Stitching the Tailored Web

Introduction

The internet continues to evolve—web-based technologies, consumer-oriented services, and business approaches to using the web. Digerati might say we have had two waves of internet innovation. First we had the web defined by the browser, HTML, web sites, and innovations such as shopping, search, file sharing, banner ads, and online banking. Second we have had the *Web 2.0* phase where these technologies and experiences have been augmented by a two-way fabric that includes user-generated content (a phrase that seems so quaint already), search monetization as a feature, social interaction, and a broader sense of community infused throughout the internet experience. Historically, one might also include the online era that predates the initial web, though used many of the same technologies, characterized by AOL's *walled garden* of content. These definitions do not need to be precise and many might argue over the delineation (now and in the future), but the important point is to see the incremental shifting of both technologies and scenarios. The tailored web represents a focused way for Microsoft to think about innovations across the company and bring them together to deliver a great experience across Windows PCs of all form factors using Windows Live and doing so with applications built using our tools for a platform we provide.

As we look forward, it is clear that we are on the verge of a new wave of internet innovation. As the use of the internet deepens into every aspect of our lives and broadens to include more citizens of the world, the scenarios and technologies are going to change. This era has the potential to be defined by a reuse of the infrastructure built up over the previous generation combined with an approach vastly more focused on the tailored consumption of the information, services, and content available on the internet. The focus on consumption, while obviously the history of the internet, is necessary because of the complexity and overwhelming nature of today's internet. The changing usage patterns of the internet from using a search engine to lead to links to traverse and ultimately to find a site which you bookmark for (maybe) later use is as outmoded as using a television without a DVR. DVRs have shown how consumption can be far more tailored to your personal view of content, and the internet should reflect that. There is a unique opportunity for Microsoft not only to participate in this next wave of change, but to define elements of it and to alter the nature of our business approach.

Much has been said about the current environment relative to Microsoft. Is Microsoft the legacy? Is it "game over" for Microsoft in various aspects of this new state of the world? Many openly wonder if Microsoft is deliberately holding back on innovations because of a fear that these innovations somehow undermine the traditional business model. Many argue that Microsoft's product development practices are themselves a barrier to participating in the new world. All of these share the almost cliché view of disruptive attacks on the establishment—on Microsoft. To me this is a naïve view of how things progress and presumes a *deer in the headlights* view of Microsoft. It also presumes that we do not have the technical or organizational wherewithal to build new cool and exciting technologies. Microsoft has transitioned through so many transitions that it is hard to recount them—from the multi-platform PC world, to the MS-DOS world, to the networked world, to the GUI world, to the client-server world, to the applications world, to the suite world, to the client-server email world, and many more. From the

business perspective, the transitions to volume licensing, enterprise sales, enterprise licensing, introduction of mass market consumer products, and so on. In all of these cases, Microsoft was not the incumbent and broke with historic success. It is not easy. And importantly it is not certain—the new thing is not always the best thing even if pundits are declaring it to be the case. We have the capability to embark on a new journey. We need to do so deliberately and with purpose.

The Internet Becomes More Consumable

Today's internet, while essential to all of us, is also a bit of a legacy technology. The combination of using a browser plus a search engine to navigate sites with complex and varied user interaction models to get to an inconsistent world of content is as burdensome as it is valuable. Almost all new technologies reach this point—the telephone was wonderful until returning to the office meant a stack of *while you were out* notices, voice mail seemed to solve this until "you have 47 unheard messages", and then caller ID comes along and you can stop taking calls altogether. Initially the web was fun to *browse*. Going to a search engine, finding something, and exploring were a great way to learn new things and spend time. But search has been bogged down by monetization that claims to add to the experience but we all know the trouble that clicking on the wrong advertisement brings. Web sites are either overly monetized and cause you to click extra pages or still get in your way with popups. Finding valuable and useful information has become a needle in a haystack problem where the best content comes from the idea of the crowd telling you what might be good. And even the most basics of the user interaction model have moved from helping you to get done what is important to you to focus on getting done what is important to the site as evidenced by manipulative user interfaces, onerous collection of private data, or completely counter-intuitive default sharing settings on social networks. As fast as businesses are trying to create new value, new revenue and profits, and new models, consumers are being lured into an ever more *evil* world. This is a world that is starting to frustrate more than reward, confuse more than enlighten, and distract more than focus.

Enter Apple and the iPhone universe.

For this memo, I want to focus on using the iPhone + iTunes + web as a way of showing what a focus on a more *consumable internet* can look like. It is important to recognize that this is not the only way and in fact I believe it has its clear limits. Therefore by describing the consumable internet through this lens we can see what it is but also see the opportunity. It is important to think of this today because in the next few weeks we are going to hear about the a new Apple tablet/slate which will no doubt "redefine computing" or "implement the modern PC" or any other superlative one can associate with the device+software+service. If there is indeed a device it will most certainly be innovative. But that hardly means it is game over and more importantly it will only serve to define our opportunity for Windows+Windows Live, and the many other parts of Microsoft.

Endless writings have explained the *end to end* view of the iPhone universe. Perfection at the hardware level. Completeness of iTunes content. Breadth of the App store. On their own each of these are great innovations. Taken together they show a fairly disruptive view of the Web 2.0 world—one that has probably not quite sunk in with people yet. This trio of innovations together with robust integration represents a creation of a new way of using, of consuming, the internet. It is task-oriented. It is

focused. It is tailored to what you want to do. It is streamlined and bandwidth efficient. It removes the serendipity, or needle in a haystack, required to find value. It is more secure. It is faster. The iPhone universe makes the internet better.

In fact, the iPhone makes the internet so much better that people who use iPhones actually use the old phone and internet worlds even less. People make fewer phone calls. Text less. The famously crushing load on the ATT network is not due to people reading tons of email, and certainly not due to sending lots of email. It isn't due to attachments being downloaded. And most interestingly it is not due to browsing the web through mobile safari. The iPhone is famously poor at phone calls—SNL's Seth Meyers noted "Google would launch its own cell phone as a challenge to Apple…also a challenge for the iPhone is *making phone calls*." I don't have SQM data on these, but willingly assert them based on overwhelming anecdotal data. Even if you want to quibble over extremes, the trajectory is clear. But, the ability to consume the internet and to consume the professional/paid content that you want to consume is so easy to do and so superior that people willingly give up these legacy activities. This defines a new way to interact with the existing web.

Consider that the most installed App is the Facebook App. How much energy does Facebook spend on their site trying to make it easy and program it? How much of that effort shows through the App (hint, not very much because the app is a streamlined and task focused version of the site). How much energy does Google put into make Google maps great with advertisements for local businesses, great features for sharing and saving, and so on? Yet no iPhone user really sees most of this because the experience is through the tailored (built-in) mapping application. Watching movies or TV shows is barely possible on the internet at large, yet trivially available for a fee on the iPhone. If those of us who have used iPhones take a minute to think of how we interact with them would realize just how different and better things are on the phone than on the PC, even than on a Mac, compared to the overloaded browser experience.

We have also experienced this same thing on Windows Mobile. The Bing search program for Windows Mobile is probably a favorite for most all of us. Traffic, movies, maps are all better on the phone than they are on the web-based UI. There's less but what is there is qualitatively better by a long margin. Many of us who commute place a high value on the various traffic applications. To show just how tailored one can make the web, the SmartPhlow program still wins out over Bing because it is a few less clicks and even more focused. And yet you never have to look at a highly designed web site with tons of other information, presumably deemed valuable by WSDOT.

These apps are the new element of the iPhone universe. The iPod pioneered the paid-for content universe. Any pop song (almost literally). A movie and TV catalog that could exhaust a lifetime of all but the most selective interests, but only growing. Podcasts and iTunes University to bring educational consumption to the device. And importantly those involved in this creation and distribution have a way to run their businesses in a legitimate way, even if they have to change and not make as much money as they might have hoped.

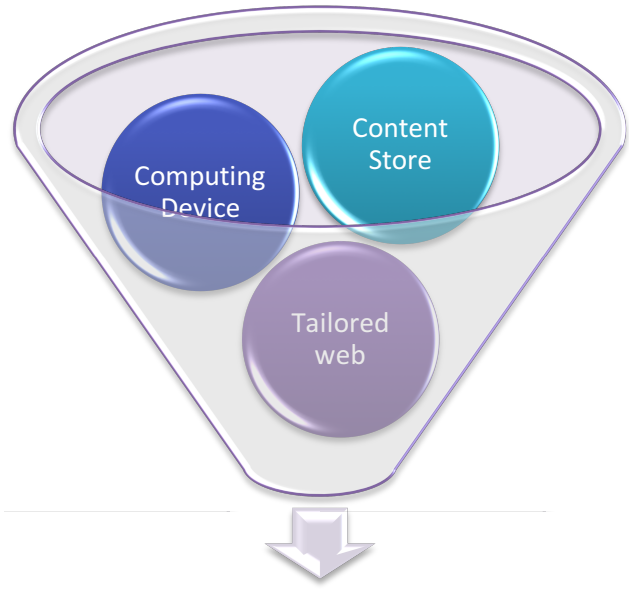
The key element of this web is of course consumption. The amount of creation that takes place on an iPhone is limited. Perhaps the most creation-oriented scenario involves photos (another scenario where

the iPhone is routinely trounced by competitors). People also use the device to send relatively short (even crudely composed) messages via text. Obviously the form factor limits doing more than this. On the other hand, imagining a larger form factor iPhone does not change the focus to creation or productivity. There's nothing special about being small that makes consuming the internet unique—certainly the screen size requires a different interface. Perhaps a better way of looking at this is that the full screen PC usage has created an experience where the signal to noise ratio is simply out of whack. In short, the small screen presented a constraint that also happens to be very favorable to consumers.

Creation will soon follow the web in a similarly developed manner. There will be a continued rise in scenarios where creation of content and information will benefit from a more scenario based implementation and likely one less about a blank piece of paper and more about synthesis of existing information. Of course we see this today with the combination of twitter and short URLs. This hardly is an end to business productivity or even a decline, but rather time that might have gone into other tasks will shift to scenario-based creation, increasing even more the total time spent interacting with computing devices.

The set of scenarios and apps today are focused on small and mobile. It is likely that being larger will create new scenarios, but not likely more focused on creation. A mobile device is very cool, but just one way to view consumption. As more and more people use the internet around the world it stands to reason that there will be more tailored consumption than creation. This is no different than the balance of other tools such as video recorders or cameras.

Visualizing these three contributions to the consumption-oriented internet is straight forward:



These each contribute to bringing all the attributes described to the internet and each is necessary, but no single (or even two) on their own would be sufficient for a successful implementation. In the near term, thinking about Windows 7 we will see a lot of innovation in the computing device (even at CES as I type this). These might be nice devices, but absent the tailored web applications and services and the ability to connect to a store these are likely to be little more than potentially elegant bricks. Among those predicting the Apple tablet in all its goodness, this is precisely what was written about the slate form factors demonstrated this week.

Elements of the Consumable Internet

Let's look at each of these and define some salient characteristics as we start to consider our opportunity. We will also look at the current landscape and how these are defined beyond Apple's definition.

The Computing Device

The **computing device** is obviously the place Microsoft starts. It is also the place that consumers start since it is what one acquires to get on the web. The two aspects to the device are the hardware and software of course.

There are many ways to think of form factors relative to the consumable internet. As with all physical devices there are tradeoffs or pros/cons for any decision. Larger screen, longer battery life, more mobile and so on. Today consumption scenarios are viewed through the keyboardless and mobile scenario. It seems unlikely that this will be the only way hardware will evolve. At the very least, many people will not be able or have the desire to spend money on multiple connected devices (i.e. multiple $100 subscriptions to data plans).

Apple and Google have both defined hardware as something they must do as a first party. This is the traditional model for Apple but currently a controversial position for Google. (Note Google is sort of halfway building hardware and managing a hardware channel but that is a subtle detail easily misunderstood by the larger audience.) Building hardware is hard of course and so one adds a lot of value to the value chain by doing this well. Apple does it very well. There are two important risks which present themselves as opportunities for Microsoft:

- **Partners and ecosystem.** The value of having partners and an ecosystem around hardware development cannot be overstated. Apple benefits enormously from being able to *cherry pick* from hardware innovations (whether on x86 or ARM). However, it is important to realize that the less opportunity these entities have outside of Apple the less choice Apple has. There's only so much one point of view and one customer can drive as Apple learned during the PowerPC era. The Windows approach on a PC will always focus on hardware partners because of the value and skills they bring and because having diversity in hardware is the only way to keep costs down and innovation up.
- **Choice for consumers.** Having a variety of choices is important to consumers. It is important to channels. Much has been written about the tyranny of choice and how tricky it can be to have a lot of choice, or how awful it can be to be able to choose among 30 sub-par

choices. But with choice comes different price points purchasing models and user scenarios. Obviously breaking out of the mold of having many poor choices is a key success criteria for Microsoft, but also an opportunity (and one where we have made progress with Windows 7).

In addition to the form factor the underlying hardware platform is becoming a bit of a choice. There is an increasing interest (and push by the self-interested businesses) to either pull some chipset families up to broader/deeper internet usage and to push the current mainstream platform down to the mobile/consumption-oriented scenarios. This is often viewed as ARM v. Intel. ARM is a complex *family* of chipsets and implementations. And Intel is early in the evolution. Many pundits (and engineers) assign specific benefits to one or the other chipsets as a requirement for participating in these new form factors and scenarios. The opportunity for Microsoft is clearly outlined in the Windows efforts for our next release. A good question is if we embark on a new hardware platform (something Windows has done several times) how much and how soon does the rest of Microsoft—tools, Office, entertainment, follow along?

The software on the device represents a spectrum. It starts with the OS but also includes the full stack. One of the biggest opportunities for us is to define the mode of interaction with Windows one might have when focused far more on consuming than creating. This is either easier than it seems or vastly harder than it seems. From a management perspective our job is to make sure we do not make this unsolvable out of the gate but also avoid the obvious sub-optimal outcome that we have previously reached by having awkward modalities in Windows or *bolted on* tasks as we have seen with Embedded, Tablet or Media Center (all to varying degrees).

Why is this so tricky? The core assets of Windows are around creation—the connection to many devices, the flexibility of Explorer.exe, the rich APIs for rendering and interaction, and most of all the vast array of software that truly defines Windows. Breaking these things by removing them, hiding them, or otherwise not considering them part of the platform has a risk of the resulting OS not really being Windows proper. Yet this is also an approach Apple took, but cleverly combined with code sharing for efficiency. It is easy to say this is a no-brainer. But following in taillights does not always lead to success, as we have seen with the Zune. We must define a unique point of view and be deliberate in how we approach the overall interaction model.

The most important runtime/platform element of the consumable internet is of course the browser. This is somewhat counter-intuitive because the browser, today, is also where all the negatives driving this innovation cycle originate. At one extreme one might say the browser is the “3270 mode” for the consumable internet—that is for the legacy or tail of sites that do not have tailored experiences you can always use the browser. It might also be the *power* mode where you go to manage, tune, or otherwise deeply engage with a web service much like the iPhone uses a PC (a PC is required and insanely valuable for the iPhone, something often overlooked). At the other extreme, no matter what evolves with the consumable internet there are millions of sites (businesses and consumer oriented) being developed and those sites will continue to provide the richest and most broad reaching access to services and information. Standards continue to evolve. And most of all, the browser as we know it is hardly *done* –

just as many proclaimed Office 97 as complete and it was our job to prove otherwise. The work at the experience level of the browser in privacy, safety, and security continues to be a strong point for Microsoft and those are very early in their evolution and the web is a very messy place.

Perhaps the most interesting element of the browser is how it is once again evolving to become a component of the tailored web experiences (as in the app store apps). The browser is now commonly embedded in iPhone apps and certainly has been embedded in hundreds of Windows applications. The browser as a runtime service was a major point of success for Microsoft. Then developers moved away from that. And now we see the cycle returning. The reasons are clear—the value of the languages, tools, and platform provided is so high that no one wants to recreate that in their own native code.

The Content Store

The **content store**, which is a term that includes any and all digital content and software that can be used on the computing device, is the next essential element of the consumable internet. The content store is the primary service that brings the device to life. Without a content store the device is just another way to use the existing internet and content available that way.

The Apple approach to the content store has been highly successful (for Apple) and in many ways has set a tremendously high bar. The music and video collection is second to none. The ease at which one can obtain content for what consumers view as a reasonable price is well-documented. The expansion of the content store to executable software (apps) has shown that the model can continue to scale.

A key element of the store is that it provides the economic engine so lacking for many on the web. It provides a way for consumers to find things to buy and then buy them, while protecting the rights of intellectual property creators. Such a store also provides partners and developers with a way to get paid since it enables end- user billing.

It is important to see the store as a *break-even* venture. Since Microsoft will not create most of what is in the store it is unlikely to generate margins beyond those one would see in the retail world. For that reason we should think of operating the store for the benefit of developers and partners. It is like putting on the PDC or MIX—we are in the unique position to offer the conference but the profits need to return to the attendees not to us. The well-documented reports on the economics of the iTunes store support this—a source of revenue, but not direct profit, for Apple.

The content store is a place where several parts of Microsoft need to come together to deliver on this promise. Our hope and/or advantage would be to offer far more content and perhaps even a different editorial policy than current best practices offer. Today we have a Zune Marketplace that offers music and video infused with a social aspect. We need a dramatic increase in the breadth and depth of media content, I believe. Given the variety of form factors we would support, there are opportunities for academic and professional writings—could we have technical manuals, could companies use this format in a private way to distribute materials to global employees, could we support textbooks (perhaps using XPS or PDF)? We also have to consider how we create the full end-to-end experience for developers which involves returning money to them in a timely manner, much like Bing cashback does. We

obviously need to handle exceptions, customer issues, and so on—we're doing credit card transactions and with that comes with a significant responsibility, especially at Windows scale.

And of course because this is Windows we have an opportunity to offer a whole range of software to customers through this store. There's no reason to stop at the content we see on the iPhone and we could consider how people get games, utilities, and so on. The incentive for developers increases with the ability to be discovered and receive payment.

With the content store we of course need to develop the digital rights programs we offer. The iPhone universe has a specific model that was born out of music. Is that the only model? Do we need many models? Is there one model to start with as we grow and learn?

The economics of the store present the biggest immediate opportunity to developers. In thinking about this a little we also have an equally significant opportunity we could provide to our OEM partners. The ability for the store to be able to have applications and content specific to your PC, provided exclusively to you by your PC maker not only affords a revenue opportunity for PC makers (for the effort of cultivating this selection of goods) but also an opportunity to differentiate the experience. This is shows how not only is there something exciting to enable for partners but that the end-to-end and closed model of the iPhone is open to improvement.

The Tailored Web

The **tailored web** is perhaps the most controversial element of this thesis because it implies nothing short of a recreation or repurposing of the existing internet. For some it might appear as a return to yesterday's walled garden of AOL. Nothing could be further from the truth. Where AOL was an editorialized and produced internet, the tailored web is one where the owners of sites and information choose to create a new tailored experience using a unique platform and then deliver that to consumers through the content store.

The act of voluntarily creating an alternate view of a site is a tremendously disruptive and fascinating development. It upends the business model (no popups, Flash, or banner ads). It changes the web from starting with a search engine to starting with a tailored site. It says that so much of the effort that has gone into the site needs to be viewed through a much more constrained lens and that lens, if the goal is to garner interaction, must be easy and pleasant and not forced or artificial. The fact that 100K developers have built apps, perhaps 60K of them essentially front-ends to existing web properties, is a fascinating development.

One can even take thus further by pointing out that the whole paradigm of using search to find places gets replaced with a search that just goes through the list of tailored web apps on your device. This begins to look a lot like the start menu or the rightmost panel on the iPhone. Instead of typing an unqualified `Facebook` into a browser address bar, you do that from the Windows start menu and instead of getting a web site you get the app.

Some have said this validates rich client development and I would agree. That, however, is a technical view. The real value is in providing a *sandbox* where the developer has the opportunity to express the

true value of their site while also being able to keep their application from both interfering and being interfered with. They get the best of both worlds.

Regardless of the device or the perspective on how tailored the web should/can be, the full web is always there. In fact for as long as anyone can see into the future it is going to be there. For many devices and many scenarios you either require or want more power. More power to provide input via a mouse and a keyboard or other hardware yet to be mainstream. More power to see more on a screen or on screens. More power to use way more bandwidth than a carrier might allow you to. At one extreme some might claim the regular internet is almost like the debugger or power user mode of the internet the way people might suggest that is what Office is used for today—that is an elitist view or a view used by competitors to talk about the very things that they cannot provide.

There are also basic things we should think about as helping to seamlessly bridge the "gap" between today's web and the notion of a tailored web. For example, today we think of site favorites in Internet Explorer. But really these should look and act no different than applications. You should be able to pin Facebook or Twitter to your taskbar. You should be able to treat them as applications. From a developer perspective, a developer should be able to define not just the chrome of the browser but the whole range of browser settings that strictly and uniquely apply to their site. Ultimately the fact that the application is running and rendering as HTML inside of the IE rendering engine is not really as material as how the person perceives using the site on Windows. And of course once we make this more seamless there is a significant opportunity to provide APIs or capabilities that go beyond the frame of the site/application and allow developers to tap into the power of Windows to make their applications more touch-aware, peripheral-aware, and more accessible (as some examples).

Windows Live should of course be the premier set of tailored applications. We have the opportunity to think through the best way to tailor both the client applications and the services to uniquely show off a highly consumption-oriented web on new types of devices.

Apple has taken an approach that provides essentially three APIs for creating applications in this world. One is really about creating games or rich graphical applications perhaps more analogous (from a scenario perspective) to providing Flash, Silverlight, or more literally DirectX. The second is a new set of controls and a UI library (and tools) that are tuned to the iPhone—touch only, virtual keyboard, iPhone animations, etc. This API also includes the vector and raster graphics from the first API but exposed through the UI framework. And third is the ability to embed HTML applications within the UI framework—essentially HTML as a control type (support for treating PDF this way is also provided). This might be a good approach but it is also based on a fairly strict view of HTML so the site developers do not get much "leverage" between their HTML work and their iPhone work. Is that good or bad or the only way to do this? It seems there is an opportunity there as well. It is especially important to think beyond one specific form factors and hardware specifications in developing an approach to providing the tailored web. The distinct competitive advantage we could deliver (based on current products) is a set of UI tools that scale to varying resolutions. If there is one thing we know it is that pixel density of displays will increase and the ability to have larger screens in smaller packages will continue (for

example comparing the current iPhone to the Nexus, or watching the increased resolution in the sub 10" notebook PC).

Providing the tailored web is as much about tools as it is about the runtime. In fact, the runtime is probably far less code and complexity than the tools. Because of the desire to have a huge number of these applications and the fact that in nearly all cases these applications will feel like extra work, these tools need to be super easy to get and even easier to use. The success of the application is really going to be measured by the time it takes to download the tool and get *something* up and running. The scenarios of easily connecting to existing SOAP infrastructure and incorporating that data are critical, as is the ability to quickly create a user interface that provides consistency with the overall experience while at the same time opportunities for developers to solve unique problems and provide for differentiation. Today our tools are about power. But we lack tools that are simple to use and exploit the internet platform in IE. And importantly these tools need to provide the connection to the store so that there is a cycle that is not just compile-edit-debug, but compile-edit-debug-distribute-sell.

Bringing Things Together

Taken together on a new device these three concepts create an interesting approach to developing this consumable internet. Focusing on a single device is interesting but for Windows we have the opportunity to think this through across multiple devices and different form factors, and form factors yet to be developed. One example might be how many devices in the home come together—three screens and a cloud if you will. Imagine the following PC form factors:

- **Home Hub PC.** Imagine a PC that is the size of a set top box. It has a few key hardware elements: excellent graphics, high speed wired and wireless networking, cable TV input, redundant storage. Let's put this PC next to a TV in the household where it can serve as the DVD player and TV tuner (primary or secondary even). It is the first HomeGroup machine. Because it is near your cable it is also your first node on your home network and because it has a wireless radio it has Windows software that makes it a secure and managed wireless access point. Because it has redundant storage we can add software like Windows Home Server to backup any other PCs on your network. Since it records TV it can serve as a source for sharing video around the house. If needed it also serves as basic shared files and a print server. The connection this PC has to the tailored web can be through the 10' user interface of the Media Center. And of course this connects to the content store. This one PC, that probably costs $1000, has brought together a set top box, DVD player, wireless router, file/print server, and backup device. All of this is within reach and easily envisioned.
- **Student Netbook.** Today's Netbook experience can be enhanced in this environment by joining the HomeGroup. This provides access to the media content (including recorded TV) on the Hub. Joining the HomeGroup also provides backup for this PC. This PC is an obvious candidate to use the content store for textbooks or other learning materials, as well as entertainment. This machine has a keyboard so it also looks and acts like a laptop. Students can use Office. Depending on the graphics capabilities it might be a game machine.

- **Couch Slate.** This form factor is really about consumption and is the motivation behind this missive. Of course this PC gains the benefits of backup, but because it is not likely that this machine has a lot of unique content on it this machine might also benefit from the consumer electronics appliance support in Windows that makes it easy to reset to the factory state (in just a minute or two). After you reset the device and sign in again, all of your content from the store and the settings for those applications are immediately available (modulo downloads). The tailored web applications really shine on this form factor and touch is the primary mode of interaction. At the same time the built in camera and microphone might make this a more modern video phone, but one that can tap into the content of the HomeGroup for sharing photos for example while on a Messenger phone call.
- **Workhorse laptop or all-in-one.** This is the machine that most resembles the combination of consumption and production that defines the modern PC experience. There is no reason why such a PC should not participate in and benefit from the consumable internet. As we have tried to demonstrate the availability of some tailored applications trumps the use of today's web site. At the same time many tasks have little hope of being straight consumption because they represent productivity – doing research, shopping for clothes, and so on. Big screens, lots of typing, many overlapping / side-by-side windows, printing, clipboard, and so on all are required and available with this laptop. But even when doing this you might want to watch TV and so we could make this PC an *extender* for Media Center where live TV is present as well as access to the other media from the Hub.

It is easy to continue this list up and down the spectrum of hardware. Obviously a Windows Phone can be part of this by simply sharing the application model of Windows so site developers can build their applications a single time. It is easy to see how this could scale up to include shared infrastructure in the backend. We can see the role the backend can play with the Windows Live services and storage, Live ID, or the social connections threaded throughout the next release.

This view also shows the ease at which this entire experience is enhanced by the Windows platform. The devices can have access to the full range of functionality. The store has the potential to be a great Windows application experience. And most of all the notion of a tailored web application is something we can define, and that definition can meld the best of the development platform provided by the browser with access to the rich functionality provided by Windows—all exposed through a developer experience that looks, acts, and feels like HTML+CSS+Javascript and at the same time could potentially access a broader range of tools and languages should we enable that.

These are just a few form factors and how they might all connect together in the consumable internet—not exclusively but showing how the consumable internet is one scenario, perhaps a powerful one, but not the only one. Our opportunity is to bring these all together into an end-to-end scenario that requires great hardware, innovative software, and the concepts of the consumable internet to all come to life. This is an expression of many screens and a cloud, where the screens build on Windows and build on the definition of a consumption platform, and the cloud provides the services we think of today along with a store.

Conclusion

With the looming release of a new form factor from Apple it is worth looking at the innovations Apple has delivered and putting them in the context of the opportunity for Microsoft and the next release of Windows. Many, externally and perhaps internally, will react or overreact to the release of a new Apple product. One professional writer has already called it nothing short of "*redefining the computing experience"*. Nothing is that simple. There's much for us to do and the opportunity is there. Hopefully this memo offers some a point of view that builds on what we have already developed, our partners have contributed and what we have been planning to do in the next releases of our products.

This is one scenario of several ones across the organization. It is not the only one nor is it the most important. The great thing about designing and building Windows, Windows Live, and IE, and also the great challenge, is that we have a vast constituency of customers / customer types to develop our products for. Doing so requires careful and deliberate planning across the team so that the combination of scenarios adds up to a coherent plan and the architecture of the software to support those plans is consistent and sustainable. Integrating the plans for this area along with the rest of the product is as important as delivering on this core scenario.

The tailored web represents a unique opportunity for Microsoft, building on many of our core strengths and requiring us to develop new competencies. That sort of change is never easy. In fact, for many who might strongly agree with the point of view expressed here, their solution might be that we should charter one group and let them do everything needed to compete end-to-end without dependencies or legacy. To do so would repeat the mistakes of so many efforts, both Microsoft's and others, that it would be folly. Achieving this type of vision is best done by groups aligning, by people sharing code, by compromising on local efforts and optimizing for a shared global effort. Let's make the most of this potential.

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