
WINDOWS 7 VISION

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TABLE OF CONTENTS

| | |
|--|----|
| Introduction | 2 |
| Business Foundation | 3 |
| Competition | 5 |
| Industry Shifts | 7 |
| Vision Area Introduction | 9 |
| ___ Specialized for Laptops | 9 |
| ___ Designed for Services..... | 11 |
| ___ Personalized Computing for Everyone..... | 13 |
| ___ Optimized for Entertainment..... | 16 |
| ___ Engineered for Ease of Ownership | 18 |
| Tenets..... | 20 |
| Delivery to Customers and Partners | 21 |
| Engineering Changes for Windows 7..... | 26 |
| Schedule..... | 28 |

Note to the reader: We are delighted to share with you the Windows 7 vision, our inspiration and framework for the next great release of the Windows Client operating system. This vision document represents our very best efforts at inclusive planning—bottom-up, top-down, and middle-out. It describes our release goals, the spirit of the product, and our feature-specific priorities. It also represents the performance review commitments for the organization as a whole and cements our commitment to Microsoft to deliver the next release with quality and on time. As a team, we feel confident that this vision provides a roadmap to success and we're looking forward to focusing all our creative energies on making this the technically outstanding and customer satisfying release we know it can be.

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INTRODUCTION

Windows software brings tremendous satisfaction to billions of people every day. This happens in significant ways, such as setting up a home network to share music and video within the home. And it happens in small ways, like simply launching your favorite program or game. In each case, satisfaction comes from the experiences just working, in a way that is intuitive and inspiring. In planning Windows 7, we've focused on bringing greater satisfaction to our customers in both big and small ways. We've observed how competitors create enthusiasm by taking a few additional steps to complete the experience; the details matter. We've also observed that the difference between satisfaction and frustration can be slim—one missing driver, an inscrutable step in the experience, or poor responsiveness, and the whole PC experience is compromised.

Emotions are indelibly tied to the PC experience, from purchase decision through usage, in the home and in the enterprise. The emotional loyalty bred from setting up, using, and managing a well-designed product is our responsibility to earn. Some companies design an end-to-end solution in a closed way, which makes it easier to create a seamless experience. It also limits opportunities for developers and end users to extend. Other companies are so new to the market that customers have yet to demand the level of integration required of Windows; their time will come. We accept and celebrate that the bar is highest for us and that our own competition from previous versions of Windows is the strongest it has ever been.

In Windows 7 we will deliver complete experiences, with attention to critical detail, that result in the greatest customer satisfaction and tie to the most significant Windows business drivers. We will cut features to make certain the ones we do ship are complete, earn customer satisfaction, and build loyalty. When we're done, Windows 7 will be a significant and celebrated advance in the Windows Client long-term mission: "Making the Windows experience a vital and loved part of people's lives."

To achieve these ambitious goals, we will acknowledge in our daily work that the experience extends beyond the quality of the technology itself and encompasses a customer's ability to access or discover it and use it for *their* intended purpose. We will strike a balance between creating platform technology for the application community and creating a complete experience for the customer. We will pay unprecedented attention to detail while ensuring we deliver innovation in key areas.

We are uniquely capable of achieving this balance. We begin by internalizing the Windows 7 vision and ensuring customer focus in everything we ship—simplifying one more experience, refining one more piece of UI, developing one more specific error handler, or improving the responsiveness where it matters most. From this, we can deliver a seamless installation and showcase all of Windows capabilities. We will carry this mindset forward from the designs, to the code, to the tests, to our marketing and sales efforts.

While we emphasize customer satisfaction in the Windows 7 release, we will also emphasize the satisfaction in doing a job right, at the caliber we expect of ourselves as the world's most successful software company working on the world's most important software. When a team works well, focusing on the right end-to-end scenarios, making smart engineering decisions, creating a solid plan and sticking with partner teams, the work is incredibly satisfying.

This vision concludes the most deliberate team planning effort in Windows history. This document maps out business objectives, technical imperatives and, most importantly, end-to-end customer scenarios we will deliver and business opportunities we will realize. The document marks our promise to our customers, to Microsoft, and to each other. We now move from promise to execution, from planning the work to working the plan. We can debate the merits and priorities indefinitely, but the vision establishes necessary boundaries and constraints. Now is the time for creativity in engineering, in solving problems with constraints, aligned with business and customer objectives. Success for Windows 7 means building these scenarios with the level of detail that drives customer satisfaction to new highs and ensuring all of our work aligns with the constraints and spirit of this vision.

BUSINESS FOUNDATION

Each version of Windows has delivered significant customer value, platform capabilities for the ecosystem, and business opportunities for the company. For Windows 7, changes in customer requirements, the competitive landscape, and the motivation of the ecosystem present a new set of challenges and opportunities. Competitors are delivering strong value for consumers while new business models are changing the dynamics of our ecosystem. To ensure the Windows business remains healthy in this changing landscape, we need to deliver innovation that will meet the needs—and capture the collective imagination—of our customers.

Windows 7 must deliver breakthrough value not just to consumers, but also to our largest and most profitable customer segment, business. The Windows installed base is fairly evenly split between consumer (49%) and business PCs (51%). However, businesses accounted for 59% of new PC shipments in FY07, while consumers accounted for only 41%. Fewer PCs ship to our largest (aka Enterprise) customers than to consumers, but the Enterprise segment generates the most revenue, contributing 31% of revenue on only 16% of PC shipments.

Several fundamental business drivers will impact our growth in the Windows 7 timeframe:

- **Revenue per license** (or how much revenue Microsoft realizes for each license of Windows sold). Revenue per license (RPL) is driven primarily by the mix of our premium SKUs (Home Premium and Ultimate) and our Business SKUs (Business and Enterprise). RPL is also driven by the mix of sales between developed and emerging markets. For the purpose of planning, we will focus on RPL in developed markets and Revenue per socket (RPS) in emerging markets. Today, our family of Windows editions targets key customer segments and generates more than \$4B per year in incremental revenue through the combination of Home Premium mix and Pro mix. While the Windows Vista SKU plan is generally understood by customers and does a good job of directing customers to the right edition, we will optimize the Windows 7 SKU plan for our three biggest RPL opportunities: 1) increasing the mix of Windows Business in the small business segment; 2) increasing the mix of Home Premium for home users; and 3) increasing the mix of Windows Ultimate for enthusiasts. To do this, we must deliver feature-based SKU differentiation that enables customers to clearly identify the edition that is right for them and to select a SKU without feeling they are compromising.
- **Windows Genuine attach rate** (or percent of PCs running with a genuine, licensed copy of Windows) and **Revenue per socket** (or the revenue we generate for each PC that ships). Today, ~35% of Windows installs are pirated, representing a \$20B opportunity for Microsoft. In Windows 7, we must

help the channel improve attach rates for Genuine Windows while making it easier for those running pirated software to get legal. In both developed and emerging markets, we need to help customers (often unsuspecting victims of piracy) to get legitimate without requiring them to reinstall the operating system—even if the version that was pirated was more advanced than the version the customer can afford. In emerging markets, many customers are unable to pay up-front for a full Windows license, but may be willing and able to license Windows on a subscription basis. To support this business model, Windows 7 must include technology to enable subscriptions. We also need built-in, mandatory anti-counterfeiting technology that enables updates to validation in response to attacks. We may also want to consider offering legalization of Windows in return for using Windows Live Services.

- **Growth in our annuity business.** Software Assurance (and Enterprise Agreements) help make the Enterprise segment our most profitable. New value in Software Assurance (SA) in the Windows Vista timeframe—including the Enterprise Edition and the Microsoft Desktop Optimization Pack—has led to resurgence in that business. While SA had been in decline since its peak in FY02, it turned around in FY06, with \$1.4B in committed revenue in Enterprise Agreements and a 78% renewal rate. To continue this growth in Windows 7, we must deliver unique value for the Enterprise Edition. Customers that deploy the latest versions of the products they have licensed are much more likely to renew their SA agreements, so it is vital that we understand, design and deliver solutions in Windows 7 that address historical deployment blockers for both consumers and enterprises.
- **Expanding our market.** We must look toward new markets and new business models to fuel our growth, including enabling subscription models. The union of Windows and Windows Live is perhaps the most important opportunity. While they are packaged and delivered separately, the combination of Windows and Windows Live must enable a new generation of scenarios that make it easy for our customers to connect with their friends, families and co-workers; access the information and services that they need to improve their experience; and have the confidence that their system is up-to-date and their information is secure. Because Windows 7 is the first version of Windows to ship in the age of Windows Live, it must be a great example of the synergistic benefits of these two products.
- **Upgrades.** While OEM will continue to be our largest and most important channel with 84% of Windows revenue, in-place upgrade—including boxed product (or FPP) and Windows Anytime Upgrade—generate 2-3 times more RPL than pre-installed OEM licenses. With Windows 7, we can enable a healthy upgrade business by ensuring that it's easy to migrate from Windows Vista to Windows 7 and painless to move from one edition of Windows 7 to another.
- **Number of sockets.** Windows faces new competition in the market that threatens the number of units of Windows that are shipped. Alternatives to the Windows technology offering (Apple) and business model (Google) could impact our continued growth. For example, while Apple's recent growth in market share in some regions is not yet having a material impact on the Windows business, the combination of many applications moving to the Web and their shift to the Intel platform is reducing some of the advantages that the Windows platform has enjoyed. Similarly, as Google moves many new innovations to an ad-funded model, they are making their offerings available to a broader set of customers who would otherwise be unwilling to pay for software.

COMPETITION

While Windows enjoys a strong market position in terms of attach to new OEM systems, there continues to be a healthy set of competitors both in traditional operating systems and emerging technologies that put pressure on our business models.

Apple. Apple has done an effective job of positioning the Mac as a credible alternative to a Windows PC. They have used the iPod to demonstrate the Apple experience to Windows users, and have successfully used advertising to build an incredibly strong brand and drive comparison between Windows and the Mac. Apple share has grown in the WW PC market from 1.8% in the first quarter of '04 to 2.6% in the first quarter of '07. Much of Apple's growth has come in the United States, where their market share has increased from 3.7% (in Q1'06) to 4.7% (in Q1'07). This growth has been driven primarily by their laptop sales, which has increased market share from 4.8% to 6.7% in that time.

From a product perspective, Apple has executed well on the most relevant consumer scenarios, with a focus on simplicity and reliability. Apple also has established the value of the Mac as a combination of luxuriously designed hardware, coupled with a comprehensive software bundle that scales from simple to advanced scenarios without technical proficiency or follow-on purchases. The .MAC service extends the Mac OSX platform and figures prominently in sharing and syncing scenarios; however, it is offered as a separate \$100 per year subscription that most customers don't purchase.

To continue its growth, Apple needs to convince customers that they provide a simpler, more reliable environment that enables a larger set of digital experiences. They also need to convince customers that anything that can be done on a PC can be done on a Mac. This is greatly facilitated by the move to Intel chipsets and the introduction of Boot Camp (and Parallels), which enable Macs to run Windows along with Mac OS X. Additionally, Apple must prove that the transition from Windows XP to OSX isn't that much harder than the transition from Windows XP to Windows Vista—a strategy that has met with early success.

Apple clearly aims to broaden the developer base as well. They have not been shy about doing cross-platform work across Windows and the Mac (using a cross-platform variant of their OS API). iTunes and the recent release of Safari on Windows are both examples, and while the Safari release has challenges unique to browsers it is clear that Apple will be defining a developer API richer than today's HTML+script model, one that will have unique elements for their PCs and devices. And we need to bear in mind that the underlying OS kernel on the Mac, which has a familiar UNIX API and underpinnings, is a core developer asset.

Linux. While adoption of Linux enterprise desktops remains small—primarily driven by a lack of drivers and applications—there continues to be interest in Linux both for alternative form factors (embedded in consumer devices) and as a pre-boot environment for entertainment on Windows laptops. While we expect Linux desktops to remain a niche offering, some OEMs are beginning to offer Linux on mainstream configurations.

The combination of pricing, the increased size of the Windows operating system, and a shift to Web computing makes Linux an attractive alternative in emerging markets and, to some extent, an attractive platform for reusing old machines in developed markets. We are seeing pockets of high Linux adoption in emerging markets, reaching around 20% in the education segment in India and in Brazil. As Firefox is

increasingly used as a browser by developers on Windows, the risk of the Web “running just as well” on Linux is real.

Gartner forecasts worldwide Linux adoption to be only 2% by 2008 and our internal Dev Tracker reports 21% of developers targeting the Linux client OS for their applications. This indicates that while Linux has remained limited in the enterprise space, developers, particularly at universities and in Web hosting, continue to be especially enthusiastic about what is available. We see a great deal of innovation on the Linux platform for developers, primarily focused on server development. We must keep sight of this important competitive dynamic.

Google. Google is working hard to create the “must have” set of solutions to enhance or replace the Windows Experience. While they are clearly a top competitor for Microsoft in the search space, Google is also among the top ISVs to embrace Windows Vista.

Google is changing the business dynamics in the software industry by paying OEMs to pre-install their software. They are also innovating rapidly to create other mechanisms to get their software installed on Windows PCs, including tying downloads of their toolbar to other download events such as acquiring Adobe Flash player. Google is also the default search engine for Firefox. Given the high customer satisfaction with Google’s search offering, customers are generally willing to take these optional downloads when they are presented as an “opt out” offering.

We must also pay attention to Google in combination with other competitors. With an Apple desktop for consumers, Linux OS for developers and students (running on Apple hardware) and Google applications, suddenly, the alternative to Microsoft begins to look more complete.

Google is also becoming increasingly credible as a tool for developers through extensions such as Deskbar gadgets and Maps mash-ups. They are courting developers to tap into the infrastructure and monetization they have to offer. Google Gears pitches functionality that today developers believe is missing from our combination of Windows, IE, .NET and Visual Studio.

OS agnostic solutions. While the dynamics of direct competition are relatively straightforward, threats from substitution are much more subtle. The growth of Web 2.0 applications signals a major change in the way many applications and services are delivered. Rather than shipping as .exe applications that exploit unique Windows value, many experiences are now delivered as OS agnostic Web 2.0 applications. For example, in the past a customer may have used a Windows application to sort and organize their photos, but now they use an online service that runs in any Web browser to achieve the same goal with the added benefits of easy sharing and anywhere access.

Substitutes. Another set of challenges come from Web-enabled cell phones, most recently the iPhone, which potentially substitute laptop purchases. As phones become more feature rich, and as more services are available online, web-enabled cell phones will compete with laptops as the ultra-mobile computing device for both information workers and consumers. Similarly, game consoles compete with PCs on hard-core gaming scenarios as well as with media recording and playback.

Previous versions of Windows. As with any release of Windows, we compete with previous versions of our product and need to continue to deliver significant innovation in order to compel customers to move to the new version. Price-conscious consumers and small businesses often will not upgrade to a new computer until the performance of their current machine degrades to an unacceptable level. In the

business space, business customers will make a conscious choice to skip a release if they do not see value in the new release commensurate with the considerable cost of testing and deploying a new OS in their organization. Lack of compatibility for mission critical applications can also be a key factor increasing the competitive strength of the previous Windows OS, especially in businesses.

INDUSTRY SHIFTS

Industry factors beyond competition will continue to drive the PC platform forward. Windows 7 will target feature work to exploit all major improvements that are available when running on a newer hardware platform. A number of these investments are longer-term in effort and yield; they are intended to solve a complex problem and enable a new class of applications or scenarios. We have identified and prioritized the following industry focus areas for Windows 7.

Multi-core/Many-core. We see both an increase in the number of symmetric, general compute cores and a trend toward asymmetric cores. In preparation, for Windows 7, we will take our first steps by getting our standard workloads functioning with fewer locks and greater parallelism.

Virtualization. Virtualization technology—through which Windows runs in a virtual environment instead of directly on a chip—is becoming increasingly important to our enterprise customers. Server management is moving toward virtualization being the lone way to deal with thousands of server images in a data center. Many enterprise customers are looking to virtual desktops as a key way to reduce total cost of ownership (TCO). There are many problems to solve in the virtualization space, including hardware instantiation, image management, and rights management. We will make Windows 7 the best guest operating system in a virtual environment. We will also be sure to have a clear business strategy for Windows in a virtualized environment.

GPUs. GPUs are continuing to out-pace Moore's law every year and are providing increased parallelism and functionality. We can harness this functionality for our customers to provide them a vibrant and immersive experience with games, multimedia and even the desktop itself. Windows 7 will target the Advanced Scheduling functionality in upcoming GPUs to provide a robust and responsive desktop experience, and the OS will advance the ability to program these GPUs to create the next generation visual experience in games.

Wireless. Continued industry innovation in wide-area, local-area, personal-area and near-field communication (NFC) technologies demands that Windows 7 take full advantage. Our focus in Windows 7 is to provide best-of-breed technology stacks for local (Wi-Fi) innovations, such as SoftAP and Virtual Wi-Fi, and personal-area networks, such as Bluetooth and Ultra-Wideband, as part of ensuring an effortless wireless experience for our customers. We will extend WWAN to natively support 3G and WiMAX under a Unified Connection Manager. In addition, we will provide extensibility in the platform so our partners can add support for newer technologies, while maintaining a consistent user experience and administrative control.

Storage and non-volatile memory. The storage industry is experiencing a major inflection driven by cheap, high-performance NV Memory and increasingly intelligent storage devices. For Windows 7, we will integrate NV memory solutions (Flash and Hybrid HDDs) with the PC. Our investments will range from technologies that augment the performance and lower power consumption of standard disk drives

to new formats in which the disk is replaced completely with solid state memory. For enterprise client systems, we will enable diskless PC support to provide the ability to consolidate storage management and provide a major cost benefit to enterprise customers.

Power management. Power consumption by PCs and the subsequent need to remove the heat generated represents a significant contributor to worldwide energy usage. Windows 7 will help reduce power consumption and improve battery life by getting to low power states more frequently and for longer time periods and by minimizing background activity.

New devices. Windows 7 will include support for important emerging hardware devices attached to PCs such as GPS and biometrics.

Diverse form factors. The range of form factors is increasing, from ultra low-cost PCs for emerging markets that use only Flash drives for storage; to ultra-mobile (5-7" display) and ultra-portable PCs (10" display) with low processing power; to very expensive, high-performance, lightweight laptops with relatively low graphics capabilities; to the desktop replacement laptops that have configurations comparable to the high-end desktops; to high-end PCs with a 30" displays. All these devices require different interaction models, from a tablet with many input methods to the living room PC with a 10' UI operated via a remote. Windows 7 will scale not only our performance and capabilities to this range of devices and peripherals, but the OS must also be intuitive and elegant to use over this broad range of devices based on "bands" of recommended configurations for user tasks and scenarios.

Componentization and layering. With the creation of MinWin, a core set of system components, we will begin the work in Windows 7 to establish engineering boundaries between areas of the system. While MinWin is not a product, it is an engineering milestone, as functionality can be developed in relative isolation, improving agility. This is the beginning; more research will be performed and boundaries proposed during the development of Windows 7 so that more modularity can be achieved in the future.

Application model. The Windows application model today can lead to application interference and system destabilization. Designing a practical application model, one that accounts for compatibility with older applications, is a long-term task. In Windows 7, we take the first steps toward a more robust application model by improving the way applications are installed and extensions are added. Windows 7 will also see incremental improvements in state separation and extensibility, two complementary aspects of the application model.

64-bit. We have already done most of the work on 64-bit in Windows and will work to make it possible to switch to 64-bit only post Windows 7 by building the capability of the hardware ecosystem and through clear communication to customers and partners.

VISION AREA INTRODUCTION

Windows 7 will deliver amazing value to our customers. Through a myriad of inputs, we identified hundreds of great ideas that could dramatically benefit our customers and drive the Windows business for Microsoft and our partners. To establish focus and to ensure we achieve maximum impact for our Windows 7 investments, we have chosen five vision areas from which we will build great end-to-end experiences and develop our customer-specific messaging for the release.

As we begin the feature selection, design, engineering, and move to delivery, each of us must maintain the spirit of this vision. The decisions, tradeoffs, and choices we make in building Windows 7 should relate to the principles outlined below. The dynamic nature of our industry guarantees situations and circumstances this vision will not foresee, but this vision serves as a guide for what is most important and should help each of us make the best decisions for our customers and partners, the team, and the company. Windows 7 will get realized through this vision and the skills, creativity, and foresight of everyone in the Windows team.

Vision Pillars

- Specialized for Laptops
- Designed for Services
- Personalized Computing for Everyone
- Optimized for Entertainment
- Engineered for Ease of Ownership

SPECIALIZED FOR LAPTOPS

Today, mobile PC shipments are growing significantly faster than desktops and by FY 2011, mobile PCs are expected to make up nearly half of worldwide PC shipments. This pillar is aimed at making Windows 7 the operating system of choice for laptops. Consumers with laptops are usually mobile, moving from one wireless hotspot to another, with their laptops going from low-power modes to fully functional and connected modes. The mobile user's experience with Windows 7 needs to be seamless, speedy and super reliable. Users should also have significantly improved interaction with their computer, or other types of desktop replacement model PCs, while away from their desks and without access to a mouse or a full-size keyboard.

Laptops are also used in increasingly by people who work from a variety of locations, including home, public hotspots, and hotels. Workers blur the lines between personal and work activities, often switching between them. These same knowledge workers often carry not only their laptops but also their power cords as they move around during the work day; imagine rarely, if ever, needing to lug the laptop power cord.

While sales are increasing, laptops also cost more per machine for corporate IT. Much of the additional cost results from end-user support issues and lost productivity, as well as from infrastructure to allow connectivity back to the corporate network. Corporate IT is also under continued pressure to secure

both the data on the laptops and the remote access channel from mobile users to corporate data. IT managers need a reliable, secure, and cost-effective way to deliver remote access to work resources while retaining appropriate configuration and compliance management control over mobile corporate clients.

Many of the improvements in this pillar also benefit desktops, whether it is improved power efficiency or simpler remote access.

ALWAYS READY TO USE

- **Responsive and ready.** Windows 7 is a more responsive operating system, enabling users to get their work done with less waiting. It is a leaner OS, designed to work well on an increasingly wide range of systems. Web browsing is faster (both IE startup and page load), applications start up faster, and playing music and video is smooth and reliable. Windows experiences, such as window management, shell interactions and search, are elegant and responsive. When users boot, shutdown, sleep or resume the system responds faster and more reliably than Windows Vista. When users shut the lid, go to another location and open the lid again, they are productive with their applications in a significantly shorter period of time than today. The experience of going to a meeting room, connecting to a projector and being able to project is painless and near instant.
- **Get connected and stay connected with wireless.** With Windows 7, it's easy to get connected and stay connected, and users are confident in their wireless laptop connectivity. Connection options are easier to discover, require less work and no specialized knowledge to use, and are presented in a clear and consistent way. Network changes and re-connections are less visible to the user. Problems with connections are presented in an understandable and actionable way or simply fixed.
- **Power management improvements.** Windows 7 maximizes hardware energy efficiency. Power consumption decreases through reduced background activity and through support for the trigger starting of system services, which enables processors to get idle more often and stay idle longer. The display adaptively dims when appropriate. Hardware related to the network, storage and graphics are also better at getting and staying idle. DVD playback time on battery is also improved. The combined effect is noticeably longer battery life on laptops equipped with the appropriate hardware, while also delivering high performance.
- **Connect to work on demand.** Windows 7 allows users seamless and simultaneous access to locally available network resources, the Internet, work resources and home resources—simply, securely and all cleanly integrated into the client desktop experience. Connectivity is automatically established on demand and usable in less than 30 seconds, without requiring difficult setup steps (no complicated VPN client experience!). IT managers require fewer servers and are able to provide remote access while retaining strong risk and compliance management more easily.

STATE OF THE ART INTERACTION MODEL

- **Touch and Tablet PC.** With all major OEMs now offering Tablet PCs that include touch or dual-mode screens, touch and tablet features are becoming part of mainstream computing. In Windows 7, touch and writing are core user experiences. Top-level UI, such as the Start menu and Taskbar, has larger targets making selection easier. Visual feedback is added for operations such as touch clicking

and double clicking. Explorer and Web browsing experiences are also more touch friendly. Furthermore, platform support for 2-touchpoint multi-touch and several system-wide multi-touch gestures are enabled, such as zooming by pinching your fingers. Windows 7 improves the pen experience with greater accuracy and speed for handwriting input and support for more languages. For greater input speed, the Text Input Panel offers predictive text and is integrated directly into common edit controls such as the Start menu and Search boxes. Handwriting accuracy is improved with personalization in all languages, custom dictionaries, and through breakthroughs in East Asian recognition. Providing a great interaction model also improves the reading experience on small, high-resolution screens common in many laptops today.

REMOTE DATA SECURITY

- **Portable data/media security.** As Windows 7 is deployed, corporate IT can easily define and enforce central policies to protect data stored on portable media such as USB drives and other personal devices (phones, music players, cameras), even if the media moves outside the corporate domain boundary. Storage devices that do not support encryption (CDRW/DVDRW) can be set as read-only by policy so that no unprotected data can be moved to these devices. Data on lost laptops are also more easily protected as Bit-Locker deployment is significantly easier. Windows 7 also provides an intuitive user experience for recognizing and accessing protected files and storage devices.

DESIGNED FOR SERVICES

Service integration with applications in Windows 7 enables new capabilities that light up when users are online. Windows 7 assumes these services are available to all our customers and the experience is designed to take advantage of them across the system, while still delivering a good experience when they aren't available. This has implications in the way that Windows 7 is presented to end-users (UI), developers (programming model and API) and to administrators (management tools).

Windows Live is an important showcase for our Windows services offering. Windows Live is a suite of applications and back-end services that helps individuals stay connected (to the information, devices, and people they care about) and protected (on their PC, in their home network, and online), built on Microsoft's platform for advertisers, developers, and merchants. Windows 7 provides APIs and documentation for third parties to connect and integrate their Web services with the OS exactly as Windows Live connects and integrates with Windows 7.

We offer the combination of Windows and Windows Live together as a customer choice—one designed for seamless interaction. Our choices allow customers to pick Windows 7 alone, Windows 7 with the suite of Windows Live applications, or Windows 7 with the suite of Windows Live applications and the Windows Live Service. Windows Live does not duplicate the Windows experience. Rather, Windows Live focuses on being a showcase developer for the Windows platform in accordance with our [Windows Principles](#).

Many Windows customers use other services in addition Windows Live. Some of these are delivered in the OS via gadgets and applets and some are delivered by third-party developers who take advantage of

our documented service APIs. The Windows Live suite of client applications will continue to support the latest common standards for popular software services. For example, Windows Live Mail is a fantastic client for any POP or IMAP service, and Windows Live Writer is a great blogging tool for standard blogging sites. In the Windows 7 timeframe, the Windows Live photo and movie experiences support publishing to popular photo and video services, as further support for interoperability.

Windows 7 also includes services that help us get better connected to our customers, keep their systems running, understand their needs, upgrade them to new software offerings, and close the feedback loop. Those services are delivered by the new Windows Online website, which gives us an opportunity to connect our customers with each other in ways that inspire and build confidence and loyalty.

INTEGRATED WEB SERVICES AND CONNECTED APPLICATIONS

- **Windows Live**. Windows Live enhances the Windows 7 experience, seamlessly connecting customers to the information, devices, and people they care about. The Windows Live suite of software services helps customers communicate, organize, and share with their friends—focused on photos, movies, blogs, email, calendar, contacts, and social networking. The Windows Live suite of applications showcases the Windows 7 platform, including new visual elements and window management capabilities, and makes it easy for Windows 7 customers to roam and share their files across devices.
- **Safe, available, connected gadgets**. Windows 7 gadgets are safe, secure, available when appropriate, and optimized for connected services. Users feel safe trying new gadgets because low-rights mode makes trying a gadget as safe as visiting a Web page. If the user isn't happy with the gadget, they can easily uninstall it from the Program Explorer. Gadgets are hosted directly on the desktop, making it extremely easy to access them. By caching last known information from the Web, "Service not available" becomes thing of the past. In-box gadgets, such as weather, leverage the new location platform and can update to their current location. Hobbyist and professional developers are attracted to the gadgets as a quick and easy platform to deliver value to their customers.
- **Applets that showcase the platform**. With Windows 7, the core in-box accessory applications finally look cool again with a focus on connecting to services where ever possible. Old standards such as Notepad, WordPad, Paint, and Calculator receive a user interface facelift, including the Scenic Ribbon for some. The ever-popular Paint.exe receives a feature overhaul, including the addition of natural media paint brushes and color picker improvements. In addition, a basic Web Camera app ships in Windows 7, allowing users to record simple videos and take snapshots. Having this in the box serves end-users as well as OEMs, who are building video cameras into mobile PCs.
- **Safer PC usage**. Windows 7 is the safest and most family friendly OS in the world. IE 9 is the most privacy friendly browser anywhere. Parents that are first-time PC users can set up controls for their more tech savvy children and get even more useful tools when connected to Windows Live. Together, Windows 7 and Windows Live help parents keep their younger children safe from inappropriate content and unwelcome communications as well as provide the information parents need to help safeguard older children. Windows 7 helps all users protect their privacy and keep children and guests from accidentally changing settings that would affect the computer.

ALL-UP WINDOWS ONLINE EXPERIENCE

- **Windows Online.** Windows Online is the definitive source of information and resources for PC users. This website guides users through the life of the PC: choosing the ideal system, learning what the PC can do, solving problems and getting updates, finding new programs, downloading personalized add-ons, connecting with other users, and upgrading to a premium SKU. All Windows Online content will be searchable with Windows Live search, making it easy to find things even without a Windows 7 PC. Windows Online makes owning a PC simple and leads users to the broad range of services and resources that make Windows so powerful.
- **Help and community.** When customers want to learn how to do something or solve a problem with their PC, Windows Help offers the best solutions and answers from a variety of sources. Users don't have to worry about which website to search. And if they don't find their answer, they can simply send a question to a community of Windows experts. With user consent, information about the PC is automatically uploaded with the question, to make the answer more specific.

ALWAYS UP-TO-DATE AND LEGAL

- **Applications are always up-to-date.** In Windows 7, the Program Center is the one place to determine the applications are installed on the PC. It's easy to identify which programs have been installed by the end user or came pre-installed with the PC, facilitating update or uninstall. The Program Center automatically identifies when any of the most common applications are in need of maintenance and gives the customer control over update installation.
- **Worry-free upgrades.** Windows 7 is more attractive to buy because it takes the worry out of upgrading from Windows Vista. Customers get clear and relevant information about the benefits of upgrading, supported upgrade paths and potential compatibility issues. Improved application and driver compatibility, consistent hardware requirements and better messaging of compatibility issues during setup reduce upgrade issues and surprises and increase customer confidence. The setup process is simplified by differentiating between a clean install and upgrade and through easier product activation. Customers can easily do an in-place upgrade from one Windows 7 SKU to a Premium Windows 7 SKU by unlocking the differentiated features via the Windows Online website. In addition, customers running counterfeit copies of Windows 7 that can get legal easily by upgrading the illegal OS to a legal Windows 7 SKU.

PERSONALIZED COMPUTING FOR EVERYONE

We're living in an age of mass personalization. People choose everything from the ring tones for their mobile phones to the color of their laptops, so it's only natural that we help them create a Windows PC that looks and behaves exactly the way they want it. With Windows 7, users have greater control of their computing experience, easy access to the information and data they care about, and can enable these capabilities across all their PCs.

Personalization is indelibly tied to the "Specialized for Laptops" pillar since mobility is a key driver of personalization. Just as cell phones transitioned from shared (the phone per household), to largely personal (a phone per person), laptop PCs are becoming less shared and more personal. This closer user-to-PC mapping creates more room for personalization.

While laptops become more associated with individuals, individuals are increasingly using more than one PC—from a kitchen-based laptop, to a desktop in the home office and a laptop from work. Today these PCs are akin to an extended family: some get along better than others, but it is hard to get them all to work together all the time. Windows 7 embraces the multi-PC household by creating a more seamless multi-PC computing experience. Home networks are easier to set up— just a few basic questions about how the PCs are used—and are welcoming to work laptops that come and go from the home. Personal settings, such as passwords and favorites, are available wherever needed, and files on the home network are discoverable and accessed easily from any PC.

Hardware personalization also gets easier and more attractive in Windows 7. We partner closely with OEMs to align hardware profiles and capabilities with the personalized experiences we enable in our software. While Windows will deliver some of the enabling technology, OEMs have the opportunity to create special offers that help the customer personalize their PCs.

YOUR PC WORKS THE WAY YOU DO

- **The desktop is made for you.** With Windows 7, the desktop area is reserved for customers to use and customize. It's easy to make the desktop look, feel, and behave in the way—and only in the way—the user chooses. Windows no longer unpredictably auto-arranges items on the desktop nor can an application developer or an OEM place things there without end-user approval. The look and feel of the desktop can be updated easily to reflect the taste of individual users, even on a shared PC, with themes that package together the most common customizations.
- **The PC is tuned to your activities.** Windows 7 helps users complete important daily activities by remembering the most frequent actions and offering quick access to them—applications and documents, websites, music, and Web searches. As a result, the Desktop and Taskbar always reflect the most important daily activities. It's easy to immediately identify and switch to the needed application or website. Window snapping helps position and size windows with fewer clicks and drags. Processing information is faster by looking up, searching, or translating information directly from the Desktop. Windows 7 does not try to guess what the user wants to do but instead helps them concentrate on their work by ensuring they are only interrupted when necessary, removing or suppressing all superfluous message and error alerts. In emerging markets, where computing has recently become affordable for new segments of the population, millions are having their first experiences with PCs. Windows 7 simplifies the experience for new users with a task-based Desktop designed to provide easy access to popular PC activities, such as sending email, searching the Web, and listening to music.
- **Made globally for you.** After picking the language and location at setup time, the user experience is well-adapted across the system. Customers easily get content and can input information in their chosen language. The entire system—dates, numbers, calendars, collations and other information—is presented using the cultural conventions customers expect. Windows 7 provides in-box support for multilingual families that wish to use the PC in more than one language. Users can choose a “market theme” based on language and location. The theme (screensaver, wallpapers, audio scheme) and user tile images are representative of local culture and give Windows a personalized look and feel. As a result, customers get a rich desktop experience that reflects their cultural background.
- **Made-for-you accessibility.** Personalized experiences in Windows 7 include those with accessibility needs. As the platform on which all Windows applications run, Windows has a dual responsibility:

directly to end-users with accessibility needs and indirectly to them through the developer community, both ISVs and ATVs (Assistive Technology Vendors). For end-users, Windows 7 delivers uniform accessibility support across the system and offers enhanced in-box capabilities, such as dramatically improved screen magnification, a new on-screen keyboard (based on Tablet PC), and more personalized speech recognition. For developers, Windows 7 has a consistent set of APIs and tools that enable them to efficiently make their applications accessible. For ATVs, the OS provides the support and access these partners need to allow their tools to deliver on the promise of a fully accessible OS.

YOUR PC HELPS MANAGE YOUR SETTINGS AND ACCOUNTS

- **Roaming between machines.** Using open APIs, Live ID (and other Web-based identity services) can be added to a Windows user account. Once added, Windows 7 will make important settings, such as IE Favorites, available to all that user's computers. Users can share pictures, folders and content to other Windows Live users. Any buddies and contacts can share their folders and when navigating to a folder on another Windows PC through the network, the Live ID is automatically used to provide seamless access.
- **Secure store for Web passwords.** Log into any computer, and the logged-on user's Web passwords will be available; users can choose to never enter user names and passwords into forms on Web pages. Users can store and retrieve saved credentials using a Live ID (or other Web-based identity services) and roam them or store them on a USB drive for backup or higher security. Password security is enhanced because passwords are only used with the site of registration and are never given to fake or malicious web sites.
- **Simple home networking setup.** A secure, Windows 7 home network is easy to set up in just a few minutes. Windows 7 compliant routers can be easily configured with a Windows 7 system. Simplified connection discovery and integrated network and sharing setup ensure networking success without the need of support professionals. A down-level tool also makes it easy to add a Windows 7 PC to an existing Vista network, and a second Windows 7 PC can be added in just one step.
- **Your laptop at home.** When bringing a Windows 7 laptop home from work or school, users can easily access files from any PC connected to the home network, even without a home server. Windows 7 automatically detects that the PC is connected at home and switches the available default printer to that in the home. Work data is automatically protected from users on the home network.

YOU CAN WORK ANYWHERE

- **Access to all your files.** The new Windows Explorer with Libraries always shows all of a user's data, regardless of where it is stored—local files, remote locations (other PCs when at home, other servers when at work) and Live storage or any other online storage that uses our open APIs. Users can copy files to and from those remote locations as if they were local folders on the PC. It only takes one click to search something in one of many storage locations and users can clearly identify the source from the result.
- **Access important files while offline.** With Windows 7, being offline doesn't stop users from getting access to files. Users can access files that are stored on home and corporate servers, SharePoint

sites, or other locations and work with these files as if they were online. When back online, files are synced automatically. Changes in connectivity when using a laptop have no affect on the ability to work. Any redirected folders transparently work offline with performance gains—during logon/off and general use—over previous releases.

- **Access work content away from work.** Windows 7 enables access to work PCs when at home or at a friend's house, or at a kiosk. Users just need a company email (e.g.: name@work.com) when a gateway server is set up inside the corporation. With an email account, corporate servers are automatically located and users are presented, through remote desktop, with available PCs at work. Some of those PCs can be shared virtual PCs that have been setup explicitly for remote use. Users can access a PC or an application and, when done, nothing is left behind.
- **Access home content away from home.** Windows 7 enables users to access home PCs from any location. Using IP lookup, once a laptop has been added to a personal home network, accessing any home computers (on which there's an appropriate user account) from outside the home is as simple as double-clicking an icon and providing home network credentials. Soon thereafter a remote desktop session offers all the features of the local desktop from any location.

OPTIMIZED FOR ENTERTAINMENT

The PC in the home is increasingly used for entertainment. With the growth in Web-available media and the power of technologies such as set-top boxes, the relevance of the PC in home entertainment can and should increase. Windows 7 will help customers get the most from the latest digital entertainment technology and will offer the best platform for accessing, viewing and interacting with digital media.

Windows 7 offers the best of entertainment scenarios to both casual users and digital media enthusiasts. Enjoying music, photos, television, movies or the best Web videos <http://www.microsoft.com/presspass/newsroom/winxp/windowsprinciples.msp> Windows 7 makes digital content easy to access and easy to enjoy. When it's time to lean back and be entertained, Windows 7 has full-screen playback mode with crisp visuals, vibrant color and HD quality. Windows 7 helps customers get the most out of their media, allowing them to access and play their media files at any time or from anywhere, either locally, over home networks, or across the world via the Internet.

The new media technologies in Windows 7 inspire a surge of new applications and devices designed to take advantage of these capabilities. Our platform will provide customers with the broadest range of choices. Stores will offer a wide range of TVs, audio/video receivers and portable devices designed to work best with the Windows 7 PC.

MEDIA THE WAY YOU WANT IT

- **Digital TV on Windows.** TV works worldwide with Windows 7. Windows 7 allows access to analog and digital TV from satellite, cable or terrestrial broadcast, including premium channels previously available only with set-top boxes. Within one TV experience, you can browse broadcast or broadband TV to find the shows, movies or videos you want to see. It's easy to find, watch, and record shows with a remote control or a mouse. You can watch recorded TV shows on your PC or big-screen TV, and easily sync them to a laptop or a portable device to enjoy them on the go.

- **Optimized for playback.** Playing media is a click away from anything in Windows 7 and the playback experience is simple, delightful, and consistent across all media types. When inserting a CD or DVD, launching a favorite playlist, or downloading a file from the Web, the playback choices are simple and clear. Finding what to play is easy, starting playback is fast, and the overall experience is high-quality. Once playback starts in full screen, users aren't interrupted by screensavers or pop-ups. Going from playback mode to the organize/edit mode is quick and intuitive.

YOUR MEDIA ANYWHERE

- **Home network media streaming.** With Windows 7, users can watch TV shows or videos, listen to any music or enjoy digital pictures from any of their PCs, anytime. Playing music or video files that are stored on another PC is easy and natural; digital content always show up as part of the media library of every PC in the house so media is easy to find no matter where it is. When playing content, users won't notice on which PC the content is actually stored because the performance and responsiveness are great over the wireless home network. Best of all, users won't have to do any special sharing or configuration steps to play media over the network. When travelling away from home users can *still* play home media files whenever their laptop is connected to the Internet.
- **Rich eco-system of devices.** When users visit electronics stores they will find a wide range of Windows 7 enabled flat-panel TVs, A/V receivers or set-top boxes that let them access and play media stored on their PCs. The best consumer electronics devices are equipped with Media Center Extenders so users can enjoy the Windows Media Center experience on any TV.

THE HD-PC

- **High-fidelity playback.** Windows 7 helps customers watch and listen in high fidelity like never before. Watch high-definition video or listen to high-quality digital music on the PC with the fidelity of an A/V receiver or HD-TV. Watch or record high-definition digital TV shows or stream high-quality video over the Internet. Or connect a PC to the best screen and best speakers in the house through one HDMI cable. The quality and fidelity of Windows 7 Certified HD-PCs is second to none. Users don't need to worry about finding software for the most common media formats because Windows Certified HD-PCs come ready out of the box.
- **High-fidelity graphics.** Windows 7 brings a stunning HD experience to the PC. View, edit and manage digital pictures on high-bit-depth displays that offer amazing detail. Text rendering is crisp and beautiful at any zoom level on high-DPI monitors. In addition, Windows 7 delights gamers. The game play experience is totally immersive and exhilarating because of Windows advanced graphics technologies and hardware acceleration features.
- **Outstanding sound.** The HD-PC delivers an inspiring sound experience. A simple HDMI cable makes it easy to enjoy high-quality sound from the PC on the best speakers in the house. When using a PC for VoIP communication, users can easily attach and use a communication device such as a Bluetooth headset. When talking with someone over a VoIP connection, users will enjoy high-quality sound with low latency; no annoying system sounds or music streams. An improved volume control makes it easy to attach several audio devices to the PC and independently manage their input and output volume levels.

ENGINEERED FOR EASE OF OWNERSHIP

The experience of owning a Windows PC starts from the moment the user unpacks the box, through four or five years of use, and then to passing it on to someone else or using it as backup machine before it is decommissioned. This Vision pillar focuses on making the ownership of a Windows 7 PC a great experience from start to end.

Customers in the home or the enterprise want to use their PC moments from unpacking it, without having to go through a long setup process or experiencing a steep learning curve. If they have an existing PC, users should be able to easily migrate the data and applications they care about. Throughout the life of the PC, customers shouldn't have to pay support professionals to help maintain their machines nor should they live in fear of installing new applications. The Windows 7 PC has built-in resiliency.. Users can keep their PCs healthy with the minimum management effort and detailed knowledge and access to services such as OneCare offer users management and safety choices.

Corporate IT continues to be under pressure to reduce cost in the ongoing management of their Windows PC and at the same time they are mandated to comply with increasingly stringent security standards. The deployment cost of Windows 7 is low, with substantial application and hardware compatibility, so that enterprises quickly realize the return on investment in the new OS.

Windows 7 will help OEMs reduce support calls and realize gains in efficiency and agility on the factory floor so they can more easily and cost-effectively configure PCs with a rich range of devices and hardware.

EASY OUT OF THE BOX

- **Quick and clean OOBE.** Right out of the box, Windows 7 starts up quickly and reaches the Windows desktop in 10 minutes without multiple reboots. After a few short questions in Windows Welcome (OOBE) to personalize the experience, and review/opt-in to OEM value-adds, users land quickly on the desktop where Welcome Center makes it easy for to know exactly what to do next. The desktop is clean and available for customization. OEM offers and value-adds are always current in Program Center and Welcome Center.
- **Easy migration.** Windows 7 earns a reputation for easy PC migration. In addition to better application compatibility, Windows 7 makes migration options for data and OS and application settings easy to discover in the Welcome Center. Installed applications on the old PC are discovered and suggestions are provided for places to install applications on the new PC, including pointers to Windows Marketplace and Digital Locker. Settings for key applications are gathered up from the old PC, to be applied on the new PC. The migration experience is enhanced by the latest updates made available via the Web.

ALWAYS PROTECTED

- **Data and file recovery.** Windows 7 users can easily find and recover lost files or documents. Users can roll back in time and find past versions or revisions of files and can choose to purge those containing potentially sensitive information. Windows 7 automatically backs up revisions of files (with sensible defaults) on the local machine, and users can also choose to back up to external

media or a home server or a Web service. Backup to external media is exposed through the Windows Health Center.

- **Diagnostics and health.** As users experience Windows 7, they will have greater confidence in the health of their PC and will need to spend less time keeping their PC running optimally. Windows 7 minimizes disruptions to the user through improved automatic problem detection as well as automated maintenance tasks that run in the background. When user intervention is needed, Windows 7 alerts users and directs them to one primary place, the Windows Health Center, for context and solutions for common PC health issues. The Windows Health Center highlights relevant information and guides users through steps to resolve a problem, including getting online and professional help as needed, or enabling them to take the system back to a known good state in the recent past. There is always the option to return to original setup state.
- **Reduced fear of new apps.** Soon after the release of Windows 7, customers learn about a class of new or updated applications that are designated “Clean Applications.” These applications have highly desirable characteristics: easy to setup, known not to negatively impact system or other application settings and they can be cleanly and easily uninstalled without escalating to an administrator. Users are less wary of installing such applications on their PC. Corporate IT also looks for this designation, finding that these applications are much easier to deploy and manage because of their predictable nature. ISVs looking to provide this “Clean” experience have access to a richer set of guidelines, tools and improved MSI capabilities that allow them to engineer to “Clean” standards efficiently.

LOWERING THE COST OF DEPLOYING, MANAGING AND ADMINISTERING WINDOWS

- **Secure the corporate data.** Compliance with regulatory standards and the need to secure intellectual property will continue to be a priority for corporate IT. Windows 7 makes it easier to meet key compliance scenarios at lower cost by requiring fewer IT steps to set access permissions and to audit access control. Compliance management becomes more efficient and flexible because access to data and applications are managed based on information defined by the business, such as employee departments or organizational structure. Windows 7 makes it easy for enterprises to securely create, share, print and scan sensitive information by using the XPS document format and define usage permissions that are persisted with the document wherever it goes. Meeting compliance regulations also becomes easier with auditing enhancements in Windows 7 that provide necessary information, such as what application is used and why access was granted. Corporate IT will also find it easier to define and manage what applications can run on desktops.
- **Lower desktop management cost for IT.** Windows 7 has the right Group Policy settings to enable IT to manage the configuration of key attributes such as security settings, data protection policies, application installation and download policies, visual experience, Internet Explorer, wireless configuration and multimedia settings. Group Policy is easier to use due to templates designed for key enterprise scenarios. Windows 7 also continues to build on the instrumentation of system settings. Corporate IT can author diagnostics packages tailored to the enterprise to perform data collection and analysis. In some cases, the diagnostic package includes the resolution to fix the problem. Where corrective actions are needed, there is an increasingly large set of useful PowerShell “cmdlets” that facilitate scripted management.
- **Faster deployment.** Enterprise deployment consists of three key phases: planning and evaluation, engineering and rollout. Windows 7 delivers improvements in all three areas. For planning and

evaluation, Windows 7 increases confidence and reduces evaluation cycles for customers through an integrated suite of tools to assess hardware readiness, application compatibility, and provide 'best practice' recommendations. These tools, coupled with exceptional application and device compatibility (Vista parity), will encourage IT decision-makers to seek the value delivered in the next OS with less fear of deployment problems. In the engineering phase, image engineering is easier and allows a greater set of customers to realize the cost benefits of standard image deployment techniques. Improvements in the imaging tools suite include support for applications, drivers, and OS updates and will scale from the smallest IT shops and system builders to the largest enterprises. Rolling out the new system will be easier and faster than ever with new IT migration tools, automated deployment technologies, and integrated platform support in add-on management solutions.

- **Great with devices.** Windows 7 makes it easy for users to connect to and work with the devices they care about with the new Device Center. Whether it's a personal device, such as a mobile phone, or a shared device, such as a network printer, the top devices are easy to find, install and use. Devices are integrated seamlessly with the user experience. For example, once a user attaches a mobile phone, it appears on the Taskbar. From there the user can easily launch tasks to sync contacts and calendar, capture pictures from the phone, customize the ringtones or wallpaper, or connect to the Internet. The Device Center also features the user's printer, making it easy to scan documents or pictures or order ink cartridges. With this capability, the user can find accessories, options or software updates for their devices. For devices that expose storage, the user can easily open an Explorer view of the device and transfer files to and from the device.

TENETS

The Vision pillars establish the direction for our engineering investments and address what we build. The Tenets of the project address how we'll build and the shared technology bets that we all support to deliver the best experience.

- **Design for interoperability.** We are committed to making Windows work well with products from other manufacturers, in accordance with the [principles](#) established by Microsoft leadership. Everyone on the team and everyone who contributes to Windows 7 are expected to internalize and operate within these principles.
- **Security is a key promise to customers.** Security features in Windows 7 will be simple to use, manageable, and valuable. System security will be more manageable by both the IT professional as well as the consumer. New Security features will not only have clear user benefit but also clear management models, and customers should only be presented with security decisions they can make with confidence. Aside from new features, we will continue to reduce the vulnerability of Windows to security attacks.
- **Windows 7 will target the same client hardware configurations as Windows Vista.** We will benchmark on Vista logo'd hardware that has at least one gigabyte of RAM; otherwise the minimum hardware configurations for Windows 7 will remain the same as for Vista. When hardware advances come out in this timeframe, such as CPUs with more cores, Windows 7 will be ready and will take full advantage of them. For Windows servers, we will be moving to a 64-bit platform only, and our benchmarks will reflect that.

- **Windows 7 will be compatible with applications and device drivers used on Windows Vista.** There will be no adoption blockers relating to compatibility in migrating from Vista to Windows 7. We will ensure that all Windows Vista drivers work seamlessly and applications will continue working. Deprecated features and technologies will be identified and made public as part of Beta 1; mitigations and alternate availability of these features must be planned at the same time. Any change in the behavior of a platform component should be instrumented for Beta 1 so that the impact can be analyzed.
- **Getting ready for 64-bit only.** We assume that by Windows 7, many OEMs will ship 64-bit installs by default, particularly for desktop replacements, and Windows 7 is likely to be the last 32-bit release. In preparation, Windows 7 will have a clear list of removed functionality, announced by Beta 1 in accordance with the application compatibility tenet.
- **Performance breakthroughs for key scenarios.** We will achieve great base-level performance by tuning the system in accordance with our performance and benchmarking reports and by actively fixing performance bugs during the development cycle. We will measure our impact in terms of the overall performance of user actions throughout an end-to-end scenario.
- **Reliability improvements continue to be critical for our customers.** We will design features so they do not crash or fail unexpectedly. We will leverage early reliability feedback loop data from representative systems/users throughout the release to identify and fix key issues contributing to user disruptions (crashes, hangs, resource leaks, reboots, unbootable systems), and drive for a substantially higher bar in terms of reduced disruptions to exceed reliability of Vista at SP1.
- **Design for sustainability, manageability and supportability.** We will plan ahead for the sustaining and support of all components that we ship: minimize dependencies to avoid reboots and other side effects of servicing; identify and minimize component definitions for the best granularity in delivering fixes; and properly instrument components and ensure that information flowing back to Microsoft through SQM/Watson/OCA is processed correctly and promptly.
- **Designed for every market, every language, simple worldwide deployment, and language neutral servicing.** We aspire to provide full feature parity for all supported markets: every feature should handle text and other data in a way that is appropriate for the local culture and easily extensible to all markets. OEMs and Enterprise customers can expect Windows 7 to provide easy worldwide deployment and servicing.
- **Improved Accessibility for all users.** We will deliver a truly great experience for customers with accessibility needs. This means improving the great work we've done in the core system and uniformly delivering this capability across everything we ship, including our services. Windows will be the most accessible operating system available.

DELIVERY TO CUSTOMERS AND PARTNERS

Few products serve a more diverse audience than Windows. An elementary school child in an emerging market and an IT Professional in a Wall Street firm could hardly have more different needs and wants, yet Windows 7 must be compelling to both. Investments in foundational quality, such as reliability, performance and security, are valuable to all audiences. Other Windows 7 investments must be optimized for the needs of specific customers, enabling us to deliver unique value to each of our core audiences—a crucial factor in achieving customer satisfaction. This section describes the primary benefits of the Vision Pillars to our customer and partner audiences.

Consumers and small business. Consumers can be broadly grouped as mainstream consumers, enthusiasts and consumers in emerging markets. The Windows 7 value proposition for each of these segments is tailored to their unique needs. Small businesses represent almost a quarter of Windows sales. This audience has perhaps the most diverse set of needs, depending on the type, size and location of their business, and the importance of technology to their business model. The table below summarizes the value proposition and areas of biggest impact in each pillar for our consumer and small business audiences:

| Mainstream Consumers | Enthusiasts | Emerging Markets | Small Business |
|---|--|--|---|
| Value Prop Statement | | | |
| <i>Windows 7 with Windows Live offers a personal and familiar way for you to get your technology working together so you can easily pursue your passions and try new things.</i> | <i>Windows 7 will help amplify your experience by delivering more control, unique performance enhancing features and support for the latest hardware and software advances.</i> | <i>Windows 7 is a Genuine Windows OS that makes it possible for government and industry partners to bridge the digital divide in emerging markets with advances in PC affordability, reliability and design.</i> | <i>Windows 7 enables a small business owner with little IT expertise to more easily manage their business PCs and quickly access all their business information, in or out of the office.</i> |
| Specialized for Laptops | | | |
| Improvement in battery life, performance and connectivity <ul style="list-style-type: none"> - Power mgmt improvements - Responsive and ready - Get Connected and stay connected with Wireless - Simple home networking setup - Your laptop at home | All of the benefits listed for mainstream consumers <ul style="list-style-type: none"> - Power mgmt improvements - Responsive and ready - Get Connected and stay connected with wireless - Simple home networking setup - Your laptop at home - Touch and Tablet PC | Windows 7 runs great on my more affordable mobile PC <ul style="list-style-type: none"> - Power mgmt improvements - Responsive and ready | <ul style="list-style-type: none"> - Power management improvements - Your laptop at home - Portable data/media security |

| Mainstream Consumers | Enthusiasts | Emerging Markets | Small Business |
|--|--|--|--|
| Designed for Services | | | |
| Windows 7 + Windows Live deliver state of the art applications and services <ul style="list-style-type: none"> - Windows Live - Family friendly Web experience - Your applications are always up-to-date - Windows Online - Safer PC usage | All of the benefits listed for mainstream <ul style="list-style-type: none"> - Windows Live - Family friendly web experience - Windows Online - Safe, available, connected gadgets | Easy to learn how to use the PC and stay safe and legal <ul style="list-style-type: none"> - Windows Online - Windows Anytime Upgrade and get legit - Family friendly web experience | Share data across all the PCs in my business, and easily share files with customers and partners <ul style="list-style-type: none"> - Windows Live |
| Optimized for Entertainment | | | |
| Enjoy my music, TV shows and videos from anywhere <ul style="list-style-type: none"> - Home network media streaming - Playback optimized for playing | Get the most from devices, electronics and PCs <ul style="list-style-type: none"> - High-fidelity graphics - High-fidelity playback - Digital TV on Windows - Rich ecosystem of devices | Easy to interact with music, online videos and other media <ul style="list-style-type: none"> - Playback optimized for playing | |
| Engineered for Ease of Ownership | | | |
| My PC is like my favorite consumer electronics <ul style="list-style-type: none"> - Quick and clean OOBE - Easy PC migration - Great with devices | I'm in control of my PC <ul style="list-style-type: none"> - Portable data/media security - Lower desktop mgmt cost for IT - Diagnostics and health - Great with devices | Fix PC, without calling a technician <ul style="list-style-type: none"> - Diagnostics and health | No need for new infrastructure <ul style="list-style-type: none"> - Legacy devices just work - Diagnostics and health |

Enterprise and mid-market. In larger businesses, IT Pros remain the strongest voice in platform decisions. Business Decision Makers (BDMs), such as a VP of marketing or a CFO, are increasingly involved in platform decisions and often own the budget for IT projects. Information Workers (IWs) are typically not involved in platform decisions, but it is important that Windows 7 deliver a strong value proposition to this audience as well. The table below summarizes the value proposition and areas of biggest impact in each pillar for these key business audiences:

| IT Pros | Information Workers | Business Decision Makers |
|---|--|---|
| Value Prop Statement | | |
| <i>Windows 7 offers the most cost-efficient, agile and secure platform for IT Professionals, supporting the needs of a dynamic business</i> | <i>Windows 7, the hassle-free operating system for today's always connected world, lets you maximize your impact in the office or on the go</i> | <i>Windows 7 delivers the most secure, reliable and agile operating system for dynamic businesses seeking increased regulatory compliance, productivity and return on IT investment</i> |
| Specialized for Laptops | | |
| Support remote users more effectively, with less cost and worry <ul style="list-style-type: none"> - Portable data/media security - Connect to work on demand | More efficient and secure <ul style="list-style-type: none"> - Your laptop at home - Responsive and ready - Get connected and stay connected with wireless - Connect to work on demand - Power mgmt improvements - Portable data/media security | More efficient and secure <ul style="list-style-type: none"> - Responsive and ready - Get connected and stay connected with wireless - Connect to work on demand - Power mgmt improvements - Portable data/media security |
| Designed for Services | | |
| Access to services to improve PC management capabilities <ul style="list-style-type: none"> - Help and Community - Applications are always up to date | Access to state of the art apps and services <ul style="list-style-type: none"> - Windows Live | |
| Personalized Computing for Everyone | | |
| enterprise class search solutions and increased compliance <ul style="list-style-type: none"> - Access to all your files - Access important files while offline | I can customize my PC to meet my unique needs and work style <ul style="list-style-type: none"> - The desktop is made for you - The PC is tuned to your activities - Access to all your files - Access important files while offline | Easily search all corporate data <ul style="list-style-type: none"> - Access important files while offline - Access to all your files |
| Optimized for Entertainment | | |
| | <ul style="list-style-type: none"> - Improved viewing on new displays | |
| Engineered for Ease of Ownership | | |
| It takes less time and cost to deploy, manage and support my company's PCs <ul style="list-style-type: none"> - Faster deployment - Easy migration - Lower desktop mgmt cost for IT - Secure the corp data | The PC doesn't get in my way and lets me work smarter and more securely <ul style="list-style-type: none"> - Data and file recovery - Secure the corp data - Diagnostics and health - Legacy devices just work | Less downtime when replacing a PC or updating the OS and easier comply with regulations <ul style="list-style-type: none"> - Easy migration - Faster deployment - Secure the corp data - Diagnostics and health |

Partners. The viability of the overall Windows ecosystem is dependent on a healthy and diverse collection of partners, including our OEMs, IHVs, and ISVs/developers. For OEMs, the OS must be easier to tailor and deploy PCs in the way their customers want them. For hardware partners, Windows 7 will support new hardware innovations, like integrated GPS, and generate demand for new classes of networked devices. For OEMs, IHVs and ISVs, the new software and driver updating features will reduce their support costs. For developers, there will be hundreds of new and updated APIs. We will ensure these new APIs are as consistent and as easy to use as possible. And, recognizing that ISVs target multiple versions of Windows to maximize their customer reach, we will be providing many of the core APIs on Windows Vista as well as Windows 7. The table below summarizes the areas of biggest impact for OEMs, IHVs, and Developers/ISVs:

| OEMs | IHVs | Developers/ISVs |
|--|---|---|
| Specialized for Laptops | | |
| Increase appeal of laptops <ul style="list-style-type: none"> - Power management improvements - Touch and Tablet PC - Responsive and ready | Increase appeal of mobile components <ul style="list-style-type: none"> - Touch and Tablet PC - Get connected and stay connected with wireless - Portable data/media security | Develop mobile-aware apps <ul style="list-style-type: none"> - Multi-touch - Custom handwriting dictionaries - Offline cache mgmt and actions - Sync UI - GPS-based location awareness |
| Designed for Services | | |
| Develop partnership opportunities with service providers to create compelling end-to-end experiences <ul style="list-style-type: none"> - Windows Live - Safe, available, connected gadgets | Reduce dev and support costs <ul style="list-style-type: none"> - Help and community - Up-to-date applications - Applets showcase the platform - Services for printing and graphics driver development | Develop connected client apps <ul style="list-style-type: none"> - SSO and credentials vault - Low-rights gadget sandbox - In-box services for community - Content ratings, family safety providers and activity reports |
| Personalized Computing for Everyone | | |
| Enable PCs tailored to individual needs <ul style="list-style-type: none"> - The Desktop is made for you - Made globally for you - Made for your accessibility | Increase demand for home networking hardware <ul style="list-style-type: none"> - Simple home network setup - Access home content away from home - Roaming and access to all files | Easier for users to discover and try new applications <ul style="list-style-type: none"> - Programs Center and app metadata - API to show items in Start menu - Plug-in search providers |
| Optimized for Entertainment | | |
| Increase appeal of higher-end PC configuration, beyond system performance <ul style="list-style-type: none"> - High-fidelity playback - High-fidelity graphics | Increase demand for home media ecosystem <ul style="list-style-type: none"> - Digital TV on Windows - Rich ecosystem of devices - Home network media streaming | Enable high-fidelity applications <ul style="list-style-type: none"> - DirectX 11 and high color - DPI-friendly sites using CSS 2.1 - Software renderer and new 2D graphics API: WGS - Modern typographical features - Platform for transcoding media - High-fidelity photo printing |
| Engineered for Ease of Ownership | | |
| Reduce support costs <ul style="list-style-type: none"> - Diagnostics and health - Data and file recovery - Easy migration - Great with devices | Device Improvements Lowering cost of deployment and management | Easier to install, maintain and service rich applications <ul style="list-style-type: none"> - Cleaner MSIs and Program Center - APIs to enable recovery and comparison (red-lining) - PowerShell SDK - Claims-based app security |

ENGINEERING CHANGES FOR WINDOWS 7

During the Windows 7 MQ milestone, we considered the engineering lessons of Vista, investigated best practices from other Microsoft teams, and identified high-impact opportunities for improving engineering productivity and product quality. These improvements will be followed by the entire team and will help us deliver with greater quality and schedule accuracy.

As a team, we are targeting these eight areas for improving our Windows 7 engineering system:

- **Planning process.** We made the largest investment in cross-team, scenario-based planning of any Windows version to date. Members from the Windows organization and our partner teams engaged in a six-month planning process that identified five key pillars, approximately 40 cross-product scenarios, and a clearly defined set of value propositions we need to deliver for customers. Feature teams identified their top features and had the opportunity to prototype. When we enter M1, we will have a solid plan for a scenario-based product we are confident we can build and deliver on time. Of course, we will balance planning and agility and we will balance “perfect” plans with rational execution.
- **Decisions informed by customer data.** Windows 7 will set a new standard for the availability of relevant data to inform engineering. While data cannot answer every question, we need to use data wherever possible when making decisions. Rich data about many dimensions of the software and service experience will be available to every person in Windows as part of our everyday decision-making processes. From the beginning, we put marketing and product planning data in the hands of the engineering teams. We use Watson crash data when we are looking at architectural updates and prioritizing bugs. We rely on an incredible depth of SQM data to inform our feature designs, combined with field and lab research, feedback from the Help system, community, and beta. This data is incredibly valuable and we need to continue to collect more. As we do, we will be systematic, pervasive and privacy and security compliant in our collection methods.
- **Increased investment in specs, dev designs and test plans.** In this release, we are asking every team to have solid, written plans in place for every feature prior to the start of coding. And to have those plans inspected and signed off by development, testing and program management. We believe this investment will lead directly to a higher quality product with fewer bugs.
- **Front-loaded schedule with frequent re-stabilization and quality checks.** Every team in Windows will be working from one milestone schedule with well-defined implementation and stabilization phases. Our new feature development work will be heavily frontloaded in a nine-month implementation phase (M1 to M3 milestones). Within those milestones, we will achieve “feature complete” (coding complete, component testing done and severity 1/2 bugs fixed) and drive quality upstream in our development cycle. Completing each milestone includes re-stabilizing the code base, running a quality assurance test pass, fixing bugs and delivering a stable build to internal and/or external customers and partners for feedback. The stabilization phase of the release will run 10 months and be devoted to gathering and addressing customer feedback, quality assurance, and bug-fixing. We will have no planned feature work for this stabilization phase.
- **Flattening the FBL’s and distributing decision making.** We will have a far broader and shallower branch structure for Windows 7. We’re doing this for several reasons:
 - To make it easier for teams to deliver smaller chunks of quality code to WinMain on a more consistent basis, avoiding traffic jams near the ends of milestones;

- To put decision making authority for the majority of the release in the hands of the people doing the work, by eliminating the need for multiple layers of shiproom reviews and approvals;
- To give feature teams clear ownership of the quality of their work without confusing interaction effects;
- To reduce team-wide initiatives and unfunded mandates.

As part of flattening the FBL structure, we are investing millions of dollars to increase the capacity of our automated RI gates. Teams will utilize these services to quickly uncover defects, at greater depth in the code tree, much earlier in the cycle than ever before.

- **Consolidated, transparent and data-driven status tracking and reporting.** We will standardize on a lightweight status reporting system based on Visual Studio Team Foundation Server. The system will be driven directly from dev, test and pm task completion by feature. Teams will have the opportunity to add additional commentary on a specific feature. Status data and commentary will be made available weekly and will be visible to any employee in Windows. Using this approach, we hope to greatly increase the accuracy of our status reporting while eliminating a lot of busy work and eliminating the need for heavy-handed status review meetings.
- **Centralized test execution labs.** Both COSD and WEX are building central test execution teams and labs leveraging WTT. This will give individual SDET's and their managers the ability to offload repetitive test execution, lab upkeep and maintenance work in order to focus their efforts on collaborating with their dev and pm partners, doing test planning, authoring test cases, analyzing results and filing and resolving bugs.
- **Clearly defined quality metrics with ongoing measurement and reporting.** We've made a big Windows 7 investment in developing common quality metrics, measurement systems and a consolidated quality metrics dashboard. Each team in Windows will use these tools to understand the quality goals for the release, the quality of Windows 7 throughout the development cycle, and the specifics of how a feature team's work is impacting overall product quality.
- **Clear philosophy for adjusting dates and scheduled.** We will use the milestone process to check our progress against our plans and make adjustments when necessary. We will not play "schedule chicken," as everyone is operating under the assumption that we will each do what we say we will do and when we say we will. Any changes to dates will be thought through and planned as a team based on data provided by the team. There is always judgment involved and we ask everyone to act responsibly and professionally, recognizing that a date-driven effort is a cornerstone of engineering.

SCHEDULE

Below is the proposed schedule for Windows 7. It reflects a 3-milestone release. The release is coincident with the next Windows Server release.

| Milestone | Start | End | Weeks |
|---------------------|----------|-----------------------|-------|
| Vision doc complete | 7/23 | 7/27 | n/a |
| M1 Coding starts | 9/4/07 | 10/17/07 | 6w |
| M1 Integration | 10/18/07 | 12/5/07 | 6w |
| M2 Coding starts | 1/7/08 | 2/13/08 | 6w |
| M2 Integration | 2/14/08 | 3/26/08 | 6w |
| M3 Coding starts | 3/27/08 | 5/7/08 | 6w |
| M3 Integration | 5/8/08 | 6/18/08 | 6w |
| M3 Escrow | 6/19/08 | 7/2/08 | 2w |
| Beta 1 | 6/19/08 | 9/17/08 (Escrow fork) | 13w |
| RC | 9/18/08 | 1/21/09 (Escrow fork) | 18w |
| RTM | 1/22/09 | 5/13/09 | 15w |