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The Advanced Computing Systems Association &
The System Administrators Guild

USENIX news

Technical Maturity, Reliability, Implicit Taxes, and Wealth Creation

by Daniel Geer

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Stu Feldman, now head of computer science research for IBM but also once part of the original UNIX team at Bell Labs (he's author of, for example, *make*) used to illustrate his talks on technical maturity with what I remember as a simple five point scale:

1. you had a good idea
2. you could actually make it work
3. you could convince a friend to try it
4. people no longer asked why you were doing this
5. other people got asked why they weren't doing it.

I like that. It is easy to remember, and I have five fingers the better to count it off. It also makes sense. In the way I am using it here, many of the technologies that dominate our work lives as USENIX members are now generally important to the world at large, which is what I wrote about last month. As a USENIX partisan and in the context of this article, I'd observe that really a lot of things got their level 1 start amongst our members, showed up at a USENIX WIP at level 2 or 3, showed up again as a paper at around level 4, are now level 5 worldwide.

Sometimes it is not technologies, per se, but ideas or whole fields that move along Feldman's scale. We've played there, too; from UNIX and its mindset to client-server applications to clustered computing models to network security to mobile computing to filesystems to various programming languages to whatever. If I had to do Feldman's scale over again, I might say that a mature technology is one where its reliability is (has become) the principle metric against which its price is calibrated.

Reliability is certainly a hallmark of critical infrastructures. A lot of us are paid to deliver reliability of large systems. Complexity is our enemy yet, if truth be told, complexity is part of the reason for our employment. I happen to work in security, and it is clearly true there, even if a large part of the complexity is itself a consequence of a market demand for power and convenience.

For the most mature market sectors, operational failure is operational failure; it leads to the same bad things regardless of whether the cause of the operational failure was electric power, hacker invasion, product liability, systems administration confusion or just plain bad luck – it won't matter. For example, reliability as seen from an operational risk point of view is about to be enshrined in formal regulation for the banking sector. The so-called Basel Capital Accord, ordinarily too esoteric a matter to discuss in the USENIX context, is under a revision process that will eventually lead to banks being required to set aside capital not only for credit risk and market risk but also operational risk. Capital set aside is a way of preparing for unexpected losses that might otherwise challenge the safety of the bank. Capital set aside is capital that is not earning money. Capital set aside to cover unexpected losses due to operational failure is a tax on the wealth-creating power of the bank. This is the kind of thing that gets attention at the Board of Directors level. This puts

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As a member of the USENIX Association, you receive the following benefits:

FREE SUBSCRIPTION TO *;login;*, the Association's magazine, published eight times a year, featuring technical articles, system administration articles, tips and techniques, practical columns on security, Tcl, Perl, Java, and operating systems, book and software reviews, summaries of sessions at USENIX conferences, and reports on various standards activities.

ACCESS TO *;login;* online from October 1997 to last month <http://www.usenix.org/publications/login/login.html>.

ACCESS TO PAPERS from the USENIX Conferences online starting with 1993 <http://www.usenix.org/publications/library/index.html>.

THE RIGHT TO VOTE on matters affecting the Association, its bylaws, election of its directors and officers.

OPTIONAL MEMBERSHIP in SAGE, the System Administrators Guild.

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operational risk directly in the line of fire when the Board bears down on senior management's ability to create shareholder value.

Well, this is not just about banks. In a late-October *NY Times* editorial, Richard Berner (chief US economist for Morgan Stanley) wrote:

But in the long term, terrorism is imposing new costs that are unlikely to go away. For every business, insurance and security costs will be higher. For many, the benefits of just-in-time management will be sacrificed as companies hold more inventory to guard against breaks in the global supply chain. The threat of cyberterrorism, which once seemed distant, will almost certainly lead to new measures for Internet security, slowing activity even for those operating in the supposedly frictionless world of cyberspace. And America's first experience with bioterrorism has thrown sand in the gears of commerce, government and everyday life, requiring new caution and precaution in once-mundane activities like mail sorting.

Together, those costs could represent a new form of supply shock, like a longer-term tax on the economy that will hurt growth and could boost inflation. That would be a toxic combination for global financial markets.

The reason I quote this at length is simple – the very kind of stuff that we all do, whether it be nameservice maintenance, application or network security, systems administration with complex authorization and systems segregation constraints, hardware and software deployment under a skeptical eye, UI design intended to transmit power but not risk, user account administration, or whatever – it is about to be at once faced with very, very much higher standards for what constitutes probity and best

practices while at the same time it is, and will be seen to be, a tax on productivity growth, i.e., what we do will be an enemy of wealth creation. Our new marching orders are tough, for the principle requirement will be that of reliability and the costs for this kind of reliability will not be trivially fixed by cleverer programming.

All of us have to look at this and look at this hard. The world profited as a whole from structural changes in the rate of productivity growth in the 90s that come directly from information technology investment on a grand scale. If we are to again achieve growth rates that are wealth creating on a broad scale, we have got to deliver reliability in a way that enhances productivity growth, not at the expense of it. This is the very eye of the storm.

2002 Election for Board of Directors

Ellie Young
Executive Director

The biennial election for officers and directors of the Association will be held in the Spring of 2002. A report from the Nominating Committee will be posted to *comp.org.usenix* and the USENIX Web site in mid-December, and also published in the February issue of *;login:*.

Nominations from the membership are open until January 11, 2002. To nominate an individual, send a written statement of nomination signed by at least five (5) members in good standing (or five separate nominations), to the Executive Director at the Association office, to be received by noon, PST, January 11, 2002. Please include a Candidate's Statement and photograph to be included in the ballots.

Ballots will be sent to all paid-up members on or about February 8. Members will have until March 22 to cast their vote. The results of the election will be announced in *comp.org.usenix*, the USENIX Web site, and in the June issue of *;login:*.

The Board is made up of eight directors, four of whom are "at large." The others are the President, Vice President, Secretary, and Treasurer. The balloting is preferential; those candidates with the largest number of votes are elected. Ties in elections for Directors shall result in run-off elections, the results of which shall be determined by a majority of the votes cast. Newly elected directors will take office at the conclusion of the first regularly scheduled meeting following the election, or on July 1st, whichever comes earlier.

International Olympiad of Informatics 2001

by Don Piele
USACO Director
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With all four members earning medals, the US team recently completed its most successful showing ever at the International Olympiad in Informatics. The competition, featuring teams from 74 countries, was held in Tampere, Finland, July 14 to 21.

Reid Barton, a home schooled high school senior from Arlington, Mass., was the top overall contestant of the entire event. Barton's total score was 55 points better than the next highest competitor, the largest margin of victory in Olympiad history, earning him his second gold medal in as many years. The week prior to the Computer Olympiad,

Barton had won his fourth consecutive gold medal at an international math competition.

Two US team members, Tom Widland of Albuquerque, NM, and Vladimir Novakovski of Springfield, VA, earned silver medals in the competition. Steven Sivek of Burke, Va., captured a bronze medal. Widland is a senior at Albuquerque Academy; Novakovski and Sivek both are juniors at Thomas Jefferson High School for Science and Technology in Springfield, Va.

The US team was sponsored by USENIX.

My trip report for IOI 2001 is available directly at: <http://www.uwp.edu/academic/mathematics/usaco/2001/ioi/report.htm>

All 205 photos that I took at IOI 2001 are stored can be viewed at: <http://www.ofoto.com/BrowsePhotos.jsp?collid=73793377103>

Thank you USENIX for sponsoring the USACO.

VECPAR 2002 – Announcement and Call for Papers

5th International Meeting on High Performance Computing for Computational Science June 26–28, 2002

Faculdade de Engenharia da Universidade do Porto, Porto, Portugal

<http://www.fe.up.pt/vecpar2002>

Important Information

Deadline for submissions: December 14, 2001

Proposals for tutorials due: December 14, 2001

Author's notification: March 8, 2002
Tutorials: June 25, 2002

Secretariat: congress.porto@abreu.pt

Organisation: vecpar2002@fe.up.pt

Topics of Interest

- Cluster and Grid Computing
- Computing in Biosciences
- Concurrent Engineering
- Data Processing
- Educational Issues in Computational Science and Engineering
- Large Scale Simulations in all areas of Engineering and Science (e.g., Computational Fluid Dynamics, Crash and Structural Analysis, etc.)
- Numerical Methods (PDE, Linear and Non-Linear Algebra, etc.)
- Parallel and Distributed Computing
- Problem Solving Environments
- Scientific Visualization

Invited Speakers

- Yutaka Akiyama (Computational Biology Research Center, Japan) “Human Genoma”
- Leif A. Eriksson (Uppsala University, Sweden) “Computational Chemistry”
- Vipin Kumar (University of Minnesota, USA) “Data Mining”
- Rainald Lohner (George Mason University, USA) “Computational Fluid Dynamics”
- Ed Seidel (Max-Planck-Institut für Gravitationsphysik, Germany) “Problem Solving Environment”

Proceedings

Proceedings, including full text of all presentations, will be available during the meeting. Additionally, a book will be published by Springer in its Lecture Notes in Computer Science series (<http://www.springer.de/comp/lncs/index.html>) and distributed after the conference. This book will include the invited talks and a set of selected papers.

Years and Years

by Peter H. Salus

USENIX Historian

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On September 8 or 9 (depending on where you were on the globe) the UNIX clock ticked its 10⁹ second. I was in Copenhagen at uptime(1), a terrific bash sponsored by the DKUUG. Talks (including mine and Rob Pike's), sit-down dinner, a rock group, a techno group, a multimedia show, champagne, and fireworks. Simply wonderful.

I got home in the wee hours of September 11 and got to my office, bleary-eyed, just after the attacks. Not the best greeting.

But, two weeks later, I was in Sydney as keynote for the AUUG's meeting (the other two keynoters were Evi Nemeth and Rob Kolstad). It was 25 years since John Lions installed v6 on the PDP-11 at UNSW. Another wow.

In November I'll be at the ALS; it's 10 years since Linus posted the 0.01 kernel on Helsinki's FTP site. In December I'll be at LISA talking about all the anniversaries that took place in 2001: 125 years of the telephone, 50 years since the first commercial computer went on sale (about the size of a small garage, 5,000 tubes, water-cooled). UNIVAC sold 46 of them at \$1 million each. Think of it as you heft your laptop or PDA.

And the ARPANET, which had four machines at the end of December 1969, now has about 160 million.

Happy New Year!