

Intel® Core™ i7: The Fastest Processor on the Planet

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Sr. Vice President, Intel Corporation

GM, Digital Enterprise Group

November 17, 2008



Intel® Core™ i7 Microprocessor

Fastest Processor on the Planet

*40% Faster**

Crossing A Threshold

Opens the Door to Exciting New Usages

Available Worldwide Today

Broad Availability and Industry Support



*Compared to Intel® Core™2 Extreme processor QX9770

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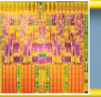
*Compared to Intel® Core™2 Extreme processor QX9770

Introducing the Next Generation of the IA Family Powered By Intel's 45 nm High-k + Metal Gate Transistors

1.0 μ 0.8 μ 0.6 μ 0.35 μ 0.25 μ 0.18 μ 0.13 μ 90nm 65nm 45nm

Intel® Core™ i7 Processor

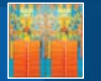
QC



Core™ 2 Processor



QC



Core Processor



DC

Pentium® 4 Processor



DC



DC

Pentium III Processor



Pentium II Processor



Pentium Processor



Intel 80486



Intel 80386



Note: Images Do Not Represent Exact Sizes

Introducing the Next Generation of the IA Family Powered By Intel's 45 nm High-k + Metal Gate Transistors

1.0 μ 0.8 μ 0.6 μ 0.35 μ 0.25 μ 0.18 μ 0.13 μ 90nm 65nm 45nm

Intel® Core™ i7 Pro

Core™ 2 Processor

Core Processor

Pentium® 4 Proces

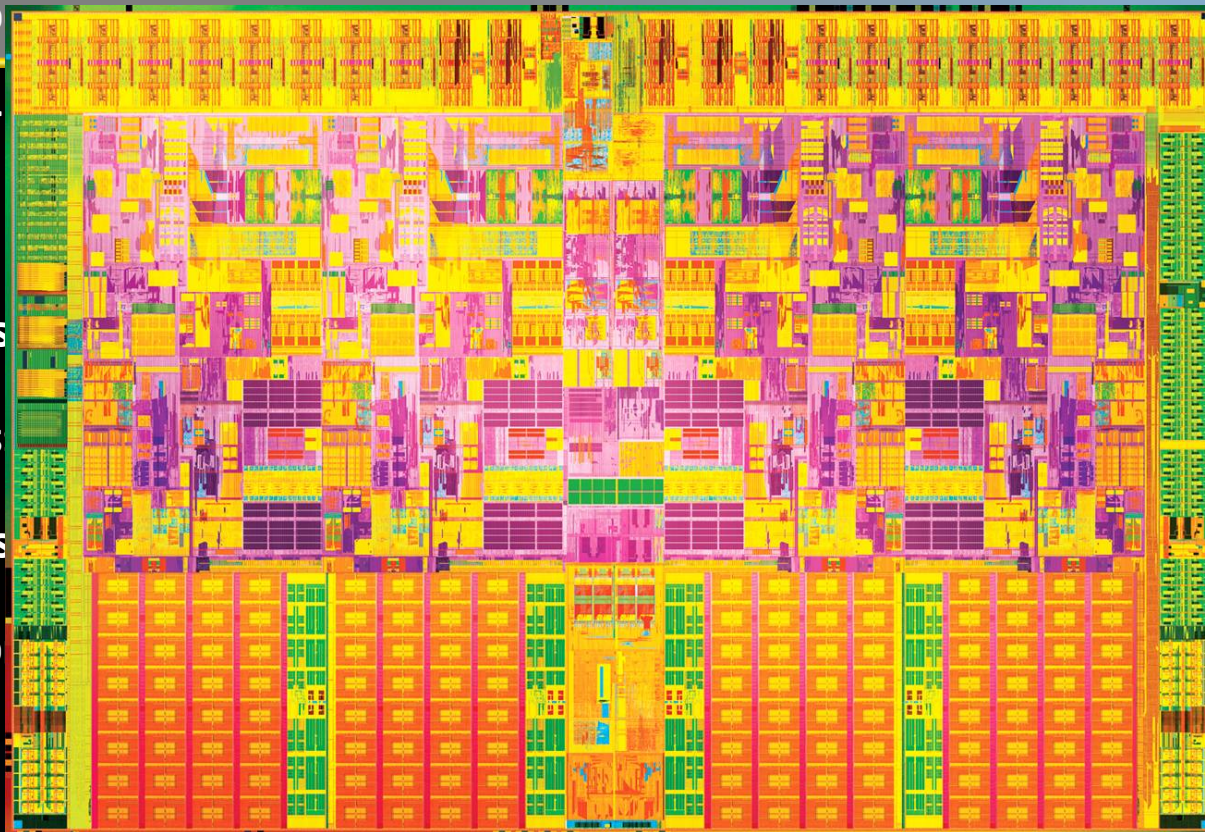
Pentium III Proces

Pentium II Process

Pentium Processo

Intel 80486

Intel 80386



QC

QC

DC

DC

DC

Note: Images Do Not Represent Exact Sizes

Introducing Intel® Core™ i7 Processor

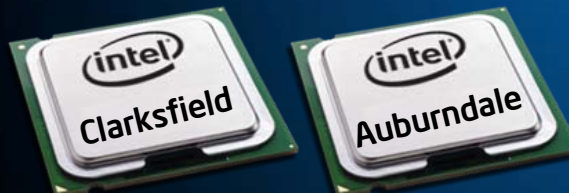
**Business and
Consumer
Clients**



High End
Desktop



Mainstream Client



Thin and Light Notebook

**Server and
Workstation**

Efficient
Performance
(2S)



Expandable
(4S+)



45 nm High-K



First Product Based On Nehalem Microarchitecture

Introducing Intel® Core™ i7 Processor

Business and Consumer Clients



High End Desktop



Mainstream Client



Thin and Light Notebook



Westmere

Server and Workstation

Efficient Performance (2S)



45 nm High-K

Expandable (4S+)



32 nm



First Product Based On Nehalem Microarchitecture

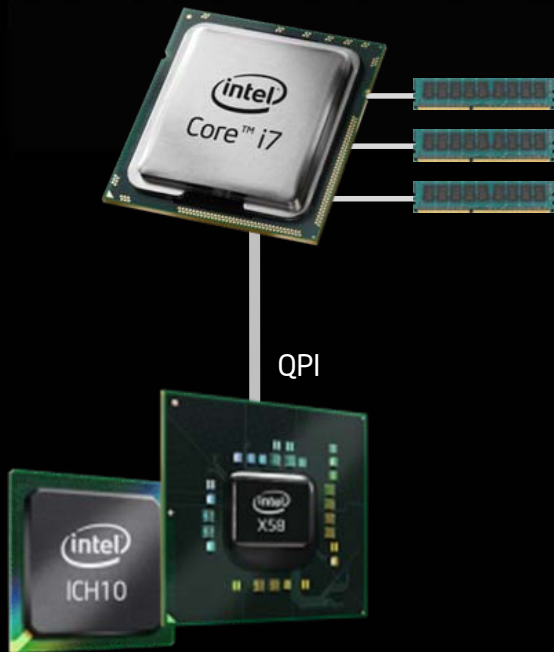
Intel® Core™ i7 Processor



- Superior energy efficient performance
- Intel® Hyper-Threading Technology
 - 8 threads, 4 cores
- Intel® Turbo Boost Technology

Intel® Core™ i7 Processor and Intel® X58 Express Chipset

Intel® Core™ i7 Processor
Extreme Edition



QPI

Intel® X58 Express Chipset

- 3 channels of DDR3* 1066 MHz
- Intel® QuickPath interconnect
 - 6.4GT/s up to 25.6GB/sec bandwidth
- PCI Express* 2.0 for Discrete graphics
 - Up to Quad graphics support
- 7.1 Dolby Home Theater Surround*
- I/O Expansion: S-ATA* and USB* 2.0



Intel® Core™ i7 and Intel® X58 Express Chipset: High End Desktop Platform DX58S0

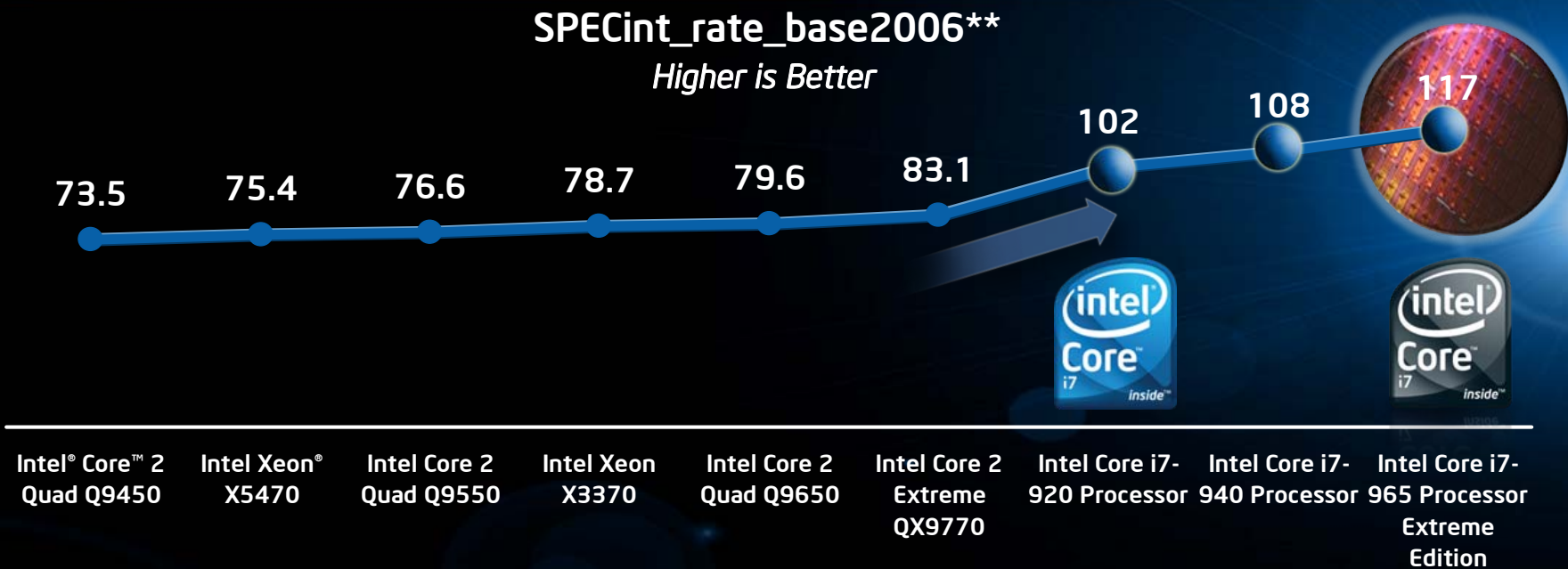


Intel® Core™ i7 and Intel® X58 Express Chipset



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A New Single Processor World Record!

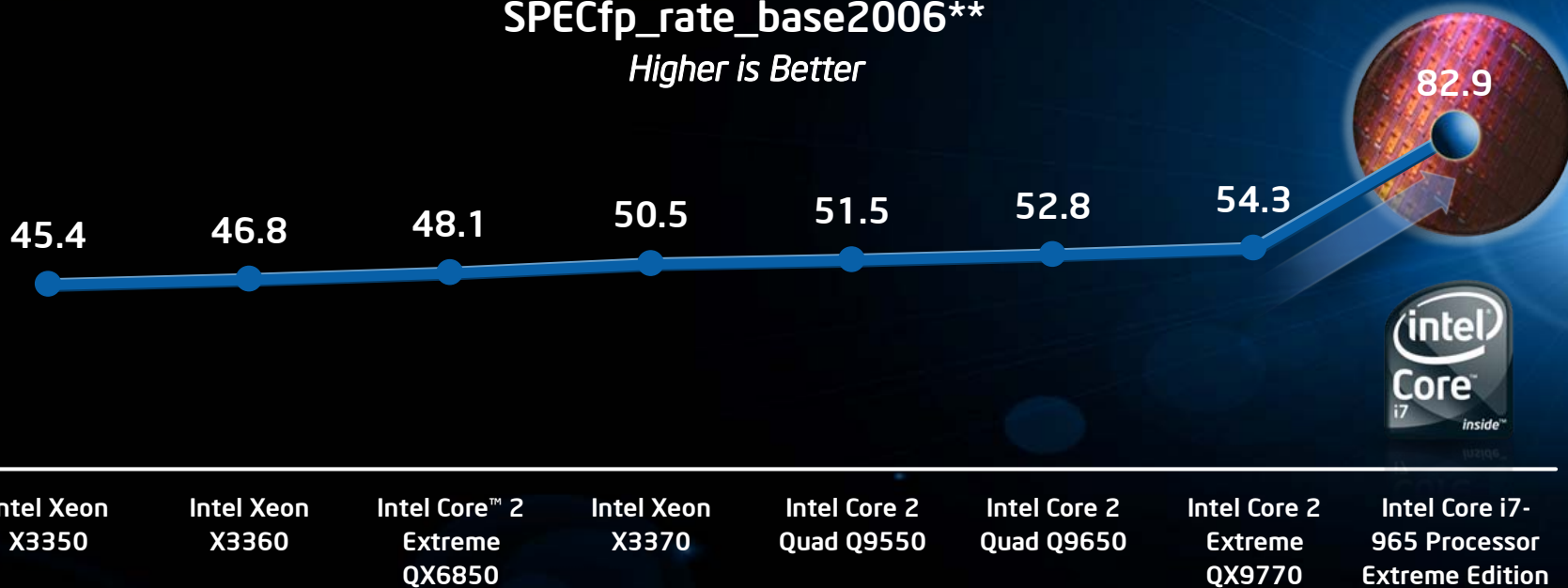


Undisputed Leadership on the Industry Acknowledged Performance Metric

A New Single Processor World Record!

SPECfp_rate_base2006**

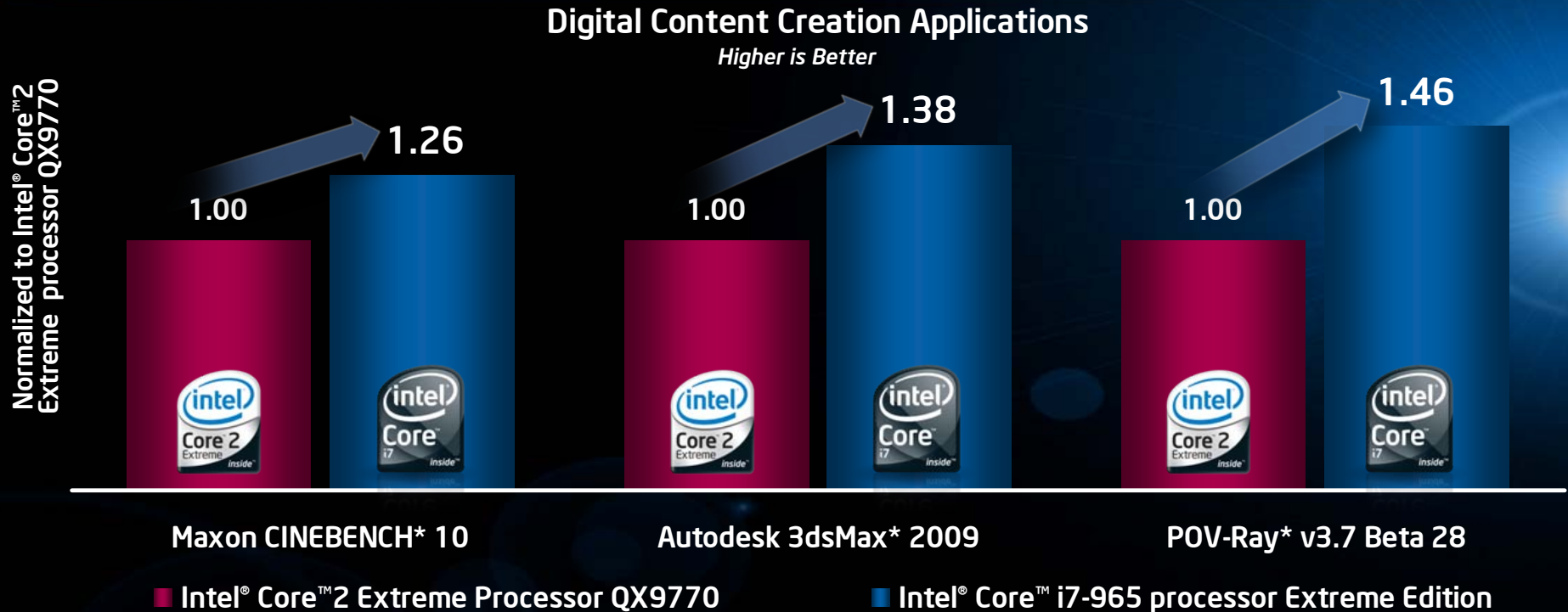
Higher is Better



Undisputed Leadership on the Industry Acknowledged Performance Metric

Source: <http://www.spec.org/cpu2006/results/> as of November 13, 2008. Any difference in system hardware or software design or configuration may affect actual performance.
**SPEC, SPECint, SPECfp, and SPECrate are trademarks of the Standard Performance Evaluation Corporation. For more information about this benchmark go to: www.spec.org
System Configurations and Disclaimers: Appendix *Other names and brands may be claimed as the property of others.

Intel® Core™ i7-965 Processor Extreme Edition



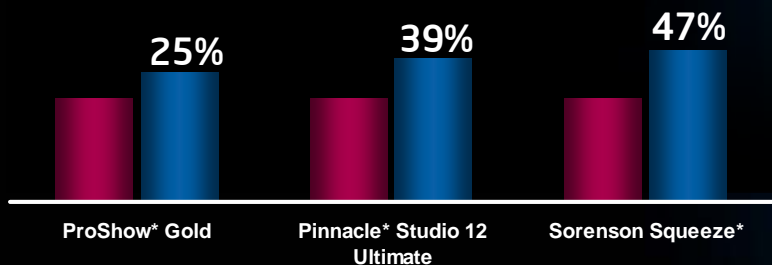
The Intel® Hyper-Threading Technology Solution Moves Media Creation to New Highs

System Configurations and Disclaimers: Appendix
*Other names and brands may be claimed as the property of others.

Intel® Core™ i7: Enhance Your Digital Life

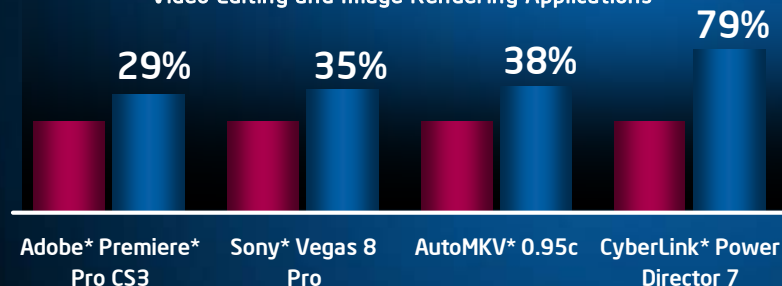
Be More Creative

Photo and Video Creation



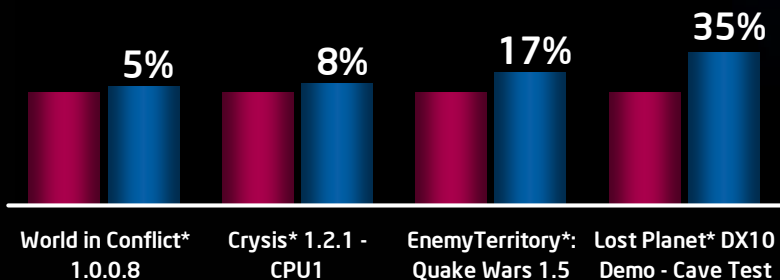
Create and Share Videos Faster!

Video Editing and Image Rendering Applications



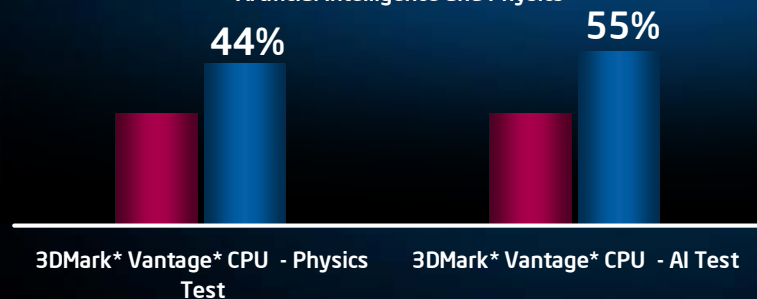
More Fun with Games

Popular Gaming Titles



Amazing Immersive Gaming

Artificial Intelligence and Physics



Normalized to Intel® Core™2 Extreme Processor QX9770



Intel® Core™2 Extreme processor QX9770



Intel® Core™ i7-965 processor Extreme Edition

BANDITO
BROS



INDIE FILMMAKER:

JACOB ROSENBERG
CTO BANDITO BROTHERS

“We work in an environment where rendering and processing is integral to getting our work done.”



DIGITAL ARTIST:

RANDALL RICKERT
3D Digital Artist

“This combination of Blender, Linux, and Nehalem make a very respectable animation platform, especially for a small studio such as mine.”



Providing digital
animation and
related services



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DIGITAL PHOTOGRAPHER: STEVE HOLVICK Independent Photographer



Intel® Core™ i7 Overclockers Claiming New Records and We Are Just Beginning

Super Pi 32M 7min 2sec **World record**

3DMark* Vantage P31605 **World record**

PCMark* Vantage 21607 **World record**

Source: <http://www.hwbot.org>

5.292 GHz Super Pi 32M Completion

– **WORLD RECORD** –

Beats a 6.498 GHz Intel® Core™ 2 Duo E8600

```
Super PI / mod1.5 XS
Calculate(C) About...(A) Help(H)

32M Calculation Start. 24 iterations.
Real memory =628666368
Available real memory =485675008
Allocated memory =268435496

0h 00m 04.672s The initial value finished
0h 00m 19.531s Loop 1 finished
0h 00m 36.609s Loop 2 finished
0h 00m 53.672s Loop 3 finished
0h 01m 10.719s Loop 4 finished
0h 01m 27.766s Loop 5 finished
0h 01m 44.812s Loop 6 finished
0h 02m 01.875s Loop 7 finished
0h 02m 18.922s Loop 8 finished
0h 02m 35.969s Loop 9 finished
0h 02m 53.062s Loop 10 finished
0h 03m 10.094s Loop 11 finished
0h 03m 27.156s Loop 12 finished
0h 03m 44.203s Loop 13 finished
0h 04m 01.234s Loop 14 finished
0h 04m 18.281s Loop 15 finished
0h 04m 35.344s Loop 16 finished
0h 04m 52.375s Loop 17 finished
0h 05m 09.422s Loop 18 finished
0h 05m 26.453s Loop 19 finished
0h 05m 43.391s Loop 20 finished
0h 06m 00.203s Loop 21 finished
0h 06m 16.750s Loop 22 finished
```

CPU-Z Processor: Intel Core i7 Extreme 965
Code Name: Bloomfield
Package: Socket 1366 LGA
Technology: 45 nm
Core Voltage: 1.536 V
Specification: Genuine Intel(R) CPU 000 @ 3.20GHz (ES)
Family: 6 Model: A Stepping: 4
Ext. Family: 6 Ext. Model: 1A Revision: C0
Instructions: MMX, SSE, SSE2, SSE3, SSSE3, SSE4.1, SSE4.2, EM64T
Clocks (Core #0): Core Speed 5292.3 MHz, Multiplier x36.0
Cache: L1 Data 4 x 32 KBytes, L1 Inst. 4 x 32 KBytes, Level 2 4 x 256 KBytes, Level 3 8 MBytes
Selection: Processor #1 Cores 4 Threads 4

CPU-Z Motherboard: Manufacturer ASUSTeK Computer INC., Model Rampage II Extreme, Rev 2.xx
Chipset: Intel X58
Southbridge: Intel 82801GB

"The raw performance we have achieved from overclocking the Core™ i7 is truly amazing. Intel delivers another incredible processor."

Charles Wirth, XtremeSystems.org



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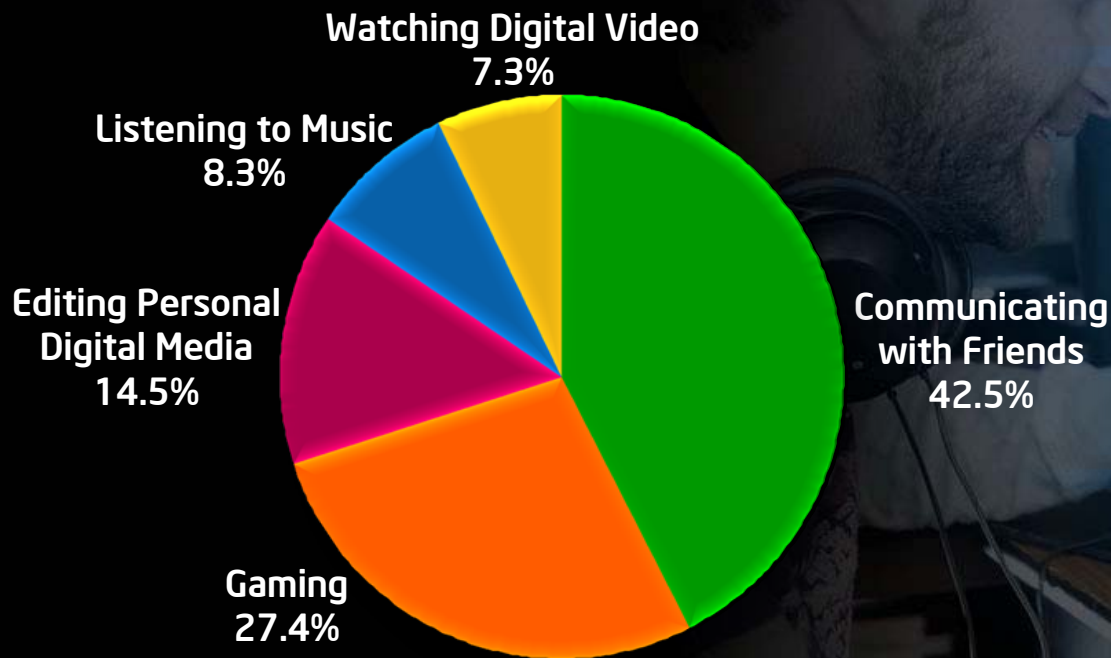
Broad Availability and Industry Support



*Compared to Intel® Core™2 Extreme processor QX9770

Consumers Communicate, Game, and Edit Media*

Q: Primary Use For Home PC?

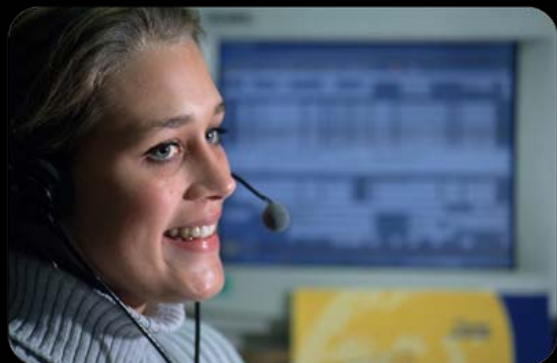


*This Is What People Do With
Their Computers Today...
But What About Tomorrow
With Intel® Core™ i7?*

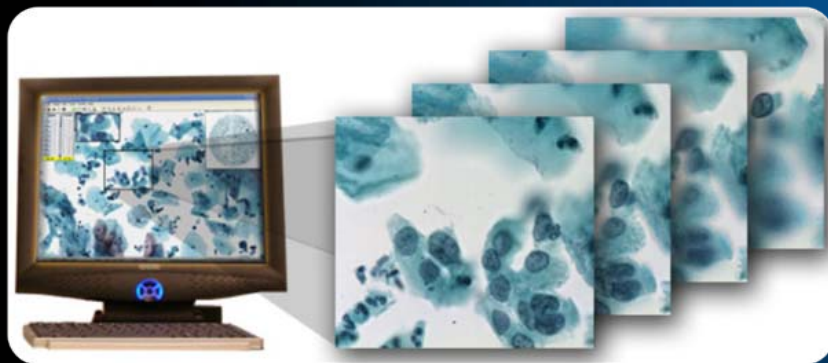


* Source: IDC 2007

Crossing the Threshold: *Exciting New Usages Possibilities*



**Breakthroughs In
User Interface**



**Back-End Compute
and Analysis
On the Desktop**



**Motion Capture
and Analysis**



Cetin Cetinturk
CEO
CTD Systems





Arthur Lewis
General Manager,
Gaming
Dell





Dr. Frank Schneider
Duke University Medical Center
Department of Pathology



acer

Gary Elsasser

Vice President

Desktop and Server Products

Acer



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organic motion

Andrew Tschesnok
CEO
Organic Motion, Inc.



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Intel® Core™ i7 Processors Are Here

More Than 100k Processors Shipped

Selling In More Than 70 Countries Worldwide

Over 500 Different System Offerings
Available From OEMs

Over 35 Different Motherboard Offerings
In The Channel



Intel® Core™ i7: Worldwide Industry Support



Intel® Core™ i7 Processor in Japan



The Nehalem Team



Industry Recognitions

For Outstanding Commitment and Timely Delivery of Products That Support the Intel® Core™ i7 Processor



The Technical Press Says...

"Core i7 represents the pinnacle of desktop CPU performance today."



"Intel's new Core i7 processors don't just live up to their hype—they exceed it."



"... simply destroys previous CPU benchmarks."



"Core i7 continues to fuel Intel's beacon of performance"



"Intel executed on its roadmap to near perfection and the Core i7 is everything they promised it would be."



"In a nutshell, Nehalem is a masterpiece..."

LostCircuits

"If we had to describe the Core i7 in one word, it would be 'monster'."



"Intel's done a marvelous job with the Core i7"

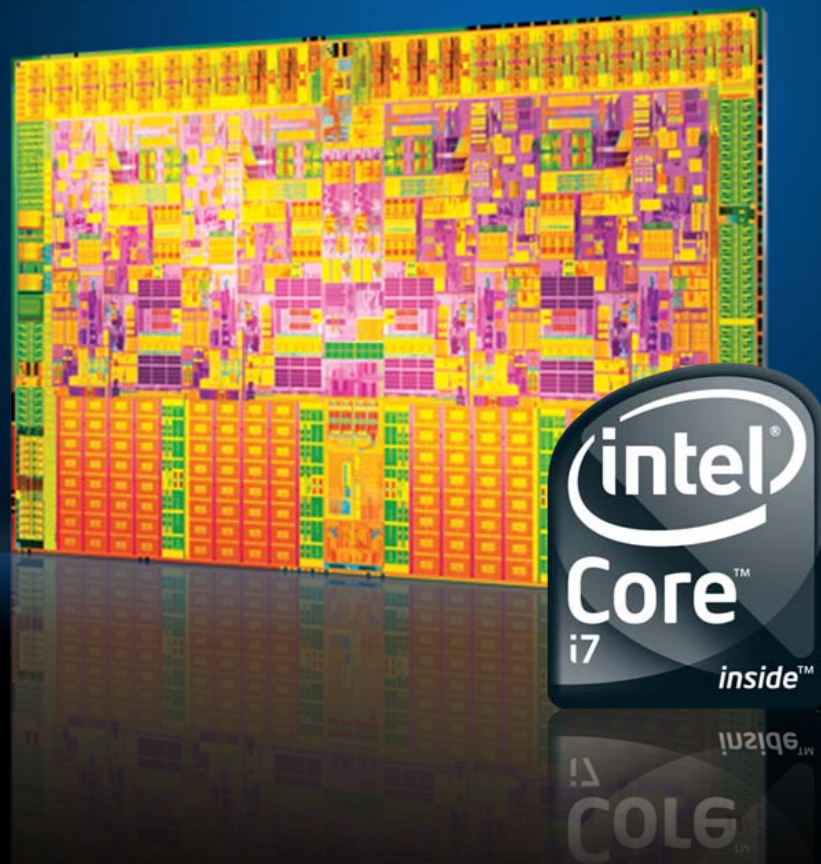


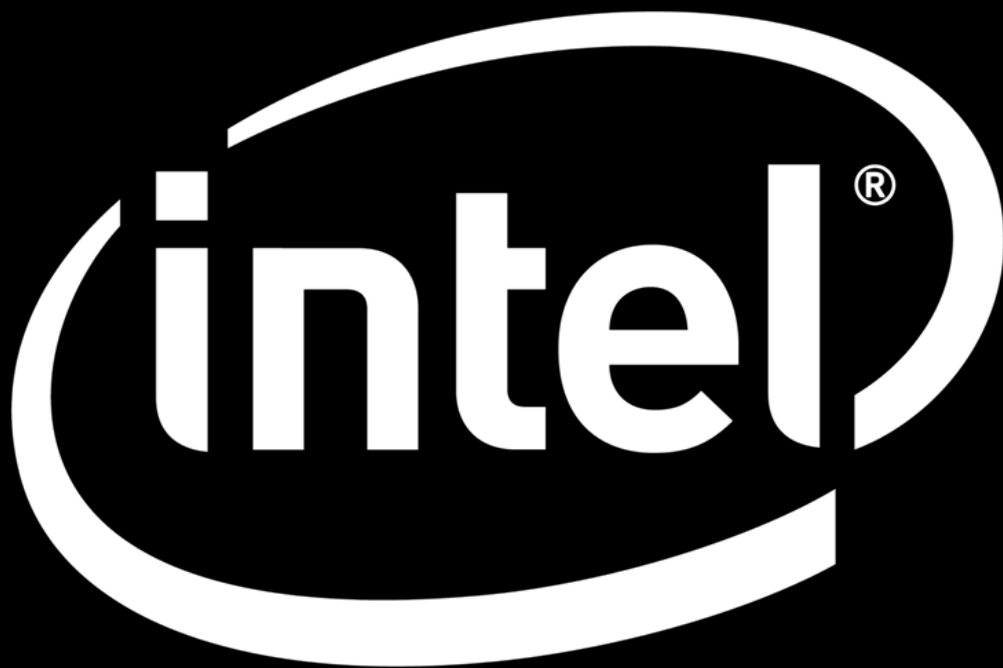
Summary

Intel® Core™ i7 :
The Fastest Processor on the Planet

Crossing A Performance Threshold

Products Available Today and More to Come





FASTEST
PROCESSOR
ON THE PLANET



Legal Disclaimers

All dates and products specified are for planning purposes only and are subject to change without notice

Relative performance is calculated by assigning a baseline value of 1.0 to one benchmark result, and then dividing the actual benchmark result for the baseline platform into each of the specific benchmark results of each of the other platforms, and assigning them a relative performance number that correlates with the performance improvements reported.

SPEC, SPECint, SPECfp, SPECjbb, SPECweb, and SPECpower_ssj are trademarks of the Standard Performance Evaluation Corporation. See <http://www.spec.org> for more information.

Warning: Altering PC memory frequency and/or voltage may (i) reduce system stability and use life of the system, memory and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel assumes no responsibility that the memory, included if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. Check with memory manufacturer for warranty and additional details.

Warning: Altering clock frequency and/or voltage may (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warranty, the operation of the processor beyond its specifications

Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor series, not across different processor sequences. See http://www.intel.com/products/processor_number for details.

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Regarding the performance measurements in this presentation

- Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_numbers for details.
- Performance tests and ratings are measured using specific computer systems and / or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit <http://www.intel.com/performance/>
- Hyper-Threading Technology requires a computer system with a processor supporting HT Technology and an HT Technology-enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. For more information including details on which processors support HT Technology, see <http://www.intel.com/info/hyperthreading>.
- Intel® Turbo Boost Technology (Intel® TBT) requires a PC with a processor with Intel TBT capability. Intel TBT performance varies depending on hardware, software and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel TBT. For more information, see <http://www.intel.com/pressroom/archive/releases/20080819comp.htm>.
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SPEC* CPU2006* Configuration Details

- Configuration 1: Intel® Core™2 Extreme Processor QX9770 (3.20GHz /1600 FSB /2x6 MB L2) Asus P5E3 Premium board, X48 chipset 2 channel 4GB (4x1GB) Corsair CM3X1024-1333C9DHX DDR3-1333 9-9-9 clocked down to DDR3-1200 by the BIOS (BIOS: 0505, INF:8.4.0.1016)
- Configuration 2: Intel® Core™ i7-965 processor Extreme Edition (3.20GHz/6.4GT/s QPI/8MB L3) SMT ON/Turbo ON, Asus P6T Deluxe, 3 channel 12 GB (6x2GB) Samsung M378B5673DZ1-CF8 DDR3-1066 7-7-7-20 (INF:9.1.0.1007)
- Common Elements: Intel® X25-M (80GB SSD SATA2), 1 x GTX 280 PCIe graphics (Graphics Driver: NV177.41), Intel® Compiler v11.0 32-bit binaries, Windows* Vista* Ultimate 64 bit.

Note: SPECrate requires 1GB of memory for each copy running. The Intel Core2 Extreme processor QX9770 requires 4GB of memory to run 4 copies of SPEC (1 copy for each thread). Furthermore, the X48 chipset supports no more than 2GB of DDR3-1600 memory and must use 4GB slower DDR3-1200 memory. The Intel Core i7 processor requires a minimum of 8GB of memory to run 8 copies of SPEC (1 copy for each thread).



System Configuration for the Intel® Core™ i7-965 processor Extreme Edition except SPEC* CPU2006*

- Configuration 1: Intel® Core™2 Extreme Processor QX9770 (3.20GHz/1600 FSB /2x6 MB L2) Asus P5E3 Premium board, X48 chipset 2 channel Corsair CM3X1024-1600 C7DHXIN XMP @1.8V 2GB (2x1GB) DDR3-1600 7-7-7-20-1T (BIOS: 0402, INF:8.4.0.1016)
- Configuration 2: Intel® Core™ i7-965 processor Extreme Edition (3.20GHz/6.4GT/s QPI/8MB L3) SMT ON/Turbo ON, Intel® DX58SO 3 channel (3x1GB) Samsung M378B2873DZ1-CF8 DDR3-1066 7-7-7-20 (BIOS: 2260B, INF:9.1.0.1007)
- Common Elements: Intel® X25-M (80GB SSD SATA2), 1x GTX 280 PCIe graphics (Graphics Driver: NV177.41), Windows* Vista* Ultimate 32bit.

Note: These systems contain different amounts of memory. The purpose is to compare the fastest supported Intel® Core™2 Extreme Processor platform (2x1GB of DDR3-1600) versus the recommended configuration (3x1GB of DDR3-1066) for the Intel® Core™ i7-965 processor Extreme Edition platform.

