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TechNews is a technology, news and analysis service aimed at those in the education sector keen to stay informed about technology developments, trends and issues. Please navigate the newsletter by clicking on items within the table of contents.

Networking and wireless

Analysis: Trusted Computing and Network Access Control

One of a network manager's most significant concerns is security. An increasing amount of personal equipment is brought into school to be attached to networks and wireless links mean that even people outside buildings can present a risk. This risk might be intentional, such as that presented by hackers attempting to piggyback a school's internet link; or unintentional, such as a teacher's PC unknowingly carrying a virus into school from their home computer.

Two areas of development addressing these scenarios are Trusted Computing and network access control. Trusted Computing uses hardware security to control functions of a computer - potentially over and above the desires of a user - and increase security. Network access control sets out requirements for client computers to meet before being allowed to fully join a network.

Developments, led by Intel, AMD, HP, Microsoft and IBM over the last five years through the Trusted Computing Group (TCG), involve building stronger links between hardware and software. This will mean that the hardware will control much more tightly how software runs and which software can run on particular hardware, potentially reducing the risk of software attacks. The core of the Trusted Computing hardware is a TPM (Trusted Platform Module). This is the hardware controller of all Trusted Computing functions and is being adopted in many computers and other devices such as mobile phones. The TPM provides increased security by authenticating a hardware device and providing secure storage of encryption keys, passwords and digital certificates.

This is a controversial area as privacy advocates have expressed concerns that users may be restricted in what they can do with their computer and applications. TC will allow approved software to run using reserved memory and system resources. This will also make Digital Rights Management (DRM) more robust.
http://www.trustedcomputinggroup.org/

Currently there are few applications that use or plan to use Trusted Computing. Perhaps the highest profile is Intel-based Apple computers which use a Trusted Platform Module installed on the motherboard to prevent OS X being run on non-Apple hardware. Microsoft Windows Vista is expected to make use of this hardware to secure its drive encryption features. The Microsoft Next-Generation Secure Computing Base (NGSCB) is their implementation of Trusted Computing. This was originally expected to be part of a number of features in Microsoft Windows Vista. However, currently this has been scaled back to a smaller number of features including drive encryption. Intel's new vPro platform also includes TPM technology to improve security and control of PCs.
http://www.techworld.com/security/news/index.cfm?NewsID=4167

In a school or other managed environment Trusted Computing offers way of adding restrictions to a computer. For example a TC client will be able to be prevented from running any non-authorised software (eg malware) at a hardware level. This will be a

measurable improvement over current software-restrictions such as those applied through operating systems. Therefore, in the future, managed clients will be much more controllable, even if they are restricted to only using certified software.

Network access control (NAC) services will increase security and control across networks. They will enforce a security policy, restrict certain kinds of traffic, quarantine devices that do not meet the policy and prevent the spread of malware. For example a NAC system might check that all computers connected to a network meet a minimum specification of anti-virus software, personal firewalls and operating system patches and only allow access to the internet and other computers if this is in place. These NAC solutions are predicated on underlying standards being in place, such as 802.1x. 802.1x is an authentication standard that works on Ethernet LANs, including wireless access points.

There are currently several competing approaches to network access control. These include NAC appliances; control software installed on network devices or temporarily installed to unknown devices joining the network; and the infrastructure approach being taken by Microsoft and Cisco.
http://www.microsoft.com/technet/itsolutions/network/nap/default.mspx
http://www.cisco.com/en/US/netsol/ns466/networking_solutions_package.html

Cisco and Microsoft are currently developing competing products. Cisco markets a network admission control product called Network Admission Control (NAC), while Microsoft Network Access Protection (NAP) is found in Windows Vista and Windows Server. These are tackling a similar problem from two perspectives – Cisco with a network appliance with a range of agent software, while Microsoft is building on the client/server operating system. Both companies have recently announced a plan to work together to deliver interoperability, but this is unlikely to be realised in practice until after the launch of the server edition of Microsoft Windows Vista/Longhorn. The Trusted Computing Group is separately investigating open infrastructure based NAC architecture.
http://newsroom.cisco.com/dlls/2006/prod_090606.html
http://www.infoworld.com/article/06/06/02/78706_23TCnac_1.html

The final part in the jigsaw of security is user authentication. Trusted Computing concepts will enable a highly granular level of user monitoring and tracking, down to individually identifiable, ‘non-spoofable’ PC information – should managers choose to deploy it.

Any initiatives that support the network manager in delivering a robust, scalable and reliable service should be welcome, but there are concerns that IT managers and other users will lose some control over their hardware, software and content. It is likely to be around 2 years before this approach even begins to be seen in volume and probably another 3 years before most infrastructure is supported. Schools, although great potential beneficiaries from this level of control, are likely to be late rather than early adopters of the total solution. This will allow corporate early adopters to work through the issues before network equipment and clients in schools become compatible.

Networking and wireless news

Becta Infrastructure Services Framework

Becta has announced its latest procurement framework. These frameworks are designed to allow schools and local authorities to buy high quality, appropriate and affordable ICT Services; comply with EU regulations on purchasing; achieve value for money through aggregating purchases with other schools; and develop reliable and coherent ICT in line with national strategies. The Infrastructure services framework provides a comprehensive supplier network to deliver high quality ICT solutions and services to education. Services available through the framework include system design, hardware and software provision, training, implementation and ongoing technical support. This framework was conducted according the European procurement rules which mean that customers are not required to go through the full process themselves. Instead local authorities and schools are able to conduct a much simpler mini-competition. All services meet Becta's standards and specifications for Institutional Infrastructure and suppliers are monitored to maintain a high quality of service. Although the full range can be purchased as a 'managed service', educational institutions can also purchase individual services which can be integrated with existing ones, for example provided by the local authority.
http://schools.becta.org.uk/index.php?section=re&catcode=ss_res_pro_bps_inf_04

802.11n update

802.11n is not expected to be finally ratified until 2008 and is designed to deliver high speed wireless networks with real world data rates over 100Mbps. This is expected to find applications in business/education as well as in home networks allowing multimedia to be streamed between devices such as PCs and set-top boxes. Intel has announced that it will release pre-802.11n chipsets next year and is currently testing for interoperability with various manufacturers who have already launched devices based on Draft 1 of the standard. As previously reported, the Wi-Fi Alliance is expected to offer certification for pre-standard 802.11n devices in the first half of 2007. This should give buyers more confidence that products will be interoperable, but analysts advise it may be better to wait for the standard to be fully ratified.
http://www.wi-fi.org/

Predicted growth in GPS-based services

The market indifference to 3G services has encouraged mobile phone manufacturers to look for alternative applications including links to location-based services (LBS). These are services that directly target users based on their location offering some personalisation and contextualisation. A new study by ABI Research suggests that in 2011, the total population of GPS-enabled location-based services (LBS) subscribers will reach 315 million, up from 12 million in 2006. This represents a significant growth and if such services are deployed successfully then they could have a real impact on mobile applications with smarter technology. Possible applications include vehicle and equipment tracking, variable charge calling and providing location information to emergency services. Several education projects have shown the value of providing context/location based information to learners.

http://www.3g.co.uk/PR/Sept2006/3701.htm. For example HP has announced a partnership with the UK's Historic Royal Palaces to develop a location aware game using handheld computers in the Tower of London. This kind of application is likely to become more popular in other museums and galleries.
http://www.lbszone.com/content/view/1359/2/

Mobile WiMAX

The 802.16-2005 mobile WiMAX standard was agreed late last year and now products are being tested for compliance and interoperability. This has led to a number of manufacturers showing off their new products, but analysts are warning purchasers that this early equipment is still a risky choice. WiMAX is an emerging wireless broadband technology. A limited mobile WiMAX service has already been launched in South Korea. There are two main approaches to achieving better WiMAX performance: MIMO and beamforming. It is expected that equipment will eventually use both alternative approaches, but this is not the case with current offerings. According to a recent report by Rethink Research (http://www.trendsmedia.com/pdf/WimaxOperatorSpending.pdf), global spending on Mobile WiMAX equipment is expected to reach $6bn by 2009 – giving some sense of the scale of investment that is being made in new wireless technologies. The various operators who have licences to operate WiMAX around the world have formed the WiMAX Spectrum Owners Alliance (WiSOA). This group hopes to promote the applications and take-up of WiMAX internationally. Intel is expected to release Wi-Fi/WiMAX chipsets for laptops by 2008.
http://www.wisoa.com/site/
Mobile WiMAX is expected to offer 3-5Mbps of bandwidth to mobile devices in competition with 3.5G networks such as HSDPA (High-Speed Downlink Packet Access). This means it will be suitable for both mobile applications and last mile broadband services. Next year Intel is expected to launch mobile chipsets incorporating mobile WiMAX, 802.n Wi-Fi and 3G/HSDPA mobile connectivity.
http://www.theregister.co.uk/2006/10/18/precertified_mobile_wimax/
http://www.theregister.co.uk/2006/10/06/intel_wireless_roadmap/

Short range wireless developments

Short range wireless technologies are an area of continuous development to enable communication between devices such as keyboards, mice and mobile phones. Bluetooth is the market leader in this application and has wide support from peripheral and PC manufacturers. Bluetooth's main limitations are range, data-rate and power consumption. Bluetooth developers are looking at application developments to overcome these issues (eg using Ultra Wideband), while other companies are coming up with alternatives. The latest proposal is called Bluetooth TranSend. This is an application function that runs over Bluetooth and will act like a small clipboard. It will allow users to send text and graphics between devices (for example from a website to a phone) without the need for a full device synchronisation/connection. Existing mobile phones do allow selective whole-file transfers but only after a full software connection has been made.
http://www.fiercewireless.com/story/spotlight-bluetooth-sig-unveils-transend/2006-10-16

Nokia is targeting the short range/low-power wireless market with Wibree. This is intended to be an open standard, but is designed to work alongside Bluetooth in the 2.4GHz spectrum. The data rate is expected to be around 1Mbps over 10m, but the power consumption is so low that it only requires a button battery. This is expected to be used in small devices such as sensor nets. One example scenario suggested is a heart-rate monitor that uses Wibree to communicate with a mobile phone that in turn updates a website via a GPRS or 3G data connection.
http://wireless.itworld.com/4984/061003nokiawireless/page_1.html

4G progress

Electronics giant Samsung recently hosted the 4G Forum in Cheju, Korea. A number of companies used this event to demonstrate next generation mobile wireless technologies. 4G, the next generation mobile telephony standard has not yet been fully defined, but is expected to be IP based. Products are not expected to be available until 2010 (at the earliest), but the spectrum to be used should be agreed in October 2007. Various manufacturers and groups are vying for their solutions to drive forward the eventual 4G standards. The ITU defines 4G as offering data rates of 1Gbps (stationary) and 100Mbps (mobile). Samsung demonstrated prototype devices achieving these speeds at the 4G Forum.
http://www.about-electronics.eu/2006/10/18/samsung-demonstrates-4g-mobile-technologies/

Broadband update

Competition in the broadband market is continuing to put drive down prices and bring new offerings to the market. Following 'free' broadband offers from The Carphone Warehouse, Sky and Orange (dependent on taking other packages), Vodafone has also announced details of its broadband offering launching in next year. However, recent studies suggest customer service has not improved to match the huge growth in subscribers: http://networks.silicon.com/telecoms/0,39024659,39164030,00.htm
NTL/Telewest has launched a trail of 50Mbps broadband in Kent. If successful it may be rolled out next year. The company will also rebrand as Virgin Media in 2007.
BT is expected to reduce the prices of its wholesale products that it sells to other internet providers from April 2007.
http://www.adslguide.org.uk/newsarchive.asp?item=2876

xG Flash Signal

xG Flash Signal, a technology that has been covered in earlier issues of TechNews, looks to be moving a step closer to delivery. The wireless technology claims to be able to deliver 10Mbps over around 10 miles with low power consumption. The company behind the technology is offering 9% of its stock for £30m but has yet to release any real information on how their technology works. If this technology does work it has the potential to change the direction of 4G mobile phone developments and the lower power requirement will mean gains in device battery life. The company plans to start offering a service in the first half of 2007 in the southern US and there are many larger companies which will be watching with interest. However, it is too early to say whether the technology will deliver on its claims.
http://www.xgtechnology.com/

Mixing power and data

A number of different companies have developed products that mix power and network traffic over the same cables. For business the most popular approach is to deliver power to networking equipment such as wireless access points (Power over Ethernet: see TechNews Autumn 04). Future standards of Power over Ethernet are expected to deliver up to 56W of power which will be enough to serve a greater variety of devices. This standard, IEEE 802.3at is only in draft currently. Domestic customers are a target market for Powerline products that deliver network connections over electricity cables. New powerline devices, based on specifications such as the Open PLC European Research Alliance (OPERA) and the Digital Home Standard (DHS) from the Universal Powerline Association, offer up to 200Mbps. Twelve companies now provide interoperable devices against this industry-defined specification. Another standard in this area is HomePlug AV which offers practical speeds of around 100Mbps with a theoretical line rate of 200Mbps. Some utility companies are also looking at delivering broadband access over the electricity supply.
http://www.upaplc.org/
http://www.poweroverethernet.com/
http://www.homeplug.org/

Software Defined Radio Conference and announcements

There are two broad approaches to radio transmission and reception – hardware and software. Hardware uses dedicated electronics to process signals while the software approach uses a hardware receiver with data processing carried out by software. Software Defined Radio (SDR) gives benefits of flexibility and makes upgrades to new wireless standards easier. For example, a single device would be able to receive and interpret data sent with different wireless standards without the need for multiple dedicated chips. Wireless standards also change on a regular basis – and upgrading software is a lot easier than upgrading hardware. SDR installations have issues over power-consumption. but implementations are likely to get more efficient. Example implementations of Software Defined Radio include GNU Radio (http://www.gnu.org/software/gnuradio/) and at the website of the National Association for Amateur Radio in the US (http://www.arrl.org/tis/info/sdr.html). It is likely that the majority of users will benefit from SDR indirectly from ease of upgrades and wider compatibility of purchased hardware rather than through this self-build approach. One definite area of application is in RFID tags. These small embedded tags, replacing barcodes in many applications, use a range of radio protocols. Therefore software analysis is preferable to a number of hardware solutions. An example handheld computer aimed at the RFID market that uses SDR can be found at http://www.windowsfordevices.com/news/NS4749941121.html.
New announcements in this area are coming at a rapid pace. The US Air Force has announced moves to adopt SDR to improve compatibility between systems (http://www.technologynewsdaily.com/node/4956) and UK developer Axis Network Technology has announced a new base station module that uses software to control radios ranging from 400MHz to 4GHz. This shows how developers are hoping that my moving from dedicated platforms to flexible, software driven solutions with the future benefits to upgradeability.
(http://www.electronicsweekly.com/Articles/2006/11/08/40106/Software-

defined+radio+works+in+basestations.htm).The industry group, the Software Defined Radio Forum, has held its annual Technical Conference and Product Exposition in Florida where over 120 papers were presented on updates in this area. http://www.sdrforum.org/

Multimedia

Analysis: Digital Pens

Computer hardware and software has advanced in many areas, but data input has remained steadfastly focussed on the QWERTY keyboard and mouse combination. For the majority of deskbound workers this has simply become habit, but for mobile users this is not always very convenient.

Mobile users, whether they be social workers, emergency technicians or schools doing data-capture, have a number of choices of mobile device. The most popular are laptops and PDAs, but these are often not intuitive to use for every application. Digital pens, that offer some kind of handwriting capture, have been refined over many years, but a number of recent high-profile deployments may mean this technology has reached greater maturity.

Digital pens can work in a number of different ways. The primary application for digital pen based entry is for the capture of handwritten data by mobile workers, such as filling in forms and taking simple meeting minutes. The most popular technology, developed by the Swedish company Anoto and widely licensed, uses special paper combined with a digital (and standard ink) pen equipped with a miniature camera. This paper has an invisible pattern of dots on it that allow the pen to precisely locate itself on the paper. Alternative approaches use pressure sensitive surfaces, electromagnetic induction or wireless positioning technology to sample the position of a stylus and track movement over time. This means different systems vary in how the technology works– in some combination of pen, pen and dedicated paper or pen and capture device.

The Anoto system, as deployed by Leeds County Council, allows custom forms to be printed and software developed to automatically transcribe text entered in a particular part of the page to a specific database field. Sections of the form can also be used to control the application (eg a ‘send’ button could be printed). This kind of flexibility can completely remove the requirement for laptops and PDAs from whole sections of a workforce. More importantly this approach to data entry is still more natural and flexible for many users than typing.
http://www.anoto.com/

In Leeds, Social Services expect to save £1.2m through more efficient delivery of services supported through the use of 1500 Digital Pens. Rather than equip outreach workers with expensive ICT that requires time to start up, needs regular power charging and is quite cumbersome, their solution is 1500 pens that update central servers live, using mobile phone technology for data transfer. Innovators at the

council are very excited about the increases in speed and convenience to the user; along with improved service delivery to clients.
http://www.leeds.gov.uk/innovation/pens.html

Digital pens can use a range of methods to upload captured data. Bluetooth and USB are the most common approaches. However the characteristics of wireless connections used (speed and range) can often impact battery life. Long battery life for a Digital Pen system is clearly a requirement in order to avoid users rejecting these technical approaches for a more reliable, ink-based solution.

The storage capacity and battery life of pens varies. Logitech pens will store around 40 pages of notes on the device between uploads to a server and have a claimed battery life of 8 hours. A system by EPOS announced at CES in 2006 plans to use a Digital Pen with a USB connector. The pen sends data to a wireless USB dongle connected to a PC, where handwriting recognition software recognises the text.
http://www.epos-ps.com/products.asp?pid=1275&ppid=1278
http://www.logitech.com/index.cfm/products/productlist/US/EN,crid=1552
Some systems will connect to a mobile phone via Bluetooth, so that data can be uploaded to networks over the mobile connection.

There are a number of potential benefits to using Digital Pens in education, but it is important to distinguish between pen-based data input, handwriting-recognition and pen-interfaces.

Pen-based data input is the simplest of these approaches and uses some kind of digital pen to enter data, one way into a computer system. This is suited for simple yes/no questions, sketches and basic data entry. Computer systems behind these devices may do little more than capture shapes rather than interpret them in any way. The benefits over a traditional pen and digitiser (such as a scanner) are comparatively small but there is immediacy to reporting and it can save time. For example the system can track how shapes were built over time which could help analyse handwriting practice. Class registers taken with Digital Pens communicating immediately with an MIS system, could be a better system than even the lightest PC hardware solution.

Handwriting recognition is the next stage from digital capture. Systems that do this to different levels of success have been around for many years translating either specially designed alphabets or normal handwriting. Most of these systems require training to work effectively. Many Digital Pen systems do offer some kind of handwriting recognition – either at the point of capture, or by initially recording "graphics" and translating these on a connected PC system after the data has been downloaded.

Pen interfaces offer the final dimension to pen-based computing. At their simplest this involves a pen press on a tablet screen replacing a mouse click – therefore allowing interaction and not just data capture. Easy enhancements include variable pressure sensitivity and extending the interface even further by using the pen as an intuitive approach to creating and manipulating objects. An example of this is the

Microsoft Physics Illustrator designed for the Tablet PC. This is one of the small but growing number of applications of tablet computing.
http://www.microsoft.com/windowsxp/downloads/powertoys/tabletpc.mspx

In September 2006 a Scottish council was the first in the UK to use Digital Pens in voting. Each ballot paper used in the small Clackmannanshire town of Menstrie was printed using the Anoto system as used in Leeds. This means votes can be counted electronically, but through a reassuringly familiar medium. Additionally the computer scores can be compared to the physical paper records. Medical applications in this field have been trialled for some time. These again exploit the advantage of digital pens that real physical outputs are replicated in persistent, secure, central electronic records.
http://www.clacksweb.org.uk/council/press/?release=933

Despite an increasing reliance on and use of traditional desktop and laptop computers, handwriting and paper are still more flexible in many situations. The twin moves to improved relationships between paper and pens; and flexible electronic paper present an attractive view of an environment that is not “paperless”, but instead has “smarter paper” and ways of working with it. One possible use in education is in the area of assessment. Traditional paper-like assessments could potentially be replaced with Digital Pen systems. The results of exams can be stored as hard copy, but examiners can have papers to mark within minutes of a session being finished rather than rely on a postal system. Multiple examiners can work on the same papers in parallel and from the user perspective, very little will have changed.

Multimedia news

User generated content market, New digital literacy

Much has been said of the importance of digital literacy – the ability to use a computer for communication and collaboration; to surf the internet safely; and to understand how to use digital tools for expression and creativity. Research from In-Stat has analysed what it believes will be the growing impact of sites like YouTube and Myspace that give users the potential for huge audiences for their own music and video. The research estimates that by 2010 there will be 65 billion downloads/views of this material – which will be backed by advertising revenue of perhaps $850million. User Generated Content (UGC) is expected to remain an important and growing part of the web and is likely to lead to democratisation of the internet by removing some of the technical barriers to content hosting and delivery. Schools and educators can embrace and adapt the concepts and practises of UGC and turn it to their own purposes through encouraging skills development and creativity. http://www.instat.com/catalog/Ccatalogue.asp?id=212#IN0602976CM

Free iPod Nanos in South Kent College

A UK project aimed at supporting students to succeed through free iPods has been launched. Despite opposition from groups that see this approach as bribery, educators at South Kent College have distributed 250 iPod Nanos to students so

they can access podcasted material drawn from lectures. The college argues that this is a practical application of remote and on-demand learning and not incentives for students to miss classes in the knowledge they can catch up more easily. A similar scheme has been used in various US institutions such as Georgia College & State University since 2002. This college now uses iPods for 40 courses and initiatives across the range of its activities. Many other educational institutions in the UK and abroad are running other projects based on podcasting content.
http://news.bbc.co.uk/1/hi/education/5319258.stm
http://www.apple.com/education/profiles/georgiacollege/

Technology for deaf users

The RNID has for years provided a service that use textphones and trained operators to allow deaf people to participate in telephone conversations. The devices used to date have been from a range of manufacturers and looking increasingly dated so the RNID has launched a new device. The new ScreenPhone combines a modern phone with a large display to receive incoming text updates from a TypeTalk operator.
http://www.rnid.org.uk/shop/products/telephones/screenphone.htm
http://www.rnid.org.uk/howwehelp/our_services/typetalk/
Technology need not be specifically designed for use by disabled people for it to be useful. Text messaging and mobile email through devices such as BlackBerry handsets are popular with deaf young people.
http://www.blackberryforums.com/aftermarket-software/795-benefits-blackberry-deaf-hard-hearing.html
The Quality Improvement Agency has announced a new online dictionary of computing terms for deaf people, described using sign language. This is designed to reduce the barriers for deaf people to interact and succeed in the modern technology driven society.
http://www.slcresources4ict.net/

Applying virtual worlds

Massively Multiplayer Online Role-Playing Games have become a way of life for many people, but big business and education are also starting to embrace the opportunities for working in these virtual worlds. Press agency Reuters has opened a press office and IT giant IBM has been experimenting with virtual meetings in the Second Life virtual game world. The differences between these technologies and previous attempts at virtual reality experiments are the low cost, large potential user base and ease of use. These are robust and reliable systems used by large numbers of people rather than bespoke services of 5-10 years ago.
http://www.computing.co.uk/computing/analysis/2166761/ibm-looks-virtual-reality
Universities in the US are also using Second Life to deliver classes and bring students and teachers together in virtual spaces. In addition to using the service as a tool, it is also used as a simulation of public spaces and human interactions.
http://www.wired.com/news/games/0,2101,65052,00.html

Portable projectors

New portable projector technology continues to be developed. Scientists in Finland have announced a product that is currently around the size of a mobile phone. They

expect to be able to shrink it even further so it can be included in MP3 players and mobile phones for very low cost. This device uses LED technology to give an acceptable quality from a tiny device by redirecting omni-directional LED light in one direction.
http://news.cnet.co.uk/mobiles/0,39029678,39194240,00.htm
Larger, but available to buy now, is a new portable projector from Toshiba. This is again LED based, but is palm-sized. This 400 LUX/800x600 is designed for mobile multimedia presentations and includes a small speaker.
http://uk.gizmodo.com/2006/10/18/toshiba_tdpff1au_projector_is.html

Larger monitors may increase productivity

French consultants have released results of a study into the impact of monitor size on productivity. The survey, commissioned by Apple, suggests that a large 30" monitor significantly increases the productivity of workers when performing multi-application tasks (such as moving data between a word processor and spreadsheet) and image manipulation. However, the estimates of around 50% productivity gains have been challenged on a number of fronts. Other consultants suggest that this estimate is over-exaggerated and multiple monitors are preferable. The reality is that most users will be unable to afford either the cost or desk-space for large or multiple monitors. http://pfeifferreport.com/Cin_Disp30_Bench_Rep.pdf
http://www.computerworld.com/action/article.do?command=viewArticleBasic&articleId=9004022&pageNumber=1

Wireless consumer electronics

Recent developments in wireless networking, with technologies such as WiMAX, have been focussed on the broadband wireless networking to replace DSL and other last-mile technologies. However, while business wireless networking is quite mature there is still a large untapped market in the area of consumer electronics – the digital living room. The demands of the home electronics market basically rely on the ability to share multimedia around a house and between a range of devices including televisions and PVRs as well as PCs/mobile devices. The 802.11n standard is expected to deliver at least 100Mbps in real world applications, which is enough for HDTV streams as well as VoIP and digital audio. Devices such as Apple's iTV are expected to work in this way.
http://www.macworld.co.uk/news/index.cfm?RSS&NewsID=15919
However, the market has been slow to equip devices with this connectivity – partly through issues over which standard to choose and partly with the technical complexity of configuring and managing devices. Analysts still expect the market to grow from 40 million devices in 2006 to nearly 250 million in 2011, but there is significant work to be done on ease of use. For example many homes now suffer from interference on their wireless networks from neighbours without understanding the underlying issues.
http://www.abiresearch.com/eblasts/archives/analystinsider_template.jsp?id=31

New wireless standard aimed at HD video

Several consumer electronics companies have created an organisation to develop a new standard for wireless networking aimed at consumer electronics devices as well as PCs. This group, including giants such as Sony, Toshiba and LG, is looking at

WiHD technology operating in the 60GHz band to deliver at least 2-5Gbps for mobile devices (where power consumption is an issue) and up to a maximum of 20Gbps. 4-5Gbps is enough to share uncompressed video. Uncompressed formats remove the processing burden of decoding signals to both send and receive.
http://www.wirelesshd.org/
The WiMedia Alliance industry group thinks that the aggressive timescale set for this technology is unrealistic. They suggest that technologies such as Ultra WideBand (UWB) are much more likely to be able to deliver in the short term and 60GHz systems are at least two years away.
http://www.eetimes.com/showArticle.jhtml;jsessionid=QU4FEOS1OPXY0QSNDLOSKH0CJUNN2JVN?articleID=193500877
One factor that makes this proposed standard different is the make-up of the industry group. The WiHD group is made up of consumer electronics and PC manufacturers which will actually implement technology, compared to other wireless interest groups, which have more members from the chipset and electronic component industry.

Camera and music phones do not replace dedicated devices

A recent study from InStat (Repetitive Redundancy: The Consumer's Tendency to Carry Multiple Devices) suggests that despite an increase in the number of people with multimedia phones, most users still rely on other dedicated devices. This suggests we are still some way from having a converged device that offers all the functionality and performance users expect. The study reports that 80% of users with a cameraphone still regularly carry a digital camera. 50% of users with multimedia phones also use digital music players and interestingly 75% of Smart Phone users also take a PDA with them.
http://www.instat.com

Image/doodle based search engine

Searching on the web is big business and different online search providers offer a variety of different services. However 3D-Seek has identified a niche for image based searching. This software translates graphical “doodles” by users into a search for 3D objects. The search is designed to help researchers and engineers identify production components. Companies are encouraged to upload data on their own libraries of 3D objects and then their own employees search via this externally hosted application. This type of search adds a new dimension to the search market. Originally crawlers simply read the text on a page, then metadata was introduced to help categorise content and now this search finds another way to represent information – in this case as mathematical data. Encouraging companies to upload their own information and effectively outsource the application to a third party shows the specialist role that can be played by application service provision and web services.
http://www.3d-seek.com/

Hardware

Analysis: Green computing

For many years the focus of computer manufacturers has been on producing faster, more powerful chips that deliver greater performance – in turn encouraging us to update and replace equipment. In recent years environmental concerns have moved to the fore. Recycling, reducing waste, saving energy, greater use of public transport and generally reducing carbon emissions are all key concerns, but few people have considered the impact of large deployments of PC systems on our world.

A typical school computer suite will have between twenty and thirty PCs, upgraded every three to five years, which means that the education sector is a significant market for computer equipment and potentially significant contributor to landfill sites. New products are becoming more environmentally focussed through a combination of consumer pressure and legislation.

Personal Computers use a wide range of materials in their manufacture. These include both precious metals and poisonous chemicals that are engineered into processors and circuit boards. In 2004 the UN University produced a report which concluded that the production of a desktop computer required some ten times its weight in fossil fuels to be consumed during the manufacturing process. One desktop computer and 17-inch CRT monitor was estimated to require 240 kg of fossil fuels, 22 kg of chemicals and 1,500 kg of water – a total of 1.8 tonnes of materials. Often these considerations are ignored by users, but the environmental impact of owning a PC starts well before it is unpacked and first plugged in.
http://update.unu.edu/archive/issue31_5.htm

Personal computers are most commonly differentiated by their central processing unit (CPU). As CPU speed has increased so has the amount of power required. For comparison Pentium 75MHz processors would typically draw 3-8W while a modern Pentium 4 840 would commonly be over 50W with some models at over 100W. This scale of power/performance increase was the typical model until the latest generation of chips that use active power management technologies and multiple, rather than faster, cores to offer higher performance output for a lower average power consumption.
http://www.xbitlabs.com/news/cpu/display/20060421031743.html

Power consumption has become an important selling point and product differentiator amongst chip manufacturers. Intel and AMD are both extolling the green credentials of their new ranges of home computer chips but the competition is equally fierce in the server market. For example both Sun and IBM, with their UltraSPARC T1 and PowerPC 750CL chips respectively, are aiming at data centres and large processing engines that are power-conscious. Computer Data Centres are massive consumers of resource. Densely deployed server blades or multiple computer clusters require significant power supplies for the computers and the necessary air conditioning - commonly referred to as HVAC (Heating, Ventilating and Air Conditioning) or

Building Services. Green computing is now an important part of the marketing battle and VIA has announced a carbon-neutral processor, where the company has built into the purchase price funds to offset the carbon dioxide produced over the life time of the chip.

Perhaps paradoxically the message from manufacturers to buy new, modern, energy efficient computers contradicts suggestions from environmental activists to keep using old computers longer, as even though they use more power when in use – there is a saving in manufacture cost. A recent EU directive (2005) aims to foster environmentally friendly design requirements for energy-using products (EuP). A recent Bill in the US asks for an Environmental Protection Agency (EPA) study into the energy consumption of servers and data centres. The EPA also provides 'Energy Star' ratings for efficient products.
http://ec.europa.eu/enterprise/eco_design/index_en.htm
http://www.itworld.com/Man/2681/071306itenergy/

Environmental credentials are likely to grow in importance in the market especially as the emphasis from a number of manufacturers changes from "performance" to "performance per watt". When chips run faster they tend to run hotter. Active cooling systems ranging from CPU fans to water cooling are required to stop some computers overheating and malfunctioning. Of course these also draw more power and highlight the importance of choosing the right solutions.

This is perhaps most explicitly demonstrated with air-conditioned climate-controlled server rooms where energy-expensive systems are required to keep machines running. Silent PCs often focus on passive cooling systems based on case design and airflow rather than relying on fans though some just use specially silenced fans. Passively cooled systems use less power but these designs often have a price premium.

Thin Client and Blade Centre solutions are being touted as solutions to the growing energy requirement of businesses. Thin Client systems typically use a fraction of the power required by a desktop PC based system. These solutions use large, cooled servers but connecting to low-power, solid state devices on users' desks. Blade centres work in a similar way by making more efficient use of central resources meaning there is less "idling" by high power-consumption PCs and monitors. Virtualisation is also an emerging technology in this field, as it allows multiple virtual servers to efficiently share the same resources and power connections.

Display technology is also a significant factor. CRT units, now replaced in many environments by flat screen technology, are expensive to manufacture, costly in terms of materials and have very high power consumption. LCD displays power requirements are around 35% of CRTs. Across a large school or college this can make a significant difference to costs.

Both computers and monitors consume a large amount of power when on standby – similar to many home electronic devices. Computer power supply manufacturer Antec estimates that next year there will be 1 billion PCs in use in the world and

these consume between 5 and 60 watts each when on standby. Antec suggests that "If a million PC users switched to a more efficient power supply, it would save almost the equivalent of 250 thousand litres of gasoline a day." There can also be a significant difference in the efficiency of power supply units (PSUs) in PCs, with the best 85% efficient.

Laptop computers are designed to be more power efficient as battery life is a consideration. They more commonly include, or take advantage of, power-saving features such as software power management, sleep and hibernate mode. Laptop processors are normally low power versions of desktop chips – though some budget laptops have managed to squeeze cheaper desktop CPUs into a laptop case. Many of these features are available in desktop computers, though are less commonly actually used.

Power issues are not restricted to computer processors as modern graphics cards are also incredibly demanding. For example, the latest card released by Nvidia recommends using a 450W rated power supply.

When a computer does reach the end of its life inside the European Union there are a number of regulations that must be followed. The most important of these in the UK are RoHS (restrictions on hazardous substances) and WEEE (waste electrical and electronic equipment) directives (see TechNews February 2005). WEEE is expected to be implemented from 2007. ROHS is aimed at banning some hazardous substances from being used in PCs. WEEE is designed to encourage recycling and to ensure that electrical and electronic equipment is disposed of appropriately. The regulations in the developed world are much more stringent then those in underdeveloped areas of Africa and Asia and there has been criticism from some quarters of recycling schemes that take advantage of cheap, even child labour, in the Third World with serious impact on workers health. In the US, the state of California adds a recycling charge to the cost of new monitors and televisions to pay for recycling at the end of the equipment's life. Many PC companies are offering PC recycling schemes in addition to legislative requirements.
http://www.dti.gov.uk/innovation/sustainability/weee/page30269.html
http://www.dell.com/content/topics/global.aspx/services/en/assetrecoveryservices?c=us&l=en&s=corp

This tightening of regulation has seen the development of companies which will take on an organisation's waste and ensure it is properly disposed of. This sector includes charitable organisations that will refurbish PCs to send to the Third World where often they can enjoy extended lives. Alternatively, recycling firms will strip components and extract the valuable and toxic chemicals. The dark side of this industry is the illegal export of equipment to so-called recycling centres in places like India and China where disposal is not carried out to high standards and workers often suffer from poisoning as a result of poor practice. Schools should talk to their Local Authorities about reputable recycling and disposal schemes. A good recycling/reuse company will also ensure data is properly wiped from hard drives for example, which is a serious concern for PCs used in school administration. Of

course, these processes do add to the Total Cost of Ownership, which is a concept now extended to include the disposal of assets.

Schools and all computer users need to start taking more responsibility for the impact of computing on the environment. This needs to be part of an institution wide strategy (electricity bills are seldom considered as part of the IT budget so there is often no direct incentive to reduce demands in this area).Tightening regulations on carbon emissions are leading to cleaner, greener manufacturing, but while high-tech devices are required in massive volumes they will continue to be significantly responsible for pollution.

In practical terms there are a number of actions that could be adopted in every school such as: switching off devices every evening (except essential servers etc); enabling power management wherever possible; switching off monitors, projectors and other peripherals when not in use – perhaps by having them on a separate power connection; considering extending the life of PCs; replacing CRTs with LCD displays; and having an appropriate equipment disposal policy in place.

The Carbon Trust offers guidance and advice packs for schools on reducing their carbon footprint. They also provide free site surveys on request.
http://www.carbontrust.co.uk/about/presscentre/121006_schools.htm

Hardware news

Four-core processors

Computer chip manufacturer Intel has launched its first quad core Xeon processors. This current generation of Intel quad core chips (launched November 13) can be more accurately described as two dual processors combined in a single unit rather than a completely integrated four core unit. Integrated four-core units are expected from Intel and rival AMD in 2007. These processor architectures are scaleable and the number of cores in processors is expected to continue to increase.
http://www.reghardware.co.uk/2006/05/16/amd_debut_65nm_dec_06/
http://www.vnunet.com/vnunet/news/2167000/intel-shows-first-way-quad-core
http://news.com.com/New+Intel+quad-core+chips+are+really+double+duo-cores/2100-1006_3-6047182.html?tag=nl

IEEE to review laptop battery standards

The IEEE is going to review the current IEEE 1625 (TM) standard for laptop batteries. Recently, there has been a series of high-profile battery recalls from major manufacturers following incidents of overheating batteries catching fire or even exploding. The review is expected to take 18 months. Millions of batteries have been recalled and it is worth checking with manufacturers whether your batteries need to be replaced.
http://standards.ieee.org/announcements/pr_P1625_guidelines.html

Wafer thin optical discs

Next generation DVD formats such as HD-DVD and Blu-Ray Discs use new laser and disc technology to deliver high capacities. However Hitachi Maxell has adopted a different approach and announced that researchers have been able to manufacture much thinner discs based on proven DVD technology. They expect that by modifying the thickness of the disc, down to 1/10th of a millimetre each (this compares to 1.4mm in DVD and CD), multiple disc cartridges may be manufactured relatively cheaply. These could store up 100 of these thin DVDs, giving a capacity of 470GB, in a manageable unit. These are expected to be used in large-scale storage products.

This idea demonstrates how old technology need not become completely redundant – and manufacturers are capable of applying efficiency advantages and process improvements to current/last generation technology.

http://storage.itworld.com/4653/061004hitachimaxell/page_1.html

EU Energy research highlights standby mode

The European Union has published the results of new research into the energy efficiency of homes across the 15 member states that were members before 2004. This study is quite clear about wasted energy and the potential for improvement. It cites voluntary codes for aspects of energy use such as the power-consumption in standby mode and some commentators believe this is a precursor to longer term harmonised legislation. Home networking, such as wireless and broadband, are singled out as particular villains as they consume a large amount of power even when not being used. Despite agreements with manufactures in 1997 and 2000 to limit the standby power consumed by devices it is estimated that some 10% of electricity in homes across the union is wasted in this fashion. Consultation accompanying the report places less emphasis on policy and more on education and enforcement of existing legislation, which is in part being addressed by Defra's work in England on Climate Change.

http://ec.europa.eu/energy/efficiency/index_en.htm
http://www.climatechallenge.gov.uk/index.html

Processors developments

Intel has set out its plans for microprocessor developments in 2007. It hopes for a 20% performance gain through moving from the current 65nm to a new 45nm process. Intel has said that these new chips will use the same architecture as the current models; while in 2008 a new architecture will be introduced. Intel and AMD continue to vie for the lead in performance PC processors. AMD will shortly migrate to 65nm and seems to be lagging about a year behind Intel in this respect. However, this does not necessarily relate directly to real world performance.

http://www.intel.com/technology/silicon/new_45nm_silicon.htm

Laptops for Vista

Manufacturers expect the launch of Windows Vista to bring with it demands for new systems. Vista will be launched to corporate customers on 30 November and have its full release on 30 January 2007. Intel has announced its Centrino Pro range, previously codenamed "Santa Rosa" to meet this need in early 2007. These systems will include a number of advances over current models. The heart of the system will

be a Core 2 Duo family CPU with an 800Mhz bus speed, new pre-standard 802.11n wireless network chips, integrated HSDPA cellular data facilities (from Nokia) and new Active Management and Virtualisation technologies. “Robson” technology will add Flash memory to the motherboard to take advantage of new memory management features in Vista, improving performance and start up times. This is an alternative approach to hybrid hard drives that also use a Flash memory cache.
http://news.zdnet.com/2100-9584_22-6032965.html

PC prices falling before Vista launch

New releases of Windows tend to encourage users to upgrade their hardware, so it is not surprising that in the run up to a major release, the price of older stock drops. Analysts at the Wall Street Journal are expecting bargains to be had as manufacturers seek to dump old stock with Windows XP preinstalled. Microsoft has announced November 30th for the release of Vista (and Office 2007) to corporate customers. Vista will not be available to upgrade customers until 30 January 2007 and PC hardware discounts are expected to last over the build-up to the Christmas holiday period. Microsoft is currently shipping upgrade vouchers with PCs – promising free or discounted Windows Vista upgrades when it is launched.
http://www.theregister.co.uk/2006/10/25/vista_vouchers/
http://online.wsj.com/public/article/SB116243668263910999-pARwrNNxK5kQRLG4AlyOYJ3gIYc_20061201.html?mod=tff_main_tff_top

Nokia wearable modular phones

Mobile phones remain one of the largest and fastest going areas of consumer electronics. However, despite shrinking sizes and improved performance there has been little significant change in underlying technology. Handset manufacturers need to continue to innovate to encourage a cycle of upgrades and the latest concept from Nokia is wearable components.
Their latest phone uses virtual interfaces rather than physical keys to deliver flexible devices and displays that can be broken down into different parts. They envisage that, for example, the keypad section of one of these devices might also be worn as a watch and a fuel cell-based power supply be built into a belt-clip. Nokia are planning to have different components use low-power short range wireless technologies to communicate.
http://www.hexus.net/content/item.php?item=6975
Despite pronouncing methanol fuel cell technology immature 18 months ago, Nokia now say there is no reason in principle that mobile devices cannot be powered this way – however the market cannot yet deliver a suitable supply chain.
http://www.theregister.co.uk/2006/10/03/nokia_fuel_cells/

Trusted Computing spec for mobiles

The Trusted Computing Group (TCG) Mobile Phone Work Group has published a draft of a Mobile Trusted Module (MTM) specification. Trusted Computing works by using hardware and encryption to only allow certain software and processes to affect key parts of a device. From its origins in PCs there is growing interest in adding security and control features to all kinds of mobile devices. Possible applications on mobile phone handsets and PDAs include controlling updates of identity information, phone software upgrades and using such devices as virtual wallets to control

payments. It is envisaged that a more secure platform would also deter phone theft as the underlying identity information cannot simply be rewritten. The CTIA is publishing a Mobile Security Specification based on the TCG work.
http://electronics.ihs.com/news/tcg-mobile-security.htm
http://wireless.itworld.com/4276/060830ctia/page_1.html

Photonics moves closer

Computer chips commonly operate on electrical principles and performance is limited by the characteristics of an electron. High speed network technology is based on optical principles – the fact that photons are smaller and travel faster than electrons. Scientists developing the next generation of processors are looking at how they can create chips and interconnects that use light instead of electricity. They are developing silicon lasers for this purpose. Intel researchers expect that this will deliver significant performance improvements over current technology – providing enough bandwidth to support 80 or more cores running in parallel, which is a step up from modern two or four core chips. Products based on this work are not expected for at least five years
http://www.anandtech.com/tradeshows/showdoc.aspx?i=2841

Software and internet

Analysis: Semantic web

The World Wide Web is based on a simple principle – that information can be published using universal standards. The core standard is HyperText Markup Language (HTML). HTML is text information where tags are used to control how that information is presented on screen to the reader. For example *some text* would render “some text” in bold. There are a large number of tags that can be used, but these are almost all concerned with presentation to a human reader. To a computer the tag presents no clue about the type of information. The concept of the Semantic Web involves tagging information based on its nature. For example information on the publisher of a document might be contained in publisher tags, e.g. <publisher>Becta</publisher> for TechNews. HTML is focussed on presenting information, while the move to XML (eXtensible Markup Language) separates the data from the presentation. XML data may be presented in HTML using some kind of presentation layer, but it exists, has value, consistency and integrity without a web browser.

Once information is properly structured it can be processed by computers rather than people. This is the fundamental principle of the Semantic Web – information is published in such a way as to be readable by computers and applications rather than just people. This then enables the same information to be applied in a number of different ways including "simple" presentation as HTML through a web browser. At the most basic, a web application could search all documents tagged with a publication date and author and link across multiple websites to present a time line of all works by an author, or all works published on a particular day.

The next stage for this machine-readable network is the development of “intelligent agents” – software that is able to make decisions based on this available wealth of information. Ultimately, Tim Berners-Lee (credited with developing the World Wide Web) believes software agents will be able to take over a large number of day to day tasks from people and base decisions on a wealth of machine, rather than human readable data.

The publication of information in this way requires standards to be established and then implemented through XML. Perhaps the most popular example of a very limited scope semantic web application is RSS (Really Simple Syndication). RSS uses a Resource Description Framework (RDF) aimed at publishing and organising online content such as news items and blog entries. RSS sets out a format for defining attributes for articles that RSS aggregators can read, display and summarize. The use of RSS allows many different sources of similar information to be organised and presented together. This is only a basic implementation of the Semantic Web principles as the RDF is limited in its definitions and RSS is merely aimed at presenting the results to a user through a browser or other software rather than further machine processing.

Web Ontology Language (OWL) is a development from RDF that is geared up to more effective machine processing of information. It has a number of features that are designed to make working with data easier. If XML is considered a language that can define data in an infinite number of ways; RDF is a set of definitions that define how XML can be used to describe resources; and OWL is a refinement and extension of RDF that is aimed particularly at machine sharing processing of data. OWL adds more vocabulary for describing relationships between data and richer classification of properties.
http://www.daml.org/language/features.html

Moving on from the theoretical, programmers and scientists are slowly developing applications that apply these principles with a practical outcome. Obvious applications include shopping sites that can compare similar information from various suppliers; checking book information against a range of bookshops and public libraries and matching those who want to sell goods with those who want to buy in real time. It is not always about comparing or searching for the same item. Semantic Web technologies might allow a music website to be linked through to a band’s site, then to the record company; and include biographical information on the band members and about those people listening to the band via a community site. These are all possible using current technologies – but not automatically. Currently there is no way of associating one site with another other than with manual links – computer systems do not understand that there is such an entity as a “band” that has members, albums, songs etc. – but these links would be automatic in a semantic world.
http://www.ftrain.com/google_takes_all.html

Scientists across the world are looking at Semantic Web technologies to allow sharing of experimental information and data catalogues. For example a project called Sealife (http://www.biotec.tu-dresden.de/sealife/) has been launched to allow

researchers in the Life Sciences to have access to a range of information easily. Elsewhere in Health-care and Life Sciences there are a number of projects aimed at using semantic technologies to share drug and research information between researchers with the aim of increasing the effectiveness and decreasing the development time of new treatments.
http://www.w3.org/2005/04/swls/

Metadata is concerned with describing data (data about data) and is at the heart of Semantic Web technologies. However, early implementations were often crude and as a result ineffective. For example, basic metadata about a web page might contain a series of terms the author hopes will be interpreted by search engines. This is a long way from semantic techniques that use a defined set of rules for what descriptors, such as “author” and “publisher”, are used. These rules define a schema. The Curriculum Online website is an example of a project that has a schema used to define resources in its catalogue. Records stored to this specification can be searched either within the site or externally, but there are no direct links with other such directories/repositories. Schema such as this are often criticised for the amount of work required to populate the metadata and while Semantic Web developments may not directly reduce this – they will ensure that any definitions made in one place can be shared with others more easily. For example instead of creating a metadata record just for the Curriculum Online website, a supplier will define a resource for its own website and share that information automatically.
http://www.curriculumonline.gov.uk/SupplierCentre/Metadataguides.htm

The Semantic Web is directly relevant to search engine techniques. Most search engines are based on a combination of content and metadata. Search engines have to work out, often based on a simple text search of this information, the relevance of a site. Semantic techniques will allow resource discovery in a different way – based on the content and also how the content defines itself. As the web gets bigger it is likely that increased “intelligence” will be required to be at all successful in successful searches.

A good place to start to explore what the Semantic Web has to offer is the Piggy Bank extension to Firefox that extracts machine-readable RDF information from web pages and allows users to make their own “mash-up” pages of linked information.
http://simile.mit.edu/wiki/Piggy_Bank

There are potentially many applications for education. Navigating between resources could become more logical, organised and automatic. For example students researching volcanoes could tap easily into live seismic data that is being pushed to the internet without even being aware it existed. Search accuracy can increase. For example, if content is properly identified for a particular age range then finding suitable material to support study is easier.

From a local authority perspective semantic technologies can support data sharing within and across authorities. For example if information is linked to a “person” who might have a relationship with a “school” that information can automatically be

referenced across functions such as Social Services and Education and across boundaries – if a child goes to a secondary school in a different authority.

None of these services will be implemented overnight or without significant work developing ontologies. They key barriers to widespread adoption are the issues focussed around creating and agreeing structures that can be used to share data. Data schemes need to be defined, managed and monitored before there can be confidence in developing tools to use the semantic web. The market also needs to mature. At the moment there are so few software agents that publishers' efforts need to be focussed on HTML output for human users of web browsers – so there is little incentive to develop expensive information structures with no real market. Non-technical problems around politics, privacy and security will also have to be addressed. http://www.co-ode.org/downloads/pizzafinder/
http://www-ksl.stanford.edu/projects/wine/explanation.html

Software and internet news

UK teachers most IT literate in EU

A European Commission survey has reported on how teachers across Europe feel about using ICT. The UK scored top with 96% of teachers having used a computer in class in the previous 12 months and 60% of teachers being classed as 'Fully Ready to use Computers in Class'. This confidence is accompanied by relatively high levels of ICT provision and broadband connectivity. Across the EU 'Over 90% classroom teachers use computers or the internet to prepare lessons. 74% also use them as a teaching aid, although this again varies widely, from the UK (96%) and Denmark (95%) to Greece (36%) and Latvia (35%). Over 80% think that pupils are more motivated and attentive when computers and the internet are used in class, and that they have significant learning benefits'.
http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1285&format=HTML&aged=0&language=EN&guiLanguage=en

Web browser updates

October saw new releases of web browsers from Microsoft and the open source Mozilla Firefox project. Recent figures show that Microsoft is slowly losing market share to Firefox (82.1% to 12.46%) but it still retains its market lead. Internet Explorer 7 includes a number of enhancements such as tabbed browsing within a single window, increased security and support for RSS. It is expected to rapidly gain a significant market share. http://www.microsoft.com/windows/ie/
Mozilla Firefox 2.0 is the result of a number of tweaks to both the underlying software and the appearance of the application. These include in-line spell checking and new facilities to integrate and manage search engine links.
http://www.mozilla.com/en-US/firefox/
Another recent browser development is Torpark. This is designed to be a portable web browser, based on Firefox that uses the Tor network. Tor claims to offer proxy based, anonymous browsing on the internet that will also bypass some filtering and content control systems. Designed to be run from a flash drive or similar, it could be of concern to some educational institutions as it could circumvent many systems-based protections.

http://www.torrify.com/

British Library copyright statement

The British Library has launched a new manifesto challenging the current copyright laws relating to Intellectual Property (IP) rights in a digital age. The document, full text of which is available online, expresses the library's concern that some digital material is being released under more restrictive conditions than printed material with archiving and research use suffering as a result. The document challenges lawmakers to make clear consideration of digital materials and ensure that conditions are in line with traditional publishing.
http://www.bl.uk/news/2006/pressrelease20060925.html

ebooks and digital publishing

The International Digital Publishers Forum (IDPF) has been highlighting new devices that are suitable for use with ebooks and new file formats that hope to standardise how content is packaged. The IDPF is trying to move its members towards adopting a common, or at least a smaller number of file formats. It hopes to replace the current range of often manufacturer specific types with one or two, most likely Adobe's PDF and its own OBE. OBE is an open file format that can be included in the OCF based on a zip-format container. The Open eBook Publication Structure Container Format (OCF) will include all necessary information about an ebook including metadata and DRM information:
http://www.idpf.org/pressroom/pressreleases/ocf1.0.htm
New devices and software include readers for iPods (http://www.ambience.sk/ipod-ebook-creator/ipod-book-notes-text-conversion.php), a paperback style unit from Sony using electronic ink (http://www.learningcenter.sony.us/assets/pa/prs/index.html) and the first products using electronic paper developed by Philips (http://www.irextechnologies.com/). Next generation devices are expected to incorporate flexible displays.
The world is still a long way from mass ebook adoption, but as the physical technologies are now maturing – most of the software is already there to exploit it.

New Google online services

New products and services continue to be released by Google. It also claims a 1% increase in search market share to 45.1% against 28.1% for Yahoo and 11.9% for Microsoft.
http://www.informationweek.com/industries/showArticle.jhtml?articleID=193400787&articleID=193400787&sa_type=&section=industries&subSection=News+By+Vertical+Industry
A recent big acquisition was of online video sharing site YouTube for $1.65 billion. This highlights the increasing importance of user generated content and Web 2.0 applications. However, Google is likely to have to address the issues of copyrighted material being published through the site.
http://www.google.com/press/pressrel/google_youtube.html
The company has also launched a number of online services and new search tools. It has completed integration of the online word processor Writely into a GoogleDocs service that is complemented by a similar service offering online spreadsheets. Google is also launching a hosted service offering to remotely host calendar and

email applications for organisations. Education is seen as a key market for this service and follows Microsoft providing free webmail for students and staff in Warwickshire.
http://www.google.com/google-d-s/tour1.html
Other announcements include new personalised searching, online literacy resources and a news archive. The new personalised web search claims to learn from results and, through using a Google account to track progress, deliver more accurate results over time. Google has released literacy materials developed with UNESCO designed to encourage reading, research and blogging. The News Archive search analyses a range of news sources and historical archives and can present results in a timeline format.
http://www.google.com/psearch
http://www.google.com/literacy/
http://news.google.com/archivesearch

Tesco to sell inexpensive software

Tesco has launched a new range of software designed to retail at under £20. Tesco hopes that this software, sold as own-brand, but actually repackaged versions of other manufacturers products, will undercut the typical costs of branded software. For example the office suite is based on Ability Office and the security/anti-virus package on Panda Software. This low-cost software solution fits somewhere between the retail and volume discount prices of Microsoft and the free alternatives from the open source software community or online services such as Google docs.
http://www.formjetplc.com/
http://www.tescosoftware.com/
http://docs.google.com

Alternative community online encyclopaedia

Wikipedia has become a very popular information resource built on web pages that can be edited by anyone with an internet browser. It has created a massive online database covering a range of topics and invites contributions from the general public to improve its content, which is then made available under the GNU Public Licence (GPL). However, it is constantly dogged by controversy over the accuracy and quality of its content. One of the co-founders of Wikipedia has announced a new project, the Citizendium, which hopes to learn lessons from the free for all of Wikipedia and create a more expert and considered online resource. Reaction to this new project, which is not yet publicly available, is mixed. Some commentators believe that Wikipedia has been a victim of its own success and is now too changeable to be of value. Others believe that a transient site where information is volatile more accurately reflects the variety of opinion in the world and is a strength. The Citizendium will initially source its content from Wikipedia and gradually build up its moderated and expert content. Indeed the differences that develop between these two databases will be interesting in themselves.
http://www.citizendium.org/

Internet viruses drop 47%

A new report from security vendor ScanSafe makes a number of interesting observations about security and use of the internet. The ScanSafe Global Threat Report for September states that despite high-profile vulnerability being discovered in Microsoft's Internet Explorer, the number of viruses delivered through web pages dropped by 47% in the month. News is not so good in the area of spyware where there was a 21% increase.

As an aside the report claims that one in twenty of the total web requests in the month were to the YouTube website. YouTube and other video sites consume a comparatively high level of bandwidth, meaning that network providers and IT managers may have to prepare for an impact on service. Network managers need to decide whether the benefits offered by these sites are worth the cost to other network applications if bandwidth is saturated. There are also issues of inappropriate content and copyright.

http://www.scansafe.net/scansafe/news/story?id=129971

Internet addicts

Researchers at the Stanford University School of Medicine in California have released a new study that suggests some users may be becoming internet addicts. The study suggests that one in eight of the people surveyed showed signs of "problematic internet use". Nearly 70% of respondents were regular internet users, nearly 15% found it difficult to stay away from the internet for several days at a time and nearly 10% attempted to conceal their use of the internet from others. This was compared by researchers to the behaviour of addicts such as alcoholics.

http://mednews.stanford.edu/releases/2006/october/internet.html

EU project looks at OSS viability

The EU has reaffirmed its commitment to exploring the use of Open Source software (OSS) with a grant of €1.6m to the Software Quality Observatory for Open Source Software (SQO-OSS). This organisation is a Europe-wide partnership that aims to provide formal validation of open source software and tools. In turn, it is hoped that this will increase confidence in OSS and promote adoption.

http://www.sqo-oss.eu/news/releases/european-consortium-to-prove-quality-of-open-source-software

Earlier this year the EU published a report on the impact of Open Source software on European economies. This study, paid for by the European Commission, concluded that the open source software movement has a significant positive impact on the economics of the region. A leaked letter to the European Commission from the Initiative for Software Choice (ISC), an industry body, has criticised the report.

http://www.flosspols.org/

http://www.techworld.com/applications/news/index.cfm?newsID=7109&pagtype=all

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