Applications in Pharo

Come to the Desktop Side

Pablo Tesone - Pharo Consortium
ESUG 2023

It’s a me, Pablo!

Pablo Tesone
Pharo Consortium
Engineer

@tesonep

- 24 years trying to code
- 13 years of experience in industrial applications
- 9 Years working on Pharo
- PhD in Dynamic Software Update
- Interested in improving development tools and the daily development process.
- Enthusiast of the object oriented programming and their tools.

Desktop Applications

Our Objective Today

Desktop Applications

Our Objective Today

- We want:
  - Multiplatform Applications
  - Seamless Operating System Integration
  - Packaging and Installation
  - Automatic Process / CI integration

We want to develop in Pharo

- Cool Tools
- Iterative Process
- Fun & Addictive

We want Pharo Everywhere

Because Pharo has a Rich Ecosystem

- Tools
- Frameworks
- Language Support

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- Frameworks
- Language Support

We want to take advantage of them!!!

A broad spectrum of Applications

And Pharo is fit for it

Native Applications

Custom UI Apps

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Custom UI Apps

Spec + GTK

Bloc + Toplo

Spec

Cairo / Alexandrie

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Native Applications

Custom UI Apps

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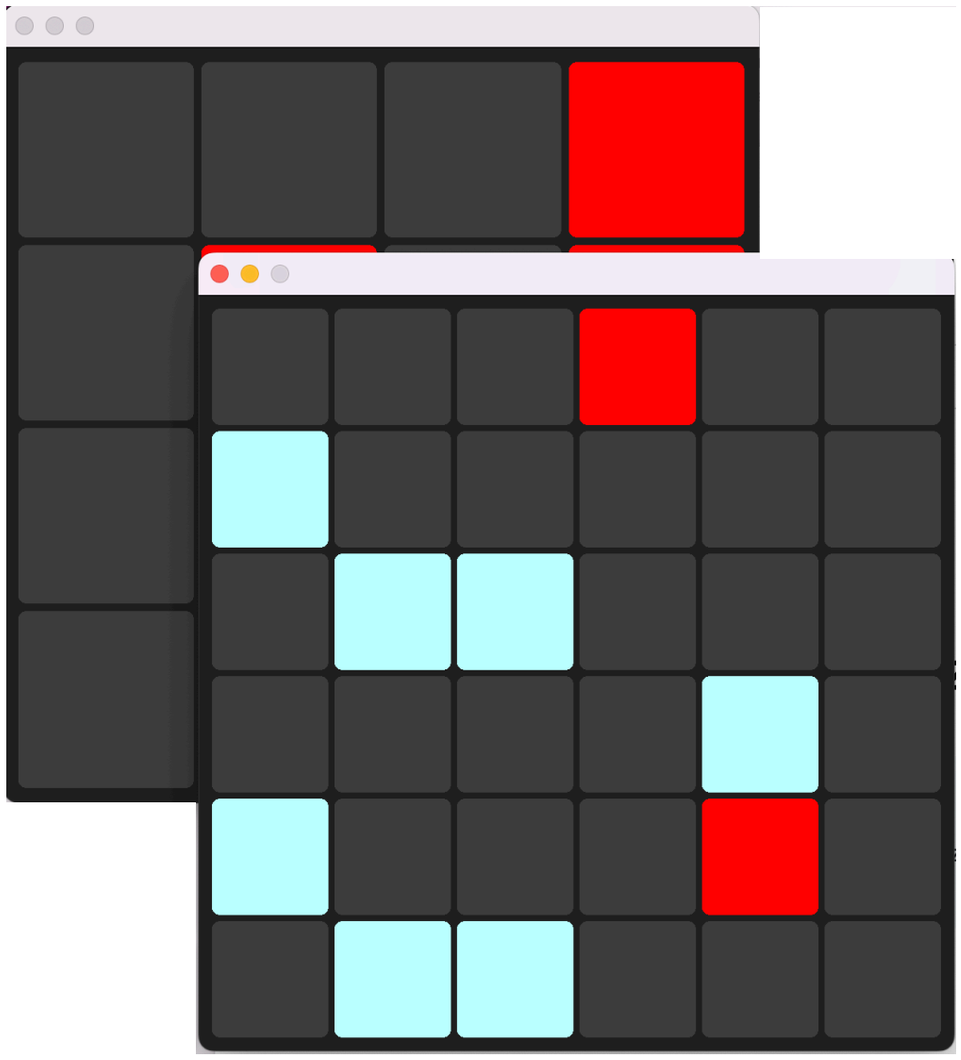
Spec

Cairo / Alexandrie

Let's Automate the Packaging and Installer

An Example Application

- Let’s take a nice game using Bloc + Toplo
- Takuzu (puzzle game similar to Sudoku)



```
Metacello new
    baseline:'Takuzu';
    repository: 'github://Enzo-Demeulenaere/Takuzu/src';
    load: 'core'
```

An Example Application

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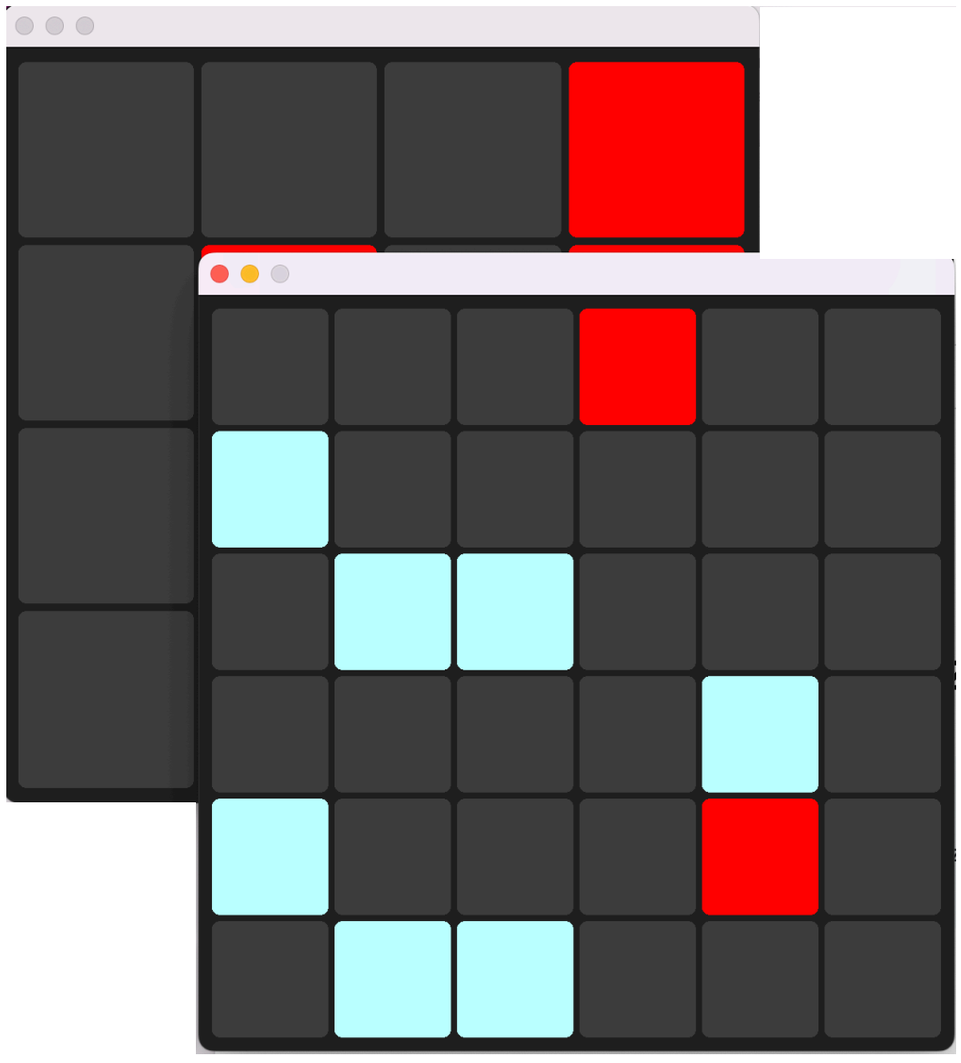

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Metacello new
    baseline:'Takuzu';
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    load: 'core'
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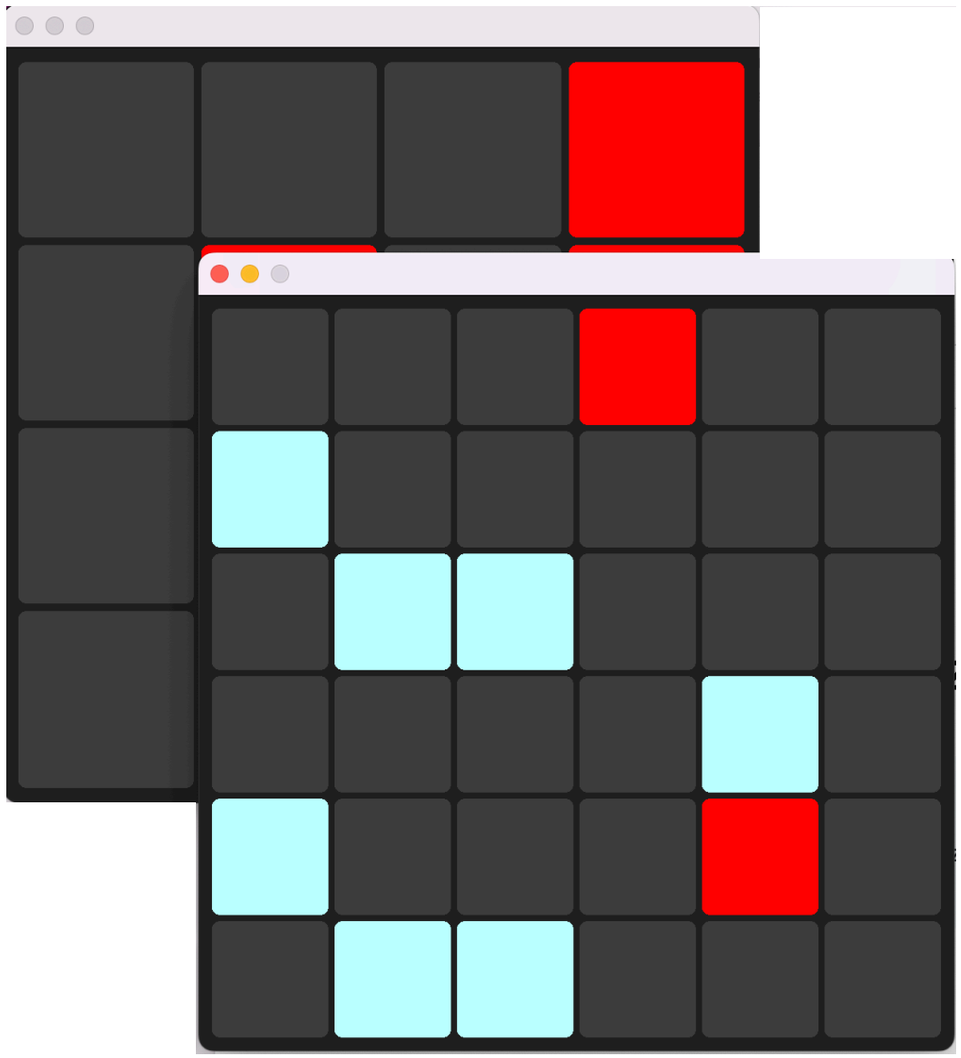
Thanks Enzo Demeulenaere

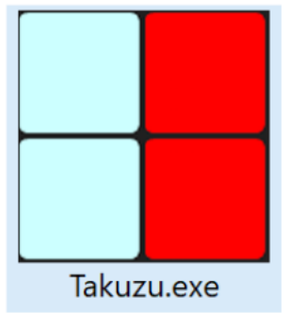
An Example Application

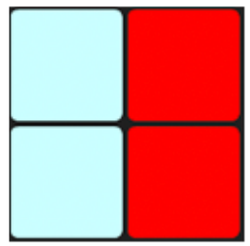
- Let’s make it look like a Nice App
- Let’s package it and have a nice installer for it
- We are going to do it for Windows and MacOS

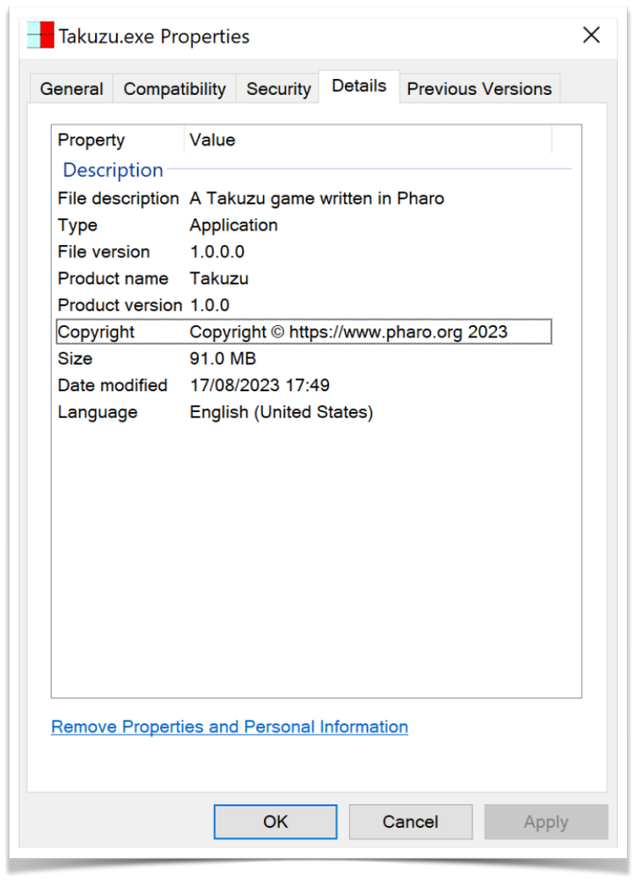


What we want (1/3)

Custom Icon and Branding



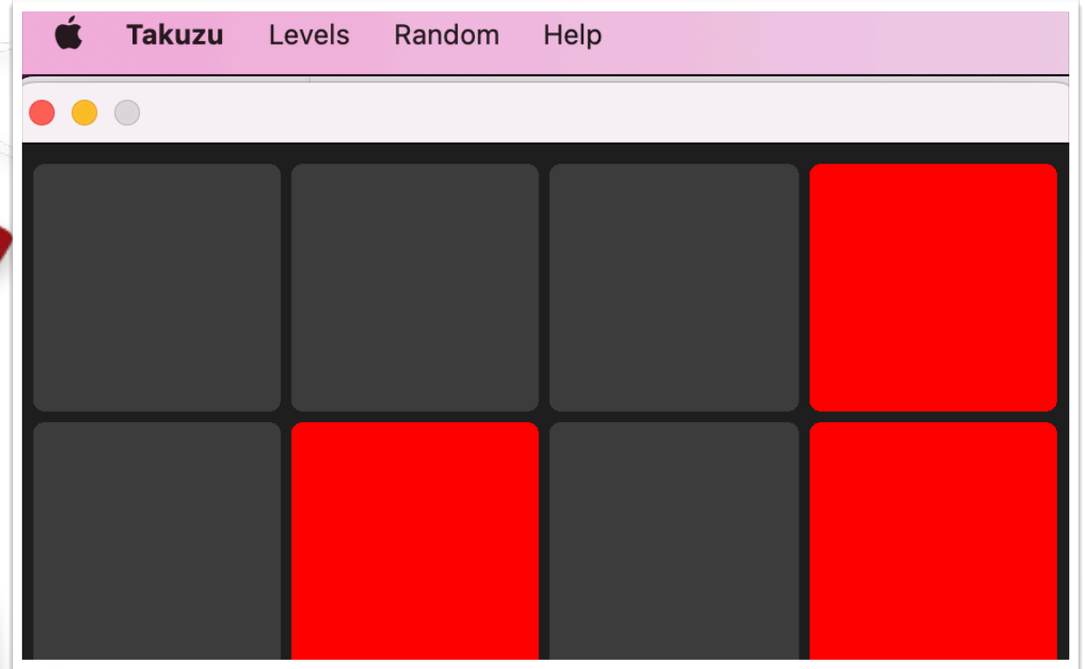


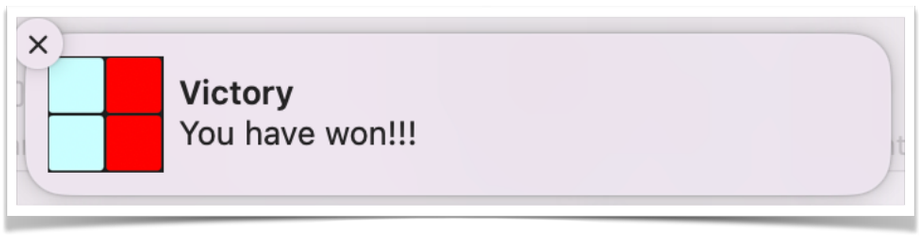


Executable Metadata

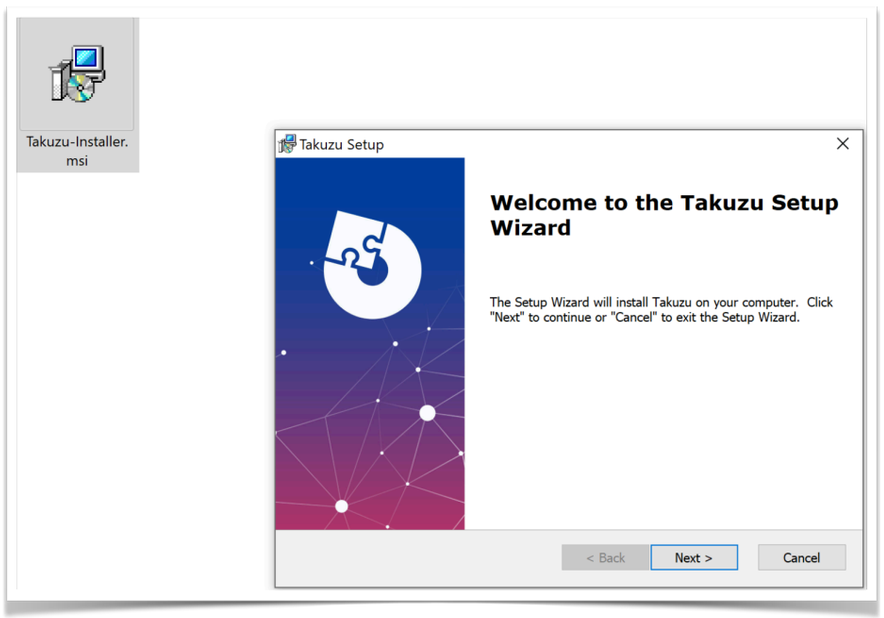
What we want (2/3)

OS Integration

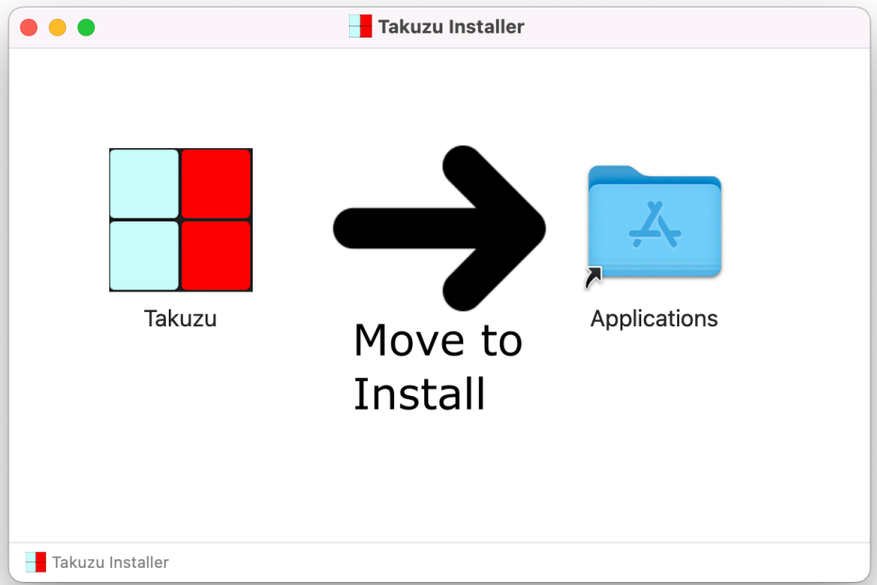




Installers

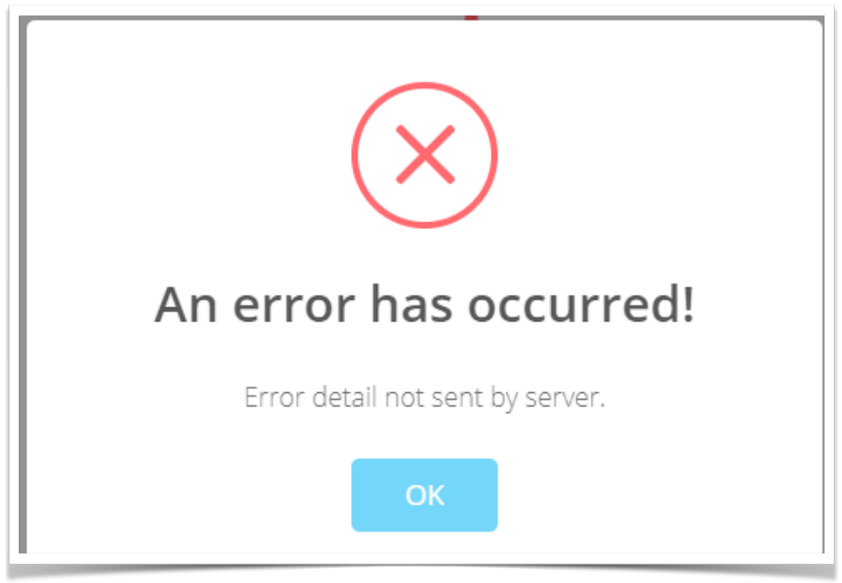


Takuzu-Installer.dmg



What we want (3/3)

Custom Error Handling



Cheap and automatic!!!

The Plan

1. Load our application code
2. Add OS Integration (e.g., menus, notifications, etc)
3. Load Pharo Embedded Support Project
4. Generate Scripts to automatically build and create installers.
5. Run them in our CI and distribute them

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5. Ru… …hem

Easy, we just use Metacello

```
Metacello new
    baseline:'Takuzu';
    repository: 'github://tesonep/Takuzu/src';
    load: 'core'
```

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Add OS Integration

The Plan

Great Existing Libraries

OSX

Objective C Bridge

```
Metacello new
  repository: 'github://estebanlm/objcbridge/src';
  baseline: 'ObjCBridge';
  load.
```

Windows

Pharo-OS-Windows

```
Metacello new
        repository: 'github://astares/Pharo-OS-Windows/src';
        baseline: 'OSWindows' ;
        load
```

Pharo COM Support

```
Metacello new
  baseline: 'PharoWin32';
  repository: 'github://tesonep/pharo-com';
  load.
```

Add OS Integration

The Plan

Great Existing Libraries

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Objective C Bridge

```
Metacello new
  repository: 'github://estebanlm/objcbridge/src';
  baseline: 'ObjCBridge';
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Pharo-OS-Windows

```
Metacello new
        repository: 'github://astares/Pharo-OS-Windows/src';
        baseline: 'OSWindows' ;
        load
```

Thanks!!!

Esteban

Torsten

Pharo COM Support

```
Metacello new
  baseline: 'PharoWin32';
  repository: 'github://tesonep/pharo-com';
  load.
```

Add OS Integration

OSX Examples in Action

Menus

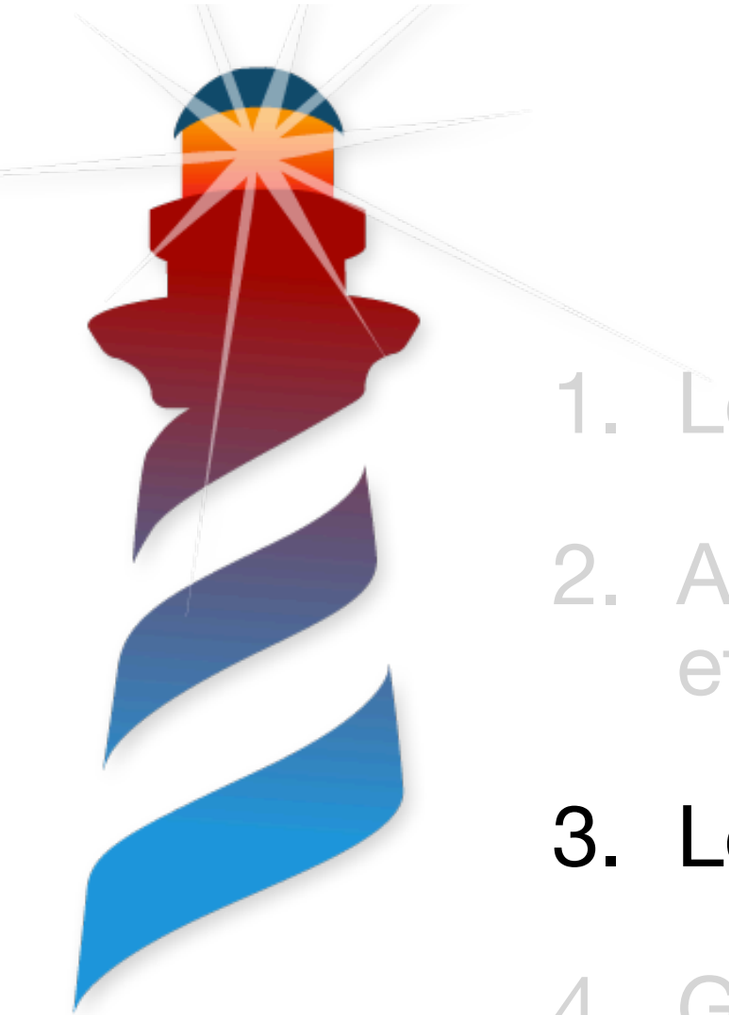
```
main := CocoaMenu new.
main  title: 'MainMenu'; "Only informative"
   addSubmenu: 'Application' with: [ :m |
      m
         addItemWithTitle: 'Quit'
         action: [ Smalltalk snapshot: false andQuit: true ]
         shortcut: 'q' ].

main addSubmenu: 'Random' with: [ :m |
      m addItemWithTitle: '4x4' action: [ TFieldElement launch4 ].
      m addItemWithTitle: '6x6' action: [ TFieldElement launch6 ] ];
   addSubmenu: 'Help' with: [ :m |
      m
         addItemWithTitle: 'Show Help'
         action: [ Takuzu showHelp ]
         shortcut: '' ].
main setAsMainMenu.
```

Notifications

```
(OSPlatform current isMacOSX and: [UNNotificationCenter isAvailable])
   ifTrue: [ UNNotificationCenter uniqueInstance showNotificationTitle: 'Victory' body: 'You have won!!!' ]
   ifFalse: [ self openEndGameWindowInBloc ]
```

The Plan



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Load Pharo Embedded Support Project

- A library that provides:
  - Custom error handling
  - Command Line Handlers
  - Generators for automatise the packaging

```
Metacello new
  baseline: 'EmbeddedSupport';
  repository: 'github://tesonep/pharo-vm-embedded-example:pharo-11/smalltalk-src';
  load.
```

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Generate Scripts

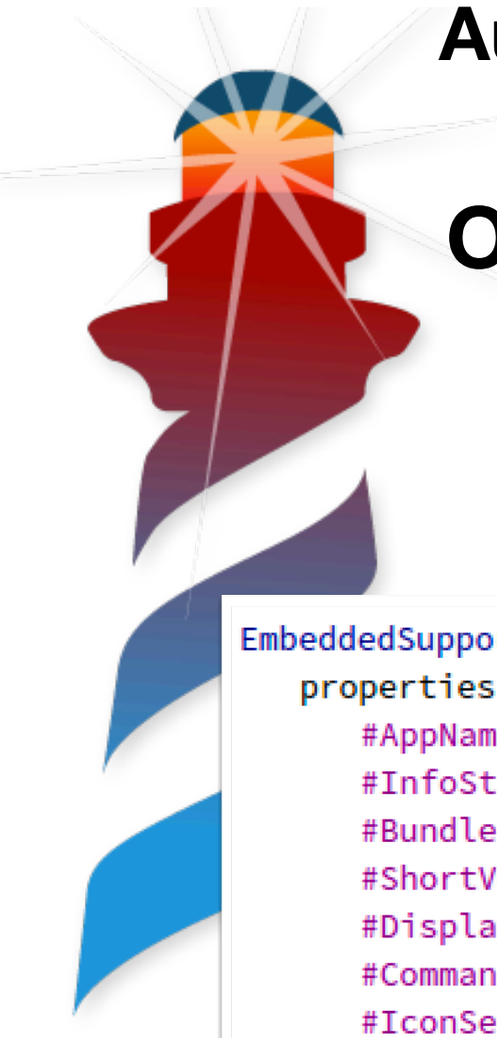
Automatically build and create packages & installers

OSX

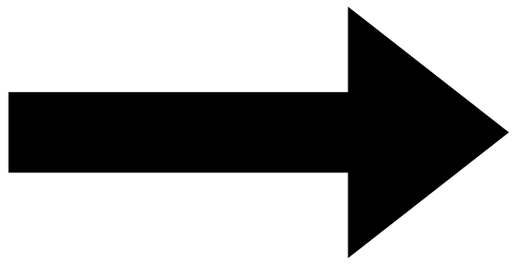
```
EmbeddedSupportOSXGenerator new
    properties: {
        #AppName -> 'Takuzu'.
        #InfoString -> 'A Takuzu game written in Pharo'.
        #BundleIdentifier -> 'org.pharo.takuzu'.
        #ShortVersion -> '1.0.0'.
        #DisplayName -> 'Takuzu'.
        #CommandLineHandler -> 'takuzu'.
        #IconSetFile -> self iconSetFile.
    } asDictionary;
    outputDirectory: FileLocator workingDirectory / 'build';
    generate
```

Generate Scripts

Automatically build and create packages & installers



OSX



Bash Script

```
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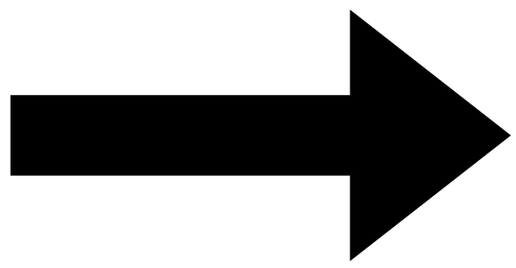

Bash Script

App Package

Installable DMG

Generate Scripts

Automatically build and create packages & installers

Windows

```
EmbeddedSupportWindowsGenerator new
   properties: {
      #AppName -> 'Takuzu'.
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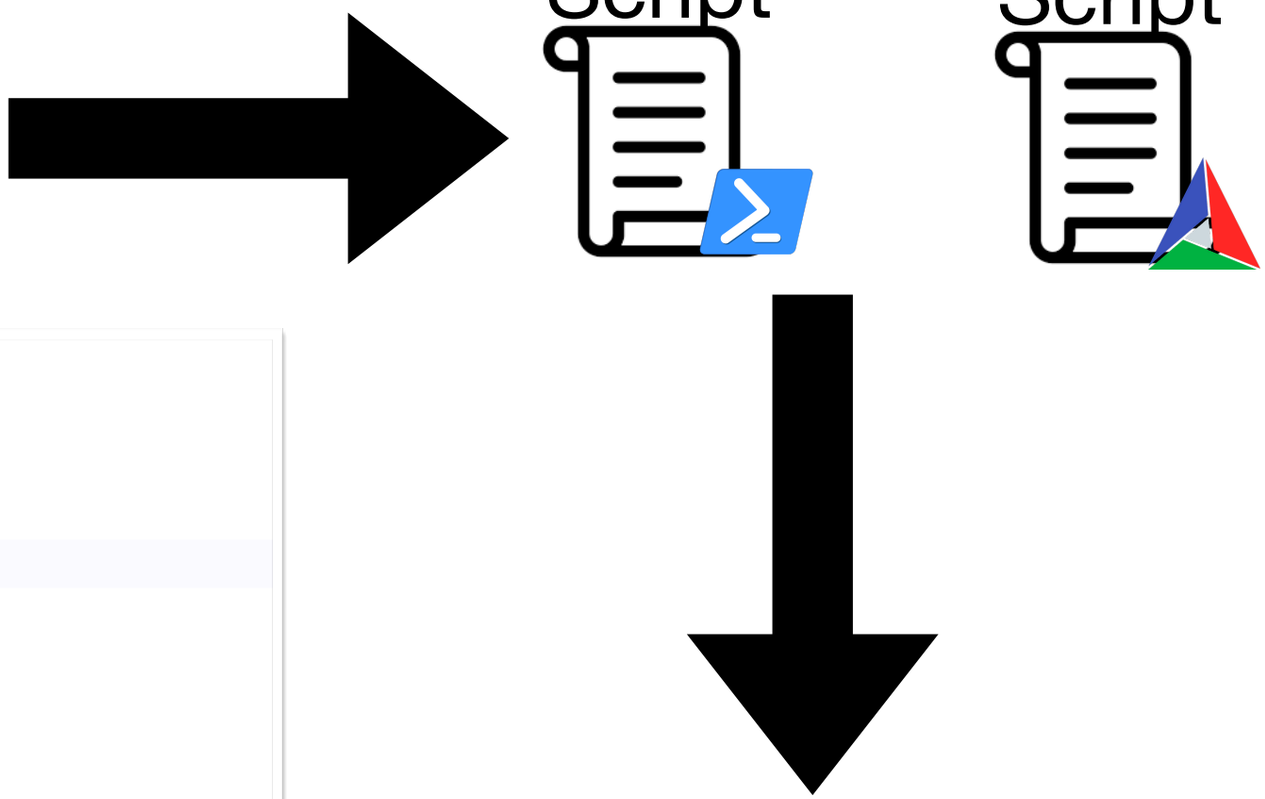
      #BundleIdentifier -> 'org.pharo.takuzu'.
      #ShortVersion -> '1.0.0'.
      #DisplayName -> 'Takuzu'.
      #CommandLineHandler -> 'takuzu'.
      #IconFile -> self iconFile.
      #CompanyName -> 'Pharo Consortium'.
      #LegalCopyright -> 'Copyright \251 https://www.pharo.org 2023\0'
   } asDictionary;
   outputDirectory: FileLocator workingDirectory / 'build';
   generate
```



Executable

Installable MSI

Generate Scripts

Automatically build and create packages & installers

Windows

PowerShell Script

CMake Script

Thanks!!!

Christophe

Guille

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EmbeddedSupportWindowsGenerator new
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    generate
```

Executable

Installable MSI

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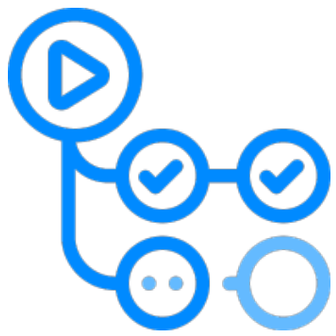
Run them in our CI and distribute them

Let’s run in the CI

Run in Github Action:

- Get a Pharo Image and load our code
- Generate the Scripts and execute them
- Upload Artifacts
- Available for OSX and Windows



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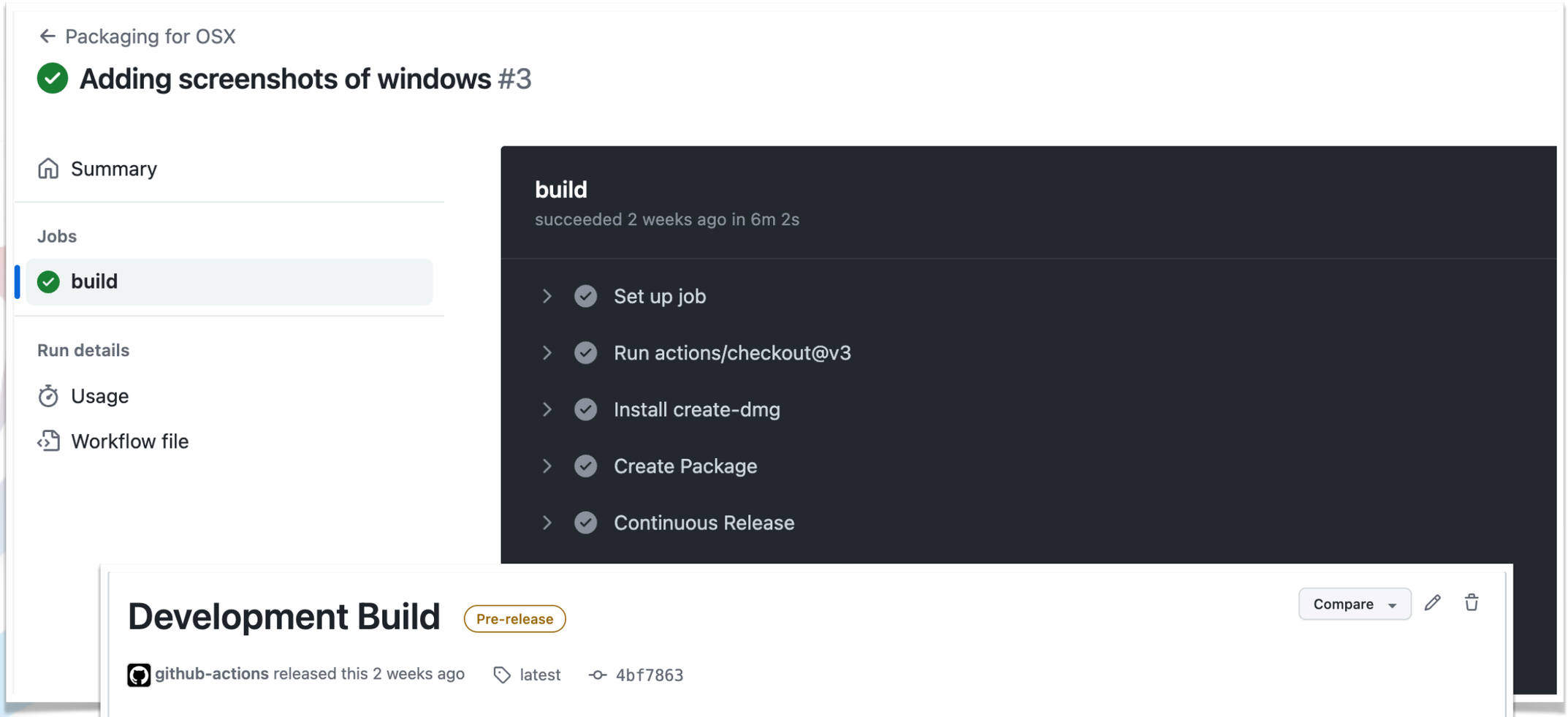

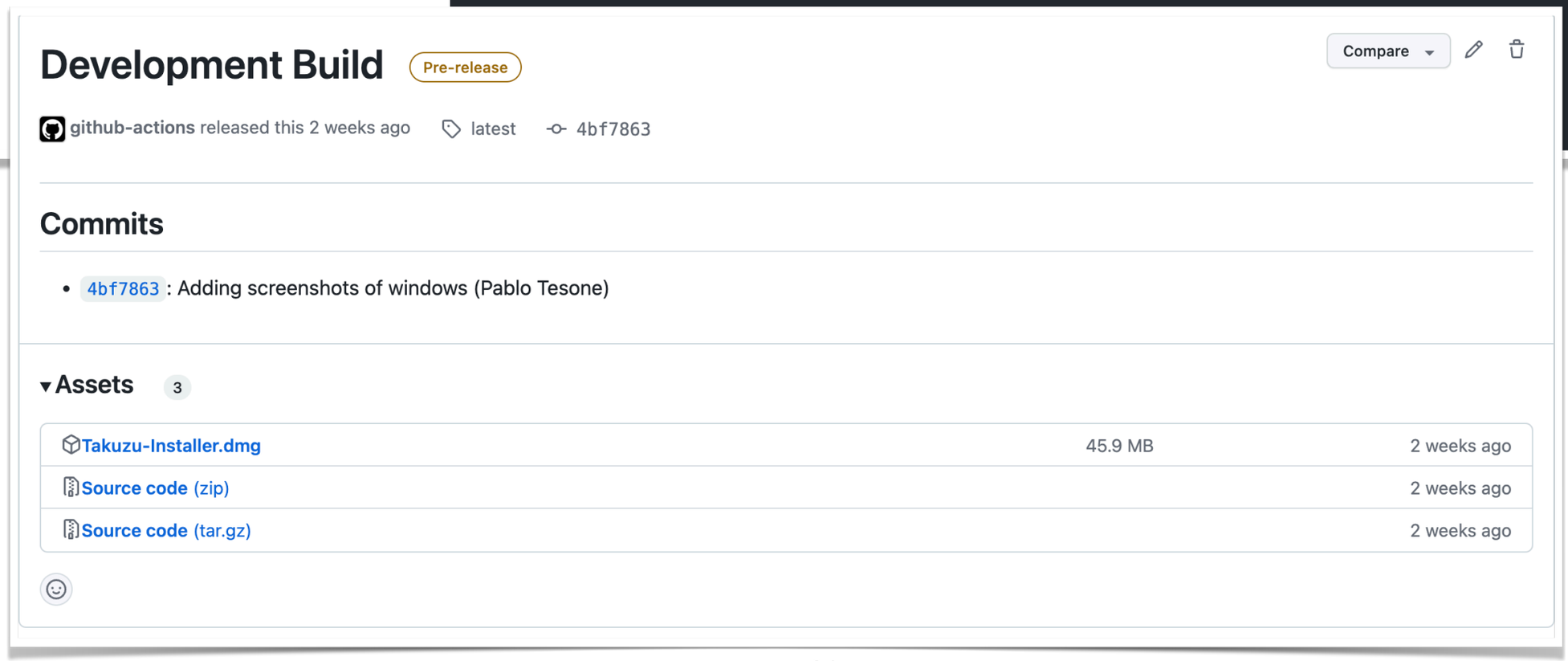

Run them in our CI and distribute them

Let's run in the CI

Run in Github Action:

- Get a Pharo Image and load our code

Thanks!!!

Christophe

Cyril

Stef

Our Complete Example

Available on Github

tesonep/Takuzu

- Windows and OSX Example
- Github Actions
- OSX Integration
- Embedded Windows App
- Bloc Application

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- Windows and OSX Example
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Open to Improve and to copy

Future Plans

Everything is Open

tesonep/pharo-vm-embedded-example

- Adding UI to generate script
- Support for Minimal Images
- Moving generators outside the image
- Adding support for signing / notarisation
- Documentation / More Examples

Applications in Pharo

Thanks so much!!!

- Custom Icon and Branding
- Error Handling
- Metadata
- Installers
- OS Integration
- Automatizable

tesonep/Takuzu

tesonep/pharo-vm-embedded-example