

THOMSON SOFTWARE PRODUCTS
Professional Services

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ERC32 Products Day

Ada Compilation System
and

Worst-Case Execution Time
Estimator

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What do we offer?

ERC32 Products Day
*Ada Compilation System and
Worst-Case Execution Time Estimator*

- ⇒ **Software Development Environment for Ada83**
 - ↪ **Host machine is Sparc / Solaris 2.x**
 - ↪ **Target machine is any Sparc v7 compatible processor**
 - ↳ eg. the ERC32 of course
- ⇒ **Special support for ERC32 Features**
 - ↪ **e.g. use of Ada Tasking Accelerator Circuit (“ATAC”)**
- ⇒ **Special support for Ada95 Real-Time Features**
 - ↪ **Static Analysis, Efficiency**
- ⇒ **Additional Capability for Predictable Execution Timing**
 - ↪ **Worst-Case Execution Time Estimator (“WCETE”)**

What is the status of the tools?

Ada Compilation System

- ⇒ **Complete working version delivered Q1 1996**
- ↳ **Fully tested on Force Computers CPU-2CE board**
- ↳ **Partially tested on prototype DEM32 board**
- ↳ **Partially tested on ESTEC ERC32 Simulator (“sis”)**
- ⇒ **Version for ERC32 upgrade scheduled end-Q4 1996**
- ↳ **Also includes some new functionality**
 - ↳ e.g. inter-operability with C code

Worst-Case Execution Time Estimator

- ⇒ **Prototype to be integrated with the end-Q4 1996 ACS**

Ada Compilation System

- ⇒ Based on mature, production-quality “AdaWorld” product
- ⇒ Passed full test suite for formal Ada validation (“ACVC”)
- ⇒ Passed standard internal product quality test suite
- ⇒ Passed special tests for real-time extensions
- ⇒ Passed special tests for ERC32-specific features
- ⇒ Produced good benchmark test results
- ⇒ Will undergo rigorous specific tests for new enhancements

Worst-Case Execution Time Estimator (prototype)

- ⇒ Will undergo rigorous specific tests for the supported subset

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What are the main features(1)?

- ⇒ Ada83, the natural choice for ...
 - ↪ Correctness (“WYSIWYG”)
 - ↪ Safety / Provability
 - ↪ Maintainability / Long-life
 - ↪ Interface consistency (“Programming in the Large”)
 - ↪ Portability
 - ↪ ESA!
- ⇒ ... Plus some needed real-time features from Ada95
 - ↪ Lightweight synchronisation / communication / protection mechanism (“Protected Objects”)
 - ↪ Accurate timing (“Delay Until <abs_clock_time>”)
- ⇒ **SIMPLY THE BEST!**

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What are the main features(2)?

- ⇒ **Comprehensive Software Development Environment**
 - ⇒ **Motif-based GUI interface**
 - ⇒ **Production-Quality, Validatable Compiler**
 - ⇒ **Binder / Linker capable of generating multiple formats**
 - ↳ e.g. S-Records for PROM programming
 - ⇒ **Powerful and flexible Program Library System**
 - ↳ to support large-scale program development / integration
 - ⇒ **Symbolic Debugger exploiting ERC32 features**
 - ↳ e.g. Hardware support for data watchpoints
 - ⇒ **Supporting Development Tools**
 - ↳ AdaMake, AdaXref, AdaReformat
 - ⇒ **ISO-Standard Maths Library**

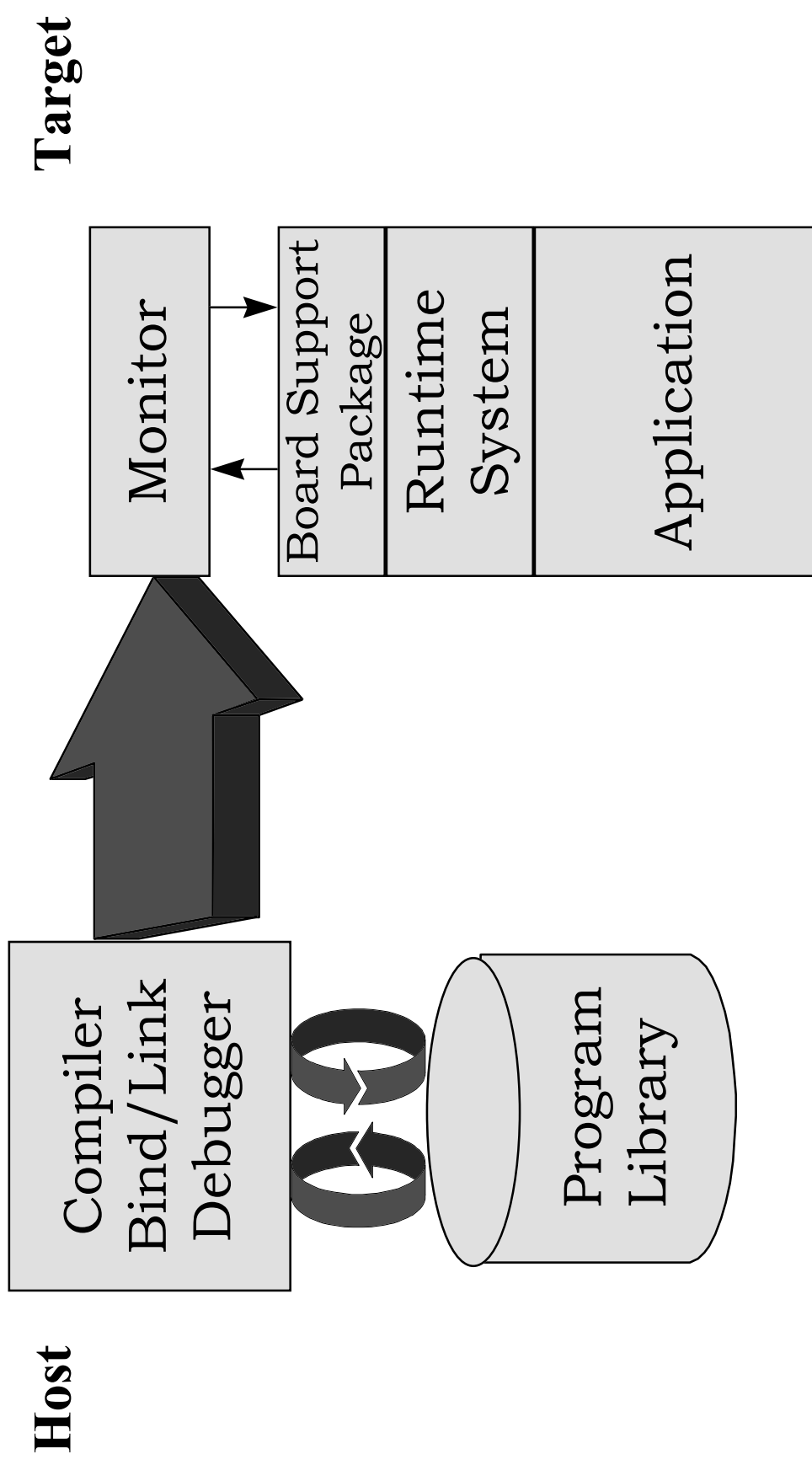
What are the main features(3)?

- ⇒ **Comprehensive Application Program Support**
 - ⇒ **Efficient Run-time System**
 - ⇒ **Alternate Run-time to exploit ATAC co-processor**
 - ⇒ **Special support for Schedulability Analysis**
 - ↳ Static timing analysis by the WCETE
 - ↳ Dynamic timing of scheduling events
 - ↳ Explicit run-time support for timing analysis primitive constructs
 - ⇒ **Mixed-Language Programming (C and Assembler)**
 - ⇒ **Special support for dynamic code replacement**
 - ⇒ **User-Configurable Board Support Package (“BSP”)**
 - ↳ Allows tailoring of ERC32 board characteristics
 - ↳ Allows execution on other Sparc V7 compatible boards
- ⇒ **Target-Resident Monitor to support download, debug, I/O**

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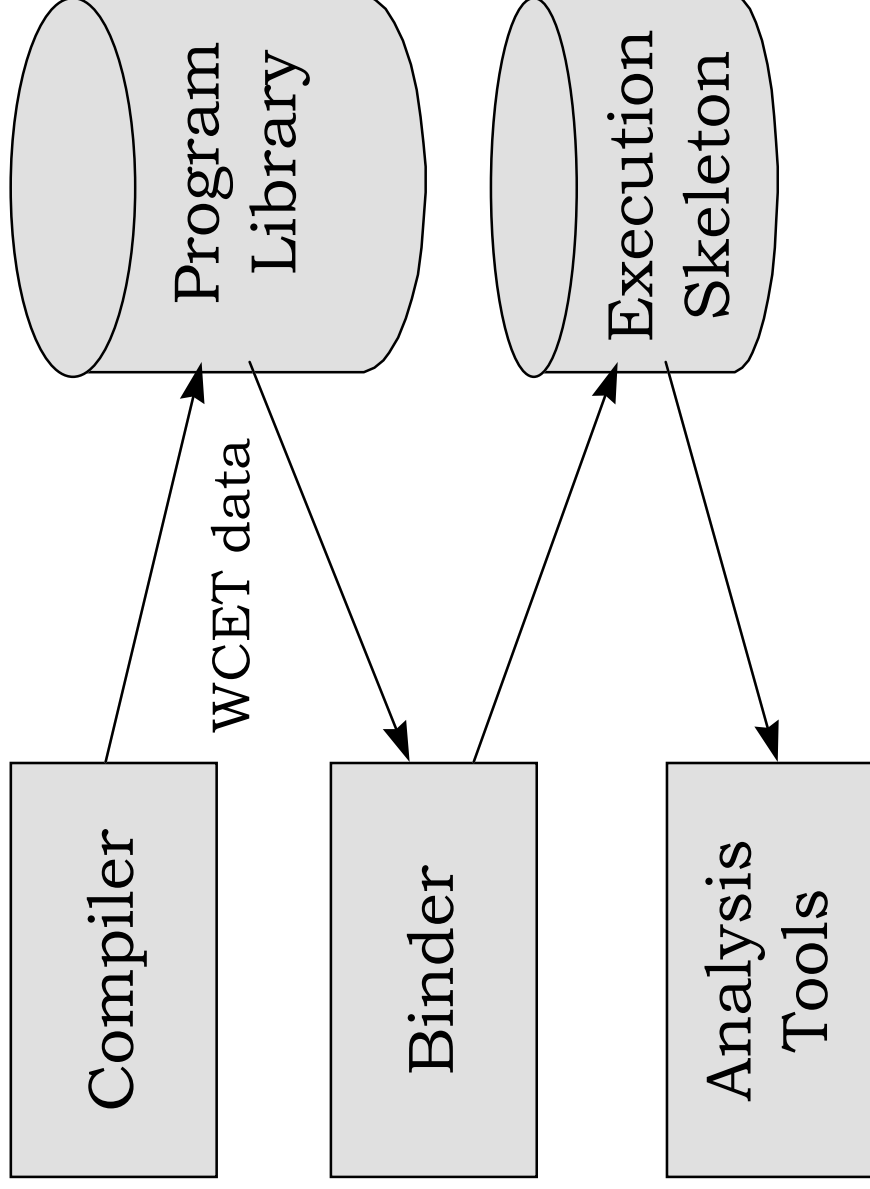
Ada Comp'n System Structure

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WCETE Structure

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Summary

ERC32 Products Day

Ada Compilation System and

Worst-Case Execution Time Estimator

Ada Compilation System

- ⇒ **Comprehensive solution for real-time applications**
- ⇒ **Production-Quality based on mature product**
- ⇒ **Available now**

Worst-Case Execution Time Estimator

- ⇒ **Prototype tested by Verification tests**
- ⇒ **Wholly integrated with Ada Compilation System**
- ⇒ **Available end-Q4 1996**

