

Tkinter vs. DelphiFMX for Python GUI

Embarcadero Open Source Project Stream

Thursday, June 2nd, 2022

Slides, links, replay, and more:

blogs.embarcadero.com/tkinter-vs-delphifmx-in-the-embarcadero-open-source-stream/



Who's on the Stream?

- Jim McKeeth - Embarcadero Developer Relations
- Kunarapu Priyatham - Python Developer & Tech Writer
- Lucas Moura Belo - Delphi & Python Developer
- Mohil Gupta - Chief of Staff & Entrepreneur
- Kyle Wheeler - Embarcadero General Manager
- Kiriakos Vlahos - Maintainer of PyScripter and Python4Delphi
- Chris Gardner - Whole Tomato Visual Assist Lead Developer
- *And others who may or may not chime in . . .*



Jim



Priyatham



Lucas



Mohil



Kyle



Kiriakos



Chris



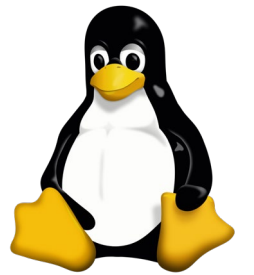
What is an Embarcadero Open Source Project Stream?

- A online event with Embarcadero discussing some of the open source projects they sponsor
- Panelists Include
 - Embarcadero and Idera product and general managers
 - Developers involved with the projects
 - Users from the community
- Everyone is invited to contribute
 - Join the conversation with questions and comments
 - Visit the projects on GitHub and file issues, pull requests, etc.
- Each week has a theme and focuses on specific project(s)
 - *Will try to stay on topic*
- Discussions include overview of the project, answering questions, and planning its future



General Notes and Comments

- Most all projects are open source, MIT licensed, and hosted on GitHub
- Embarcadero is directly sponsoring the developers and development.
- All of these projects are available and mostly working today
 - Some are still in beta or even alpha as they are under active development
- Unless otherwise stated, everything works on:
 - Android, Windows (32 & 64-bit), MacOS (x86 & ARM), and Linux
- We are looking for feedback, pull requests, contributors, examples, and forks on all Embarcadero Open Source projects!
- ★ Starring a project is a great way to show your interest!
- Download the eBook <https://embt.co/PythonGUIBundle>



Part of the Embarcadero Python Ecosystem

Python Developers



PyScripter

FMX App Builder

D4P Exporter

Delphi Extensions
for Python



DelphiFMX



DelphiVCL



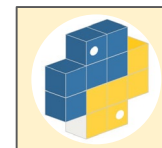
Python

Python4Delphi



Delphi

CONDA



PIP

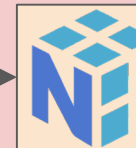
Python
Environments

Lightweight
Python Wrappers

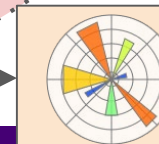
P4D
Data Sciences



Tensorflow



NumPy



etc.

Delphi Developers



GitHub



GetIt



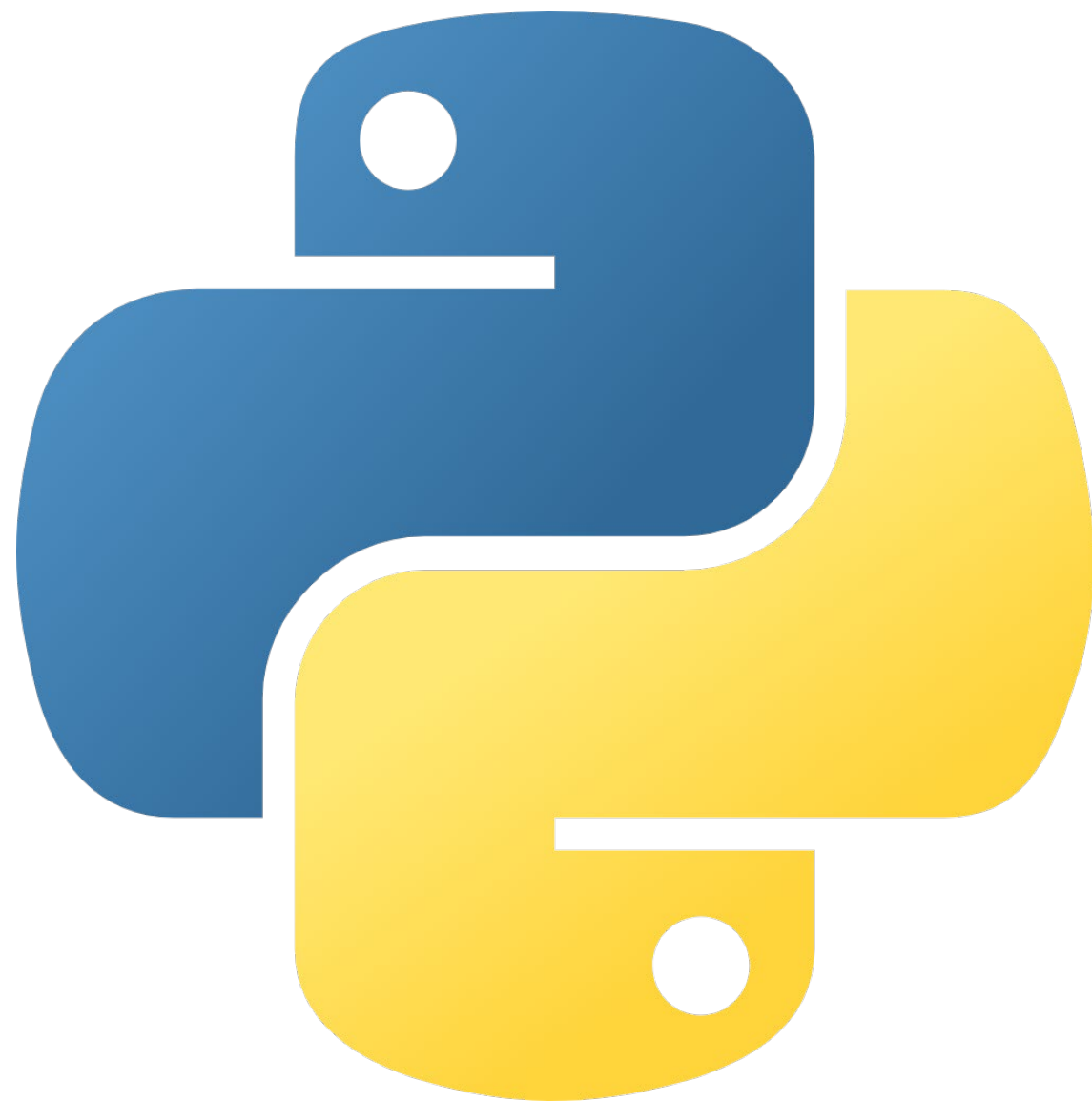
PyPi



Conda
Forge



embarcadero



For Python Developers

Bringing the best of Delphi to the Python community.

In your best Archer voice:

Do you want a nice GUI?

Because that how you get a nice GUI!




embarcadero®

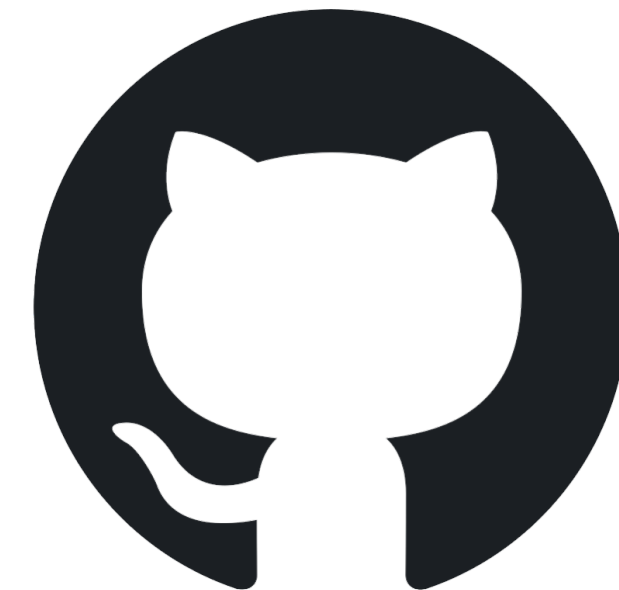
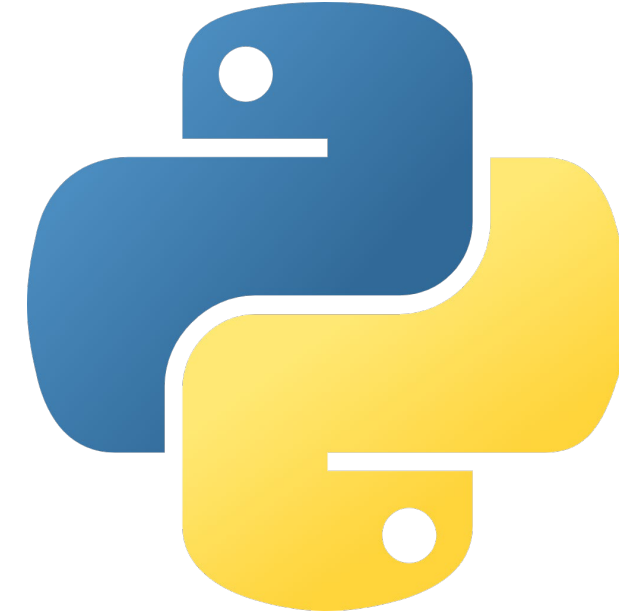
Agenda

DelphiFMX for Python

- Tkinter vs. DelphiFMX
 - Overview and comparison of the two libraries
 - Where can DelphiFMX improve?
- What's new in DelphiFMX
- Review Issues & Pull Requests
- Answer Questions
- Any other feedback or contributors
- Plan roadmap for future changes

Next Week

- Python Data Sciences Library:  PyTorch
for Delphi





DelphiFMX



Tkinter

Single event handler per event	<	Multiple event handlers per event
Instance level event bindings only	<	Both instance and class level events
Type hints still to do	<	Existing type hints
Components have Owners and Parents	>	No ownership hierarchy
Parents automatically show components	>	Need to pack each widget
18 layout options	>	3 layout options
124 Components	>	18 components
15 custom styles + 4 default styles	>	7 theme styles
Comprehensive visual designer	>	Limited designer
Simplified Android deployment	=	Works on all Python platforms

Quick Comparison

- Both have High DPI and Style support.
- Both support asynchronous / multithreaded applications.
- Tkinter works on more platforms, but DelphiFMX has a simplified Android deployment.
- The Delphi designer provides much greater flexibility and control than the designers available for Tkinter.



Tkinter Overview

- Python's de-facto standard GUI (Graphical User Interface) package.
- A thin object-oriented layer on top of Tcl/Tk.
- Name comes from “Tk interface.”
- Tcl is its own programming language, but not needed to use library.
- Supports 7 different theme styles
 - winnative, clam, alt, default, classic, vista, xpnative
- 18 widgets (visual components):
 - Button, Checkbutton, Entry, Frame, Label, LabelFrame, Menubutton, PanedWindow, Radiobutton, Scale, Scrollbar, Spinbox, Combobox, Notebook, Progressbar, Separator, Sizegrip, and Treeview
- 3 Layout options: pack, grid, place
- Online visual designer: visualtk.com



Wiki wiki.python.org/moin/TkInter

Docs docs.python.org/3/library/tkinter.html
tkdocs.com/tutorial/

Installed as part of Python

Version: 8.6

Supports all Python platforms.

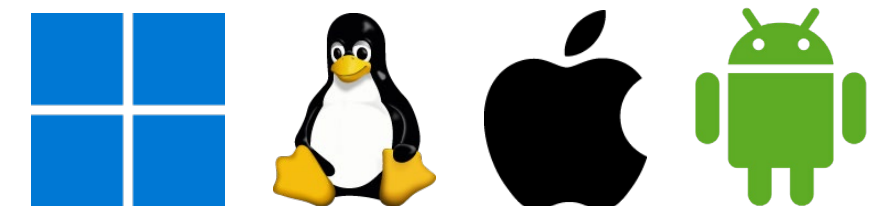


DelphiFMX Overview

- Based on Embarcadero Delphi's FireMonkey Framework
- Delphi is it's own programming language, but not needed to use library
- Powered by Python4Delphi, the same library that powers PyScripter
- Additional Projects:
 - [PythonFMXBuilder](#) - Bundles a Python script into an Android application
 - [Delphi4PythonExporter](#) - IDE plugin for Delphi to export form for Python
 - [Python4Delphi](#) - The bridge between Python and Delphi and source for libraries
 - [DelphiVCL4Python](#) - The lightweight *native* Windows framework for Python
- 4 Built in Styles, and 15 free styles in the [eBook bundle](#) (with more available)
- 124 Components = 78 Visual + 19 subcomponents + 27 non-visual
- Still To Do:
 - Stubs for Type Hinting/Code Completion (Exploring best practices)
 - Full documentation
 - Even more components, effects, etc.
 - *Your suggestions*



Home	pythongui.org/delphifmx
GitHub	Embarcadero/DelphiFMX4Python
PyPi	pypi.org/project/delphifmx
License	Source is MIT Binary libraries are Freeware
Install	Pip
Works w/	Conda, Venv
Arches	Win32 x86, Win64 x86, Linux64 x86, Android64, macOS64, and macM1
Python	cp3.6, cp3.7, cp3.8, cp3.9, & cp3.10



FMX.StdCtrls

PresentedTextControl
Panel
CalloutPanel
Label
Button
SpeedButton
CornerButton
CheckBox
RadioButton
GroupBox
StatusBar
ToolBar
SizeGrip
Splitter
ProgressBar
Thumb
CustomTrack
Track
TrackBar
BitmapTrackBar
Switch
ScrollBar
SmallScrollBar
AniIndicator
ArcDial
ExpanderButton
Expander
ImageControl
PathLabel

FMX.Edit

Edit
SearchBox
ComboEditBase
ComboEdit
CustomEditBox
SpinBox

FMX.Memo

Memo

FMX.ListBox

ListBoxItem
ListBox
ComboBox

FMX.ListView

AdapterListView
ListViewBase
PresentedListView
AppearanceListView
ListView

FMX.ComCtrls

TabControl
TabItem
MultiView

FMX.Dialog

OpenDialog

FMX.Shapes

Shape
Line
Rectangle
CaretRectangle
RoundRect
CalloutRectangle
Ellipse
Circle
Pie
Arc
CustomPath
Path
Text
Image
PaintBox
Selection
SelectionPoint

FMX.Colors

ColorBox
ColorQuad
ColorPicker
GradientEdit
ColorPanel
ComboColorBox
ColorButton
ColorListBox
ColorComboBox

FMX.Layouts

Layout
ScaledLayout
ScrollBar
VertScrollBar
HorzScrollBar
FramedScrollBar
FramedVertScrollBar
GridLayout
GridPanelLayout
FlowLayout
BufferedLayout

FMX.ScrollBox

PresentedScrollBar
PresentedVertScrollBar
PresentedHorzScrollBar
PresentedFramedScrollBar
PresentedFramedVertScrollBar

FMX.Forms

Form
Frame

FMX.Menus

MainMenu
PopupMenu
MenuBar
MenuItem

FMX.Grids

Grid
StringGrid
Column
StringColumn
ProgressColumn
CheckColumn
DateTimeColumnBase
DateTimeColumn
TimeColumn
DateColumn
PopupColumn
ImageColumn
CurrencyColumn
FloatColumn
IntegerColumn
GlyphColumn

FMX.Media

CameraComponent
CustomMediaCodec
Media
MediaPlayerControl
MediaPlayer
MediaPlayerStart
MediaPlayerStop
MediaPlayerPlayPause
MediaPlayerValue
MediaPlayerCurrentTime
MediaPlayerVolume

FMX.ActnList

CustomActionList
ActionList
Action
CustomViewAction

FMX.StdAction

HintAction
SysCommonAction
FileExit
WindowClose
FileHideApp
FileHideAppOthers
ObjectViewAction
VirtualKeyboard
ViewAction
BaseValueRange
ValueRange
ValueRangeAction

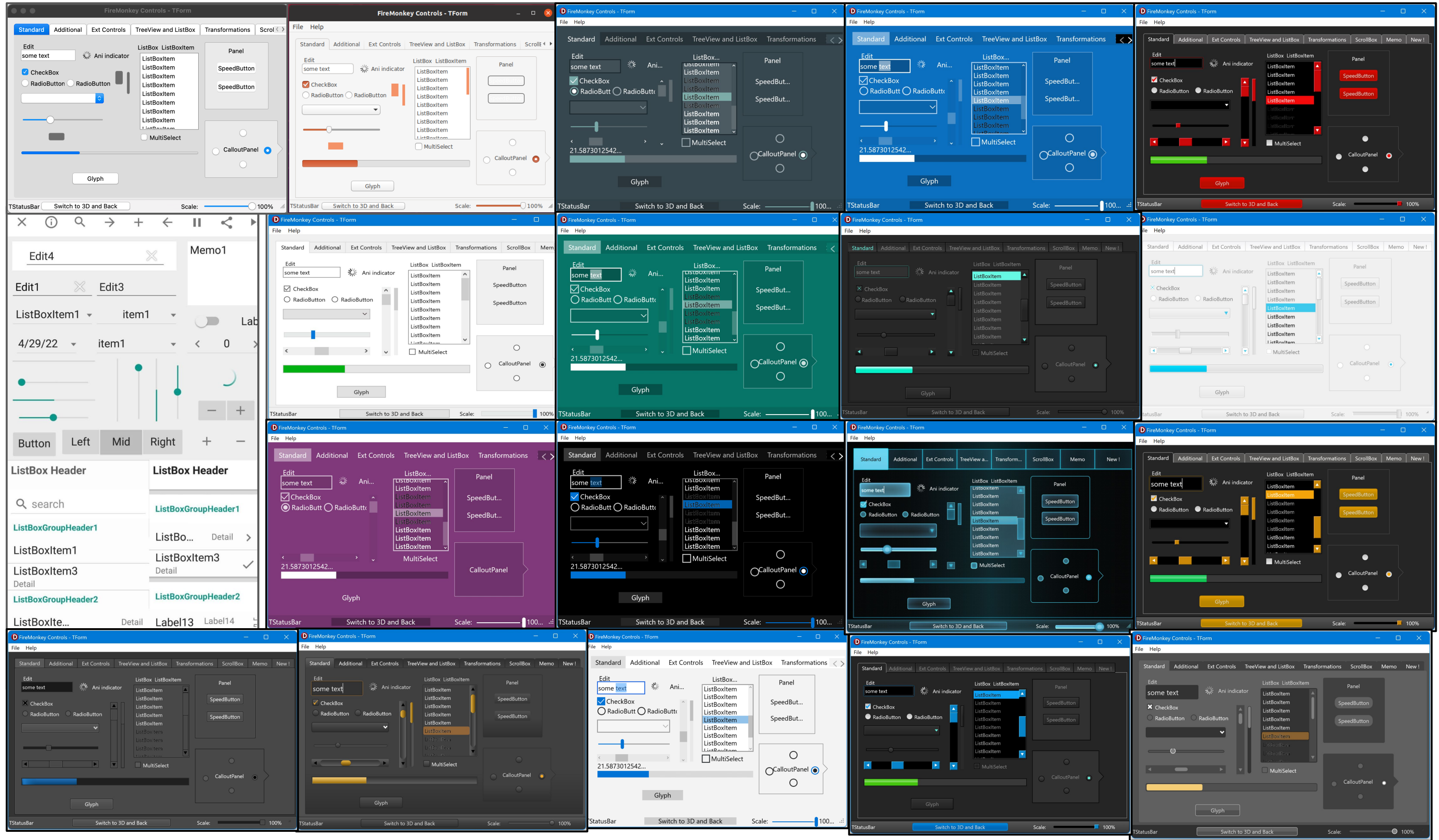
124

Components, Layouts, etc.

Many more coming



DelphiFMX for Python Styles



Part of the Python GUI eBook Bundle <https://embt.co/PythonGUIBundle>

Python FMX App Builder

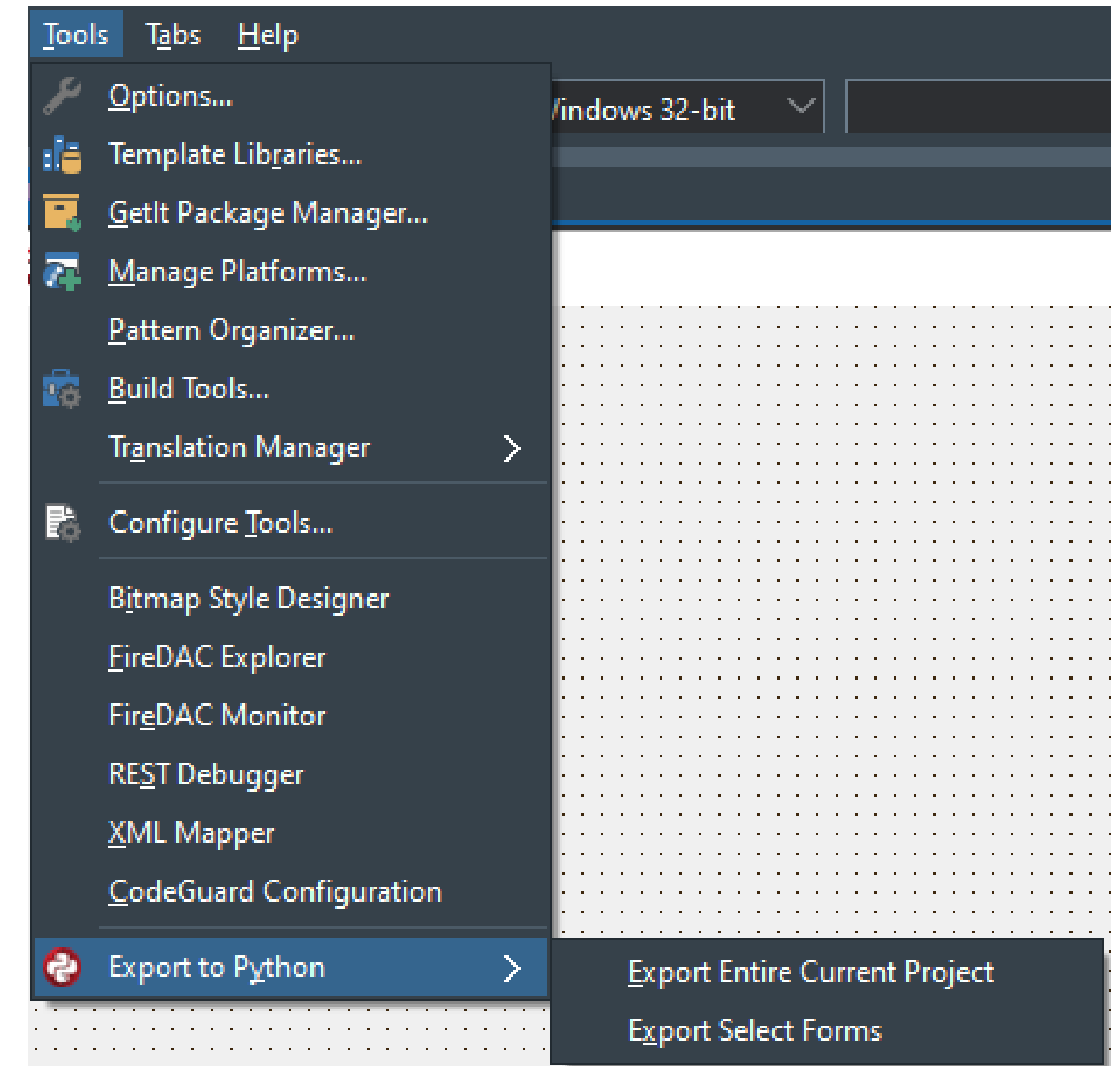
- Bundles a DelphiFMX for Python and a Python script into an Android app
- Two parts: Builder and Android app
- Manages the bundling and customization process
- Uses a pre-built Delphi Android 64-bit ARM app
- App is customized, and has the Python script and required libraries injected into it, then signed, and deployed
- Doesn't require Delphi to use
 - A Delphi developer could extend and customize the app and builder.
- Potentially could be expanded to support iOS
 - But may violates Apple's *App Store Review Guidelines* (2.5.2)
 - "nor may [Apps] ... execute code which introduces or changes features or functionality of the app" developer.apple.com/app-store/review/guidelines/#2.5.2



Delphi4Python (D4P) Exporter

Download from **GitHub**
github.com/Embarcadero/Delphi4PythonExporter
Also available via **GetIt**
getitnow.embarcadero.com/Delphi4PythonExporter-D104-1.2.0/

- *Design your Python GUI using Delphi's designers and then export them for Python use*
 - Supports DelphiFMX and DelphiVCL for Python
- Plug-in for the Delphi IDE (10.4 or 11)
- Simplifies form design for Python development
- Also works with Community Edition and Trial
- Export either VCL (DFM) or FMX forms in either binary (more efficient) or text (easily editable)
- Export of a single form, or entire project
- Supports embedding TStyleBook and FMX Styles
- Creates stub for quick import into Python

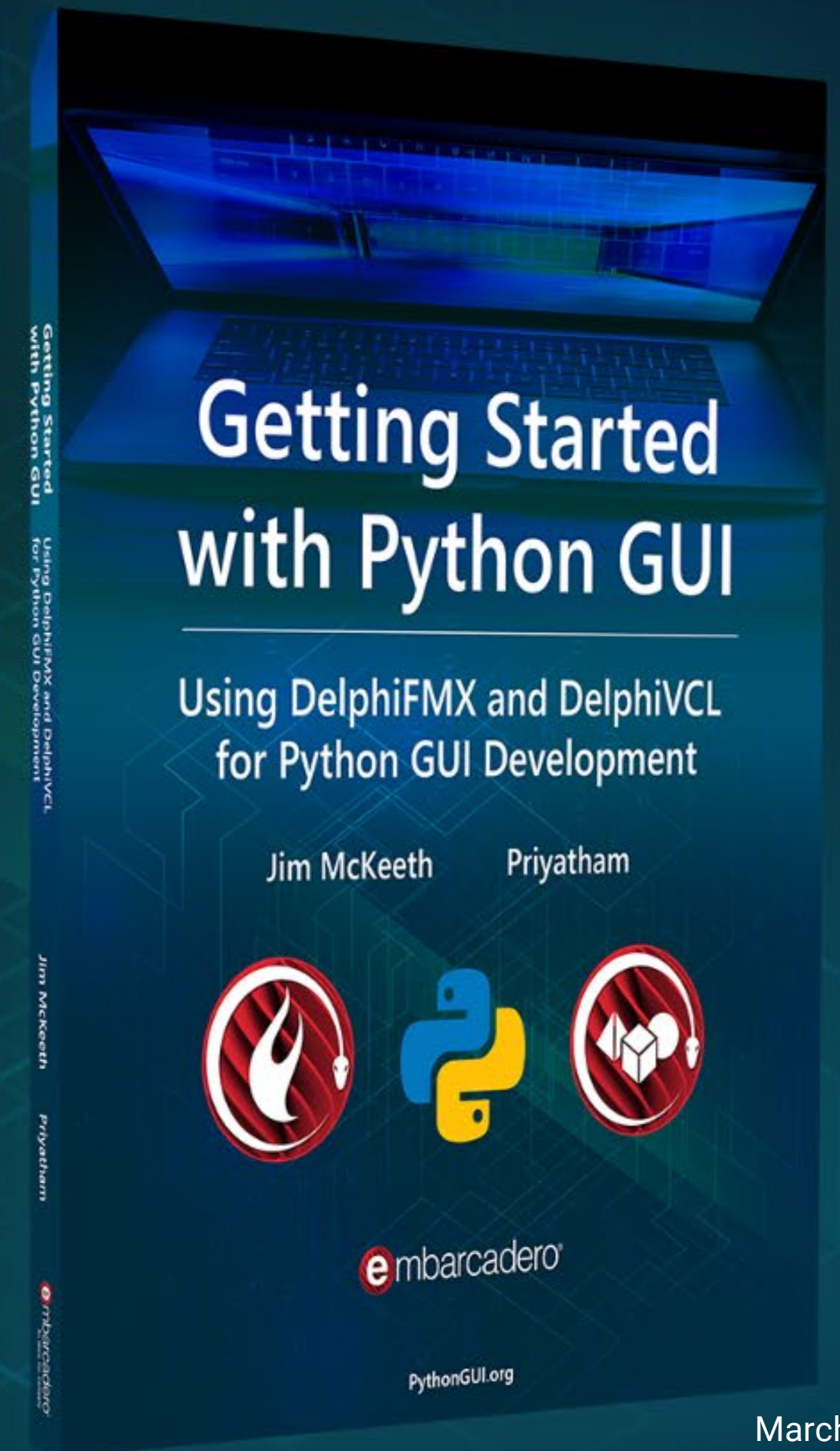


Python GUI eBook Bundle

- 15 DelphiFMX for Python styles
- 14 DelphiVCL for Python styles
- 50 Page eBook
- Topics include
 - Installation
 - Getting started
 - Project background
 - Multiple application examples
- **All Free!**
 - <https://embt.co/PythonGUIBundle>



Free Download



v1.0
March 2022

DelphiFMX for Python GitHub Review

- Stats Review
- Latest release
- Recently closed issues
- Review open issues
- Review pull requests
- Answer discussions
- Other feedback or contributors
- Plan roadmap for future changes



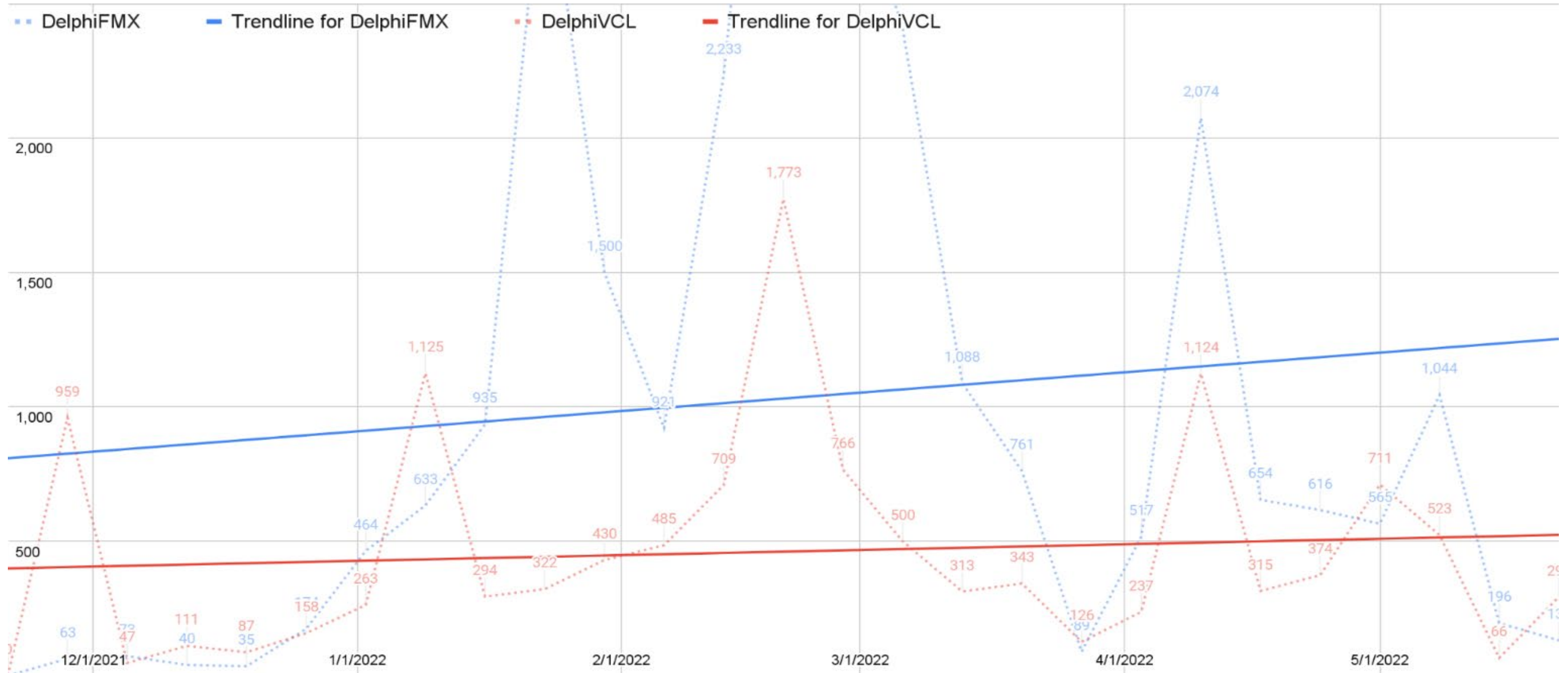
Stats from May 24th, 2022



	Stars	Watch	Forks	Pulls	Issues		Latest Release
					Open	Closed	
DelphiFMX4Python	121	15	19	1	9		v0.1.49 Apr 14, 2022
PythonFMXBuilder	11	7	4	0	4		22may2022
DelphiVCL4Python	133	20	22	0	5		v0.1.40 Apr 13, 2022
Delphi4PythonExporter	32	8	10	0	0		v1.2.0 Apr 19, 2022
Python4Delphi (combined)	711	104	254	2	12		1.1 Dec 9, 2020

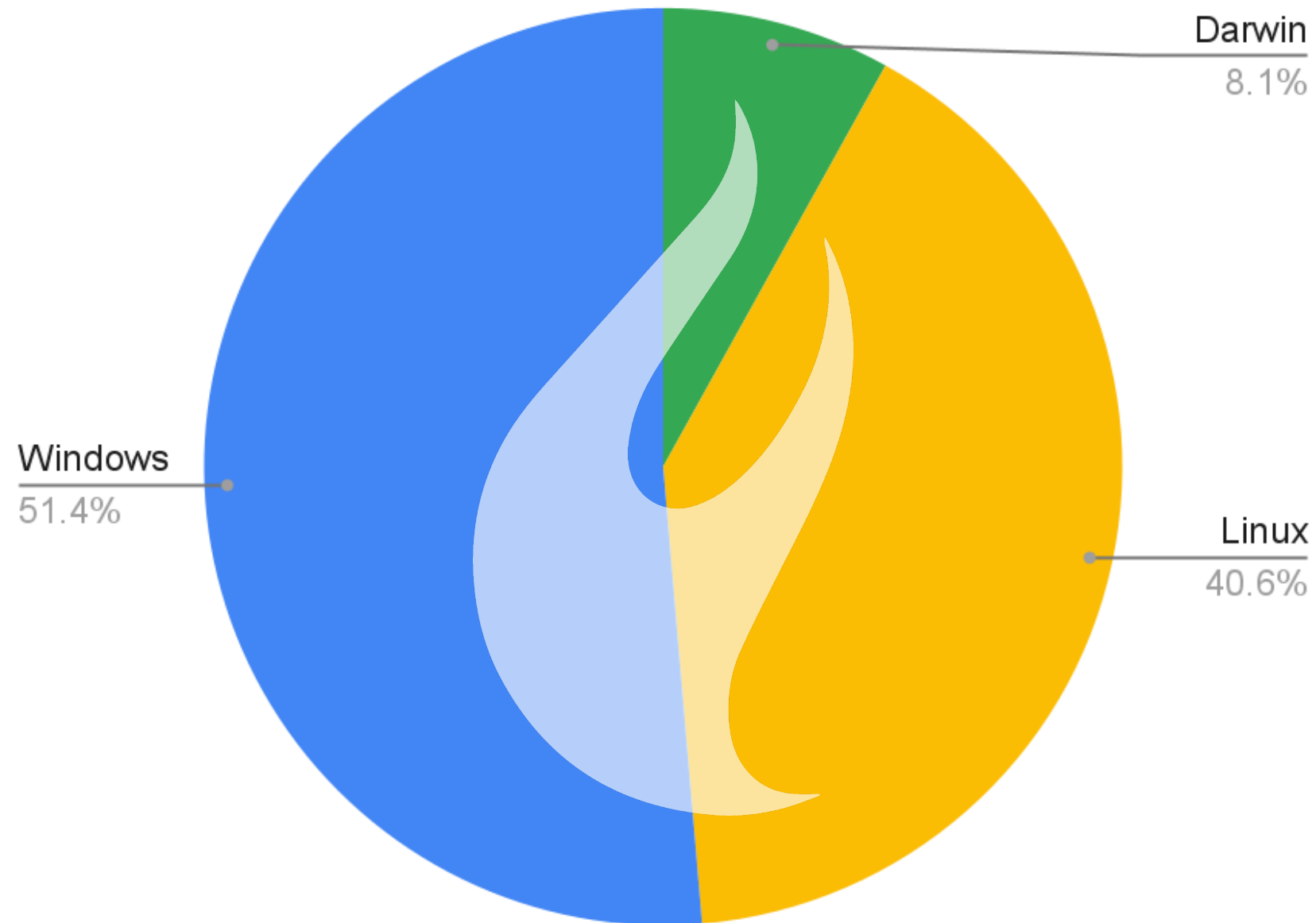


PIP Downloads

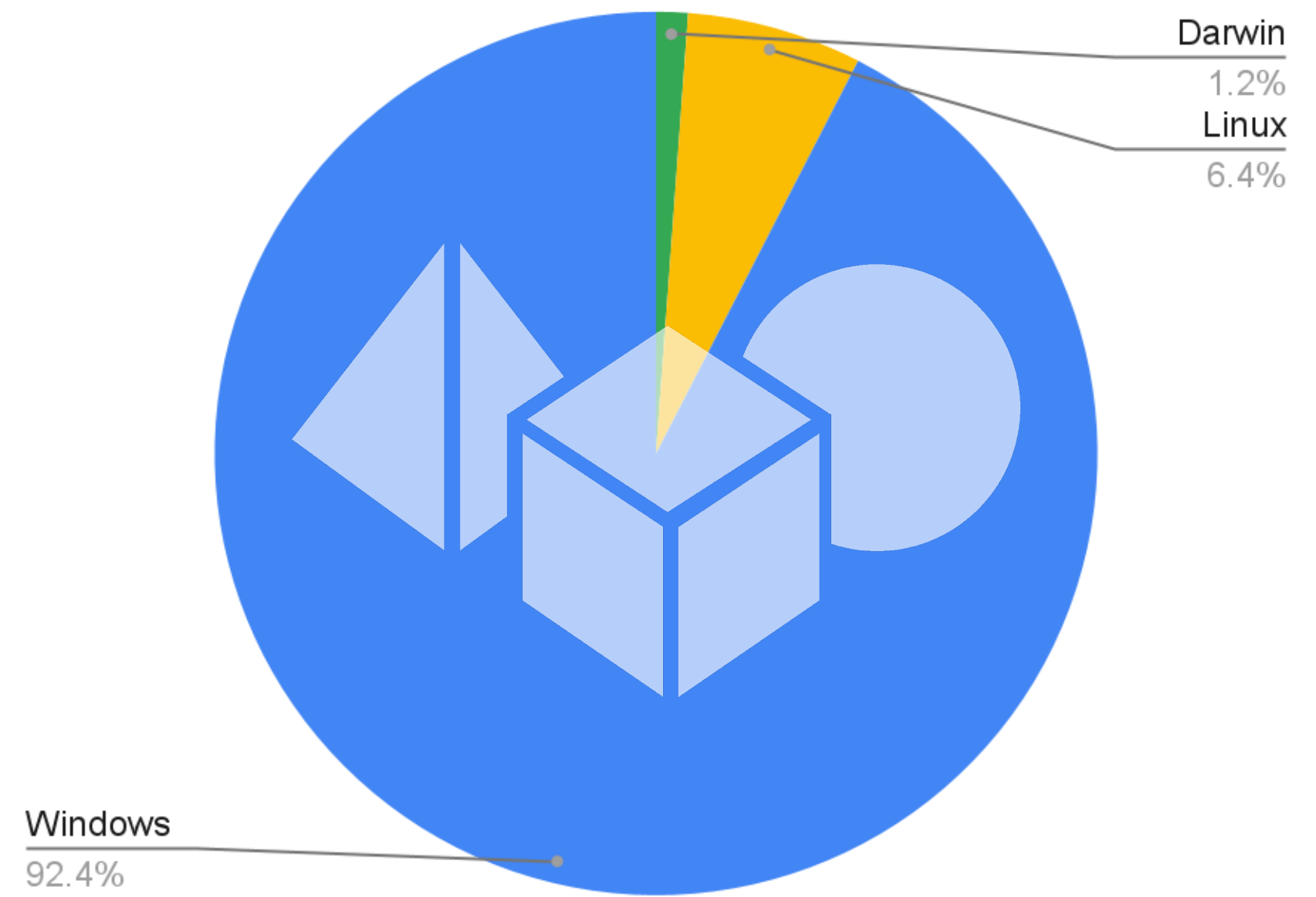


Library Downloads by Operating System

DelphiFMX for Python



DelphiVCL for Python



Darwin = Apple's macOS
The majority of downloads didn't specify an OS and were excluded.

Sources
<https://pypistats.org/packages/delphifmx>
<https://pypistats.org/packages/delphivcl>
Overall without mirrors



Jumping to the Projects



[DelphiFMX for Python](#)

[Python FMX Builder](#)

[Delphi for Python Exporter](#)

Next Steps:

- Install the library
- Test the code
- Star and Watch the project
- File a issue
- Suggest a feature
- Make a pull request
- Join the discussion

Download the eBook bundle

<https://embt.co/PythonGUIBundle>

eBook Bundle



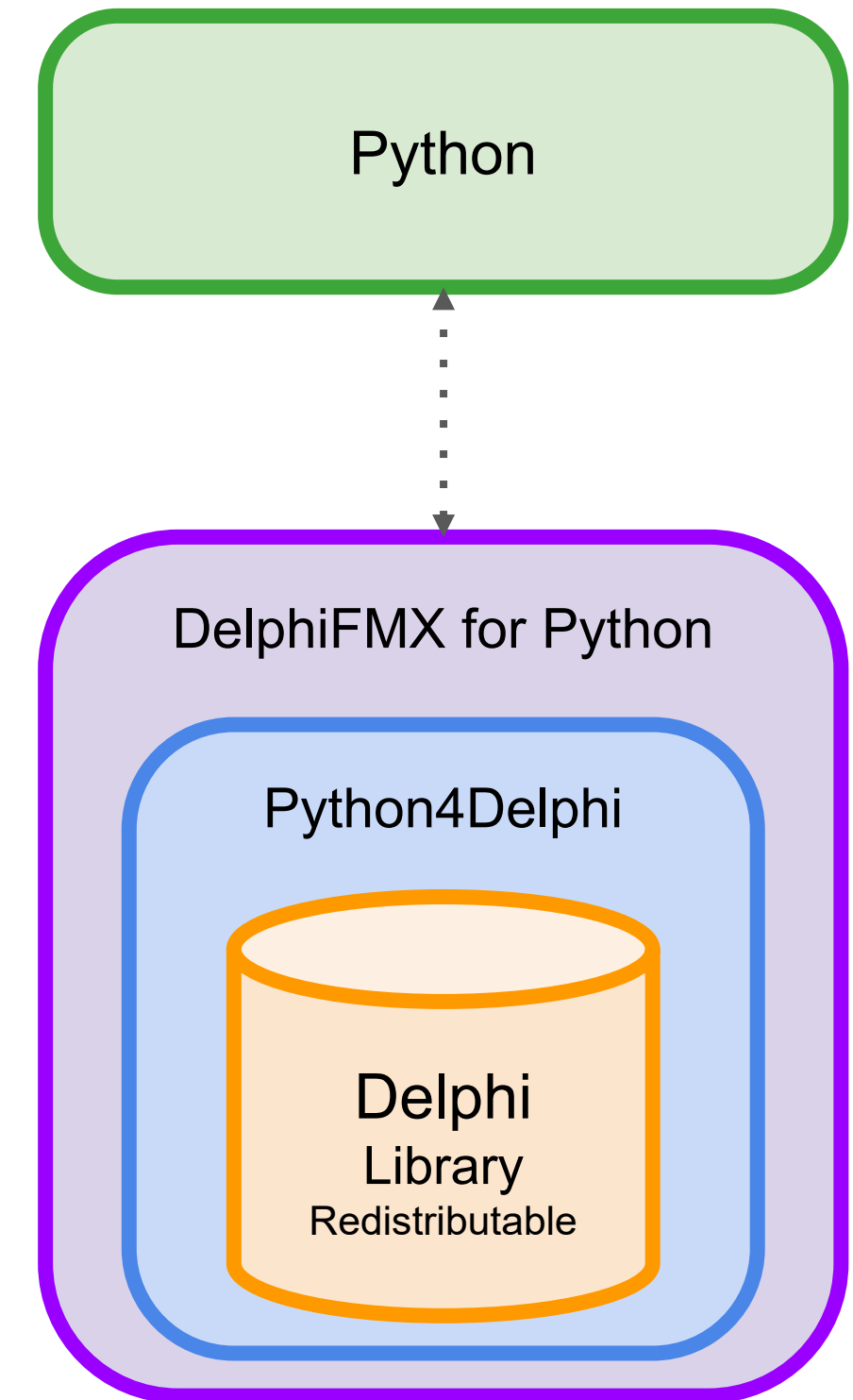
embarcadero®

Understanding the Licenses

- The parts and their licenses
 - **Python** - Python Software Foundation License ([PSFL](#)) is a BSD-style, permissive software license which is compatible with the GNU General Public License (GPL).
 - **Delphi, VCL, & FMX** - [Free](#) (Community Edition) and [Commercial](#) licenses.
 - **Python4Delphi** - The source for DelphiFMX & DelphiVCL for Python is covered under the permissive and GPL compatible [MIT License](#).
 - **DelphiFMX & DelphiVCL for Python Libraries** - The compiled libraries (containing Embarcadero's VCL & FMX) covered under [freeware license](#).
- Anyone is welcome modify and/or contribute to Python4Delphi under the MIT license, but the redistributables containing the VCL or FMX libraries are covered by the Embarcadero Freeware License.



The Python License, BSD, MIT, & GPL are all listed as [OSI-approved](#), in that they comply with the [Open Source Definition](#). While these projects use a number of different licenses, overall they comply with the spirit of the Open Source definition.



We Need Your Help!

- Try the projects out
- File bug reports
- Make a Fork
- Issue a pull request
- Add features and fix bugs
- Star the projects on GitHub
- Tell your friends!
- Write a blog post
- Make a demo



Slides, links, replay, and more:
blogs.embarcadero.com/tkinter-vs-delphifmx-in-the-embarcadero-open-source-stream/

Next Week

Python Data Sciences Libraries

Thursday, June 9th, 2022

Including

 PyTorch for Delphi

PyTorch is Primarily developed by Facebook's AI Research lab (FAIR). It powers projects like Tesla Autopilot, Uber's Pyro, Hugging Face's Transformers.



Super Charging Python with Delphi

Python + Lowcode
+ Native Speed



Python and Delphi	Python is a general-purpose programming language that is popular with Data Scientists and Developers using Big Data, Cloud Computing, Artificial Intelligence (AI) and Machine Learning (ML). Delphi, and its extensive cross-platform native libraries, help extend Python with blazing fast native speed that you can only get with compiled binaries. Delphi, the modern Object Pascal language, is also easy to learn making it accessible to any level of developer.		
Product	1 PyScripter	2 Delphi4Python	3 Python4Delphi
What is it?	PyScripter is an open source Integrated Development Environment (IDE) for Python Developers. pyscripter.dev <i>PyScripter is sponsored by Embarcadero Technologies, the home of RAD Studio, Delphi, and C++Builder.</i>	The “ DelphiVCL4Python ” and “ DelphiFMX4Python ” libraries make powerful UI controls available from Python scripts. The VCL is the original Low Code native framework for Windows, while FMX is Delphi’s leading cross-platform framework for Windows, Linux, macOS & Android.	Python4Delphi is a set of open source components for Delphi that enable you to integrate existing Python into Delphi projects.
Why use it?	PyScripter is a lightweight native IDE that speeds up Python development. It’s fast , accessibility friendly and easy to pick up and use and helps you code faster and smarter.	The VCL provides native, performant Windows controls, while FMX provides a single code approach that provides a native user experience across the Window, Linux, and macOS platforms.	Full access to the blazingly fast multi-platform libraries that cross compile for Windows, macOS, Linux and mobile. Including multi-threaded , REST , and database connections .
Who uses this?	Those working with Python in any scenario, such as <ul style="list-style-type: none">• Python developers• Data scientists	<ul style="list-style-type: none">• Python Developers wanting to add the speed, and usability of native UI’s to their Python code.• FMX - Developers needing a native UX on multiple platforms.	<ul style="list-style-type: none">• Delphi Developers wanting to use python inside their applications• Python developers wanting to add the benefits of Delphi and native speed to the existing Python projects.
Getting Started	FREE Download : embarcadero.com/free-tools/pyscripter/free-download Video : Getting to know PyScripter - Webinar Replay Blog : Getting to know PyScripter - Blog	Download VCL : github.com/Embarcadero/DelphiVCL4Python Download FMX : github.com/Embarcadero/DelphiFMX4Python Video / Blog : blogs.embarcadero.com/introduction-to-python-gui-development-with-delphi-for-python-vcl-fmx/	Download : github.com/embarcadero/python4delphi/ Video : Overview Getting Started with Python4Delphi Introductory Webinars & Samples : Part 1 Part 2 Intro (PDF)
Interesting facts	<ul style="list-style-type: none">• Translated in 15 languages• 1.1+million downloads• Open source• Written in Delphi.	<ul style="list-style-type: none">• No runtime fees• Cross platform• VCL for Python uses the same libraries trusted by millions of developers to deliver first class Windows native apps since 1995.	<ul style="list-style-type: none">• Open Source and FREE• No runtime fees• Use with ALL Delphi Editions,• Download Delphi today!



As **Python** prototypes mature into production, **Delphi** and **Delphi4Python** help reduce risks, and get you there faster.

1

Develop using PyScripter

Meet Frank, a Developer using Python, for data ingestion with Big Data. Frank loves Python as it allows him to prototype quickly around his big data stack.

2

Add Native UI using Delphi4Python

When developing and testing, it is often useful to have an optional UI layer that can be visible to monitor data processing and get early feedback. **Delphi4Python** helps Frank achieve this rapidly with full accessibility support.

3

Optimize Speed and UX with Delphi

For high loads processing, performance is critical. Frank uses Delphi libraries to rapidly inject native speed and performance into his Python scripts. **Python4Delphi** enables Frank to quickly add Parallel processing, use Visual UI development and more..

PROTOTYPE > PRODUCTION

Get there faster with native library support, reducing cost, testing, and risks in development.

AGILE

Allow developers and data scientists to react faster with low code advanced native libraries.

FASTER

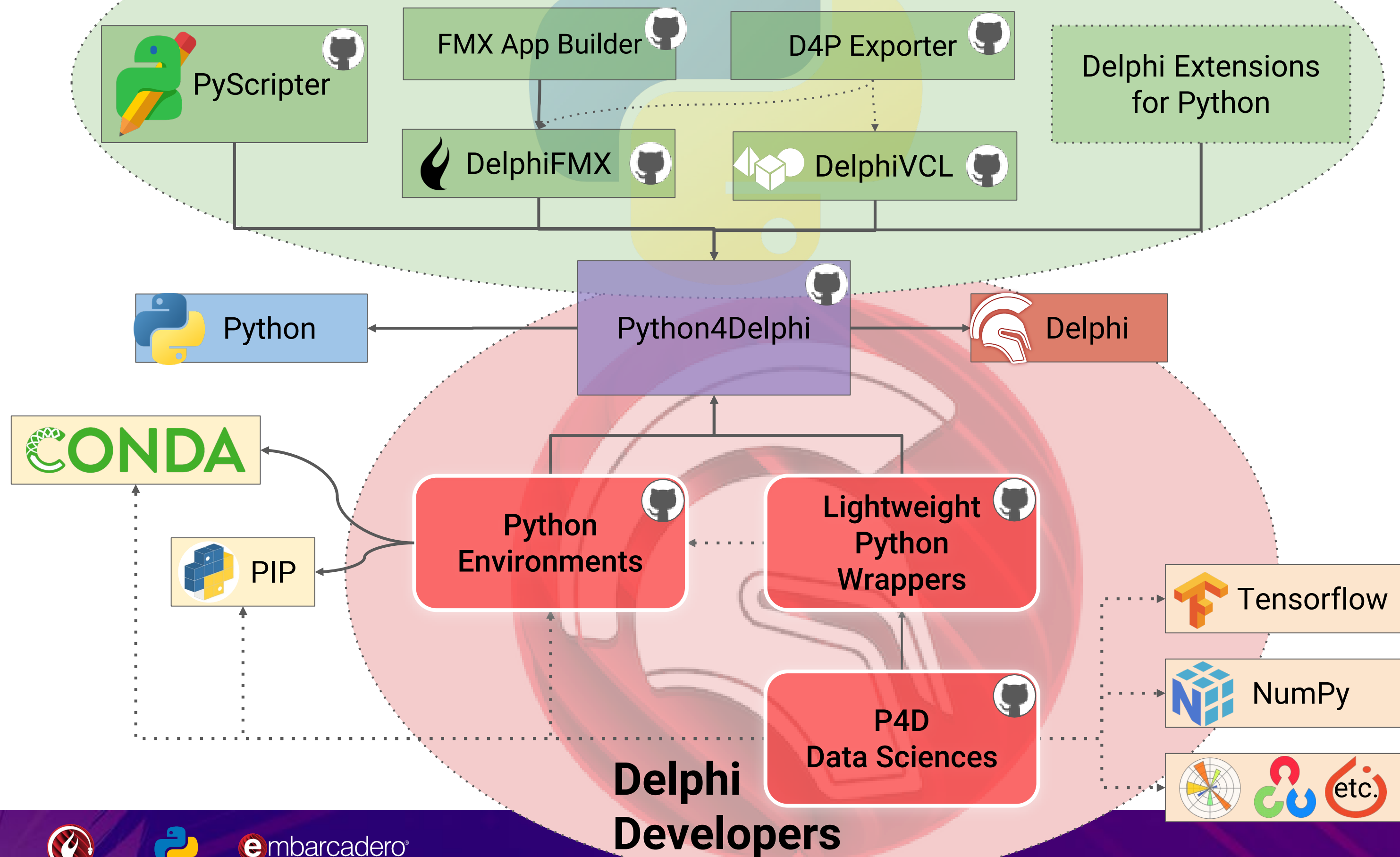
Delphi powers up developers with 26+ years of low code native simplicity

Need Advice?

Embarcadero pre-sales engineers are available to discuss your project requirements and help point you in the right direction. [Ask your local sales rep for an appointment..](#)

Python Developers

Part of the Embarcadero Python Ecosystem



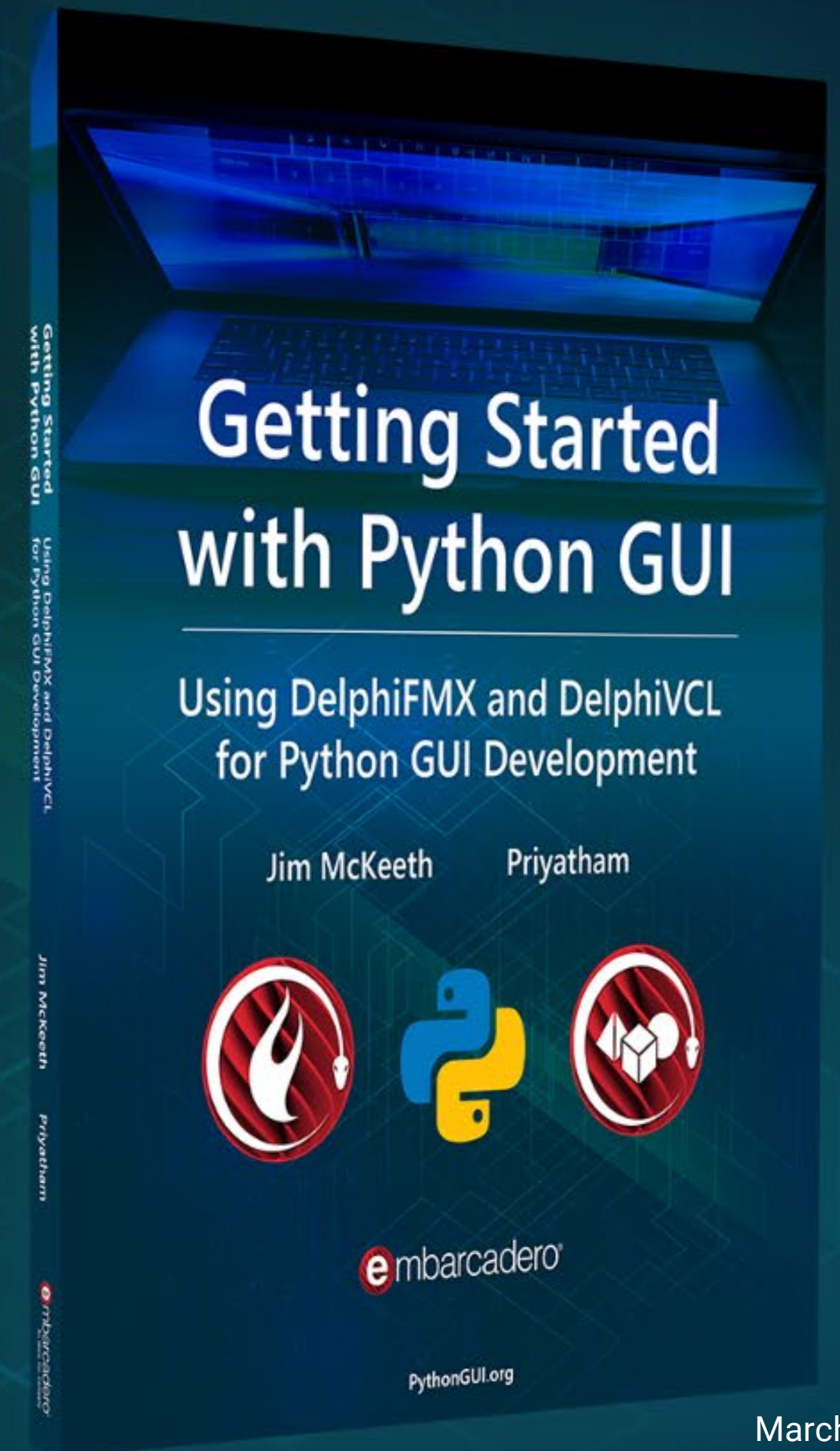
embarcadero

Python GUI eBook Bundle

- 15 DelphiFMX for Python styles
- 14 DelphiVCL for Python styles
- 50 Page eBook
- Topics include
 - Installation
 - Getting started
 - Project background
 - Multiple application examples
- All Free!
 - <https://embt.co/PythonGUIBundle>



Free Download



v1.0
March 2022