Becta Report

January 2008

Becta leading next generation learning

Microsoft Vista and Office 2007

Final report with recommendations on adoption, deployment and interoperability.

Contents

1. Executive summary

1.1 Becta announced in January 2006 that it would conduct a review of Microsoft's Vista and Office 2007 products. In announcing the review, we indicated that we would look carefully at what advice we would give in relation to the advantages of coherence and continuity in ICT institutional infrastructure, as opposed to, for example, investing resources in constantly acquiring the most recent versions of products.

1.2 In January 2007, following that review, we published an interim report which concluded:

- the new features of Microsoft's Vista product added value but did not justify early deployment in the education sector. The deployment costs were seen as high and the benefits were far from clear
- Office 2007 contained no 'must have' features and Microsoft should develop an underpinning business case to justify deployment in the education sector
- there were interoperability concerns regarding Office 2007; and Microsoft should urgently provide 'native' support for the OpenDocument format (ODF)
- educational ICT suppliers should ship computers for the educational marketplace with a choice of office productivity suites on the desktop. Ideally, this choice should include an open-source offering

1.3 Since the publication of that interim report, Becta has carried out significant additional work, including appointing Oakleigh Consulting Ltd (Oakleigh) to conduct a further comprehensive review. We set out in Section 2 the background and findings underpinning the interim report and in Section 3 we summarise the additional work which informed this final report.

1.4 In Section 4 we give our detailed conclusions in relation to the deployment of Vista and Office 2007, and set out in Section 5 our position on document interoperability. Finally, in Section 6 we address some of the challenges and opportunities in relation to competition and choice in this area of the educational ICT marketplace.

1.5 The key recommendations emanating from this final report (all of which we cover in further detail in the report) are as follows.

- we advise that upgrading existing ICT systems to Vista is not recommended and that mixed Windows-based operating-system environments should be avoided
- we believe that Vista can be considered where new institution-wide ICT provision is being planned

- recognising the limitations regarding Microsoft's implementation of the ODF standard and the limited uptake of Microsoft's new Office 2007 file format, we recommend that in the short term users should continue to use the older Microsoft binary formats (such as .doc)
- schools and colleges should make students, teachers and parents aware of the range of 'free-to-use' products (such as office productivity suites) that are available, and how to access and use them
- the ICT industry should be pro-active in facilitating easier access to 'free-to-use' office productivity software

Microsoft Vista

1.6 Following their review, Oakleigh reported that Windows Vista Enterprise was stable. During the review the product was used to perform a wide range of assessments and to generate reports. There were no issues with data loss and Vista was found to be reliable and stable.

1.7 Our interim report recommended that Microsoft should facilitate a limited number of pilot activities to clarify what the benefits of deploying Vista in an educational institution would be, and what level of costs the deployment would generate. Becta is not aware that Microsoft has completed any such cost-benefit analysis.

1.8 The key findings emanating from the current review are as follows.

- there remains a perceived lack of significant business benefit delivered by the new features in Vista to balance out the costs associated with its deployment
- while an estimated 66 per cent of machines in the school ICT estate are 'Vista capable' (as defined by Microsoft), only an estimated 22 per cent of machines meet the specification necessary to run Vista effectively
- the costs of upgrading to Vista are broadly as indicated in our interim report. For a typical primary school the cost of upgrading across its ICT estate would be in the region of £5,000: about £125 per machine. For a secondary school, the cost of a similar upgrade would be in the region of £24,000: about £75 per machine. The overall costs for all schools in England and Wales are estimated at some £175 million, about one third of which would relate to Microsoft licensing costs

1.9 Section 4 sets out our detailed recommendations on the deployment of Vista which confirms the position in our interim report that upgrading existing ICT systems to Vista is not recommended and that mixed Windows operating-system environments should be avoided. Vista should be evaluated where new institution-wide ICT provision is being planned.

Microsoft Office 2007

1.10 Our interim report recommended that Microsoft should develop a compelling business case to underpin any rationale for deploying Office 2007 in UK education. We have seen no such business case. This final review confirmed that there remains no compelling case for deployment. It also confirmed that the use of Office 2007 could adversely affect document interoperability between the school or college and the home environment.

1.11 In Section 4 we advise that no widespread deployment of Office 2007 should take place until schools and colleges are confident that they have in place mechanisms to deal with the interoperability and potential 'digital divide' issues that the review has identified. To do otherwise risks introducing unnecessary complexities and restrictions on the choices available to students, teachers and families when exchanging documents between home and school, and potentially introducing additional financial burdens for parents.

Interoperability

1.12 Effective document interoperability reduces costs, improves productivity and avoids user lock-in. It therefore holds out the opportunity of significant benefits not just to schools and colleges and to students' homes and families, but also more generally.

1.13 However, de-facto standardisation (using products from a single supplier) can impede competition and choice – thus pushing up costs. Increasingly governments, commercial users and the educational community are not prepared to see their information locked into a format controlled by any individual supplier. That has resulted in a movement away from proprietary file formats to new, more open, file formats under the control of an effective standards body.

1.14 In our interim report we identified a number of concerns in relation to the interoperability capabilities of Office 2007. These concerns were:

- the move in Office 2007 to a new file format that no other product supported
- ineffective support for the international document standard (ODF) that is increasingly used in competitor products

1.15 We also recognised that a loss of interoperability with free-to-use products (such as Star Office and OpenOffice.org) had the potential to exacerbate 'digital divide' issues, so we recommended that Microsoft move quickly to provide effective support for ODF. We further recommended that schools and colleges should only deploy Office 2007 when its interoperability with alternative products was satisfactory.

Current position

1.16 Microsoft has not moved to address the interoperability concerns identified in our interim report. Office 2007 still does not effectively support the international ODF document standard. It has continued to seek approval for a second international document standard based on its Office 2007 file formats – a move which has attracted considerable controversy.

1.17 Microsoft has argued that the ODF standard does not adequately address the needs of users regarding access to documents stored via previous versions of Office, and that a further international standard is required. While the need for a second standard remains unresolved, it is clear that increasingly Microsoft's competitors are using the existing ODF standard as their key file format.

1.18 We remain concerned about the approach taken to supporting ODF in Office 2007. While the product includes the functionality to read virtually every other relevant file format 'out of the box', the processes for dealing with ODF files are very cumbersome. We identified ten steps that users would need to take in order to locate and install the converter that gives Office 2007 the ability to access ODF files and note that the arrangements for opening and saving ODF files in Microsoft Office 2007 are not intuitive in that they deviate from the normal approach familiar to users. We believe that these arrangements present sufficient technical difficulties for the majority of users to make them disinclined to use competitor products and this may weaken competition.

1.19 We have discussed with Microsoft on a number of occasions its rationale for not providing effective integrated interoperability with the ODF document standard. We did not find the various explanations we received convincing.

1.20 We believe that the barriers Microsoft has placed in the way of users who want to use the file format that is increasingly common in competitor products will have the effect of limiting the use of such products. The interoperability that Microsoft makes available in Office 2007 for competitor products is less than it makes available for its own family of products. We have complained to the Office of Fair Trading (OFT) that this puts competition at risk and is an abuse of a dominant position by Microsoft. The OFT is considering our complaint.

Home-school interoperability

1.21 The review assessed interoperability between Office 2007 and various open file formats and commented on the extent to which home-school access would be facilitated. Following a comprehensive testing exercise which identified the poor integration of the ODF converter available for Office 2007 and the possible loss of formatting and content (depending on document complexity), Oakleigh reported:

If educational establishments were to upgrade to Office 2007 now, we do not believe that it would provide increased interoperability (regardless of standards) and it would, in fact, reduce interoperability and introduce additional complexity to day-to-day working.

Interoperability in the context of home and school usage cannot be considered as being easy to use either 'out of the box' or following configuration of the required components (compatibility packs, changes to default file formats or ODF add-ins).

1.22 We set out in Section 5 the approach that schools and colleges should adopt in the short term to ensure that their Microsoft Office files can be read by the intended recipient. In view of Microsoft's lack of support in Office 2007 for the ODF standard, and the limited uptake of Microsoft's new Office 2007 file format, we recommend that users should in the short term continue to use the older Microsoft binary formats (such as .doc). This recommendation extends to situations where documents are produced in Office 2007.

1.23 It is important now to take the relevant strategic steps to avoid losing permanently the benefits which should flow from open standards. Becta supports the recommendation of the recent pan-European e-government services committee (PEGSCO) that 'suppliers should develop applications that can handle all relevant international standards, leaving the choice to their customers as to what format will be used "by default".'

1.24 While we are not commenting on the technical merits of either the existing international document standard (ODF) or the proposed second international document standard (OOXML), we remain convinced that multiple incompatible international standards that address essentially the same area of functionality are not in the interests of educational users. It will introduce confusion, complexity and unnecessary costs; and it will constitute a lost opportunity of considerable proportions which will damage the marketplace, the educational community and indeed the concept of international standards per se.

1.25 Becta again supports the position taken by PEGSCO regarding the need 'to work together towards one international open-document standard, acceptable to all, for revisable and non-revisable documents respectively'. To facilitate such an outcome Becta will:

- continue to make the necessary representations to spell out to the standards-setting bodies and competition authorities the implications of dual standards for educational users
- use its advisory and requirement-setting responsibilities to encourage the use of products which provide effective interoperability, and to ensure that schools and colleges only deploy products which effectively adopt international standards

- explore the extent to which an approach to open-document formats and standards can be developed and implemented across the UK education system

Competition and choice

1.26 We note a number of recent developments aimed at enhancing choice in the field of office productivity software. These include further development of the online Google Apps product set, the incorporation of Star Office into the free download Google Pack and the release by IBM of a free version of Lotus Symphony.

1.27 For the home market there are now more low-cost systems available using a Linux-based operating system and software applications. We have also noted the emergence of low-cost innovative 'mini-notebooks' that have been brought to the market running a version of Linux and a range of Linux-based applications including OpenOffice.org.

1.28 For innovative developments to flourish, the market must operate effectively and impediments related to licensing or interoperability must be addressed. For example, Becta considers it is unacceptable that a device using Linux, and not running any Microsoft software, should attract annual payments to Microsoft under a School Agreement licensing model. Over the lifetime of the device such payments would adversely affect its price point and potentially limit its uptake. Such arrangements fall within the scope of our current OFT complaint.

1.29 We set out in Section 5 a programme of work designed to address impediments to greater competition and choice in the marketplace by addressing barriers to the wider use of open-source solutions. The programme includes enhanced information on the Becta website, developing the research base, reporting on the overall uptake of such products and establishing a catalogue of suitable open-source software.

1.30 Becta will also work with the Building Schools for the Future (BSF) programme to ensure that as wide a range of technology solutions as possible are being offered, and that impediments to the use of open source solutions are addressed whenever feasible. We will also work with BSF to encourage easier access by students, teachers and parents to a range of educational ICT products procured on the basis that they can be made available to students, teachers and parents for home use without attracting additional licensing costs.

1.31 Schools and colleges can also do more to drive forward choice in the context of home-school use. We recommend in Section 5 that, whenever possible, they should make students, teachers and parents aware of the range of free-to-use products (such as office productivity suites) that are available, and how to access and use them.

1.32 We also recommend that schools and colleges should configure their office productivity systems in such a way as to ensure that they do not place impediments in the way of learners, teachers and parents who use alternative products (including free-to-use products) at home.

1.33 In our interim report we were clear that the ICT industry could play a part in facilitating greater choice of office productivity software. We recommended that suppliers should facilitate choice to schools, ensuring that computers for this market are shipped with a choice of office productivity suites on the desktop, and that ideally this choice should include an open-source offering. Our consultations with the industry confirmed that there are no significant reasons why this recommendation cannot be delivered.

1.34 We propose that, when specifying requirements, schools and colleges should normally insist that suppliers provide an office productivity suite that is capable of opening, editing and saving documents in the ODF format and setting ODF as the default file format.

1.35 We are aware that during 2007 some schools and colleges have deployed trial versions of Office 2007 software, leading to confusion and concerns at the end of the trial period regarding whether or not schools and colleges or indeed parents (when students try to access such files at home) need to purchase the full version of the trial product. We recommend schools and colleges to exercise caution and to seek clarification in advance when deploying such trial products, as they can have the effect of exacerbating the digital divide.

2. Introduction and background

2.1 Becta provides leadership, support and advice to the UK educational community in all aspects of the application of information and communications technology (ICT) in the delivery of teaching and learning. Our remit encompasses the entire publicly-funded education system across the UK, with the exception of higher education, and is focused on the objectives of widening educational opportunity, reducing inequality, narrowing the achievement gap and targeting the hard to reach. In England we have overall responsibility for the delivery of the Government's e-learning strategy.

2.2 To describe the impact of the e-strategy at its highest level, Becta has developed a comprehensive set of strategic outcomes that encompass:

- fit-for-purpose technology, systems and resources
- capability and capacity of the workforce, providers and learners
- efficiency, effectiveness and value for money across the system
- improving learner and system performance

2.3 In ensuring fit-for-purpose technology, systems and resources, Becta is delivering a range of programmes designed to ensure:

- that all learners and practitioners have access to the appropriate technology and the digital resources they need for learning
- that every learner has a personalised learning space to enable them to learn when and where they choose
- that technology-enabled learning environments are secure, supported and interoperable
- that there is a dynamic, vibrant and responsive technology-for-learning market that can meet the needs of the education system

2.4 These programmes rely on providers supplying appropriate ICT products, services and resources that institutions need, value and are prepared to pay for. Providers, Becta advises, should thus focus on delivering coherent and reliable services at an affordable price that institutions recognise as sustainable.

2.5 In pursuit of that objective, Becta announced in January 2006 that it intended to conduct a review of Microsoft's new operating system (later named Vista) and the update to its office productivity suite (later named Office 2007). The announcement of the review included the following statement:

Becta will also look carefully at what advice we give in relation to the advantages of coherence and continuity in the ICT institutional infrastructure, as opposed to, for example, investing resources in constantly acquiring the most recent versions of products.

2.6 In January 2007 we published an interim report based on early-release versions of Vista and Office 2007. The key recommendations in that interim report were these:

On Microsoft Vista

- the new features of Vista add value but do not justify early deployment in the educational ICT estate. We strongly advised schools and colleges to consider the findings of Becta's final report (this report) on Vista before considering any wide-scale deployment

On Office 2007

- schools and colleges should only deploy Office 2007 when its interoperability with alternative products is satisfactory

On interoperability

- microsoft should move to provide native support for the international standard for document formats (ODF) as soon as is practical and at the latest by mid 2007

On choice

- educational ICT suppliers should seek to facilitate choice to schools, shipping computers for this market with a choice of office productivity suites on the desktop. Ideally this choice should include an open-source offering

2.7 When publishing the interim report, Becta indicated that it would hold further discussions with Microsoft and with suppliers of competitor products, including free-to-use alternatives. We also indicated that we would evaluate what practical steps could be taken to facilitate the uptake of competitor products. We were clear that we would pay specific attention to how interoperability between Office 2007 and competitor products evolved.

2.8 The remainder of this report sets out the additional activities we have undertaken since the publication of the interim report, and our current views in relation to Vista and Office 2007. We also comment on developments in relation to interoperability and on competition and choice.

3. Review methodology

3.1 To ensure appropriate rigour, depth and breadth to the interim review, Becta initiated a wide range of activities encompassing:

- a detailed review of Microsoft Vista
- a detailed review of Microsoft Office 2007
- evaluation of competitor products
- a range of interoperability tests

3.2 In developing this final report, we appointed Oakleigh Consulting Ltd (Oakleigh) to conduct a further review which would involve revisiting and updating their earlier work and carrying out significant additional work including on-site assessments and systems upgrades, plus comprehensive testing of a wide range of interoperability scenarios. We also asked for Oakleigh's views on whether – taking account of the interoperability concerns set out in Becta's interim report, and of the subsequent developments – interoperability with Office 2007 was satisfactory.

3.3 Oakleigh began work in March 2007, completing most of their work between April and September 2007.

3.4 In addition to the review completed by Oakleigh, Becta held a number of meetings and discussions with Microsoft and the wider industry related to interoperability, competition and choice in the marketplace. Additionally, we held discussions with the UK and European competition regulators and we submitted evidence and arguments to BSI British Standards (BSI) as part of the wider international consultation on the approval or otherwise of Microsoft's own document format (OOXML) as an international standard.

Vista and Office 2007

3.5 We asked Oakleigh to update their assessment of the benefits of Microsoft's Vista operating system and its Office 2007 suite now that the products are on the market. Recognising that the assessment of deployment costs in our interim report was predominantly a desk-based exercise, we also asked Oakleigh to carry out an evaluation of the options and costs associated with the deployment of Vista and Office 2007 in the real-world educational environment.

3.6 This work included a series of on-site assessments of ICT networks in primary, secondary and special schools. Oakleigh also examined deployment options where ICT provision was delivered via a managed service. We asked Oakleigh to take account of experience gained in relation to the reliability, stability, usability and security of the products since the full market launch. We also sought recommendations in relation to the wisdom or otherwise of operating mixed Microsoft network environments consisting of, for example, systems based on Windows XP and Vista.

Interoperability

3.7 Our interim report recommended that schools and colleges should not deploy Office 2007 until its interoperability with competitor products was satisfactory. During 2007 a number of tools designed to improve interoperability between Office 2007 and competitor products have come onto the market. We asked Oakleigh to carry out:

- an evaluation of changes since our interim report with regard to support for Office 2007 document formats – both between different versions of Microsoft Office applications and between Microsoft Office 2007 and a chosen set of alternative office productivity applications
- a practical assessment involving testing and evaluating the support for interoperability in the context of home and school usage to determine 'ease of use' when working in mixed environments using documents created in different formats and with differing levels of complexity
- an assessment of the extent to which standards such as ODF and OOXML support interoperability, particularly in the context of home and school use

3.8 In order to ensure that the findings from the interoperability aspect of the review were relevant to the education sector, Becta identified a sample set of 100 documents which we considered typical of those produced or used in an educational context. Taking account of the complexity of each document, we asked Oakleigh to advise whether:

- the document could equally well have been prepared using competitor products
- it would have been possible to translate the document effectively using the various ODF converters available and using OOXML

3.9 We specifically asked Oakleigh to evaluate the converters available and to identify:

- the range of functionality and interoperability they supported
- the ability of users to select each of the converters as the default file format
- how effectively the converters were integrated into the relevant Microsoft Office products including Office 2000, Office XP, Office 2003, Office 2007 and, if appropriate, into Microsoft Works
- the contribution that the converters made to addressing home-school interoperability concerns.

4. Microsoft Vista and Office 2007

4.1 The initial work that Oakleigh carried out for Becta in 2006 identified a range of issues to be addressed prior to Microsoft's Vista and Office 2007 deployment across the educational ICT estate. The key areas explored were:

- additional functionality
- coherence of the ICT estate
- costs of deployment
- interoperability.

4.2 We set out below the impact on the issues identified of the further work undertaken in 2007 and we give our final recommendations on the deployment of Vista and Office 2007.

Product assessments

Reliability, stability and functionality

4.3 The review found Windows Vista to be stable. During the course of the review, Windows Vista Enterprise operating system was used as the platform on which to conduct a wide range of assessments and to generate reports. During the review there were no reported issues of data loss and the product was found to be reliable. The review also confirmed that there were no significant areas of concern in relation to any implications that the DRM (digital rights management) features of Vista might have on its use in an educational context.

4.4 In relation to Office 2007, the position on stability remains as described in our interim report. The product was found to be reliable and stable and there were no significant functionality changes between the version tested for our interim report and that released to the marketplace. The review confirmed that Office 2007 still performs well when running under Windows XP, which means that there remains no clear need to upgrade to Vista prior to any upgrade to Office 2007.

4.5 The review indicated that although there will be considerable training requirements inherent in any upgrade to Office 2007, given basic orientation, users should soon become familiar with the new look and feel of the application suite. However, in a classroom context some users may get confused by operating in an environment which has a mix of the new and the more familiar Office user interfaces.

4.6 While there are some usability improvements, the review confirmed that the key business benefits of the integration and collaboration features of Office 2007 are more relevant to a business environment than to the education sector.

4.7 Most of the new 'collaborative' features in Office 2007 (such as Groove) require the installation of additional server-side components. This introduces additional complexity and cost to the installation in order to be able to realise the benefits. The costing models do not reflect these additional costs.

Application compatibility

4.8 The results of the desk-based and on-site compatibility testing of Vista indicated that:

- two of the five networks tested had compatibility issues with about 10 per cent of their applications and two had issues with about 20 per cent. In the remaining network 40 per cent of the applications had compatibility issues
- two of the five networks tested had compatibility issues with about 10 per cent of their attached devices. In the remaining networks about 20 per cent of the devices had issues
- typically 60 per cent of application issues were related to the new security enhancements in Vista (User Access Controls)

4.9 Office 2007 introduces a new default file format and, as outlined in our interim report, this development raises a number of compatibility issues. Interoperability between Office 2007 and previous Microsoft Office versions and office applications from other suppliers remains unsatisfactory. We give more detail in Section 5 below.

4.10 Support for both the portable document format (PDF) and the XML paper specification (XPS) file format is available in Office 2007, which is of benefit in an education environment. However, this is only available as a separate plug-in which needs to be downloaded and installed – there is no 'out-of-the-box' integration or support for PDF or XPS file formats.

Deployment considerations

Approach to defining a deployment strategy

4.11 The review recommended a two-stage approach to defining a deployment strategy for a network:

- identify the upgrade scenario. This is the state of the network prior to upgrade, and any facts about current practice which are likely to have an impact on a deployment strategy
- specify the deployment strategy. This should be based on information in the upgrade scenario, and should include a plan which identifies the required resource and the deployment approach to take to the upgrade

Deployment strategy

4.12 As a result of the on-site assessments and continued investigations into deployment strategies for Windows Vista, the review identified a preferred approach for deploying Vista. This uses automated tools and procedures and minimum manual intervention – a process described by Microsoft as a 'lite touch' approach.

Upgrade tools

4.13 The review used freely available Microsoft tools from the business desktop deployment toolkit to provide assessment data for the model networks and actual school networks. During the review, Windows Vista migration products have also become available from companies such as Novell and Symantec, although the review was not able to evaluate these.

4.14 The review recommended the use of the Windows Vista hardware assessment tool wherever possible for hardware evaluation, and the application compatibility toolkit for assessing application compatibility.

Installation and upgrade timings

4.15 Although fresh installation timings were fairly consistent across different networks and machine specifications, the review confirmed that upgrades varied significantly according to the machine specification and the size of the installation upgraded. An upgrade will always take longer than a fresh installation. In general terms, the review suggested that it took around 30 minutes to do a fresh install of Vista Enterprise and about three times as long to do an upgrade. The timings for Office 2007 were similar to those for Vista – both for the fresh install and the upgrade.

Increased driver support

4.16 Since the release of Windows Vista there has been substantial movement by Microsoft and hardware manufacturers to provide Vista driver support for existing hardware devices, and the review reported that increasing numbers of devices are now supported under Windows Vista. This increase in support is expected to continue as the product becomes more established in the business and consumer marketplace, accelerating after the scheduled release of Service Pack 1.

Deployment costs

4.17 In updating their assessment of Vista costs, the review identified two key cost factors:

- the hardware specification required to run Vista
- the upgrade strategy

Hardware specification

4.18 In line with the approach adopted in Becta's interim report, the review confirmed that the Microsoft-defined 'Vista-capable' system would not effectively run Vista in an educational context. Consequently the costing assumptions in the review are based on upgrading systems to what are described as a 'Vista-sensible' specification – the minimum necessary to install Vista effectively (see the definition at Appendix 1). This specification will not run the Aero interface in Vista, as the graphics card specification is not fit for that purpose.

4.19 This specification was created to address the issue of the high upgrade costs associated with the Vista Premium/Aero-capable specification. The review of the Aero functionality highlighted that there was no significant benefit to schools and colleges in running Aero, so the Vista-sensible specification was created to provide a lower upgrade cost to education by not providing a graphics card powerful enough to run Aero.

4.20 While the review estimated that 66 per cent of machines in the schools ICT estate would be 'Vista capable', it estimated that only 22 per cent of machines would meet the required 'Vista-sensible' specification.

Upgrade strategy

4.21 The revised costs of deployment are based on the use of the 'lite touch' upgrade strategy and an estimate of the size of the ICT estate in schools in England and Wales in 2007.

Revised costs

4.22 The overall costs of deploying Vista in schools in England and Wales are in the region of £175 million. While this estimate does not include the additional graphics cards necessary to use the Aero interface (which would add significantly to the cost base), it includes the necessary hardware-upgrade costs, licence costs, testing, configuration and deployment costs. About one third of the total costs are attributable to Microsoft licensing costs.

4.23 The cost to a typical primary school of upgrading to Vista across its ICT estate would be in the region of £5,000 (about £125 per machine). For a secondary school, the cost of a similar upgrade would be in the region of £24,000, which indicates costs per machine of around £75. While these costs are in the same ballpark as the overall cost in the interim report, the component costs break down differently.

4.24 Hardware costs, for example, have reduced by about 33 per cent to £50 million as a result of increased support for Vista by hardware manufacturers. Conversely, deployment costs based on the recommended approach have risen by about 50 per cent to some £65 million. This increase flows from the need for more planning and preparation in advance of the implementation than Oakleigh originally assumed. This revised approach will result in reduced risks of failure during the implementation phase.

Final recommendations on Vista

4.25 Commenting on Vista, our interim report advised schools that the new features of Vista added value but did not justify early deployment in the educational ICT estate. We strongly advised educational institutions to consider the findings of Becta's final report on Vista before considering any wide-scale deployment.

4.26 Having completed our further work, we set out below our final recommendations on upgrading existing school systems to Vista, our recommendations in relation to operating mixed environments and in relation to new builds.

Upgrading to Microsoft Vista

4.27 Since the publication of the interim report, there has been time to gain considerable experience in the deployment of Vista. Vista has for the most part proved to be stable and reliable, with an increasing availability of drivers enabling the use of a wider range of peripherals. However, deployment costs remain high, reinforcing the importance of the recommendation in the interim report that, before publication of this final report, Microsoft should develop a comprehensive business case to underpin the case for Vista's deployment in the education sector.

4.28 We have not had sight of any evidence to support the argument that the costs of upgrading to Vista in educational establishments would be offset by appropriate benefits. Indeed, we noted the recommendation from Oakleigh that:

> We found very few changes between the beta version of Vista Ultimate Edition and the production version of Vista Enterprise Edition. None of the changes we found were considered to be significant in terms of the overall recommendations made in the previous report.

4.29 Oakleigh further advised:

> ... none of the second-phase findings alter our original recommendation that an upgrade to Windows Vista is not recommended at present in the UK educational environment.

Recommendation

The new features of Vista add some value but, taking account of the deployment costs and potential benefits, widespread upgrade of the ICT estate in schools and colleges is not recommended.

Operating mixed environments

4.30 Recognising that schools and colleges with an infrastructure that is based predominantly on Windows XP may acquire new computers with Vista pre-installed, we asked Oakleigh to comment on the technical and support implications of operating a mixed Windows environment. Oakleigh concluded:

> We do not recommend the use of PCs in a mixed operating-system environment (for example Windows Vista and Windows XP). Although there are no technical reasons why this is not possible, running multiple operating systems in a single network greatly increases maintenance and support overheads.
>
> Any policy, update or application rollouts need to be tested separately on each operating system, and training and support costs are increased. Where applications are only supported on one or other of the operating systems, this can lead to problems with machine availability or duplicated licensing costs.
>
> For these reasons we recommend that new machines that come with Windows Vista pre-installed be downgraded to Windows XP until such time as the entire network can be upgraded.

4.31 Oakleigh identified a number of non-technical arguments against a mixed environment, including the following:

- the different look and feel to Vista as compared to Windows XP may mean that staff and pupils require training or familiarisation with the new operating system. This may cause confusion if a class or key stage uses both operating systems
- systems running Windows Vista may require different versions of an application or even different products. This may cause confusion if staff or pupils need to use both operating systems. It may also generate a requirement to develop resources for a given lesson or project separately for systems based on Windows Vista and those based on Windows XP
- the need to schedule ICT resources such as rooms or clusters to allow for access to a specific version of an operating system or application may introduce additional complexity.

Recommendation

There may be merits in schools operating ICT environments of mixed operating systems, such as Windows, Mac and Linux, where appropriate. However, we recommend that schools and colleges which currently have a coherent ICT estate operating under Windows XP and which subsequently acquire additional Vista-based systems, should where possible, exercise their software downgrade rights and maintain their Windows operating system cohesion.

New build

4.32 Our concerns in relation to the cost benefits associated with upgrading to Vista, or in relation to the complexity associated with operating mixed environments are not relevant in situations where schools and colleges are contemplating replacing their entire ICT estate or in new-build situations. Under such circumstances Vista should be evaluated on its ability to meet the relevant technical and functional requirements in a cost-effective manner.

Recommendation

Schools and colleges should evaluate Vista where they are planning new institution-wide provision as opposed to upgrading existing provision or operating mixed Windows environments.

Final recommendations on Microsoft Office 2007

Upgrading to Office 2007

4.33 Our interim report recommended as follows:

> Microsoft should develop a compelling business case to underpin any rationale for deploying Office 2007 in UK education. The business case should take account of the nature and scale of deployment of existing office productivity tools, and should also identify the additional educational capabilities that Office 2007 would offer to offset the additional costs. Ideally such a business case would be available before Becta finalised its recommendations in relation to Office 2007.

4.34 We have seen no such business case for deploying Office 2007 in the educational estate. Again we have noted the most recent advice of Oakleigh, who reported:

> We found very few changes between the Beta Version of Office 2007 and Microsoft Office Enterprise 2007. None of the changes found were considered to be significant in terms of the overall recommendations made in the previous report.

4.35 Oakleigh identified a number of key findings emanating from their more recent work:

There is still no real benefit to be obtained by upgrading to Office 2007.

Additional configuration and installation of software components is required to achieve interoperability between versions of Microsoft Office and/or alternative office applications.

There are some usability improvements in Office 2007. However, there is a low level of support for interoperability in the context of home and school use.

4.36 It is important to ensure that there are no unnecessary impediments placed in the way of pupils, teachers and families when documents need to be exchanged between the home and the school or college. Such impediments could have the effect of restricting the use of systems using other document formats or result in the imposition of unnecessary financial burdens.

Recommendation

No widespread deployment of Office 2007 should take place until schools and colleges are sure that they have in place mechanisms to deal with the interoperability and potential digital divide issues set out elsewhere in this report.

4.37 The review indicated that mixed environments (that is those running multiple versions of Microsoft Office applications) in educational establishments are likely to be prevalent for some time to come and that this will bring added complexity.

Recommendation

Schools and colleges that are considering an upgrade to Microsoft Office 2007 should only do so in the context of a wholesale move to a single version of the Office product within a specific establishment/environment.

5. Interoperability developments

5.1 We set out in this section our findings in relation to interoperability. We focus on document interoperability between office productivity applications as opposed to any wider definition, and our recommendations should be considered in that context.

The importance of interoperability

5.2 Effective document interoperability reduces costs, improves productivity and avoids user lock-in. While interoperability is far from being simply a technical debate about standards, those standards are nevertheless important. They play a key role in ensuring the fit-for-purpose technology solutions discussed in Section 2.

5.3 Interoperability, however, through de-facto standardisation (using products from a single supplier) can impede competition and choice, thus pushing up costs. Increasingly governments, commercial users and the educational community are not prepared to see their information locked into a format controlled by any individual supplier. That has resulted in a movement away from proprietary file formats to new, more open, file formats under the control of an effective standards body as opposed to a single supplier. Such developments hold out the opportunity of significant benefits not just to schools and colleges, students' homes and families, but also to society generally.

Interim report findings

5.4 At the time we published our interim report we identified a number of concerns in relation to the interoperability capabilities of Office 2007. These concerns were:

- the move in Office 2007 to a new file format that no other product supported
- the ineffective support for the international document standard (ODF) increasingly used in many competitor products

5.5 We recognised that using the default file format of Microsoft Office 2007 had the potential to exacerbate 'digital divide' issues as a result of the loss of interoperability with free-to-use products (such as Star Office and OpenOffice.org). We recommended that Microsoft should move quickly to provide more effective support for the international standard. We further recommended that schools and colleges should only deploy Office 2007 once its interoperability with alternative products was satisfactory.

Developments since publication

5.6 Microsoft has not moved to address the interoperability concerns we identified in relation to support for the existing international document standard. Microsoft has, however, continued to seek approval for the establishment of a second international document standard (Office Open XML) based on its Office 2007 file formats.

5.7 There continues to be considerable controversy around the possibility of the ratification of two international standards for open document formats, and around the perceived lack of openness of some aspects of Microsoft's proposed new document standard. The proposed second standard narrowly failed to achieve the necessary support in an international vote in September 2007. We expect a final decision to be made in early 2008.

5.8 For its part, Microsoft has argued that the ODF standard agreed in May 2006 does not adequately address the needs of users regarding access to documents stored via previous versions of Office, and that a further international standard is therefore justified.

5.9 When we published our interim report there were no non-Microsoft products available that could read Microsoft's new file formats. Since that time suppliers such as Novell and Corel have announced the intention to develop their own tools to improve the interoperability of their products with Office 2007. Neither of these tools was available to the review during its interoperability testing phase.

Approach to interoperability by design

5.10 Microsoft's current approach to providing interoperability with the ODF standard is by facilitating the development of a third-party 'add-in' or 'converter' to Office 2007 rather than by developing the functionality itself and integrating it fully into its product. The current approach raises concerns in relation to non-technical users over both how they access the necessary interoperability functionality and how intuitive it is to use.

Accessing interoperability functionality

5.11 Under arrangements pertaining at the time of the review, users needed to go online to a third-party website and complete a range of technical tasks before they could satisfactorily open, edit and save ODF file format documents. The steps included:

- understanding that a converter for their particular version of a Microsoft product has been developed by a third party
- locating and navigating to the appropriate third-party website
- identifying the correct version of the converter for their particular Microsoft Office product
- selecting the correct language version of the converter
- reading and accepting the licence conditions for the converter
- reading and accepting the licence conditions for the Microsoft .Net 2 framework necessary to install and use the converter
- installing the Microsoft Net 2.0 framework
- reading the release notes
- downloading and installing the converter
- repeating all the above steps for each product (Word, Excel, PowerPoint) where the user wants to be able to save files in the international standard.

5.12 Users would have to complete all these steps the first time they installed the converter and then repeat most of them each time an upgrade or bug fix for any of the converters they use was released. This represents a considerable hurdle for non-technical users and an inefficient use of resources.

Using interoperability functionality

5.13 Having taken all the steps necessary to install the converter and allow users to save documents in the ODF standard, we have examined the extent to which its use is intuitive. We set out below, both for Microsoft's OOXML format and the ODF format, how typical functions operated during our review.

Activity	Microsoft OOXML format	International standard ODF format
Is the functionality for opening and saving files in this format included in Office 2007 'out of the box'?	Yes	No Virtually every relevant file format except ODF is supported 'out of the box'.
Can the document format be set as the default file format in Office 2007?	Yes	No Virtually every relevant file format except ODF can be set as the default file format. The user must remember that Office 2007 treats ODF differently every time they want to save a file using ODF.
Does 'File open' work as normal?	Yes	No The normal 'File open' command will not open an ODF file correctly. The user must use a special 'ODF open' item in the file menu. Failure to do this results in the appearance of a screen that makes the ODF file look as though it contains unintelligible, corrupt or encrypted text.
Does 'File save' work as normal?	Yes	No The normal 'File save' command will not save an ODF file correctly. The user must use 'Save as ODF' in the file menu.
Can I double click on the file and automatically open the relevant Office 2007 application?	Yes	No As with 'File open', doing this results in the appearance of a screen that makes it looks as if the ODF file contains unintelligible, corrupt or encrypted text.
Is the software supported by Microsoft?	Yes	No The ODF 'add-in' is developed via an open-source project and is unlikely to be covered by a Microsoft support contract.

5.14 We believe that these arrangements to access and use the functionality to interoperate with competitor products in Microsoft Office 2007 present technical difficulties. These difficulties are likely to make most users disinclined to use competitor products and thus competition will be damaged.

5.15 We have discussed with Microsoft on a number of occasions their rationale for not providing effective integrated interoperability with the ODF international document standard. The various explanations Microsoft gave us included:

- timing difficulties – it was impossible to provide integrated support in time to meet the release schedule for Office 2007
- low level of interest in the ODF standard by their customers during the Office 2007 development phase
- customer demand – customers were not seeking integrated support
- community credibility – the open-source community would prefer that Microsoft did not itself provide converters for the ODF standard

5.16 We found those arguments unconvincing. It is clear that Microsoft's approach to accessing and using ODF-related functionality presents a range of barriers to non-technical users. We consider these barriers particularly unhelpful in the context of home-school usage where there is a growing range of credible 'free-to-use' alternatives which use the ODF as the default file format.

5.17 We have therefore complained to the Office of Fair Trading, alleging that Microsoft's approach to interoperability will marginalise the document standard increasingly used by its competitors and that this will have the effect of damaging the uptake of competitor products. The interoperability that Microsoft makes available in Office 2007 for competitor products is less than it makes available for its own family of products. We argue that this puts competition at risk and is an abuse of a dominant position by Microsoft. The OFT is considering our complaint.

Testing scenarios

5.18 The review developed a range of tests to explore common interoperability in two different scenarios:

- between different versions of MS Office: for example creating a spreadsheet in Excel 2007, amending and saving it and then reopening it in Office XP
- round trips between office suite applications (Microsoft and non-Microsoft): for example creating a Word 2007 document, amending and saving it and then re-opening it in OpenOffice.org

Between versions of Microsoft Office

5.19 Interoperability between Microsoft Office 2007 and earlier versions of Microsoft Office is not available 'out of the box'. However, Microsoft has produced an update to its compatibility pack of add-in software which should allow previous versions of Microsoft Office to open the Office 2007 file formats. This approach is generally successful but, depending on the office productivity product used, under certain circumstances it will introduce varying degrees of degradation or loss of fidelity.

Round-trip conversions

5.20 Each test developed consisted of creating a round-trip scenario in which a 'school' document was created in an Office 2007 application (such as Word, Excel or PowerPoint) and then saved in a format that would allow it to be opened at 'home'. At 'home' the document was opened, then edited and saved it in a format that would make the changes recognisable on opening the document again in the 'school' Office 2007 application.

Applications Tested

5.21 The applications assumed to be in the home, and against which the review tested interoperability with a school using Office 2007, were:

- Microsoft Office XP
- Microsoft Office 2003
- alternative office suite with ODF support (OpenOffice.org)
- alternative office suite with no ODF support (Ability Office)
- Microsoft Works 2006 or older (Microsoft Works 8.5)

Summary of findings – Versions of Microsoft Office

5.22 Microsoft has produced an update to its compatibility pack of add-in software which is meant to enable users of previous versions of Microsoft Office to open the Office 2007 default file formats. Depending upon the complexity of the document, this results in varying degrees of degradation of the file content known as 'fidelity errors'. For instance, complex or heavily formatted documents may appear different when viewed in previous versions of Office using the compatibility pack software to translate document formats. This may have happened either because there were features that the earlier version of the product did not support, or because the earlier version behaved differently. We give below some details of the fidelity errors.

Loss of fidelity

5.23 Some typical situations in Microsoft Word include the following:

- equations become embedded graphics that are impossible to change
- themes, theme colours, fonts and other text-based effects may be converted (permanently) into styles
- charts and diagrams may be converted into images that are impossible to change

5.24 Some typical situations in Microsoft Excel include the following:

Loss of table style formatting

- loss of embedded objects
- incorrect functioning of some of the more complex formatting associated with the data-analysis tool (pivot tables)
- excel 2007 provides for many more cells in a spreadsheet. However, there will be a loss of formula values, references and names entered into these additional cells during translation

5.25 Some typical situations in Microsoft PowerPoint include the following:

- charts may be converted into objects which, although editable, appear differently
- heading and body fonts may have their formatting altered
- features and effects specific to PowerPoint 2007 may be converted into non-editable pictures

Summary of findings – Microsoft and non-Microsoft

5.26 The review concluded that common interoperability between Microsoft and non-Microsoft office suite applications is not integrated and causes problems such as loss of content and formatting changes to documents. Oakleigh commented:

The versions of the ODF plug-ins that we tested we perceive as a hindrance to common interoperability. They are not integrated into the Office 2007 suite and cause elements from documents to be either lost or changed.

In the context of home and school usage, interoperability is not adequate to the extent that it may be deemed 'easy to use'.

5.27 We began this section of our final report by outlining the significant opportunity that the move to open document standards holds for educators. Based on the findings from the review and on research and developments since our interim report was published, it is clear that the current approach to achieving document interoperability is characterised by:

- a move to a new file format in Microsoft Office 2007 which, while potentially advantageous, 'breaks' interoperability at the default file format level with competitor products, including free-to-use alternative products
- the inability to set the default file format in Office 2007 to the ODF international standard
- a drive by Microsoft to establish a second international document standard (incompatible with the ODF international standard)
- a lack of credible support by Microsoft for the ODF international document standard, which creates significant difficulties for non-technical users who want to use competitor products, and which has the potential to limit the uptake of such products and exacerbate the digital divide
- an approach to delivering interoperability by Microsoft and other suppliers based on the development of multiple patches, add-ins and converters of variable effectiveness and availability. This suggests that interoperability requirements are low priority needs which 'sticking plaster' solutions can meet, as opposed to addressing them by integrating well designed functionality.

5.28 Left unchecked, these developments will create for non-technical users a document-interoperability landscape which is highly complex and involved, which would absolutely defeat the original purpose of a move to open document standards. Microsoft has a dominant position in PC operating systems and this is likely to be enhanced by its current approach to open-document standards. We summarise in the remainder of this section:

- Becta's formal position on document standards
- tactical recommendations which schools and colleges can follow now
- strategic actions which Becta will take to ensure delivery of the original objectives of a move to open standards

Document standards

5.29 It is a mandatory requirement under Becta's technical specification for institutional infrastructure that office applications used in schools and colleges must have the functionality to create, edit, save and print documents files in open standards file formats. The acceptable standards are as follows:

Document Type	Acceptable formats
Text	Plain text as .txt files or Plain/formatted text as rich text format (.rtf) or Plain/formatted text as OpenDocument format (.odt)
Spreadsheets	Comma-separated variable (.csv) or OpenDocument (.ods) format
Presentations	Hypertext documents (.html) or OpenDocument (.odp) format

5.30 The tactical recommendations set out below indicate how best to configure applications in the short term to facilitate interoperability, taking account of the limitation of the approaches currently available in Microsoft Office. They do not affect the need for applications to be capable of saving documents in the acceptable formats summarised above.

Tactical recommendations

5.31 The review made the following recommendations on how, in the current circumstances, schools and colleges can best achieve interoperability with the minimum loss of document formatting and content. While Becta has accepted these recommendations, we believe that they should be regarded as short-term tactical options for working within the limitations of the present arrangements. The following are therefore short-term recommendations only.

Microsoft Office 2007

5.32 Users of Microsoft Office 2007 should not save documents in OOXML format. Instead, they should save them in the older Microsoft formats (.doc for word-type documents, .xls for spreadsheet documents and .ppt for presentation documents).

Microsoft Office 2003 and earlier

5.33 Users of Office 2003 or earlier should install the compatibility pack in order to be able to open any OOXML Office 2007 documents they receive. They should not save documents in OOXML format. Like Office 2007 users, they should save documents in the older Microsoft formats (.doc for word-type documents, .xls for spreadsheet documents and .ppt for presentation documents).

Non-Microsoft products

5.34 Users of OpenOffice.org or Star Office (or indeed any other open-standard office-productivity suite) will need to be more aware of the technology used by the intended recipient of their documents to account for the limitations of Office 2007. To ensure compatibility, these users should always save their documents in the older Microsoft formats as this is the lowest common denominator for supporting interoperability between these disparate product sets.

Strategic recommendations

5.35 The need to continue to use existing proprietary binary formats to achieve satisfactory interoperability is testament in itself to the fact that open document formats are not currently delivering their potential benefits. This is a situation which is due in no small way to their ineffective integration into mainstream products and to functionality shortfalls in the translation capabilities of those products themselves.

5.36 It is important therefore to take the relevant strategic steps to avoid losing the potential benefits which should flow from a move to open standards and allowing suboptimal arrangements to be permanently imposed on schools and colleges. Becta supports the recommendation of the recent pan-European e-government services committee (PEGSCO) which stated that:

'Suppliers should develop applications that can handle all relevant international standards, leaving the choice to their customers as to what format will be used "by default".'

5.37 Becta considers it important that changes ostensibly designed to introduce greater openness into a marketplace should not, through ineffective implementation, be allowed to limit competition and choice or to place unnecessary technical and financial burdens on education and home-based users.

5.38 Becta did not conduct technical assessments of the merits of either the existing international document standard (ODF) or the proposed second international document standard (OOXML). We are not convinced that the development of multiple international standards addressing basically the same area of activity is in the interests of educational users. As we have stated previously, we believe that such an approach will introduce confusion, complexity and unnecessary costs. It constitutes a lost opportunity of considerable proportions that will damage the marketplace, the educational community and indeed the concept of international standards per se.

5.39 Again Becta supports the position taken by PEGSCO when it recognised the need:

'to work together towards one international open document standard, acceptable to all, for revisable and non-revisable documents respectively'.

5.40 To facilitate such an outcome Becta will:

- continue to make the necessary representations to the standards-setting bodies regarding the implications of dual standards for schools and colleges
- use its advisory and requirement-setting responsibilities to encourage the use of products which provide effective interoperability, and to ensure that schools and colleges only deploy products which effectively adopt international standards
- establish a programme to explore the extent to which an approach to open document formats and standards can be developed and implemented across the UK education system

6. Competition and choice

6.1 We set out here our comments on market developments since the publication of the interim report. We describe briefly the nature of the industry consultations we have held and the key issues emanating from those consultations.

6.2 We outline an enhanced programme of work to drive forward the agenda of competition and choice in the educational ICT marketplace. We also update our recommendations for choice on the desktop, and address some issues in relation to the uptake of non-proprietary software in schools.

Market developments

6.3 There have been some developments in relation to the availability of operating systems and office productivity software since the publication of our interim report. These developments include:

- further enhancement of the online Google Apps product set, including the availability of presentation software
- the incorporation of Star Office into the free download Google Pack
- the release by IBM of a new free version of Lotus Symphony
- the announcement of the Microsoft Student Innovation Suite (the '$3 desktop') incorporating Microsoft Office 2007
- an increasing availability of systems targeted at the home using a Linux-based operating system and Linux-based applications
- the emergence of low-cost innovative 'mini-notebooks' which – while capable of running Microsoft Windows – have also been brought to the market running a version of Linux and a range of Linux-based applications, including OpenOffice.org

Competition concerns

6.4 These developments indicate an increasing number of competitor products in the office productivity area, and that innovative systems based on alternatives to Windows are now starting to emerge.

6.5 However, if such innovations are to flourish in the education marketplace, it needs to operate in the absence of barriers to competition – whether licensing restrictions or interoperability impediments. Thus, for example, Becta considers arrangements whereby a device based on Linux attracts annual payments to Microsoft under its School Agreement licensing model, despite the fact that the device is not actually running any Microsoft software, to be unacceptable. Such arrangements fall within the scope of our current OFT complaint.

6.6 We indicated earlier the strategic steps we have taken to prevent the introduction of open file formats from having the effect of impeding, as opposed to facilitating, the uptake of competitor products.

Industry consultations

6.7 As part of the follow-up to our interim reports on Vista and Office 2007 and on Microsoft's academic licensing arrangements, we engaged in a series of consultation meetings with educational and commercial stakeholders to explore with them the issues identified in those reports.

6.8 The key issues we explored with the industry stakeholders were:

- what practical steps to take to improve the availability and choice of office and operating-system products to schools
- the provision of support for these products for schools
- the impact of mixed economies of operating system and productivity products in schools
- the costs of deploying Vista and Office 2007 in the school estate
- the methods of licensing educational products to schools

6.9 The key messages emanating from the consultation were as follows:

- the supply side considers itself well placed to offer choice on the desktop in relation to office productivity software, provided that it is a user or a Becta-driven requirement
- the cost implications of that choice are not considered to be significant
- unlike other sectors where demand for open-source solutions was visible and increasing, demand in the education sector was generally estimated as low, with Becta regarded as key to establishing demand

6.10 Those consulted felt that there was more that Becta could do to facilitate choice. Key priorities were the need for Becta to:

- be rigorous about adopting and driving forward supplier-independent standards
- be alert to the bundling of products in the marketplace as this could hinder take-up of competitor products or alternative technologies such as web-based delivery of solutions
- communicate more examples of the successful deployment of open source in the education system

- work to ensure that as wide a range of technology solutions as possible are being offered under BSF, and that impediments to the use of open-source solutions in the programme are addressed whenever possible

Enhancing choice

6.11 During the next twelve months Becta will take a number of steps to encourage more effective choices for educational users. The work will involve delivering a programme of work designed to:

- improve the information on Becta's website about what open-source software is and its benefits to UK education
- build on the existing research base in relation to the use of open-source solutions in the education sector and identify exemplar deployments of open source. This would include developing a national picture of the current use of open-source software in schools and colleges
- work with the open-source community to develop an online catalogue of open-source software suitable for use in UK schools. The information available would include how to get support for open-source products and how to contribute to their future development. The catalogue would be published under a creative commons licence so that suppliers could repurpose it for their own use
- give guidance on how open-source companies can effectively participate in new framework competitions and how they can provide open-source solutions via Becta's existing framework suppliers
- work with Partnership for Schools to address any impediments in relation to the use of as wide a range of technologies as possible in BSF, and to encourage easier access by learners, teachers and parents to a wide range of free-to-use educational ICT products via BSF

Addressing issues of mind set

6.12 Some schools and colleges take the view that they need to use a specific proprietary software product because that product is widely used in industry and commerce, and, the argument goes, students need to be familiar with what is in the 'real world'. There are certainly some cases where this argument can be justified. For example in vocational courses with a specific industry focus where a small number of applications are widely used in that particular industry, it can be important for students to be familiar with those specific applications.

6.13 However, students today are usually highly ICT literate, and are likely to use a wide range of ICT software in school or college – possibly even a wider range at home. They can also happily switch from using computers at school to those at home or in the local library or internet café. They would be very unlikely to be incapable of using a particular version of an office productivity suite when they left school because they had become used to using (say) OpenOffice.org at school.

6.14 In summary, the 'familiarity' argument is more suited to pupils of the 1980s and 1990s than to those of the 21st century. Indeed it would be a poor testament to today's ICT education if, on leaving formal education, young people were unable to use a basic software package (such as office productivity software or a web browser) just because it had some differences in functionality, or in its user interface, from the one they had used at school or college. Multi-vendor skill sets should enhance employability in the 21st century, not limit it.

6.15 Recognising this fact and that an increasing number of functionally capable office productivity packages are becoming available on a free-to-education basis, schools and colleges should ensure that students know how to access such software and how to use it.

Recommendations

Whenever possible, schools and colleges should ensure that students, teachers and parents are aware of the range of 'free-to-use' office productivity suites that are available and how to access and use them.

Schools and colleges should configure their office-productivity systems in such a way that they do not place impediments in the way of learners, teachers and parents who use alternative products (including 'free-to-use' products) at home.

6.16 In our interim report we were clear that industry could play a part in facilitating greater choice in relation to office productivity software. Our recommendations included the following:

Educational ICT suppliers should seek to facilitate choice to schools, ensuring that computers for this market are shipped with a choice of Office productivity suites on the desktop. Ideally this choice should include an open-source offering.

6.17 Our consultations with industry lead us to conclude that there are no significant reasons why our recommendations for choice on the desktop cannot easily be met.

We are aware that during 2007 some schools and colleges have deployed trial versions of Office 2007 software, leading to confusion at the end of the trial period over whether or not schools and colleges or indeed parents (when students try to use such files at home)
have to buy the proprietary product.

Recommendations

The ICT industry should be pro-active in configuring the products they ship to schools and colleges to allow easy access to a 'free-to-use' office productivity application – ideally one that is open source.

When specifying new systems, schools and colleges should normally insist on the desktop having access to office productivity software that is capable of opening, editing and saving documents in the international standard ODF, and setting it as the default file format. Such products should be procured on the basis that they can be made available to students, teachers and parents for home use without attracting additional licensing costs.

Schools and colleges should exercise caution in their use of trial versions of commercial software – particularly where students, parents or teachers may feel that the only way to access the files generated is to buy a copy of the software.

Appendix 1

The Oakleigh-recommended 'Vista-sensible' PC

The following 'Vista-sensible' specification was based on Oakleigh's knowledge and belief. Oakleigh have confirmed that this specification has not been subject to any validation.

Becta and Oakleigh would recommend that, before investing in any new hardware, schools and colleges insist on thorough evaluation and testing of any specifications in order to determine their suitability for purpose.

Technical specification

- 1GHz 32-bit (x86) or 64-bit (x64) processor

While Windows Vista will run on a slower processor, performance would be a limiting factor to the usefulness of the machine.

- 1GB of system memory

While Windows Vista will run with 512MB memory, use with more than one application simultaneously would result in a performance hit owing to hard-disk swap-file activity.

- hard drive with 15GB free space

Windows Vista with Office 2007 occupies approximately 9GB of space, so the threshold for hard-disk space beyond this limit will depend on the application and data storage requirements of the particular machine.

- a DirectX 9 graphics processor that is capable of providing SVGA (800x600)

As stated in our original report, we do not consider that Windows Aero Graphics offers enough benefit to justify the cost of upgrading a graphics processor. As long as the graphics processor is supported by Windows Vista and can offer resolution of at least 800x600 (and preferably 1024x768) at 32-bit colour, this should be adequate for most applications.

- internet access capability

Windows Vista makes extensive use of the internet. In addition to the Windows Update security and maintenance features, registration is greatly simplified by online access. Help files are kept up to date online and many application vendors are now using the internet to supply patches and feature upgrades. While the operating system could function in a non-connected environment, we recommend an internet connection as highly desirable for a Windows Vista machine.

Becta leading next generation learning

Millburn Hill Road
Science Park
Coventry CV4 7JJ

Tel: 024 7641 6994
Fax: 024 7641 1418
E-mail: becta@becta.org.uk

www.becta.org.uk

01/DD07-08/157/TT/100

The raw material for this paper is sourced from fully certified sustainable forestry and is fully recyclable.