

Intel
Developer
Forum

A World of Transformations

Craig Barrett :: CEO :: INTEL



The background features a globe where the continents are formed by a grid of binary digits (0s and 1s). The globe is set against a dark blue gradient background with faint, glowing binary code floating around it.

Overview

A World of Change

Transformations

Dimensions of Growth



A World of Change

Technology Applied

Countries

Governments

Businesses

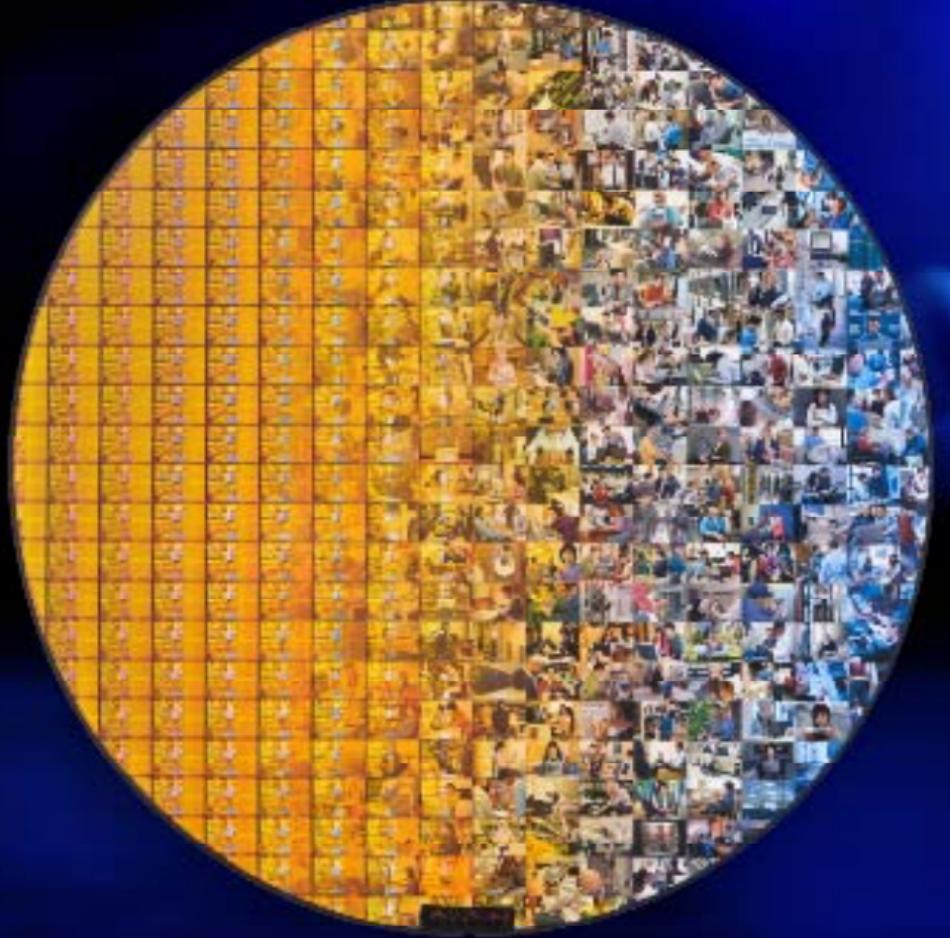
Consumers

Educators

A World of Change

Digital Transformations







A World of Change

After the Storm

OUR FUTURE OPPORTUNITY
THE GROWTH OF COMPUTING
AND COMMUNICATIONS

Growth

Irrational
Exuberance
Enabling
Technologies

YOU ARE
NOW HERE

Turbulence

Rational
Growth

T i m e



A World of Change

New Fields Emerge

Life Sciences

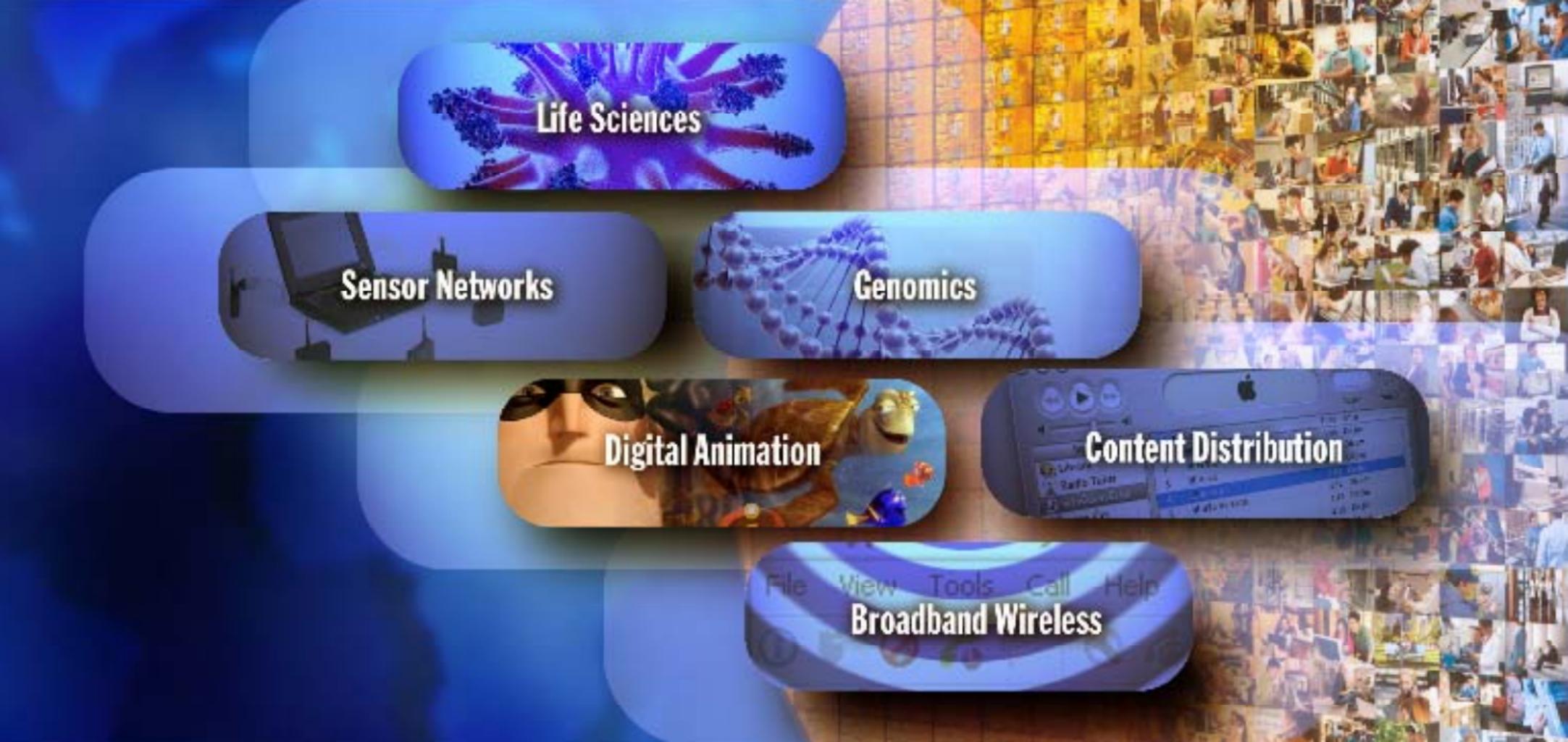
Sensor Networks

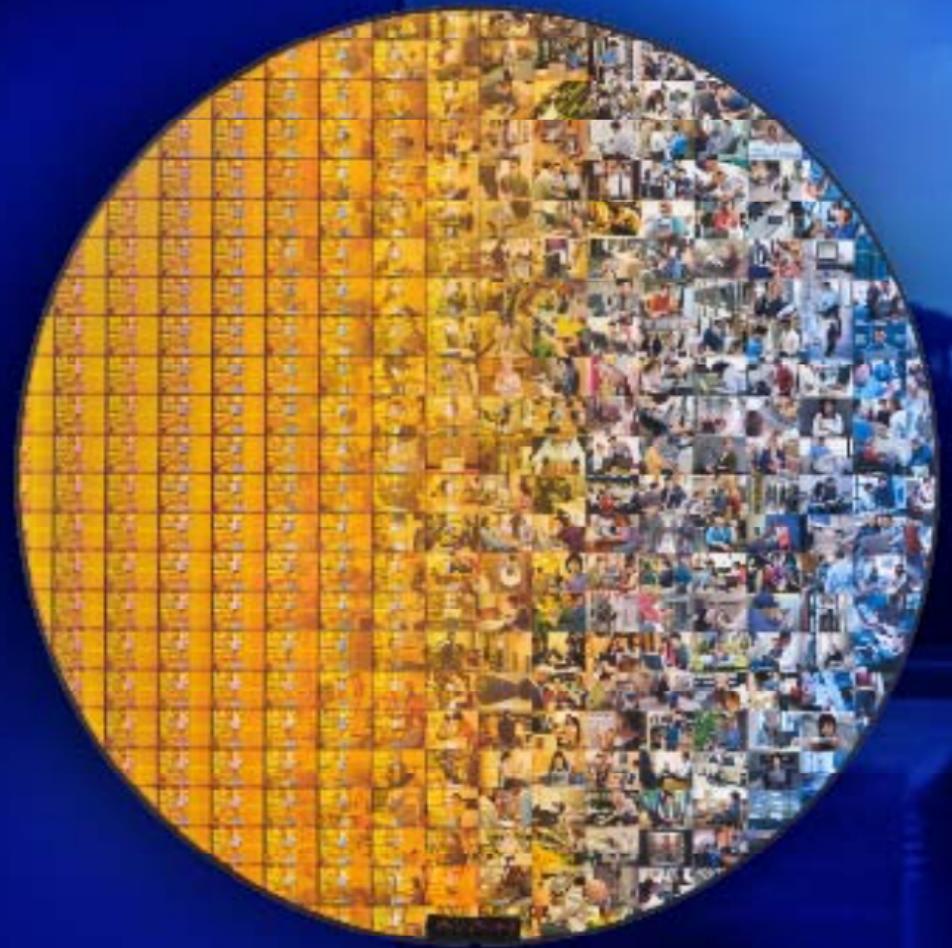
Genomics

Digital Animation

Content Distribution

File View Tools Call Help
Broadband Wireless









The world is being **transformed** by digital technology

Transformations

Convergence



Convergence is driving this change

Transformations

Silicon Integration Marches On

Runtimes

Intel® Centrino™

Mobile Technology

Media

Graphics

Multiple Cores

64Bit Technology

Recognition

LaGrande

Hyperthreading

Vanderpool

Packet Processing

Data Mining



Transformations

Silicon to Solutions

Ecosystems

Applications

Software

Reference Designs

Silicon

Transformations

Enterprise



#1 in performance

>50 OEM's shipping systems

1000 applications and tools in production

Transformations

Intel Itanium™ Platform

Dual and Multiple Cores

Cache Reliability

Multithreading

Power Management

Performance

PCI Express



ITANIUM²

Morgan Stanley



Morgan Stanley has earned a worldwide reputation for excellence in financial advice and market execution. The 58,000 members of Morgan Stanley in 28 countries connect people, ideas and capital to help our clients achieve their financial aspirations.

CONTACT US | SITE MAP

Welcome to the world of Morgan Stanley



Individual Investors



Institutional Services



About Morgan Stanley

WORLDWIDE

DJIA
NASDAQ
NIKKEI
DAX
FTSE
ACWI
EAFFE
NWD

4:30 PM
© Morgan Stanley

Morgan Stanley

Morgan Stanley has earned a worldwide reputation for excellence in financial advice and market execution. The 58,000 members of Morgan Stanley in 28 countries connect people, ideas and capital to help our clients achieve their financial aspirations.

CONTACT US | SITE

Welcome to the world of Morgan Stanley



Individual Investors



Institutional Services



About Morgan Stanley

WORLDWIDE

DJIA
NASDAQ
NIKKEI
DAX
FTSE
ACWI
EAFE
MWD

4:30 PM
© BlackRock

Transformations

Intel Xeon™ Platform

PCI Express

Faster CPU and
Front Side Bus

DDR2 memory

XEON™

Power management
technology

64-bit extension
technology

SSE3 Instructions

Microsoft Windows Server System

Windows Server System

Overview

Solutions for...

Server Platform

Communication and Collaboration

Data Management and Analysis

E-Business Management

Security

Speech

Mr. 5,000 Desktops Updated with the Latest Engineering App in 10 Minutes

MOTOROLA

Highlights

Try SQL Server 2000 Reporting Services

Information into a competitive

Steven Is Doing More with Less

Steven Bramson works as a Senior Systems Architect to help keep Motorola's 65,000 desktops updated.

Watch the 3-minute video

Read how they did it

Products by Name

- Windows Server
- Application Center

Search Microsoft

Address http://www.microsoft.com/windowserversystem/default.mspx

Search Web

1 blocked

AutoFill

Options

Back

Search

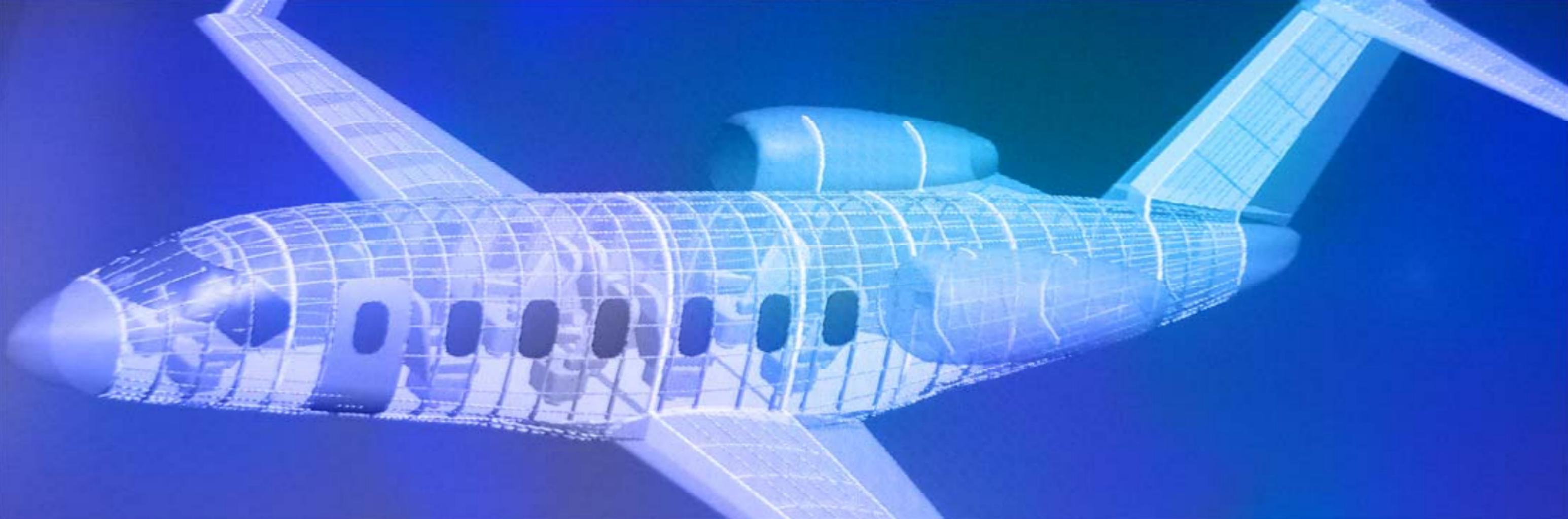
Favorites

Edit View Favorites Tools

Google

EDS

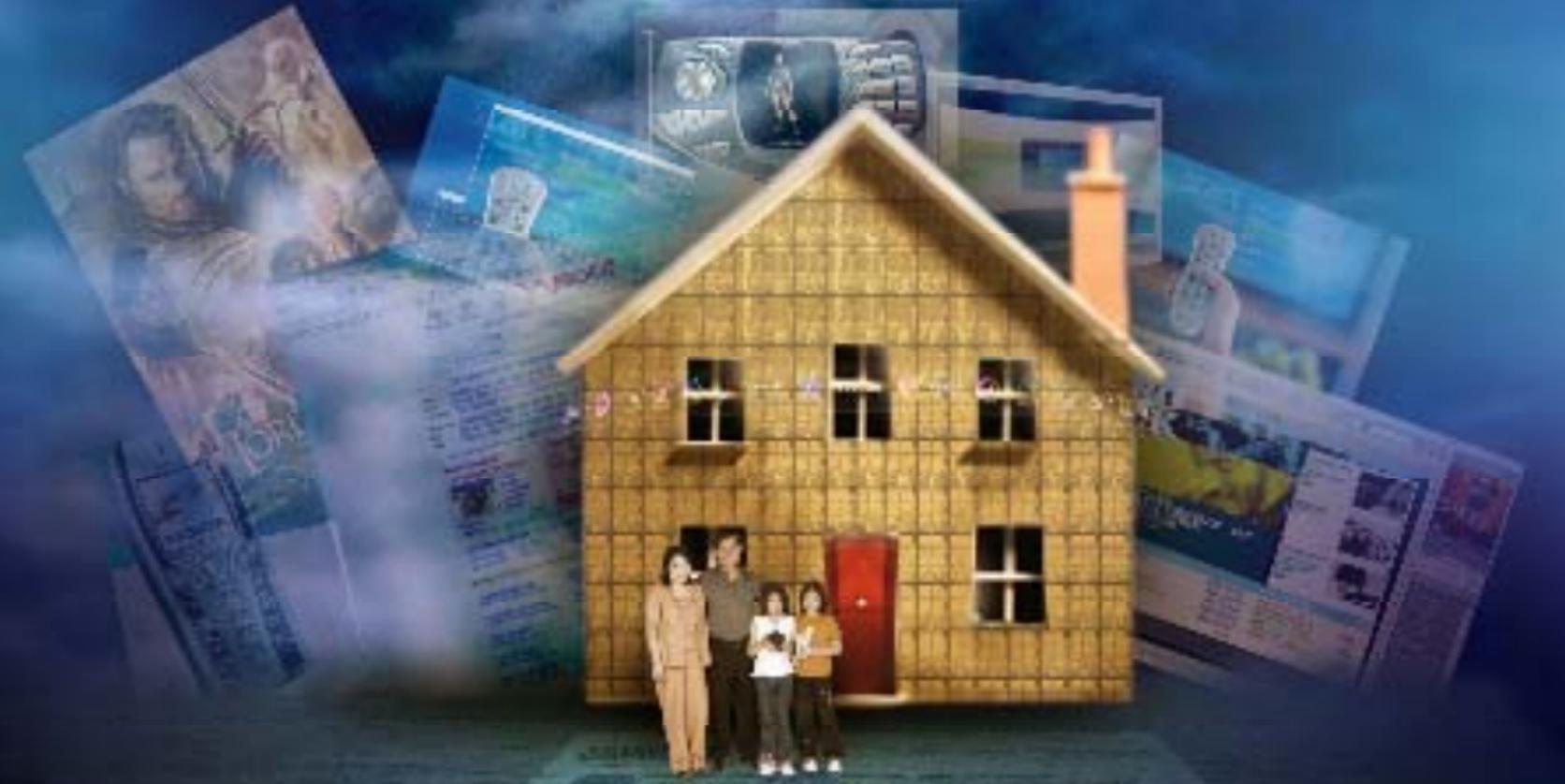


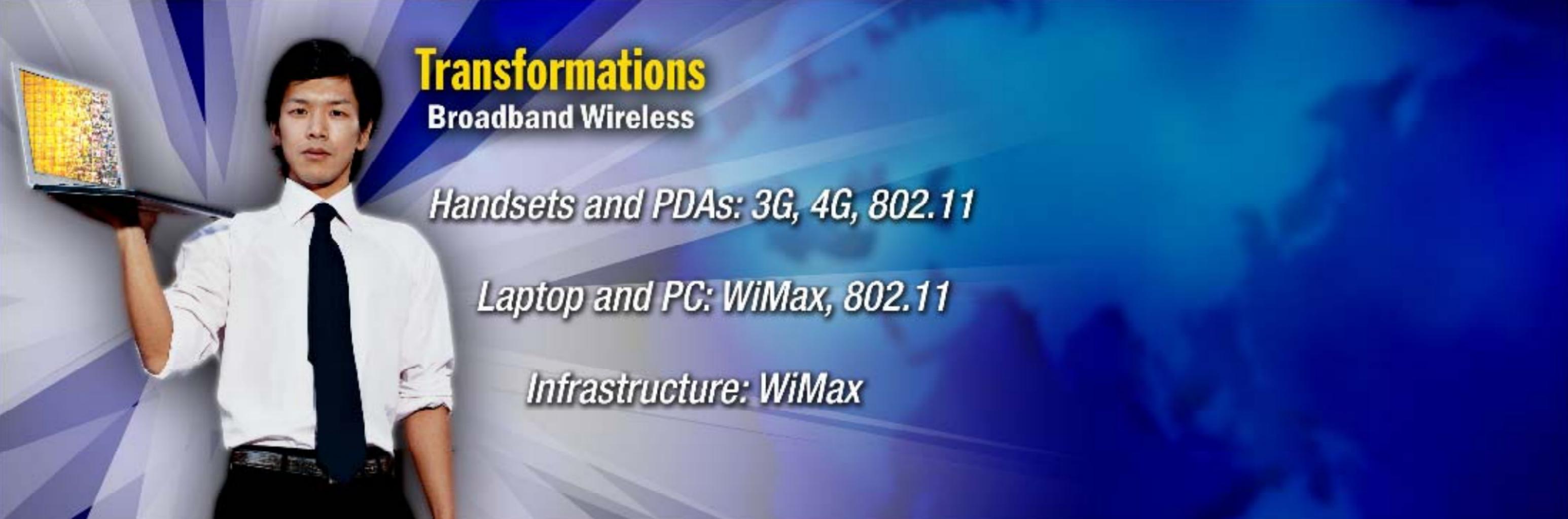


Transformations

Your Digital Home

Merging of consumer electronics and computing





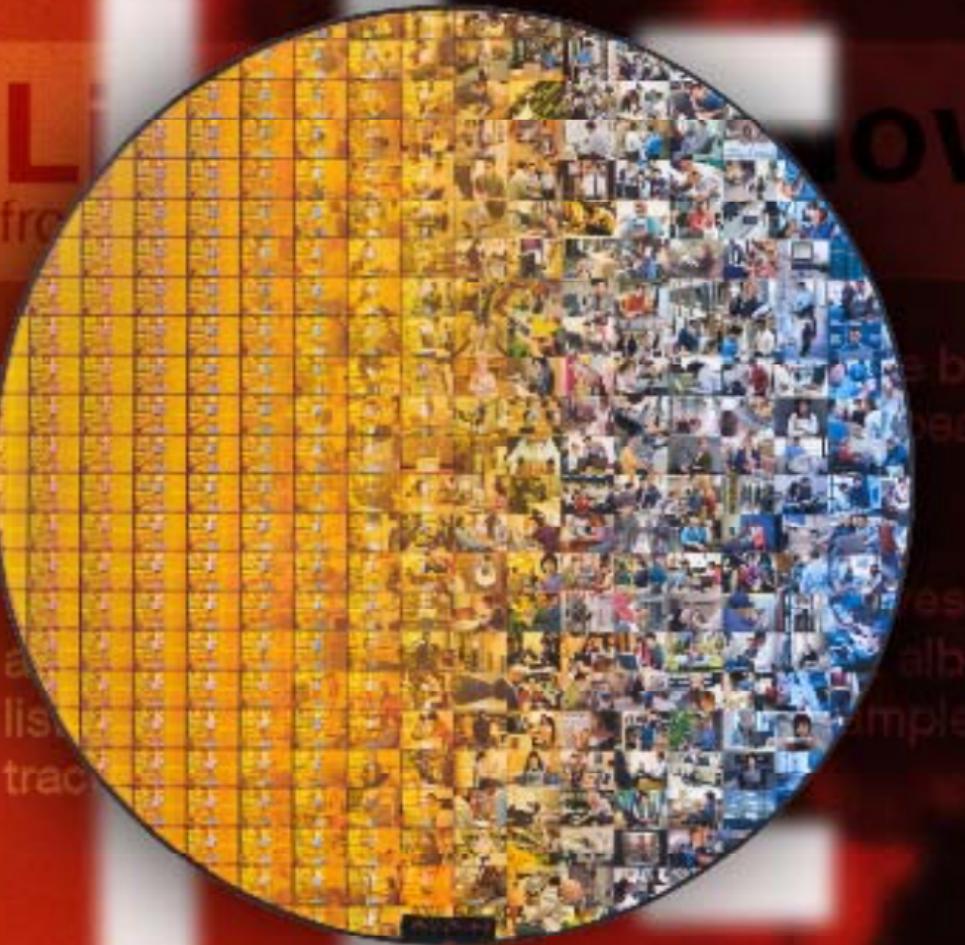
Transformations

Broadband Wireless

Handsets and PDAs: 3G, 4G, 802.11

Laptop and PC: WiMax, 802.11

Infrastructure: WiMax

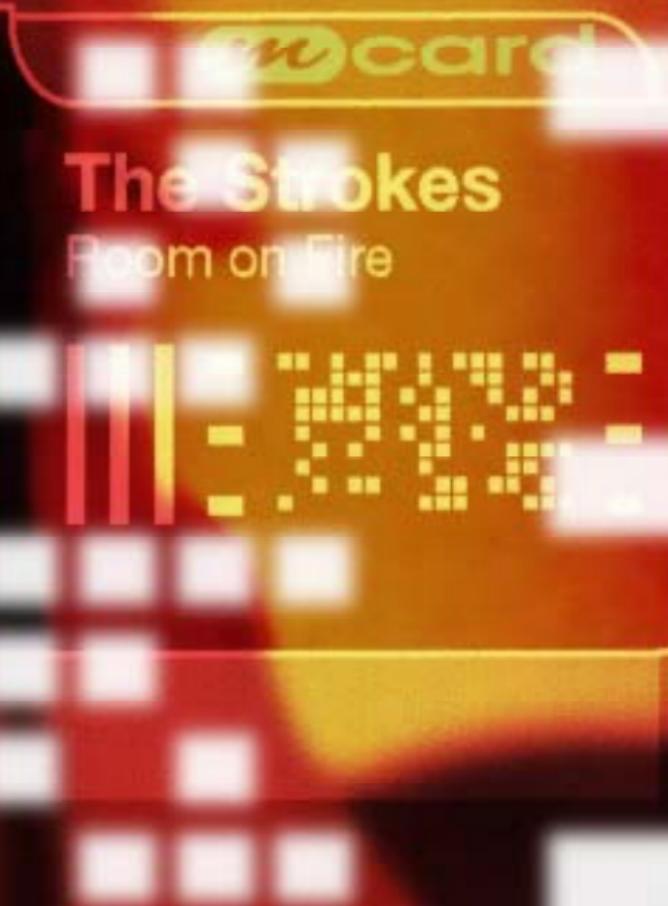


from

now...

the barcode
appear on your screen. When it

gives the relevant product information
album art, news, and the track
samples and buy the album individual



Listen to it NOW...

from your car phone!

Simply point your camera squarely at the barcode on the front of the album cover or CD jewel case. Once you've got the app open and ready, just point your camera at the barcode and wait for the interface to appear on your screen. When it beeps, you're done.

MusicJoe's iCast app immediately retrieves the relevant product information and displays it right on your phone: get album art, reviews, and the track listing. You can even listen to song samples and buy the album, individual tracks, or even ringtones!



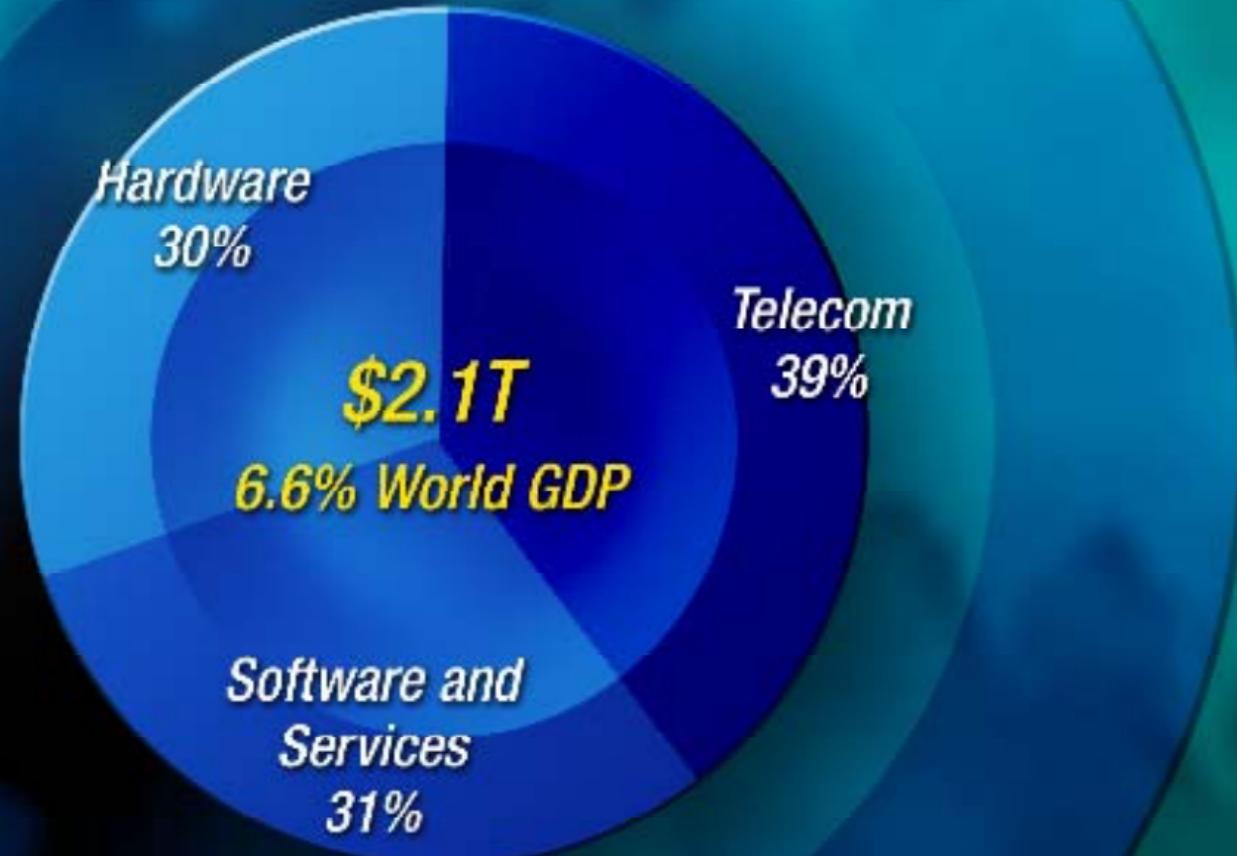




Every aspect of life has a digital opportunity

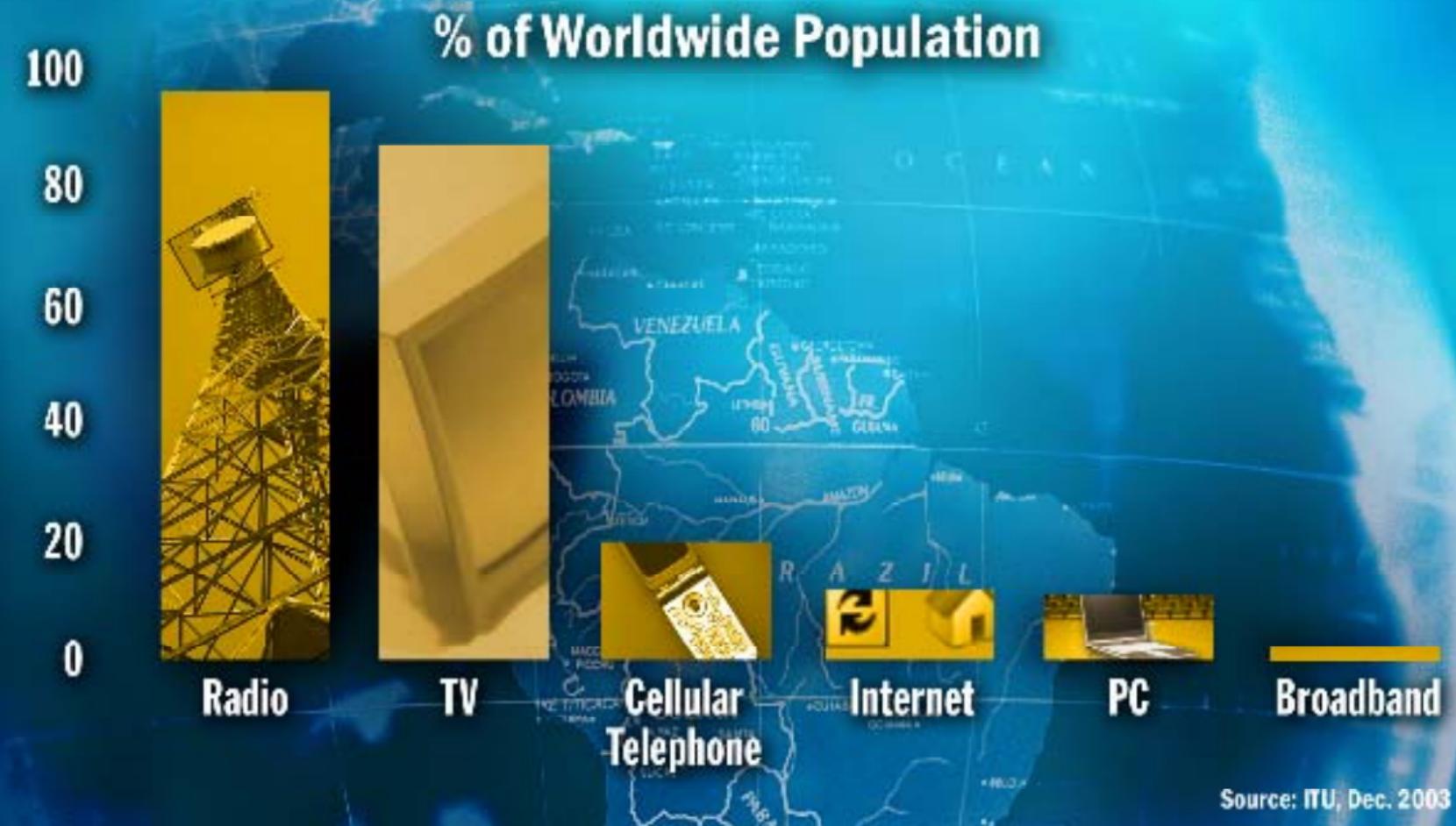
Dimensions of Growth

Worldwide IT Market



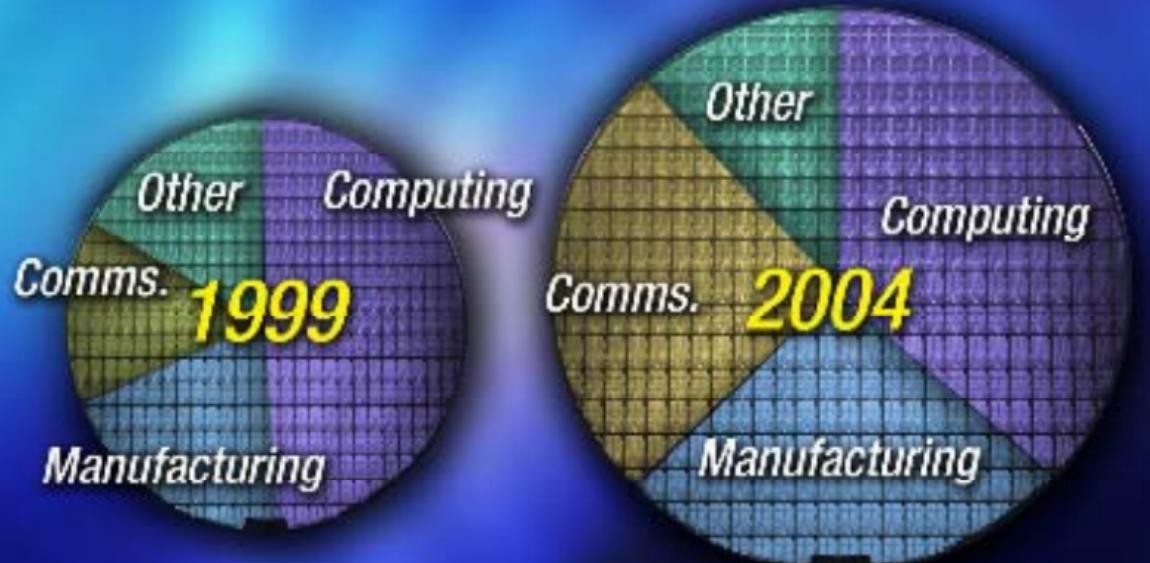
Dimensions of Growth

Access to Various Devices



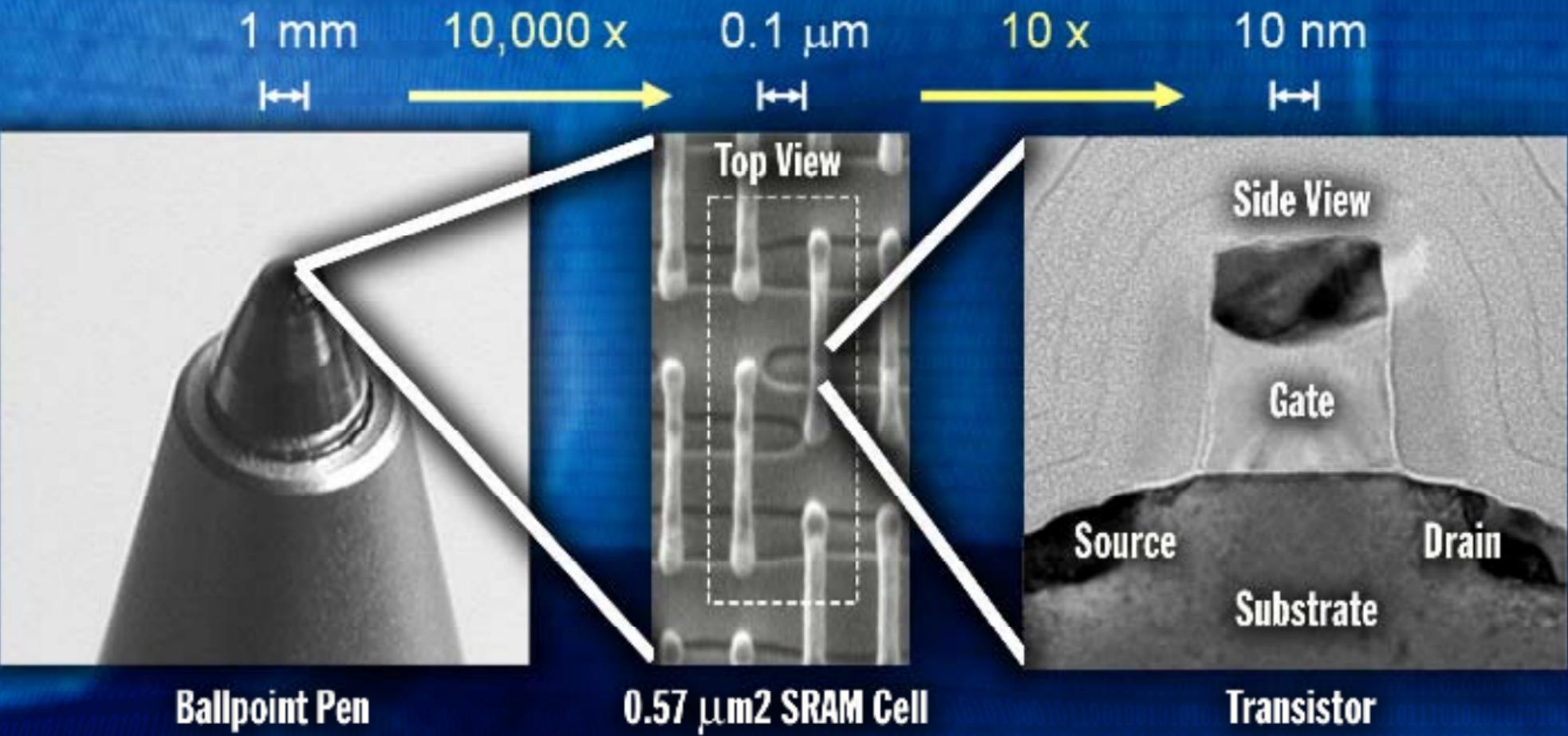
Dimensions of Growth

Research and Development



Dimensions of Growth

65nm Generation Transistor



Dimensions of Growth

Silicon Modulator

search
help

this week's highlights

← item →

highlights

Silicon gets photonics friendly

Silicon is the material of choice for electronics, circuits are made from it. But since the 1980s, started trading in a different currency, using the beams rather than the electrons of electrical circuitry, chipping away at the obstacles that prevent the systems. A silicon-based light source is needed. are working on promising silicon light sources, an optical modulator fast enough to bear competitive electronics. That target gets a little closer this week. A group based in the San Jose and Jerusalem laboratories have developed a silicon optical modulator that more than 1 GHz, quite an advance on the 20 MHz best previously attainable.



nature 12 February 2004

Letters to nature

A high-speed silicon optical modulator based on a metal-oxide-semiconductor capacitor

ALICE L. MCGARRY¹, JAY DEHNE¹, KAREN DAVIS¹, ANDREW H. REYES, NICOLAS J. & NABIL PANOUEY²

Silicon has long been the standard material for electronics, but it is only relatively recently that it has been considered as a material option for photonic devices. One reason is that silicon has relatively low speed silicon optical modulators compared to those fabricated from compound semiconductor materials such as gallium arsenide. To date, the fastest silicon-metal-oxide-semiconductor-based optical modulator reported is a switchable laser diode with a switching time of only ~20 MHz (ref. 1, 2), although it has been predicted theoretically that a ~1 GHz speed can be achieved using a similar technique. Here we describe a switch based on a metal-oxide-semiconductor (MOS) capacitor that can operate at a speed high enough to allow its use in a demonstration of all-silicon optical modulator with a modulation frequency including a single-sideband coherent long-wavelength (NOL) (C-NOL) process, and the integration of the silicon modulator

letters to nature

highlights

nature 12 February 2004

Silicon gets photonics friendly

Silicon is the material of choice for electronics, and essentially all integrated circuits are made from it. But since the 1980s, information technology has started trading in a different currency, using the photons that make up light beams rather than the electrons of electrical currents. So researchers are chipping away at the obstacles that prevent the use of silicon in photonics systems. A silicon-based light source is needed and already several groups are working on promising silicon light sources. The next part of the jigsaw is an optical modulator fast enough to bear comparison to those used in electronics. That target gets a little closer this week, with a report from a group based in the San Jose and Jerusalem labs of Intel Corporation. They have developed a silicon optical modulator that operates with a bandwidth of more than 1 GHz, quite an advance on the 20 MHz best previously attainable.

letters to nature

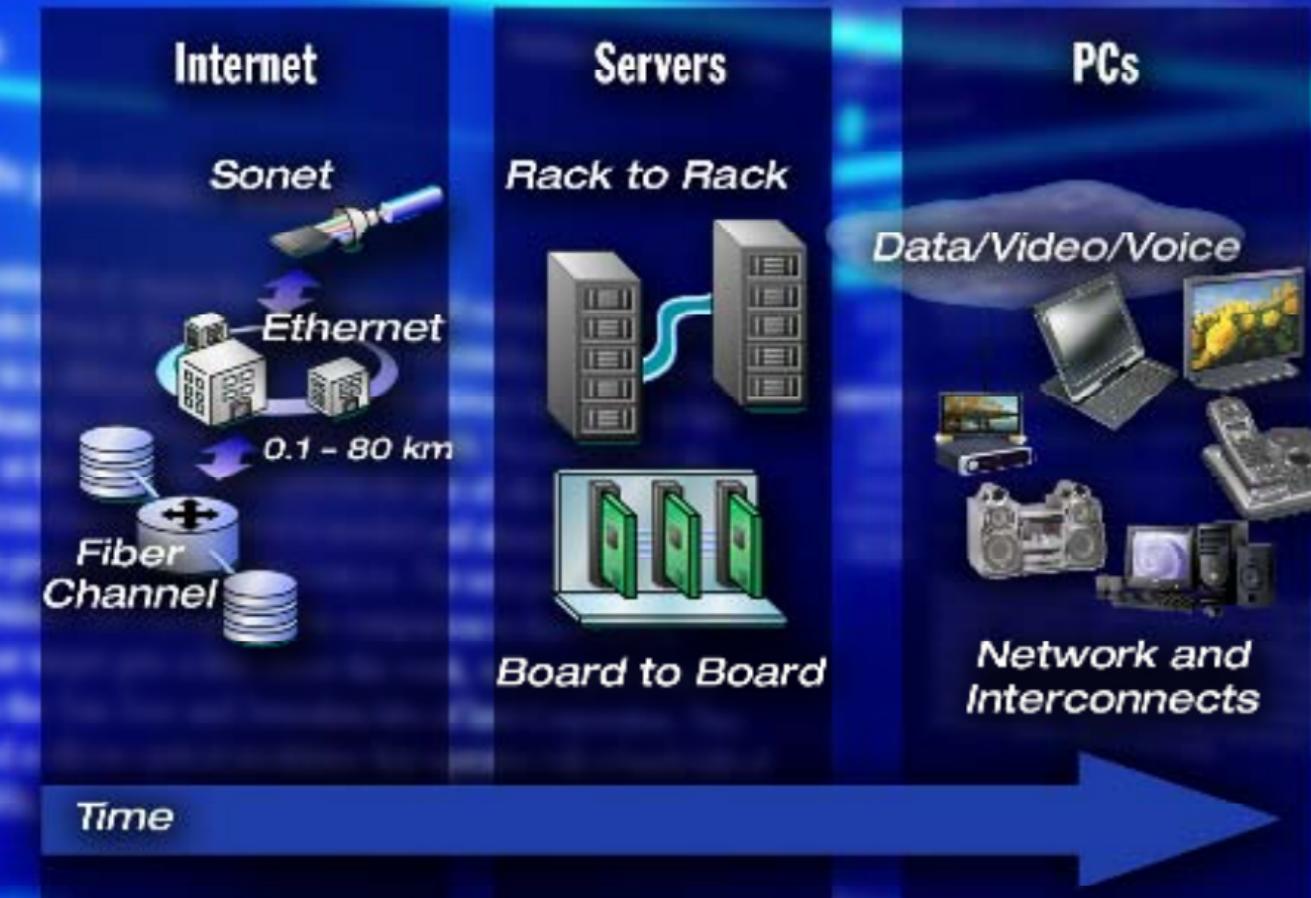
A 3-GHz-speed silicon optical modulator based on a metal-oxide-semiconductor capacitor
J.-P. Lefebvre, C. Deneke, M. Sano, J. P. Raskin, J. P. Harb, J. P. Bois, J. P. Bourgoin & N. Kavousi¹

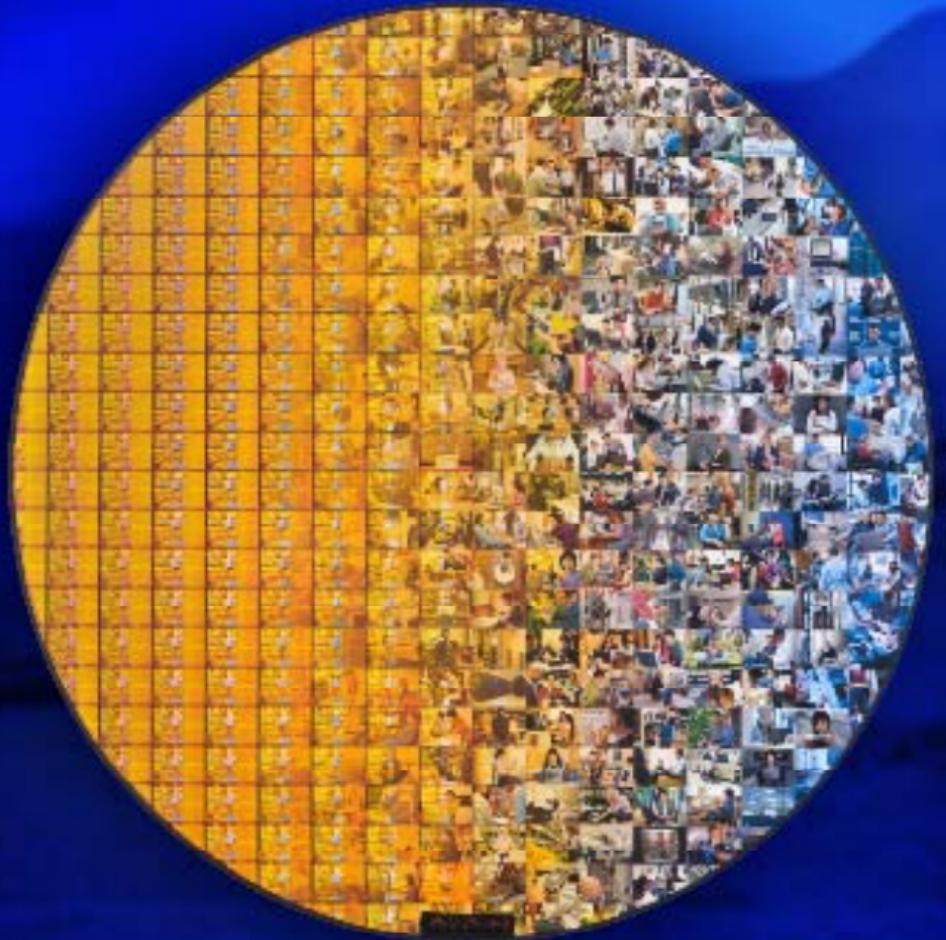
¹ Intel Research, San Jose, California, USA; Department of Electrical Engineering, Technion, Haifa, Israel; Department of Electrical Engineering, Ben Gurion University of the Negev, Beer-Sheva, Israel; Department of Electrical Engineering, Tel Aviv University, Tel Aviv, Israel; Department of Electrical Engineering, Weizmann Institute of Science, Rehovot, Israel

Silicon has long been the optimal material for electronics, but it is only relatively recently that it has been considered as a material option for photonic devices. For example, no photonic materials have so far had the relatively low speed of silicon optical modulators compared to those fabricated from compound semiconductor materials such as gallium arsenide. To date, the fastest silicon-optical-modulator-based optical modulator reported by researchers has a modulation frequency of only ~20 MHz (ref. 1, 2), although it has been predicted theoretically that a ~1-GHz speed is achievable in some device structures. Here we describe an approach based on a metal-oxide-semiconductor (MOS) capacitor that achieves a speed of 3 GHz. Our approach is to use a standard planar technology to fabricate an all-silicon optical modulator with a modulation frequency as high as 3 GHz. This is achieved by including a complementary metal-oxide-semiconductor (CMOS) processing, and the integration of the silicon modulator on a single silicon substrate is becoming possible.

Dimensions of Growth

The Potential of Silicon Photonics

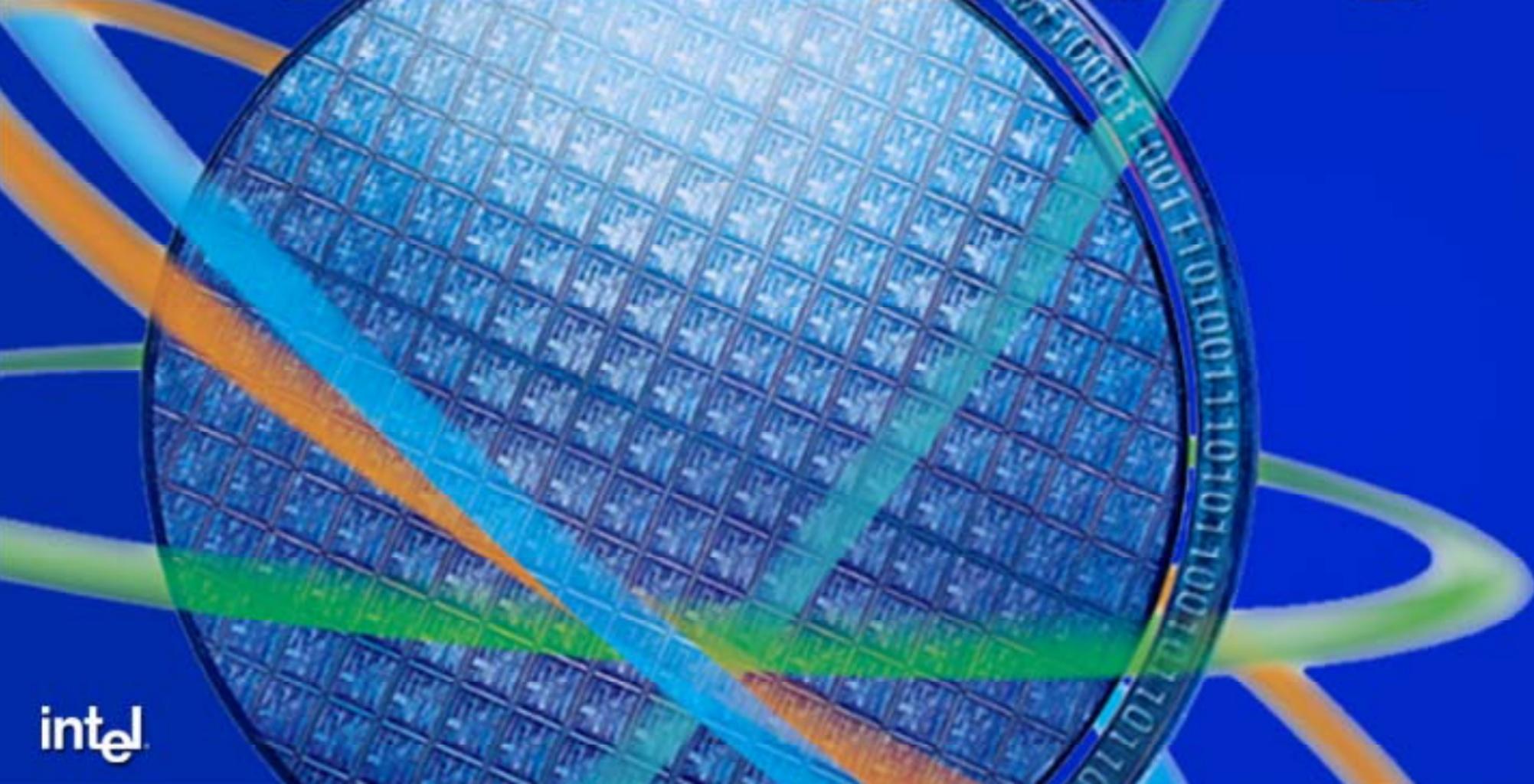








Let's **invest together** in the possibilities



Intel
Developer
Forum

Dimensions of Growth

Expanding Opportunity

