AdaCore DIGEST

NOVEMBER 2023

24.0 Release

We're happy to announce the release of branch 24 of our technology! As every year, this is an early release, marked 24.0, made available for feedback and early integration. The first stable version will be released Q1 2024 and marked 24.1, followed by a bugfix release in the summer marked 24.2. If you select this branch for productization builds, it is possible to subscribe to the assurance product on that specific branch and receive critical bug fixes passed this date.

Highlights of this release include our yearly GCC upgrade which is now on version 12, C++ bare metal support, in-depth redesign of CodePeer user experience (which is now known as GNAT Static Analysis Suite), and much more. Full release notes are available here.

Yearly Survey

Our yearly customer satisfaction survey is out! If you are currently an active GNAT Pro customer, we are interested in hearing about your experience, and knowing more about your needs present and future. Access the survey here.

GNAT Pro for Rust Product Launch

On July 10, we launched GNAT Pro for Rust. GNAT Pro for Rust brings the stability, security, dependability and support that customers have come to expect from AdaCore to the development of safety- and security-certifiable embedded applications written in Rust. GNAT Pro for Rust is an industrial-grade toolchain, delivered with guaranteed integrity of the software supply chain through yearly updates to the Rust programming language and its associated tools, aligning with the update cadence of the other programming languages supported by GNAT Pro.

Rust support is also offered through GNAT Pro Assurance, which provides long-term support via sustained branches for the complete toolchain for as long as customers require.

Finally, GNAT Pro for Rust will offer extensive support for a wide range of embedded platforms, catering to the specific needs of security- and safety-critical applications. If you'd like to find out more about GNAT Pro for Rust or to discuss your specific requirements with a technical expert, use the contact form on our website.

New SPARK Webinar Series

A new SPARK Webinar series is launching this month. Join Yannick Moy to discover how to use SPARK Pro to its fullest and achieve unbeatable security, correctness and proven memory safety for your projects.

The first of three online sessions, <u>SPARK Pro for Embedded and Systems Programming</u>**,** will take place on 28 November, 15:00 GMT / 16:00 CET / 10:00 EST / 07:00 PST. During this webinar, Yannick Moy will outline key features of SPARK Pro, including demos on pointer ownership, function contracts and safe type casting. Further sessions on SPARK Pro for Proven Memory Safety and SPARK Pro for Proven Program Correctness will follow in early 2024.

<u>Learn more about the SPARK Pro for Embedded and Systems Programming webinar</u>

WASM, NVIDIA GPU, FreeRTOS: new options for embedded Ada software

New interesting ports are being made available to increase the available range of embedded execution platforms.

GNAT Pro for CUDA generates code that runs directly on GPUs (Graphics Processing Units) relying on the NVIDIA CUDA (Compute Unified Device Architecture) software framework. You can improve the performance of your Ada application by partitioning it into the part that is executed on the host processor and the many parallel threads that run on the GPU.

GNAT Pro for Web Assembly compiles code into Web Assembly, an assembly-like language which can be run in various environments ranging from a browser to a bare metal target. The same application can be reused in completely different contexts without a complete rewrite.

GNAT Pro for FreeRTOS helps developers produce small footprint embedded systems with Ada on FreeRTOS, a real-time operating system for microcontrollers and small microprocessors. This will give convenient access to operating-system drivers from Ada.

And for bare metal platforms that currently support Ada (based on ARM, x86, PowerPC, RISC-V, LEON), there is now **GNAT Pro for C++** that comes with a run-time library supporting a freestanding version of C++ 20. This profile is a subset of the standard library headers intended for bare metal targets.

Adamant: An Open-Source Space Software Framework written in Ada

The Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder faced a significant challenge in creating onboard software for NASA's CLARREO Pathfinder Reflected Solar mission, which demanded high accuracy, multitasking, and real-time capabilities within tight processing constraints. LASP responded by developing an Ada/SPARK component-based and model-driven framework called "Adamant" emphasizing high performance, reliability, and reusability.

LASP's choice of Ada and SPARK for the Adamant framework exemplifies the critical role of programming language selection in mission success, ensuring reliability and safety in spaceflight software. Adamant is to be open-sourced on GitHub fostering collaboration, community contributions, and best practices exchange in the field of flight software development.

Read more about Adamant in the October 2023 Space Technology Special Report.

Events

On September 17-18, AdaCore exhibited at the FACE™ and SOSA™ Army Technical Interchange Meeting hosted by the U.S. Army. Technology Interchange Meetings (TIMs) allow DoD, industry, and academia to collaborate on research and engineering technology challenges. This year's event was held in conjunction with the MOSA Industry and Government Expo and Summit.

AdaCore was also a sponsor of the GNU Tools Cauldron, September 22-24 in Cambridge, UK. The purpose of this workshop is to gather all GNU tools developers, discuss current/future work, coordinate efforts, exchange reports on ongoing efforts, discuss development plans for the next 12 months, developer tutorials and any other related discussions.

On October 17, the High Integrity Software conference (HISC) took place in Bristol, UK. AdaCore is a co-organizer, major sponsor and exhibitor at the conference which celebrated its 10th anniversary this year. The mission of the HISC is to share challenges, best practice and experience between software engineering practitioners. The conference featured talks from industrial and academic specialists which disseminate experience and knowledge of important techniques and methods that are applicable across industry sectors.

Check out our Events page for updates on where we'll be next.

If you have questions about any of the technologies or services mentioned above, please reach out to your Account Manager or email us at info@adacore.com