

April 2006

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 below.

| | |
|---|----|
| Networking and wireless | 2 |
| Analysis: NEN services | 2 |
| Networking and wireless news | 5 |
| UK broadband hits 10m customers | 5 |
| WiMAX update | 5 |
| UWB update | 5 |
| Ofcom spectrum auction and VoIP consultation | 6 |
| Powerline networking reaches 200Mbps | 6 |
| 10Gbps and 100Gbps Ethernet over copper | 6 |
| 4G technology update | 6 |
| Wi-Fi update | 7 |
| EU launch RFID consultation | 7 |
| Pervasive mobile computing project in Bath | 7 |
| Multimedia | 7 |
| Analysis: IPTV | 7 |
| Multimedia news | 10 |
| France to open up online music | 10 |
| Digital TV update | 10 |
| HDTV update | 10 |
| Peer to Peer internet TV | 11 |
| BBC update | 11 |
| Next generation DVD update | 11 |
| IP-world | 11 |
| Apple launch volume limiting patch for iPods | 12 |
| MegaSIM approach suggested for new phones | 12 |
| Next generation games consoles | 12 |
| Hardware | 12 |
| Analysis: Thin Clients | 12 |
| Hardware news | 15 |
| New Becta publication: Emerging technologies for learning | 15 |
| Home Computer Initiative cancelled | 15 |
| Apple/Windows dual boot PCs | 15 |
| Fuel cells cleared for take-off | 15 |
| Flash memory developments | 15 |
| Ultra-Mobile PCs | 16 |
| eAuctions for public sector procurement | 16 |
| Dirty mice | 16 |
| Quantum computing and processor shrinking | 16 |
| Intel business PC platform | 17 |
| Software and internet | 17 |
| Analysis: ICT in European schools | 17 |
| Software and internet news | 19 |
| Delays to Microsoft Windows Vista and Office | 19 |
| Disability access specification for websites | 19 |
| Creative Commons wins first legal challenge | 19 |
| European Digital Library | 20 |
| Microsoft IE and Web 2.0 | 20 |
| European Union focus on research | 20 |
| Red Hat embraces virtualisation | 20 |
| Open Source update | 20 |
| Government launch Open Source Academy | 21 |
| Online gender gap | 21 |
| TechNews Information | 22 |
| Disclaimer and copyright: | 22 |
| To unsubscribe: | 22 |
| Feedback: | 22 |

Networking and wireless

Analysis: NEN services

The National Education Network (NEN) has as its foundation the DfES initiative to connect all schools to broadband by 2006. Initially the focus was on each RBC (Regional Broadband Consortium) connecting schools within their region, but the next stage was to connect each of the regions together to form a national network. The chosen method for this was to connect each region to the SuperJANET network run by UKERNA for UK universities, colleges and research institutions. This would build a shared, national education network used by schools, colleges and universities.

<http://www.nen.gov.uk/>

<http://www.ja.net/>

A network is in practice, only as useful as the content and services delivered over it. Therefore the next stage of NEN development, after connectivity, is the delivery of shared services. The requirements of the different schools, local authorities and regions connected to the network are common in some areas but differ in others. Certain services, dependent on their nature, are candidates for aggregation across multiple customers to save money and increase opportunity. The recent Cabinet Office paper Transformational Government, also sets out requirements on local and central government to share service delivery to achieve efficiency savings.

http://www.cio.gov.uk/transformational_government/strategy/

This article will look at some of the services that have been implemented on the NEN and others that are planned for the future. For each service both the underlying technologies, possible future direction and reasons for shared service development are explored. The three current services that will be covered are Video conferencing, Hosting, Content distribution and Internet access. The three planned services are Authentication, ISP transit and Learning Platforms. Finally a Collaboration Service is a possible service for the future.

Video conferencing is the best current example of a shared service. When schools were interconnected via SuperJANET to make the NEN a reality the potential was to also participate in services that had been set up for the HE/FE sector. The video conferencing service was created by UKERNA to support standards based interoperation between sites. The service uses an international standard, H.323, as the basis for conferences and is broadly in two parts.

<http://www.jvcs.ja.net/>

The first involves technical support and quality testing and the second is a multi-user conference service. Interoperability is ensured by having all sites separately perform a quality assurance test with a central point – and the assumption that if a site can pass the test with the central service then it can connect with a good quality link to any other site that has passed the same test. This idea of "trusted third party" testing is essential when scaling a service as otherwise the number of potential combinations quickly become impractical. The second part of the service is a multi-user system that is bookable online through a web interface and also provides a gateway to ISDN services. Further associated elements of the service include equipment compatibility testing and advice on technical and practical aspects of video conferencing.

Video conferencing was a prime candidate for sharing due to the opportunity to join an established service, UKERNA's role as co-creator of the international video conferencing numbering scheme the Global Dialling Scheme (GDS) beyond education and the need to for schools to find an easy straightforward solution to interoperability – a challenge already solved by the HE/FE sector.

<http://www.jvcs.ja.net/docs/E164policy.pdf>

Future developments include replicating this model in other European partner countries and possible changes in video conferencing standard to supplement H.323 with SIP, alongside existing links to H.320 ISDN video conferencing. The online booking system, as it requires user authentication, is a candidate for early adoption of the shared Authentication service described below.

The NEN is a fast, private network with the capacity to be used for content delivery. It is the optimum location for content and services with robust, reliable access for users. Given that one of the drivers

for the development of the private links between RBCs was that a private network would offer a superior experience to the public internet, then it makes sense to host much relevant content on the network.

This has resulted in two approaches to content hosting. The first is RBCs and local authorities supporting themselves by offering hierarchical distribution of content and the second is third party providers hosting their content directly on the NEN or using a high speed dedicated link to the network.

Most RBCs run some kind of hosting solution and those that do not will implement regional hosting through partnerships with member local authorities. This can range from simple content mirroring, like the hosting of DiDA materials by the East Midlands RBC (EMBC) to secured, authentication based hosting enabling specific content distribution within a region. The basic model remains the same – one party offers to host content on the NEN for other parties to access with a high degree of confidence.

Third party providers are able to connect their servers to the network where their conditions are met and the community desires. The highest profile examples of this are the British Pathe film archives and the BBC JAM content. By offering a non-Internet based delivery path to this content these media rich services are made available to schools with more confidence.

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

<http://jam.bbc.co.uk/>

These are relatively simple but effective solutions to the content distribution issue, where content is based around standard file types and delivered through common applications such as web browsers – however, there is potential for a significant benefit in reducing demand on often already stretched internet connections. The more complicated the content, where interaction and other application logic is involved, the more potential problems arise as simple mirroring may not work. The other key risk with this approach is where there is not sufficient consideration of off-network users. For example when pupils are at school they are on the NEN, but when they go home they are not – yet ideally require access to the same content so hosting only on the NEN without any public internet facing version is not ideal.

Internet access is still probably the most used service delivered across the NEN to schools. Despite the growing wealth of content available on the network, the public internet will remain vaster and relevant to many. Aggregation of internet access is a cost-effective use of the NEN infrastructure either as a primary feed or as a resilient backup.

There are two models of use of the NEN for internet feeds. First there is the service offered by UKERNA to their customers in HE/FE. This is used by one region as its primary internet feed and leads to a simple routing arrangement where all external connectivity from the region's network goes via the SuperJANET network – whether destined for an internal NEN or external internet address. The second model is where there is regional or sub-regional service aggregation. For example some or all of the members of a RBC could choose to combine their internet requirements into one contract and have only one link into the authority that delivered both NEN and internet traffic, with routing distinctions made at a higher level. In this case the local authority would have one connection, but the RBC network would have multiple links – to the national NEN backbone and to ISPs.

Putting aside the technical complexity the message is a simple one – based on the idea that each authority has a NEN connection, this connection can be used to deliver all the network requirements both regional (such as shared internet feeds) and national (such as the content hosting described above). This approach can deliver both cost effectiveness through a larger, aggregated contract and flexibility, as a larger connection will give scope for increased requirements.

Content either hosted by the NEN or accessed by users of the NEN often requires access control systems in order to preserve content licensing, track users and offer personalisation and context-based features. Currently, access to content is controlled in a crude manner, for example using IP

address restriction; is only hosted inside the school with no visibility to home or other schools; or each content package requires its own username and password.

This situation is neither user-friendly nor scalable, so an alternative system has been proposed using an open source architecture called Shibboleth which has been developed by the Internet2 project in the USA. The principle is that a federation of trusted members, comprising both servers holding identity information and servers holding content, work together and trust information on logins without duplication. It is envisaged that RBCs or local authorities will hold and manage a user database which will be federated with others to give national coverage.

<http://shibboleth.internet2.edu/>

<http://industry.becta.org.uk/display.cfm?page=1709>

Shibboleth is XML based communication middleware and as such can work with most database systems, but the challenge is establishing a consistent approach to storing and formatting data, for example so what one database calls "Last Name" is matched against what others call "Surname" or "Second name". It is expected that a formally agreed approach to Shibboleth implementation will be agreed in late 2006, with implementation to follow.

There are two major advantages to using Shibboleth. The first is that, through separation of content from authentication there will be more flexibility in how it is accessed and licensed. If content is controlled by a login then it is easy to make it securely available at home as well as school. The key advantage of a Shibboleth system would be a single username and password for multiple resources. The second advantage is that if a local authority or RBC has a user database they have confidence in, then many other applications can be developed off the back of this, for example including links with MIS systems, Active Directory-based services and email. Future direction for this will involve the majority of content suppliers adopting this approach.

A potential variation on the delivery of internet access through the NEN is the transit of ISP services. This is the ability for a third party ISP to deliver services to a customer across the NEN backbone rather than a discrete communications circuit. This has the advantage of allowing customer choice over supplier and service, while also simplifying their connectivity and lowering costs. For example a local authority might wish to use its NEN connection to deliver service from a commercial ISP such as BT or Redstone. Currently they have to use a discrete circuit from a telecommunications supplier to connect this feed to their network, but in the future it should be possible to route the traffic across the NEN instead. This type of potential service treats the NEN as physical communications infrastructure rather than a conceptual content delivery network.

The DfES are promoting and funding the adoption of Learning Platforms in schools. These will offer pupils a personalised online environment comprising content and collaboration tools giving teachers the flexibility and confidence to apply digital content. It is technically possible to host a learning platform inside a school, but economies of scale for procurement and deployment; support for 24/7 access from home and school; and associated services such as support and training, strongly support the concept of hosting by a local authority or RBC on behalf of its schools on the NEN.

Hosting on the NEN, together with application of standards, should also allow easy national and international collaboration, interoperability of content and user data, plus the opportunity for associated services such as backups and remote hosting of MIS systems. Through NEN-based aggregation these complex software and content systems can be purchased, deployed and delivered effectively to users both inside a school building and at home through links with authentication systems and access from the internet.

<http://www.learningplatforms.org.uk/>

Effective use of all collaborative online services such as those described above, plus more mundane tools such as email, requires the identification of partners. UKERNA and Becta, supported by the RBCs and content providers, are looking at the potential development of a collaboration service that will do just this. Though at a very early stage, the aim will be to create an open, standards-based online service that will encourage contribution and participation from all providers of collaboration

opportunities, private or public sector. This will likely be a service hosted on the NEN, but more focussed on the NEN as a community rather than as infrastructure.

This article has covered a wide range of services and discussed two different interpretations of what "NEN Services" actually means. These are "NEN as infrastructure" and "NEN as community". The former is perhaps easiest to understand as it involves connections, wires and quality of service to deliver measurable technical outcomes. The latter is potentially more important and about encouraging collaboration between partners that might use the infrastructure, but as with the collaboration service, do not actually require it to work.

The most common concerns over all these services are political ones – of control and governance. It is essential for effective use of the network that is on one hand effectively managed, but on the other it is run by the stakeholders. Getting this balance right is the key to the success of the NEN.

http://schools.becta.org.uk/index.php?section=lp&catcode=le_pp_po_03&rid=11278

Networking and wireless news

UK broadband hits 10m customers

Ofcom's new *The Communications Market - Interim Report February 2006* has a number of interesting snippets of news for watchers of the broadband and digital technology markets. Revenue from fixed-line telephony dropped by 9% in the year 2005, but there was significant growth in the use of broadband and internet connections. As of February 2006, over 10million of the country's approximately 16 million internet connections use broadband and about 250,000 local loop lines have been unbundled. A full report is available at: http://www.ofcom.org.uk/research/cm/feb06_report/ The broadband market in the UK continues to evolve rapidly. TalkTalk are currently offering free broadband bundled with their voice calls and telephone plan. BT are rolling out ADSL MAX to exchanges across the country that will increase the maximum download speeds to 8Mbps and upload speeds to 448kbps. Analysts have speculated that BSkyB, having recently acquired Easynet, will begin offering its own branded internet service later this year. It is assumed this will be aimed initially at the existing subscriber base and be linked into IPTV developments.

<http://www.talktalk.co.uk/talktalk/servlet/gben-LLU-PageServer?article=MAIN.UK.TALKTALK.STATIC.TESTHUB>
<http://www.adslguide.org.uk/newsarchive.asp?item=2622>
<http://business.guardian.co.uk/story/0,,1748856,00.html>

WiMAX update

The first UK trial of certified 802.16-2004 WiMAX equipment has been announced by Urban WiMAX. The free trial is designed to run for three months and will then become a commercial service. This service will be delivered using an "unobtrusive" roof mounted antenna. It is expected to cost around £100 a month for 2Mbps and £200 a month for 4Mbps symmetric connections.

<http://www.techworld.com/mobility/news/index.cfm?NewsID=5599&inkc=0>

Intel has announced that standard compliant WiMAX cards are now expected to be available in the second half of 2006, rather than the previously announced date of 2007. Intel has also invested in Pipex. Pipex own the licence to spectrum key to WiMAX deployment and intend launching commercial WiMAX services in the near future. <http://news.bbc.co.uk/1/hi/technology/4785742.stm>

UWB update

Ultrawideband (UWB) is an emerging wireless technology intended to provide high speed links over short distances. It is likely to be used for cable replacement (eg wireless versions of USB) and multimedia networking. Two industry groups, the WiMedia Alliance and the UWB Forum, are promoting their own incompatible UWB solutions with the first commercial products to be launched this year. Although the UWB Forum products may be first to market, the WiMedia Alliance seems to have wider support. The Bluetooth SIG has recently announced that it intends using the WiMedia Alliance solution for future versions of Bluetooth.

<http://www.techworld.com/mobility/news/index.cfm?NewsID=5671&inkc=0>. The first Bluetooth products using UWB are expected to launch in 2008. UWB has not yet been approved for use in Europe.

Ofcom spectrum auction and VoIP consultation

When the original 1800MHz band was allocated for the use of mobile telephones a "guard band" was left between GSM and the neighbouring DECT spectrum. Ofcom has now auctioned this 1781.7-1785 MHz/1876.7-1880 MHz spectrum to potential suppliers of services. It is expected that, rather than be used for generic GSM services, these will be used for low-power picocells that are designed to offer service coverage over limited geographical areas, such as inside a building, train or aeroplane. Such cells would be compatible with existing mobile phones and might connect to the internet to offer inexpensive VoIP calls, transferring to standard GSM when users go out of range. More information is available on Ofcom's website at <http://www.ofcom.org.uk/radiocomms/spectrumawards/>. Several companies have bid for the licences.

Ofcom has also published new proposals on its approach to VoIP services. The approach taken includes some deregulation, but includes a specific requirement to inform consumers clearly of the capability and restrictions of VoIP services. The proposals are contained within a consultation document.

<http://www.ofcom.org.uk/media/news/2006/02/nr20060222>

Powerline networking reaches 200Mbps

Using existing mains electrical cabling to create data networks in the home is an alternative to wireless or fixed Ethernet. Standards-based and proprietary approaches have so far failed to gain much market penetration, but some manufacturers, such as Netgear, have recently announced products that offer 200Mbps throughput – although with overheads this will deliver closer to 100Mbps. Powerline technology has the potential to become popular in home networking installations due to the ease of deployment, low cost and high data rates that are capable of delivering video. The main industry group is the HomePlug Alliance who are promoting their HomePlug Alliance AV specification.

<http://www.homeplug.org/en/index.asp>

http://www.reghardware.co.uk/2006/02/24/netgear_200mbps_powerline/

10Gbps and 100Gbps Ethernet over copper

The physical limits of data transmission over copper based cabling are being pushed with plans and standards for 10Gbps and 100Gbps Ethernet. At present the focus on design is chiefly for backplane links between servers over short distances of perhaps a metre, such as inside a Blade server. As prices drop, the technology may increasingly be used in LANs as well. The main driver for these developments is the relative simplicity of the Ethernet standard and the wide body of experience in its development and equipment manufacture that is in turn likely to keep costs down. The longer term implications of these developments are faster and faster networked connections, well in excess of the transfer speeds offered by PC hard disks – making a case for centralised network storage in preference to local disks.

<http://www.techworld.com/networking/features/index.cfm?featureid=2259>

4G technology update

The 3G mobile phone market continues to mature with a steady flow of new handsets and innovation in the content that is available on these devices. However, researchers are already developing next generation 4G technologies. In the latest update from Japan, researchers have topped last year's 1.5Gbps figure with a 2.5Gbps connection to a vehicle moving at 20kph. This is a very early stage test, but does highlight the kind of bandwidth the final applications hope to reach. This test involved using six transmission antennas. 4G is not expected to be deployed commercially until at least 2010 (in Japan) and across the rest of the world over the following 5 years.

<http://www.techworld.com/mobility/news/index.cfm?NewsID=5438&inkc=0>

Wi-Fi update

Despite pressure from upcoming new technologies both at the short-distance/high-bandwidth and long-distance/medium-bandwidth ends of the market, the growth of Wi-Fi continues at pace. The BBC has recently published a useful primer on how wireless networking works

(<http://news.bbc.co.uk/1/hi/technology/4758722.stm>) and a new report from ABI Research estimates that municipal Wi-Fi networks, currently covering around 1500 square miles, are likely to cover over 126 000 square miles by 2010, an increase of 8400%.

<http://www.networkingpipeline.com/showArticle.jhtml?articleID=181503866>

Municipal authorities in Washington DC are looking to wireless networking to address the digital divide and through online access raise opportunities for disadvantaged citizens. They plan to let an 8 year contract for provision of services. Various cities in the UK are also embracing wireless technologies.

[http://www.washingtonpost.com/wp-](http://www.washingtonpost.com/wp-dyn/content/article/2006/03/08/AR2006030802362.html?referrer=emailarticle)

[dyn/content/article/2006/03/08/AR2006030802362.html?referrer=emailarticle](http://www.washingtonpost.com/wp-dyn/content/article/2006/03/08/AR2006030802362.html?referrer=emailarticle)

In the UK National Express is trialling free Wi-Fi access on its coaches between Cambridge to London in partnership with Telebria. Wi-Fi access while on public transport continues to be a hot topic with GNER rolling out connectivity on some of its trains and Virgin Trains expected to follow suit soon.

http://www.nationalexpress.com/why_choose/wifi.cfm

EU launch RFID consultation

The European commission has launched a public debate on the role and uses of RFID tags, designed to investigate the balance between the benefits of this technology versus concerns over privacy and interoperability. RFID (Radio Frequency Identification) tags work as mobile electronic 'barcodes' that respond with information when scanned. The debate was launched at the CeBIT show and is backed up with face-to-face workshops and an online consultation. For more information go to

http://europa.eu.int/information_society/policy/rfid/index_en.htm

In other RFID news, security researchers working in the field of pervasive computing have demonstrated how RFID tags may be used to distribute malicious code. RFID tags typically contain only very small amounts of storage space (around 1Kbit), but this has been shown to be enough to execute malicious instructions through middleware. The main risk from RFID tags is their effective invisibility and relatively casual, passive access to networks.

http://www.cbronline.com/article_news.asp?guid=B960208D-9ECF-4F0B-B964-4DD779BFF905

Pervasive mobile computing project in Bath

An innovative project has been launched in the City of Bath designed to look at peoples' reactions to pervasive networks and computing. The Cityware project has a number of threads including widespread wireless networking and location aware multimedia blogging. The project hopes to cover many different aspects of applied technology, both physical and spatial, along with sociological and psychological aspects of living and using context-aware devices. This project is a window on the future of ubiquitous mobile computing where the emphasis is not just on "what devices can do" but "what can devices do in a given place and situation". Commentators and suppliers are watching with interest to identify new opportunities for services and devices.

<http://www.cityware.org.uk/>

Multimedia

Analysis: IPTV

Few inventions have changed the nature of the world as much as television. In the world today television can be many things including educator, entertainer and babysitter, but research has shown how young people are turning away from the TV for the internet. Like all technologies television is evolving; the way it is delivered and the way we interact with programming is changing. Potentially the biggest change could be over who controls it.

The most established form of television is the distribution of images and sound using analogue radio signals from long range transmission masts. This analogue TV is a very inefficient user of signal

bandwidth compared to digital equivalents. However, the big advantage it still has is a massive installed user base compared with digital terrestrial, cable and satellite systems. Research by Ofcom suggests that some 70% of households in the UK now receive some kind of digital television service but there are still more analogue than digital TV sets.

http://www.ofcom.org.uk/research/tv/reports/dtv/dtu_2005_q4/

Digital TV signals are based on MPEG-2 compression standards for audio and video. These allow many more channels to be transmitted using the same amount of bandwidth as a single analogue channel and normally give a superior picture less prone to interference. In the UK, cable and satellite broadcasters used to use analogue systems but soon switched to more efficient digital distribution. Digital distribution systems use their own standards for signal encoding and network transmission, rather than using protocols and standards commonly found in computer networks. Digital services also enabled implementation of value-add television services such as electronic programme guides (EPG) and video on demand services.

The standards for television and computer networking would have continued on separate paths, were it not for the explosion in demand for broadband, especially in the home and the realisation of cable television companies that they could lever their television-based infrastructure assets to also deliver IP services. This means that cable companies effectively run two networks over the same cables – one for computers and one for television.

The success of these services was not lost either on other digital broadcasters or internet providers. Digital satellite broadcasters are not able to offer the interactive back-channel as easy or cheaply as cable providers so IP-services remain economically unviable, however internet providers have the opportunity to look at how they can make TV simply another service that can be delivered across their connections, along with web browsing, email and communications applications such as video conferencing and VoIP.

This challenge was taken up by a number of computer software companies who looked at how to transmit digital television signals across IP-based networks. Primarily this is driven by telcos who want to compete in the converged media market, but it is also relevant to incumbent digital television providers who could simplify their networks. This is IPTV.

IPTV is a major contributor to the converged media market that has seen BT license Microsoft IPTV software to trial television delivery and BSkyB has bought the telco Easynet. A converged broadband service is known as Triple Play – high-speed internet access, television/video and telephony over the same connection. Analysts consider that this is potentially a huge market, but there are unsolved issues of price and usability. It is expected that the market will take some time to mature.

http://www.theregister.co.uk/2006/03/30/iptv_future

Technically, IPTV is based on a simple concept – video signals are encoded and transmitted over an IP-based network for subsequent reception and display on either a computer monitor or suitably equipped television or set-top box. The main problem with using an IP network in this way is that IP was not designed to deliver real-time and time-sensitive data compared to alternatives such as ATM. This has led to developments in virtual circuits and quality of service that are hoped to ensure that all time-sensitive data ranging from television to telephone calls is handled appropriately.

The second issue is the choice of encoding method for the actual content. Compression systems have become more complex and processor intensive as computing power becomes much cheaper, enabling higher quality transmission over lower bandwidth. The main restricting factor in a market such as cable television is the cost and ease of upgrading set-top boxes – which can be time consuming and massively expensive. This naturally slows the pace of change and adoption of new services.

Standard digital TV is based on the same MPEG2 standard used by DVDs. IPTV systems are normally based on the more modern H.264/MPEG-4 standard which is more feature rich and offers higher levels of compression.

<http://www.videohelp.com/comparison.htm>

IPTV systems are, put simply, another bit of middleware that sits between the raw data (video) and the user system (whether that be a PC or a set-top box). Microsoft is held by most analysts to be the market leader with the Microsoft IPTV product but it faces competition from a number of alternatives including Myrio, owned by Siemens. Microsoft is considered to be the one to watch because of its range of products covering all aspects of a potential service – ranging from end user software (Windows Media Player) to databases for storing content (SQL Server).

<http://www.microsoft.com/tv/IPTVEdition.msp>

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

There are three real reasons to be interested in the take-up of IPTV. The first is the flexibility in the range of devices that will suddenly have access to TV content as more and more devices become IP based, including mobile telephones. The second is the benefits that a standard will bring to the market – the age of the podcast may well be replaced by the age of the vodcast, but these will be accessible easily by a whole range of IP-connected devices and thus to markets beyond computer users – everyone will be able to be a broadcaster in a traditional rather than just internet sense. Finally once television signals are bits of data on an IP network, they will be able to be managed, stored and recalled in a similar way to any other kind of data.

There is growing popularity in the PVR (Personal Video Recorders) that store television programmes on a hard disk and offer much more flexibility for storing, organising, real-time pausing and playback. These typically work by encoding incoming video signals in MPEG-4 format. If the incoming signal is already in MPEG-4 then this process is simplified.

Peer-to-Peer technology also has a role to play in delivering IPTV content. Already Sky is distributing content over IP using peer-to-peer systems so that users become distributors as well as consumers. This approach is also being considered by the BBC, but is more about "distributing internet content that happens to be video" rather than being strictly analogous to the "IPTV using IP to deliver a television experience" paradigm.

All these developments are changing the nature of television. The content is being separated from the delivery method. The concept of television channels and watching programmes scheduled at a particular time may eventually break down as viewers can create their own "channels" of content on demand and access them on an increasing range of devices.

The main issue over using domestic IP connections, such as ADSL, to distribute programming is the bandwidth costs and network quality. The question for ADSL customers is whether they would like to lose 1Mbps of their internet connection to a television signal especially when the demand increases to 8Mbps+ for high definition TV pictures. The last mile is likely to remain the problem. Multicast fibre-optic backbone networks are unlikely to have too many problems carrying this additional data, but fibre to the home remains some way off.

The challenge to providers, beyond making the networks work, is allowing for new interactive services to encourage consumers to make the switch. Already the PVR has revolutionised some aspects of TV advertising by allowing viewers to fast-forward through commercial breaks, leading to investigations into whether existing restrictions on product placement need to be revisited. Internet-savvy users will demand a new level of interaction with content which will stretch the technology and the programme makers, and television as a format is unlikely to survive in its current format.

Programmes distributed via IP are less likely to survive intact for long. Already through TV capture cards, multimedia artists sample programming and rebuild it into mash-ups. A move to IP and MPEG standards for all content will potentially remove the barrier of needing any special equipment to allow this. On one hand it will be a victory for creativity and has clear applications in education, but on the other any encryption or DRM systems will have to adapt rapidly and be very robust to appropriately protect intellectual property.

Finally, it is worth considering an example of education content and how IPTV might impact on it. Teachers TV offers professional development and curriculum ideas for classroom teachers. Currently

it is broadcast on digital satellite, cable and terrestrial and some content is available online for viewing through a web-browser. If it is sent over an IPTV platform then it would be simple for teachers to build their own channels from the content that is available and content could be delivered easily from the same source without the need to convert content between different formats. The channels could be cached and stored by school and local authority content delivery systems and all the content could be metatagged and searched through databases.

At its simplest, IPTV is a tool for the communications industry and will allow existing telcos to enter the TV market. However, IPTV also offers the chance of improved services to end users and new models for television consumption.

Multimedia news

France to open up online music

Executives at Apple computer have said a new French bill would encourage "state-sponsored piracy". The bill requires online music retailers to make Digital Rights Management (DRM) controlled content, such as music, compatible with different formats and devices. It is unlikely similar laws will be passed elsewhere in the world. However, the French Cultural Minister has stated that his goal is to encourage the rest of the European Union to take a similar stance. Analysts suggest French customers make up some 5% of Apple's global music market and the bill still needs to be passed by the French Senate in May if it is to become law.

<http://www.wired.com/news/technology/0,70466-0.html?tw=rss.technology>

<http://arstechnica.com/news.ars/post/20060322-6434.html>

Digital TV update

New figures from regulator Ofcom place the UK at the top of the list of world adopters of Digital TV, boding well for the government's planned switch over from analogue to digital signals between 2008 and 2012. Ofcom estimates that 70% of homes were receiving digital signals at the end of 2005 – some 17.5m households. In the US the comparable figure is only 55% and no other European country has yet reached 50%. 2.7m new installations of Digital TV took place in 2005 and 10.5m Freeview boxes have been sold. Digital television can provide more choice, more efficient use of spectrum and the opportunity for interactive services, such as those showcased by the BBC Winter Olympic coverage where viewers could choose which sport they wanted to watch using an interactive menu. This model of viewer choice fits more with the internet delivery model for content, where using RSS and other technologies users personalise their experience from a range of content supplied by broadcasters.

<http://news.bbc.co.uk/1/hi/entertainment/4816832.stm>

HDTV update

A busy time for HDTV in the UK has seen announcements from the BBC, Sky and Telewest. The BBC released plans to screen the football World Cup and Wimbledon Tennis championships in HDTV for some viewers with compatible equipment. The improved picture quality will only be available to viewers who have HD-enabled television sets, set-top boxes and relevant services via satellite and cable distributors. The BBC will pilot HDTV for up to a year before making any further commitments or service announcements.

<http://news.bbc.co.uk/1/hi/entertainment/4834322.stm>

Sky has announced that its service will launch in May, offering 7 channels plus high definition versions of movies and potentially other pay-per-view content. The Sky service will require an HDTV compatible set-top box and an additional subscription. Sky has launched a website that offers downloads of sample high definition programmes to demonstrate the improved quality.

http://www.theregister.co.uk/2006/02/23/sky_previews_hdtv/

http://www.hdtvuk.tv/sky_hdtv/index.html

Telewest will deliver HDTV services using its upcoming TVDrive PVR which will also contain an HDTV tuner. No further information on a release date has been announced, but demand is expected to be high. Since the merger with NTL, a similar device is expected for those customers.

<http://www.computeractive.co.uk/vnUNET/news/2151810/telewest-switches-hdtv-uk>

The UK is roughly on a par with the leaders in Europe on the deployment of HDTV and the World Cup is acting as a catalyst for adoption in many countries. Most are distributing via satellite networks, but Sweden is investigating IP HDTV to the home. All HDTV services require high definition television sets to work. This may speed up the adoption of HD flat screen displays, as traditional CRT sets are not capable of displaying HDTV.

http://www.reghardware.co.uk/2006/02/23/euro_hdtv_contest/

Peer to Peer internet TV

Sky has launched a service to distribute extra content to subscribers PCs using peer to peer technology. The BBC is expected to deliver content via broadband in a similar way in the future. However, while subscribers are encouraged to download content, they effectively become distributors of material rather than just customers. Some analysts are objecting to the software being used. Kontiki, the sharing software, has been found to run in the background of PCs – eating up bandwidth – even when the main application is closed, speed has been criticised and objections raised to the information returned to Sky servers about the user's PC. Issues like these will become more common as peer to peer finds increasing application in the commercial world.

<http://www.sky.com/skybybroadband/home/0,,00.html>

<http://www.pcdictor-guide.com/wordpress/?p=2452>

BBC update

The BBC has announced that its internet TV player will be tested against new public value rules before it is launched. Assuming it is approved, this player, which will allow users to watch BBC programmes on PCs rather than televisions, is expected to be launched by the end of 2006. MyBBCPlayer is the new name for the BBC's iMP service which has been demonstrated to store and play up to seven days of BBC programmes.

<http://news.bbc.co.uk/1/hi/technology/4833140.stm>

The BBC's Natural History Unit has released new content under the Creative Archive Licence scheme. Over 200 pieces of content are available for download and re-use under this BBC non-commercial licence, which is encouraged to inspire and support creativity and education. BBC Science & Nature is also running a 'Wild Card' competition for users of the Creative Archive Science & Nature content.

<http://www.bbc.co.uk/calc/sn/index.shtml>

Next generation DVD update

Panasonic and Sony have announced the availability of the first Blu-Ray disc products as Toshiba begins shipping the first player working with the rival HD-DVD format. Panasonic and Sony expect to ship products over the next six months, leaving HD-DVD with a clear market in the meantime. Several HD-DVD compatible laptops have been recently announced.

http://www.toshiba.co.jp/about/press/2006_03/pr3101.htm

Industry insiders claim that problems with the Blu-Ray copy protection mechanism have contributed to the delay to both players and the upcoming Sony PlayStation 3 console. Success of the PlayStation 3 is seen by some analysts as crucial for the Blu-Ray format. The PS3 is now expected to be available world-wide in November 2006.

<http://news.bbc.co.uk/1/hi/technology/4807858.stm>. TDK have announced plans to produce an eight-layer Blu-Ray disc that will store 200GB of data.

Other rival next generation DVD formats continue to be discussed, though none currently have the backing or momentum of HD-DVD or Blu-Ray. Versatile Multi-layer Disc launched at CeBIT, claims to offer up to 40GB per disc and work with the standard, cheaper red lasers used in current DVD technology. This is expected to make the initial cost much lower than the two main contenders. Realistically though, without the backing of major movie studios it is unlikely to achieve widespread adoption.

<http://www.computeractive.co.uk/personal-computer-world/news/2151738/third-format-enters-hd-fray>

IP-world

A research study carried out by US-based Strategy Analytics claims that 16 million IP-enabled multimedia devices were sold in the US in 2005. This highlights three key points. Firstly that more and

more home devices are designed to work in IP environments such as networked homes where there might be multiple networked devices in different rooms and a desire to stream recorded TV from a PVR to an upstairs room. Secondly this vision for a converged, connected, multimedia home will place new demands on networking technologies, especially short-range high-bandwidth technologies such as Wireless USB that can easily connect devices together at speeds high enough to support multimedia streams. Finally, the increasing number of networked devices supports the argument for the transition to IPv6 where direct addressing becomes much easier with the larger number of addresses and more sensible routing. All next generation games consoles will fit this model and remote access to applications and devices such as controlling/viewing home based content on a mobile phone are likely to increase.

<http://www.technewsworld.com/story/48908.html>

Apple launch volume limiting patch for iPods

Apple has launched a free software update for iPods to allow users to set their own maximum volume limit. The software also allows a limit to be set and locked with a passcode. This will allow parents to control the volume of their children's devices. The software patch comes after a lawsuit in the USA claimed that portable music devices posed a threat to hearing and do not have adequate warnings (see TechNews March 06).

<http://www.apple.com/pr/library/2006/mar/29ipod.html>

MegaSIM approach suggested for new phones

As mobile telephones become more and more complicated so the demands on the humble SIM card are increasing. Currently data storage for basic information like contact lists to multimedia such as pictures and video is split between the internal phone memory, SIM card and additional memory card. This works, but makes changing handsets and migrating much more complicated and confusing. The MegaSIM, announced at the 3GSM conference, aims to combine the SIM and additional memory card into a single high-performance device that not only has more storage space, but also offers higher transfer speeds (from between 9.6-128kbps to 20Mbps). This is seen not only as a simpler approach to upgrading handsets but also allows new applications and data to be carried on the phone such as PC synchronisation and portability applications. This further blurs the distinction between PDAs and smartphones and moves closer to the phone as essential PC companion as well as a smart, personalised communication device.

<http://www.newswireless.net/index.cfm/article/2620>

<http://www.migosoftware.com/index.php>

Next generation games consoles

The next-generation console wars are set to hot up later this year even with the delay to the Sony PlayStation 3. Nintendo has announced a new compact version of the DS handheld console to be called the DS Lite. This is set to replace the existing version and the changeover is expected to take place between August and September. Nintendo's Revolution console is still expected to reach shops this year and an official release date will be announced in May. The Revolution is the least powerful and least hyped next generation console, but is expected to deliver innovations in user interaction with a spatially-aware controller that detects movement in three dimensions. This may have impact on general human-computer interaction devices if positively received.

<http://www.revolutionreport.com/articles/read/310>

Hardware

Analysis: Thin Clients

Thin Client computing is an approach that has been around for many years, but despite reasonable levels of adoption in some markets and a strong associated user base in mainframe and mini-computing, it has failed to significantly impact on the traditional PC model.

The architecture of modern personal computer systems is based on a modular approach that separates the various elements of the system such as input devices, video display and central

processor unit. The concept of Thin Client computing is to remove as much of the load as possible off the local device and instead perform tasks on a remote computer. The local device simply handles capturing and sending input such as mouse movements and keystrokes, and displaying screen displays it receives.

The hardware requirements for Thin Client user devices are therefore fairly low but the network and the central server must be well specified. In essence, rather than the cost of an IT system being distributed around the client computers, it is in the network and the central servers which have to be higher specification than a typical application or file server.

Thin Client compatibility is broadly defined by the choice of display protocol used as part of the exchange of data with the server. The three main alternatives are X11, RDP and ICA.

X11 is a standard toolkit for implementing graphical user interfaces (GUIs) for Unix-based systems including Linux software such as Linux Terminal Server Project (LTSP). As such it can be used with the appropriate hardware or software client to deliver Thin Client services across a network. This is stable, robust and there are freely available clients for existing systems such as Microsoft Windows. X11 does not natively handle sound, only graphics, so it requires additional software to support this. Typically Thin Client hardware includes X11 support by default and it has lost popularity to more modern alternatives.

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

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

ICA (Independent Computing Architecture) was developed by Citrix Systems who first brought Thin Client services to Windows. ICA has become a modern, effective, high performance Thin Client protocol and has been the market leader for many years. A wide range of hardware and software ICA clients are available, covering a range of operating systems. Citrix servers are now able to use both the ICA and RDP protocols, to give users a choice of client.

<http://www.citrix.com/English/ps2/products/ga.asp?contentID=186&faqID=5638&title=Understanding+Citrix+ICA>

Microsoft's response to the growth of the Thin Client market was the development of RDP (Remote Desktop Protocol). RDP was designed as a native Windows protocol and until recently has not been supported outside of clients for Microsoft Terminal Services servers. Hardware and software clients are widely available. RDP 6.0, the next generation of the RDP protocol, is due for release with Windows Vista in early 2007.

<http://support.microsoft.com/kb/186607>

Microsoft and Citrix are locked in a development challenge to make their respective Thin Client protocols more functional and lower bandwidth. Typically it is possible to run both RDP and ICA connections over very small bandwidth connections, but display performance obviously drops with the connection speed.

There are three main types of client that can be used to access a Thin Client server. The first is a dedicated hardware client. These are normally simple terminals with built in support for one or more of the display protocols mentioned above and little in the way of local processing and memory. These clients are normally solid state, have low power consumption and are relatively cheap. The main advantage they have in support terms is that if they have fewer parts to go wrong and faulty terminals can be quickly and easily swapped out. Even if this happens mid-session for a user, a new unit can be plugged in and the user pick up where they left off. Well known manufacturers include Neoware, Wyse and HP and these often run operating systems such as embedded Linux or Windows XP.

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

<http://www.wyse.co.uk/>

<http://www.hp.com/products/thinclients>

Old or recycled computers can often be brought into service as Thin Clients. Older computers may have little value as PCs in a modern school or business, but they can be reused as Thin Client terminals. Older versions of Windows can be used as the basic operating system and then a software

client used, or machines can be rebuilt using a dedicated Open Source solution such as the Linux Terminal Services Project (LTSP). These can have reliability issues of course and keeping spare equipment is essential. Microsoft is developing a slim-line version of Windows XP, codenamed Eiger that is aimed at older hardware not capable of running XP locally. Eiger, is a 'tubby client' in that it runs some applications such as the web browser and media player on the local hard drive.

<http://www.zdnet.com.au/news/software/0,2000061733,39192166,00.htm>

Thin Client networks can be delivered across any kind of network including both LAN and WAN. An offshoot of the Thin Client model is the emergence of the ASP (Application Service Provider). These companies offer application rental delivered across the internet. The ASP market has never become as huge as some commentators predicted it would, but the model has recently been revived by Microsoft with its Windows Live service that works in a similar way, though using a web browser rather than a Thin Client application.

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

The purchase cost of a Thin Client system is not significantly different to a traditional fat client based network. Thin Clients may have cheaper clients, but the servers need to be high-powered than their traditional network counterparts. This, combined with the falling cost of low-end fat clients due in part to volume sales that Thin Client devices do not have, means that there is often little or no difference.

The cost difference is exposed when considering the Total Cost of Ownership. Thin Client systems, with built in resilience and ease of management have been shown to have a lower TCO in many studies. There are also benefits in security as the individual workstations store no data locally. Thin Client hardware has a number of other advantages including client hardware that is less attractive to thieves and lower power consumption. Network management is easier and identical for all workstations, upgrades of software/patching are all done centrally and the client devices tend to have a longer useful life than standard PCs that need to be upgraded as technology and software moves on.

<http://www.informationweek.com/story/showArticle.jhtml?articleID=173500008>

However, from a user perspective, especially in education, the weakness of Thin Client solutions remains performance with multimedia and the lack of support for some software. Much has been done over recent years to increase the audiovisual performance of Thin Clients with more efficient network protocols and improved standards, but multimedia on a Thin Client does not currently give as good performance as locally accessed resources. The move to online delivery of content has removed the issues of compatibility with some software, but some legacy content is simply not designed to work in a multi-user environment and looks for local access to resources. Graphical applications, such as digital video editing are often not suitable and not all peripherals can be supported across the network. As the computing is 100% reliant on the network, any issues with connectivity or performance can impact seriously on the user experience and the faster speeds and higher reliability of wired networks over wireless means they are preferable.

Another development loosely linked to Thin Client is the emergence of PC blade systems. These comprise a number of PC boards in a single, central server chassis that can be centrally managed and secured. Each user has a small desk unit that uses network cabling to communicate with a blade that is effectively their own PC for the session. This combines some of the management control, mobility, flexibility and low cost of desktop equipment from Thin Client systems with individual PC hardware for each user.

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

Successful Thin Client projects have focussed on the benefits of reusing old computers, on lowering the support/management costs and widening participation. As Thin Client servers can offer the same access from any location in the world, they are good for accessing school content from home and enabling low cost devices to be taken home by low-income families that still have the functionality of modern systems. Many schools choose to implement a hybrid network of both thin and "fat" clients. In these schools thin clients tend to be deployed in numbers for basic computer tasks such as internet access and office applications. Fat clients are used to overcome the limitations of thin clients, such as where local processing is required (eg video editing) or for running particular software or peripherals.

Hardware news

New Becta publication: Emerging technologies for learning

This publication covers emerging technologies and some of the future trends that are likely to have an impact on education. This is not a technical document, but is intended to inform readers about the potential for technology to transform our ways of working, learning and interacting over the next three to five years. It features five articles by experts on a variety of technology themes including mobile learning, the ambient web, HCI, social networks and the broadband home.

The publication is free and can be ordered from the Becta website or downloaded as a PDF.

http://www.becta.org.uk/corporate/publications/publications_detail.cfm?show=latest&orderby=title_asc&letter=ALL&pubid=321&cart=

Home Computer Initiative cancelled

One of the technology related items in the recent budget was the end of the Home Computer Initiative (HCI). This scheme enabled employees to effectively buy PCs tax free through gross-salary deduction. It was designed to bridge the digital divide and to benefit low-paid workers. However critics say the scheme was used most by affluent employees to keep their PC equipment up to date rather than widening the scope of ownership significantly. The Chancellor has since hinted that he may consider setting up an alternative scheme in the future.

<http://www.computeractive.co.uk/personal-computer-world/news/2152588/dismay-pc-tax-break>

Apple/Windows dual boot PCs

The idea of a dual-boot Mac OSX/Windows XP system running on Apple hardware was first mooted in the development community and a total prize of around \$13000 put up. This was quickly achieved, but Apple has now announced official dual-boot beta software which will allow the two operating systems to co-exist. However, some early users of the unsupported beta software have encountered problems leaving their Apple computers only able to boot to Windows. Third party developers have announced software that will allow Apple OSX and Windows XP to run simultaneously on the same machine using virtualisation.

<http://news.bbc.co.uk/1/hi/technology/4880022.stm>

<http://www.vnunet.com/vnunet/news/2152155/windows-xp-boots-intel-mac>

Fuel cells cleared for take-off

Fuel cell technology for mobile devices had a boost recently when a key barrier to their use was removed. The International Civil Aviation Organisation (ICAO), the body that determines the regulations on airline luggage, recently announced that it was changing the international air passenger rules that prohibit methanol from being carried onto aircraft due to its flammable nature. Many fuel cells in development use methanol. The new regulations will come into force in January 2007 and the first fuel cells are likely to be available about the same time.

<http://news.bbc.co.uk/1/hi/technology/4794920.stm>

Flash memory developments

The Flash memory market is changing with larger capacity chips and new applications being launched. Samsung has announced a 32GB flash-based "hard drive" that is designed to provide very fast access and low power consumption for portable devices. Analysts expect performance to be faster than the current generation of 1.8" hard drives and use about 90% less power. In practice, this is likely to roughly halve the start-up time for Windows and typically add another 20-40 minutes of operating time.

Hybrid drives that combine traditional hard disk technology with flash memory are also being developed. A modern hard disk will have 8MB or 16MB of cache, but the new hybrids will be able to easily offer at least 128MB or more and offer performance gains including much faster system hibernation and fast access to frequently used files/applications. Microsoft, which is working with Samsung on the hybrid drive, is also working with Intel on adding flash memory to PC motherboards for data storage and high speed access.

http://www.tgdaily.com/2006/03/21/32gb_ssd_samsung/index.html

http://www.tgdaily.com/2006/03/17/hybrid_hard_drives_from_samsung_microsoft/page2.html

The most common way of using USB memory sticks is as removable storage devices. However, executives from Samsung have been discussing the External Memory Device (EMD) feature of Windows Vista that will enable PC systems to reference such external devices as if they were system memory.

<http://www.eetimes.com/news/semi/showArticle.jhtml;jsessionid=CEUMCERGMOVFCQSNDBECKHS CJUMEKJVN?articleID=180100087>

Ultra-Mobile PCs

At the recent CeBIT show the first Ultra Mobile PCs (UMPC) were demonstrated. There had been a great deal of speculation about the devices codenamed origami by Microsoft. Origami is the interface for an Ultra Mobile PC (UMPC), a device that runs Windows XP on a hand-held PC. One of the demonstration units by Samsung showed a mode that runs a cut down OS solely for media access. Some analysts, including Gartner, have been quick to criticise the devices and point out its shortcomings. Battery life is relatively poor, they are bigger than a PDA but not as functional as a notebook computer and the price is seen as too high – Gartner estimate the ideal price point for a device of this kind at \$400 while UMPCs could cost up around double that. These products are likely to rapidly evolve and could eventually offer versatile functionality, portability and good battery life at a mass market price. At the moment the product is likely to remain a niche device.

<http://www.microsoft.com/windowsxp/umpc/default.mspx>

<http://www.techweb.com/wire/hardware/183700231;jsessionid=0D4HRSUJYAJ22QSNDBGCKHOCJUM EKJVN>

eAuctions for public sector procurement

The Office of Government Commerce (OGC) has launched a push to get public sector bodies to use eAuctions to drive down prices and increase procurement savings. In a recent announcement they highlighted how £17m was saved for the public purse last year through auctions and aggregation including £1.6m on stationery alone in London. This approach, supporting the government's aggregation and shared services agenda, is being championed by the OGC and regional centres of excellence. eAuctions are real-time reverse auctions where suppliers bid competitively online against each other to deliver higher levels of value or lower cost. The OGC website includes tools and calculators to support decision making about whether eAuctions are appropriate, but larger scale ICT purchases such as by Local Authorities or schools are obvious candidates.

<http://society.guardian.co.uk/e-public/story/0,,1714629,00.html>

<http://www.ogc.gov.uk/index.asp?id=1001034>

Dirty mice

A Korean survey of public places has revealed some startling facts about the bacteria present on communal hardware. It rated computer mice as having the second-least clean surfaces surveyed, behind only supermarket trolleys. Mice were found to be significantly dirtier than public toilet door handles. This highlights how shared computer equipment, especially when used for extended periods of time such as in a school computer lab, can be breeding grounds for unwanted bacteria. The researches suggested we all remember the old adage – "Wash your hands!" A more serious point is that communal equipment should be cleaned regularly with a cloth dampened with an antibacterial solution or antibacterial wipes.

<http://www.techweb.com/wire/ebiz/180202459;jsessionid=TFWNYXNN01ZYYQSNDBCSKHOCJUM EKJVN>

Quantum computing and processor shrinking

Researchers at the University of Illinois at Urbana-Champaign have announced an intriguing advance in quantum computing. Quantum computing has the potential to render the entire basis of modern computing obsolete, but has so far failed to scale to any degree. In a bizarre twist of quantum logic, the scientists have solved a search problem without having to run it, using a process called counterfactual computation. Quantum computing is one contender for the next major leap in computing (beyond silicon chips).

http://www.theregister.co.uk/2006/02/23/quantum_computing/

In more practical developments, researchers at IBM report positive results from investigations into manufacturing chips at 29.9nm. This is below the 32nm size that is the expected limitation of current processes. If this is possible in volume manufacturing, it is hoped to give the microprocessor industry more breathing space with current techniques before design approaches need to be totally re-invented. Smaller chips are essential for higher speed, lower temperature and more power efficient processors demanded by the market.

http://domino.research.ibm.com/comm/pr.nsf/pages/news.20060220_nemorelease.html

Intel business PC platform

Intel is launching a new business desktop platform called vPro (previously codenamed Averill Pro). vPro, will use hardware-based secure computing and virtualisation to control application access to hardware and operating system elements for greater security as well as improving performance and reliability. vPro's Active Management Technology is intended to make managing network PCs easier with a range of remote control facilities, such as patching, remote diagnosis/repair and automatic isolation of infected machines. vPro will be available with some of Intel's next generation micro-architecture processors (codenamed Conroe), later this year.

<http://www.intel.com>

http://www.channelregister.co.uk/2006/02/16/intel_averill_platform_plan/

Software and internet

Analysis: ICT in European schools

The UK may be an island nation but there is no escaping the fact that it is part of a larger European whole, a Europe with a population of some 460m and 4 of the 10 richest nations of the world.

The growth of the internet has effectively removed international boundaries and compressed distances, so now rather than study other countries both near and far using static books and the occasional visit, there are potential opportunities for simple real collaboration and communication using ICT tools. This article looks at some of the initiatives and technologies that may be used between the UK and Europe and offers some pointers as to how further information and partners might be located.

According to Eurostat (<http://epp.eurostat.cec.eu.int>), there are nearly 460 million people in the EU; 75 million are under 14. 77.3 percent of 20-24 year olds have attained at least upper secondary education attainment level. However, there are few statistics about ICT uptake in Europe's 500,000 schools. Eurydice (www.eurydice.org) provides useful statistics on education but its *Key Data on Education in Europe 2005* survey simply records that in most countries there are less than four 15 year olds per computer but in others over 30, and that most schools have internet access of some sort in one or more locations. There are considerable differences between and within countries in terms of levels of equipment, connectivity and embedding in teaching and learning. A 2003 survey (reported in October 2005

http://www.eurydice.org/Documents/Eurydice_en_bref/EN/8_PAGES_ICT_EN.pdf) found that 81 percent of 15 year-olds in Europe had a computer at home and 60 percent had an Internet connection at home.

Moreover, country profiling work by European SchoolNet

(<http://insight.eun.org/www/en/pub/insight/policy/policies/countryreports.htm>) with education ministries and schools suggests that even in those countries which are at the forefront of ICT in schools, like the UK and the Nordic countries, only 10 to 15 percent can be considered 'e-confident' - that is, systematically using ICT to improve all aspects of the school's activity. It is also clear that schools' connectivity arrangements vary enormously and that we are some way from seamless integration of broadband services like video conferencing.

Beyond simple IP-based internet connectivity there is little consistency in service provision to schools beyond a relatively common set of requirements (around fast, always-on and content controlled

access) and the type of provider ranges from direct contracts with commercial suppliers to community based provision such as through a shared network with universities.

Each European country has a high speed network connecting universities, known as an NREN (National Research and Education Network). The UK NREN is UKERNA. In Europe the NRENs are themselves connected together using a network called GEANT. This effectively means that, via their NRENs and GEANT, research institutions can connect reliably and privately to each other. Where schools are connected by the NREN this example can be extended – effectively offering a private Europe-wide schools network, roughly analogous to the UK NEN/RBC network.

However specific initiatives, based on widely recognised international standards do have some success in achieving interoperability between schools across Europe in a managed and controlled fashion. The main thrust of development at the moment is around video conferencing over IP. This is a specific service, based on the H.323 standard, but also importantly sets a model for future development.

Video conferencing over ISDN is a mature, reliable technology but suffers from two main disadvantages. Firstly there is a pay-as-you-use cost that can discourage widespread adoption and experimentation and secondly dedicated ISDN infrastructure has an associated cost to maintain with monthly line rental fees normal. IP has the advantage that one connection to a site can deliver broadband internet and video conferencing without any additional cost.

IP-based video conferencing requires a different approach slightly and to work well requires special considerations of design and in some cases installation of additional servers on the network. This is not especially complex, but making video conferencing work needs some special knowledge, co-ordination and investment.

TERENA – Trans-European Research and Education Networking Association (www.terena.nl) has begun an initiative looking at how NRENs connect schools to the internet and has met in both across Europe including a session in the UK covering video conferencing. From this meeting came the TERENA VISIT (Videoconferencing in Schools Initiative) which aims to promote video conferencing across Europe and develop guidance and practice for member countries to connect and support this service to schools.

<http://www.ja.net/schools/vcsp/documents/VISITCFP20051221.doc>

All schools participating in the project should enjoy the same level of performance, cost-effectiveness and international interoperability as higher education and research, making video conferencing a simple matter and opening up many possibilities for enriching teaching and learning. TERENA members are working together to enable schools from different countries to collaborate and participate in joint projects. Video conferencing is the most demanded service by schools but members are also working on AAA (Authentication, Authorisation and Accounting) issues, content hosting, filtering and security services, and access to heritage resources.

Once the technical issues have been solved there is the issue of finding partners.

When UK schools ask to video-conference with another school elsewhere in Europe, it is not be easy to locate partners with the necessary broadband connectivity, equipment or teacher expertise. The eTwinning initiative (www.etwinning.net) is probably the best way to find project partner schools but even with over 11,000 schools in Europe registered few mention video conferencing so far, though the project is relatively new. For partnerships around the world, the DfES and British Council have set up the Global Gateway site (<http://www.globalgateway.org.uk/>). Finally UKERNA, Becta and the RBCs (Regional Broadband Consortia) are investigating the development of an open-access collaboration portal which will help users identify commercial and public sector partners for all kinds of collaboration including video conferencing.

The European Union has funded many other projects that are relevant to citizens of Europe, such as the European Digital Library that will make cultural resources available online to users including teachers and pupils in schools.

<http://www.theeuropeanlibrary.org/portal/index.htm>

In conclusion, there is rather a mixed picture around Europe, from the broadband rich to the connectivity poor which makes single-solutions impossible. The approach favoured by TERENA members is to concentrate on federated standards-based solutions that can be implemented in each country separately, then made to interoperate on the basis of country to country. Video conferencing will be the first service to attempt to deliver this to schools and is expected to drive higher levels of European collaboration. The EU has supported a number of developments around sharing resources between schools such as LIFE which aims to build a Learning Resource Exchange for Europe. Initiatives like this are driven through European Schoolnet.

<http://www.eun.org/portal/index.htm>

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

<http://life.eun.org/ww/en/pub/insight/interoperability.htm>

Software and internet news

Delays to Microsoft Windows Vista and Office

Microsoft has announced delays to the release of Vista, the next generation Windows operating system and Office 2007, its new productivity software suite. According to Microsoft spokesmen the delay in Vista was to allow more testing by PC manufacturers, but some analysts are worried that the new launch date of January 2007 for both products will come at a bad time – after the Christmas sales boom. Corporate versions are still planned for launch in November.

<http://www.computeractive.co.uk/vnUNET/news/2152422/microsoft-delays-windows-vista>

<http://news.bbc.co.uk/1/hi/business/4840848.stm>

Disability access specification for websites

The British Standards Institution (BSI), sponsored by the Disability Rights Commission (DRC), has published a new specification (a step down from a formal standard) for good practice in website accessibility. These guidelines are also designed to support organisations in meeting the requirements of the Disability Discrimination Act (DDA) which has been law since 1999. These new guidelines are not legally binding but cover a number of areas such as defining an accessibility policy and information that can be used when commissioning external work. For more information see PAS 78 on the BSI website. <http://www.bsi-global.com/ICT/PAS78/index.xalter>

<http://news.bbc.co.uk/1/hi/technology/4783686.stm>

<http://www.webcredible.co.uk/user-friendly-resources/web-accessibility/uk-website-legal-requirements.shtml>

The Usability Exchange has launched a service where organisations can commission disabled web users to test their sites thoroughly with a real user rather than an automated tool. This is designed to give specific results and consultancy, with feedback from a real disabled audience and help sites improve their accessibility.

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

Creative Commons wins first legal challenge

The Creative Commons License, founded to balance creative freedoms and preservation of intellectual property, has had its first major legal test in a Dutch court. A Dutch gossip magazine was sued after photos of an ex-MTV VJ's daughter were published without permission. The magazine argued that the photos, published on Flickr, were public and the license was not obvious. In fact Flickr, which promotes the use of Creative Commons licenses for images, displays information on licenses and the judge ruled against the magazine and said it had not made sufficient efforts to contact the copyright owner. Creative Commons offers a number of different licenses that can be attached to content. Creative Commons Canada said the importance of the ruling is that it emphasises the user's responsibility to find out about and follow the license.

http://news.com.com/2100-1030_3-6052292.html

<http://creativecommons.org/>

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

European Digital Library

The European Union has announced that more than 6m works reflecting the cultural diversity and significance of the member states will be made available online over the next five years. The initiative will eventually link together every library, archive and museum in Europe under the European Digital Library banner.

http://www.theregister.co.uk/2006/03/03/european_digital_library_goes_live/

A recent consultation on the topic of digital libraries highlighted divisions on copyright and intellectual property issues, but it is hoped issues can be resolved to build a rich and vital site to support learning in its broadest sense, as well as stimulate digitising projects in the member states.

http://europa.eu.int/information_society/activities/digital_libraries/consultation/replies/index_en.htm.

In the UK digitising projects have met with mixed success, but have been generally positively received. The EnrichUK website, for example, lists the projects funded through the NOF-digi programme a few years ago.

[http://www.mla.gov.uk/webdav/harmonise?Page/@id=73&Document/@id=18613&Section\[@stateld_eq_left_hand_root\]/@id=4332](http://www.mla.gov.uk/webdav/harmonise?Page/@id=73&Document/@id=18613&Section[@stateld_eq_left_hand_root]/@id=4332)

<http://www.enrichuk.net/>

Microsoft IE and Web 2.0

Bill Gates announced at a Microsoft web developer conference that the speed of change on the internet will lead to a new strategy of releasing updates to Internet Explorer every 9 to 12 months.

This is in the face of increased competition from the Mozilla Firefox browser as well as new technologies such as RSS becoming more mainstream. Additionally he announced that Microsoft is testing a tool for the Ajax web development approach, codenamed Atlas. Ajax (Asynchronous JavaScript And XML) is a technique that has risen in popularity as part of Web 2.0 style services. For more information see the Analysis piece in TechNews March 06.

<http://www.informationweek.com/showArticle.jhtml;jsessionid=MS1AVDCVTR3RCQSNDBGCKH0CJUMKJVN?articleID=183701121>

European Union focus on research

European Commissioners, concerned about the ability of Europe's universities to compete effectively with major institutions in the US and growing developments in China, have announced plans for a European Institute of Technology (EIT). This virtual institution is hoped to bring together the best in academia and industry with the aim of conducting cutting edge research, but also applying it to create jobs and economic growth. Critics have suggested there is duplication between this approach and the existing European Research Council (ERC) that was created for similar purposes.

<http://news.bbc.co.uk/1/hi/world/europe/4740144.stm>

Red Hat embraces virtualisation

As chips from both Intel and AMD support a drive to virtualisation, Red Hat has announced that the next version of both Fedora and Red Hat Enterprise Linux 5 will natively support this approach. Virtualisation allows several operating systems to run simultaneously on the same hardware. One of the key benefits of virtualisation is more efficient use of resources. Typically a server will go from 20% to 80% utilisation as slack time for one operating system is translated into resource time for another - while allowing easy, discrete management of different virtual servers. For example the same hardware might run a web server, database server and file server; or a number of file servers for different customers. Each server application will act as if it was on its own hardware, but in fact they would all share the same - therefore cutting costs significantly through consolidation.

<http://www.vnunet.com/vnunet/news/2151960/redhat-takes-virtualization>

Open Source update

The Joint Information Systems Committee (JISC) has released a paper to its member UK universities and colleges encouraging them to consider the role and appropriateness of Open Source software in their institutions. JISC funds the OSS Watch project which provides advice, guidance and advocacy to

the UK academic community. OSS Watch has recently delivered a presentation on GPL v3 which is available online at <http://www.oss-watch.ac.uk/talks/2006-02-17-oxford/2006-02-17-oxford.pdf>.
<http://www.oss-watch.ac.uk/>

Richard Stallman, main author of the GPL (General Public License used by much open source software and widely regarded as one of the pillars of the open source software movement), gave a talk in February and a transcript has now been made available online at <http://www.ifso.ie/documents/rms-gplv3-2006-02-25.html>. He covered a range of topics including DRM and patents. The Free Software Foundation has published a complete list of changes proposed for GPL v3 together with a document explaining the rationale.
<http://gplv3.fsf.org/rationale>

Government launch Open Source Academy

The UK government has also launched a new site, the Open Source Academy which is designed to be a hub for information and guidance on the use of Open Source software in local authorities. The site includes a round-up of case studies and links to tools provided by local authorities and central government departments and includes an "Ask the Expert" service focussing on legal and procurement rather than technical issues.
<http://www.opensourceacademy.gov.uk/>

Online gender gap

A report from Pew/Internet has highlighted ongoing key differences between both the way men and women in the US use the internet and the proportion of the users. These figures show the gender gap is narrowing, but a caricature of the white male internet user is still preserved. Headline figures include: more women under 30 and black women use the internet than men from the same groups, but older men use the internet far more than older women. Men tend to log on more often but spend less time online than women. Men tend to be less focussed in their use of the internet and spend more time searching a breadth rather than depth of topic. Men are more likely to use the internet for recreation and women are more likely to interact through email exchanges and support groups to find information rather than just absorb. The report concludes that men and women are more similar than not, but the perhaps there is a message here for early adopters of interactive and collaborative technologies that women might find it easier to engage initially and stay on task than men. Read the full report online at http://www.pewinternet.org/pdfs/PIP_Women_and_Men_online.pdf

TechNews Information

Disclaimer and copyright:

While every care has been taken in the compilation of this information to ensure that it is accurate at the time of publication, Becta cannot be held responsible for any loss, damage or inconvenience caused as a result of any error or inaccuracy within these pages. Although all references to external sources (including any sites linked to the Becta site) are checked at the time of compilation, Becta does not accept any responsibility for or otherwise endorse any information or products contained in these pages including any sources cited.

We cannot be aware of the uses to which you may put this information nor of the environment in which you are working. Consequently you should take care to obtain professional advice relating to your circumstances before making use of this information.

Copyright and permitted use

The material featured is subject to Becta copyright protection unless otherwise stated. You may reproduce the Becta copyright-protected content, free of charge, in any format or medium without specific permission, provided you are not reproducing it for profit, material or financial gain.

You must reproduce the material accurately and not use it in a misleading context. If you are republishing the material or issuing it to others, you must acknowledge its source, copyright status and date of publication.

The permission to reproduce Becta copyright protected material does not extend to any material that is identified as being the copyright of a third party. You must obtain authorisation to reproduce such material from the copyright holder concerned.

Copyright in the typographical arrangements (including template design and graphics), logos and trademarks, all software compilations, underlying source code and software on this website are copyright Becta or copyright of third parties as identified. All rights reserved.

To unsubscribe:

<http://lists.becta.org.uk/mailman/listinfo/technews>

Feedback:

We welcome your feedback. Email comments to:

technews@lists.becta.org.uk

Publisher details

British Educational Communications and Technology Agency (Becta),
Millburn Hill Road, Science Park, Coventry, CV4 7JJ.

Tel: 024 7641 6994

Fax: 024 7641 1418

Email: becta@becta.org.uk