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## The KIT — Knowledge & Information Technology

### Issue No. 5 - 1 August 2009

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For your summer reading, here is a "researchy" issue - recent news about leading-edge efforts that may ultimately transform various aspects of IT.

Claude Baudoin

#### → Connect the Dots

Grid computing sounds like old news, after all the marketing hype about clouds. But grid middleware that enables applications to be distributed across heterogeneous platforms (different chips and operating systems) is still a research area. One of these efforts is the [GridCOMP project](#) funded by the European Union.

#### → Alphabet Soup

PKI is considered complex, and it has been said (e.g. by Gartner analysts John Pescatore or Vic Wheatman) that it will only be successful when it disappears into the infrastructure, because it scares people away when it is visible. Some of the people who invented it are now working at Dartmouth College on a [PKI Resource Query Protocol \(PQRP\)](#) that is supposed to make PKI easier to use. One might however suggest that a good start for a more user-friendly system is NOT to wrap up a four-letter acronym around a three-letter one, Russian doll-like.

#### → Seven Billion and Counting

Accurately predicting population-related phenomena (pandemics, viral dissemination of information) potentially requires a model containing billions of individuals, which is currently beyond the reach of both software and hardware. The Virginia Bioinformatics Institute plans to address this challenge, using a \$1.5M grant from the National Science Foundation to develop a "[petascale modeling capability](#)".

#### → Houston, We Have a (TCP/IP) Problem

I have mixed opinions about the [Disruption Tolerant Networking \(DTN\)](#) technology being researched by University of Colorado at Boulder and NASA. The goal is to extend the Internet protocol to connections with the long delays and outages that occur between space vehicles and the Earth. First, Vint Cerf, the "father of the Internet," was already talking about a NASA JPL project about this in a Stanford lecture on March 15, 1999 (yes, I found my notes). On the other hand, this may also have a positive impact on other poorly connected environments such as oil rigs, submarines, etc... but only as long as we're not talking about it in the future tense another ten years from now. And finally, there should be a hyphen between "disruption" and "tolerant."



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### → Not Your Old 3-D Cardboard Glasses

SIGGRAPH is the premier annual conference about computer graphics. This year, it takes place Aug. 3-7 in New Orleans and will focus on [stereoscopic 3D](#). As usual, the media industry drives the trend, but an impact on scientific visualization and even business intelligence can be expected, both in terms of advances in the software and hardware, and through the cost reduction that will follow large-scale commercialization of home 3D systems.

### → These pJ's Are Picojoules, not Pajamas

On July 27, DARPA concluded its Request for Information (RFI) to industry on "[Ultra High Performance Computing](#)" (UHPC). In order to resolve the power consumption issue with very large clusters, they're shooting for a limit of 20 pJ per operation, two order of magnitudes less than today's processors.

### → Visualizing the Visualization

Prof. Kawn-Liu Ma at UC Davis proposes [new visualization software](#) that makes a lot of similar claims to other advanced systems, but he claims to also let researchers "visualize the process of visualization itself," saying that this gives users much greater insight into their data.

### → Follow Your Trash

The writer of this [BBC News article](#) about tagging trash bags in order to track where they are going must never have thrown away anything important by mistake and wanted to retrieve it, because clearly this would be one application (or implication) of the technology. The consequences for electronics recycling are interesting but so are the privacy issues.

### → Japan's Next Goal in Scalar Performance

HPC Wire reports on a Japanese research institute's plan for a [10-petaFLOPS supercomputer](#) with a scalar architecture using Fujitsu chips. NEC was supposed to contribute vector units to make it a hybrid system, but backed out.

*The next issue of the KIT will revert to the usual eclectic news compilation, but you should expect an EA / SOA / BPM focus.*