



ACM

**SIGAda 2004
Welcome**



**Currie
Colket**



**ACM
SIGAda
Chair**







Overview of Presentation

What is Ada?

What is ACM?

What is SIGAda?

Introduction of SIGAda Officers

How Not to do Systems Engineering

Ada Engineered Products

Common Characteristics of Ada Applications

Future of Ada





What Is Ada?

What Is Ada?

- An internationally standardized language designed for *large-scale, long-lived real-time / embedded applications* where *reliability is critical*

Originally designed by a team led by Jean Ichbiah in the early 1980's ⇒ **Ada 83**

- strong typing + packages + exceptions + tasking + generics

Revised by team led by S. Tucker Taft in the early 1990's ⇒ **Ada 95**

- Ada 83 + OOP + child libraries + protected objects
- Also: generalized “pointers”, richer API interfacing, “Specialized Needs” annexes

Revision Process started for ~2005 ⇒ **Ada 05 Amendment**

- Ravenscar Profile + Real-Time, Safety-Critical, OOP enhancements, powerful interfaces (Component library)

Ada is a Language for Building Industrial Strength Systems



What Is the ACM?

What Is ACM?

- Association for Computing Machinery
- World's oldest and largest scientific computing society
- A major force in advancing the skills and knowledge of Information Technology professionals since 1947
- Has approximately 75,000 members worldwide
- Valuable resource for rapidly changing IT field
- Approximately 30 Special Interest Groups

SIGs in General ⇒

- Keep you up to date with the latest technical developments
- Provide focused resources and forums for discussion
- Help you network with colleagues outside your immediate workshop



What Is SIGAda? - 1

What Is SIGAda?

- Special Interest Group in the Ada Programming Language; formed in 1981; ~ 500 members today
- Dedicated to all aspects of the Ada Language
- Played a significant role in the evolution of the Ada Standard:
 - Ada Language Issues Working Group (ALIWG)
 - Performance Issues Working Group (PIWG)
 - Numeric Working Group (NUMWG)
 - Ada Run Time Environment Working Group (ARTEWG)
 - Ada Semantic Interface Working Group (ASIS)
- Played a significant in educating the Ada community
 - Education Working Group (EDWG)
 - Application Program Interface (API) WG (APIWG)



What Is SIGAda? - 2

What Is SIGAda? (continued)

- Work with the Ada Community for Ada Advocacy
 - SIGAda Local Chapters
 - Ada Advocacy Booth
- Publish Ada Letters
- Cooperate with the Ada International Community
 - Ada-Europe, Japan, ISO/IEC JTC1/SC22 WG9
- Formal Approved Category C Liaison with WG9
 - Important benefit of SIGAda membership
- Provide a wealth of Ada information on our home page => <http://www.acm.org/sigada>
- Conduct the annual SIGAda Conference

Membership is Valuable for your Professional Development
We welcome volunteers who want to get involved



SIGAda Officers

Original Term: 1 July 01- 30 June 03

Reaffirmed for: 1 July 03- 30 June 05

Chair:	Currie Colket
Vice Chair for Meetings and Conferences:	David Harrison
Vice Chair for Liaison:	Ann Brandon
Treasurer:	John McCormick
Secretary:	Clyde Roby
International Representative	Jean-Pierre Rosen
Past Chair	Ben Brosgol

Elections Planned for early 2005
Contact Ben Brosgol if interested in running



Jack Stuart Brandon





What Are the Benefits of SIGAda Membership?

Some FY'06 Member Benefits Provided to SIGAda Members:

- Subscription to SIGAda Ada Letters, published 3 times per year
- Sponsorship of annual SIGAda Conference.
- Reduced registration at conferences sponsored by SIGAda.
- Participation in the evolution of the Ada Programming Language via a Category C Liaison Agreement with ISO/IEC JTC1/SC22/WG9.
- Reduced registration at Ada-Europe conferences.
- Access to SIGAda Home Page and selected content in the ACM Digital Library.
- SIGAda-ANNOUNCE and Team-Ada mailing lists
- Ada Awareness Initiative to promote Ada.

Join Today; SIGAda Professional Membership Only \$25
SIGAda Student Membership Only \$10 – See Tom Panfil



**How Not To Do
Systems
Engineering
And The
Sinking Of
The Largest
Offshore
Oil Platform
March 2001
Disclaimer:
Slides
Received
From
Unknown
Author**



For those of you who may
be involved in the
engineering of systems

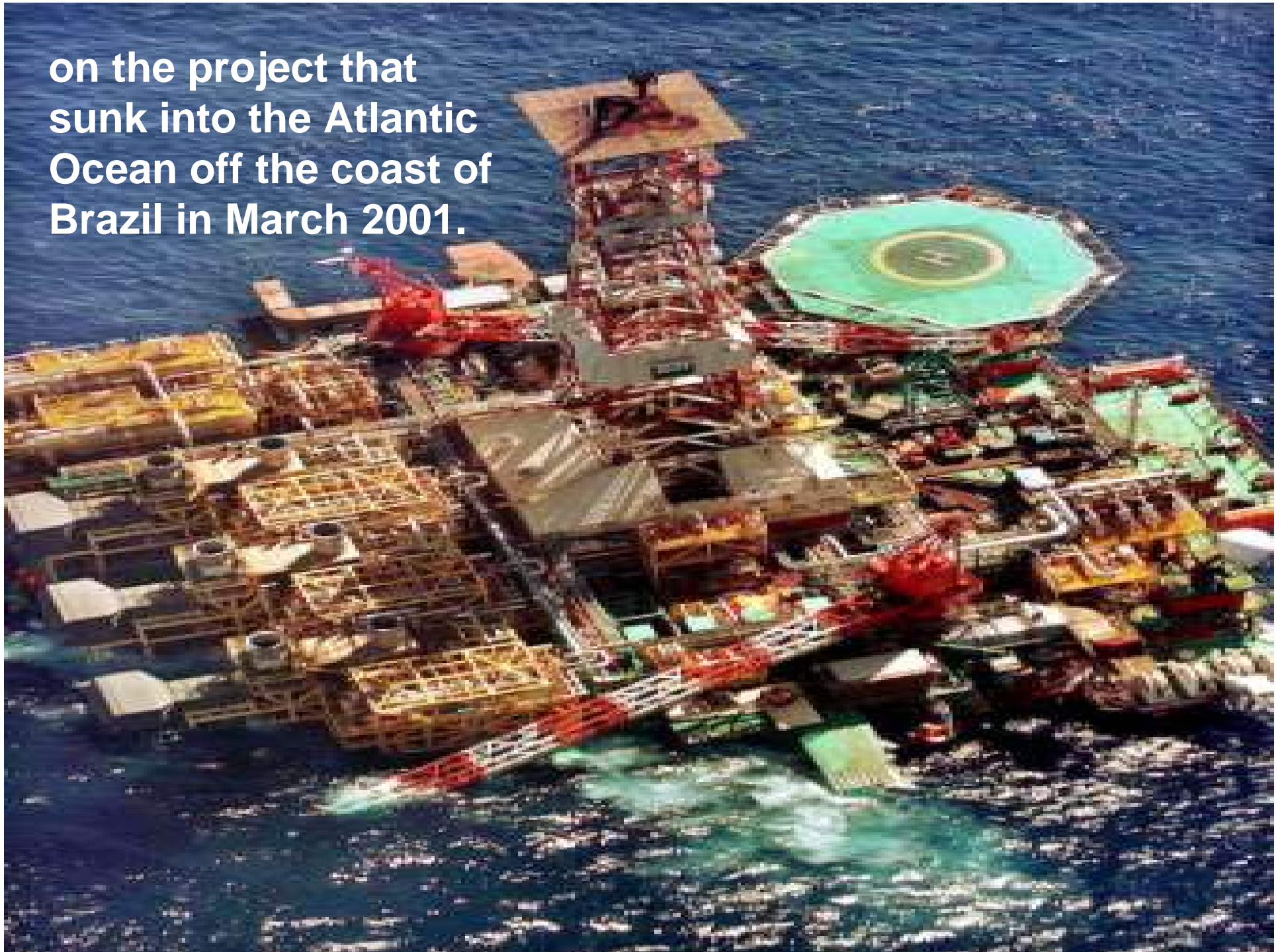


**Please read this quote from
a Petrobras executive,**

**extolling the benefits of
cutting quality assurance
and inspection costs,**



on the project that
sunk into the Atlantic
Ocean off the coast of
Brazil in March 2001.





"Petrobras has established new global benchmarks for the generation of exceptional shareholder wealth"



through an aggressive and innovative programme of cost cutting on its P36 production facility.

Conventional constraints have been successfully challenged



and replaced with new paradigms appropriate to the globalised corporate market place.





**Through an integrated network
of facilitated workshops,**



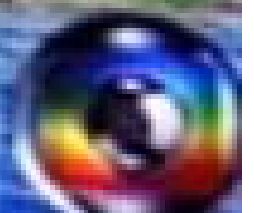
the project successfully rejected the established constricting and negative influences of prescriptive engineering,



**onerous quality requirements, and
outdated concepts of inspection
and client control.**



Elimination of these unnecessary straitjackets has empowered the project's suppliers and contractors to propose highly economical solutions,





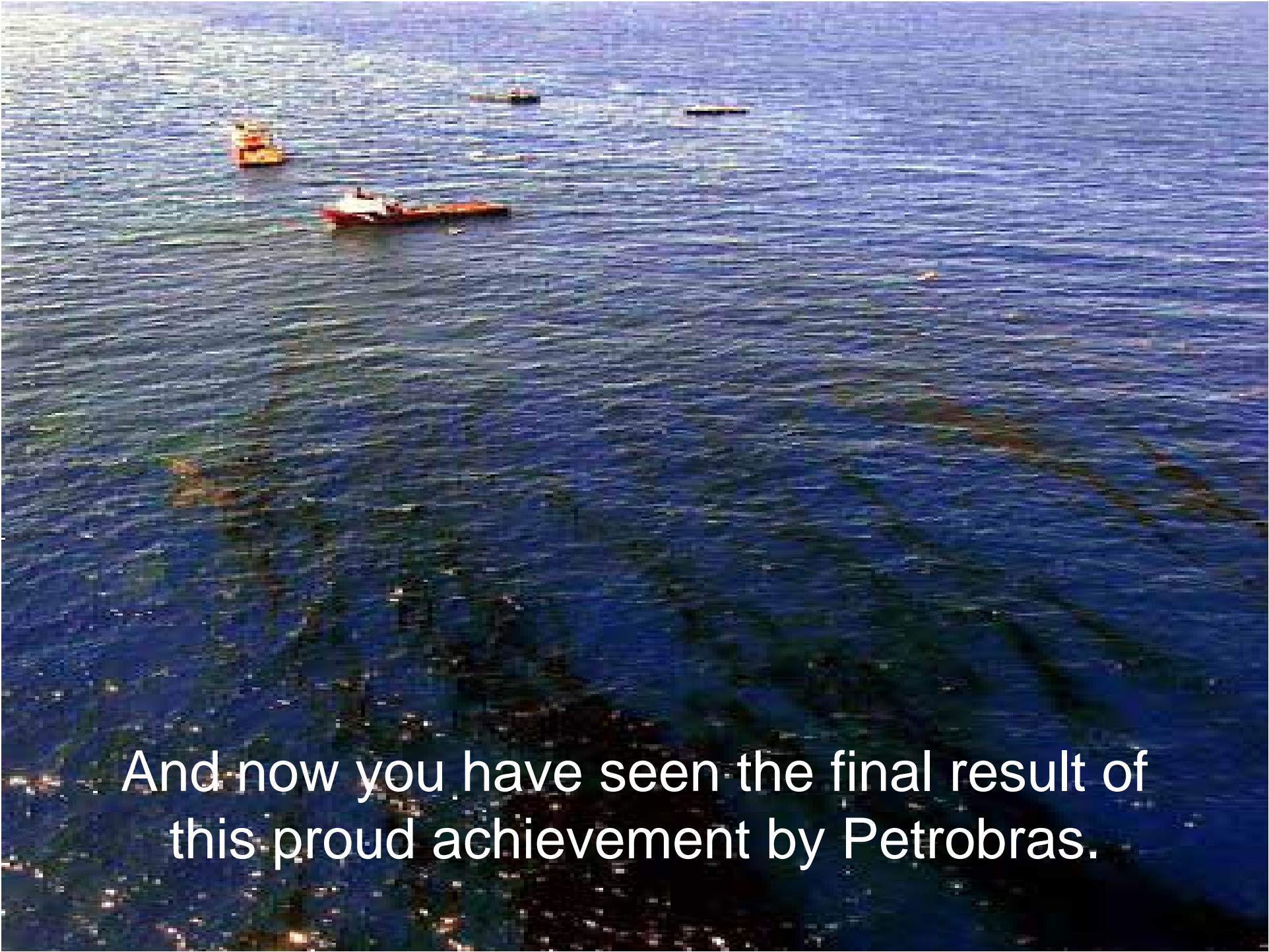
**with the win-win bonus of enhanced
profitability margins for themselves.**



The P36 platform shows the shape of things to come

An aerial photograph showing a large, dark, irregular oil spill in the middle of a vast, deep blue ocean. The spill is composed of several interconnected dark patches. In the upper left quadrant, a small, brightly colored (yellow and red) inflatable boat is visible on the water's surface. The water's surface is covered in small, rhythmic ripples. The overall scene conveys a sense of environmental disaster in a remote, open-sea location.

in unregulated global market economy of the 21st Century.”

An aerial photograph of an offshore oil platform in the middle of a vast, deep blue ocean. The platform is a complex of structures, including a large central tower and several smaller buildings. Several support vessels, including a yellow tugboat and several red and white supply ships, are positioned around the platform. The water is a deep, dark blue, and the sky is a lighter blue. The overall scene depicts a large-scale industrial operation in a remote maritime location.

And now you have seen the final result of
this proud achievement by Petrobras.



Ada Engineered Products (1)

LAMPS SH-60R ASW Helicopter





Ada Engineered Products (2)

Boeing 777 Commercial Aviation



Airbus 320
Airbus 330
Airbus 340
Beechjet 400A
Beech Starship I
Beriev BE-200
Boeing 737
Boeing 747
Boeing 757
Boeing 767
Boeing 777
Canadair Regional Jet
Embraer CBA-123
Embraer CBA-145
Fokker F-100
Ilyushin 96M
LM Hercules
Saab 2000
Tupolev TU-204



Ada Engineered Products (3) Boeing 7E7 Prototype – 70% Ada





Ada Engineered Products (4) Canal+ Interactive Television

CANAL+ 
 **TECHNOLOGIES**

The **REAL**
difference in
Interactive
Television!

A hand holding a small television set. The screen of the television displays a close-up of a human eye, symbolizing interactive television.

CANAL+ TECHNOLOGIES is the world's leading provider of digital broadcasting and interactive TV software solutions. Its field-proven systems are being used by more than 20 different digital operators and over 15.7 million (in 2002) set-top boxes based on its technologies are currently deployed.

[Canal+ was brought out by Nagra of Switzerland]



Ada Engineered Products (5)

Hertz Neverlost





Ada Engineered Products (6)

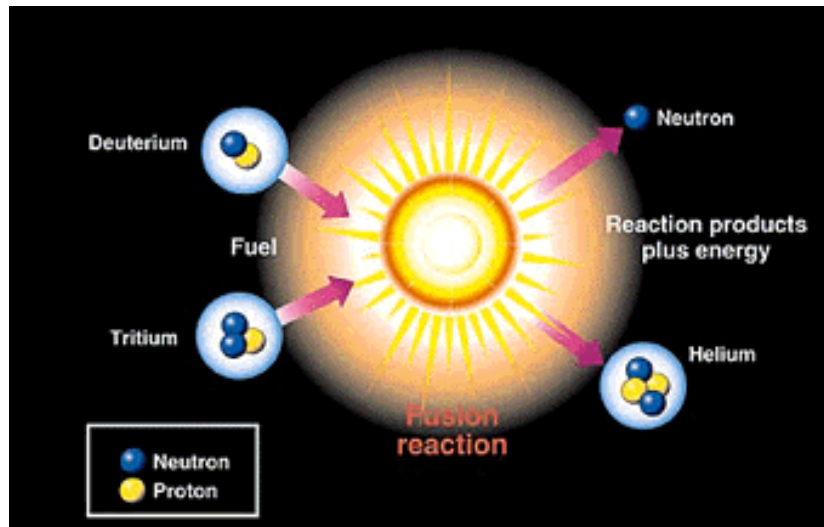
70' Kingcat M270 Luxury Power Catamaran





Ada Engineered Products (7)

National Ignition Facility



Inertial Confinement Fusion
192 Lasers (510 Meters Path)
1.8 megajoules
Tiny Target – 600 μm diameter
At Lawrence Livermore National Laboratory





Ada Engineered Products (8) NASA Space Systems





Ada Engineered Products (9) Enroute Automation Modernization

\$2,000,000,000.00 Contract

Awarded to Lockheed Martin in March 2003

Modernization program to update hosts for FAA Air
Traffic Control

Estimate 1.2 MSLOC with the majority in Ada

Reuse of ~ 500K Ada SLOC for DSR/URET Programs



Ada Engineered Products (10) Phillips Semiconductor

AdaCore Ada Answers Film

Philips Semiconductor

Filmed earlier 2004

$\frac{3}{4}$ MSLOC used to Manufacture

25 Million Products per year



Common Characteristics of Ada Applications

- Reliability is a real concern
- Control safety or mission critical applications
- Control hard real-time or near real-time application
- Reliability is a real concern
- Control highly distributed systems
- Control systems with multiple interfaces
- Reliability is a real concern

Achieved via a sound systems engineering approach

With the Ada Language as a Key Technology



Future of Ada - Optimistic on Ada

Ongoing requirements for languages that support industrial strength engineering solutions

Ada language meets the requirements that it was originally designed to satisfy

- Large-scale, long-lived, high-integrity real-time embedded applications

Ada survived the period when it was most at risk

- 1997-98, after the closing of the AJPO
- Ada usage appears on the rise
- Ada is expanding into new domains

Technology is mature

*I'm Upbeat on Ada
Ada Really Works*



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ARTiSAN
SOFTWARE