

WINDOWS 7 WILL CHANGE THE PC INDUSTRY FOREVER

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"We accelerate growth"

The release of the next generation PC operating system (OS) from Microsoft in October marks a small but significant departure from tradition for the software giant. In January 2007 Microsoft released the much hyped follow on from Windows XP – Windows Vista. After the dust had settled from the launch, the reality set in very quickly as users had all sorts of issues with Vista. Most issues revolved around performance issues and hardware compatibility. Microsoft has concentrated a lot of effort over the last 2 years on addressing these and believes most have been solved with the release of the newest PC OS – Windows 7. One of the most important parts of this announcement is that Windows 7 is the first PC OS to come out of Microsoft that does not require more advanced machines to run than prior versions. This driver for upgrades was one of the key market forces keeping Moore's Law relevant over the last 25 years but this departure from tradition may force PC vendors and components suppliers like Intel to think of new ways to encourage PC buyers to upgrade their hardware.

Key Takeaways

- Windows 7 represents a user driven upgrade that breaks the link between PC OS and PC Hardware upgrade cycles for the first time in the history of the PC
- While Moore's Law will continue to be technically feasible, Windows 7 may render it obsolete in relation to the PC CPU
- Windows 7 will drive significant upgrade revenue for Microsoft without any hardware upgrade thus separating Microsoft from the PC vendors in the next PC Upgrade Cycle
- Any slowdown in recovery from the current market slump for the PC Vendors may accelerate the vendor consolidation process
- If Microsoft continues to decouple PC OS upgrades from hardware upgrades it will accelerate the PC vendor consolidation process even more leading to a very small number of PC vendors commanding the majority of the PC market share all over the world.

Introduction

In 1985 Windows 1.0 was released to a generally uninterested and unready market. Ever since then we have had a constant flow of updates and changes to the PC OS that is now installed on over 90% of the more than 1 billion PCs in use in the world today. Ever since the PC began to hit the mainstream in the early 90's we have always known that every individual PC would be obsolete and need to be replaced within 3-4 years. The entire PC industry seemed to be built around this planned obsolescence and every hardware and software vendor surrounding the PC industry benefited from this ongoing cycle.

Microsoft and Intel are of course two of the key players in the PC industry with more than around 90% share each in their respective PC markets. While there is no evidence to suggest that either organisation worked together to build this obsolescence into the PC industry, it worked well for both of them to be heading in the same direction. As long as each of them had something bigger and better to offer PC users and there was a need for it, then they could sell more every year.

¹ Moore's Law is a predictor of the IT industry named after the founder of Intel – Gordon Moore. Moore's Law states that the number of transistors that can be placed on an integrated circuit will double every two years.

The Main Players

Intel has built much of its regular platform and technology upgrades on what has been known as “Moore’s Law”. Moore’s Law is a predictor of the IT industry named after the founder of Intel – Gordon Moore. Moore’s Law states that the number of transistors that can be placed on an integrated circuit will double every two years. This can mean circuits get smaller and produce the same output, or remain the same size and produce more output. In relation to PCs its means CPUs and memory will constantly improve (smaller or faster or both) at an exponential rate or the cost per unit of computing power will come down over time. The fact that the cost comes down over time means that CPU and memory suppliers need the market to desire more computing power in order to just maintain their revenues as prices fall over time.

In order for any of this computing power to mean anything PC users must have something to do with all this power. Microsoft has been one of the leaders in using this constantly increasing power through the PC OS and applications such as those found in the Microsoft Office Suite. Microsoft has constantly looked for ways to utilise the power available in a PC to help the users do more things with their PCs thus making the PC a fundamental business and consumer tool.

Some of these updates to the PC OS have been relatively minor changes to previous versions while others have been complete overhauls of prior versions. Windows Vista was a complete overhaul of the PC OS and it was this degree of change that caused many of the problems Vista has faced since its release 2 ½ years ago. Windows 7 is really just a minor update to Vista in relative terms but it is targeted at resolving the problems people faced with Vista as much as any major technological advances.

One of the biggest issues people have had with Vista has been its poor performance. Even users that like Vista have complained about how slow their PC’s run compared to a Windows XP environment. Microsoft went to great pains to advise consumers and businesses about the demands Vista would place on their hardware with the “Vista Ready” campaign but the reality was that even high-end PCs continued to struggle under the load of Vista.

Windows 7 aims to fix this problem and it is these fixes that will change the way the PC industry flows for at least the next 1-2 years – if not forever. In simple terms Windows 7 is much more efficient at using the resources available to it than Vista and as such will run much faster than Vista on exactly the same PC. While most users had to upgrade their existing PC or buy an entirely new PC when they first bought Vista, Windows 7 users will not need to upgrade any hardware whatsoever if they have a Vista Ready PC. More importantly, that Vista Ready PC will probably run better and faster than it does today with Vista. It is this paradigm shift that will spark one of the biggest flow-on effects of the release of Windows 7.

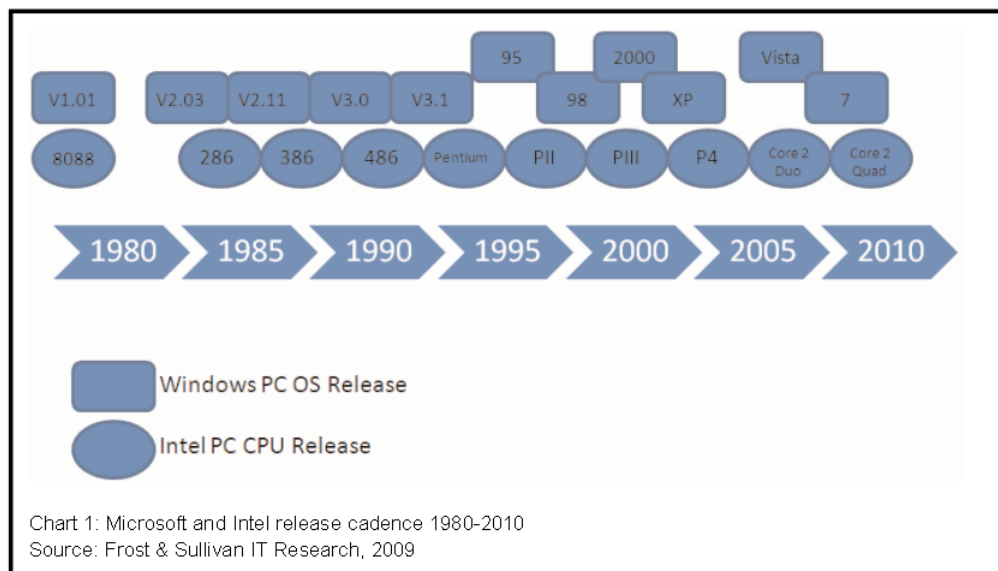
Moore’s Law and Windows

Ever since the PC started to become a useful and common business tool in the early 90’s users have been somewhat unwilling participants in a seemingly endless upgrade cycle. It seemed that every time Intel came out with a new technology, Microsoft and others came out with ways to use it and even suffocate it – requiring another upgrade from Intel and so on and so on.

From the chart below we see that Intel and Microsoft have had a very regular cadence of major releases over the past 30 years and much of these independent release cycles have been very closely matched. While there is no suggestion of any collusion between Microsoft and Intel, it is clear that the two organisations have thrived off one another’s innovations for decades. This sort of thing is to be expected in an industry where there are two virtual monopoly shareholders in two key portions of the market – OS and CPU.

There have been times where the hardware has had more capacity than the OS required and it wasn’t until the release of XP that the OS and related applications began to truly take advantage of all the hardware resource available to them. With every single release, Microsoft offered new features and functions and openly stated the hardware requirements and those hardware requirements were always a little more than the version before required. Until now. Windows 7 represents the

first update to the PC OS that does not require more hardware resources than the version before. In fact the official system requirements to run Windows 7 are slightly lower than those required to run Vista. The CPU and RAM requirements are the same but the hard disk requirements are smaller for Windows 7.



This comparison of requirements is actually just a comparison on paper of the “Vista Ready” requirements published when Vista was released and the system requirements that have been published with the release of Windows 7. The reality is that Windows 7 tends to run better on the same hardware configuration as a Vista PC even when it is at the lowest end of the “Vista Ready” requirements. Benchmarking is still hard to do with Windows 7 as the current versions that have been released for testing have some restrictions around publishing of benchmarks. That said, most reviews have come in very positively especially when compared to Vista.

This change represents a major de-linking of two major players in the PC industry that could have repercussions for users and vendors alike. It won't be known until the next version of Windows is released within the next 3 years as per the committed release cadence when Vista was released if this de-coupling of the OS and hardware upgrade cycles is a one-off adjustment for the problems created by Vista.

Paradigm Shift

Microsoft's departure from the hardware upgrade cycle mentioned above has been driven by end-user feedback on the shortcomings of Vista. Users were generally happy with the features of Vista but were not happy with the performance. It is almost universal that PC users from consumers to high-end professional users prefer performance over small feature and function upgrades. This was something Microsoft got wrong with Vista and it is something Microsoft is trying to rectify with Windows 7. Microsoft had no choice but to fix these performance issues, especially as the PC OS comes under increasing pressure from open source alternatives. In order to fix the performance issues Microsoft had to work out how to make Windows 7 less resource intensive than Vista.

The resource conservation in Windows 7 in itself does not spell the end of Moore's Law; in fact, Moore's Law is not really at threat at all technically speaking. The need for ever-faster microprocessors has taken a blow with Microsoft's move away from the hardware upgrade cycle. Technically vendors like Intel probably can continue to cram more transistors into a CPU, but Windows 7 shows that the market may not need things to move so fast at least not for this PC upgrade cycle.

The big issue with Vista was its significant hardware drain over prior versions. Every version of Windows before Vista was a gradual increase in hardware drain over the previous version but Vista was a huge jump. In fact, even with high-end Media

Centre PCs, Vista still ran poorly on many PCs. PC users all over the world have been buying “Vista Ready” PCs since the release of Vista whether they were planning to use Vista or not simply because they may need to upgrade to Vista during the life of that PC. Windows 7 uses this hardware much more efficiently than Vista and so we have a massive fleet of PCs the world over that are “ready” for Vista but screaming for Windows 7.

So while Intel designers may be more than capable of squeezing more transistors onto a CPU, the PC marketplace may not have much need for this extra power for the next PC upgrade cycle. Typically a PC upgrade cycle is anything from 18-36 months so this means that for the next year or so there will be millions of PC users around the world that will not need to upgrade their PC to get the latest PC OS – and this is where the paradigm shift is. This has never happened before – not on this scale at least.

In the immediate term, this means that the PC vendors will have to work hard to show the value of a PC upgrade without being able to lean on the new version of the operating system as has been the case in the past. When Vista was released there was a detailed list of specifications that users needed in order to have a reasonable experience with the new PC OS. PC vendors used this new hardware requirement from Microsoft for Vista to help sell new PCs. This is not the case with Windows 7 as the hardware requirements have not gone up with the new OS.

The Installed Base

By Microsoft’s estimates there are well in excess of 1 billion PCs in use in the world today and over 90% of them are running a version of Windows. At the same time at least 25% of these PCs are suspected of being “Vista Ready” – that means they have a CPU of 1GHZ or greater, at least 1GB of RAM and reasonable graphics capabilities. This means there are at least 250,000,000 PCs in use in the world today that are ready to run Windows 7.

Estimating the number of these PCs that are actually running Vista is extremely difficult, as Microsoft does not divulge this information. The fact is Microsoft does not actually know what users have running on their PCs – this is mainly due to things like piracy and enterprise agreements which make an accurate count impossible. Enterprise agreements allow organisations to install whichever PC OS they like as long as it is still supported by Microsoft. At the moment that means enterprise clients could be running XP or Vista, and Microsoft will not always know which one the users are running. It is irrelevant how many of these PCs are actually running Windows Vista, suffice to say that Microsoft has been working very hard to get enterprise customers to upgrade from older versions of Windows to Vista with limited success.

Many organisations have been holding back on upgrading to Vista because of the bad press and the amount of work it would take to move their organisation on to the new platform. The lack of interest in Vista is exacerbated by the fact that most organisations are relatively happy with XP. To make Vista even less attractive, Windows 7 has been getting some very good press coverage and reviews for almost a year. Enterprises large and small have held back on Vista with the intention of moving onto Windows 7 as soon as possible after release.

In Microsoft’s current situation it doesn’t matter if a user is on Windows 98, 2000, XP or Vista. As long as users have a PC that is “Vista Ready” then they are a target for an upgrade to Windows 7 – with or without a hardware upgrade. That gives Microsoft a target of at least 250 million PCs in the installed base for PC OS upgrade – a number Microsoft has never seen before.

Many of these PCs will be covered by enterprise agreements where organisations already have the rights to use Vista but chose not to for technical reasons so there will be a large number of upgrades to Windows 7 that will not generate any new revenue for Microsoft. That being said, Microsoft is always trying to get its users to move to the latest platform in order to maintain a close relationship. The assumption is, an organisation that is using the latest software is happier with Microsoft than one that is using a generation or two below.

There is however a very large number of organisations that do not have an enterprise agreement with Microsoft and have “Vista Ready” PCs. This will be a massive target for Microsoft to sell Windows 7 upgrades as the users will be able to upgrade from old versions like Windows 2000, XP or Vista for a fraction of the cost of buying a new PC. With the performance reviews being seen on Windows 7, this OS upgrade cost will give such a boost to many PCs that it will be equivalent to a hardware upgrade for many – especially those that are currently using Vista.

Prices for these upgrades are complicated and differ around the world but essentially users will be able to upgrade from old versions of Windows to Windows 7 for anything from US\$50-250. Even a new netbook PC will cost more than that in most countries – and won't usually match the power of a “Vista Ready” PC.

The PC Upgrade Cycle

For years PC vendors and analysts have talked about the PC upgrade cycle like it was a predictable phenomenon that helped sales spike every 18-24 months. The reality has been quite different over the last 5 years or so with factors other than a PC refresh cycle having major impacts on the PC upgrade cycle. Global and local economic issues have been a major cause for change in the PC upgrade cycle and the current global economic slowdown has had a very serious effect on the PC upgrade cycle. Almost without exception PC vendors and their component suppliers have been reporting some of their worst quarterly growth rates in recent memory with most struggling to make a profit over the last 12 months.

Most of this despair in the PC industry has been driven by the squeeze placed on enterprise and consumer spending over the last 12 months. In most cases it is very easy to delay the upgrade of hardware for 6-12 months. This delay in upgrades is having a very immediate effect on revenues for PC vendors as well as reshaping the PC upgrade cycle. In all likelihood this delay in PC upgrades is actually pushing more users into the same potential upgrade timing of something in the next 6-12 months.

This is where Windows 7 becomes so interesting. For those enterprises and consumers that have stretched their PC upgrade as far as possible, it is unlikely they are currently working with a Vista Ready PC so they will generally look to buy an entirely new PC. However for those that have a PC that is 2-3 years old, and especially for those that are running Vista on these PCs, an upgrade of the OS without a hardware upgrade is a very real option. Whichever option the users take they will be buying a Windows 7 license.

So for the users that have PCs that are more than 3 years old we would expect to see a hardware upgrade in the next 6-12 months for most. This will include a Windows 7 license. The users that have PCs that are less than 3 years old and are not running very smoothly – thanks to the performance issues of Vista – we would expect to see a significant number upgrade to Windows 7 WITHOUT a hardware upgrade. Because Windows 7 is less resource intensive than Vista we would therefore expect to see all of these PCs that will be bought or upgraded from now on to be capable of lasting longer than previous PCs. In other words, we expect Windows 7 to help extend the PC refresh cycle.

All of this combined means that there are literally millions of PCs that will have an OS upgrade in the next 6-12 months that may have been candidates for a complete hardware upgrade in 12-18 months. This complete hardware upgrade will now be pushed out to 18-24 months time and the PC refresh cycle will grow from the standard 3-4 years of today to well beyond 4 years. This of course does not take into account the hardware failure rates that plague notebooks in particular after 3 years. But the fact remains, the PC refresh cycle will be extended because of the solutions Windows 7 brings to market.

Implications for PC Vendors

Clearly, the PC vendors have the most to lose in this process. There is a significant level of pent up demand in the PC market today driven by the global economic situation. In the past the PC vendors would be the ones most likely to benefit from a situation like this but the timing and the technology cycle may suit Microsoft and leave the PC vendors with little to get

excited over. Historically Microsoft has not sold many retail PC OS upgrades but PC vendors and retailers should be prepared for a significant change in this trend with Windows 7.

The other issue that has been affecting PC vendors over the past 12-18 months has been the netbook phenomenon driving down average selling prices (ASP) much faster than ever before. Consumers in particular are now able to get a “good enough” PC for the home for under US\$300. To date Microsoft has not been able to get Vista to run well on these low powered PCs instead opting to keep XP alive long enough to hold off open source offerings until Windows 7 is released. So with Windows 7 comes a netbook ready OS that includes the latest technologies. While this won't necessarily drive up demand for netbook, it will add more strength to the platform thus pushing ASPs down even farther.

If the next version of the PC OS continues this trend and breaks the link between the OS and hardware then we will see a major change in the PC industry in a very short period of time. Hardware vendors will really struggle to make a profitable business with existing R&D budgets and the PC will head closer to a true commodity status. PC vendors will begin to disappear and we will be left with a limited number of PC vendors that dominate the PC market in every country. Local PC vendors will begin to lose relevance as they struggle to compete with the mega-PC vendors that will be created from this process. Expect to see 3-4 PC vendors controlling at least 70-80% of the PC market in almost every country in the world and this will happen within the next 10 years.

Implications for Microsoft

The OEM division at Microsoft represents the largest clients/channels Microsoft has and manages. OEMs, or Original Equipment Manufacturers are the worlds IT hardware vendors such as HP, Dell, Acer, Lenovo, etc. According to the latest financials, Microsoft's OEM channel accounts for over 80% of total revenue from the “Client” Segment (ie: the Windows PC OS segment). For Microsoft's fiscal year 2009 that represents approximately US\$11.76 billion. In other words, the PC OEMs around the world spent almost US\$12 billion in 2009 with Microsoft on the Windows PC OS. Clearly Microsoft wants to do the best thing by this segment but they must also serve the users of their product to ensure there is demand and relevance. This is the difficult path Microsoft must tread in the coming months as users may be more interested in an OS upgrade than a full PC upgrade – or even an upgrade to a netbook. Either option is not a great outcome for the PC OEMs.

Microsoft is working with the OEMs explaining the value proposition of Windows 7 – especially at the higher end of the consumer PC market, but the fact is that this is still little more than a niche market in most countries. The majority of the PC market lies in the middle of the range home PC and the middle of the range business PC. Windows 7 is an exceptional proposition in this space and with hundreds of millions of existing users this proposition is attainable without any hardware upgrade. Clearly Microsoft needs to help the PC OEMs sell the message of the PC upgrade in the coming months without ruining the message of all the good work that has been done to fix the problems with Vista.

Implications for Intel

To some degree Intel has thrived on its technical ability to maintain Moore's Law AND the market's need for ever faster/smaller microprocessors. Windows 7 represents a break in a long-standing cadence in the PC market that has helped maintain the relevance of Moore's Law. It is this break that will require Intel to think very carefully about how to maintain the relevance of Moore's Law. While Windows 7 is only one small change and on its own it will not render Moore's Law obsolete, it has the potential to change a long standing flow in favour of user needs – as opposed to vendor driven planned obsolescence.

Intel has the ability to show many new uses for smaller and faster microprocessors and this is an area where Intel needs to increase its activity. There is no doubt that Intel does a lot of work beyond the PC CPU but this potential change in PC market dynamics should drive Intel even more towards advances beyond the PC CPU.

Implications for end-users

It would seem that PC users have voted with their wallets and Microsoft has listened. Millions were driven to buy PCs loaded with Windows Vista even when they wanted Windows XP and this led to some very vocal consumer and business groups pushing back at the Microsoft forced upgrade cycle. Downgrades from Vista to XP have been extremely common and the transition from XP to Vista for business users has been much slower than Microsoft would have liked. This is what drove much of the changes that have come with Windows 7 where in the past Microsoft built things that they thought would be interesting or useful but not many users (if any) ever even asked for.

With Windows 7 we see a change in the way Microsoft listens to the users and how that translates into updates that people are waiting for. It is because of this that Windows 7 will be a pleasant surprise for many users – business and consumer alike. All PC users should investigate Windows 7 and if it can be installed on their existing PCs. Chances are it will work well on old PCs that are not officially “Vista Ready”. Windows 7 can easily add 1-2 years life to many PCs in the installed base today and for the upgrade cost it is well worth it compared to the cost of buying a new PC.

In Conclusion

Frost & Sullivan believes Windows 7 represents a major announcement for Microsoft and a subtle, but significant change in the PC industry. Windows 7 represents a new Microsoft product development cycle that has been driven more by customer demand than by technical expertise. In building something that end-users asked for Microsoft ended up building something that broke a tradition that has stood since the invention of the PC where each new version of the PC OS required a little more resources to run than the previous version.

It is this break with tradition that represents the most significant change that comes with Windows 7 – assuming it is more than a one off occurrence. If the next version of the PC OS after Windows 7 continues to break the link between the OS and the hardware upgrade cycle then we will see a new PC industry emerge. Microsoft is due to release its next PC OS within 3 years of releasing Windows 7. That means the follow on from Windows 7 is due by late 2012 or earlier. It would take less than 2 years from then for a new PC industry to take shape if the 2012 release was relatively easy on hardware resources like Windows 7. There will be a small number of PC vendors that control almost every PC market in the world. These may seem like big predictions from such a small event but the global PC market is showing signs of stress under the current economic conditions and if Windows 7 stops or slows a recovery in the PC hardware industry in anyway then major change is inevitable.

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