E.I.T. Links

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

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"The most beautiful thing we can experience is the mysterious."
- Albert Einstein

By Steve Knode, steve@steveknode.com

Links for this Issue

AI General

- Real life HAL 9000 meets Skynet: AI controlled video surveillance society – Eye in the sky is everywhere, but what if all those cameras were functioning as eyes connected to computers with artificial intelligence that can see, learn, and make decisions on what to report in realtime as threats based on computer recognition?

- Can entrepreneurialism be automated? – If Artificial Intelligence and automation is going to replace the entire workforce, we're all going to need to give up any hope of employment and become startup entrepreneurs and innovation investors instead. They couldn't possibly automate those, could they?

- Self-aware computing project named a 'world changing' idea by Scientific American – Project Angstrom's self-aware computing has been selected by the editors of Scientific American as one of "Ten World Changing Ideas" in the December 2011 issue. The goal of the CSAIL and Department of Electrical Engineering and Computer Science faculty, researchers and students involved in Project Angstrom is to tame the exploding complexity of computer systems. Self-aware computing will revolutionize the way people build and use computers by allowing the machines to observe and optimize themselves.

Apps for Smartphones and Tablets

- USDA plans internal app store in 2012 – The Agriculture Department is developing a mobile application it believes will cut in half the travel required of its Natural Resources Conservation Service employees working on projects to reduce chemical runoff at farms.

- New iPhone, iPad and Android Apps for November 2011 – Several new and useful apps are profiled and explained.

- Kenya Has Mobile Health App Fever – Mobile health platforms are fast emerging in

Kenya, where one startup's newly launched mobile health platform is attracting nearly 1,000 downloads daily, and the dominant telecom, Safaricom, has forged a partnership that will give its 18 million subscribers access to doctors.

Brain

- [Creating Artificial Intelligence Based on the Real Thing](#) – The principles of biology are gaining ground as a tool in computing. The shift in thinking results from advances in neuroscience and computer science, and from the prod of necessity.

- [New Ways of Thinking](#) – Making sense of real-time input flowing in at a dizzying rate is a Herculean task for today's computers, but would be natural for a brain-inspired system. Using advanced algorithms and silicon circuitry, cognitive computers learn through experiences, find correlations, create hypotheses, and remember—and learn from—the outcomes. Researchers at IBM have been working on a cognitive computing project called Systems of Neuromorphic Adaptive Plastic Scalable Electronics (SyNAPSE). By reproducing the structure and architecture of the brain the SyNAPSE project models computing systems that emulate the brain's computing efficiency, size and power usage without being programmed.

- [Will You Live Forever—or until Your Next Software Release—by Uploading Your Brain into a Computer?](#) – Transhumanists have promised that in coming decades we will be able to transfer a digital copy of the trillions of connections among nerve cells in our brains into a computer. We would essentially reincarnate ourselves as non-biological beings that persist for eternity inside a laptop, on the endless links of the Internet or as avatars inside a television set.

Educational Technology

- [Stanford expands free, online information technology course offerings](#) – New online courses set to start in January 2012 include Software as a Service and Computer Science

101, as well as primers on entrepreneurship.

- [Death Knell for the Lecture: Technology as a Passport to Personalized Education](#) – How can we improve performance in education, while cutting costs at the same time? In 1984, Benjamin Bloom showed that individual tutoring had a huge advantage over standard lecture environments: The average tutored student performed better than 98 percent of the students in the standard class. Until now, it has been hard to see how to make individualized education affordable. But technology may provide a path to this goal.

Future

- [The Road to 2050 (Part I)](#) – The world is struggling to contend with unacceptably high levels of poverty, an unstable global economic system, a shortage of employment, and dangerous environmental stresses. To confront these challenges, Ian Johnson, Secretary General of the Club of Rome, argues we need a more human-centered economics — and new institutions that guide us towards a more stable and secure future.

- [Real Values and Their Role in Global Governance (Part II)](#) – We are entering into uncharted territory where non-linearity, shocks and surprises will become the norm. But it is also a world where creative and enlightened public policy and corporate actions can move us towards a future of which we can be proud.

- [Global Governance and the Role of Markets (Part III)](#) – There are few who do not now believe that our market systems, and the banking and financial services that underpin them, are in need of attention. Failure to correct the excesses of the past decade will decrease trust, increase social disharmony and lead to undesirable outcomes.

- [Employment and Ecology: The Twin Challenges for Humanity (Part IV)](#) – Between now and mid-century, the global community will have to face the twin challenges of providing jobs and protecting the planet's natural resources. According to Ian Johnson, Secretary General of the Club

of Rome, taking steps to address these challenges will amount to making a big investment in our self-preservation, peace and security.

- [The Future is Now (keynote presentation by Michael Zappa)](#) – Insightful and thought-provoking presentation by futurist Michael Zappa.

- [The Future of Computing](#) – Links to the NY Times special issue articles on the Future of Computing.

- [Get ready for the supercomputer that can predict the future](#) – A £900million scheme to produce a computer system which could predict the next financial crisis has been backed by leading scientists. The Living Earth Simulator Project (LES) aims to 'simulate everything' on the planet, using anything from tweets to government statistics to map out social trends and predict the next economic crisis. Using vast reams of data fed into the internet, trends can be spotted by analyzing information with 'the world's most powerful computers'.

Information Overload

- [The Problem with Stream 3.0](#) – Today, the Stream is growing exponentially. Twitter famously grew by 3x in the last year and sends out more than 250 million Tweets per day. Facebook sends billions of public and private messages per day. And this is just the tip of the iceberg — or the deluge, as it were.

Innovation

- [Romo– The Smartphone Robot](#) – This robot application allows your smartphone to become the "brains" of a robot. The innovation method of raising the needed capital to promote the idea is included.

- [Innovative Ideas to Watch in 2012](#) – One of my favorite 'big thinkers', Michael Schrage, lists his six exciting "innovative invitations". If your organization doesn't find them innovatively interesting, then be careful:

they may be wielded by the competitors you most dread.

- [Q&A: Edward Jung](#) – The CTO of Intellectual Ventures believes we need a new model of innovation to solve our biggest problems.

Intelligent Agents

- [5 Cool Things Siri Can Do Now That She's Been Hacked](#) – As cool as Siri seemed to many at launch, like so many things, it's true potential wasn't really unlocked until a crafty developer got his hands on it and started tinkering. Pete Lamonica managed to create a hack called SiriProxy that allowed him to control his thermostat using only his voice. He set up a proxy server and posted his code on GitHub so that more developers could take advantage of it and push the limits of what Siri can do. And indeed they have.

Kurzweil

- [Michio Kaku, Singularity and an "A.I. Uprising"](#) – (videos) Michio Kaku comes up with a plan to stop the robots from taking over Earth. Imagine a world ruled by artificial intelligence where humans have been wiped out. This is no sci-fi fantasy. We're fast approaching the moment when machines will be smarter than we are! We need a plan to stay on top and Dr. Michio Kaku is on the case.

- [Vernor Vinge says that when the Singularity happens, it will be "very obvious"](#) – Another legendary 'big thinker', Vernor Vinge, gives his views on the Singularity.

Manufacturing

- [3D printer used to make bone-like material](#) – Washington State University researchers have used a 3D printer to create a bone-like material and structure that can be used in orthopedic procedures, dental work and to deliver medicine for treating osteoporosis. Paired with actual bone, it acts as a scaffold

for new bone to grow on and ultimately dissolves with no apparent ill effects.

- Printing new "organs" (TED talk) – What if we could simply "print" new organs for use in clinical trials? Gabor Forgacs from Organovo tells us about a radical new approach to tissue engineering.

- 3D printers: Almost mainstream – 3D printing isn't new. The manufacturing technique known today as 3D printing, also called additive manufacturing or direct digital manufacturing, has been used for rapid prototyping for decades. But over the last 24 months, prices have dropped to a level that makes it appealing to a wider audience.

Medical

- Do Away With Antibiotics, Then Destroy All Pathogens – Last year, federal officials warned that Americans were on the verge of "a post-antibiotic era." And that's exactly what the Pentagon's far-out research agency is after. Darpa wants researchers to use nanoparticles — tiny, autonomous drug delivery systems that can carry molecules of medication anywhere in the body, and get them right into a targeted cell.

- TEDMED 2012 videos – Several riveting and insightful video presentations from the recent TEDMED conference.

- New Tool Helps Spot Melanoma Cancer without a Biopsy – Melanoma is the deadliest form of skin cancer, and soon dermatologists will get some high-tech help deciding which suspicious-looking moles should be removed and checked. It's a tool called the MelaFind, meant to find melanoma.

Military

- Palantir, the War on Terror's Secret Weapon – An organization like the CIA or FBI can have thousands of different databases, each with its own quirks: financial records, DNA samples, sound samples, video clips, maps, floor plans, human intelligence reports from

all over the world. Gluing all that into a coherent whole can take years. Even if that system comes together, it will struggle to handle different types of data—sales records on a spreadsheet, say, plus video surveillance images. What Palantir does is "make it really easy to mine these big data sets." The company's software pulls off one of the great computer science feats of the era: It combs through all available databases, identifying related pieces of information, and puts everything together in one place.

MISC

- New technique to accomplish 'accelerated serendipity' using robotics – The basis of the research was to combine new technology with a unique, rapid-reaction approach that could allow chemists to explore unheard-of and potentially important chemical combinations without devoting years to the pursuit.

- The Next Economic Revolution –In one of the buildings at NASA's Ames Research Center, within walking distance of the Googleplex, elite groups of very smart people are trying to prepare for a future so advanced we can't even predict what it'll look like. This Singularity University is a hub for forward-thinking experts to learn about robotics, artificial intelligence, and other key technologies of the next century.

- Erik Brynjolfsson and Andrew McAfee: When Machines Do the Work (On Point) (audio) –Ever since machines came on the scene, humans worried they would steal their jobs. They did. But humans adapted. Found other jobs. Guests Erik Brynjolfsson and Andrew McAfee of MIT say machines are now moving into the workplace at such a pace that humans can't keep up. Not even in many white collar settings, where subtle new machine intelligence is now challenging pedigreed human professionals. (NOTE: More on this subject is available at my blog, http://sknode.blogspot.com/.)

- Civilian use of tiny drones may soon fly in U.S. – Drone aircraft, best known for their role in hunting and destroying terrorist hideouts in Afghanistan and Pakistan, may

be coming soon to the skies near you. Police agencies want drones for air support to find runaway criminals. Utility companies expect they can help monitor oil, gas and water pipelines. Farmers believe drones could aid in spraying crops with pesticides.

Nanotechnology

- Eric Drexler: how exploratory engineering will lead to future nanotechnologies (video) – Drexler explains a new kind of predictive mechanism for determining where the future of technology — and, in particular, nanotechnology — will take us, based on how the laws of physics determine future engineering. He further outlines the concept of "exploratory engineering," a hybrid of sorts between science and engineering.

Robots

- Qbo Robot Passes Mirror Test, Is Therefore Self-Aware (video) – The mirror test is commonly used to identify whether animals are self-aware, and all it takes to pass is the ability to recognize that when you look at yourself in a mirror you're looking at *you* and not some other human that looks just like you. Humans pass (after about 18 months), as do most apes, elephants, dolphins, orcas, European magpies, and a barn owl[1] named Wesley.

Search Engines

- IBM's Watson Ponders Whether to Fight Patent Trolls or Join Them – Now Watson is applying that same cold, masterful logic to the patent industry. Dubbed the Strategic IP Insight Platform (SIIP), Watson's new software allows it to delve peer-reviewed literature and past patents and build a rich tapestry of what has been done before. At the same time it's cataloging various firms, analyzing their intellectual property, products, and financials.

Simulation/Games

- Sony creates holodeck using Playstation Move and Eyetoy – The scenes are stunning by themselves, but the fact that the production team swears they did not alter the scenes in any way after shooting makes them doubly impressive. No fancy editing or post-production CGI; just traditional camera tricks, several projectors, and a single take. Set pieces vanish and reappear from the walls seemingly out of thin air, while the actor on screen appears to take one fantastic journey after another without leaving his couch. At a certain point, it becomes difficult to tell what is an actual physical object in the shot and what isn't.

Web 2.0

- Yes folks, it's artificial artificial artificial intelligence (video) – This is about using what the Economist calls artificial artificial intelligence. The idea is that the disabled can finally turn the tables on disability. They're getting involved in developing tools to help the rest of us help them.

- Bottlenose has launched! – Bottlenose uses next-generation "stream intelligence" technology to understand the messages that are flowing through Twitter, Facebook and other social networks. It also learns about your interests.