What is it?

RAD Studio® is a software development IDE for building native applications for Windows, macOS, iOS, Android, and Linux from one Delphi codebase, and Windows apps with C++. Featuring visual designers and embedded AI, RAD Studio uses integrated toolchains, comprehensive data access and a component-based architecture to accelerate development workflow

25/50/100 Word Descriptions

Key Messages

#1 - Modern Tool Chain & 64-bit IDE
*RAD Studio now features its first **full-featured** 64-bit IDE for Windows (targeting 64-bit Windows apps), giving developers the power to handle larger projects with ease. This means more memory and smoother workflows—especially for large codebases RAD 13 also includes updates to mobile tooling, C++ LLVM and CLANG and enhances Debugging support..*

#2 - New Language Features (requested by the community)
New Ternary Operator and other language features respond to the most asked-for language updates, resulting in the biggest update to the language in many releases. - still highly backwards compatible, protecting code investment while making onboarding new staff easier than ever.

#3 - Add AI Power to your Applications - SmartCore AI Component Pack -
Your Gateway to AI inside Your Apps: A new set of core AI components designed to help developers add AI features to their apps or build brand new AI-focused apps with Delphi or C++Builder.

#4 - RAD Studio Web development has never been this powerful!
RAD Studio enhances the WebStencils library, adding enhanced and secure access to objects and variables, improved dataset navigation, and support for WebBroker's new Session Management. This powerful and highly popular feature lets you build modern, front-end-agnostic websites driven by data processed in your RAD Studio server-side applications, and is ideal for Web teams working alongside RAD developers!

#5 - Nothing better for Windows Development!
Market Leading Window Support - VCL Components, the RTL and a new set of units provide complete coverage of the Windows API and support for features even the latest Windows API falls short on. 13.0 wraps up even more of the Windows API for comprehensive coverage, and continues to offer the best long-term value for your code investment. Menus and Toolbars are awesome with 13

#6 - Smooth, Market-Leading Animations in FMX.
RAD Studio 13 introduces a new animation rendering system that adapts automatically to the screen refresh rate on the device it's running on, making for market-leading smooth animations

New! In RAD Studio 13

IDE
- **64bit IDE -** Compared to the 64-bit IDE "Initial Release" in 12.3, 13.0 offers Delphi and C++ support for building and debugging 64-bit Windows 64bit applications, now including: code tooling for C++ via Visual Assist; support for COM, ActiveX and Type libraries; Live Templates (Ctrl+J) and the Surround menu, and quality improvements
  - ○ Target - Customers with large projects/code base
- **Search and Find - Improvements**
  - ○ **Structure View -** an incremental search that supports both designed and source code views, offering syntax highlighting in the source

code search results. (Ctrl + F)
  - ○ **Project Manager - Find -** supports high-speed querying and is optimized for very large projects (containing 20,000+ files) (Ctrl + F)
  - ○ **Message Pane and Events Log**. It also features a dedicated incremental search function to help navigate potentially large data structures.
- **PackageVersions in GetIt -** Install specific versions of released components.
- **Message Log: Highlights, Grouping Hints, and Warning -** Provides greater clarity when navigating a large number of messages, and it **accelerates the build process by approximately 10%.**
- **Upgrade Advisor Wizard -** Help with faster compilation and code completion.

Artificial Intelligence (AI)I
- **SmartCore AI Component Pack**:
  Integrate AI into your applications, addressing popular AI use cases, and adding support for in-product content creation, such as
  - ○ Generating images and other media
  - ○ Adding in-product localization support for on-the-fly translation,
  - ○ Building an in-app chatbot to add interactivity to an existing application.

Delphi Language
- **New Ternary Operator**: Highly requested language feature Implemented using the "if" keyword, the ternary operator added to Delphi resembles the same feature in many programming languages and offers a shorter way to express a condition directly in an expression.
  ```
  X := if Value < 100 then 22 else 42;
  ```
- **NEW: "noreturn" operator -** The "noreturn" directive is an attribute you can associate with procedures, indicating that the call is going to raise an exception and not complete regular execution. This will allow the compiler to skip a warning about undefined results and also enable optimization and code elimination.
- **NEW: "NameOf" function -** Matching the way the similarly named C# function works. You can pass to it any identifier and it returns the matching string representation:
  e.g. `Memo1.Lines.Add (NameOf(TButton));`
- **NEW: "is not" and "not in" operators -** The compiler allows "is not" and "not in" operators, which offer a shorter and more readable version of existing combined operators e.g.
  ```
  if Obj is not TFoo then ... // new syntax
  ```
- **NEW:** In a method of a generic class, it is now possible to cast the result of a generic method returning the generic type itself
- **NEW: Compiler directives:**
  - ○ Extended the $IFOPT directive to support long directives
  - ○ {$PUSHOPT} and {$POPOPT} (similar to C++ "#pragma option push" and "#pragma option pop")

VCL
- **UIAutomation support -** To improve the accessibility and integration of VCL applications with UI testing tools, version 13.0 adds support for UIAutomation to the VCL library. *This is currently a work in progress.*
- **TitleBar Improvements** The TitleBarPanel in 13 supports custom VCL styles. In other words, the release adds support for drawing styled controls in the title bar area, *a feature requested since the TitleBar was introduced*
- ***TMenu** updates to include scrolling - **Fixing Windows API issues***
- ***WinUI3 Demo** - Updated and integrated with the product*
- ***EdgeBrowser** - Microsoft WebView 2 control (aka Chromium-based Edge) updated to version 1.0.3296.44 of the WebView2 SDK*
- **Improvements to**
  - ○ *TControlList (new SplitButton and OnGetItemHint event and ShowItemHint property)*

  - ○ *FormsTabsBar (Transparency Support, OnGetTabCaption event, TabFromPoint and TabIndexFromPoint methods made public and new MouseMiddleButtonClose property)*

Key FireMonkey Platform Enhancements
- **New: Display Link Service -** Animations in applications look smoother and cleaner thanks to a major upgrade of the FMX components. This results in noticeably improved stability and smoothness of animations, making animations more fluid.
  - ○ This is a significant change and enhancement, bringing FMX animation on par with, and in some cases, **faster than other mobile solutions**.
  - ○ This improvement is visible across **all target platforms** and GPU drivers that FireMonkey can use.
- **Skia Update -** now on 7.0.0
- **FMXLinux -** New version
- **MaskEdit -** New MaskEdit control for FireMonkey, working similarly to the VCL counterpart. It includes a specific designer for input masks
- **Improvements to other FMX controls -** e.g. TComboEdit AutoComplete
- **iOS full-screen support added**

FireDAC & Data Enhancements
- **New field type: TFieldType.ftLargeUint -** It is supported by FireDAC through Oracle and MySQL drivers, as well as the TFDMemTable
- **Oracle - OAuth 2.0 support -** added to FireDAC TFDConnection.
- **Firebird 5.0 -** Support for parallel operation in TFDFBBackup.
- **TFDMemTable Improved:** Now allows loading standard JSON and also RecsSkip and RecsMax for filtering (to support WebStencils)

Web Development
- **WebBroker Session Management and Authentication -** Highly featured session management component that works well with WebStencils. Enables control of content and endpoints for specific users. Includes role-based authentication.
- **FastGCI and NGINX support -** offers a more robust and scalable architecture
- **WebStencils -** Huge number of new features for WebStencils, including Extra Variables, Switch Statement, Automated Session Integration, Security White list for components/objects accessed via RTTI and access to DataSet properties

RAD Server:
- **Multi-Tenancy Improvements -** tenant-specific configuration (like database connections), can now be set up before any business logic runs. This allows database separation between tenants.
- **NEW IEMSResourceInterceptor -** BeforeRequest and AfterRequest methods enable a host of different authentication and logging options.

Key C++ Enhancements
- **LLVM Toolchain Upgrade (v20):** The toolchain has been upgraded from LLVM v15 to LLVM v20. This update supports recent C++ standards and compiler optimizations.
- **C++ 23 Support Introduced in C++Builder Windows Modern Toolchain -** The new Clang 20-based compiler introduces C++ 23 support - the Latest in the C++ language standard.
  - ○ Bcc64x now defaults to C++23, but developers may choose to target C++20 or C++17 as needed.
- **Versioned RTL/STL Shared Libraries**: Shared runtime libraries (e.g., libc++.dll) are now suffixed with the BDS version number (e.g., libc++-370.dll). This prevents runtime conflicts when multiple versions of RAD Studio are installed.
- **Improved**
  - ○ **Address Sanitizer (ASAN)** runtime (Win11 Support),
  - ○ Compatibility with legacy versions of the C++Builder compiler.

Target Platforms

Android API 35 (for app store deployment) along with the latest mac, iOS, Windows and Linux distros Full list of Target Platforms

Discovery Questions

o **Have you had challenges building and debugging larger applications?** Both Delphi and C++Builder benefit from new 64bit versions of the compiler, supporting larger project compilation, in addition, many processes that were taking up memory in the IDE are now shifted to supporting agents, making the IDE more stable, and capable of supporting even larger projects than ever before!

o **[IDE - Upgraders] Are you interested in a 64bit IDE?** - RAD 13.0 updates the 64bit IDE to a fully featured status for creating Windows 64bit applications. The 64bit IDE benefits from larger memory support for exceptionally large projects.

o **[IDE] Are you Interested in using AI to speed up development?** - The RAD Studio approach leaves you open to make your own choices. The new tools API avoids vendor lock in, and not knowing where your code is going. You can control which AI engine you engage with and even ensure it runs only on your local network! This approach has already proven to be the right one in the market with Deepseek.

o **[Web] Are you developing Web sites and Applications?** - WebStencils enables developers to create modern, data-driven websites with flexible server-side HTML integration and works well with HTMX to build modern web applications rapidly. White Paper - **RAD 13 introduces the largest upgrade to WebBroker since Delphi 6!**

o **[Windows] Are you developing applications for Windows?** - RAD Studio 13 includes units covering the ENTIRE Windows API, making it faster & easier to develop any program on Windows.

o **[C++] Are you a C++ developer?** -The productivity gains with the Visual Assist integration are a HUGE productivity gain. Faster code navigation (e.g. between the implementation and header), auto method completion, rename refactoring. There is even new logic to help autocomplete and add to your includes section classes that you haven't even implemented in your code yet! Gone are the days of having to search for an include, the IDE will help tell you!

o **[C++] Do you want to work with any C++ library in your code?** The C++ toolchain has excellent compatibility and lets you do exactly that

o **[Mobile] Do you / are you looking to develop for mobile?** The latest updates to FMX make for the fastest mobile animations ever in RAD Studio. Apps compiled with 13 adapts to the device screen at runtime to provide smooth animations out-the-box. Just recompile your code to start benefiting from these updates, it's that simple!

o **[Data] Are you a database developer?** The latest updates to FireDAC help you write safer code, with new properties to help protect your SQL queries from unintended SQL injection and multi-statement use. - Not using FireDAC? You can use reFind to help convert Delphi code to use FireDAC instead of BDE / DBExpress etc automatically.

o **[RAD Server] Are you using RAD Server or looking to build Multi-tier applications?** The latest updates in RAD Server enable multi-tenancy to work easily with database isolation for each customer. Simply set the database as the session starts based on the user connecting and all the business logic will then run on the right database.

o **Have you added HighDPI support to your applications?** This is critical for Windows' latest multi-monitor and multi-resolution support. Without it, old apps are becoming unusable on Windows 10/11. White Paper

o **Do you need help to migrate to the latest version of Delphi?** Our professional services team can help you migrate your code to take advantage of modern VCL styles and FireDAC database connectivity, ready to use REST client connectivity, parallel processing and touch/gesture enabled VCL controls.

o **Do you have existing server applications that you want to take advantage of cheaper Linux servers/hosting?.** Target both Windows/Linux servers with existing code, just re-compile!

o **Do you develop for a mixed user base that needs apps to run across multiple operating systems and devices?** Native single-source brings solutions to life faster, with lower total cost of ownership.

o What challenges are you facing supporting all those platforms?

o Would you like to get your apps to more devices and more platforms with less effort? Inc. Android, iOS, Windows, Mac, Linux

o **Do you have short project timelines?** RAD Studio enables your team to get more done in less time – create apps for more devices and more platforms with one team and one development environment. No need for multiple projects, schedules, teams, tools, languages and libraries to target and learn for each device platform?

Competition

Platform Vendor Tools

o Development tools from the operating system or platform vendors - Products in this category: Microsoft Visual Studio, Apple Xcode, Eclipse, Flutter (Visual Studio Code Plugin)

o Why are we better? RAD Studio enables multi-device app development from a single source code base and reaches more customers with multi-store support.

o Long term value from your code! - Track record of backward compatibility ensuring your investment works for decades!

Scripting Language Based Solutions

o Development tools where development is done in HTML5 and JavaScript and then run in a runtime interpreter on the device

o Products in this category: Appcelerator, Sencha, Kendo, Edge, PhoneGap, Corona

o Why are we better? Native apps built with RAD Studio are script-free (meaning they are more secure), deliver faster performance and support desktop development

Virtual Machine (VM) Based Solutions

o Development is done in a language like Java and C# & then the bytecode or IL is run on a virtual machine runtime on the device

o Products in this category: Xamarin (now part of Visual Studio), Mono

o **[Better]** Apps built with RAD Studio run directly on hardware CPU providing performance and predictability without extra layers. - It also means apps are more secure by avoiding the need for popular middle layers where hackers can target.

RAD Studio 13 vs. Key features of previous versions of RAD Studio

o **10.2** focused on opening up the door to millions of Windows users via Windows Store package creation,

o **10.3** enabled Delphi code to cross compile to Linux Server & Desktop and added Windows Store components to make in-app monetization easy! **10.3.2/10.3.3** added new compilers for 64bit macOS and Android

o **10.4** added new C++ 64-bit compilers, Delphi language enhancements, and unifies the memory model across all platforms making development simpler; RTTI improvements make apps faster; new LSP support for

Delphi (to join C++) makes coding faster and more (enjoyable) productive.

o **11.0** Enables Delphi Code to run natively on the latest Apple Silicon, enhances VCL modernisation and design, improves FireMonkey Desktop HiDPI support, Improves IDE usability, with modern HighDPI designers, and improved security

o **12.0 / 12.1** - Modern C++ Tool Chain, Visual Assist for C++, Split Editor View in the IDE

o **12.2** - WebStencils. AI-Powered Smart Code Insight,

o **12.3** - Initial 64bit IDE & LSP

How RAD Studio 13 is better than ever

● Best RAD Web Development Framework
● AI Support for Developers in the IDE and Components for Development!
● More Modern Language features for C++ and Delphi
● Modernisation & VCL Reinforce the commitment to backwards compatibility.

Product Editions

RAD Studio 13 - Professional
● Includes Delphi & C++Builder
● Create desktop apps for Windows and macOS (Delphi)
● Create mobile apps with Delphi for Android and iOS
● Create WebApps with WebStencils
● 64bit IDE supporting extra-large code bases and Win64 compilation

RAD Studio 13 - Enterprise - *Professional edition plus:*
● Linux Compiler (Delphi)
● FireDAC Client/Server, remote database connectivity
● Application Server development with DataSnap and RAD Server. (Including 1x RAD Server license)
● RAD Server Lite for easy-to-deploy simple, low-traffic RAD Server apps
● InterBase 2020 ToGo Mobile license included

RAD Studio 13 - Architect - *Enterprise edition plus:*
● Database modeling & design with Aqua Data Studio (subscription required)
● *Web Development with Sencha Ext JS Pro*
● *RAD Server Multi-server license included*

Cross-sell, Add-ons, or Related Products

InterBase Deployment Licenses
● **Included**: The InterBase 2020 Developer and ToGo edition for development purposes. Get deployment licenses to deploy as an embedded database or a high-performance, low-maintenance database server, or upgrade to InterBase 15
● **InterBase ToGo Pro** License for all platforms as an annual subscription is available.

RAD Server
● RAD Server is a turn-key application foundation for rapidly building and deploying services-based applications and, with WebStencils, websites. RAD Server provides automated Delphi and C++ REST/JSON API publishing & management, Enterprise database integration middleware, IoT Edgeware & an array of application services such as User Directory and Authentication services, Push Notifications, and JSON data storage. Enables developers to quickly build new application back-ends or migrate existing Delphi or C++ client/server business logic to a modern services-based architecture that is open, stateless, secure and scalable. RAD Server is easy to develop, deploy and operate, ideally suited for ISVs and OEMs building re-deployable single or multi-tenant solutions.