



## BBC News | Technology | UK Edition

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**Updated:** 11-22

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## **Panel power**

**The technology behind solar energy is constantly evolving. Portable devices that charge up gadgets from the sun are becoming smaller and more powerful.**

A new generation of portable solar chargers can plug straight into a laptop and provide up to a quarter of its power needs while in use.

The Solargorilla charger by Powertraveller, for instance, can also level out the electrical spikes caused when clouds obscure the sun.

Jerry Ranger, head of Powertraveller, says the charger is able to convert a high percentage of the sunlight's energy in a more compact way than previous devices.

"You can get the power output if you get a massive great big panel but clearly that's impractical so we've needed to get it down to a size that's portable," he told BBC Click.

"So previously we had around 15% efficiencies, we're now on the verge of getting 20%, and within the next 18 months we expect to deliver around 22% efficiencies," he explained.

Consumers can currently use portable panels only for charging up small devices such as phones or music players.

Powertraveller plans to launch a portable four-panel folding array that can run a laptop and charge the battery at the same time.

Planned for spring 2010, it will be the first commercial device to offer AC or DC outputs.

Consumers are also increasingly exploiting the sun's energy in the home.

### **Panel power**

There has been a steady growth in small-scale electricity production at home in recent years. In 2008 there was a considerable jump - the number of people looking to generate their own electricity doubled in just 12 months.

Traditionally, homes have harnessed power from the sun through conventional solar panels, but an American company has developed what it hopes is the next generation of panel power.

SRS Energy has created "sole power" tiles, which are coated with thin-film flexible photovoltaic cells. The roof tiles are a dark blue colour to

maximise the absorption of sunlight, and will be available from spring 2010.

The tiles are an example of how technology, in the form of new polymers and coatings, has the potential to increase the amount of energy that can be adapted from the sun.

For years most solar cells struggled to harness just one sixth of the sun's energy.

But newer materials are helping solar panels become more efficient, according to Professor Tony Day, director of the Centre for Efficient and Renewable Energy in Building, London South Bank University.

"Laboratory tests are showing we can get to module efficiencies of about 22-23%, with traditional materials," he said.

"The next generation of materials it looks in the laboratory to be moving towards 30%, and in some specialist applications even 40%," he added.

### **Light tunnels**

The British Columbia Institute of Technology decided to dispense with expensive solar panels and test out a new system in one of its buildings.

The Canadian university installed sun canopies in the roof to direct light through tunnels in the ceilings above every floor.

Each tunnel has a highly reflective coating to bounce the light round the building. When a cloud goes over, the fluorescent lights kick in to maintain brightness until the sun returns.

Allen Upward, a research engineer at the University of British Columbia (UBC) said the system is seven times more effective than traditional solar methods.

"As a system for lighting a building, it's far more effective than using solar panels to generate electricity and then turning that electricity back into light," he explained.

The sun's potential remains under-exploited - the Earth gets 5,000 times more energy from the sun than we use in electricity. Solar farms have been popping up all over the world in an attempt to harness the green power on a mass scale.

One solar farm in southern Spain has swapped panels for mirrors and is using the sun's heat rather than brightness to create electricity.

### **Heat power**

Just outside Seville, hundreds of mirrors track the sun as it crosses the sky and reflect their beams to a single point at the top of a tower.

The intense heat is used to boil water and create steam to power a turbine - which creates electricity.

Engineer Valerio Fernandez, at Abengoa which runs the solar farm, says the resulting heat is the equivalent of 4,000 times the power of direct sunlight.

"With this amount of energy we can generate very high temperatures, about 2,000 degrees Celsius," he said.

A consortium of 12 European businesses plans to build a huge solar project in the Sahara desert.

Desertec Industrial Initiative plans to produce solar-generated electricity with a vast network of power plants and transmission grids across North Africa and the Middle East. It aims to supply Europe with 15% of its energy needs by 2050.

The plan has the backing of huge companies including Deutsche Bank, Siemens - and needs \$500bn (£303bn) of investment.

But some solar experts are sceptical.

"Part of the problem with the Desertec project is that we are asking somebody else if we can lease their land so we can generate electricity to keep the lights on in Europe," said Prof Tony Day.

"I think that there are political issues and ethical issues that we need to think about," he said.

*Watch Click on BBC News Channel, Saturday 21 November at 11.30 (GMT).*

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## UK climate unit's e-mails hacked

**The e-mail system of one the world's leading climate research units has been breached by hackers.**

E-mails reportedly from the University of East Anglia's Climatic Research Unit (CRU), including personal exchanges, appeared on the internet on Thursday.

A university spokesman confirmed the email system had been hacked and that information was taken and published without permission.

An investigation was underway and the police had been informed, he added.

"We are aware that information from a server used for research information in one area of the university has been made available on public websites," the spokesman stated.

"Because of the volume of this information we cannot currently confirm that all of this material is genuine.

"This information has been obtained and published without our permission and we took immediate action to remove the server in question from operation.

"We are undertaking a thorough internal investigation and we have involved the police in this enquiry."

Researchers at CRU, considered to be one of the world's leading research bodies on natural and human-induced climate change, played a key role in the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report, which is considered to be the most authoritative report of its kind.

### **'Inside information'**

Graham Cluley, a computer security expert, suggested that December's key climate summit in Copenhagen, which has made headlines around the world, could have increased the university's profile as a possible target among hackers.

"There are passionate opinions on both sides of the climate debate and there will be people trying to knock down the other side," Mr Cluley, senior technology consultant for Sophos, told BBC News.

"If they feel that they can gather inside information on what the other side is up to, then they may feel that is ammunition for their counterargument."

Mr Cluley added that universities were vulnerable to attacks by hackers because some many people required access to IT systems.

"You do need proper security in place; you need to be careful regarding communications and make sure your systems are secure.

"I trust that they will now be looking at the systems, and investigating how this happened and ensuring that something like this does not happen again."

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## Facebook acts on follower trade

**Facebook has threatened legal action against a service that sells friends on the social networking site.**

It said it would take the action against marketing firm USocial unless it stopped violating Facebook's rights.

It also wanted USocial to stop helping members break the site's terms and conditions, specifically letting people profit from their profile.

In response, USocial agreed to a change in its practices but would not shut down its service.

Facebook sent Cease and Desist letters to USocial claiming that the way the marketing firm operates violates its rights by sending spam, using web tools to harvest pages, getting login names and by accessing accounts that did not belong to the marketing firm.

Customers of USocial use it to boost follower and friend numbers on social network sites such as Facebook and Twitter.

On micro-blogging site Twitter, followers can be bought in blocks starting at £53 for 1,000. The biggest block uSocial is selling is 100,000 people.

USocial defended itself against Facebook's claims, saying that it did not spam users or use web tools to gather information about profiles.

However, in response to the legal letters, USocial said it would delete the login information it had collected and broadly stop offering to sell Facebook friends. It also put a notice on its site saying it was not affiliated with Facebook.

However, it said, there was "possibility" that it would resell the service in the future. If it was to re-start the service it said it would let Facebook know beforehand.

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## After the hype

Second Life store closed" border="0" vspace="4" hspace="4">

**By Lauren Hansen**

BBC News Magazine

**Not long ago Second Life was everywhere, with businesses opening branches and bands playing gigs in this virtual world. Today you'd be forgiven for asking if it's still going.**

Once upon a time Second Life had a Twitter level of hype. Even those without a cartoon version of themselves couldn't plead ignorance due to blanket coverage in newspapers and magazines.

Second Life is virtual world started by the US firm Linden Lab in 2003, in which users design an avatar to live their "second life" online.

And everything about this world can be customised for a price - new outfits, drinks in a bar, even a luxury mansion can bought with Linden dollars.

Mentions of Second Life first crept into the UK media mainstream in early 2006.

A year later, newspapers fell over themselves to cover it, devoting many column inches in their business, technology and lifestyle sections to profiles and trend pieces. By the end of 2007 Second Life had secured more than 600 mentions in UK newspapers and magazines, according to the media database Lexis Nexis.

IBM bought property in 2006, American Apparel opened a shop the same summer, Reuters installed avatar journalist Adam Pasick - also known as Adam Reuters - to report on virtual happenings, and countries established virtual embassies.

The number of people joining the site jumped from 450,000 to four million in 2007.

But just as quickly as it had flared, media interest ebbed away. References plummeted by 40% in 2008 and dropped further this year. And businesses diverted their resources back to real life.

American Apparel closed its shop just one year after opening. Reuters pulled its correspondent in October 2008. When asked about his virtual experience, Pasick says: "It isn't a subject we like to revisit."

So, what happened

## **SECOND LIFE'S PRECURSOR**

*"In Snow Crash by Neil Stephenson, a seminal sci-fi work of the 90s, one of the plots is that there was this whole metaverse exactly like Second Life, only cooler. You had a whole generation of people who read Snow Crash and were talking about this idea of the internet as a 3D world you could immerse yourself in"*

## **Ben Hammersley**

Not much, says Wired UK editor-at-large Ben Hammersley, and that was the problem.

"You could go and open these stores and no-one would turn up," he says.

"They would have 20 to 30 people there when it opened, and after that no-one would bother going in there again. It just wasn't worth the spend."

The "spend" varied from business to business. A retailer like American Apparel might spend £10,000 on designers, as well as storage space from Linden Lab, to build a virtual store.

But at the peak of the hype, the cost of purchasing or building property was worth it.

"The first to go online would make the front page of the Guardian," Mr Hammersley says. "But when you're the 15th country who goes on Second Life, no magazine, no newspaper touches it."

Some businesses and users found it wasn't quite for them. The technology wasn't easily grasped and some computers couldn't handle it.

Second Life has had to temper its ambitions for the quality of graphics to extend its accessibility across varying speeds of broadband around the world, leading to complaints about the cartoony look and feel of the site.

And there is a fundamental question about whether Second Life is a game or a social networking site.

"It's not a really good social space," Mr Hammersley says. "Not as good as Facebook or any general online forum."

Simon Gardner, a 23-year-old freelance social media marketer, believed the hype in 2007.

He signed on, created an avatar with a shock of red hair that vaguely resembled him, and jumped into what he found to be a lacklustre experience.

"It was a real pain. You have to learn how to control things and read manuals on how to get to islands and get off. Half the time you're just wandering around talking to weirdos."

After three months Mr Gardner became bored and left.

### **Mobile dilemma**

And the online social network scene is a crowded one. "The key to anything online is to get a broader reach of people," says Jim Clark of market researchers Mintel. The learning curve required for Second Life prevents many general users from returning regularly.

As more people turn to smart phones, sites need a mobile presence to stay relevant.

"Mobile is the future of any activity online. This is something that Second Life will struggle to penetrate," says Mr Clark.

This is because the graphics require more memory than current smart phones can handle.

But Linden Labs isn't worried, because the number of users continues to rise.

"Monthly repeat login - a metric we use to gauge the number of users engaged with Second Life - grew 23% from September 2008 to September 2009," says Mark Kingdon, chief executive of Linden Lab.

On average, a million people log in each month, he says. In October 2009, 75,000 of those were in the UK.

And the site continues to evolve, Mr Kingdon says. It launched a new product earlier this month geared towards businesses, and will soon be launching more user-friendly and intuitive software.

And many companies and organisations are still hold on to their virtual selves - 1,400 of them says Mr Kingdon. IBM continues to be an avid supporter of Second Life.

But for many others, the jury is out.

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## **YouTube gets automatic subtitles**

**YouTube's parent company Google has announced on its blog that automatic captions are to begin to roll out across the site.**

The machine-generated captions will initially be generated in English. At first they will only be found on 13 channels.

These include National Geographic, Columbia, as well as most Google and YouTube channels.

The software engineer behind the technology, Ken Harrenstien, is deaf.

Currently YouTube offers a manual captioning service but video makers tend not to use it.

"The majority of user-generated video content online is still inaccessible to people like me," Mr Harrenstien wrote in the Google blog.

His solution combines automatic speech recognition with the current caption system.

The translation is not always perfect (in a demonstration the phrase "sim card" becomes "salmon" in text), but Mr Harrenstien says that the technology "will continue to improve with time".

Alternatively users can upload a transcript of their video and auto-timing algorithms will match the text to the words as they are spoken.

Vint Cerf, vice president at Google, is widely recognised as a founding father of the internet. He is also hard of hearing and has worn a hearing aid since the age of 13.

"One of the big challenges of the video medium is whether it can be made accessible to everyone," he told news agency AFP.

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## **Crime time**

**PC Ed Rogerson is like many other beat bobbies. He patrols his patch, fights crime and gives out crime prevention advice. But in one respect he is different to almost every other copper walking a beat.**

PC Ed Rogerson is on Twitter. He is one of about 20 or so police officers that have turned to the micro-blogging service.

He started using Twitter in October in a bid to reach more of the people that live along the streets he patrols in Starbeck, Harrogate.

"Twitter is the new thing," he said. "I'm just trying to keep up and communicate with people in Harrogate."

"It works on a far more local level than the force-wide Facebook group," he said. "It's local to Harrogate and our problems."

Some of his messages, or tweets, contain advice for residents. On occasion he announces an arrest. Others are just to let people know that, while they were out, the police were on patrol.

"People do not see us so they do not think we are there," he said.

North Yorkshire police are among the few forces using social media. It's Safer Neighbourhood teams use it to send out messages and it has reserved a page that will soon become its presence on Facebook.

"These kinds of social media are ultimately just another way of communicating with the public," Tom Stirling, North Yorkshire's web officer told the BBC.

"Posting a message on Twitter warning about a spate of burglaries in an area is a similar concept to pinning up a poster on the local parish council noticeboard."

"Doing either in isolation might be fine, but by doing both we can spread that warning even further."

### **Street talk**

There is no national plan to make the police use social media, but its use by beat bobbies and many other officers is about to get a boost with the creation of the MyPolice website.

Set up by designers Sarah Drummond and Lauren Currie, it hopes to become a central point on which members of the public can relate the good and bad of their experiences with the police.

"Its creation stems from my friend getting robbed," said Ms Drummond.

"She didn't have a terrible experience but there were aspects of her case that she was not happy with."

In a similar way the site will log these problems, funnel them to the police and find out what happens to put things right.

"It's meant to be very bottom up," said Ms Drummond. "It'll engage with the bobby on the beat, community wardens and PCSOs. They are the ones seeing the problems at ground level."

She said: "It will give the police a chance to listen and they should be listening to people."

Ms Drummond said the plan is to run a closed pilot with a couple of forces before rolling it out more widely. The two designers are working on data visualisation tools to ensure that the site is easy to use for both the public and police.

### **Net gains**

Even before MyPolice gets going some forces are pioneering widespread use of social media.

West Midlands police has redesigned its public website to work better with social media, it has Facebook pages for local areas, some officers are blogging. It has been known to use keywords, or hashtags, on Twitter to ensure people know its views about popular issues.

"We want to talk to people and allow people to talk to influence the way we police," said Inspector Mark Payne, a spokesman for West Midlands police. "Print media is shrinking and losing some of its traditional audience."

*"Forensics is fantastic, but it's people that solve crime"*

### **Inspector Mark Payne**

"This is not about abandoning the traditional ways," he said. "More and more people are using social media to communicate and, if that's where people are talking, that's where we need to go."

"We can find out if we are doing the right things," said Inspector Payne. "Have we get a problem we do not know about"

One of the reasons that West Midlands police got interested in social media was because it found it was the subject of discussions and videos on YouTube.

In a bid to put its point of view across it got involved with the discussions and now posts videos straight to its own channel on the site.

Nick Keane who works for the National Police Improvement Agency advising forces about social media, said West Midlands' experience was common.

"It's a matter for forces as to whether they use social media," he said. "If you are a force that doesn't that is a perfectly defensible thing."

"However," he added, "they cannot ignore it. The conversations about those forces carry on anyway."

Unless forces move to engage their critics or the concerns being aired on social media sites they risk having their role undermined, said Mr Keane.

The partiality of social media, especially video, often misses the context surrounding an incident leaving many with a false impression of what happened.

In light of this, West Midlands police used both Twitter and YouTube while policing a potentially rowdy demonstration mounted by the far right England and Wales Defence League (EDL) in Birmingham.

The police sent messages via Twitter using the hashtag created by EDL members to let protestors know what was, and was not, permissible during a demonstration. West Mids also posted their own video of the way the demo was policed.

Beyond helping the police reach out to communities, social media also has a definite operational benefit.

Information that has helped PC Rogerson round up persistent graffiti artists arrived via social media. Inspector Payne said West Mids' presence on Facebook has helped find a missing person and with a murder case.

"Forensics is fantastic, but it's people that solve crime," he said. "And this is just another way of talking to people."

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## **Dell sees quarterly profits fall**

**US computer maker Dell has reported another decline in quarterly profits, sending its shares lower.**

Net profit at the US giant was \$337m (£202m) in the three months to October, down from \$727m last year.

Dell's revenues also dropped 15% to \$12.9bn. Both figures missed analysts' expectations, sending shares down 7% in after-hours trading.

Although Dell did not provide a formal outlook, it said it expects fourth-quarter revenue to improve.

Global computer sales have been knocked by the worldwide recession, as customers cut back on their spending.

Since returning as chief executive in 2007, founder Michael Dell has cut more than 10,000 jobs and acquired several companies.

Dell bought IT services provider and fellow Texan firm Perot Systems for \$3.9bn in September.

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## First test for record solar plane

The prototype of a solar-powered plane destined for a record round-the-world journey will make its first trip across a runway on Thursday and Friday.

This week saw the Solar Impulse plane outside its hangar for the first time, with tests of its engines and computer.

The plane's maiden flight is scheduled for February, and a final version will attempt to cross the Atlantic in 2012.

As wide as a jumbo jet but weighing just 1,500 kg, it will be piloted by Swiss adventurer Bertrand Piccard.

"It's very exciting, we are moving now toward a very concrete phase," said Solar Impulse chief executive Andre Borschberg.

"You have to realise this airplane is quite special and you cannot just put it on the runway, apply full power and go in the air - it has to be done really step-by-step," he told BBC News.

### Wright stuff

To that end, the team has spent several days ramping the plane's engines up to full power, and the "taxiing tests" of Thursday and Friday will give the test pilot a feel for how the plane moves on the ground.

If the tests are successful, the next step will be a short hop in about two weeks' time.

"We'll take off at the beginning of the runway, fly a few metres above it - a little bit like the Wright brothers did in 1903 - and then land again, to see how it behaves at the beginning of the flight.

"If this is satisfactory, we will dismantle it and transport it to [Payerne air force base in western Switzerland] where will we do the real first flight of about two hours, in February."

But each step will be a careful one, Mr Borschberg stressed.

"This is truly a new design - an airplane the size of an Airbus and the weight of a mid-sized car - so we're not taking risks by not understanding something."

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## Google previews operating system

**By Jonathan Fildes**

Technology reporter, BBC News

**Internet search giant Google has lifted the lid on its operating system, known as Chrome OS.**

The free and open source system is initially aimed at low-cost netbooks and does away with many of the features of a traditional programme.

All programmes are designed to run in a web browser and all the user's data is stored on Google's servers.

Engineers from the firm said the first computers running the system would be available before the end of 2010.

"We are trying to offer a choice for users," said Sundar Pichai, vice-president of product management, during an event at the firm's headquarters in California.

"This model of computing is fundamentally different."

The event follows the recent launch of Microsoft's Windows 7 and Apple's operating system upgrade, Snow Leopard.

### **Speed test**

Google first announced its intention to build an operating system in July this year.

The firm has designed the system around its Chrome browser. The programme was released 14 months ago and already has 40m regular users, the firm said.

*"We want Google Chrome OS to be blazingly fast"*

### **Sundar Pichai, Google**

"It's very familiar and intuitive to users - most people know how to use the browser," said Mr Pichai.

All programmes or applications - such as word processing and email - run in different tabs in the browser.

"There are no conventional desktop applications," said Mr Pichai. "That means you don't have to install or update software."

"It's just a browser; a browser with a few modifications."

Mr Pichai said the system was based around speed, simplicity and security.

He showed it booting up in seven seconds.

"We're working very, very, very hard to make that time shorter," he said. "We want Google Chrome OS to be blazingly fast."

He said they wanted it to be like a television, where a computer could be switched on and instantly running and connected to the web.

Google has been able to boost the speed of the system by designing it for specific hardware. The firm said that it would only run on computers using "solid state drives" instead of traditional hard drives.

In addition, the firm has been talking to hardware manufacturers to specify which components to include on finished machines.

This means that the company could "optimise" the code to run as quickly as possible, said Mr Pichai.

### **Memory games**

He used the demonstration to show the machine doing many common tasks such as playing games and music, as well as reading books and writing text.

Any documents and files created on the computer were automatically synced and saved on Google's servers, said Matthew Papakipos, an engineer working on the system.

As a result, he added, anybody who lost their computer would be able to buy a new machine and easily recover all their data.

"In a matter of seconds, all the data syncs back to the machine."

Although the firm envisages most tasks will be done online, it will also offer the capability to use some programmes when there is no connection.

It already offers a similar feature for programmes such as Gmail and Google Docs using its Gears program.

Initially, the firm envisages people will use the operating system on a second, portable machine.

Memory intensive tasks, such as video editing, would require a more powerful machine.

### **Open offer**

The demonstration could dramatically change the market for operating systems, especially for Microsoft, the biggest player with around 90% share of the market.

When it was first announced, Rob Enderle, industry watcher and president of the Enderle Group, described it as "the first real attempt by anyone to go after Microsoft".

The fact that it is free could encourage many users to try the system.

Currently, Mr Pichai said the company did not have a business plan but admitted that encouraging people to use the web and Google services "benefits us as a company".

Google derives most of its revenue from selling advertising around search and its other online products.

Most consumers will have to wait until 2010 to get their hands on a device running the system.

However, the firm used the event to release an early version of the code for developers.

"You can get Chrome OS up and running today," said Mr Pichai.

They said they had chosen to release the code and the designs for the system because it was based on a variety of existing open source projects such as the Linux and Ubuntu operating systems.

Open source systems allow people to tinker and use the underlying code to build and customize applications. It is normal to publish any modifications to allow other people to take advantage of the changes.

"We're looking forward to feedback from the open source community," said Mr Pinchai.

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## **CD player production ends at Linn**

**By Douglas Fraser**

BBC Scotland's Business Editor

**A manufacturer of hi-fi systems has sounded what it said could be the death knell of the compact disc player.**

Linn Products has become the first manufacturer to announce it will give up on CDs from the start of next year.

Instead, the niche company will focus its production on equipment for digital streaming.

The firm, which makes systems costing from £2,500 to more than £100,000, said discerning customers recognised the superior quality of digital streaming.

Yet it continues to make turntables for vinyl records, as there remains a demand for the quality of sound compression offered by older record technology.

Linn, which has its own small record label, foresees a move to what it calls Studio Master Quality material, available for download.

### **Digital players**

The Beatles' back catalogue has been re-mastered and is leading the move to that premium-value sound quality, and it accounts for 70% of Linn Records' downloads.

The shift from CD players to digital music streamers has been very recent. It was only during 2009 that the digital players outsold Linn's CD players.

The newer technology allows digital streaming through other operating systems, including home computers and networking throughout homes.

Gilad Tiefenbrun, managing director of Linn Products, said: "Our customers have fast recognised the limitations of CD players and in the age of home networking, people now want better control of their music and the ability to enjoy it in any room of their home.

"CD players no longer belong in the specialist domain."

The company reckons that the CD format will continue to be useful as a way of recording and storing music. It claims that a CD recorded onto a hard disk can achieve a higher quality than one played on a CD player.

### **Falling CD sales**

Compact discs began commercial music sales in 1982, replacing the cassette tape as well as vinyl records. The shift from compact discs to digital downloading is again changing the music market.

BPI, representing the British recorded music industry, announced last month that 2009 had already broken last year's record number of legally downloaded single and individual track sales. Of 117 million sales, nearly 99% were digital downloads.

But there is a different market for album sales. CD sales continue to dominate, but their share of the market is sliding.

In 2006, there were 154 million album sales, of which CDs accounted for 151m, and digital for 2.7m.

In 2007, with 138m sales, 131m were CDs and 6.2m were digital.

In 2008, there were 137m album sales, with 123m CDs and 10.3m digital downloads. Vinyl records, cassettes and other formats accounted for around 300,000.

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## Twitter urges Murdoch to be open

By Jonathan Fildes

Technology reporter, BBC News

**Newspapers should become "radically open" if they want to make money in the online world, the co-founder of social networking site Twitter has said.**

Biz Stone said that he would "love to see what happens" if newspaper mogul Rupert Murdoch went ahead with plans to block Google from his websites.

"The future is in openness not [being] closed," he told the BBC.

Mr Murdoch recently said that search engines could not legally use material such as headlines in search results.

Earlier this year, he said his News Corp business would start charging customers for access to its websites.

News Corp owns the Times and Sun newspapers in the UK and the New York Post and Wall Street Journal in the US.

Mr Stone said he should be allowed to "fail fast" with the proposal.

"They should be looking at this as an opportunity to try something radically different and find out a way to make a ton of money from being radically open rather than some money from being ridiculously closed," he told an event organised by the National Endowment for Science, Technology and the Arts (Nesta) in London.

### **Aiming high**

Twitter itself is a so-called "open platform". From its inception, Twitter allowed other software developers to build their own apps and services for the site.

These include search tools and services that allow people to add video and pictures to messages, known as tweets.

This openness has allowed Twitter to grow at a phenomenal rate.

Between February 2008 and February 2009 the number of users grew by 1,382% - from 475,000 to seven million - according to Nielsen Online.

*"Twitter will always be free to everyone but you will be able to pay for an additional layer of access to learn more about your Twitter account"*

**Biz Stone**

## Twitter confirms major cash boost

Recent figures suggest this period of growth has flattened off, particularly in North America.

Mr Stone would not give exact figures but said that the firm was "continuing to grow very fast from an international and a mobile perspective".

Measurements of Twitter traffic are notoriously difficult as many users do not interact with the service through the website. Instead, they use desktop software and mobile phones.

### **Mobile growth**

A report in June suggested that more than 50% of all updates were published using these tools.

"We're unique from an internet perspective in that our DNA is in mobile," Mr Stone told BBC News.

"We started out in texting and then we brought the service to the web."

Mr Stone said that the company saw most of its growth on mobiles.

"We see over four billion mobile phones active around the world as opposed to the 1.65 billion active web accounts, so when you look at this together you see a very broad potential for growth for Twitter," he said.

A memo leaked from the company earlier this year suggested that the firm wanted to reach a billion users by 2013.

Despite this growth, critics of the firm have questioned its ability to make money.

Earlier this year it secured \$100m (£62m), which would value the firm at \$1bn. However, it is still to make a profit.

### **'Better experience'**

To address this, Mr Stone said that Twitter would begin to offer commercial services this year.

"One of the first things we are going to do explicitly is commercial accounts," he said.

"Twitter will always be free to everyone but you will be able to pay for an additional layer of access to learn more about your Twitter account - get some feedback, some analytics, become a better 'Twitterer'."

The firm said that it was also considering "licensing and syndication possibilities".

"We can give away this real-time feed of data to other companies such as Google and Bing to give them a better experience for searching Twitter," he said.

However, Mr Stone admitted that Twitter was still finding its way.

"We are coming out of a very rapid growth over the last two years," he said. "We have a lot of work to do."

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## Computer curse

Witness

By Dave Lee

BBC World Service

**If you've ever had to spend a lot of money on antivirus software, you'd be forgiven for wanting to take Fred Cohen aside for, to put it politely, a few choice words.**

But although Mr Cohen is responsible for creating the first ever computer virus some 26 years ago, his pioneering research has in fact led the way in protecting computers from the threats that surfaced in the years to come.

He told BBC World Service's Witness programme about the day he made the discovery while studying at the University of Southern California.

After a neighbouring university created a Trojan horse - which allowed hackers to gain access to a machine - Mr Cohen realised that the Trojan could be programmed to duplicate itself.

This is the proverbial lightbulb going off.

"I was sitting there in the class and all of a sudden it dawned on me that if that Trojan horse copied itself into other programs, then all those programs would be infected, and then everybody that ran any of those programs would get infected and so forth.

"It was at that point immediately obvious that it was game over."

He discussed the idea with Len Adleman, another computer security expert at the university.

"Fred approached me and said he had this new type of computer security threat, and he began to describe what we now call viruses," recalled Mr Adleman.

"He wanted to run some actual experiments, in particular on the computer that I used.

"There was no point in running an experiment, since it was so obvious that it was going to work."

However, Mr Cohen insisted they make sure - and the first computer virus was born.

"In that moment, I pretty much understood the bad news.

"I spent the next five or six years of my life trying to find ways to protect against it and understanding the limits of what could ever be done."

### **Ethical dilemma**

Armed with their new discovery, the pair faced a problem.

It had the potential to have a massive negative impact on the computing world. As academics, did they have an obligation to share their findings or should the vulnerability be kept secret

They decided to publish the paper.

"If we told people about computer viruses, they could potentially protect themselves," said Mr Adleman.

"It was also at least my impression that computer viruses were inevitable, and were going to arrive whether Fred published or not.

### **WITNESS**

- Witness is a new daily programme from the BBC World Service bringing you back to the events that changed our world, told by the people who were there
- It is broadcast every day at 0050GMT and 0850GMT
- It is also available as apodcast

"In the end we decided to publish, but to not make the code that Fred put in his paper so explicit that an amateur could take it and produce computer viruses."

Mr Cohen agreed.

"This was going to happen one way or another. The real question was is it going to happen after somebody's done the research, and figured out what to do about it, or is it going to happen before the research is done - and then we're really in trouble."

Mr Cohen no longer researches viruses. Indeed, he believes that genuine research into possible threats has not happened for quite some time.

"As far as I can tell, somewhere around the late eighties or early nineties was the end of the real research related to computer viruses.

"There are businesses that want to make sure they keep making money by having cures that fix the last one, but not the next one."

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## China military site draws hackers

**The Chinese military defence website was subjected to 2.3 million hacking attempts in its first month online according to officials.**

"When there were major events taking place related to the military and national defense, the number of (cyber) attacks rose," said editor Ji Guilin.

The website, launched in August 2009, has so far attracted 1.25bn visitors from around the world.

Ji Guilin was talking to Chinese state-run newspaper the People's Daily.

There are English and Chinese versions of the website.

Most of the overseas visitors to both versions came from the US, but the website also attracted visitors in the UK, Australia, Singapore and Japan.

The most popular search topics were "military photos", "top military leaders", "high-level events" and "military power", said Mr Ji, who runs the website.

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## Set to stun: scientists test 'phaser' on worms

Scientists have shown off an effect not unlike that of the "phasers" in the show *Star Trek* - but it only works on tiny worms called nematodes.

They used a special molecule that, when exposed to ultraviolet (UV) light, changes its shape.

When the worms were fed this molecule and then exposed to UV light, they exhibited paralysis.

But when the worms were again exposed to visible light, they started moving again.

The work is published in *Journal of the American Chemical Society*.

The authors claim the research could have therapeutic applications.

The phaser is a fictional invention in the *Star Trek* TV shows and films, a gun-like device that can stun or kill adversaries.

The effect in this study is down to the molecule dithienylethene.

This belongs in a family of compounds known as "photoswitches", which reversibly change their shape in response to light.

While some so-called photodynamic therapies already make use of light to release chemicals or make them more reactive, only photoswitches can be returned to their starting shape, on exposure to light of a different colour.

They are routinely used in chemistry experiments to investigate fundamental processes, but the researchers from Simon Fraser University in Canada say their work is the first time the photoswitching effect has been demonstrated in a living animal.

### Stop light

The team started with tiny, transparent *Caenorhabditis elegans* nematode worms, an animal frequently employed in scientific research.

After feeding them a solution containing dithienylethene and exposing them to ultraviolet light, they turned blue - because the "switched" form of the molecule is blue.

The worms remained paralysed until exposed to normal light, which returned the dithienylethene molecules to their starting condition and the worms to theirs.

Neil Branda, lead author of the research, said that a likely reason for the paralysis is that the "blue" form is much better at attracting electrons,

which would interrupt metabolic pathways in the worms and starve them of energy.

"I'm not convinced there's a legitimate use of turning organisms on and off in terms of paralysis, but until somebody tells me otherwise, I'm not going to say that there isn't an application," Professor Branda told BBC News.

The researchers are more interested in the demonstrating the potential use of photoswitches in "photodynamic therapies" within the body.

Doctors use light-sensitive materials and photo-reactions in medicine to treat certain forms of cancer.

"Right now, [photodynamic therapy] tends not to have as much control as the clinicians would like, so we have the potential opportunity to be able to turn the therapy off and on," Professor Branda said.

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## **Sony aims to return TVs to profit**

**Sony has said it aims to make its LCD TV operations profitable in the financial year starting next April.**

Sony said it had been integrating its businesses and would eventually aim for a 20% share of the LCD TV market in the year starting April 2012.

The electronics giant has been moving ahead with plans to cut costs and boost earnings as it seeks to weather the economic downturn.

Last month, Sony reported its fourth consecutive quarterly loss.

Global LCD TV shipments jumped 38% to a record 37.5 million units in July-September, industry research has shown, driven by government stimulus measures boosting consumer spending in China and Japan.

Sony also said it aimed to make its game operations profitable next year by cutting costs and expanding both hardware and software sales.

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## California to ban power-hungry TVs

**Energy-hungry television sets will soon be banned across California in a landmark move by state legislators to reduce energy consumption.**

The state will be the first in the US to impose a mandatory energy curb on TVs, an often-overlooked power drain.

Supporters say the move will help save California residents more than \$8bn over 10 years in energy costs.

But some 25% of TVs currently on sale would not meet the minimum standards, an industry group in Virginia said.

The California Energy Commission will require that all new television sets up to 58 inches (147cm) be more energy efficient by 2011, consuming 33% less energy than current sets.

The standards will get even tougher in 2013, when regulators will require sets to be 50% more efficient.

"We have every confidence this industry will be able to meet the rule and then some," energy commissioner Julia Levin said.

"It will save consumers money, it will help protect public health and it will spark innovation."

Television usage currently accounts for 10% of home energy bills in California.

### **'Limit choice'**

Environmental groups applauded the tougher standards, saying the new rules would help avoid the need for a new 500-megawatt power plant to be built and save nearly \$1bn each year.

However, some consumer advocates and industry leaders opposed the move, saying it would limit consumer choice and increase the price of television sets.

"It could drive up costs," said Dave Arland, who represents the plasma television industry.

"The ones that are super energy efficient are the ones that are more pricey."

California has long pioneered environmental change, setting tough standards on everything from refrigerators to washing machines.

As a result, electricity use in the state has stayed level for nearly three decades, whereas it has risen elsewhere in the US.

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## Tiny chip could diagnose disease

By Jason Palmer

Science and technology reporter, BBC News

**Researchers have demonstrated a tiny chip based on silicon that could be used to diagnose dozens of diseases.**

A tiny drop of blood is drawn through the chip, where disease markers are caught and show up under light.

The device uses the tendency of a fluid to travel through small channels under its own force, instead of using pumps.

The design is simpler, requires less blood be taken, and works more quickly than existing "lab on a chip" designs, the team report in *Lab on a Chip*.

It has a flexible design so that it could be used for a wide range of diagnostics.

Much research in recent years has focused on the chemical and medical possibilities of so-called microfluidic devices at the heart of lab-on-a-chip designs.

These microfluidics contain between dozens and thousands of tiny channels through which fluids can flow, and as micro-manufacturing methods have advanced, so has the potential complexity of microfluidics.

Now, scientists at IBM's research labs in Zurich have developed a cheap lab-on-a-chip that has the potential to diagnose dozens of diseases.

### **Bind and shine**

The device relies on an array of antibody molecules that are designed to latch on to the protein-based molecular markers of disease in blood.

The antibodies are chemically connected to molecules that emit light of a specific colour when illuminated - but only when they have bound to the disease markers.

"There are devices that have been developed in microfluidics to do analysis of proteins, but most of them use active pumping and electrical components," said Luc Gervais, a co-author on the study.

"They're very complex systems; this makes them less easy to use by non-trained personnel - and it makes them a lot more expensive to manufacture," Dr Gervais told BBC News.

Instead, the new device exploits capillary action, the tendency of fluids to climb through narrow channels - the same phenomenon that drives water into a sponge placed on a wet surface.

The speed with which blood is drawn through the chip can be controlled by the design of the micro-channels on the device. Those channels can be designed with incredible precision on a silicon chip - something with which IBM has significant experience.

The microchannel-patterned chip is then sealed with a special polymer called polydimethylsiloxane, to which the "detector" antibodies easily bond.

Different antibodies can be placed in a number of distinct channels, making it possible to diagnose a range of different diseases simultaneously.

Such wide-ranging studies can be done in large analysers, found in the central laboratories of hospitals.

"Typically you'll take a couple of millilitres of blood send it to the central lab and it can take up to an hour or even more to get the results," Dr Gervais said.

"In our case you can get a quantitative analysis of the patient's blood within just a few minutes at the bedside of the patient."

What is more, it can be done with just a few microlitres of blood - a thousand times less - an amount that could be collected with a prick of a finger instead of a syringe.

While the approach will make diagnosis cheaper, co-author Emmanuel Delamarche said the key aspect of the approach is its speed.

"We are giving back precious minutes to doctors so they can make informed and accurate decisions right at the time they need them most to save lives."

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## Two held in global PC fraud probe

Two suspected computer hackers have been arrested in Manchester in a major inquiry into a global internet scam designed to steal personal details.

The trojan program is believed to have infected thousands of computers around the world, said The Metropolitan Police which is leading the investigation.

A man and woman, both aged 20, have been questioned and bailed until March 2010 pending further inquiries.

Police revealed the arrests were the first in Europe as part of the inquiry.

The investigation focused on the ZeuS or Zbot trojan - "a sophisticated malicious computer program", said police.

### ZEUS TROJAN

- Zeus, also known as Zbot, is what is known as a banking trojan
- Trojans are a type of program or message that looks benign but conceal a malicious payload.
- Often distributed as attachments in email messages, and as software downloads masquerading as legitimate programs
- Primarily targeted banking details but was also used to skim login information from social networking sites
- Used a variety of different methods to steal details, including logging key strokes as a user entered password
- Total number of machines infected unknown, but thought to run to several million
- The trojan often changed to avoid detection by anti-virus software

### Hi-tech crime: A glossary

The malicious software records online bank account details, passwords and credit card numbers to steal cash with the information accessed.

It also copies passwords for social networking sites before causing each computer to forward the data to servers under the control of the hackers.

It has emerged in several guises, including a false Facebook page that encouraged users to download a software update.

The pair being questioned were arrested on 3 November under the 1990 Computer Misuse Act and the 2006 Fraud Act.

Details of the arrests have only just emerged.

Det Insp Colin Wetherill said: "The Zeus Trojan is a piece of malware [malicious software] used increasingly by criminals to obtain huge quantities of sensitive information from thousands of compromised computers around the world.

"The arrests represent a considerable breakthrough in our increasing efforts to combat online criminality."

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## **Ordnance Survey maps to go online**

**Ordnance Survey map data will be freely available online to everybody from 2010, the Government has announced.**

The move will allow people to interpret public statistics about crime, health and education by postcode, local authority or electoral boundary.

Currently, the geographical data is only available free of charge to small scale developers.

Opening it up is key to the success of government plans to free its data via data.gov.uk, say the site's creators.

"Making all that data available doesn't make much sense without the geography to tie it all together," Professor Nigel Shadbolt, one of the developers of the site, told BBC News.

"Time and place are the two things that make sense of other data. Which hospital, where, when, for example."

Data.gov.uk has also been developed by Sir Tim Berners-Lee, inventor of the web.

It is a commitment to make a wide range of non-personal data collected by the government on subjects such as health, crime and education available online for free in a raw form.

Developers can then use it to create mash-ups - a web page that combines sets of data to link up results.

For example, combining the road traffic accident statistics of a certain area with the amount of local vehicle thefts could reveal whether there is a correlation between the two.

### **'Driving change'**

The ability to do this by location is crucial, according to Professor Shadbolt. Culturally people are interested in "hyper locality" - what is going on in their street or postcode - he says.

According to Stephen Timmins, Minister for Digital Britain, 80% of public sector data mentions a place.

He described the announcement as "an important step" in the Government's public data strategy.

Professor Shadbolt believes that OS maps are more comprehensive in their coverage than other open source competitors which are already freely available online.

Despite this, he thinks that developers have shied away from OS data because of the restrictions on its use - its current free offering has a "fair use" policy which requires people to apply for commercial licenses once their website reaches a certain threshold, and there are issues of over rights.

"If, for example, you built a 'where's my nearest post box' site, and you had more than 200 people a day looking at it, you'd start to hit limits," OS product manager Ian Holt told the BBC in October.

Professor Shadbolt says that if people could get at the data "they would prefer to use it".

The transition to free-for-all is likely to happen in April 2010 and was announced on November 17 by Prime Minister Gordon Brown and Communities Secretary John Denham.

"We want people to be able to compare the outcomes and the costs for their own local services with the services delivered elsewhere, and suggest means of improving and driving change," said Mr Denham.

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## Government lays out digital plans

The government has laid out its plans to deal with illegal file-sharers as part of its Digital Economy Bill, outlined in the Queen's Speech.

It includes the power to disconnect persistent pirates.

But its controversial broadband tax is not mentioned and will be launched as part of the Finance Bill, due next year.

Other elements of the bill include a shake-up of radio spectrum and a classification system for video games.

The bill will, according to the government, "ensure communications infrastructure that is fit for the digital age, supports future economic growth, delivers competitive communications and enhances public service broadcasting".

### **DIGITAL ECONOMY BILL**

- Legal framework for tackling copyright infringement via education and technical measure
- Oftcom given powers to appoint and fund independently funded news consortia
- New duties for Ofcom to assess the UK's communications infrastructure every two years
- Modernising spectrum to increase investment in mobile broadband
- Framework for the move to digital radio switchover by 2015
- Updating Channel 4 functions to encompass public service content, on TV and online
- Age ratings compulsory for all boxed video games for those over 12 years

The plans for tackling illegal file-sharing, detailed earlier this year, will be a two-stage process. Initially the government will aim to educate consumers and, those identified as downloading illegal content, will be sent letters.

If this proves insufficient, technical measures which will include the powers to disconnect persistent pirates, will be introduced in the spring of 2011.

Lobby organisation The Open Rights Group is urging people to contact their MP to oppose the plans.

"This plan won't stop copyright infringement and with a simple accusation could see you and your family disconnected from the internet - unable to engage in everyday activities like shopping and socialising," it said.

### **Broadband tax**

The government will also introduce age ratings on all boxed video-games aimed at children aged 12 or over.

There is, however, little detail in the bill on how the government will stimulate broadband infrastructure.

## **ANALYSIS**

### **Jane Wakefield, BBC News technology reporter**

The Digital Economy Bill represents the culmination of the work done by Lord Carter over the summer to set out a strategy for how the UK can compete in the digital age.

Its plans to cut off file-sharers have been hugely controversial and some believe the government could find itself at odds with European legislation which aims to protect net users from disconnection.

Considering the bill is about stimulating the digital economy there is little detail about broadband infrastructure in the bill.

Given that the UK has languished mid-table at best when it comes to its global broadband performance, this might surprise some commentators it does not form a more key part of a Digital Economy Bill.

The controversial broadband tax will have to wait until the Budget to get its chance to become law.

It is likely to have a tough time as the Tories have already opposed it.

According to the Department for Business, Innovation and Skills, there will be more details on the future of broadband networks when the bill is published on Friday.

The plan to introduce universal broadband of at least 2 megabits per second is not included.

"It does not need legislation," a spokeswoman for the Department for Business, Innovation and Skills said.

Some £170m has been set aside from the digital switch-over budget to help fund the so-called universal service commitment for broadband.

The most controversial part of the Digital Britain report was a broadband tax to fund next-generation networks. This will form part of the Finance Bill, due after the 2010 budget.

The tax will see the government collect an extra 50p per month for all households with a land-line telephone in order to create a next-generation broadband fund for areas of the country deemed uneconomic for other firms to connect.

At a speech at the NextGen broadband conference in Leeds yesterday, Digital Britain minister Stephen Timms reiterated his commitment for next-generation broadband to reach 90% of the population by 2017.

"The UK is on track to seeing half of households having a choice of next-generation service providers within the next three years. The challenge today is to reach more than two-thirds of the population," he said.

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## **dot.life**

Do the plans to tackle illegal file-sharers add up?

## Worlds apart

### **We need atoms as well as bits, says Bill Thompson**

*"I once got told off by the manager of the BBC's Heritage Collections for publishing a photograph of Alistair Cooke's typewriter in its display case on the second floor lobby of Bush House, home of the World Service.*

*It seemed that photography on BBC premises was not approved of, so I removed the image from Flickr.*

*I didn't want the people in charge of such things to stop exhibiting interesting artefacts because they were scared we might take photographs of them.*

*Fortunately things seem to have got a lot more relaxed since 2006, as the stream of BBC-related photos and videos on the world's many social networks demonstrates.*

*Cooke's typewriter fascinated me because it seemed to bring me close to the journalist himself, whose work I had long admired. It's long gone from the lobby, but I was reminded of it earlier this month when I saw another important typewriter, one owned and used by T S Eliot during his years working at Faber & Faber.*

*Few authors still use typewriters, and I have to admit to wallowing in nostalgia when I came across this particular item of literary memorabilia on display as part of In a Bloomsbury Square, the British Library's celebration of Faber's 80th anniversary.*

*Today books are largely written on the keyboards of laptop or desktop computers, and the typewriter belongs to a vanished age - despite the valiant efforts of my 18-year-old daughter who still writes essays on hers.*

*I was made vividly aware of how much things have changed last week during a visit to Melbourne, where I am speaking at a conference on the role of libraries in the networked world.*

*The Library's head of learning, Andrew Hiskens, gave me a tour around the collection at the State Library of Victoria, and it was a treat - here a volume from the Medici library, there a hand-written edition of Boethius in a script that looked like a modern font, while next to the illuminated manuscripts sits one of Caxton's earliest printed volumes.*

*Then we came across a display case containing the iBook G4 laptop on which Peter Carey wrote 'The True History of the Kelly Gang', sitting beside a marked up manuscript and editions of the book it was used to write.*

### **More than words**

*On first glance, the laptop and the typewriter are just two different ways of putting words in order, but there is a fundamental difference: the laptop remembers.*

*The typewriter has no memory of the poems and letters written on it, while the laptop can be persuaded to recall the book it was used to create, and it may be the only place from which early drafts and abandoned versions can be conjured back into existence.*

*" On first glance the laptop and the typewriter are just two different ways of putting words in order, but there is a fundamental difference: the laptop remembers."*

### **Bill Thompson**

*Eliot's typewriter and Carey's laptop exist on the two sides of a gulf as wide as that between the hand-written copy of Boethius' Consolation of Philosophy and the early example of Caxton's printing that share space in the Victorian library; the gulf between the pre-computer world and the world we know today.*

*It is a world we are still building, and although we can make out some of its boundaries the final shape is far from certain. But it is not a "digital" world, and I think it's time we corrected the misapprehension that it might be.*

*We are not abandoning the physical or planning to give up our organic bodies and sublime into a mysterious form of conscious energy like the advanced species in Iain M Banks' Culture novels. We remain resolutely physical, and we remain reliant on old-fashioned analogue systems like eyes, ears and brains.*

*Digital content remains dependent on the physical world too, since data has to be stored somewhere, and some machine built of atoms is needed to process it. The digital world is really a hybrid world, one where analogue and digital co-exist, where the physical and the virtual come together in a mutually dependent relationship.*

*Those of us living in developed countries already inhabit a world in which most of the information we deal with, most of the time, is either created,*

*manipulated or distributed as bits and relies on networks and computers for its existence or availability.*

*The change to this way of doing things is, as the long-time commentator on network culture Glyn Moody puts it, not just a once in a generation shift - it is a once in a civilisation shift. So it is no wonder that we feel dislocated by what is happening or that we are uncertain about the future. The last time our species tried to change things on this scale we invented agriculture.*

"

*Bill Thompson is an independent journalist and regular commentator on the BBC World Service programme Digital Planet. He is currently working with the BBC on its archive project.*

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## Public humiliation

### DIGITAL PLANET

By Dave Lee

BBC World Service

**For a man described as the "internet entrepreneur you've never heard of", Josh Harris has led an extraordinarily public life.**

As an internet pioneer he took webcam surveillance to the extreme, becoming what many called the "Warhol of the web".

His story is now part of an award-winning documentary film, *We Live in Public*.

After setting up analyst firm Jupiter, he went on to found Pseudo.com, one of the web's first webcam portals.

Then, after making millions in the 1990s dotcom boom, he gathered 100 artists and moved them into an underground bunker on the eve of the new millennium for a project called *Quiet: We Live in Public*.

*"The new big problem is loss of self, or loss of individuality."*

### Josh Harris

[Listen to Josh Harris on Digital Planet](#)

Fitted with many cameras, the artists' every move - sex, fights, drug-taking - were recorded and broadcast online - until New York police shut the operation down.

Next, Harris fitted cameras in his own home, including in the bedroom, bathroom and toilet.

For six months, every detail of his life, and that of his girlfriend, Tanya Corrin, was captured and broadcast live while Harris interacted with fans in a chatroom.

During that six months, his girlfriend left him, his multi-million fortune was destroyed when the dotcom bubble burst, and he had a mental breakdown - all on camera.

Facing financial ruin, he retreated to an apple farm in upstate New York before heading to Ethiopia, where he now runs the broadcast company African Entertainment Network.

### Big Brother anarchy

As the film begins to show at selected cinemas in the UK, Harris spoke to BBC World Service's Digital Planet about the bunker project, privacy and a changing media world.

"It was ahead of its time and, unlike the television show [Big Brother] which was a facsimile of living in public, we actually were living in public and the audience was not just watching - they were literally in our heads and doing things in our lives that we didn't necessarily control."

### **DIGITAL PLANET**

- Digital Planet is the weekly technology programme broadcast from the BBC World Service
- It is broadcast on Tuesday at 1232GMT and repeated at 1632GMT, 2032GMT and on Wednesday at 0032GMT
- It is also available as a podcast
- It can be found on the social networks Facebook and Orkut

He believes his experiment was prophetic, pre-empting a time when the internet has become the most influential form of media.

"We're just on the cusp where netcasting, or internet television, is the most powerful medium that man has even invented," he said. "The leap is exponential - it's not incremental."

"Google is now the most powerful medium on the face of the earth."

Unsurprisingly for a man who decided to allow anyone to watch his every move, Harris disregards any concept of privacy.

"In my experience, I think privacy is gone.

"The new big problem is loss of self, or loss of individuality."

Harris' next project is a return to voyeur experimentation.

"I'm going to build a facility where popstars live on set, and all they do all day long is watch people in their homes. Sort of a game show."

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## **Network sites 'need help buttons'**

Major social networking sites MySpace and Facebook have been criticised for failing to introduce a help button for children being bullied online.

Jim Gamble, from the Child Exploitation and Online Protection Centre (Ceop), hit out as rival networking site Bebo adopted the button.

He said there was "no legitimate reason" why MySpace and Facebook had not done the same.

A spokesman for Facebook said users' safety was its "top priority".

### **Trained officers**

Ceop says thousands of youngsters a month are already using its Report button on other websites.

Clicking the button allows users to contact specially trained Ceop officers for advice.

It also provides details of local police and links to 10 other sources of help including Childline.

Mr Gamble said social networking sites were making money through advertising by attracting children and teenagers to join.

"We applaud that but do not forget while you do that there is a responsibility, a duty of care, to the young and the vulnerable," he said.

"We are here to help at a low cost - in fact, this is free, we are giving away this service. What cost can you put on child protection I have seen the horrible aftermath of it."

*"I can see no reason why other sites would not consider adopting the same approach"*

### **Sir Hugh Orde**

#### **Association of Chief Police Officers**

Mr Gamble said some sites claimed there were technical issues surrounding introduction of the button, while critics suggest companies do not want to lose potentially lucrative advertising space.

But he added: "[The button] is tiny and does not take up any significant real estate. The bottom line is there is no legitimate reason for not taking it and placing it on a site."

Several sites including Bebo, MSN Messenger and Facebook already give users the chance to alert staff to abuse, but now Bebo has gone further by adopting the Ceop Report button itself.

Bebo said it was "committed to providing its community with the safest possible environment" and its decision was praised as "very responsible" by Sir Hugh Orde, president of the Association of Chief Police Officers.

"I can see no reason why other sites would not consider adopting the same approach and would encourage them to embed the Ceop Report button for the benefit of all users," he added.

### **'Safe environment'**

A Facebook spokesman said: "The safety of Facebook users is the top priority for the company, which is why we have invested in the most robust reporting system to support our 300 million users.

"We also work closely with police forces in the UK and around the world to create a safe environment. Our teams are manned by trained staff in two continents giving 24-hour support in 70 languages.

"We look forward to hearing about the experience of Bebo using the Ceop button and will take account of their experience in any future evaluation of our reporting systems."

On Monday, a poll of more than 2,000 young people by charity Beatbullying found that 57% had been harassed online using Windows Live Messenger.

Nearly a third said they had been cyber-bullied on Bebo.

Earlier this year, in the first criminal case of its kind in the UK, 18-year-old Keeley Houghton was detained for three months in a young offenders' institution for harassing a woman on Facebook.

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## **T-Mobile staff sold personal data**

**Staff at a UK mobile phone company sold millions of records from thousands of customers without their knowledge, the information watchdog says.**

Christopher Graham told the BBC that the details had been allegedly sold on to brokers for substantial sums.

They were allegedly used by other firms to cold-call customers of the unnamed firm as their contracts neared expiry.

The suspected breach emerged after the firm alerted the watchdog. Mr Graham is planning to prosecute those involved.

Mr Graham, the Information Commissioner appointed earlier this year, said the case he was now preparing illustrated why there needed to be a prison sentence to prevent people from selling private data to third parties.

### **Search warrants**

The BBC understands that investigators from the Information Commissioner's Office have been working with the company.

It reported suspicions of an unlawful trade in customers' data and the ICO's team obtained search warrants to enter premises.

Mr Graham said: "Many people will have wondered why and how they are being contacted by someone they do not know just before their existing phone contract is about to expire.

"We are considering the evidence with a view to prosecuting those responsible and I am keen to go much further and close down the entire unlawful industry in personal data.

"But, we will only be able to do this if blaggers and others who trade in personal data face the threat of a prison sentence.

"The existing paltry fines... are simply not enough to deter people from engaging in this lucrative criminal activity. The threat of jail, not fines, will prove a stronger deterrent."

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## **Nasa game lets web users explore Mars for themselves**

### **The US space agency needs your help to explore Mars.**

A Nasa website called "Be A Martian" allows users to play games while at the same time sorting through hundreds of thousands of images of the Red Planet.

The number of pictures returned by spacecraft since the 1960s is now so big that scientists cannot hope to study them all by themselves.

The agency believes that by engaging the public in the analysis as well, many more discoveries will be made.

The new citizen-science website went live on Tuesday at <http://BeAMartian.jpl.nasa.gov>.

The site is just the latest to use crowdsourcing as a tool to do science.

Players at Be A Martian can earn points in one game by helping Nasa examine and organize the images into a more complete map of the planet.

Another game gets users to count impact craters to help scientists understand better the relative age of rocks on Mars' surface.

Nasa hopes the mix of real data and fun will also inspire the planetary scientists of tomorrow.

"We really need the next generation of explorers," says Michelle Viotti, from the agency's Jet Propulsion Laboratory, which oversees Mars missions.

"And we're also accomplishing something important for Nasa. There's so much data coming back from Mars. Having a wider crowd look at the data, classify it and help understand its meaning is very important."

Software giant Microsoft has been a major contributor to the technology powering Be A Martian.

The website was built on the Microsoft Windows Azure Platform, using the company's Silverlight interface and its "Dallas" service to house all the information.

"The beauty of this type of experience is that it not only teaches people about Mars and the work Nasa is doing there, but it also engages large group of people to help solve real challenges that computers cannot solve by themselves," said Marc Mercuri from Microsoft.

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## Night vision scopes see daylight

By Daniel Emery

Technology Reporter, BBC News

**"OK, make sure you've got your glow in the dark armband, watch out for vehicles without any lights and don't cross that line, otherwise you might be shot."**

So started a briefing at the Owning The Night Conference, an event held at the Bisley range in Surrey, showcasing the latest development in night vision technology.

The two day event brought together members of the armed forces, military contractors and weapons researchers to a foggy and wet corner of Surrey.

On offer was a range of night vision and thermal-imaging equipment that developers hope will give the British armed forces an edge in night time operations.

The former Commander of British troops in Afghanistan, Colonel Richard Kemp, told BBC News that the development of night vision was of "critical importance" to the ongoing conflict in Afghanistan.

"It's not so much about night fighting, it's about night surveillance.

"The Taliban do much of their mine laying and planting of improvised explosive devices (IED's) at night, so the advantage of turning night into day is very necessary indeed," he said.

Night sights can be broken down into two main categories - thermal imaging and near infrared (IR) - both of which are in use in Afghanistan.

Thermal sights detect the heat signature produced by hot objects (people, animals, vehicles etc) while IR sights work on the same principle as our eyes, only they "see" light reflected off objects in the infrared spectrum, rather than the visible.

### Wavelength shift

"The near IR, such as you get on night sights and security cameras, work up to 1.1 microns in wavelength, that's redder than we can see, and similar to that produced by a TV remote control," explained Dr Neil Bowles, a physics lecturer at Oxford University.

A micron is one millionth of a metre.

Infrared systems can be further broken down into active and passive systems.

"Active near-IR systems use a near-infrared source to illuminate the scene and then measure the reflected light using a detector array similar to the sort you find in an ordinary digital camera," said Dr Bowles.

"Passive IR systems use a range of technologies to sometimes amplify, but then convert the infrared image to one in visible light.

One of the pieces of kit on show at Bisley was LUCIE, a passive binocular system used by vehicle drivers and commanders in Afghanistan.

It operates in the near IR and allows the operator to see the environment as if it were daylight, albeit in green.

Infra red systems such as this rely on a vacuum tube with an active infrared pigment at one end and a visible pigment at the other.

"It uses the photoelectric effect to generate electrons at the infrared end of the tube and then a high voltage to pass them down the tube to where they hit a pigment that glows in the visible," said Dr Bowles.

Because passive IR systems don't require a light source, they can be used in an environment where a source could be detected by a hostile force. Instead they use moonlight or, in some cases, starlight, to illuminate the area and then see what is going on.

Where this becomes a problem is on a truly dark night: full cloud cover and no way of illuminating the environment.

This is when the thermal imaging systems, such as Qioptiq's Virpr-2, for sniper rifles, come into their own. Rather than using reflected light to view the terrain, these systems work by detecting thermal emissions (heat) from objects.

"You can get them to cover a range of wavelengths, depending on the type of material you use to detect the light in your detector array, but they all work in a similar way to a digital camera," said Dr Bowles.

"Typically they work in the 7-14 micron region, where most body heat is emitted and are traditionally more complex than active near-IR and image intensifiers."

The technology shown off at Bisley was part of the MoD's Future Integrated Soldier Technology (FIST) programme, a multi-nation project designed to improve the fighting capabilities of the infantryman by equipping them with the latest technology and equipment.

The project includes advanced clothing, communications and weapons systems. A complete FIST system is expected to enter service in the coming decade.

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## Medical debut for smart band aid

**Clinical trials have begun of a smart plaster - a sensor-studded band aid that wirelessly monitors vital signs.**

Once stuck to a patient's chest, the band aid monitors heart rate, blood pressure and other health indicators.

Its creators hope it will eventually take over from the wired devices that limit a patient's movement.

As well as monitoring standard vital signs, the gadget can be tuned to capture far more subtle indicators of a patient's condition.

The trials will see how the disposable device performs in several different scenarios, said Dr Nick Oliver, a clinical research fellow at Imperial College's Institute of Biomedical Engineering, who is overseeing the trial.

Initial trials will test the integrity of the data being gathered and transmitted by the plaster to ensure it gives accurate readings of a patient's condition. The basic device monitors temperature, heart rate and respiration.

The second series of trials will see it placed on patients who are recovering from minor illnesses and assess how it fares when the patient has a shower or an x-ray.

Finally, said Dr Oliver, the band aid will be used to monitor the health of those recovering from more serious respiratory diseases.

"We'll look at the data in far more challenging circumstances," said Dr Oliver. "We need to challenge the device a little bit and make sure it is reliable."

The smart plaster was developed at Imperial College by Professor Chris Toumazou who wanted a way to improve the range of data that can be gathered from a patient that did not involve festooning them with more wires and dermal patches.

Dr Oliver said the wireless plaster could also allow patients to be monitored from afar as data could be piped beyond a bedside readout to a central location for immediate analysis.

In addition, Keith Errey, co-founder of Toumaz Technology which is developing Prof Toumazou's idea, said the smart plaster could monitor far more than just basic vital signs.

He described the plaster as a "platform" that can be loaded with all kinds of sensors that can keep an eye on other bodily indicators, such as glucose levels, blood pressure in different parts of the body and other fleeting signs that show a patient is recovering or getting worse.

It could also be used as a location monitor so staff can keep an eye on the whereabouts of patients or those at risk of falls.

Professional sports stars were also interested in using the device, said Mr Errey, so they can fine tune their training regime.

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## Europe fights Google's book plans

By David Reid

Reporter, BBC Click

**Google plans to put millions of the world's books online and create the world's largest virtual library by 2010.**

The company has already scanned 10 million out-of-print books as part of its Library Project.

Google plans to charge people for access to its large online collection of books and to act as a selling agent of books through its Google Editions.

Critics fear it is creating a monopoly over information, and are unhappy at the firm digitising titles against the wishes of many authors and publishers.

### **'Scandalous'**

French publisher La Martiniere is one of many who have taken Google to court for using its books without asking first.

"What I find a bit scandalous is that a company like Google can come and digitise works published by this company without asking our permission and without paying either the authors or the publishers," said publisher Herve de La Martiniere.

He launched his court case three years ago, but Google has continued scanning books during this period.

"I find this intolerable," said Mr La Martiniere. "It is like someone comes to your house and takes your furniture and says, 'if you want to come and get them back, you can, but in the meantime they are mine'," he added.

Google reached a \$125m deal with the American book industry in 2008, but implementation of it has been delayed by a judge in New York.

While a US agreement may be in sight, Google is yet to come to a blanket legal arrangement with European authors and publishers.

### **Listening**

In October, German Chancellor Angela Merkel attacked Google in her weekly video blog by saying that copyright must be protected on the internet.

She said her government rejected Google's "scanning of books without any copyright protection".

Google is applying to have the La Martiniere case heard in the United States, where the copying took place.

American law allows Google to show excerpts of copyrighted books, but the law in France forbids it.

Santiago de la Mora, head of print content partnerships in Europe for Google, said his firm was listening to publishers.

"If the publisher has granted us permission to display a percentage of the book, we will do so. If not, then you will only see a snippet, a little abstract or fragment," he said. "We are very much aware of the difference."

Mr de la Mora added that more than 30,000 publishers have granted Google permission to display a preview of books - he believes this will make consumers more likely to buy them.

### **Free digitising**

The European Union has its own project to digitise library collections which was first mooted as a counter to Google.

The Europeana project aims to keep art, culture and out-of-print books free from commercial control.

Not everyone is opposed to Google's plans - some libraries view the firm's commercial ambitions as a chance to get their collections digitised for free.

Patrick Bazin, director of the library in the French city of Lyon, explained that if libraries do not digitize their collections, they run the risk of disappearing from the cultural landscape.

He added that Google's investment could be used to his library's advantage.

"Our aim is not to supply a private company with digital versions of our books, but to have digital versions so we can build a digital library.

"We estimated that to digitise the 500,000 books we are going to would cost us 60m euros. We don't have 60m euros," he explained.

*Watch Click on BBC News Channel, Saturday 31 October at 11.30 (GMT).*

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## Wikipedia's future in Africa

### DIGITAL PLANET

Dave Lee

BBC World Service

**Expansion into Africa and other non-English speaking areas is a top priority for Wikipedia, site founder Jimmy Wales has said.**

Speaking on the BBC World Service's Digital Planet programme, Mr Wales outlined the next step for the online encyclopaedia.

"When we look at the vision I have for Wikipedia - which is a free encyclopaedia for everyone in their own language - we're succeeding, we feel pretty good. But we still have a long way to go."

He says his challenge is to encourage thousands more to contribute in their own languages.

"In the languages of India, we're seeing 10% monthly growth, which is really exciting but they're still quite small.

"In Africa, we have very few languages that have any substantial size at all - Swahili is around 10,000 entries now. But that's quite tiny compared to what we think of as a really successful project with 200,000 entries."

#### **'Really fascinating'**

Mr Wales believes that greater interaction from less-connected countries is essential to bring their voice to the world and its media.

"Even the media that is more globally focused, like the BBC World Service, there's still a certain focus.

"We're not hearing from everybody. We hear very unevenly from places around the world. I think that's going to start to even out, and we're going to start getting cultural influences from places we know almost nothing about today.

*"I think we're about to experience some really interesting cultural implications."*

**Jimmy Wales**

**[Jimmy Wales interview part one](#)**

**[Jimmy Wales interview part two](#)**

"I think that's going to be really fascinating."

Recent improvements to Africa's internet access, such as the new East Africa fibre optic cable, will aid in encouraging more Africans online and, Mr Wales hopes, onto Wikipedia.

"I think it's important for Wikipedia, but I also think it's important for the world. I think we're about to experience some really interesting cultural implications."

Meanwhile, in the developed world, Wikipedia has other hurdles to jump. The site has been heavily censored in China - at times being completely unavailable. Recently, however, the Chinese authorities have loosened controls.

"We were completely banned in China for three years," recalled Mr Wales.

"Now we are available in China, with the exception of a few pages - certain sensitive topics in China. Certain questions about the status of Taiwan are quite delicate - those things tend to be filtered.

"We have a very strong view that access to information is a fundamental human right. We're about trying to provide that neutral voice.

"We're very hopeful that in the long run that as China begins to open up more and more, they're going to realise that having a neutral description of the debate about Taiwan doesn't damage their interests."

### **Neutral respect**

Mr Wales praises the site's neutrality when it comes to covering major issues such as the Israeli-Palestinian conflict.

"Lots and lots of people, even around very emotional issues, really do believe in the idea of neutrality.

### **DIGITAL PLANET**

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"That itself can be a really strong part of the healing process. Where you have a sense of humanity on both sides - I think that's really important."

Thrust into the public eye after Wikipedia's success, Mr Wales has gained a degree of rock star status - particularly among students who increasingly rely on the site as a starting point to research.

"I often go out and speak to college students. If I walk on a stage at a university it's like a standing ovation and they're screaming and cheering. I founded an encyclopaedia, right"

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## Social media challenges society

### Old social rules don't seem to work online, says Bill Thompson

*"Last week I sat around a large table on the top floor of Bush House in London with about 20 other people while we talked about the ways radio is changing and tried to imagine how English-language programming on BBC World Service could take advantage of the online, multimedia world that is emerging around us.*

*I was invited because I appear on Digital Planet each week to think out loud about the impact of technology on our lives, but this was an internal BBC meeting rather than an open seminar, and the discussion was never intended to be made public.*

*That didn't stop one of the other attendees, BBC technology correspondent Rory Cellan-Jones, from recording a segment of the introductory remarks that Ben Hammersley, the associate editor of Wired UK, made and posting it online via AudioBoo. And it didn't stop several of us tweeting about our presence, or me posting a photo of Rory at his end of the table on yfrog.*

*None of us revealed the substance of the debate, and the online activity was in some ways just a good way of making the point that the world has changed, but we could easily have crossed the line with an ill-considered tweet.*

*It wasn't the only time that week that I broke the implicit social rules at an event. On Tuesday I was one of the fortunate few to have acquired a ticket for Boffoonery, a benefit event for Bletchley Park that featured great comics like Robin Ince and Robert Llewellyn performing for a cause that is dear to my heart.*

*During the show I was taking photos, updating my Facebook status and twittering away in a manner that would have got me kicked out of the National Theatre but seemed entirely appropriate for an event that began with geek pin-up Simon Singh showing us a real enigma machine.*

### **Audience reach**

*I did it again the very next day when I spoke at a conference organised by Nominet, the company that runs the .uk domain name registry. During a lively panel session I tweeted about the event, posted a photo of the "panel-eye view" and even used Google to look up the details of the ENUM service that translates a VOIP telephone number into a domain name so I could answer a question.*

*At the end of our session the chair, broadcaster Sarah Montague, expressed her surprise that we been checking our mobile phones so openly. Wendy Hall, Michele Neylon and I all loudly protested that we hadn't been reading e-mails*

*but engaging in debate with the audience, although I'm not convinced we persuaded her that we weren't just being impolite.*

*" Behaviours developed for the industrial age simply cannot cope with the new possibilities for information sharing."*

### **Bill Thompson**

*Thanks to the easy connectivity provided by smartphones and the growing number of people connecting online through social media sites it is now possible to reach out to the audience at an event or people anywhere in the world while talking on a panel, speaking on stage or sitting in an audience.*

*The shift in the boundaries was in the news this week for much more serious and sombre reasons. On Friday Major Nidal Malik Hasan, an Army psychiatrist, shot dead 13 people and wounded many others at Fort Hood army base in Texas.*

*Once the military authorities realised what was happening, the base was locked down and information was provided through a US Army spokesperson. But one of the soldiers caught inside Fort Hood, Tearah Moore, used her cameraphone to tweet and upload photographs throughout the incident.*

*Tearah Moore has been widely criticised for doing this. Much of what she said was incorrect, as although she was present she did not actually see much of what was happening, and she seems to have posted without any consideration for the feelings or privacy of those affected.*

#### **'Real-time ethics'**

*One of the most trenchant criticisms of this "social reporting" came from Paul Carr on the technology blog Techcrunch UK, where he argues that "her behaviour had nothing to do with getting the word out; it wasn't about preventing harm to others, but rather a simple case of "look at me looking at this'".*

*Carr also notes that: "For all the sound and fury, citizen journalism once again did nothing but spread misinformation... and breach the privacy of those who had been killed or wounded. We learned not a single new fact, nor was a single life saved."*

*The contrast between me tweeting from a conference panel and the tragic events at Fort Hood is of course enormous, but it shows the range of situations now being affected by the new social media. The challenge posed by easy access to online tools and services affects everything.*

*Paul Carr doesn't believe we can or should try to stop this or censor what is published, but thinks that "we need to get back to a point as a society where - without thinking - we put our humanity before our ego".*

*It's a point echoed by Kathryn Corrick, one of the shrewder observers of the social media scene.*

*In a typically eloquent blog post on "the ethics of real-time social reporting" she points out that "gossip and news has always travelled quickly. What's different is the reach and speed now possible and the wider and deeper impact".*

*Today our social rules seem to have been overloaded by our always on, always connected culture. Behaviours developed for the industrial age simply cannot cope with the new possibilities for information sharing.*

*We are clearly going to see a lot more inappropriate use of social media before new rules emerge.*

"

*Bill Thompson is an independent journalist and regular commentator on the BBC World Service programme Digital Planet.*

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## **A 360 degree net experience**

**By Dan Simmons**

Reporter, BBC Click

**When Google's Streetview was launched in the US in 2007, users marvelled at being able to see locations and move along the images.**

**Now hi-tech firm yellowBird is promising to offer people the chance to direct their own 360 degree exploration of a place or event such as a music festival.**

Unlike Streetview's static images of people and cityscapes frozen in time, yellowBird's technology aims to deliver virtual video tours.

"The user can look around for themselves and decide for themselves what they want to look at in a particular scene," said Marc Groothelm, head of yellowBird.

Click reporter Dan Simmons met up with the company at a festival in Amsterdam to see out how it creates an immersive experience.

### **Stitched images**

The firm uses a video camera with six divided lenses to capture every possible viewing direction in video with sound, rather than photographs. Unlike Google's StreetView cameras which travel by car, yellowBird's rig is carried by a human operator.

Once shot, footage is stitched into a single image stream in a studio and saved into a variety of formats for playback.

Currently the camera can be setup on a tripod or to "float" above the head of the camera operator - and it then takes about a week to stitch a 60 minute video together.

Camera operator Stefan Vogelzang said that the device must be handled carefully to stop the audience getting confused.

"If they want to go to the right in the video while I am moving to the left it doesn't work. It clashes.

"So I have to walk pretty carefully and walk straight lines," he said.

Music lovers could experience a concert or festival from the comfort of their own sofa. Or it might enable them to relive an event from a different perspective - festival-goers could catch up on something they had missed first time round.

### **Interactive future**

Mr Groothelm said the next step will be filming an event from multiple cameras so the audience get an even more personalised experience.

"With multiple cameras at the festivals, people can choose their own scenes and create their own movie, but that's something for the future," he said.

He believes his system could create novel ways of broadcasting various kinds of events, and foster creative ways to interact in music videos and online shops.

The company could monetise its system, if it can enhance the experience of online shoppers.

"You can make it far more interactive... giving labels to particular items, for example, in a virtual store. Making it possible for people to actually walk around and click on specific items in the store," he said.

He added that this would create a "real life virtual experience", in contrast to virtual reality with artificial images.

YellowBird said it was months away from streaming live events. However, this will need a slimmer stream of data to fit broadband bandwidth and fast computers stitching images together instantly.

Users can try out a beta version of yellowBird via the firm's website.

**Watch Click on BBC News Channel, Saturday 7 November at 11.30 (GMT).**

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## Strength in science collaboration

Google Wave is proving its worth in the scientific community, as one of the new collaboration tools which scientists are using to work together and conduct research.

"Google Wave offers two specific things," says Cameron Neylon, senior scientist for bio-molecular sciences at the Science and Technology Facilities Council.

"What it looks like is this cross of e-mail and instant-messaging, which is great fun. Where it really wins for science is that actually these documents or 'Waves' can be made automated so we can connect up documents and ideas with each other."

He says the real power of tools like Google Wave lies in automation - where it collects data without any need for extra human effort.

"A particular chemical compound, for instance, could be labelled and linked back to a database," adds Mr Neylon.

"That lets us start to link up all the references to that single chemical compound and connect all of those together. But it can also do all this without necessarily requiring the user to do too much work."

### Pairing people and papers

Victor Henning is the co-founder of Mendeley, an online collaboration tool which was created specifically for scientists.

The free software allows scientists and researchers to upload papers which are then trawled for bibliographic data - author, title, issue and so on - and paired up with similar papers already in the database.

*"Using those tools to more effectively push those objects around to other scientists has got to be a good thing."*

### Cameron Neylon

Mendeley is supposed to take the work out of managing these [research] papers.," explains Mr Henning.

"You can just drag and drop your collection of PDFs into the software and it'll automatically extract all the bibliographic data - all of the stuff that you'd usually have to type in manually.

"What Mendeley is designed to do is give you recommendations which compliment your existing library."

## Biggest thinkers

The software is proving a hit with high-profile scientists working within top institutions including MIT, Stanford, Harvard, Cambridge and the University of Michigan.

Mr Henning says the site has roughly 70,000 users, and is growing at a rate of 40% each month.

He says the site's current features will remain free, but they hope to build up a profitable model too.

"We will be introducing additional premium features later this year, such as more storage space, more sharing features for labs."

## DIGITAL PLANET

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The key to these sites is putting scientists in touch with fellow researchers and academics in a way that was only before possible with word of mouth or extensive, time-consuming networking.

"The power of Web 2.0 tools is they allow people to share a huge range of objects - they might be pictures, text, or just raw data," concludes Mr Neylon.

"Using those tools to more effectively push those objects around to other scientists has got to be a good thing."

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## **An internet that speaks to you**

**Progress towards making the net more multi-lingual is welcome says Bill Thompson.**

*"It is 40 years to the week since the first data packets were sent over the Arpanet.*

*That was the research network commissioned by the US Department of Defense Advanced Research Projects Agency (Arpa) to see whether computer-to-computer communications could be made faster, more reliable and more robust by using the novel technique of packet switching instead of the more conventional circuit switched networks of the day.*

*Instead of connecting computers rather as telephone exchanges work, using switches to set up an electric circuit over which data could be sent, packet switching breaks a message into chunks and sends each chunk - or packet - separately, reassembling them at the receiving end.*

*Late on October 29 1969 Charley Kline sat down at a computer in the computer laboratory at UCLA, where he was a student, and established a link to a system at the nearby Stanford Research Institute, sending the first data packets over the nascent Arpanet.*

*"This will finally allow users of these domains to have a domain name that is entirely in characters based on their native language, and marks an important point in the internationalisation of the whole internet. "*

### **Bill Thompson**

*Later in the year permanent links were made between four sites in the US, and over the following years the ARPANET grew into a worldwide research network.*

*Arpanet was one of the computer networks that coalesced into today's internet, and the influence of the standards and protocols established there can still be seen today, making this anniversary as important for historians of the network society as July's celebration of the 1969 Apollo 11 landing is for those who study space science.*

*Technology does not stand still, and over the years the way computers communicate with each other has changed enormously. Early Arpanet computers used the Network Control Protocol to talk to each other, but in 1983*

*this was replaced with the more powerful and flexible TCP/IP - the transmission control protocol and internet protocol.*

*Today we are in the process of migrating our networks from IP version 4 to IP version 6, which allows for more devices to be connected to the network and is more secure and robust, but work continues to improve and refine all aspects of the network architecture.*

*One area that is changing is the domain name system, DNS. This links the unique number that identifies every device on the internet with one or more names, making it possible to type in "www.bbc.co.uk" and go to the right web server without having to remember its number.*

*Designed by engineer Paul Mockapetris in 1983, DNS is a vital component of the network as well as the web, including e-mail and instant messaging. Every time a programme uses a name for a computer instead of a number, DNS is involved.*

*However DNS, like so much of the network's architecture, was developed by English-speaking westerners, and its original design only allowed standard ASCII characters to be used in names.*

*ASCII, the American Standard Code for Information Interchange, is a way of representing letters, numbers and punctuation in the binary code used by computers, and was originally based on old telegraphic codes.*

*It works really well for English, but had to be extended and updated to cope with other alphabets, and has now been replaced by the much more powerful and capable Unicode standard, able to represent non-Latin languages as well as those based on the Latin alphabet.*

*Being able to write in your own language is one thing, but it's also important to be able to have e-mail or website addresses that use it. Unfortunately the way DNS was rolled out means that key applications would not work with anything other than ASCII, making it impossible to simply add in Chinese or Arabic characters to domain names.*

*As someone has pointed out to me that DNS itself is happy with any character set - it's the way e-mail and web browsers work that's the real problem.*

*Work has been going on since the mid 90's to change this and provide what are called "internationalized domain names", and many organisations are now able to have websites and e-mail addresses that include Chinese, Cyrillic, Hebrew, Arabic and many other alphabets.*

*The process took a significant step forward this week when Icann, the international body that looks after domain names, fast-tracked a proposal to*

*provide internationalised versions of two letter country domains, such as .uk and .jp.*

*This will finally allow users of these domains to have a domain name that is entirely in characters based on their native language, and marks an important point in the internationalisation of the whole internet.*

*It has taken a long time to make this happen, but the problems of re-engineering such a key part of the network infrastructure without breaking anything are enormous, and anyone who reads through the technical documentation will see just how complex the process has been.*

*And it was definitely necessary to do it properly - the fuss over the recent retuning of Freeview boxes in the UK was bad enough, but trying to persuade a billion internet users to update their software to support a new form of DNS would have been impossible.*

*Over the next five years the majority of new internet users will come from the non English-speaking world. It's good to see that those of us who have helped build the network so far are making it more welcoming for them.*

"

*Bill Thompson is an independent journalist and regular commentator on the BBC World Service programme Digital Planet.*

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## Is e-democracy a good thing?

**We need to think seriously about what digital democracy has to offer, says Bill Thompson**

*"Whoever wins the forthcoming General Election, we are about to be ushered into a Digital Britain, and we had better prepare for it.*

*Broadband speeds may remain painfully slow, but the desire to provide access for all will be driven by the pressing need to save money by reforming public services, cutting costs and improving efficiency, no matter who is in power.*

*So we'll see universal access simply because the financial benefits of online public services will only be realised if nearly everyone has access to them.*

*There will always be a need for offline provision too, for those who cannot be served effectively through a screen and keyboard. I, like many others, will fight for this.*

*However, over the next five years we can expect to see increasing use of web-based tools as the primary way of accessing state-provided services.*

*I already renew my road tax, register to vote, pay my VAT and income tax, hand over the money for my TV Licence and pay the occasional parking penalty charge online.*

*I expect that soon I will have no need to write or phone a single agency to conduct my business with government at local or national level.*

### **'Demands for transparency'**

*The drive to digital will also be fuelled by increasing demands for transparency, as the crisis of faith in our MPs created by the revelations about expenses claims works its way through the political system.*

*Furthermore, a desire to emulate US president Obama will give extra impetus to the Googleisation of government IT and initiatives like data.gov.uk.*

*Any resemblance to its transatlantic cousin, data.gov, which speaks proudly of its exciting mission to "increase public access to high value, machine readable datasets generated by the executive branch of the federal government", is of course entirely deliberate.*

*But introducing digital technologies into society is not a simple matter of providing computers, websites and internet connections and then getting on with it.*

*"As we have seen with attempts to use computers in classrooms, new technologies do not automatically lead to a positive outcome. "*

## **Bill Thompson**

*As we have seen with attempts to use computers in classrooms, new technologies do not automatically lead to a positive outcome.*

*Within the education sector the debate over the real usefulness of laptops in school and the gradual replacement of printed texts with ebooks is becoming increasingly rancorous as evidence piles up on both sides, and we should expect similar arguments elsewhere.*

*The stakes in this particular game of transforming government are especially high, and we cannot afford to take a naive view of moves towards digital democracy.*

### **Facebook and Foucault**

*Fortunately the new generation of social theorists, people who have grown up with computers in their lives and are as familiar with Facebook as they are with Foucault, can offer some guidance in this new area.*

*One of the most important thinkers is Will Davies, who cut his teeth working with economist Will Hutton at the think tank The Work Foundation, where he was a lead on its groundbreaking iSociety project.*

*He is now a research fellow at the Said Business School at Oxford University.*

*Mr Davies brings Weber, Hayek, Weinberger, Arendt and even Habermas to bear on the question of whether decentralising information through online services like data.gov.uk can offer us good government.*

*He concludes that while it may provide transparency and even accountability it can never sustain the legitimacy that a democratic state provides.*

*He offers a dense, complex argument, written for an audience familiar with the thinkers he refers to.*

*Davies' writing is not for everyone, but it should be essential reading for anyone who wants to develop a sound understanding of the implications for society and political structures of the technological change that we seem to have accepted as inevitable.*

*It is the sort of thinking that we desperately need if we're to understand the technological future being offered to us by politicians of all major parties - and in all developed countries - as they are seduced by Google, Microsoft and Facebook into thinking that search, social networks and software can help us to solve the world's many problems.*

*We have to hope that the politicians who are dragging us into the digital tomorrow take time to read and consider the wider issues raised by people like Will Davies instead of just signing up to the programme. Otherwise we will all be the poorer.*

"

*Bill Thompson is an independent journalist and regular commentator on the BBC World Service programme Digital Planet.*

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