

AUUGN

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Summer Conference pictures

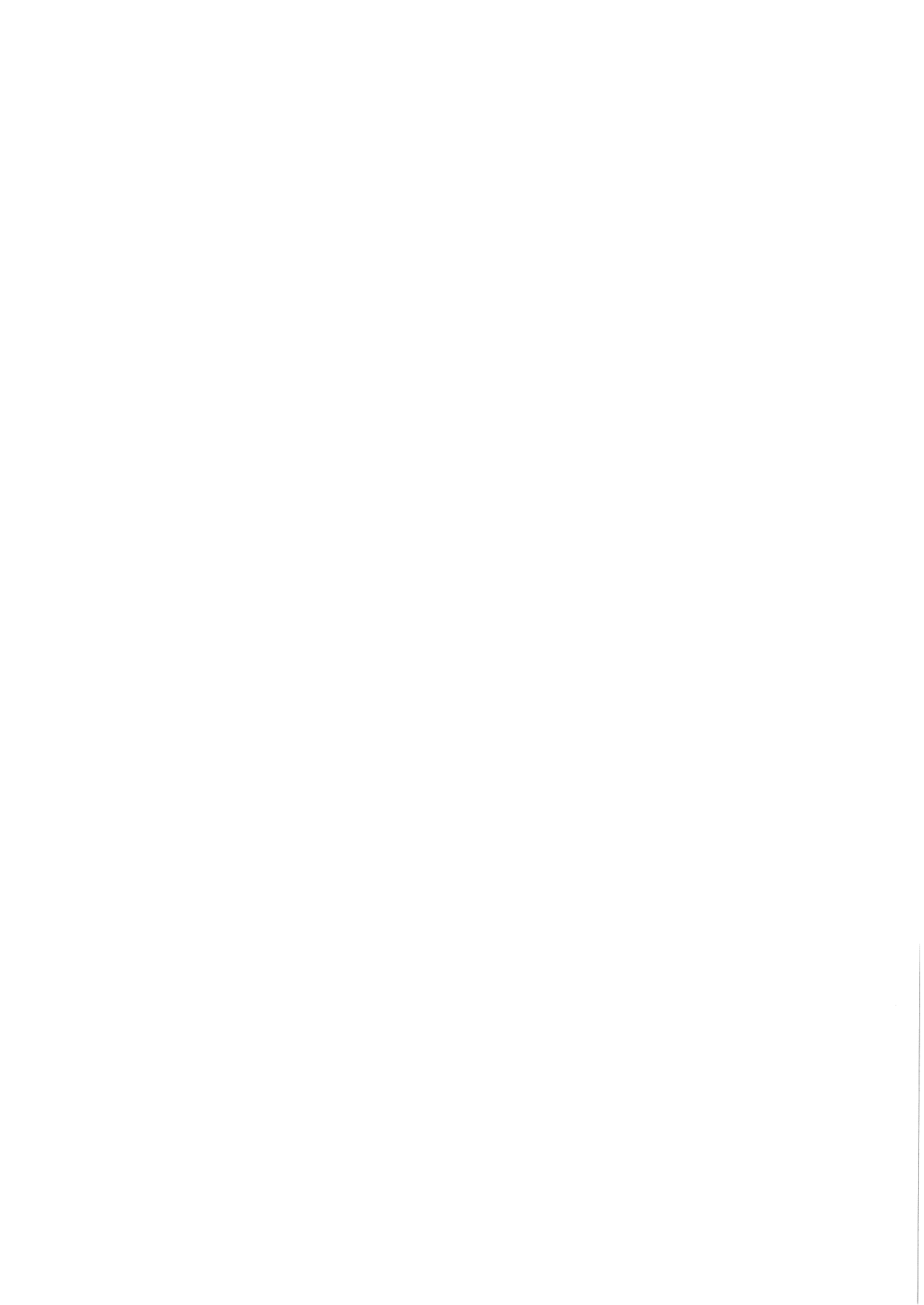
Formation of The Open Group

When will NT learn?

... plus reviews, Chapter news, and more

AUUG
Inc.

UNIX & OPEN SYSTEMS USERS



AUUGN

Volume 17, Number 2
April, 1996

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Editorial

Phil Anderson <phil@osa.com.au>

Hi all; well, AUUGN's almost back on schedule, keep those contributions coming! Don't *think* about writing something, just write it!

Our Tricks & Traps subeditor, Janet Jackson, has recently been blessed with a baby that just loves to stay up all night and make lots of interesting noises. Congratulations Janet, may your new addition be writing perl before they can walk! :^)

...and while we're on the subject, Janet's preoccupation with post-natal hijinks means that we're short a Tricks & Traps subeditor; at least for a while. Any volunteers? If you're keen to take this on, you might want to drop me some e-mail at auugn@auug.org.au, or the address above.

As you can see from the following pages, Liz took a bunch of snaps while attending the summer conferences; she tells me there's even more next issue.

See you in sixty!❖

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is your journal!

Without you, there is no AUUGN: if you've knowledge to share, share it through AUUG's bimonthly journal.

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We're looking for:

Talk to your local Chapter contact for ideas, and see elsewhere in this issue for submission guidelines.

- Papers
- Reviews
- Articles
- News
- Comment

President's Report

Michael Paddon <mpaddon@acci.com.au>

One of the reasons that we all grew up to love UNIX was not so much the elegant operating system layer, nor the wide variety of tools that truly supported "plug and play", but the really neat things you could *do* with this open system. And definitely one of the neatest was the way you could communicate with friends and peers around the globe, first with email and then network news.

Of course, in the true open systems tradition, it wasn't just UNIX machines that cooperated in this grand experiment in electronic communication; anyone who had some machine cycles, some disk and the willingness to do some coding could participate. In turn, we created a community where people could help each other out, exchange gossip, gratuitously flame one another and generally have one hell of a time.

Today, we have the Internet (with a capital "I", no less), and you'll often hear the long of beard and stooped of back yearning for the good old days. There's no doubt that the days when everyone knew everyone, when you could read *all* of the newsgroups and still do some work, and when CompuServe and AOL subscribers couldn't post news are well and truly gone. And there is no looking back.

Amongst all this sentimentalism for the halcyon days, we shouldn't lose sight of the good things that have remained with us. The Internet is still an open system (take note Microsoft!), it still contains small communities which work together for the common good and it still provides unfettered communication around the globe.

Today, however, I wish to serve a warning rather than bask in our accomplishments.

There are people who don't agree with the freedoms currently afforded to us by the Internet, and there are people who just don't care but are willing to use the issue to their advantage. You are probably aware of all the fuss that has been reported (perhaps over-reported) by our media as to the recent U.S. federal legislation covering online "decency". You are also probably aware of the fact that electronic privacy software is considered a "munition" in the U.S. and that Phil Zimmermann (the author of PGP) was recently the target of major legal action by the U.S. government.

What is perhaps unfortunate is that our local media has been less than complete in their coverage of similar activity by our legislators in Australia. There is a significant amount of interest in the Internet in the parliaments across the nation, and decisions are being made about our future as you read this article. Allow me to take some examples.

Last November, a federal senate committee turned in its "Report on Regulation of Computer On-Line Services". This report presented a balanced view of the current state of affairs with objectionable (pick your definition) material on the Internet. The overall evidence convincingly showed that such material comprises an insignificant amount of the total material available from the net.

It is disturbing to note that at the same time this report was being researched, The Australian (14 September, 1995) reported that "There is a very large amount of paedophilia and bestiality on the Internet". Where is it? I ran a straw poll amongst long time Internet users to find anyone who had found material not viewable, without restriction, at a newsagent. Two out of fifteen had viewed such material, and both admitted that they had to go looking for it, and found it difficult despite their skills.

How does little Johnny Mnemonic have the stuff flash up, uncalled for, on his screen? That's a damn good question, but it's not only The Australian which creates this impression.

Despite all this, the committee recommended regulatory enactment, brushing aside evidence about the lack of need, inadvisability and perhaps impossibility of such an approach. Not surprising considering it is a body of lawmakers. If a bunch of us programmers got together, we'd probably recommend coding a solution. That wouldn't make it work, though.

I was disturbed by an impression from the report that service providers argued against legislation purely from self interest. Sure, there's be some of that, but most of the evidence that was presented indicated that there was a community trying to preserve its values and roots. Doesn't this community have as much a right to existence as the nebulous wider community that legislation purports to protect?

The only bright spark in all of this was the recommendation that service providers not be responsible for what they carried, but it contained a bizarre corollary that providers ensure their clients are over 18. Maybe we should bar them from the public library while we are at it.

In Victoria, we have the Classifications (Enforcement) Bill. This piece of (as yet unproclaimed) legislation goes to the effort of mentioning on line services specifically, and makes quite stringent demands about controlling the distribution of "objectionable" and "unsuitable" content, especially when you start trying to pin those terms down. More frighteningly, there are draconian search and seizure provisions in this bill, that even allow equipment not mentioned in a warrant, that might be suspected of being used to breach the law, to be seized. You get to prove they were wrong in court. At the speed the court system works. I would be worried if I administered any Internet connected system in Victoria, let alone an ISP.

The Western Australian Censorship Act (1995) is a bit better, since it provides for reasonable grounds for

innocence. However the spectre of "computer service" hangs over us. This includes everything: email, news, web, etc. Are we responsible for all these? Where does privacy fit in? Do we have to filter newsgroups because we know there is "objectionable" material in there sometimes? Do we have to lock off some sites because we know they talk about hallucinogen pharmacology? This legislation suggests so.

As I write this piece, a march on the N.S.W. Parliament is proposed in regards legislation substantially similar in content to those in W.A. and Victoria.

Back at the federal level, the Australian Broadcasting Authority is currently soliciting public comment for a report to the federal communications minister. Why is a *broadcasting* authority investigating (and eventually making weighty recommendations about) the Internet? Since when, MBONE aside, was the Internet broadcast? I personally doubt IETF meetings would stir even the most prurient! Do our legislators even begin to comprehend the point to point nature of most of our internetworking?

One last rant. Why don't the legislators say what "objectionable" and "unsuitable" is. Is it naked bodies? William Burroughs novels? Images of classical sculptures? Does it change from state to state? City to country?

It's clear that we stand at a crossroads. Our legislators do not understand the fundamental nature and behaviour of the new electronic media. In confusion, they are creating laws based on analogies against traditional media; the only result of which can be incorrect, unworkable and counterproductive laws.

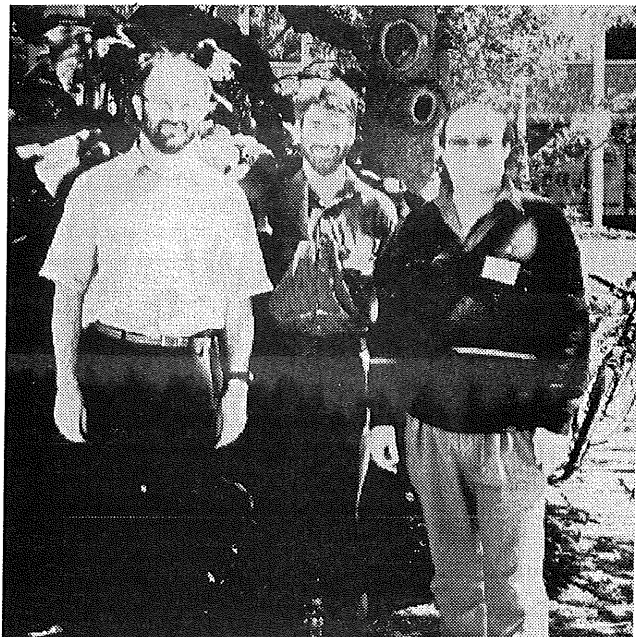
Additionally, there are people who are taking advantage of this confusion in order to establish their own agenda, whether it be prescriptive morality, empire building, or fear of something outside their control. Or in the case of the traditional news media, perhaps an overreaction to a future competitor (or perhaps just the normal knee jerk reaction to any story that might contain sex).

Finally, it is of prime importance that Australia chart its own course in these unsteady seas. We are not a colony of the Americas (no matter what one might think from what you see on TV). If we transplant our broad tolerance for other cultures and other ideas into the online world, what an advantage we shall have!

What was this column all about, really? Get involved. Keep your open system open. Maybe we need regulation and legislation, but let them be informed, positive laws that support online communities and commerce. You must be involved in this process, helping lay the foundations for an unforeseen and unforeseeable future. Imagine what will happen if you don't...❖

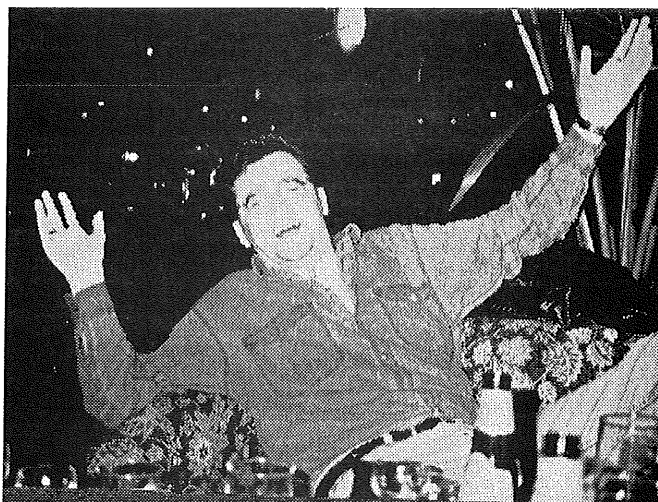
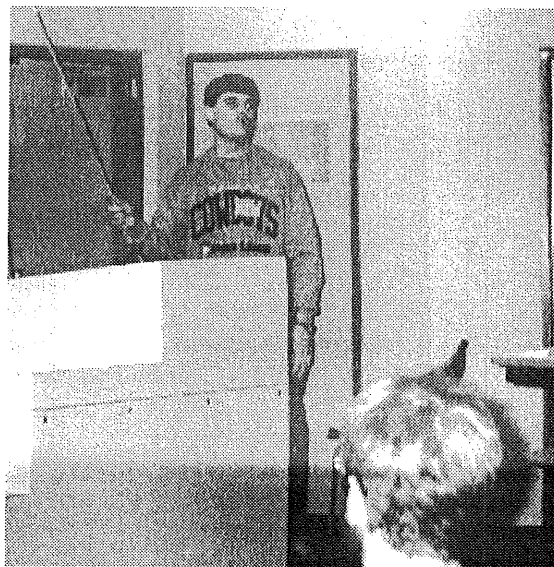
Summer Conference reflections

Pictures and comment by Liz Egan

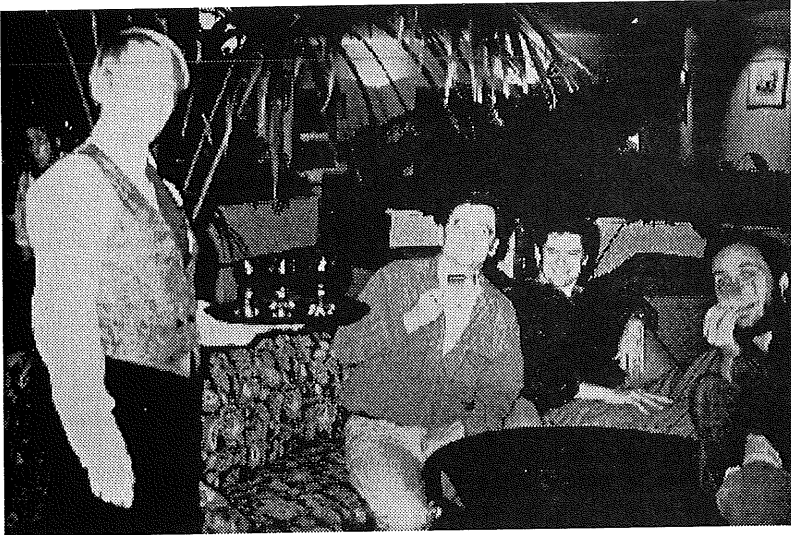


**We kicked off in Canberra ...
Jeremy Bishop, David Baldwin
& Lawrie Brown gear up for the event.**

**... and first on is
Andrew Tridgell with a
SAMBA presentation**

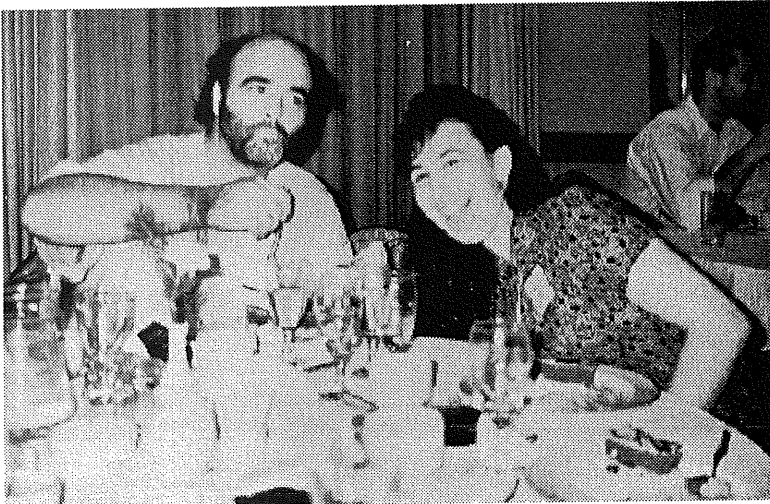


**In Hobart, Michael Brown,
our Tassie President, unwinds
after a hectic day!**

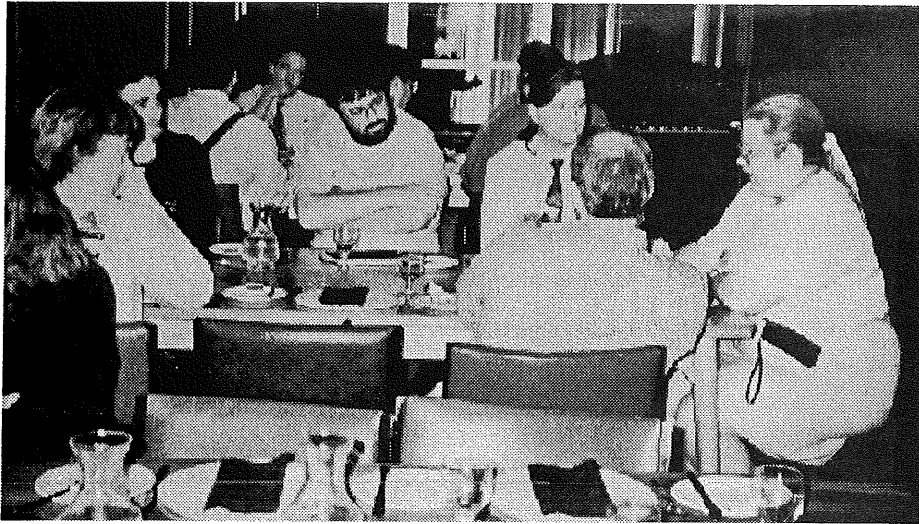


"Excuse me, but will our AUUG cards cover those?" ... and who's that behind the pot plant?

In Sydney, Berny Goodheart (our NSW President) and Liz Egan check out the desserts ...

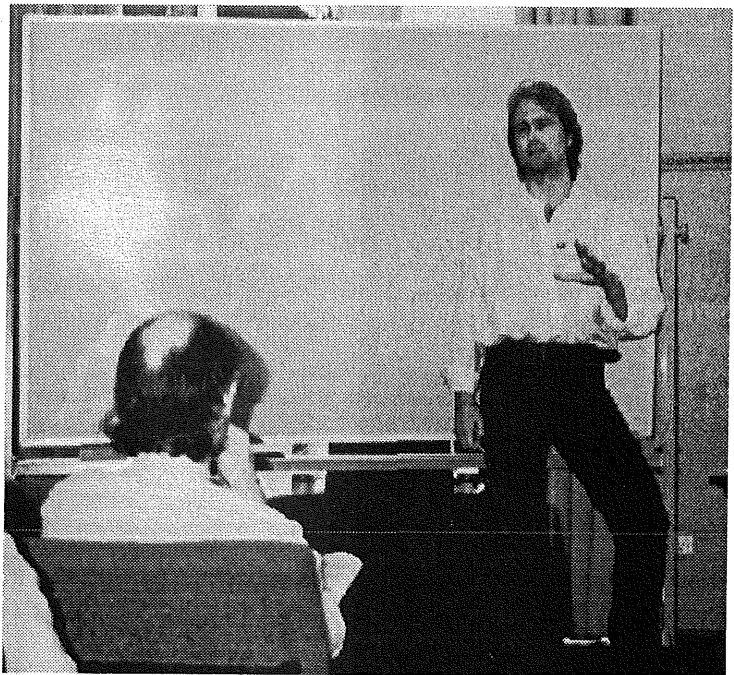


... while Frank Crawford and John Terpstra seem to have had enough!



At the Melbourne event, Michael Paddon appears pretty engrossed in lunchtime discussion.

While Paul-Michael Agapow explains how to survive C++.



AUUG WET certainly didn't run dry ... Euan & Brenda Pryde join in the fun at the Dolly Pot!



**Thanks to one of our sponsors at AUUG WET ...
no prizes for guessing who they are!**



**Back in Sydney, some of the AUUG Exec. plan our next events:
Lucy Chubb, Frank Crawford, Stephen Boucher,
Liz Egan, Michael Paddon, and David Purdue.**

Comment: A Major Contributor

Greg Rose

A few months ago, an article appeared in *Byte Magazine*, about the 20 most influential people in the computer industry. Now, a lot of articles like that are pretty subjective, so I didn't think about it straight away. Later, though, an interesting thought occurred to me. Dennis Ritchie was mentioned, but Ken Thompson wasn't. Strange.

I'm lucky in a way. I was walking along a corridor at the University of New South Wales twenty years ago, when a couple of Mad Computer Scientists kidnapped me and told me I had to write programs for this new operating system called UNIX. Its name hadn't been upper-cased at that time. This was one of the first places in the world to be running UNIX, and the staff at the university were very excited by it. I wasn't excited -- I was just a second year programming student. For the researchers, though, UNIX represented their first real chance to get close to the machine; up until then serious computers lived in shielded rooms on hilltops, and were run by Data Processing Units, with no desire at all to let academics touch them. But I digress.

After a few years of being involved with UNIX, the Australian UNIX Users Group, AUUG, was formed, named, and eventually incorporated. I became first Secretary, then for a few years President. Clearly I was now a Mad Computer Scientist in my own right, since no one else would be silly enough to donate so much time to such an effort. There was a payback for this, though. When we had our conferences, I was usually in a position to meet interesting people. Among them were Ken Thompson and Dennis Ritchie.

The thrust of the *Byte* snippet regarding Dennis Ritchie was that he was the creator of UNIX, C and Plan 9 (Bell Labs' new operating system). I think there was a "with Ken Thompson" thrown in there somewhere. This viewpoint is just slightly revisionist. Part of the problem is that both Ken and Dennis are basically quiet, humble and shy people. During an interview when Dennis was last in Australia, in 1994, he was asked something about his involvement in Plan 9.

"I really don't have much to do with its development, it's mostly the other guys," Dennis said, and as I personally know, completely truthfully.

"The Humble Creator of Plan 9" was one of the titles he was addressed by during the next few days.

I have the privilege of counting Dennis Ritchie among my friends, and I hope it will stay that way, but Ken Thompson is a friend too. I can't let the *Byte* article pass unchallenged. Dennis is a "mover and shaker" of the computer industry, but Ken has done more, with less publicity.

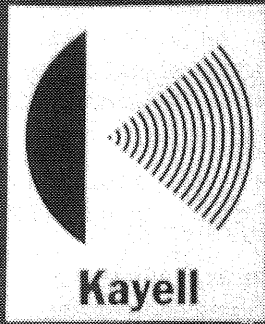
If you look at the source code of UNIX at the time I spoke of, the programs which made it up are divided into two directories, called "ken" and "dmr" (Dennis' initials). The amount of code splits about 2:1. Go further, and you discover that the scheduler, the memory management, the assembler machine support, the file system, and so on, are in "ken".

Dennis Ritchie is the designer of the C language, and implemented the first compiler for it. This implementation was required to rewrite UNIX in a high level language. Ken Thompson collaborated closely with Dennis Ritchie on the architecture of the language, to get it to the point where it could be used for that purpose. There might have been a UNIX without C (in fact there was, for the first few versions) but there would never have been a C without UNIX.

Ken Thompson has been a developer of Plan 9 since its inception, along with a number of others, notably Rob Pike, Dave Presotto and Phil Winterbottom. Dennis Ritchie is their manager.

Ken Thompson has a large number of other achievements under his belt which are not well known. He led the world in computer chess for a number of years; this research has had a number of spin-offs, and his chess computer was prevented from being sent to Russia for a tournament because of its advanced technology. Recently he has been working on compression algorithms for digital radio broadcasts. This compression allows nearly a full day of CD quality music to be compressed onto a standard CD-ROM. (He also interfaced a prototype and a PC to a mini-jukebox so that his departmental secretary can play '50s and '60s music "with an appropriate user interface".)

There is little more to be said. I just want to go on record, saying that Ken Thompson should have been on that *Byte Magazine* list. ❖



Look out

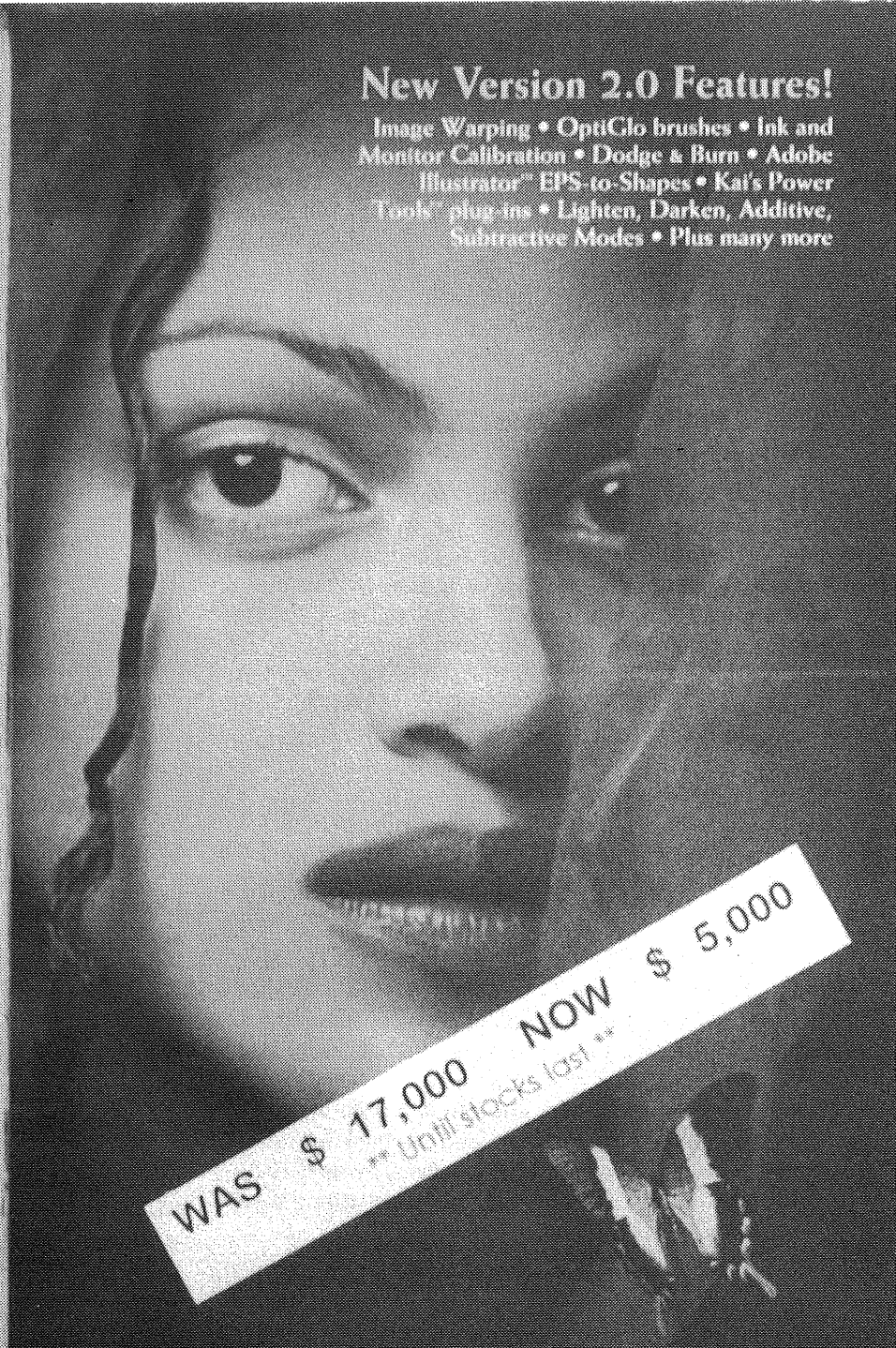
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Background: Standard API for Windows

David Purdue

As a member of AUUG I am very interested in emerging computing standards. After all, it is adherence to published, widely accepted and easily obtained standards that defines Open Systems.

There are many advantages to standards based computing. When users insist on vendors adhering to standards, then those vendors must compete on the quality of their implementation, support and services, rather than close a market by locking in users with proprietary interfaces. Open standards lead to greater choice for the user, and hence lower costs.

And by implementing on an open, standard platform, software application developers ensure the greatest market for their software. They can be sure that their software will run on all platforms that adhere to the standard they used.

Open standards stop vendors from locking out software developers by hiding the technology involved in their hardware and operating systems. The result is fairer competition.

So I was very interested when I read of a new standard released by ECMA, a Europe-based international standards development organisation, and set for fast track through ISO, the International Standards Organisation.

That standard is called APIW - the Application Programming Interface for Windows.

Yes, that's right, Microsoft Windows. The single highest volume API in the world.

APIW documents the Win16 application programming interfaces (APIs) that have been widely adopted by the windows programming community.

APIW does not contain the full Win16 interface, just the subset chosen after a detailed analysis of the APIs used by the top-selling ISVs. Thus APIW reflects the current Windows programming practice.

But why would anyone want the Windows API standardised?

Well, remember that there is increasing support for Windows programs on non-Windows platforms, for example IBM's OS/2 for PC's, SunSoft's WABI for PC's, SPARC and Power PC machines running Solaris, and SoftPC for the Macintosh.

By adopting the APIW standard, the vendors incorporating Windows support have a fixed point to aim at - they know exactly which Windows functions they have to support.

In addition, software developers programming to APIW can be sure that their software will run on the widest range of platforms. Their software will run on Windows, but they can also be sure it will run on all non-Windows platforms that adhere to APIW.

And users will know that which ever platform they choose, they will be able to run their APIW compliant windows applications.

Microsoft has been informed of the APIW effort, and was encouraged to participate. To date, however, Microsoft has expressed no interest in APIW.

But even Microsoft could have benefited from the adoption of a standard Windows API, based on those APIs chosen by the developer community. A standard Win16 API would have reduced the development effort of ensuring Windows 3.x backward compatibility in Windows 95.

Instead, Windows 95 had to supply support for all Windows 3.x APIs. Developing and testing this support could be one reason it took so long for Microsoft to deliver Windows 95.

Microsoft will benefit from APIW, because many of the world's largest software customers, such as the US military and European Union governments, strongly prefer to buy standards-based products.

Although Microsoft has not participated in the development of APIW, it is being supported by many companies, including Hewlett-Packard, IBM, Novell and Sun. The US Defence Information Systems Agency is involved in the effort, and the Open Software Foundation (OSF) is developing an APIW test suite.

Microsoft is not a company noted for its commitment to open standards, but it is being dragged kicking and screaming into the standards process.❖

Opinion: Client-Server Internet

Philip McCrea

Everyone it seems has discovered the Net recently. It's interesting to note the appearance of email addresses, and even Web addresses, on business cards. So it's a fairly safe assumption to say that the Net has shed its UNIX mantle, and has entered 'mainstream' communications. The main users of internet email and the Web are now PC or Macintosh users, so the percentage of UNIX workstation users is dropping.

All round the world millions of PC users are buying modems, getting accounts with Internet Service Providers (ISPs), and getting into the Net. And the world is becoming one big distributed computing system.

The WWW is client-server based. What this means is the client software, or 'browser', runs on your own PC or Mac, and the server software runs on a machine owned by your ISP. Servers are almost invariably UNIX workstations. These servers also provide other Net services such as e-mail, news, and gopher. (Gopher is an earlier text based version of the WWW which is still in use).

Other PC programs, such as spreadsheets, word processors and the like, can also use the Net as a source of their data. For instance you send a piece of text in an e-mail message to someone, who can then include this in a Wordperfect document; or you can search for something on the Net, and then start up the appropriate software on your machine to 'interpret' that data. In the Windows world, the file suffix provides your computer with information regarding the format of the data in that file. No doubt all of us have come across messages such as 'There is no application associated with your data: please select an application'. And we have to guess what the data file is.

All this is likely to change in the near future, as a result of the arrival of Java. So what exactly is Java? It's not difficult to understand, really. As we noted above, the Net is currently used to transmit `_data_` to our PCs. The programs which interpret that data reside on our PCs. With Java, however, both the data `_and_` programs associated with that data are transmitted over the Net from the source to your PC. In Java parlance, a program that is transmitted over the Net is called an 'applet'. In technical terms, Java reflects an 'object-oriented' view of the world, where a program

is hidden from view inside the data that it manipulates. The implication is that more processing is carried out locally on your PC than on the server that supplied the information. In the context of the WWW, Java permits animated Web pages.

Big deal, you say - what is the point of this? There are two ramifications which are likely to have a huge effect on the computing industry. Firstly companies that sell PC and Mac packaged software such as Microsoft, Lotus, Wordperfect, etc. are very vulnerable. If Java lets you download programs over the Net, there is no need to buy them at an inflated price in a coloured box with two inch thick manuals! With the Java model you don't buy software, you 'borrow' it, or perhaps 'rent' it, for the duration of the time that you want to use it to manipulate or view the data that you have also fetched.

Small wonder that Microsoft has been sent into a spin, and has done an about face on the Internet. Not only is its homegrown Internet competitor, Microsoft Network (MSN), all but dead - it's now effectively an Internet gateway- the future of its bread and butter business - PC application software - is seriously under threat. This explains all the recent announcements in the press from Microsoft, such as its recent decision to cease development of Blackbird, its content authoring environment for MSN.

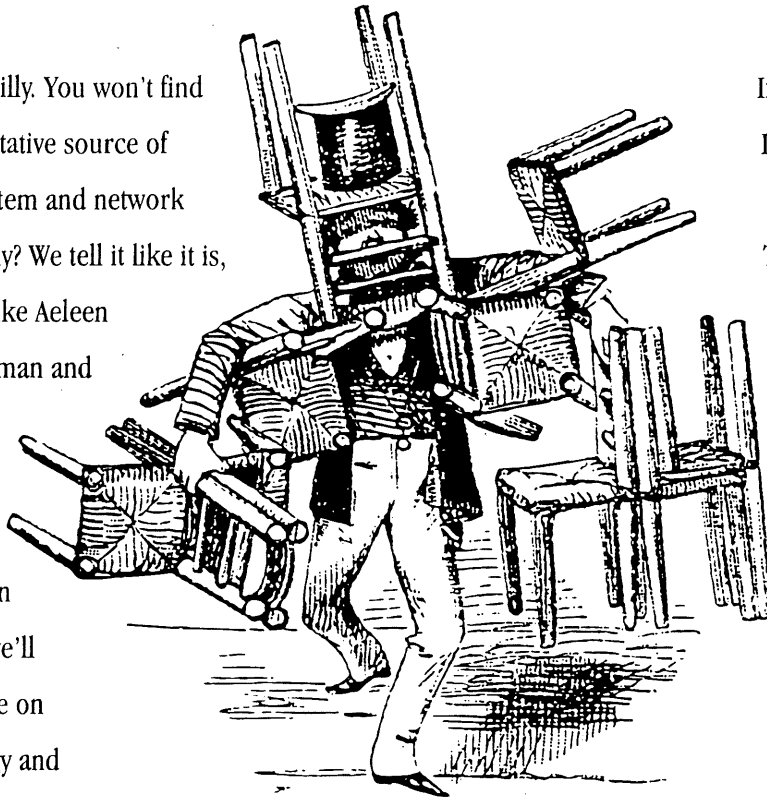
The second implication of Java is that the nature of our home computing equipment is likely to change. We will always need a screen, I guess, but it may transpire that we simply plug it into a specialized communications socket in the wall, rather than into a cumbersome, temperamental piece of PC hardware. Software (the 'applets') will be fetched from the Net as required. Our future Internet terminal may become as ubiquitous as a mobile telephone, and be distributed through car radio shops!

This is exactly the view that Larry Ellison of Oracle has been proposing - what he calls 'the \$500 Internet terminal'. Companies like Oracle who are dominant in the server market, in contrast to Microsoft which dominates the `_client_` market, stand to do very well out of this new computing paradigm. The Oracle/Netscape combination will be a potent force in the near future, and may cause Bill Gates more than a couple of sleepless nights.

Has UNIX had an effect on the computing industry? Has the Internal Combustion Engine had an effect on travel? Just about all the interesting developments in computing over the past decade have had their origins in UNIX - most notably the Internet. And Java, being a creature of SunSoft, is no exception.❖

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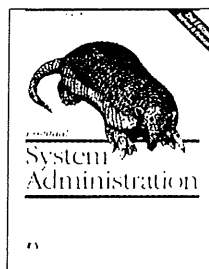
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Opinion: When will NT learn?

Frank Crawford

Recently there has been a security scare concerning Microsoft's Windows NT, and a particular virus protection software. The problem wasn't really with the software, but rather with the installation procedures and the possibility that a "naive" administrator could leave around information that would compromise the system.

The problem itself could be easily fixed once identified, but the difficulty of informing everyone involved is a tremendous task. However, the security problem brought to light a much more fundamental problem with NT, that will need to be addressed before it can be widely deployed on the Internet. The problem has to do with the attitude to security by the entire NT community.

If we look at UNIX, for many years it was considered very insecure and thus not really suitable for use in a commercial environment. This bred a generation of UNIX system administrators who were at least aware of the security issues involved and many who undertook a much deeper study on how to improve it. Today, it is generally accepted that UNIX can be made into a secure system, and the only issue is the diligence of the system administrator.

Unfortunately, NT seems to have taken a very different tack. Because it is backed by a large company it is assumed to be secure, after all, Microsoft wouldn't release a product with problems, would they? This is despite many recent security problems being found in Microsoft Windows for Workgroups, etc. While it is clear that the security subsystem in NT is good, although different to that found in UNIX, it is neither automatic or fool proof.

However, because of the impression fostered by Microsoft's publicity, little thought is generally given to security issues. As well as this, because of its PC heritage more concern is given to issues like viruses than true system security. Even worse, NT's GUI, by hiding the details, often also hides just what actions are performed and, more importantly, what are not.

This is an area that NT developers can learn much from UNIX software developers. While the implementation of security may vary, the concepts are very similar, as, after all, both systems are intended to satisfy the same market. As an issue to be addressed, Microsoft's current software development policy also does little to address security.

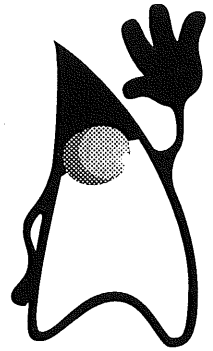
As a means of boosting the software available for NT, Microsoft is insisting that software certified for Windows 95 also be available for NT. The problem with this approach is that the security model for Windows 95 is not sufficient for true server systems, and generally the software companies involved in the development have little understanding of the issues involved (after all, what security exists in DOS or Windows?).

To overcome these problems, NT developers need to take note of the lessons learnt by UNIX developers over the years. They need to consider security issues at a very early stage of development, not as an after thought or as an add on. They need to consider how their software can be used in ways that don't conform to the specifications, or even in malicious ways.

As well, implementors and administrators need to consider security in their design of systems. They need to realise that many people will be attempting to break through anything they put up, often just for the sake of it. Management also has to insist that security is a priority in all systems, and not taken as a given, just because it comes from Microsoft.

Finally, even Microsoft has a part to play, by being proactive with security. They need to be much quicker in identifying and then distributing the information to all users, rather than their current practice of denial until forced to confirm it. They also have to put in place policies that will make security a prime concern of all developers and implementors, otherwise, as NT servers are distributed throughout the Internet, they will get the reputation of being easy to crack. As it presently stands, any problem found takes months, if not years, to correct, and that is far too long in this age of instant communication.❖

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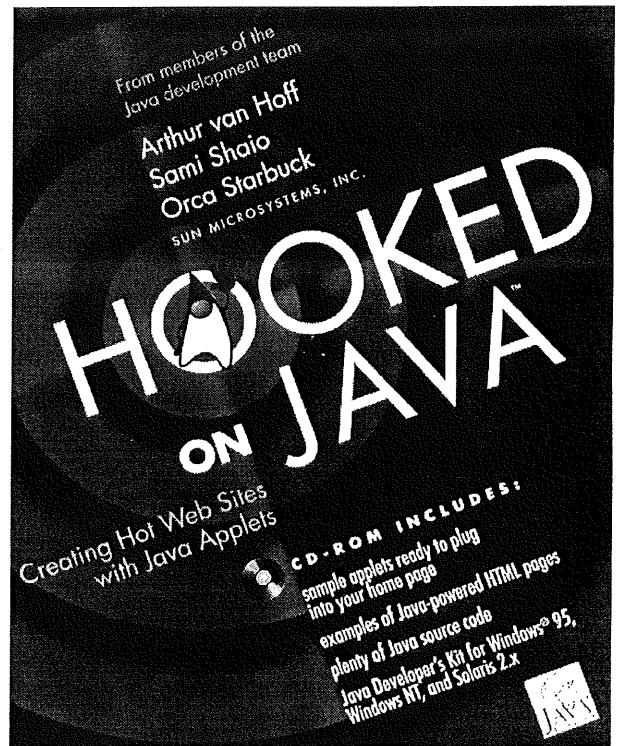
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Opinion: Professionalism

Andrew van der Stock

When you think of the word 'professional', I wonder what the first image that comes into your mind. For me it conjures an image of a cool, calm and collected individual who, like other professionals in other industries, is respected by his or her peers for the work that they do.

One day, many moons ago, I saw the most ridiculous sight - a photocopy service person who was dressed to the nines in a suit. Considering the messy beast that he was servicing, his attire was completely unsuitable and maybe even dangerous if his tie got caught in the rollers. Obviously he was dressed like this because his servicing company confused professionalism and presentation. What made this person a professional is not that he was dressed in a suit, but that he managed to fix a dodgy photocopier and it didn't need fixing again for the few remaining months that I was at this site.

How does this relate to System Administration? We are a nascent profession, struggling for adequate recognition that our skills deserve. When I was young (many of you may say that wasn't too long ago :-), I remember visiting our local GP who was considered almost like a country squire, accorded great respect in the community. He wore a suit, a stethoscope, and had a enormous Gladstone bag. I feel that he was accorded respect because he did a good job and knew his patients. Being the country, I doubt that what he wore would have much to do with his reputation - the Gladstone and the stethoscope probably invoked what he was more than the rustic tweed jackets he wore.

As System Administrators, we must be careful of the image we present. Most of the intricate problem solving comes through hard work, and lots of inspiration, and not through a manageable or procedural process. It worries traditional managers that they 'manage' a resource that they cannot control. Thus many of us take great pleasure in developing a very individualistic style, and this is reflected in not only the work we do, but also the way in which our office or cubicle is decorated (usually buried several feet deep in documentation and noffage*) and in the way in which we present our services to clients.

This is not to say that we should automatically turn into System Administrator clones, available on every street corner with no personality and wearing the same conservative blue double breasted suit. At work, this was very seriously considered by my new manager (including wearing stock exchange trader-

style bright waistcoats, with an 'ASK ME!' badge on the lapel) until he was disabused of the notion. Wearing silly clothes is not professionalism and doesn't help the client, which in the end, is what we are paid to do.

How we present ourselves starts from the first contact - first impressions do count. However, with prolonged contact, as in the case of a permanent or semi-permanent contract, you must perform or your reputation will be ruined. All the Armani suits in the world will not help an unskilled or inexperienced System Administrator. Professionalism is the sum of a complex equation which definitely includes presentation.

SAGE-AU have a certification sub-committee looking into how SAGE-AU can certify System Administrators as a mark of quality, much in the same way that accountants can be certified as Certified Practising Accountants. This is separate from, say a Certified Novell Engineer, or a Microsoft Certified Systems Engineer certification. The certification process will consider many things: from ethical conduct through to technical expertise through to site management issues. The sub-committee is working on this issue, and hopefully we'll see something positive come out of it by the time of the Annual Conference this year.

Part of the certification process will be continual learning. I'm sure many of you know people who have degrees on paper but are an embarrassment to all those many good graduates who keep their skills up to date. The computer industry changes so fast that you must keep your skill base current. SAGE-AU is one of the ways in which I do so.

Professional development is as important as knowing intricate technical minutiae or being a good system engineer.

With SAGE's efforts, hopefully people will be able to differentiate real professionals from the average System Administrator (or even from the few Evil Ted's in our midst :-)*

* *noffage - stuff that is useful the day after you throw it out*

Background: Formation of 'The Open Group'

Phill McCrea <phillip.mccrea@syd.dit.csiro.au>

An organisation called 'The Open Group' is about to come into being, with very little associated press fanfare. A couple of years ago, such an event would have caused big headlines in the IT press. The Open Group is an amalgamation of two existing open systems organisations - the Open Software Foundation (OSF) and X/Open.

Let's look at some history to find out about the origins of OSF and X/Open.

Back in the beginning, UNIX belonged to AT&T, the American equivalent of Telstra. In fact, UNIX was a creation of Bell Research Labs, the equivalent of Telstra Research Labs. Nobody in AT&T cared too much for UNIX at first, because they were (still are) a telephone company, and didn't know what to do with a computer operating system. So they gave it away for free (except for the cost of the media) to Universities, who were delighted to have access to an operating system that could be used for teaching purposes. Unlike other operating systems at the time which were

written in assembly language, UNIX was written in a readable language, C, which could be understood by students.

When these UNIX-literate graduates left Universities and became involved with start-up computer companies, they selected UNIX for those machines - partly because it was the operating environment they knew best, but also because the existence of C compilers made it relatively easy for UNIX to be ported to new architectures. This was the beginnings of the workstation era, epitomised by Sun Microsystems.

AT&T have made several attempts over the past decade to expand their business activities to become a computer company, none of which has been successful. Initially they made and sold their own machines - the 3B2. Then they tried an alliance with Olivetti, which didn't work out too well. And then someone at AT&T decided that purchasing a percentage of Sun was a good way to get into the computer market. Well, this put the cat amongst the pigeons! Until then, companies such as IBM had ignored the UNIX part of the market, even though it was growing rapidly: it was still too insignificant to pose a threat to IBM. But a combination of AT&T and Sun was a different question!

And so the Open Software Foundation (OSF) was established by IBM and others - primarily to combat

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Background: Formation of 'The Open Group'

the combined threat of AT&T and Sun, and their control of the direction of the development of UNIX. By way of reaction Sun, AT&T and some other companies formed UNIX International (UI) - and it was on for one and all!!!

The well publicised UNIX wars of the late 80s and early 90s set back the cause of UNIX and open systems, and allowed Microsoft to become dominant the desktop.

Whilst UI was basically a marketing and political organization, OSF was a technology producer - their members did not want to use UNIX any more, and so they set about creating a new operating system, OSF/1. They also became involved with areas such as interoperability, resulting in DCE.

Meanwhile, on the other side of the Atlantic, X/Open was formed in the UK in 1984, with the aim of identifying open systems (read UNIX) interfaces, and attempting, through agreement, to have them adopted as standards. The hallmark of the organisation was their portability guides, and associated verification suites. Amazingly, X/Open remained above the political shenanigans between OSF and UI, and always remained neutral.

In the early 90s, the bastions of proprietary operating systems could see the writing on the Wall - and the word was UNIX! The concept of Open systems was becoming accepted, and X/Open's specifications (then

called Spec 1170) enabled any operating environment to behave like UNIX, after it had been wrapped in the appropriate layer of software. UNIX International pulled up stumps, and folded. OSF however, has carried on, although in a somewhat different form - primarily because OSF is still producing technology, and its members have remained interested in the on-going development of DCE and other technologies.

With the old foe out of the way, OSF began to work more closely with X/Open, and it was only a matter of time till they merged. The opportunity was created last year with the departure of Dave Tory, the OSF Chief, who was strongly identified with the earlier UNIX wars. Tory was replaced by James Bell, who has just been appointed interim CEO of The Open Group. Geoff Morris, the X/Open CEO has just announced his departure from X/Open, and will remain as a Consultant to The Open Group.

The imminent formation of The Open Group is good news for the UNIX and open systems community, as it has removed some of the confusion in the marketplace. Currently there is speculation in Unigram/X and elsewhere that the remaining open systems organisation, the Object Management Group (OMG), may also join with the Open Group. ♦



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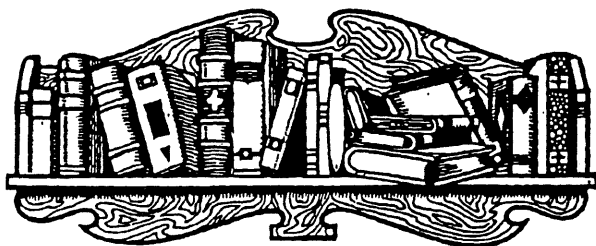
Book Reviews

Frank Crawford <frank@ansto.gov.au>

Another issue of AUUGN is now in your hands as is obvious we have a number of books reviewed for your information. The books being covered have a strong networking bent, from IPng to connecting to the Internet both in Australia and overseas, over UUCP and on the road. As well we have another review on a Linux book, the O/S developed by the works of many on the Internet. You will see from the reviews that not all are positive, this is useful so you can select the good from the bad.

As many of you have noticed, we currently have lots of books coming for review. The current practice is to post a note to the mailing list

<auug-books@ansto.gov.au> and the newsgroup `aus.org.auug` when we have new books available. Unfortunately, this disadvantages members without network connections, or on the end of a low speed link. For people in such a position, either mail, via the AUUG PO Box, or fax me on (02) 717 9273, with your contact details and preferences. ♦



On-line in Oz

by Sue Lowe

Addison-Wesley 1995,

270 pages + Diskettes,

\$39.95 ISBN 0-2301-44364-3

Reviewed by Michi Henning

DSTC Pty Ltd <michi@dstc.edu.au>

Yet another book trying to help people understand what this information superhighway is all about. However, the book is different from many of the other offerings I have seen in this area.

Rather than concentrating on the various protocols, such as email, ftp and HTTP, and dealing exclusively with the Internet, the book takes a different approach.

The text places much emphasis on available content, rather than technology, and it compares four networks in detail: the Internet, CompuServe, Apple's eWorld and Microsoft's On Australia. This comparison is based on criteria such as ease of finding a service

provider, getting up and running, charges, available services, reliability and content.

Squarely aimed at on-line novices, and computer users with little or no technical knowledge, for each of the four networks, the book aims to introduce common features, to explain the culture, content and typical user community, to point out the various options for signing up with a service provider, and to provide a "travel guide".

I was impressed how well the book meets those aims. Most certainly, this is the most comprehensive comparison of the four networks I have seen. If you are new to being on-line, and want to know what your options are, the book provides a host of valuable information for deciding on a provider, and more importantly, once you are connected, it tells you where to start looking.

It is this "travel guide" aspect of the book I liked best. It gives a good overview of the multitude of topics covered in various forums, explains Web search services and jump sites, gives an overview of news groups (with some basic netiquette!), and generally does an excellent job in getting you started. In particular, quite a large chapter provides an overview of Web sites grouped by topic, such as sports, hobbies, lobby groups, finance, electronic magazines, etc. This section is comprehensive and useful, and goes beyond the usual handful of standard Web sites, such as Yahoo and Netscape.

The biggest strength of the book, namely its focus on content, may also be one of its weaknesses. Much of the information is liable to go out-of-date, and given the rapid evolution of the net, the book probably needs to be re-published every twelve months. Still, even if some of the detail is no longer accurate, the detailed comparison of the major networks makes it a worthwhile buy.

An appendix contains the usual list of Internet access providers, and included with the book are floppies from OzEmail, CompuServe and Apple, containing the standard trial subscription offers and software to get a PC on-line (I admit I didn't examine the programs on these disks).

A final word of warning: one thing the book does not do is to help you get through the pain of setting up a PC, configuring a modem, installing software, and pulling of the miracle of getting a modem to condescend to talking to some other modem at the other end. There are better books than this around (Hi Frank and Bernie :-).

However, if you want to find out what's available on-line, and what suits your needs, the book can be a real help to get you started. ♦

IPng: Internet Protocol Next Generation

Edited by Scott O. Bradner and Allison Mankin
Addison-Wesley 1995,
307 pages,
\$49.95 ISBN 0-201-63395-7
Reviewed by Kate Lance
Department of Computer Science
University of Newcastle <clance@cs.newcastle.edu.au>

This book is deeply interesting on two levels: as a broad description of the functionality of the next generation of the Internet Protocol, and as an illustration of the mechanisms by which it is being brought into being by the IETF, the Internet Engineering Task Force. The current implementation of the Internet Protocol, IPv4, is the foundation of the Internet. It defines, as simply as possible, an addressing system and a packet delivery service, and this elegance has been the basis of the resilience and unstoppable growth of the Net.

But in 1991 it was realised that the IPv4 32-bit addressing scheme for networks and computers (e.g. 134.148.96.116), which should have been able to support over 4 billion hosts, was turning out to be inadequate in real life: usage of addresses was wildly inefficient, and the enormous address space was in danger of exhaustion within a few years.

This book describes how the problem was defined by IETF working groups, using their unique methodology of discussion and argument, focused by commitment to consensus and working code (otherwise known as "cooperative anarchy").

One of their first tasks was to decide just how long before IPv4 address space would be exhausted. The Class B space was rapidly running out, but if demand for Class Bs were to be satisfied with large allocations of Class Cs, then the load on the world's routers would become insupportable. One approach was to start implementing CIDR, Classless Inter-Domain Routing, which provides much greater flexibility in the definition of network and host parts of an address. This has today led to higher address usage efficiency, but is a stop-gap solution.

The task became to define the technical criteria for a new version of IP. A call for papers went out to the community, and the responses are collected in the book: from the military, large corporations, researchers, the power industry, laboratories and universities—describing their concerns and wishes for the future of the technology. A set of criteria were established. The next generation of IP had to be able to:

- Scale beyond current addressing and routing constraints
- Allow for many different network topologies
- Perform at least as well as IPv4; give robust service
- Have a straightforward transition plan from IPv4
- Be independent of networking media
- Support an unreliable datagram delivery service
- Be easy to configure, administer and operate
- Provide a secure network layer and a unique naming system
- Have freely available protocol documentation
- Provide both unicast and multicast packet transmission
- Be extensible and able to evolve
- Provide network service classes
- Provide support for mobility, for testing and debugging, and for private internetworks on top of the basic Internet

These criteria were tested against a number of different proposals for IPng, and one of the most interesting sections of the book, Part VII, describes this process—the compromises, arguments and engineering tradeoffs that had to be made. Finally one proposal was selected and is now formally named IPv6.

Part VIII provides a readable technical overview of IPv6 and the transition mechanisms that will ensure a flexible and graceful evolution from IPv4 to IPv6—from 32-bit to 128-bit addresses—with dual-IP layers in hosts and routers, and tunnelling of IPv6 packets through IPv4 technology by hiding the packets inside IPv4 headers. Part IX describes security considerations, and Part X the current processes within the IETF to complete IPv6 specifications.

This book is not just a very useful overview of the next Internet Protocol, but it's a fascinating glimpse into how such an intricate and difficult job is being carried out—by volunteers, without expense accounts, top-heavy committees, or proprietary secret networks.

In a mailing-list discussion, an IETF member, Tony Li, put it beautifully: "...we should be quite proud of what we've accomplished. Changing the wings on a 747 in-flight that's gaining weight as you fly is an interesting experience."

(See the IETF home page, <http://www.ietf.cnri.reston.va.us/home.html>, for links to the working groups, their mailing-list addresses, and the current status of their efforts.) ❖

Running Linux

by Matt Welsh and Lar Kaufman
O'Reilly & Associates 1995,
575 pages,
\$49.95 ISBN 1-56592-100-3

Reviewed by Grant Morphett <gmorph@auug.org.au>

I consider myself to be somewhat of a UNIX idiot (but I did manage to install Linux before reading this book) so I was looking forward to reading this book and learning heaps. I wasn't disappointed. If you don't know anything about Linux or you do and want a book that gives you a general insight into configuration of Linux and its tools, then this is it.

The book starts by giving an accurate description of Linux and some of its system features. It describes hardware requirements, sources of documentation and differences between Linux and other operation systems in the form of Linux is better because....

Next is installing Linux. This includes where to obtain Linux, preparing the hard drives, creating file systems and boot floppies etc. It also gives a brief "if this happens then..." guide. The book then covers most of the basic UNIX commands in about 120 pages. For the experienced out there you may learn a couple of things but its probably only useful to the UNIX naive. Speaking for the UNIX naive, this section was damn good. Real damn good. The commands were explained simply and clearly. The book describes what Linux does on startup, how to customise it and the basic UNIX utilities such as tar, gzip, fsck and cron.

The book then moves onto a chapter called "Power Tools" and the first thing it talks about is vi. Kind of a contradiction I thought but I am informed by the vi faithful it is a power tool. Hmmm. Anyway it describes vi, Emacs Tex and Latex and groff briefly before launching into X windows. X was also covered very well detailing how to install XFree86 with a good explanation of the video card and monitor configuration surely the trickiest thing to install under Linux. It describes fvwm and how to configure it and moves onto a few X applications such as MTools (for performing DOS file operations) and the DOS and Windows emulators.

Next chapter is called "Programming with Linux". It covers how to drive gcc, what a Makefile is and how to write them (another damn good explanation). It covers Perl and Tcl/Tk quickly and moves onto how to drive gdb (but not xxgdb).

It then goes into a really useful summary of gprof, a profiling tool, and strace and checker which are performance tools as well as covering RCS.

The last 100 pages are devoted to Networking. Configuring TCP/IP, SLIP, UUCP, Elm and WWW packages such as Mosaic. It speaks of HTML and

configuring your own WWW server and covers file transfer protocols like C-Kermit and Zmodem. No mention of PPP but you can't have everything.

The Appendices list sources of Linux documentation, a vendor for Linux software, a list of ftp sites and BBS access to Linux (only useful if your in USA). It also has the GNU General Public License and a very comprehensive Bibliography of further reading.

The things I like most about this book was how clear and concise it was. It told you how to do things generally and not in great detail. For commands the basic structure was specified, a few of the key flags and some useful and practical examples (like how to do a basic backup). If you want any more details you read the man pages. For applications such as Perl and Tcl/Tk you were given a taste of what they were about and how they did things. I'll have to go out and buy books on these now. They look very useful tools to have in the toolkit.

If you know someone who knows nothing about Linux, give them this book, put them in the corner with a PC NOT running Linux, some Linux install disks and tell them to come back when they are enlightened. For the rest of you if you need to know how to configure a Linux tool or application or networking software buy and read. ♦



Managing & Using UUCP

by Jennifer Kline
O'Reilly and Associates Inc. 1995
ISBN 1-56592-153-4

Reviewed by Paul Burgess <paulb@geko.com.au>

The UUCP book "Managing & Using UUCP", is a well written book, and takes the expert through areas they need to explore, but also starts at the basic, to give a novice an opportunity to learn.

The UUCP software described is however SVR3 software, and as such does not fully explain the components nor the functions of the SVR4 implementations of UUCP (those on DG & AT&T anyway), it is therefore dated information, but still a good pointer to the functions. Whilst many functions have changed functionality or names, it can be worked out from the book and "playing" with uucp.

In all I found the text easily read, and understood, and would recommend it to the novice, and it would not be out of place on the experts shelf...

The text has numerous examples and descriptions....and all are explained in detail, I found it enjoyable, which is not the way I would normally describe a utility manual, but this book is easily read, but also technical. ❖



Field Guide to the Internet with Windows95 (quick, easy answers)

by Stephen L Nelson
Microsoft Press 1995,
194 pages,
\$17.95 ISBN 1-55615-822-X

Reviewed by Catherine Allen
AUSCERT <Catherine.Allen@mailbox.uq.oz.au>

Nelson's Field Guide aims to be easy-to-read for internet-virgins, complete with quirky pictures and warm, colloquial language. Nelson attempts to explain complex ideas in a basic and simple way without talking down to his audience and, for the most part, he succeeds. Computer geeks may cringe at one or two over-simplifications but generally, he does a good job.

This is a book for beginners only!

AUUG members with internet access will find this book too basic for their needs. However, if you're looking for a book that may entice your mother (or grandmother) onto the Internet - this one would be a good choice.

The book is small (less than A5) but thick (194 pages) with lots of diagrams, screen dumps and cross-references. It also sports a full menagerie of cute, friendly animal cartoons. Some of the cartoons are meaningful icons (like the paw-prints which help "track down" related topics) but most are just there to look pretty and to make the content appear non-threatening.

The many examples, diagrams and screen dumps are clear and useful but show only Microsoft products.

The Field Guide comprises four sections:

Environment

This section gives a good broad overview of the internet and how it hangs together. This is not a networking book; it just explains concepts (like telnet) as simply as possible.

Internet A-Z

More useful than I expected, this section is a quick reference for concepts and includes some humorous entries. (Check out the "Gulf War" entry on page 64).

Troubleshooting

This section is disappointingly short (only 14 pages) covering basic FAQs for email, ftp, www, telnet, newsgroups and HyperTerminal (a Windows95 application which uses zmodem). Some of the FAQs are not appropriate to the section title. For example, the "Newsgroups" section includes three handy tips, two of which describe what to do if: "You Can't Decode a Picture or Binary File" and "Your Picture Looks Gritty". One wonders which newsgroups the author had in mind!

Quick Reference Guide

This is an easy-to-read guide to commands and toolbar buttons. It appears to be extensive for the client applications described. Unfortunately, only Windows95 applications are described. If you don't plan to access the Internet using Windows95 tools, this quick reference will be of little use to you.

Nelson's Field Guide to the Internet assumes the reader is an American with a PC full of Microsoft products and absolutely no previous experience. ❖



On The Road - Pervasive Portable Computing: PowerBooks, PDAs, and Beyond

by Michael Prochak
Addison-Wesley (Addison-Wesley) 1995,
272 pages + Diskette,
\$36.95 ISBN 0-201-59396-1

Reviewed by Adrian Booth <abcc@DIALix.oz.au>

Working for a company that gives most of its staff a Mac portable, I thought I might pick up some useful technical tips from this book. Instead, the book reads like a publisher's indulgence to a favoured nephew, a relic from the 1970s whose life consists of Apple computers and Harley-Davidson motorcycles. You do not want to read this book; do not feel obliged to read the rest of this review!

Harley-Davidson? That's right - The introduction starts with a long paragraph espousing the features of the Harley-Davidson that make it such a great motorcycle. The next paragraph then starts, "The Apple Macintosh

is a Harley-Davidson kind of personal computer". Boggle.

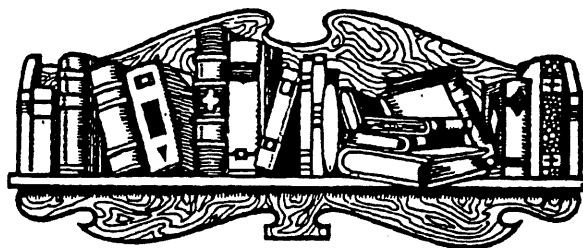
This approach is followed throughout the rest of the book - a discussion about Harley-Davidson motorcycles as an introduction, and then by analogy a discussion of some aspect of Apple computers - be it the Macintosh itself, PowerBooks (the Apple laptops) or the Newton PDA. For example, we read all about Harley-Davidson's eventual reluctant adoption of rear suspension (with the introduction of two shock absorbers and swingarm on the 1958 DuoGlide, if your care), and then, "...for years, Apple did more or less the same thing with the Macintosh, trying to convince both itself and its customers... that nobody really needed, or wanted, colour".

The specifications of many models of PowerBook (and PowerBook docking stations) are listed, under the headings Frame (size and weight), Paintwork (colour), Engine (CPU), Carbs (memory capacity), Tank (disk capacity), Front-End (screen), Electrics (battery), and Bars (keyboard/mouse). As Dave Barry might say, I Am Not Making This Up!

The final quarter of the book discusses being our "On The Road" with information on nifty gadgets and adapters you might need to telecommute on phone systems around the world.

Most chapters start with a lengthy anecdote, involving some combination of motorcycling, alcohol, 1970s song lyrics, and conversations with the author's erstwhile travel companion, "Dean". Perhaps one third of the book is taken up with this dross. Another quarter consists of the model specifications mentioned earlier. There are some technical tips, such as "Buy as much RAM as you can afford". In summary though the book reads like an extended ramble from a burnt out Mac evangelist. Anyone want my copy?

N.B.: the book also comes with a floppy disk purportedly containing excerpts from the book, a selection of sample mobile software, and an array of useful applications. Given the quality of the book itself I have not even attempted to load or use any of these applications.❖



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WAUG news: From the Western Front

Edited by Tom Hallam
<thallam@geol.uwa.edu.au>

Meeting information

WAUG meets at the Freeway Hotel, 55 Mill Point Road, South Perth. We meet at 6:15pm on the third Wednesday of each month.

Our meetings are advertised in the Diary column of the Computers section of Tuesday's *West Australian*.

If you need further information about the next meeting, please contact Mark or one of the committee.

SPEAKERS ARE NEEDED

especially ones who can actually commit to giving a talk on a certain date! So if you can give a talk, or know someone who can, please let us know. Mark (our meeting organiser) cannot produce them out of thin air.

WAUG Email Aliases, Newsgroups and Web Page

WAUG has the following mail aliases on uniwa.uwa.edu.au:

waug-membership - for membership enquiries
waug-chair - our Chairperson
waug-meetings - our meeting organiser
waug-secretary - our Secretary
waug-newsletter - for newsletter contributions or enquiries
waug - for general correspondence (will be read by the Secretary, as a paper letter would be).

So, for example, you may send general correspondence to waug@uniwa.uwa.edu.au.

Check us out on the World Wide Web at:
<http://www.auug.org.au/auug/waug/waug.html>
 (thanks Canberra AUUG).

Also see the newsgroups wa.waug and aus.org.auug for announcements and discussion.

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- James Patton (Meeting Reporter)
jrp@mrwa.wa.gov.au

A publicity officer has not yet been appointed. Please volunteer. (Adrian is acting in the interim, but don't you think he has enough to do already?)

For Systems Administrators: Local SAGE-AU Meetings

The WA Regional Group of the Systems Administrators Guild of Australia (SAGE-AU) meets on the *first Tuesday of each month at 6pm, in room G3 at the Alexander Library* (Note the change).

If you manage computer systems for a living, we'd like to have you along. SAGE-AU is NOT another UNIX group. All systems and network administrators are welcome. We would particularly like to see more PC network administrators attending, so if you know any, send them along. I'd like to see lots of Novell, NT, OS2 and MAC people attending.

For more information, please contact any of the following:

- regional group chair,
 Janet Jackson <janet@DIALix.oz.au>,
 (09) 272 5061
- meeting organiser
 Mike Horton <mikandfi@DIALix.oz.au>,
 (09) 479 8424
- Tom Hallam <thallam@geol.uwa.edu.au>,
 (09) 380 2665

For information about SAGE-AU in general, you may also look at

<ftp://ftp.sage-au.org.au/pub/SAGE-AU> and
<http://www.sage-au.org.au:8080/>

❖

AUUG news: Queensland chapter

Edited by Mark White
<m.white@brisbane.tandem.com>

While not reported in these pages of late, the Queensland Chapter (QAUUG) has certainly been far from idle. At the time of writing, the Queensland Chapter is gearing up for its Summer Technical Conference, which will be held at Brisbane's Sheraton Hotel on Thursday, April 18th. This year's conference features a number of local and well known speakers, including Geoff Huston, Simon Hackett, Ken McDonell and David Hughes. With a solid number of registrations and corporate sponsorship from Stallion Technologies, Data General, DSTC and Silicon Graphics this year's conferences promises to be very successful.

There will be no April monthly meeting (due to the conference) but the May meeting will also be the Chapter AGM. All AUUG members are encouraged to attend, and elect the Chapter Executive Committee members for 1996. The meeting will also feature a presentation on Kerberos from DSTC's Gary Gaskell.

The March Chapter meeting featured Byron Collie, from the Australian Federal Police. Byron delivered an extremely well-received presentation on "The AFP & Investigation of Computer Security Incidents".

Peter Elford from Cisco was the guest speaker at the February Chapter meeting. As one of our regulars suggested: "I've been to a whole lot of IPv6 presentations, that was certainly one of the best." We'd like to thank Peter and Cisco Systems for making that event possible.

Held on the last Tuesday of every month, the monthly meetings of QAUUG provide a forum for engineers, managers, dealers and end users to exchange ideas and experiences. If you have an interest in open systems, come along and meet like-minded people. For more information,

Contacts

QAUUG committee
E-mail: qauug-exec@auug.org.au

Mark White
Chairman
Phone: 018 068 275

AUUG news: Tasmanian Chapter

Things have been moderately quiet on the AUUG front in Tasmania over the past several months. Our former President, and the driving force behind the establishment of the AUUG Tasmanian Chapter, Steven Bittinger, left the state for warmer climes. We wish him well in his new position in Queensland, and thank him for his involvement in the Tasmanian Chapter, and its forbear, the UNIX Special Interest Group of the ACS, which operated for several years.

I arrived back from an extended overseas holiday at the end of October, to be greeted by the news that I was now President of the State Chapter. Thanks, people.

The 1996 conference was held on February 21, in the Centenary Lecture Theatre at the University of Tasmania. The event was judged a success, with just on 70 participants. A good range of topics were presented, covering a diverse range of topics from Networking, through document management, and of course UNIX, and the role of the Common UNIX Specification.

This was the seventh Annual UNIX conference in Tasmania, and the first to be totally under the AUUG banner. We had excellent support from Digital, Silicon Graphics, Sun, and the Fulcrum Consulting Group, all of whom provided speakers for the occasion. Local content was provided by Tony Cruise, of the Department of Premier and Cabinet, and Dr. David Wright, of the University of Tasmania.

The conference culminated with the Hewlett-Packard & ComputerLand Hobart sponsored cocktail party, which featured some excellent food, and an even more excellent assortment of fine Tasmanian wines. More than one interstate visitor remarked on the latter, and most of our guest speakers have asked to be invited back next year.

April sees the presence of Berny Goodheart, author of *The Magic Garden Explained*, in the State to present his *System V Release 4 Internals Tutorial*. Berny will also be presenting a paper at the April meeting. The meeting is on Wednesday, April 17, and the 2 day tutorial will be held on April 18 & 19.

As usual, information on the Tasmanian Chapter activities can be found at our web site, located at: <http://www.dpac.tas.gov.au/~mgb/auug-tas/>

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An Update on Standards Relevant to USENIX Members

by Nick Stoughton

USENIX Standards Report Editor

<nick@hoskyns.co.uk>

Report on SC22/WG15/USTAG

Charles Severance <crs@crs.cl.msu.edu> reports on the July 10-15, 1995, meeting in Nashua, NH

The most interesting topic at the United States Technical Advisory Group to ISO Working Group 15 (the "TAG") meeting was the discussion regarding the question as to whether or not we would support the proposal to give X/Open a category C liaison to the ISO SC22/WG15 standards committee. There had been a number of interesting hallway discussions about the topic. When we reached that point in the agenda where we were developing the US position on this issue, the chair called for discussion on the topic. There were several requests for clarification but no substantive discussion. There were several long pauses during the consideration of the issue.

As the chair moved toward taking the vote, I wondered what the other members of the group were thinking. As I prepared to cast my vote, many things raced through my mind.

First, X/Open is a very good standards-related organization. They have been a strong supporter of the POSIX standards. In my mind, X/Open has added tremendous value to the POSIX standards. By adopting POSIX and then filling in the gaps, XPG provided a specification that the computer vendors could buy and the computer users could purchase to accomplish real work. As a vendor-driven consortium, X/Open could fill these gaps much more quickly and respond to market needs in a time frame that allowed the wider spread of UNIX and open systems.

In addition to adopting POSIX standards, X/Open has financially supported people to attend POSIX. Without the support of X/Open there almost certainly would never have been POSIX standards for networking and system administration. X/Open has patiently participated in the IEEE/ISO process as a good citizen (which *does* take some patience).

When X/Open develops international standards in association with POSIX, their route to an international standard would take roughly the following steps:

- Develop and ballot the document as an X/Open document according to X/Open rules and procedures.
- Submit the document to the IEEE as part of the POSIX standards effort – attend POSIX meetings and ballot the document using the IEEE rules. Resolve the comments from the IEEE POSIX balloting group.
- Submit the document to ISO at SC22/WG15 and go through an international ballot. At this step, they must resolve comments from various countries such as Canada, Denmark, France, Germany, etc.

Eventually the document is approved as an International Standard.

The following reports are published in this column:

- SC22/WG15/USTAG
- POSIX.1 Removable Media Interfaces
- POSIX.1a: System API
- POSIX.1e/POSIX.2c: Security
- POSIX.1h: SRASS
- POSIX.1m: Checkpoint/Restart
- X/Open Distributed Systems Management

Our Standards Report Editor, **Nick Stoughton**, welcomes dialogue between this column and you, the readers. Please send any comments you might have to <nick@usenix.org>.

STANDARDS

However, the category C liaison can be viewed as the first step in bypassing the IEEE steps in this process. I can certainly see why X/Open might want to eliminate this step. Going through the IEEE will add at least a year to the time it will take to complete the process of getting one of their standards approved at the international level. There is no question that getting standards approved quickly is in the best interest of computer vendors and computer purchasers.

Given that one possible outcome of the category C liaison is that X/Open will begin to completely bypass the IEEE/POSIX process, one might expect the US WG15 TAG (dominated by members of POSIX) to vote not to support a liaison that might eventually cut them out of the flow of X/Open specifications. Of course, that would have only been one vote at WG15 and the European countries would have certainly supported X/Open, so the US would have been overruled. Still, perhaps it might have been a good symbolic gesture.

The other thoughts running through my head were wild speculations of a worst case scenario for the future. In this scenario, X/Open eventually creates virtually all of the open system specifications and sends them straight to ISO, bypassing IEEE. This thought saddens me at some level.

It seems that the only formal standards body on the planet where there is any significant user power is the IEEE. People constantly complain that membership (and balloting) in the IEEE is based on the individual and not by organization. In the IEEE, users who actually purchase systems have a real voice in the process. A vote from an individual engineer is equal to a vote from a corporation. I have also seen situations where engineers vote on a ballot based on their unbiased assessments as engineers rather than on the best interest of their organizations.

Once IEEE/POSIX is bypassed, the computer vendors will dominate all of the forums through which the standard passes. They dominate X/Open, and they have a very strong presence in ISO.

If I look back a few years, the UNIX market had a large number of vendors, and users had a large impact on UNIX related standards in forums such as USENIX and POSIX. As time passes, we are quickly approaching the situation where there will be only a small number of major vendors of open system products and they will control the standards users specify to procure those systems. Every standard they develop will quickly become an international standard with little or no user input.

One other choice I would have in forming my vote would be to wait to see which way the wind was blowing and vote with the majority. That way I would not have to make a choice.

In the instant the chair called for a vote, I decided to vote affirmative based on what I know to be true in the past rather than what might happen in the future. After my hand was up, I looked around the room, thinking it might be a close count, but every hand in the room that I saw was raised in support of the X/Open liaison.

Since the meeting, I have wondered why this vote turned out the way it did. My conclusion is that the yes vote was a referendum on the respect and trust between POSIX and X/Open that has developed over the years. This respect and trust are based both on individual people and on the overall organization. How could we do anything but support an organization that has contributed so much to POSIX over the years?

Report on POSIX.1: Removable Media Interfaces

Chuck DeBaun <debaun@fnal.fnal.gov> reports on the October 16-20, 1995, meeting in St. Petersburg, FL

The removable media group was formed to create an optional standard for a removable media resource management command line interface. However, in the search through existing standards, it was noted that such a standard could not be implemented in a strictly compliant POSIX environment. Indeed, serial media, otherwise known as tape, cannot be supported in such an environment.

Thus, as a first step, the removable media study group submitted a Project Authorization Request (PAR) to provide the missing `mtio` semantics in POSIX.1 so that serial media, a primary type of removable media, can be supported in a POSIX environment. This PAR was approved in July 1995. A proposal is currently on the table and is being used as a working document. This proposal is based on the BSD `mtio` interfaces. Draft 3 of this proposal is expected following the October meeting.

At the same time, a PAR (POSIX.2d) was accepted to provide the `mt` utility definition for POSIX.2. This will provide a command line interface to the `mtio` API. Work has not yet begun on this project.

A third PAR is being prepared for the actual removable media resource management command line interface specification. This work is being delayed by the need to create support for serial media before it can be started. The need to backtrack to create the `mtio` semantics has caused a marked decrease in interest and attendance, further delaying action in this area.

However, this is an important area for standardization, and I would strongly and urgently encourage willing participants to step forward!

Report on POSIX.1a: System API

Shravan Pargal <pargal@cray.com> reports on the July 10-15, 1995, meeting in Nashua, NH

The first meeting of the POSIX.1a working group under the new organization commenced with a plenary meeting of the entire system services working group to elect a working group chair. Both Jay Meyer, chair of the former POSIX.1 working group, and Joe Gwinn, chair of the former realtime working group, were nominated. Following some fine campaigning by both candidates, Jay Meyer was elected chair after a short ballot procedure.

The new system services group now consists of:

- core interfaces (POSIX.1a)
- SRASS (POSIX.1h)
- real time(POSIX.1b)
- removable media (POSIX.1k)
- transparent file access (POSIX.1f)
- resource limits (initially a part of POSIX.1)
- checkpoint/restart (also initially a part of POSIX.1)

Joe Gwinn, as runner-up in the election for chair, was appointed without contest as vice chair of the new working group.

The POSIX.1a document went through some major reorganization during this meeting. Having experienced significant difficulty in getting the checkpoint/restart and resource limits sections through the ballot process, it was decided to split this work off into two separate new projects. There is work to do on these areas, and the ballot group had alerted us to the fact that they weren't yet ready for publication. New Project Authorization Requests (PARs) were submitted to the PAR Management Committee (PMC) for these projects. The PMC agreed to recommend approval of the two new PARs. It was decided that separate ballot groups, separate time lines, and separate resources were appropriate for the two PARs (and corresponding working groups). The new names for the working groups are checkpoint/restart (P1003.1m) and resource limits (P1003.1p).

The resource limits and checkpoint/restart sections of the POSIX.1a document will be removed from there and become the starting point for these new projects.

Other hot topics in POSIX.1a continue to cause long discussions, both in and out of the meeting room. How to deal with trailing slashes seems to be such a regular discussion

item that the vice chair has even suggested we add it as a fixed agenda item for every meeting!

The current standpoint on this, reflected in the last draft (draft 12), is to insist that a filename can have one or more trailing slashes only if it is a directory. The words currently talk about "as if a trailing /." were appended. This still needs some work, but it is unlikely that the next draft will be any more tolerant of trailing slashes on nondirectories than draft 12.

Another hot topic is the handling of group-ids when files are created. System V and BSD systems have totally different models here, and the original POSIX.1-1990 tolerated both. Attempts to settle on the BSD behavior have met with enough resistance that it now seems likely that both will continue to be tolerated.

Almost all this discussion is driven from the ballot process for POSIX.1a, currently trying to resolve issues on draft 12 and get a draft 13 out to ballot around the end of the year. It is a long, slow job, as anyone who has been through a ballot must realize, and most of us are new to it in POSIX.1a!

Sometimes changes are so deep into history that we cannot fathom the reason for them and have to start all over again. For example, some requirements on fflush were changed between 1988 and 1990, but no rationale was supplied at the time. What should be the effect of fflush on a stream opened for reading? Now we have to write a rationale for this action that occurred five years ago!

Report on POSIX.1e/POSIX.2c: Security

Larry Parker reports on the October 16-20, 1995, meeting in St. Petersburg, FL

Nine months ago the future looked relatively bright for the POSIX security working group. The resolution of all comments/objections from the most recent ballot had been completed in only three meetings, and a new ballot had been scheduled to occur with less than a year having passed since the previous ballot. Ballot resolution had proceeded well, and it appeared as if we might be approaching the point of being able to start the recirculation process by year's end. The only thing that needed to happen was for our technical editor to produce a formatted version of the draft by the end of January.

Well, it didn't happen. In fact, it didn't happen for six months!

Due to the massive delay caused by our now ex-tech editor, we have missed two scheduled ballot windows and currently can't obtain a ballot window until March 1996. If this doesn't change, we will have gone a full two years between ballots. This is an unacceptable delay in the ballot process

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and has rightfully caused many to question whether the security working group is capable of producing a standard in any time frame. This concern has been heightened by the fact that the group has not met since January and no information on the group's status has been provided to the POSIX leadership. And, to make matters worse, one of the central members of the working group resigned due to a change in job responsibilities.

So what's happening now to correct this mess? Can the group pull itself together to complete the ballot process for the security standard? The following answers are strictly my own opinions. The work that has been accomplished to date on this draft standard through the work of many people over several years is far too important to allow it to be discarded due to the failure of one person. The core of the group has pulled together to put some life back into the effort. We have a new tech editor who produced a formatted draft within a week of receiving the materials from the previous editor. The group met in St. Petersburg in October and gave the draft a full review for consistency and updated much of the document rationale; the draft is in good shape, and we should still be able to start the recirculation process after the next (our fourth) full ballot. Essentially, we are ready for a ballot as soon as we can obtain a ballot window. Coincidentally, the POSIX organization is considering a change to the ballot scheduling process that may result in the draft being released for ballot as early as November of 1995! *[Editor's Note: Nick Stoughton reports that this has not happened as of January 5, 1996.]*

In short, the group has gone through a year of major turmoil but is beginning to return to the business of carrying the draft through the standardization process as quickly as possible.

Report on POSIX.1h: SRASS

Richard Scalzo <rscalzo@relay.nswc.navy.mil> reports on the October 16-20, 1995, meeting in St. Petersburg, FL

You say that your computer system fails without warning, that this happens too frequently, and that this state of affairs makes you nervous? You say that repairing it is too expensive? If you want to do something constructive about this problem, participate in the POSIX standards process. As the market for highly reliable computer systems grows, so will the need for portable applications that can manage faults for your system. The best part is that there is a lot of activity concerning standards for system services for fault management. You can get in on the ground floor (well, maybe the second floor) of this expanding activity if you hurry!

The POSIX.1h working group (Services for Reliable, Available, and Serviceable Systems, SRASS) is in the process of developing standard sets of APIs to support fault manage-

ment. The goal of the SRASS working group is to produce a coherent set of APIs that allows applications to perform fault management functions and to be portable.

Right now the SRASS working group is in the process of producing drafts of standard APIs for logging and notification, core dump control, and configuration management. These APIs, of course, are only part of the picture (more on that below).

The logging APIs are aimed at allowing an application to log application-specific and system events and for notifying applications when these events of interest occur. The functions are: write to the system log, open a connection to a log file, read from the opened log file, provide notification of events of interest, and find that part of the system log of interest to your application.

There is a single core dump control API to enable an application to specify a location for a process that terminates with a core dump file. The SRASS working group felt that your application should be able to find the core dump file in case you (unintentionally, of course) brought your system to its knees!

The proposed API set for configuration management is the most ambitious effort undertaken by SRASS to date. Its claim to fame is that it will allow an application access to underlying system configuration information that is available at boot time (which is normally invisible to an application). It will also allow an application access to those parts of the configuration space of a system that it may cause the system to generate. The primary purpose for the proposed interface is to support the recovery of a system from the effects of faults. In particular, the proposed set of APIs will allow an application to keep track of system configuration data that is important to recovery. It will allow an application to maintain a picture of the configuration of the system that is relevant to it. This is achieved by means of mount and unmount operations, linking and unlinking operations, operations to add nodes to the configuration description, and several functions to allow an application to access any part of the current description of the configuration picture.

The realtime contingent of the SRASS working group feels that there is a need for a set of APIs to help manage event detection. This is because realtime systems require more flexibility in interfacing with operating systems than do other types of application programs. Dr. Arun Chandra of IBM made a presentation on IBM Phoenix Event Management capabilities. These capabilities allow an application to access and manage system information on the state of system resources. It is hoped that these and the associated model will be made available for standardization shortly.

In addition, there is a lot of activity related to SRASS. There is a new working group for checkpoint/retry. This working group was formed after an original proposal was deemed to be incompletely specified. Because of the importance of checkpointing/restart to the high-assurance computing world, a new working group was formed. There is still a lot of work to do in this area, and your participation is invited.

Joint work with the realtime working group on event tracing is ongoing. So far, 35 requirements for tracing have been identified. There was lively discussion on the merits of tracing at the thread level and whether a trace on a process should span a fork. Several other requirements led to much debate before being resolved. A presentation on the use of trace facilities used by the ARPA HiPeR-D project was made by Eric Lager of the Naval Surface Warfare Center. He presented a description of requirements that the realtime community has for trace facilities. It was noted that in order to do trace in the stringent realtime environments of HiPeR-D, high-resolution clocks are required. It was decided that time stamps were an important part of being able to extract causality and order from a completed trace file, so the current requirement calls for time stamps to be made available. An initial proposal for trace APIs is expected to be ready in time for the January POSIX meeting. Attendance at these joint meetings was high and very active. There was lively participation by representatives of SUN, IBM, Tandem and Sequoia, as well as members of the realtime community. For more information on these activities, get in touch with Jim Shaffer at jjs@austin.ibm.com or Francois Riche at rich@ibm.fr.

To top things off, there was a presentation by Dr. Lonnie Welch of the New Jersey Institute of Technology concerning the need for the HiPeR-D Project to be able to access system statistics via an API. System statistics are needed to assess system performance, which must be analyzed before the trace facilities are used.

If you are interested in helping to produce standard APIs that support fault management (including serviceability and fault tolerance aspects of systems), get in touch with Helmut Roth at hroth@relay.nswc.navy.mil or Dr. Arun Chandra at achandra@vnet.ibm.com.

Report on POSIX.1m: Checkpoint/Restart

Steven J. Dovich <dovich@tiac.net> reports on the October 16-20, 1995, meeting in St. Petersburg, FL

The checkpoint/restart working group, otherwise known as POSIX.1m, began considering text extracted from previously balloted material from POSIX.1a. This was the first meeting of the group since the approval of the Project Authorization Requests (PARs) that split the content of the POSIX.1a draft. It seems that there was some expectation that the formation of the new working group meant that the

previous work was being discarded. The reality of the situation is that the new working group is using the text from the current POSIX.1a draft as its first draft. Whether preserving the investment in the languages of that draft is appropriate will doubtless become evident as this group brings a document forward through the balloting process.

The objections and comments from the last round of POSIX.1a balloting formed the basis for POSIX.1m group discussion. It seems strange to begin new working group activities with a ballot resolution. And I should note that none of these comments requires a response from POSIX.1m because they were submitted against a different draft document. Because we are all nice people, and because we recognize that these comments were offered in order to improve the language of the standard, we felt it important that each comment be considered and appropriate changes be made. Besides, if ignored, these objections and comments will probably be resubmitted as soon as this draft is sent out for balloting anyway (folks who join ballot groups can have rather long memories).

A portion of the comments was obvious enough that the group reached consensus on the appropriate changes in this meeting. Most of these dealt with ambiguity due to undefined terms, missing descriptions, or text that was acknowledged as unacceptable and for which an appropriate solution was supplied in the POSIX.1a ballot. There remains a list of issues that have been deferred, either because of the complexity of the proposed solution or because of the subtlety of related issues already documented in the published standards.

A sufficient number of items was agreed to in this meeting to provide plenty of work for the technical editor and other group members, during the next few months. Barring any issues other than those already identified from the POSIX.1a ballot, this working group should be able to prepare a draft ready for balloting by the end of next year.

Report on X/Open Distributed Systems Management

Martin Kirk <m.kirk@xopen.co.uk> reports on X/Open Distributed Systems Management

The X/Open Distributed Systems Management Program commenced in 1990 and aims to progressively define an environment for the development of distributed management applications for heterogeneous systems. The program has produced a variety of deliverables, including a Systems Management Reference Model, the XMP Management Protocols API, a first volume of Common Management Facilities for an OMG CORBA (Object Management Group's Common Object Request Broker Architecture) environment, and specifications for Performance Measurement and Backup and Restore Services.

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Current and future activities include the definition of further Common Management Facilities, Event Management Services, and Distributed Software and Print Administration.

The work of the X/Open Systems Management working group is complementary to other activities such as IEEE POSIX P1387, the Network Management Forum (NMF), the Object Management Group (OMG), and the Performance Management Working Group (PMWG).

X/Open's role in distributed systems management is to promote the convergence of management protocols and object definitions, the establishment of a consistent management environment on open systems, and the integration of open systems as both client and management application platforms in networks of heterogeneous computing environments. In this role, X/Open aims to serve as a facilitator, adopter, integrator, and/or innovator to promote agreement and rapid implementation and deployment of distributed management services.

The X/Open Distributed Systems Management program is concerned with the distributed management of distributed, heterogeneous systems, covering:

- Management of Stand-alone Systems
- Management of Distributed Systems
- Application Management
- Network Management

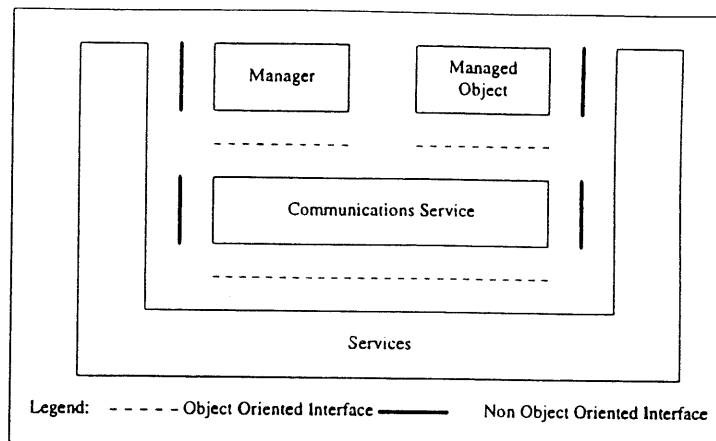
It aims to produce the specifications necessary to facilitate the development of systems management software for a distributed, heterogeneous environment.

The program has the following broad goals:

- Portability of Management Software
- Portability of Administrators
- Interoperability of Management Systems
- Integration between Systems and Network Management

In addition to the user requirements developed as part of the X/Open's requirements gathering process, the working group works with the X/Open Distributed Systems Management Requirements Topic Group to identify and refine the detailed requirements that shape the continuing technical program.

X/Open has defined a framework for its current specification development work in this area in the Systems Management Reference Model. The following diagram taken from that model illustrates the overall concepts involved:



The diagram illustrates the relationship between managers (who implement the management tasks performed by administrators) and managed objects (which represent the resources being managed).

Communications between managers and managed objects is provided by a Communications Service, which also provides access to other services necessary to implement distributed management systems.

Services can be divided into the following broad classes:

- general services, which are characterized as being of use to a wide range of different problem areas
- management services, which are common facilities that have been specialized for distributed management (Areas of specialization might include policies for more centralized control of security, policies for configuring and distributing applications, and the ability to control the location of objects.)
- application services, which are services specific to some particular functional area within the overall management problem space (Although these services are not of general use to a wide range of management applications, they provide common services to implementations addressing that particular area. An example might be a catalog service provided for the use of multiple backup and restore applications.)

The interface to the Communications Service implements an object-oriented paradigm. The interfaces provided by other services may also be expressed in the same way; however, some service interfaces will be defined as non-object-oriented, functional interfaces. The reason for this approach is wholly pragmatic; object-oriented frameworks are not universally deployed, and in order to deliver specifications in a timely manner, it is not possible to predicate them on the existence of object-oriented framework technology. The reference model is deliberately described using abstract terminology, independent of any specific implementation

technology. At present, a variety of technologies is in common use:

- SNMP (Simple Network Management Protocol) and CMIP (Common Management Information Protocol) Management Protocols for Network Management
- RPC (Remote Procedure Call) for Systems Management
- OMG CORBA for emerging Systems and Network Management frameworks

The X/Open Distributed Systems Management Program will incorporate the above technologies. X/Open has defined an API specification (XMP) that provides consistent access to the SNMP and CMIP management protocols and an accompanying specification (XMPP) that references the protocol specifications supported by XMP.

Current development of "application-level" specifications is being performed using RPC technology as the underlying mechanism. As noted above, these developments indicate the need to respond pragmatically to user requirements and in as timely a manner as possible.

Work is under way to develop interfaces to management services using the OMG CORBA technology. Where applicable, a migration path will be provided for RPC-based specifications to a CORBA environment.

Work is also under way to enable effective interworking between network management frameworks based on SNMP and CMIP, and the OMG CORBA technology that is expected to form the basis of future systems management frameworks.

The systems management working group collaborates with several other related groups, including NMF, OMG, and PMWG. This integration role is an important part of the X/Open strategy, and further collaborative relationships with other groups are expected in the future.

X/Open published several classes of document:

Snapshots: These provide a mechanism for X/Open to disseminate information on its current direction and thinking. The intention is to stimulate industry debate and prototyping and solicit feedback. A snapshot represents the interim results of an X/Open technical activity. A snapshot does not represent any commitment by X/Open members to develop any specific products.

Guides: These provide information that X/Open believes is useful in the evaluation, procurement, development, or management of open systems, particularly those that

are X/Open-compliant. They are advisory, nonnormative documents.

Preliminary Specifications: These specifications, which often address an emerging area of technology and consequently are not yet supported by multiple sources of stable conformant implementations, are released in a controlled manner for the purpose of validation through implementation of products. A preliminary specification is not a draft specification. In fact, it is as stable as X/Open can make it and on publication has gone through the same rigorous X/Open development and review procedures as a CAE specification. Preliminary specifications are analogous to the trial-use standards issued by formal standards organizations, and product development teams are encouraged to develop products on the basis of them. It is expected that preliminary specifications will normally progress to become CAE specifications once suitable implementation experience has been gained.

CAE Specifications: CAE (Common Applications Environment) specifications are the stable specifications that form the basis for X/Open-branded products. These specifications are intended to be used widely within the industry for product development and procurement purposes.

The following publications developed in the Distributed Systems Management Program are currently available:

- S110. Systems Management: Problem Statement. 8/91
- S190. Systems Management: Identification of Management Services. 5/92
- G211. ISO/CCITT and Internet Management: Co-existence and Interworking Guide. 12/92
- G207. Systems Management: Reference Model. 9/93
- G302. Systems Management: Managed Object Guide. 9/93
- G141. Systems Management: Guide to the Universal Measurement Architecture. 12/94
- P426. Systems Management: UMA Measurement Layer Interface. 12/94
- P434. Systems Management: UMA Data Capture Interface. 12/94
- P435. Systems Management: UMA Data Pool Definitions. 12/94
- P424. Systems Management: Backup Services API. 7/95
- P421. Systems Management: Common Management Services, Volume 1. 7/95

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- P521. File System and Scheduling Utilities. 10/95
- C206. Systems Management: Management Protocol Profiles (XMPP). 11/93
- C306. Systems Management: Management Protocol API (XMP). 3/94
- C502. Systems Management: GDMO to XOM Translation Algorithm. 10/95

More detailed information is available on the X/Open Web server, URL: <http://www.xopen.org>.

The following projects are currently under development within the systems management working group:

- *Common Management Facilities, Volume 2.*
Preliminary specification: 2Q96.
This project will add to the OMG IDL-based (Interface Definition Language) services defined in Volume 1.
- *Event Management Service.*
Preliminary specification: 3Q96.
This project is intended to define an event management service capable of receiving events from a variety of sources and providing mechanisms by which an application can register to receive events in which it is interested.
- *Distributed Software Administration Interoperability.*
Preliminary specification: 4Q95.
This project will develop interoperability interfaces that will be complementary to the POSIX P1387.2 software administration standard. The POSIX standard concentrates on issues of portability, and the X/Open specification will provide an interoperability definition that will allow the development of distributed, heterogeneous software administration.
- *Distributed Print Administration Interoperability.*
Preliminary Specification: 2Q96.
This project will develop interoperability interfaces that will be complementary to the POSIX P1387.4 print administration standard. The POSIX standard concentrates on issues of portability, and the X/Open specification will provide an interoperability definition that will allow the development of distributed, heterogeneous print administration.
- *Inter-Domain Management: Specification Translation*
Preliminary Specification: 4Q95
Inter-Domain Management: Interaction Translation
Preliminary Specification: 2Q96
This project, undertaken in collaboration with the Network Management Forum, will establish guidelines for translating managed object definitions between ISO

GDMO and SNMP, and OMG IDL. This will enable the simpler interworking of management systems based on ISO and SNMP and OMG technology. It is expected to be particularly important in enabling better integration between systems and network management.

- *UMA Data Capture Interface.*
CAE specification: 3Q96.
UMA Measurement Layer Interface.
CAE specification: 3Q96.
UMA Data Pool Definition.
CAE specification 3Q96

These deliverables represent the completion of the X/Open process for the existing preliminary specifications. These specifications were developed by the Performance Management Working Group. They define interfaces and metrics for performance measurement.

Until relatively recently, the Distributed Systems Management working group consisted primarily of representatives of the major system vendors who are the X/Open shareholders, together with representatives of the X/Open user and ISV councils. In 1993, X/Open created a new form of membership that allows participation directly in individual working groups, and this has resulted in a significant number of systems management ISVs joining the group. For further information on either membership or the work of the Distributed Systems Management working group, please contact the author, <m.kirk@xopen.co.uk>.

Open Systems, POSIX, and Windows NT – Another Point of View

by Heinz Lycklama
<heinz@osta.com>

“It’s Official: Windows NT Is Open” – Editorial by Michael Goulde in the November 1995 issue of *Open Computing*

“Feds declare NT ‘open system’; UNIX takes a hit” – *ComputerWorld* news headline, July 31, 1995

“NT is a FIPS-2 certified system, and as such is a ‘POSIX-compliant’ operating system” – stated as fact in “redacted decision” by judge from GSBCEA

What’s going on here? What do these statements from recent trade publications and the judge’s “redacted decision” have to do with the facts? Are any of them true? How did the GSBCEA judge come to this conclusion in the Coast Guard Standard Workstation III award? The flurry of activity following the US Government bid protest judgment

handed down in June 1995 has been remarkable. Are thirty lawyers better qualified to define an "open system," let alone a "POSIX-compliant operating system," than the technical experts who produced the POSIX standards and the POSIX.1 Testing Policy?

What we have here is the trade press badly misrepresenting the decision that was handed down by the US Government, analysts repeating what the trade press is reporting without doing any real analysis, the judge in this case making statements contrary to the spirit and law of the NIST POSIX.1 Testing Policy, and at least one "POSIX expert" agreeing with the judge's statement, even though it is contrary to the NIST POSIX.1 Testing Policy.

The press has done a great job of clouding the issue of "open systems." First it was *ComputerWorld* with its article stating that the government declares that Windows NT is "open." The November 1995 issue of *Open Computing* has an editorial written by Michael Goulde of the Patricia Seybold Group with the title: "It's Official: Windows NT Is Open." Michael states that the "GSA Board of Contract Appeals declared that Microsoft Windows NT is an open system." They said no such thing! Where do these analysts/reporters get this from? What's a user to believe?

In his article "Open Systems, POSIX, and NT," published in the December, 1995 issue of *;login.*, Stephe Walli provides much of the background of this protest case involving the award of the US Coast Guard Standard Workstation III (CGSW) RFP to Unisys. He also provides a summary of the "findings of fact" with some discussion from the judge's redacted decision. I won't bother to repeat the "findings of fact," but I do disagree with his conclusions. This article explains my views on why the decision handed down in this protest bid is incorrect and sets a bad precedent for those who promote the use of open systems – suppliers and users alike.

I was directly involved in the bid protest trial as an expert witness on POSIX-related issues for the protesters (proud to represent the side of "open systems," I might add). As the founder of the original */usr/group* Standards Committee, which spawned the IEEE POSIX standards efforts, I care a great deal about how POSIX and open systems are viewed and used in the industry.

Someone familiar with this protest said, "Now that Windows NT has won a large bid by following the rules that the UNIX community created, UNIX people are crying foul – That's not right!" My contention is that Windows NT "won" this bid by the not-so-subtle use of a "bait-and-switch" policy, and not by rules that the UNIX community created. Let's look a little deeper into the issues of POSIX compliance and "open systems" surrounding this protest.

Is Windows NT POSIX-compliant?

For that we need to go to the NIST POSIX Testing Policy. This policy recognizes that the POSIX.1 APIs can be hosted by a number of different configurations, one being a "cooperating-hosted system." In the definition of terms, it states that a "cooperating-hosted system" is "a single computer system that provides the functionality of both the development system and the host implementation with a *single* operating system, and provides the FIPS 151-2 conforming implementation with *another* operating system" (emphasis added). This definition was introduced to accommodate the testing of the Windows NT POSIX Subsystem. No problem here – the intent is clear when you look at the three other configurations that had been dealt with by the NIST POSIX Testing Policy heretofore (native implementation, hosted implementation, and cooperating system). Windows NT supports multiple operating system environments, e.g., Win32, OS/2, and POSIX, and thus a new test configuration definition was required.

In the Certificate of Validation issued by NIST, the implementation tested is the "Microsoft Windows NT POSIX Subsystem, Version 3.5." It should also be noted that there are some major deficiencies listed on the Certificate of Validation, including the following:

- general terminal interface devices
- mountable file systems
- modem control
- appropriate privileges

These deficiencies carry no legal binding, but they do indicate that the POSIX Subsystem of Windows NT barely squeaked through the tests.

The Windows NT POSIX Subsystem is the validated product, the "another operating system" in the definition of cooperating-hosted introduced in the NIST POSIX Testing Policy. The "single operating system" in this case is the Windows NT Win32 Subsystem – that is the development system that was used to compile the POSIX test suites. The implementation under test, i.e., the validated FIPS 151-2 product, as identified in the NIST POSIX Testing Policy and in the Certificate of Validation is the "Windows NT POSIX Subsystem." The NIST POSIX Testing Policy says that "The product identified represents the operating system tested." This is correctly identified in the Certificate of Validation as the "Windows NT POSIX Subsystem."

Because the "Windows NT POSIX Subsystem" is certified to be POSIX compliant, does this mean that Windows NT is POSIX compliant? No, the definitions in the NIST POSIX

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Testing Policy are very clear that this is not what is meant. NIST never intended it this way, and NIST personnel have testified to that. Consider this analogy with the cooperating system in which the development system (which is used to compile the POSIX test suites) and the target system (which is used to run the POSIX test suites) are two separate computers. If the target system is certified to be POSIX compliant, does that make the development system POSIX compliant? I don't think anyone would argue that, but that's exactly what is being claimed for the Windows NT system. The claim is that because the POSIX Subsystem is POSIX compliant, Windows NT is POSIX compliant.

Did the Windows NT-based solution proposed meet the CGSW III RFP?

One of the major requirements of the CGSW III RFP is that certain applications (email and RDBMS) run under the POSIX operating system. We interpret this to mean that these applications must run under control of the POSIX compliant operating system. For the Windows NT platform proposed, that means the POSIX Subsystem, which is the operating system environment that provides the POSIX.1 services. The email and RDBMS products proposed run in the Win32 Subsystem. So how does this meet the requirements of the RFP?

One of the other major objectives of the RFP was to provide a platform for portable applications using the NIST Application Portability Profile (APP) as a framework. Certain standards were selected from this APP for the CGSW III RFP. These include:

- GOSIP (FIPS 146-1)
- SQL (FIPS 127-1)
- XVT
- C (FIPS 160)
- Ada (FIPS 119)
- Pascal (FIPS 109)
- POSIX.1 (FIPS 151-2)

The intent of the NIST APP (and of the POSIX Open System Environment (OSE) as defined in the POSIX.0 Guide for Open Systems Environment, upon which the NIST APP is based) is that the APIs defined by the standards be part of an integrated environment so that a portable application can use any and all of the APIs that are part of the APP. The Windows NT-based solution provides the GOSIP, SQL, XVT, C, Ada, and Pascal standards in the Win32 Subsystem and only C and POSIX.1 in the POSIX Subsystem. This makes it impossible to write a portable program that uses all these APIs in an integrated manner so that the application can be ported to

another POSIX.1 compliant platform. So the solution proposed defeats the intent of the NIST APP, the government's own proposed framework for developing portable applications.

Clearly, the proposed Windows NT-based solution does not meet the letter, intent, or spirit of the CGSW III RFP. How did this happen? If the CG wanted Windows NT, they should not have written "POSIX operating system" into the requirements, or determined a need for portable applications for that matter. They should have stated up front that a proprietary solution such as Windows NT was acceptable. Other bidders spent millions of dollars to put together bids that complied with the POSIX and portability requirements.

The government, NIST specifically, spent millions of US citizens' tax dollars to define procurement procedures that would meet the needs of various government agencies. Part of the effort was to define an Application Portability Profile that would provide a framework for writing portable applications, and give the agencies the choice of selecting from multiple suppliers, knowing that their current applications would still run on any new platform that they might acquire in the future. This is called investment protection.

Investment protection was in fact a major objective for the CG because they wanted to move from a proprietary CTOS environment to an "open environment" that would give them choice of suppliers and solutions in the future. The CG has moved from one proprietary platform to another with the Windows NT solution. The CG also wanted to be able to import applications written by other government agencies for their "open platforms." The Windows NT-based solution also defeats this purpose because portable POSIX compliant applications cannot be ported to the Windows NT platform.

We even heard the argument that "The language 'run under' was used by the Coast Guard to prevent bidders from proposing solutions of these applications that were run under emulation." Give me a break! The English language is not that imprecise that one would believe that the word "POSIX" was introduced so that we should interpret "POSIX Operating System" as meaning that this disallows emulation. There is no mention of emulation in the RFP. This really stretches credibility! In fact, even the Win32 Subsystem in Windows NT supports Windows applications running in 16-bit mode using emulation. This interpretation of the RFP language would even disallow Windows NT as a solution!

Microsoft has a desire to capture as much of the government market for computing platforms and applications as possible. (They have that right, but they need to play by the same rules as other suppliers do.) Windows NT was designed with the government market in mind. As stated in chapter 1 of the book *Inside Windows NT* by Helen Custer of Microsoft,

“To meet the government’s POSIX procurement requirements, NT would be designed to provide an *optional* POSIX application execution environment” (emphasis added). This is exactly what Microsoft has done – added an optional POSIX Subsystem for no purpose other than passing a POSIX.1 test suite. No commercial Microsoft or third party products that use the POSIX Subsystem have been introduced. It was never intended to be useful. In fact, one can remove the POSIX Subsystem, and all commercial applications will run just fine.

Let’s call a spade a spade. Bottom line, this is a “bait-and-switch” policy: the POSIX Subsystem is the bait, and the Win32 Subsystem is the switch. “Yes, we have POSIX, but please use our Win32 Subsystem, i.e., Windows Open System Architecture, instead – it’s the only one that really works.” Is this a marketing sham or what? It’s like writing a contract to have a house built with 110 volt sockets. Your contractor builds the house with 220 volt sockets, but with only two 110 volt sockets. The test is whether your toaster will work on the 110 volt socket. Yes, but if you plug in two appliances on the two 110 volt sockets, a fuse is blown. Oh by the way, you can plug in as many 220 volt appliances as you want, but you can only buy those appliances from a factory in Redmond!

What makes a system open?

That depends on who writes the definition. Portability, interoperability, and user portability are three agreed-upon key requirements. How well do products on the market meet these requirements? This has become a very subjective discussion. The POSIX Open System Environment has four major goals:

- application portability
- application interoperability
- data portability
- user portability

with the resulting benefits of:

- integration of components from multiple vendors
- efficient development and implementation
- efficient porting of applications

The NIST APP, which has a strong resemblance to the POSIX OSE, was developed for the government market to make large government procurements more cost-effective and efficient and to promote portability and interoperability between IT solutions adopted by various government agen-

cies. The key here is that suppliers and users must agree on an application framework to meet the stated goals and achieve the benefits listed above.

Computing systems and applications that meet the above-stated goals meet the needs of the government agencies. Application portability works only if the application uses an integrated set of APIs that fits within a well-defined applications framework such as the NIST APP or POSIX OSE. The X/Open application profiles also match the NIST APP and POSIX OSE very well. Most UNIX systems, and even proprietary operating systems with integrated “open systems environments,” delivered today provide a consistent set of “open systems” APIs agreed to by players in the open systems industry. These systems provide open platforms suitable for applications portability and interoperability.

Given these application profiles/frameworks, openly defined by all participants in the process, any system vendor can build computing platforms to meet the requirements, and any ISV can build applications that fit into the framework. The user has a choice of system providers and a choice of applications providers. The framework is open and not controlled by any one vendor. This model fits the government’s standards-based procurement needs and does not lock the government into any one vendor. This is openness in the purest sense of the word. The specifications for all important “open system” component interfaces such as POSIX, X windows, TCP/IP, CORBA, and now the World Wide Web were determined by cooperation among industry suppliers.

Is Windows NT “Open”?

By whose definition? Does it support application portability? Only if you move an application from one Windows NT platform to another. Porting an application from Windows NT to a UNIX system or vice versa is not easy because the set of APIs used on one system is not necessarily supported on the other system. UNIX systems provide an integrated set of APIs that matches the requirements and framework of the NIST APP. Windows NT provides a different set of APIs that does not meet the framework requirements of the NIST APP, but rather fits within the Microsoft-defined WOSA. The POSIX.1 APIs provided by the Windows NT POSIX Subsystem do *not* fit into the WOSA framework (by design).

With Windows NT, we have a model where the application architecture or framework (WOSA) and the APIs are controlled by one vendor – Microsoft. The user can buy computing platforms and applications from any supplier who provides Windows NT and applications that fit the WOSA architecture, all owned by one vendor. Open systems is an attempt to break this control by one vendor.

STANDARDS

By adding the POSIX Subsystem as an appendage to Windows NT and then declaring that Windows NT itself is POSIX compliant, Microsoft has corrupted the concept of "open." Microsoft advertises Windows NT as a POSIX-compliant operating system, thereby subverting the meaning of POSIX compliance. Other operating systems suppliers such as IBM, HP, DEC, and Tandem have added POSIX.1-compliant interfaces to their proprietary systems in an integrated manner, but these POSIX.1-compliant environments were meant to be, and are, used by their customers to build portable and interoperable applications. Microsoft has no such intent in providing the POSIX Subsystem appendage to Windows NT.

Users are free to buy proprietary solutions controlled by one supplier. But if this is what the user intends to procure, then the RFP should state clearly that all solutions will be considered, open or proprietary. Don't use POSIX compliance as a ruse. Don't even use the term "POSIX compliant" in the RFP if it carries no meaning.

Possible Responses by the Open Systems Community

The CGSW III RFP was awarded improperly to a supplier that responded with a noncompliant operating system, Windows NT. It is a mistake to let this award stand because of the precedence it sets. Here are some options that suppliers interested in open systems have:

- Mount a concerted effort to overthrow this award. Letting it stand confuses the meanings attached to "POSIX compliant" and "open" in the user's mind. From a technical point of view, the US Government's ruling doesn't have a leg to stand on. The "finding of fact" quoted above is in fact false, according to the NIST POSIX Testing Policy.
- Mount an open systems marketing effort to shed light on what's really happening in order to educate confused users. This will encourage users to write RFPs that result in the procurement of open systems solutions. RFPs must be written with a lot more precision than they have in the past. Open systems give users choice.
- Work with users to strengthen the demand for open systems solutions. X/Open, OSF, and UniForum are in a position where they can help influence the writing of RFPs that result in the procurement of open systems solutions. RFPs must be written with much more precision to avoid the problems encountered with the CG III RFP.
- Work with NIST to strengthen the RFP requirements writing procedures to assure that the government acquires open systems solutions that meet the NIST APP specifications. The government has spent millions of dollars to develop the NIST APP and the test suites that are used to

measure conformance. Let's not let this effort go to waste.

- Strengthen industry cooperative efforts to avoid unnecessary fragmentation and to counter the inroads being made by Windows NT. Industry players have taken a number of steps to strengthen the role of open systems technologies in the past year. We need more open systems technologies such as X windows, TCP/IP, NFS, World Wide Web, CORBA, and Java to give users a choice in buying open systems solutions from more than one vendor.

Postscript

"Michael Gould recants statement" – *Open Computing*, December 1995 issue, page 10

"*Open Computing* magazine closes its doors" – *Unigram X*, Issue 567, December 4-8, 1995

"Stephe Walli does penance – builds the real McCoy" – Details at UniForum '96 in San Francisco.

Sun Microsystems pours hot Java on Microsoft and writes script for the new game.

Microsoft: "Let's hope Anne Bingaman [DOJ] doesn't read about this."

30 lawyers agree to redefine "open system" by spelling the second word as s-e-a-s-o-n.

MEMBERSHIP APPLICATION

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We agree that this membership will be subject to the rules and by-laws of AUUG as in force from time to time, and that this membership will run from time of joining/renewal until the end of the calendar or financial year.

We understand that we will receive two copies of the AUUG newsletter, and may send two representatives to AUUG sponsored events at member rates, though we will have only one vote in AUUG elections, and other ballots as required.

Signed _____ Date _____

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Following are our specified contacts. The primary contact holds the full member voting rights. The two designated reps will also be given membership rates to AUUG activities including chapter activities. By default a regional chapter will be selected for you. If you would rather nominate a chapter, please specify in space provided (indicate NONE for no chapter). (Please print clearly or type)

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AUUG Membership Secretary
 P.O. Box 366
 Kensington, NSW 2033
 Australia

(Please allow at least 4 weeks for the change of address to take effect.)

- The following changes are for my personal details, member #: _____
- The following changes are for our Institutional Member, primary contact.
- The following changes are for our Institutional Member, representative 1.
- The following changes are for our Institutional Member, representative 2.



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