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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.

Notices:

Web 2.0 examples needed

Becta and Nottingham University are seeking examples of the use of Web 2.0 technologies in secondary schools. Please send details of any Web 2.0 projects or examples you have of classroom, school level, or LA use of Web 2.0 technologies to charles.crook@nottingham.ac.uk or emtech@becta.org.uk.

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Networking and wireless

Analysis: Near Field Communication (NFC)

Near Field Communication (NFC) is a very short range, low power wireless connection technology. It is a development of RFID and contactless card technologies and is likely to be increasingly found in mobile phones, smart cards, and consumer electronics. The technology is very intuitive to use as it involves bringing two devices very close together to create a connection, without the need for configuration or set-up.

Introduction

NFC was developed by Sony and Philips and is now based on the ISO 14443 standard. This standard deals with proximity cards, which can receive and transmit data over short distances. NFC is capable of supporting three data rates, 106, 212, or 424 Kbps, over maximum distances of around 20 centimetres, but more usually within 4 centimetres. Crucially it is interoperable with other wireless and contactless card standards. This means that a connection can be set up using NFC, but the communication can then take place over faster protocols such as Wi-Fi or Bluetooth.

It operates within the unlicensed 13.56 MHz range previously reserved for research and medical equipment. The system is a read/write technology that has two modes: passive mode, which draws its power from the reading device; and active mode, where the device itself is powered. In passive mode the devices are intended to operate for up to six minutes after exposure to an appropriate radio signal.

<http://wg8.de/sd1.html>

Comparison to other specifications

Bluetooth supports significantly faster transfer speeds than NFC, with speeds of up to three Mbps and ranges of up to 10 metres for most commercial devices. For Bluetooth devices to communicate they must first establish a pairing, which is usually done by scanning the local area for devices transmitting Bluetooth identities. Once a device is discovered a trusted relationship, or pairing, is established through the use of secure passkeys. Once established a pairing can be retained between communication sessions. In comparison NFC requires no real set up time, with NFC devices responding on demand to any request signal. Compared to Bluetooth however, NFC is not secure - the specification is concerned purely with the physical characteristics of communication and not the data that is communicated. There is some inherent security in that two devices need to be brought close together or touched to make a connection.

Some aspects of NFC are similar to Rubee, a short distance, lower power radio communication system. Rubee operates at the 131 KHz wavelength and is designed to handle data packets of up to 128 bytes. The key difference between NFC and Rubee is that all Rubee devices are powered and act as transceivers - transmitters and receivers of radio signals. This means that Rubee enabled devices or tagged objects will broadcast their signal without waiting for an interrogation from an active device first. This makes Rubee suitable for creating self-configuring mesh networks of sensors, for example. Rubee also operates at a greater distance of up to 15

metres, as compared to NFC's 20 centimetres. But there are disadvantages, because it is a low power, low frequency radio signal the data transfer rate for Rubee is slow, with data rates a fraction of NFC and Bluetooth.

http://standards.ieee.org/announcements/pr_p19021Rubee.html

Current uses

NFC has a variety of uses and can be integrated into various devices. Typically it is used for making payments, for secure entry systems, travel cards (similar to Oyster) or other contactless card functions. In Japan it has been widely integrated into mobile phones to enable contactless payments and travel and this is now being trialled in the UK.

The current O2 Wallet trial, is attempting to replace smart cards with NFC-enabled phones. This follows a number of payment trials such as Manchester City Football Clubs use of ticketless entry, with fans using their NFC enabled mobile phones instead of paper tickets to gain entry to home games. Projects such as O2s wallet are also exploring the wider possibilities of NFC, transferring data such as URLs and telephone numbers, when the mobile phone user makes a transaction using the e-wallet.

<http://www.3g.co.uk/PR/Nov2007/5483.htm>

NFC goes beyond payment/access uses. RFID and NFC tags have been used to create smart posters and smart objects. These smart objects communicate with NFC enabled computers, phones and handhelds. The NFC device transmits either identities or even small packets of data such as a URL, which is then picked up by the NFC-enabled device. Projects such as Transport for London's Vortex, have trialled using smart posters to guide travellers through the London Underground. In this system a user touches their phone to an NFC poster and they receive a URL. The phone then connects to the internet and downloads travel information to a custom-made browser. In a school, smart posters could be used to direct students around planned learning journeys, or to test understanding once a lesson is complete. Some of the latest NFC projects include the sentient computing project at Cambridge University have used smart posters to create a large scale user interface for controlling other IT equipment.

<http://www.tfl.gov.uk/corporate/media/newscentre/5832.aspx>

<http://www.cl.cam.ac.uk/research/dtg/attachive/spirit/>

NFC has been used considerably through its relation to RFID, primarily for identity documents and secure entry systems. The contactless card stores an identification number for the individual that matches up to a record on a security database. When brought within range of the active networked NFC transceiver the card is interrogated and the ID returned. This principle has many potential uses within a school, beyond security. For example a number of schools have piloted smart card systems that control the allocation of school meals (cashless catering), library books and registration such as the One Edinburgh project, with the pupil presenting their card instead of payment or in the case of school meals, with the card returning details of their entitlement. Smart cards have also been used to support authentication when accessing computer networks, with the identity obtained from the card being reconciled with the authentication record on the database to reinforce,

or in some cases replace user names and passwords. In addition, NFC enabled smart cards could speed access to libraries and other resources with students using them to check in and out. Some projects, such as that undertaken by Devon County Council, have looked at using smart cards to manage school transport.

<http://www.smartcard.co.uk/members/newsletters/2005/SCN%20March%202005.pdf>

Network setup

Another important use for NFC is to simplify the set up of other faster or longer range networking connections. For example an NFC enabled mobile phone could be touched to a digital photo frame to allow the pictures to be downloaded; or it could be used for easy set up of Wi-Fi networks. Currently many users struggle with the complexities of networking or pairing devices, so NFC could well be integrated in increasing numbers of devices to make this process much easier. Sony recently demonstrated a new wireless technology called TransferJet. It combines NFC (operating over very short distances) with fast wireless connections (around 375Mbps) using technology similar to Ultrawideband (see TechNews April 07). It is still unclear whether this will be widely adopted in the market.

Conclusion

Whilst RFID and Near Field Communications have been in existence for some time, new devices such as the Samsung SGH-X700 or Nokia 3220 and the increasing capability of mobile phones has made the possibility of NFC enabled projects of interest to education. NFC technology will become increasingly ubiquitous with up to 419 million NFC chipsets predicted to be shipped for inclusion in portable devices and contactless card readers by 2012 (InStat). Continued investment by companies such as Nokia, indicate a clear belief in the commercial and practical potential of NFC applications. Indeed commercial and public projects over the past year have demonstrated that NFC is now a valid way of delivering information to a student, or member of the public.

However NFC needs to be considered along side other technologies. 2D barcodes may prove a cheaper solution for static information if properly implemented. NFC does have some distinct advantages though, particularly in the speed and simplicity with which it can be used at close range. RFID and NFC both offer potential uses in education to allow learners to interact with objects and locations in the real world (see Ubiquitous computing in Becta's Emerging technologies for learning volume 2)

Networking and wireless news

Becta launches next generation learning campaign

The Next Generation Learning campaign is about using technology well to make learning a more exciting, rewarding and successful experience for people of all ages and abilities. The Next Generation Learning campaign is aimed at parents, learners, teachers and employers. A specially commissioned survey by the polling company Populus shows that 95 per cent of parents think the use of interactive whiteboards and other high tech tools help their children learn at school. Almost 80 per cent of parents questioned on behalf of Becta think technology can bring lessons to life and engage their child in subjects they find difficult, while more than 60 per cent believe the use of computers raises standards. Becta is leading the drive to improve the use

of technology in education via the Next Generation Learning campaign. For more information visit the [Next Generation Learning campaign website](#).

BT and Ofcom voice doubts over the urgent need for next generation broadband

Ofcom, BT and the Broadband Stakeholder Group (BSG) have cautioned against speeding up the replacement of the copper wire telephone infrastructure with fibre optic cables. Fibre optic cables could offer speeds of 100Mbps and beyond, but would require significant investment to replace the existing telephone infrastructure. It is not clear whether enough demand exists or whether companies would be able to receive a return on investment. The BSG and competitiveness minister Stephen Timms have recently brought the issue of planning for next generation broadband to the fore. Currently BT is planning to provide fibre to the home to new housing developments. Other companies, such as H2O, are planning to offer fibre connections to certain towns by running cables through the sewer system, which offers significant cost savings.

<http://news.bbc.co.uk/go/rss/-/1/hi/technology/7114642.stm>

Australian research scientist claims to have dramatically improved ADSL speed

Dr John Papandriopoulos at the University of Melbourne has suggested that crosstalk interference slows the maximum data transfer rate across copper telephone lines. By managing the transmission power across the different spectrums used by ADSL, Panandriopoulos has suggested that reducing this interference could increase maximum ADSL speeds by up to 100 times.

<http://jpap.andriopo.uos.org/>

UK users move to broadband

Figures released by the Office for National Statistics show that 88% of internet users are now connecting via broadband services, with only 11% of internet users still using dial-up connections. The information gathered through a survey of Internet Service Providers (ISPs), suggested that the average speed of broadband connections has also been increasing with over 45% of internet users having a 2Mbps connection or faster. There are now a total of 26.8 million internet users in Great Britain, of which 23.4 million access via broadband.

<http://www.statistics.gov.uk/pdfdir/intc1107.pdf>

However, US analysts Nemertes Research are predicting that internet speeds will take a dramatic downturn from 2010. They believe that current broadband networks will be unable to cope with increasing demand and the increasing amount of data carried in the US. This congestion is being fuelled by an increased demand for rich media such as video, with 8.3 billion video streams being watched in one month alone. The company estimate that £20 billion will be required to bridge the gap in the US, and £66 billion worldwide.

<http://www.internetinnovation.org/tabid/56/articleType/ArticleView/articleId/94/Default.aspx>

BT announces new shared broadband wholesale product

BT has announced a new service aimed at small to medium-sized organisations, which will offer faster uplink speeds and greater reliability than current ADSL. The service, which will be available through Internet Service Providers, uses software to split data traffic over multiple ADSL lines, increasing reliability and speed. The system, known as Shareband, uses client and serverside software to split and reconstitute the signal, but can also be used on other network infrastructures such as wireless networks.

http://www.sharedband.com/media01_07.html

Short range wireless developments

WirelessHD specification 1.0 has just been launched. WirelessHD is a wireless networking technology developed by an industry consortium of computer and consumer electronic companies. It is aimed at offering high speed wireless communications within the home suitable for transmitting high definition video and other content to displays and other devices. It works in the 60 GHz spectrum, but will need to compete with a range of other similar technologies such as those developed by Pulse Link.

<http://www.wirelesshd.org/>

Mobile phones control devices

The P2P (Peer to Peer) Universal Computing Consortium (PUCC) has been established to develop and promote a communications platform for controlling connected devices. So far the platform is being used by NTT DoCoMo in Japan to allow mobile users to remotely control appliances in the home. However, the technology could be used for a range of remote monitoring and control purposes.

<http://www.pucc.jp/en/index.html>

Ofcom plan to release analogue television spectrum

Ofcom, the UK's telecommunications and broadcasting regulator has announced their plans for using the radio frequencies that will be freed up in the moves to digital broadcasting. Much radio spectrum is due to become available as analogue television is switched off. Ofcom is intending to hold an auction to allocate the available frequencies and is taking a largely market led approach to this allocation. Consultation has identified a number of potential uses for the freed up spectrum including mobile broadband (eg WiMAX), digital/HD television and cognitive radio.

http://www.ofcom.org.uk/media/news/2007/12/nr_20071213a

Nokia invest in Near Field Communications (NFC)

Following the successful release of a number of NFC enabled mobile phones, Nokia recently invested in an NFC-enabled contactless payment system. The system, known as Micropass, is similar to the current trials being undertaken by O2. NFC is a short range data transfer specification, similar to radio frequency identity chips, which allow tags to transmit data to mobile or fixed devices over short ranges. Nokia is working with Visa and O2 to allow users to make payments using their mobile phone instead of a credit card. Using this system the user touches the mobile phone

to the credit point. NFC can also be used to create smart posters and fast network setup systems.

http://www.o2.com/media/press_releases/press_release_3322.asp

http://www.insidecontactless.com/press/archives_view.php?sq=72&page=1&where_encode=IHdoZXJlIHdkYXRlIG5vdCBsaWtlICcyMDA4JSc=

Galileo navigation satellites move forward

The European Union has approved the development of the Galileo satellite navigation system. The system, similar to the US Global Positioning System (GPS), will be built with components supplied by a variety of EU countries and is planned to be operational by 2010. The system will have five services, many of which will be free to air, requiring no ongoing subscription.

The services available will be Open Access, Commercial, Safety of Life, Publicly Regulated and Search and Rescue. The open access systems should reduce the cost of location based computing and geotagging projects within education, and will certainly offer more choice in the products available

The Russian GLONASS satellite navigation system, used primarily for military purposes, has also made significant progress launching its eighteenth satellite. As well as military uses, the system will also be available for commercial developments, including pet tracking devices.

http://ec.europa.eu/dgs/energy_transport/galileo/documents/doc/2007_12_03_council_results_en.pdf

<http://www.glonass-ianc.rsa.ru/pls/htmldb/f?p=202:1:16827457493506720876>

Multimedia

Analysis: High Definition (HD)

High definition video devices and television services are increasingly available in the UK, but with competing specifications and technologies it is not always clear what should be considered in planning and resourcing High Definition projects. This article aims to explore the different High Definition formats for recording and displaying High Definition television and video.

What is HD TV?

High Definition (HD) television and video in simple terms has a higher resolution than standard video. Currently High Definition refers to particular broadcast standard for digital television, specifically the International Telecommunications Union standard: ITU-R BT.709-2. Currently there are no Freeview HD TV channels (trials have been carried out), however HD TV channels are available through Sky HD and Virgin V+ services. It is also possible to receive free to air HD satellite channels with an appropriate set-top box. HD may be available on Freeview in the future. Channels available include sport, movies and the BBC's HD service.

http://www.ofcom.org.uk/media/news/2007/11/nr_20071121

The move to high definition television is often likened to the emergence of colour television in the late 1950s. This is both in terms of the technological transformation

and in the slow adoption rate due to initially high prices. In the US the first colour televisions cost \$1000 in 1956 and by 1964 only 3% of households had bought one.

Digital HDTV offers high resolution images, with a wider range of colours, native 16:9 (widescreen) aspect ratio and surround sound. The two main HDTV standards are 720p (1280x720 progressive scan) and 1080i (1920x1080 interlaced). This compares with UK PAL standard definition television (SDTV) of 625 lines interlaced (704x576 active lines). 1080p is currently restricted to non-broadcast content. High definition broadcasts need to be compressed to fit in TV channel bandwidths of 6-8 MHz. Different broadcasters compress content by different amounts, which can seriously affect the final picture quality. MPEG2 is the compression standard currently used, but newer codecs such as H.264 and VC-1 are vying to become the format of choice. Both offer DVD quality at about half the bit rate of MPEG2.

Video definition is described according to three key indicators: pixels and lines, frame rate and scanning. *Pixels and lines* refers to the number of dots that make up the image, this is usually denoted by the number of lines 480, 576, 720 or 1080. *Frame rate* refers to the rate at which the picture is refreshed on the screen, usually 50Hz in Europe.

The way in which the image is refreshed is called *scanning*, and there are two types, progressive and interlaced. Progressive scanning refreshes every line in the image for each frame, whilst interlaced refreshes every other line, swapping between lines on each refresh. Interlaced video is effectively a form of compression and therefore reduces the amount of memory and bandwidth required to record and transmit, but also reduces the quality of the video particularly for rapid movement.

To view high definition television or other HD content a suitable display is needed. Traditional CRT displays cannot handle HD, so HD capable LCD, plasma or projectors are needed. Displays designated HD-ready can support 720p, but recently 'Full HD' displays have become more common supporting 1080p. Most equipment is also capable of upscaling or down scaling images to fit the native resolution of the display.

http://www.dvb.org/technology/fact_sheets/

Recording formats

European HD TV is usually broadcast using the MPEG-2 standard, and is likely to move to the more efficient MPEG 4. These video compression methods work by converting each pixel into two bits of reference data, the colour or chrominance, and the brightness of luma. The image is then compressed by removing some of the colour information. When reconstituted again the colour values can be derived from the pixels that remain. There are three compression rates within MPEG-2 that refer to the amount of colour data removed. 4:2:0 has roughly 75% of the chroma information removed, 4:2:2 indicates 50% of the colour information has been removed, and 4:4:4 indicates no colour information has been removed. Both Blu-ray and HDTV support the MPEG-2 format, but also support the MPEG-4 derived format known as VC-1, the same codec used in the windows video format .wmv.

The growth of HD video has been accompanied by a move toward Hard Drive video cameras and Digital TV recorders. Solid state memory and Optical Disc formats are also used. Blu-ray and HD DVD are the two main optical disc formats for playing and recording HD content (see TechNews November 05). It is not clear which of these formats will become dominant, but the current momentum and market support seems to be behind Blu-ray.

For creating HD content there are a number of recording formats depending on the media being used, but many of the commonly-available formats do not offer true High Definition. Many, like DVCPRO HD, and HDV use non-square pixels, essentially limiting the definition of the video captured to 1440x1080 pixels. This is extended to the full 1920 pixels by stretching the recorded pixels to fit the definition in playback.

The professional formats could be considered HDCAM SR and XD-CAM. Whilst DVCPRO is aimed at the professional market the recording format it does not offer sufficient memory to allow true professional use with HD. Most professional HD formats listed here are used for electronic news gathering (ENG) and outside broadcasts rather than studio filming. The pro-format cameras are very expensive starting at around \$12,000.

HDCAM is the latest development in the Betacam family of products using a magnetic tape to store the video. There are two variants of HD CAM, *HDCAM* and *HDCAM SR*. HDCAM SR uses MPEG standard definition of 1080 at either 4:2:2 or 4:4:4. HDCAM uses different compression technology and a non standard picture size, and should really be avoided in favour of SR. DVC Pro HD is a development of the Digital Video (DV) camcorder tape format by Panasonic, DVC Pro uses the same chroma compression rates as MPEG-2 and 4 and allows for progressive video at 720 and interlaced at 1080. Finally, XD-CAM is a Sony format concentrating on the use of PDD media, capable of recording in native MPEG-2 at 4:2:2 compression and fully 720 progressive and 1080 interlaced definition.

The main recording format for consumers and semi professionals is HDV or High Definition Video. HDV can record at 720 progressive, which is sufficient for current broadcast quality high definition. However, it cannot fully record at 1080 interlaced and uses non-square pixels to scale the image. In addition HDV uses interframe compression, which uses key frames of high quality and intermediate frames of lower quality. As a result of interframe compression HDV can introduce distortion into the image where the footage is edited. Because of this HDV is not considered to be a professional tool, but is still capable of producing very good results. HDV records to standard miniDV tapes.

The other main consumer format is Advanced Video Codec High Definition (AVCHD). AVCHD uses MPEG-4 compression, compared to MPEG-2 in HDV, and

can theoretically achieve a better compression rate as a result. Using MPEG-4 AVCHD is capable of recording at 1080 progressive, this is achieved through greater interframe compression than HDV which can introduce problems when editing. Significantly AVCHD does not use non-square pixels, instead recording in full HD but with increased compression, using the same codec as HD disks such as Blu-Ray and HD DVD. Sony, Canon and Panasonic all produce cameras in both formats.

Finally, a number of cameras are opting for native MPEG-2 or MPEG-4 encoding, these generally use hard drives or solid state memory, such as the Sanyo Xacti or the JVC Hard Disk Cameras. These offer the possibility of HD recording at potentially lower costs, currently starting at around £400, although they have the same group of picture compression rates as AVCHD.

Editing

Editing High Definition video, as you would expect, requires more computer power than editing standard definition video. The choice of recording format can affect this as well. Because consumer MPEG-2 and MPEG-4 formats (HDV and AVCHD) are compressed using interframe compression, editing software needs to reconstitute the intermediate frames. This requires considerable processing power to be done on the fly and can cause distortion when spliced. This can be mitigated to a certain extent by converting the footage into an uncompressed file format for editing purposes. Most current professional and consumer software such as Adobe Premier, Avid, Final Cut, Pinnacle Studio and iMovie support HDV, MPEG-2 and MPEG-4, however, support for AVCHD is not quite as widespread. Support for Blu-Ray and HD DVD formats is starting to appear in video editing software, but few products currently support both Blu-ray and HD DVD. Two additions to Blu-ray and HD-DVD called AVCREC and HDREC allow the recording of HD content to standard DVDs on suitable recorders.

As HD video requires more computing power to manage the video compression and the higher data capacity of HD video, dedicated graphics cards with HD capability will make editing easier. Newer PCI-express cards and those with High Definition Multimedia Interface (HDMI) connectors are preferable. These newer graphics cards that offer hardware support for HD can also make playing Blu-ray or HD DVD films easier on PCs.

It is likely that we will see an increasing move away from tape media to hard drives over the next year. It is likely that AVCHD will be available in an increasing number of cameras, particular those at the cheaper end of the market. Equally use of native MPEG-4 is likely to increase for Hard Drive and solid state cameras. Already a few cameras using Blu-ray disks to store the video have come onto market and we should expect to see more of them in 2008.

Whilst the format for High Definition optical discs is still not decided it is difficult to judge where to make the investment in software and hardware. However, the use of MPEG-2 and MPEG-4 standards and the support for HDV means that capturing and editing HD video is relatively straightforward. In the short to medium term, the best option may be to publish the finished video in MPEG-2 or VC-1 formats which will

play on both formats and on the PC. By the end of 2008 though, it should be clear which of the new formats is going to win out.

Standard Definition TV and video will be with us for many years to come, and HD should not be considered a must have requirement in education. That said, creative projects will benefit from understanding the latest developments and the different techniques required for working in HD as compared to standard definition. The relatively low cost of entry level HD devices means that HD projects can be used to supplement but not necessarily replace existing learning and teaching resources. Finally, the Japanese are already working on Ultra high definition services.

Multimedia news

BBC Launch iPlayer

The BBC's video on demand service iPlayer was launched in December. The service allows internet users to view television programmes up to seven days later via their web browser. A Macromedia flash version has also been launched to allow the service to be used with non Microsoft operating systems. The service is free to use and can be shown on any computer that can run the flash plug in. The BBC is also working with other broadcasters such as ITV and Channel 4 to develop a combined online TV service.

<http://www.bbc.co.uk/iplayer/>

Ofcom Issues new guidelines for using under children in broadcast programmes

As a result of new research Ofcom have issued revised guidance for programme makers using children and young people in their programmes. The guidelines suggest that programme makers develop clear guidance for production staff, conduct background checks and risk assessments on the participants, provide child friendly information and other child welfare guidance.

http://www.ofcom.org.uk/media/news/2007/12/nr_20071212a

The European Parliament passes the Audio Visual Directive

The Audio Visual Media without frontiers directive is designed to update current EU broadcasting law, recognising the impact of the world wide web. The directive, which must now be incorporated into the law of each member state, includes rules on product placement, on certain rights to access and use audiovisual material and better support for the hearing and visually impaired.

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/706&format=HTML&aged=0&language=EN&guiLanguage=en>

E-book readers and flexible displays

Amazon.com has developed a wireless tablet device that allows users to download books, newspapers, journals and blogs. The device named 'Kindle' has a matt screen which uses e-Ink which is designed to have a resolution approaching printed paper, is viewable in direct sunlight and extremely low power. Using a US data only mobile phone network Kindle will connect to a proprietary server which will manage access to paid and unpaid content, as well as e-mail. Kindle runs on a Linux and

uses Secure Digital expansion cards for additional storage. The Kindle joins products such as the iREX and Sony Reader in using the flexible lightweight display technology to create a paper like document viewer.

LG/Philips recently demonstrated a flexible 14" colour display e-paper display, but this won't be available in products for some time. However, a Philips spin-off company called Polymer Vision plans to launch a monochrome flexible display integrated into a 3G mobile phone later this year. The RADIUS device will be the first commercial use of the technology. Although limited by lack of colour and a slow refresh rate, it points at future possibilities and the ability to overcome the problem of small displays on mobile devices.

<http://www.amazon.com/Kindle-Amazon's-Wireless-Reading-Device/dp/B000FI73MA>

<http://news.sel.sony.com/pressrelease/6394',525,700,1>

<http://www.itworld.com/Comp/3825/lg.philips-lcd-epaper-080103/index.html>

<http://www.polymervision.com/frameset.php?id=&page=>

Handheld pico-projector unveiled

Display manufacturer Microvision has developed a handheld battery powered digital projector. The projectors use three coloured lasers to create the image, and therefore need a lot less space and power. Microvision's projector, named Show, is capable for an 848 x 480 resolution image up to a distance of 2.5 meters.

Companies such as Texas Instruments have also been developing Pico projectors which are designed to be used with portable devices such as handhelds and mobile phones. Pico projectors were covered in more depth in previous editions of TechNews.

[http://phx.corporate-ir.net/phoenix.zhtml?c=114723&p=irol-](http://phx.corporate-ir.net/phoenix.zhtml?c=114723&p=irol-newsArticle&ID=1090397&highlight)

[newsArticle&ID=1090397&highlight](http://phx.corporate-ir.net/phoenix.zhtml?c=114723&p=irol-newsArticle&ID=1090397&highlight)

http://www.dlp.com/tech/press_releases_details.aspx?id=1336&year=2007

Nokia develop innovative photo recognition and language tools

Nokia has developed a photo recognition search tool service, named point and find, which allows mobile phone users to use images to search for local services. For example, a user could take a photograph of a cup of coffee and be shown the location of nearby cafes. The phone uses GPS technology, cameraphones and an image recognition database to ascertain the user's current location and what they are looking at. In addition the service is trialling the possibility of optical character recognition and translation, so signs in French or Japanese could be photographed and translated. The service is expected to be launched in 2010. A similar service, designed by Geovector, is already in use in Japan. Location based services for education has been covered in previous editions of TechNews.

http://www.nokia.com/NOKIA_COM_1/Press/twwIn/press_kit/Point_&Find_Press_Backgrounder_October_2007.pdf

Display developments

Alienware has announced a prototype curved LCD screen at the Consumer Electronics Show (CES). The 2880 x 900 pixel screen is curved to mimic the peripheral vision of the user. This widescreen resolution is supported by many of the latest computer games and the screen is intended primarily at a gaming market. That

said, the screen does offer interesting possibilities for educational simulation software. HP also launched notebooks with HD displays at CES.

Also at CES Sony displayed its 11" OLED displays which are available for sale. Samsung has said it expects to launch large OLED displays in 2010. OLED displays are currently used in some mobile devices. They are extremely bright, with high contrast and require no backlight, which allows them to be extremely thin. Research is looking at creating flexible versions of the displays.

Sony tests seven layer holographic disks

Sony is experimenting with holographic laser disk technology, which uses two lasers to create an interference pattern on a layer of the disk. This interference pattern represents the data stored, but only reflects some of the light of the reading laser, allowing other stacked layers of data to be read simultaneously by the same laser beam. Currently Sony have successfully managed to store and read seven layers of data and are planning to achieve twenty layers within two years. Other companies have been working on holographic discs for some time.

<http://www.vnunet.com/vnunet/news/2202883/sony-tests-seven-layer>

Warner Brothers have recently stopped development of their Totally HD dual HD DVD and Blu-Ray disk system. The system which allowed one disk to be played in either player had one side that was Blu-Ray and one side that was HD DVD. The company has decided to drop support for HD-DVD and concentrate on Blu-Ray disks in future, further adding momentum to the Blu-Ray format

Wireless memory cards

At the Consumer Electronics Show in Las Vegas, US Company Eye-Fi demonstrated a new wireless networked Secure Digital memory card. The card incorporates 2 GB internal storage and an 802.11g wireless network card. The card, aimed at digital camera users, is intended to speed up the downloading of photographs to a computer or uploading to a website. The card, which must be configured on a PC prior to use, saves the authentication information for the preferred wireless network and photo sharing site, allowing it to automatically transmit the photographs when within range. Although some cameras now have built in Wi-Fi capabilities, these cards will allow the functionality to be added to large number of standard digital cameras.

<http://www.eye.fi/>

XBox to host BT video on demand service

BT announced that their 'BT Vision' video on demand service, currently available through a set top box, will also be made available through the Xbox 360 games console. The console, which has in built networking, will not be able to view or record broadcast digital television. The service, which will be available as an additional package to BT broadband users will allow people to browse and view video content from a library of pre-recorded programmes hosted by BT. This contrasts with the PS3 which is set to release a Freeview Digital Video Broadcast (DVB) tuner in March this year. This will allow PS3 users to view broadcast digital television but not video on demand

http://www.theregister.co.uk/2008/01/07/bt_vision_microsoft_xbox/

Hardware

Analysis: Processor futures

Current microchip technology is gradually reaching its physical limitations. However, despite predictions of the end of Moore's Law, manufacturers have continued to innovate with new materials and processes in order to continue processor advances. This article looks at some of the current and future developments that could allow processors to break the limitations of silicon technology.

Moore's Law

In 1965 Dr Gordon Moore, co-founder of Intel, made a general prediction that the number of transistors per square inch of integrated circuit would double every one to two years. Intended initially as an observation on improvements in manufacturing technology, and consequent reductions in cost, Moore's law has increasingly been seen as a goal to aspire to, with processor manufacturers aiming to double capacity within an 18-24 month development cycle. However, the exponential increase in the number of transistors on a chip, does not necessarily translate into exponential developments in technology, as is sometimes claimed.

The growth of transistor density and processing power has slowed as the physical limits of current technologies are reached. Current transistors are placed on metal circuits etched onto silicon wafers. These manufacturing techniques stop working as the spaces between the circuits get smaller and the insulation between the circuits provided by the silicon starts to fail. A number of manufacturers and researchers are looking at new techniques and materials to allow more processing power to be created, and into reducing the amount of power needed and heat generated by processors, to make them more efficient. It is now widely believed that Moore's law, which was originally predicted to reach its peak in 2007, can now be extended for up to twenty years, before reaching fundamental physical limits.

Current fast chip technology

Current Microchip manufacturing processes use UltraViolet (UV) light lasers to fuse deposited material, in several layers to the base material, usually silicon. These are;

- gate layers consisting of silicon or silicon dioxide
- insulation layers of silicate glass,
- conductive layers aluminium
- tungsten contacts are finally etched through the conductive layer and deposited.

This technique known as photolithography, because it uses light to cure the material in place after each stage of deposition.

Current 45 nanometer (nm) technology such as Intel's Penryn uses this technique however their planned 32 nm technology named Westmere and AMD's planned 45nm chips will be using a variation known as immersion photolithography. Immersion photolithography uses a layer of water to completely remove the air gap between the laser and the deposition layer. Using purified water the diffraction of the light is reduced allowing for more precise etching and fusing of the deposited

material. This method has a theoretical limit of 16 nm, allowing for four points on the evolution scale of Moore's law.

http://download.intel.com/pressroom/kits/events/idffall_2007/BriefingSilicon&TechManufacturing.pdf

http://www.amd.com/us-en/Corporate/AboutAMD/0,,51_52_9999_10002,00.html

A number of companies are looking at alternatives to silicon dioxide in the gate layer of the chip. Intel, IBM and NEC have all announced the use of so called high-k materials to replace silicon dioxide in the processor gates. All current high-k chips such as Intel's Penryn have infused a high capacitance metal called hafnium, which is better at containing the current than silicon. This reduces the amount of current that bleeds between the gates which allows for the gates to be more tightly placed. The other major change in recent years has been the move to multicore processors that offer a way of increasing the number of transistors whilst been more power efficient. Intel is researching terascale computing with 80 core chips. For mobile devices the trend is to integrate more elements into the chip (System on a chip), again saving complexity and power.

Emerging processor technologies

Through Silicon Via (TSV) is a relatively new concept for increasing the power of single chipsets. TSV is essentially a vertical connector that allows layers of traditional integrated circuits (ICs) to be stacked. This is important for three reasons:

- Firstly, processor capacity can be doubled without significantly increasing the physical size of the chip by joining multiple processors together vertically.
- Secondly, the distance the electric signals have to travel can be reduced by allowing them to travel in three dimensions, thus reducing the time taken to process individual tasks
- Finally it allows different chips with discrete functions to be combined more efficiently increasing the capability of any particular chip.

The University of Arizona is currently working on research into using proteins to create the circuits for microchips. The research has created metal-coated microtubule proteins of roughly 40 nm in diameter. The researchers have yet to create microchips using the proteins however they hope to be able to exploit the inherent polarities within the tubes to improve the performance of microprocessors. DNA and molecular processors could eventually allow a less rigid type of processing than currently possible with silicon.

Another development in organic chips is unlikely to provide great increases in speed, but it will increase the versatility of applications for microprocessors. Using organic semiconductors sprayed onto flexible surfaces, Nanoident is producing disposable short life flexible microprocessors. Designed for single use applications such as blood testing or water purity tests. The University of California has been working on similar technology combining organic semiconductors with organic light emitting diodes to create simple printed tools.

Graphene is a gauze of carbon atoms forming a hexagonal structure at molecular level. Manchester University has used this gauze to create transistors that are one atom thick and 50 atoms wide. The single electron transistor works using a process called coulomb blockade, that prevents electrons passing through the gate until a positive voltage is applied. This offers the possibility of extending Moore's Law long into the future, possibly to its physical limit; however it estimated that it will be another 15 years before practical graphene processors reach production.

A number of chip manufacturers are considering the current research technology known as AirGap. AirGap replaces the plug insulation material with a microscopic vacuum (not air as the name suggests). This provides better insulation and allows smaller gaps between each gate on the chip, which reduces the size of the chip overall. In addition Airgaps also reduce the amount of resistance through the gate and the amount of energy that bleeds from one connector to another on a chip, both of which potentially allow faster operation for less power. IBM is currently planning to incorporate AirGap nanotechnology into server chips by 2009.

Surround Gate Transistors are a variant of the metal-oxide-semiconductor field-effect transistor (MOSFET) commonly used in microprocessors and memory chips, built along the vertical as well as horizontal axis. The transistor is built around a silicon tube with the gates and being arranged around the circumference and the vertical plane. This reduces the amount of distance the electrical signal needs to pass for any particular operation and could significantly increase performance. A number of companies have started serious research into SGTs including NEC, Intel and IBM.

http://www.bit-tech.net/news/2007/12/07/3d_cpus_to_speed_computing/1
http://www.zurich.ibm.com/st/post_cmos/nanowires_devices.html

Current computing relies on a flow of electric current passing through a binary gate, giving the possibility of two states off and on, or 0 and 1. Optical computing replaces electrons with photons. Optical computing is developing in two ways. Firstly optical interconnects could create faster links in circuits. This would result in a hybrid optical /electrical computer that still do binary calculations. However, early research is looking at making use of the different properties of photons which can be in two states at the same time (not just 1 or 0). This moves into the realm of quantum computing which could fundamentally change how computing works and create a huge leap forward in processing ability.

IBMs development of Silicon nanophotonics is an example of optical computing. This replaces the copper wiring between processor cores with nanoscale optical fibres. These optical fibres are capable of transporting more data with less leakage than current circuits. Although not the same kind of step change offered by quantum computing, silicon nanophotonics offers considerable speed improvements for complex multicore chipsets.

The end of Moore's Law?

Although the trajectory of Moore's Law challenges traditional microchip manufacturing methods, we can see that in the short term more advanced manufacturing and materials will continue the increase in processor power for some time. In the medium term changes to the structure of transistor, chips and insulation will allow manufacturers to squeeze better performance from silicon technology. However, as manufacturing reaches the limits of physics, alternatives will be required

Hardware news

Whiteboard interoperability specification

Becta has announced a new initiative to improve teacher's ability to share whiteboard content. Currently most whiteboard software use proprietary file formats, meaning that content developed using one whiteboard will not work on a different company's product. This means considerable duplication of effort, within local authorities and nationally because good materials cannot be distributed without remaking them for each make of whiteboard. To combat this problem Becta have commissioned work to develop a national standard whiteboard file format to allow files to be created and shared easily. Industry will be invited to become involved in this process.

<http://news.becta.org.uk/display.cfm?cfid=1495917&cftoken=b8eb4da5ec798d6c-A48A0899-FA8E-E240-0E1CD45760AF9EBD&resID=35000&page=1658&catID=1633>

Intel developments

Intel has launched further 'Penryn' 45nm processors, including the first ones designed for notebook PCs. However, the notebook processors are only available as dual cores and not quad core. They include power saving functions. The 'Santa Rosa' version of the Centrino platform includes support for 802.11n Wi-Fi, whereas the Montevina update, due in the second half of 2008, should include the option of the 'echo-peak' combined WiMAX/Wi-Fi card.

<http://www.intel.com/pressroom/archive/releases/20080107comp.htm>

At CES, Intel showed server devices based on their new low power Menlow platform for ultra mobile PCs and Mobile Internet Devices (MID). The Mobile Internet Devices run on Linux, have 4.8" screens and support WiMAX wireless broadband. They are designed to be smaller and less expensive than Ultra mobile PCs (UMPC).

<http://www.techworld.com/mobility/news/index.cfm?newsid=11066&email>

Taiwan is starting to develop a similar ultra mobile internet device. The device known as mTube, will use both WiMAX and Wi-Fi wireless networking standards to connect to the internet. The Linux based mTube is designed to run PC like software and is based around the same x86 chip architecture. Built from currently available Taiwanese made parts it has a 1 GHz processor, 8 GB of storage and a 2.8" screen but weighs less than 150 grams. Developed under the auspices of Taiwan's Science and Technology Advisory Group, the device is designed to showcase Taiwanese technology and to demonstrate the benefits of WiMAX.

[New handheld set to exploit WiMAX](#)

Low cost mobile PCs

Asus have been giving details of the next versions of their Eee PC which is intended to be in production in the second quarter of 2008. The new notebooks will feature larger 8.9" screens with increased resolution and will be WiMAX ready and will come in Linux and Windows XP versions. The One Laptop per Child (OLPC) project also moved forward mass production starting in November and both Peru and Bolivia have committed to purchase a large number of the low cost notebooks. It has suffered a set back though with the withdrawal of Intel support.

<http://eeepc.asus.com/global/>

<http://laptop.org/laptop/>

Advances in memory

More companies have started launching products using solid state drives instead of hard disks. Bit Micro has commenced production of high capacity Solid State drives. These drives have capacities of up to 1.6 terabytes for a 3.5" drive and 850 GB for a 2.5" Drive. Toshiba has also announced the production of laptops using Flash hard drives, with up to 128 Gigabytes of storage. ASUS meanwhile displayed a laptop with 1 Terabyte of storage at CES on January. The laptop uses two Hitachi 5k500 hard drives each with 500GB of storage.

NRAM research is continuing with Nantero announcing that they have successfully built a carbon-nanotube based memory Non-volatile RAM (NRAM) wafer. NRAM offers the possibility of replacing Dynamic RAM (DRAM), and flash memory. This could lead to the development of universal memory: fast enough to replace RAM and with the non-volatile storage of Flash memory.

Researchers have also been working on NRAM, using quantum dots. The dots are small groups of atoms that store data by restricting the movement of electrons. Using this technique the researchers believe they can produce NRAM that is both faster to access than Flash and lasts longer, up to a million years.

http://www.bitmicro.com/press_news_releases_20080107.php

http://www.bitmicro.com/press_news_releases_20071113.php

http://www.asus.com/news_show.aspx?id=9454

<http://www.nantero.com/index.html>

<http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=APPLAB000091000026263105000001&idtype=cvips&gifs=Yes>

Fujitsu develop monitors that draw no power in standby mode

It is estimated that eight percent of all domestic electricity is used by devices in standby mode. To reduce this figure Fujitsu Siemens have developed monitors that use capacitors and solar panels so no mains power is drawn when in standby. When the monitor stops receiving video signals from the PC, it will stop drawing mains power, instead relying on stored power in the capacitors, topped up with power drawn from solar cells to maintain a standby state for up to 5 days. After 5 days the monitor will power down completely and need to be switched on again. This technology is intended for use in television and monitors but may be applicable to a range of domestic and personal electronics.

Wireless monitors and projectors

Display card Manufacturer DisplayLink and UltraWideBand developer Alereon have announced a wireless display adapter. Built around the Wireless USB specification the card allows a PC to connect to any Wireless USB enabled monitor and projector without needing a cable to do so. The card supports up to 16 million colours and a display of 1680 x1050. Ultrawideband wireless networking may be used in future for wireless docking stations that would overcome the current issue of laptops only working with specific docking stations.

<http://www.alereon.com/press-room/press-releases/?pid=348>

The Firewire standard increases its speed

The developers of the IEEE 1394 Firewire data cable standard have approved a new revision S3200 which will take the maximum data transfer speed up to 3.2Gbps. The new standard will use the same plug connector as the current 800Mbps version, but will not be compatible with the 400Mbps sockets.

The USB 3.0 specification scheduled for release in June this year and will take the speed of that standard up to 4.7Gbps.

<http://www.1394ta.org/Press/2007Press/december/12.12.a.htm>

<http://www.intel.com/pressroom/archive/releases/20070918comp.htm>

LED backlit displays

Toshiba and Dell have both recently announced new Tablet and laptop PCs that use LED backlit screens. LED backlighting, replaces traditional light sources such as fluorescent tubes, to illuminate the LCD screen and produce a bright display. They are lighter and draw less power than traditional light sources, leading to lighter more power efficient devices, and because of this are perfectly suited to tablet and ultramobile PCs.

<http://www.toshibadirect.com/td/b2c/ebtext.to?page=m700>

Improved battery performance using silicon nanowires

Stamford University has announced new research into Lithium ion batteries that could see battery life increase up to 40 hours. This has been achieved by replacing carbon with silicon nanowires as the material that holds the Lithium ions during charging. Silicon can absorb more ions than carbon, but during charging it swells in size, causing fracturing, and loss of capacity over time. The researchers have used silicon nanowires, which can expand and contract with the charge allowing a greater charge to be stored without the same degradation of the battery life.

<http://www.nature.com/nnano/journal/v3/n1/abs/nnano.2007.411.html>

IBM announce silicon nanophotonics

Researchers at IBM have unveiled a new exploratory project looking to increase the speed at which data travels between the different processing cores of a microchip. The technology, in which data is transmitted through light signals along a microscopic fibre optic strand, is believed to be 100 times faster than current

systems. In addition it is believed that the technology will use one tenth the power of current copper circuits.

http://domino.research.ibm.com/comm/research_projects.nsf/pages/photronics.index.html

Software and internet

Analysis: Portable 'personalities'

With the increased capacity of USB drives and internet connections it has become possible to change the way personal files are accessed, and stored. We can now load an entire operating system, together with desktop settings from a portable device, or recreate our desktop over an internet connection. Ultimately this allows user to access 'their computer' without being tied to a single device. This article looks at some of the different ways of creating a portable desktop and the issues that need to be taken into account.

Portable desktops/profiles can be divided into 3 main types. Those that recreate the entire operating system, application and data, those that recreate applications and/or data and those that only provide personal settings and/or data.

Along with the ability to boot a computer from a USB drive and the increasing size of flash memory has come the possibility of launching the operating system and all files from a pen drive. The technique, known as Live USB, is an extension of the Live CD concept, with the added possibility of saving changes back to the boot device. Live USB and Live CD installations load the operating system into the memory of the PC and make use of temporary swap space on the hard drive, but leave no permanent trace of the operating system or user settings once the computer is shut down.

With USB memory sticks now available with several Gigabytes of memory, the amount of software that can be stored and launched from a single memory stick has increased. This, combined with the ability to write data back to the USB sticks, means that it is possible to store personal settings such as the desktop, files and office applications on the same memory stick. This allows a person to effectively carry their desktop around with them and reduces the risk of data being left on temporary machines.

Live USB installations are primarily Linux-based with variants of the Knoppix live CD distribution being amongst the most common, but others such as Mandriva and Gentoo are also available. Boot from USB is not limited to Linux, as both BeOS and Window XPe offer this functionality. Windows XPe is the version of windows for embedded software for machines such as cashpoints or checkouts. Using XPe it is possible to boot Windows wholly from a USB memory stick, using this facility to create a portable office desktop would require considerable configuration.

Several companies now offer portable applications that can be launched from USB pen drives (or indeed other USB devices such as an MP3 player). These include: Portable Apps, Ceedo and U3 specification devices. Some of these will need

applications to be packaged for use with a USB drive and many cannot handle Windows applications. However, virtualisation can overcome some of these limitations.

Virtualisation allows the decoupling of hardware from software (see TechNews May 05) a virtual machine will leave no data behind on the host machine when the virtualisation session ends. Solutions can either offer a fully virtualised OS and applications (eg Moka5, VMware) or virtualise applications (including Windows apps), such as Mojopac, but which rely on there being a Windows host PC.

Virtual desktops, application/OS streaming and other server based computing/thin client infrastructures have been covered in more detail in previous editions of TechNews. These all allow the user to access their 'desktop' over a network/internet connection and have many advantages in terms of management and security. There has been increased interest in hosted desktop solutions and some companies such as LightApp are aiming these at education.

<http://www.lightapp.com/>

Internet Desktop

Another development taking a different approach is the use of the internet and web applications to provide a desktop and working environment accessible through any internet-connected PC. The functionality can range from providing office software and a file store to including instant messaging, and e-mail settings.

Best known of these is perhaps Google Apps which, whilst not strictly a desktop, allows users to create, store and retrieve files in a variety of formats. It is possible to upload documents and files from a local PC

More dedicated internet desktops such as Jooce, eyeOS, YouOS, do not tend to offer the same breadth of office applications; however they do offer more flexibility in the types of file and provide a more traditional desktop look and feel. In addition, they include e-mail, instant messaging from a variety of sources; some include games and the ability to share your desktop with other users. This offers real potential for simple collaborative projects between students, both in school or in school.

Security vs. simplicity

One of the key concerns with many of these portable personal desktop methods is security. Clearly products that make it difficult to store data locally have this in mind, but password protection and encryption is key. Losing a USB stick could be as big a problem as losing a PC particularly if no password is set up for the LiveOS installation. Most secure are those that either encrypt the entire Operating System or those that act as thin clients where no information or applications are accessed or saved locally. The user is also exposed to risk if they use the portable desktop on an unsecure PC, encryption of the operating system and not saving files reduces this risk, but accessing files or working on a machine through an insecure network could expose the portable desktop to attack.

Limitations

Each of these methods has its limitations for truly portable computing - many use the internet as a way of storing data and accessing applications. This limits your portability to networked areas. The web based systems such as GoogleApps or eyeToo are limited in the types of application that are available, whereas thin client systems can have high network bandwidth requirements. The Live USB systems can operate truly locally and do not require any internet connection but the amount of space available is limited by the size of the USB memory stick, restricting work on large projects. Used in the right context each of these problems can be overcome and offer the possibility of extending a users roaming profile beyond a shared domain between institutions. As students increasingly move between schools and colleges for the delivery of vocational qualifications the ability to apply a consistent working environment or to collaborate with a 'home' centre may prove a useful tool. Portable desktops although cheaper in terms of hardware may still require software to be licensed, and some licensing models may not be compatible with the concept of a personal desktop. Certainly licensing systems that inspect the local machines configuration to verify an installation may not work when used through Live USB or similar systems.

Ultimately, portable desktop solutions are still immature and need to be considered within a range of possible portable computing options, to meet the specific requirements of the users and institutions.

Software and internet news

Becta advice on Windows Vista and Office 2007

Becta has published a key report on Microsoft Vista and Office 2007 and on document interoperability which analyses the suitability of both software packages for adoption by schools and colleges. Becta recommends that schools and colleges review the findings of the report before considering any large-scale investment or deployment. The key recommendations from Becta's report are:

- Upgrading existing ICT systems to Microsoft Vista or Office 2007 is not recommended and mixed Windows-based operating environments should be avoided. However, Vista should be considered where new institution-wide ICT provision is being planned.
- No widespread deployment of Office 2007 should take place until schools and colleges are sure that they have in place mechanisms to deal with interoperability and potential digital divide issues set out in the report.
- To ensure widest compatibility of files between different applications, users of Office 2007 should not save in Microsoft's new Office format (OOXML).
- Due to limitations in Microsoft's implementation of the Open Document Format (ODF) international standard, users should in the short term continue to save files in the more widely adopted .doc, .xls and .ppt formats.
- Pupils, teachers and parents should also be made aware of the wide range of free-to-use products currently available and on how to use and access them.

- The ICT industry should be facilitating easier access to 'free-to-use' office productivity software

Further advice can be found at:

<http://news.becta.org.uk/display.cfm?resID=35287&page=1658&catID=1633>

The full report is available here:

<http://publications.becta.org.uk/display.cfm?resID=35275>

Google launches a Wiki and Wikipedia launches search

Google have launched an invitation only Beta test for a user created encyclopaedia. Google is distinguishing itself from its well established rival, by allowing only one author to publish an article or Knol as Google call it, rather than the collaborative methods used by Wikipedia. They believe that the ability to attribute authorship is important in judging the quality and integrity of the content.

<http://googleblog.blogspot.com/2007/12/encouraging-people-to-contribute.html>

Coincidentally Wikipedia founder, Jimmy Wales, has announced a Wiki driven open source search engine. Driven by dissatisfaction with traditional search algorithms Mr Wales has proposed and developed a search engine that is driven by human ranking of results. Unlike Wikipedia the search site, named Wikia, will be commercial generating revenue through advertising.

http://search.wikia.com/wiki/Search_Wikia

Microsoft developments

Microsoft has announced that the latest version of its internet explorer web browser will be beta tested in the first half of 2008. The latest version of the software is thought to have better support for web specifications such as RSS syndication and maintain better compatibility with legacy sites than IE 7

<http://blogs.msdn.com/ie/archive/2007/12/19/internet-explorer-8-and-acid2-a-milestone.aspx>

Microsoft has also announced service packs for both Windows XP and Windows Vista. Vista Service Pack 1 (SP1) promises improved file copying and file movement speeds as well as improved support for large image files and improved security. It is expected in the first quarter of 2008. The XP service pack to be released in the first half of 2008 is aimed at improving XP security and bringing into line with Vista.

<http://www.microsoft.com/windows/lifecycle/servicepacks.mspx>

Microsoft has also announced a new update for Microsoft Office 2007, which improves support for Mobile devices; this allows Office 2007 users to share documents with Pocket PC devices using Office Mobile without the need for third party software.

<http://www.microsoft.com/downloads/details.aspx?familyid=4b106c1f-51e2-42f0-ba32-69bb7e9a3814&displaylang=en&tm>

Finally Microsoft has announced the Beta version of its Hyper-V virtualisation software. Released slightly early this software, designed for windows server 2008, allows systems administrators to create many discrete instances of a server on one physical machine, sharing aspects of the machines hardware between the different virtual server instances.

<http://www.microsoft.com/windowsserver2008/virtualization/default.mspx>

Ofcom digital communications survey

Ofcom's Second International Communications Market report, published in December has indicated some key trends in online activity in the UK. The report indicates that the UK has the highest rate of digital television take up of the countries surveyed and digital radio was also popular. Of all the countries included in the survey more adults in the UK use social networking sites such as Facebook, and on average women spend more time online than men. The report also found that the UK has some of the cheapest domestic communications services of the countries surveyed. Ofcom suggests that this has been helped by bundling of several services such as telephone, mobile telephone, and broadband together for discounted rates. A further interesting statistic is the dominance of mobile phones which now account for 61% of the whole domestic telephone market.

http://www.ofcom.org.uk/media/news/2007/12/nr_20071213

Online safety

A special edition of the American Journal of Adolescent Health has been published focusing on the problems of on-line harassment and bullying. The report states that about nine percent of adolescents were harassed on-line but attempts to draw a distinction between harassment and bullying, highlighting significant differences in the way online harassment is interpreted by the public and professionals.

<http://www.jahonline.org/article/PIIS1054139X07003631/fulltext>

The BeatBullying charity in co-operation with YouTube has launched an online anti-bullying video channel. The channel will provide advice for children being bullied in a number of short videos. A moderated community will also be available for user to chat about their experiences.

<http://uk.youtube.com/profile?user=Beatbullying>

A new report by the Information Commissioners Office warns about the legacy of social networking content. The report suggests that 71% of young people would not want an employer or potential university seeing content they have posted on social networking sites, however 60% of the same group had not considered that this content may be still available online for many years to come. This is known as digital persistence. The report clearly shows a gap between young peoples ability to create online content and their understanding of the potential issues that surround it.

www.ico.gov.uk/upload/documents/pressreleases/2007/social_networking_press_release.pdf

Advice on online safety is available from the Becta website

<http://schools.becta.org.uk/index.php?section=is>

Google maps adds location abilities for mobiles

Google have added a location feature to Google maps for some mobile phones. Using either GPS or triangulation from mobile phone masts, the system is able to show your position within a kilometer. The 'beta' system called My Location requires the user to have java and a web browser installed on their handset. The service will be available for users of the 3 network in the UK but can only be used on a limited number of mobile phone handsets.

<http://www.google.com/gmm/mylocation.html?hl=en>

MIT courseware for schools

The Massachusetts Institute of Technology (MIT) has launched a new, free content service for secondary schools. Based on the successful open courseware initiative, the site presents education materials for both students and teachers in secondary schools. Subjects covered include science, engineering, social studies and foreign languages.

<http://ocw.mit.edu/OcwWeb/hs/intro-courses/introcourses/index.htm>

PDF becomes an international standard.

The International Standards Organisation (ISO) has approved The Portable Document Format (PDF) version 1.7 as a general standard for representing documents. Adobe, who previously developed and owned PDF, has now given control of the specification and development to the ISO, effectively making the file format open for other companies to use.

<http://www.adobe.com/aboutadobe/pressroom/pressreleases/200701/012907OpenPDFAllM.html>

Shakespearean virtual world

The Synthetic World Institute of Indiana University has launched a Massive Multiplayer Online Role Playing Game (MMORPG) based on the works of William Shakespeare. The world, called Arden, uses the multiverse gaming engine, to create an online world within which social scientists can experiment. Designed initially to study the economic impact of on-line gaming, it has not yet been decided whether the world will be opened up to the wider community.

<http://swi.indiana.edu/>

Linux increasingly important for enterprise

Two new reports have suggested that Open Source software is increasingly important in supporting business IT systems. The first report conducted by Unisphere suggested that the number of enterprises running the majority of their systems on open source software had risen from 9% to 13% with the figure for medium sized enterprises being as high as 24%. Over half of the companies surveyed expected their use of open source to increase of the next twelve months, many driven by cost concerns. The second report produced by research company Forrester looked into enterprise desktop software. It suggested that as businesses look to refresh their Windows XP systems many of them are seriously considering switching to open source. However, Windows still accounts for 90% of all business desktop systems.

<http://www.techworld.com/applications/news/index.cfm?RSS&NewsID=10479>
<http://www.forrester.com/Research/Document/Excerpt/0,7211,41408,00.html>

TechNews Information

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