GNAT Pro insider

an AdaCore Publication
Autumn 2007
www.adacore.com

newsflash

▶ **Edmond Schonberg: WG9 ARG Convenor**
AdaCore Vice President Edmond Schonberg has been named the new convenor of ISO WG9's Ada Rapporteur Group (ARG), which conducts the technical work on the maintenance of the Ada language standard. Ed's in-depth knowledge of Ada semantics and implementation, combined with his consensus-building skills, make him ideally qualified to lead this group.

▶ **Joel Brobecker: GDB Global Maintainer**
Joel Brobecker, a senior software engineer in AdaCore's Vancouver (Canada) office, is now one of the eleven GDB Global Maintainers worldwide. This group, who are in charge of most day-to-day GDB debugger development, invited Joel to join them in recognition of his expertise in debugger technology and his many contributions to GDB. Joel already serves in the position of GDB Release Manager.

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GNAT Pro High-Integrity Family Expanding to Servers

Extending its product family for the safety and security market segments, AdaCore is introducing the GNAT Pro High-Integrity Edition for Servers. Like the existing High-Integrity Edition for DO-178B, this new product will offer the greater testing capabilities and specialized run-time libraries to satisfy strict safety and security standards, but oriented towards systems that run on native rather than embedded configurations.

Safety-critical systems span a broad range, and the GNAT Pro High-Integrity Edition for Servers is especially intended for native applications that must meet the most demanding safety requirements. A particular focus is Air Traffic Management and Control (ATM/ATC), with the new GNAT Pro edition designed for such stringent standards as DO-278 (US), ESARR 4/6 (continental Europe) and CAP670/SW01 (UK).

"The GNAT Pro High-Integrity Edition for Servers is especially intended for native applications that must meet the most demanding safety requirements."

In addition to the basic compile tools, the GNAT Pro High-Integrity Edition for Servers will provide:

- A **configurable library approach** that allows developers to tailor the run-time based on the language features required by their application. It can be configured along a spectrum that ranges from a zero-foot-print (ZFP) profile, to a Cert library oriented around safety certifiability, to full Ada, depending on the assurance level required for the system.
- **Life-cycle artifacts for run-time libraries** that were certified for the GNAT Pro High-Integrity Edition for DO-178B product, as examples of certification material.
- The recently released **GNATstack static analysis tool**, which computes and outputs data on the absolute maximum memory utilization for programs conforming to the ZFP or Cert subset libraries.

With the introduction of GNAT Pro High-Integrity Edition for Servers, AdaCore will lead the industry by offering both native and embedded safety-critical software development solutions.

For information about specific platform availability, please contact **sales@adacore.com**.

US Navy Policy Recognizes Open-Source Software

In a memorandum distributed earlier this year, the US Navy has cited Open-Source Software as a key piece in helping achieve the goal of net-centric interoperability and seamless access to critical information. The memorandum states:
"The misconception that OSS (Open-Source Software) is neither commercial off-the-shelf (COTS) nor government off-the-shelf (GOTS) has hindered the DON's (Department of the Navy's) ability to leverage the benefits of OSS methodology."
The full text of the memorandum may be found at **oss-institute.org/Navy/DONCIO_OSS_User_Guidance.pdf**.

< current releases >

GNATstack Full Launch

GNATstack, a static analysis tool that accurately predicts the maximum memory stack requirements for an embedded software application, is now provided as a standard component in the GNAT Pro High-Integrity Family products. For more information, or if you are interested in using this tool in other contexts, please contact **sales@adacore.com**.

GNAT Pro on Windows Vista

GNAT Pro 6.0.2 is now available for Microsoft's Windows Vista operating system. It is also supported on Windows 2000, Windows 2003, and Windows XP.

GNAT Pro on .NET

GNAT Pro is now available on Microsoft .NET, and is the first commercial Ada tool to support the .NET Framework and API, not simply through "unmanaged" (Windows) code, but also through managed .NET code. The product includes an Ada compiler (supporting Ada 2005), a comprehensive toolset, and supplemental libraries and bindings.

GNAT Pro on RTX

GNAT Pro is now available for RTX (Real-Time Extension to Windows), enabling software developers to implement Ada applications that meet hard real-time requirements on the Windows platform.

GNATbench 2.0.1

This new version of AdaCore's plug-in for Wind River Systems Workbench and for Eclipse includes several enhancements based on customer requests, including automated support for Code Assist.

GPRbuild Tool

AdaCore has launched the beta test program for GPRbuild, an advanced software tool that automates the building of multi-language systems. With GPRbuild developers can quickly and easily compile and link programs written in a combination of languages including Ada, assembler, C, C++, and Fortran.

PolyORB-based Implementation of Distributed Systems Annex

PolyORB 2.2 is now available, the first major release to support the Ada Distributed Systems Annex as an applicative personality. Ada applications can now use standard CORBA protocols for full interoperability with any CORBA component, while retaining their conciseness and smooth integration with the Ada Distributed Systems Annex facilities.

< academia corner >

Spotlighting a GAP Member: University of Stuttgart (Germany)

At the University of Stuttgart, Ada is the first programming language taught to incoming students of Computer Science, Software Engineering, Mathematics, Automation Technology, and several other disciplines as part of their year-long introduction to practical Computer Science and to programming.

Additionally, Ada is the language of choice for several advanced courses in Software Engineering, compiler construction, and real-time programming. Naturally, it also plays a role in courses that involve comparative studies of language semantics or implementation. In one research group, Ada is the main language for both student and advanced research projects centered on the maintenance and enhancement of a system with about one million lines of Ada code.

Prof. Erhard Ploedereder explains: "Ada was chosen as the primary language because it supports different development paradigms within a single language, it integrates a competent concurrency model, and it has good and freely available infrastructure. Students find that they can easily migrate into other languages if necessary, such as C++ or Java, having been educated with the well-designed constructs of Ada in their introductory courses."

< in the pipeline >

GPS 4.2.0

GPS 4.2.0, the next major release of the GNAT Programming Studio IDE, introduces a number of new features including:

- Support for gcov (code coverage)
- Improved documentation generation
- Improved code completion (in particular, support for Object.Method syntax)
- New plug-ins such as
  - listing unused entities
  - showing dependency path between files
  - support for addr2line
- Ability to manage files/directories from GPS
- Improved handling of dispatching calls and primitives
  - highlighting dispatching calls
  - adding possible targets for a dispatching call in contextual menu
  - listing all methods of an entity in contextual menu

This release is scheduled for Q4 2007.

What's Coming in GNAT Pro 6.1.0

As part of AdaCore's regular annual release cycle, GNAT Pro 6.1 will be available on most platforms during Q1 2008. Customers will benefit from a number of enhancements:

- Additional GNAT Pro platforms incorporating the gcc 4.1 code generator (this code generator will now be included on most platforms)
- Upgrade of the debugging engine, based on gdb 6.6
- Improvement in robustness and efficiency for Ada 2005 features
- Better real-time support on win32 platforms
- Thread-safe profiling with gprof, on several platforms
- Increased coverage analysis support for Ada in the gcov tool
- New warnings to help programmers detect errors earlier

Additionally, GNAT Pro companion tools such as gnatcheck, gnatpp and gnatmetric are being enhanced to support a wider variety of coding styles and coding standards.

Ada/Java Interfacing Tool

In early 2008 AdaCore is launching a beta test program for its new Ada/Java interfacing technology. The product will include a binding to the JNI interface, user documentation including examples of usage, and a tool that can generate Ada stubs from native specifications of a Java class. Customers interested in participating in the beta program should contact **sales@adacore.com**.

Interview with Gregory Gicca Director of Safety and Security Product Marketing

GNAT Pro Insider Tell us a bit about your background. How did you come to be involved with Ada, and what interested you in AdaCore?

▶ **Greg Gicca** At college I concentrated in Electrical and Computer Engineering, and that was where I first encountered Ada. I was struck by how it both figuratively and literally set a new standard as a language for reliable programming, and decided to pursue a professional career with Ada technology as the focus.

Over the years I have worked at a number of organizations where I could fulfill this goal, ranging from defense contractors to Ada tool vendors. I was attracted to AdaCore because of its commitment to the Ada language, the excellent reputations of its personnel, and the quality of its products. To me, Ada is the best choice for high-assurance systems in today's (and tomorrow's) safety- and security-conscious world, and I wanted to be part of the organization that, much more than any other company, is making Ada a reality in these fields. I joined AdaCore this past January.

GNAT Pro Insider Your position at AdaCore is Director of Safety and Security Product Marketing. What does this role entail?

▶ **Greg Gicca** Any marketing requires communication in two directions. First, you have to listen to your customers to understand their needs, and then use that information to plan products and services. From another angle you have to communicate the benefits of your products and services so that customers understand how they will help them solve their problems. In my role I am responsible for formulating the communication in both directions, for GNAT Pro's product family for High-Integrity applications.

AdaCore's GNAT Pro High-Integrity Edition for DO-178B, the initial offering in this family, has been successfully deployed across a range of avionics projects certified to the highest safety level of the DO-178B standard. Continued evolution of this product is based on this experience as well as feedback from customers. And as explained in the article on page 1 of this newsletter, we are also establishing a complementary product, the GNAT Pro High-Integrity Edition for Servers, designed for ground systems (such as Air Traffic Management and Control) that need to comply with other safety standards. The benefits of these products extend well beyond the realm of aviation, and so the other side of the marketing role comes into play: communicating with users from application areas such as high-speed rail, industrial automation, and medical device control to show how Ada in general and the GNAT Pro High-Integrity Family in particular can help save them effort and money in certifying their systems against the applicable safety standards.

GNAT Pro Insider AdaCore has so far been addressing the safety-critical community, but the technical issues in developing high-security systems seem similar. What are AdaCore's plans in this area?

▶ **Greg Gicca** From the beginning the GNAT Pro High-Integrity Family has been designed so that it could be extended into the security domain. One notable implementation candidate, the Multiple Independent Levels of Security (MILS) architecture recommended by the US National Security Agency (NSA), is a framework for fielding applications at different security levels on the same computer. MILS uses a separation kernel as its core component in a fashion almost identical to what is used in the ARINC-653 safety-critical kernel that GNAT Pro already supports, so AdaCore's experience from the safety arena is directly applicable even if the certification standards are different. But in the case of security, program separation is not the only concern: policy-based communication across applications/partitions must also be supported. Along these lines AdaCore has strengthened its partnerships with leading CORBA Distributed Data Service (DDS) providers. A future offering in the High-Integrity family will provide a Commercial Off-The-Shelf (COTS) Ada security solution with the required real-time operating system interface and communications middle-ware. Customers developing systems at high security levels have shown a rising interest in Ada, as a much more secure language than others such as C and C++, and we foresee a healthy market for GNAT Pro in this domain.

Webinar Schedule

Several webinars are planned for this autumn as part of the popular GNAT Pro InSight Webinar series:

- GNATbench for Workbench (October 30)
- GNAT Pro for OpenVMS on HP Integrity Servers (November 20)
- GPS (December 11)

Each webinar is conducted by an AdaCore technical expert and consists of a presentation of the product's features and benefits and a tool demo or related information, followed by a question and answer session. For further information, recordings of previous webinars, and enrollment instructions for the upcoming events, please visit **www.adacore.com/home/gnatpro/webinars**.

Photo: Gary Matoso

< partner's corner >

AdaCore Partner Praxis High Integrity Systems Makes SPARK/Ada a Language to Depend on

AdaCore maintains an active partnership with several best-in-class partners who offer valuable technologies to our joint customers. Praxis High Integrity Systems (UK), developer of the SPARK language and toolset, is both an AdaCore partner and a GNAT Pro user.

When a system has stringent safety and/or security requirements, developers are turning to AdaCore and Praxis HIS for their language technology. The SPARK language and its associated toolset have a proven track record in helping users reduce the costs for certifying against standards such as DO-178B.

SPARK is an Ada subset with specially marked comments that define a program's behavioral contract as well as its data and information dependences. SPARK includes concurrency features (the Ravenscar profile) and has advanced the state of the art in the field of high-assurance software.

Praxis' SPARK tools mesh seamlessly into AdaCore's GNAT Pro environment. To offer SPARK users a well-integrated development solution, Praxis has adapted AdaCore's GNAT Programming Studio (GPS) IDE to add a dropdown SPARK menu from which the SPARK Examiner and other tools can be invoked.

SPARK and GNAT Pro are being used by Praxis for a new Air Traffic Management and Control system, iFACTS (Interim Future Area Control Tools Support), sponsored by National Air Traffic Services (NATS) in the UK. This system has been cited as "the biggest change in air traffic control systems since the introduction of radar," and the selection of Praxis and AdaCore is further confirmation of the effectiveness of the two companies' partnership.

Conferences / Events ▪ October 2007 - April 2008

Ada Day at Saab

2 October 2007 / Jarfalla, Sweden

This one-day seminar by AdaCore focuses on the Ada programming language and the GNAT Pro toolset. If you are interested in a similar event at your company, please contact sales@adacore.com.

Wind River (EU) A+D Roadshows

9, 15, 18 October 2007 / Sweden, Israel, Turkey

AdaCore is a Gold sponsor of these events, and our exhibit includes GNAT Pro demos. www.windriver.com/announces/ aerospace-defense-forum-2007/

IET Systems Safety

22-24 October 2007 / London, UK

AdaCore is a main sponsor of this event. Robert Dewar is presenting a talk on the certification of Object-Oriented Programs. conferences.iee.org/safety/

SIGAda 2007

4-8 November 2007 / Fairfax VA, US

AdaCore is a Platinum Sponsor for this conference and is on the program with a tutorial by Ben Brosgol and a paper presentation by Robert Dewar, as well as a vendor presentation and a Birds-of-a-Feather session. www.sigada.org/conf/sigada2007/

Avionics 08

5-6 March 2008 / Amsterdam, Netherlands

AdaCore is a main sponsor of this event. www.avionics-event.com/

ESC Silicon Valley

14-18 April 2008 / San Jose CA, US

AdaCore is exhibiting at this conference. www.embedded.com/esc/sv/

newsflash

▶ AdaCore on TOPCASED

AdaCore is applying its experience in safety-critical and embedded software systems to bring an advanced Eclipse-based environment for Ada to the TOPCASED Project. The TOPCASED consortium from academia and industry was established to produce an open-source development environment for safety-critical embedded systems. Please see **www.topcased.org** for further details.

▶ New Paris Office

In early December 2007 AdaCore's European headquarters is relocating to new facilities in Paris. The new space, twice the size of the current office, reflects AdaCore's continuing growth and will allow hosting courses and seminars on Ada and GNAT Pro technology.

The new address appears in the masthead below. The phone and FAX numbers remain unchanged.

The GNAT Pro insider is published twice a year simultaneously in New York and Paris by AdaCore

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