



# Mid-Atlantic Crossroads

Advanced Regional Internetworking for  
Higher Education and Research

Office: 8400 Baltimore Avenue  
Suite 102  
College Park, Maryland 20740  
301.405.6666

November 30, 2009

## Welcome

Welcome, to the November 2009 edition of the MAX Newsletter. In these updates we highlight current technical activities and policy initiatives amongst our staff, our participants, the Regional Optical Network and national networking communities. Please let us know your thoughts, and especially your suggestions.

## Executive Director Message

MAX continues to be involved with the NSF GENI project as it moves into the second year activities associated with Spiral Two. A number of new projects began, many focused on increasing measurement and instrumentation capabilities in support of scientific and engineering experiments. The overarching term being used by the GENI Program Office is “Meso-scale Integration” as attempts are being encouraged for various projects to integrate multiple functions. Twelve campus projects are starting that will deploy and use OpenFlow switches that are now being supported by more and more vendors <http://www.openflowswitch.org/>. There are also seven WiMAX campus deployments being supported.

The major push during Spiral Two is to seek more experimenters to use GENI and provide ongoing feedback to help improve the robustness of components and functions. Ed Birrane, a doctoral student at JHU APL, is using GENI for his research on a Delay Tolerant Network project in conjunction with NASA and the Jet Propulsion Laboratory. [http://www.nasa.gov/mission\\_pages/station/science/experiments/DTN.html](http://www.nasa.gov/mission_pages/station/science/experiments/DTN.html)

Jang Li, Associate Professor at Howard University, will be using GENI to study Opportunistic Wireless networks.

<http://www.networks.howard.edu/lij/>  
<http://www.scs.howard.edu/li.htm>

If you, your faculty and staff, or researchers have interest in learning more about GENI and how it may be possible to use it, please let me know.

<http://www.geni.net/>  
<http://groups.geni.net/geni/wiki/SpiralTwo>

- Peter O’Neil

## MAX All-Hands Meeting December 3rd

On Thursday December 3rd, MAX will host an All-Hands Meeting at the UMUC Conference Center. As MAX engages with you in individual conversations about the services we offer, how well we are doing, and a range of possible future directions, this meeting will provide a timely opportunity to collectively reflect on the themes we are hearing and gain consensus and support. Feel free to attend even if you haven’t previously registered. The link to the meeting and directions can be found at: <http://wiki.maxgigapop.net/twiki/bin/view/MAX/Fall2009MemberMeeting>

## 9th Annual GLIF Workshop

The annual Global LambdaGrid Workshop was held 27-28 October 2009 at the Daejeon Conference Center, Daejeon, South Korea. GLIF, the Global Lambda Integrated



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Facility, is an international virtual organisation that promotes the paradigm of lambda networking. The GLIF participants are National Research and Education Networks (NRENs), consortia and institutions working with lambdas. Information from the meeting is available at: <http://www.glif.is/meetings/2009/> Next years meeting will be held at CERN in Geneva, Switzerland October 13-14.

At the GLIF meeting Nortel announced it is making making its network control plane software DRAC available to the GLIF community under an open source license. Nortel actively participates in GLIF's working group experimenting with lightpath control solutions and interoperability. <http://www.nortel.com/drac/>

## 100-core Tiler Chips

Charlie Demerjian has an interesting article on Tiler's claim to have the first commercial CPU to reach 100 cores, and while true, the real interesting technology is in the firm's approach of the interconnects. A great deal of thought was devoted on multiple different approaches to move data from core to core with minimal latency and problems. <http://www.semiaccurate.com/2009/10/29/look-100-core-tilera-gx/>

## Internet Research Cryptography Webpage

The Internet Research Task Force has a Crypto Forum Research Group that maintains a web page for network security in general as well as for the IETF. <http://www.irtf.org/charter?gtype=rg&group=cfrg>  
<http://www.mindspring.com/~dmcgrew/ic/internet-crypto.html>

## Department of Energy's ARPA-E Selects 37 Projects to Fund

DOE's new Advanced Research Projects Agency - Energy (ARPA-E) announced it will support a number of transformational energy research proposals. The link to the announcement lists the range of funded areas and the institutions involved in this initial funding round. Another solicitation is expected to be released soon.

<http://arpa-e.energy.gov/news.html>  
<http://arpa-e.energy.gov/apply.html>

## How Secure is Cloud Computing

The ACM held a workshop on cloud computing security at which NIST was closely involved. A list of participants and slides of their talks are available. <http://crypto.cs.stonybrook.edu/ccsw09/> An interview with Whitfield Diffie is here <http://www.technologyreview.com/computing/23951/>

## Costs of Implementing DNSSEC

ENISA, the European Network and Information Security Agency, has conducted a survey study of 20 organizations analyzing the costs involved in deploying DNSSEC in a registry, registrar, zone operator or recursive resolver operator. <http://www.enisa.europa.eu/act/res/technologies/tech/dnss/eccosts>

## The Changing Selectivity of American Colleges

Caroline M. Hoxby, from Stanford University and the National Bureau of Economic Research, has published an interesting article in the *Journal of Economic Perspectives* on the market for college education. <http://economics.stanford.edu/files/ChangeSelectAmericanCollege.pdf>

## TED Mid-Atlantic Talks

Under a license from TED, a series of talks were given and recorded in Baltimore by interesting people from our region across a variety of disciplines and walks of life and are available for viewing. <http://tedxmidatlantic.com>

## “What Computer Science Can Teach Economics”

Larry Hardesty, MIT News Officer, writes about how Constantinos Daskalakis applies the theory of computational complexity to game theory, with consequences in a range of disciplines.



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<http://web.mit.edu/newsoffice/2009/game-theory.html>

And Hardesty writes further on the notorious P vs. NP problem.

<http://web.mit.edu/newsoffice/2009/explainer-pnp.html>

Scott Aaronson has additional discussion on P vs. NP on his blog: <http://scottaaronson.com/blog/?p=122>

## Tracking Unsolved Math Problems

The [American Institute of Mathematics](#) (AIM) looks to help track work done and solve long-standing and difficult math problems. The Institute along with the [National Science Foundation](#) has opened the [AIM Problem Lists site](#) for those up to the challenge.

DARPA has their list of challenging mathematical problems still awaiting innovative breakthroughs.

<http://www.networkworld.com/community/node/33361>

## Science Efforts With ARRA Funds

ScienceWorksForUS is an initiative of the Association of American Universities, the Association of Public and Land-grant Universities and The Science Coalition to demonstrate the impact of Recovery Act-funded university research activities across the country. If your curious which States and institutions are receiving funds from which agencies here's the way to learn more

<http://www.scienceworksforus.org/>

## FCC Broadband Study

Harvard University's Berkman Center for Internet & Society released a study they performed on behalf of the FCC. The draft report provides a comprehensive and multidimensional study of how relatively advanced economies are doing on broadband, and what sort of prices and quality -- in particular as measured in speed -- consumers in these different countries are seeing. The results found for the US are less than inspiring. This report, not surprisingly, is generating a large amount of disagreement from RBOCS and Cable companies. Comments are welcome. <http://cyber.law.harvard.edu/node/5781>

## Explaining Explanation

David Deutsch provides a short TED talk from Oxford, England on "A New Way to Explain Explanation.

[http://www.ted.com/talks/david\\_deutsch\\_a\\_new\\_way\\_to\\_explain\\_explanation.html](http://www.ted.com/talks/david_deutsch_a_new_way_to_explain_explanation.html)

## 10 Things Mobile Devices Make Obsolete

As portable hand held devices continue to become more powerful and capable of performing an ever range of functions, some are already tracking other objects foreseen to be left by the wayside.

[http://recombu.com/news/ten-things-mobiles-have-made-or-will-make-obsolete\\_M11191.html](http://recombu.com/news/ten-things-mobiles-have-made-or-will-make-obsolete_M11191.html)

## Super Computing '09 Unveils Teraflop chip

Intel's Larrabee GPU chip was shown off at this month's Super Computing show in Portland, Oregon. While over-clocked, the chip was demonstrated to run at just over 1 teraflop, and reports are it can be purchased now.

[http://www.theregister.co.uk/2009/11/17/sc09\\_rattner\\_keynote/page2.html](http://www.theregister.co.uk/2009/11/17/sc09_rattner_keynote/page2.html)

[http://en.wikipedia.org/wiki/Larrabee\\_\(GPU\)](http://en.wikipedia.org/wiki/Larrabee_(GPU))

The Navy Research Laboratory, along with colleagues at University of Illinois/National Center for Data Mining, Caltech, and the University of Tokyo won the Bandwidth Challenge award this year. Congratulations!

## A New Theory About Time and Space

Petr Hořava, a physicist at the University of California, Berkeley is developing a new interpretation of Einstein's theory of gravity and relativity. Scientific American has a summary of the specifics.

<http://www.scientificamerican.com/article.cfm?id=splittin-g-time-from-space>

## Looking Back At Allan Kay's Dynabook, and Forward

During the mid 1980's Allan Kay gave a talk at MIT and spoke about his conceptual handheld device called the



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Dynabook, a theoretical computing device aimed toward higher education and “children of all ages”.

[http://en.wikipedia.org/wiki/Alan\\_Kay](http://en.wikipedia.org/wiki/Alan_Kay)

<http://en.wikipedia.org/wiki/Dynabook>

Wired Magazine reprises some of Kay’s and the Dynabook’s ideas in this article looking back over the past decades of computing.

<http://www.wired.com/gadgetlab/2008/11/museum-celebrat/>

And John Maxwell’s thesis on the elements conceived to be in the Dynabook along with a rich series of historical computing pointers <http://thinkubator.ccsf.sfu.ca/Dynabook>

And now, after gaining some appreciation for the past, take a look at this instantiation of the concept

<http://www.treehugger.com/files/2009/11/roll-up-notebook-looks-more-like-a-mini-yoga-mat-than-computer.php>

## NASA Space Shuttle Video

There is an unusually well done twelve and a half minute video of this month’s space shuttle showing images from a number of camera angles. Well worth viewing.

<http://www.vimeo.com/7852885>

## The Beauty of Science

A competition was held seeking “Pictures from Research” and the images displayed on this page are sure to awe, inspire, and enhance your imagination.

<http://www.spiegel.de/international/zeitgeist/0,1518,663849,00.html>

## Member Spotlight

### George Washington University

George Washington University announces plans for research expansion into six key areas.

As part of the University’s plan to ramp up research operations, Vice President for Research Leo M. Chalupa has

announced that George Washington will focus on six initial research areas in the coming year.

Autism, computational biology, science policy, sustainability, neglected diseases and energy were selected based on input from the faculty and deans.

“These are areas that the deans felt we should target,” Dr. Chalupa says. “We already are leaders in these fields with top researchers who are team players.”

A collaborative approach is critical, he adds, given that these six areas are multidisciplinary and therefore cross school and college boundaries. These sectors continue to hold tremendous potential for the University, he says. Starting with these six focus areas is “a way to jumpstart the research operation at George Washington,” Dr. Chalupa says. He expects that the University will hire more expert faculty members in these subjects in the coming years. This effort “will make us preeminent in very important areas,” he says.

For each of the six focuses, an internal GW committee is providing recommendations for future activities. These plans then are being reviewed by an external committee of experts, who will provide feedback on plan implementation. The autism plan is the furthest along, and then the others will develop in the order listed above.

“We can then use this same paradigm for other areas,” Dr. Chalupa notes, stressing that these six subjects are only the initial research focuses. The University will move to expand others later.

All of these six areas have a large potential for federal funding. In addition, the attraction of more highly skilled faculty researchers will enhance the student experience at GW by offering more opportunities for learning and research assistantships. “The first priority is the intellectual endeavor,” Dr. Chalupa says, from which all members of the GW community benefit when research is elevated.

<http://www.gwu.edu/explore/gwtoday/learningresearch/universityplansresearchexpansion>

<http://www.gwu.edu/>



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## MAX Participants

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- ATDnet - NRL, LTS, DISA
- D.C. Government
- Energy Sciences Network (ESNet)
- Laboratory for Telecommunications Sciences
- Library of Congress
- NASA / GSFC
- National Archives and Records Administration (NARA)
- National Institutes of Health (NIH)
- National Institute of Standards and Technology
- National Library of Medicine (NLM)
- National Oceanic and Atmospheric Administration (NOAA)
- National Science Foundation (NSF)
- USDA, Beltsville Agricultural Research Center
- U.S. Department of Health and Human Services
- U.S. Department of State (through GWU)
- U.S. Department of Veterans Affairs
- U.S. Holocaust Memorial Museum

### Higher Education:

- American University
- Baltimore Education & Research Network
- Catholic University
- GEANT
- Georgetown University
- George Mason University
- George Washington University
- Johns Hopkins University

- Johns Hopkins University - Applied Physics Laboratory (JHU-APL)
- Montgomery College
- National Consortium for Supercomputing Applications / ACCESS
- Network Virginia
- Smithsonian Institution
- Southern Universities Research Association (SURA)
- University of California, D.C. campus
- University Consortium for Advanced Internet Development (UCAID / Internet2)
- University of Maryland, College Park
- University of Maryland, Baltimore
- University of Maryland, Baltimore Co.
- Univ. System of Maryland Network
- University of Southern California, Information Sciences Institute / East
- Washington Research Library Consortium

### Corporate and Non-profit:

- Columbia Telecommunications Corporation (CTC)
- Howard Hughes Med. Institute
- Inter-American Development Bank (IADB)
- Northrop Grumman Corporation
- The Institute for Genomic Research
- Windber Professional Services, Inc.
- World Bank
- The Venter Institute