Nothing Stops It.

OpenVMS History

Ruth Goldenberg

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In the Beginning

Confining Software Environment, Limited Scaleability, Incompatible Systems

- PDP-11 Popularity
- 16-bit Architecture
- Architecture Limitations
- 1974: Should we build a 32-bit PDP-11?

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1975: STAR and STARLET goals

Beginning a 20 year tradition
of shattering barriers and breaking the rules

- April 1975: Gordon Bell says “Go”
- Integrated Hardware and Software Design
- Expand Addressing to 32 Bit
- Highly Scaleable Architecture
- One System, Compatible Tools

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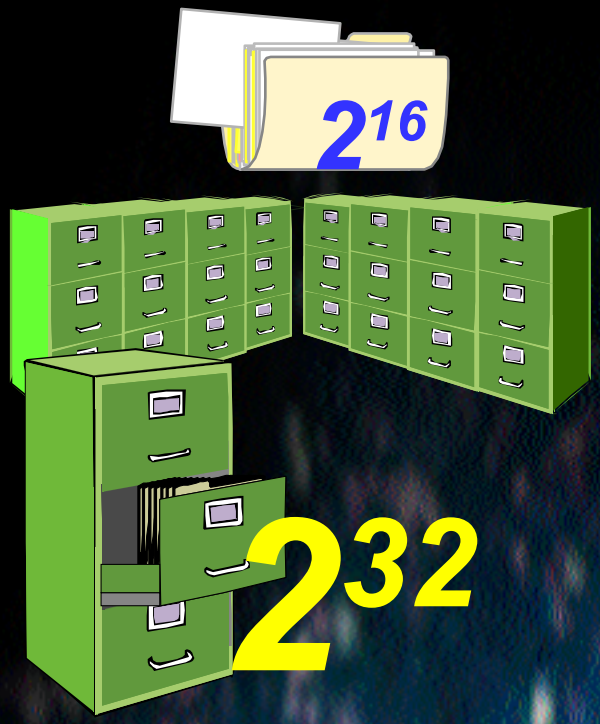
Do The Math

2^{32} Is A Whole Lot More Than Two Times 2^{16}



- Eliminates Software "Overlays"
- Critical Software (e.g., RMS) Stays Resident
- Improved Performance
  - Programmer Efficiency
  - Program Execution

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VAXA Committee

- **Gordon Bell**
- **Peter Conklin**
- **Dave Cutler**
- **Bill Demmer**
- **Tom Hastings**
- Richie Lary
- Dave Rogers
- Steve Rothman
- Bill Strecker, chief architect

VAXA's Architectural Goals

- A 32-bit virtual address space
- An instruction set optimized for high-level languages
- Data types compatible across all languages
- PDP-11 compatibility
- Easy to develop software for it\
- Single operating system for multiple markets

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Early Development

- Sept 1975 SRM Rev 1
- April 1976 April Task Force
- June-Aug Detailed software design

Initial VMS Design Team

By November, 1975...

- **Dave Cutler, project leader**
- **Andy Goldstein**
- **Roger Gourd, manager**
- **Roger Heinen**
- Dick Hustvedt
- Hank Levy
- Peter Lipman
- Trev Porter

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Starlet Goals and Features

- Software quality
- Cultural compatibility with the PDP-11
- Digital Command Language compatibility
- Provide common environment for all languages
- Implement virtual memory
- Integrated networking
- CPU-independent system disk
- Strong upward-compatibility ethic

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Work in 1976

- Architectural design simplified
- Other organizations have assigned people
- “Do it right”
- July – the Starlet Working Design Document
- Sept. – the Starlet project plan
- Oct. – Base level 1

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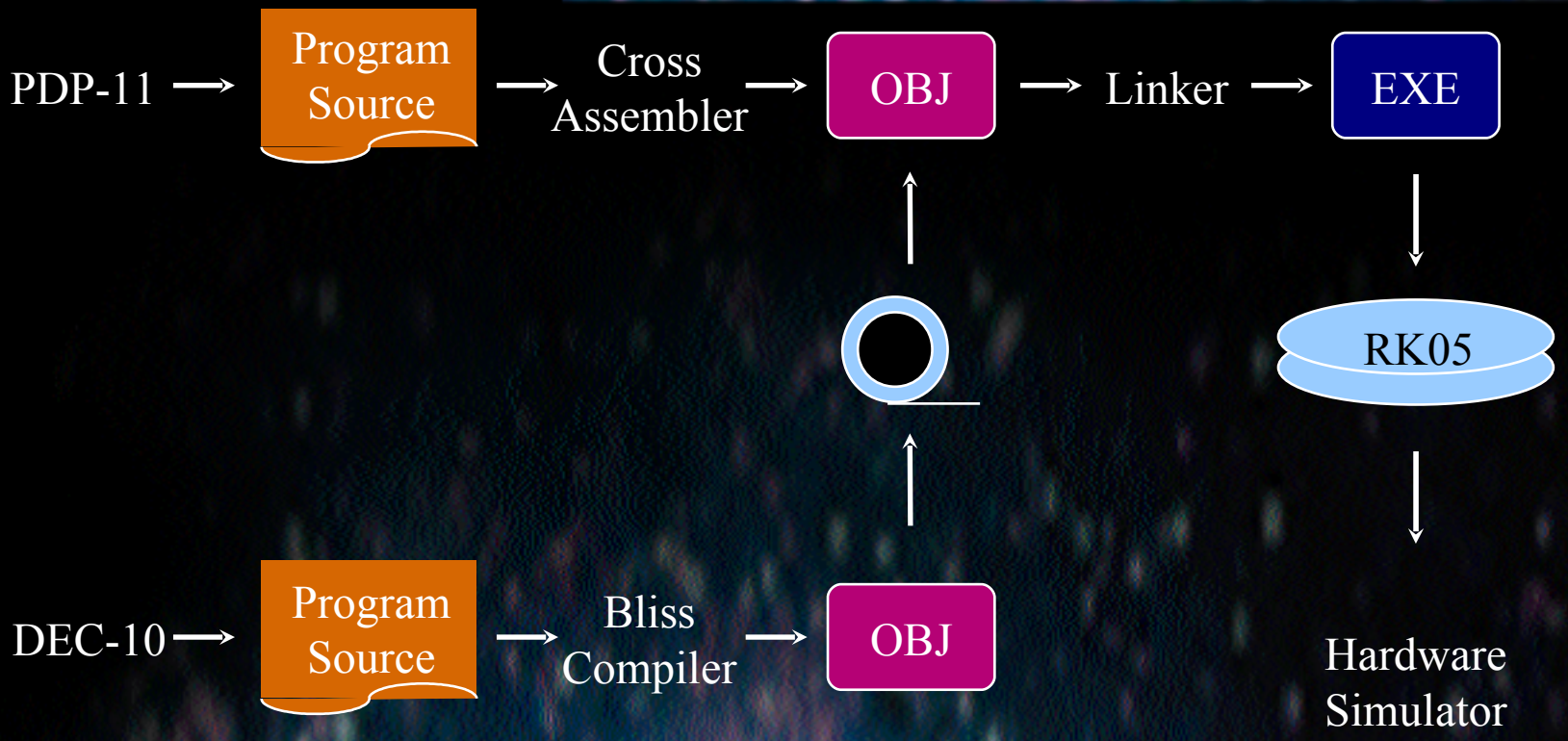
Program Development and Testing



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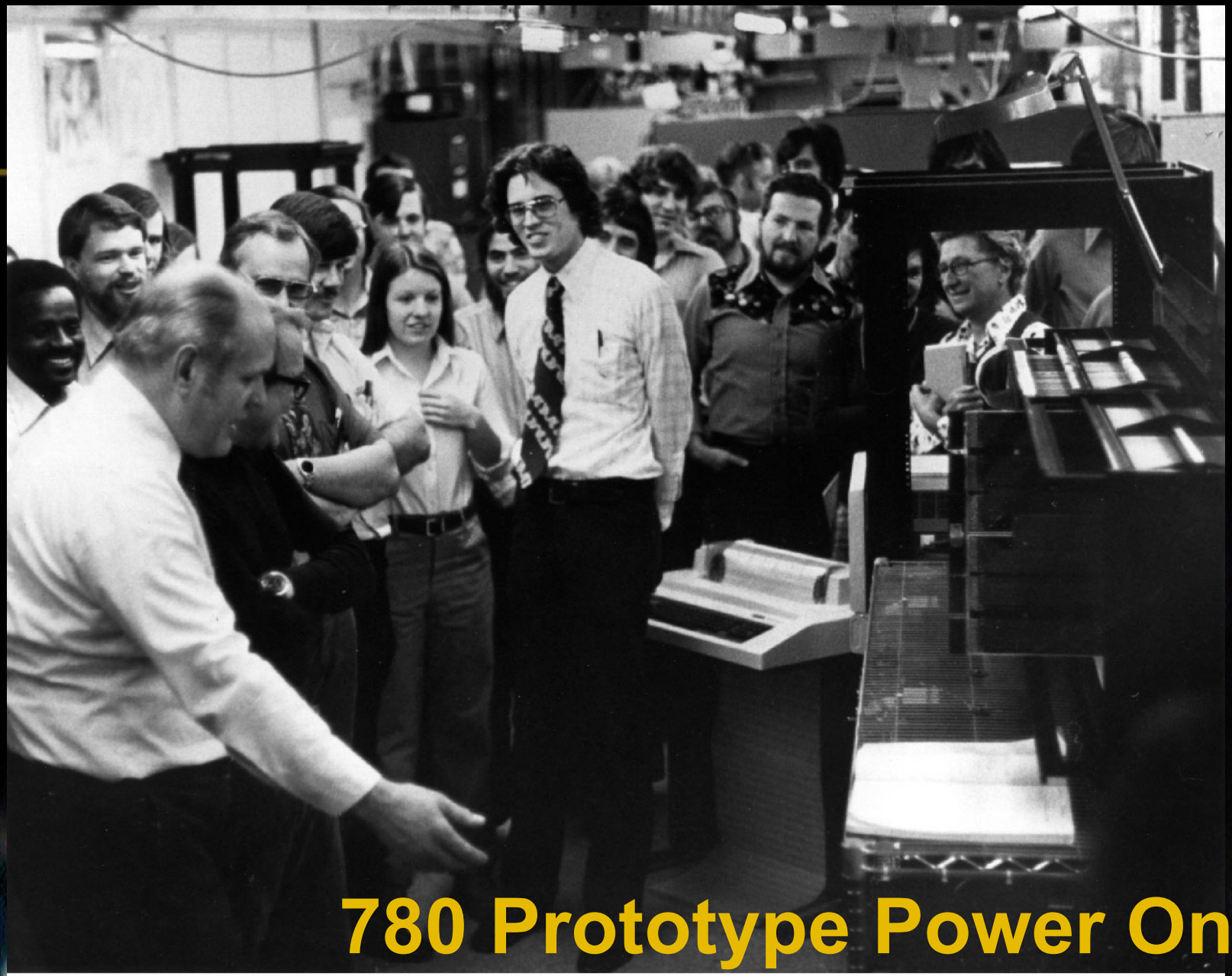

780 Prototype Power On

Timesharing on the Prototype

- Prototype 780, 1MB memory
  - 2 RP06 + RK07
- VT52s in the offices
- Self-supporting
  - System builds
  - Bliss compiler
  - “Eat our own dog food”

Nothing Stops It.

1977

Announcement of DIGITAL's 32-bit Computing System

- October 25, 1977
- VAX-11/780
- VMS V1.0 Announced

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October 1977 Announcement

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V1.0 Development Team

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1978 1979

- VMS V1.0 Shipped
- DECnet Phase II
- FORTRAN IV
- Up to 8 MB Memory

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1980

Low-Cost, High-Performance Networking – Built Right In!

- DECnet Phase III
- VMS V2.0
- New programming tools
- Ethernet products
- VAX-11/750

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V2.0 Development Team

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1982...

A Long History of Growing Up -- And Down!

- VAX-11/730
- VMS V3.0
- RA60 and RA81 Disk Drives
- Digital Storage Architecture
- ALL-IN-1

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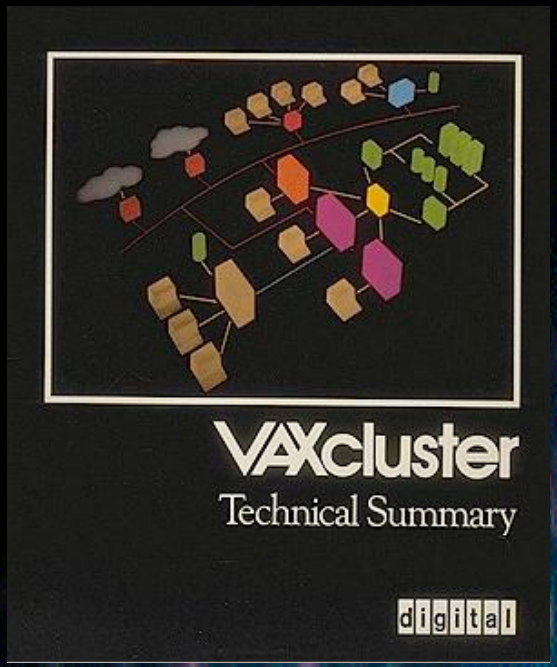
1983 1984

VAXclusters -- 24 x 365 computing leadership, then and now!



- VAXcluster Technology
- 16 Node Star Architecture
- CI Connectivity
- DECnet Phase IV

Nothing Stops It.

1984

A Solid and Stable Production System -- For Business and Engineering!

- VMS V4.0
- VAX Rdb/VMS
- VAX-11/785
- VAX 8600 and 8xxx
- VAXstation I
- MicroVAX I

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1986

VAXcluster Power, Implemented Using Cost-Effective LAN Technology!

- VMS V4.5
- VAX 8800
- Local Area VAXclusters

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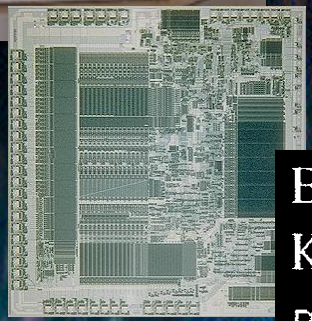
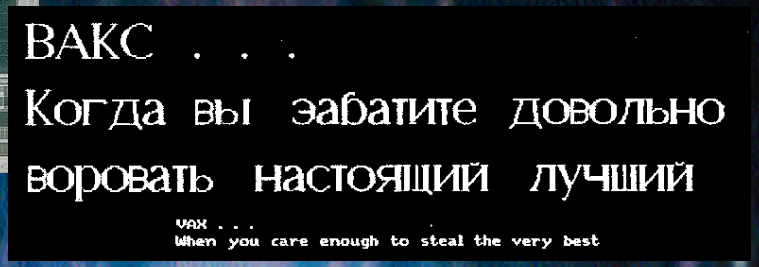
1987

“When You Care Enough to Steal The Very Best!”



- VAXstation 2000
- MicroVAX 2000
- CVAX Chip…
  When You Care Enough to Steal the Very Best!
- MicroVAX 3500 and 3600



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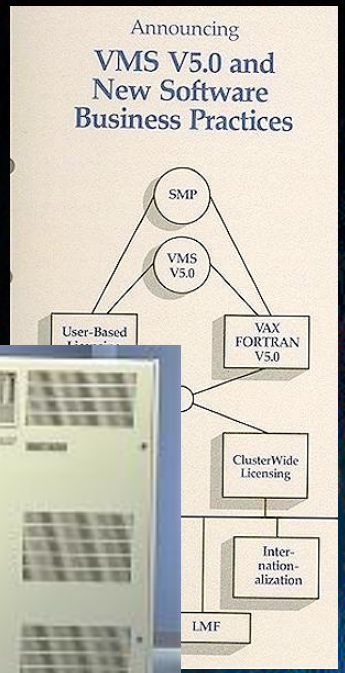
1988...

High-Speed Internal Bus + Tightly Coupled SMP = High Performance!



- VAX 6000
- VMS V5.0
- Symmetric Multiprocessing
- VAX 6200

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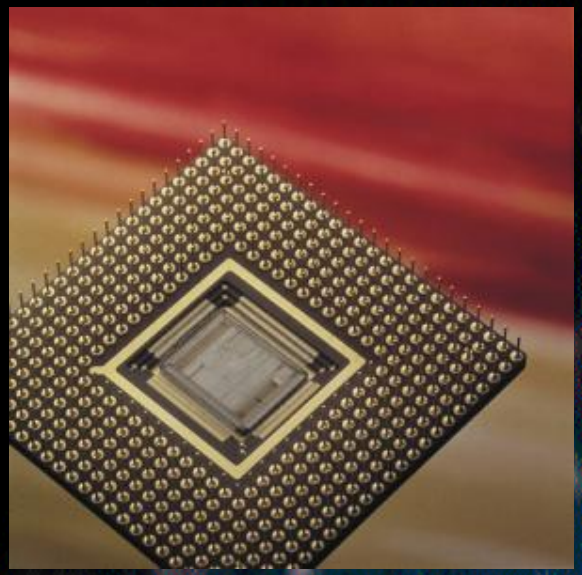
1992

Shattering Barriers - Again - With 64-Bit Computing!



- Alpha 64-Bit Processor Architecture
- Breaking the rules again: “You can’t port OpenVMS. It’s written in assembler!”
- First Release of OpenVMS AXP V1.0 for Alpha

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1995

OpenVMS V7.0 - breaking the rules yet again

- OpenVMS VAX V7.0
- OpenVMS Alpha V7.0 with 64-Bit, VLM/VLDB Support
- Kernel threads
- The Biggest Release of OpenVMS Since V5.0

ORACLE

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1995

Do The Math -- Again!

- VAX and VMS 32-Bit Addressing Capability…
- Q: If VAX 32-Bit Addressing Equates to 20 Minutes of TV, What Size Multimedia Can 64-Bit Manage?

Nothing Stops It.

1995

- AlphaServer and OpenVMS 64-Bit Addressing Capability
- A: Every TV Show Ever Shown Since 1948!

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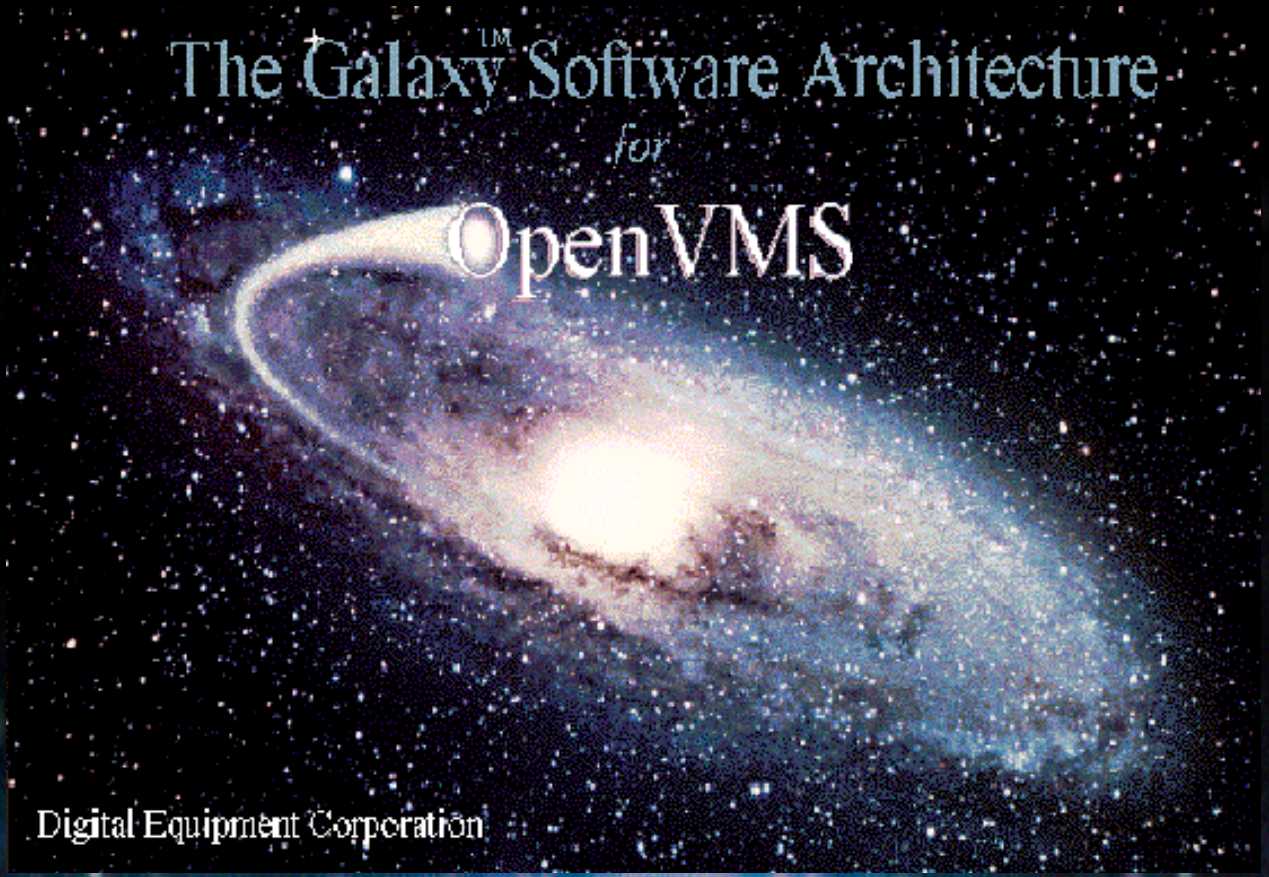
2000

The Next Generation…*Here Now!*



Nothing Stops It.

2001

Intel Inside!

- Breaking the rules yet again:

  What about all the special Alpha features that support OpenVMS?

  – It's all software!

Nothing Stops It.

2001 2002 2003 2004 2005 2006...

Where Do You Want to Go - *Tomorrow?*

- **A First Class Commercial Machine**
- **For Unlimited High-end Computing**
- **On OpenVMS!**