Spring Analyst Meeting

Paul S. Otellini :: President and Chief Operating Officer

2003 Intel Spring Analyst Meeting

intel

Convergence of Computing & Communications

"Always" and "All-Ways" Digital

Wireless

the 1st Killer Environment

Winning with Connected Computing

intel

7 Years Ago…

1 Billion Connected Computers

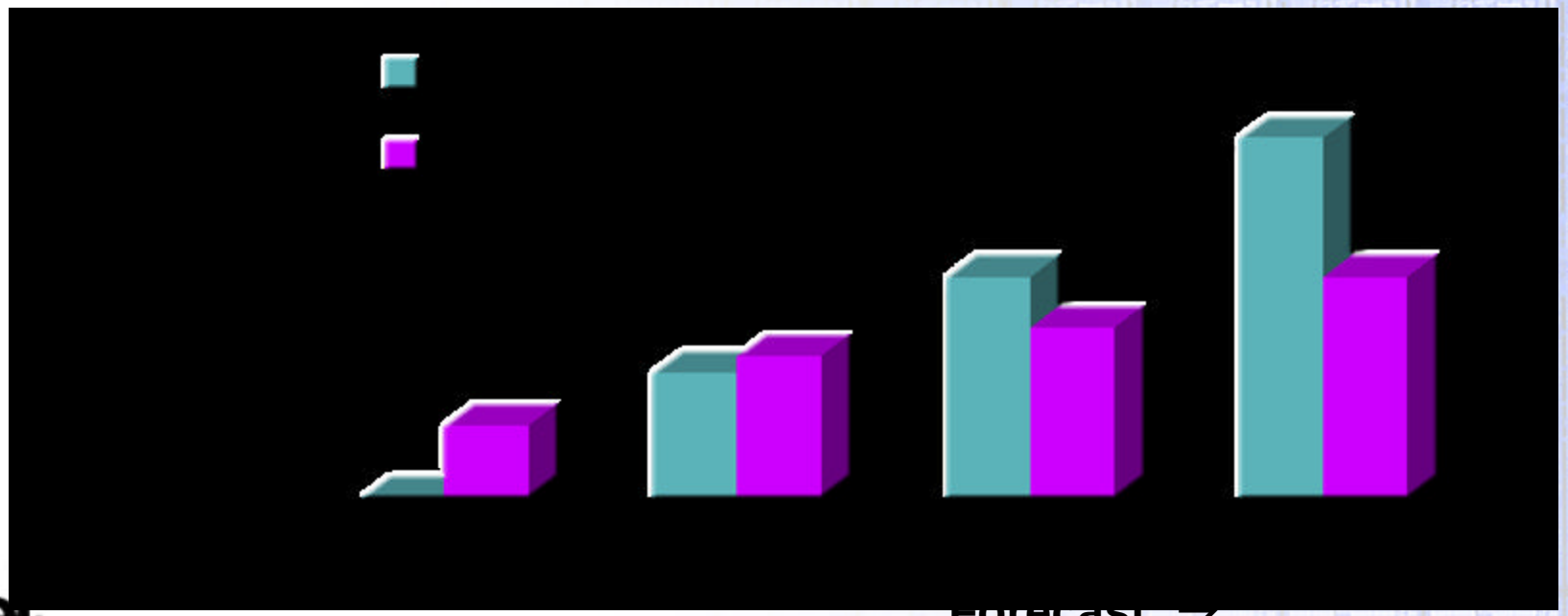
Andy Grove

4 Years Ago…

1 Billion Connected Computers
1 Billion Connected Handsets

Craig Barrett

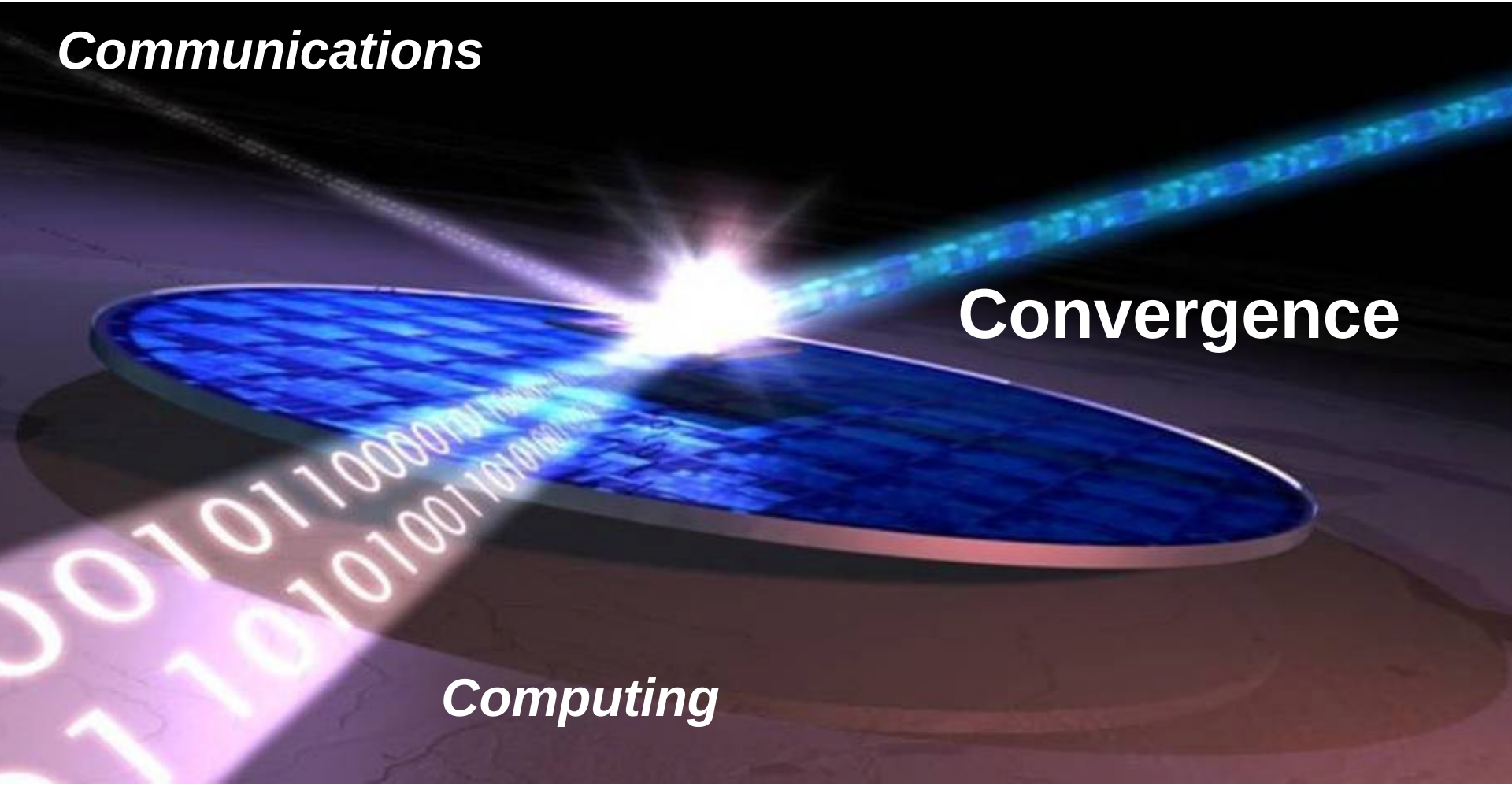
What happened?



Forecast →

One year ago…

All computers will *communicate*…



All communications devices will *compute*…

intel

Convergence is here…

Manitoba
"Wireless Internet on a Chip"

Intel® Centrino™ Mobile Technology

intel

Making Convergence Mainstream

With the device…

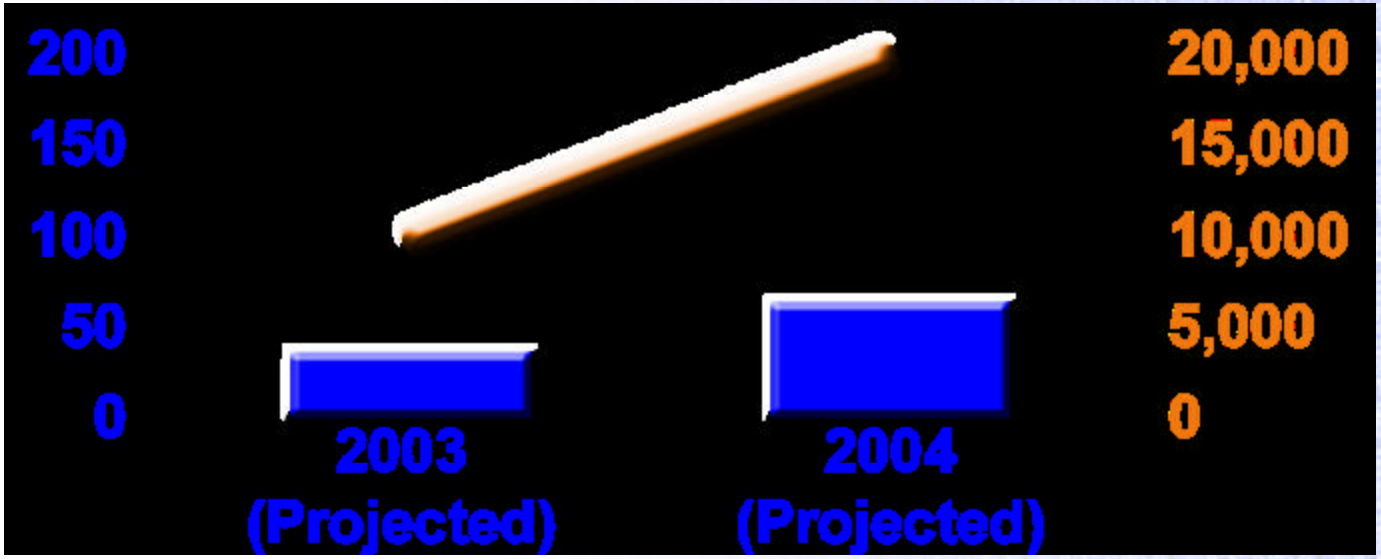
Intel® Centrino™ Mobile Technology

2003 → 2004 units: >2x

Intel XScale™ Technology-based handsets

2003 → 2004 units: >10x

and the connections…



Adding 27,000 access points per day…

the 2010 Opportunity…

1.5 Billion Broadband PCs

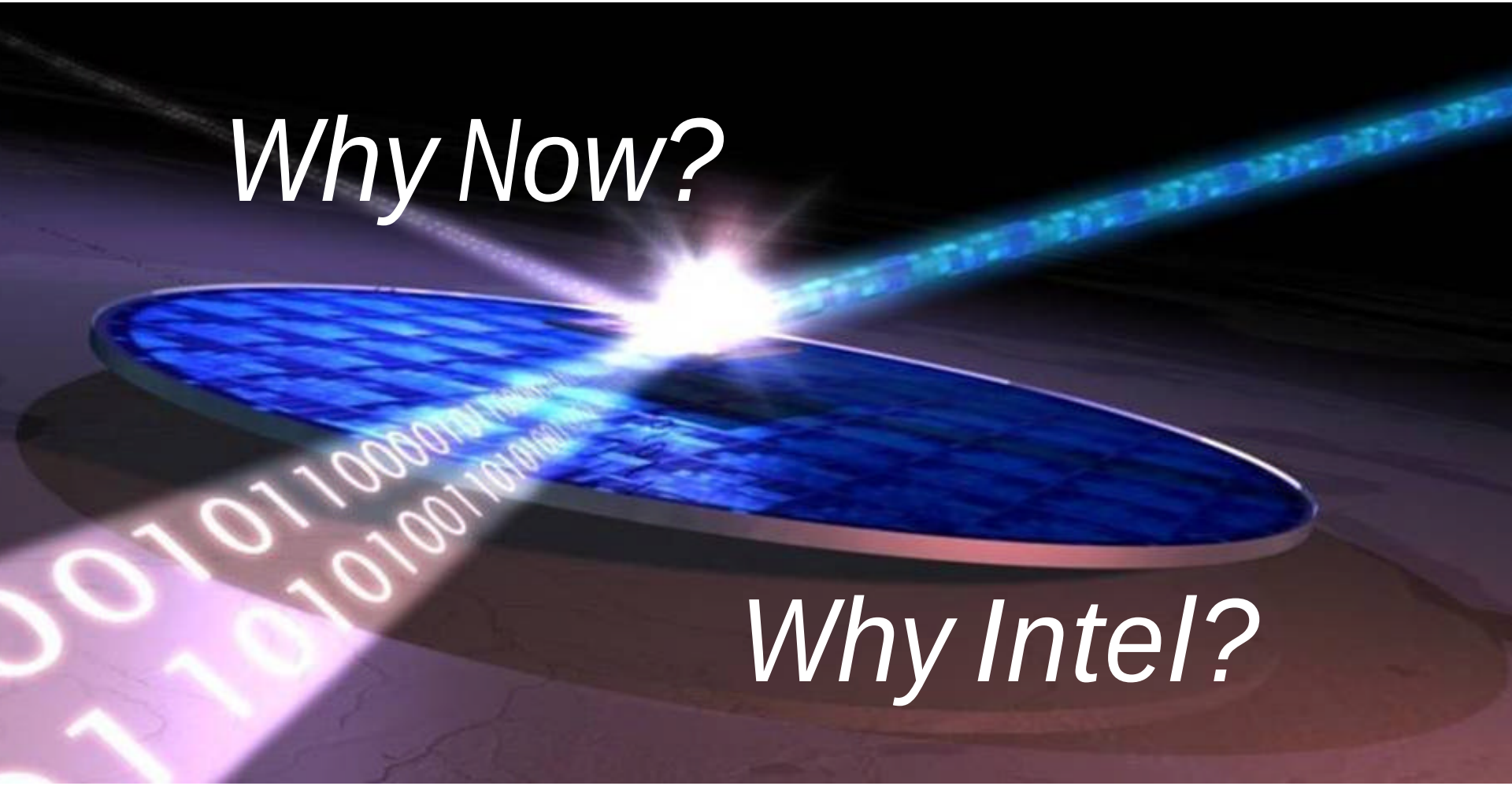
Wired *(Copper, DSL/VDSL/Cable and Fiber)*
and ***Wireless*** *(802.11, 802.16 and 3G/4G)*

2.5 Billion Connected Handsets with "GHz"

performance equivalence of a ***"4GHz Pentium® 4"***

intel

CONVERGENCE



intel

Convergence
Why Now?

“ALWAYS” & “ALL-WAYS”
Digital

intel

Wireless:
The 1st Killer Environment

Wi-Fi means Business

Business Week, April, 2003

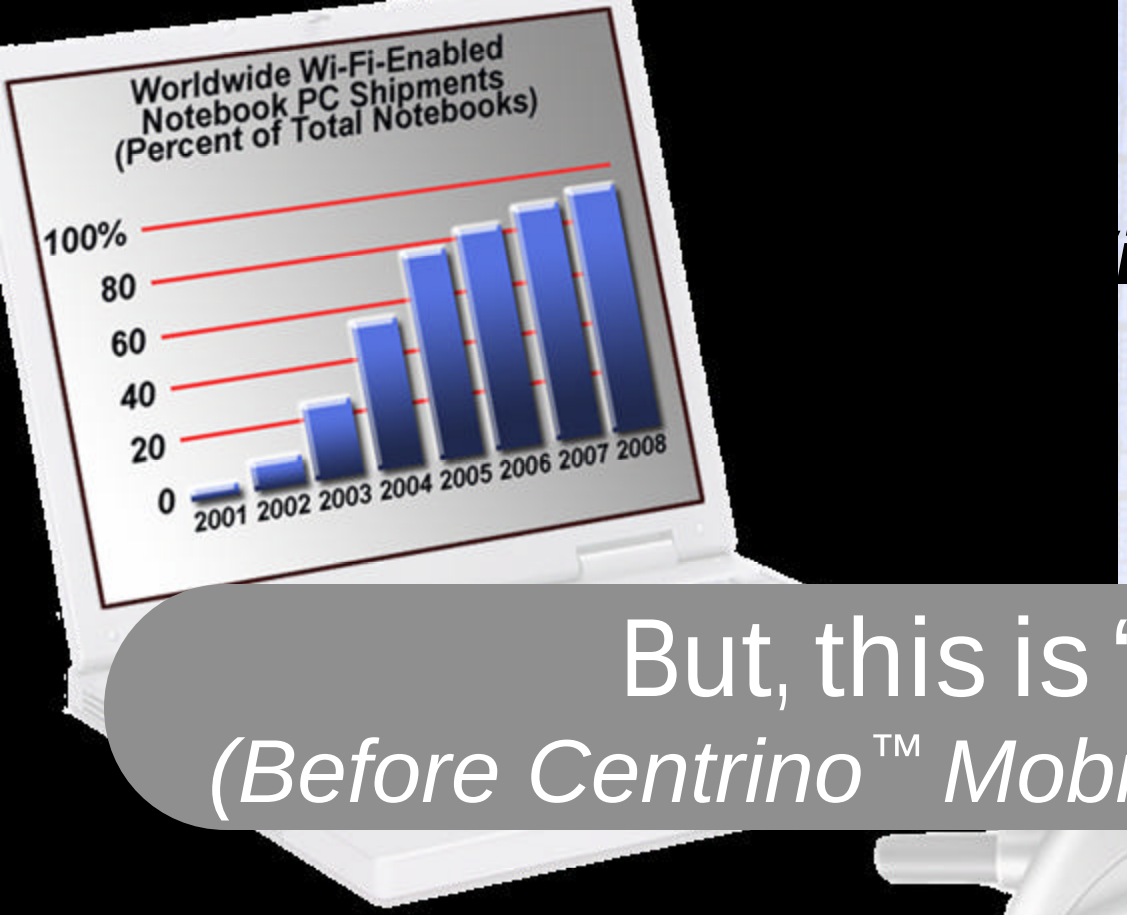
Wi-Fi Inside
Positions Intel at Top

Telephony Magazine, March, 2003

Wi-Fi: Anytime,
Anywhere

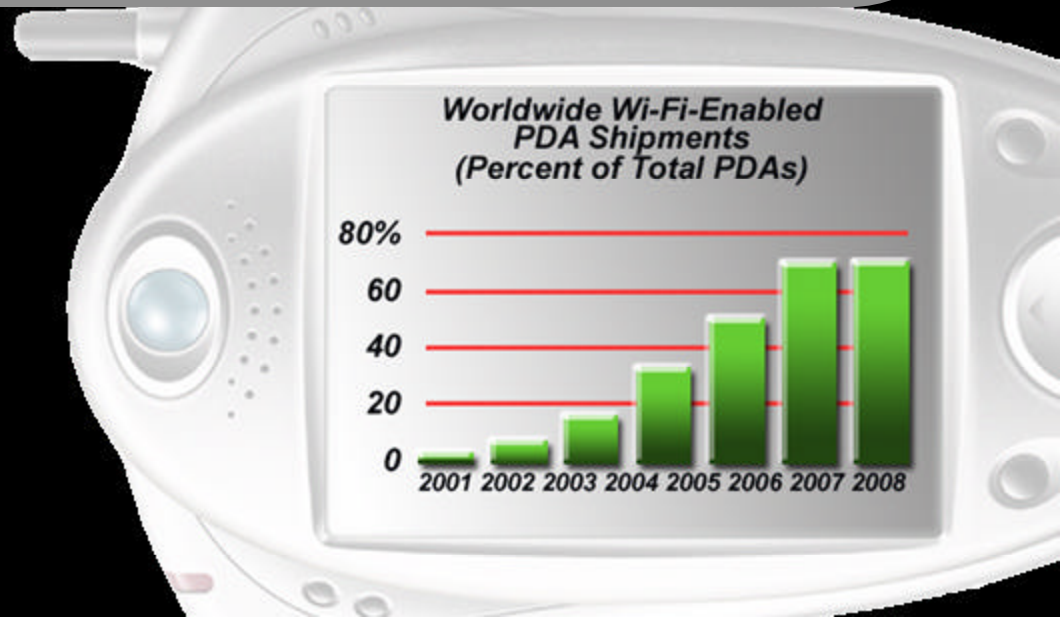
Wall Street Journal, March, 2003

intel



ireless
Adoption

But, this is "BC"
(Before Centrino™ Mobile Technology)



and Wi-Fi Enable
Handhelds.

intel

Wireless: not just 802.11…

Devices will require multiple standards…

in all geographies… in one device

WLAN	**802.11.b → b/g → a/b/g/i → n**
WMAN	**802.16**
WWAN	**GSM → GPRS → UMTS → 4G?**

intel

“Radio Free Intel” = Leadership

and more than Notebooks & Handsets…

Wireless: the next server opportunity

Internet : edge

Wireless : databases & OCC* apps

intel

* Occasionally Connected Computing

Convergence

Why Intel will win?

Lowest Cost

Highest Capabilities

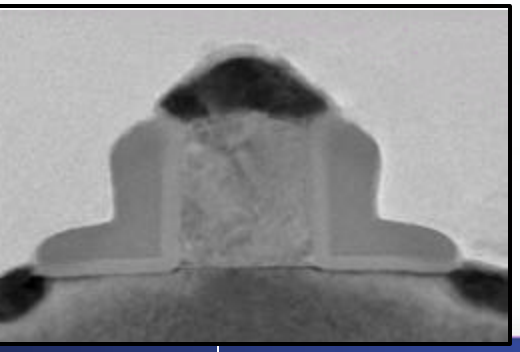
Worlds best "Diffusion Engine"

Common Software

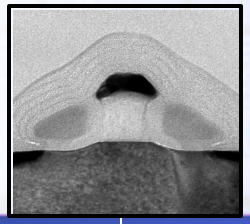
intel

Moore's Law
Alive and Well

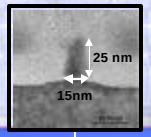
130nm node
70nm gate



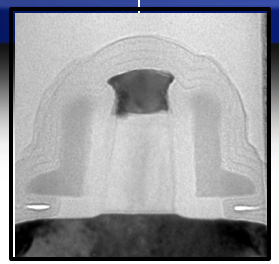
65nm node
30nm gate (prototype)



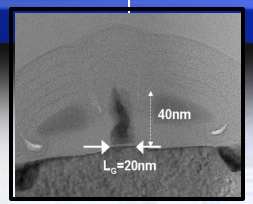
32nm node
15nm gate (prototype)



2001 ***2003*** ***2005*** ***2007*** ***2009***



90nm node
50nm gate



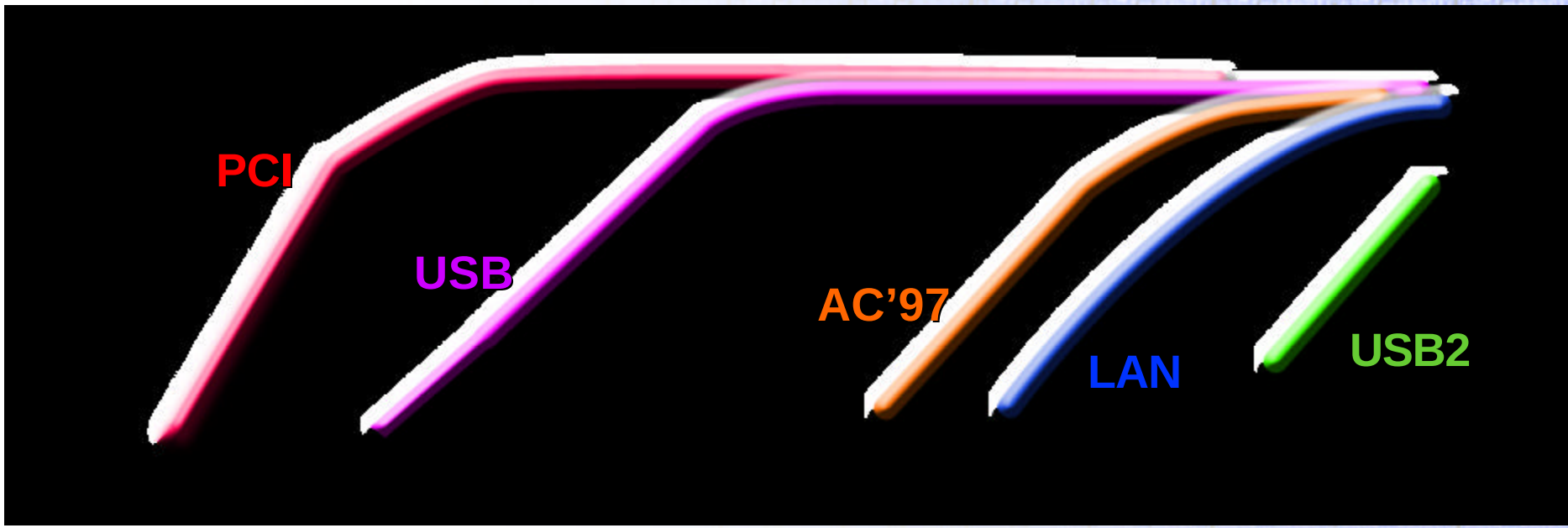
45nm node
20nm gate (prototype)

intel

Delivering Highest Capabilities at Lowest Cost

Intel: The Worlds Best "Diffusion Engine"

% of Intel Based Chipsets with New Capabilities



No one else can "diffuse" capabilities on our scale

Next… Wireless, PCI-E, Serial ATA…

intel

Software Goal:

Write once, run best on Intel processors…

Occasionally Connected Computing

"Always" and "All-ways" Connectivity

Common denominator is Intel silicon and tools

intel

JAMDAT™ mobile

demo

intel

Winning Converged Computing…

Mobile Internet Clients

Digital Home

Digital Office

Communications Infrastructure

intel

Intel® Centrino™ Mobile Technology: Raising the Bar…

Worldwide launch in Q1

125 designs, 50 at launch

CMT ramp meeting our expectations

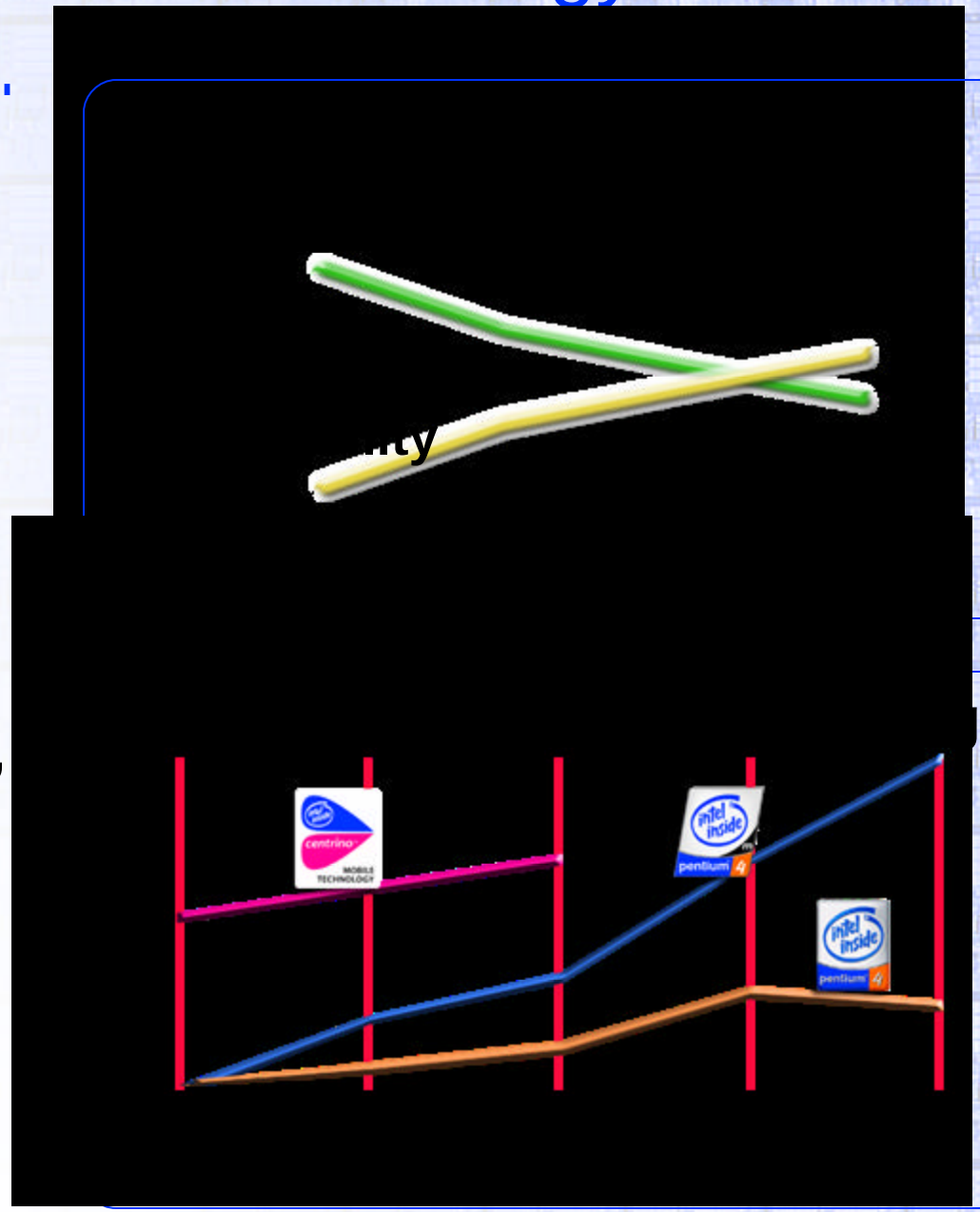
Wireless attach rate > 50%

New Market: "White-book"

Launch: 3 ODMs, 35 SIs

2003: 8 ODMs, 120 SIs

Enabling the channel to sell into the growth segment



intel

And it gets Better...

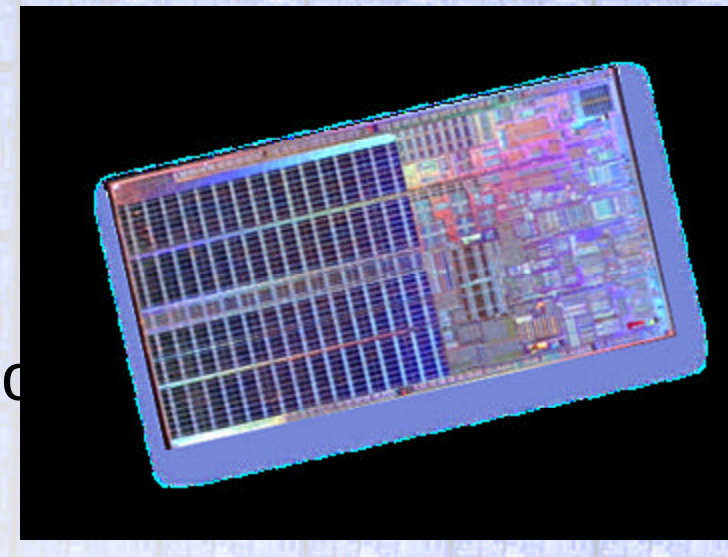
2H'03

Dothan: 1st 90nm mobile CPU

Better performance (2x cache, higher GHz)

Wireless: 802.11a/b & 802.11b/g

New chipset: Backlight Image Adaptatic



2004:

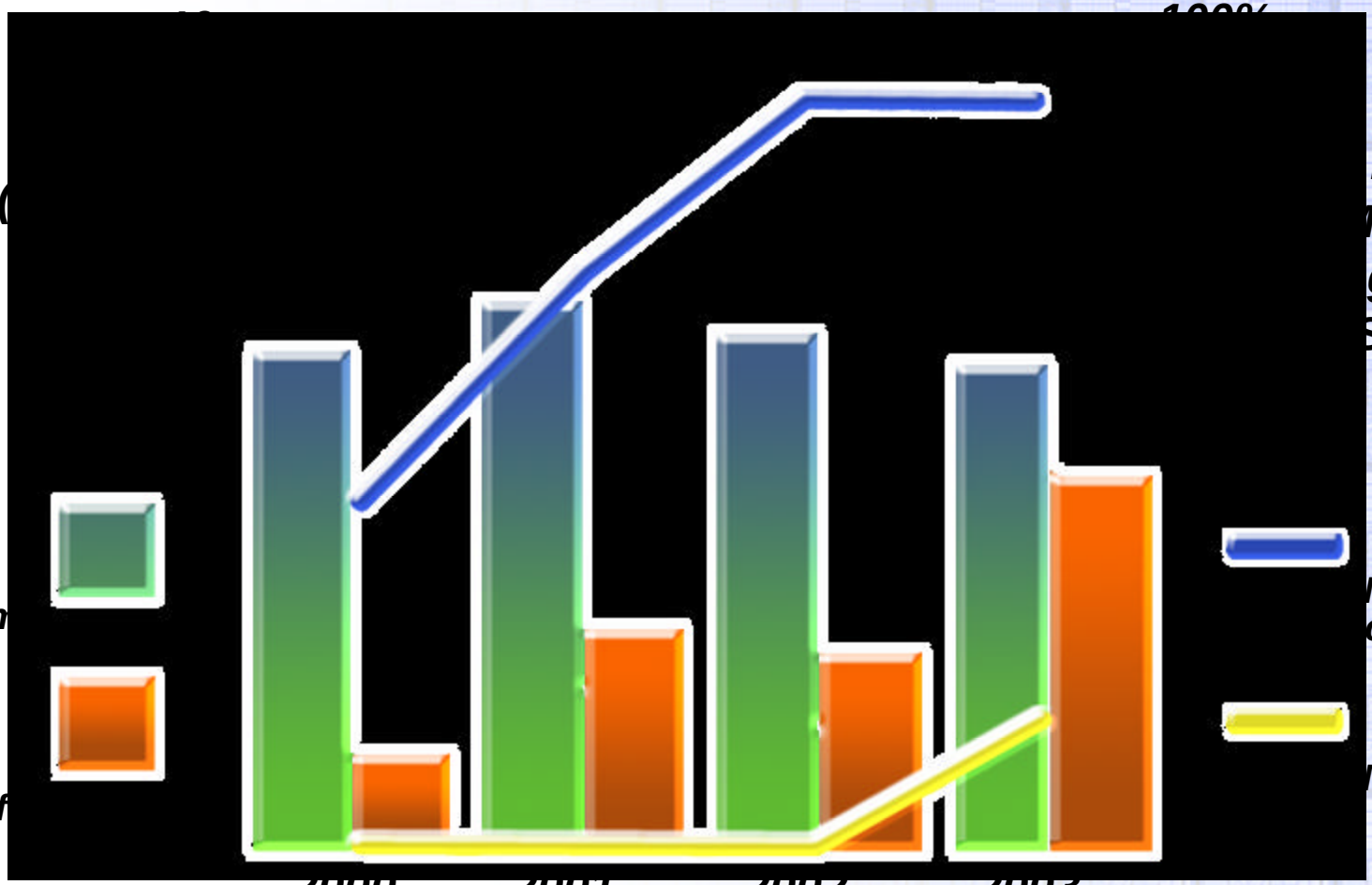
Next Gen. Wireless: 802.11a/b/g

Next Gen. Mobility: Newport Concept

"Quick Peek" lid display, Always-on Wireless

5 radios, all day battery life, fan-less…

Extending Mobility:
2003 is the crossover point for PDAs…



Prescott: enabling the Digital Home & Digital Office

Technology Leadership:

- Hyper-Threading, La Grande Technology

Platform Leadership: New capabilities

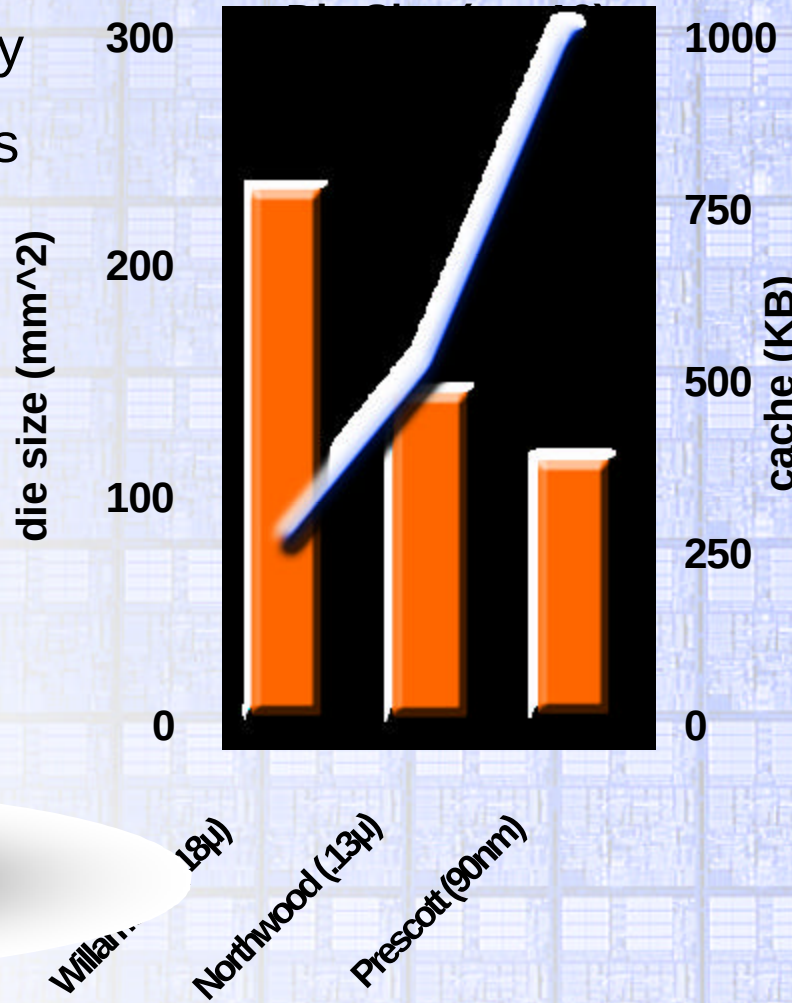
- 800MHz FSB, 400MHz DDR, SATA
- Statesboro, Marble Falls, Powersville

Mfg. Leadership: 90nm, 300mm

Software: Office 11, Sinbad…

Powersville

Marble Falls



intel

More than "just the next CPU"

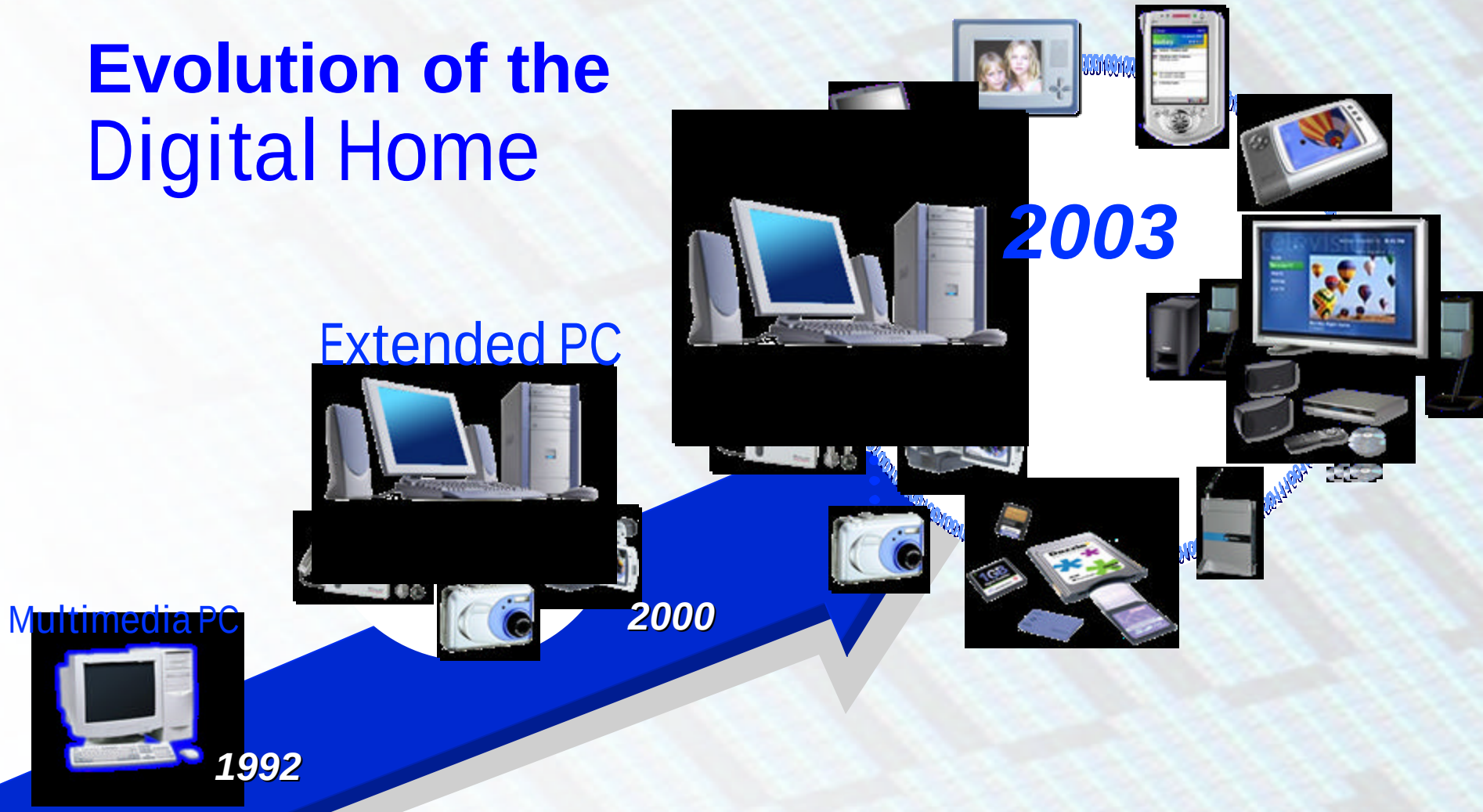
Winning the Digital Home

"TiVo is God's machine."

Michael Powell, FCC Chairman
February, 2003

intel

Evolution of the Digital Home

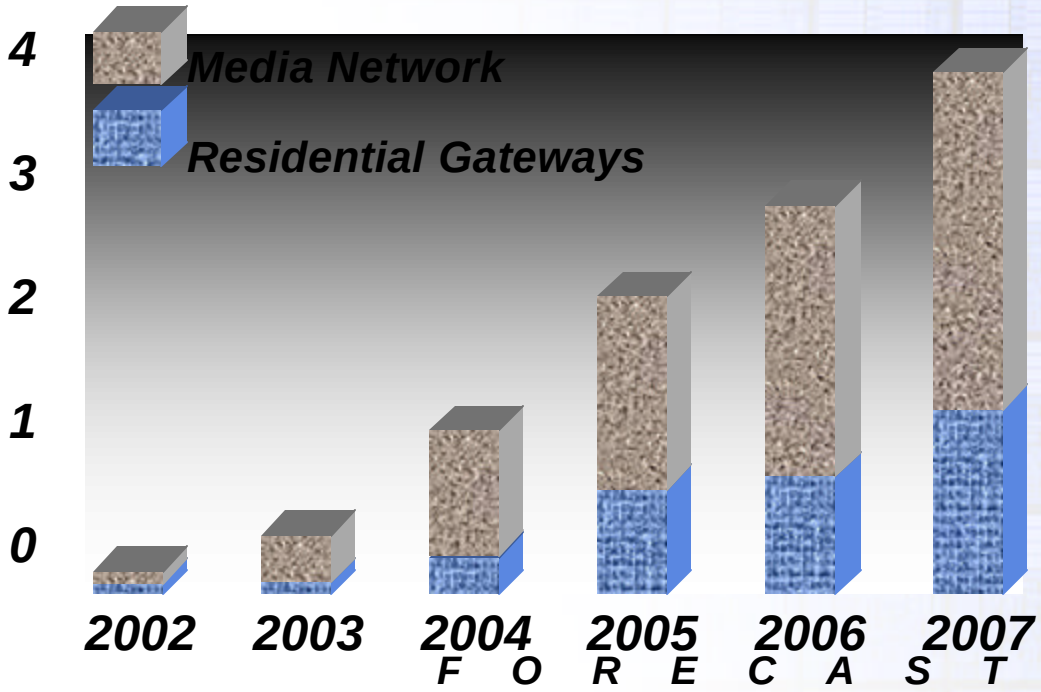


Wireless will liberate **the home…**

intel

Whole House Media Connectivity:

Worldwide Home Networking Revenues ($B)



Philips iPronto

Linksys Digital Media Adapter

Toshiba Transcube 20

intel

Winning the Digital Home

With Standards & Partners

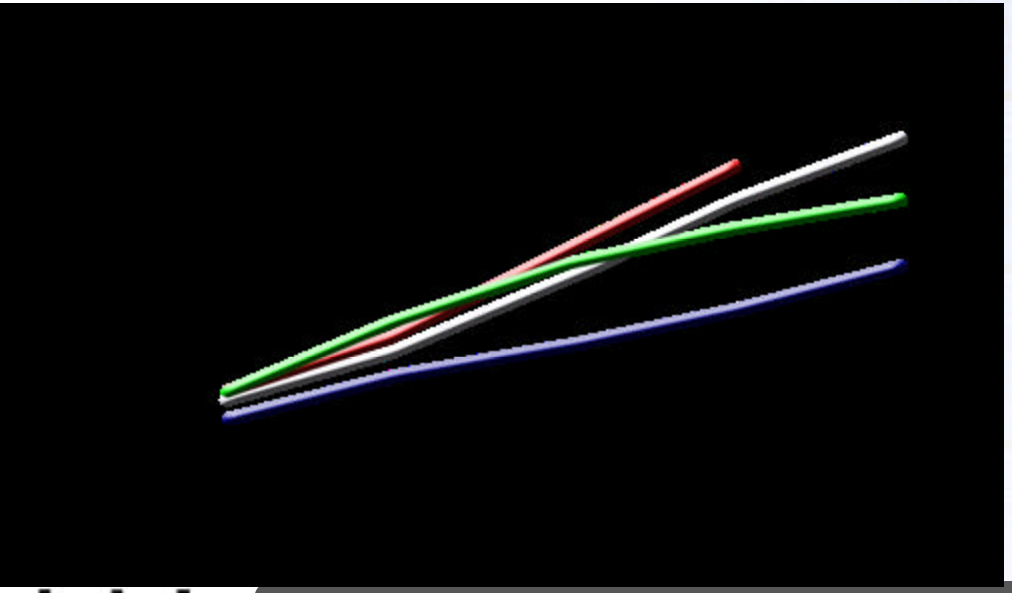
CE and PC Industries

Technology & Capabilities

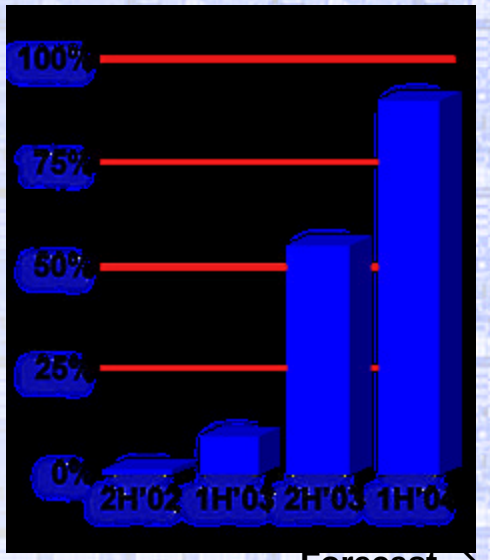
1H: Springdale (865), HT

2H: Prescott: 90nm, 300mm

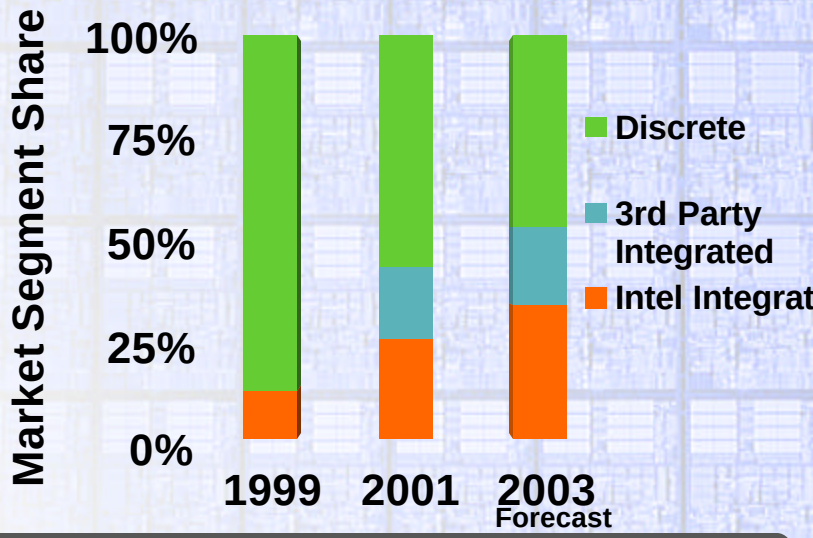
graphics: goal is #1 in '03



Hyper Threading % of Performance Desktop



Mobile & Desktop Graphics



Your Content, Your Apps: *"Always"* & *"All-Ways"* Available

Winning the Digital Office

With a compelling upgrade proposition

With notebooks and wireless

With the best server building blocks…

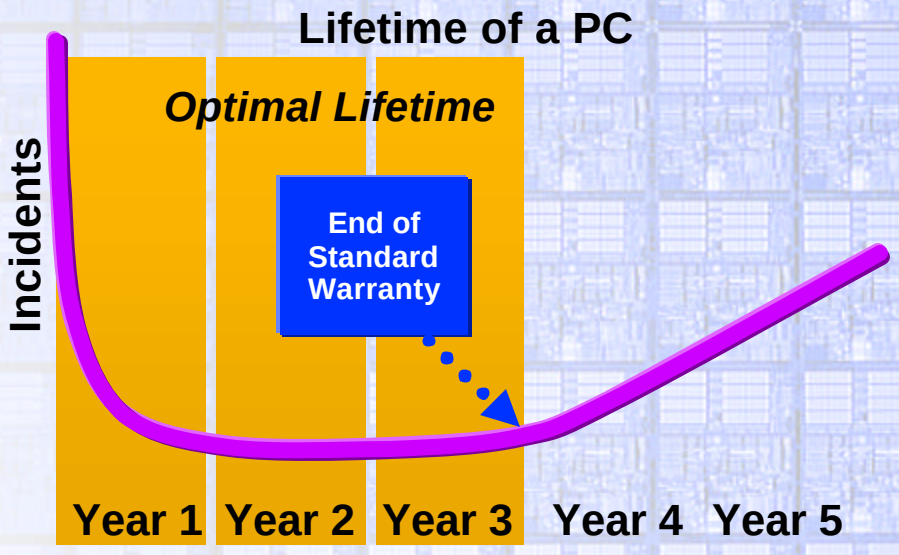
intel

Digital Office: Why Upgrade Now?

500M PCs below **700MHz***

Three refresh drivers

1) TCO
2) Security
3) Productivity



A Big Four accounting firm partner indicated that his firm's auditors… will look at clients running mission-critical business processes on ***unsupported and vulnerable computers*** *.*

Aberdeen Group

intel

IT benefits from Mobile and Wireless

ThinkEquity partners

The key driver why laptops will be such a lynchpin for corporate upgrade cycle is **productivity**.

Gartner

WLAN ROI: **Additional 8hrs per week** in productivity over wired networking

Deloitte & Touche

~ 85% of our employees have notebooks. We gain huge **productivity advances** by providing notebooks to anyone who wants one.

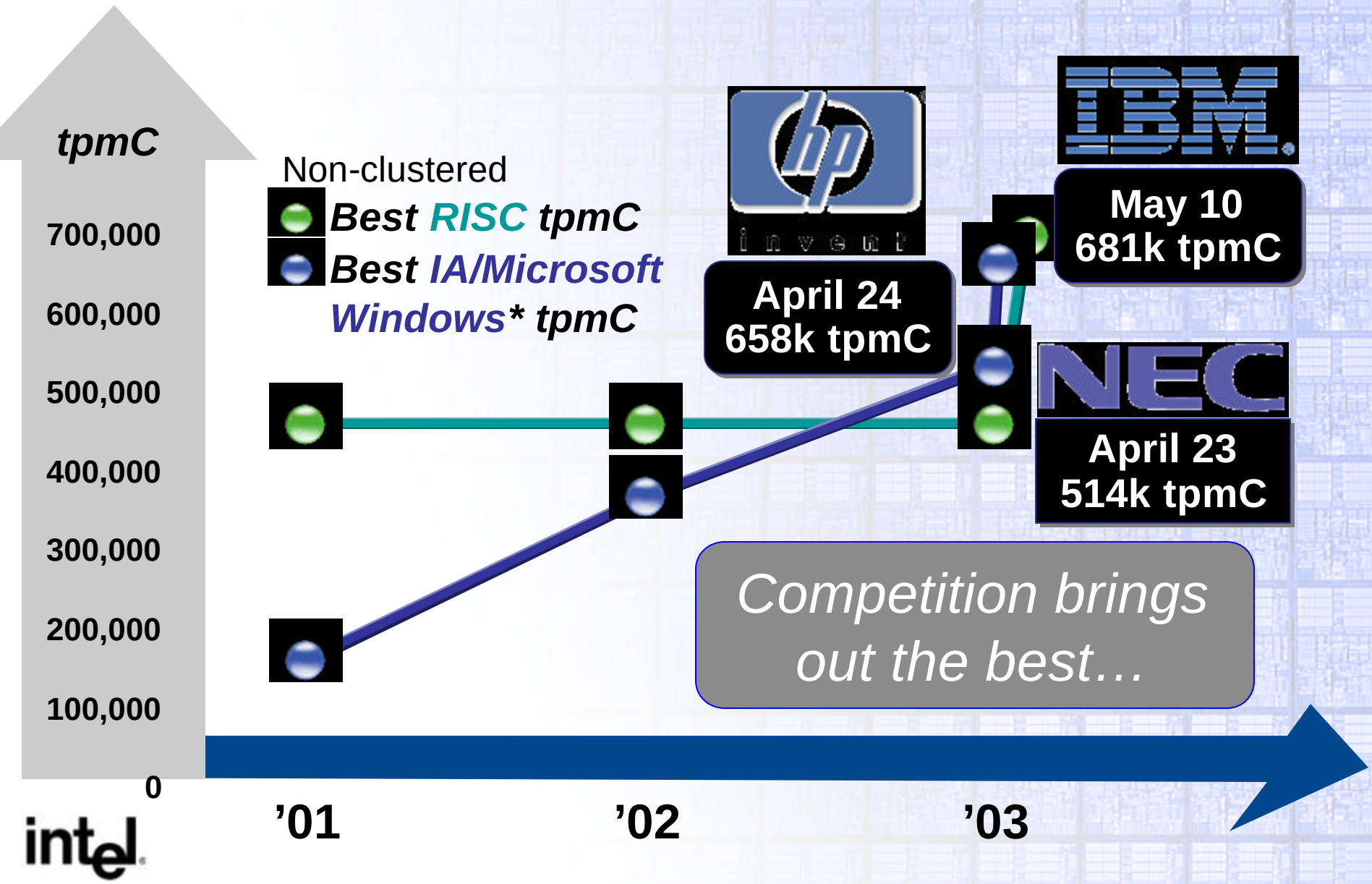
intel

Proof-points: IGNITING the Refresh…

419 "wins"… in all geos

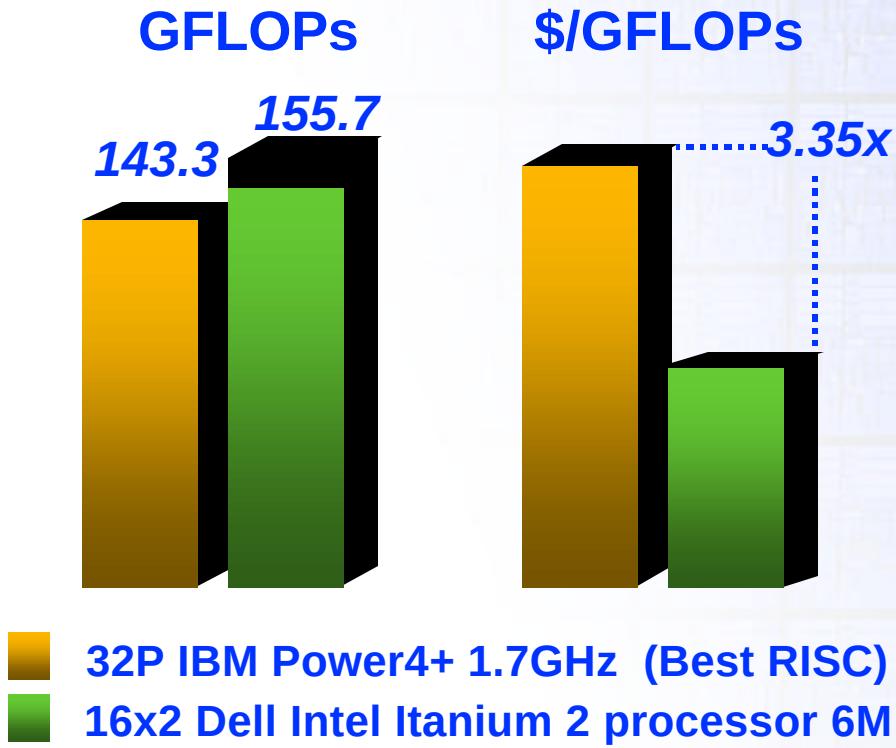
1.5M incremental clients, and growing…

The Enterprise: Winning the last Hill…



Leading the (Lin) Pack:
Intel® Itanium® 2 Processor 6M

Linpack HPC



Results as of 5/12/03

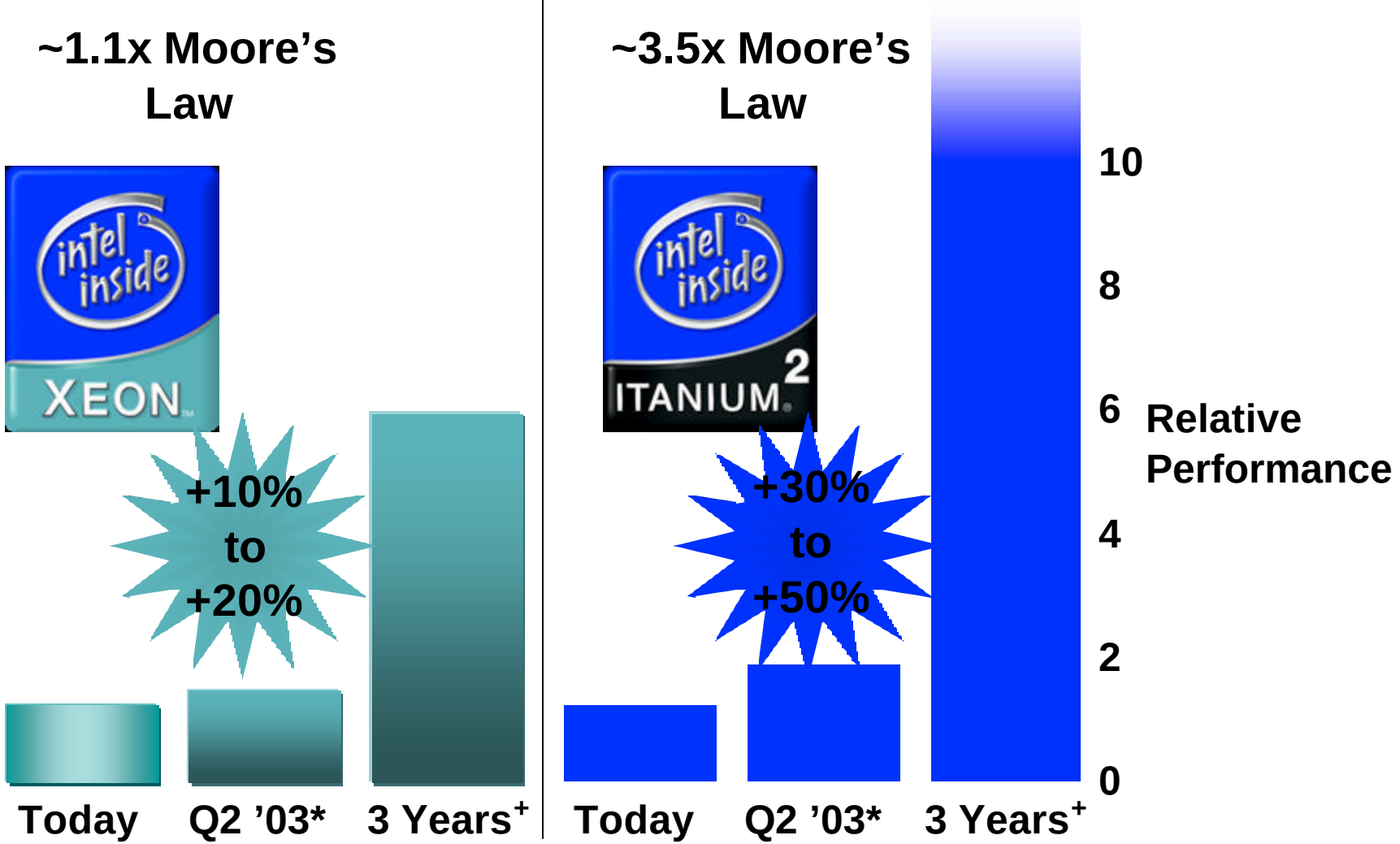
Announcing:

World's fastest 32 processor HPC result

At 1/3 the cost…

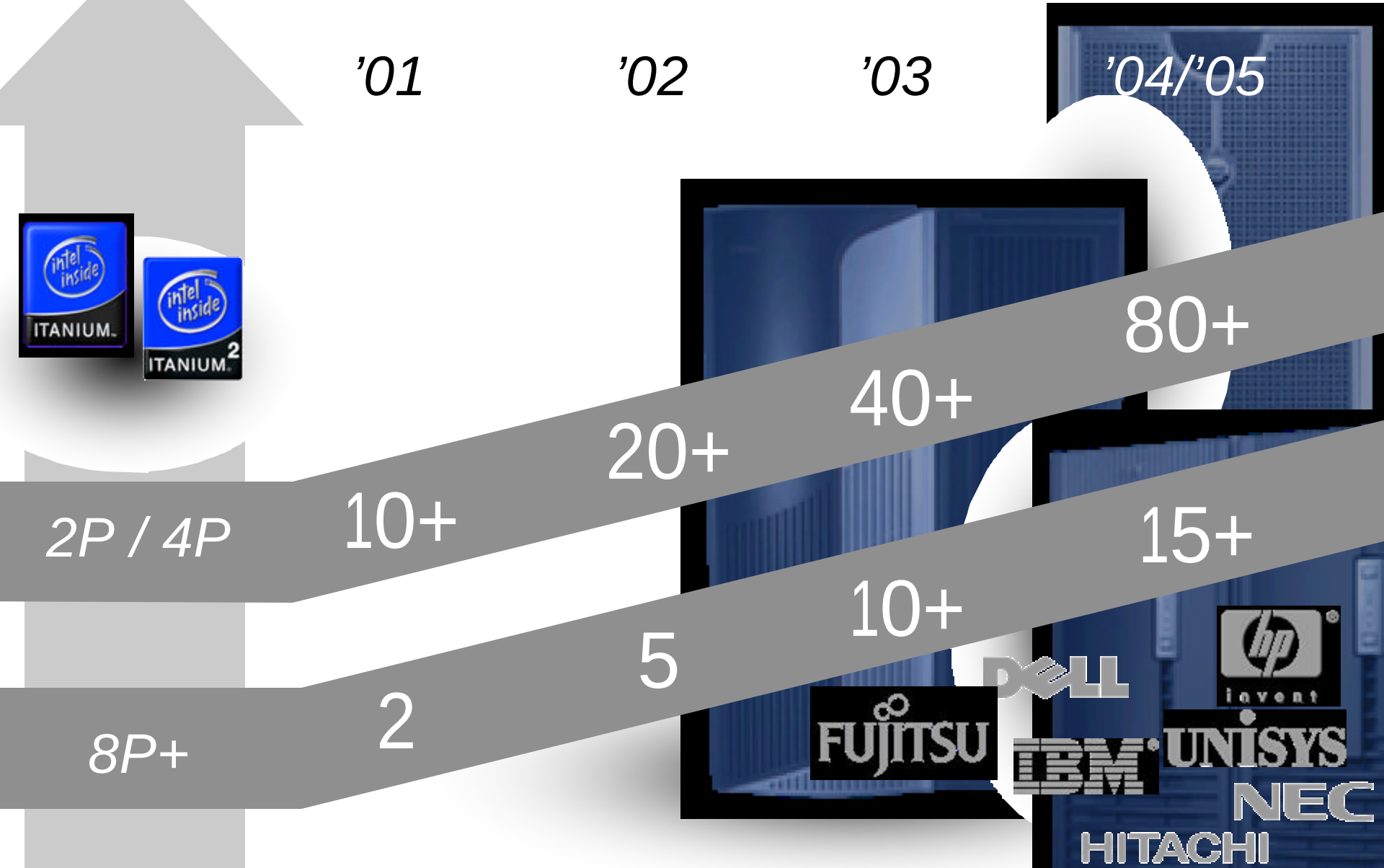
Intel® Xeon® Processor and Intel® Itanium® Processor Families

Continuing to Win: Short and Long Term



*"Q2 '03" is a performance range based on an average increase measured and estimated across workloads that include: SPECint2000, SPECjbb2000, SPECweb99_SSL, TPC-C, and SAP SD 2-tier benchmarks on 4-way servers with Intel Itanium® processor at 1.5 GHz with 6MB L3 cache and Intel Xeon™ MP processor at 2.8 GHz with 2M

OEM Systems: Scaling on Intel® Itanium® Processors



Innovation's Role

“ ***I believe business will come back when we get some products that people want to buy.”***

Charles F. Kettering, 1933
Founder of Delco
Director of General Motors R&D

intel

Backup

Backup for Linpack and TPC-C

Linpack

Source: Itanium® 2 processor 6M results on a cluster of 16 Dell PowerEdge Servers, each with 2 Itanium® 2 processors 6M at 1.5GHz, 4GB RAM, RedHat Linux AS 2.1. Estimated street price of the 16node cluster is approximately $325,000 – at 155.7GFLOPS this equates to $2087/GFLOP.

Source: http://www-1.ibm.com/servers/eserver/pseries/hardware/system_perf.pdf Best RISC results on a IBM eServer p690 with 32 Power 4+ processors at 1.7GHz. Estimated st reet price of p690 with 32 Power4+ 1.7GHz processors with 64GB of memory starts at $1.9M. A discoun t of approximately 50% which is common practice is applied to get the system cost down to $1M – at 143.3GFLOPS this equates to $6978/GFLOP.

	TPC-C Version 5 results			
Year	2001	2002	2003	2003
Best RISC tpmC	455818	455818	455818	680613
$/tpmC	28.58	28.58	28.58	11.13
Availability date	2/28/2002	2/28/2002	2/28/2002	11/8/2003
System name	Fujitsu PRIMEPOWER 2000 c/s w 66 Front-Ends	Fujitsu PRIMEPOWER 2000 c/s w 66 Front-Ends	Fujitsu PRIMEPOWER 2000 c/s w 66 Front-Ends	IBM eServer pSeries p690 Turbo 7040-681
Best IA tpmC	165218	342746	514034	658278
$/tpmC	21.33	12.86	11.5	9.8
Availability date	3/10/2002	3/31/2003	10/22/2003	10/23/2003
System name	Unisys e-@ction Enterprise Server ES7000	NEC Express5800/ 1320Xc C/S w/Express5800/120Rd-	NEC Express5800/1320 Xc	HP Superdome

Results as of 5/12/03