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# Tech advances take online living to new level

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In this high-bandwidth, downloadable and interactive world, technology is changing faster than we can learn to use it.

And while some of us worry that we may be trading human interaction for email and Facebook, it's hard to deny the irresistible convenience these modes of communication provide.

One look at the city of Nanaimo on Vancouver Island shows why — and because of technology you can take that look from anywhere in the world.

Thanks to Google Earth, Google's free downloadable software that interacts with the company's massive databanks of online mapping information, Nanaimo can be observed more closely and with more layers of information than any other city in the world.

By just looking with the aerial photos the city has given to the search giant it's possible to see what kind of cars people are driving. But that's old news; many cities have that.

Over the last 20 years Nanaimo has been digitising city information, from where every sewer pipe lies to how high the tallest hotel is. Now it is putting that information online via Google and it can all be pinpointed with the click of a mouse.

With Google Earth, that information turns into 3D buildings and virtual tours. When an ambulance speeds by in Nanaimo, residents don't need to run to their window to see where it is going; they can hop on the computer and get a visual image of the location.

That's because each dispatch is instantly posted to the Internet through the same kind of RSS feed that lets web-savvy surfers find out the minute their favourite newspaper posts a new article.

Users can't see real-time images of what is happening, but a little blue section on the map tells them where that fire truck or ambulance went to moments ago.

If developers want to build a light industrial park close to existing water and sewer lines near a deep sea port and be sure they have the proper zoning, they don't need to make multiple trips to city hall — they can just Google it.

Per Kristensen, Nanaimo's chief technology officer, said the city isn't spending a fortune to become the leader in Google-ability, just using the tools already available.

"It's nothing new or unique. We're just building on it."

To that end the city has provided Google with over 200 layers of information. An upcoming addition will add every grave plot in the city cemetery. Genealogists will be able to track the family tree right to a family member's final resting place, and visit it via high-resolution aerial photograph.

"It was relatively easy and simple to do," said Kristensen of the city's online expedition. "The technology tools these days allow us to do some really neat stuff without a whole lot of work."

Kristensen said it's all about making information more easily accessible to the public and that they wouldn't do it if it didn't help local residents. They also hope to attract a few more tourists.

Across the country in Montreal, another company is also aiming to make information more accessible but in a completely different way.

It's called eFairJob, a virtual job fair running from March 17-28 that brings employees and employers together in a video game-like atmosphere.

The concept promises job seekers an entirely new way to interact with employers. Users scan a virtual room that looks like most other real-world job fairs. They find the booth of an employer they're interested in and "walk" over by clicking on the booth. Then they can chat with a company representative and give them the resume they uploaded when they signed onto the site. They can also get a Google map of the company's location.

While Googling Nanaimo and visiting a virtual job fair are vastly different experiences, both are about communicating information. Nanaimo's Google initiative lets users communicate with the city to get information they once had to request in person. The virtual job fair lets users communicate with potential employers from the comfort of their home computer.

Mary Sanseverino, a computer science professor at the University of Victoria said the technologies that bubble to the top are the ones that extend how people can communicate.

"That's what people want to do with technology," she said.

Sanseverino points to websites like YouTube, MySpace, Flickr and Facebook as examples. She said that when new technology allows us to communicate better, it is quickly adopted, citing Facebook's rapid rise to challenge MySpace, the reigning king of social networking websites, as a prime example.

Each new technology expands communication, allowing lay computer users to do what only tech wizards could do in the past. Like uploading photos with tagged descriptions and sharing them online. Or making a personalised website complete with a video diary and pictures from a dinner party the night before.

"People are doing things in all of these technologies that five years ago would have been very difficult to do."

The downside is that people become tied to computers. Sanseverino quotes comedian Ron James, who describes it as "sucking at the Mac internet-enabled teat."

"We're really tethered to our technology, even though the technology is mobile," said Sanseverino adding that the result can be seen when she goes for a hike and finds other hikers typing away on their blackberries.

"Is that really a great thing? Maybe in some things it's excellent, but maybe in other cases it's too tethered."

# Playground powers the heating at new school

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A flagship eco-school building was opened in the UK this week with a revolutionary new system that uses the playground to heat its buildings.

The system collects heat during the warmer months of the year and stores it beneath the foundations in a thermal store. In the winter months the heat is then drawn from the thermal store to heat the school's buildings.

Opened by HRH The Duke Of Gloucester, the new campus of Howe Dell School in Hatfield, Hertfordshire, uses a heat transfer and storage system invented by British company ICAX Ltd (Interseasonal Collection and Exchange).

"This is the first building in the world to benefit from Interseasonal Heat Transfer" Edward Thompson from ICAX told The Epoch Times in an interview.

The same system was successfully trialed by The Highways Agency at Toddington service station on the M1. The system used a similar system of pipes to collect heat from the roads during the summer and store it in the ground.

By reversing the process in the cooler months ICAX were able to prevent the road from freezing all year round. A Japanese company has also licensed the technology and successfully repeated the Toddington experiment.

Debra Massey, the head teacher at Howe Dell School sees the school as a teacher itself, "My view is that for our children in the main school, who are four -11 years of age, this school is a living organism and it is speaking to you, you just need to learn to listen to her.

The school also has an outdoor classroom. There, the children can walk on a grass roof and see solar panels close at hand, see photovoltaic panels, look over a balcony at the wetland area where there is an overspill for the school's recycled water, and from where they can see how the water that flushes the toilets is collected between paving slabs.

"They can see the playground from the roof too, and they know know that's where the heat store is that heats their school." said Mrs Massey. "None of theses features on their own is special enough to make this a zero carbon emissions building, its the combination of all of these technologies working together that make this such a unique building for the UK."

Interseasonal Heat Transfer system is a further development of the more conventional ground source heat pump. Conventional ground source heat pumps work by pumping heat from below the ground into the building, much like a pump on a fridge moving heat from inside the fridge to outside the fridge. This produces a cooling effect in the ground as the heat is removed and the building is warmed.

Under theoretical conditions a standard heat pump can bring several times more heat into a building than is expended in 'pumping' the heat from the ground. However, over the course of a season, this process gradually cools the ground, and the heat pump has to work harder.

Mr Thompson said: "In the summer, if you run water though the pipes just beneath the surface of that playground you will quite easily get temperatures of about 40 degrees off it, you run that into the thermal bank and it will take the temperature in the thermal bank up from the 10 degrees or so that it would be naturally up to about 25 degrees. So at the beginning of the season when you start using your heat pump you're now taking from a thermal store at 25 degrees instead of 10 degrees."

"Basically, the heat pump has got only half as much work to do then would be the case if it was a ground source heat pump."

COURTESY BILL HOLDSWORTH

COURTESY HERTFORDSHIRE COUNTY COUNCIL

**ABOVE:** The playground of Howe Dell Primary School is used to collect heat during the summer and stored for use in colder months

**RIGHT:** Two of the school's eco squad show off their sink made of recycled yoghourt pots

Mr Thompson explained that over the season the interseasonal heat transfer was over twice as efficient as a standard pump.

Although the system is the primary heat source for the school, there is a back up system – a gas boiler.

Mr Thompson explained: "If you size the whole system in terms of the collector, and store and everything else to meet the peak load, that's not as efficient as aiming for about 80 per cent of peak. If you are aiming 80 per cent of the peak load you will be able to cover almost every day in the year anyway, there's just a risk that on one or two days you won't quite make it. For those occasions the back up boiler is used"

# New material may clean nuclear waste

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A new material for cleaning up radiation from nuclear waste has been developed by a team of American scientists.

The synthetic compound captures radioactive ions of the isotope strontium-90, one of the more hazardous constituents of nuclear waste. They can then be separated from the less harmful components, such as sodium and calcium, which had previously proved difficult.

"The [new] material is remarkably simple and can be created in large quantities at a relatively low cost," said Dr Kanatzidis in a statement.

Strontium-90 is a product of nuclear fission and is found in the waste from nuclear reactors mixed together with other radioactive material and harmless ions. This mixture can be incredibly acidic or alkaline and it has been difficult to discover compounds that can survive these conditions long enough to extract the strontium.

Dr Mercouri Kanatzidis and colleague Dr Manolis Manos of Argonne National Laboratory and Northwestern University, USA, developed the compound, named KMS-1. It is composed of layers of hexagonal sulphide crystals and can survive the harsh environment of the nuclear waste to strip away 99 per cent of the strontium-90 in just a few hours. Until now the materials used for removing this kind of radiation have only worked under a certain range of conditions, say the researchers.

"The layered sulphides used work quite well," commented Dr Kanatzidis. "We even surprised ourselves."

The scientists suggest that these types of compounds should be considered for the clean-up of certain nuclear wastes. Their next step is to experiment with the compound's ability to siphon away other common radioactive elements like caesium and uranium.

The research is published in early online edition of the *Proceedings of the National Academy of Sciences*.

# Intel cheap laptops expanding to US, Europe

BOSTON/SAN FRANCISCO (Reuters) – Intel Corp said on Wednesday sub-£150 laptops initially designed for poor children will soon be available to US and European consumers in a move that could further push down computer prices.

PC makers in the United States and in Europe will sell a yet-to-be-unveiled, second-generation version of the Intel-designed Classmate PC for £125 to £175, said Lila Ibrahim, general manager of Intel's emerging market platform's group, in an interview with Reuters.

"This is a very big deal," said Laura Didio, an analyst with Yankee Group who follows the personal computer industry.

While the machines are intended for children, analysts said the launch will add momentum to the low-cost computing movement – and will likely mean this year's bargain-basement laptops will have more power than in previous years.

"Particularly in a recession year, quality low-cost products are going to move well," said Rob Enderle, an analyst with the Enderle Group. "But the key is for them to be quality."

He said while he hasn't yet seen the machines that will be on sale this Christmas, he suspects consumers will be able to get "a pretty decent" laptop for less than £300 and perhaps for less than £250.

Didio said retailers might throw in another £25 to £50 in rebates or other incentives.

Laptop prices have been under extra pressure since last year, when Taiwan's Asustek Computer Inc introduced the £199 Eee PC, which has flown off store shelves from Asia to North America.

The machine runs on the Linux operating system, and people used to Microsoft's Windows and Apple's Mac OS X operating systems have had trouble adapting to the system, Enderle said.

The new, cheap laptops being developed from Intel's technology will likely run on Windows, he added.

The movement toward low-cost computing was also spurred by the XO laptop, the brainchild of Massachusetts Institute of Technology professor Nicholas Negroponte and his One Laptop Per Child Foundation.

The foundation began producing a laptop running on Linux at a cost of £94 in November. They sold them in the United States and in Canada for £200 through a charity drive that also provided one machine to a poor child overseas.

The chipmaker has conducted pilot tests of the Classmate PC at schools in Texas, Oregon and California, along with some schools in Australia, said Intel spokeswoman Agnes Kwan.

# Rain-making bacteria discovered

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Scientists have uncovered evidence that rain-producing bacteria are widely distributed throughout the Earth's atmosphere. The discovery, made by Louisiana State University (LSU) Professor of Biological Sciences Brent Christner and team, suggest that these bacteria could factor heavily in the precipitation cycle, affecting climate, agricultural productivity and even global warming.

Professor Christner's team, which includes scientists from Montana and France, examined precipitation from global locations and demonstrated that the most active ice nuclei are biological in origin. The significance of the discovery is that the formation of ice in clouds is required for snow and most rainfall. Other particles, such as dust and soot, can serve as ice nuclei, but biological ice nuclei can trigger freezing at much warmer temperatures. If present in clouds, biological ice nuclei may affect the processes that trigger snow and rain formation.

The concept of rain-making bacteria isn't far-fetched. Cloud seeding with silver iodide or dry ice has been known about for over 60 years. Many ski resorts use a commercially available freeze-dried preparation of ice-nucleating bacteria to make snow when the temperature is just a few degrees below freezing.

Adding to the complexity of the research, the majority of these ice-nucleating bacteria are plant pathogens or germs. These bacteria can cause freezing injury in plants and can seriously affect agricultural crop yields. It was also revealed that it's likely that the atmosphere represents one facet of the plant infection cycle, whereby the bacteria infects a plant, multiplies, is aerosolised into the atmosphere and then delivered to a new plant through atmospheric precipitation.

"The role that biological particles play in atmospheric processes has been largely overlooked. However, we have found biological ice nuclei in precipitation samples from Antarctica to Louisiana – they're ubiquitous. Our results provide an impetus for atmospheric scientists to start thinking about the role these particles play in precipitation," said Professor Christner in a press release.

"This work is truly multidisciplinary, bridging the disciplines of ecology, microbiology, plant pathology and climatology. It represents a completely new avenue of research and clearly demonstrates that we are just beginning to understand the intricate interplay between the planet's climate and biosphere," said Professor Christner.

Professor Christner and his colleagues published their findings in the journal *Science* on February 29th.