

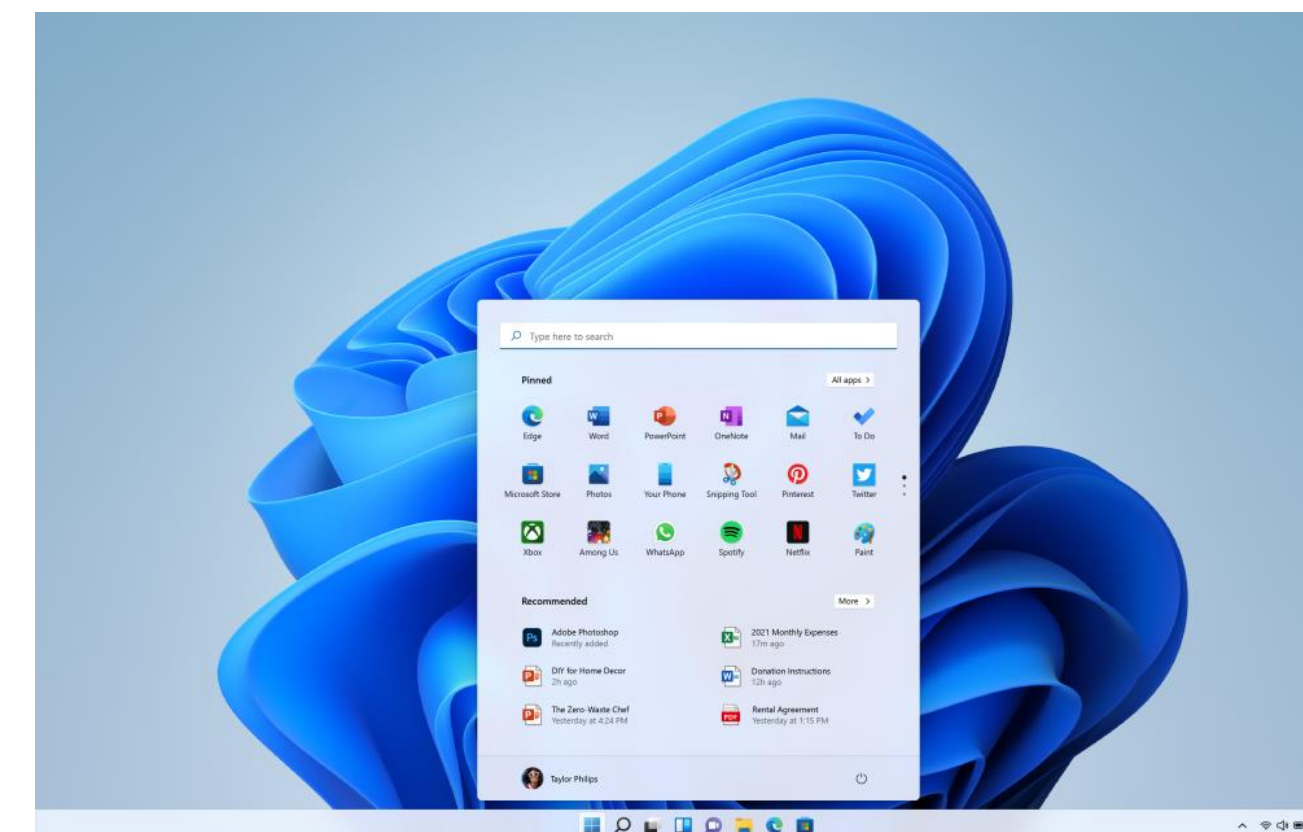


RAD Studio 11 Alexandria

 embarcadero®

The Landscape

- **Microsoft about to release Windows 11**
 - Fully focused on it, key reason for picking version 11
 - New dev platform is Windows App SDK (aka Project Reunion)
- **Transition to ARM also on desktop**
 - Led by Apple with macOS
 - And ARM reigns on mobile platforms
- **Developers on 4K**
 - High resolution and multi screen are common for developers
 - Growing also for end users



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

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

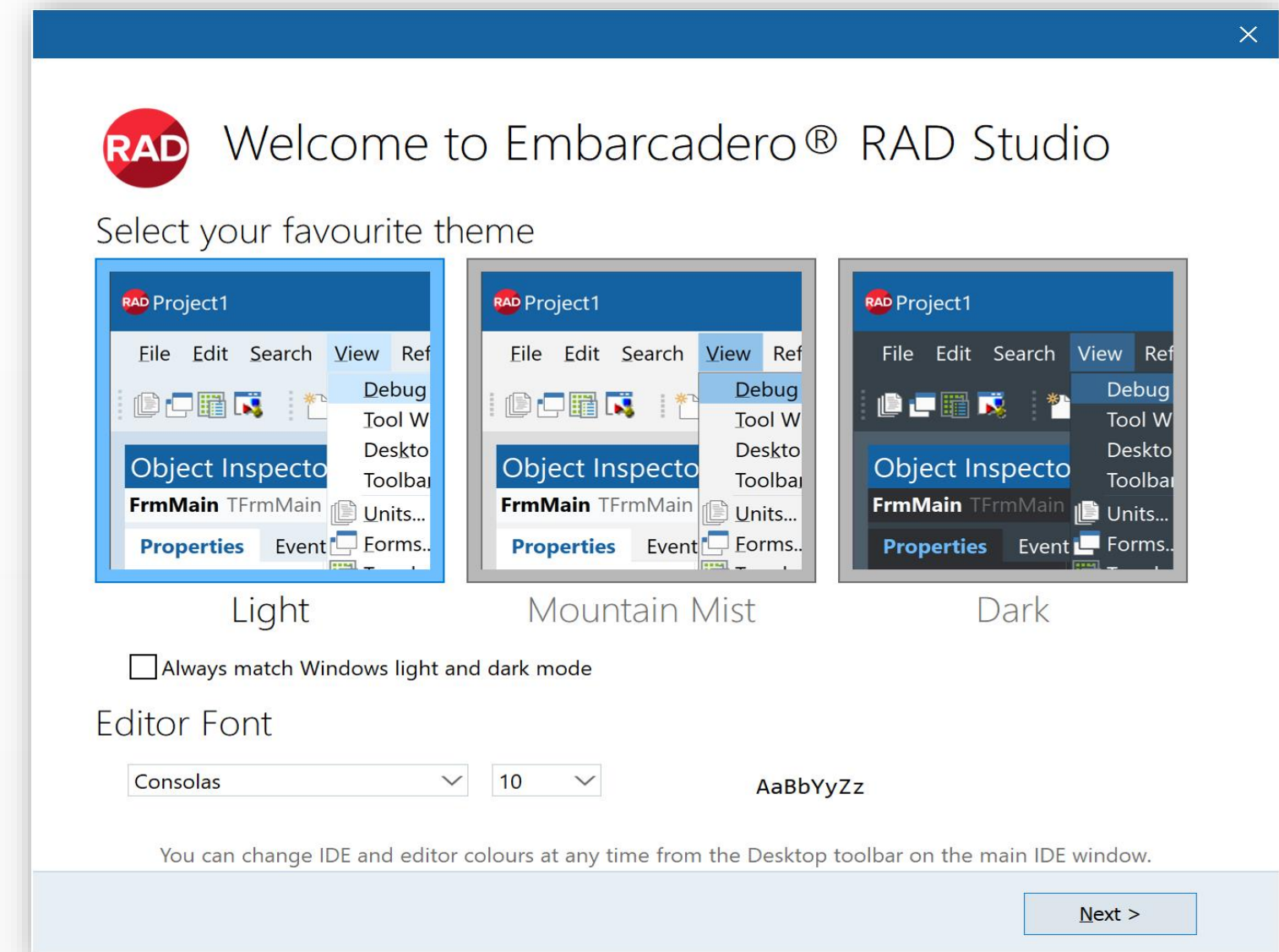
Backward Compatibility - You have an investment in your code, RAD Studio keeps that relevant



Recent RAD Studio Features

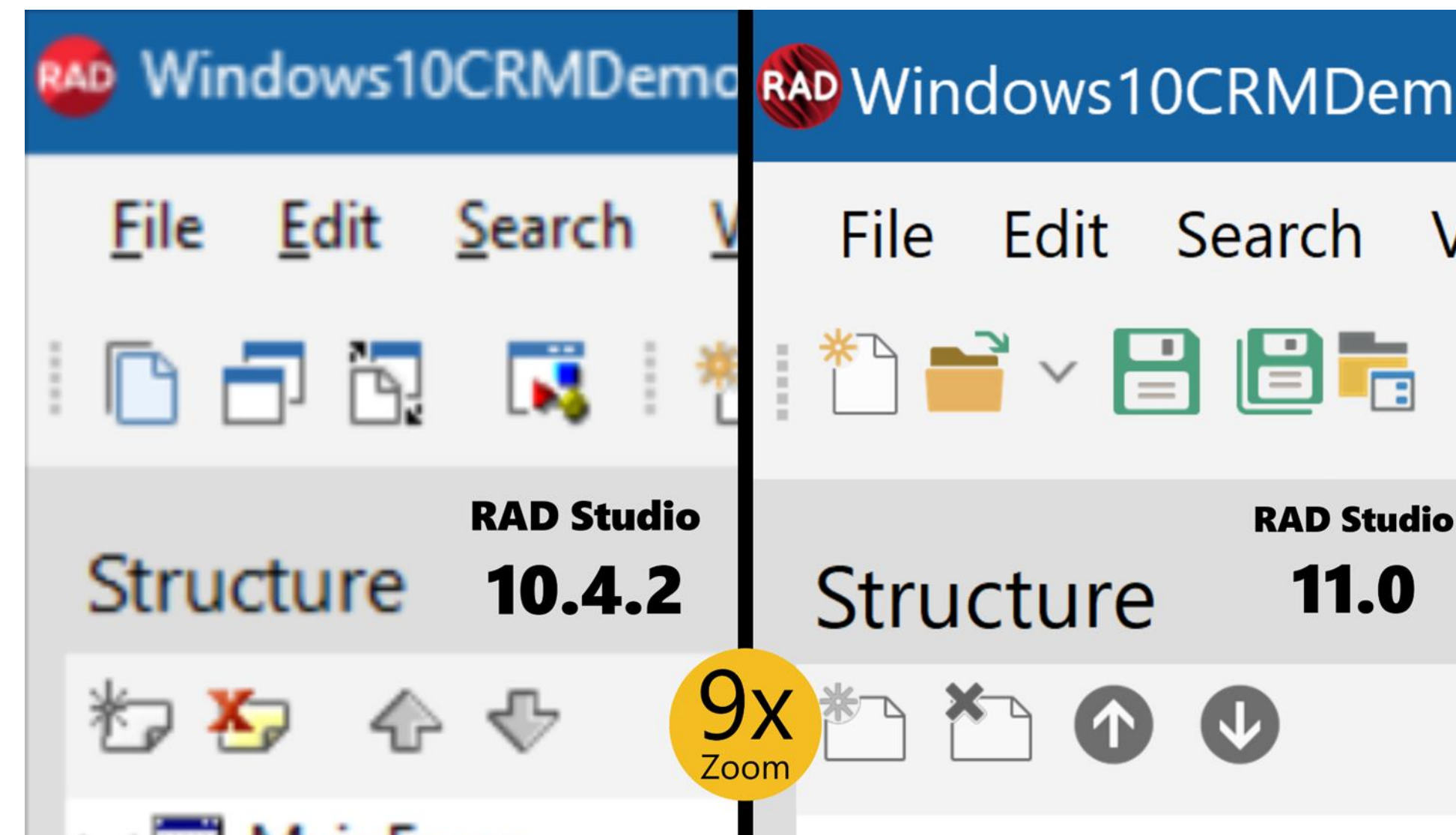
- IDE
 - Dark theme and full styling support
 - Delphi redesigned Code Insight with LSP
 - Reworked offline installation experience
 - MSIX support
- Extensive VCL work
 - High DPI, High DPI styles, per-control styling
 - Additional components: TControlList, TNumberBox and TEdgeBrowser
- C++ Win64 extensions
 - New 64-bit Debugger
 - C++ Exception Handling and STL Improvements
- FMX and Multi Device
 - macOS 64-bit Intel support (Delphi)
 - Support for the latest iOS and Android (Delphi)
 - Apple Metal GPU driver support
 - FireMonkey Low Code App Wizard

I. RAD Studio 11 IDE



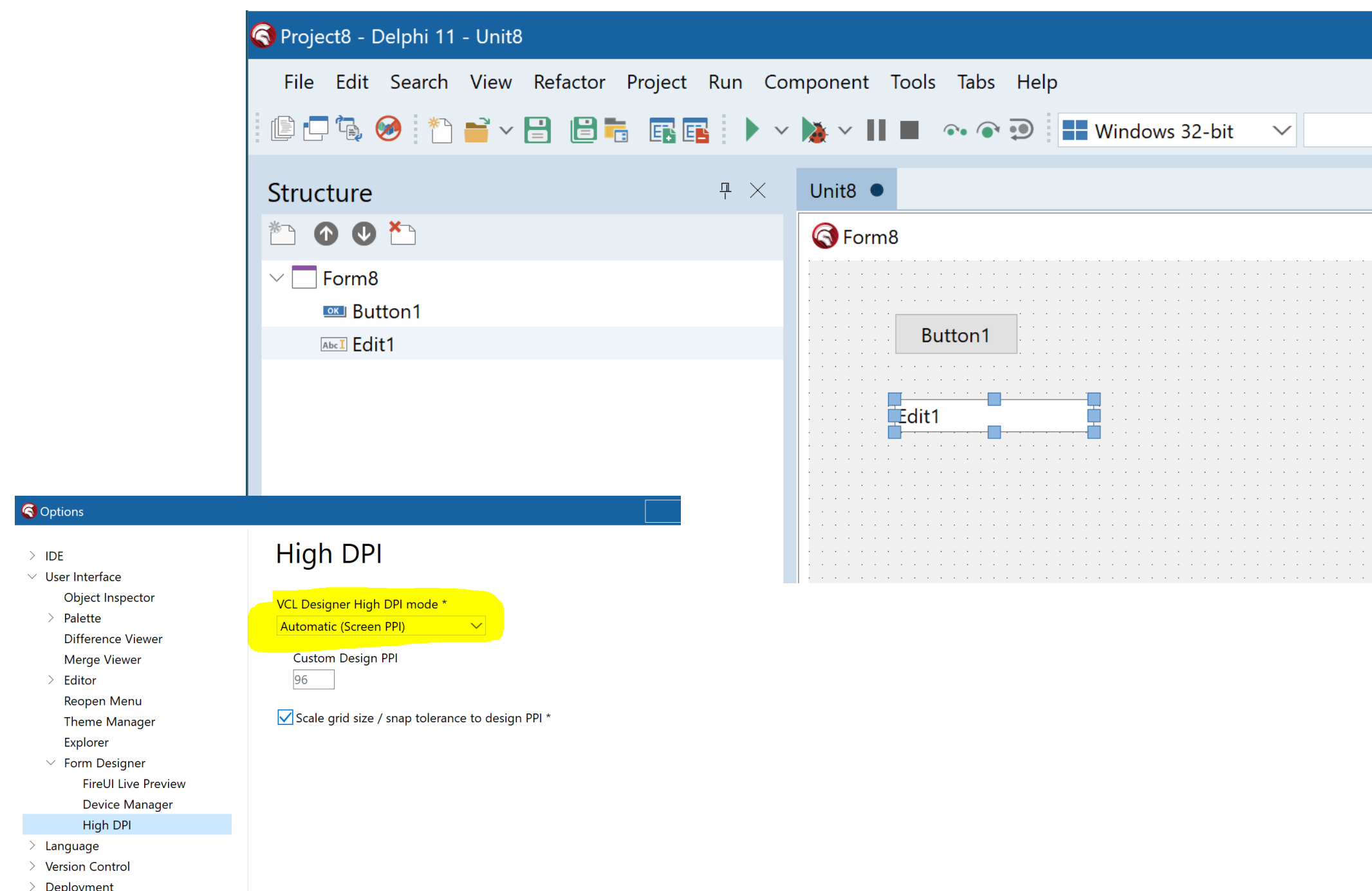
High DPI IDE

- Crisp fonts in all windows, and editor
- Based on VCL PerMonitorV2 support and High-DPI support for styles
- All new set of IDE icons (with multiple resolutions), IDE uses the image collection and virtual image list components
- ToolsAPI: new interfaces for APIs that use images



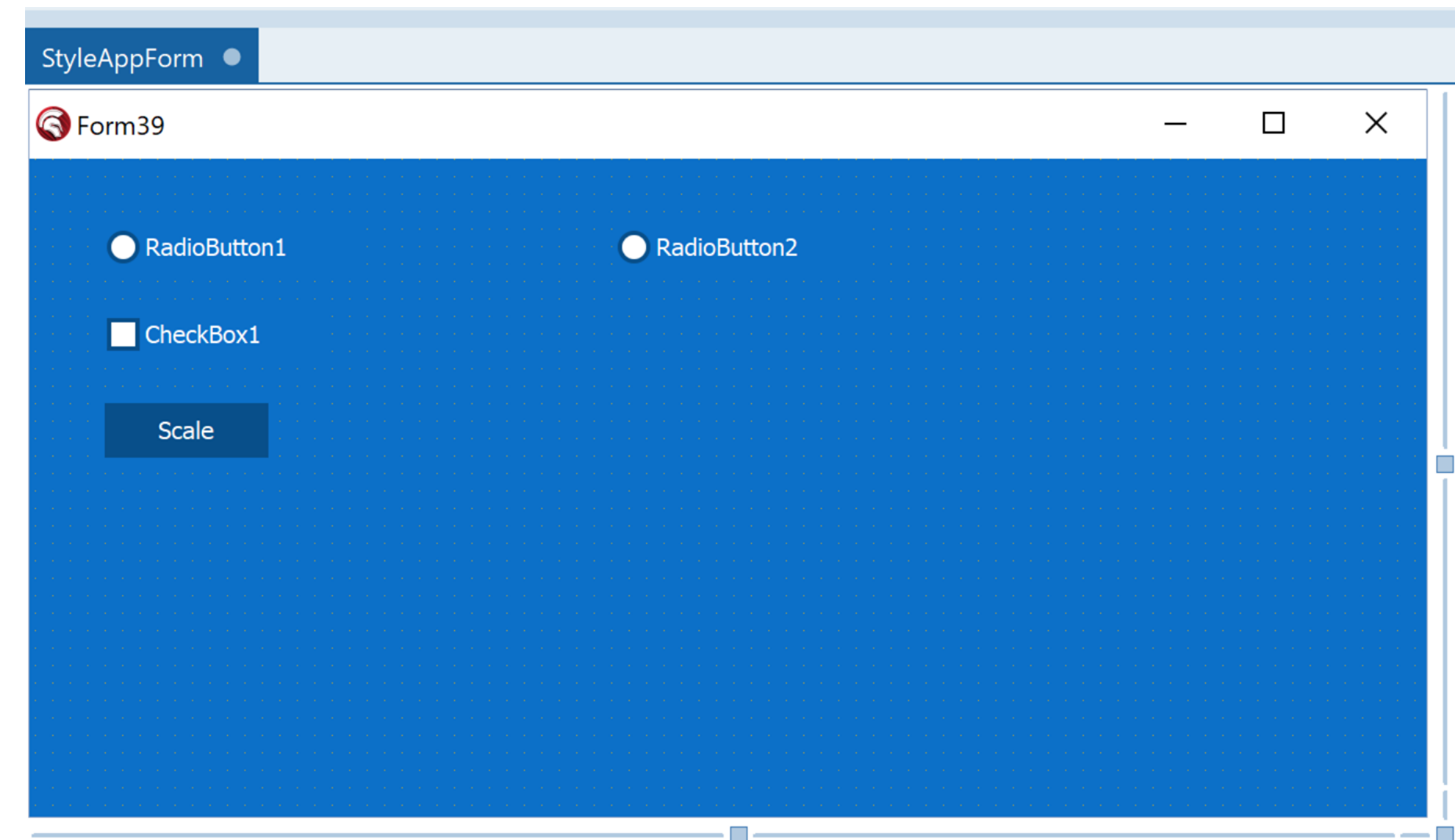
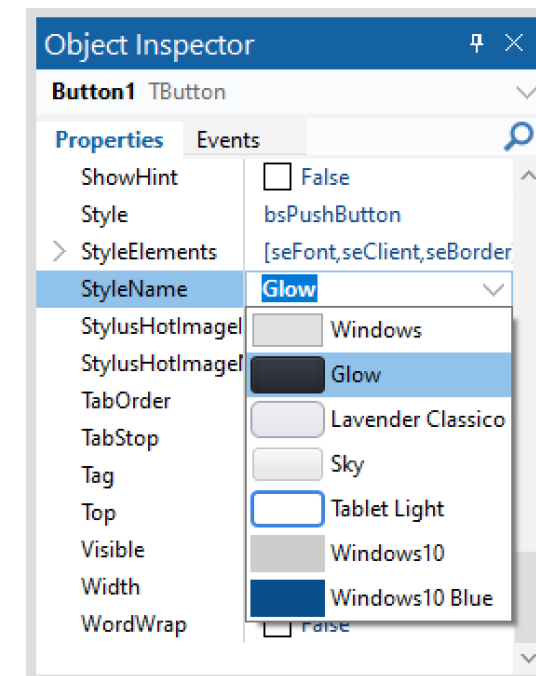
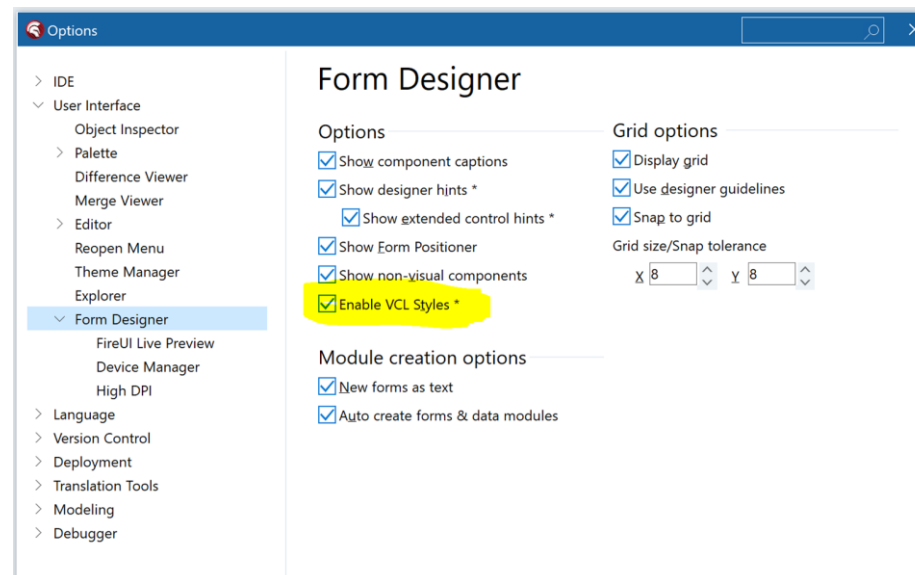
High DPI enabled form designer

- Forms, frames, and data modules
- Designer can use low (96) DPI, your current DPI, or a custom DPI (set in Options dialog). Default is low
- DPI is saved in the DFM, and form scaled at runtime



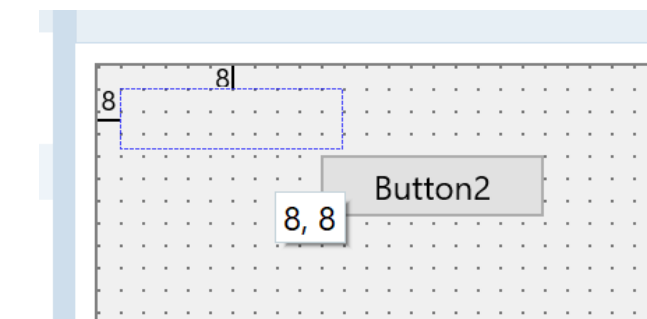
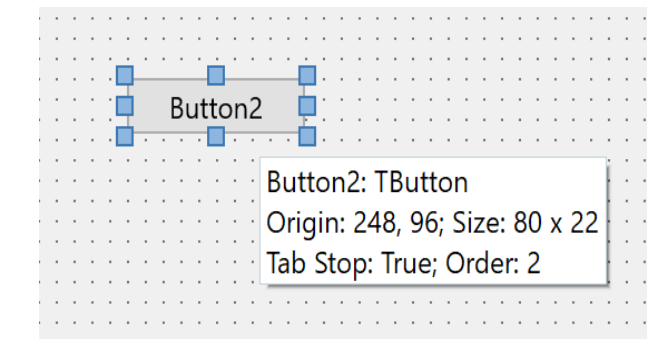
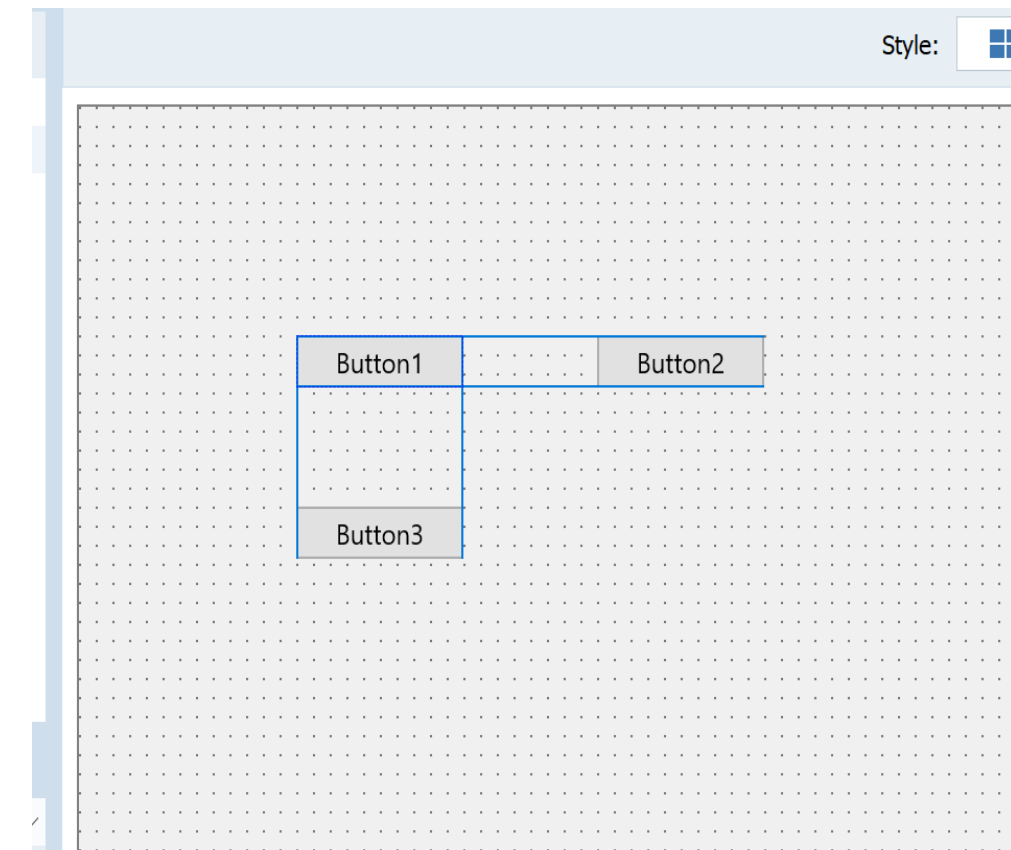
Active styles in VCL designer

- For styled applications, pick a native style (for each form or control) and preview at design
- Also Win10 styled window frame
- Not enabled by default



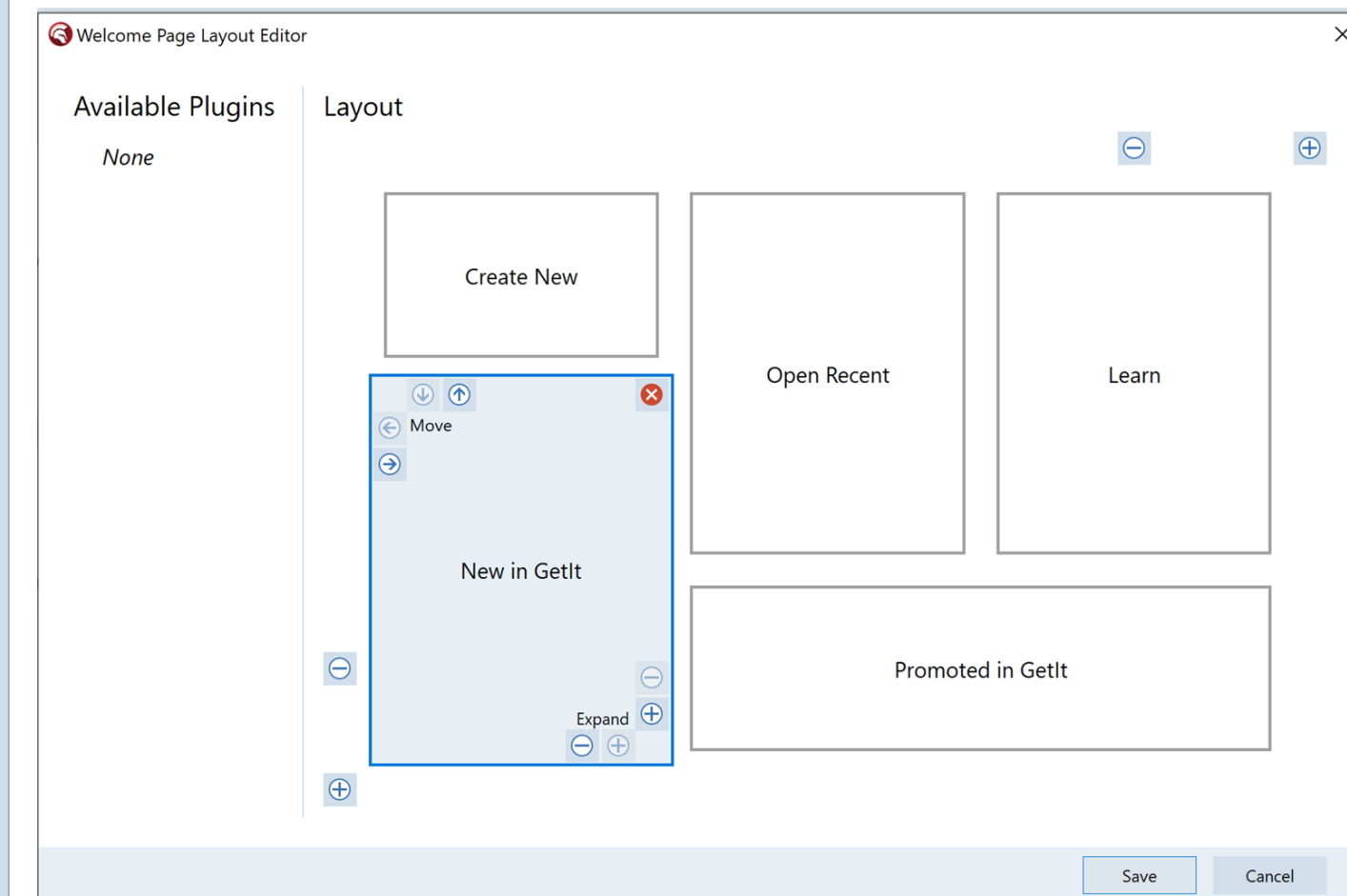
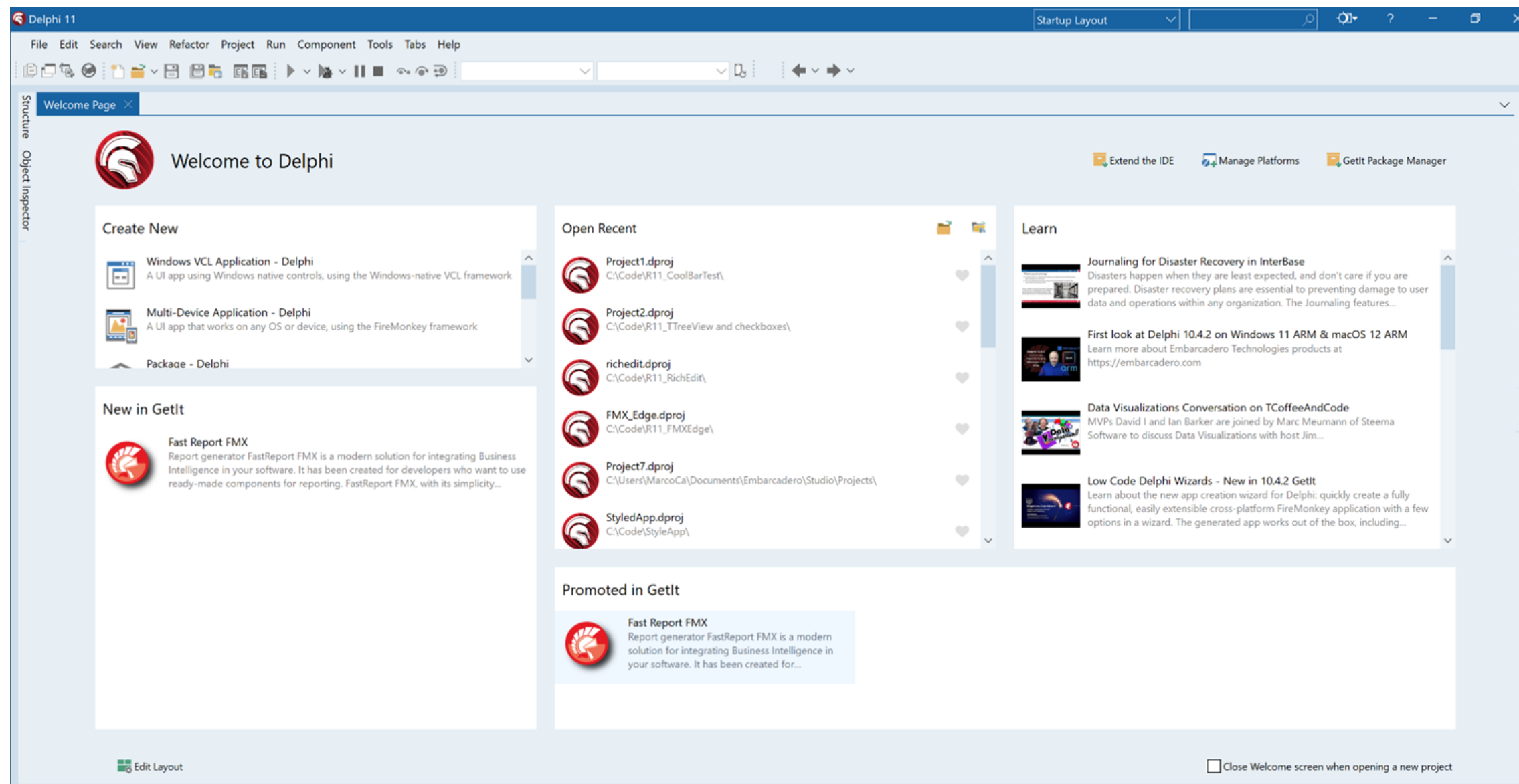
More in RAD Studio IDE

- FMX designer enhancements
 - Hints and guidelines
- Delphi LSP quality improvements
- New C++ code formatter
 - Based on clang-format
 - (Optional) format on save or as you type (on Enter)
- Consolas is the new editor font, plus additional fonts shipped
- Many fixes to multi-window support, including design & code at the same time



New Welcome Page

- New native Welcome page, VCL based and flexible - Similar content as today
- Plugin architecture, to be made open in the future for third-party plugins



Visual Studio Code Delphi LSP Support

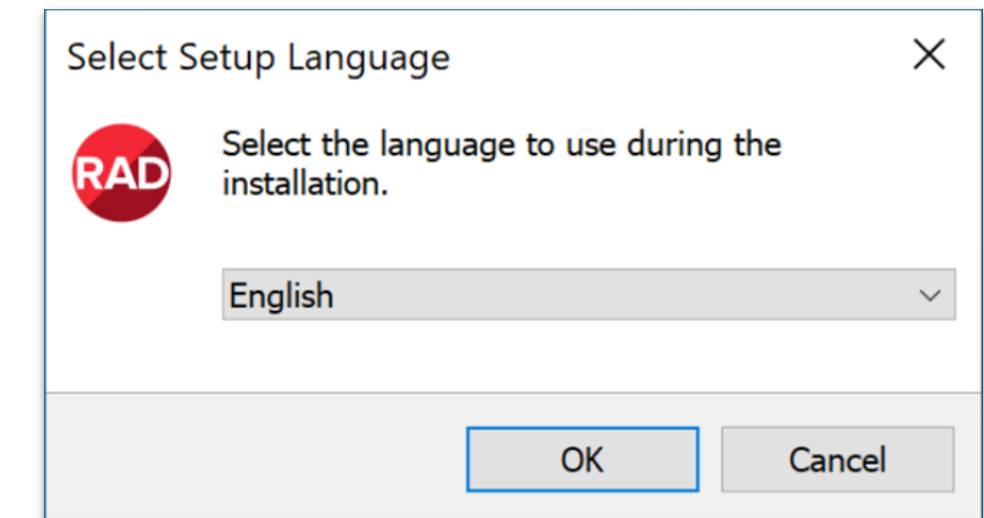
- VSCode plugin to use DelphiLSP
 - Will be in the Visual Studio Marketplace
 - Windows only
- Allows customers to use another editor, with code tooling

```
procedure TForm1.FormCreate(Sender: TObject);
begin
    //
    var Hello : string := 'Hello from VSCode';
    Caption := He
end;
```

abc Hello

Installer

- Minimal installer improvements
 - High DPI UI
 - Initial Language selection (rather than detection)
 - Ability to specify a custom Catalog Repository folder
- Feature Installer
 - Some done operations in parallel, for faster installation



II. C++ and Delphi Languages



C++ Quality work

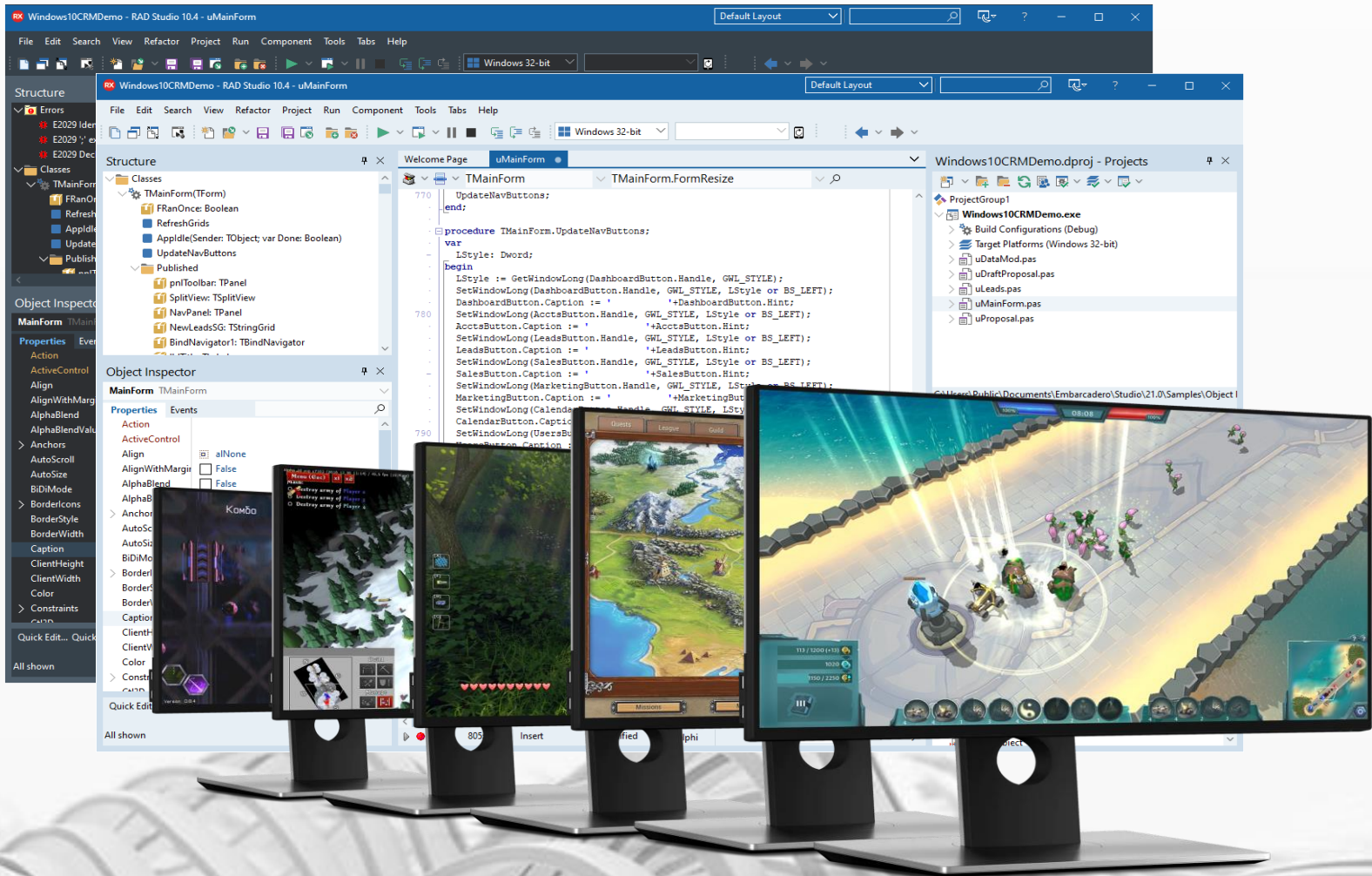
- Focus on RTTI (for components)
 - Delphi-style RTTI for C++ components allows using Clang-built components in-IDE
 - C++-style RTTI for Delphi types available to Clang
 - typeid() for Delphi-style types works
- Exception handling: further work following 10.4.2's: complex scenarios passing
- C++/Delphi interop improvements
 - std::string_view for Delphi strings
 - String assignment
 - String conversion methods for Delphi types
- CMake: revision of functionality and packages it can handle

Delphi

- New macOS 64-bit ARM target platform
 - For Apple Silicon M1 and beyond
 - Includes toolchain and signing support
 - Universal binary (package Intel + ARM)
- Minor language enhancements
 - Binary literals and digit separator support
 - Inline assembler support for AVX instructions (AVX-512)
- Further compiler performance optimizations
 - Mostly already delivered in 10.4.2 and patches

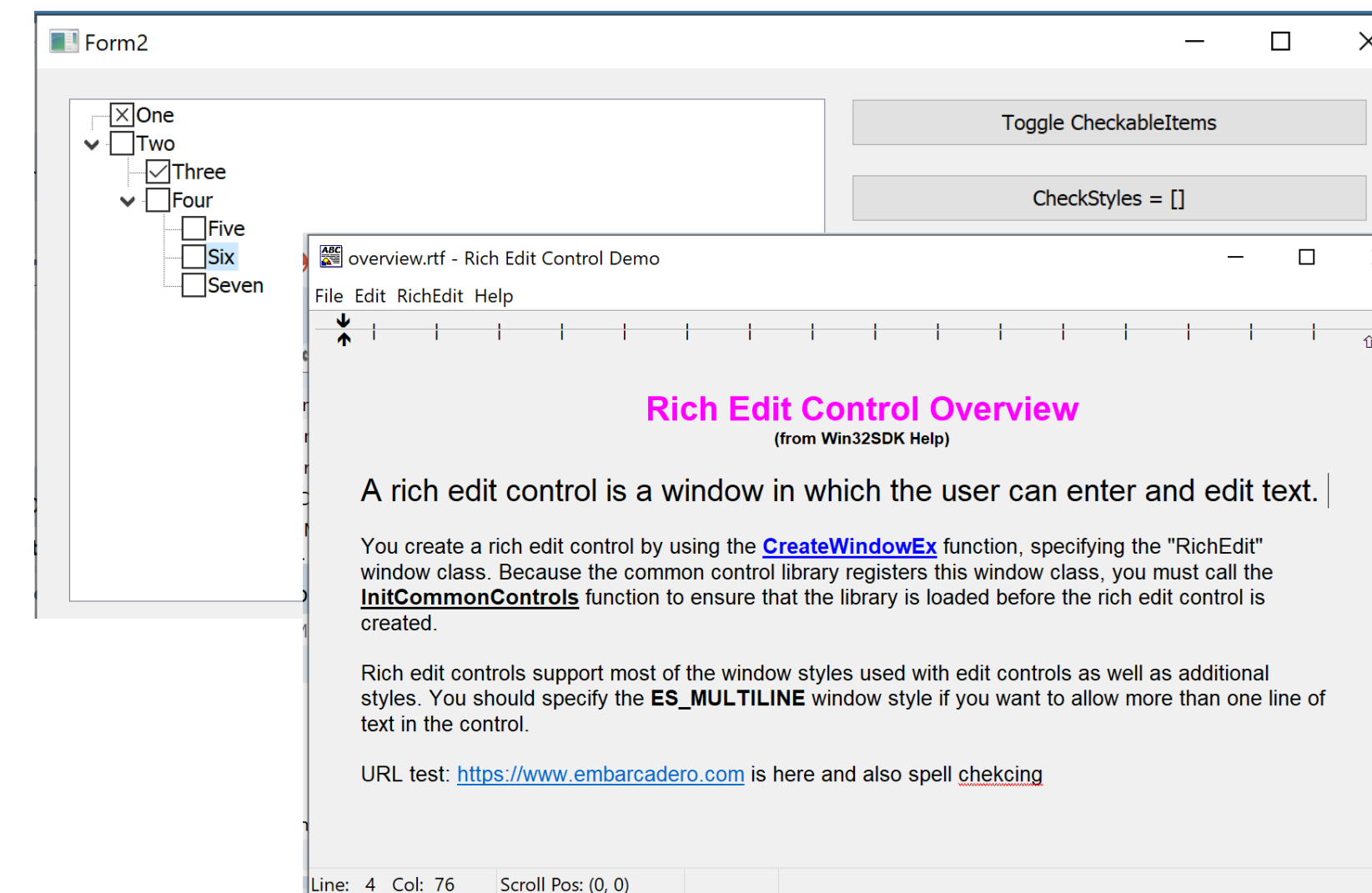
```
1 procedure TForm5.Button1Click(Sender: TObject)
2   var
3     x: Integer;
4   begin
5     x := 1_000_000;
6     ShowMessage (x.ToString);
7
8     x := %1010101;
9     ShowMessage (x.ToString);
10  end;
```

III. RAD 11 Libraries Quality & Improvements



VCL Modernization work

- “New” RichEdit implementation (RichEdit 4.1 via MSFTEDIT.dll)
 - Including URL detection, transparency, spell checking
- Large collection of small improvements focused on removing XP legacies and improve core features
 - TreeView checkboxes
 - Smaller: nsDropHilited, Coolbar Chevron, mouse wheel, button category gutter, TWICImage multi frame, default form size, SetSelText Undo, default form font, exception dialog copy button... too many to list here
- VCL Quality
 - Remote desktop improvements for VCL and IDE
 - New TDBLabeledEdit component

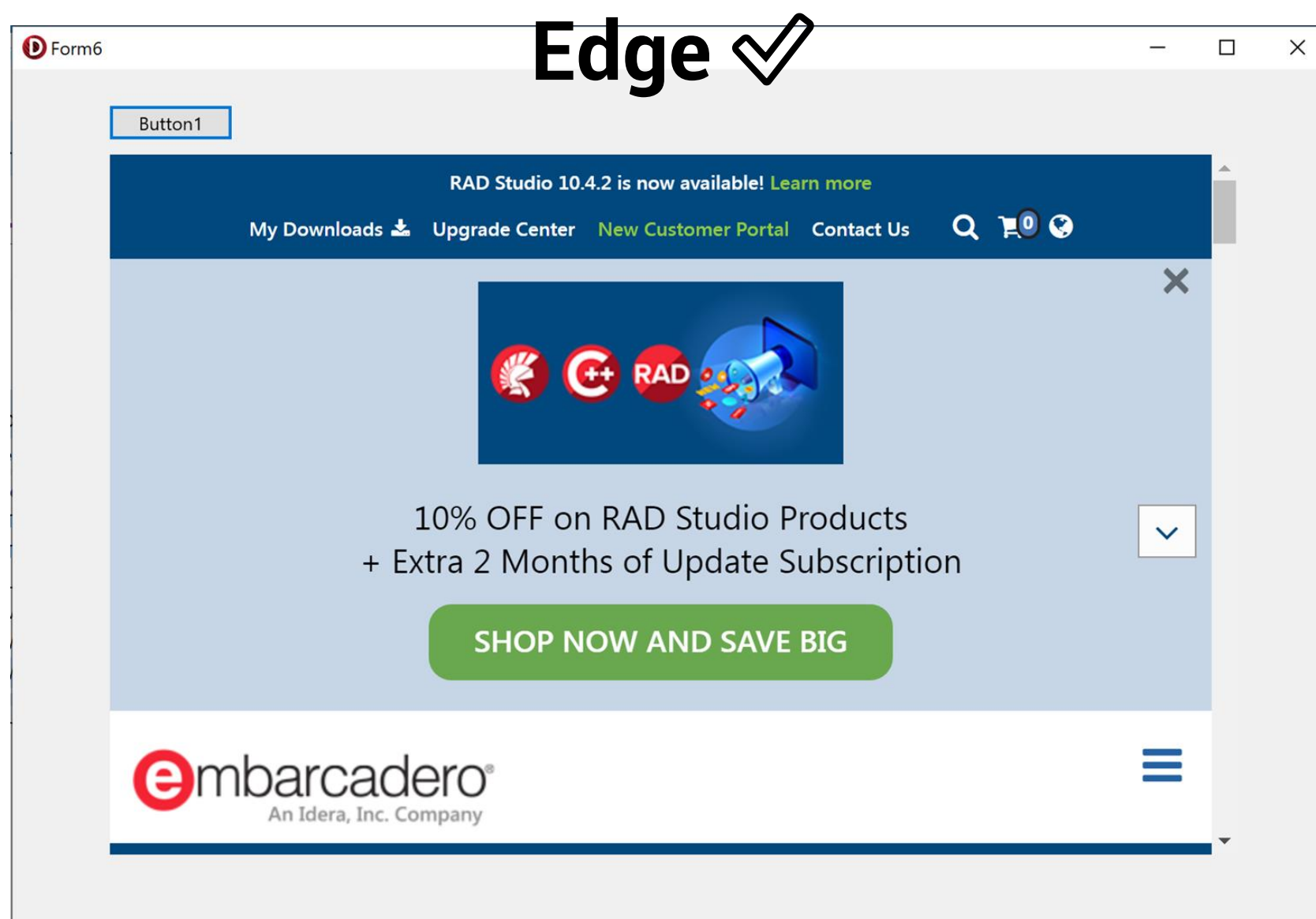


FireMonkey

- Better FMX Windows and desktop integration
 - Platform services for macOS and Windows refactored into separate units
 - IFMXSaveStateService, IFMXDeviceService, IFMXVirtualKeyboardService, IFMXTimerService, IFMXLoggingService, IFMXMenuService, FMX.Platform.Metrics.*
 - Firemonkey Accessibility Pack Integration
- FireMonkey Windows High-DPI improvements
 - From pixels to device independent units (PX to DP)
 - Extended IFMXMultiDisplayService
 - Delivers much higher UI quality on Windows High DPI monitors
- Target Android API 30
 - Related requirements for AndroidX, in-app purchases, matching Play Store requirements
 - Multiple classes.dex files, simplifying integration of external Android dependencies

FMX TWebBrowser with Edge

- WebView 2 (Chromium Edge) implementation of TWebBrowser on Windows
 - Compare website rendering:



(Delphi) RTL & Data Improvements

- TZipFile (including Zip64, files deletion, quality improvements and optimizations)
- Large data structures (and 64-bit) improvements
 - Lists, large stream operations, dictionary improvements for hashing and capacity
- Record helpers for TDateTime and TCurrency, UTCNow function
- New core classes: TNoRefCountObject and TPointerStream
- Bluetooth LE quality (for most platforms)
- Performance optimizations and RTTI improvements (open array support)
- PPL Thread pool statistics
- FireDAC: offers specific improvements for the PostgreSQL, Oracle, and Firebird databases

HTTP, REST, Cloud, Multitier

- Web Technologies
 - HTTP Client Library: Windows support for HTTP / 2
 - New property THttpClient.ProtocolVersion
 - CustomContentType in RestRequest
 - TCertificate.PublicKey
 - DataSnap: Configurable REST URI to methods mapping
 - Base64url encoding
- RAD Server
 - Multipart/form-data support
 - New TRESTRequestDataSetAdapter component for uploading datasets to RAD Server
 - RAD Server Lite: Embeds IBToGo, easy to deploy, unlimited deployment, limited throughput



Quality Overall

Customer reported QP issues *fixed* *

New Features: 115

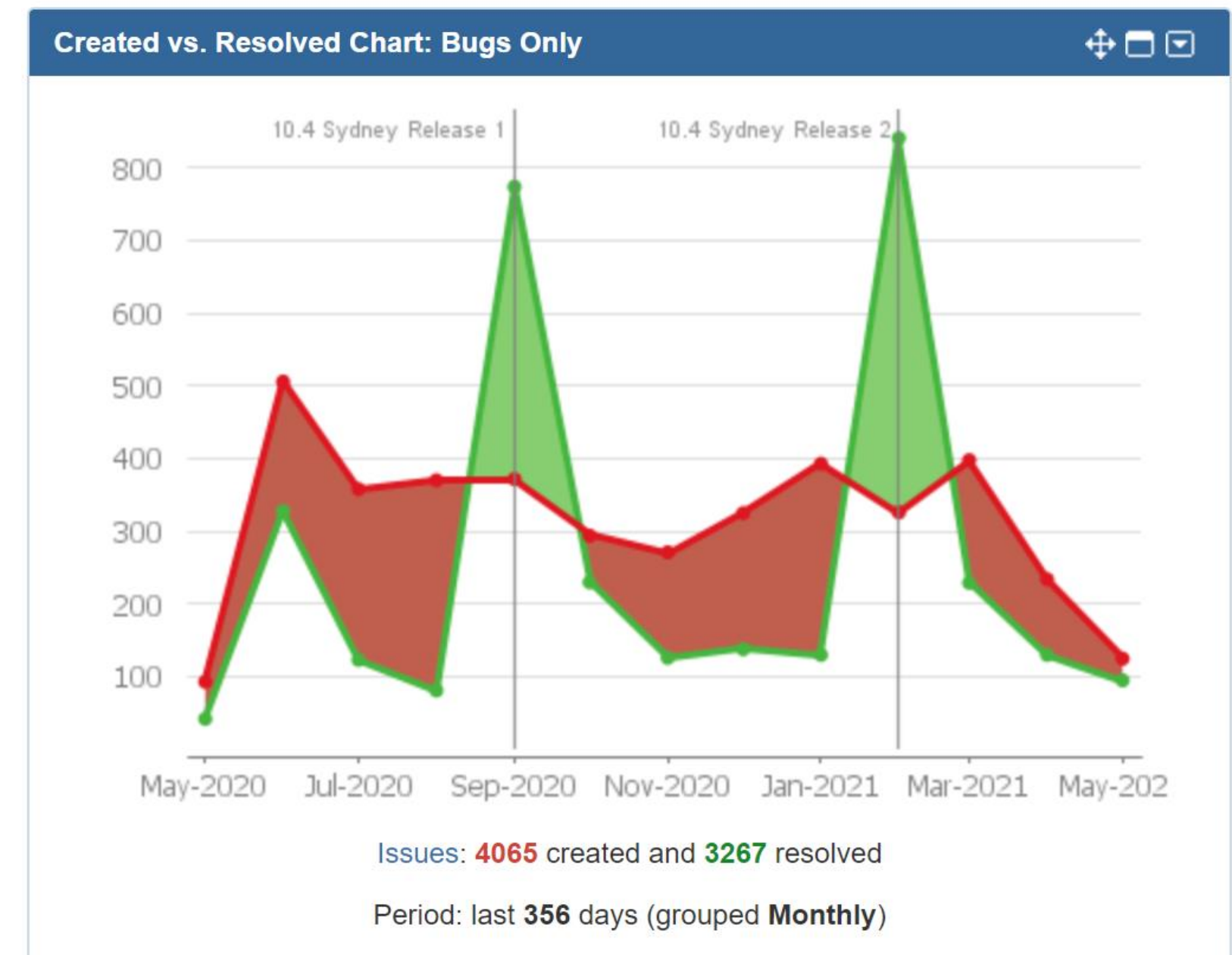
Bugs: 670

Total QP issues addressed (*any resolution*) *

New Features: 150

Bugs: 920

* *Estimate, pending final testing on a few issues*



RAD 11 Summary

I. 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

II. Delphi and C++ compilers and toolchains

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

III. 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 Supported Platforms
 - Support for WSL 2 (Windows Subsystem for Linux)

Q&A

