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# ***Spring Analyst Meeting***

***Sean Maloney :: Executive Vice President and General Manager  
Intel Communications Group***

2003 Intel Spring Analyst Meeting



# ***Agenda***

***Intel Communications Group***

***ICG in the Telecom Industry***

***ICG in the Computer Industry***

***Summary***

# ***Telecom Industry***

***...Objective: #1 supplier of building blocks  
driving “Modularization” of the industry***



# *Telecom Industry*

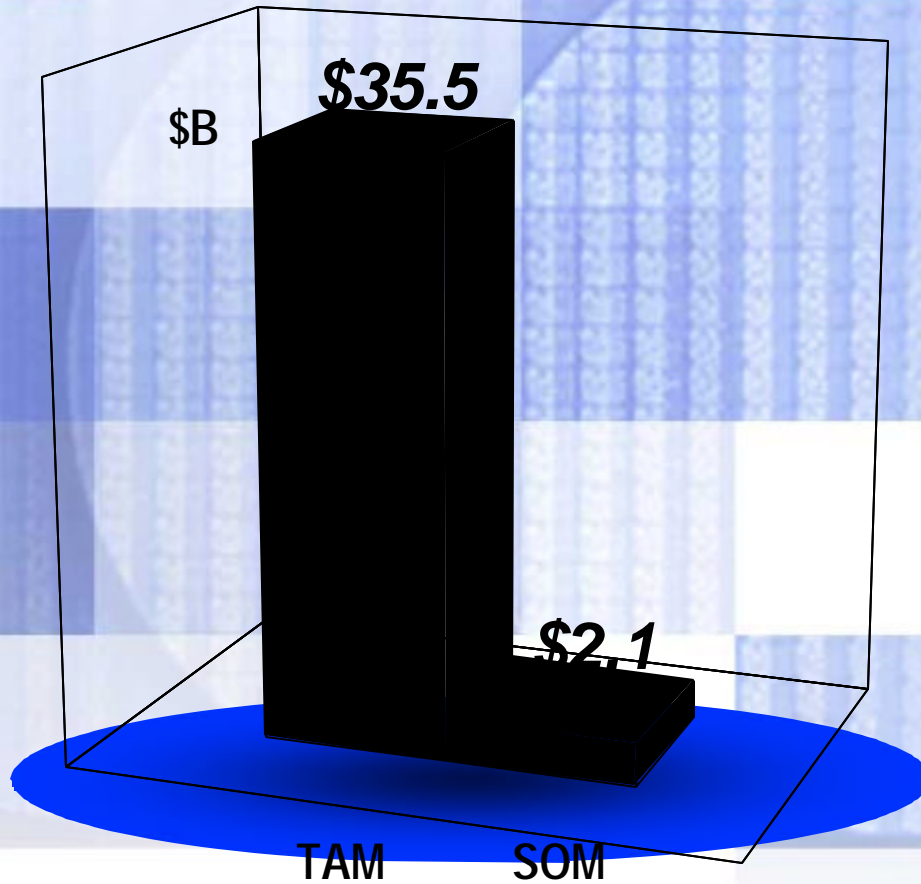
*...Objective: #1 supplier of building blocks driving “Modularization” of the industry*

# **Computer Industry**

***...Objective: #1 supplier of communications technology***

# Communications Silicon TAM

Communications IC vs. Intel's Share (2002)



# ***Intel in the Telecom Industry***



# *The Old COMPUTER Industry*

vs.

# *The NEW COMPUTER Industry*

*Circa 1980*



*Customized,  
Thousands of Units Shipped*

*Today*

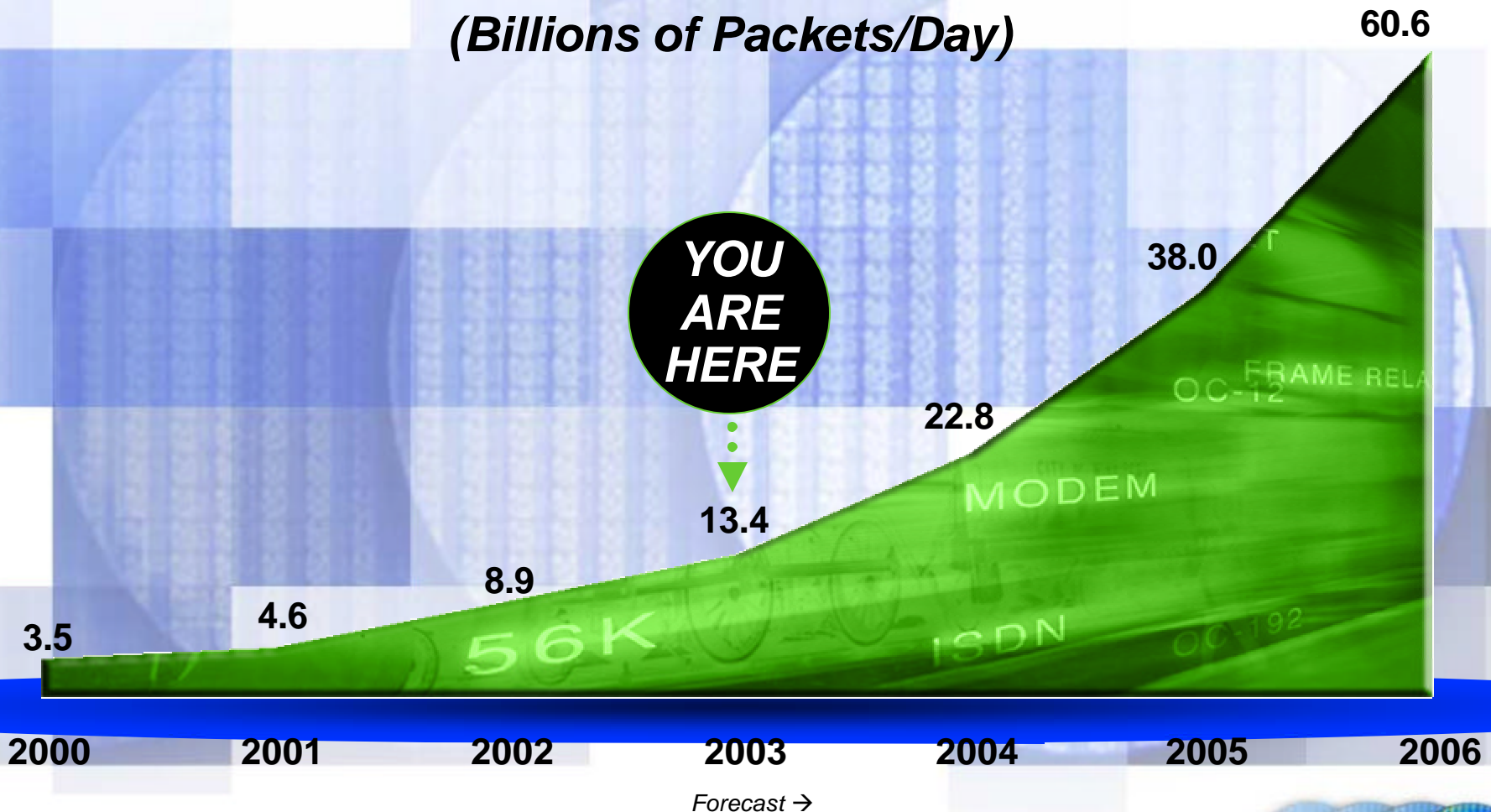


*Standardized,  
Millions of Units Shipped*



# Internet Traffic Growth

**Internet Traffic**  
(Billions of Packets/Day)



# ***Why Traffic Growth Will Continue***

***Broadband continued ramp***

***Emerging markets***

***Video streaming and download goes mainstream***

## The iTunes Music Store



“Kazaa traffic (and traffic from similar file-sharing applications) now is about one third of all traffic on U.S. Internet backbones, and is growing rapidly.”

*RHK, May 2003*



**Kazaa Lite - [Search]**

File View Player Tools Actions Help



4,153,607 users online, sharing 862,015,862 files (6,732,672 GB)

Not sharing a

**Snapshot: 4 Million Users, 862 Million Files, 6.4 Petabytes**





# ***Why Traffic Growth Will Continue***

***Broadband continued ramp***

***Emerging markets***

***Video streaming and download goes mainstream***

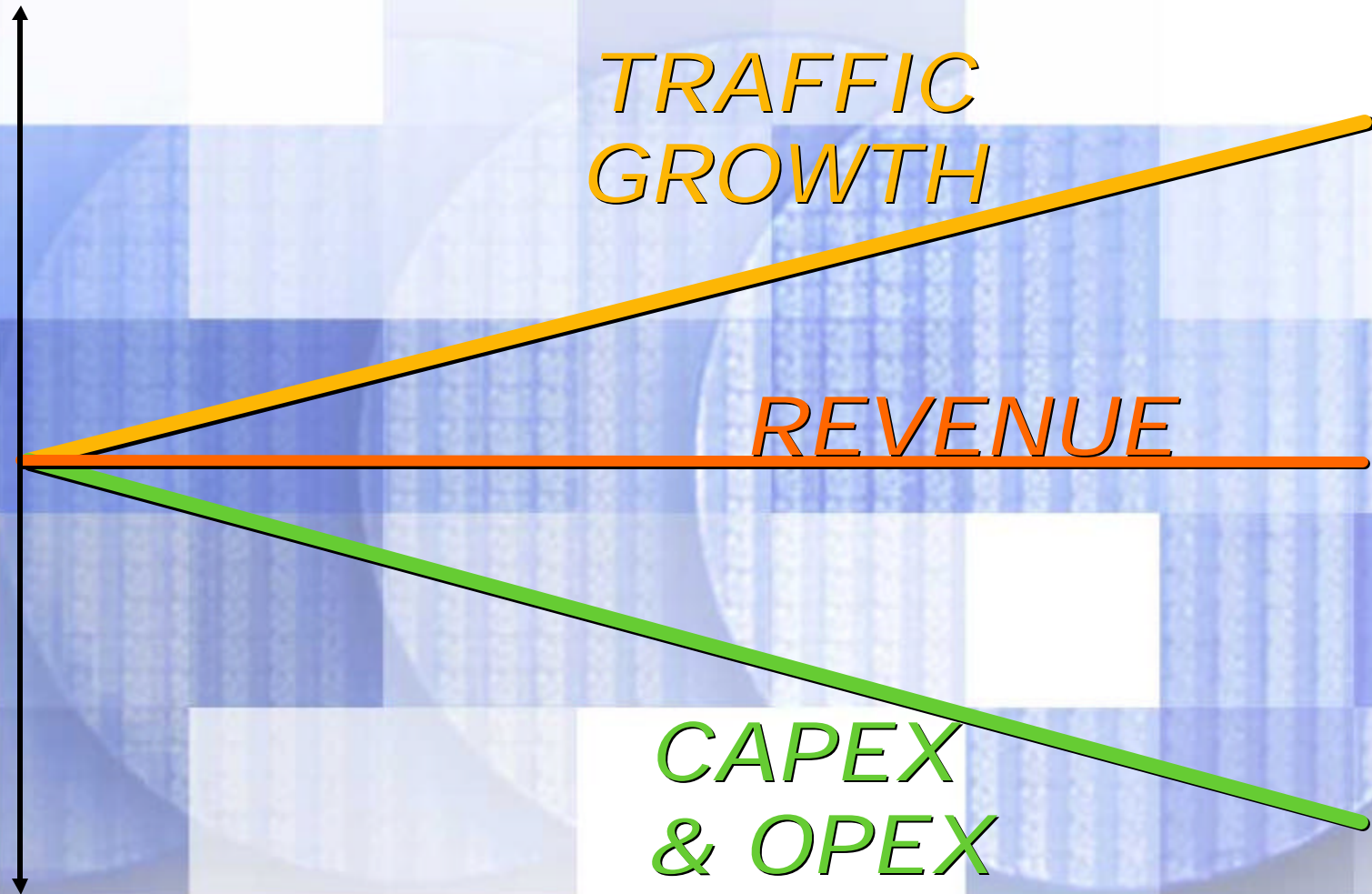
***Integration of video/pictures in phones***

***E-business***

***Mass deployment of Wi-Fi***



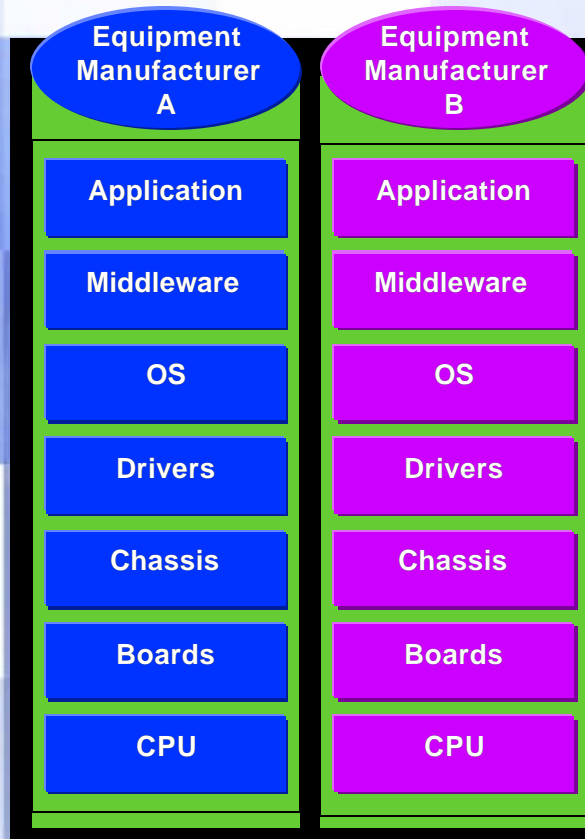
# *The Industry's Dilemma*



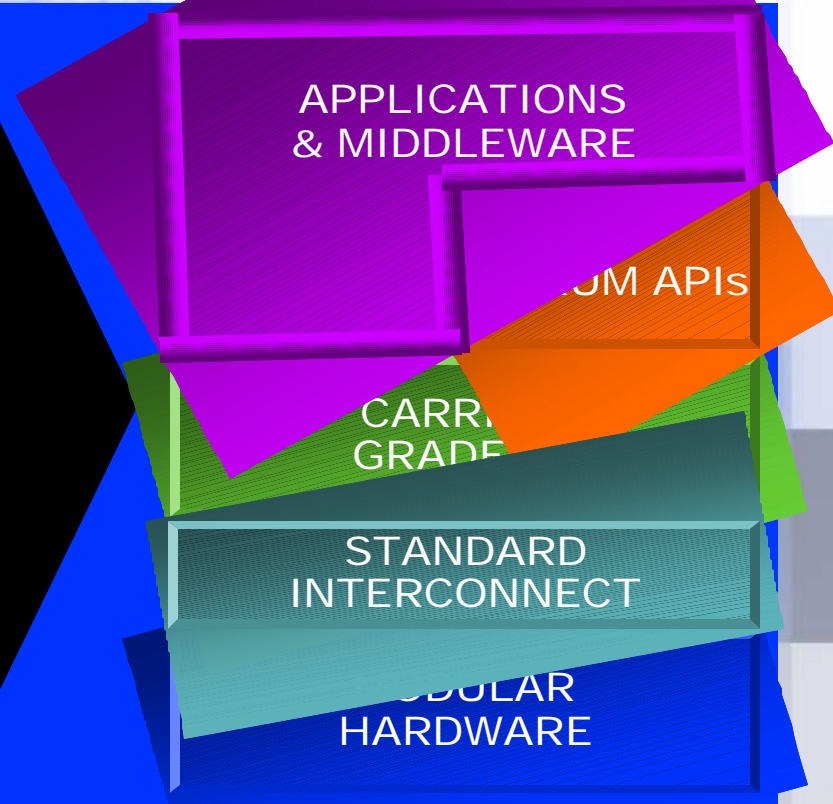
# *The Old COMMUNICATIONS Industry*

vs.

# *The NEW COMMUNICATIONS Industry*



*Low Volume, Customized*



*High Volume, Modularized*

# Advanced Telecom Compute Architecture



PERFORMANCE TECHNOLOGIES

NOKIA

SIEMENS

hp invent

tyco Electronics

COMVERSE

AudioCodes

IBM

NEC

intel

Motorola

PLX TECHNOLOGY

HUAWEI

XILINX

WindRiver

ramix

crystal

78 reviewers/contributors

com

Lucas Technologies

kontron

Mellanox Technologies

agere systems

CICADA SEMICONDUCTOR

radiSys

MonView SOFTWARE

Pentair

FCI

ALMIVA

RTAL

Intel Networks



***Intel® Architecture Processors***  
***= Applications Processing***

***Intel® IXA Network Processors***  
***= Packet Processing***



# ***Intel Architecture Winning in Communications***

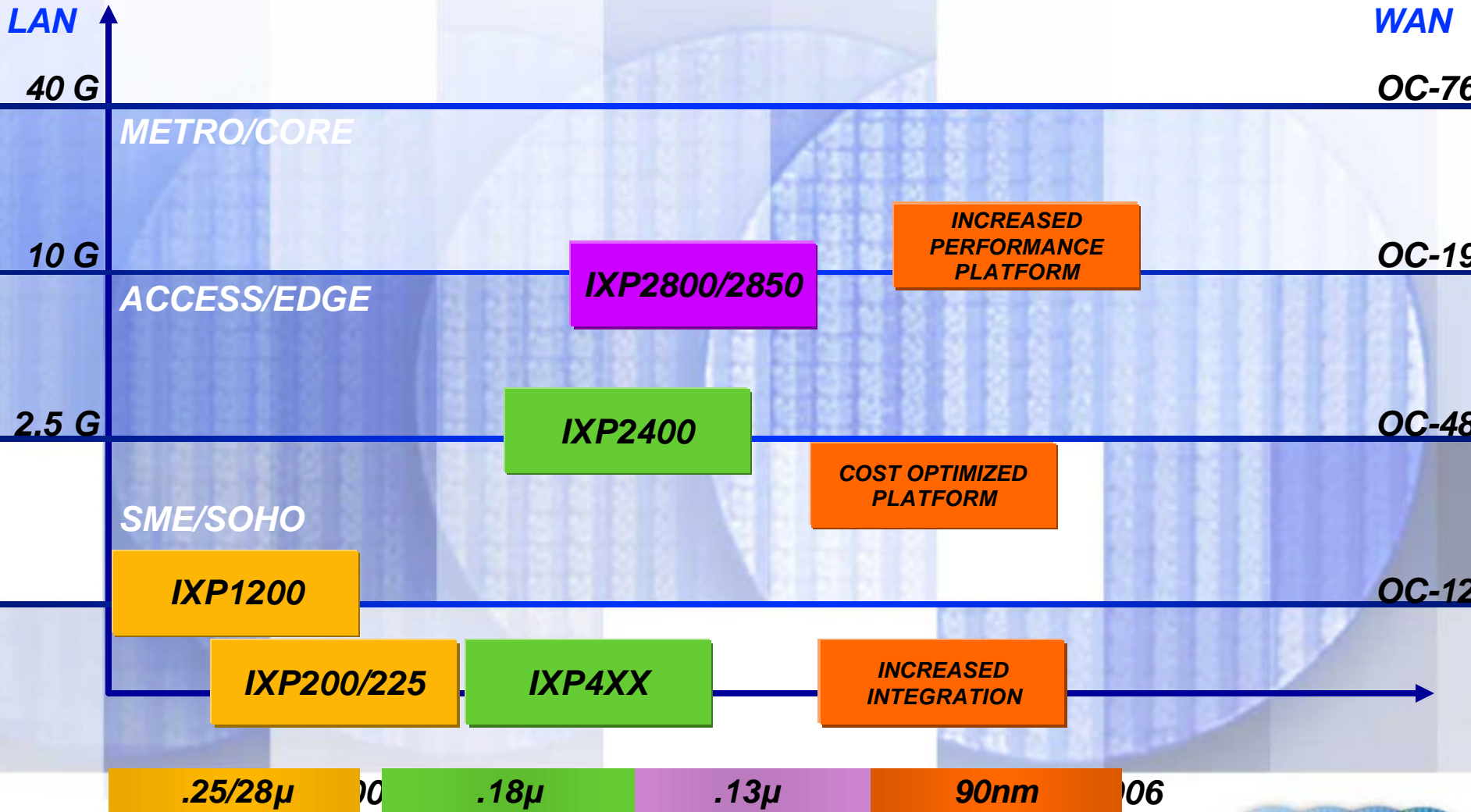
***1.2 Million Intel® Architecture Processor Units  
Shipped in 2002***

***245 Design Wins in 2002***



Source: Intel





# ***Carrier Grade Linux Momentum***



***CGL 1.1***

***Being Defined***



***CGL 2.0***

**Intel working with Open Source  
community to complete CGL 2.0 in 2003**





# Ecosystem: Modular Communications Platform



APPLICATIONS  
& MIDDLEWARE

APIs

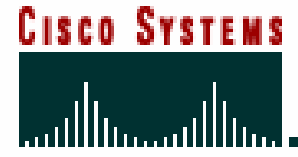
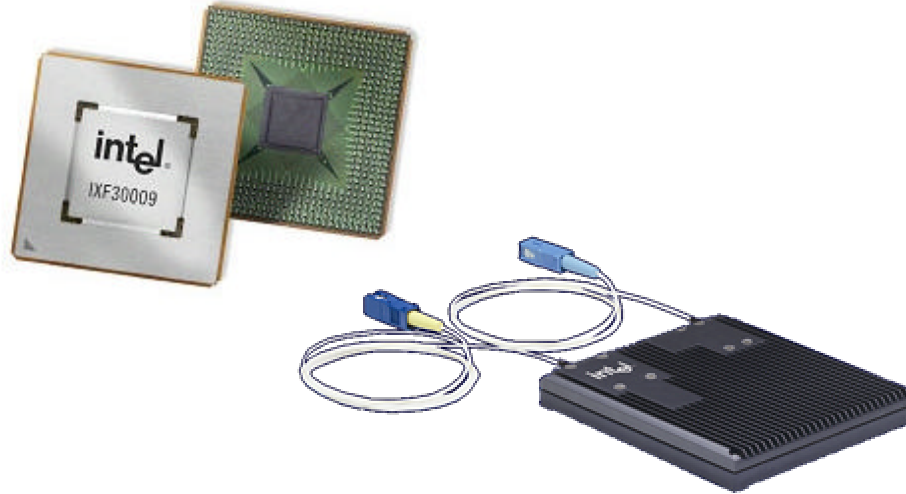
CARRIER  
GRADE OS

STANDARD  
INTERCONNECT

MODULAR  
HARDWARE



# OC-192/10GbE Successes



Lucent Technologies  
Bell Labs Innovations



*“Intel is emerging as a new leader of the industry...”*

*RHK, Sept. 2002*

*“Who could have imagined that ....an IC company would loom so large in optics?”*

*WDM Solutions, March 2003*



***Primary Supplier of Silicon Building  
Blocks to the  
“New” Telecom Industry***

# ***Intel in the Computer Industry***

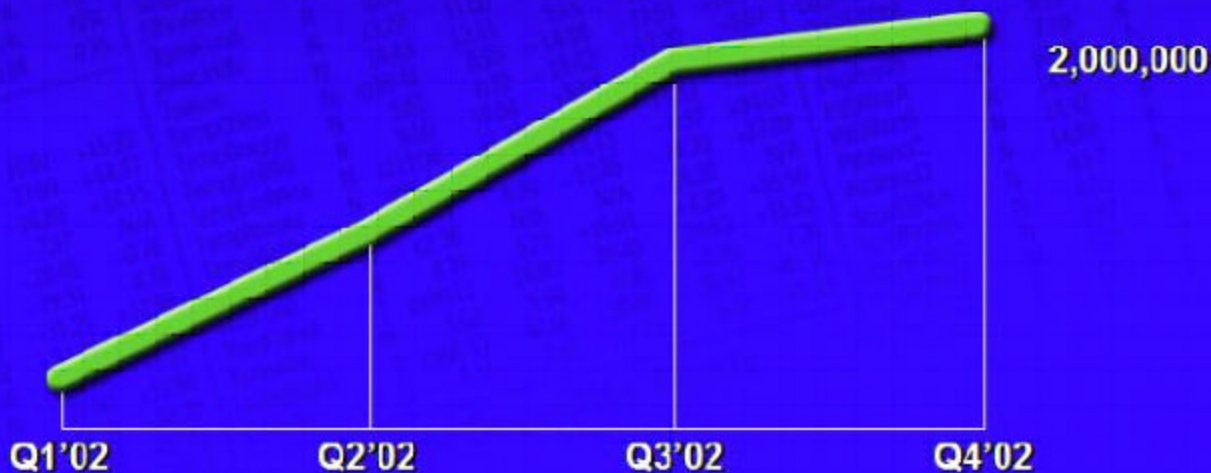




# Gigabit Ethernet Ramp: What We Said

## ICG in the Computer Industry

### Intel Will Drive Gigabit Ethernet to the Mainstream Desktop



**Intel Plans to Ship 5M Gigabit Connections in 2002**

intel

Source: intel Internal Forecast, April 2002

intel

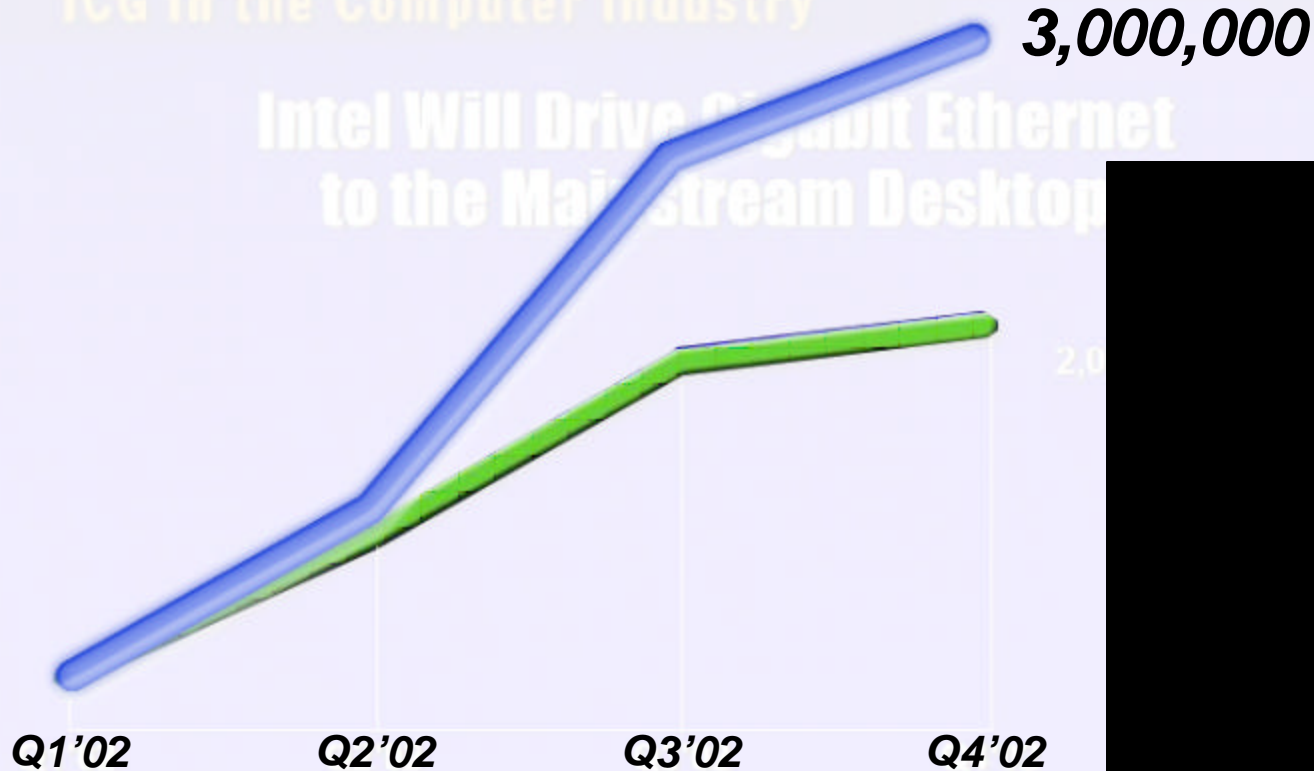




# Gigabit Ethernet Ramp: What We Did

ICG in the Computer Industry

Intel Will Drive Gigabit Ethernet  
to the Mainstream Desktop



3,000,000

2,000,000

Q1'02

Q2'02

Q3'02

Q4'02

Intel Plans to Ship 5M Gigabit Connections in 2002

intel.

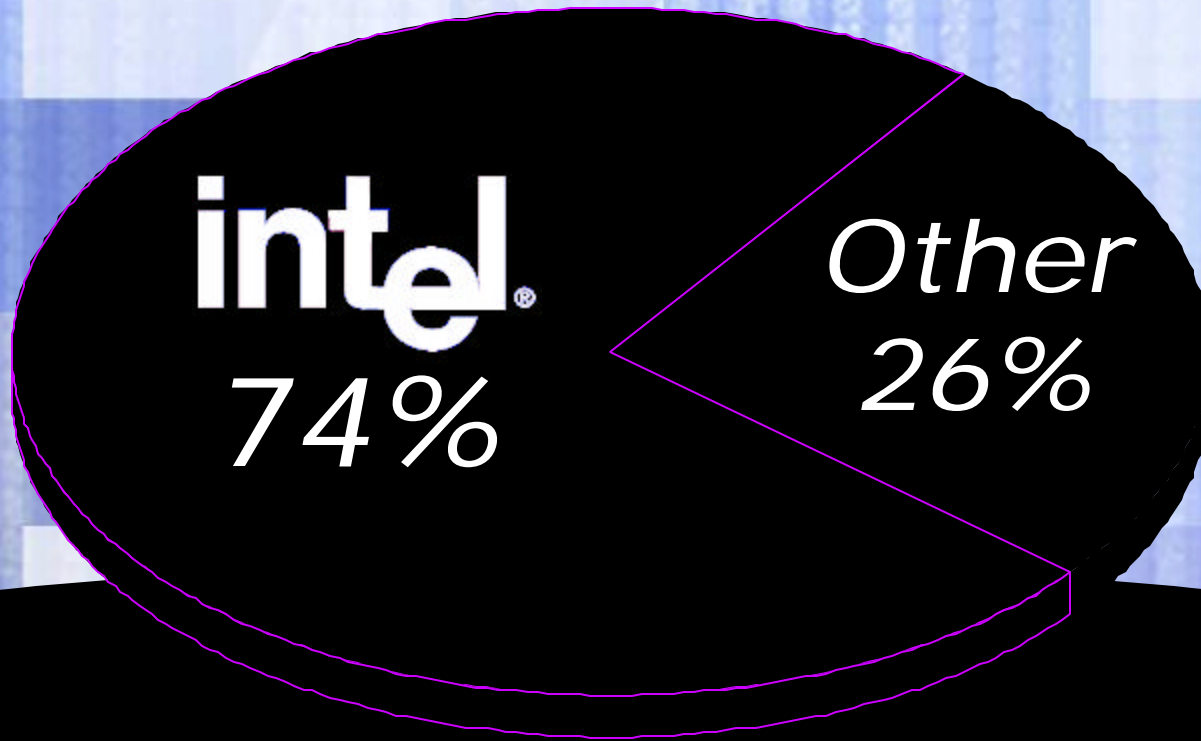
Source: Intel Internal Forecast, April 2002

intel.



# ***Gigabit Ethernet Connection Leadership***

***Worldwide 10/100/1000 LOM  
Q4'02 Market Segment Share by Vendor***



# *Intel Gigabit Ethernet History Continues* with 90nm product...

**.25 $\mu$**



**82543  
MAC**

**.18 $\mu$**



**82544  
MAC+PHY**

**.15 $\mu$**



**82540/5/6  
MAC+PHY**

**.13 $\mu$**



**82547  
MAC+PHY**

**90nm**

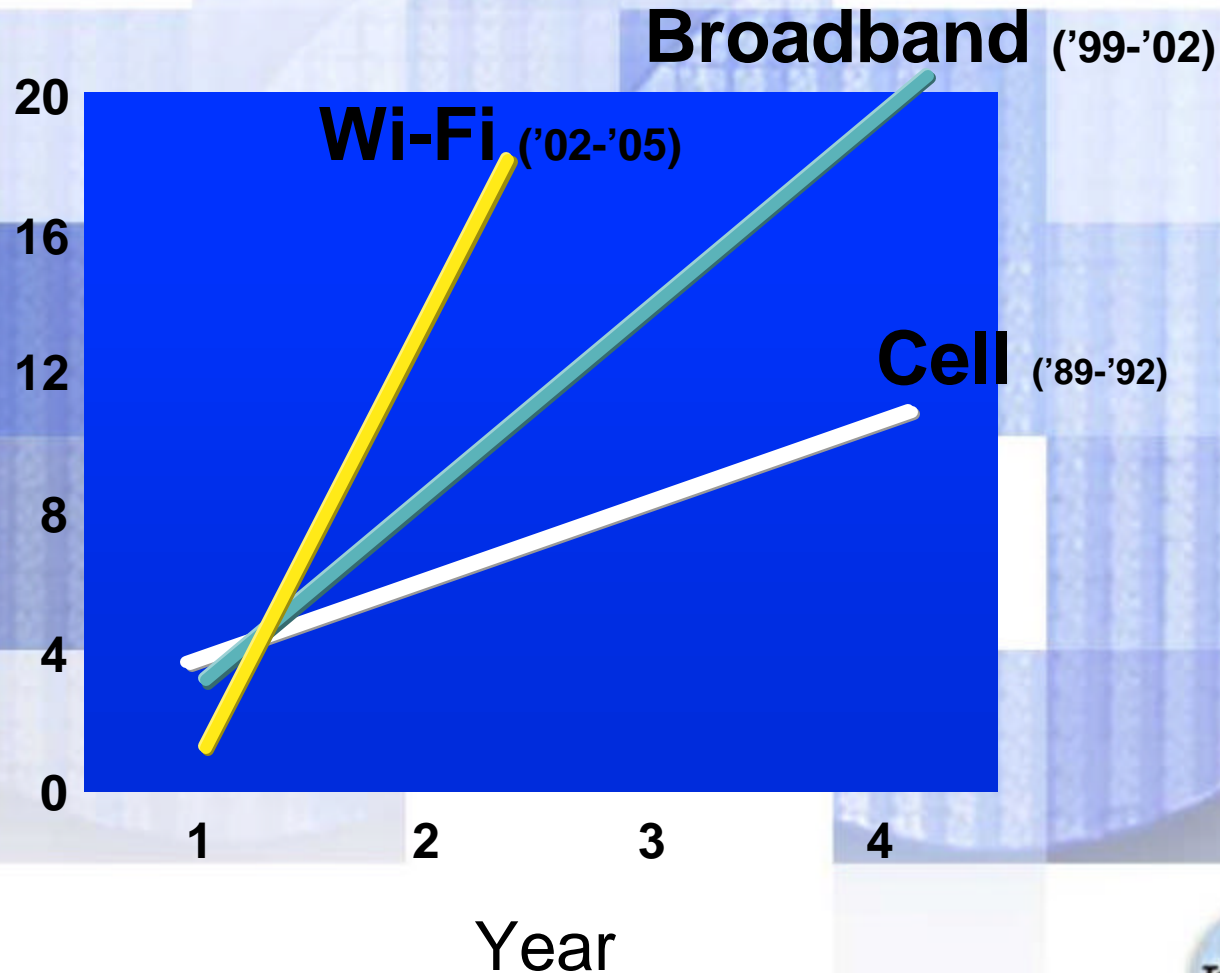


# ***Intel and Wi-Fi***

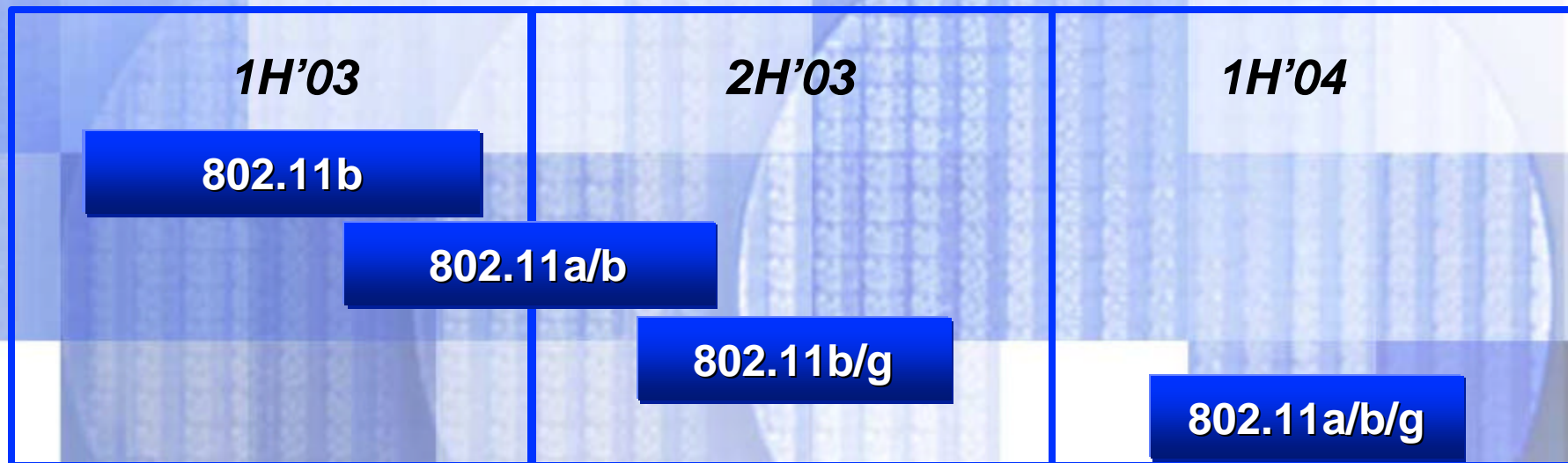




# ***Wi-Fi Growth: Faster than the Cell Phone***



# *Intel's 802.11 Roadmap*

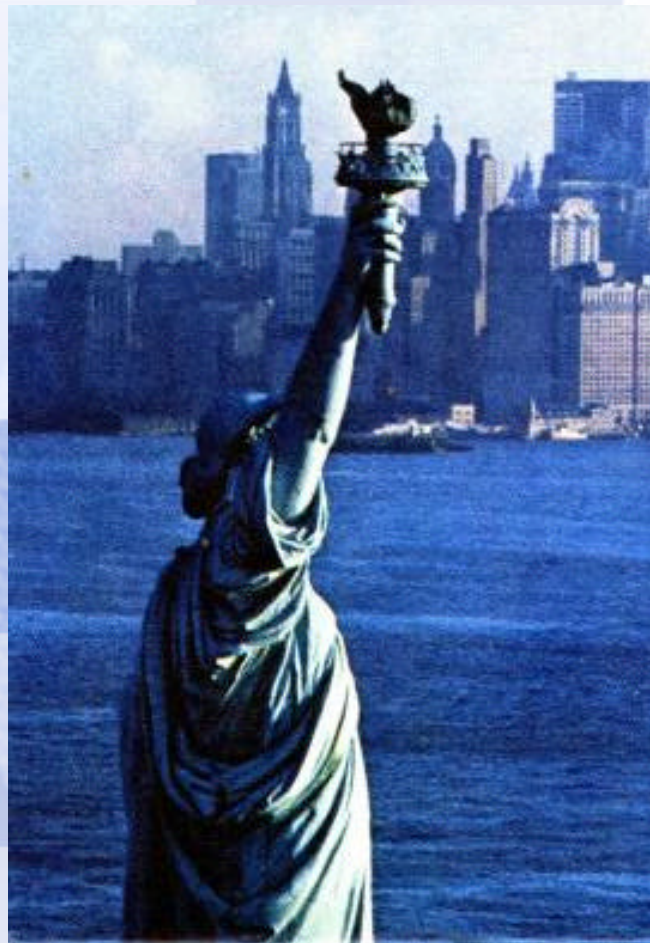


*Forecast →*

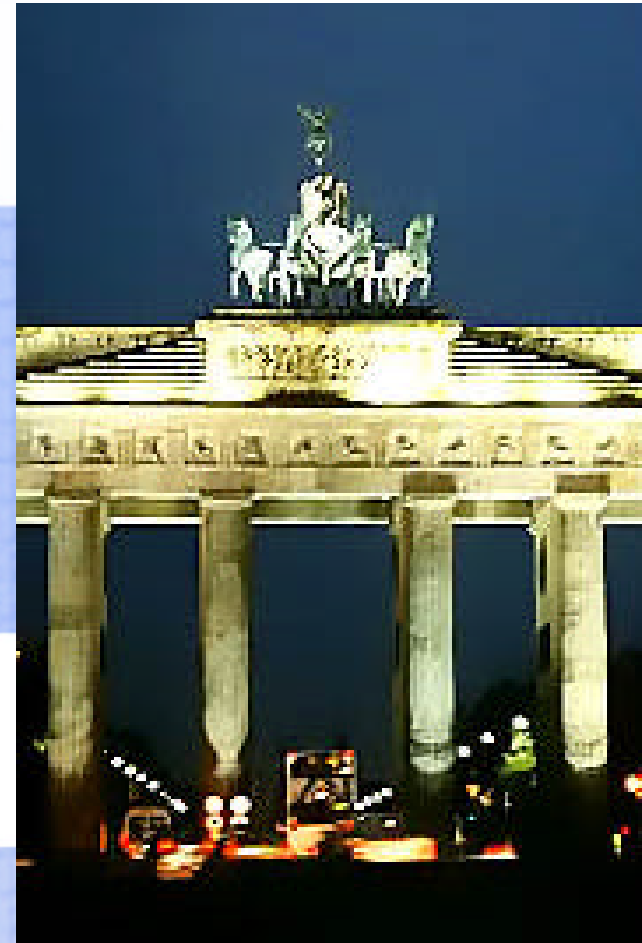
# *From Hot Spots to Hot Cities...*



***“Paris Goes Wi-Fi”***



***“New York Scene May Inspire  
Dallas to Set Up Free Wireless  
Internet for Users”***



***“Our goal is to establish...  
an attractive, secure...  
WLAN offering within our  
initiative ‘WLAN-City Berlin.’”  
Senator Harald Wolf***

*“There is a point at which a new technology transitions from the bleeding edge to the mainstream... Centrino’s introduction is that point for Wi-Fi.”*



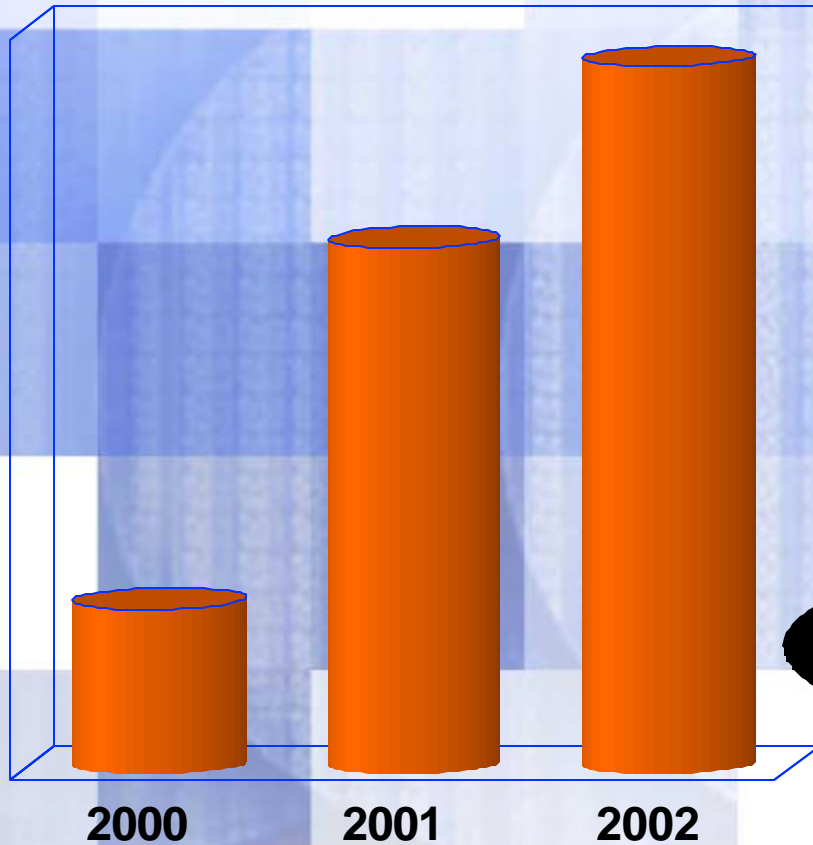
*Peter Hortensius, IBM ThinkPad Division*



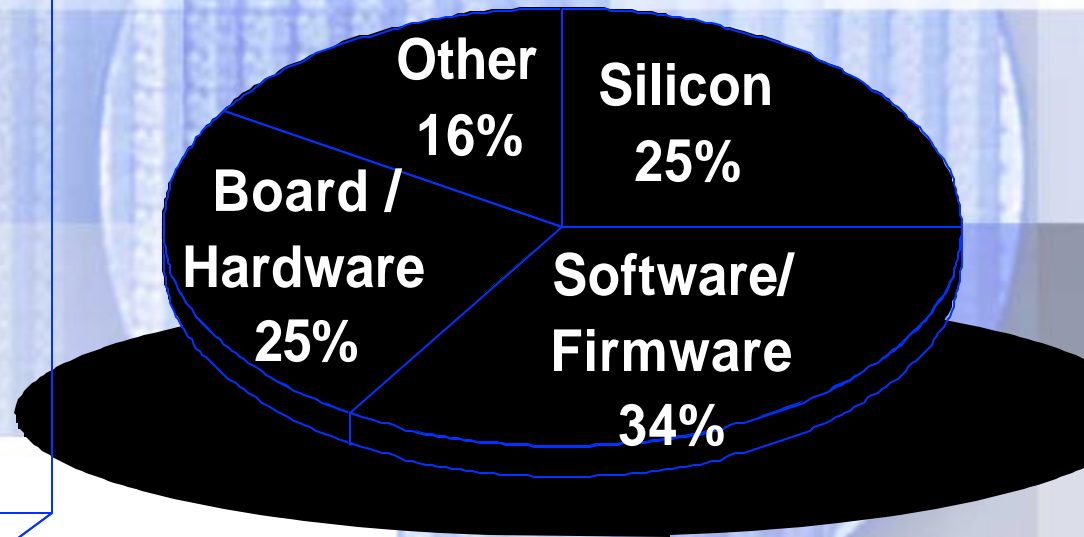


# Wi-Fi at Intel

**Headcount**



**Focus**



# ***Virtual Intel Mobility Lab: Mobility Technology Zone***



Video



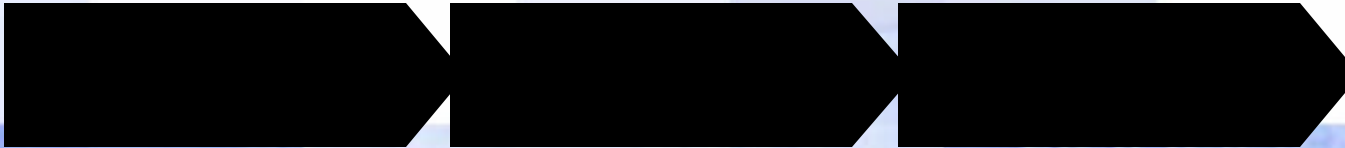
# ***Top Wi-Fi Challenges***

***Security***

***Ease of Use***

***Signal Strength and Reach***

# Intel® Centrino™ Mobile Technology Security Roadmap



Intel® Centrino™ Mobile Technology

*VIRTUAL PRIVATE NETWORK (VPN)*

*TRUSTED PLATFORM MODULE (TPM)*

*WIRED EQUIVALENT  
PRIVACY (WEP)*

*WI-FI PROTECTED  
ACCESS(WPA)*

*802.11i*

*CISCO\* COMPATIBLE  
EXTENSIONS (CCXv1)*

*CISCO COMPATIBLE  
EXTENSIONS (CCXv2)*

Demo



Intel is a registered trademark and Centrino is a trademark of Intel Corporation.





***Ease of Use:***  
***Intel® Centrino™ Mobile Technology***  
***and***  
***Intel® PRO Network***  
***Connection Software***

Demo

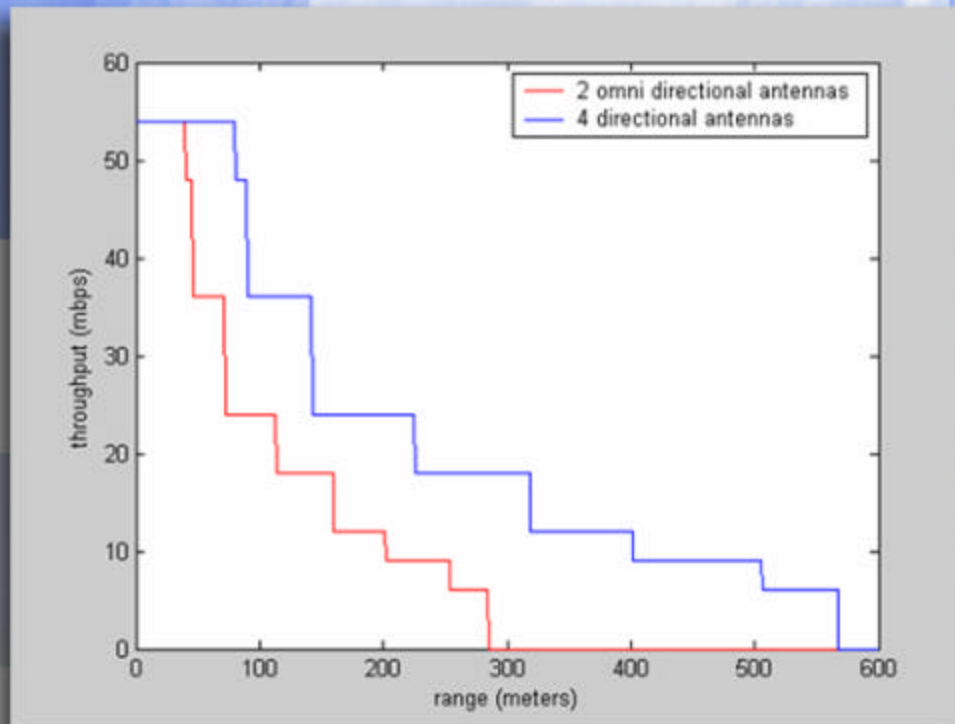


# Wi-Fi Reach Extensions

## Future Technology Development

### Impact

**2X Reach Increase  
at Equivalent Bandwidth**



# ***What's Next for WiFi Reach: WiMAX***

## **GROUP EXPANDED TO PROMOTE NEW WIRELESS BROADBAND TECHNOLOGY STANDARD**

**WiMAX to test and certify IEEE 802.16 wireless  
network equipment**

*SAN JOSE, Calif., April 8, 2003*

	<i><b>802.11</b></i>	<i><b>802.16</b></i>
<i><b>Reach</b></i>	<i><b>~ 300 ft.</b></i>	<i><b>Up to 30 Miles</b></i>

# *Wireless Local Loop Growth?*



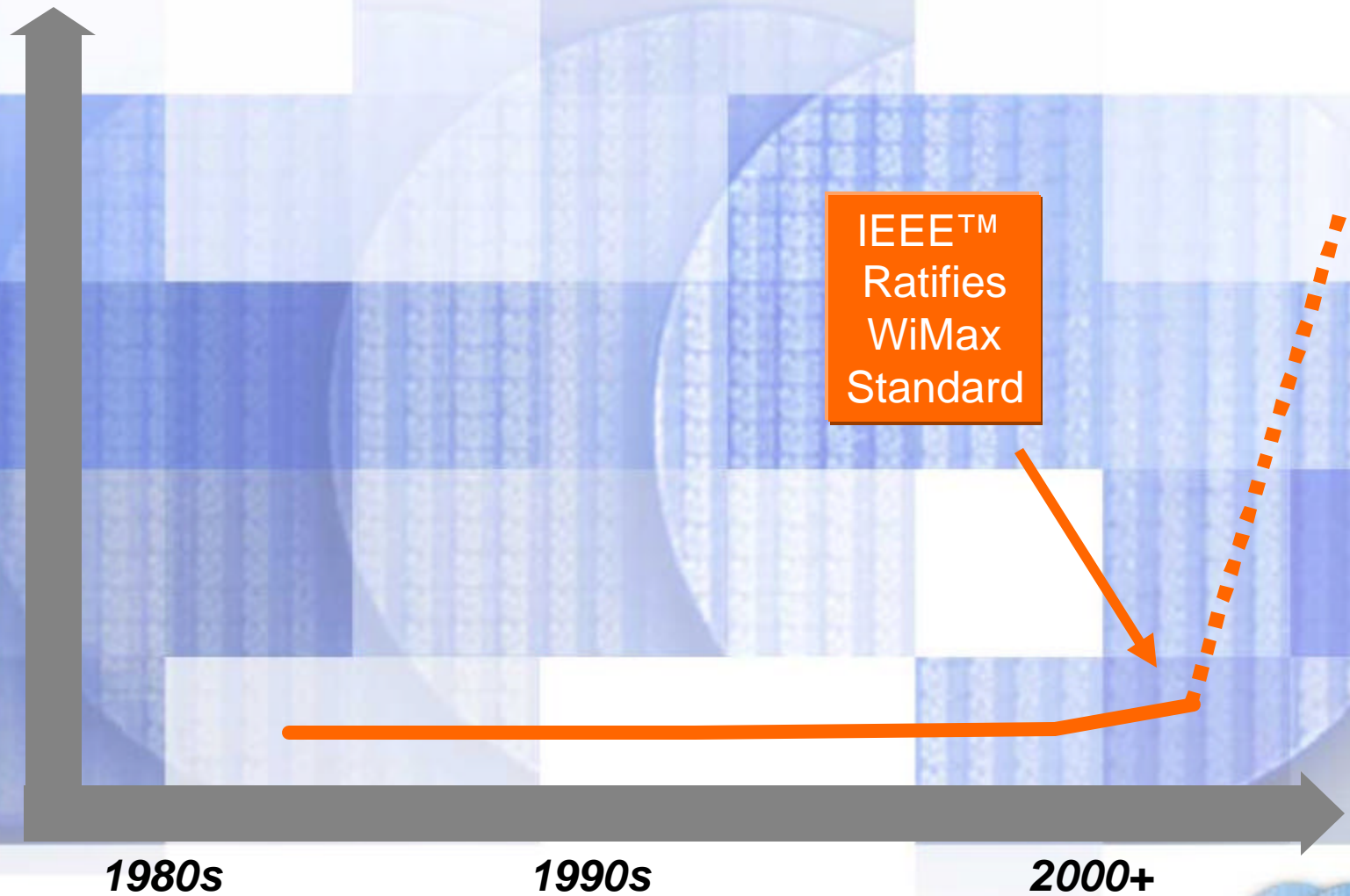
1980s

1990s

2000+



# *Wireless Local Loop Growth?*



1980s

1990s

2000+

# ***Summary***

***The “New” Telecommunications Industry is emerging around standards***

***Intel hardware and software components at the core***

***The Computer Industry***

***Intel moves ahead in Ethernet silicon***

***Intel will continue to drive the Wi-Fi phenomenon***