Applications in Pharo
Come to the Desktop Side

Pablo Tesone - Pharo Consortium
ESUG 2023
It’s a me, Pablo!

Pablo Tesone
Pharo Consortium
Engineer

- 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.

@tesonep  

![Image of Pablo](image.png)
Desktop Applications

Our Objective Today

IT'S DEMO TIME

makeameme.org
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
Because Pharo has a Rich Ecosystem

- Tools
- 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
A broad spectrum of Applications
And Pharo is fit for it

Native Applications
Spec + GTK

Custom UI Apps
Bloc + Toplo
Spec
Cairo / Alexandrie
A broad spectrum of Applications

And Pharo is fit for it

Native Applications

Spec + GTK

Custom UI Apps

Bloc + Toplo 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)

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

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
What we want (3/3)

Custom Error Handling

An error has occurred!

Error detail not sent by server.

OK

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
The Plan

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Easy, we just use **Metacello**

```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

Windows

Pharo-OS-Windows

Pharo COM Support

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

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

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

The Plan

Great Existing Libraries

OSX
Objective C Bridge

Windows
Pharo-OS-Windows

Pharo COM Support

Thanks!!!

Esteban

Torsten

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

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

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

OSX Examples in Action

Menus

```plaintext
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

```plaintext
(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';
  load.
The Plan

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Generate Scripts

Automatically build and create packages & installers

OSX

```smalltalk
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

```plaintext
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

```
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
```

App Package
Installable DMG
Generate Scripts

Automatically build and create packages & installers

Windows

PowerShell Script

CMake Script

Executable

Installable MSI

```ruby
EmbeddedSupportWindowsGenerator new
properties: {
  #AppName -> 'Takuzu',
  #InfoString -> 'A Takuzu game written in Pharo'.
  #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
```
Generate Scripts

Automatically build and create packages & installers

Windows

PowerShell Script

CMake Script

Thanks!!!

Christophe  Guille

Executable  Installable MSI
The Plan

1. Load our application code
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5. Run them in our CI and distribute them
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
Run them in our CI and distribute them

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**Development Build**

- **Pre-release**
- **github-actions** released this 2 weeks ago
- **Commits**
  - 4bf7863: Adding screenshots of windows (Pablo Tesone)
- **Assets**
  - 3 files:
    - Takuzu-Installer.dmg
    - Source code (zip)
    - Source code (tar.gz)

**Summary**

- **Jobs**
  - build
  - Set up job
  - Run actions/checkout@v3
  - Install create-dmg
  - Create Package
  - Continuous Release

**Packaging for OSX**

**Adding screenshots of windows #3**
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 Scripts and execute them
- Upload Artifacts

• Available for OSX and Windows

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
Our Complete Example

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tesonep/Takuzu

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

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