



Iceberg 2018

Getting more solid

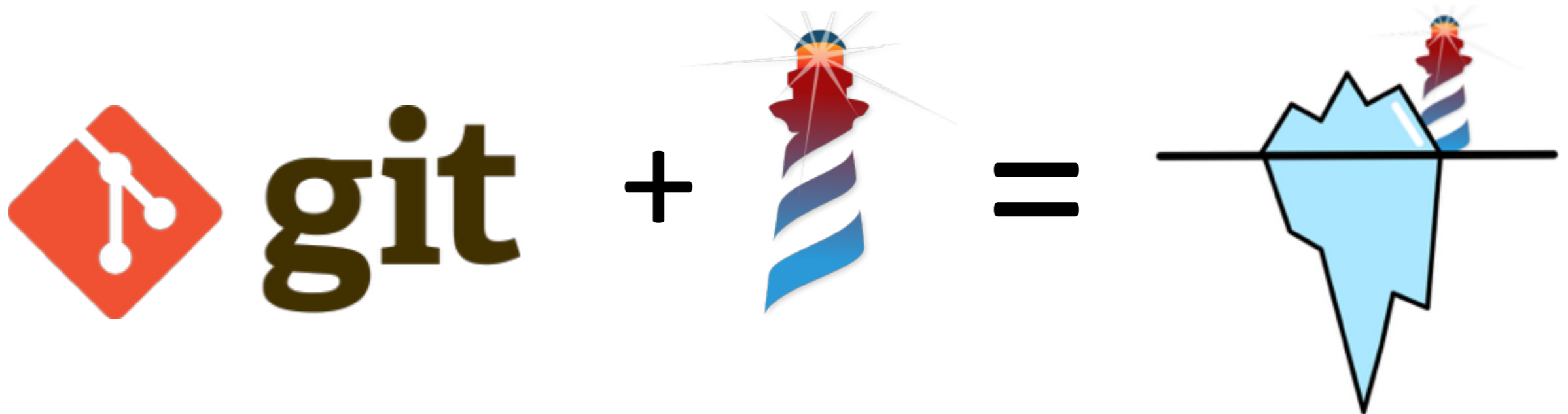


by Guille Polito
@GuillePolito

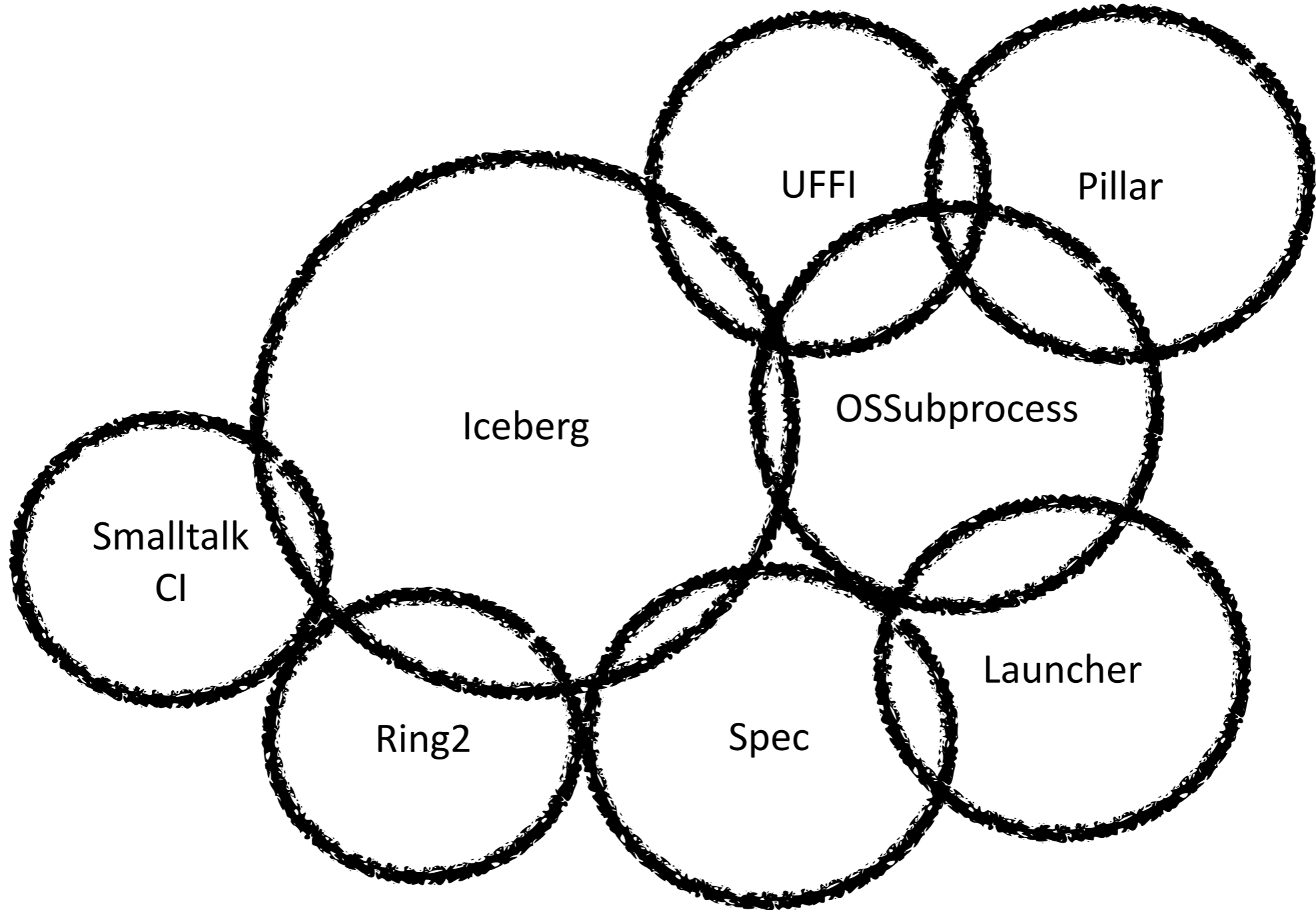


What is Iceberg?

<https://github.com/pharo-vcs/iceberg>



Eat our own food



Why git ?

- Visibility
- Manage more than only code
- Lower entry barrier into the community
- Lots of existing tools
- Good branch support, good diff
- ...

2年 after the 1st Iceberg

- Git is a misunderstood monster:
“With great power comes great responsibility”
- Iceberg grew up, it's **not**
a prototype anymore
(v1.2.2)



Much things going on...

working-copy

Github-Integration

credentials-manager

64bits

Metacello-Integration

Git-FileSystem

HTTPS

three-way-merge

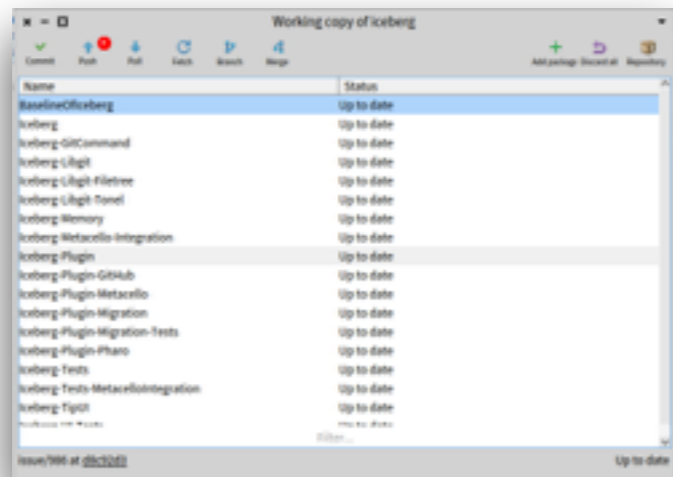
OSSubprocess

tags

FileDiffSupport

SSH

Easier & More Robust



New UI



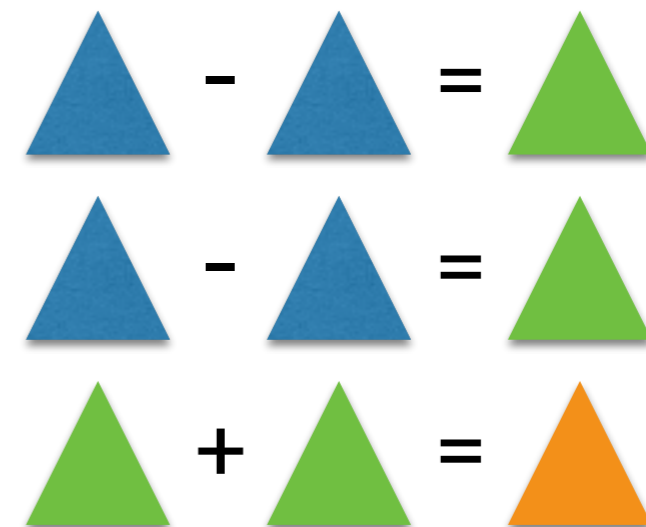
Lots of CI

64bit support

53% coverage



Dual Working Copy

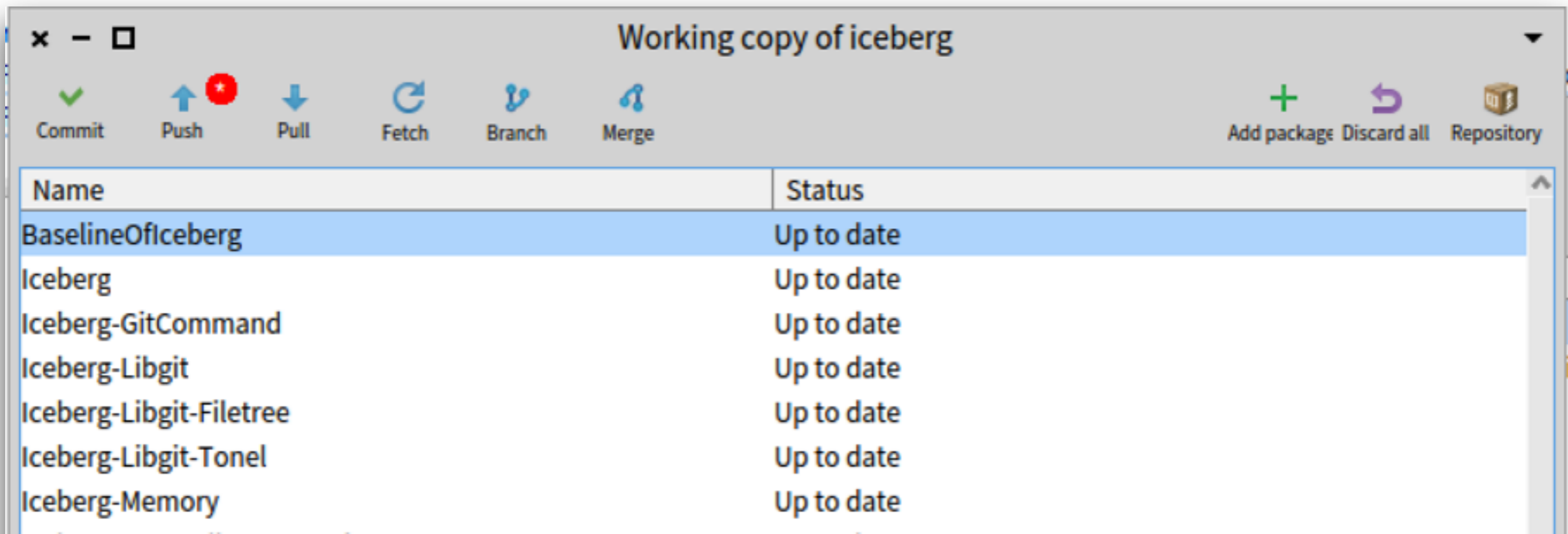


Three-Way Merge

IceTip: New UI

Spec based

+ new widgets (toolbars, status bars...)



3 Guidelines

- **Be explicit:** preview destructive operations
- **Be explicit:** warn problematic states
- **Be explicit:** let the user decide

Explicit Commit

The screenshot shows a commit dialog titled "Commit on Ring2 branch mergeDev". The dialog is divided into three main sections: a file tree on the left, a diff view in the center, and a commit message input at the bottom. The file tree shows a project structure with folders like ".project", "src", "Ring2-Core", and "Ring2-Monticello". The diff view compares the "Repository" and "Working Copy" for a file named "name:". The diff highlights a change in the "usersWithOldDefinition" method, where the repository version uses "each -> each copyForBehav" and the working copy version uses "collect: [:each | ea". A "Commit" button is visible at the bottom right.

Commit on Ring2 branch mergeDev

Repository Working Copy

```
"as yet unclassified"
name: aString

| usersWithOldDefinition |

usersWithOldDefinition := se
each -> each copyForBehav

super name: aString.

usersWithOldDefinition do: [
self announcer behaviorDe
self announcer behaviorMo

"as yet unclassified"
name: aString

| usersWithOldDefinition |

usersWithOldDefinition :
collect: [ :each | ea

super name: aString.

usersWithOldDefinition d
self announcer behavi
self announcer behavi
```

Cannot push new branch automatically. Use the `Push` option

A comment for your commit

Commit



Explicit Pull

Pull iceberg/dev-1.0 from pharo-vcs/dev-1.0

Pull from remote: pharo-vcs <git@github.com:pharo-vcs/iceberg.git>

Timestamp	Commit	Author	Description
2018-09-06 11:26	a8bc2c8	Guille Polito	Merge pull request #987 from guillep/issue/986
2018-09-05 17:58	9f9af6d	Guille Polito	Merge pull request #981 from tesonep/issue/980
2018-09-05 17:57	e350aa6	Guille Polito	Simplification
2018-09-05 17:56	45d8f6f	Guille Polito	Merge pull request #989 from tesonep/issue/988
2018-09-03 19:01	df9ce8b	Pablo Tesone	Fixing the description
2018-09-03 18:57	cf03dff	Pablo Tesone	Making the load of packages in a single operation.
2018-09-03 15:45	d8c92d3	Guille Polito	Remove useless test
2018-09-03 15:35	524b87a	Guille Polito	Make it work with any class announcement
2018-09-03 15:18	52d939d	Guille Polito	Fix #986
2018-08-20 16:14	34d68a2	Pablo Tesone	Merge pull request #976 from estebanlm/fix-ask-everytime-conflicting-versions
2018-08-16 17:03	5b63fa8	Pablo Tesone	Fix #983

Info

HEAD to cf03dff

cf03dff to 34d68a2

Commit: [cf03dff] cf03dff5f07bd662e943d2af19f150bcc90e4f94

Parents: 34d68a2

Author: Pablo Tesone

Date: 2018-09-03 18:57

Tags:

Comment: Making the load of packages in a single operation.
It accumulates the changes in a single MCLoader and then loads it.

Pull



Explicit Checkout

Preview checkout of iceberg/origin/dev-0.6

How to checkout: Checkout packages ALREADY LOADED in the image, in alphabetical order

- + ensureMetacello
- + ensureMetacelloBaseConfiguratio
- + isMetacelloConfig
- + load
- + loadBleedingEdge
- + loadDevelopment
- + project
- + validate
- Iceberg
 - ✗ DateAndTime
 - ✗ asLocalStringYMDHM
 - ✗ asStringYMDHM
 - IceAbstractCommitWalk
 - <> commitFrom:
 - ✗ firstCommit
 - ✗ fromCommit:
 - ✗ fromTag:
 - <> upto:
 - ✗ IceAbstractCredentials
 - ✗ host
 - ✗ host:
 - ✗ isDefault
 - + IceAbstractDiff
 - + announcer

Working Copy	Checkout origin/dev-0.6
"private"	"private"
commitFrom: result	commitFrom: result
^ self repository commitFromGitCo	^ self repository iceCommitFr



Explicit Repository Status

The screenshot shows the 'Repositories' application window. At the top, there are window controls, a 'Fetch all' button, an 'Add' button, and a 'Settings' button. Below is a table with columns 'Name', 'Branch', and 'Status'. The 'iceberg' repository is selected, and a context menu is open over it. The menu items are: Packages, Repair repository, Fetch, Create Tag, Repository, Forget repository, Github, Metacello, and Extra. The 'Repair repository' item is highlighted. At the bottom of the window, a 'Repair repository' button is also highlighted.

Name	Branch	Status
iceberg	Packages	Detached Working Copy
pharo		Local repository missing
Calypso		Up to date
*Ring2		Uncommitted changes
OSSubprocess		Detached HEAD
*tonel		Detached HEAD
*ClassAnnotation		Detached HEAD
*Commander		Detached HEAD
*FFICHeaderExtra		Uncommitted changes



Explicit Repository Status

Repair repository

This repository was created from commit f564539 but the commit is not in your disk repository. You may fetch the correct commit from a remote repository or discard the code in your image and load what is in the repository.

- Fetch remote commits to find the reference commit
- Discard local changes and checkout an existing branch
- Discard image changes and load repository version

Discard all changes in your image and checkout an existing branch.
This action will checkout the branch in the repository and align your image with your repository.

This situation happens because the code loaded in your image does not correspond with the status of your repository.

Opens a preview window before doing any change.

This operation will modify the state of your working copy in disk. All non-committed changes in your disk working copy that are not in the image will be lost. If you want to keep them, perform a commit from outside before.

Ok

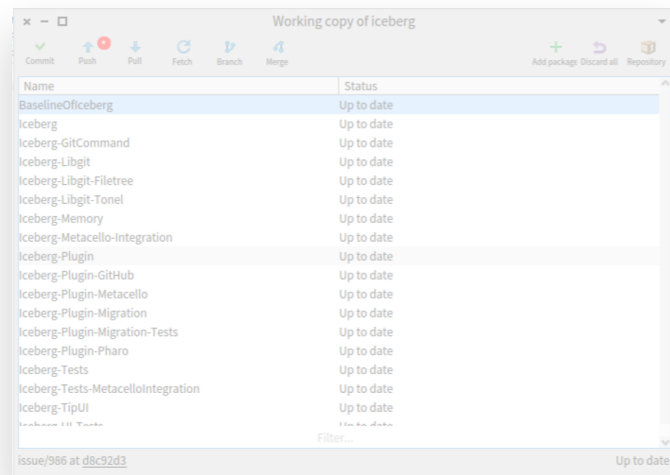
Cancel

Problem
Description

Proposed
Solutions

Consequences
+
Tradeoffs

Easier & More Robust



New UI



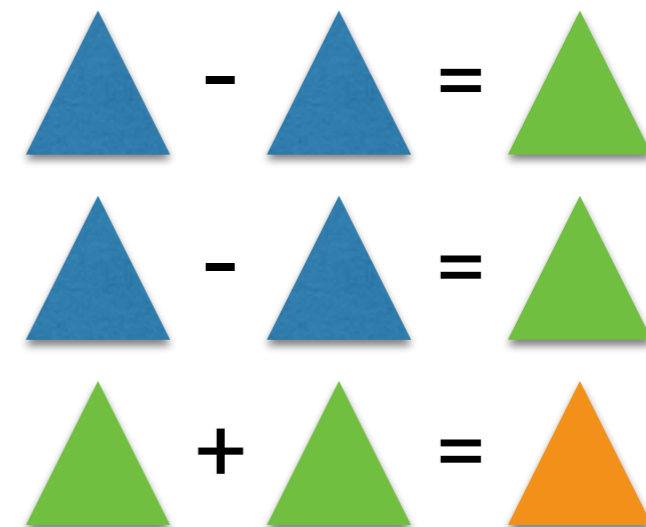
Lots of CI

64bit support

53% coverage



Dual Working Copy



Three-Way Merge

Robustness through Automation



Travis CI

Iceberg is getting big

- `packages size`

=> 17

- `packages sum: [:e | e definedClasses size]`

=> 589

- `packages sum: [:e | e linesOfCode]`

=> 21769

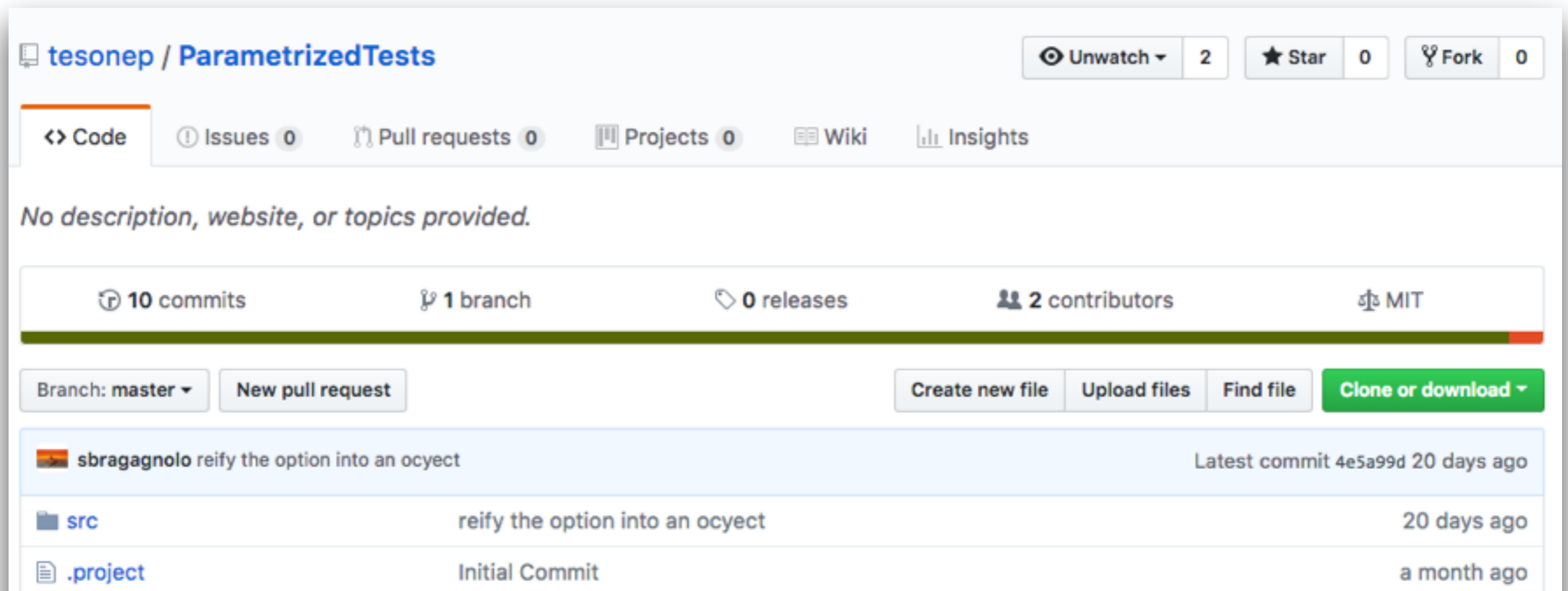
Code coverage in last
~6 months

~6% \Rightarrow ~53%

Parameterized tests

To define complex test cases and fixtures

<https://github.com/tesonep/ParametrizedTests>



The screenshot shows the GitHub interface for the repository 'tesonep / ParametrizedTests'. At the top, there are navigation links for 'Code', 'Issues 0', 'Pull requests 0', 'Projects 0', 'Wiki', and 'Insights'. On the right, there are buttons for 'Unwatch 2', 'Star 0', and 'Fork 0'. Below the navigation, a message states 'No description, website, or topics provided.' A summary bar shows '10 commits', '1 branch', '0 releases', '2 contributors', and 'MIT' license. Below this, there are buttons for 'Branch: master', 'New pull request', 'Create new file', 'Upload files', 'Find file', and 'Clone or download'. The commit history shows a commit by 'sbragagnolo' titled 'reify the option into an ocyect' from 20 days ago, and a file named 'src' with the same commit message. A file named '.project' is listed as an 'Initial Commit' from a month ago.

tesonep / ParametrizedTests

Unwatch 2 Star 0 Fork 0

<> Code Issues 0 Pull requests 0 Projects 0 Wiki Insights

No description, website, or topics provided.

10 commits 1 branch 0 releases 2 contributors MIT

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

sbragagnolo reify the option into an ocyect Latest commit 4e5a99d 20 days ago

src	reify the option into an ocyect	20 days ago
.project	Initial Commit	a month ago

Lots of tests,

Lots of
running time



Speed-up with Ring2

Because slow-downs come most from impacting the system, e.g., compilation, system coherence

ESUG 2017

**META-MODELING
OF CUSTOM
PHARO IMAGES**

PAVEL KRIVANEK, INRIA NORD EUROPE

Esug '17

**Meta-Modeling of
Custom Pharo Images**

Pavel Krivanek

Huge Investment In CI

- 18 jobs, multiple platforms x Pharo versions
- Pharo integration pre-test, metacello integration, wiki synchronization
- SmalltalkCI!!

pharo-vcs / iceberg Building

Current Branches Build History Pull Requests More options

✓ dev-1.0 Merge pull request #987 from guillep/issue/986 → #1817 passed Restart build

Commit a1bc2c8 Compare 9f9af6d..a1bc2c8


Branch dev-1.0

Guille Polito authored GitHub committed

Ran for 27 min 36 sec
Total time 1 hr 53 min 35 sec
about 2 hours ago

Build Jobs

✓	#1817.1	Smalltalk: Pharo-7.0	JOB=test_CI_FILE=smalltalk.ston	4 min 57 sec
✓	#1817.2	Smalltalk: Pharo64-7.0	JOB=test_CI_FILE=smalltalk.ston	4 min 25 sec
✓	#1817.3	Smalltalk: Pharo-6.1	JOB=test_CI_FILE=smalltalk.st	3 min 51 sec
✓	#1817.4	Smalltalk: Pharo64-6.1	JOB=test_CI_FILE=smalltalk	2 min 26 sec
✓	#1817.5	Smalltalk: Pharo-7.0	JOB=test_CI_FILE=smalltalk	6 min 14 sec
✓	#1817.6	Smalltalk: Pharo64-7.0	JOB=test_CI_FILE=smalltalk.n	6 min 10 sec
✓	#1817.7	Smalltalk: Pharo-6.1	JOB=test_CI_FILE=smalltalk.m	7 min 29 sec
✓	#1817.8	Smalltalk: Pharo64-6.1	JOB=test_CI_FILE=smalltalk.metacellobsts.ston	8 min 41 sec



Travis CI

Make sure it runs in x64

- Make **OSSubprocess** stable in 64bits
- Latest release **v1.0.1**, stable since mid-may

The screenshot shows the GitHub repository page for `pharo-contributions / OSSubprocess`. The repository is described as "Forking Operating System Processes from within Pharo Language". It has 14 watchers, 17 stars, and 7 forks. The repository contains 263 commits, 2 branches, 12 releases, and 7 contributors. The latest commit is by `guillep` with the message "Fixed timeout for short number of processes" on 25 Jun. The repository is licensed under MIT.

Repository details:

- 263 commits
- 2 branches
- 12 releases
- 7 contributors
- MIT license

Actions:

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

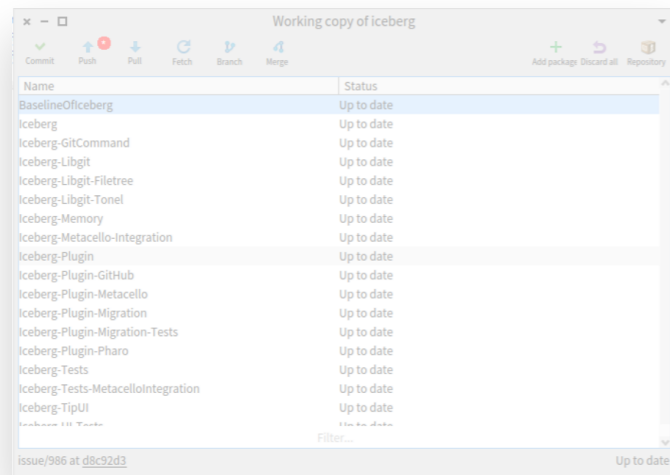
Commit history:

- `guillep` Fixed timeout for short number of processes (Latest commit 57a0920 on 25 Jun)
- repository Fixed timeout for short number of processes (2 months ago)

Key points for robustness

- Not fear the change
 - Lots, fast, both integration and unitary tests
 - In multiple platforms
 - Automated
- Enhance our infrastructure
 - OSSubprocess, Ring, ParameterizedTests, Spec...

Easier & More Robust



New UI



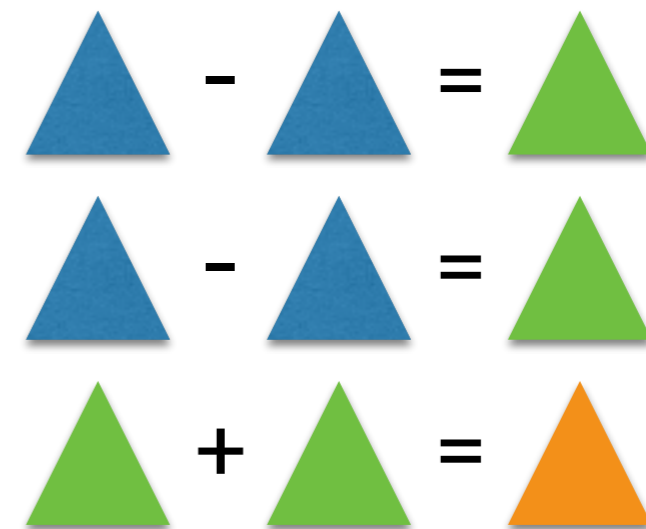
Lots of CI

64bit support

53% coverage



Dual Working Copy



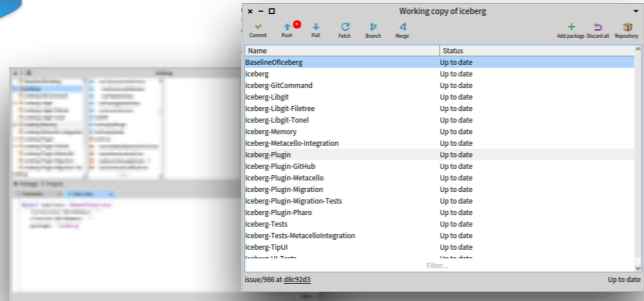
Three-Way Merge

The Working Copy



Iceberg's Working Copy

Pharo Image



Iceberg Working Copy

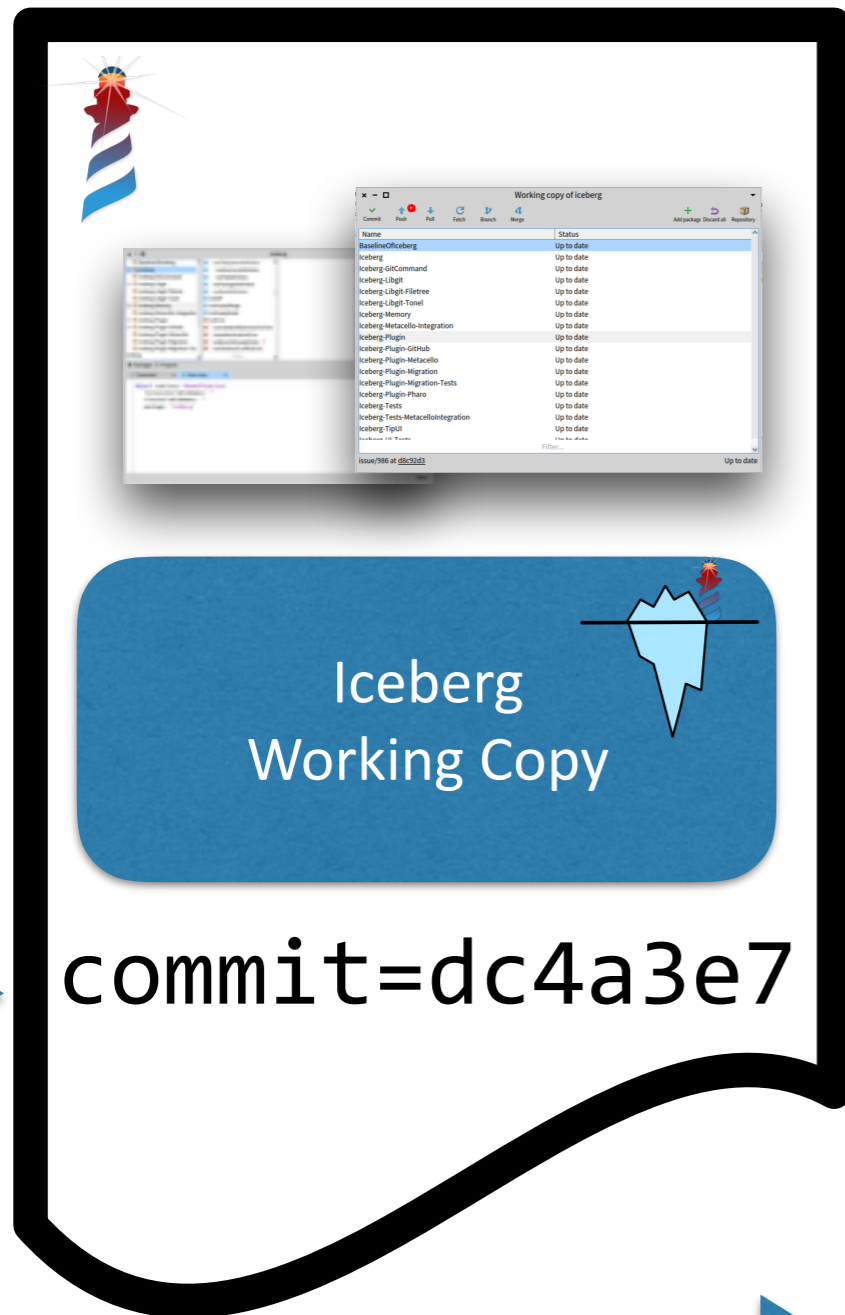
`commit=dc4a3e7`

The image shows a Pharo IDE window titled 'Working copy of iceberg'. It contains a list of components and their status, all of which are 'Up to date'. The components listed are: BaselineOfIceberg, iceberg, iceberg-GitCommand, iceberg-LibG, iceberg-LibG-Filetree, iceberg-LibG-Tonel, iceberg-Memory, iceberg-MetacelloIntegration, iceberg-Plugin, iceberg-Plugin-GitHub, iceberg-Plugin-Metacello, iceberg-Plugin-Migration, iceberg-Plugin-Migration-Tests, iceberg-Plugin-Pharo, iceberg-Tests, iceberg-Tests-MetacelloIntegration, and iceberg-TipUI. A blue arrow points from the left towards the IDE window.

- A repository has an **in-image working copy**
- A working copy remembers its **current commit**
- Required for pulling, pushing, diffing...

Dual Working Copy

Pharo Image



commit=dc4a3e7

To be able to work, the working copy should be **in-sync** with the working copy in disk

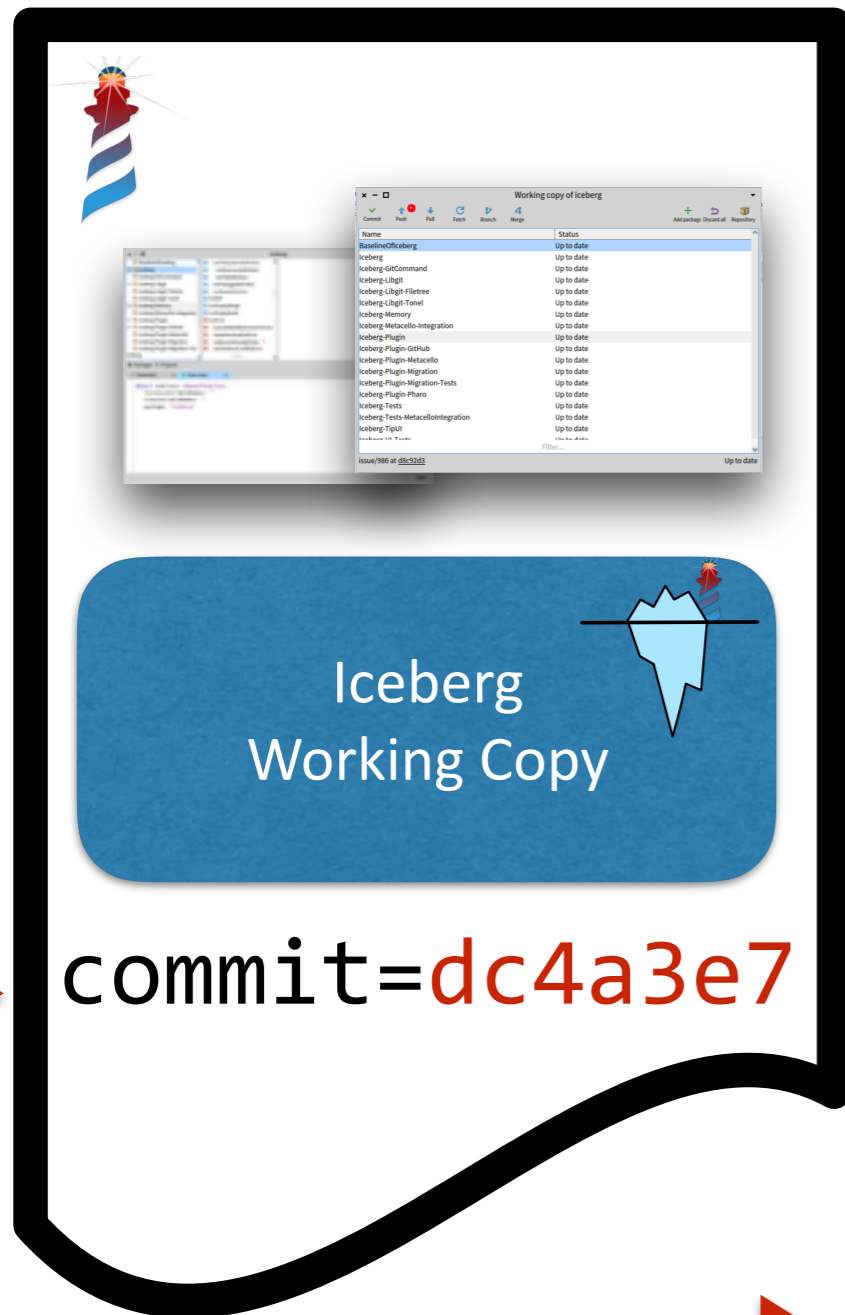


...



Detached Working Copy

Pharo Image



The working copy in the image can get **desync** from the working copy in disk



commit=dc4a3e7



...



Why do I get Detached Working Copy?

Although quite rare:

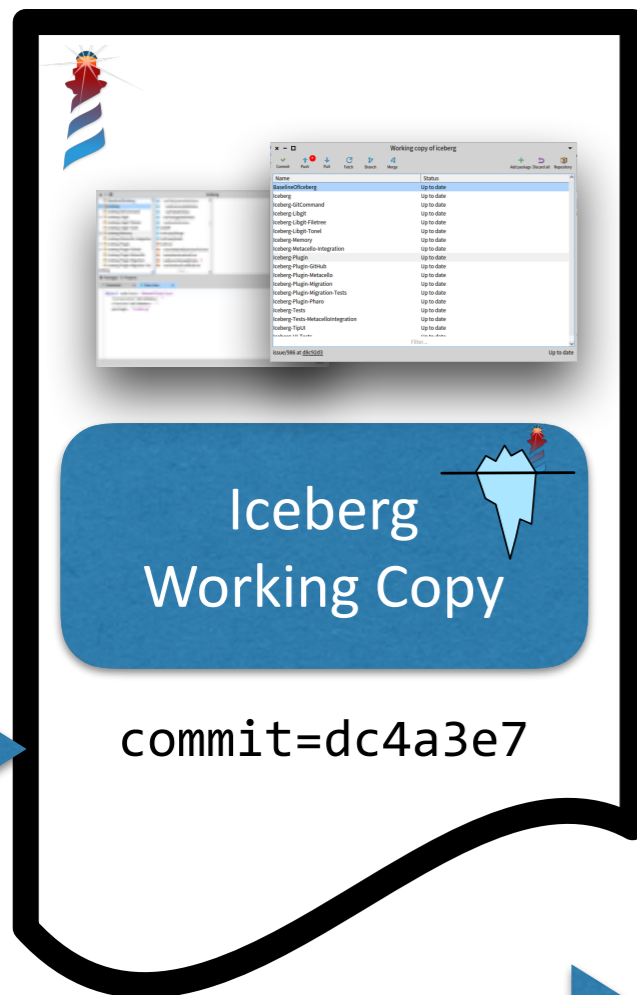
- Possibility 1) You touched your git repository from outside the image
- Possibility 2) Your image crashed in between commits
- Possibility 3) You forgot to save your image after a commit

How do I get out of Detached Working Copy?

- Option 1) Move your image to your repository state (load what is in the disk)
- Option 2) Move your repository state to what is in the image (checkout image's commit)
- Option 3) Try merging both

A simpler design

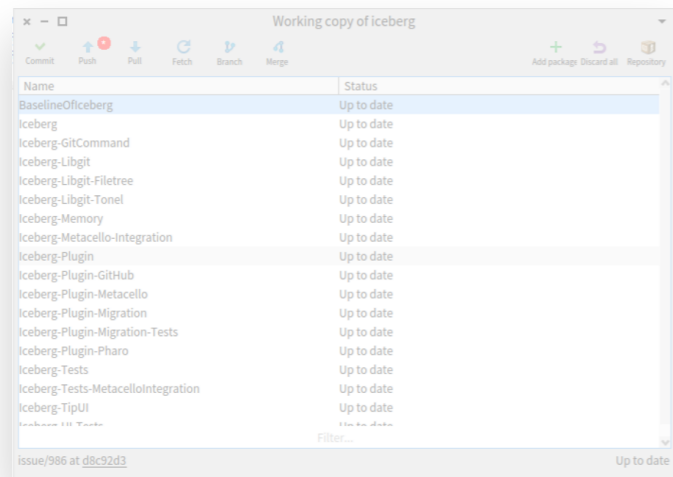
Pharo



- Simplification over the model on Iceberg < 0.7
- Less error prone
- Still, we are looking on **workflow** simplifications (virtual branches?)



Easier & More Robust



New UI



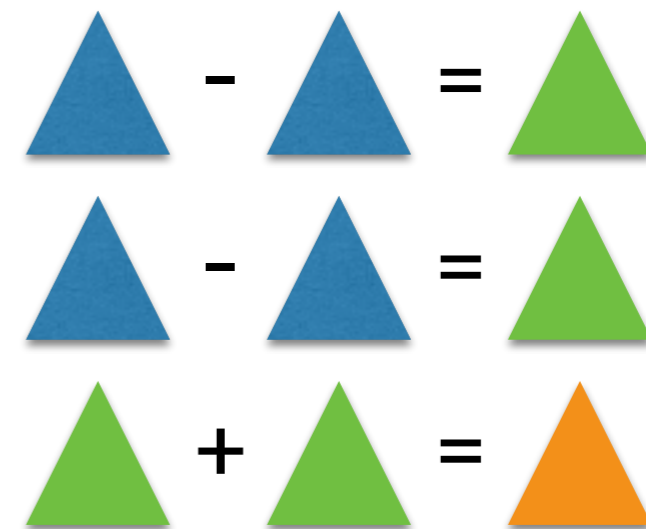
Lots of CI

64bit support

53% coverage



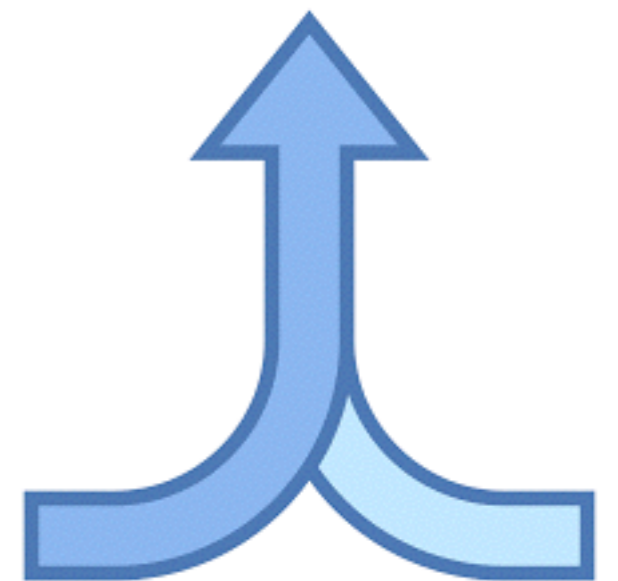
Dual Working Copy



Three-Way Merge

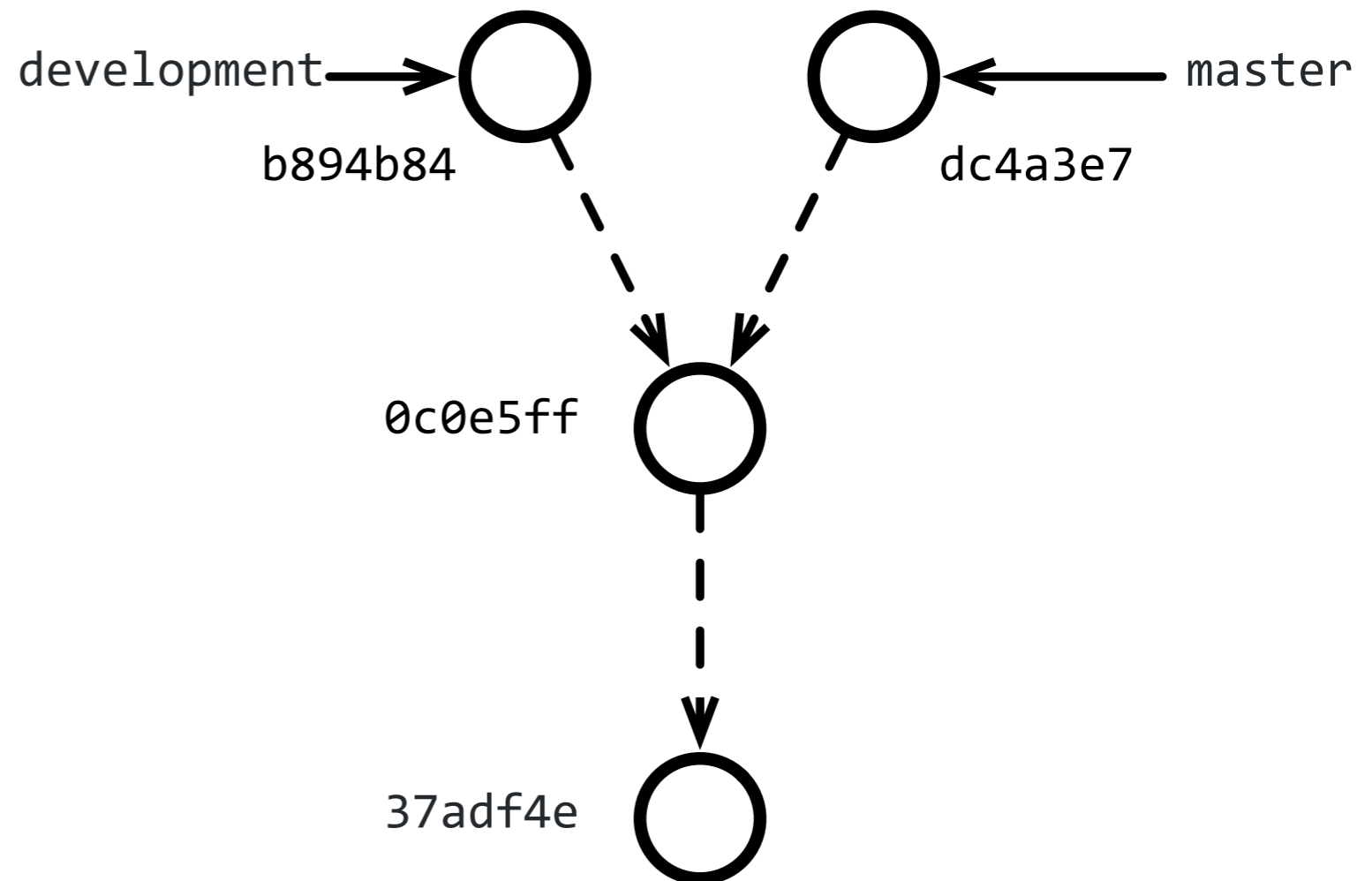
New merge algorithm

- Repository-project based instead of package based
- Allow file merges
- Honors git merge (ff, non-ff...)
- Three-way!

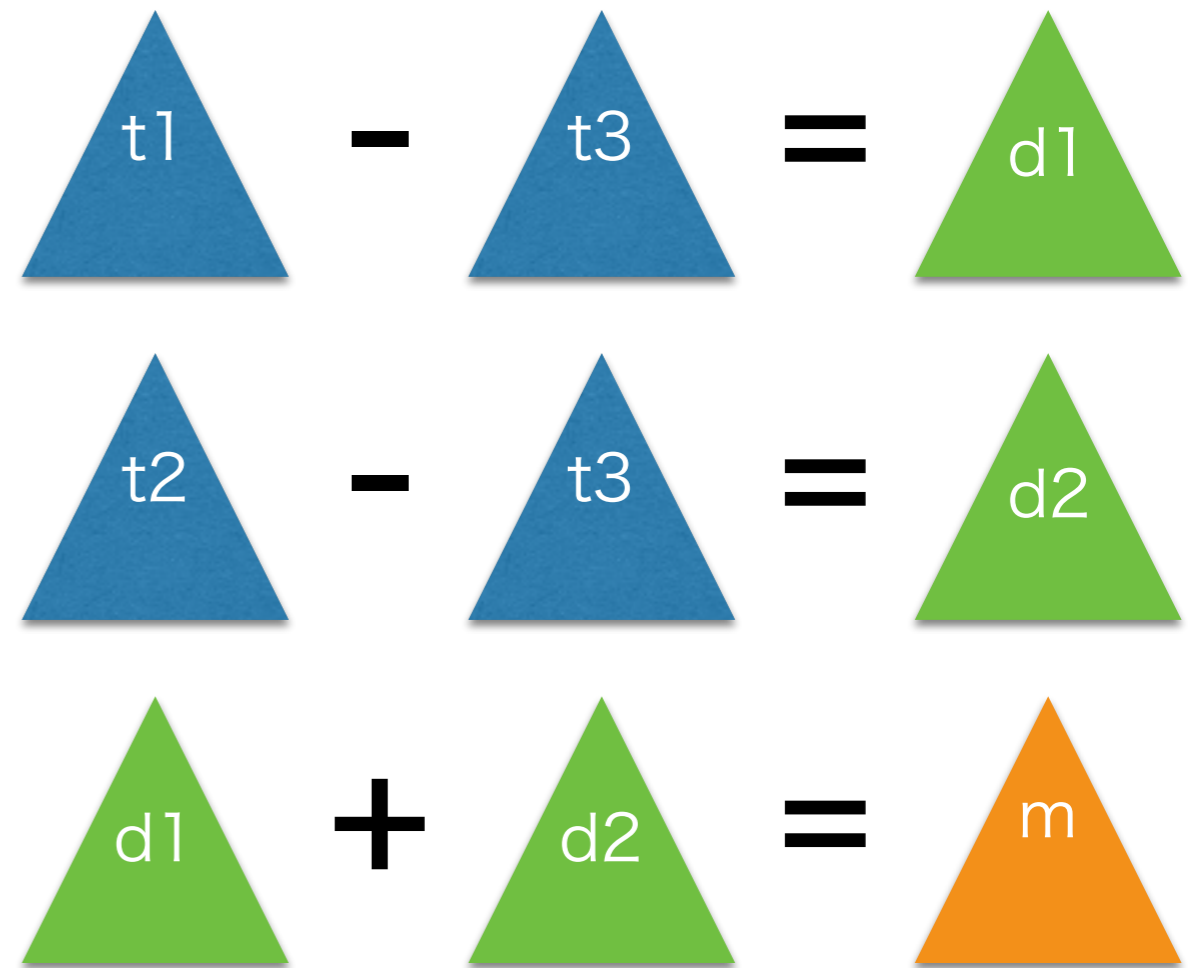
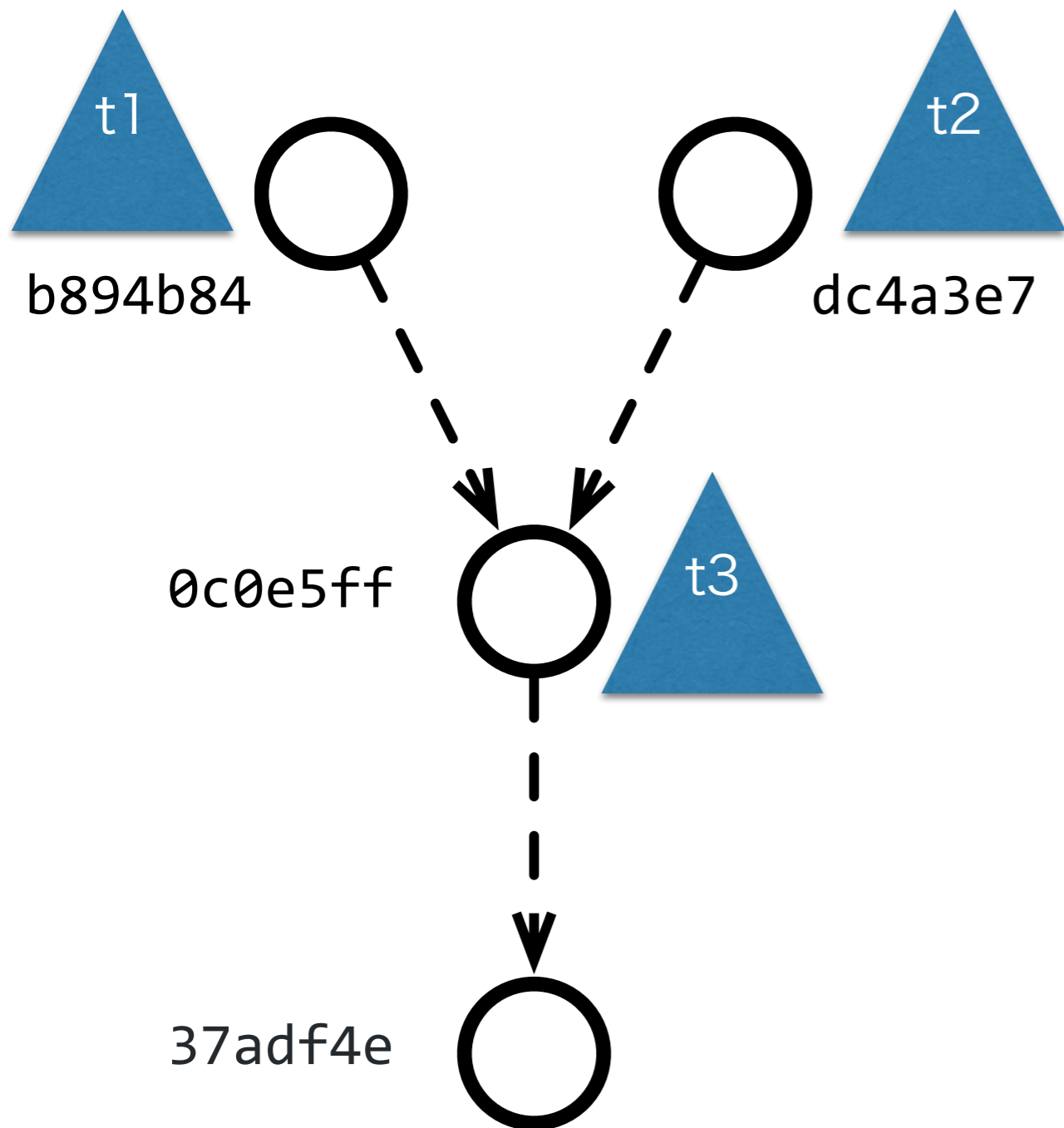


Three-way merge

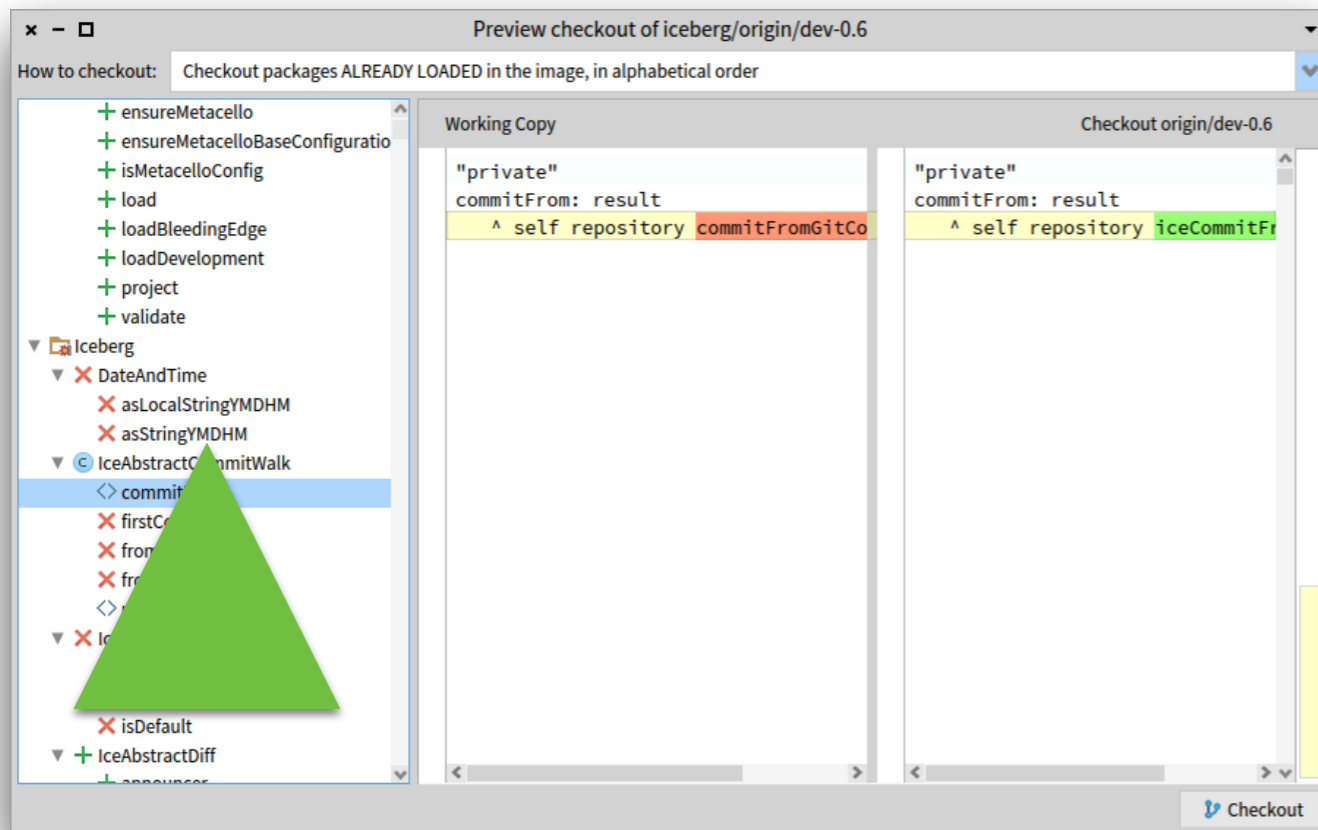
1. Diff merged commits against common parent
2. Merge both diff trees (and check conflicts)



Three-way Merge Explained

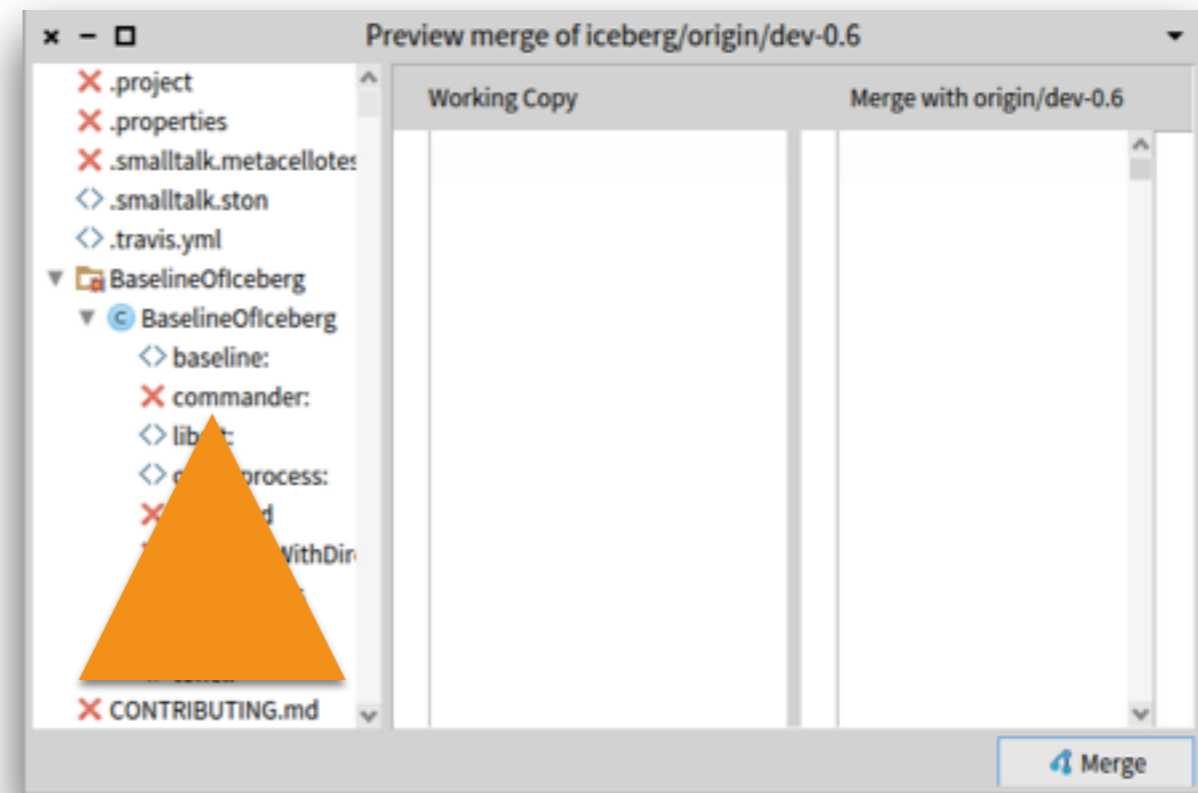


And all these are objects...



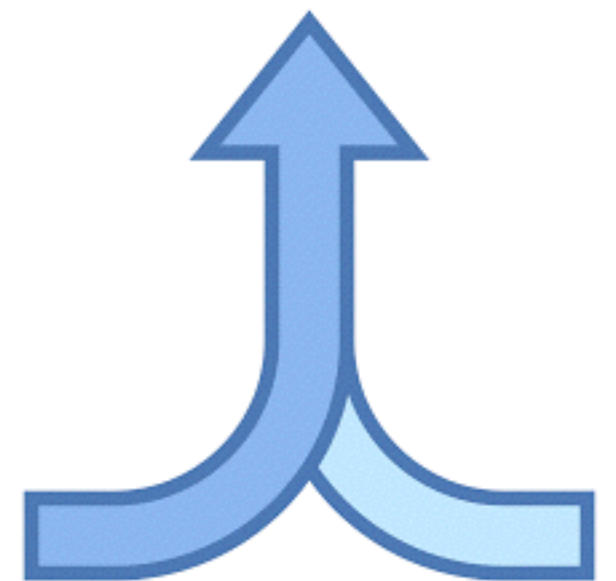
Diff tree
in Checkout

Merge tree
in Merge

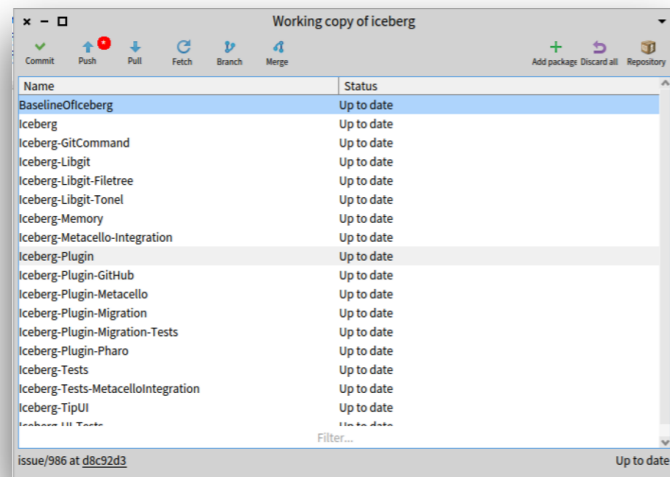


Reliable merge

- Do not lose code
- Correctly calculate conflicts
- Still need some UI enhancements



Easier & More Robust



New UI



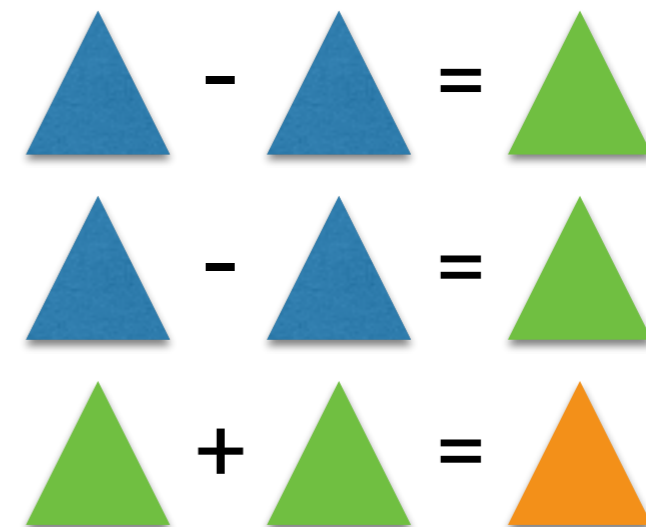
Lots of CI

64bit support

53% coverage



Dual Working Copy



Three-Way Merge

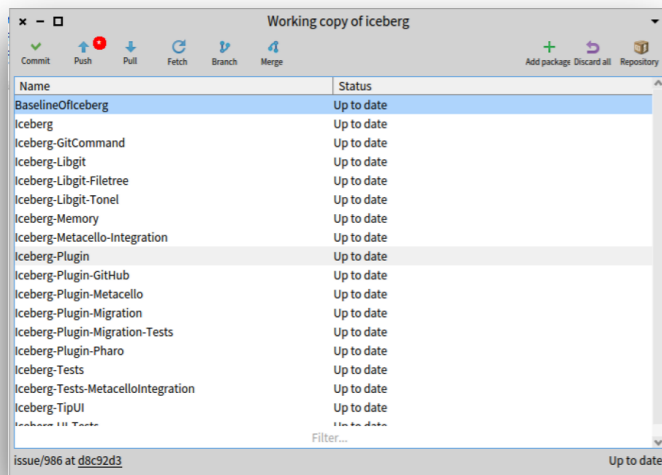
The next evolution

- Manage more than code?
- Sub-projects?

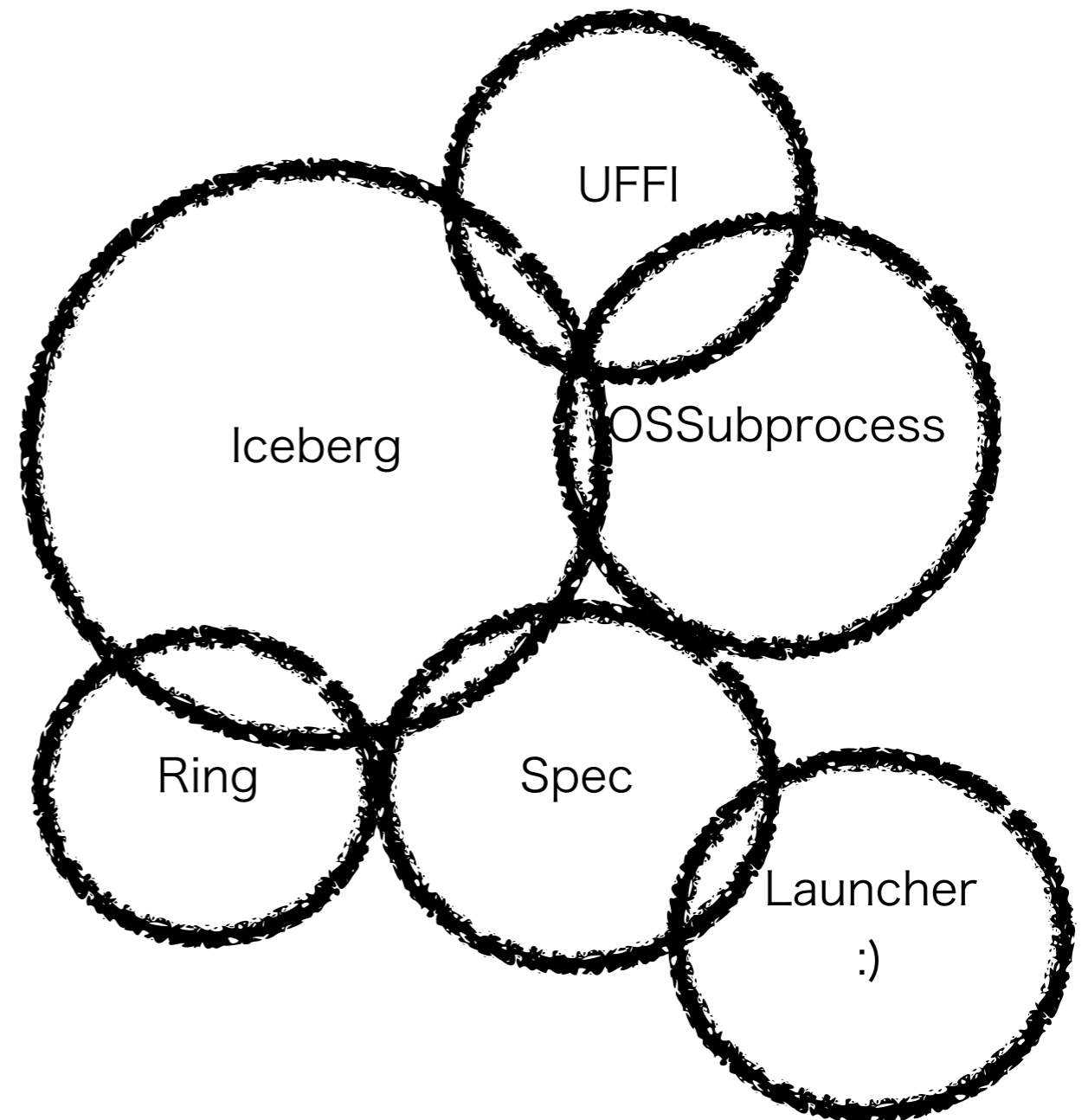
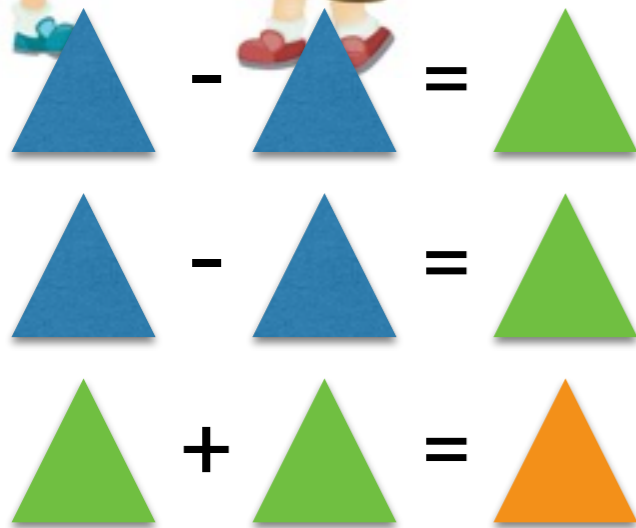


Conclusion

<https://github.com/pharo-vcs/iceberg>

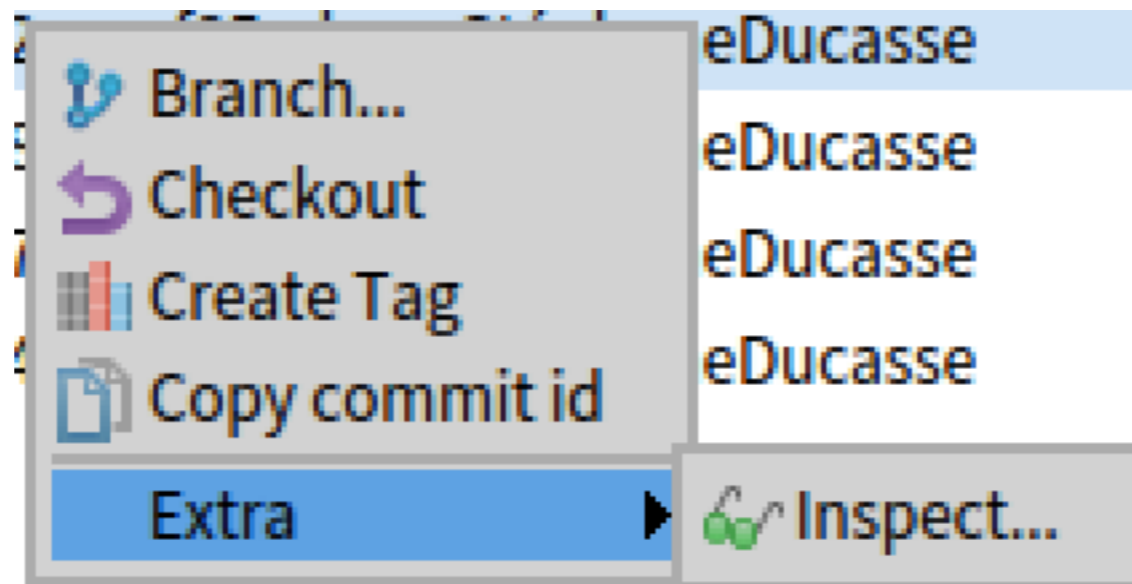


Name	Status
BaselineOfIceberg	Up to date
Iceberg	Up to date
Iceberg-GitCommand	Up to date
Iceberg-Libgit	Up to date
Iceberg-Libgit-Filetree	Up to date
Iceberg-Libgit-Tonel	Up to date
Iceberg-Memory	Up to date
Iceberg-Metacello-Integration	Up to date
Iceberg-Plugin	Up to date
Iceberg-Plugin-GitHub	Up to date
Iceberg-Plugin-Metacello	Up to date
Iceberg-Plugin-Migration	Up to date
Iceberg-Plugin-Migration-Tests	Up to date
Iceberg-Plugin-Pharo	Up to date
Iceberg-Tests	Up to date
Iceberg-Tests-MetacelloIntegration	Up to date
Iceberg-TipUI	Up to date
Iceberg-UI-Tests	Up to date



Extra Slides!

Inspect, inspect, inspect



iceCommit fileSystem

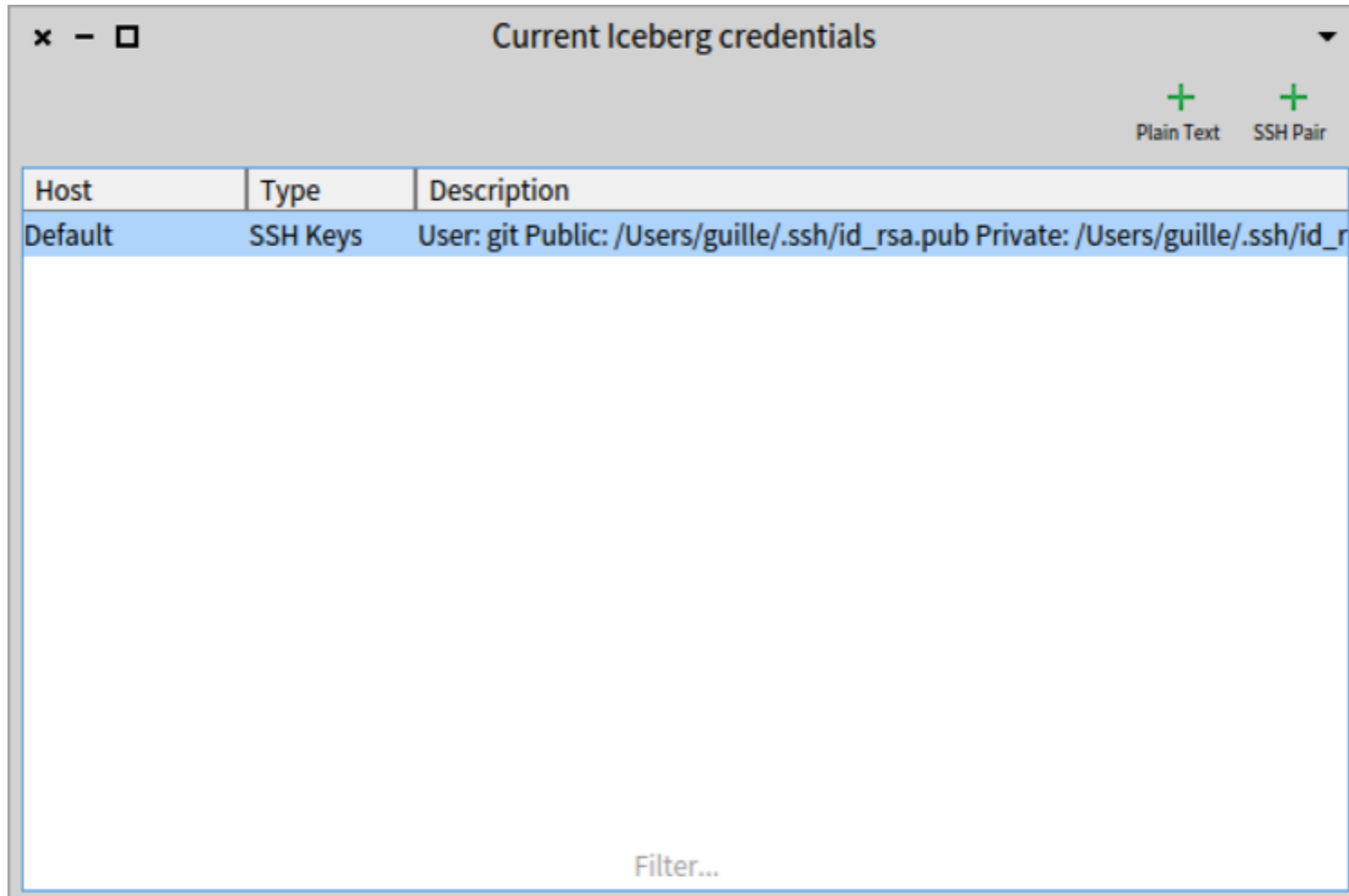
The screenshot displays an IDE window titled "Inspector on a FileReference (/)". It is divided into three main panes:

- Left Pane:** Shows a file browser view for the root directory (/). The items listed are:
 - BaselineOfLeBonTrouveur (folder)
 - LeBonTrouveur (folder)
 - .project (file)
 - .properties (file)
- Middle Pane:** Shows a file browser view for the directory /BaselineOfLeBonTrouveur. The items listed are:
 - .. (parent directory)
 - BaselineOfLeBonTrouveur.class.st (file, selected)
 - package.st (file)
- Right Pane:** Shows the content of the selected file, "BaselineOfLeBonTrouveur.class.st". The content is a Smalltalk script defining a class and a baseline. The script is as follows:

```
"
Metacello new
  baseline: #LeBonTrouveur;
  repository:
    'github://Ducasse/LeBonTrouveur';
  load
"
Class {
  #name :
    #BaselineOfLeBonTrouveur,
  #superclass : #BaselineOf,
  #category :
    #BaselineOfLeBonTrouveur
}

{ #category : #baselines }
BaselineOfLeBonTrouveur >>
baseline: spec [
  <baseline>
```

Credential Manager



The screenshot shows a window titled "Current Iceberg credentials". In the top right corner, there are two green plus signs with labels "Plain Text" and "SSH Pair" below them. Below this is a table with three columns: "Host", "Type", and "Description". The first row is highlighted in blue and contains the following data: "Default", "SSH Keys", and "User: git Public: /Users/guille/.ssh/id_rsa.pub Private: /Users/guille/.ssh/id_r". At the bottom center of the window, there is a "Filter..." label.

Host	Type	Description
Default	SSH Keys	User: git Public: /Users/guille/.ssh/id_rsa.pub Private: /Users/guille/.ssh/id_r

Prototyping about Files

