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Ada, *GNAT*urally!

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Vendor Presentation

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Outline of presentation

- **Introduction**
 - Who is AdaCore?
 - What is GNAT Pro?
 - “Open Source” approach
 - Applications and customers
- **Technology**
 - GNAT Pro basic components
 - GNAT Programming System (GPS) IDE
 - Project facility
 - Tools and libraries
 - Platforms
 - High-Integrity Edition
- **“Customercentricity”**
 - GNAT Tracker
 - On-line consulting / support
 - Quality assurance
 - Additional services
 - Training
 - Documentation
- **Ada advocacy**
- **Conclusions**

Who is AdaCore?

- **AdaCore = Ada Core Technologies + ACT Europe**
 - Separate legal entities but single organization
 - Founded in 1994 (US) and 1996 (Europe)
 - Robert Dewar, Edmond Schonberg, Richard Kenner in US
 - Cyrille Comar, Franco Gasperoni in Europe
 - Staff comprises around 40 people worldwide, mostly technical
 - *Extreme* Ada and compiler expertise
- **Flagship product is *GNAT Pro***
 - GUI-based Integrated Development Environment
 - Full Ada (core language + all annexes)
 - Toolchain / libraries / bindings
 - On-line consulting / support
 - Documentation
 - Add-ons
 - On-site training in Ada and/or tools

AdaCore software is “Open Source”

- **Business model, not a religion**
 - No intrinsic connection between product quality and use of open-source versus proprietary software
 - We use open source model / gcc technology because it makes good business sense for us and our customers
- **Benefits to AdaCore**
 - Allows leveraging gcc code generator experience
 - Ease of interfacing with other gcc languages
 - Pool of university graduates familiar with our technology
 - Makes GNAT the Ada technology of choice for university research
- **Benefits to customers**
 - Availability of run-time library sources
 - Lower risk
 - No problem developing proprietary or classified software
 - No need to expose source code

Domains and customers (partial)

- **Application domains**

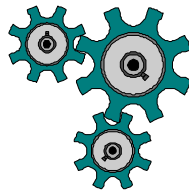
- Air traffic control
- Avionics (civil, military)
- Communications
- Defense
- Electronics
- Energy
- Financial institutions
- Medical imagery
- Space
- Telecom
- Television
- Transportation

- **Customers**

- Alcatel
- Alstom Transport
- BAE Systems
- Boeing
- Canal+ Technologies
- EADS
- Ericsson
- Eurocontrol
- JEOL
- Lockheed Martin
- Philips Semiconductor
- Raytheon
- Rockwell Collins
- Saab
- Smiths Aerospace
- THALES

GNAT Pro basic components

- **Integrated Development Environment**
 - GPS (GNAT Programming System)
- **Compilation tools**
 - gcc
 - gnatbind
 - gnatlink
 - gnatmake
- **Project facility**
 - Management of settings used for program builds
- **Debugger**



- **Functionality**
 - Context-sensitive, language-aware, configurable editor
 - GNAT Pro Ada compilation system
 - Visual debugger
 - Source browsing / navigation facility
 - Interface to source configuration management tools
 - Control over project settings
 - Pretty printing / reformatting
 - Control over window topography
- **Attributes**
 - Intuitive, easy to use
 - On-line help includes access to source files for predefined libraries (in GPS 2.1)
 - Configurability, extensibility through scripting

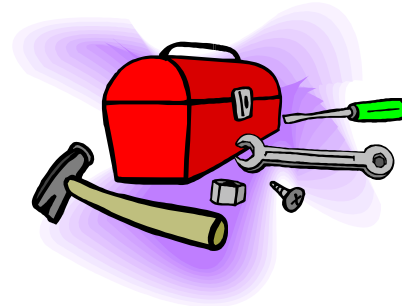
- **Introduction**

- A *project* is a configurable set of properties for a collection of source files
- Developer can specify
 - Directories for source files, objects, executables
 - Source file naming conventions (per-unit or global)
 - Switch settings
- Access to command-line switches, environment variables
- Hierarchical organization
 - Project may inherit / override source files from parent project
- Project may import other projects containing required source files

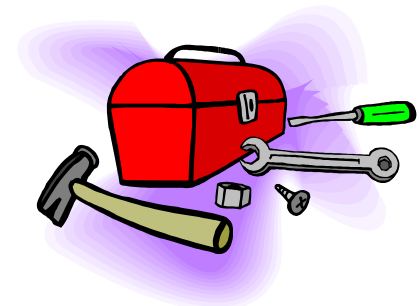
- **Some uses**

- Common set of sources generates object files in different directories, via different switches
- Multiple versions of the body for a package spec

- **Monitoring**
 - `gnatmem` (heap monitor)
 - `GNAT.Debug_Pools` (diagnose heap problems)
 - `gprof` (profiler)
- **Reducing code space**
 - `gnatelim` (minimize executables)
- **Testing**
 - `gcov` (test coverage)
 - `aunit` (test harness)
- **Browsing**
 - `gnatxref` (cross-referencer)
 - `gnatfind` (definition / use finder)
 - `gnatls` (library browser)



- **Documentation**
 - `gnathtml` (HTML generator)
- **Utilities**
 - `gnatchop` (file splitter)
 - `gnatkr` (file name "kruncher")
 - `gnatprep` (preprocessor)
 - `gnatstub` (body generator)
 - `gnatpp` (pretty printer)
 - `gnatclean` (delete intermediate files)
 - `gnatmetric` (metrics tool, coming in GNAT Pro 5.03a)
- **Distributed systems**
 - GLADE
 - PolyOrb



GNAT Pro libraries

- **Bindings**
 - GtkAda
 - X/Motif
 - AWK-like parsing functions
 - CGI support
 - Tcl expect
 - Win 32 / COM / DCOM
- **Sorting**
 - Bubble sort
 - Heap sort
- **Data structures**
 - Dynamic arrays
 - Hash tables
- **String handling**
 - Regular expressions
 - SPITBOL
 - Other utilities
- **ASIS**
- **Other**
 - Calendar
 - Locking / Tasking
 - Command line
 - Directory operations
 - I/O
 - OS Interface
 - Exception utilities
 - Floating point coprocessor control
 - Source file info
 - Spell checker
 - Debugging
 - Interfacing



GNAT Pro platforms

- **Native**
 - Alpha OpenVMS
 - Alpha Tru64
 - MIPS IRIX
 - PA-RISC HP-UX
 - PowerPC AIX
 - SPARC Solaris
 - x86/Pentium GNU Linux
 - x86 Windows
 - x86 Trusted Solaris
- **High-Integrity Edition**
 - DO-178B VxWorks/Cert
 - PowerPC (Solaris hosted)
 - PowerPC (x86 Windows)
 - VxWorks AE653
 - PowerPC (Solaris hosted)
 - PowerPC (x86 Windows)
- **Cross / Tornado**
 - SPARC Solaris ⇔ 68K
 - x86 Windows ⇔ 68K
 - SPARC Solaris ⇔ PowerPC
 - x86 Windows ⇔ PowerPC
 - x86 Windows ⇔ StrongARM/XScale
 - SPARC Solaris ⇔ UltraSPARC
- **LynxOS**
 - Native x86
 - SPARC Solaris ⇔ PowerPC
- **Ports in progress**
 - Mac OS X
 - SGI Altix
 - SPARC Solaris ⇔ x86 VxWorks

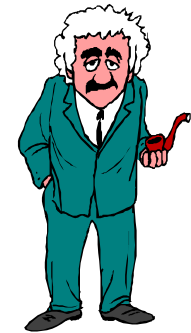
- **Enforcement of selected profile**
 - High-Integrity profiles
 - Zero Footprint
 - Cert
 - Ravenscar
 - Full-Runtime
- **Allowance of user-specified profile**
 - Run-time libraries selected *à la carte*, based on features actually used in the program
- **Platform / application**
 - Wind River Platform for Safety Critical ARINC 653
 - Boeing 7E7 Dreamliner Common Core System (Smiths Aerospace)
- **Status**
 - Certification materials (DO-178B, Level A) for Ada libraries will be available in early 2005

- **Product highlights**
 - Binding to ARINC 653 Application Executive (APEX)
 - Support for AE653 partition types
- **Compiler features relevant to High-Integrity development**
 - Generation of human-readable low-level intermediate representation (-gnatD, -gnatG)
 - Generation of human-readable data layout information (-gnatR/)
 - Generation of assembly language listing
 - Restrictions identifiers for implicit loops or conditionals
 - Restrictions identifier for form of explicit conditionals
 - Style checks (-gnaty/)

- **On-line consulting / support**
 - Immediate response to user questions on any aspect of Ada or GNAT Pro
 - Prioritized bug-tracking system overseen by CEO
 - Wavefronts
- **Quality assurance process**
 - Report tracking
 - Configuration management
 - Attempted check-in triggers regression test
 - Nightly builds with extensive testsuites
 - ACATS
 - Internal tests
 - Customer-supplied tests
 - Bootstrap

- **Secure web-based customer interface**
- **Download of GNAT Pro tool suite and components**
- **Online version of GNAT Pro documentation**
- **Submit toolset support or online consulting requests**
- **Download of GNAT Pro releases**
- **Access to up-to-date versions of known-issues and features**
- **Browse/search all request exchanges for your account**

- **GNAT consulting**
- **On-site courses**
 - Introduction to GNAT Pro and GPS
 - Introduction to GNAT Pro and GPS for AE653
 - Ada Programming with GNAT Pro: Fundamentals
 - Ada Programming with GNAT Pro: Advanced Topics
 - Ada Programming with GNAT Pro: Beyond Ada 83
- **Professional services**
 - GNAT Pro ports
 - Special-purpose run-time libraries
 - Tool customization and enhancements
 - Assistance with in-house specialized GCC and GNAT ports



- **Ada language**
 - Ada Reference Manual
- **GNAT Pro**
 - GNAT Pro User's Guide for Native Platforms
 - GNAT Pro User's Guide for Cross Platforms
 - GNAT Pro Reference Manual
 - GNAT Pro High-Integrity Edition User's Guide
 - GPS User's Guide
 - GPS Tutorial
- **ASIS for GNAT**
 - User's Guide
 - Reference Manual
- **GNU tools**
 - GCC
 - GDB



Documentation is on-line, hard copy, or both

- **Ada Answers - www.ada-answers.com**
 - Summary of Ada's technical and business benefits
 - Vendor-neutral testimonial videos from Ada users
 - Summary of who's using Ada
- **GNAT Academic Package**
 - AdaCore serves as clearinghouse of resources for universities using Ada for teaching or research
 - On-line GNAT and Ada technical support
- **Ada Resource Association – www.adaresource.com**
 - Preserves Ada "infrastructure"
 - Maintenance of Ada language standard
 - Ada IC / ARA website
 - Promotes / publicizes Ada
 - SIGAda booth at tradeshow
 - Success stories

- **AdaCore is stable, established, committed to Ada**
 - Steady growth since its inception
 - Excellent retention of technical staff
- **GNAT Pro is high-quality product**
 - Excellent reputation among customers
 - Continued enhancements
- **GNAT Pro comes with expert support**
 - Support staff = developers
- **AdaCore supports Ada 2005**
 - Several GNAT Pro features have influenced Ada 2005
 - GNAT Pro implements many Ada 2005 features now

“Your safe choice for Ada tools”