COMMUNITY RESEARCH

Desktop Modernisation

A service delivery view

Dale Vile and Tony Lock, Freeform Dynamics Ltd, November 2009

The personal computer is one of the few parts of the IT infrastructure with which the user interacts directly, and is often, rightly or wrongly, regarded as 'personal' by the employee. The desktop environment is also very dynamic from a technology evolution perspective, with the relentless release of higher spec machines and new versions of software. Against this background, how important is it to keep things up-to-date, and is there still a case for investing in modernisation?

KEY FINDINGS

The normal upgrade cycle has been interrupted, but activity looks set to resume

Over half (54%) of the 1,127 participants in a recent study report desktop upgrades being deferred as a result of the economic downturn, typically by about a year. Together with a lukewarm response to Windows Vista, a consequence is that only 23% of organisations would describe their current desktop infrastructure as modern and up-to-date. The more positive response to Windows 7, however, together with an upturn in the economy, looks set to rekindle quite a few upgrade plans looking ahead. Overall, two thirds of organisations have desktop modernisation on the agenda for the coming 12 months, and around 20% anticipate Windows 7 deployments to have started by mid-2010.

Understanding user needs is an important pre-requisite to any desktop initiative

In terms of demand, while some argue that the personal computer has now become 'part of the furniture' in the business environment, feedback suggests the majority of users actually care quite a bit about the PC they use, so the appetite for upgrades within the business is generally strong. In terms of specifics, performance and stability are universally highlighted as key concerns. Mobile users then emphasise battery life and convenience, while power-users call out a desire for the latest software. Even those with more modest needs highlight the importance of the user experience. Understanding these varying requirements is key to prioritising, scoping and justifying investment.

Future proofing the desktop estate is as important as meeting immediate needs

In terms of current pain, over three quarters of study respondents allude to issues arising from older equipment, ranging from excessive operational overhead in the IT department, to reduced employee productivity and staff morale/satisfaction issues within the business. Tellingly, just over a quarter of respondents are running estates in obvious need of modernisation, and these are typically between 30% and 50% more likely to be experiencing problems. Another half of respondents are faring reasonably well today, but have aging estates likely to run into issues as hardware and software release cycles continue to turn. Future-proofing for this group is therefore an important imperative.

An objective, service-centric approach is recommended when moving forward

Rather than blindly re-start the traditional routine of upgrade and migration in response to better hardware capability and new software releases, IT departments are urged to take a step back and think of the desktop from a service delivery perspective. Some are already considering the role of desktop virtualisation and/or Windows alternatives such as Mac OS X and Linux, and with a selective approach to adoption, these may or may not help with service levels in some areas. Another key area to look at is operations and support, as the evidence suggests significant room for improvement here. Whatever route is chosen, the imperative is to focus on business value rather than pure technology.

The study upon which this report is based was independently designed and executed by Freeform Dynamics and performed in collaboration with The Register news and information site. Feedback was gathered via an online survey of 1,127 IT professionals from the UK, USA, and other geographies. The study was sponsored by Intel.

Introduction

The personal computer (PC) is a special piece of equipment for a couple of reasons. Firstly, it is one of the few parts of the IT infrastructure with which the user interacts directly. Apart from being a tool in its own right, it is the main physical gateway to everything else running behind the scenes.

The PC is also, rightly or wrongly, often regarded as 'personal' by the user. The fact that it is generally allocated uniquely to them as an individual, and has an obvious similarity to the personal equipment they run at home, reinforces this mindset.

These factors together mean that user productivity, creativity and the overall impression of IT delivery are all significantly impacted by how well and how reliably the PC does what it is supposed to. Even when every other aspect of the systems infrastructure is humming along nicely, if the user's machine is not working as it should, from their perspective, they are hampered in doing their job because IT is letting them down.

And if we take things to the next level, the capability, performance and reliability of the desktop* estate as a whole has a tangible impact on business efficiency and effectiveness, and indeed, the overall satisfaction of business stakeholders with the quality of service delivered by the IT function.

The irony is, of course, that some of those same stakeholders, particularly in more recent times, see the amount of money spent on desktop computing as simply a cost to be minimised, without necessarily acknowledging the business criticality of effective service delivery in this area, or the incremental value that a properly maintained and managed desktop environment enables.

With this situation in mind, it is not surprising that those charged with running desktop estates often have a common complaint. When PCs fail or otherwise fall short of expectations, business people are quick to emphasise that they are critical to their work. Yet all too often, this appears to be forgotten when it comes to allocating budget to fund upgrades and operational enhancements.

It's against this background that we explore the significance of keeping your desktop estate in as good a shape as possible, with a particular focus on how the age and spec of both hardware and software has an impact on IT service delivery and, in turn, business performance. As part of this, we'll also be looking at some of the ways in which IT departments are ensuring the currency of their desktop environment, and the kind of tools and procedures that matter the most when it comes to management and support.

A note on terminology

The way the word 'desktop' is used in the IT industry in relation to PCs can sometimes be ambiguous. There was, of course, a time back in the 80's and early 90's when all PCs literally were installed on the top of a desk, which is the origin of the word. The phrase 'desktop PC' today, however, tends to refer to any permanently installed (i.e. fixed, non-portable) PC regardless of its form factor, including desk-side towers, for example. Confusion arises, though, around phrases such as 'desktop computing', 'desktop estate', 'desktop systems' and 'desktop environment', which are inclusive terms that embrace all types of PC equipment, including portable machines. With regard to the latter, there's then two other terms in common use - 'laptop' and 'notebook'. The second of these generally refers to smaller, lighter machines, but many vendors and IT professionals use the terms interchangeably. Throughout this report, we generally use the term 'laptop' by preference to refer to any type of fully functional portable PC, regardless of size.

Inputs into this report

As a foundation for our discussion we'll be using input gathered via a research study completed in October 2009, during which feedback was gathered via an online survey from 1,127 respondents.

Those who participated were mostly IT professionals from a range of organisation sizes and industries, with representation predominantly from the UK and USA, and a number of respondents from other geographies (see Appendix for more details).

The study was designed and executed on an independent basis by Freeform Dynamics Ltd (www.freeformdynamics.com) and conducted in association with *The Register* news and information site (www.theregister.com). The work was sponsored by Intel.

The current landscape

A good place to start with the discussion is to take a look at the current landscape that exists with respect to desktop systems. There are a number of dimensions to this, from the nature of the equipment itself, through what's installed on it, to its age and specification. Overlaid on this we then have various types of user.

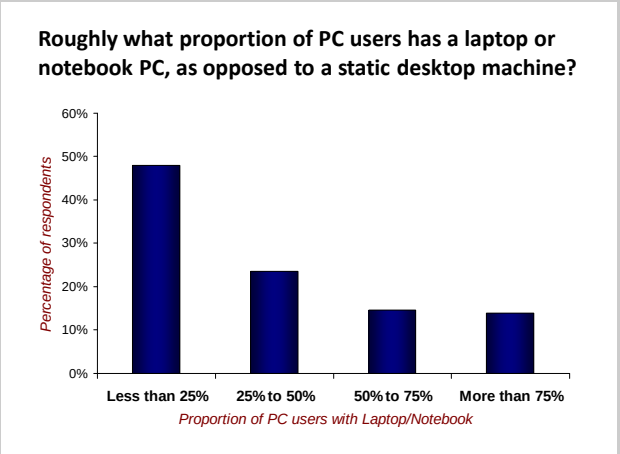
In reality, there is a very complex multi-dimensional set of relationships and dependencies here, but for the sake of striking a balance between completeness and simplicity, we have used a couple of different cuts to come up with three workable segments for analysis purposes:

Laptop users	A segment we can take as a rough approximation for employees working in at least partially mobile professional people-facing roles such as management, sales, professional services, and so on.
Demanding desktop users	Including power users in financial or technical roles, for example, that place great demands on the equipment they use in terms of performance and functionality.
Other desktop users	Including transaction-oriented staff working in various admin and other roles for which the PC is mostly just a window onto corporate systems with much more modest needs for local processing capability.

Regarding laptop users, we of course acknowledge that the relatively small price differential between desktop PCs and more work-horse oriented laptops means portable equipment is now sometimes used by static workers. In general terms, however, laptops are still most commonly associated with staff working in a more flexible manner. While not perfect, laptop users still therefore represent a meaningful user segment.

Distribution of different user types

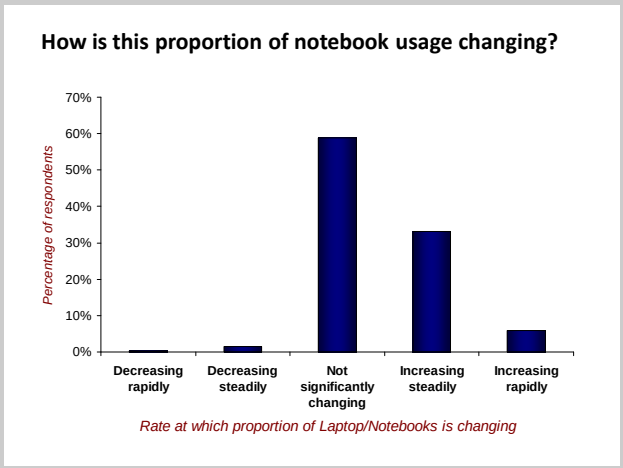
Starting with the distinction between desktop and laptop users, when we look at this dimension, it is clear that desktops, on average, outnumber laptops by a significant margin. In three quarters of organisations, laptop users, while a key group as we have said, represent a clear minority. Indeed in around half of cases, laptops make up less than a quarter of the overall estate (Figure 1).



Desktop machines still predominate in the business environment, but mobile equipment users are a very important segment.

Figure 1

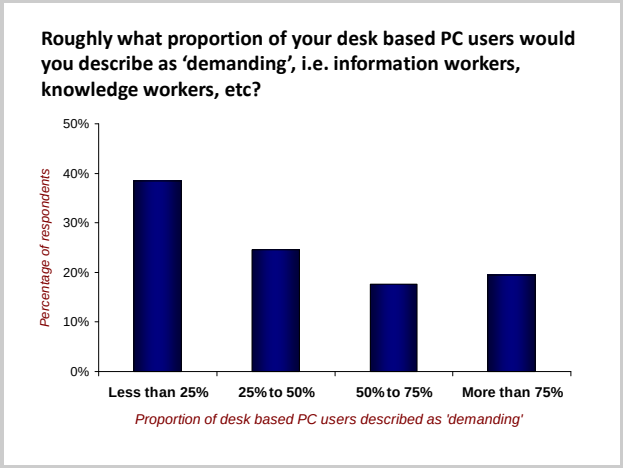
As an interesting aside while looking at this, indications are that the explosion we saw in mobile equipment a few years ago seems to have slowed down quite a bit. While the proportion of laptop users is increasing at a steady rate in just over a third of the organisations, equilibrium has been reached in the majority (approximately 60%) of cases (Figure 2).



The proportion of mobile equipment continues to creep up in some organisations, but indications are that after the significant shift over recent years, a degree of equilibrium has now been reached.

Figure 2

When we home in on desktop machines, we find that users with simpler needs predominate as we would expect, but there is a significantly sized segment of more demanding users, which, for example, make up a quarter or more of the desktop PC user base in over 60% of cases (Figure 3).

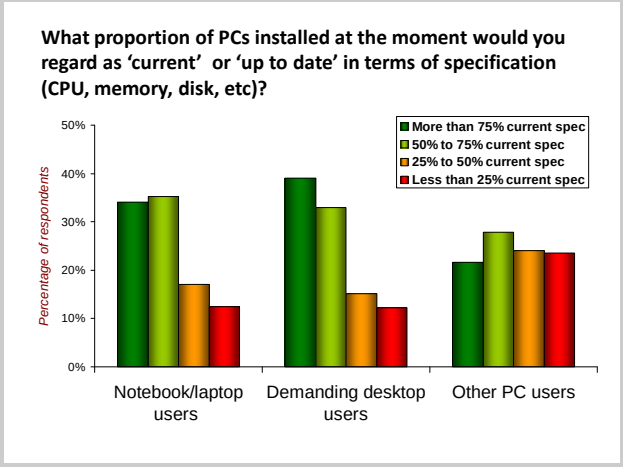


Users vary significantly in terms of the demands they place on the PC they use at work.

Figure 3

Age and spec of equipment

Turning to equipment age and spec, we get our first illustration of why segmentation is important, with more attention clearly being paid to keeping laptop and demanding desktop users current (Figure 4).



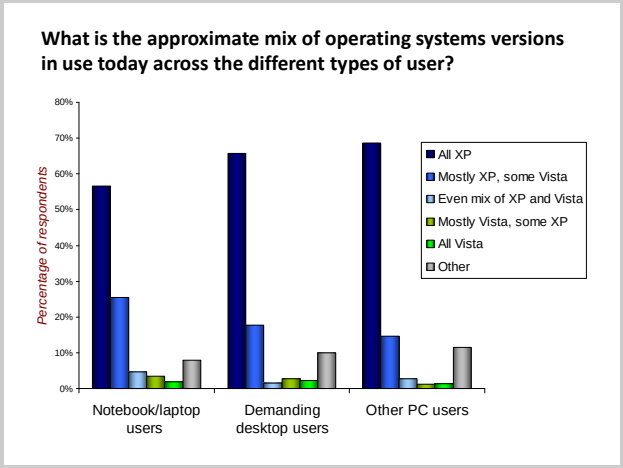
More attention is paid to keeping mobile and more demanding desktop users up to date with equipment.

Figure 4

We'll explore some of the factors that give rise to this picture a little later, but in the meantime it is important to understand what's in place in terms of operating systems.

Use of different operating systems

When we look at desktop operating systems, the most striking observation that leaps out right away is the relative lack of variation seen. Every user category is not surprisingly dominated by Windows, but it's also notable that the vast majority of PCs are currently running Windows XP specifically (Figure 5).



It's a Windows world, with XP dominating the desktop at this moment in time.

Figure 5

There is a bit more penetration of Vista into the laptop segment, but even here it is relatively limited.

Focusing on the 'Other' bars shown here, these represent respondents whose organisations are using something other than a combination of Windows XP and/or Vista. We have not broken this out, but it includes those who still have a significant amount of older Windows software in place (e.g. Windows 2000 or 9x) and/or have users running alternatives such as the Mac and Linux. It doesn't, of course, mean they aren't still running a lot of XP, it's just that they don't fit into our standard XP/Vista spectrum options. Whichever way you look at it, though, the relatively small size of these 'Other' bars confirms that the desktop modernisation question, at least in OS terms, is largely about how organisations are going to move forward from Windows XP, with perhaps a touch of Vista.

But before we get too carried away with this question of modernisation, shouldn't we first ask whether the age and specification of equipment really matters, and whether anyone cares about the version of Windows they are running?

What do users care about when it comes to PCs?

During the study we offered respondents a list of attributes and capabilities in relation to the age/specification of the hardware and the version of Windows being run. We then asked them to indicate which ones mattered, based on their experience, to the various types of user.

On the question of age and specification of equipment, all types of user rank performance and response times the highest. Stability of the environment is then ranked in second place for desktop users, but it's interesting that this second slot is occupied by battery life for laptop users, which clearly preoccupies those who work out and about quite a bit (Table 1).

Table 1: **Top 3 'care about' factors in relation to PC age/specification**

Notebook/laptop users	***Demanding desktop users***	***Other desktop users***
1. Performance/response times 2. Battery life 3. Image/status symbolism	1. Performance/response times 2. Stability of the environment 3. Ability to run latest software	1. Performance/response times 2. Stability of the environment 3. (Image/status symbolism)

Looking at these rankings, another big difference stands out in that demanding desktop users put a lot of emphasis on the ability to run the latest software. This makes absolute sense as these are the users that really are pushing their machines to deliver.

By contrast, after performance and battery life, laptop users move on to highlight image and status symbolism, linking the latest kit with perceptions of employee importance. Some might dismiss this as insignificant in business terms, but this type of user will often argue that portraying the right kind of image is important in many commercial scenarios. From a higher level business perspective, there is then the notion that providing the 'right' equipment can help with staff motivation and retention.

We can also see from the table that less demanding desktop users rank status symbolism in third place also, but we have listed this in parentheses as the status/image factor was far less prominent. Basically, unless you are in the laptop or demanding user categories, you probably only care about performance and stability when it comes to the age and spec of the hardware on your desk.

Moving onto Windows version related 'care about' factors, stability of the environment in terms of fewer crashes and hangs again figures prominently across the board (Table 2).

Table 2: **Top 3 'care about' factors in relation to the version of Windows**

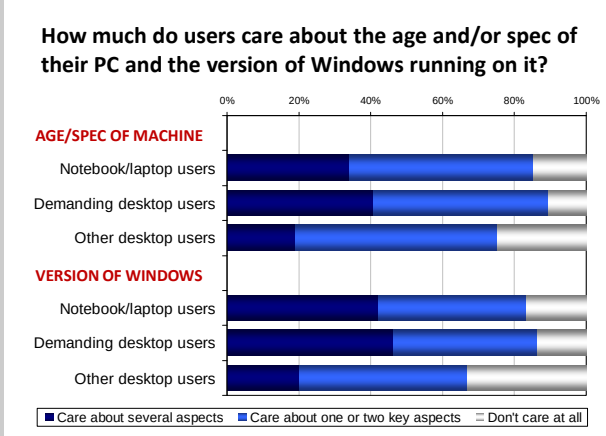
Notebook/laptop users	***Demanding desktop users***	***Other desktop users***
1. Stability of the environment 2. Familiarity of UI 3. New OS features	1. Stability of the environment 2. Ability to run latest software 3. New OS features	1. Familiarity of UI 2. Stability of the environment 3. Better user experience

For demanding desktop users there is then a similar emphasis on functionality to the one we saw before, this time not just in terms of the ability to run the latest software, but also in relation to new operating system features, both of which can potentially help to boost productivity and creativity.

Less demanding users not surprisingly focus on user interface familiarity and the overall user experience, the implicit message being that they just want to get on with the job without having to worry too much about technology getting in the way.

Notebook/laptop users are somewhere between. The convenience factor (that new OS features often represent) is key for them, but in the majority of cases, they are not pushing their PCs that much in terms of software functionality, with the emphasis typically being on messaging and communication, light to middling complexity MS Office centric activity, with elements of corporate access.

Taking a step back from the detail, we can learn a great deal from looking at responses at a summary level. When we do this, we can see that while laptop and more demanding desktop users tend to care about more aspects of their PC, the majority of users call out at least a couple of factors (Figure 6).



While laptop and more demanding desktop users tend to care about more aspects of their PC, the majority of users call out at least one or two factors.

Figure 6

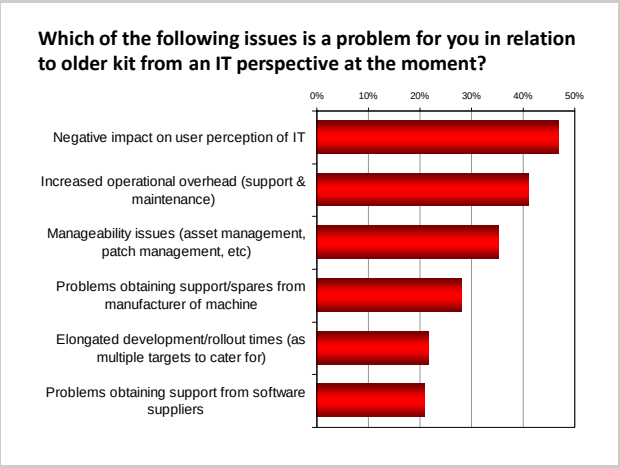
Pulling all this together, the message so far is that users care significantly about the PC hardware and software they are provided with to do their work, but that different types of user put the emphasis in different places. At the highest level, such basic observations confirm the need to understand user requirements and avoid making too many generalisations when it comes to drivers and business cases for modernisation activity.

These differences, for example, explain why more emphasis is placed on keeping laptop and demanding desktop users up to date as we saw previously in Figure 4. With these two groups, it's often a case of 'faster and newer is better', whereas with less demanding users, the 'good enough' principle prevails. The differences are also consistent with Vista penetration being higher among laptop users, as regardless of its perceived shortcomings, it does provide nice features that enhance convenience and the overall experience for mobile workers.

So far so good, but most of what we have looked at so far relates to the user view of the world. While we might infer business benefit from this, what else did we find out that can help make the case more directly for investment in desktop modernisation?

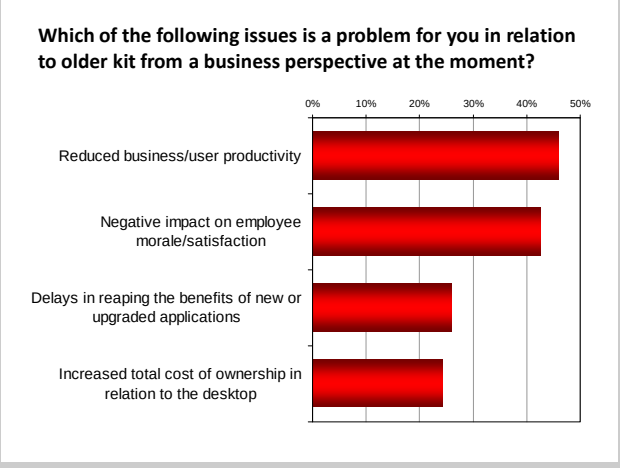
Where does it hurt?

One of the most powerful foundations for a business case is pain relief – investing time, effort and money to remove issues that are causing grief and aggravation. When we look for such pain in relation to older PC equipment, we find that quite a bit of it exists. This is true whether we look from an IT service delivery perspective (Figure 7) or a business impact perspective (Figure 8).



The pain caused by the lingering of older equipment is evident, and looking behind this chart, the majority of respondents (75%) report issues in at least one of the areas listed.

Figure 7



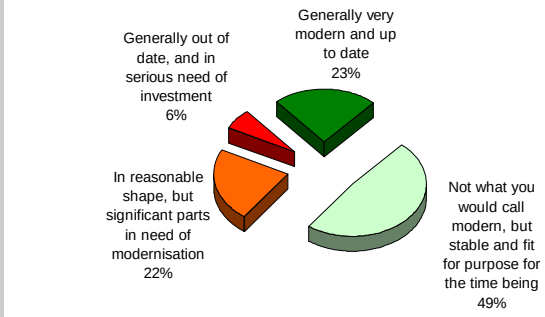
The tangible impact of older kit from a business perspective is also clear.

Figure 8

As prevention is better than cure, however, it is worth taking a closer look at how issues come about.

The eroding cliff

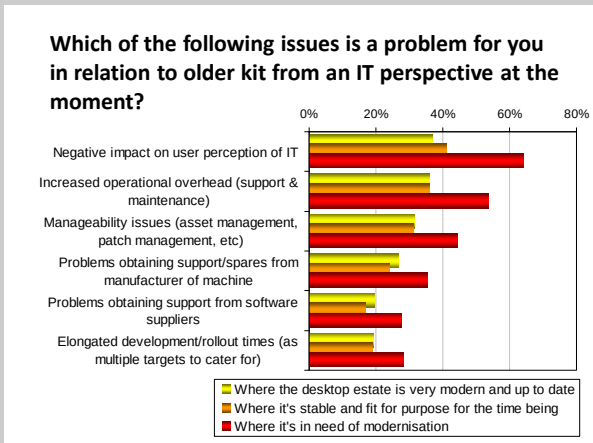
To permit further analysis, we can bring the currency of desktop estates into the equation (Figure 9).



Apart from illustrating the current status in 'bottom line' terms, the 'good enough' mindset that is often associated with the desktop is particularly well highlighted by this picture.

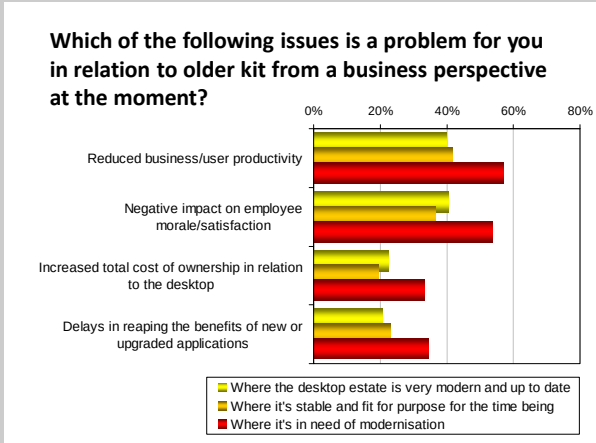
Figure 9

This chart is interesting in its own right, in that over three quarters of respondents allude to an aging infrastructure; even if half say what's in place is meeting current needs. When we cross-reference between status of infrastructure and issues encountered, however, it is apparent that those with desktop estates in more obvious need of modernisation fare significantly worse (Figures 10 and 11).



The lesson here is that once the estate slides into obsolescence, issues become more prominent, and many are only one step away from this.

Figure 10



Again the risk of allowing the estate to get too out of date is highlighted.

Figure 11

What's interesting here is that there appears to be no significant difference in performance between the first two groups, i.e. those with a modern and up to date infrastructure, and those with an aging estate but that is still fit for purpose. This tells us that you don't need the absolute latest desktop technology to deliver an acceptable service, but if you let things slip too far and the environment moves into the realm of being more seriously out of date, you fall over the edge from a quality of service perspective, at which point there is significantly more chance of a tangible negative impact on both IT and the business.

We can liken what's going on here to the impact of an eroding cliff. A modern and up-to-date infrastructure is the equivalent of a house built well away from the cliff edge - it will be safe for a number of years to come. An aging but fit for purpose infrastructure is like a building close to the edge – it's safe and sound for the moment, but as the erosion continues and the cliff edge continues to recede, it will not be long before the foundations are undermined and things start to crumble. Of course desktop estates which are significantly out of date have, metaphorically speaking, already fallen over the edge, or at least are in the process of doing so.

In desktop IT terms, it's the relentless movement of the software industry that gives rise to the erosion phenomenon. With every turn of the Windows release cycle, a proportion of machines in the average desktop estate are rendered unfit for purpose. Of course delaying the adoption of the next Windows release is a way of buying more time for older equipment, but you can only play that game for so long before other issues arise around support, maintenance, application compatibility, and generally keeping up with those user needs and expectations mentioned earlier.

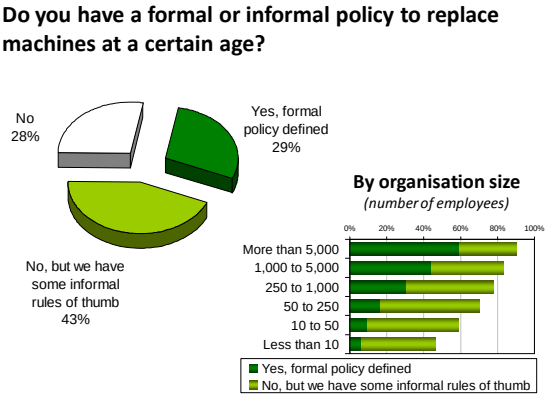
As an example, there was a time when organisations were hanging on to Windows 98 and delaying the move to XP, but few would argue that the older of these two releases would be a viable foundation for delivering an acceptable desktop service today. By the same token, there will come a time in the not too distant future when maintenance of XP, an operating system that has already been around for the best part of a decade, will be more trouble than it's worth.

The bottom line is that history has confirmed the eroding cliff phenomenon time and time again when it comes to desktop computing. Whether it's the relentless march of the software industry or the continuing escalation of user and business requirements and expectations, the ground will eventually fall from under any desktop estate that is not up to date.

Soul destroying though it sometimes feels for IT professionals to have to continually rebuild things far enough from the edge for safety, that is unfortunately the reality and Figures 10 and 11 above remind us of the consequences of not doing so. So how do IT departments deal with this in practice?

Keeping a safe distance from the edge

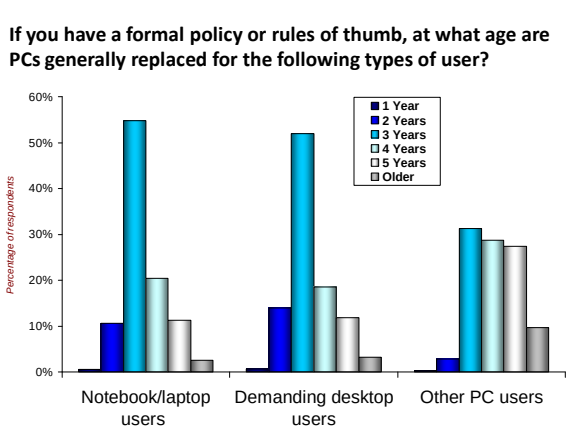
For the reasons discussed, most organisations, particularly larger ones, have a rolling replacement approach to keeping their desktop estates up to date (Figure 12).



It is typical for larger organisations to have a formal or informal replacement policy in place, though smaller organisations are much less prescriptive.

Figure 12

Where such a policy exists, the typical replacement period for notebook/laptop users and more demanding desktop users is 3 years, though for users with more modest needs, there is a lot more variation, with an average replacement period of over 4 years (Figure 13).



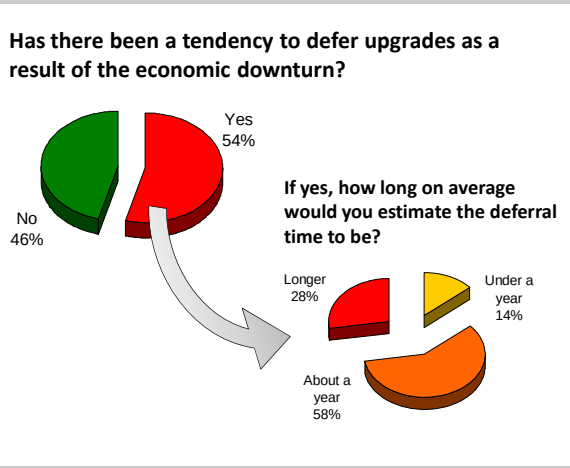
The typical replacement age for mobile and demanding desktop users is 3 years, with more of a spread in relation to other users (average over 4 years for these).

Figure 13

This kind of policy, coupled with the common practice of cascading older equipment downwards by reallocating it to those with less demanding requirements, will obviously be familiar to many.

The problem is, however, that this normal process has recently been interrupted, firstly as a result of Windows Vista being largely rejected by the business community, but also as a result of the economic downturn.

With regard to the latter, over half of the respondents in our study indicated a deferral in investment, typically of a year or longer (Figure 14).



The usual upgrade cycle has been interrupted in over half of cases by the economic downturn, typically by around a year.

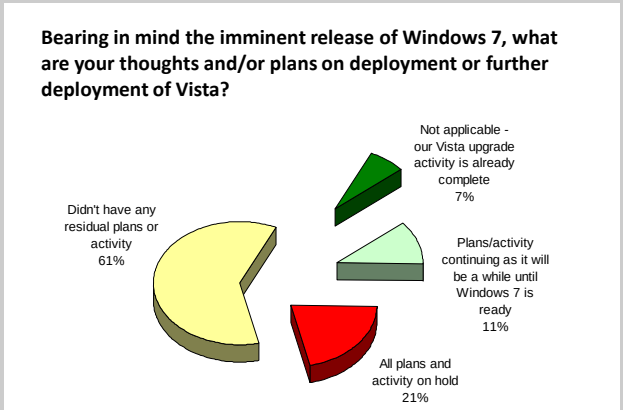
Figure 14

This phenomenon has undoubtedly put more organisations closer to our metaphorical cliff edge than they would ideally like to be.

The Windows 7 effect

Against this background, the announcement of Windows 7 and the general positive reception it has received has been a double-edged sword.

On the negative side, most of the Vista upgrade activity that did actually exist out there was brought to a halt, with two out of every three migration initiatives put on hold (Figure 15).



Two out of three Vista initiatives have been halted as a result of the announcement of Windows 7.

Figure 15

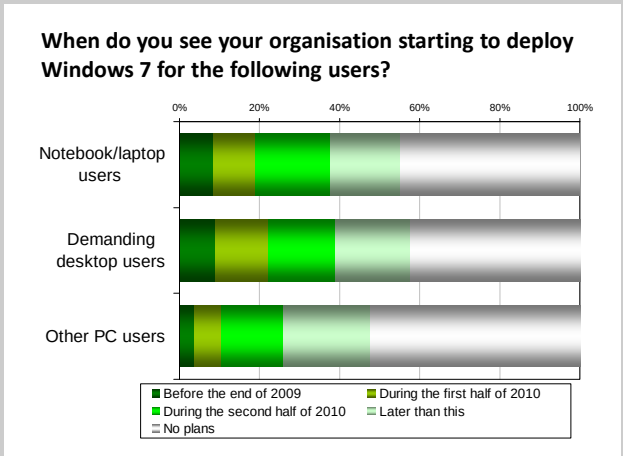
At first sight, this might not seem like such a big deal. After all, Windows XP is still largely meeting the needs and expectations of most users as we have seen.

We need to remember a couple important things, however. Firstly, regardless of how solid things feel at the moment with XP, that cliff edge is still getting closer and the clock is still ticking. And if denial on this front exists within your organisation, look again at Figures 10 and 11 above to remind yourself of the consequences of deferring modernisation for too long.

We also need to keep in mind that desktop modernisation and migration is not just about the hardware and the operating system. Much of the work involved is concerned with application testing and remediation, and with Windows 7 being based on the same kernel as Vista, and having a high degree of compatibility with it, any head start on the application migration front will have been lost as a result of Vista migrations being shelved.

That's the negative side.

On the plus side, however, the positive sentiment around Windows 7 has created confidence and led to unusually strong intentions in terms of adoption. Around 20% anticipate starting to deploy to notebook/laptop users and more demanding desktop users by the middle of 2010, with that number doubling by the end of the year (Figure 16).



Around 20% anticipate Windows 7 deployments to have started by mid-2010, with a similar number joining them by the end of the year.

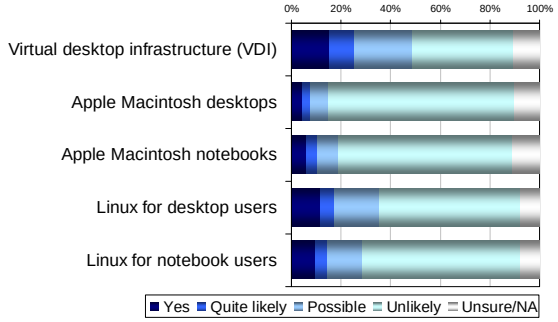
Figure 16

This emphasis on the first two categories of user is consistent with the drivers we saw earlier.

Considered overall, indications are, at least at this early stage, that the release of Windows 7 will play a significant role in either stimulating or unblocking a significant amount of desktop migration activity.

But what about the alternatives?

As the combination of Windows 7 and improvements in the economic outlook bring desktop modernisation activity back to front-of-mind, we should not necessarily assume that organisations will simply restart the traditional Windows upgrade cycle. Indeed a number of participants in our study said they were likely to take the opportunity to investigate alternatives (Figure 17).



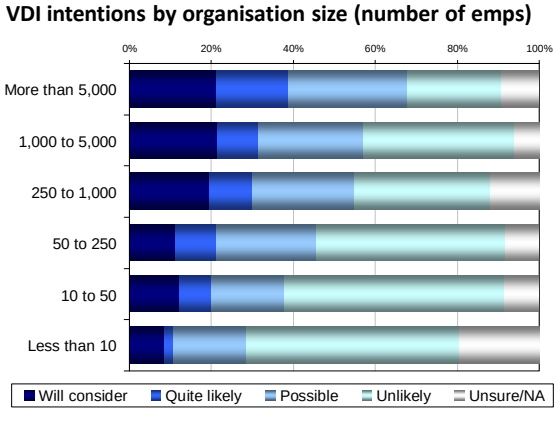
The majority are likely to continue with the traditional Windows client approach, but some are considering alternatives.

Figure 17

As a word of warning here, the speculative nature of this question means we should not take the above as an indication of activity that will definitely come to pass. There is a big difference between considering and adopting an alternative, for example, or even planning to adopt. This is likely to be particularly true in relation to the Mac and Linux, which many IT professionals like to promote, even though there are practical challenges in switching to these against the backdrop of the Windows world that clearly exists.

Having said this, these alternative operating systems are bound to pop into the frame as some organisations stop to think before ploughing on with Windows upgrades, and an important principle to bear in mind here is that of selective deployment. This is something we discussed in another recent Freeform Dynamics report[1] in which those with experience of mainstream desktop Linux adoption were very much advocating targeted deployment to specific types of users. This is again an example of the value of user base segmentation as a starting point for the review and planning cycle.

In the meantime, there is nothing emotive that we would expect to artificially inflate the level of interest in virtual desktop infrastructure (VDI). This is founded on the premise of executing desktop software remotely on a server, or at least streaming desktops or applications from the server on demand. The interest we see here is therefore noteworthy, especially among larger organisations (Figure 18).



One of the alternatives most likely to make an impact, VDI, is clearly on the radar of larger organisations in particular.

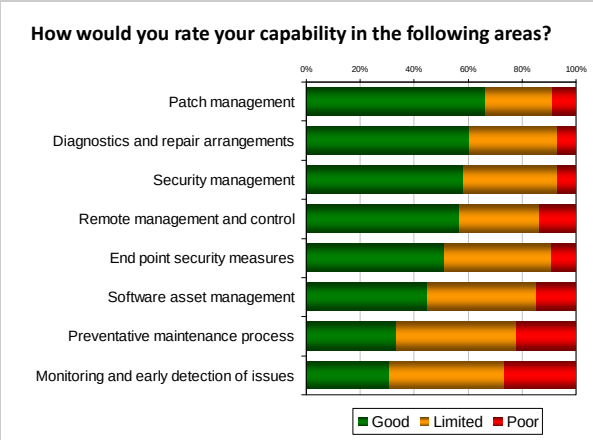
Figure 18

VDI is another topic recently investigated by Freeform Dynamics[2], and the potential benefits it can deliver, especially in terms of operational overhead reduction and cost savings are significant. And as a footnote here, it is also worth considering that some forms of VDI potentially provide a new lease of life for older desktop equipment; if the work is being done on the server, all that's needed on the desk is enough horsepower to run the presentation part of the environment.

The reality when it comes to alternative approaches is that even if you do take them on board, the chances of you being able to wean all of your users off the traditional full blown Windows desktop are remote. That's not to say it isn't possible, just that most will find themselves left with a Windows estate of some kind to look after, which brings the operational side of things into focus.

Operational considerations

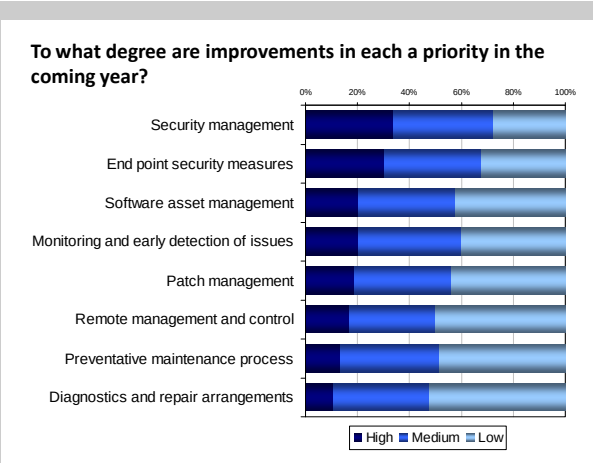
It is important to acknowledge that modernisation of the desktop estate itself is only part of the story. Indications are that many organisations could also do with paying attention to various aspects of desktop maintenance and support (Figure 19).



Beyond the desktop itself, there are aspects of desktop management that could do with some attention in many cases.

Figure 19

Looking at this picture, we see a number of 'must do' reactive items appearing near the top of the list, such as security management and capabilities to do with troubleshooting and support, e.g. diagnostics and repair, and remote management and control, etc. By contrast, capabilities required to take more of a proactive or pre-emptive approach, e.g. asset management, preventative maintenance and effective monitoring, appear near the bottom of the list, indicating significant gaps. Despite this, however, relatively few are prioritising improvements in these areas (Figure 20).



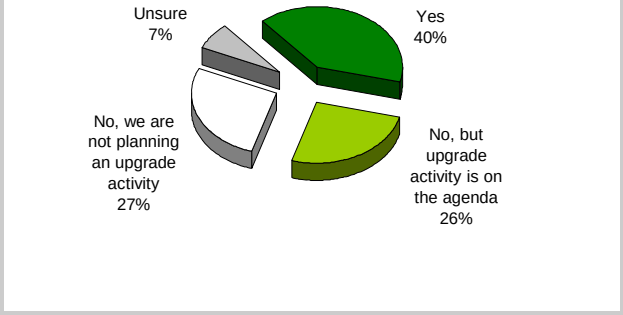
Many have upgrades to the desktop management infrastructure on their agenda.

Figure 20

The call to action here is to pay more attention to operations when formatting modernisation plans.

Moving things forward effectively

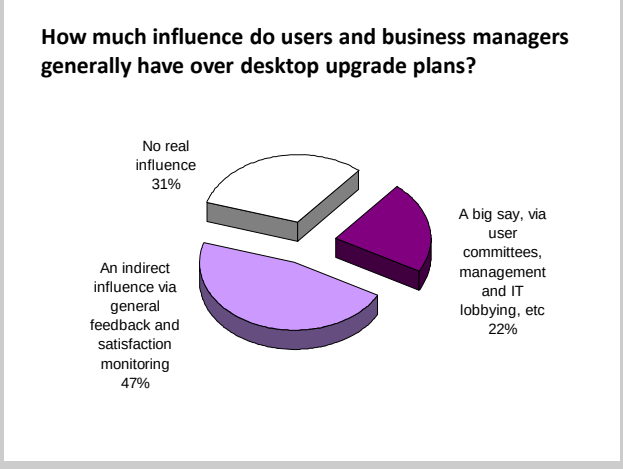
In terms of moving things forward, almost two thirds of organisations participating in our study have some form of desktop upgrade activity on the agenda for the coming year (Figure 21).



Almost two thirds of respondents have a desktop upgrade on the agenda for the coming year, with most of these having already allocated funds.

Figure 21

With this in mind, when prioritising activity and investments, we hope that the insights presented in this report will be useful, and not just in terms of some of the imperatives we have discussed to do with various aspects of risk management and operational efficiency. Coming back to the discussion of what matters to users, tuning into the needs and expectations of the various segments is good way of ensuring that positive business value can be delivered also. Indeed the chances are that users will be influencing things anyway (Figure 22).



One way or another, end users will influence the way forward in most organisations, so their opinions and satisfaction levels need to be taken seriously.

Figure 22

So, if we stand back and pull everything together, the top line advice we can give to anyone reviewing the current status of their desktop computing environment and considering modernisation is to:

- Understand the needs of your users, and how meeting them relates to business performance, bearing in mind the differences in drivers and expectations between groups.
- Assess the status of your desktop estate, not just in terms of whether it is currently meeting needs, but also with regard to how future proof it is (remember that eroding cliff!).
- Remember the operational side of the equation, considering prevention as well as cure.

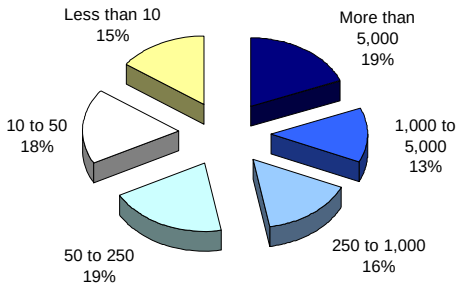
These simple points will ensure that desktop modernisation initiatives are focused on effective IT service delivery to drive maximum business value, which is exactly as it should be.

Appendix: Study Sample

Feedback was gathered via an online questionnaire published via The Register news and information site (www.theregister.com). Respondents were largely IT professionals representing a good cross section of job functions and working in a range of different industry sectors.

The composition of the sample by organisation size and geography was as follows:

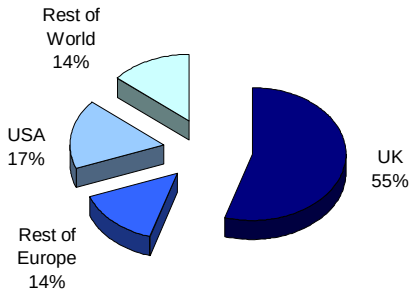
Approximately how many employees do you have in your organisation?



A range of organisations across the full spectrum of size bands were represented.

Figure 23

Sample by location



The majority of the respondents were from the UK, with some representation from the rest of Europe, the USA and other geographies.

Figure 24

The study was completed in October 2009, and we would like to take this opportunity to thank all of those who took the time to participate. Your help is very much appreciated.

References and Further Reading

The following documents referred to in this report are available for download, free of charge, from the Freeform Dynamics website.

1. **Linux on the Desktop**
   Lessons from mainstream business adoption
   http://www.freeformdynamics.com/fullarticle.asp?aid=678

2. **Desktop virtualisation**
   Early days for mainstream adoption
   http://www.freeformdynamics.com/fullarticle.asp?aid=678

Further reports that may also be of interest can be obtained from www.freeformdynamics.com.

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Freeform Dynamics is a research and analysis firm. We track and report on the business impact of developments in the IT and communications sectors.

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