IT@Intel Client Overview

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Legal Notices

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Agenda

- Intel IT client background

- Intel's move to mobility

- Managing Intel's PC fleet today

- Support best practices

- Technology

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Intel IT Operational Profile

5,660 IT employees supporting ...

- 78,900 Intel employees in 150 sites
- >90,000 PCs and ~100,000 servers
- 95 Data Centers consuming 440,000 sq ft
- 28,324 kW (per day)
- 177 million e-mail messages (per month)
- 3,974 terabytes of backup volume (per month)
- 18,905 new client laptops refreshed

D

Design Computing

- Supports the chip design community
- Has most of the servers in Intel

O

Office General Purpose

- Supports typical IT and customer services

M

Manufacturing FAB/ATM

- Manufacturing computing that supports fabrication and assembly

E

Enterprise

- Enterprise applications that support eBiz and ERP

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Intel Employee and IT Statistics

- 80,000 employees
- 150 sites
- >90,000 PCs

Data and Messaging Traffic	2009
E-mail messages Millions per month	177
External e-mail messages blocked Millions per month	772
LAN ports	471,100
Backup volume Terabytes per month	3,974

PC Refreshes and Upgrades	2009
Laptop PCs refreshed	18,905
PCs with Intel® vPro™ technology provisioned with Intel® Active Management Technology	48,500

Employee Work Habits
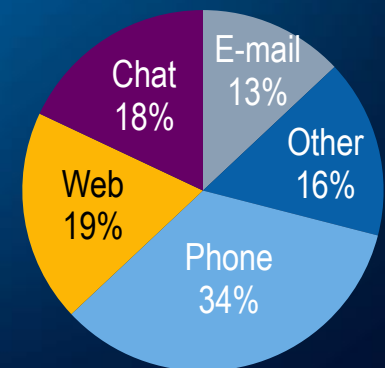
- Extended Work Day From Home
- Work 3-5 Full Days/Week at Home
- Work 1-2 Full Days/Week at Home
- Do Not Work From Home

20%
12%
6%
60%

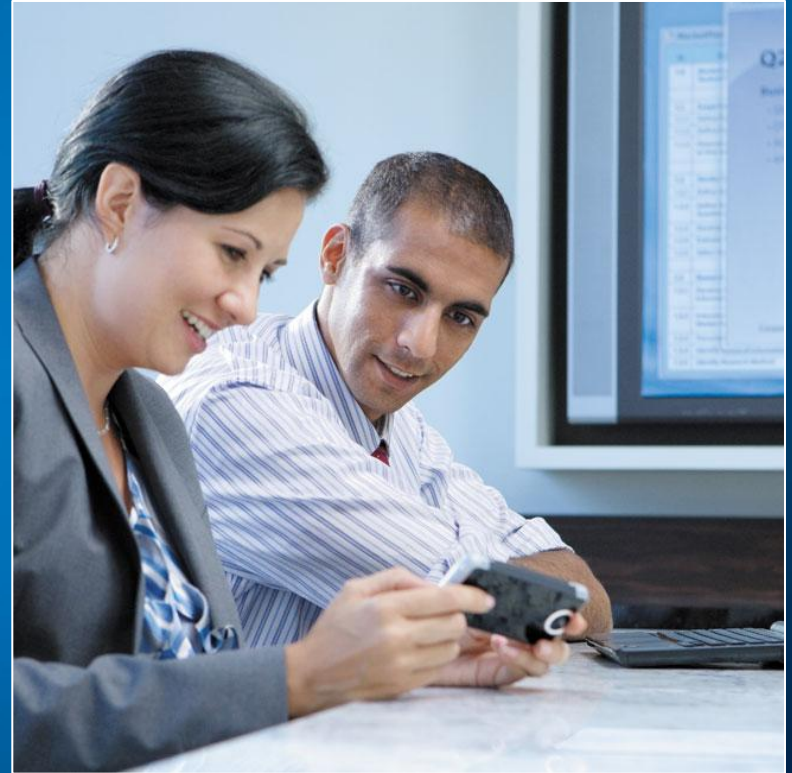## Form Factor Mix

Desktops 19%
Laptops 81%
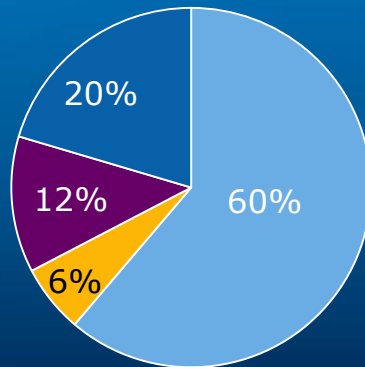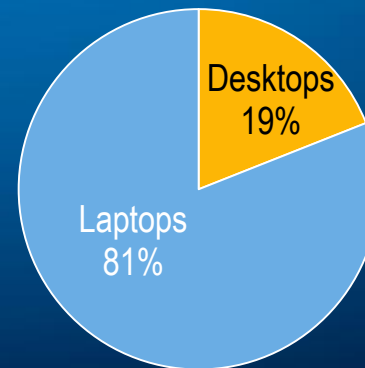
Service Desk Channel Usage

Chat 18%
E-mail 13%
Other 16%
Web 19%
Phone 34%

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Intel Client Background

- 94,000 clients

- 16 brands

- 6 classes of systems

- 1 base image

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Customer Segmentation
by Job Role

Cube Captains (13k)	• Desktop and "low-end" notebook users • Waterfalled PCs	
Functionalists (5k)	• Tablet/Handheld/MID • Low-end notebook or shared desktop	
Tech Individualists (17k)	• Discrete graphics/ larger screen	• Lots of memory, fast disk/SSD, fast network • Graphics and Performance
Global Collaborators (54k)	• Notebook • Wireless – campus, home	• 24x7 availability • Video and collaboration
Nomads (5k)	• Showcase/Branded PC, 2-year refresh rate • Thin, light, extended battery life	• Voice and Video • Multiple devices – PDA, Phone • Connectivity is key – WiMax*, WWAN

Day Extenders

One size does not fit all!
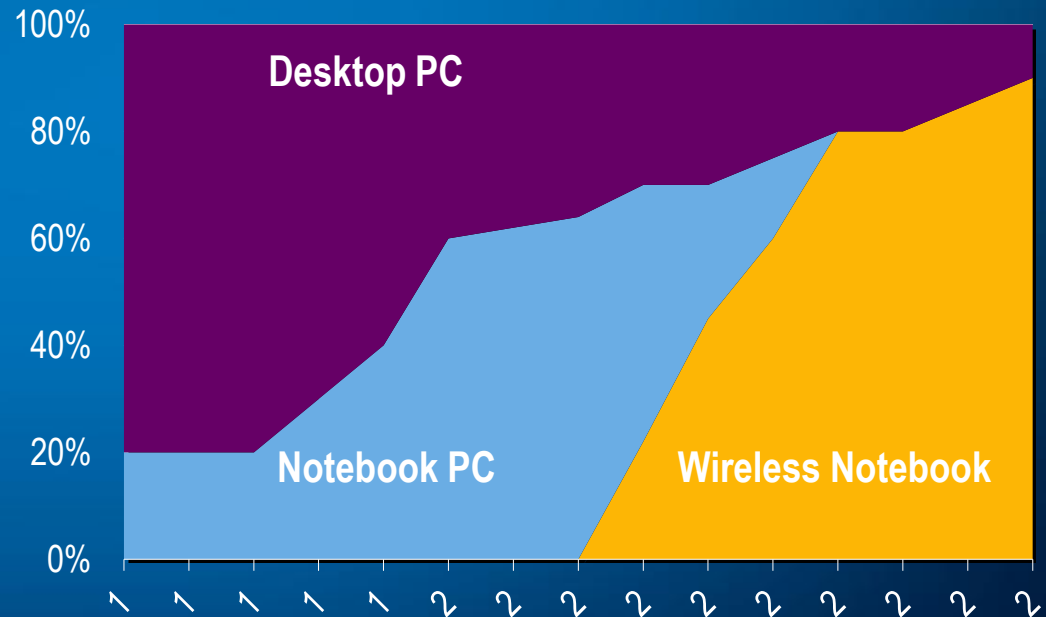
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Intel's Drive to Mobility

Began in 1998 by changing Intel's computing paradigm (80/20)

Keys to success

- Total cost of ownership data
- Usage data and segmentation
- Executive sponsorship

Approximate PC Mix of Desktops/Notebooks

Desktop PC

Notebook PC

Wireless Notebook

Result:
Dramatic cost reduction

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Mobility Vision

Easy, trusted connectivity anytime, anywhere

- **Easy:** Auto-discovery and auto-configuration
- **Trusted:** Private, protected session
- **Anytime, anywhere:** True roaming across nets

Mobile office

- Securely connected at work, at home, and on the road

Mobile networks

- WLAN, WWAN, WPAN, WiMax*
- Wired to wireless

On the Road

Hotel

Home

Customer Site

Office

> ## Work is something you do, not some place you go.

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Mobility Aids Business Continuity

Moving away from disaster

- Employees can take the "office" with them

- **Flood hits Folsom, CA building**
  - Burst water main floods office space
  - Wireless notebooks easy to relocate
  - No customer impacts
- **Snow shuts down Portland, OR**
  - Roads impassable for three days
  - 5,000 Intel employees simply work from home using notebooks
- **SARS shuts down Hong Kong office**
  - Fast deployment of notebooks to HK from around the globe, employees work from home
  - Minimal impact to operations

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Comparing Power Consumption of Clients

Unmanaged

Intel Core™2 Duo Processor
Unmanaged and Managed

Mobile
Managed

KWh Consumption per Year

1015

938

30%

655

65%

229

74%

59

Client with CRT

Client with LCD

Un-Managed

Managed

Managed

Intel® Pentium® D Processor 945

Intel® Core™2 Duo Processor E6550
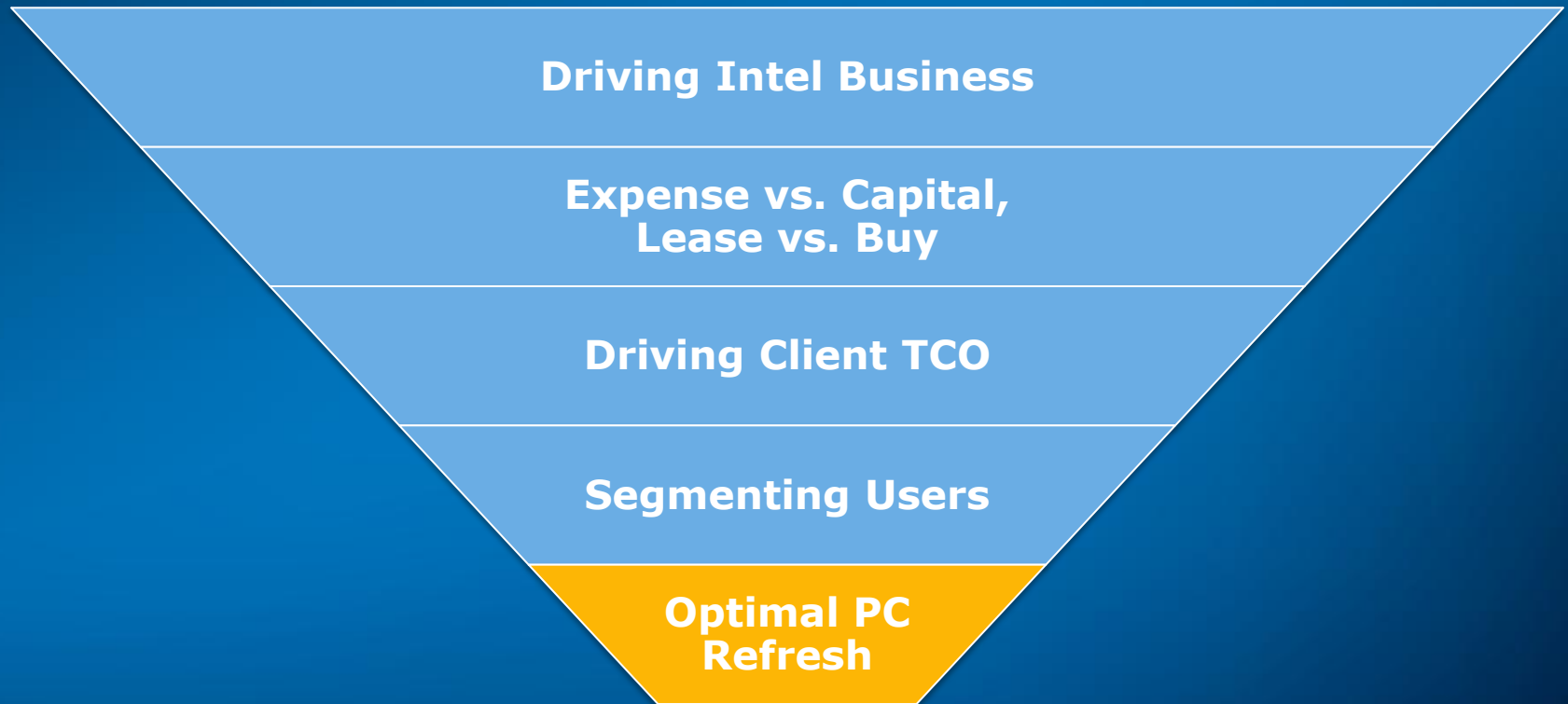
Intel® Core™2 Duo Processor T7700
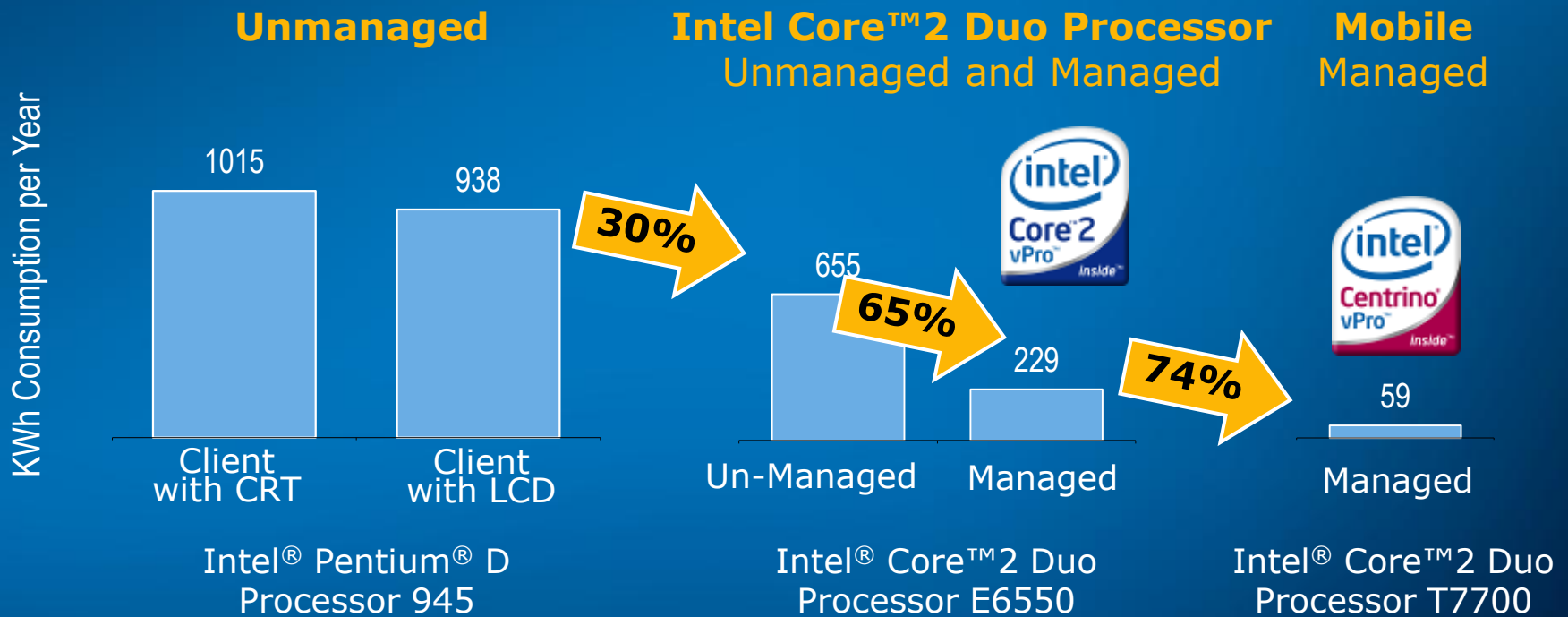
Mobility Aids Power Consumption Reduction

Key Learnings

- Remote overnight replacement

- Self-service SLA improvement
  - Quicker and more convenient repair (no scheduling issues)
  - Customer satisfaction

- Green effects
  - Smaller footprint vs. desktop
  - Notebook power vs. traditional desktop
  - Turned off when not in use
  - Telecommuting and time flex effects

- Power/Green: virtual workers

- Productivity realized from day extenders

- Lower TCO through better processes

- Improved network security

- Increased PC hardware failures (HDDs)

- Use and care practices of mobile devices
  - Privacy screens, locks, and more
  - Ergonomic usage, need more peripherals, such as stands and mice

Consider downstream effects as part of your mobile transition

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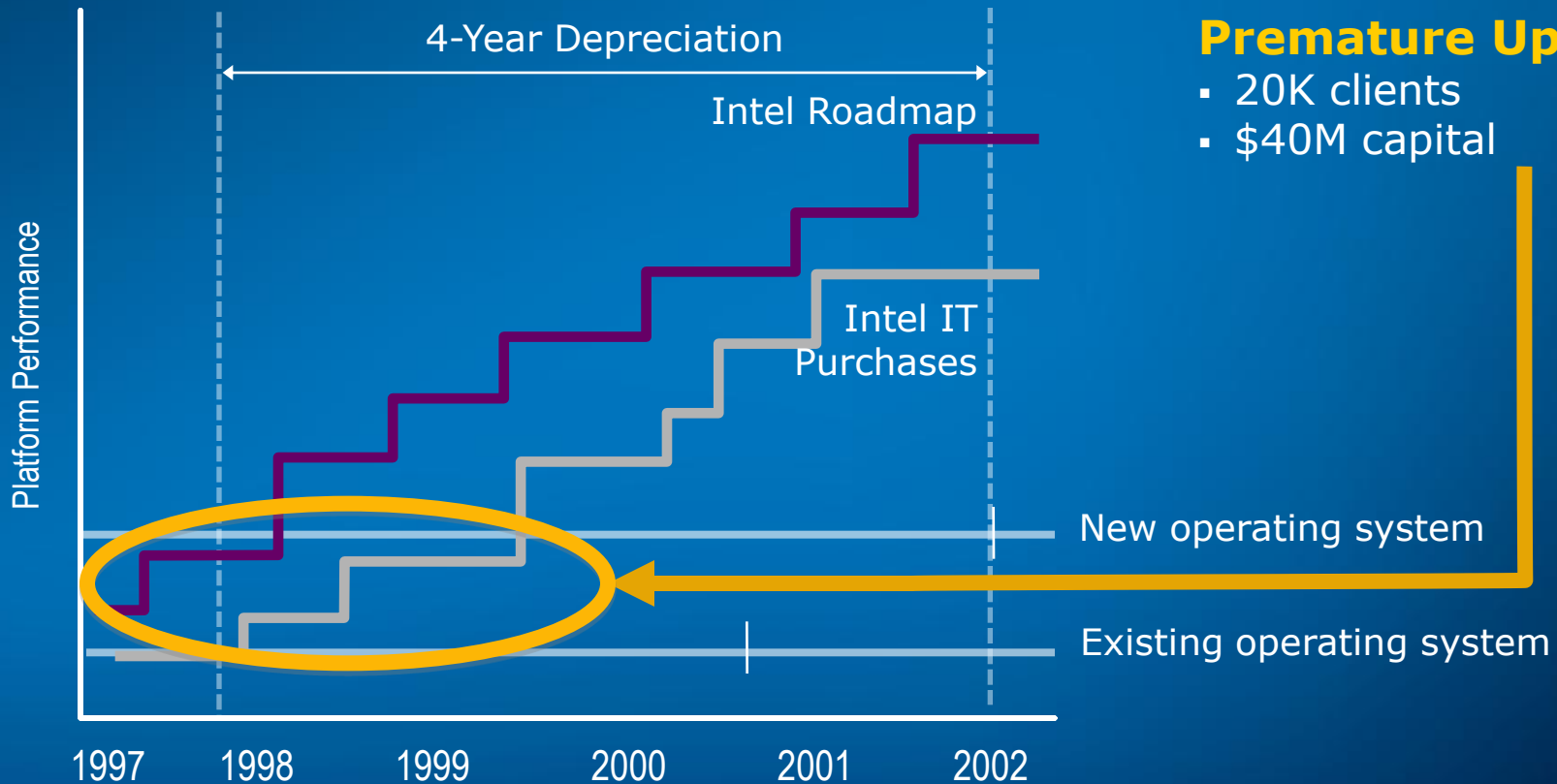
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Fleet Management

Driving Intel Business

Expense vs. Capital, Lease vs. Buy

Driving Client TCO

Segmenting Users

Optimal PC Refresh

PC refresh is one component of PC purchase strategy

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Intel's TCO for Client PCs: Historical Data

PC Total Cost of Ownership (TCO)

Consolidation and standardization of support

Downward TCO trend continued during mobile transition

Reduced hardware pricing and client support, economies of scale

Estimated TCO in U.S. Dollars

$10,000

8,000

6,000

4,000

2,000

0

Time
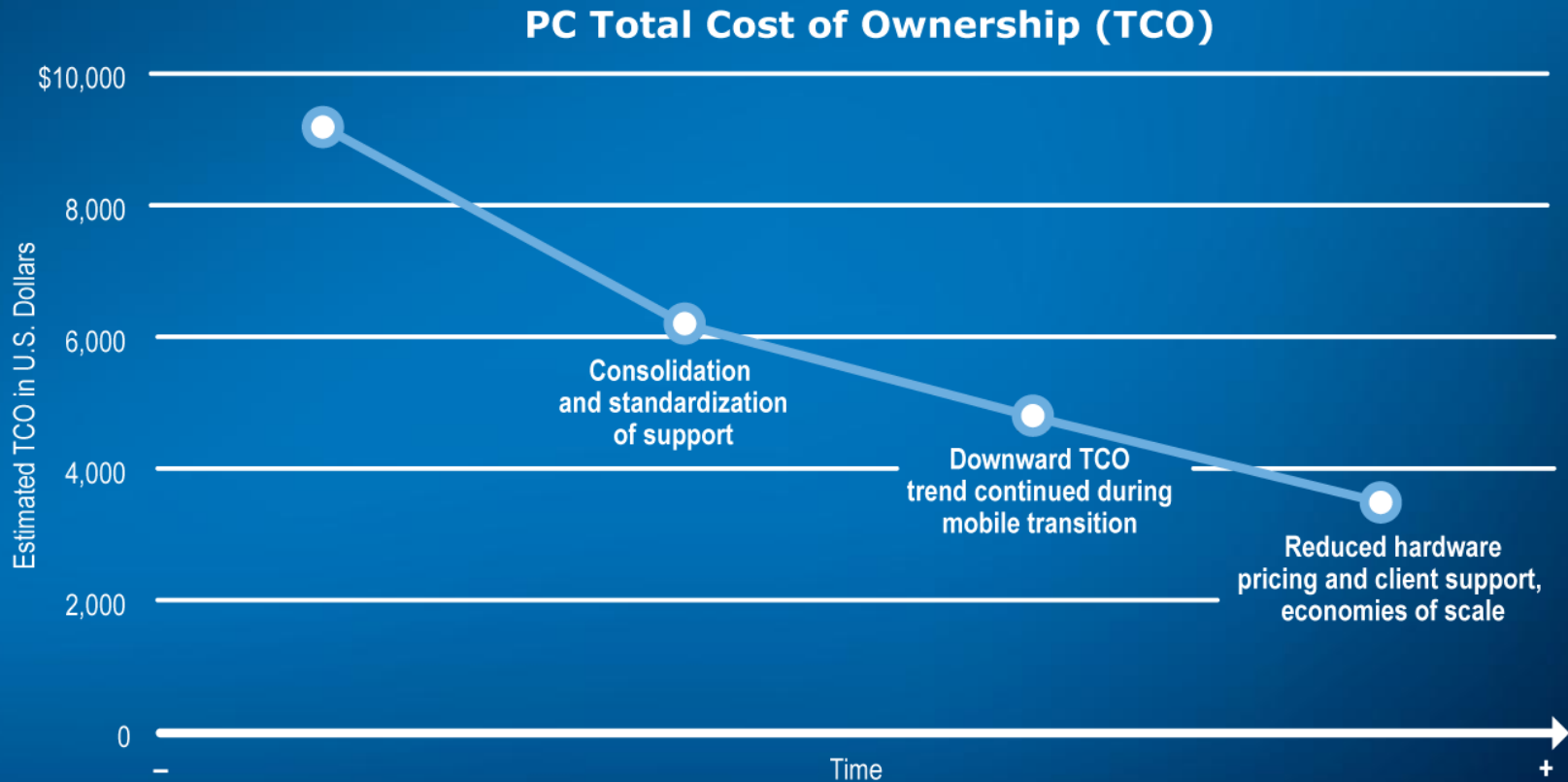
53% TCO Reduction from 1995-1998

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We Bought Too Low ...

Premature Upgrade
- 20K clients
- $40M capital

Shortened useful life

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... We're Now Buying High

Faster Transitions
- Performance headroom
- New features
- Requires stable platforms

4-Year Depreciation

Intel Roadmap

Intel IT Purchases

New operating system

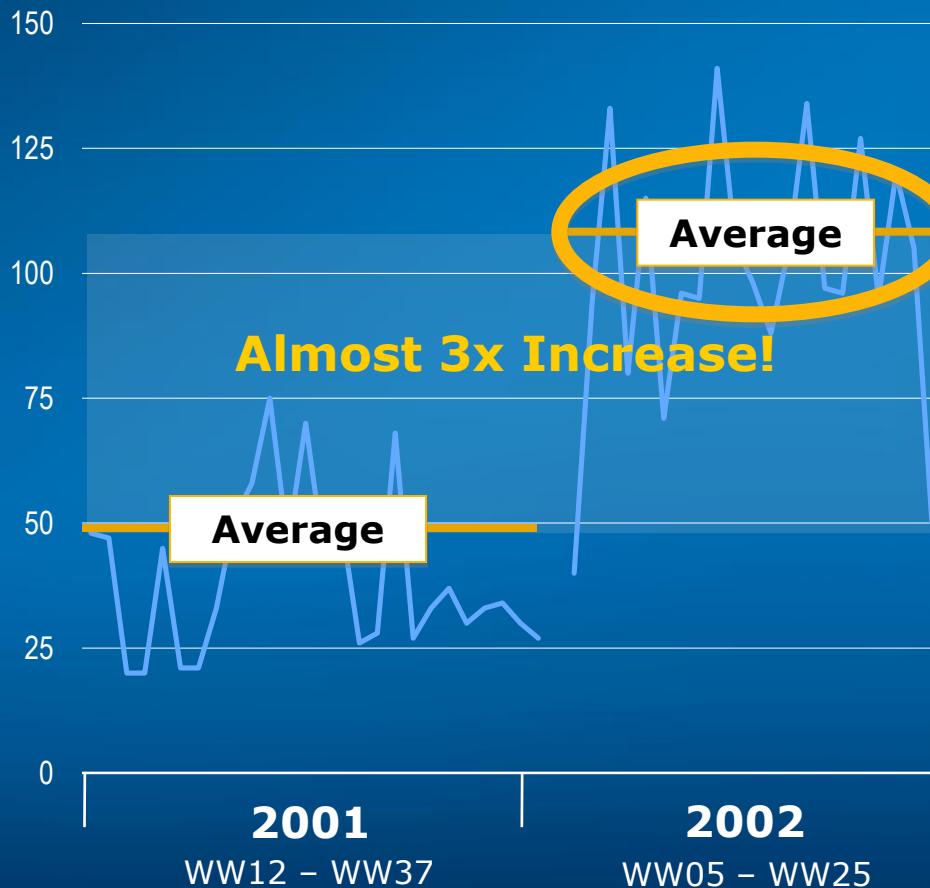Existing operating system

Platform Performance

1997 1998 1999 2000 2001 2002
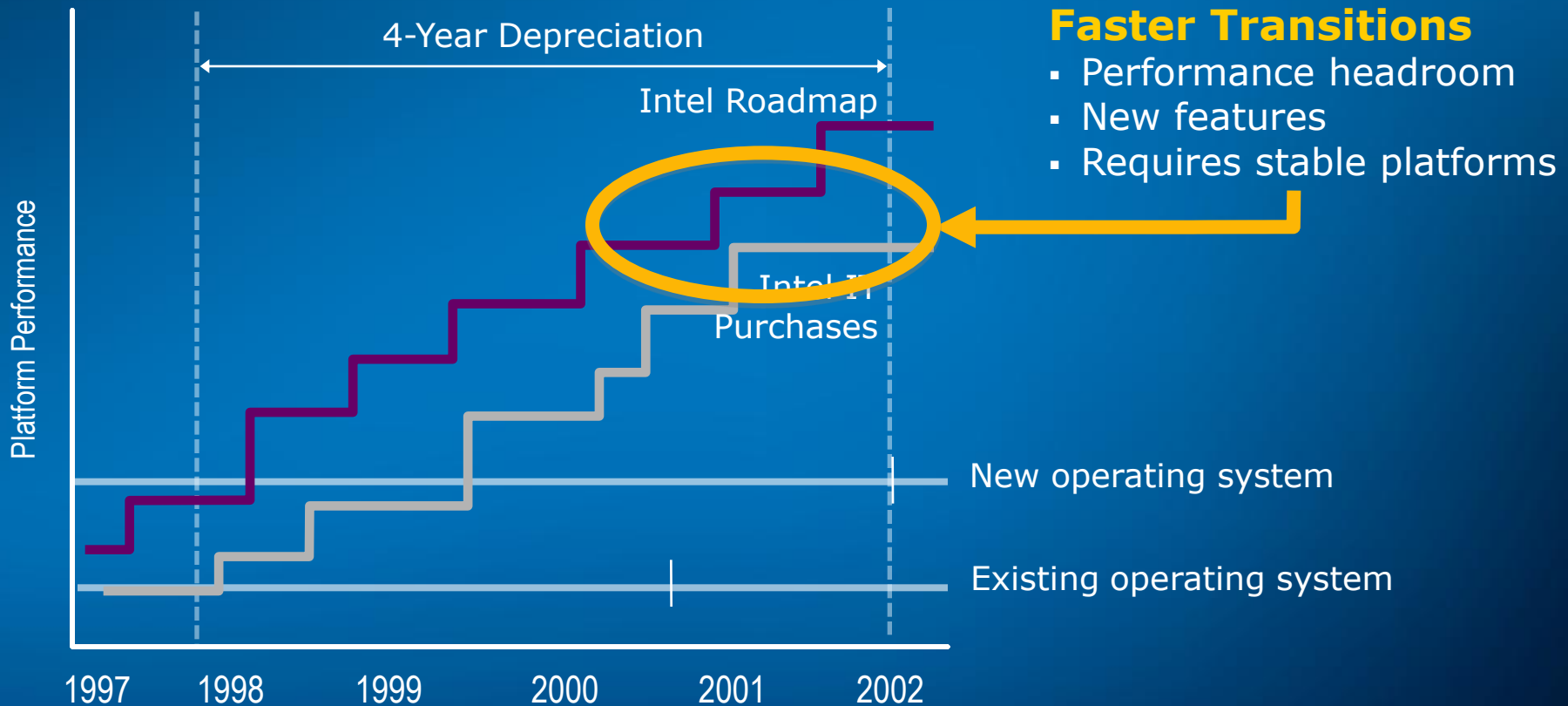
Stable platforms enable us to balance efficiency and effectiveness

...But Then We Held Too Long

2001 and 2002 Exception Requests

Intel did not actively retire systems in 2002

- Increase in exception requests
  - Aging systems began causing problems
  - Requests for end-user upgrades increased
  - Performance-related help desk calls increased

Almost 3x Increase!

Average

Average

2001
WW12 – WW37

2002
WW05 – WW25

150
125
100
75
50
25
0

2009 - IT PC Annual TCO by Refresh Rate

Cash Flow Description	YEAR				
	1	2	3	4	5
PC Acquisition	1,150	589	402	309	253
Training	25	13	9	7	6
PC Engineering (Build)	28	14	10	8	6
PC Deployment and Logistics	21	11	7	6	5
Software and Patch Deployment	15	17	19	22	25
Help Desk Support (First Level)	20	22	24	27	30
Deskside Support (Second Level)	67	77	88	100	113
Out-of-warranty Repair	0	0	0	18	38
Additional Upgrades and Peripherals	0	0	0	16	27
Retrieval/Disposal Costs	43	21	14	10	7
Disposal Cost Recovery	(778)	(269)	(124)	(65)	(36)
TOTAL (USD)	591	495	449	458	474

Equivalent Annual Cost in U.S. Dollars

USD 591 — Year 1
USD 495 — Year 2
USD 449 — Year 3
USD 458 — Year 4
USD 474 — Year 5

Consistent result – 3-year optimal refresh

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Determining Optimal Refresh Cycles

Model Drivers	Description	Cycle Effect
Acquisition and Deployment Cost	Purchase price, procurement cost, client engineering cost for build, other overhead	Lengthen
Support Cost (Baseline)	Cost of deskside and call center support, security patches, and out of cycle warranty parts repair	Shorten
Support Cost Growth Rates (%)	Changes in baseline support cost over time	Shorten
Out-of-Warranty Costs	Out-of-warranty parts costs in Years 4 and 5	Shorten
Disposal Cost	Cost to remove PC from user environment and clean, donate, scrap, or sell	Shorten
Salvage Value	Price per unit for units sold in aftermarket at end of Intel cycle	Lengthen
Productivity / Business Value	Value derived from productivity & other factors related to new PC	Shorten

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Support

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Tiered Support Model

Tiers of Support

- Proactive: Down-the-wire pushes of patches and repairs
- User Education and self service
- Service Desk Call Center
- PC Service Centers
- Mail-out support for Remote

PC Health Check

- Streamlines diagnostics from 20 minutes to 30 seconds
- Solves customers problems 77% of the time
- Cumulative cost savings exceeding USD 3 Million

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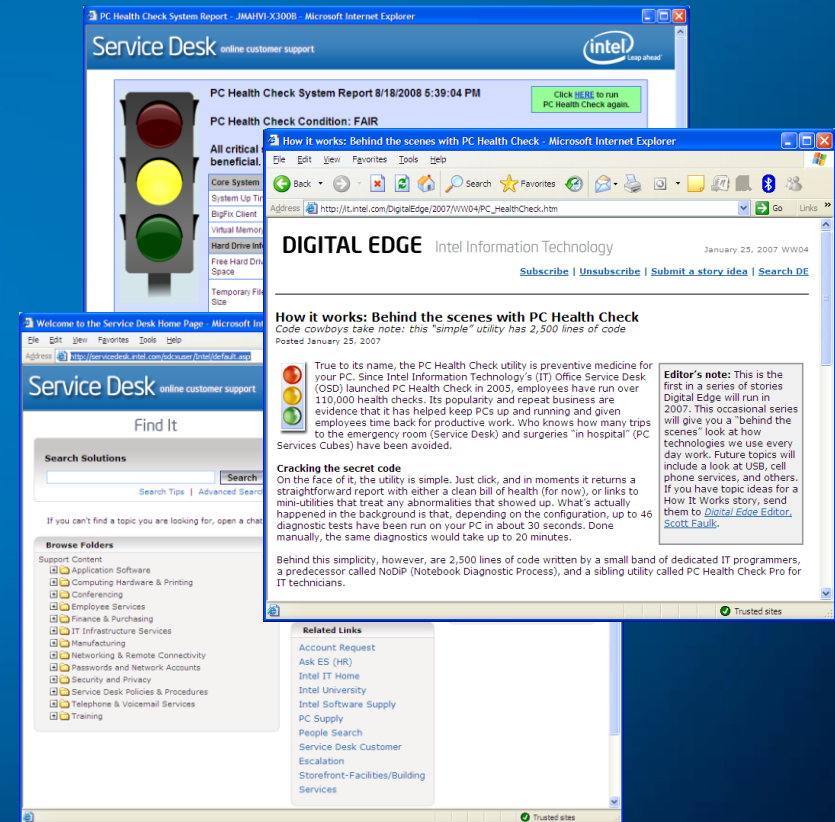
Best Practices

PC Deployment

- User PC selection
- Focus on reducing the impact of PC transition
  - Prep user for migration and scheduling
  - Key apps pre-loaded
  - Data backed up
  - JIT training on a new PC
    - Wireless capabilities
    - New apps: conferencing/collaboration
  - Data migration
- Secure destruction of old data
- Recycling of old PC

Mobility and PC Support

- Mobile PCs enable a service center based hardware support and upgrade model
- PC Service Centers enable large-scale technician-assisted customer system and software migrations
  - Customers are scheduled into the deployment centers
  - Technician assisted migrations and training in a classroom setting
  - 1 technician can support upgrading multiple PCs simultaneously
- Mail-Out Program
- Supports small sites, virtual fffices

Economies of scale with mobile platforms drive down PC upgrade and support costs

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Technology

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Notebook Platform Considerations

Feature	Spec	vs.	Priority	Value
System	Intel® Centrino® processor	-	1	Integration, Usability, Performance, Battery
Intel® Active Management Technology	Intel® vPro™ technology	-	2	TCO, Security
SSD	SSD	HDD	3	Performance, Battery, Green
HDD	7200 RPM	5400 RPM	4	Performance
Display	LED Backlight WXGA+ Only	WXGA, CFC	5	Usability, Battery, Green
Memory	4 GB	2 GB	6	Performance, Longevity
Battery	9 Cell	6 Cell	7	Battery
Camera	Yes	No	8	Collaboration
FPR	Yes	No	9	Usability
Slots	Media Card	PC Card	10	Usability

Solid State Disks

Intel IT excited about what SSD can bring

- Game-changing performance
  - 18-33% system performance improvement over standard HDD system
  - 41% improvement on Intel IT-developed workload test
  - 12º (Fahrenheit) cooler than traditional HDD
  - 59 to 70 minutes longer batter life (6-cell battery)
  - Estimated 96% reduction in HDD failures
- Enables new computing models, such as virtualization
- Mitigates performance hit from disk encryption
- Closer to more "instant on"-type experience
- Extends battery life on mobile systems
- Reduces thermal footprint

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Solid State Drive (SSD) Performance

Benefits to users include

- Increased productivity, reduced data loss and drive-related errors, longer battery mode usage, and lower thermal footprint for more comfortable use

Benefits to IT include

- Faster malware scans, better performance with less RAM, and extended battery life cycle, faster system "builds"
- TCO study & white paper released

Reduction in annual failure rate	90%
Reduction in average annual employee PC time lost due to drive failure	90%
Reduction in IT time spent per employee on PC rebuilds due to failures	96%
Reduction in annual time spent on suite of productivity tasks	44%

0   20   40   60   80   100%
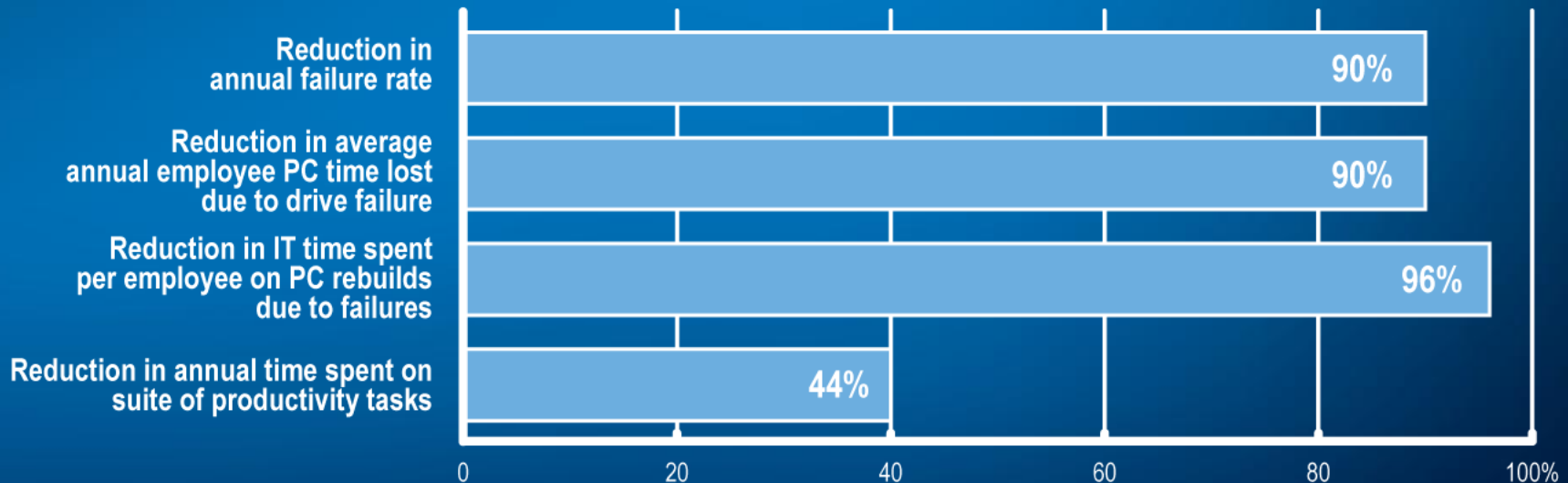
**Intel IT is deploying
up to 10,000 notebooks with SSDs**

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Windows 7*
Planned 2010 Deployment

Strong partnership through TAP

Great results

- Improved productivity
- Better stability
- Ease of deployment
- Enhanced security
- Reduced Power Consumption
- Lower TCO

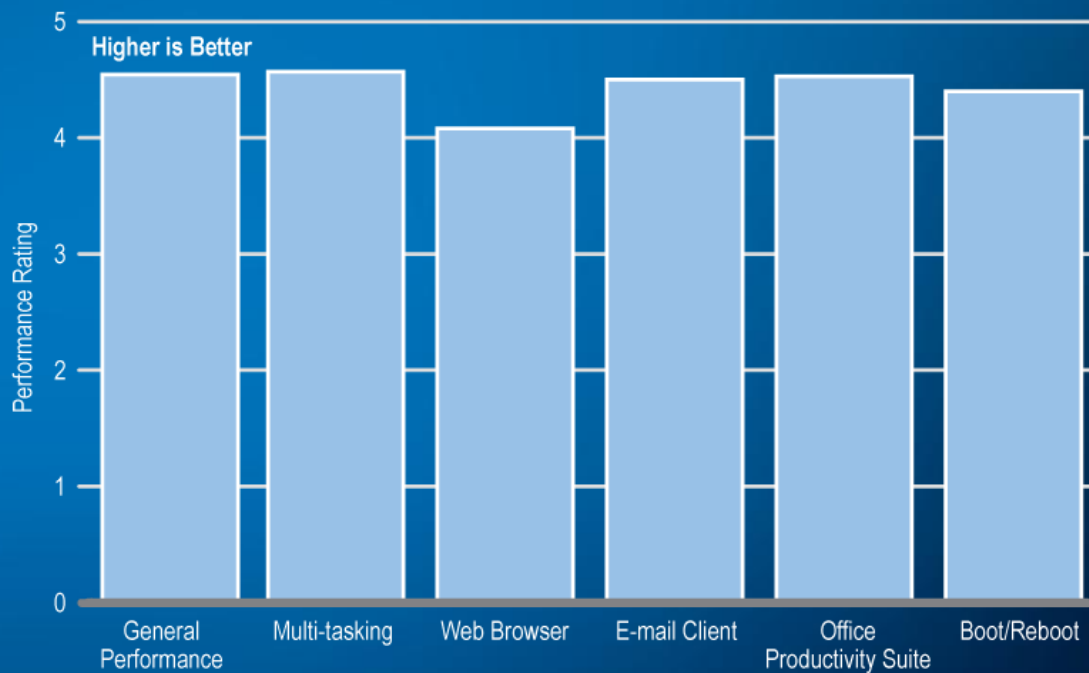**Windows 7* on PCs with Intel® vPro™ technology forecasted to deliver Intel significant value in the coming years.**

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Windows 7*
Key Results of Intel IT Evaluation

Lab Performance Results

Lower is Better
- Microsoft Windows 7*
- Microsoft Windows XP*

Overall Time to Perform^ (seconds)

	Word Processing	Presentation	Spreadsheet
Windows 7	9.83	8.05	23.28
Windows XP	11.63	9.35	24.38
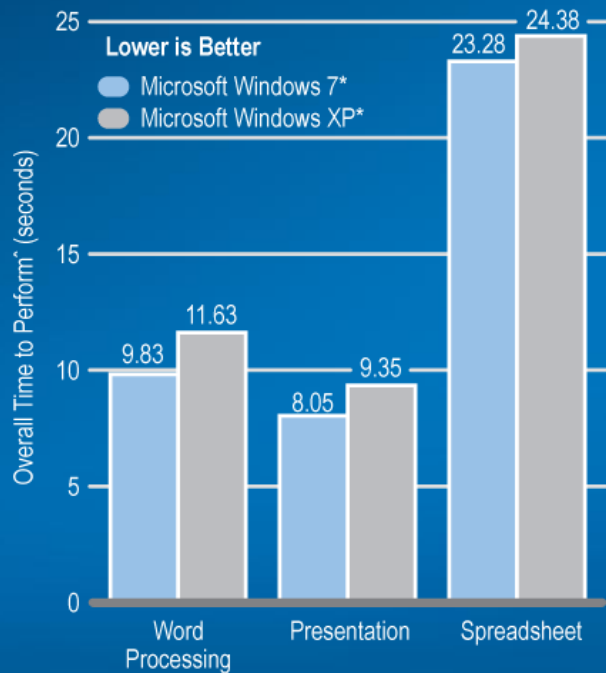
User Ratings of Microsoft Windows 7* Client Performance

Higher is Better

Performance Rating

General Performance, Multi-tasking, Web Browser, E-mail Client, Office Productivity Suite, Boot/Reboot

^ Overall time to perform a series of typical tasks with each application, including opening the application, opening, editing and saving documents, and closing the application.

Lab performance results and user ratings demonstrated that Microsoft Windows 7* met Intel business group requirements

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2010 Outlook

- Client trends
  - Green, globalization, consumerization

- New technologies create additional opportunities
  - Solid state drives
  - LED screens
  - WiMAX*
  - Windows 7*

- Continued adoption of green standards
  - ES4, TCO 2008, 85+ power supplies

- Focus on client optimization and scale
  - Reduce IT overhead
  - Reduce exceptions to a minimum with inclusive standards

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Final Thoughts

- Mobility improves productivity and enhances TCO

- PC fleet management generates real value

- Mobile technology has a positive "green" impact on sustainability

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Q&A

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