

E.I.T. Links

From “self-service” to “room service”:
How Emerging Information Technology is changing the way we live

“Technology...the knack of arranging the world so we don't have to experience it.”
 - Max Frisch

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Editor's Note:

Please feel free to pass on the newsletter to those interested. *Anyone wishing to receive future editions of the newsletter, please email me at: sknode@gmail.com.*

Note: This newsletter contains links found during Mar 2010, and all of the links were working at time of publication.

Remember, all links here can be found at www.steveknode.com/news_updates.htm and previous newsletters are available at: <http://www.steveknode.com/newsletters.htm>.

Anyone seeking more frequent updates can follow my 'tweets' via my twitter account, <http://www.twitter.com/sknode>

Links for this Issue

AI General

- [How Artificial Intelligence Will Change Music](#) – AI is making serious inroads into the music creation industry. Using complex software, North Carolina's Zenph Sound Innovations models the musical performances of musicians from Thelonius Monk to Rachmaninoff, based on how they played in occasionally old, scratchy recordings. New recordings in the same vein

are then created.

- [The Rapidly Evolving Automated Lab](#) – Implementing lab automation, robotics, and automated analyses are the easy parts. Integrating these technologies with the next technology level—artificial intelligence, autonomous operation, and android-like interfaces—will take a little more effort. But it will come.

Brain

- [The scientific brain](#) – It turns out that there is a striking similarity between how the human brain determines what is going on in the outside world and the job of scientists. Good science involves formulating a hypothesis and testing whether this hypothesis is compatible with the scientist's observations.
- [The riddle of experience vs. memory](#) – One of the giants, Daniel Kahneman, discusses the riddle of experience vs. memory in this fascinating TED talk.
- [Electronics 'missing link' brings neural computing closer](#) – When the "missing link of electronics" was finally built in 2008, it was the vindication of a 30-year-old prediction. Now it seems the so-called memristor can behave uncannily like the junctions between neurons in the brain.

Chatterbots

- [Online Seduction - Intelligent Automated Software Picks up Women Online](#) –

Chatterbots continue to develop, often in bizarre scenarios. This researcher has created a "robot" that automatically engages women in online conversations, flirts with them and organizes dates without you doing anything.

Expert Systems

- [Knowledge Engineering 2010](#) – Excellent free "book", covering many topics related to AI in business. This book is intended for those who are faced with management problems and would like to think there are emerging technologies that would help them.

Future

- [Welcome to the Future](#) – Very good overview of developments from an executive who just finished the Singularity University's executive program.

Information Overload

- [Data, data everywhere](#) – The Economist's outstanding report on managing information. Many sections in the report, including some on how information is changing business, new ways of showing data, how machines deal with information, etc.

Information Visualization

- [Getting More from Location Data](#) – Thanks to smart phones and other mobile devices, the number of applications that make use of geolocation data is exploding. But developers and device makers face new challenges that include determining physical location accurately, turning coordinates into meaningful information, and protecting users' privacy.
- [Google sexes up stats with Public Data Explorer — 10 live demos](#) – Google leads the way with this new method of displaying dynamic data. Ten new demonstrations are shown here to illustrate this new concept.

Innovation

- [The Secret Lives Of Objects: StickyBits Turn Barcodes Into Personal Message Boards](#) – Every place and object in the world has a secret past: who lived there, who passed by, who touched it. The secret lives of objects are filled with such details. If only you could make them talk. But what if you could give any physical object a story simply by sticking a barcode on it and appending a message to that barcode?
- [Catalyst could power homes on a bottle of water, produce hydrogen on-site](#) (video) – With one bottle of drinking water and four hours of sunlight, MIT chemist Dan Nocera claims that he can produce 30 KWh of electricity, which is enough to power an entire household in the developing world. With about three gallons of river water, he could satisfy the daily energy needs of a large American home.
- [Mobile Tickets That Let Moviegoers Go Paperless](#) – Moviegoers can now use their mobile phones to not only check on movie times, but also to show their paid 'scan' to gain access to movie theaters.
- [Does This Headline Know You're Reading It?](#) – Not yet, but it could, if new technology goes as planned.
- [Got Roomies? Pay Your Bills With WePay, the Online Group Payment System](#) – If you have ever 'shared' expenses with a group, this application will help with the inevitable problem.

Intelligent Agents

- [Virtual Agents to Capture and Report Student Illness Symptoms for CDC Pilot Program](#) – An automated system that calls and checks on student absences is now in a pilot program. The pilot project was established to determine if increased information about medical absences reported to schools would lead to improved intelligence about contagious diseases, possible biological attacks or other notable trends in student health.

- [Beacon Power Connects Flywheel Energy Storage System to California Wind Farm](#) – There is now a ‘smart’ energy system designed to demonstrate that advanced control technology with energy storage can help expand the delivery of wind energy by effectively increasing the capacity of constrained transmission facilities in the area.

Kurzweil

- [At Singularity University, blowing minds and taking meetings](#) – Interesting insights from attendees to the Singularity University’s Executive Program. A very interesting perspective.

Medical

- [Health Care to the Year 2035, Part I](#) – Terrific presentation on where health care is likely to be by 2035. This first part deals with what health care is likely to look like by 2035; there is a link to part II which deals with how we might get there from here.
- [A Vision for Personalized Medicine](#) – Another vision for what personalized medicine will look like soon. Highlighted is the upcoming shift from ‘reactive’ medicine to ‘proactive’ medicine.
- [The Manhattan Beach Project to End Aging by 2029](#) – “Manhattan Beach Project” was founded as an “all-out assault on the world’s biggest killer – aging.” It will require the political mastery of a scientific and societal transition built around the Nano-Info-Bio-Cogno (NBIC) roadmap. (NOTE: For a great overview of NBIC implications and developments, download the NSF report from 2002, still relevant, http://www.wtec.org/ConvergingTechnologies/1/NBIC_report.pdf)
- [Soon, portable eye to make reading smarter for visually-impaired](#) – CSIO is developing a portable reading machine that will act like an artificial eye for the visually impaired. The person can speed up the rate of speech, switch to next document, set the voice level and have full control of the device. The machine will have artificial intelligence that

will read out the text.

- [Eat Me Before I Eat You! A New Foe For Bad Bugs](#) – Now researchers are starting to work with organisms that are more likely to appear in a hospital, like staph and influenza, and have their sights on Clostridia difficile, Pneumococcus aeruginosa, Acetivobacter baumanii and an alarming number of other bacteria that are resistant to antibiotics.
- [Print Your Own Designer Organs](#) (video) – Organovo, a San Diego-based company that specializes in regenerative medicine, announced a new \$200,000 bioprinter that prints artificial organs using inkjet technology. Initial units will be capable of printing only very basic tissues like blood vessels, not full-blown organs (yet).

Military

- [Darpa Wants Self-Guiding, Storytelling Cameras](#) – The Pentagon’s risk-taking research agency is kicking off a new program to turn everyday cameras into autonomous ‘bots with problem-solving smarts. The agency wants artificial intelligence-powered cameras that can recognize objects — and then tell a story about them.

MISC

- [Fiber-wireless \(Fi-Wi\) to provide ultra-high-speed, short-range communication](#) – New ways to exploit the electromagnetic spectrum are leading to much faster wireless transfer rates. Within buildings and homes, the short-range wireless signals can provide high-speed connectivity (faster than 1 Gb/s) for a variety of wireless, high-bandwidth communication devices.
- [Human arm transmits broadband](#) – Transmissions through a human body are now being tested. Researchers have transmitted data at a rate of 10 megabits per second through a person's arm, between two electrodes placed on their skin 30 centimetres apart.

- [Forget IQ, Collective Intelligence is the New Measure of Smart](#) (video) – Individual intelligence is old news, collective intelligence (CI) is the future. And it's already here. Collective intelligence can include distributed computing. We've seen how a complex problem can be solved by using millions of connected computers working in tandem. So too can any task be divided among a set of human peers.
- [First quantum effects seen in visible object](#) – The mysterious world of quantum computing continues to unfold. This is the first ever quantum superposition (two opposite states at the same time for an object) in an object visible to the naked eye has been observed.

RFID

- [The Third Assessment Of The National Nanotechnology Initiative](#) – An excellent report, updating progress and challenges in the nanotechnology arena.
- [The Nanotech Gamble](#) – A special report outlining many of the possibilities and potential risks associated with nanotechnology.
- [Nano-based RFID tag, you're it](#) – Rice researchers have come up with an inexpensive, printable transmitter that can be invisibly embedded in packaging. It would allow a customer to walk a cart full of groceries or other goods past a scanner on the way to the car; the scanner would read all items in the cart at once, total them up and charge the customer's account while adjusting the store's inventory.

Robots

- [Artificial Neural Networks Help Identify Predisposing Factors for Conversion of Mild Cognitive Impairment to Alzheimer's Disease](#) – Excellent illustration of how an intelligent technology such as Artificial Neural Networks can be used to recognize subtle patterns in large data sets.
NOTE: I have a streaming video presentation on neural networks available at: <http://www.steveknode.com/ET/NN/nn.html>
- [Down on the farm with the robots](#) – Automated harvesting by intelligent robots is on the horizon. These robots can not only pick fruit and vegetables, but determine whether the fruit or vegetable is ready to be picked.
- [MeBot](#) (video) – The MeBot is a semi-autonomous robotic avatar that gives a person a richer way to interact remotely with an audience than is allowed with phone and video conferencing. The robot was designed with an emphasis on being able to convey the non-verbal channels of social communication.
- [Robot toddler gets an upgrade](#) (video) – A robot toddler is getting an extreme makeover to make it even more like a real child. Called iCub, it has been built to road-test theories about how flesh-and-blood children think, learn and develop.
- [The Slow Rise of the Robot Surgeon](#) – Robotic surgery continues to progress, but not fast enough, according to some.
- [Could Robots and Smart Devices Help Older People Look After Themselves?](#) – Another area of research with large payoffs

Neural Networks

Natural Language Processing (NLP)

Quantum Computing

if successful. (NOTE: If you wish to see some current elder care robots in action, take a look at the [Carebot](#) video from Geckosystems. In my previous position at the National Defense University, we purchased and experimented with such a bot.)

Sensors

- [Spy chips hidden in 2.5 MILLION dustbins](#) – An interesting use of small sensors, namely deploy them in trash cans to determine how much (and what) rubbish is being disposed of. Lots of privacy concerns involved as well as a rubbish tax. (NOTE: There have been similar systems deployed in the United States several years ago, http://www.sciencedaily.com/videos/2006/1/001-smart_trash_cans.htm)
- [Listening in on single cells](#) – MIT researchers have built the first sensor array that can detect single molecules emitted by a living cell. Their sensor targets hydrogen peroxide and could help scientists learn more about that molecule's role in cancer.
- [Printable sensors](#) – In the future every home will have one: electronic devices that you can control just by pointing a finger. To turn this vision into reality the 3Plast research consortium is developing special sensors that can be printed onto plastic film and affixed to objects. (NOTE: If this concept intrigues you, check out the [Mirror](#) software.)
- [A Bendable Heart Sensor](#) – A new flexible and biocompatible electronic device can produce a more detailed picture of the electrical activity of a beating heart. This high-resolution electrical map could help improve the diagnosis and treatment of heart abnormalities by pinpointing areas of damage or misfiring circuitry.

Virtual Reality

- [GM Develops Augmented Reality Windshield](#) – A new "enhanced vision system" from General Motors could help drivers by highlighting landmarks, obstacles

and road edges on the windshield in real-time. Such a system can point out to drivers potential hazards, such as a running animal, even in foggy or dark conditions.

- [Real-World Virtual Reality](#) – Virtual reality products are now being commonly used by many medical, car and aeronautics companies, often to test product designs and simulate user interaction. VR head-mounted displays--from inside a user sees a 3-D environment--are also used in flight simulators.

Wearable Computers

- [Now You Can Wear Your Windows](#) – The next wave of cyber fashion? Imagine your smartphone feeding information to a 15-inch virtual Microsoft Windows PC display that sits in front of one eye (leaving the other free) while you speak commands using a hands-free natural speech recognition interface to control your phone and wireless access to the Internet. (NOTE: We had similar devices at the National Defense University several years ago as part of an experimental effort---partly inspired by the early work of Steve Mann.)

Web 2.0

- [Foursquare is the Breakout Mobile App at SXSW](#) – Foursquare improves on the Twitter experience by letting you tell the app where you are and then lets your friends know where to find you. Using the Foursquare iPhone app, you can automatically check-in and post shouts based on where you are and what you're doing. You can also find your friends, search venues, earn badges, and add friends.
- [Government Going All A-Twitter?](#) – Say goodbye to the stereotype of the stodgy bureaucrat. Government agency managers now are getting totally "with it" when it comes to using social media tools to provide better services to taxpayers.
- [Need Directions? A Job At Sears? Train Info? Twitter Blog Highlights Novel Uses](#) – Still confused as to what Twitter is and why

anyone would use it? This article lays out a case for several useful and clever applications.

- [Evan Williams on listening to Twitter users](#)
– Another great TED video, this one by Evan Williams (co-founder of Twitter). Co-founder Williams reveals that many of the ideas driving that growth came from unexpected uses invented by the users themselves.
- [Twitter - A Fundamental Force for the Spread of Democracy?](#) – Some believe that the free exchange of information (such as via Twitter) is key to the spread of democracy.