Introducing

RAD Studio 11.2 *'Alexandria'*

embarcadero®

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RAD STUDIO 11.2

Committed to Best-in-class Tools and Brands

Data Tools

IDERA

precise

up.time software

AQUAFOLD

WEBYOG

WhereScape®

Qubole®

BitTitan perspectium

Developer Tools

embarcadero®

Sencha

Froala

WHOLE TOMATO SOFTWARE

LANSA

FusionCharts

apilayer

UltraEdit

filestack

Yellowfin

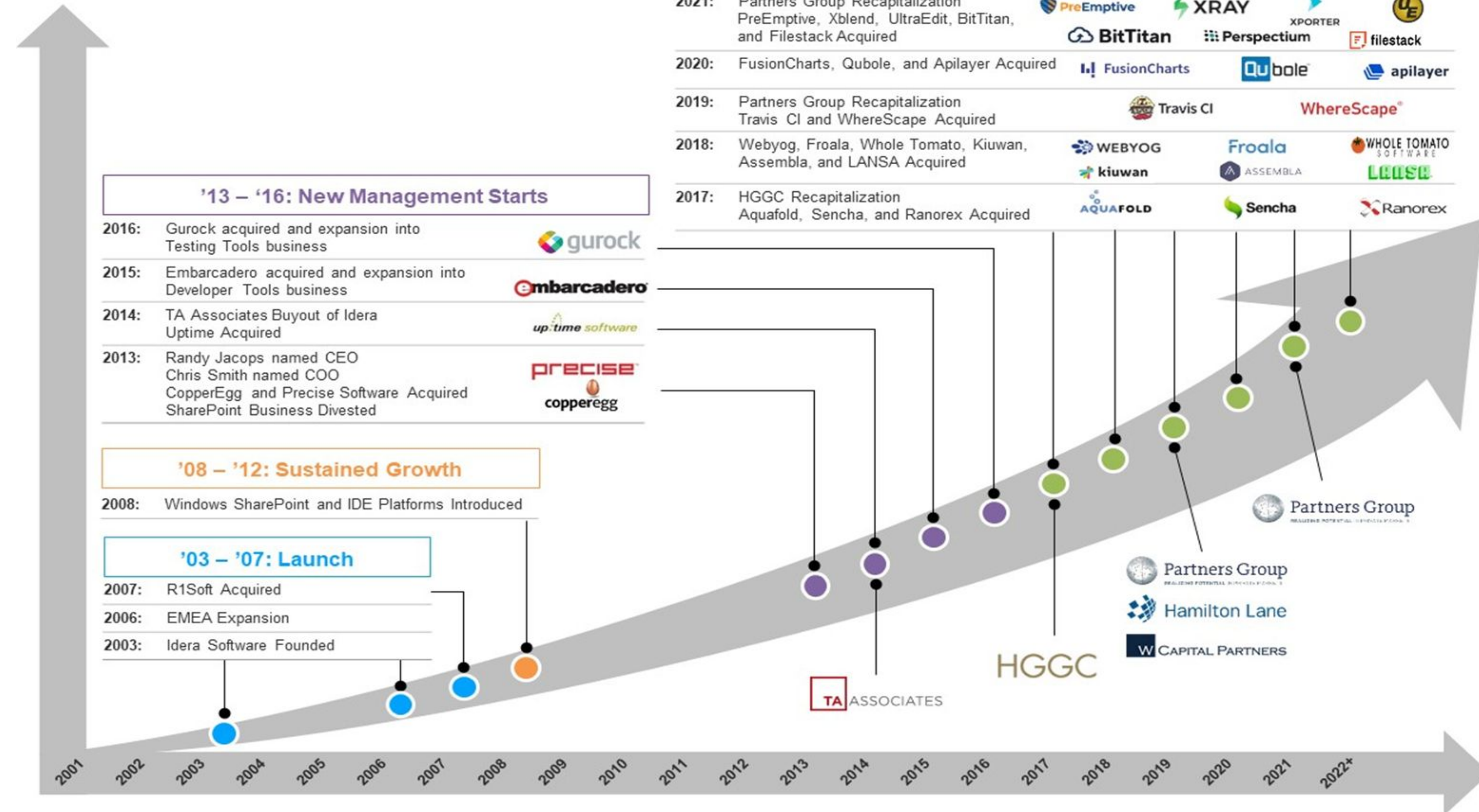## DevOps

TestRail

XRAY XPORTER

Ranorex®

kiuwan

PreEmptive

Travis CI

ASSEMBLA

RAD STUDIO 11.2

Idera, Inc.

Timeline

'17 – Today: Consolidation

Year	Event
2022:	Yellowfin Acquired
2021:	Partners Group Recapitalization PreEmptive, Xblend, UltraEdit, BitTitan, and Filestack Acquired
2020:	FusionCharts, Qubole, and Apilayer Acquired
2019:	Partners Group Recapitalization Travis CI and WhereScape Acquired
2018:	Webyog, Froala, Whole Tomato, Kiuwan, Assembla, and LANSA Acquired
2017:	HGGC Recapitalization Aquafold, Sencha, and Ranorex Acquired

'13 – '16: New Management Starts

Year	Event
2016:	Gurock acquired and expansion into Testing Tools business
2015:	Embarcadero acquired and expansion into Developer Tools business
2014:	TA Associates Buyout of Idera Uptime Acquired
2013:	Randy Jacops named CEO Chris Smith named COO CopperEgg and Precise Software Acquired SharePoint Business Divested

'08 – '12: Sustained Growth

Year	Event
2008:	Windows SharePoint and IDE Platforms Introduced

'03 – '07: Launch

Year	Event
2007:	R1Soft Acquired
2006:	EMEA Expansion
2003:	Idera Software Founded

- Growth + Profitability
- Based in Austin, TX
- 1,000+ global team
- Large partner network
- Scaled operating model
- Strong capital backing

RAD Studio Landscape

- **Very engaged community**
  - Coding Boot Camp very successful
    - 8000 registrants!
  - 330 MVPs & Tech Partners

- **Huge registration for this webinar**
  - Many thousands
  - On par with 11.0 (major release) for a point release

- **New audiences**
  - New developers, and younger developers
  - Bringing VCL & FMX to Python
  - Simultaneously streaming to Youtube and Facebook
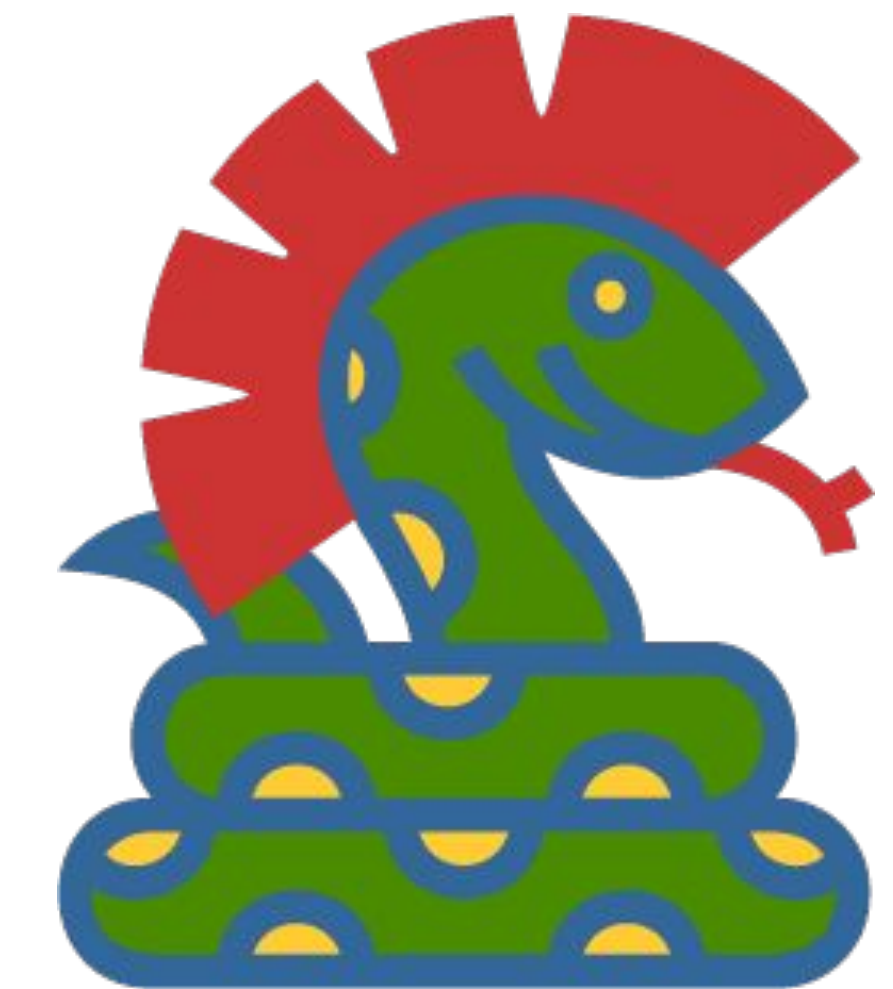
LearnDelphi.org

The Landscape

- **Microsoft released Windows 11**
  - Fully focused on it, key reason for picking "11"
  - New dev platform Windows App SDK
    (aka Project Reunion)

- **Transition to ARM on desktop**
  - Led by Apple with macOS
  - Plus, ARM reigns on mobile platforms

- **Developers on 4K**
  - High resolution and multi screen are common for developers
  - Growing also for end-users

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Introducing

RAD Studio 11.2 'Alexandria'

embarcadero®

What's Great in RAD Studio

Developer Productivity

Shipping is a feature. Get to market 5x faster with Delphi and C++Builder

Fast Native Apps

With native compilers, RAD Studio gives your apps the speed they need (no bloat)

Database Access

Key to Delphi's initial design, database access is integral to RAD Studio

Powerful C++ Libraries

Hundreds of C++ libraries can be used in C++Builder or Delphi in RAD Studio

Platform API Access

Gives you access to all the platform APIs on all platforms

Visual Designers

Forget prototyping in another tool, just design it and finish it in the RAD Studio IDE

Strong Community

Full of Technology Partners, MVPs, trainers, authors and developers

Backward Compatibility

You have an investment in your code, RAD Studio keeps that relevant

RAD Studio 11.0 Summary

Large Focus on IDE

- IDE High DPI and High DPI enabled form designer
- VCL styles in VCL designer; improvements to FMX designer and Multi-window design/code for a unit
- LSP quality and new C++ code formatter
- New Welcome page
- Visual Studio Code LSP support
- Minimal installer improvements

Delphi and C++ compilers and toolchains

- C++ Quality: RTTI (components); exception handling
- Delphi macOS 64 ARM (M1) compiler and toolchain
- Minor Delphi language improvements

Libraries Improvements

- Delphi RTL quality: TZipFile, 64-bit data structures, Bluetooth LE
- VCL Modernization work
- Better FMX High DPI on Windows and desktop integration, including WebView 2
- Android API 30 support and related work

Additional Delphi Platforms

- Support for WSL 2 (Windows Subsystem for Linux)
- Including WSLg (Linux GUI) on Windows 11

RAD Studio 11.1 Summary

Focus on Quality and Improvements
- Usability, performance, stability
- Some new small IDE features

Better Code Insight and LSP
- For both languages, Delphi and C++

Platforms and Tooling
- Official support for Windows 11, macOS 12 Monterey, iOS 15, and Android 12

Libraries
- Performance and quality improvements and small additions to Delphi RTL, database libraries, VCL, FireMonkey

RAD Studio 11.1.5 (C++) Summary

C++-only release for Code Insight and LSP
- Performance, solving quality issues, and more
- Also related changes around saving projects

RAD Studio 11.2: iOS Simulator & Quality / Polish

Focus on Quality and Improvements

- IDE and Designer High DPI
- Usability / 'The Small Things' Quality

IDE Improvements

- CPU View Syntax Highlighting
- Markdown Support
- Editor Tab Improvements
- Fonts and Styles

Code Insight / DelphiLSP

- Reworked Help Insight (and using XSLT again)
- Marking Inactive Code and Color Constants
- C++ Code Insight from 11.1.5

Platforms and Tooling

- iOS Simulator for Delphi
- LLDB for Linux
- Android Target API 32
- Remote Debugging Win64 C++

Libraries

- VCL WebView2 Improvements
- General VCL and FMX Quality
- ZLib, HTTP / REST
- RAD Server
- FireDAC reFind, Updated Drivers, and FDMonitor/FDExplorer

I. RAD Studio IDE
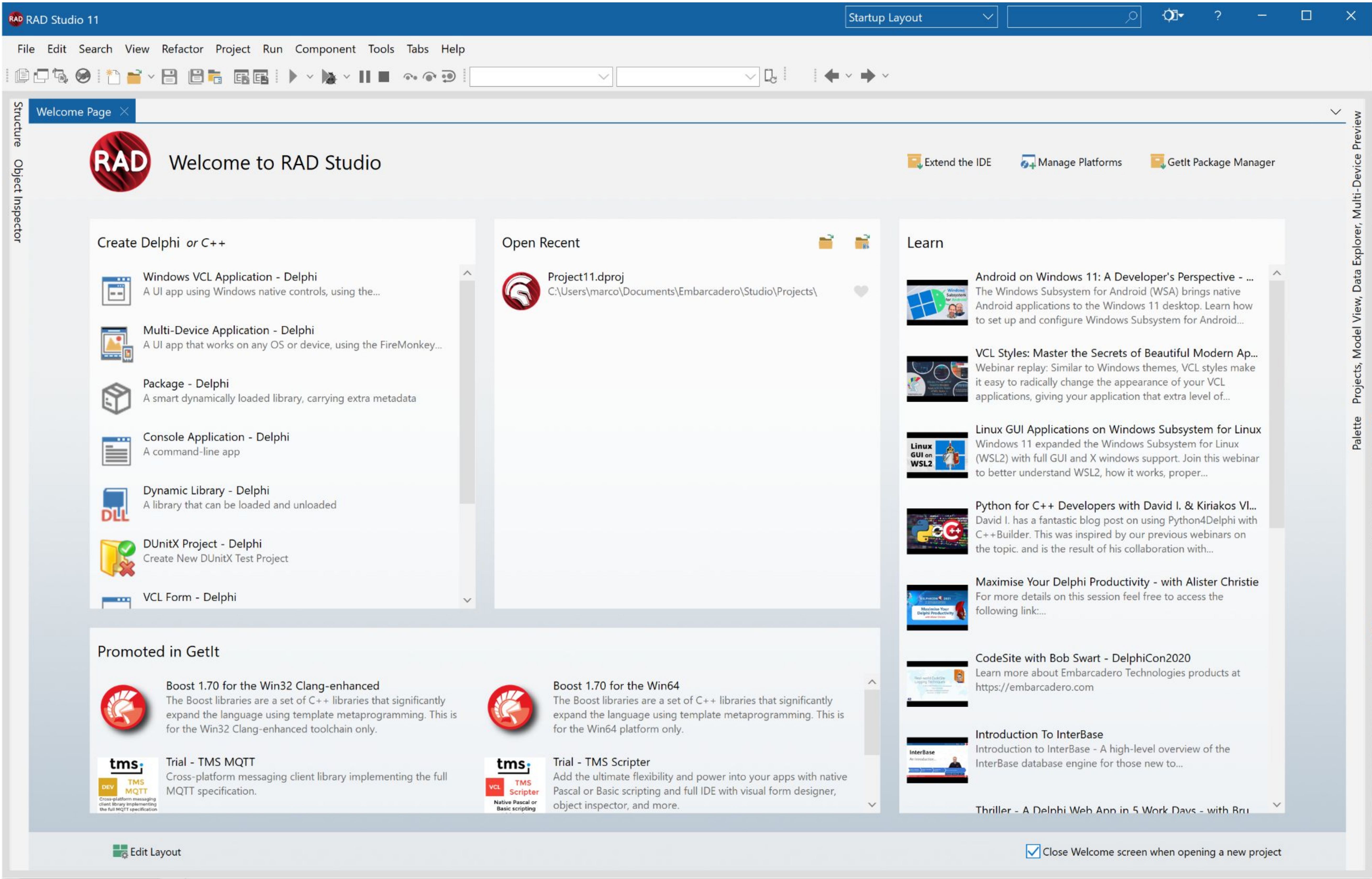
11.0 and 11.1: IDE and Designers

- High DPI IDE
  - Crisp fonts in all windows and the editor
- High DPI enabled form designer
- Multiple Active Styles in VCL Designer
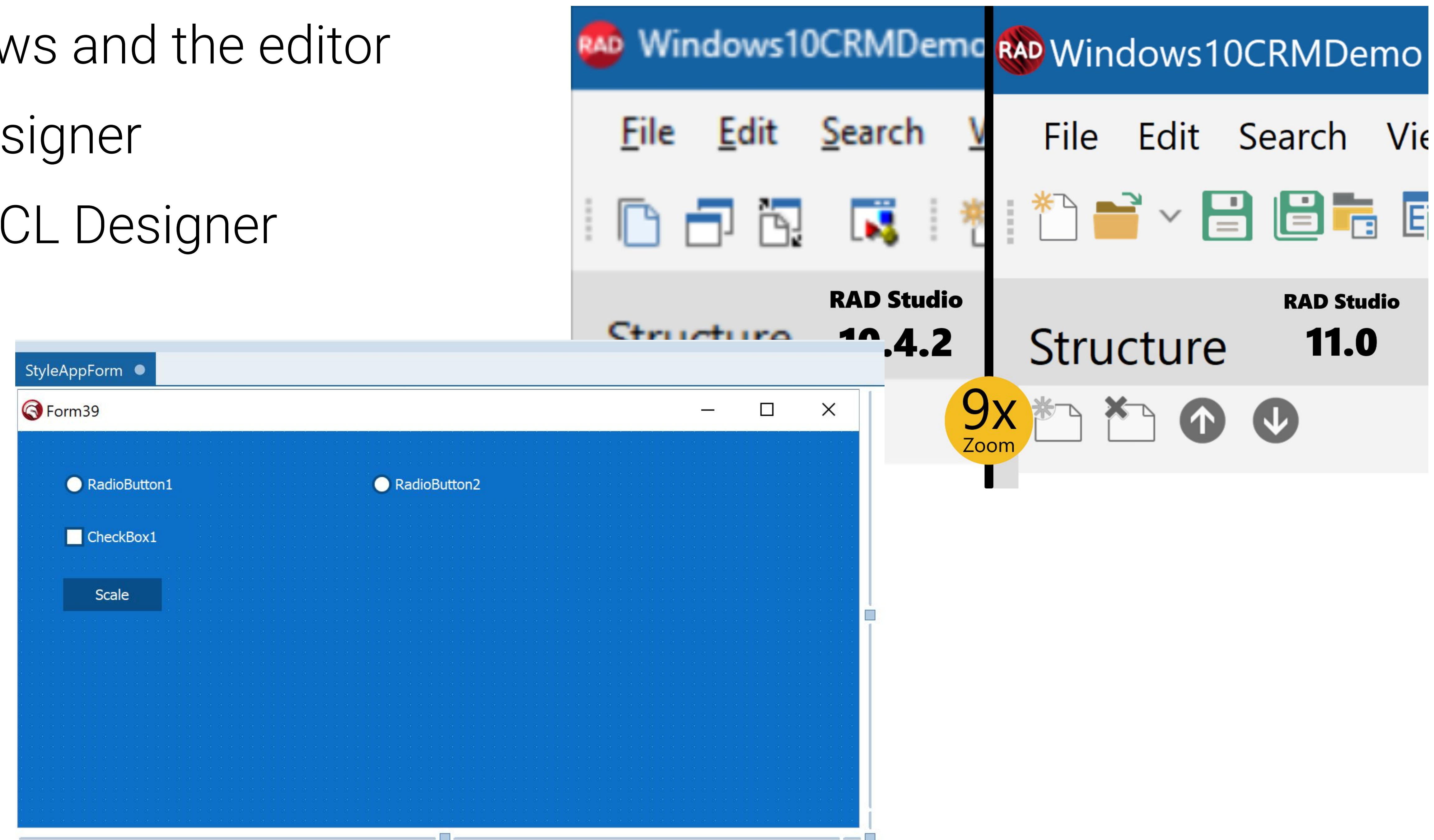
11.2: IDE Designers

- High DPI Quality improvements
  - Many areas, many windows: overall quality
  - VCL Designer has many High DPI fixes

- VCL Designer uses styles by default
  - In 11.0, added optional (off by default) styles in the designer, including multiple styles at once, just like apps
  - In 11.2, this is on by default, and a special design style is used at designtime

RAD STUDIO 11.2
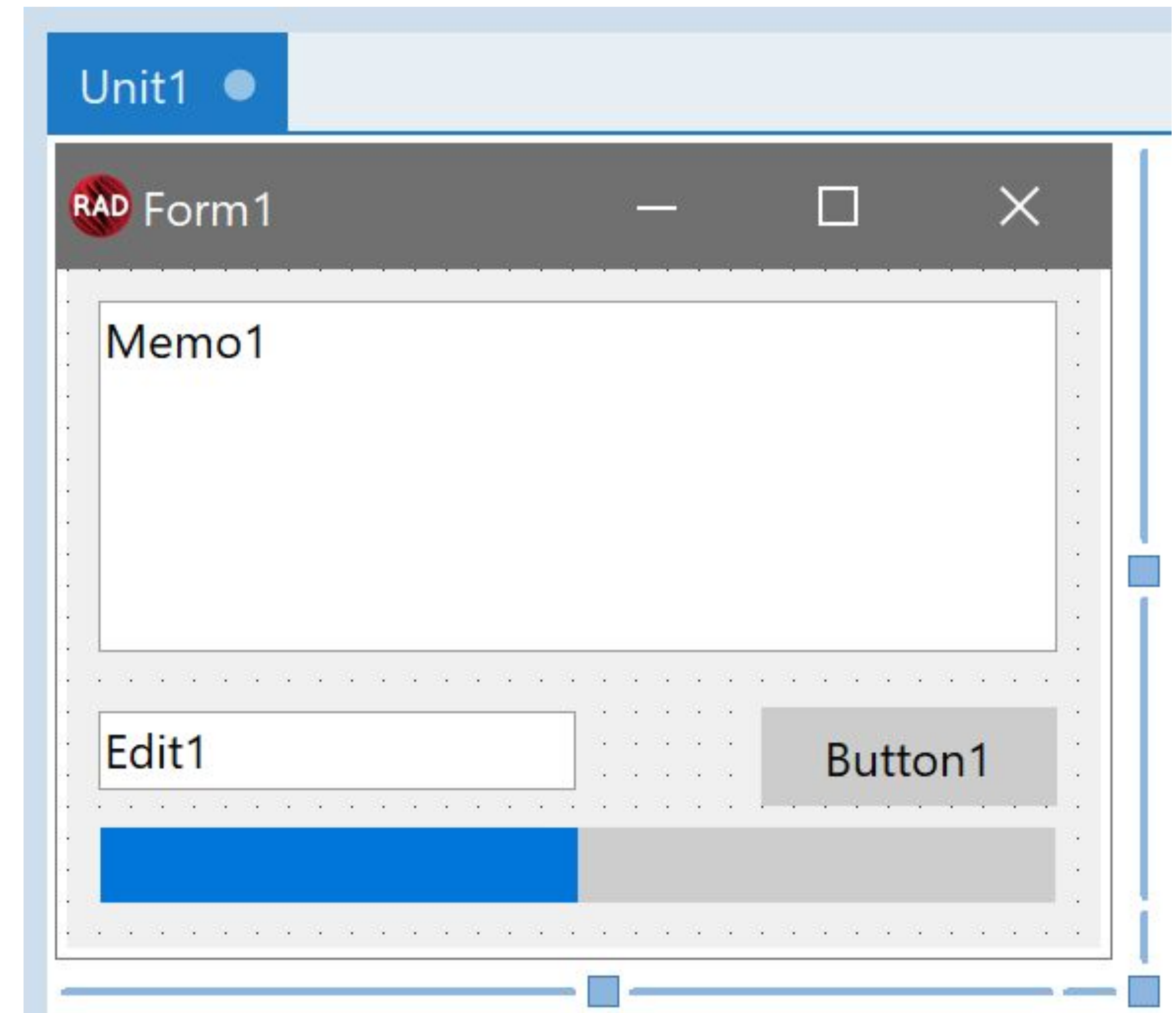
11.2: IDE - tab state visualization

- Some tabs are different to other tabs:
  - Some have *different, non-code functions*, eg the Welcome Page, Type Library editor, source control tabs
  - Some code is *opened while debugging*
  - Some code is *read-only*
- In the past, we indicated modified code with a dot in the tab
  - **In 11.2, we add symbology for all the above as well.** Helps visual navigation
- Plus, the X to close is now configurable: off entirely, on the active tab, or on all tabs

Non-code tabs have different colours
(and your custom ToolsAPI tabs can too)

Italic captions mean 'opened while debugging'

The modified dot ● can change to a padlock, indicating read-only (unmodifiable) code
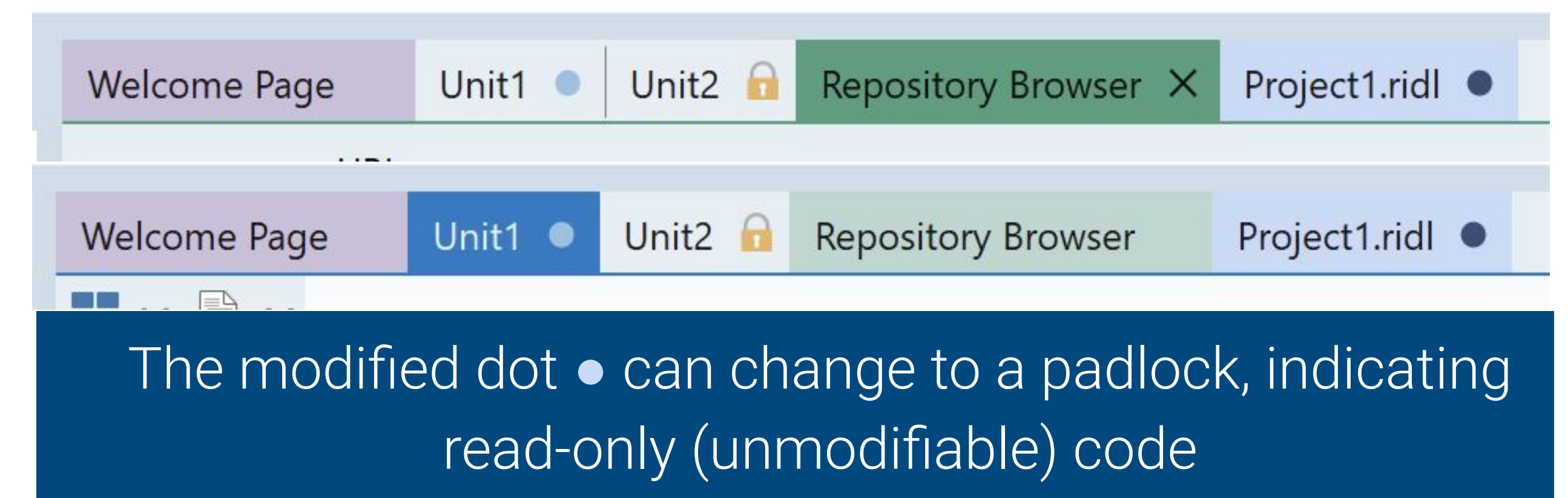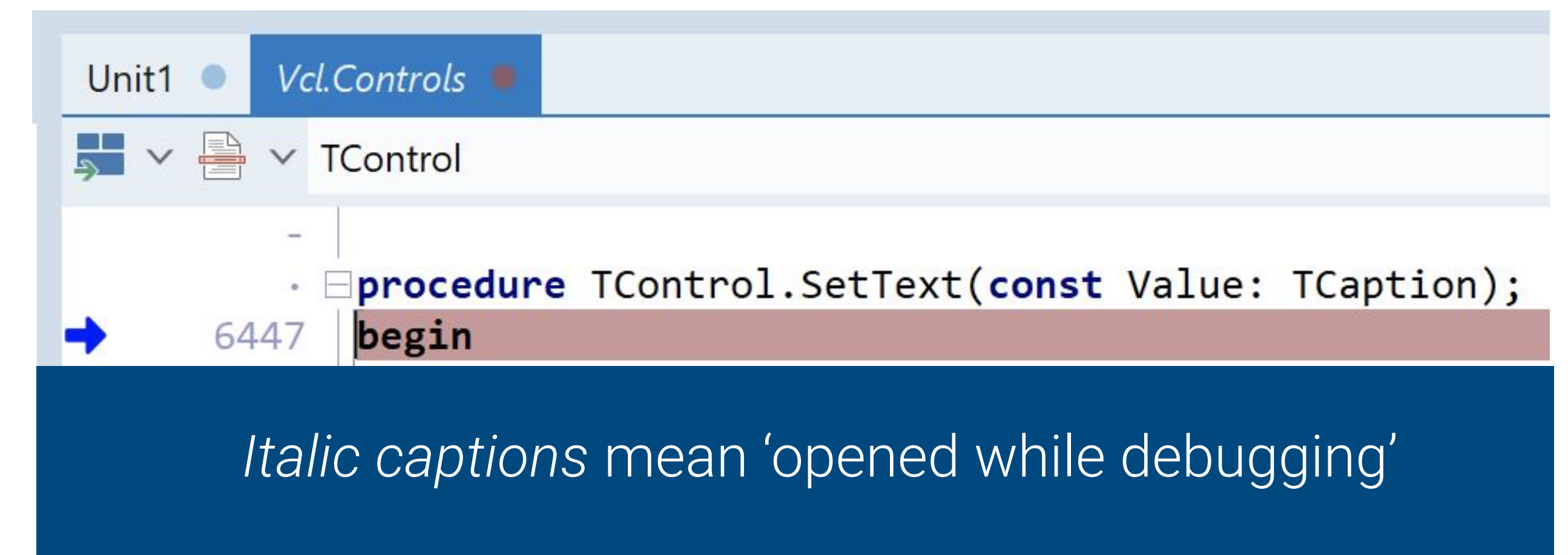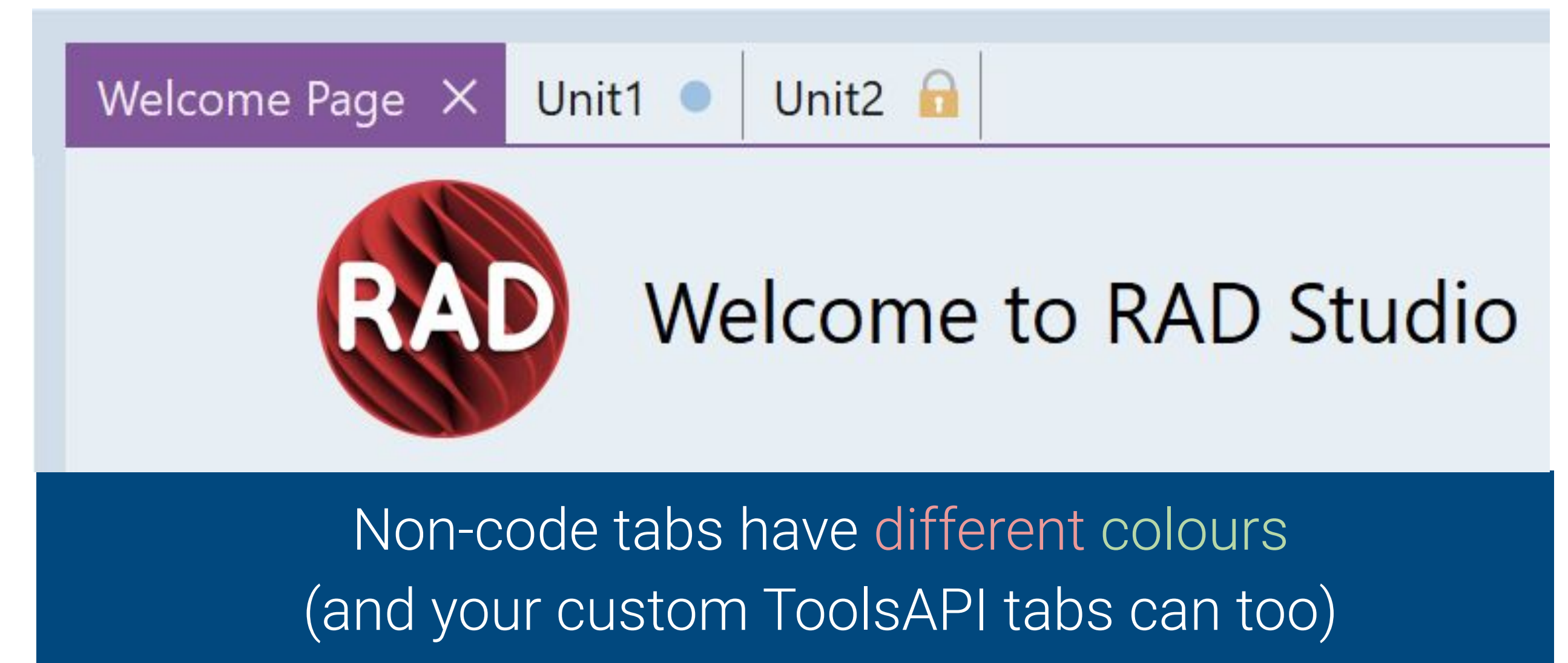
11.2: Markdown and HTML

- Markdown is a common human-readable 'markup' (formatting) format

- Most GitHub readmes are Markdown

- IDE supports Markdown documents, richly formatted: headings, links, images, code, etc

- Rich HTML returns as well

- HTML and MD editable in code editor

- Project readmes can be Markdown

- No Internet Explorer in the IDE any more! Pure VCL implementation
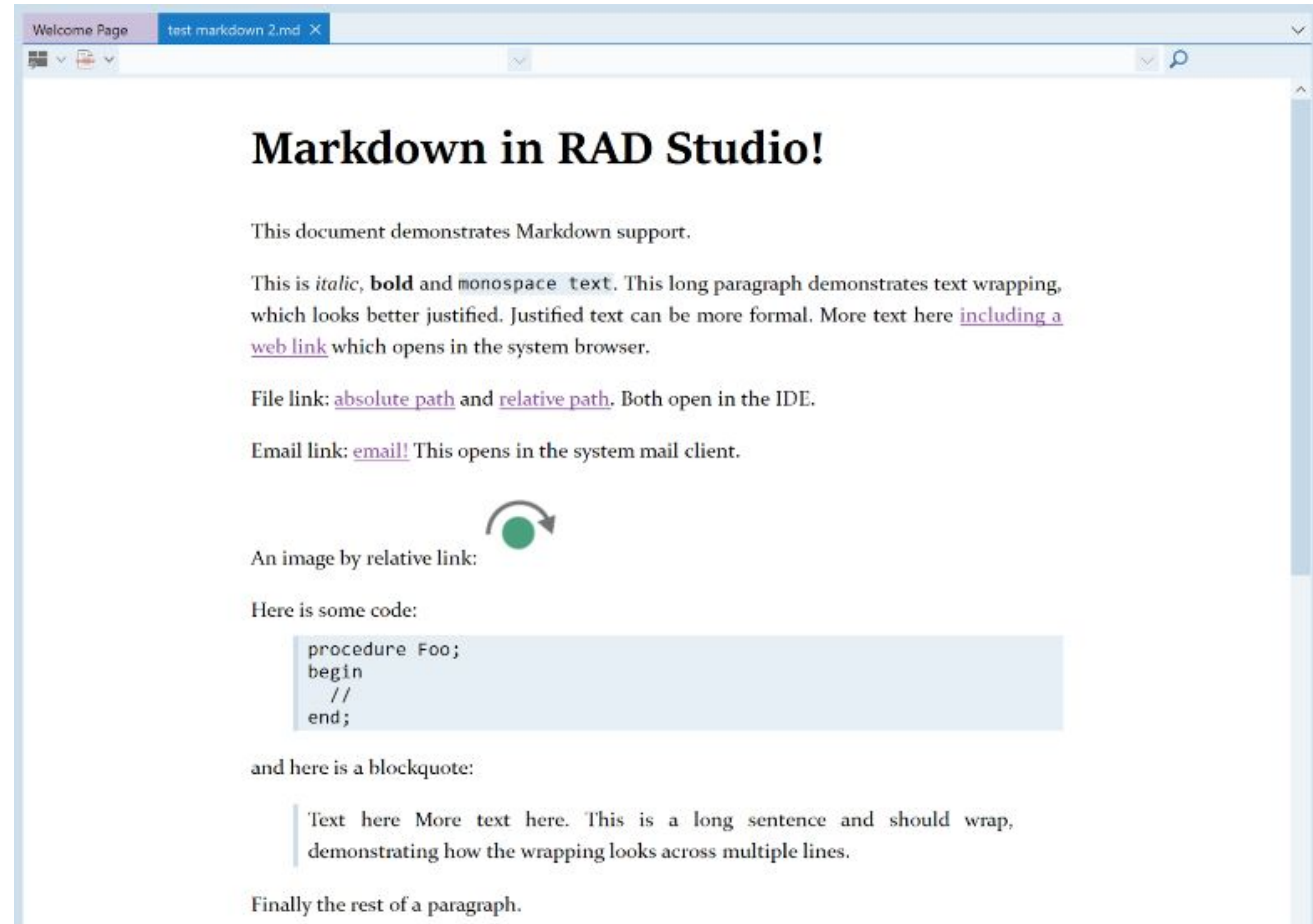
11.2: HelpInsight

- The return of XSLT!

  ○ Effectively, Help Insight as it was pre-11.0

  ○ Full XmlDoc info

  ○ Can be customised by editing XSLT file (eg, as Documentation Insight does) and CSS

- Contains links to navigate

11.2: Delphi: see Inactive Code in the editor

```delphi
uses
  FMX.Platform,
{$IF DEFINED(ANDROID) OR (DEFINED(IOS))}
  FMX.DialogService.Async
{$ELSE}
  FMX.DialogService.Sync
{$ENDIF}
  ;
```

```delphi
if Addr = 0 then
  Result := 'Nil'
else
{$IFDEF AUTOREFCOUNT}
  Result := Format('%s@%8x(%d)', [ClassName, Addr, Instance.RefCount]);
{$ELSE}
  Result := Format('%s@%8x', [ClassName, Addr]);
{$ENDIF}
```

11.2: C++ CodeInsight (incl from 11.1.5)

- From the 11.1.5 C++-only release, all included into 11.2:

- Improvements to save order of projects and files

- Performance (one test was 20 seconds -> 2 seconds to show the completion dropdown)

- Improved navigation (ctrl-click) including showing multiple destinations

- Third indexing option: index all files in all projects

- Many quality fixes incl for classic

  ○ We **strongly recommend** reading the Docs on configuring C++ Code Insight for your project setup:

    ■ Code Insight Reference > 'Index for C++ Insights' heading > 'LSP Behaviour'


```
TForm(Owner)
vcl.forms.hpp (1446, 28) class PASCALIMPLEMENTATION TForm : public TCustomForm
vcl.forms.hpp (1570, 53) /* TCustomForm.Create */ inline __fastcall virtual TForm(System::Classes::TComponent* AOwner)
```



```
Form1->clien
property    ClientWidth
property    ClientHandle
property    ClientHeight
method      AdjustClientRect(System::Types::TRect &...    →void ...
```

11.2: CPU Disassembly View

- When stepping into assembly code, syntax highlighting can help make it much easier to read
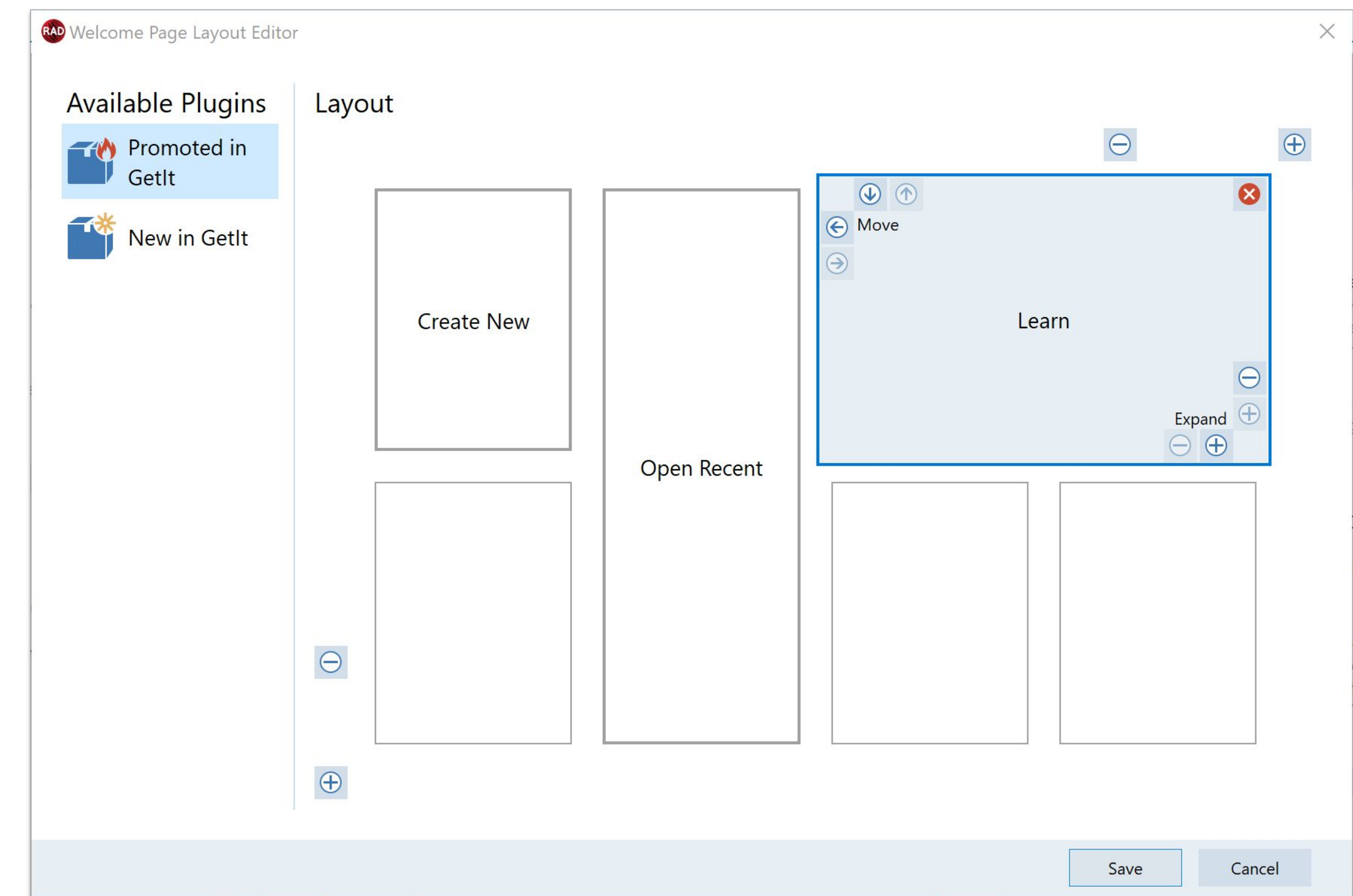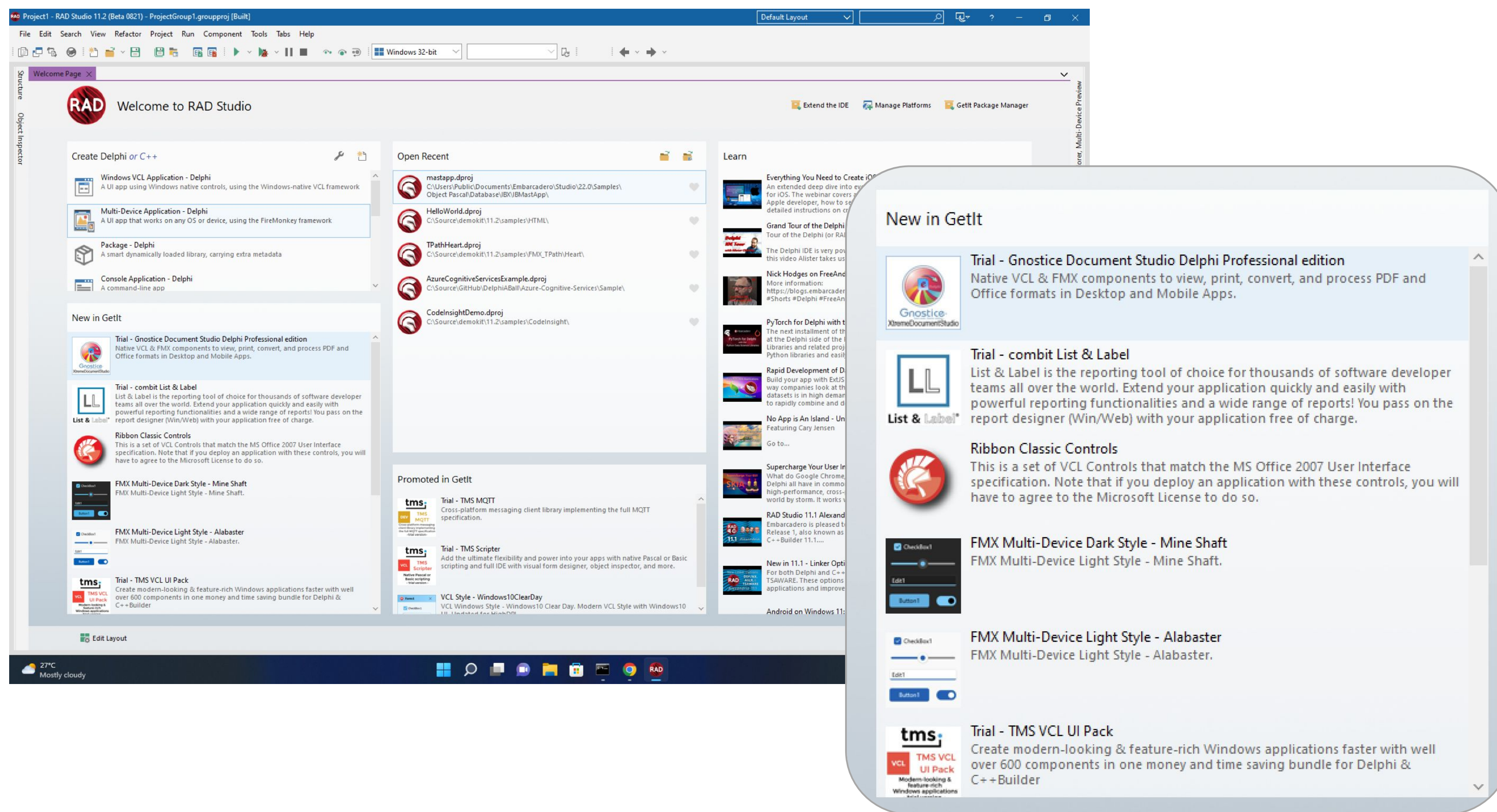
- Match editor or IDE style colours

11.2: Welcome Page

- In 11.1: New native Welcome page, VCL based and flexible. Layout and content is fully customizable: show what and where you want

- New in 11.2: New in GetIt pane, shows recently added packages
  - See what's new – discover packages

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11.2: GetIt improvements

- Language filter: search for only Delphi or C++

- Local packages (with update subscription)

  ○ Download a package, install on a computer not connected to the internet

  ○ Experiment with creating packages

  ○ Simplify team installation of libraries for multiple devs

- Will wait for an external installer

Other IDE Enhancements in 11.x

- New Items dialog: available platforms for each item
  - Also uses TControlList and offers other views

- 11.2: File > New, now shows "Data Module" as standard

- Messages view: errors, warnings, and hints are differentiated by color (the colors can be customized)

- The Compile dialog shows the platform and build configuration
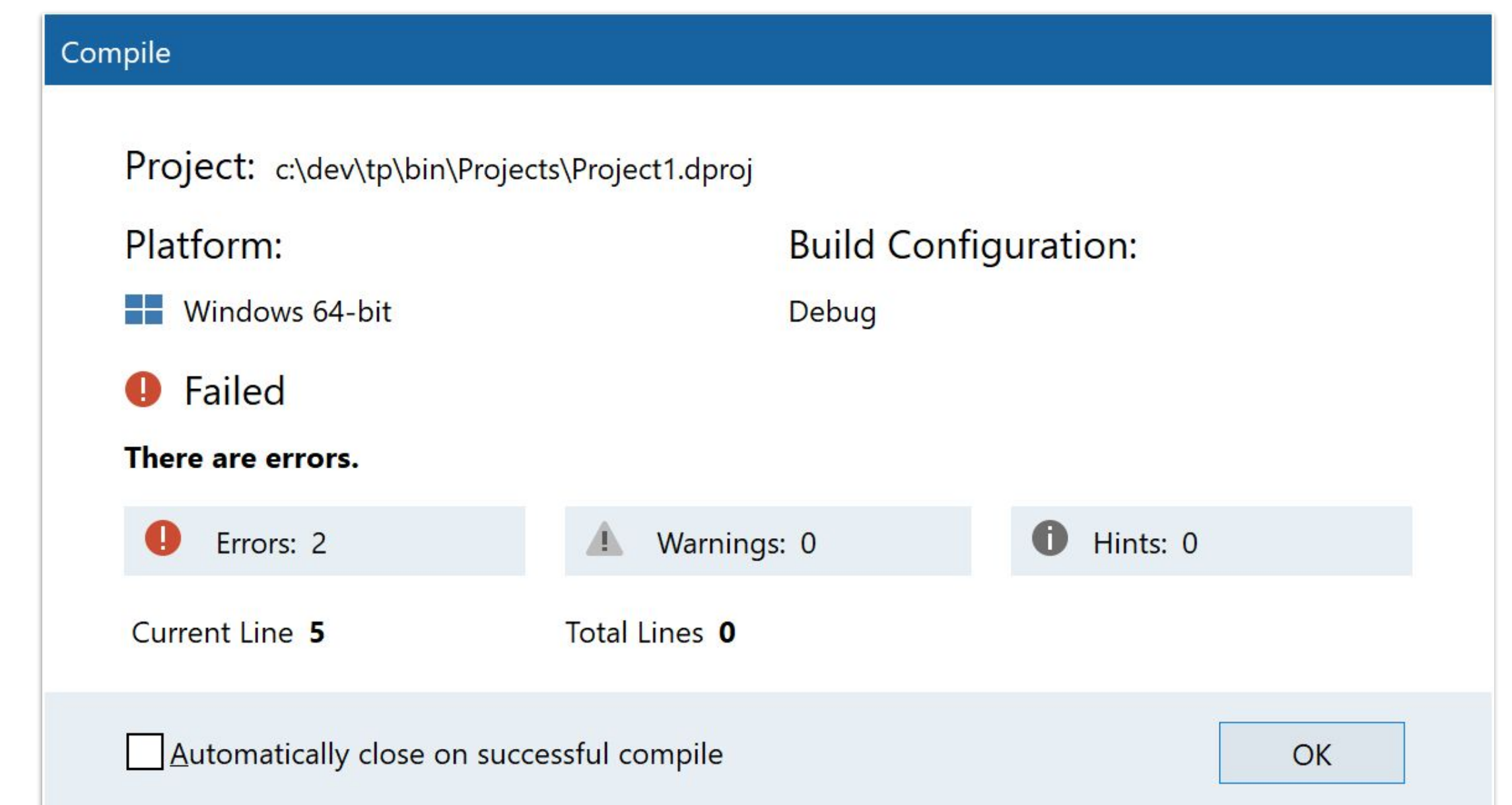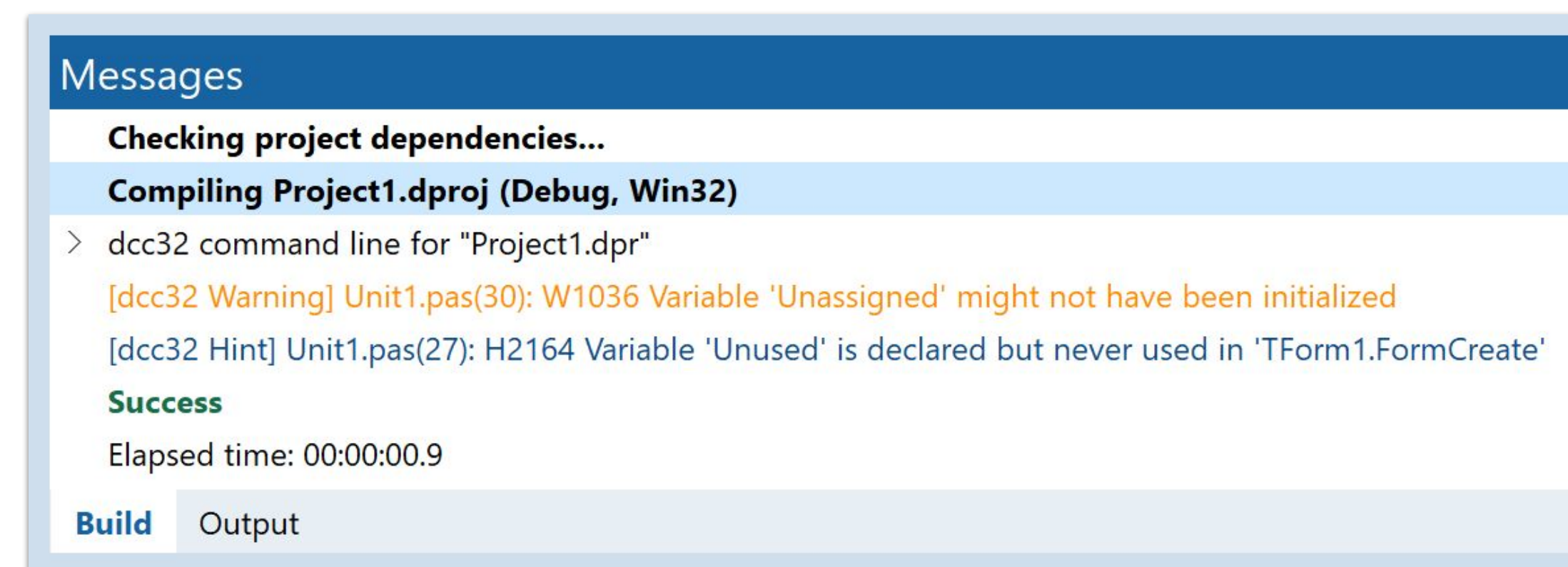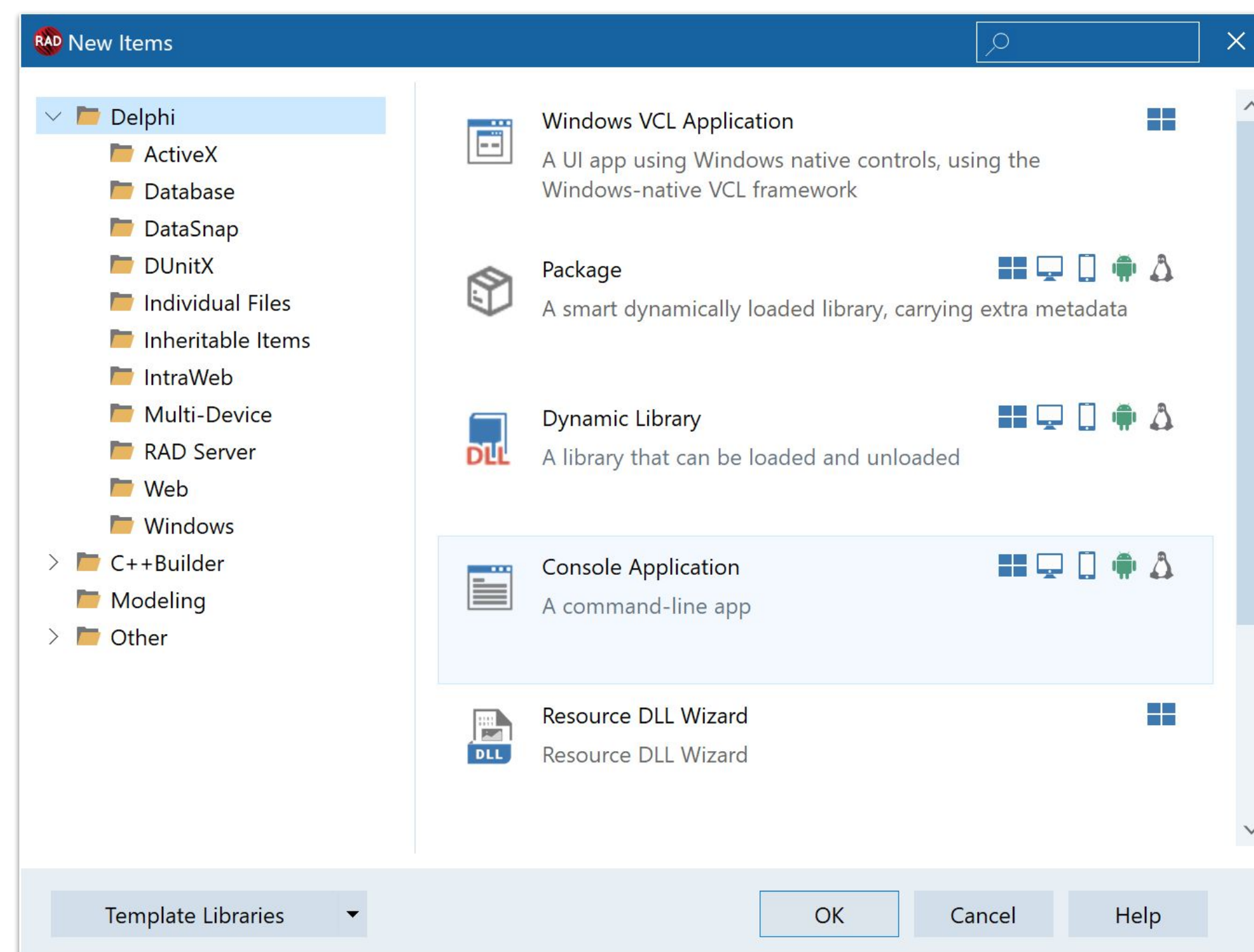
11.2: Polish: the little things that help

- RAD Studio 11.2 is full of small tweaks that improve quality of life

- *Some already mentioned are:*

  ○ Editor tabs, colours and opened while debugging

  ○ File > New > Data Module

  ○ VCL designer - high DPI improvements (control size, checkboxes and radios, etc)

  ○ Readonly units, padlock icon

- *Some not yet mentioned are:*

RAD Server, see IP address and more; Projects double click: does what you expect; Reopen list always up to date; Compile and File Cache dialogs format counts follow locale and are easier to read; IDE performance when drawing / moving windows greatly improved; Large number of UI layout, control rendering, control sizes, etc improved; IDE style shows the default button better; Large font size support in the IDE: set in Options dialog (not registry) and supported for more windows; Custom style support in the IDE (any VCL style) can be set in the Options dialog; Remote Desktop usage improvements; About box shows installed patches; Delphi code completion shows color constants with their colour; **...and more!**

II. C++ and Delphi Compilers and Tools
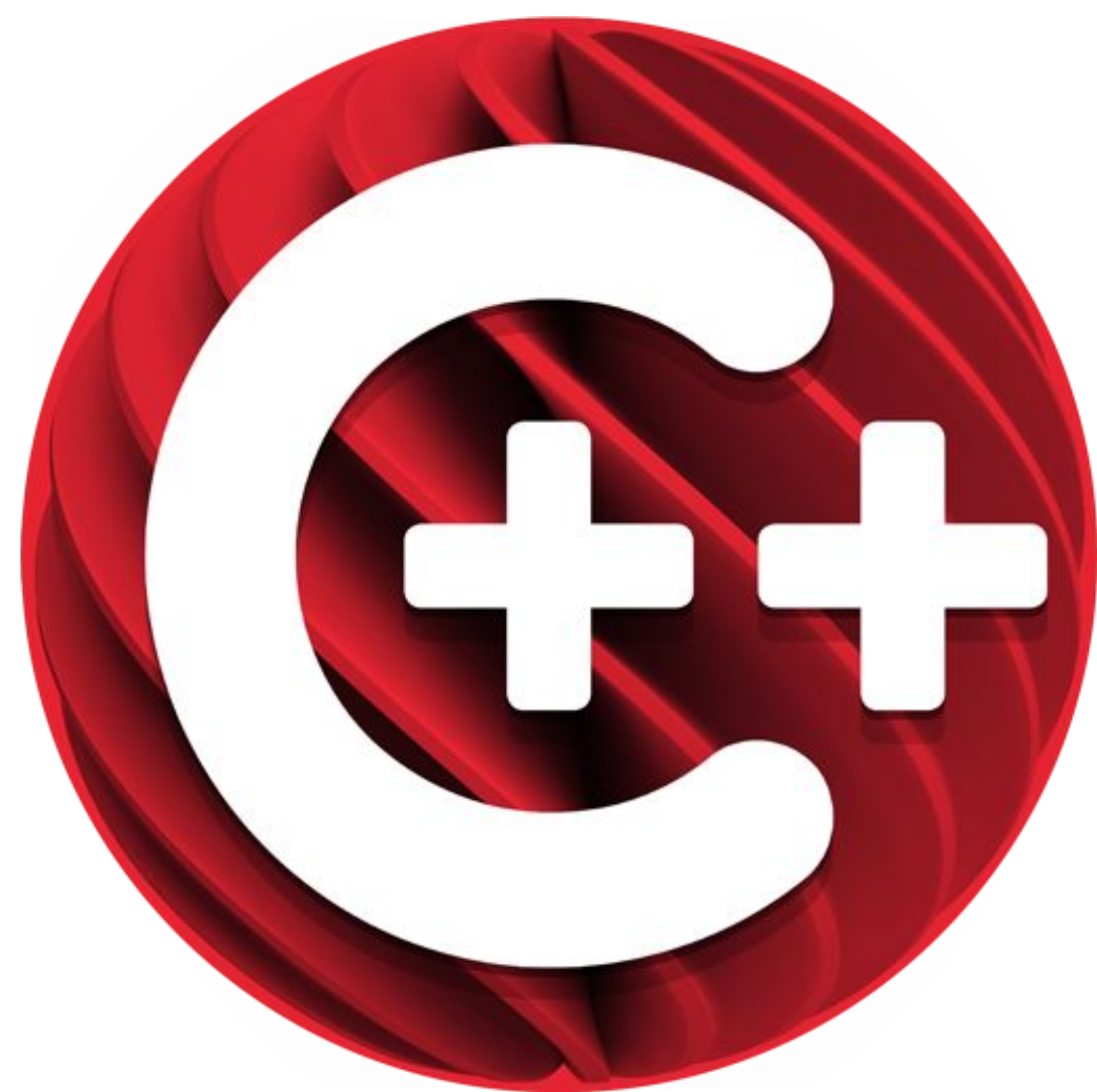
iOS Simulator Support

- New Target Platform for Delphi in 11.2

- Simulator very useful for fast iteration:
  - Deploy to the simulator, and debug, is much faster than to the actual device

- Apple moving to ARM across all devices, including running iOS apps on Mac

- In 11.2, run Delphi iOS apps through the simulator on M-series CPU Apple devices
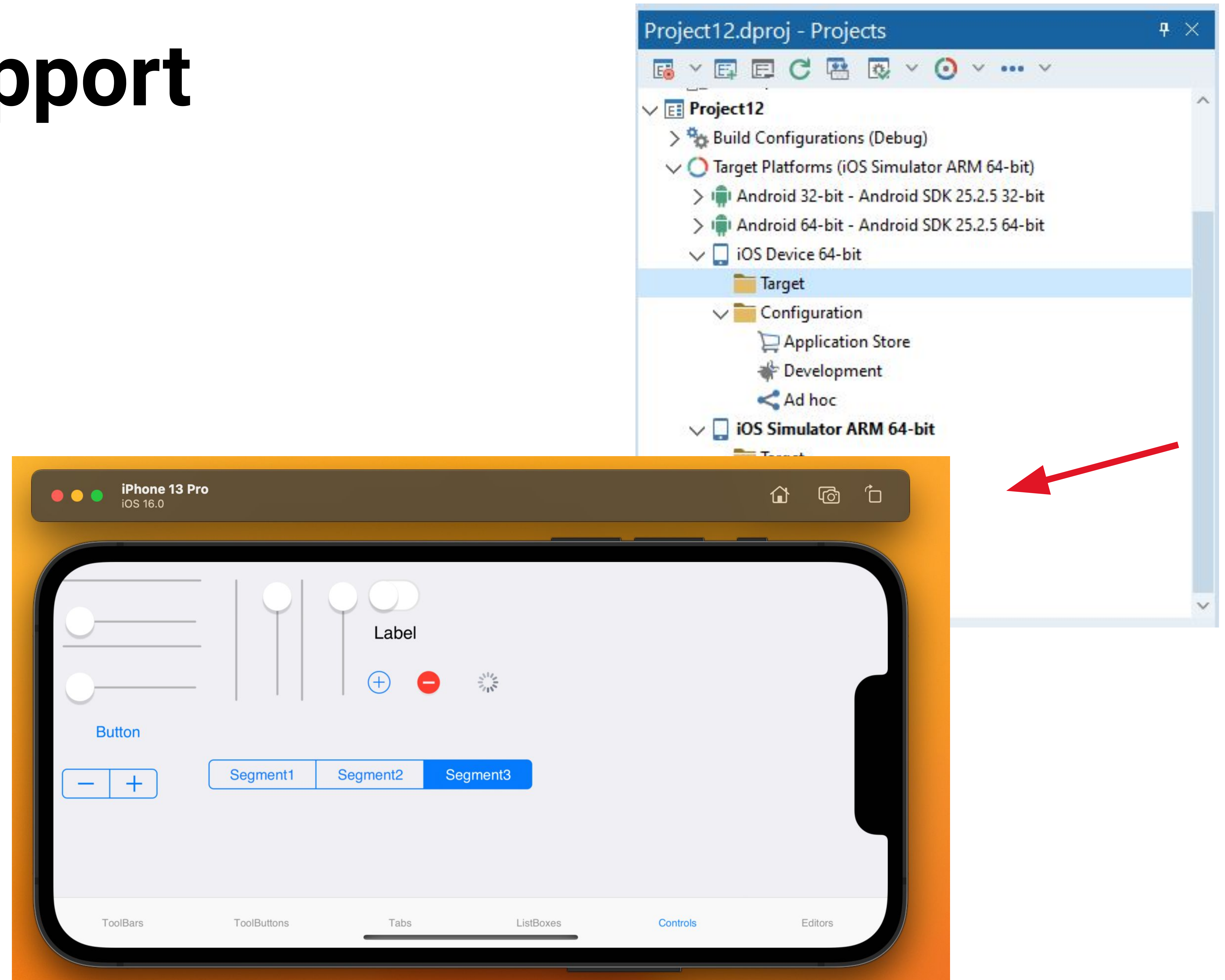
Delphi compiler: Quality Focus

- 11.x features plus all hot-fixes
  - Includes AtomicCmpExchange[128] fixes from 11.1 patch 1; 'set of' quality on LLVM compilers, and improvements to Win64 assembly instructions

Security flags
- ASLR support extended with High Entropy Address Space Layout Randomization (HE-ASLR) in Win64
  - A good additional security feature. DEP/NX, ASLR (both in 11.1) and HE-ASLR often required for some industry areas

- Expect issues if you convert handles to ints: do not assume handles are 32-bit despite the common Windows norm, not all are.

- All our packages support it

C++ toolchain: Quality Focus

- Includes all work from C++-only release, 11.1.5
  - Code completion and navigation, as seen earlier

- STL iostreams performance: < 25% of 11.1 time, plus other quality improvements: integrated record helpers from Delphi, delay load improvements, linker fixes, data alignment IDE <-> bcc32c, and more

- Linker supports ASLR, DEP/NX, and TSAWARE flags (but not >4GB start address)

LLDB for C++

- Remote debugging for Win64!
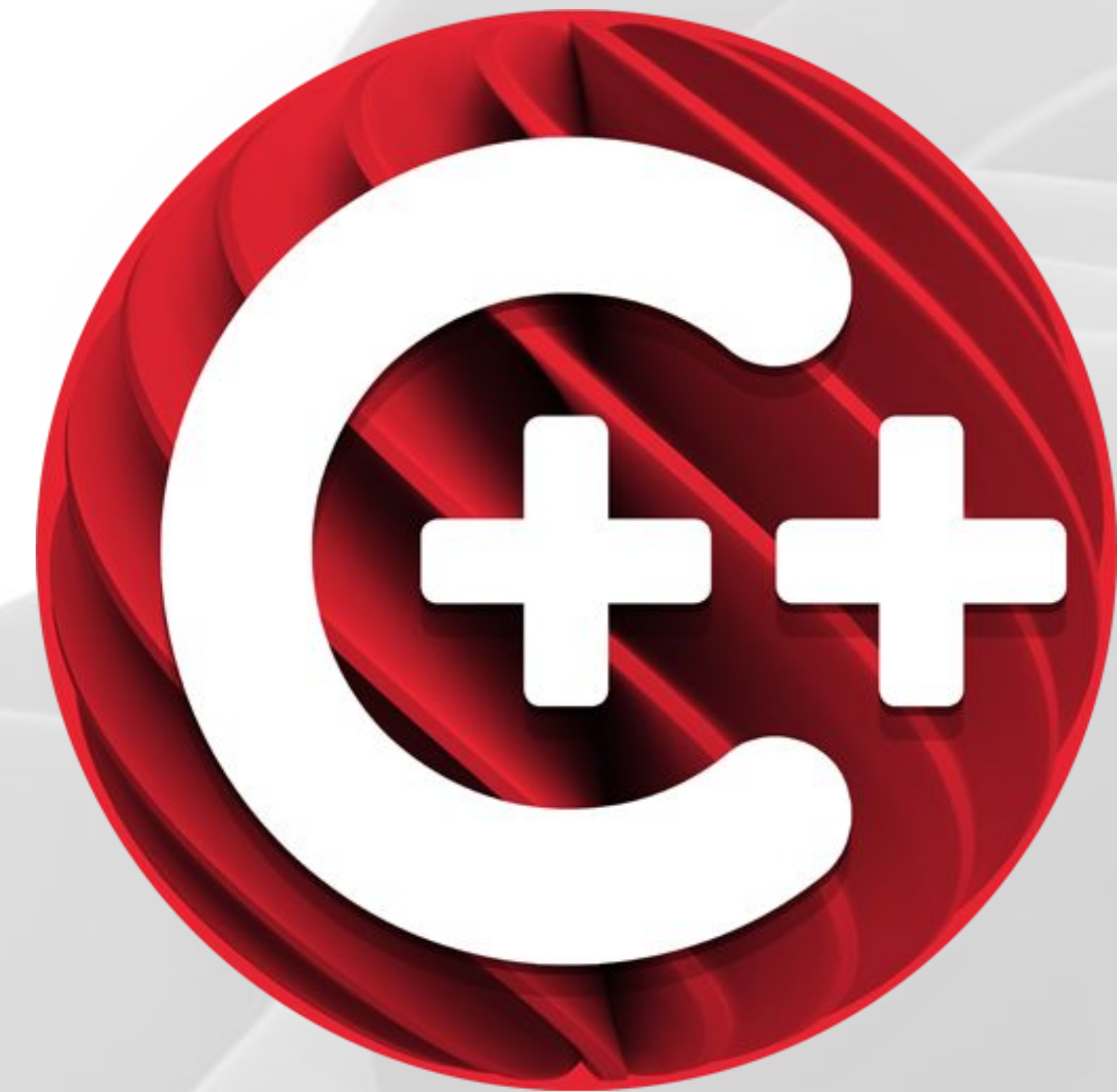
Android

- Using Android API level 32
  - Play Store mandates level 31 starting Aug 2022 for new submissions, Nov for updates
  - Updates targetSdkVersion, AndroidManifest.xml template, etc

- JDK version is now v11
  - and if Eclipse Adoptium JDK is available, will be used in preference to others

- Improvements for local notifications

- Many new Uses Permissions

- Can also create a PKCS12 keystore

LLDB Update

Goal: add Delphi language support to LLDB so can evaluate expressions in Delphi in Evaluate/Modify, watches, etc, and move to LLDB across all platforms.

This:
- reduces multiple debuggers to one;
- gives consistent features across all platforms;
- and uses a modern debugger

Have seen this in past release webinars, and over (some) future releases, will continue to see progress on LLDB

11.2 extends Delphi support:

- basic handling of set expressions, dynamic arrays, 'nil', pointer casts, empty strings and strings with hex characters

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LLDB Update

11.2: Linux 64 moved to LLDB
Requires Python 3, see docs if you have issues
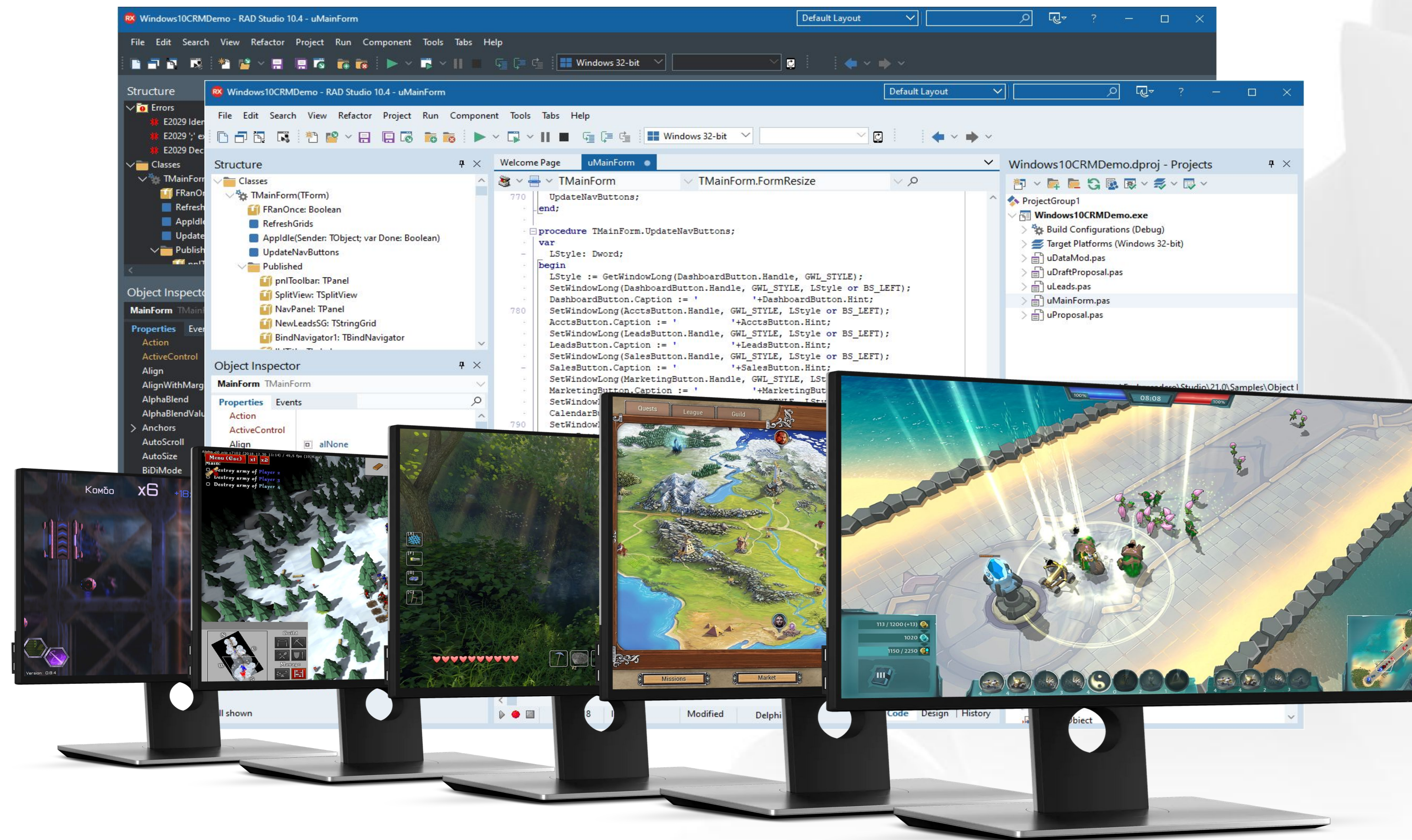
As of 11.2, LLDB is used for:

- C++ Win64
- Delphi macOS ARM 64
- Delphi macOS Intel 64
- Delphi Android 64
- Delphi iOS 64
- C++ iOS 64
- Delphi Linux 64

Not used for:

- Delphi and C++ Android 32
- Delphi Windows 64
- Delphi and C++ Windows 32

Making great progress!

III. RAD 11.2 Libraries Quality & Improvements

11.2 RTL: Quality Focus

- ZLib updated to 1.1.12 to address recently patched vulnerability, plus other zip quality (stored files, symlinks on Linux, handling truncated data, and more) and performance
- New: TProxySubrangeStream class: a subrange of any other stream (similar to previous private TStoredStream)
- PCRE is JIT-enabled, giving great performance
  - and can access TPerlRegEx.Study
- RTTI quality
- System.SysUtils.StrToFloatDef no longer changes the numerical exception mask
- Several performance improvements

11.2 VCL: Quality Focus

- Improvements in the use of Microsoft's WebView 2 control in both TEdgeBrowser and TWebBrowser components
  - Better support for the UserDataFolder and the ExecutableFolder configurations
  - More flexibility in the deployment of applications that use the WebView 2 control, including secure enterprise scenarios

- Many issues addressed for CardPanel, NumberBox, RichEdit, ListView, DateTimePicker and BalloonHint components

11.2 FMX: Quality & Performance Focus

- Support for iOS status bar with dark icons
- TPathData quality
  - Extensive improvements over TPathData processing and rendering, both in terms of quality and performance, including quadratic Bézier curve commands and other transformations
  - Increased the rendering speed of TPath on GPU canvas
- Many other quality improvements, including areas:
  - TBufferedLayout reacts to an update of contained control styles
  - Windows privacy and TVideoCaptureDevice interact well, plus other Windows camera quality
  - TWebBrowser and Edge quality
  - StyleBook Windows 64 quality
  - ListView quality with DynamicAppearance
- TListBox supports Shift+Click to select a range

11.2 Data

- Search and Replace with FireDAC reFind
  - Script for dbGo migration
    - plus compatibility unit, FireDAC.ADO.Migrate.pas
  - reFind also lets you leave old code as a comment (/C switch)

- Updated FireDAC drivers
  - ODBC for DSQL Server
  - MSSQL on macOS M1
  - support for MongoDB new transaction feature

- Addtl DB library changes

11.2 Data

- FDMonitor greatly improved!
  - Syntax highlighting improvements
  - SQL Output view to track SQL commands
  - FDExplorer and FDMonitor have search commands
  - Optimisations of ODBC and other

- FireDAC SQL editor has syntax highlighting, line numbers, and common shortcut keys

- TCustomADODataSet.AutoIncFieldsMode: optimise opening a dataset by avoiding extra data traffic to detect auto-increment fields

11.2 RAD Server and HTTP/REST

- RAD Server Lite: 2-user limit removed!
- Enhanced Logging: now log IP address and DateTime
- emsserver.ini can specify paths to the FDConnectionDefs/FDDrivers.ini files
- EMSFireDACClient component has a context menu item to create persistent fields based on result set
- TEMSFireDACClient.PostUpdates can use a custom session token
- TEMSFileTResource list function improved

HTTP and REST

- Improved Windows proxy detection
- Improved THHTPNetClient SSL certificate checks for Android
- TRestRequest MIME types and multipart/form data improved

11.2 Quality Portal and Overall Quality

- Specific fixes for over 450 QP issues (1070+ in 11.*x*)
  - New Features: 30
  - Bugs: 420*

* Estimate, pending final testing on a few issues, doesn't include duplicates and 'won't fix'/'works as expected' items

- QP issues addressed by product area:
  - IDE: over 350 issues
  - FireMonkey and VCL: around 100 issues each
  - RTL, Data, Compilers: over 75 issues for each area

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Additional Product Initiatives

- Appercept's AWS SDK for Delphi
  - Long term distribution deal, included in Enterprise and Architect
  - New releases expected at a constant pace
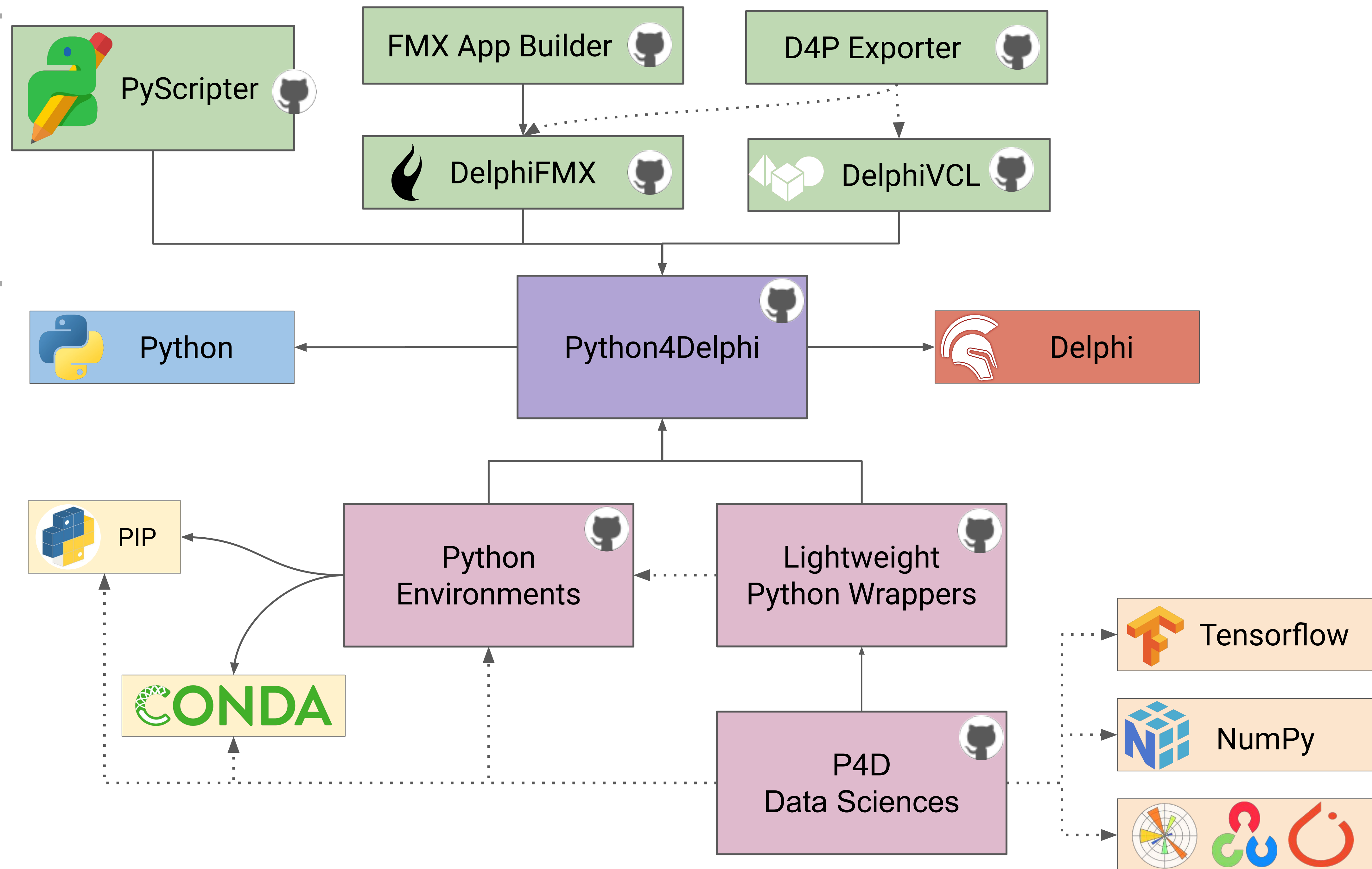
Python

Based on Python4Delphi

- Delphi UI libraries (VCL + FMX) for Python
  - Free UI library for Python developers
  - Upgrade to a Delphi license for additional power and features
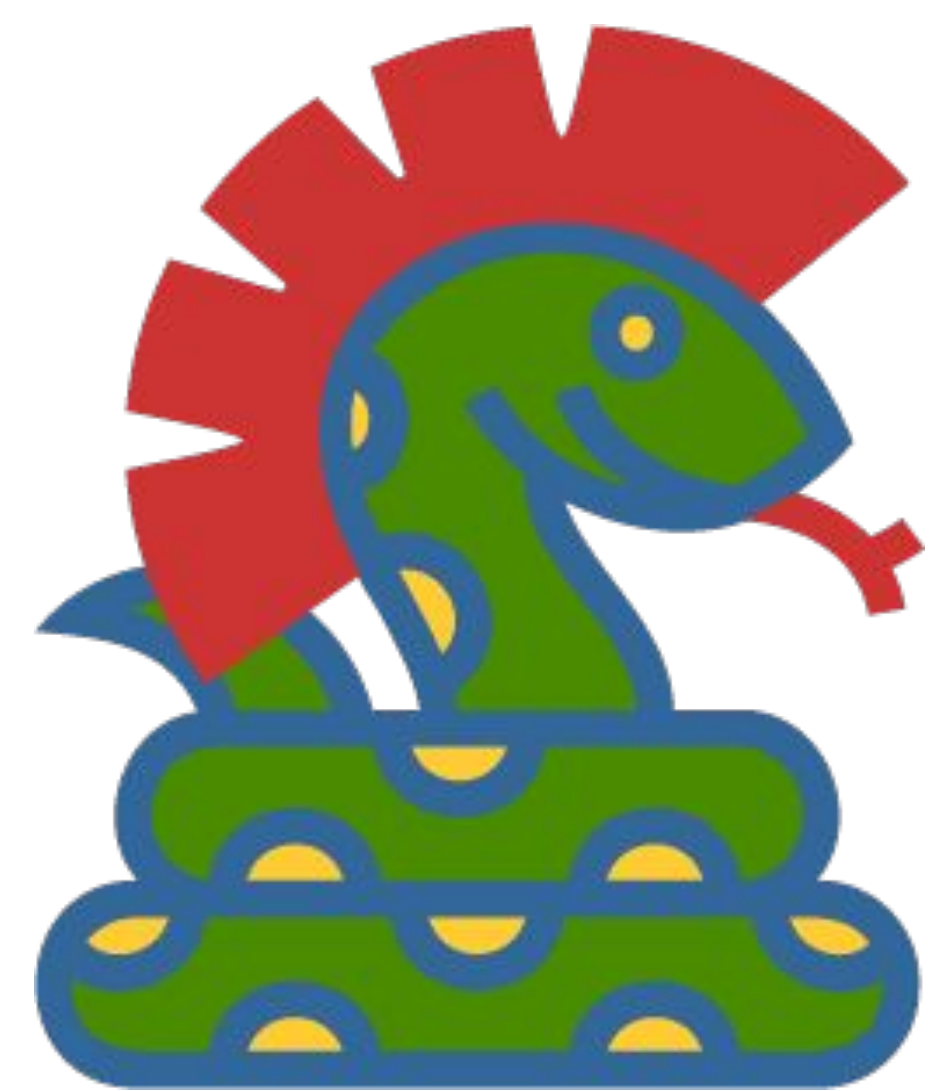- Also, you can use Python in Delphi applications

Embarcadero Python Ecosystem

For *Python* Developers

For *Delphi* Developers

PyScripter

FMX App Builder

D4P Exporter

DelphiFMX

DelphiVCL

Python

Python4Delphi

Delphi

PIP

Python Environments

Lightweight Python Wrappers

CONDA

P4D Data Sciences

Tensorflow

NumPy

PythonGUI.org

GitHub

GetIt

PyPi

Conda Forge

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Embarcadero Python Ecosystem

- **Python4Delphi**: The Bridge between Delphi and Python
- **Python Environments**: Simplifies deployment and configuration of Python **Lightweight Python Wrappers**: Wrap Python libraries into Delphi components
- **P4D Data Sciences**: Delphi components for popular Python Data Sciences tools
  - Tensorflow, NumPy, PyTorch Vision, PyTorch, MatPlotLib, Natural Language Toolkit (NLTK), OpenCV, and Scikit-learn and more
- **DelphiVCL for Python**: VCL as a Python library for native Windows GUI
- **DelphiFMX for Python**: FMX as Python library for cross platform GUI
- **D4P Exporter**: Export FMX & VCL forms for use in Python
- **FMX App Builder**: Build & debug pure Python powered Android apps
- *And more coming in the future!*
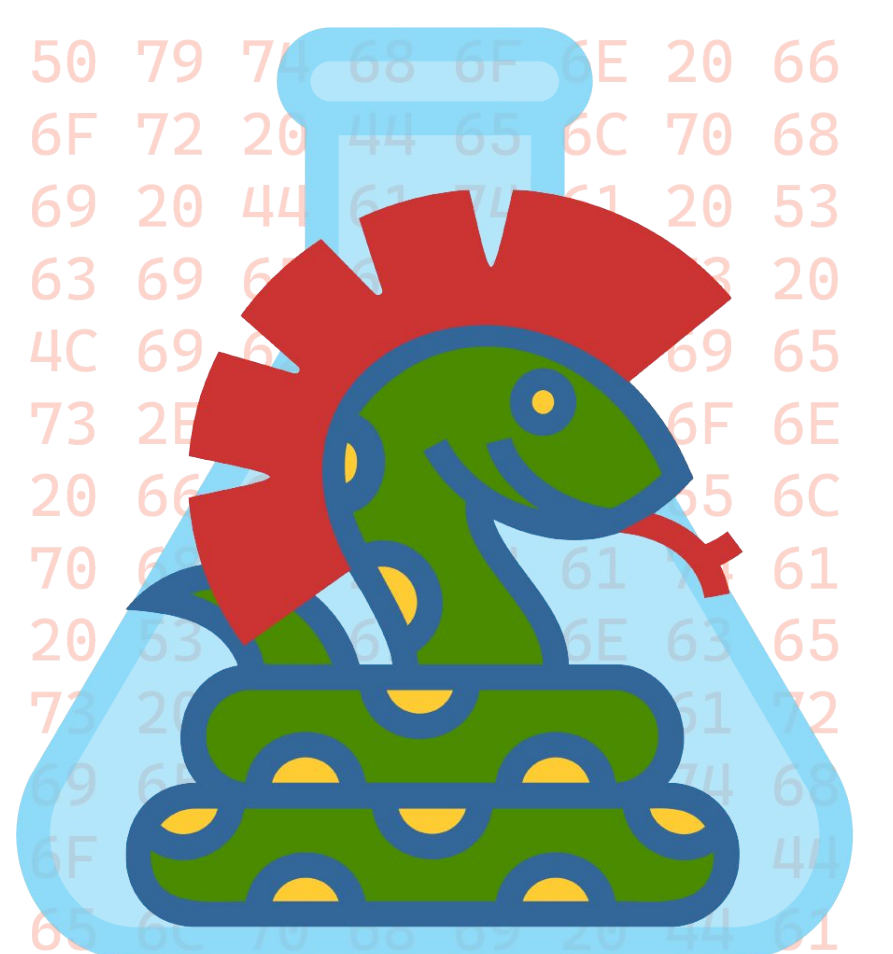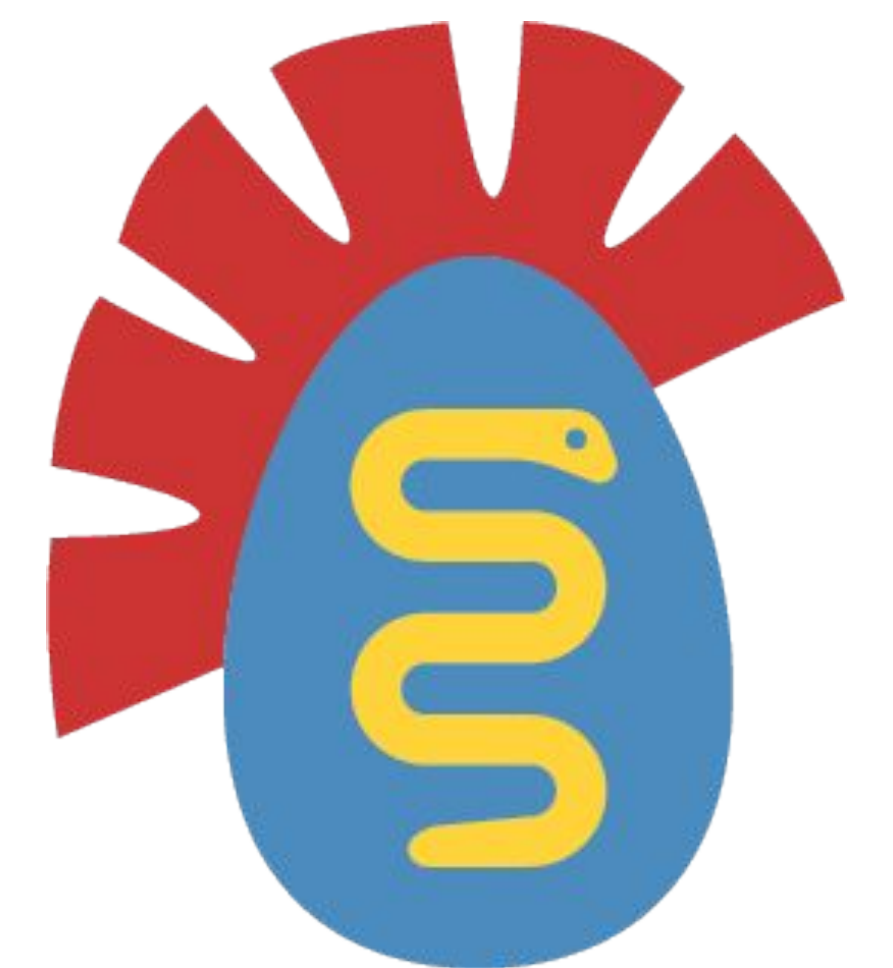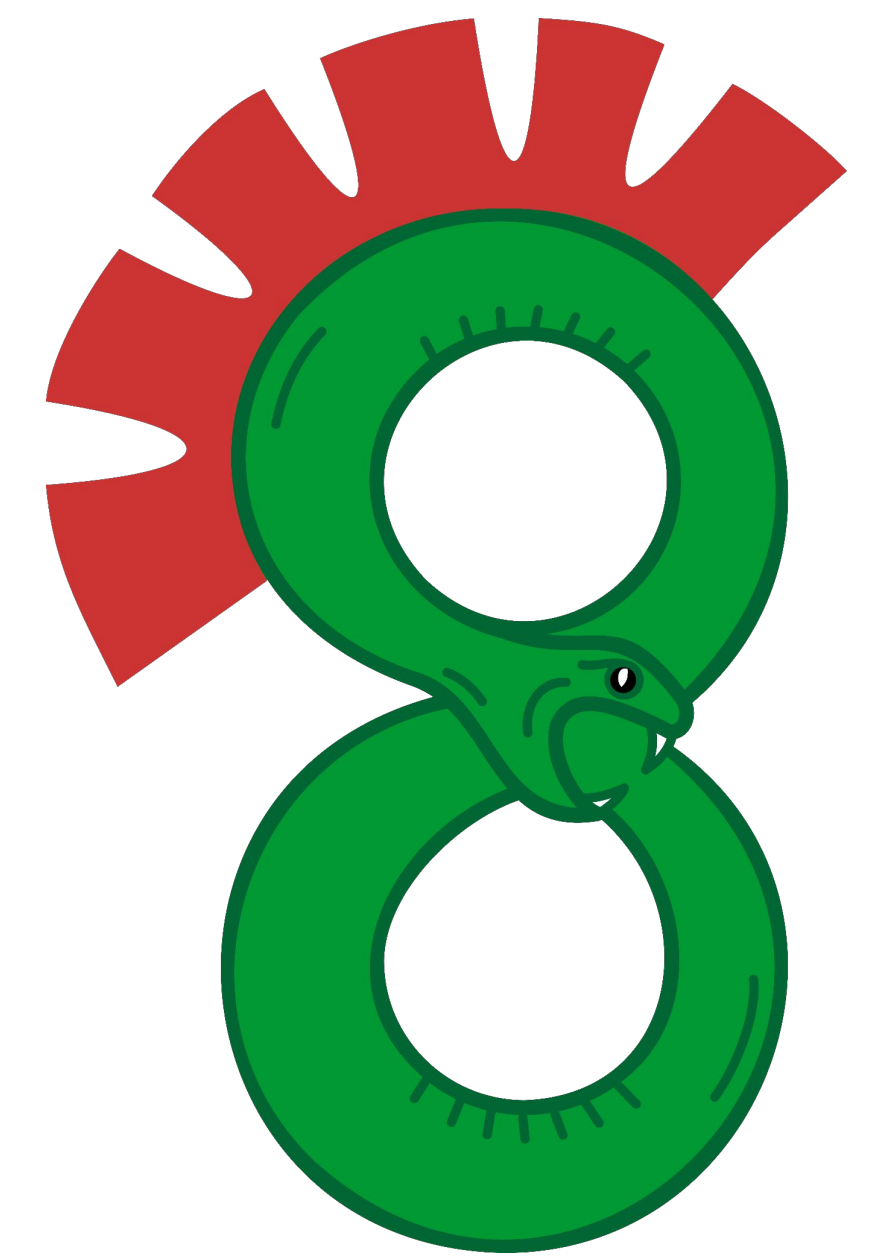
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- Android Target API 32
- Remote Debugging Win64 C++

V. Libraries
- VCL WebView2 Improvements
- General VCL and FMX Quality
- ZLib, HTTP / REST
- RAD Server
- FireDAC reFind, Updated Drivers, and FDMonitor/FDExplorer

How RAD are you?

https://idera.applytojob.com/apply/yj1mn44Fio/Solutions-Consultant-Embarcadero

Q & A

Join the team?

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