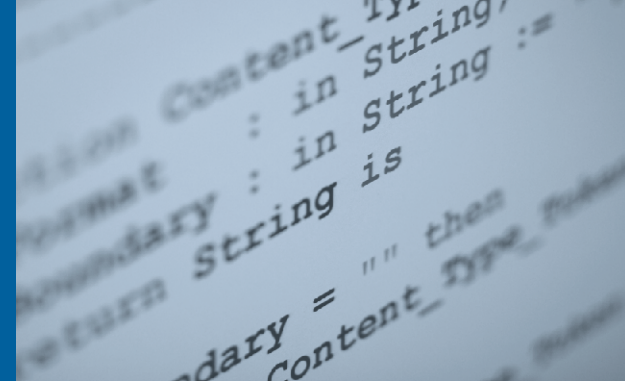


# GNAT Pro insider

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## newsflash

### ► Tenth anniversary celebrations

This past July marked the 10th anniversary of the founding of Ada Core Technologies, an occasion celebrated with a festive banquet in New York City. These ten years have been extremely successful for us, as evidenced by the company's steady growth and the GNAT Pro technology's continued spread and adoption in the marketplace.

### ► GNAT Pro and GPS releases

During Q3 2004 AdaCore released GNAT Pro 5.02a1 and GPS 2.0.2 on a wide range of platforms. These new versions of our toolset and IDE principally provide corrections and minor updates.

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## GNAT Pro High-Integrity Edition Selected for Boeing 7E7

AdaCore's GNAT Pro High-Integrity Edition for AE653 has been selected as the Ada environment for the Wind River Platform for Safety Critical ARINC 653, to be used in the Boeing 7E7 Dreamliner Program. The Wind River Platform with AdaCore's technology will be used on the 7E7's Common Core System, provided by Smiths Aerospace, which is the backbone of the airplane's computers, networks and interfacing electronics. The 7E7 Common Core System comprises approximately 80 to 100 applications running simultaneously, which will control many of the airplane's avionics and utilities functions.

AdaCore's development tools have been used extensively in recent years for safety-critical avionics applications. With the GNAT Pro High Integrity Edition now built into Wind River's Platform for Safety Critical ARINC 653, Boeing and its other 7E7 suppliers will be able

to leverage their existing software investments and readily adapt them to be used in the new Common Core System architecture.

GNAT Pro High Integrity for AE653 provides sophisticated Ada development tools for the various partition types and operating modes available on AE653, and includes a full Ada binding to the ARINC653 Application Executive (APEX) implemented by AE653. The product features a configurable Ada run-time library capability, and specific run-time library profiles for common classes of safety-critical applications that need to be certified against DO-178B, Level A. These capabilities reduce the cost of safety certification by customizing the Ada run-time support library to the application. Certification materials for the Ada run-time libraries will be available in early 2005.

## A New Look for Ada Core Technologies and ACT Europe

Ada Core Technologies, Inc., and ACT Europe are pleased to introduce a common name—AdaCore—and a new logo. We continue to operate as separate business entities, but now the common AdaCore name emphasizes the unity of the organization and also reflects our ongoing commitment to Ada. AdaCore is dedicated to providing quality software and services, and our new look serves to convey the professionalism synonymous with our GNAT Pro package.

### What does the new name mean for you?

This change does not affect the products or support we provide our customers, and you can still use the current report address to communicate with our technical team. For sales inquiries please send e-mail to [sales@adacore.com](mailto:sales@adacore.com). The corporate website is at [www.adacore.com](http://www.adacore.com), and the GNAT Tracker web server is available at [www.adacore.com/gnattracker](http://www.adacore.com/gnattracker). Of course the old [gnat.com](http://gnat.com) and [gnattracker](http://gnattracker.com) addresses will continue to work, so you can switch to the new scheme at your convenience.

If you have any questions about the name change, please do not hesitate to contact [sales@adacore.com](mailto:sales@adacore.com).

**AdaCore**  
The GNAT Pro Company

**GNAT Pro 5.03a will be available during Q1 2005.**

In addition to some significant efficiency improvements, this release will include a number of major new features:

- ▶ A new code metrics tool, gnatmetric
- ▶ Enhanced support for multi-language builds
- ▶ Improved debugger support for tasking and tagged types
- ▶ Support for several Ada 2005 features (under control of a switch)

**GPS 2.1 will be available November 2004. Major new features include:**

- ▶ More powerful and flexible customization capabilities
- ▶ Support for the AE653 environment

**GPS 2.1.1 will be available during Q1 2005 with GNAT Pro 5.03a**

# New GNAT Pro Cross-Compiler for ERC32

GNAT Pro for ERC32, a flexible cross-compilation system supporting the Ravenscar tasking profile on top of a bare ERC32 computer, is now available. It is designed for mission-critical real-time space applications, especially those that have to meet safety standards.

Sponsored by an ESA (European Space Agency) contract, AdaCore targeted the compiler to the ESA's standard processor for spacecraft on-board computer systems, the ERC32, which is a radiation-tolerant SPARC V7 processor. Available host platforms are x86 Linux and SPARC Solaris.

The static and simple tasking model defined by the Ravenscar profile allows a streamlined implementation of the Ada run-time library

directly on top of bare computers. Its reduced complexity, together with its configurability, make it an excellent choice for mission-critical space applications in which certification or small size is needed. The developer can choose from several predefined run-time libraries, each corresponding to a particular set of run-time Ada features, or, even more flexibly, configure a tailored library reflecting exactly the set of features that are used.

Also as part of the ESA contract, AdaCore has developed a comprehensive test suite that checks compliance with the Ravenscar profile and correct behavior of specialized features (such as the last-chance exception handler mechanism) and supplemental tools (such as the debugger).

## www.ada-answers.com Launches!

As the need for robust and reliable software systems increases, Ada continues to address many of today's most complex programming challenges. Our new Ada Answers web site is dedicated to keeping developers and project managers informed about Ada, and to helping publicize Ada's successes.

The Ada Answers site is designed to evolve, and we are always looking for interesting and innovative Ada applications to add, whether as a brief note, an in-depth summary, or a full-fledged video. All contributors whose story is published will receive a stylish Ada Answers T-shirt. Please contact us if you have an Ada project that you would like to publicize.



# Ada Academic Initiative >>>>>>>



The GNAT Academic Program ("GAP"), an AdaCore initiative designed to further the awareness and use of Ada in academia, is in high gear. Launched this year with meetings at AdaCore offices in Paris and New York, the GAP package includes tools and materials and allows the Ada academic community to easily share educational resources. An important part of the program is that GAP members receive online GNAT and Ada technical support from AdaCore.

An open discussion session on the GAP program was held in June at the Ada Europe conference in Mallorca, Spain. AdaCore's Cyrille Comar and Louise Arkwright presented the details of the GAP package, and educators Javier Miranda (University of Las Palmas de Gran Canaria) and Juan Antonio de la Puente (Technical University of Madrid) described some of the teaching materials they would be sharing with GAP members.

The GAP initiative has been received enthusiastically by educators around the world, and thus far 45 members have signed up. Since the start of the academic year, the GAP mailing list has become a lively discussion forum, and Ada educators are starting to contribute teaching and other materials. In early October AdaCore announced a joint initiative with Praxis Critical Systems Ltd. The GAP package is now linked to the Praxis Academic Support Programme (see the GAP web page [www.adacore.com/academic](http://www.adacore.com/academic) for details). We will be announcing academic links with other AdaCore tool partners in the near future.

- ▶ Continued discussions with the academic community will take place at the SIGAda conference in Atlanta, at a GAP Workshop on November 17.
- ▶ Finally, we are implementing an exciting new project designed to link customers and universities, with the goal of matching Ada-knowledgeable students to Ada-oriented internship positions. Once the Ada Intern Program is operational, the GAP web page will provide news and information on how to participate.



# Interview with Robert Dewar, CEO, AdaCore US

**GNAT Pro:** Your background (Ph.D. from University of Chicago) is in chemistry. How did you come to a career in the software industry?

**Robert Dewar:** As a hobby I was building telescopes at Chicago’s Adler planetarium, and a controversy arose about the criticality of the placement of the mirrors. I knew nothing about computers, but I figured that if they were good for anything then they should be able to compute that sort of thing. I borrowed a few JOB ID cards (80 column punched cards!) and a Fortran book from one of my professors, and, as he would later tell it, after three years and \$50,000 worth of computer time, he managed to get rid of me with a Ph.D.

**GNAT Pro:** You have implemented many languages over the years (COBOL, Algol 68, SPITBOL, ...). What about Ada led you to found a company around it?

**Robert Dewar:** In 1978 I was chair of WG2.1, the IFIP working group on Algorithmic Languages. I was busy with Algol 68 and related matters when I received a courtesy invitation to a WG2.4 meeting. This was the IFIP working group on Software Implementation Technology, and they were reviewing the “Red” and “Green” specifications in the design competition for the language that would later become Ada. I thought I might as well find out what was going on, so I went to the meeting. My immediate reaction was that this seemed to be a very exciting and well thought out development. I went back to NYU and obtained a small research contract, and that was the start of a 15-year, multi-million dollar research effort at the university. When that was completed, we realized that if we did not commercialize and productize the technology, no one else would. So in 1994 Ed Schonberg, Richard Kenner and I went out and spent \$50 to form Ada Core Technologies (encouraged by SGI, who very much wanted to see the technology commercialized and further developed).

**GNAT Pro:** Conventional wisdom says that it is difficult to make money selling software where the source code is freely available. Yet AdaCore recently celebrated its 10th anniversary and continues to grow and be profitable. How do you explain this apparent contradiction?

**Robert Dewar:** It doesn’t seem like a contradiction to me. For example, Boeing could go into the business of building and selling Ada compilers. They could either start from scratch, or start from the GNAT sources. But either way, they would be venturing into an area in which they are not the experts. Part of the classical model of the capitalist economy is that labor divides so that people do what they are good at. Boeing is expert in building planes not building Ada tool sets. If Boeing sent us the detailed plans for their 747, it does not mean that it would make sense for AdaCore to start manufacturing airplanes! The real capital of a company like ours is our expertise, not our source code, which after all, if not maintained by experts, rapidly becomes obsolete in any case.

**GNAT Pro:** The Ada 2005 revision (summarized in the April 2004 *GNAT Pro insider*) will bring several kinds of new features. Which ones do you think will be especially useful? When do you expect them to be available in GNAT Pro?

**Robert Dewar:** First, it is important to realize that this is a relatively small incremental improvement, nothing like the step to Ada 95, which in effect created a new language. That being said, there are a number of features that I think users will especially appreciate. One example is the new Interface construct, which was inspired by Java but has been adapted to fit into Ada very smoothly. This is not only a practical approach to multiple inheritance but also a nice abstraction facility. Another example, again in the OOP area, is the support for the traditional *object.operation* notation. Although really this is just a minor syntactic addition, it should help to enhance Ada’s stature as an OO language.

AdaCore has already implemented many of the new Ada 2005 features, which are available through a special compiler switch. We are energetically working on the rest, and we are committed to having a full implementation when the standard is released. More importantly, we are making these features available as soon as possible, so that our customers can start using them right now if they wish. And in fact, I need to get back to work, integrating the implementation of the Ada containers packages, which were written as Free Software by Matthew Heaney; we are working with Matthew to integrate them smoothly.

### More GNAT Pro Ports on the Way!

One of GNAT Pro’s technical advantages is ease of porting to new platforms; here are some of the efforts currently underway, all planned for Q1 2005 availability:

- ▶ **Mac OS X**
- ▶ **SGI Altix**
- ▶ **Cross compiler, SPARC Solaris to x86 VxWorks**

## GNAT Pro Jewel: Scripting in GPS

A comprehensive integrated development environment like GPS tries to be all things to all people. Of course this goal can never be achieved, since users have different needs, work styles, and tastes. On the other hand, a more reasonable objective is to allow users to tailor the GPS environment to meet their own requirements. Tailoring can be done at several levels. Since GPS is Free Software, users have the source code and can implement whatever features that they wish. That's nice in theory, but in practice almost no one has time to dig in at that level. Instead, a much more practical approach is to use GPS's new Python scripting features. These allow you to make major changes and additions to the environment without programming at the GPS level. By using Python's interfacing to powerful GPS APIs, you can adapt the IDE to meet your needs.

For example, you can use Python scripts to add new keyboard editing functions, to integrate new tools, to hook up different version control systems, and to add new

language support. All of these are things our customers have done recently.

Why Python? Why not Ada, for example? And why is it necessary to learn a new language? Scripting work like this could conceivably be done in Ada, but it makes sense to choose the language best suited for the task. Here we need a very high level interpreted language suitable for a very dynamic system. Python is an ideal choice, since among all the so-called "scripting" languages it offers far the cleanest design. As for learning a new language, you will find that studying the examples provided with GPS may well tell you all you need to know. As an interesting side note, Python owes part of its design approach indirectly to SETL, a language that several of us here at AdaCore worked on at NYU in the 1970's.

Have a look at the examples that come with GPS, and dive into Python scripting today. You will be amazed at what you can achieve with very little effort.

## Technology Updates Available on Site

Following requests from customers, AdaCore has initiated the **InTouch Program**: a one-day visit from an AdaCore technical representative, providing updates on the GNAT Pro compiler and toolset. Each meeting is tailored to the individual customer and their Ada projects, and comprises information on

new product features, new ports, the Ada 2005 language revision, as well as the new flexible subscription model and other topics.

If you would like to arrange a Technology Update Day for your company, please contact [sales@adacore.com](mailto:sales@adacore.com).

### AdaCore at Conferences, November 2004–April 2005

- ▶ SIGAda 2004, Atlanta, Georgia, USA, 14–18 November 2004

[www.sigada.org/conf/sigada2004](http://www.sigada.org/conf/sigada2004)

AdaCore is a Platinum Sponsor for this conference. Ben Brosgol will be giving a tutorial, Ed Schonberg and Javier Miranda will be presenting a paper, and we will also be holding a Workshop on the GAP program.

- ▶ Safety Critical Systems Symposium, Southampton, UK, 8–10 February 2005

[www.safety-club.org.uk](http://www.safety-club.org.uk)

AdaCore will be exhibiting at this event, featuring the GNAT Pro High-Integrity Edition.

- ▶ STC 2005, Salt Lake City, Utah, USA, 18–21 April 2005

[www.stc-online.org](http://www.stc-online.org)

AdaCore will be exhibiting at this conference.

Visit us at Booth #431 and see demos of our latest technology.

## newsflash

- ▶ **GNAT Pro on x86 Trusted Solaris**

GNAT Pro is now available on the Trusted Solaris 8 Operating System on x86 platforms. This product includes the compiler, debugger, GPS IDE, and associated tools.

- ▶ **AdaCore presentation at UK Defense conference**

Robert Dewar, CEO of AdaCore US, presented a talk on the use of Free Software and COTS in the defense industry. The venue was the COTS in Defense Conference, held in London during 7-9 October 2004. Please contact [sales@adacore.com](mailto:sales@adacore.com) if you would like a copy of the slides that were presented.

- ▶ **Partnership with Artisan Software**

AdaCore and Artisan Software [www.artisansw.com](http://www.artisansw.com), a provider of real-time object-oriented development tools for mission-critical and safety-critical applications, have established a tool partner agreement. A full press release will be issued later this year.

- ▶ **AdaCore participates in CALIBRE Project**

This two-year European project [www.calibre.ie](http://www.calibre.ie) aims to foster the transfer of open source best practice to European industry, and in general to coordinate open source software research and practice. AdaCore sees these as useful goals and plans to participate in this project.

- ▶ **AdaCore EU recognized for strong financial performance**

For the second year in a row, AdaCore has received an award for strong growth from the Deloitte & Touche Technology FAST500 EMEA and Le Figaro Entreprises in France.

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