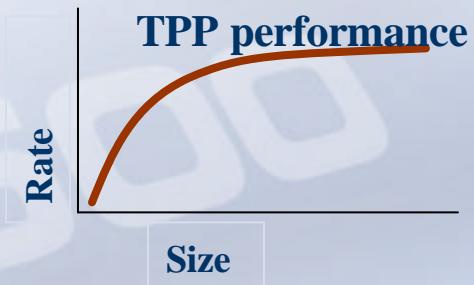




21th TOP500 list

ISC2003 Conference, Heidelberg, June 25, 2003

- Listing of the 500 most powerful Computers in the World
- Yardstick: Rmax from Linpack
 $Ax=b$, dense problem
- Updated twice a year:
 - ISC'xy in Germany, June xy
 - SC'xy in USA, November xy
- All data available at www.top500.org





TOP500 Supercomputer sites - Netscape

http://www.top500.org/

TOP500 SUPERCOMPUTER SITES

18th International Supercomputer Conference
ISC 2003

HOME ABOUT CURRENT LIST ARCHIVE DATABASE IN FOCUS NEWS SITEMAP CONTACT

PRESENTED BY
UNIV. OF MANNHEIM
UNIV. OF TENNESSEE
NERSC/LBNL

TOP500 SUPERCOMPUTER SITES

The TOP500 project was started in 1993 to provide a reliable basis for tracking and detecting trends in high-performance computing. Twice a year, a list of the sites operating the 500 most powerful computer systems is assembled and released. The best performance on the Linpack benchmark is used as performance measure for ranking the computer systems. The list contains a variety of information including the system specifications and its major application areas.

TOP500 INFORMATION

- 21st TOP500 List now available**
The 21st TOP500 List will be now available and will be introduced during the **International Supercomputer Conference (ISC2003)** in Heidelberg, June 24-27, 2003.
- 21st Edition of TOP500 List of World's Fastest Supercomputers Released**
"In what has become a much-anticipated event in the world of high-performance computing, the 21st edition of the "TOP500" list of the world's fastest supercomputers was released June 23, 2003."
- 22nd TOP500 List**
The 22nd TOP500 List will be introduced during the Supercomputer Conference (SC2003) in Phoenix, AZ November 15-21, 2003.
- High-Performance Linpack Benchmark**
The Linpack benchmark can now be run using HPL, A Portable Implementation of the High-Performance Linpack Benchmark for Distributed-Memory Computers

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Myricom AUTHORIZED RESELLER

Linux Network

Appro Server Solutions
Dual Intel® Xeon™ Processor
HyperBlade Cluster Solution

AMD
I want top performance now

promicro

Top performance, scalable and reliable
IBM

atipa technologies

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Start | Sys... | TOP... | TOP... | TOP... | 5:00 AM

- 1. List in June 1993
- 20. List on Nov. 20, 2002, at SC2002 in Baltimore
- 21. List on Jun. 25, 2003 , at ISC2003 in Heidelberg
- 22. List on Nov. xx, 2003, at SC2003 in Phoenix
- Accepted by users and manufacturers

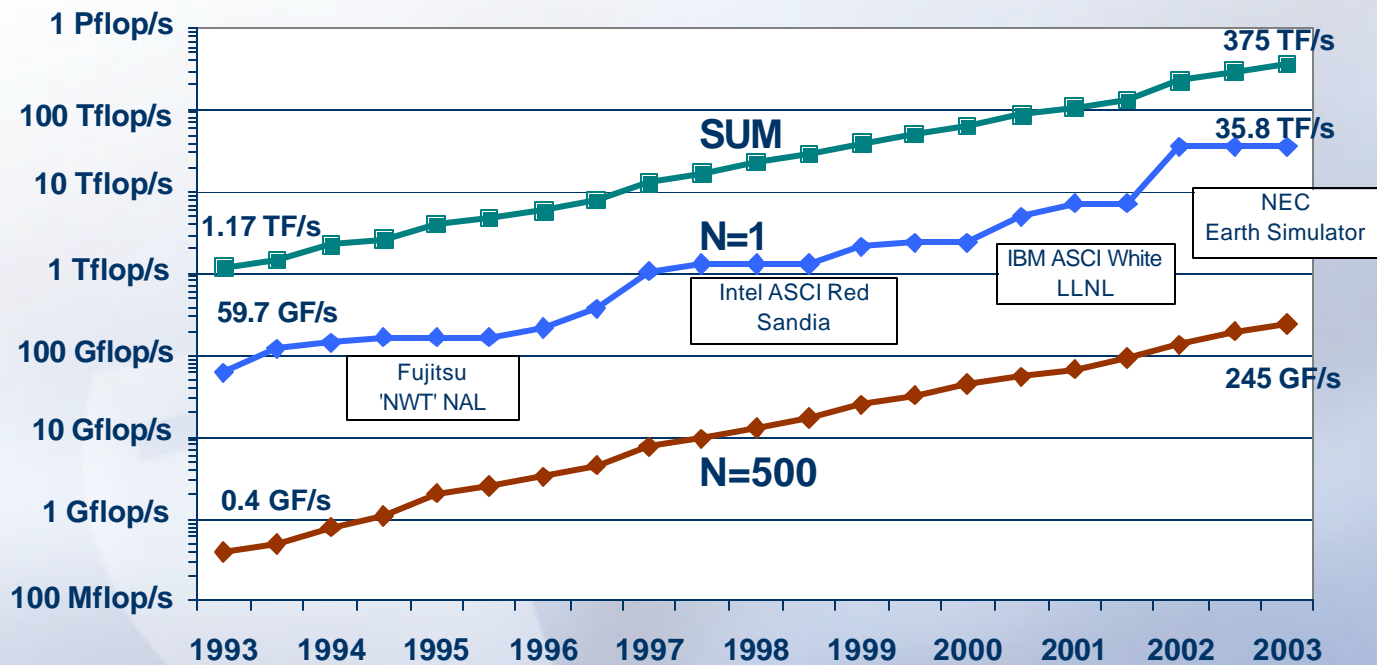


- **Manufacturer** Manufacturer or vendor
- **Computer Type** indicated by manufacturer or vendor
- **Installation Site** Customer
- **Location** Location and country
- **Year** Year of installation/last major update
- **Installation Type** Academic, Research, Industry, Vendor, Classified, Government
- **Installation Area** e.g. Research: Energy / Industry: Finance
- **# Processors** Number of processors
- **R_{\max}** Maxmimal LINPACK performance achieved
- **R_{peak}** Theoretical peak performance
- **N_{\max}** Problemsize for achieving R_{\max}
- **$N_{1/2}$** Problemsize for achieving half of R_{\max}
- **N_{world}** Position within the TOP500 ranking

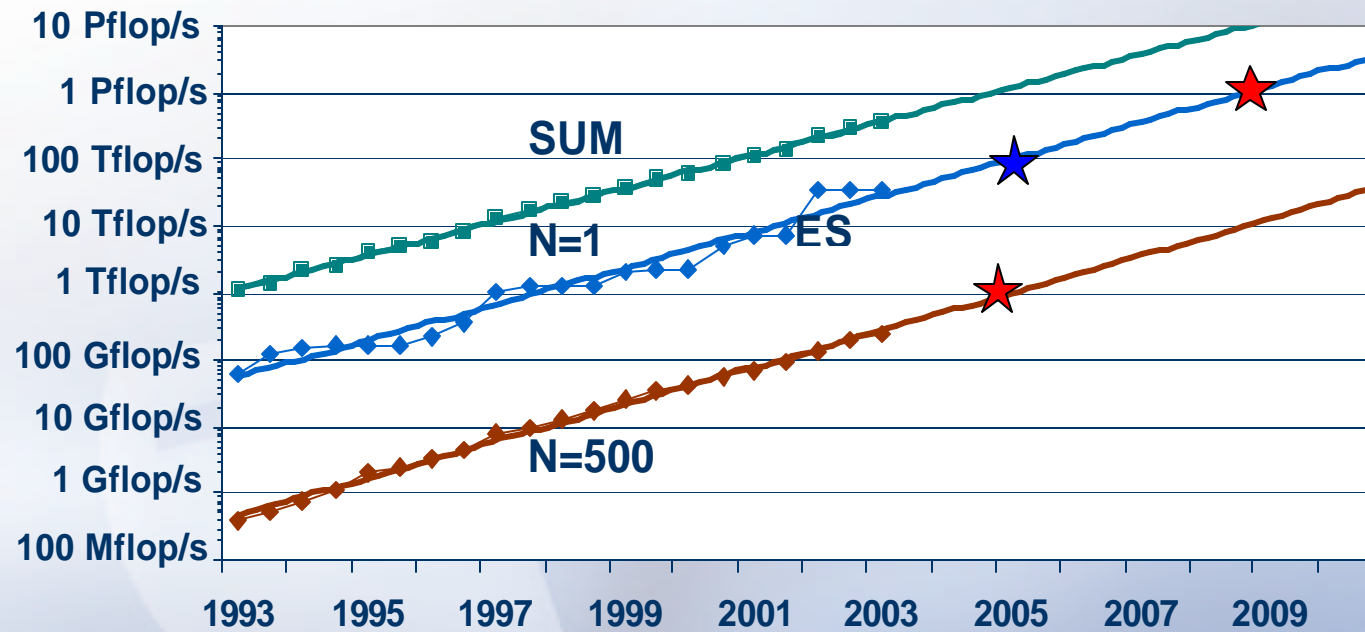
21th List: The TOP10

Rank	Manufacturer	Computer	R_{\max} [TF/s]	Installation Site	Country	Year	Area of Installation	# Proc
1	NEC	Earth-Simulator	35.86	Earth Simulator Center	Japan	2002	Research	5120
2	HP	ASCI Q, AlphaServer SC	13.88	Los Alamos National Laboratory	USA	2002	Research	8192
3	Linux Networx/ Quadrics	MCR Cluster	7.63	Lawrence Livermore National Laboratory	USA	2002	Research	2304
4	IBM	ASCI White SP Power3	7.3	Lawrence Livermore National Laboratory	USA	2000	Research	8192
5	IBM	Seaborg SP Power 3	7.3	NERSC Lawrence Berkeley Nat. Lab.	USA	2002	Research	6656
6	IBM/Quadrics	xSeries Cluster Xeon 2.4 GHz	6.59	Lawrence Livermore National Laboratory	USA	2003	Research	1920
7	Fujitsu	PRIMEPOWER HPC2500	5.41	National Aerospace Laboratory of Japan	Japan	2002	Research	2304
8	HP	rx2600 Itanium2 Cluster Qadrics	4.88	Pacific Northwest National Laboratory	USA	2003	Research	1536
9	HP	AlphaServer SC ES45 1 GHz	4.46	Pittsburgh Supercomputing Center	USA	2001	Academic	3016
10	HP	AlphaServer SC ES45 1 GHz	3.98	Commissariat a l'Energie Atomique (CEA)	France	2001	Research	2560

Performance Development



Projected Performance Development



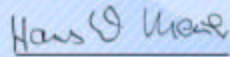


*The Earth Simulator System, Manufactured by NEC at the
Earth Simulator Center, Japan*

is ranked
No. 1


among the worlds' TOP500 Supercomputers with
35.86 TFlop/s Linpack Performance
TOP500 list published at the ISC2003 Conference in Heidelberg, Germany, June 25, 2003

Congratulations from The TOP500 Editors

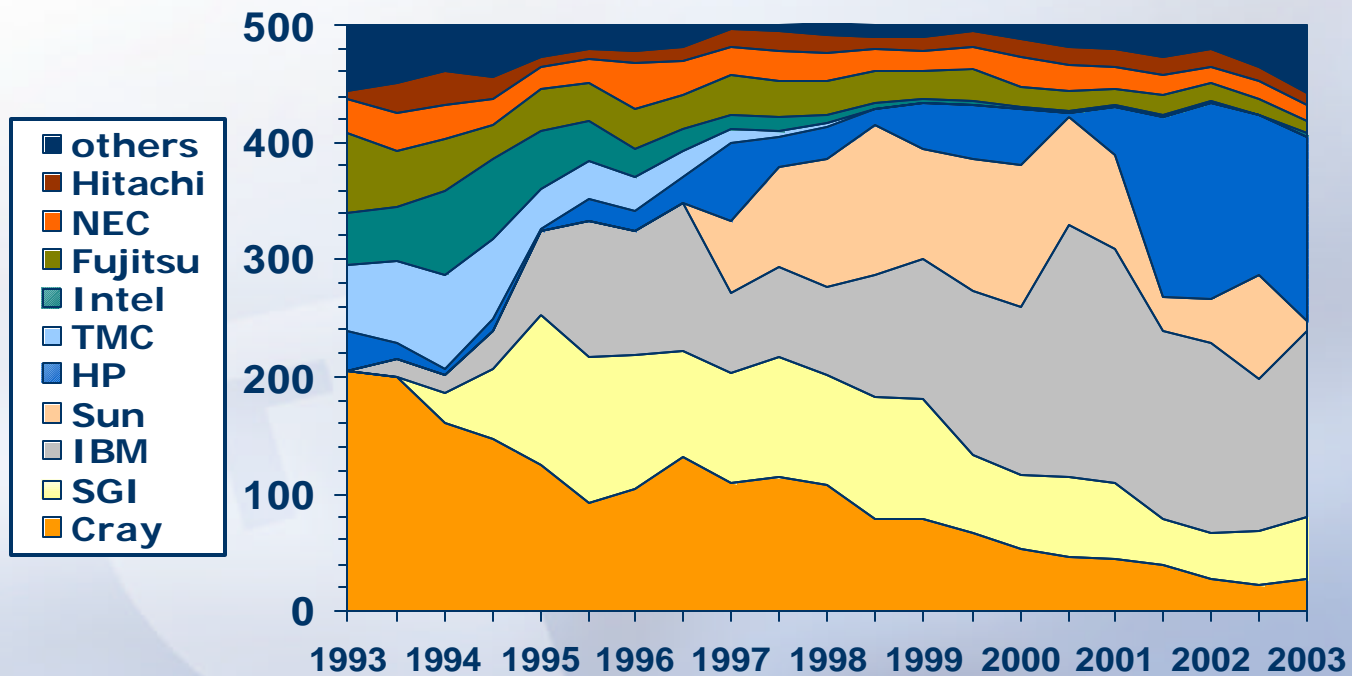

Hans Meuer
University of Mannheim

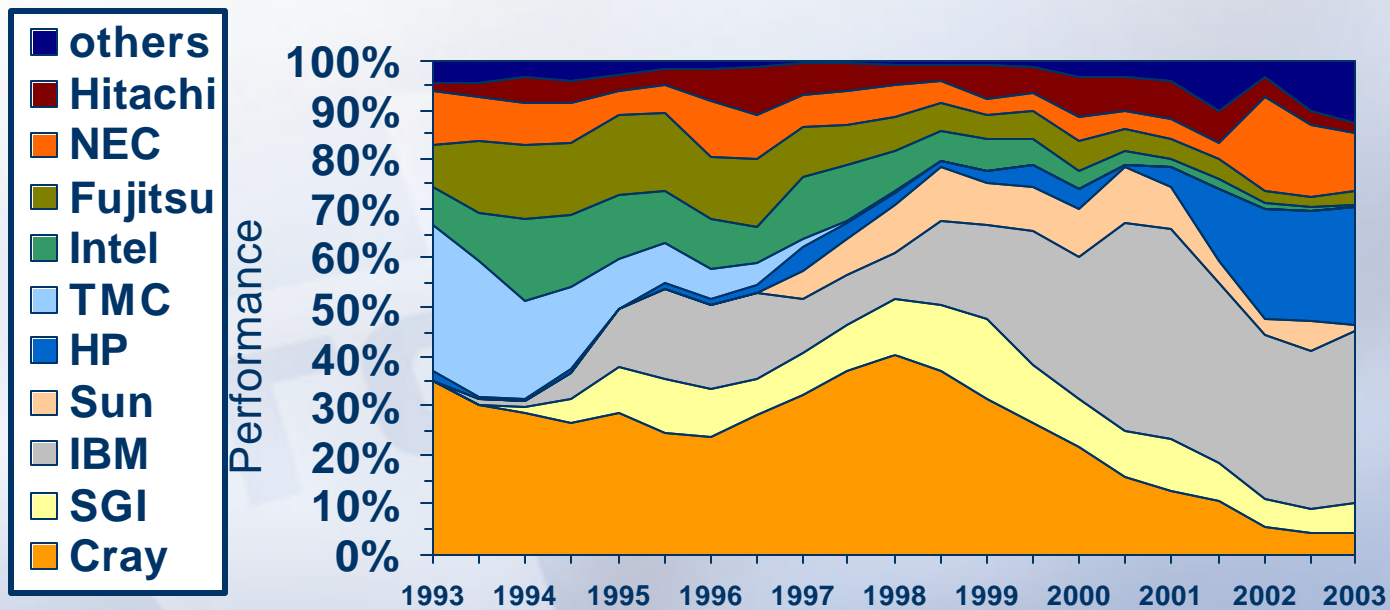

Erich Strohmaier
NERSC/Berkeley Lab


Jack Dongarra
University of Tennessee

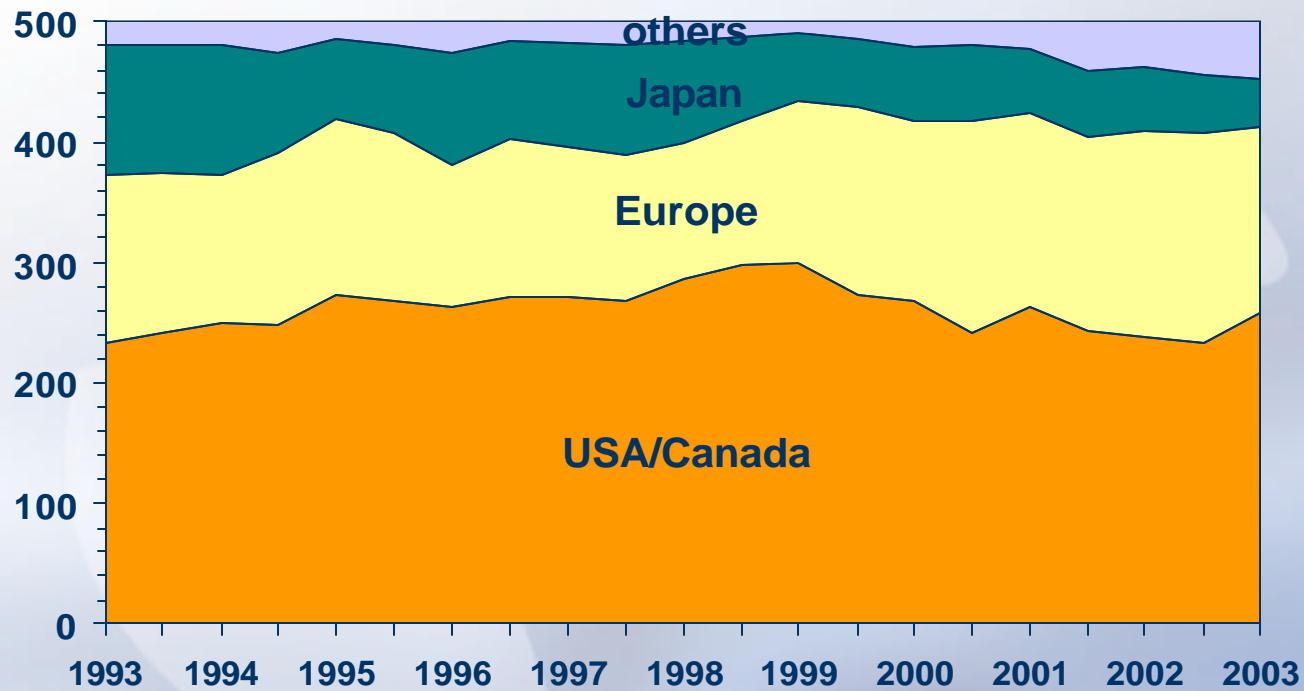

Horst Simon
NERSC/Berkeley Lab

Manufacturers

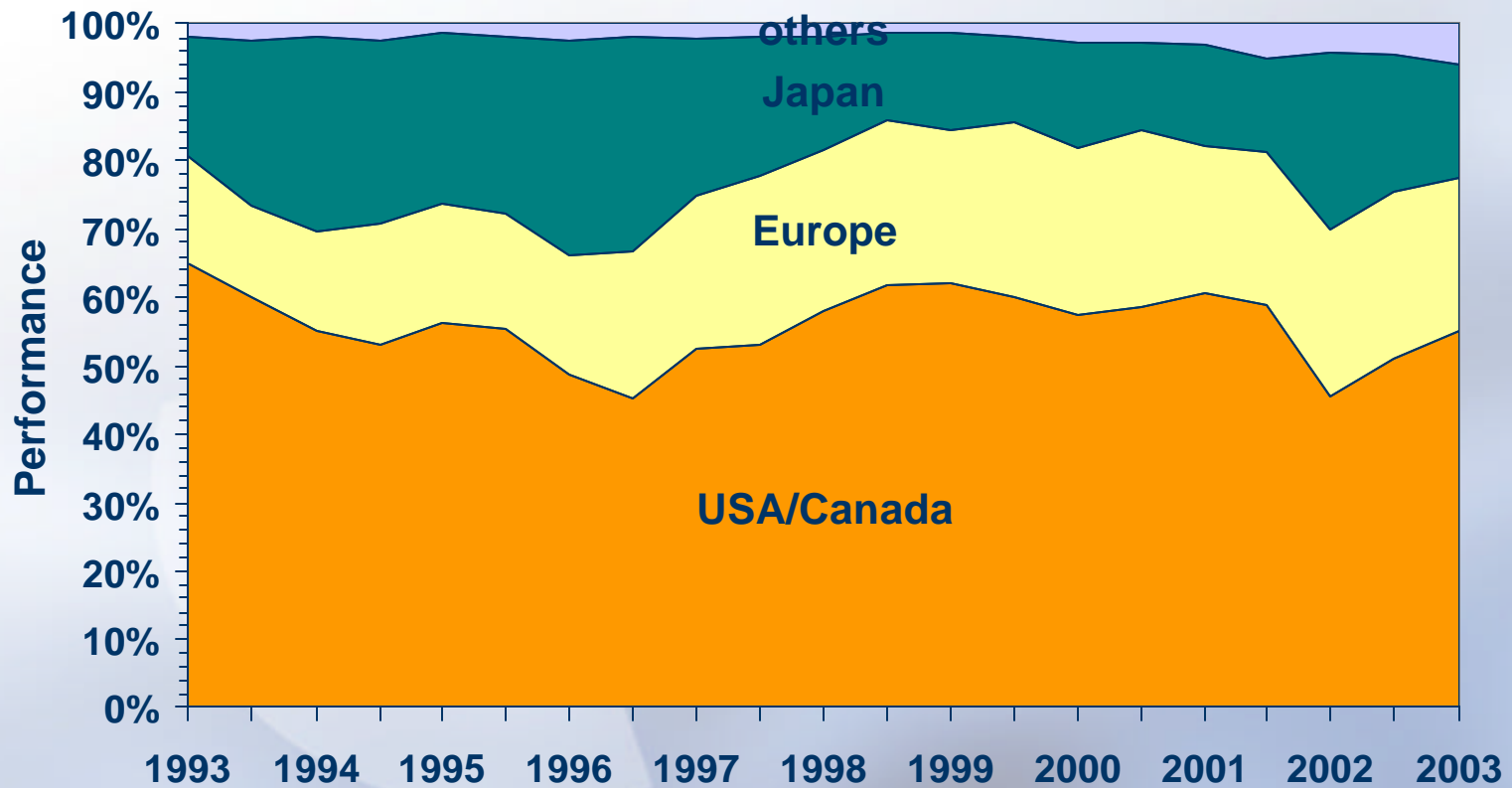




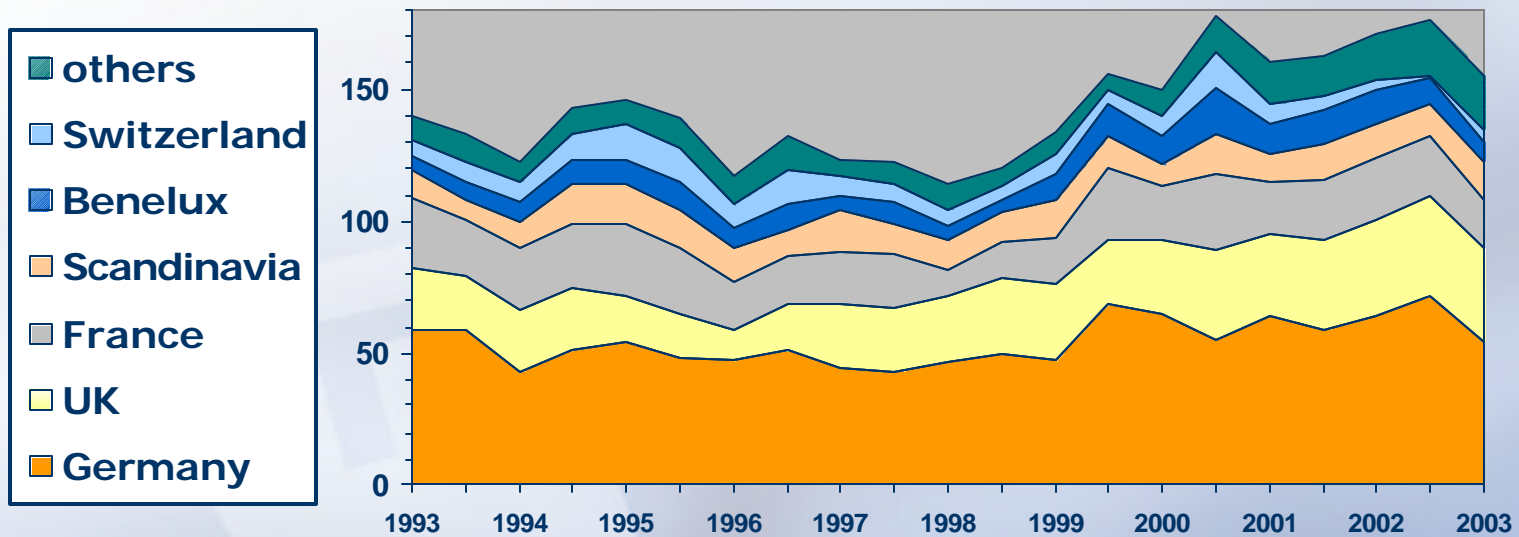
Continents



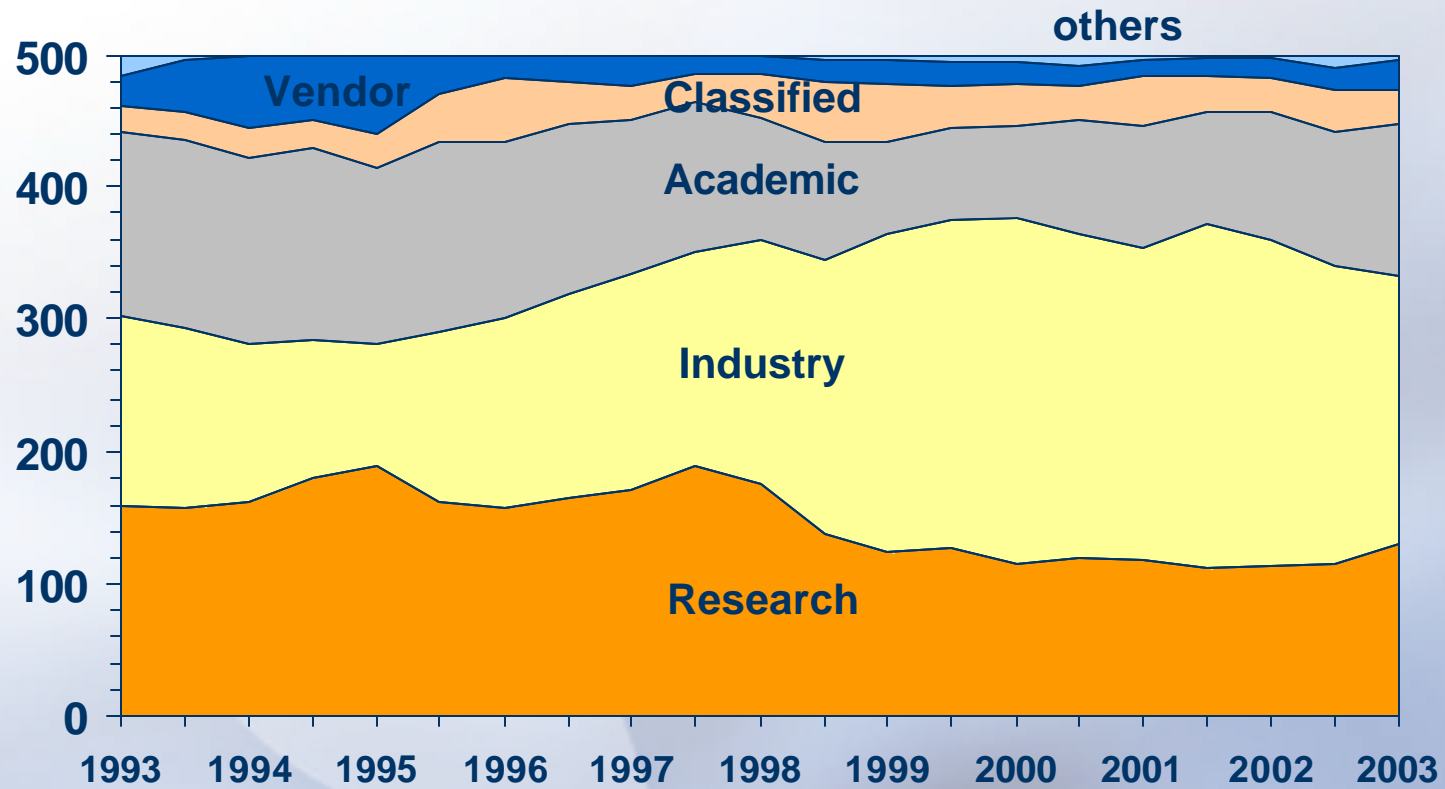
Continents Performance



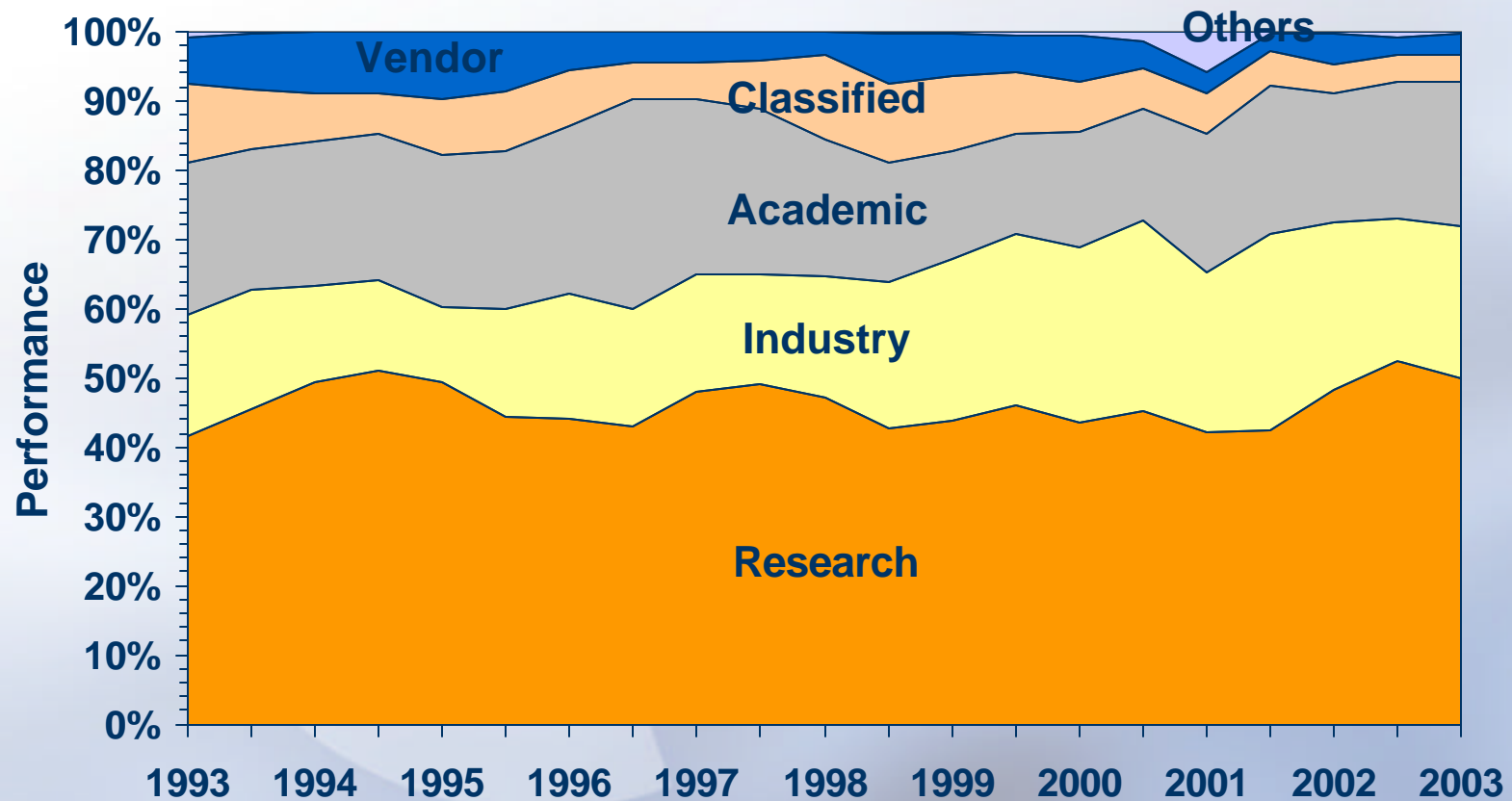
European Countries



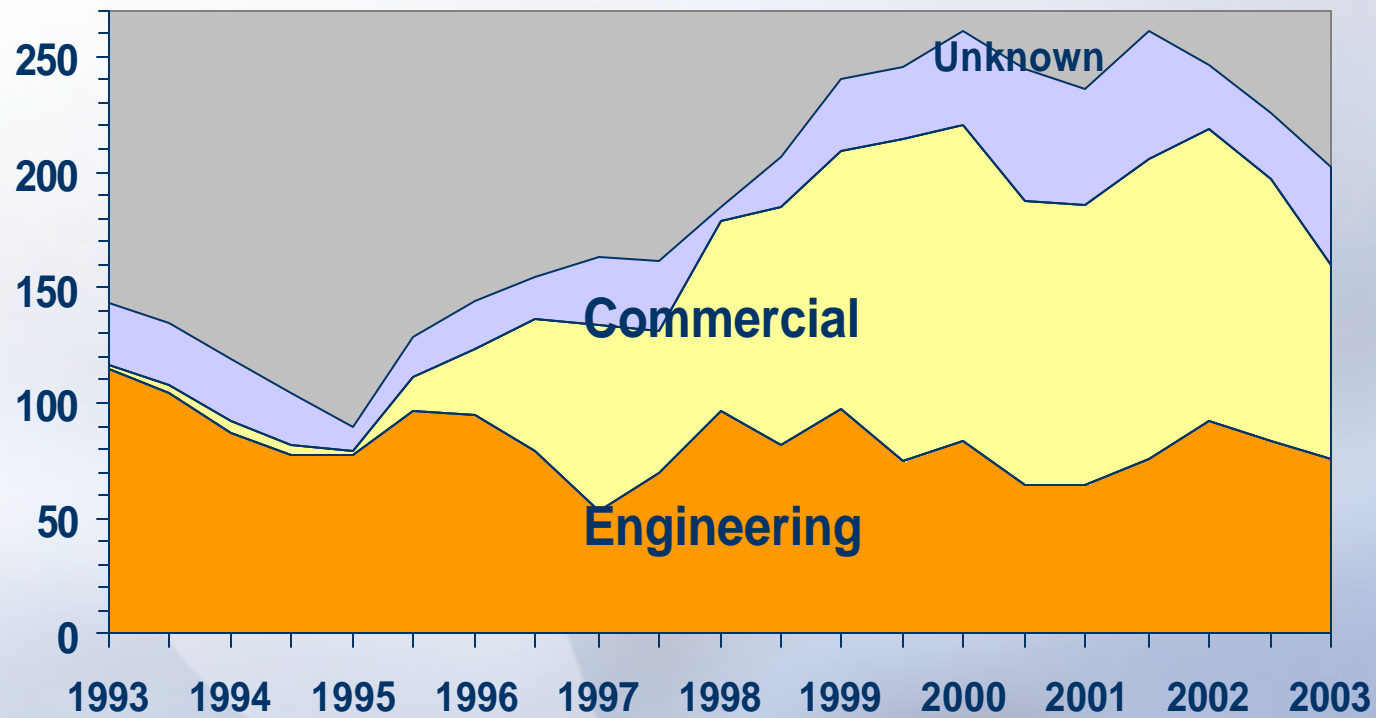
Customer Types



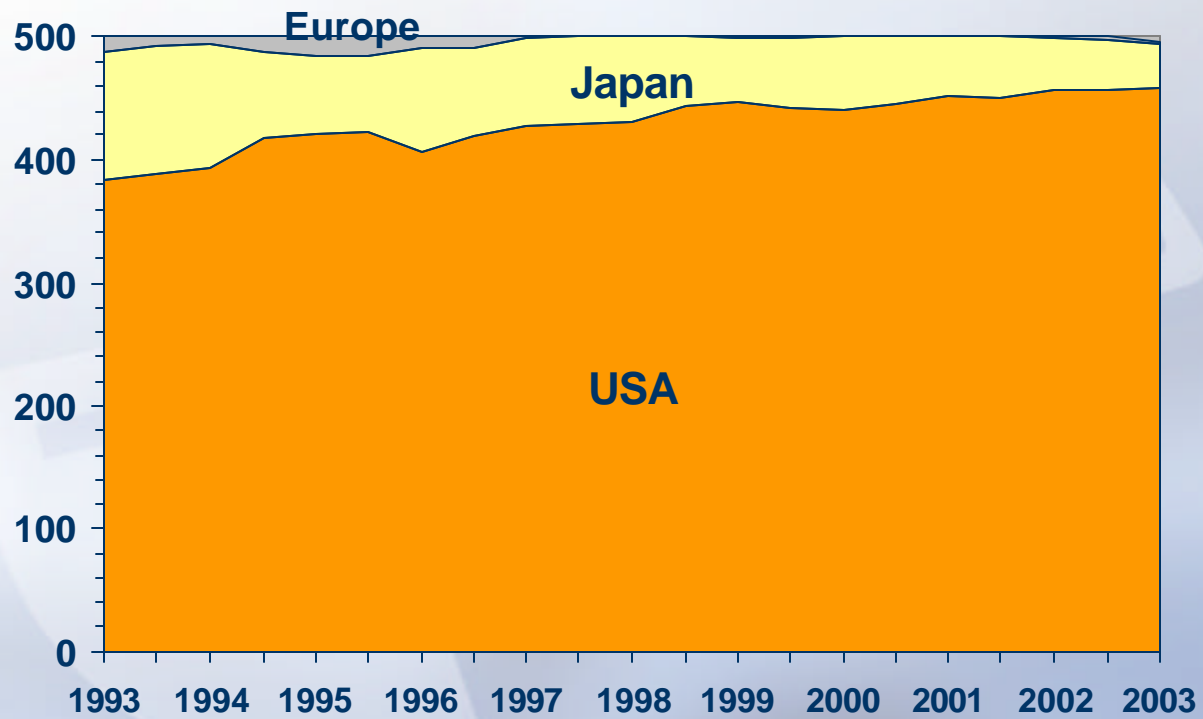
Customer Types Performance



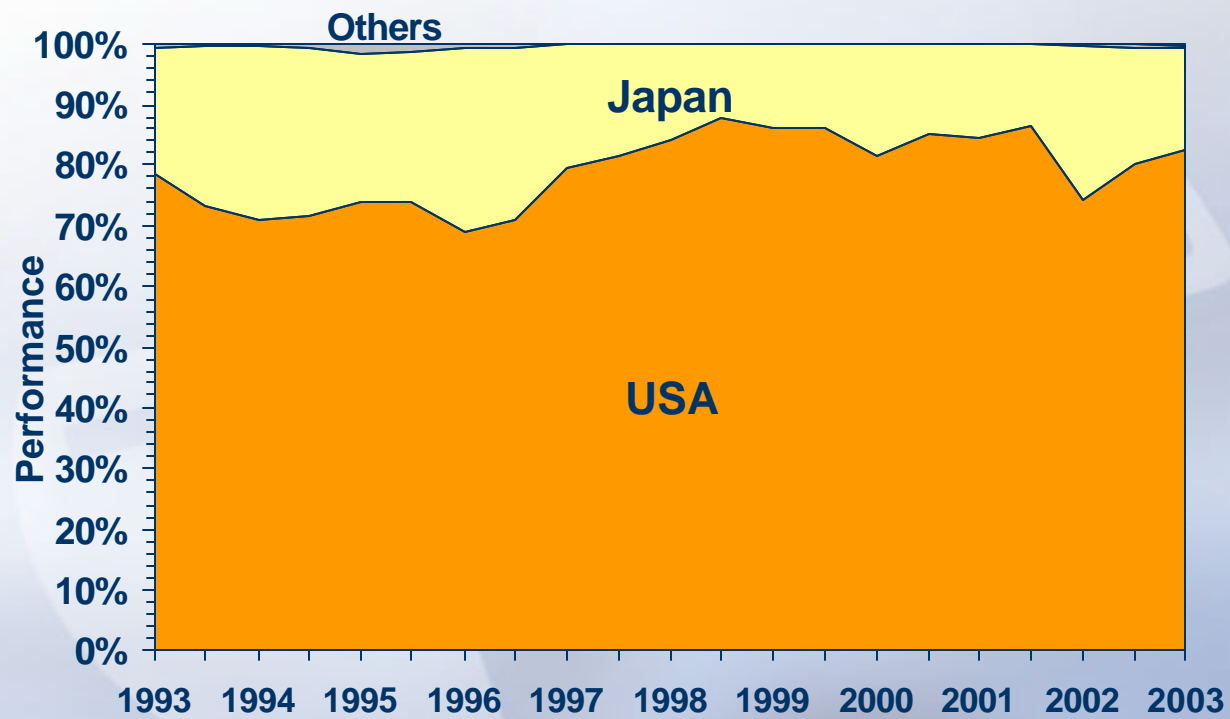
Industrial Customer Segments



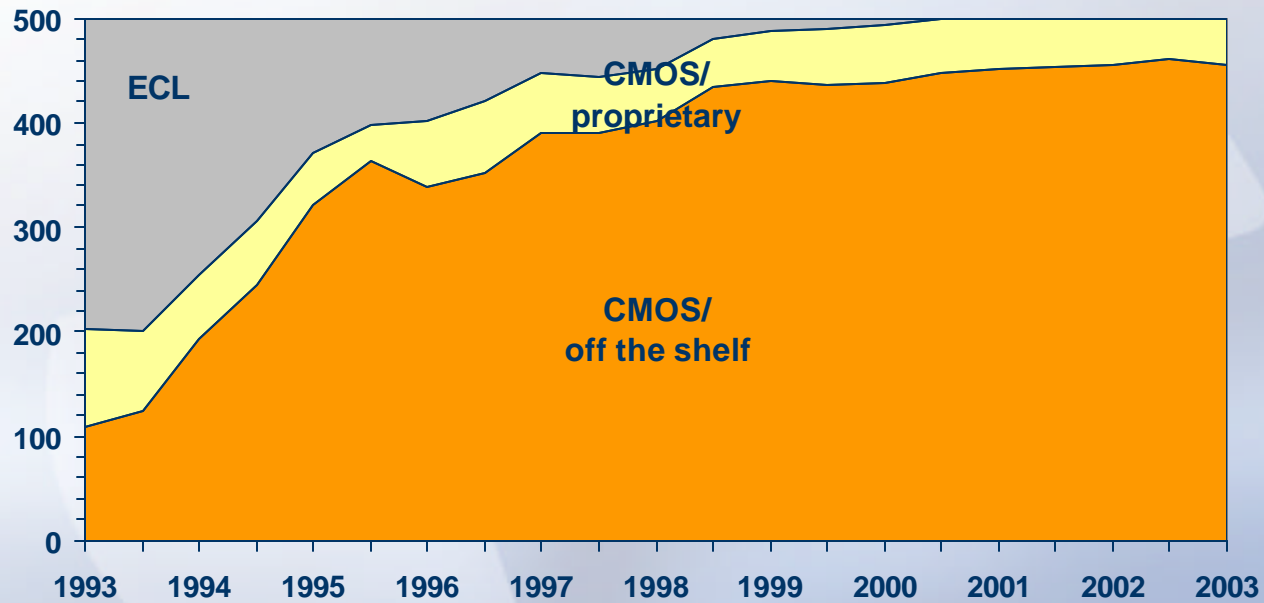
Producers



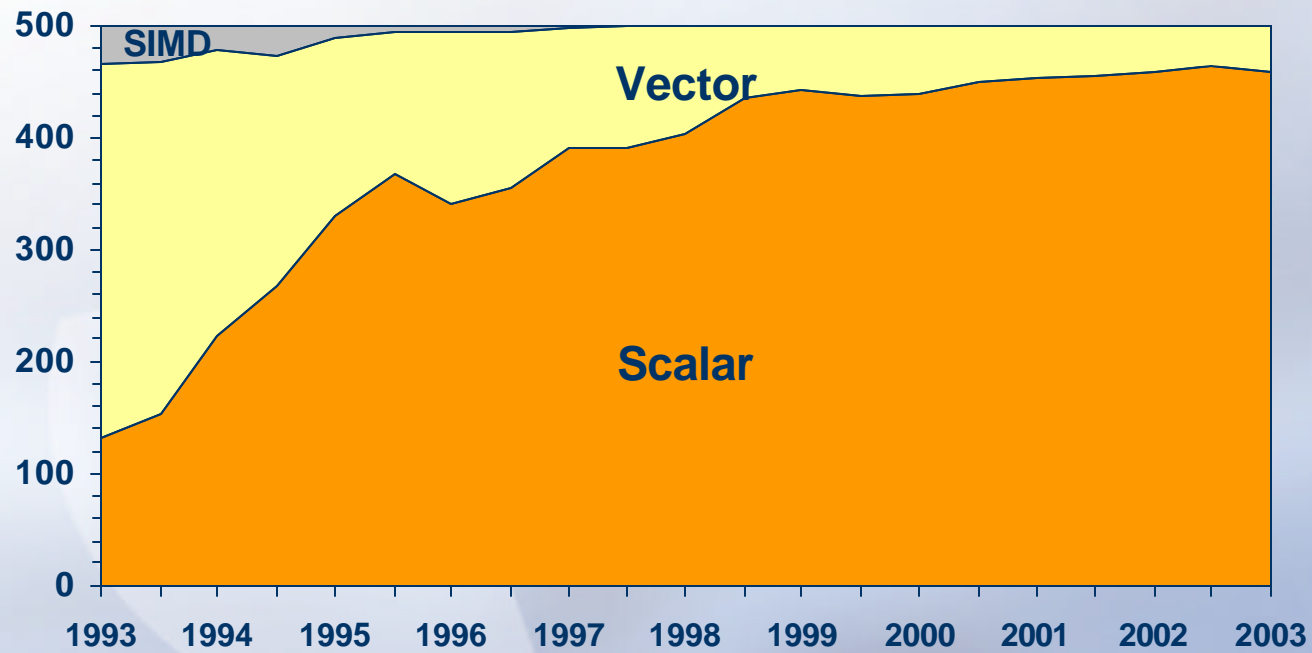
Producers Performance



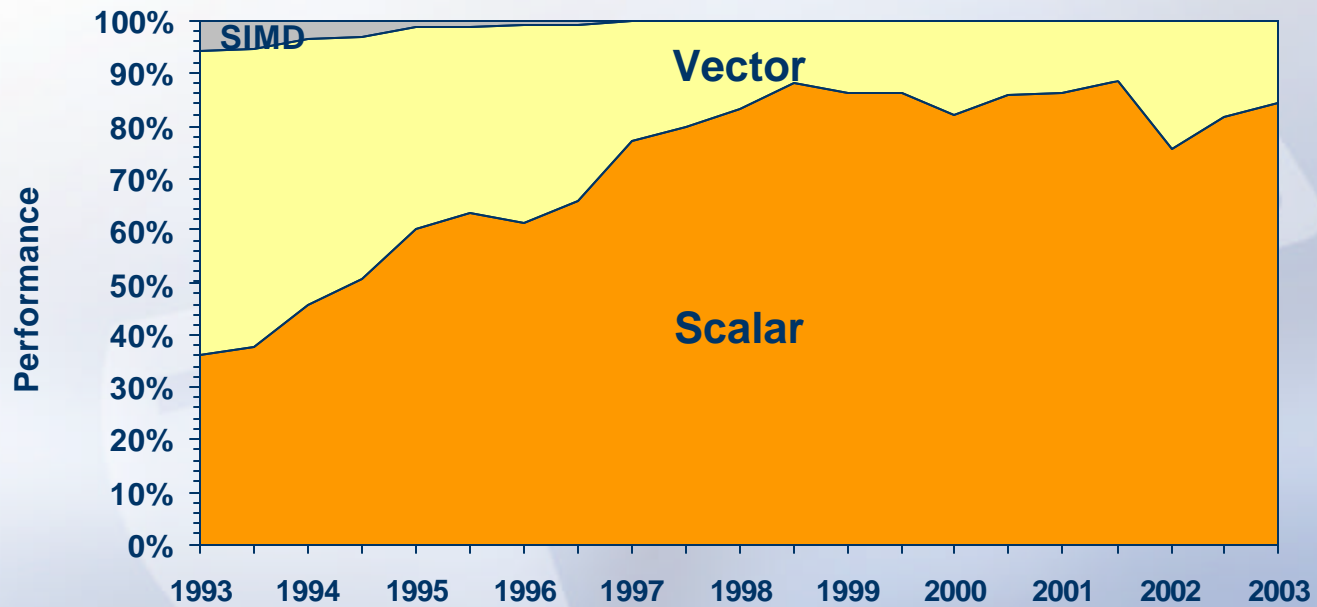
Chip Technologies



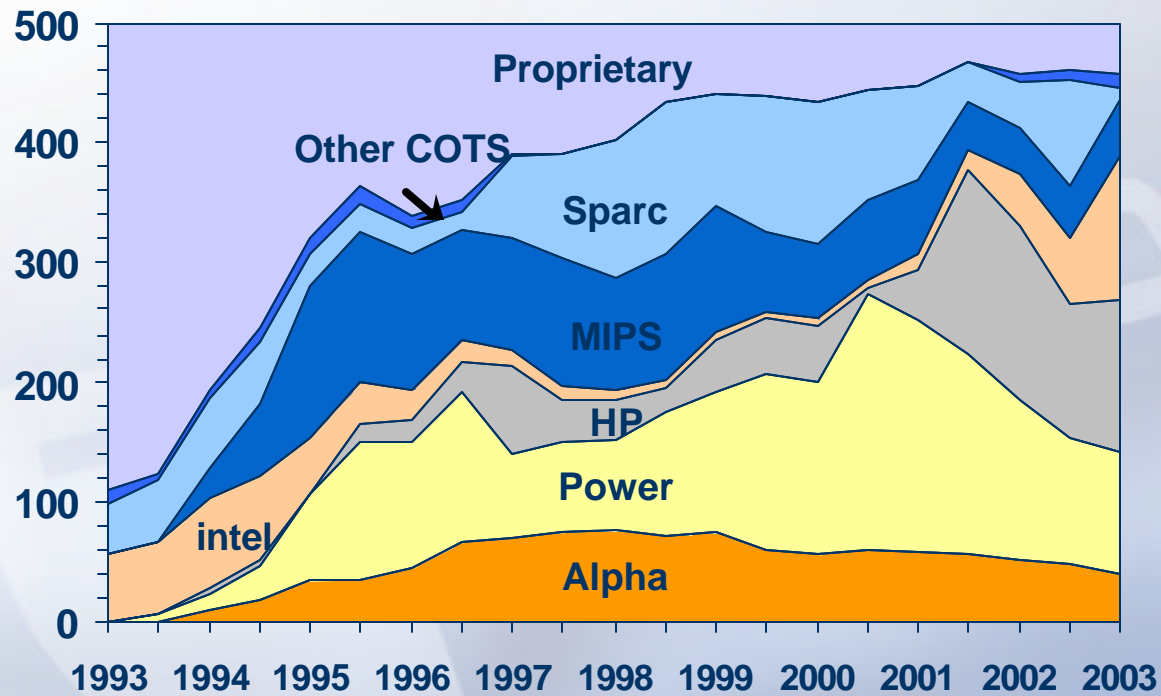
Processor Type



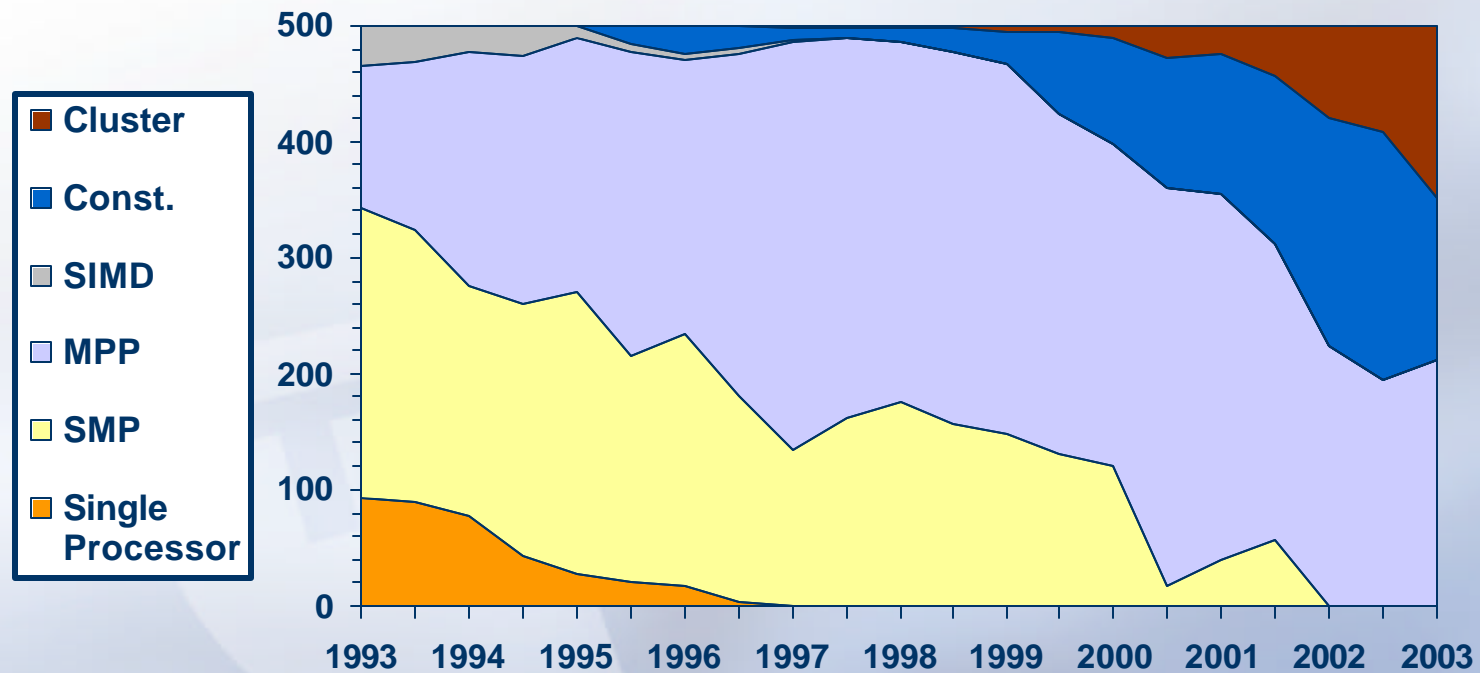
Processor Type

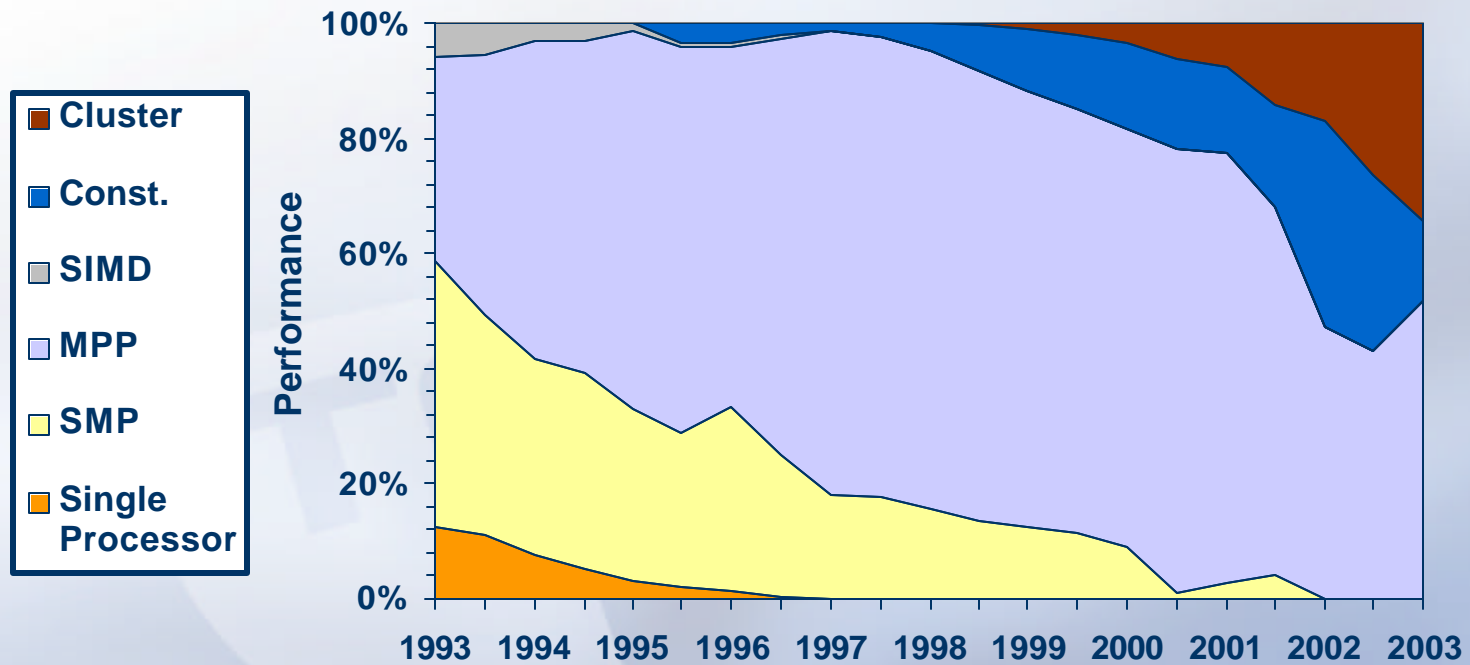


Processor Types

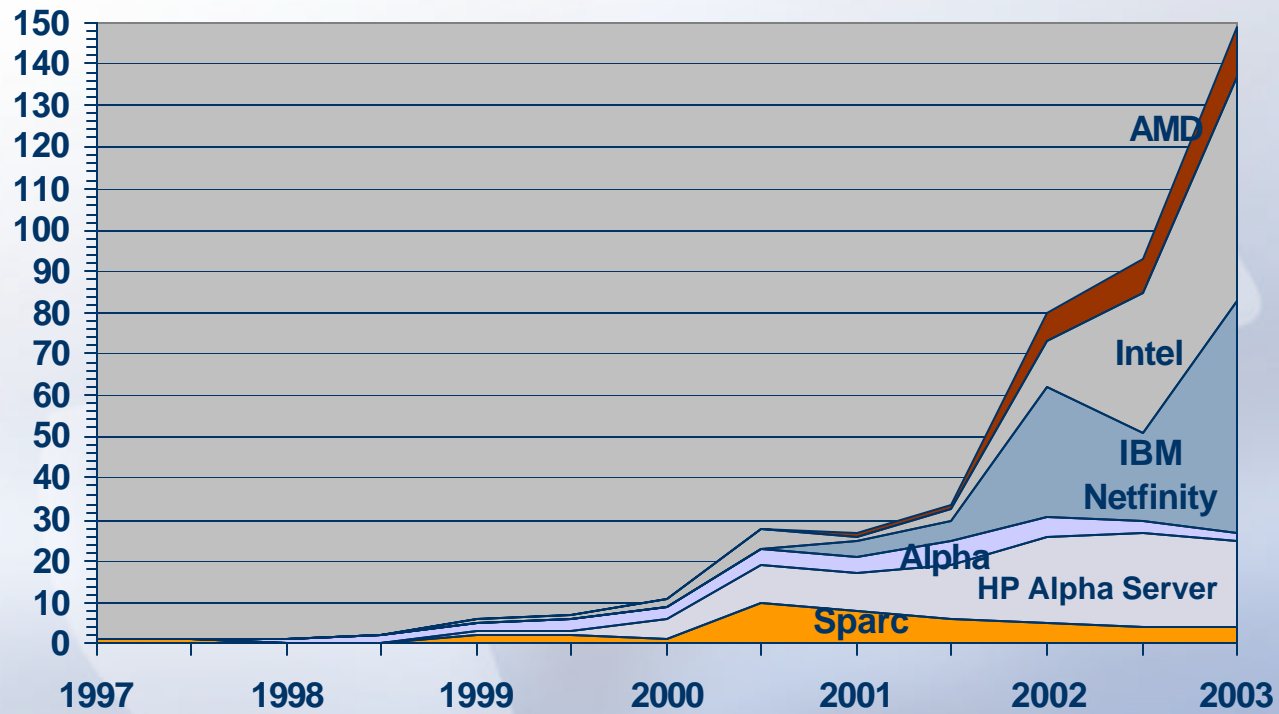


Architectures





NOW - Clusters



Excerpt from the 21th list

Rank	Manufacturer	Computer	Rmax [TF/s]	Installation Site	Country	# Proc
...
3	Linux Networx	MCR Linux Cluster Xeon - Quadrics	7.634	Lawrence Livermore National Laboratory	USA	2304
6	IBM	xSeries Cluster Xeon - Quadrics	6.586	Lawrence Livermore National Laboratory	USA	1920
8	Hewlett-Packard	rx2600 Itanium2 - Quadrics	4.881	Pacific Northwest National Laboratory	USA	1540
11	HPTi	Aspen Systems, Xeon - Myrinet2000	3.337	Forecast Systems Laboratory - NOAA	USA	1536
19	Atipa Technology	P4 Xeon Cluster - Myrinet	2.207	Louisiana State University	USA	1024
25	Dell	PowerEdge 2650 P4 Xeon - Myrinet	2.004	University at Buffalo, SUNY, CCR	USA	600
31	IBM	Titan Cluster Itanium2 - Myrinet	1.593	NCSA	USA	512
39	Self-made	PowerRACK-HX Xeon GigE	1.202	University of Toronto	Canada	512
...

The Most Powerful Supercomputers 1993 - 2003

- We want to look at systems in the early and mid 1990s in perspective
- In order to account for the rapid performance growth, we need to normalize Rmax performance
- Define **normalized Rmax** for a system the ratio of its Rmax performance and the sum of all Rmax for all the systems on the list
- For each system on all twenty-one lists we recomputed the normalized Rmax in %
- The we added all the normalized Rmax values together

	Site	Company	System	sum% norm Rmax	Max Rank	Sum Rmax TF/s
1	Sandia	Intel	ASCI Red	49.7%	1	26.24
2	NAL	Fujitsu	Numerical Wind Tunnel	41.2%	1	3.68
3	ES Center	NEC	Earth-Simulator	37.9%	1	107.58
4	Sandia	Intel	XP/S140	26.9%	1	1.45
5	LLNL	IBM	ASCI White	25.6%	1	41.31
6	LANL	TMC	CM-5	19.8%	1	0.66
7	LANL	SGI	ASCI Blue Mountain	18.3%	2	15.16
8	U. Tsukuba	Hitachi	CP-PACS	16.2%	1	5.15
9	LLNL	IBM	ASCI Blue-Pacific	15.8%	2	17.15
10	Minnesota SC	TMC	CM-5	13.7%	2	0.48

Excluding Classified Sites

	Site	Company	System	Edition	% Rmax	Rank
1	ES Center	NEC	Earth-Simulator	Jun-02	16.2%	1
2	NAL	Fujitsu	Numerical Wind Tunnel	Nov-93	8.5%	1
3	Sandia	Intel	ASCI Red	Jun-97	8.3%	1
4	LLNL	IBM	ASCI White	Jun-02	6.7%	1
5	Sandia	Intel	XP/S140	Jun-94	6.4%	1
6	LANL	TMC	CM-5	Jun-93	5.3%	1
7	U. Tsukuba	Hitachi	CP-PACS	Nov-96	4.6%	1
8	LLNL	IBM	ASCI Blue-Pacific	Nov-99	4.2%	2
9	LANL	SGI	ASCI Blue Mountain	Jun-99	4.1%	2
10	Government	Cray	T3E1200	Jun-98	3.9%	2

- In order to determine the most powerful sites we added the normalized Linpack Rmax values for all machines and all 21 lists

Sites – Aggregated Performance%

	Site	sum % norm. Rmax	Max Rank	Sum Rmax TF/s	Country
1	Sandia National Laboratories	85.1%	1	37.21	US
2	Los Alamos National Laboratory	80.1%	1	63.82	US
3	Lawrence Livermore National Lab	66.3%	1	94.24	US
4	NAL	47.7%	1	11.02	Japan
5	Earth Simulator Center	37.9%	1	107.58	Japan
6	University of Tokyo	34.6%	1	19.71	Japan
7	Pittsburgh Supercomputing Center	29.8%	2	23.84	US
8	NERSC/LBNL	29.0%	2	24.98	US
9	Oak Ridge National Laboratory	28.0%	3	15.95	US
10	NAVOCEANO	24.2%	5	20.53	US

Excluding Classified Sites



www.top500.org



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User Functions

Username:

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In order for you to add new systems or sites, please sign up as a [New User](#)

Preview of new TOP500 List

Thursday, June 19 2003 @ 02:28 AM CDT

Moore's Law still works and this can again be seen in the new TOP500, which will be released next Monday June 23rd, in time for the ISC2003 conference.

[read more \(283 words\)](#)

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Call for Participation in 21th TOP500 list

Wednesday, March 19 2003 @ 10:48 AM CST

The next release of the Top500 Supercomputer List will be presented at 18th International Supercomputer Conference, June 24-27 in Heidelberg, Germany. (<http://www.supercomp.de/>) The deadline for submitting entries is April 15, 2003. All systems reported have to be installed by May 15, 2003.

[Read more](#)

[1 comments](#)

Most Recent Post: 8-4/15 10:38AM by Anonymous

Companies roll out 10G bit/sec InfiniBand product demos

Wednesday, December 04 2002 @ 08:50 AM CST

A laundry list of companies teamed up this week to prove the performance of InfiniBand and present products based on the interconnect technology. At the SuperComputing 2002 conference in Baltimore this week, Lane15 Software Inc., Appro International Inc. and InfiniCon Systems Inc. demonstrated applications that contrasted the

Clusters @ Top500

For more information about this Site, please [read here](#).

Cluster Database: Be sure to check the cluster database. If you are affiliated with one of the sites and think that some cluster data is incorrect, please let us know.

Primeur

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- [Faster Power 4+ processors for Research Center J Klich](#)
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- Hans- Werner Meuer, University of Mannheim
- Erich Strohmaier, NERSC/LBNL
- Jack J. Dongarra, University of Tennessee
- Horst D. Simon, NERSC/LBNL
- Anas Nashif, Prometheus GmbH

More Information at www.top500.org or cluster.top500.org