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USENIX news

Good Works

by Daniel Geer

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Ignoring such cultural icons as The Grinch, who can argue with Good Works? If you have no idea that USENIX has a Good Works side, perhaps it would be best to first read <*http://www.usenix.org/about/goodworks.html*> and then we'll chat.

Assuming you are aware of what is on the above page, let me tell you some more. As I long since learned to recite, most important things are not seductive while most seductive things are not important. Candidate Good Works that are important are, in fact, harder to find than candidate Good Works that are seductive. This is where the Grinch comes in, and for the better.

We get proposals that are, charitably, charity cases. We get proposals that simply represent a few peoples' life work and dedication. We get proposals for startlingly fundamental research. We get proposals for operating expenses of very nice people shopping their desires door to door looking for "yes." We get proposals that are to play the winner and so deliver the next generation of contributors to our field. We get proposals that shore up orphan facilities that we all nevertheless depend on. How to choose? How to measure Good Works, and how to learn from that measurement?

First, as former Treasurer, I can tell you that USENIX is in a very sound financial position and that this was no accident. It is the result of a decade of husbandry, of living within a little less than our means, of getting a balance sheet together that permits a broader latitude for USENIX to experiment, to take risks. In all the business world, it is the balance sheet that buffers risk and bounds the risk-to-reward ratio, at least until it can't do it anymore. USENIX is in a favorable position for risk taking because we have been prudent about taking our own risk and balancing it with our purpose to help individual risk takers show what they can do, show what they have done.

Second, the monies that USENIX has are almost entirely derived from its attendees and exhibitors, that is to say from its members. We have had some gifts, but our favorable position should be thought of as the harvested proof that we are doing something right. So long as we can keep doing the right thing and the economy doesn't tank, this equilibrium can be maintained, modulo our essential need to track the march of technical progress and its steady wind of obsolescence.

That said, in what sorts of Good Works should we be engaged? Board members are called upon to vote money to Good Works every time we meet. Remember, this is/was your money we are talking about and Board members of any organization like this one are formally obligated to be prudent, forward thinking, and dedicated in their investment of the organization's funds and to the furtherance of their organization's goals. What should we do? By what outcome measure should we be judged, should our Good Works be judged?

The naive decision is simply "This applicant seems deserving; we have the cash; let's feel good by giving him some." We are not naive, but that is one end of the spectrum. The other end is more like "Is there any appreciable bang for the buck in this proposal that's out to get our members' monies?" In between is the dif-

ficult "What is the most strategic thing we can do for our members that except for this proposal will never get done?" and the even more difficult "Even if this is not our responsibility, is it nevertheless essential to our ability to keep getting our work done?"

Honorable people can and will differ on this. Speaking as President, my position, subject to new and better evidence from any quarter, is this: The mission of USENIX in <*http://www.usenix.org/about*> is well stated where it enumerates

- problem-solving with a practical bias,
- fostering innovation and research that works,
- communicating rapidly the results of both research and innovation,
- providing a neutral forum for the exercise of critical thought and the airing of technical issues.

It is that mission that rules. As I am absolutely convinced that USENIX is the very best organization that the computer systems community has, I take it as a responsibility to use whatever surplus we might enjoy beyond prudent reserves to advance that explicit mission on the grounds that we are the best there is to do so. I take it as a responsibility to spend the monies contributed by our members on our members, which isn't about buying steak dinners or subsidizing other less able organizations however seductively appealing they may be; it is simply our responsibility to invest in your capabilities, your thought leadership, your continuing capacity to evolve. It is not our responsibility to make charitable decisions for you – you can do that well enough on your own time and to your own taste.

You're right; my position has an edge to it. I have the single most skeptical multi-year voting record on proposals for Good Works, which coupled with a personal record of initiating more risky new venues than anyone else is at least consistent in its dedication to spending every dime of capacity we can generate on doing what we do well and on whom we derived it from, i.e., you and in proportion to your capacity to give something back of consequence. I like positive feedback loops. We are damned lucky enough to have this one.

Board Meeting Summary

by Gale Berkowitz
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The following is a summary of some of the actions taken by the USENIX Board of Directors between August 2000 and January 2001.

Conference Registration Fees for 2001

Conference registration and tutorial fees will be increased by $10 per day and the charge for registering after the cut-off date was raised to $100. Conference registration fees for the Annual Linux Showcase will increase by $100. Student fees will not change. Membership dues will remain the same.

Standards

The proposal from Stoughton for Standards work for 2001 was approved in the amount of $50,250. This year the principal area of focus in Standards work will continue to be with the "Austin Group," revising the POSIX and Single UNIX specifications. The resulting standard will replace the current ISO 9945-1 and 9945-2, IEEE 1003.1 and 1003.2, and The Open Group's SUS (XSH, XCU, and XBD). The Open Group continues to be an active focus for the new Open Systems standards. USENIX continues to play a critical role in the development of these standards.

Good Works

The Board voted to allocate $25,000 for the Computing Research Association's Committee on the Status of Women in Computing Research for the Distributed Mentor Project (<*http://www.cra.org/Activities/craw/dmp/index.html*>), in which outstanding female undergraduates work with female faculty mentors for a summer of research at the mentor's institution.

USENIX will again sponsor the USA Computing Olympiad (the annual computing competition for high school students) in the amount of $51,200.

A proposal by Lesley University, in collaboration with Polytechnic University, for $50,000 in funding for support of its Computer Clubhouse Network was approved. The aim of this project is to provide computer mentoring and training for underserved children at an after-school learning center.

USENIX will fund the Berkeley Foundation for Opportunities in Info Technology (BFOIT) (<*http://www.bfoit.org/*>) in the amount of $15,000 to increase representation among students of color in the computer-related studies at U.C. Berkeley.

USENIX voted to sponsor the HAL 2001 conference in the Netherlands from August 10–12 2001, in the amount of $10,000. This three-day, open air, networking event will focus on computer security, privacy, citizen rights, biotechnology, and other controversial issues affecting society as a whole.

SAGE Certification

The USENIX Board voted to offer at least $75,000 in matching funds for SAGE Certification. This is a challenge grant to other potential patrons of the Certification project. For more information about SAGE Certification Patronage, see <*http://www.usenix.org/sage/cert/patrons.html*>.

Conferences

BSD Con. USENIX will be taking over sponsorship of this conference in 2002.

AFS. A distributed file system workshop will be held in conjunction with the Annual Technical conference.

NordU. USENIX will make available $15,000 to cover speakers' travel expenses for 2002.

GUADEC Conference (GNOME Users & Developers European Conference). USENIX gave a grant of $10,000 to support travel costs for speakers and some attendees.

OpenBSD's "!Crypto 2001" Summit. USENIX will give a grant of up to $5,000 for travel and expenses for some of the developers to attend.

SAGE

Over the past several months discussions have been taking place among the USENIX Board of Directors, the SAGE Executive Committee, and the membership concerning the potential restructuring of the relationship between USENIX and SAGE. An overview of the direction of SAGE, remarks from the President of the Board of USENIX, and the Discussion Points for the restructuring can be found on the Web at *<http://www.usenix.org/sage/restructuring/index.html>*.

A business plan will be submitted by the SAGE Executive Committee to USENIX in early February 2001.

Next Meeting

The next meeting of the Board of Directors will be held April 3, 2001, in Berkeley, CA.

Twenty Years Ago in USENIX and in UNIX

by Peter H. Salus
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I thought I'd take a break and look at one single event each in USENIX and UNIX history and their prime movers.

USENIX

In 1981, Lou Katz left Columbia University and trekked westward to Berkeley. And with him moved the Association.

By then, the center of gravity had shifted: much of the work on UNIX was being done west of the Delaware River; and it was clear that most of the conference attendees were from Texas, Colorado, California, etc. Following Lou's move, USENIX set up a real office and (at long last) took on some employees. The result was amazing.

UNIX

Also in 1981, UniSoft, founded by Jeff Schreibman, brought out a port called UniPlus+, which was compatible with System III and (in 1993) was still compatible with System V.

Jeff was one of the Berkeley students in fall 1975 who helped Ken Thompson bring up Sixth Edition on the newly arrived 11/70 (the other was Bob Kridle who, in 1983, was one of the founders of mt Xinu).

The next summer, Jeff supervised Chuck Haley and Bill Joy as they installed the fixes from the "50 bugs" tape. Interestingly, it was Schreibman who ported Joy's changes to the size of the data blocks on the VAX-11/780 to the PDP-11/70. But by then he had founded UniSoft.

Jeff, wherever you are, your deeds are remembered.

(Incidentally, /usr/group was incorporated in 1981; but that story's in my *Quarter Century of UNIX*.)

USACO News

by Rob Kolstad
Editor
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The USA Computing Olympiad has held two contests so far this year, the fall and winter USACO Opens. Each contest had two divisions, one for those starting out and one that challenges world-class competitors.

The fall contest attracted 280 entrants from 30 countries. Vladimir Novakovski, an underclassman from Thomas Jefferson High School of Science and Technology in Virginia, achieved the only perfect score. Contestants from Vietnam earned four of the top six spots.

I analyzed the programming languages used in order to see the influence of the USA's AP computer science curriculum (the Green Division sports the more challenging problems):

GREEN DIVISION				ORANGE DIVISION			
Program	Subs	C	Pascal	Program	Subs	C	Pascal
amicbl	155	88	67	sort	66	44	22
enemy	83	41	42	crypt	54	36	18
infrnd	109	60	49	vhist	82	60	22
outfrnd	112	69	43	parktri	107	80	27

As you can see, just over half of the submissions in the Green Division are in C (excepting the enemy problem) and 2/3 to 3/4 of the entries in the Orange Division are in C.

The winter contest had the most entries ever in a non-end-of-year contest – 310 entrants from 28 countries:

United States: 126	Korea: 9	Slovakia: 3	Denmark: 1
Georgia: 45	Indonesia: 8	Slovenia: 3	Estonia: 1
Belarus: 34	Latvia: 7	Argentina: 2	Germany: 1
Vietnam: 14	Canada: 6		
Netherlands: 2	Lithuania: 1		
China: 13	Poland: 6		
Croatia: 2	Singapore: 1		
Bulgaria: 12	Yugoslavia: 5		
Greece: 2	South Africa: 1		
Colombia: 10	Kyrgyzstan: 4		
Romania: 2	Turkey: 1		

Four contestants achieved perfect scores: Jan Oravec from Slovakia, Reid Barton from the USA, Nguyen Viet Tien from Vietnam, and Nguyen Kinh Luan from Vietnam (currently residing in Singapore).

The five problems in this contest were very difficult, with a mean score of 316 points out of 1,000 possible and a variance of 304 points. The scoring was challenging as well; only nine test cases (out of approximately 50) separated those who scored 750 points from those who scored 1,000. You can see detailed results and analysis at *<http://ace.delos.com/WINTER01res.htm>*.

Like any world-class event, the world's best competitors can often perform feats that appear to be superhuman. Here's another amazing effort (in the orange division) from Matthew Watson of the USA. It solves the problem: "Find the last non-zero digit in *N* factorial." This pro-

gram runs in milliseconds even for huge values of *N*:

```
int   n[] = {1, 1, 2, 6, 4, 2, 2, 4, 2, 8};
int r (int x) {
      int   w[] = {6, 4};
      if (x >= 10)
         return ((r (x / 5) * w[(x / 10)
            % 2] * n[x % 10]) % 10);
      else
         return n[x];
}
void main () {
      ifstream in ("fact.in");
      ofstream out ("fact.out");
      int     num;
      in >> num;
      out << r (num) << endl;
      in.close ();
      out.close ();
      exit (0);
}
```

Do you know a pre-college student that might like to compete in computer programming at the national or world level (this year's big trip is to Finland)? Please direct them to <*http://www.usaco.org*> so they can get signed up for our spring and US Open contests later this year.

Here's a challenging problem because its many solutions naturally break the programs into speed categories. It was problem 5 in the winter contest. Five-second time limit on a Celeron 400; good solutions run in under 750 milliseconds.

Cows in Bed [Burch, 2001]

Farmer John has N (1 <= N <= 5,000) cows who sleep in stalls in a barn with K stalls numbered 0..K-1. The i-th cow has a unique brand that is a number Si (1 <= Si <= 1,000,000). Each cow knows where to sleep because she sleeps in stall number Si mod K. Of course, cows will never want to share a stall for sleeping.

Given a set of cows and their brands, determine the minimum K such that no two cows sleep in the same stall.

INPUT FORMAT:

```
* Line 1: One integer: N
* Lines 2..N+1: One integer that is
        a cow's brand
```

SAMPLE INPUT (file bed1.in):

```
 5
 4
 6
 9
10
13
```

OUTPUT FORMAT:

A single line with the minimum value of K on it. All legal input datasets can be solved within the allotted time.

SAMPLE OUTPUT (file bed1.out):

```
8
```