

Windows Blue Vision

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Note to the reader: We are delighted to share with you the Windows Blue 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 our product, and our feature-specific priorities. It also represents the performance review expectations for the organization as a whole cementing our commitment to Microsoft to deliver the next release on time and at the highest quality. 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 will be. Delivering on this vision requires the contribution of many divisions at the company. While we can't list all the partnerships implied by this plan, we are confident that our partners across the company will share in the excitement and sense of purpose, and we appreciate their commitment and accountability to this shared vision. In particular, Windows Services and Internet Explorer continue to contribute important aspects of our Windows experiences and will be described in further detail as part of the Windows Services Wave Blue vision and the Internet Explorer Blue vision.

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Introduction

Windows software brings tremendous satisfaction to about a billion people every day. Through observation, telemetry, and our collective experience we can say these billion people are using it as an essential part of their lives and an integral part of the organizations they are part of, in at least a billion different ways. Our goal is to continue to extend the breadth of PC usage and deliver Windows Blue as a significant and celebrated continuation in the Windows mission of *making the Windows experience a vital and loved part of people's lives*.

We have just launched one of the most ambitious wave of releases from Microsoft. From the moment we first unveiled it at BUILD, Windows 8 was set to change the course of computing. As we have said, Windows 8 is a bold reimagination from the chipset to the experience. We built Windows 8 for a new era of computing, of Windows computing. We called on our team's collective experience from the overwhelmingly positive Windows 7 release and challenged ourselves to do more. And we delivered. And then some. Across the entire division including Internet Explorer and Windows Services. And across all of Microsoft including Visual Studio, Bing, Xbox, and more. Windows Blue builds on these accomplishments.

This time next year our customers will be getting Windows Blue. Whether as an upgrade from Windows 8 or on a brand new PC, Windows Blue will be a release all Windows customers will want. It will expand our bold vision of modern computing and cloud-connectivity. Developers will see the unprecedented opportunity to innovate and reach hundreds of millions of users. New Windows Blue PCs will have the latest innovations in displays, long battery life, and top end performance. Windows

8 customers won't pause – they will want the upgrade because of the confidence that their machines will work better with Windows Blue while getting the latest Windows has to offer.

We will deliver this release in one year and bring the focus needed to do so. We remain committed to delivering complete experiences, with attention to craftsmanship, resulting in the greatest customer satisfaction and connecting to the most significant Windows business drivers. The fundamentals and core of our system will continue to improve and meet the expectations of quality we define. We'll make certain the features we ship are fully complete, earn customer satisfaction, and build loyalty; this will no doubt involve hard choices regarding features we choose not to develop in order to stay true to this principle. To achieve these ambitious goals, we'll 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'll create both platform technologies for the application community and complete experiences for consumers. We'll pay unprecedented attention to detail while ensuring we deliver innovation in key areas.

We have unique capability and opportunity to achieve this balance given our heritage, ecosystem, worldwide customer base, developer opportunity, consumer and enterprise scale, and engineering creativity and talent. These are our assets and represent challenges we fully embrace. We begin by internalizing the Windows Blue 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 responsiveness where it matters most. From this, we will deliver a seamless installation and showcase all of Windows capabilities. We'll carry this mindset forward from the design to the code to the tests to our marketing, sales, and support efforts.

While we emphasize customer satisfaction in the Windows Blue release, we'll 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.

We've focused our investments on scenarios that map to the pillars and customer promise for the release. These scenarios will spark even more customer enthusiasm for our product and define Windows Blue, along with the apps and services designed for the platform, as the most compelling reason to upgrade and reason to purchase a new PC. This document maps out our business objectives, technical imperatives and, most importantly, the end-to-end customer scenarios we will deliver and business opportunities we will realize. The document marks our promise to our customers, to our partners, to Microsoft, and to each other. We now move from promise to execution, from planning the work to working the plan. This vision establishes necessary boundaries. Now is the time for creativity in engineering, in solving problems despite of and within given constraints, and in aligning with business and customer objectives. Success for Windows Blue means building these scenarios with the level of detail that drives customer satisfaction to new heights and ensuring all of our work aligns with the constraints and spirit of this vision.

Business foundation

Windows is the heart and soul of Microsoft. Windows 7 has been an impressive success so far, shipping over 670M licenses since launch (as of November 1, 2012) with over half-a-million customers moving to Windows 7 PCs every day. In fact, we have set a record with over half of our enterprise customers already deployed. Windows is also the flagship product for Microsoft, and our division generated \$18.37B in revenue in FY12, contributing over one quarter of total corporate revenue and little over half of total corporate profit.

With the launch of Windows 8, we usher in a new era for Windows, reinforcing to our customers and partners around the world that Windows continues to be the most innovative and desirable operating system for both consumers and businesses in the industry. It is expected that by the time we ship Windows Blue, we will have almost a year's worth of PCs running Windows 8. Our renewed and stronger focus on the ecosystem has paid dividends for Windows, from adding entirely new silicon partners to our ecosystem with Windows RT to reinvigorating app development for Windows. We have also evolved how we work with the ecosystem as a whole, from creating new collaboration mechanisms with OEM partners to partnering with new channels like mobile operators.

As we look toward Windows Blue, we will continue to improve the customer and ecosystem experience, and thereby drive our business forward along five key dimensions:

PC shipments. The PC marketplace has been highly dynamic for several years, impacted by global macroeconomic conditions, renewed competition in client operating systems, challenged by tablets, and the ever increasing consumer choice of connected digital devices, content and services. In FY10, shipments of x86/64 PCs were 325M units and this number grew slightly by FY12 to 339M. The big news since the release of Windows 7 has been tablets. Adding tablets, we estimate a total of 429M devices in FY12. While x86/64 PC shipments has grown some over the course of the last two years, we can reasonably conclude that while tablets have increased the total number of devices, there has been cannibalization of the core PC segment. The incredibly fast rise of tablets is not simply adding to the total number of PCs being shipped, but is part of the evolution of the PC marketplace as a whole. Windows 8 has changed the game and gives the PC a strong position in tablets. Windows Blue will further enable the ecosystem to build compelling experiences that span form factors – from large to small screens – enabling us to serve the largest potential number of PC shipments.

Windows usage. Another important factor in our business is the percentage of traditional x86/64 PCs that run Windows. In this context, we consider Macintosh a traditional x86/64 PC. Globally, counting both paid and un-paid customers, approximately 94% of x86/64 PCs sold in FY12 run Windows as the primary OS. While this is a phenomenal success, tablets have significantly grown overall device sales, and we sell very few of those running Windows 7. Windows Blue will bring an even stronger offering across both PCs and tablets, giving us a better competitive positioning across the entire device market with Windows Phone.

Genuine attach. Globally, 71% of x86/64 PCs shipped in FY12 were shipped with a paid version of Windows. But this worldwide figure hides meaningful geographic differences. For instance, while the usage of Windows on x86/64 PCs in China in FY12 was very high, only 34% of those were shipped

with a paid, genuine Windows license. By the end of FY12, we estimate roughly 420M PCs will be running a pirated version of Windows. This demonstrates the challenge of upgrading the world's PCs as we roll out successive versions of Windows. Windows Blue will continue to reinforce the value of being a Genuine Windows user by providing clear differentiation and enable a free upgrade for consumers.

Revenue per license. Pricing is a critical factor that influences our OEM and Volume Licensing revenue. Our approach here is to have offerings at different price points that cater to different customer needs. We have learned that too many offerings complicate our conversation with customers, and too few leaves money on the table or unused features delivered to customers. We took a major step towards simplifying our lineup with Windows 8, enabling us to clearly explain the value of Windows and why a customer should purchase a premium version. Windows Blue will build on the SKU strategy we built with Windows 8 with a simple SKU model that provides obvious upsell where appropriate.

Revenue over time. Revenue over time refers to our ability to earn additional revenue on a PC after the initial OEM license. Windows 7 has been a tremendous success so far in this market, already running on over 50% of Windows enterprise desktops. In the business segment, we generate \$3.7B in revenue annually through Volume Licensing (VL) which offers version upgrades with tiered pricing for businesses, and Enterprise Agreements (EA) giving businesses the rights to the next release, access to the Enterprise SKU, and the rights to subscribe to the Microsoft Desktop Optimization Pack (MDOP). In partnership with Windows Server, our EA business grew from \$2B in FY10 to \$2.65B in FY12 when we started to provide unique value to our business customers over and above the value they received from the OS that they purchased through the OEM. On the consumer side, we have the opportunity to drive upgrade revenue from our large Windows 7 customer base through traditional retail, e-commerce, and integrated Windows Upgrade Packs. For Genuine Windows 8 customers, Windows Blue will be straightforward with as little friction as possible. For business, Windows Blue will provide a compelling reason to maintain their long term buying contracts with Microsoft.

Competition

As Windows 8 is adopted, we should continue to expect our competitors to evolve their technologies and associated business models which will continue to challenge our market position and ability to collect revenue from our customers. Windows Blue will address a number of key competitive gaps, while differentiating in meaningful ways from our key competitors:

Apple. During the Windows 8 development cycle, the center of gravity of Apple's business has seemingly shifted from OS X and Mac to iOS and iPhone/iPad by most accounts (though we should expect continued efforts to converge OS X with iOS) with additional significant investment in iCloud. As evidenced by recently flat Mac growth, iPad sales are cannibalizing Mac, but by regularly increasing the capabilities of iOS and creating new lower priced iPads, Apple is expanding the footprint of the iPad in computing. Today this is allowing Apple to define the tablet opportunity, almost exclusively, and the volumes and app ecosystem are reinforcing this expansion. iCloud is enabling a long term, sticky customer relationship for Apple products exclusively, similar to what

iTunes was for iPods. Furthermore, Apple's continued leading consumer share in the higher-priced PC segment means less overall margin for our OEMs to reinvest in innovation and marketing. Apple's brand is incredibly strong and will continue to drive stickiness to their ecosystem by tying together digital content, apps, and cloud services with their devices, bolstered further with frequent incremental releases. While Apple's global traditional x86 PC sales are still relatively small, they will also continue to invest in geographic and channel expansion to drive initiatives such as reaching more of China's middle and upper income classes. Windows Blue must offer consumers high quality and compelling device experiences that integrate hardware, software, services and content. Blue will cement our distinct point of view about how a consistent experience across tablets and PCs are what customers want. Further, it will provide developers and content creators a great platform with the largest opportunity to build their businesses on.

Google (OS's & browser). Google still has not settled on a distinct vision and direction for their Android and Chrome OS platforms. However, it is clear across the board their investments are focused on monetizing the user through advertising, their core business. Google has generally been a reactive, fast follower to Apple and Microsoft on core OS functionality, but innovation is occurring with the bundled apps and services. These apps leverage Google's cloud features such as search, voice recognition, or storage in an attempt to drive traffic back to their advertising business. Android's success in winning significant share in phones has not been replicated yet in tablets. Further, they are dealing with a significant fracturing of the platform between their own version, Samsung's, and Amazon's to name a few. With Chrome now the default browser on Android, the convergence of Android & Chrome OS has begun, but Google will continue to be challenged with platform fragmentation, profitably managing and growing their Motorola and other hardware businesses, as well as questions around IP licensing required when using Android. Meanwhile, the competitive agenda for browsers is primarily being driven by Google Chrome, with the near term focus shifting on how browsers running across multiple devices (of all sizes – from the pocket to wall size displays) facilitate, integrate and cement stickiness to consumer and enterprise cloud services. This creates a browser runtime that acts as a cross-device, cross-OS development platform. With recent investments in Google Drive and the integration of it across Android and Chrome OS, they are pushing strongly into being the place where customers store their email, contacts, calendar, photos, movies, and files online. Windows Blue must provide a clearly consumer-first view of browsing, the cloud, and devices that focus on the quality, consistency, and privacy customers will demand.

Amazon (& other content and cloud services companies). As Windows 8 hits the market, Amazon's cloud connected devices tightly coupled with and subsidized by digital (and physical) content have achieved a moderate level of success, sufficiently spooking Google to rush to evolve Android and their digital content business models to compete in the lowest price ranges. As low prices always draw consumer attention, expect others to attempt to adapt their business models in this new race to the bottom. For most companies, this race will be unsustainable but the market will be consistently inundated with lower and lower priced products that focus on winning on price at all costs. We should not underestimate Amazon's "race to the bottom" with respect to profit, and their ability to continue to confound analysts with the details of costs and profits. Windows Blue must recognize this environment by clearly demonstrating the benefits of quality and choice in devices and apps.

Linux. Open source continues to be a competitive factor, especially as vendors continue to look for opportunities to reduce product costs; however, the influence of standard desktop Linux (Ubuntu, Cent OS/Red Hat, SuSE, etc.) has diminished somewhat with the rise of mobile, Android, and integrated cloud services to help customers access and use their information across devices.

Windows 7, non-Genuine Windows. In some respects, Windows 7's biggest competitors have been Windows XP and non-genuine copies of Windows. Given the general resistance to change, no doubt a huge challenge for Windows 8 and Windows Blue will be our own legacy products. Apple's approach provides lessons on how to accelerate user base migration and avoiding platform fragmentation that are typical for frequent release cycles. Windows Blue will demonstrate clear reasons to upgrade, whether it is with new hardware, or with features that draw customer demand, while instilling the confidence to do so.

Industry trends

Tablets. The first generation iPad launched roughly six months after the launch of Windows 7 and has ushered in broad experimentation with tablets across various sizes, operating systems, and price points. Tablet volumes in 2012 are likely to be over 100M units; iPad currently has 68% of those shipments, but experimentation has extended beyond just the new device form factors and into a remarkable number of innovative offerings from a set of large and small companies building primarily around Android. Amazon and Google have pushed on content-driven business models with low cost devices pursuing revenue from content sales or advertising, and these devices have captured share through 2012. What is clear is that the tablet segment is fluid and nascent, and Windows 8 will impact how it evolves in the next few years. This includes how people perceive media consumption tablets versus devices capable of greater productivity, and how the increased availability of touch in traditional form factors such as laptops and all-in-ones interact and pressure each other to evolve.

Channel consolidation. Major multinational OEMs continue to take share from smaller companies that assemble PCs (i.e. system builders) and OEMs continue to battle each other for global share in a slow growth market. The current economic climate favors the multinationals with scale, cost advantages, and brand strength. The continued shift of demand to tablets and laptops, which systems builder cannot easily manufacture, drives this dynamic. Channel consolidation helps focus our genuine and quality efforts on a smaller number of partners, as well as potentially gives our partners the resources to compete with alternate platforms, but it also brings the challenge of greater market concentration, increasing buyer leverage and pricing pressure. Further, this has led to ODMs being a major source for the actual design work, which is an even more consolidated space. These ODMs are often building products across a broad variety of operating systems and are putting their investments into those product lines that return the highest margin through volume or price premiums.

Consumer channels. Following a general trend towards consolidation, we expect that in the Windows Blue timeframe, large retailers (e.g., Best Buy, Dixons) will continue to have significant influence over PC specifications and price points, as well as preinstalled software. However, these

large retailers are increasingly challenged by Apple's expanding retail footprint and the associated margin pressure. The Operator channel has long held the promise of being a PC seller, but significant volumes have yet to materialize. With the launch of Windows 8, we are making the most serious effort to date to bring devices with embedded mobile broadband to market. We've learned through this process just how different this channel is, from how they go about spec'ing a device to how they test and certify for their networks.

PC prices. PC prices continue to decline, and are increasingly challenged by tablets being sold as part of a broader experience (for example Kindle Fire + PRIME). In the Windows 7 timeframe, the race to the bottom was occurring with netbooks (essentially just cheap laptops with minimal hardware differentiation from each other), whereas the attention is now on cheap tablets. Both phenomena are manifestations of the inability of device manufacturers to sell the value of their offerings above and beyond the app ecosystem in which they play, resulting in them primarily competing on price. However, this inexorable march by Windows OEMs to lower and lower price points continues to reduce the amount they can invest back into building new and innovative devices, and is exacerbated by the Android ecosystem's significant price pressure. In quantitative terms, the average PC ASP declined 9.2% from the Windows 7 launch until Windows 8 (source: IDC). On the tablet side, the iPad demonstrates that competing on price is not the only viable model. Apple has been able to build and sell a device which in Q1 2012 (calendar) had an average selling price of \$644 (source: IDC), which was higher than the US PC ASP of \$606 (source: IDC) in the same time period, and with the iPad delivering significantly more margin. Enabling our ecosystem to build sustainable business models continues to be an important focus as we move into Blue.

Emerging markets. PC unit volume continues to shift to emerging markets. From FY10 to FY13, the proportion of our licenses from China and emerging markets rose from 27% to 36%. This fact directly impacts our ability to sustain revenue as our pricing for China and emerging markets is lower to reflect the prevalence of piracy. However, we should be wary of notions of PCs always being cheaper in emerging markets – for example, the PC ASP from the Windows 7 launch until Windows 8 declined 15.6% in the US, while in China, the PC ASP only declined 5.4%. China remains a unique challenge for piracy and we will need to consider continuing special SKU work for that geography. For Blue, we will pay special attention to core features (such as the IME) that are critical to China as well as needs for apps that might be critical to China (QQ, RenRen, etc.).

Piracy. Multiple factors influence our Genuine Windows success. They include the quality of our engagement level with our OEMs, the distinct value we deliver in Windows relative to the competition or a non-Genuine experience, and the technological advancements we make to make piracy harder and Genuine Windows more compelling. We have made significant efforts in Windows 8 to simplify the experience for customers, making it easier to know when a PC is non-Genuine and easier to pay for a copy of Windows. However, these efforts address symptoms and not the problem itself.

Differentiation. Our OEM partners have long asked for greater ability to differentiate their machines via hardware and software. Our collective challenge has long been to allow for meaningful differentiation while maintaining a high quality bar and consistent user experience. With Windows 8, we focused the opportunity for differentiation on form factors, apps, and quality, but we also learned

how much guidance and time it takes to meaningfully execute with OEM partners. From our Store to new apps to hardware and peripherals, true differentiation takes significant investment and time, and we have to be mindful of and guard against the dangers of platform fragmentation, while allowing partners the opportunity to extend Windows with uniquely valuable apps and devices.

Services built-in. By 2015, according to Strategy Analytics, the install-base of “smart” consumer electronics devices that are capable of connecting to a network will reach over 4.5B units worldwide. 90% of the devices will be connected to some personal cloud and more than 60% will be used in mature markets where the average household already owns at least one other smart device. The strategic play on the cloud is beyond the inherent value of just storing blobs of data in a datacenter; it is in the experiences it enables and the stickiness it creates. This fact is not lost on our competitors. Google makes 97% of their revenue from search, and data shows that the more Google services people use (Gmail, YouTube, Docs) the more they search. They continue to extend their services offerings, most recently offering 100GB of Drive cloud storage with the purchase of a cheap Chrome laptop. Apple has deeply integrated iCloud into all their devices to enable backup, roaming and cloud access to content gaining over 150 million customers in less than 9 months. Amazon also uses cloud services (storage, cloud compute and digital content delivery) as critical pieces to the Kindle Fire value proposition. As services become an increasingly assumed and critical part of device and software experiences, customer expectations for service quality, availability and scale are growing and we must meet and exceed these expectations.

Apps and browsing. While no one questions anymore that all digital devices, including PCs, are now intended to operate connected to the cloud nearly all the time, there still is ongoing debate on the best way to deliver the connected experience to end users. On the one hand, the web browser continues to evolve, enabling developers to develop a small set of web sites that can work on most modern digital devices. On the other hand, apps tailored to specific platforms and devices still work more simply and can deliver more advanced functionality for end users. They’re also currently still an easier way for developers and content providers to monetize their efforts. Windows 8 and IE 10 deliver the best of both models, but our competitors have a head start with their store-driven app ecosystems with Google in particular taking significant browser share with Chrome.

What is clear though is that connected apps, digital content and services are key factors in driving platform differentiation for devices going forward, and that is where our key competitors are all investing significant time and effort.

Upgrades. With Windows 7, about 1% of consumers upgraded their existing Windows PCs the year following Windows 7 availability. Despite our best efforts to lower the price and simplify the upgrade process in Windows 8, it is reasonable to expect that only 5% of Windows 7 customers will upgrade to Windows 8. Whereas other CE devices, like the iPad, achieve much faster and broader upgrade adoption – iOS 6 is already on 45% of all iPads just after a month of its release and runs on 60% of iPhones. With the iPad, Apple has created a simple and intuitive experience that gives most consumers the confidence to upgrade. Apple also has a model where the upgrades are free, however after a period of time upgrades are no longer available for older devices (iPad 1 can’t be upgraded to iOS 6 for example). Because of this rapid upgrade cycle customers have the best possible experience

the device has to offer and developers have the confidence and clarity they need to update existing apps or build new ones for the most current version of the platform.

Windows Services and Internet Explorer

Windows Blue depends on a host of partnerships across individual teams within Windows, across the Windows Division and across Microsoft at large. It would be impossible to enumerate all of the cross-team partnerships. There are two areas, Windows Services and Internet Explorer, which represent significant areas of opportunity where we will work together to deliver complete and differentiated end-to-end experiences for our customers.

Windows Services Wave Blue. Windows Services will deliver on a number of scenarios for Windows Blue, building on what we are already delivering in Windows 8 and Wave 5: Microsoft account for authentication, SkyDrive for backup and roaming of settings and app data across devices, Outlook.com as the first class mail service powering our inbox apps and bringing powerful features like Sweep to Windows as well as safety platform investments in both the client and service. Windows Services Wave Blue was planned together with Windows Blue, and will ship code aligned with the Windows Blue development schedule. In addition, Windows Services Blue will continue to innovate and release code to power service back-end and web front-end technology on a cadence that is right for the team. The Wave Blue vision document will enumerate our areas of cross-team partnership and the Wave Blue schedule in more detail.

Internet Explorer Blue. Internet Explorer will deliver both an industry leading browser experience for Windows Blue and provide key components to power the Windows platform. The schedule and detailed investments will be detailed in the Internet Explorer Blue vision document. Internet Explorer is critical to completing a core set of experiences that customers expect on modern devices and a platform for developers to build the most innovative web experiences on Windows.

Vision area introduction

Windows Blue has six vision areas from which we will build beautiful end-to-end experiences, our developer platform, and develop our customer-specific marketing messages for the release.

As we begin feature selection, design and engineering and then move to delivery, each of us must maintain the spirit of this vision. The decisions, tradeoffs, and choices we make in building Windows Blue 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. We realize Windows Blue through this vision and the skills, creativity, and foresight of everyone in the Windows team.

Vision pillars

- Refining the user experience
- Advancing Windows app development
- Extending the experience with services
- Completing the experience with apps and sites
- Partnering with Windows
- Doubling-down on fundamentals

Refining the user experience

Windows 8 represents the start of the biggest paradigm shift in the history of Windows and in the hardware on which it runs. We fundamentally reimagined what it means to use a PC with the kinds of immersive apps that people use, touch as a more natural way of interacting with a PC, and a new set of gestures, contracts, paradigms and animations which comprise the core experience of using a Windows 8 PC. We left no stone unturned in reconsidering what the PC should be about and what using it should feel like. We led the industry with advances in the creation of a native touch interface that also can be used fluidly with a mouse or a physical keyboard. We began to unify the personality of Microsoft's consumer products, together with Xbox, Windows Phone, and Bing.

But Windows 8 represents only the first step of this journey. The core principles of the user experience remain true: beautiful, fast, and fluid apps working together to complete common scenarios quickly. Windows Blue will continue to advance the promise of the new Windows 8 user experience. It will take into consideration the feedback we get as we all use Windows 8 with real apps and a new generation of PCs for the first time. When we release Blue, people will write that we have "completed" Windows 8 in key areas of the UI. We will focus on a few key scenarios and build them completely, and to a high level of craftsmanship.

Fluid, efficient, natural text input

Improved text selection. Selecting words, characters, and lines of text with your finger should be natural and easy to discover and use. In Blue, people will not be confused about the selection and commanding model for words. They will be able to easily position the caret between letters of a word for quick editing. The experience of selection will be beautiful, gracefully animated, and straightforward.

Improved typing efficiency. Blue will enhance the text correction and prediction experiences to help correct more typing errors on the fly. Tweaks to touch keyboard interactions will be explored, such as adding gestures for common keystrokes like space and backspace to fit more keys on the screen. There should be no experience in a Windows Blue app in which a text box is not fast enough to keep up with a person's typing speed. We will make sure that the experience of entering text with an IME is natural, fluid, and efficient together with the IME teams in China, Japan, and Korea. Auto invoke of the keyboard will work predictably everywhere, including during OOBE, in dialogs, in webauth, etc.

Fast, fluid, and accurate typing on innovative physical keyboards. Windows 8 PCs come with a variety of innovative hardware keyboard designs. We will look at the most popular of these designs, and optimize text correction and suggestions so that they take full advantage of the capabilities of the hardware to provide a great experience.

Instantly find and do

Search charm is the best place for global search. The Search charm will become the clear place to search across your PC, the cloud, your apps, and the web, giving you instant access to relevant actions and answers from whatever you're doing,

Search results are fast, relevant, complete, and actionable. Simple atomic actions like "start an app" or "play a song" or "reduce brightness" will be absurdly lightweight, direct, and quick, with no barriers or extra steps in the way. Full search results will be richer, incorporating actions and results from several indexes together with "hero" content for top types of searches that makes results pages actionable and tailored and beautiful—like an on-the-fly curated app created from a search query.

Deep in-app search happens within the app. Many Windows Blue apps will have a search box within their app content. We will make it easy for people to reuse their Windows 8 search contract code by providing a control which reproduces the behavior of the Windows 8 search contract within their app.

Windows is native to the cloud

Drop your PC in the pool. If you drop your Windows Blue PC into the pool, you can go get a new one, enter your Microsoft account in OOBE, and in a matter of minutes, your whole experience comes back—personalization, settings, music, video, apps, and access to files. And no UI is required to set this up—Windows Blue is protected by default.

SkyDrive is the default place content is stored. In any app, when you save data, state, files, or content, they are automatically saved in SkyDrive, without additional configuration. Conflicts and other sync complexities are handled in the background and without UI. When someone wants more storage, it will be seamless and in-context for them to buy it and continue on their way.

The cloud harmonizes my devices. It will be seamless in Blue to get to my stuff from my Windows Phone, my PC, or my Xbox. We help apps share state and settings across devices, like the website I'm looking at, or the page of the book I am reading. Getting music, TV, and photos from any of these devices to any other device will be seamless, consistent, and compatible with a wide range of apps and media formats.

Productive and beautiful on better screens

Powerful multitasking for large screens and multimon. Windows Store apps will become more natural to use on larger screens, as you will be able to fit more of them on the screen at once and in more useful and flexible layouts. People who have multiple monitors will be able to customize exactly which apps go on which monitor, and they will stay where they're put. People can tile multiple windows from a single app, making it possible to read and write a mail on the same screen, or compare two web pages side-by-side. All of the in-box apps will fully support Snap in Blue.

Beautiful and functional up to 270 DPI. Windows Blue will work great out of the box on a 270 DPI screen. Fonts will be crisp and readable and will maintain the same personality they have at lower DPIs. Key Desktop UI will be updated to ensure that the metrics and layout of control looks identical to how they look in low PPI, except sharper.

Usable and readable on smaller more portable devices. Windows Blue will be able to power devices as small as 7" diagonal, with the exception of many parts of the desktop. While touch targets and text may be smaller on these devices, it is important that key scenarios like typing and web browsing work very well.

Finish portrait mode. Blue will finish the experience of portrait mode and rotation, ensuring that the apps are usable, complete, and delightful in either rotation. In particular, smaller tablet devices are more likely to be used in portrait orientation and so enabling the ecosystem to do smaller devices means have a complete portrait story.

Personal and captivating

Start becomes more personal more easily. In Blue, people can rearrange tiles and groups of tiles to get a layout that makes sense to them in fewer steps. Apps can be sorted into groups based on their categories, and rearranging apps is clearer and less frustrating. Once you do have a layout you like, that layout is roamed across all your connected PCs. People will be able to customize the color and accents to a much greater extent than in Windows 8, and additional tile sizes allow the Start screen to be more efficient and useful.

The lock screen is captivating and dynamic. The lock screen will become the best picture frame ever, especially on all-in-one devices designed to be plugged in. It will captivate and attract you to the PC with a relevant overview of what's going on in your life, powered by the apps on your PC. It will be alive and stunningly beautiful, while preserving the heart of the silhouette of text and notifications we created in Windows 8.

Humanizing the personality. We will evolve the visuals of Windows in Blue, staying true to our Windows 8 principles but perfecting animation and visuals, eliminating unwanted visual flashes, and evolving the visual language towards a less stark version of the new Windows UI design.

See no desktop, except when you want

Settings becomes a complete experience in the new UI. In Blue, people need only go to the desktop because they have a program they want to run—never because they are forced there to change a setting or manage some aspect of their PC. While enthusiasts may still like to play around with Group Policy Editor and the Registry, PC Settings will be a complete experience for humans.

Microsoft account connected in OOBE, every time. In the Windows Blue out-of-box experience (OOBE), you will be able to connect to any kind of network so that you can use your Microsoft account out of the box. This includes connecting to protected Wi-Fi (such as on corpnet), public Wi-Fi hotspots (such as in a mall), and mobile broadband networks. We will also make it easy to join your PC to a domain during OOBE, removing another reason to go to the desktop.

Do all your work with files. Windows Blue includes a new experience for files, removing the need to go to the desktop for common file operations. So whether you are plugging in a USB key, connecting to a network share, or looking for a file on your local computer – you can do it all right from the Start screen.

Advancing Windows app development

Windows 8 introduced a powerful new platform, one that embraces HTML and JavaScript and extends the promise of rich app development from long-time Windows developers to new audiences. Developers who wouldn't or couldn't consider Windows as a platform can now use what they know to write powerful, innovative, engaging Windows apps for a massive audience. In Windows Blue, we will advance and further modernize the WinRT platform so that app development is efficient and effective for creating apps that truly shine. We will continue to promote Windows apps as alive and connected to services ensuring the platform has built-in and first-class support for first-party services like SkyDrive, Azure, and Xbox Live. Blue apps will be presented as part of our overall set of apps for Windows 8 customers and Blue customers, ensuring that developers will not need to choose between targeting the Windows 8 or Windows Blue platform.. Windows 8 customers will be able to choose a Blue app and the Windows Store will make the update to Windows Blue a smooth, easy, obvious part of the app installation. Windows Blue will be the obvious choice for customers and for developers.

The Windows Blue app platform and tools will enable developers to efficiently and effectively create apps that perform well, are prudent with system resources, are battery friendly, and have the visual detail and responsiveness of Windows itself. The platform will advance in key app categories of video playback and streaming, gaming, communication, and connection to services, with a special emphasis on Windows RT devices. Developers will be able to readily create apps that can display stunning video on 1080 screens, can enable their customers to resume from the point of last use across Microsoft Blue phones and PCs, and can incorporate key Microsoft services such as game leaderboards.

All apps are connected to services

Service connected from the start. Many Windows 8 apps are connected to a service. Windows Blue will focus on all apps being connected to service. Some approaches include:

- A Blue developer can create an app in Visual Studio Express that has a live tile provisioned with Azure Mobile Services.
- Developers can register for Xbox Live and Azure will be more discoverable.
- The SDKs for Xbox Live and Azure will all be available in VS Express.
- Developers can utilize private services or other established services in their apps.

Windows is the best place to browse the web

Apps blend web content seamlessly. One of the values of the Windows 8 app model is the ability to consume web content in an app tailored to its environment and form factor. In Blue, we will enhance the platform abilities for consuming web content such that apps (both those that use HTML/Javascript UI presentation and those that use XAML UI presentation) can blend content from the web in a manner that is natural, consistent, performant, and safe. Magazines and books will render the easily delivered HTML5 content beautifully and fast. Developers can create apps that readily blend packaged app code with remote content.

Performance, composition, and controls. We will invest in performance and fluidity of key web content controls, such as list view and TriEdit, and will provide a much improved experience when hosting web content in XAML and HTML/JavaScript apps. We will also invest in improved composition performance and smoothness, ensuring that controls are responsive to resize and work as well in portrait mode as landscape.

Awesome video and movie experience

Stunning 1080p video. Video is central to every domain, from entertainment to education, at home and in business. The Windows Blue app platform will enable developers to create apps that playback stunning local and streamed video on 1080p screens, with a special focus on beautiful, glitch free playback on a Windows RT device.

Standards-based protected video in apps and IE. We will invest in MPEG-DASH and the encrypted media and adaptive bitrate W3C standard to enable video content owners to deliver standards based

high performance, high quality, and protected video through the browser and through Windows Store apps.

Better when Xbox is in the house. Video consumption on Windows Blue will be enhanced through the use of SmartGlass if you have an Xbox console. Customers will be able to play the content from the video app on the Xbox with real time speed, because we've enabled passing the "play" reference to the Xbox console rather than sending a stream from the PC. We will enhance the charms capability of Play To automatically enabling this "play by" reference. Building on our app to app communication abilities in the platform, we will also enable an app (for example Netflix on the Blue PC) to send a "play by" reference to the same app on the Xbox console, providing the same real time performance in playback. We will partner with IEB on these video capabilities.

High quality video phone calls. Windows Blue will also advance the platform such that video communication apps (e.g. Skype) provide customers using Windows RT devices an exceptional video communication experience with a focus on the quality of the video and spoken communication. We will invest in the performance and battery use of the video stack and composition capabilities and will partner with Skype on key technology improvements.

Windows+Xbox gaming experience

All games use base Xbox Live service. Windows has a rich history of platform support for games, and games represent a large portion of the overall business value delivered across the various app stores in our industry. Our investment in platform support for DX and hardware acceleration, the rise of Xbox and Xbox Live, and the popularity of casual games bring unique opportunity to Windows. Windows Blue will advance the platform, tools, and services for gaming such that developers can incorporate, achievements and leaderboards starting from the templates in VS Express. They will also have the ability to store game state via Xbox Live, and the ability to play/pause/resume the game across Blue PCs, phones, and Xbox. The Xbox Live SDK will be included in VS Express, and onboarding will be unified in the Windows Store. We will partner with IEB on these capabilities.

High end games. We will continue to invest in the platform capabilities for high end games including D3D, shader linking and runtime HLSL compilation in Windows Store games. We will support larger appx packages and DX feature level packs.

Efficient to port games from other platforms. There will be increased focus on enabling developers to easily migrate games from other platforms to Windows. Through these investments, Blue will present the broadest business opportunity for game developers across AAA, Indie, and Casual categories. Customers will be able to play their personal favorite games on Blue, and can expect new hit titles to be available on Blue when they are launched.

Apps look, feel, and perform as well as the rest of Windows

Apps can replicate Windows experiences. In Windows 8 we introduced UI frameworks with a standard set of controls to enable developers to create apps that take on the Windows look and feel. Windows Blue will advance the UI platform such that developers can more easily match the

performance and UX fidelity of Windows Blue using standard Windows Blue UI controls. Additionally VS Express and Blend templates will naturally lead the developer to create these experiences.

Filling out the control set. In Windows Blue we will focus on the composition and rendering performance of UI controls such that Windows 8 and Windows Blue apps will have improved performance. We will invest in UI gaps in XAML and WinJS by adding signature controls such as Flyout and DatePicker and will invest in new WinJs controls to improve the performance for targeted scenarios such as the Windows Store.

Apps have snappy UI. The input platform will advance to provide independent input which will produce snappier UI responsiveness. Additionally we will focus on the responsiveness of key gestures like flick and short panning and in XAML rendering through DCOMP.

Easy to create apps that keep the WinRT promise

Developer support for creating well-behaving apps. Ensuring new Windows apps perform well requires that we continue the significant investment in our developer tools and platform. Developers should be able to readily create Windows Blue apps that perform well, are prudent with system resources, are battery friendly, and have the visual detail and responsiveness of Windows itself – in other words, behave the way customers expect. We will invest in memory and performance profiling, async debugging, hybrid debugging, and better error reporting and handling. We will improve key aspects of overall app performance such as app launch and the JavaScript engine. As with Windows 8, we will partner with Developer Division on these capabilities.

Reduced footprint. The Windows Blue platform and tools, along with the Windows Store, will enable developers to optimize for reduced disk footprint and package size by creating and onboarding resource packages and downloading only as needed. We will improve multi-app packages for preinstalled apps allowing apps within the package to be individually suspended, terminated, and closed.

Seamless experience across app boundaries. Building on the contracts model that was introduced in Windows 8, the Blue app platform will enable app to app communication in key areas that continue to provide customers stronger experiences when more apps are present. For instance, a Skype phone call could identify the caller via the contact list provided by the People app, or another app if the user so specified. Or, a reservation app could offer the ability to select the correct date by snapping the Calendar app to the side and enabling the customer to select the date while seeing his/her full calendar. Developers will be able to leverage app-to-app communication for smart data scenarios like enabling users to click on phone number to make calls, or click an address to see it on a map.

Windows Blue is a dev no-brainer

Pull to Blue. When a developer uses VS Express Blue to update an existing Windows 8 app or create a new one, the result will be an app that runs only on Blue. Since existing Windows 8 apps will run on Blue, Windows Blue customers will be presented with all Windows 8 apps and all Blue apps. With

upgrade being an obvious and easy choice for all customers and an obvious and easy choice for all developers, we will present all Windows 8 apps and all Blue apps to Windows 8 customers as well. Windows 8 customers will be able to choose a Blue app, and the Windows Store will make the update to Windows Blue a smooth, easy, obvious part of the app installation.

Sustaining existing apps. Developers will be able to use VS Express Blue to provide an app update to an existing app that already has a Store app ID with no cost to the customer, if the developer so chooses. This update will run only on Blue. For a period of time yet to be determined, the developer will be able to service the Windows 8 app even though he updated to Blue. During this time period, VS Express for Windows 8 will be used to service existing apps and to create and onboard additional Windows 8 apps. . VS Express for Windows 8 will be able to run side by side with VS Express for Blue.

Providing developer resources in one place. We continue to evolve the Windows dev center to be the go-to place for developer tools downloads, content, and samples. The dev center will have improved, more task-and scenario-based navigation, as well as additional resources to help developers quickly learn how to develop apps and use WinRT APIs. Windows Blue developer content will be released on the dev center in alignment with disclosure milestones and developer engagement plans.

Extending the experience with services

Services are often the first and most lasting relationship customers have with our products. From our web experiences to app and OS acquisition to system updates, OS services such as Windows Store Windows Update, and Windows.com, provide a dynamic and vital connection between customers, their devices, our ecosystem and our brand. And as we move to a devices + services company, we have a powerful service base in Windows on which we can and will build for Windows Blue: an update service that delivers content to nearly a billion PCs a month for less than a nickel annual cost per machine; a website at Windows.com that is consistently among the top 10 most trafficked on the Internet; and an integrated Store that powers app discovery, acquisition and OS upgrade on every Windows Blue device.

Continuous self-hosting

Deployment and publishing efficiency. Windows Store deployment automation uses Aquaman, reducing the configuration deltas between self-host environments, increasing deployment automation and code velocity. Convergence of our app certification and publishing infrastructure creates a more unified stack for Store app security validation, certification and publication. Self-host OS bits use this same pipeline – a common publishing pipeline for Store apps and OS bits.

Self-host app catalog. Windows 8 Store apps are continuously available for self-hosters and version control supports side-by-side publishing of Windows Blue Store apps. Self-host Store clients automatically register the correct Store services to avoid end-user client/server configuration management.

App disclosure protection. Pre-release catalog access management support ensures we manage first-party app disclosure equivalent to the rest of the system.

Always up-to-date

Auto-update for Store apps. Developers can count on broad update adoption and users seamlessly receive the latest updates through silent download and install of updates. We respect customer choice through app update settings.

Blue upgrade in the Store. We bring the ecosystem forward aggressively through easy discovery and acquisition of the Blue OS upgrade in the Store. Upgrade from existing to equivalent SKU will happen inline through ESD and the Blue OS licensing model will remain machine-based, as it is today.

Seamless Blue Day 0. Blue Day 0 update (or ZDP) will flow into OOBE with minimal disruption. . The first-run experience will always get the latest content from WU, regardless of when in the OS lifecycle the customer purchases the PC.

Seamless hardware update. Drivers and firmware auto-update on SoC systems with dependency mapping that keeps driver and firmware updates in sync (no “torn state”). Partners can submit pre-release versions for certification to support self-host and drive quality upstream. WU throttling will regulate distribution of drivers and firmware to measure quality before broad distribution.

Best apps for you

Discover relevant apps. Blue app search and browse are more relevant to each customer, using Bing’s discovery and recommendation services to pop the best apps. An improved user experience with richer landing and app description pages will increase merchandising and targeting power to improve discovery and ease decision-making.

Pay your way. More payment methods increase choice and reduce friction, with more local app purchase options. Cash stored value eliminates per-transaction credit card requirements and enables app gifting. Alipay support provides broad payment ability in China. And support for consumables enables new business models for developers.

Acquire with confidence. Security investments in static and dynamic analysis tools, app cloning assessment, ratings and review gaming and telemetry gathering, data modeling, app and developer reputation and catalog rescan combine to support our confidence promise.

Apps in the enterprise. The dev license no longer requires a connected environment so offline app development can occur. Windows-to-Go has a Store and apps can be volume licensed for enterprise sales. App locker gives greater control over app blacklisting prior to acquisition and group policy support enables IT to hide Store categories such as Games and Social.

Refining Windows.com

Windows.com on any screen size. Blue windows.microsoft.com is adapted to mobile devices, reflecting the fact that mobile traffic today is significant and growing as we use the site for pre-sales marketing execution.

IE on Windows.com. By focusing IE digital marketing on the Windows.com platform, we provide the coherence, increased customer sat and economies of scale we've achieved with ongoing site consolidation of our key brands and content experiences.

Search. Investments in canonicalization, URL normalization, and market thinning realize improved indexation rate and higher rank in major search engines. Inclusion of Store app description pages in Windows Online search results improves browser-based app discoverability.

Publishing tools improvements. Tools improvements for content publishers make content authoring, production and publication easier and more efficient. Content publishers reduce authoring and validation time and effort and can focus more energy on the craft of creation, data analysis, refinement and continuous delivery..

Richer and more integrated content. Content is seamlessly integrated into the modern UI and provides in-context assistance to users without inadvertently dropping them into the desktop experience.

Refining the Store developer experience

Efficient and transparent onboarding. The Blue Store developer dashboard allows for onboarding of larger app packages, for automated uploading of resources for languages and other assets, more specific certification feedback and the ability to use the dashboard to broadcast custom notifications to developers.

Business your way. App publishers have more business model options, including support for consumables and private betas, so they can better match their business goals with their app experience.

Major publisher account support. Large organizations no longer have to work from a single account and set of credentials with support for multi-person authentication. Registration and submission for Xbox Live certified games is consolidated into a single flow.

Streamlined manual certification. Manual certification tools support region-specific content review requirements, robust feedback to developers and flexibility in reviewer auditing and in workflow design and revision.

Data that drives decisions. We make app referral data available to publishers and give them access to more raw data for offline analysis. Analytics for the OEM channel allow them to tune the performance of their merchandising.

Completing the experience with apps and sites

Modern devices are more than just a collection of hardware components assembled into a case. They are tightly integrated units that are meant to deliver a complete experience for customers. That tight integration goes beyond just the hardware—when people buy a device, they expect it to provide a complete end to end experience right out of the box. This means that the software needs to deliver on these core expectations and cover key scenarios including social, communication, information, and entertainment. In the highly competitive landscape today, the apps that are included on customer devices provide critical aspects of the end-to-end experience. For Windows Blue we will continue to build on the great inbox apps from Windows 8, as well as provide new apps which evolve the experience and give us great differentiation from our competitors. Web browsing with IE is also a fundamentally important experience, and we will continue to make web browsing and apps powered by web technologies even better.

Powerful and personal mail, calendar, and people

Deliver on the essentials, connecting people and helping them manage their busy lives. People spend more time using their devices for communicating than any other activity. With Windows Blue, our apps will let people handle all of their daily communications, no matter how great a volume, and easily manage their schedule with friends, family, and co-workers. They will be able to create and exchange rich and beautiful content as well as trade brief messages. They'll be able to find the right people quickly, and stay in touch in context with their daily activity.

Delight with our point of view. Design as well as functionality will be differentiators for us, to help people stay in control of their whole lives, across the integrated reality of home and work. We will provide powerful, simple solutions. We will beautifully tailor the experience, bringing life to Windows and demonstrating the best of the system for all form factors. We will be designed to be great with Outlook.com and Exchange, but work just fine with other services. We will push past the conventional presentations of email and schedule, and provide views that better orient people to what's important or interesting, and better suit the different kinds of email you get and the kinds of events you track.

Enhancing creativity through camera, photos, and movies

Capture life's moments. The Windows Blue photo capture experience will be the most powerful we've ever produced, combining new technologies with elegant simplicity to allow customers to capture, augment, share, and organize their important moments. They'll never miss capturing a moment again due to an implicit 'burst' mode that lets them go back in time and select the shot they thought they just missed. We will take advantage of sensors and touch for high impact photos with a unique point of view, and we'll make it very easy to move back and forth between capture, retouch, and organization.

Be creative and enhance your memories. We'll enable customers to fix their photos when they want, even in the moment of capture, so if they are taking a photo they intend to share immediately

they can autofix or brighten a particular region before sharing to make it great right in the moment. And of course we'll provide beautiful and fast browsing of saved photos and videos locally and on SkyDrive and other services.

Bring moments to life creating cinematic stories. We'll provide apps to make short, personalized, movies with a unique design point of view and bring still photos to life and make time stand still. In movies people will also be able to autofix or adjust to get a great result even when making a quick movie to post and share.

Delivering on the essentials for new scenarios

Deliver the next must-have apps. For Windows Blue we will also build new apps to help people have fun and get things done. Our goal will be to deliver on scenarios which are unique to Windows and innovative vs. the competition, delighting customers and encouraging them to stick with Windows because it helps them do what they want. This will include new apps and modern updates to Windows apps.

A seamless web experience in Windows

Apps and sites are better together. With Windows Blue, customers will be able to quickly and confidently navigate between Apps and Sites, including launching apps when URLs are clicked in the browser, and providing a better 'browser-like' experience within apps which utilize web content. We will also encourage Developers to write apps instead of browser plugins to facilitate extensions to what the browser can do inherently. Browsing the web on Windows Blue will be made even better by extending capabilities for of the browser such as by enabling background audio. We will enable apps to connect to each other and launch other apps based on the content that is being viewed, so that clicking on an address in one app can bring up a Maps app for example. We will enable apps to easily share data or screen space with one another, or have effective two-way conversations.

Connecting apps and other apps. We will enable apps to connect to each other and launch other apps based on the content that is being viewed, so that, for example, clicking on an address in one app can bring up a maps app. We will enable apps to easily share data or screen space with one another, or have effective two-way conversations.

Partnering with Windows

The Windows ecosystem spans thousands of partners in hundreds of technology areas: hardware, software, services, silicon, OEM, etc. In the past release we invested deeply with our partners to bring Windows RT to the ARM processor and IDP systems to market. We created new driver models to enable our partners to better unlock the potential of Windows, and improved the experience for partners working with Windows through the partner portal. With Windows Blue, we are doubling down on how we work with partners by investing in changes that will enable Microsoft to more seamlessly collaborate with internal and external organizations.

Our goal is that every partnership – internal and external – results in consistent and high quality end user experiences. In Windows Blue we will invest directly in features and improvements that enable users to do more and partners to drive unique value through their investments in hardware, software and services.

Integrated Developer Program

For Windows Blue we will continue to invest in the Integrated Developer Program (IDP) and add support for two new ARM SoCs, one each from NVIDIA and Qualcomm. These are significant upgrades to the processors we supported for Windows RT and will require deep focus from all teams as we take them to market. They enable capabilities such as 1080P displays, USB3, and better performance, while delivering equal or better battery life. In addition to Intel's ATOM, we will also develop support for Intel's Haswell ULT processor which is intended to be Connected Standby-capable while delivering the high performance of the Core series. Our model for developing this support will be a phased approach, with clear entry and exit criteria and strong management throughout. As upgrading every Windows 8 or Windows RT machine to Windows Blue is a promise, we will also work to ensure Windows Blue runs great on today's shipping silicon.

Extending and improving device support

Completing device support. Windows Blue has scan support for Windows Store apps, and brings additional print features built on the v4 driver model into the modern experience. The new basic capabilities included in the Wi-Fi class driver simplify the work those partners must do to create a great wireless experiences. Biometrics support means customers can use their fingerprints to log into Windows and make secure transactions through Windows Store apps.

Enabling apps with device support. Our IHV partners have requested device extensibility and the ability to leverage devices from multiple Windows Store apps. Windows Blue adds this capability through a targeted set of scenarios that enable easy pairing of Bluetooth-connected devices as well as some USB-connected devices. This extensibility enables customers to easily use their favorite devices with multiple apps without a custom driver.

Improving input

Best precision touchpad. In Windows 8/Windows RT, we worked hard to bring a great touch experience to Windows tablets. We believe that the best interaction model for touch is the screen, and that customers use a touchpad to do precision work, especially in desktop apps. Touchpads enable our unique point of view: that our customers don't have to compromise to have the best of a tablet and the best of a laptop as well. With Windows Blue, touchpads are better than the mouse for many tasks. They provide a consistent, high quality experience for users, and accidental activation is a non-issue (e.g. Palm rejection). For developers, there is no friction – apps "just work" with touchpads with no additional drivers and no long running processes. Legacy hardware gets better as well, with common settings and better wheel support.

Great dock support. Windows Blue supports mobile docks that provide keyboards, touchpads, additional batteries, and wired networking to tablet systems making them great for all kinds of productive work. Wired networking on docks provides Connected Standby functionality using new parts from our IHVs. Improved multi-battery support extends the run time of all systems, and shortens charge time.

Improving external partner tools and processes

Improved certification. By improving partner engineering tools and processes, we improve partner code quality as well as velocity to support an annual release cycle for Windows while working with the broad ecosystem. Each and every one of our partners must run the Hardware Certification Kit in order to receive a logo for their device or system. Simply put, individual improvements to the HCK content that each team delivers is the most leveraged way to improve partner quality. Across Windows, we are making significant investments to improve the quality of the tests and content delivered in the HCK, as well as the systems we use to build the HCK itself.

Better mobile operator service support. MOs want compelling devices that efficiently leverage and integrate with their backend and service infrastructure as well as device certification processes. Windows Blue enables MOs to receive premium experiences, including enabling mobile hotspots, rich video conferencing, and premium content services. These services are delivered efficiently over their network on Windows Blue PCs, and the MO can prioritize and manage that traffic effectively. Our metadata architecture and processes have been simplified, and MOs can include operator-friendly tools in their certification processes.

Tooling that partners love. Basic tests have been integrated into the driver kit and include tools all driver writers can use, moving the push for quality upstream. IHV developers also use pre-certification testing during development, categorizing test content, and integrating static analysis tools to improve code quality throughout development. In addition, support for side by side development, automated tools, and better bug management make our partners more productive.

Simplified drivers, easier self-host. When the partner is ready, they can test their new drivers using Windows Update, self-hosting the end-to-end deployment of their drivers. Detailed reports about the payload of each Windows build reduces surprises and self-host challenges. Within Windows, our engineering tools and processes are streamlined, and inbox drivers are certified just as IHV out-of-box drivers are.

Working with internal partners

Cross-Microsoft alignment. Our internal partners are also critical to our success. We are One Microsoft, striving towards the same overall goal. We work closely with our internal partners to align product plans and technologies where it makes sense. One example of this is that the User Mode Driver Framework (UMDF) is integrated into core system, simplifying Windows Phone driver development. We will continue to maintain our standards as defined by Windows for “inbox” apps relative to UI completeness, integration with other inbox apps, and business approaches to advertising, privacy, and more.

Improved internal tooling. Improved tools, such as PREFIX, static analysis for JavaScript, better APIScan detection, debugging tools for ARM, WinIDE, and Windows code search enable internal partners to “see what we see” earlier, reducing surprises and improving quality.

Great internal communication. Our internal partners have a “landing page” that tells them what’s important for them in Windows, with the right context and tools targeted to engineers. The content and resources are regularly updated and kept relevant throughout the product cycle.

Doubling down on fundamentals

The essence of Windows is its ability to connect people to possibility. We will build a release that ensures that our work on building a single system that runs all the way from small devices such as phones to large scale server infrastructures delivers on this ability. Enhancing our fundamentals is a core principle that crosses all teams and ensures we continue to improve.

Improving self-host

In order to effectively deliver on our big bet of shipping in one year, we will greatly enhance our ability to understand the issues our internal users are encountering much earlier. We will more easily understand the cause of those issues and we will increase the speed with which we are able to analyze and respond. We will invest in the follow areas:

Simple self-host. Self-hosters will automatically have the right build installed with no effort and no productivity loss. Self-hosters will also be able to search for known issues and find workarounds and fixes without blasting emails to large aliases in hopes that someone knows an answer.

User initiated feedback. When an issue is discovered and a bug is filed, it will be automatically assigned to the right developer. The bug will contain the information and data that allows the developer to jump right in to fix the issue.

One click repro. When a developer needs more data, the right tools are already on the target machine so that getting the extra data for the repro is a “one-click” experience.

Background data collection. When broader data collection is required for issues, self-host machines can be set to collect the right set of data based on the right triggers, resulting in much faster turn-around.

Easy to analyze and debug. We will update analysis tools for the developer desktop, enhance our back-end analysis services and improve investigations to reduce the time to root-cause and fix issues.

Scaling Windows up and down

Scaling down to the phone in Windows 8 was only possible because of our focus on SoC-based platforms, power management and delivering great performance. With Windows Blue we will focus

our efforts to scale Windows both up and down enabling us to target the broader device ecosystem. Windows Blue will remain to be the foundation for the breadth of Windows PCs, but will also be the foundation for many other Microsoft devices.

CoreSystem. We've built a small and efficient foundation for Windows called CoreSystem. CoreSystem allows us to leverage Windows binaries across the spectrum of computing devices enabled by Microsoft. It also allows us to share drivers and firmware from 3rd parties across Microsoft devices. The work we do in CoreSystem to add capabilities, improve performance, and increase energy efficiency makes all Windows-based products better. In Windows Blue we will leverage more of our system across Microsoft products, both at the core and at the higher layers. We will continue to refactor system components to reduce complexity, increase performance, and increase convergence.

Great battery life. In Windows Blue we will expand our power efficiency focus beyond video playback to other scenarios such as web browsing and video conferencing. In Windows Blue we will ensure that SoC systems have consistently low power drain while in connected stand-by. We will build new tools to ensure that all teams have the ability to easily diagnose and fix connected stand-by issues.

Higher PPI. Windows Blue will support higher PPI displays both in small form factors and traditional desktop monitors. To maintain a fast and fluid experience across device types, we will ensure that our work to support these higher density displays balances resource utilization, power, and thermals.

Protecting the platform

We made tremendous progress in Windows 8 to keep our users' machines secure and their data safe. However, the threat landscape continues to evolve. Windows Blue will provide more ways for users to connect to new experiences that bring the cloud into the fabric of every app. We will leverage data on the PC and across our services to better protect our users and also evolve our notion of "trusted PC" into "trustworthy PC."

Modern attacks. Windows Blue will collect and measure safety and abuse data, on the client and across our services, to allow us to better know when a machine or account has been compromised. Our existing protection services will be enabled in Store apps so that users enjoying web content from an app are protected.

Repair a PC. When a users' PC is infected or compromised, Windows Blue will use trusted recovery images to make it easy for the user to restore their PC to a clean, fully functional state.

Trustworthy PCs and accounts. Windows Blue PCs will be able to attest that they are up-to-date and not infected. This will allow cloud services to know that it's safe for that PC to have access to the data and features they provide.

Flexible system management

Windows RT includes a Mobile Device Management (MDM) service that works with InTune & System Center to provide control for organizations. Customers' preference may be for some other management tools from their preferred Partners. In Windows RT Blue, we will open manageability to partners.

Simplify. We will simplify the experience by providing one place for our partners to get management apps.

Assured. Organizations know that when a user leaves their organization, data is wiped from the device.

New apps. We will provide new style of apps and category for management apps. These apps will use the MDM to run policy on the system.

Tools. Partners will need tools and APIs to build agents to access the MDM.

Sharpening our focus on international

Language and locale parity is a fundamental expectation for any customer. This includes seamless text input and rendering - typed, handwritten and spoken. By paying special attention to our emerging markets, we can further expand our international footprint. Strengthening international fundamentals will ensure that end to end scenarios work in any target language and market.

Input and output. Asian language input and display will be a focus for Windows Blue. We will invest in our first-party IME experience making input for those languages simpler and more complete. Higher quality Asian fonts make apps and web pages easier to read with crisper text resulting in less eye strain for users.

The right language. OOBE allows any language choice, reflecting language changes immediately by enabling required resources to download quickly. We will partner with OEMs to drive solutions for language pack imaging.

Tenet changes for Windows Blue

Our tenet work in Windows 8 drove extremely positive customer feedback. Combining this excellent foundation for quality with the reimagined user experience was a huge accomplishment and one we must fortify for Windows Blue. Having set those quality expectations with customers, we need to strive to meet or exceed them. Our goals for Windows Blue tenets establish a consistent bar with our tenet results. We will push forward in a few key areas, while still ensuring that the bulk of our team's energy can be focused on innovation and adding new customer value. Windows Blue system requirements will be the same as Windows 8.

We aim to further simplify the work for teams and make it possible to think holistically about tenet work inline and on the same cadence as feature work. It's critical that feature engineering time include the tenet work for Windows Blue. Our system will support metrics tracking to ensure teams have timely and meaningful telemetry on their tenet health. Roles and expectations for everyone contributing to tenets will remain consistent with Windows 8, with the aim of delivering on a targeted set of improvements to customers. We will do the work to get these right during coding and especially at Preview so we can deliver everything we need for a great release, on-schedule. We will not rely on out-of-band kits or updates to finish the job of establishing core quality.

For Windows Blue, we have stayed with the same twelve tenet areas. Each of these is measurable, enforceable, and an area that should be familiar to teams. More details on the focus for each of the areas will be available as part of our coding milestone plans. The [twelve areas](#) are:

World-ready for all markets. We aspire to provide full feature parity for all supported markets and improve our competitive response in key 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 Blue to provide easy worldwide deployment and servicing for every external milestone.

Fast and energy efficient (includes Power/Battery Life). We will offer improved energy efficiency for PCs to reduce costs, and deliver "all day" battery life on SoC-based systems. We'll achieve improved base-level performance by tuning the system in accordance with our performance and benchmarking reports and by actively fixing performance design issues and bugs during the coding milestones.

Reliable. Windows Blue will be more stable and reliable at RTM than any previous Windows release. We will listen to Windows 8 customer feedback and telemetry throughout Windows Blue coding and appropriately adjust our Blue plan to address any real-world reliability issues. Reliability feedback data and bug reports from representative systems/users is leveraged throughout the product cycle to quickly identify and fix key issues contributing to user disruptions (broken functionality, crashes, hangs, resource leaks, reboots, unbootable systems), and to drive for a substantially higher bar in terms of reduced disruptions to exceed reliability of Windows 8 at RTM.

Compatible. Users will expect that a Windows Blue upgrade will be a seamless and positive as installing anything else from the Windows Store. Any application or device breaking changes need to have automatic mitigations, such as driver or firmware updates that are delivered as part of the Blue acquisition. This install experience will start at Preview and continue through each milestone ahead of GA.

User experience. The user experience is elegant and harmonious across all areas, so it feels like one team designed it end-to-end. Customers clearly recognize the improved usability, usefulness, and desirability of Windows Blue. As in Windows 8, we will spend focused time on not just the function but the elegance and polish of our user interfaces.

Great for developers. We will improve on the significant advancements we made in the Windows 8 developer community – a revitalized application ecosystem, development tools advancements,

certification kits, sample code, and documentation. We will also simplify the experience of being a Windows development partner by creating a single portal with everything a developer needs to release in concert with Windows. Kits are managed as part of the regular Windows Blue milestones, including Developer Preview releases.

Easy to manage. Windows Blue manageability is the most consistent and extensive ever. IT Pros will find Windows Blue has a lower total cost of ownership because of the reduced complexity associated with our having designed, developed and tested features with manageability in mind.

Secure. Windows Blue is the most secure Windows ever shipped. We continue to reduce the vulnerability of Windows to security attacks and to develop security features that are simple to use, more manageable, and have clear user benefit. Security, as with all tenets, is engineered and validated in real time during our Windows Blue development cycle. When customers are presented with security decisions, they can make choices with confidence.

Appropriate for all markets. Windows Blue meets or exceeds all legal, regulatory, and Microsoft mandatory policy requirements. The requirements are understood early in the development cycle and incorporated into our designs, schedules, reviews, code and tests.

Accessible. Windows Blue will improve accessibility through our developer platform and in-box assistive technologies, allowing customers to discover and use accessible apps and enabling Windows and partners to meet world-wide regulatory requirements.

Open protocols. We will make sure that any protocols supported in Windows Blue are documented and used correctly within the product.

Respectful of user's privacy. We will continue to lead the industry in respecting user privacy. All Windows Blue features will follow clear guidelines around handling user data and do so in an unobtrusive, easy-to-understand way.

Engineering changes for Windows Blue

In Windows 8, we made major improvements in our engineering system methods and tools. We adopted a new, unified milestone schedule with frequent stabilization periods, increased our investment in specs, development designs and test plans, flattened our code branching structure to increase code velocity, began consolidating our test execution systems, distributed decision making authority out to the feature teams and worked from a shared playbook of best practices and a common set of metrics and dashboards.

For Windows Blue, we'll reap the rewards of those investments while we improve on the engineer's experience and productivity using the product, the engineering tools, and the processes we use to create Windows. During MQ and theme planning, we identified a few key areas where we can improve the overall engineering efficiency of the organization and improve the experience at the same time.

Optimizing the 24-hour cycle. We simplified common SDE and SDET workflows into one integrated engineering desktop, the WinIDE, during Windows 8. We'll build on that experience by integrating better code review tools into WinIDE wherever possible so SDEs have more information about their code and any RI pain points *before* they check it in. This will reduce RI surprises and late-cycle bugs from central processes. Continued work on our build cycle, RI process, gates, grading and RI decision telemetry will shorten the cycle and allow true 24 hour turnaround on blocking issues and quicker iteration towards sustained quality.

Shrinking the product feedback loop. One of the most important elements to engineering Windows is observing and listening to users then quickly getting actionable feedback back to the engineers that own the code so they can fix the code for the user. We've improved at handling the overall bug load throughout Windows 7 and Windows 8 but we haven't focused much on reducing noise in the feedback system or reducing the number of round-trips or hops between a user experiencing a bug and the developer fixing a bug. Windows Blue will bring a more seamless experience to self-hosters by keeping their machines fresh, providing great feedback tools, and gathering appropriate data on behalf of the feature teams so their bug report is actionable by default. Additionally, having self-hosters around the globe using fresh builds will minimize divergence from the previous version of Windows, enabling us to deliver a highly compatible product on a shorter cycle.

Betting with our partners. We started a new working model with Windows partners during Windows 8. This included internal partners like IEB, Bing, Office, and others as well as external partners like nVidia, Samsung, Adobe, and others. We co-develop drivers, firmware, hardware, software, services, and applications with dozens of other companies but we go-to-market with literally thousands of other partners that are developing software in parallel with us. Partners had a fragmented experience with us during Windows 8 across multiple portals, kits, issue management systems, etc. To achieve the business and engineering goals of Windows Blue, we need to bring all of these partners into the new Windows cadence by simplifying and streamlining the tools and processes by which we co-develop systems.

Efficient, targeted testing. Based on a review of Windows 8 experiences, telemetry and pilot projects, we have identified several ways to improve efficiency by being more targeted in our activities. We will use Analysis Based Selection (ABS) and related technologies to ensure we run "the right tests at the right time" as opposed to the current practices which result in much higher run and analysis cost of executing large non-targeted collateral sets. Technologies that streamline our failure analysis and bug flow process will allow us to cut back on a daily analysis tax and focus on the right set of results and bugs. Revisiting our process around onboarding collateral while providing quality monitoring telemetry and reporting will allow us to get the right tests on-line sooner, and pull out tests that are not adding the right level of value. Investments in our tool sets to enable targeted upstream testing will ensure basic bugs are caught sooner and increase downstream quality.

Plan the Work *then* Work the plan. As we move into a new cadence, it's essential that we write down the work it takes to engineer, release, launch, and service Windows Blue. This is as much about documenting the steps it takes to ship a feature as it is writing down any important "tribal knowledge" contained within teams which is necessary to create a new version of Windows. We'll evolve our work item system to ensure it is most useful for the feature teams to plan and manage

their work throughout the entire release. That includes work items, bugs, blog posts, release processes, etc. so we can minimize the need to rediscover things from release to release.

One Microsoft, One Product cycle. Windows is a company-wide investment. Between inbox apps from OSD, IEB, Office, and Skype, to sales and support from SMSG, to Windows Server SKUs from STB, to shared code with the Windows Phone team, releasing Windows is a company-wide effort. Changing the Windows product cycle frequency extends well beyond our Windows engineering team. Managing these partnerships through this cadence change will be an area of increased investment for almost every team. Additionally, we will adjust general product engineering processes across the company (PRSS signing, ROQ checklists, export controls, etc.) to align with the new cadence during Windows Blue.

Schedule

With every release of Windows we have a deliberate customer and partner engagement framework. Our Windows Blue approach builds on Windows 8, with dedicated customer listening systems and partner forums that balance our need for input with partners' need vs. desire for information. We couple this with a specific messaging framework and timeline so that our messages reach the right partners, influentials, and customers at the appropriate time.

This structured approach benefits all parties. We ensure that we're meeting with the right folks within the ecosystem at the time in which we can benefit from their feedback. Our partners can predict when they will get information and can trust its integrity when they get it from our channels. We help our go-to-market efforts have the greatest impact, focused on landing our message with customers instead of time and energy wasted on eliminating confusion and minimizing disruption from mixed or unsponsored information. Having a deliberate disclosure plan and dedicated roles—and just those roles—responsible for executing our disclosure plan is crucial. The most helpful thing the team can do in this regard is to respect these plans and roles. Creating additional disclosure channels creates more work for us and for our partners and limits the impact of the information when we do share it. Our plans around unveiling the product specifics take into account when we can achieve maximum customer, partner and competitive impact.

Throughout development we will take precautions to keep the builds secure and new innovations out of sight in the product until we are ready to reveal them as part of our overall disclosure plan, driven by our marketing and ecosystem teams. For each milestone, we will deliver against our exit criteria for the milestone, mindful of our stated plans for feedback and disclosure. M1 is code and API complete for the product and for any down-level (e.g. windows 7) platform update. Preview is feature complete and reliable enough to generate the telemetry we need to assess readiness to ship. Our schedule includes the right partner-focused deliverables and certification programs, so partners deliver high-quality systems, devices and applications in a coordinated, global launch. As a result of this, Windows Blue will be used on a daily basis by millions of customers, generating excitement up to RP and through to RTM.

The schedule for Windows Blue is listed below. It reflects a two-milestone release and is coincident with the next release of Windows Server. Internet Explorer 11 will target Windows Blue and be delivered for Windows 7, with previews aligned with Windows Blue previews, and with final availability by Windows Blue GA.

Milestone	Start	End	Weeks
Vision	-	11/5-6	-
M1 Readiness	11/7	11/9	-
M1 Coding	11/12	1/4	6 + 2 holiday weeks
M1 Integration	1/7	2/22	7 weeks
M Preview Coding	2/25	4/5	6 weeks
M Preview Integration	4/8	6/14	10 weeks
Release Preview	6/17	8/19	10 weeks
Release Complete	-	8/23	