name	Branch
*Iceberg	dev-1.0
*pharo	development
themes	master
tonel	master
*Seaside	migrate-so

Filter...

Repository of pharo

Push Pull Fetch Branch Merge

Timestamp	Commit	Author	Description
21968-OSWindowcreateWindow-test-is			
21996-SDL2-clipboard-primitives-are-w	f09cd3a	Marcus Denker	Merge pull request #1718 from juliendelplanque
22003-OSWindowDriver shutdown thro	fe66e47	pavel-krivanek	fix close icon
22063-OSSDL2Driver-needs-to-clean-ha	0fdd190	pavel-krivanek	lab morphs display scale factor
22065-add-a-factory-method-that-inclu	3116d48	Julien Delplanque	Added call to super setUp.
22101-OSWindow-keyboard-events-nee	83b51b3	Julien Delplanque	Introduced dynamic presenters list builder and
22127-SDL2-needs-to-keep-the-screens	cfb1326	LionelAkue	Added rules and tests to check for test class wi
22146 update metacello to allow alter	42614d7	LionelAkue	
22199 in windows freetype library can	9e0f7fa	LionelAkue	Added rule and test to check for Test Class not
22287-size-t-type-does-not-have-right-s	675e237	LionelAkue	Added rule and test to check for dead method
22300-returning-enumeration-does-not	00d2cc5	Marcus Denker	Merge pull request #1709 from cdlm/22353-Zn
add-If	a6462d2	Marcus Denker	Merge pull request #1714 from pavel-krivanek,
fix enumeration off	6b5d8a1	Pavel Krivanek	add pharo.version

Info 109cd3a to HEAD 109cd3a to 00d2cc5

src

- Althens Cairo
 - AthensCairoCanvas
 - destroy
 - drawWithAlpha
 - fill
 - getScaledFont
 - loadPath:
 - moveToX:Y:
 - newPath
 - primClip
 - primGetCurrent

```

private
destroy
self ffcall: #(
primitive: #pr
self nbCall: 4

```

Repositories Working copy of pharo Repository of pharo



Versions of Object>>at:put:

Timestamp	Commit	Author	Description
2018-01-08 23:27	96e726a	Norbert Hartl	Small cleanups
2018-01-08 13:33	52e6792	Norbert Hartl	Added missing implementations for primitives failing because the re
2017-11-01 11:10	bef708e	Esteban Lorenzani	sources converted.

put:

- instance side
- extensions
- flags
- accessing
- asserting
- associating
- binding
- block support
- casing To be deprecated
- class membership
- comparing
- converting
- copying
- dependencies

at:

- at:put:
- basicAt:
- basicAt:put:
- basicSize
- enclosedSetElement
- size
- yourself

Methods | Vars | Classrefs. | Implementors | Senders

Inst. side method x

```

the argument value in
index. Fail if the
1 if the value is not of
the value that was
Primitive."
index]]

```

Info 52e6792 to 96e726a

```

"protocol: accessing"
at: index put: value
  "Primitive. Assumes receiver is index.
the indexable element of the receiver
index is not an Integer or is out of
the right type for this kind of colle
stored. Essential. See Object documen

<primitive: 61>
index isInteger
  ifTrue: [self class isVariable
    ifTrue: [(index between: 1 and:
      ifFalse: [self errorSubscrip
    ifFalse: [self errorNotIndexabl
    ifFalse: [

```



The new Pharo process*

- Bootstrapped.
- Git, GitHub and Pull Requests (with Iceberg).



GitHub, Inc.

Search or jump to... Pull requests Issues Marketplace Explore

pharo-project / pharo Unwatch 23 Unstar 171 Fork 104

Code Pull requests 18 Wiki Insights Settings

The Sources for Pharo <http://pharo.org> Edit

pharo Manage topics

4,969 commits 2 branches 340 releases 63 contributors MIT

Branch: development New pull request Create new file Upload files Find file Clone or download

MarcusDenker Merge pull request #1783 from astares/22434-Cleanup-FloatTest Latest commit 6fb4379 2 days ago

bootstrap	add pharo.version	19 days ago
resources	I removed the Multilingual packages from the bootstrapped image.	6 months ago
scripts	Remove package not loaded in the image and add a script to do this if..	5 months ago
src	Merge pull request #1783 from astares/22434-Cleanup-FloatTest	2 days ago
.bintray.json	deploying in different bintray projects	2 years ago
.gitattributes	add related test	4 months ago
.gitignore	cleanup repository	a year ago
.project	Integrate Iceberg 1.2.0	a month ago
.travis.yml	Fix: non restricted travis clone depth	a year ago
CONTRIBUTING.md	Add a notice about how to contribute using Iceberg 0.7.3	4 months ago



ci.inria.fr

Jenkins 6 search esteban.lorenzano@inria.fr | log out

Jenkins > Test pending pull request and branch Pipeline > Pull Requests (107) [ENABLE AUTO REFRESH](#)

- Up
- Status
- Configure
- Scan Repository Now
- Scan Repository Log
- Repository Events
- People
- Build History
- Project Relationship
- Check File Fingerprint
- Open Blue Ocean
- GitHub
- Config Files
- Pipeline Syntax
- Credentials

Build Queue -

No builds in the queue.

Build Executor Status -

Test pending pull request and branch Pipeline

This task tests everything - latest integration - pending pull request - branches It also uploads build artifacts if in development branch.

Branches (1) **Pull Requests (107)**

S	W	Name ↓	Last Success	Last Failure	Last Duration	Built On	Fav
		PR-1529	1 mo 15 days - #11	14 days - #13	29 min		
		PR-1544	N/A	23 days - #7	14 sec		
		PR-1583	21 days - #8	23 days - #7	39 min		
		PR-1609	19 days - #9	1 mo 22 days - #4	43 min		
		PR-1618	4 days 3 hr - #10	19 days - #5	28 min		
		PR-1619	N/A	23 days - #3	1 hr 23 min		
		PR-1624	1 mo 2 days - #5	23 days - #6	40 min		
		PR-1647	19 days - #7	23 days - #6	28 min		
		PR-1668	24 days - #7	19 days - #10	47 min		
		PR-1673	21 days - #4	23 days - #3	41 min		
		PR-1677	N/A	23 days - #3	30 min		



request and branch
Pipeline

Pipeline

Changes

Tests

Artifacts



Logout



1239
Branch: development

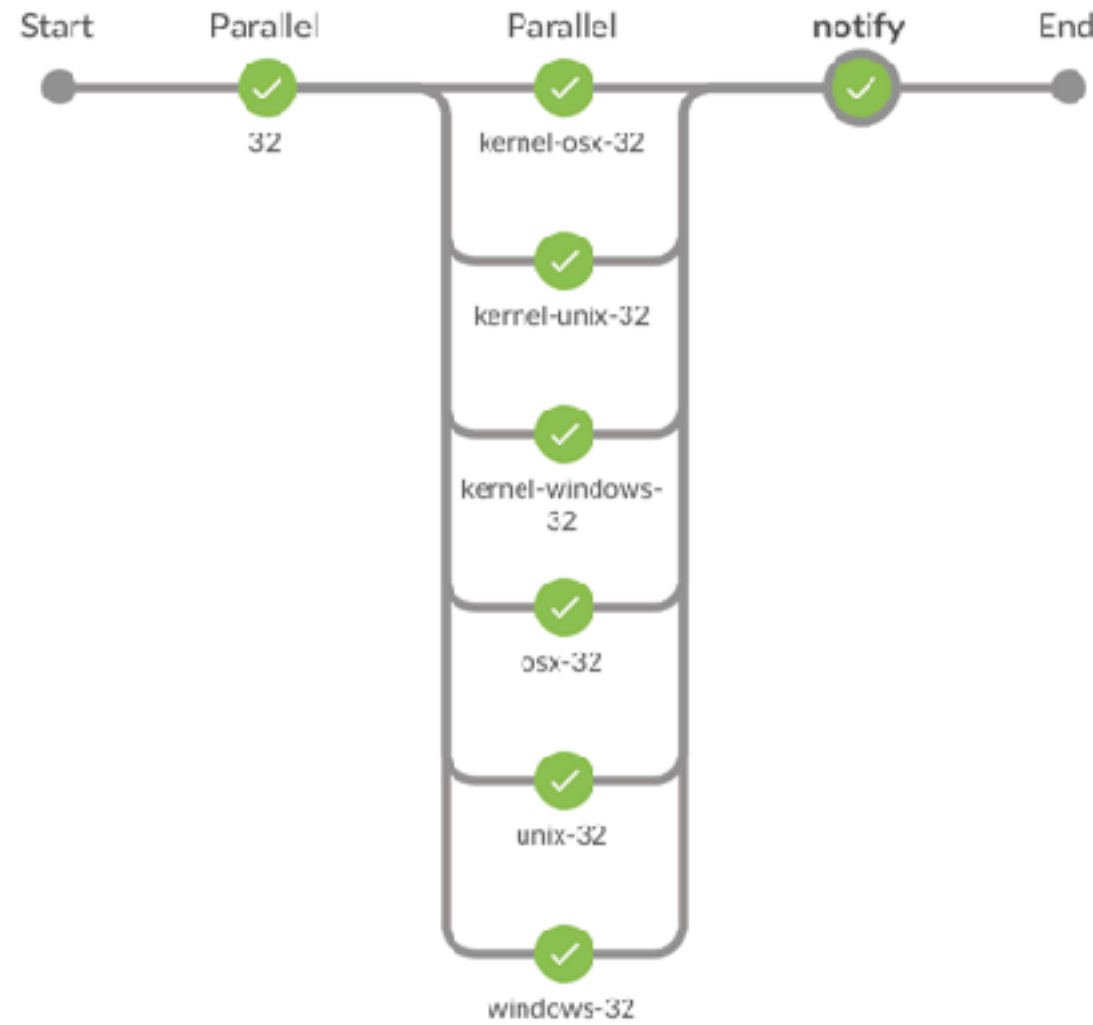
29m 15s

No changes

Commit: -

2 days ago

Push event to branch development



notify - 12s



General SCM

11s



Why?

- Reproducible.
- Verified (CI).
- Process of review and approve get's accessible to all community (and we can “distribute ownership”).
- Visibility.
- We prepare next steps: release often, back-port better, LTS.



Some numbers

- More than **1700** Pull Requests closed.
- **104** GitHub forks.
- **63** contributors.
- And that not counting Iceberg, Calypso and others.



Since we are always improving...

- New system browser (and related tools): Calypso.
- Stateful traits*.
- Streams refactor.
- Working directory now is a real working directory (and there is #imageDirectory that works as before).
- UFFI has been adapted to Windows 64bit.
- “Plugin replacement program”: move to the image while is possible (FreeType done, SSL ongoing).
- Windows 64bit VM.
- The OpenSmalltalkVM has continued improving in several ways. Not just Cog (The “Core VM”) but also specific plugins like FilePlugin for Windows.
- Pharo launcher*
- ...



What will be the story on Pharo 8?



Not yet completely decided...



But we think it should be “headless”



The headless story

- “World” start should be a responsibility of the image, not the VM.
- It will expand the “universe of the possible”.
- We will need to work on:
 - ▶ Headless VM (There is already a prototype).
 - ▶ OSWindow and SDL2 backend.
 - ▶ Threaded FFI.
 - ▶ Command line tools (Clap).



Other...

- Move issue tracker to GitHub.
- Remove some duplications in image.
- Enhance Spec and related UI components.
- 64bit as default.
- ...



Now... how to give coherence
to Pharo development itself?



The Pharo Community

- Is composed of companies, organisations and individuals that make Pharo, and contribute to it in some way.
- Some numbers
 - ▶ Lists: pharo-dev, pharo-users (**1000+**).
 - ▶ Discord (**400+**).
 - ▶ FogBugz and GitHub tracker have interesting discussions too.



The Pharo Consortium

- Non-profit organisation.
- Started at INRIA (by the RMoD team) in 2012.
- Hosted at INRIA Foundation since 2018.



Pharo Consortium goals

- Ensure Pharo continues evolving.
- Deliver updated versions that match the software industry needs.
- Structure the community.
- Companies and individuals can get an impact.



INRIA Foundation

- Umbrella to host different consortiums (Pharo, Coq, SOFA, ...)
- Share engineering resources to improve all.
- Share also administrative resources.
- Part of the “Software Heritage” initiative.



Other advantages of being part of INRIA Foundation

- Visibility.
- Solidity (having the continuous support of an institution as INRIA matters).
- Business development.
- Legal department.
- Tax reduction for donations (FR and US).



Current members

- **30** industrial partners (+**5** since last year).
- **17** academic partners (+**4** since last year).
- **101** individual members through the Pharo association.



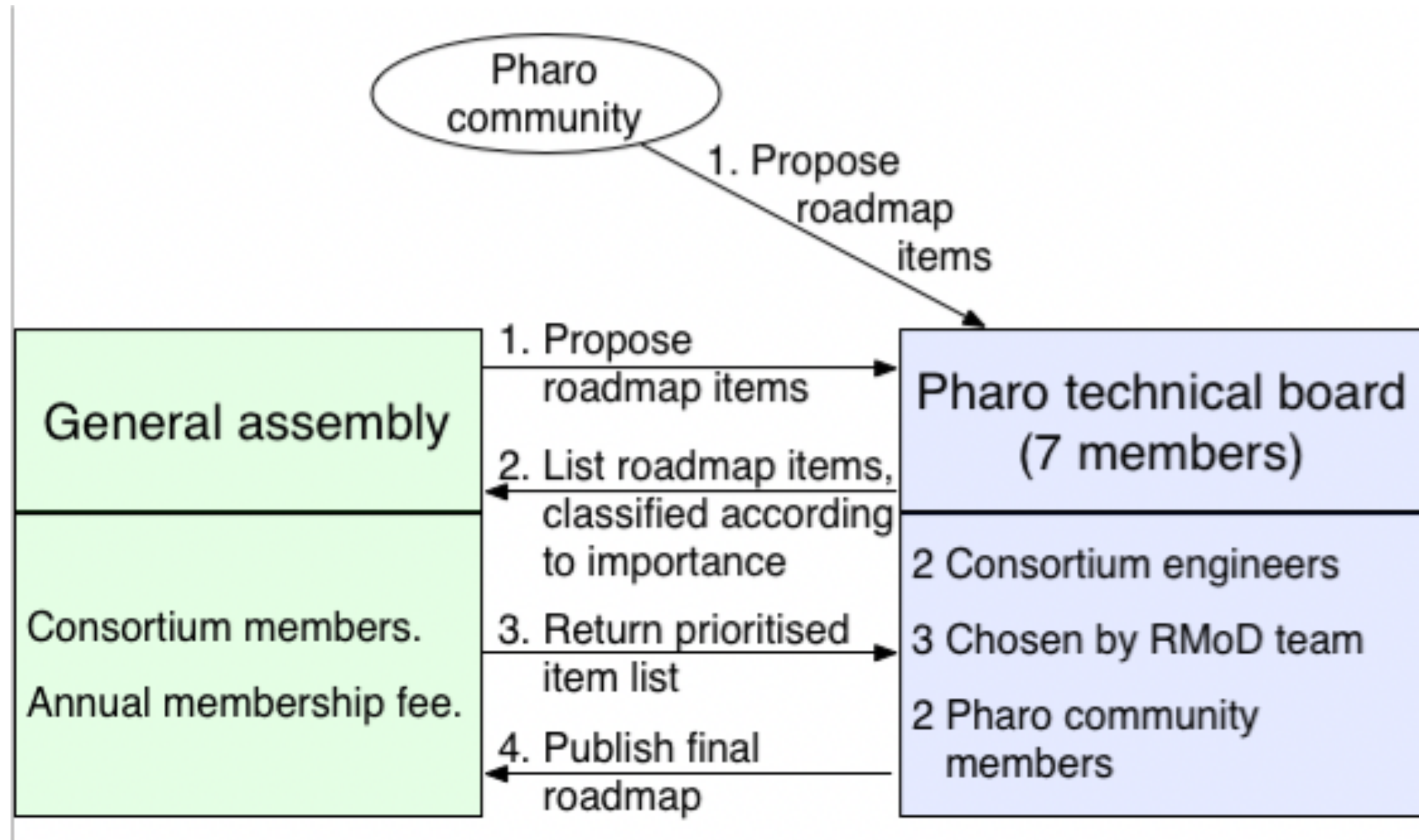
 ENSTA Bretagne	 Ingenieurbüro Schmidt	 JPMorgan Chase	 KnowRoaming	 Inceptive.be	 HRworks
 Lifeware	 Lam Research Corporation	 INRIA	 Yesplan	 Beta Nine	
 Soops	 feenk	 Synectique	 Osoco	 SORABITO	 FINWorks
 Thales	 Projector Software	 GemTalk Systems	 Inspired.org	 Ta Mère	 Object Profile
 LabWare, Inc.	 ESUG	 ZWEIDENKER	 Palantir Solutions	 netstyle.ch GmbH	 High Octane SPRL
			 Sensus		



 <p>University of Yaoundé 1</p>	 <p>ENIT</p>	 <p>Software Quality Laboratory, University</p>
 <p>Software Institute Università della</p>	 <p>Département Informatique</p>	 <p>Rych Lab</p>
 <p>UMMISCO IRD</p>	 <p>REVEAL</p>	 <p>Fundación Argentina de Smalltalk</p>
 <p>Universidad Nacional de Quilmes</p>	 <p>Mines Douai - IA</p>	 <p>Faculty of Information Technology</p>
 <p>Uqbar Foundation</p>	 <p>CRISTAL Univ Lille</p>	 <p>Software Composition Group</p>
 <p>RMoD</p>	 <p>Pleiad</p>	



Governance



The new board

- Stephane Ducasse
- Marcus Denker
- Guille Polito
- Norbert Hartl
- Sven Van Caekenberghe
- Esteban Lorenzano
- There is a free slot from “consortium engineers” to be filled soon.



The business model

- “Pharo Daily”.
- “Pharo for you”.



Pharo daily

- We take care about evolution of Pharo, to keep it up to date with ever-growing software industry needs.
- We keep all the elements in place: CI infrastructure, mailing lists, web-sites, etc.
- We also take care about sustaining an ecosystem of Pharo packages (to manage databases, etc., etc., etc.).



Pharo for you

- Support for migrations.
- Help on development practices, specific libraries/frameworks, etc.
- Development of custom libraries/frameworks.
 - ▶ Thales case.



Consortium benefits

- Privileged access to the core development team.
- Influence priorities of the next development.
- Engineering support time.
- Job posts.
- Training/Conference special price.



Expert engineers

- We have now high expertise engineers available to hire.
- We want to hire our second permanent engineer soon.
- But we also want to sustain Pharo growth and that means have even more engineers.
 - ▶ In the future, we want to be four engineers (with engineers to work also on VM related problems).




The Pharo Consortium is a player in a bigger community.
Is our way to ensure what has been from day one the
ultimate goal of Pharo.



The background image shows a large, intricate industrial facility, likely a particle accelerator or fusion reactor. It features a complex network of pipes, cables, and machinery. A prominent feature is a large, cylindrical component with a textured, metallic surface. The overall color palette is dominated by blue and yellow, with a central yellow semi-transparent box containing the text.

**A powerful engine
to invent
(y)our future**



**An ecosystem where
innovation/business
bloom**

Pharo is yours.

