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NEWSLETTER

EUUG

European UNIX® systems User Group

Volume 9, No. 4
Winter 1989

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EUROPEAN UNIX® SYSTEMS USER GROUP NEWSLETTER

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Editorial

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Parliament Hill Computers Ltd

Protect Your Software

How do you do it? You can use clever serialisations or use a dongle, but you should also do this through legal means, i.e., copyright. It is not as difficult as it seems, and if done properly gives you a means of redress if you do discover a theft.

Alicia Gronke delivered an excellent paper on this topic at the EUUG Vienna conference in September. This is reprinted on page 2 – you now have no excuse for not copyrighting your software.

Conference Mail

Did you send or receive mail when you were at the Vienna conference? The story of the activity behind the scenes is brought to you on page 10.

Those guys deserve a big "thank you" from all of us who made use of the service, why don't you mail them and say so.

Unix Networking Group

The USING group has thrown its doors wide open and is inviting membership from Europeans who are interested in Networking.

Pat Eves introduces you to the group on page 20, and invites you to their conference in March 1990.

More Conferences

Other groups also announce their forthcoming conferences to you, the AUUG (Australia) in September 1990 on page 26, USENIX (USA) in January on page 37, UKUUG (UK) in December and February on page 33, the NLUUG (Netherlands) in May on page 30, and most important of all the EUUG conference in April on page 16.

There is a summary of UNIX related meetings in the Calendar on page 71.

Regular Columns

Janet Davis has left UEL and now we have Gill Mogg hosting their column. She has started out with a detailed look at the OPEN LOOK Graphical User Interface on page 61.

Group Reports

Did you know about the UNIX group in Czechoslovakia? On page 13 Peter Pronay introduces the latest UNIX user group and discusses some of the problems that they have, not least of which is the non availability of source.

You will also find a report from Iceland (page 28) as well ass the regular reports from the Netherlands (page 30), the UK (page 33), and from the USA (page 35).

Advertise in the EUUG Newsletter

You too can reach a pan European audience of UNIX professionals. Make your product or service widely known.

Page 23 will tell you all that you need to know.

Future EUUGN Dates

As ever I am always pleased to receive contributions from readers, be this a paper, a short announcement or some information for the UNIX calendar.

Please mail or phone me to discuss an idea. Remember these important dates:

Copy Date	Publication Date
22 January	1 March
23 April	1 June
23 July	1 September
22 October	1 December

How to Protect Your Software...

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USENIX Association
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Alicia Dunbar Gronke is a native of San Francisco, California. Although formally trained and educated as a classical musician, she began exhibiting strange inclinations towards studying copyright law while working as a legal aide and research assistant for a small law firm about three years ago.

This is her first attempt at publically unleashing this, until now, "closet obsession".

How to Protect Your Software Through International Copyright Laws: Step-By-Step Instructions

This article will attempt to clarify some common misconceptions about copyright formalities as applied to intellectual properties. Due to the fact that these laws vary from country to country, the examples presented here should be viewed only as basic approaches to copyright protection, not as a legal reference.

Taking these few necessary precautions to protect your work from theft or unauthorised alteration isn't nearly as much of a task as one might believe. Here, we set about taking the mystery out of what should be only a few simple procedures. The idea being stressed here is taking as many preventive measures as possible to protect your work. The effort required to do this is minimal.

Introduction

Copyrights, by my definition, were designed with the idea that if a person is willing to share their works and expressions with the interested populace by distributing 'copies' of said works, that person has an exclusive 'right' to protection under the law from those ever present scavengers that watch for the drop of the proverbial ball, only to profit at that person's expense. That person is also entitled to the right to reap any rewards or benefits which may become evident upon publication. This type of law provides protection for the form an expression takes, not the ideas being expressed.

Step Number One: The Copyright Notice

Let's say that you've just put the finishing touches on your new C++ program. You're on top of the world and you feel like a new parent. That's fine, but what's to deter anyone from stealing your new offspring? A Notice of Copyright. The first step in the posting of a copyright notice entails the use of the copyright symbol, namely ©. This should be followed by the word Copyright, date of first publication and your name. This simple step fulfils the minimum formality requirements set by the UCC, the Universal Copyright Convention, as well as all signatory nations of the Berne Convention. Example:

© Copyright [DATE OF PUBLICATION] [YOUR NAME]

However, this may be your second or perhaps third revision of this work, in which case your statement will look something like this:

© Copyright 1985, 1989 [YOUR NAME]

In the case of multiple authors, the practice of showing the names of individual contributors (as well as the date of publication of their contribution) is often used:

© 1988 Modesia Fleming
© 1986 Elissa Metterhausen
© 1983 Daniel Karrenberg

These notices are not mandatory requirements of the UCC, however, the use of them makes the owner exempt from any other copyright formalities imposed by any other UCC nation. Although it is implied by the copyright notice, it would also be to your advantage to add the fact that this publication is not to be copied in any way, shape or form without the express written permission of the author. There is no such thing as too much insurance. To make it easier for the user to comply with your wishes, you may want to include the name and address of your publisher. The extra information volunteered in this instance will not invalidate the copyright. As long as the four major requirements are clear and properly placed, the notice is considered valid.

On works containing trade secrets, such as computer program source code, a notice indicating that the work contains non-public proprietary information should also be added.

As for [DATE OF PUBLICATION], the moment you give, sell, rent or lend the work, consider it 'published'. The exceptions to this rule are if the people using it are your employees or are part of a limited group of individuals of the understanding that further distribution of said work is unacceptable. In such instances, this could be viewed as a 'limited publication'. To keep a tighter rein, a friendly legend should be added, such as:

> "This copy is for private circulation only and may not be used in any other manner."

Or you may choose a more formal approach:

> "The material within is an unpublished copyrighted work containing trade secrets or otherwise sensitive information of [THE COMPANY]. This copy has been provided on the basis of strict confidentiality and on the express understanding that it may not be reproduced or revealed to any person, in whole or in part, without express written permission from [THE COMPANY], which is the sole owner of copyright and all other rights therein."

To deter any later arguments, your notice of copyright should be affixed in obvious places throughout the work making sure it is not concealed from view upon reasonable examination. For example, in source or object code, the notice should be placed at the beginning as well as the end of all printouts, not forgetting occasional insertions in the program itself on disk or tape. It is preferable for most users that this notice be placed solely at the very beginning or at the top of the menu. This is also acceptable. There are few things more irritating than having a copyright notice on constant display. And don't forget to affix this notice to all packaging as well, on the outside of boxes and on tapes. If a proper copyright notice is not placed on all 'publicly distributed' copies of a work, the work with which the copyright is associated may in time enter the 'public domain', as an improper copyright is an *invalid* copyright.

Allow me to stress the fact that under the Berne Convention (more on Berne later), the use of the copyright notice on published copies of a work is optional. However, the use of it is still encouraged in the U.S. As an incentive to do so, a new section was added to the U.S. Copyright Act. This section [401(d)] prevents claims of innocent infringement by defendants where notices have been placed on stolen works.

Step Number Two: Registering Your Work

This is the second most vital step toward protecting your work. Although this is no longer mandatory in most countries, it still carries considerable weight in courts of law throughout the world in cases of infringement. As each country has its own individual approach to intellectual property law, it is *extremely* important that you seek the advice of legal counsel before

making any final decisions. One advantage of this step is that your work, should it be distributed without notice of copyright (heaven forbid!), will still have some form of protection. Your registry notice is proof that you took precautionary measures to insure against this sort of thing. Another plus: bringing suit to enforce your copyright sans registration makes the job just that more difficult.

For the sake of argument, say a writer of a non UCC country, say Upper Volta, first publishes their work in Japan, a UCC nation. That work will be automatically protected as in any other UCC nation.

What is the UCC?

The UCC, otherwise known as the Universal Copyright Convention, first came into force 16 September 1955. The two other major copyright conventions are the Berne Convention and the Buenos Aires Convention. Of the three, the UCC is the most widely adopted treaty. It is the 'umbrella' providing protection known as the 'national treatment' doctrine. By employing this doctrine, each member country is obliged to grant the same protection to the works of other member countries as works first published within its own boundaries, as long as that protection meets the minimum requirements of the UCC. This rule applies to both published and unpublished works. So far, it sounds like the panacea for all those 'copyright protection blues'. Not true. The problem with this is the fact that there are still many countries not belonging to the UCC, and even for the ones who do, there are limitations to the protective requirements imposed beyond national treatment. The minimum standards set by the UCC aren't nearly as comprehensive as the alternatives.

Note:
Depending on the country, you may have trouble protecting object code, since some countries still view it as an adaptation or derivative of source code.

What is the Berne Convention?

The Berne Convention for the Protection of Literary and Artistic works is the oldest and most respected of international treaties. It was concluded at Berne, Switzerland in 1886 and is organised as a Union which is open to all countries of the world provided these minimum protective requirements are met:

- the granting of national treatment,
- the granting of certain 'moral rights/droit morale' to authors with regard to the exploitation of their works,
- the granting of certain 'economic rights', such as the exclusive rights of translation, reproduction, performance, adaptation, arrangement or alteration, regarding protected works, and
- the adoption of certain minimum terms of protection, generally the life of the author plus 50 years, for various works.

In essence, Berne provides a substantially higher level of protection. For example, copies accidentally distributed without copyright notice are given protection under Berne. This is not the case in most UCC countries. Should any conflict in protection arise, an author is assured to receive the most favourable protection offered under either treaty. Both conventions stipulate that any disputes between member States concerning the interpretation or application of the Convention that has not been settled via negotiation should be referred to the International Court of Justice.

Here is a quote from Dr Henry Olsson, Director of Copyright and Public Information Department, 21 November 1986 at an international conference on copyright in s'Gravenhage, The Netherlands, speaking on the Berne Conference:

> "The Assembly of the Berne Union in September of 1986 declared *inter alia* that copyright is based on human rights and that authors, as creators of beauty, entertainment and learning, deserve that their rights in their creations be recognised and effectively protected both in their own country and in all other countries of the world."

What is the Buenos Aires Convention?

This treaty provides copyright protection for sixteen South and Central American countries as well as the United States. According to Article 3 of the Buenos Aires Convention, no formalities have to be observed in any country other than the country of origin, *provided* a statement appears in the work that indicates the reservation of the property right. The phrase 'All Rights Reserved' or its equivalent (e.g., 'Derechos Reservados') are commonly used for this purpose. The three nations of this convention choosing not to sign the UCC treaty are Uruguay, Honduras and Bolivia.

To gain equal protection in these countries, the formalities of the Buenos Aires Convention require your notice to look something like this:

© 1989 Jaap Akkerhuis All Rights Reserved

Between contracting states which are also signatories of the UCC, the notice provision, as well as any other conflicting provisions, are superseded by those of the UCC. When distributing software in Latin American countries, take into account the technology transfer legislations which can limit the years during which protection can be provided in contracts. An excellent reference on this subject is *Trade Secrets and Know-how Throughout the World, (1981)* by Aaron N. Wise.

The following lists contain the names of independent nations which have signed the UCC treaty, the Berne Convention, the Buenos Aires Convention, as well as those without any major treaties. These Conventions are voluntary agreements made by the governments of these signatory countries. (As only three of the sixteen member countries of the Buenos Aires Convention are UCC signatories, time will be spent rather on the two larger Conventions.)

Countries signing the Universal Copyright Convention:
Algeria, Andorra, Argentina, Australia, Austria, The Bahamas, Bangladesh, Belgium, Brazil, Bulgaria, Cameroon, Canada, Chile, Colombia, Costa Rica, Cuba, Czechoslovakia, Democratic Kampuchea, Denmark, Ecuador, El Salvador, Fiji, Finland, France, German Democratic Republic, Federal Republic of Germany, Ghana, Greece, Guatemala, Haiti, Holy See, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Kenya, Laos, Lebanon, Liberia, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Mauritania, Mexico, Monaco, Morocco, The Netherlands, New Zealand, Norway, Pakistan, Peru, Poland, Portugal, Romania, Senegal, Spain, Sweden, Switzerland, Trinidad & Tobago, Tunisia, United Kingdom, United States, Venezuela, and Yugoslavia.

Countries signing the Berne Convention:
(as of November 1, 1988)
Argentina, Australia, Austria, Bahamas, Barbados, Belgium, Benin, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Central African Republic, Chad, Chile, Philippines, Colombia, Congo, Costa Rica, Côte d'Ivoire, Cyprus, Czechoslovakia, Denmark, Egypt, Fiji, Finland, France, Gabon, German Democratic Republic, Federal Republic of Germany, Greece, Guinea, Holy See, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Lebanon, Libya, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Mauritania, Mexico, Monaco, Morocco, The Netherlands, New Zealand, Niger, Norway, Pakistan, Peru, Poland, Portugal, Romania, Rwanda, Senegal, South Africa, Spain, Sri Lanka, Suriname, Sweden, Switzerland, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, United Kingdom, United States, (as of 1 March 1989), Uruguay, Venezuela, Yugoslavia, Zaire, and Zimbabwe.

Countries signing the Buenos Aires Convention:
Argentina, Bolivia, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, Peru, United States, and Uruguay.

Countries Without Conventions:
Afghanistan, Albania, Angola, Antigua, Barbuda, Bahrain, Belau, Belize, Bhutan, Botswana, Burundi, Cape Verde, Comoros, Djibouti, Dominica, Equatorial Guinea, Ethiopia, Gambia, Grenada, Guinea-Bissau, Guyana, Indonesia, Iran, Iraq, Jamaica, Jordan, Kiribati, Korea, Kuwait, Lesotho, Malaysia, Maidives, Myanmmar, Mongolia, Mozambique, Nauru, Nepal, Oman, Papua New Guinea, Phillippines, Qatar, Saint Lucia, Saint Vincent and the Grenadines, San Marino, Sao Tome and Principe, Saudi Arabia, Seychelles, Sierra Leone, Singapore, Soloman Islands, Somalia, Sudan, Swaziland, Syria, Tanzania, Tuvalu, Uganda, Upper Volta, Vanuatu, Western Samoa, Yemen (Aden) and Yemen (San'a).

Protection is automatic anywhere as long as you are a citizen of a UCC or Berne country and the work is unpublished. However, once the work is published, you must adhere to the rules imposed by the member country with which the work is registered.

Here are a few prime examples of how various European countries, the U.S. and Japan apply their own rules and formalities regarding the copyrighting of computer software.

Austria:
No provision has been made with respect to the protection of software in Austrian law. A court in Wien confirmed the position that under certain conditions, software is protected under the Austrian Copyright Act. [*Oberlandesgerichts Wien, 8 August 1985, GRUR Int. 793 1987*]

Belgium:
Like Austria, no special provision has been allotted in Belgian copyright law for the protection of software. A bill was introduced in Parliament in June of 1988 for the enactment of a new Copyright Act. The proposal provides that software is protected by copyright with a term of protection lasting 25 years. This Act is not expected to become Law until 1990.

There are currently two laws in Belgium for the protection of copyrightable works. Only programs that are original and express the personal creativity of their authors are eligible for this protection. Belgian law does not protect ideas or opinions, only the form in which they are expressed. Protection begins with creation. The term of copyright spans the life of the author plus a period ending 50 years after January 1st of the following year of death.

France:
Seeing as France has no formal copyright office, paperwork here is not a problem, even though software is indeed copyrightable. Acceptable evidence of copyright date, in some cases, can be proven by showing the work was registered in the U.S. A new law introducing the principle that software is an intellectual property protectable by copyright law came into effect January 1st, 1986. Article 1 of this law expressly confers copyright protection on software. The term is 25 years from the date of the program's creation. France requires the program to be an original work, marked by a personal and intellectual contribution of the author.

West Germany:
Like the rest of Europe, filing in West Germany is unnecessary. They have what is called the Copyright Revision Act, which includes "programs for the processing of data", ("Programme für die Datenverarbeitung"), Section 2(1)(1) of the German Copyright Act. The term of protection lasts for the lifetime of the author plus 70 years. A computer program is copyrightable only if:

- it is not just a simple program, i.e., the answer to the problem being solved is not obvious,
- while developing the program, various solutions could freely determine variables,
- the program is not restricted to mechanical-technical continuation and development of generally known subject matter, and
- one can perceive an important, creative and original ability of selection, assembly, reviewing, arranging and classification of information and instructions which surpasses the general average ability.

In the eyes of the German court, only an individual can own a copyright, not a company, which temporarily dissolves the idea of 'work-for-hire'. The common way around this is for companies to request the worker to execute a license agreement, giving the company exclusive user and marketing rights to the program.

Japan:
According to the 1982 decision of the Tokyo District Court, only source code is copyrightable and object code is merely a copy which is also protected under the Japanese Copyright Act. The period of protection is for the life of the author plus 50 years. Copyright is affirmed at the moment of creation. As with other signatory countries, registration is not a prerequisite for filing a lawsuit, although it makes proving infringement a much less painful ordeal. It is presumed that the date of creation corresponds with the date of registration. Your best move, should you be creating something in Japan, is to register with the Commissioner of the Agency for Cultural Affairs in order to establish the name of the copyright owner and the date of publication.

Their work-for-hire applications are quite similar to that of the U.S. In cases of infringement, the damages collected are equal to the profit made by the infringer. On the other hand, damages could equal the possible amount accrued had the author sold the program.

The Netherlands:
There are really no formal requirements for software copyright protection and only the outward form of the work is protected. Computer

programs in Holland are protected under Dutch law only after meeting the general requirements of originality and perceptibility. Original in the sense that the work be the result of creative activity, perceptible to the point of the work being perceptible to the senses. Protection is recognised at creation and terminates 50 years from the 1st of January of the year following the death of the author.

Sweden:
Computer programs in Sweden are protected under the Swedish Copyright Act which states: "Catalogues, tables and similar compilations, in which a large number of particulars have been summarised, may not be reproduced without the consent of the producer..." Future legislation will expressly provide for software protection under copyright law.

United Kingdom:
Section 1(1) of the Copyright Amendment Act confirms that programs are to be treated in the same way as literary works under the 1956 Copyright Act. An Act which states that a copyright work first comes into existence when it is reduced to writing or some other material form. Section 2 of the same Act states that computer programs comply with the material form requirement, even if the programs are not printed or written on paper but simply stored on a computer.

Once again, registration here is not required. So please keep careful records of program creations and changes by date. It is still unclear as to whether or not object code is seen by the United Kingdom as copyrightable. Here the author of the program is the owner of the copyright unless it was composed under a work-for-hire situation, in which case the employer would be the owner. Under a new Act passed in November of 1988, (the Copyright, Designs and Patents Act), the electronic copying of a program constitutes infringement.

United States:
All it takes to obtain a copyright registration is filing a copy of the program with the Copyright Office, along with a two sided form and a $10.00 filing fee. There is only a cursory examination to see that the form is filled out completely, the money paid and the deposit made. Once issued, the copyright is assumed valid and the term of protection is essentially 75 years from the date of publication, or 100 years from the date of creation, or the life of the author plus 50 years, whichever is shorter. For more detailed information, contact:

Register of Copyrights
Copyright Office
Library of Congress
Washington, D.C. 20559
U.S.A.

Registration of a work with the Copyright Office used to be required as a prerequisite to a suit for infringement. Section 411 of the Copyright Act has been changed to a two-part system where American authors are required to register while authors of other countries are not.

Judging by Congress' litigation 'track record', they still favour the registration system. Works accompanied by a registration certificate continue to be given prima facie standing when the question of copyright validity is in infringement litigation.

Registration provides the copyright owner with a broader range of infringement remedies. For these reasons, registration within 3 months of first publication is generally advisable. (Known as 'timely registration'.) You'll be needing Form TX for software. Take note that the U.S. Copyright Office now accepts copies of object code under the 'rule of doubt' theory. So, in granting registration, no opinion is expressed as to whether the code actually embodies the registered work. The alternatives listed are available should you feel uncomfortable submitting only object code:

- Submit only the first and last ten pages of source code,
- Submit all of the source code (referring to programs consisting of 25 pages or less) with up to half of it blocked out as necessary to protect trade secrets,
- Submit only the first and last 25 pages of source code with up to half of the code blocked out, making sure to block out just enough code in order to protect trade secrets, or
- Submit the first and last 25 pages of object code with an additional 10 consecutive pages of source code.

What are the differences between Copyright, Trade Secret and Patent Law?

Trade Secret is information. It is a way to 'protect something of economic value by keeping it a secret'. This something generally provides some sort of an edge, otherwise known as a 'competitive advantage'. Taking careful measures to keep source code under wraps and away from prying eyes and sticky fingers is of utmost importance. If by chance, in spite of all your precautions, your work still falls into the wrong hands, you will have a very strong case against the infringer if you can prove your diligence and persistence in defending your work. Here is a list of steps which may prove helpful:

- Store working copies of source code in a safe, a locking filing cabinet (one that is difficult to carry away), or a safe deposit box. Remember to keep backup copies in separate places.
- When you're finished working with the code or are stepping away from it for a break, lock it up.
- Stamp ALL copies of the source code with a rubber stamp (preferably in red ink) reading "CONFIDENTIAL". This includes diskettes and their jackets.
- Include a notice, along the same lines of the formal notice shown on page 2, at the top of the menu. You of course can use your own discretion as to how many times you'd like to list this throughout the work.
- When showing the source code, have that party sign a Trade Secret Nondisclosure Agreement form *before* viewing it.

There is a veritable plethora of precautionary measures one can take regarding Trade Secrets. I've named but a few. Most countries appear to allow trade secret information to be transferred via license agreement or contract. There is a possibility that in your particular country the transfer of trade secrets may result in tax consequences. Consult with local counsel.

Patent deals with the right of protection to an inventor for the sole monopolisation of use and commercial exploitation of an 'invention'. So far, patent is the most costly particularly in terms of the application process, and it takes up to three years to obtain. Now that we've covered the less attractive aspects, here are the positive points. Should your software qualify for a patent, it cannot be used by anyone without your permission. And that holds true for 17 years. Of course there's no telling how long it will take before the software becomes obsolete.

Note:
There is an international agreement that covers patents by the name of the Patent Cooperation Treaty (PCT) which establishes procedures for obtaining uniform patent protection. Their aim is to guarantee national treatment internationally, to enhance the creation of national protective systems and to avoid a far-reaching legal disintegration in this somewhat limited field outside the Berne and UCC conventions. For more information, a booklet called the PCT Applicant's Guide can be obtained from the World Intellectual Property Organisation.

WIPO
34, chemin des Colombettes
CH-1211 Geneva 20 SWITZERLAND

Piracy: How to Fight it From the U.S. Vantage Point

An acquaintance brings up in casual conversation, this great new C++ program she just bought for a mere fraction of what you're charging for yours. Upon careful investigation, you find yourself face to face with a slightly modified version of YOUR program. Being a victim of piracy is bad enough, but how can you fight the pirate if he's living in Switzerland? (Piracy seems to have paid off handsomely in his case.) Besides having a screaming fit and tearing your hair out by the roots, what do you do? You've done everything your lawyer told you to do in the first place. You slathered warnings and copyright notices on the box, on inside labels, in the source code. In the words of Douglas Adams, "Don't Panic".

First, call a *good*, (please note the emphasis on the word *good*) lawyer. Not all who advertise themselves as 'copyright lawyers' know what they're talking about. Try to get a referral from someone whose judgement you trust. Be sure you have all the necessary documentation on hand, i.e., notice of registration or other proof of creation, such as sealed self-addressed envelopes with dated cancellations. Once you've found your attorney, she will clarify the procedure for you and make sure all is in order before moving on to the next step.

This next step entails making sure that your copyright registration is recorded with the U.S.

Customs Service, [19 CFR Part 133 Subpart (D)]. This should slow down any imports bearing a suspicious likeness to your work until your case makes it into court and the court can issue an order preventing any further importation.

Now you're ready to move into the final stretch. You must seek an order from the International Trade Commission to bar the counterfeit work from entering the country on the grounds that its importation would prove to be an unfair act or would constitute an unfair method of competition [19 USC. Section 1337]. A similar rule applies to trademarks as well. When filing this complaint, you must be armed with the following information:

— Is this product produced in another country?

— Does it threaten to destroy an existing industry in the U.S.?

— Is the threatened industry efficiently and economically operated?

After the answers to these questions are reviewed and the formal complaint is filed, the case will be heard by an Administrative Law Judge, empowered to grant immediate relief and to ban the imposter work in whole or in part.

Conclusion

Last and most importantly, I must stress the importance of seeking legal counsel on a country-by-country basis to protect your intellectual property. Granted, there is no worldwide panacea for the piracy menace as yet. Every effort has been made to assure all the facts stated in this paper are current and accurate, giving a brief overview of what to expect when preparing a notice of copyright. As needs change, so will the laws, and no one is better qualified to keep you up to date than a lawyer who specialises in the area of Intellectual Properties.

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I'm currently working at University of Dortmund's Computer Science Department as part of the System Administration group. Right now I'm working on a User Administration System. When I'm not fooling around with UNIX computers I like flying with sailplanes and drinking Guinness (although not at the same time :-). Furthermore I love to go to EUUG conferences as I love to meet these funny UNIX people.

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I'm studying computer science at the University of Dortmund (Germany). To afford this I work at the university in system administration, mainly Sun's, and networking. A few may know me from events like the EUUG conferences. I like drinking beer, meeting people all over the world and having fun. I hope I'll finish my studies in a finite time :-)

Those of you who attended the last EUUG conference in Vienna will have seen a new service on offer: the ability to send and receive electronic mail at the conference. This article is about the project, how it worked, how it was received and what we are planning for the next conference.

Software

For the EUUG Mailing System we had to alter the normal way of accessing electronic mail to a certain extent. Usually everybody has their own account from which s/he can read and write letters. As we didn't know the exact number of attendees in advance we decided not to provide personal accounts but instead to have one general mail-account that could be used by anyone to send mail. This of course produced one major problem: if there are no personal accounts available, how is it possible to actually send mail to a conference attendee? We solved this problem by modifying the UNIX mailing software (*sendmail* and friends) to accept letters with any address. Thus people without a personal account on the mail machine could still receive mail. To make mail addresses as unique as possible we proposed that mail to a conference attendee be sent to *Firstname_Lastname_Organization@euug-conf.EU.net*. All incoming mail that could not be delivered locally (i.e., mail to us :-) was spooled in a special directory. This directory was scanned by a daemon that printed mail out onto a laser-printer. This printed mail was then put in a public place where people could look for their mail. To maintain as much privacy as possible, all mail was folded in a way that showed the address but not the contents.

To send mail a means had to be provided to let people insert their real 'home-address' in the e-mail. Usually mail agents construct the sender's address from its login name. As all people had the same login name, this had to be changed. Instead of identifying the sender by the general account the actual home mail-address of the sender had to be put into the mail header. We used *comp* from the *mh* mail package to get this job done. It is possible to configure *comp* in a way that it asks for the senders address instead of constructing its own. Furthermore a simple front-end to *comp* was built that allowed users to choose their favourite editor to write the mail.

All this worked pretty well, except for the very first mail that arrived (Sorry Dan). When the printing software was set up the laser-writer still had some problems. The printing software printed the mail—at least it thought so—and deleted it afterwards. Unfortunately the laser-writer wasn't yet working ...

As an additional service net-news was offered. Initially this didn't work too well. Again a general account was installed to be used by people to read news. Due to some faults we had done in preparing and tailoring *rn* some problems occurred. We forgot that *rn* gets pretty upset about more than one *rn* process running from the same user-id. So for the first few days it was not possible for more than one attendee to read news at one time. This led to some pretty disappointing experiences for some of the delegates. In the middle of reading articles their *rn* process was killed by another delegate who had been told by *rn* to do so... This problem however was soon fixed and for the rest of the week the news service ran smoothly as well.

Hardware

All this ran on a Sun 3/260 that was kindly provided by Sun Germany together with Bacher GMBH Vienna. The machine itself ran well and our software was installed easily. The peripherals, however, were initially troublesome. It took quite a while to get the terminal server box running—this connected the terminals via Ethernet to the machine. Basically this was due to two problems: the weird way that the box had to be configured and the quality of the terminals. These were kindly provided by Technical University of Vienna (thanks to Fritz Plank), where they had been lying in some damp cellar for quite a while. The effect of this was most of the keyboards refused to work either at all or just partly. It took us quite a while—and Fritz quite a bit of diesel as he had to drive between the conference place and Technical University to get new terminals—so that at last four terminals were available.

The biggest problem however was introduced by the modem. We had a leased line across the city to our mail- and news-feed (again the Technical University). When we set things up on Saturday afternoon all worked pretty well. On Monday however nothing worked at all. We wanted 4800 Baud but didn't even manage to get a reliable connection at 1200 Baud. The problem seemed to be line quality. On Saturday afternoon when we set things up, the line had been OK. On Monday much more happening on the phone system which gave more line noise. It was Daniel Karrenberg who finally solved the problem by magically tuning the modem. First we connected an ordinary phone speaker to the line and listened to it. All sounded pretty quiet. So Daniel opened the modem and started meditating over the circuits. Finally he pointed to some arbitrary selected

jumpers and said: "Let's play around with these jumpers and see what happens. Could be that these control the amplification rate". We were pretty sceptical especially as the modem was only rented. Anyway, he tried and it worked. From this time we had no more line problems (but perhaps the lines next to ours started to get problems :-). Thanks to Daniel.

Acceptance

The whole project was greatly appreciated by most attendees (see tables 1 and 2). During the five days that the system was running, about 1000 mails were sent and about another 1000 were received. Using an estimate of about 300 delegates: everyone sent and received about three mails. Not bad for the first time. It was fun watching delegates discovering the system. Monday morning the tutorial attendees started using the system. Probably most of their mails were like: "Hi, I can be reached at the conference. Try answering to...". By the end of Monday we received the first bunch of responses. The same happened on Wednesday when the conference itself started. Lots of people were hanging around in front of the terminals, probably sending their first hello's to their friends. The first answers arrived on Wednesday afternoon, but the main flood arrived on Thursday. Apart from these "Hello" sort of mails there was some obviously pretty serious correspondence going on as well.

Table 1: Total number of logins: 905

Account	Mon	Tue	Wed	Thu	Fri	Total
netnews	23	51	90	93	50	316
mail	75	92	167	92	30	473
news&mail	98	143	257	185	80	789
other						116

As they told us the Swedish postmaster team solved some major problems at home via mail. So all in all the new service was widely accepted.

Our experience in organising and maintaining the project together with feedback we got at the conference however suggest some ideas for future improvement.

Future

First of all we need more terminals. The 'terminal-pool' was pretty crowded—especially during coffee breaks. At the next conference we'll provide significantly more terminals. Although the mail-printing software worked well, having personal accounts for each attendee would be desirable. Currently we are investigating this. Probably we will come up with some software to make attendees create their own accounts. And of course InterEUnet access would be very desirable. We are investigating this as well. However this is probably the most complicated part of our plans. The more people who get involved in this project the more complicated the organisation will get. Providing InterEUnet access however means having to coordinate lots of different people and organisations.

Anyway, if anyone wants to make suggestions to improve the Conference Mailing System, feel free to contact us at the net addresses above.

Table 2: Number of sent and received mail

Mails received	
Total	1559
Non system mail	941
Mails sent	
Total	1771
Non system mail	1150

UNIX in Czechoslovakia

Peter Pronay
peter@iaccs.uucp

Institute of Applied Cybernetics
Bratislava
Czechoslovakia

Peter Pronay is a researcher in the Institute of Applied Cybernetics in Bratislava, Czechoslovakia. He was a systems programmer, responsible for LAN and WAN networking in the International Institute of Applied Systems Analysis (IIASA)—a UNIX stronghold—in Laxenburg, Austria from 1981 to 1986. He has 8 years of UNIX experience. His main fields of interest comprise LAN and WAN networking and UNIX system administration. He also does part-time consulting to the users of SINIX(UNIX from SIEMENS).

Surprised? How could it possibly get there?

Well, I can't tell you the exact and complete answer either. One thing is for sure: country borders and even bloc borders do not seem to be very tight when it comes to software in general and especially, when it comes to embargoed SW. But jokes aside. UNIX of different flavours has been legally available in Czechoslovakia for a couple of years. Only as binaries—as you may have guessed. Different manufacturers, like SIEMENS, NCR, HP, Olivetti and others offer and deliver their company versions of UNIX together with their hardware. Of course, the number of installations of such machines is quite low.

The reasons for it are, first of all, the limited amount of hard currency the country and the companies can spend on western technology. But that is not the only reason. The influence of IBM and the like, on mainframes, affects the way an average computing department head thinks. This is as true here just as in other countries.

Another—at least partly justified—reason for the delayed appearance of UNIX is the lower reliability of domestic hardware. For coping with it, the computer professionals preferred other operating systems with error logging features and better HW-fault tolerance. Recently, with the improving reliability of the Czechoslovak computers the somewhat discouraging ignorance of UNIX towards HW problems is losing its importance. However, to our knowledge only a negligible portion of the installed base of the VAX-compatible machines, produced in Czechoslovakia for several years, run UNIX.

Nevertheless, UNIX is becoming strong in Czechoslovakia. The main vehicle at the moment is multiuser PC-based systems. With the recent shift of the embargo limitations, allowing 32-bit PCs with up to 20 MHz clock rates to be imported, the HW base for this category of UNIX-ing or XENIX-ing becomes more reasonable. And here the conditions for quick growth of the interest in UNIX/XENIX are certainly better than in the West. Although the VAX-compatibles offer higher processing rates, their higher price makes in many cases the 80386s the preferred choice.

Since 80286-based ATs still dominate the scene, most potential users of UNIX/XENIX are discouraged by the lack of application software. With 80386 based systems and their ability to run

DOS applications under UNIX, these hesitations will fade away.

One direction of software development remains completely closed for the Czechoslovak UNIX community. It is the graphics user interface X-Windows or alternative solutions, which all require powerful graphic stations, all of which are banned by the COCOM.

The high flexibility of UNIX in communications with minimum HW requirements (uucp) is another strong argument for luring people away from other systems. The relatively good telephone network in Czechoslovakia would allow certain progress here. However, on the imported UNIX based systems, this kind of communication is still banned by the COCOM regulations (would you believe this kind of insanity?). Certainly, this is another obstacle in moving towards open communication between the computer user community in Czechoslovakia and in the western world.

My institute—the Institute for Applied Cybernetics in Bratislava*—has been using UNIX and XENIX for several years and has contributed to the growing popularity of these systems in Czechoslovakia. I was lucky enough to be able to meet with the members of the EUUG board in Vienna during the last EUUG conference. Cautiously, I asked Teus Hagen and others, how would they look at an attempt to extend the EUUG's reign to Czechoslovakia. Of course I had in mind the access to EUNET, too. To my big surprise the answers were positive. I immediately acted so as not to loose any time at all. I applied in the name of our institute for direct academic membership of the EUUG and right after coming back from Vienna (what a long journey—all of 60 km!) I began to undertake steps toward founding the National UNIX Systems User Group in Czechoslovakia.

Once this is done, the next step should be the establishment of contacts to the EUUG on national UUG level. My institute might become a suitable backbone network site in the future—it is the principal developer of the networking products for the Czechoslovak PTTs, running its own experimental network, covering several towns in Czechoslovakia. This is especially important, since the country doesn't have its public data network yet.

But this is all easier to say than to do. At the forthcoming meeting of the UNIX users there will be one major point that needs clarification. It is the relationship of the UNIX copyright owners toward Czechoslovak users. It would be foolish to pretend, that all instances of UNIX in Czechoslovakia (and in other countries—not only of the socialist bloc) have been legally acquired. The sooner we—and the West—accept this fact, and the sooner that we do something positive to bring the situation in order, the better for both sides. The embargo is certainly not doing any good to anybody (or is it?). Certainly, countries or blocs will try to maintain exclusive ownership of high-tech technologies, closely related to military applications. But trying to exclude a number of nations from a whole large section of technological 'culture' for decades is hardly justifiable. Unavoidably, it leads to mutual mistrust, speculation and 'back-door' approaches.

Shortly after I obtained the membership certificate from the EUUG, I established contacts with UNIX Europe Ltd., in order to get AT&T's clear statement about the company's policy regarding licensing UNIX to Czechoslovakia. If there is to be no way of getting source licenses, the activities of the UNIX community in Czechoslovakia will certainly remain limited, and the interest in integrating the national UNIX community to the EUUG will be smaller. On the other hand, we realise, that our group will have to act to correct the attitude of so many in our country on the idea of software copyright. There is a lot happening in this area in our country—as in the sphere of law.

I personally have no illusions about a smooth solution of these intricate problems. But I would like to hope of good will on both sides. I also expect a hand from the EUUG in establishing the contacts necessary for constructive negotiations. Likewise, our institute is ready to act as a mediator in contacts to the official places in Czechoslovakia. Should the contacts fail, fertile ground for illegal distribution and use of UNIX will be further provided and this is something that we would like to avoid.

When Alain Williams asked me to write this information about UNIX in the CSSR, he stressed that I should report about ongoing research or

* Bratislava is the capital of Slovakia—one of the two republics in Czechoslovakia

software projects related to UNIX. Well, in our situation and in spite of the above, this is particularly difficult. I could tell you something about what my institute is working on—perhaps I'll do so in a future report. But before we establish the CSUUG, I will not be able to give you a good picture about the whole scene. Those who buy western minicomputers with UNIX are well placed commercial companies, that are not especially fond of developing interesting software. The majority of these purchases goes into industry, some part goes to trading companies as well.

Those, who are strong in SW development (research institutes and universities) do not have enough hard currency to buy better HW, and if they do, they still do not succeed in purchasing UNIX sources. So they do what they can, but prefer not to talk too much about it. The projects I know about cover a broad spectrum—from AI, through multiprocessor based systems and networking to distributed database systems. There are also some pretty strong individuals and teams in the different branches of the theory of computer science. All these people would love to get UNIX sources—for the reasonable prices normally offered to the academic community in the West. I am an optimist. I believe that the barriers will be loosened and that the software folks in Czechoslovakia will gain an equal opportunity to show how good they really are! Even now the many western companies that employ Czechoslovak programmers know about it.

Let me finish with a plea: as with other standards, UNIX is a strong means to bring like-minded people together. The computer users and programmers in Czechoslovakia certainly do not want to stand aside—they would like to make their contribution.

Position Offered

The UKUUG wishes to produce a UK Newsletter and seeks an editor to collect material, produce camera ready artwork, and coordinate printing and distribution.

It is envisaged that there will initially be 6 newsletters a year, the style and contents are to be agreed with potential editors.

Candidates should:

- Live in the United Kingdom.
- Have reasonable net connectivity.
- Have available equipment and experience to allow them to typeset a newsletter.

The UKUUG will pay all costs and a fee (to be agreed) upon successful production of each newsletter. Help will be available in the form of advice, contact with a printer, and generally setting up.

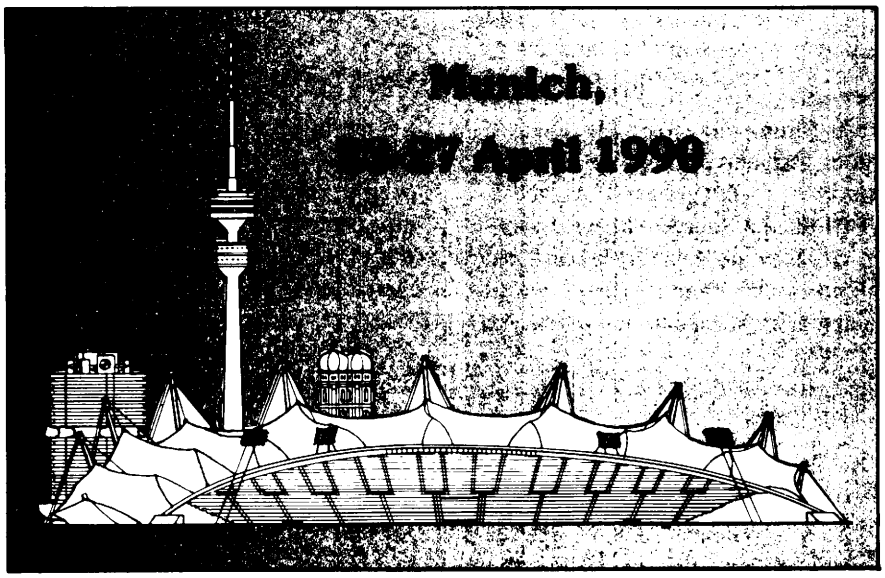
For more information please contact:

Sunil K Das,
Computer Science Dept,
The City University,
Northampton Square,
London EC1V 0HB,
England
Tel: +44 1 253 4399 X 3725
Fax: +44 1 250 0837
Net: sunil@cs.city.ac.uk

European UNIX® systems User Group

EUUG Spring '90 Conference and Exhibition

Sheraton Hotel Munich



Programme

Technical Tutorials on UNIX and closely related subjects will be held on Monday 23rd and Tuesday 24th April. The three day conference will follow starting with an opening session on Wednesday 24th at 09.30 and will continue until approximately 17.30 on Friday 27th April. The Conference will address the subject of UNIX as an example of a maturing technology. The papers will cover generic issues and standards such as the implementation of generic virtual memory systems or implementations of standardised protocols, and will highlight the fact that UNIX is becoming the platform for significant technological advances like object-oriented programming and multi-threaded processes.

These new developments also require better tools than the known ones like new source code control systems.

The current submissions of papers deal with all facets of a mature UNIX and all the interesting developments possible on a stable system base.

The Exhibition

The Exhibition will take place at the Sheraton on 24-25-26th April. Companies wishing to book exhibition space should contact the exhibition organisers:

MSM GmbH
Messe-Service-Merkhoffer
Karl-Schmid-Str. 6
Postfach 82 04 40
D-8000 Munich 83 Tel: + 49 89 429343
West Germany Fax: + 49 89 421046

Tutorials

Each Tutorial lasts for one whole day and will start at 09.30.

Only EUUG National Group Members or Direct Members are permitted to attend Tutorials.

Monday 23rd April

Tutorial M1.	Programming with OSF/Motif (TM) Tutor: Hans-Joachim Brede
Tutorial M2.	Advanced Network Programming Tutor: Richard Stevens
Tutorial M3	Chorus Tutors: Marc Rozier & Francois Armand

Tuesday 24th April

Tutorial T4.	Project Athena Tutor: Dan Geer
Tutorial T5.	An Introduction to 4.3 BSD Internals Tutor: Tom Doeppner
Tutorial T6.	System V Kernel Structure and Flow Tutor: Bill Rieken

Electronic Mail at the Conference

Delegates can be reached during the Conference by EUnet mail. Messages will be printed and posted on the message board.

To reach people at the Conference use the following address:

firstname-lastname-organisation@euug-con.EU.net

or

firstname-lastname-organisation@euug-conf.uucp

Delegates should limit the amount of messages forwarded to this address.
Distribution lists should not be forwarded.
Delegates will also be able to send mail.

Student Grants

Grants are being offered to assist students to attend the Conference. An application must be made well in advance of the Conference. A decision will be made before the event whether an application qualifies for a grant. Payment will not be made until after the Conference but the applicant will be able to proceed in the knowledge that the grant will be forthcoming.

Priority will be given to:

1. Students giving a talk at the Conference.
2. Students doing work for the EUUG or a National Group.
3. Students.
4. Other deserving cases like research students.

How to Book

A Conference Registration Booklet giving full details of the programme and events, cost, hotel booking, sightseeing programme, plus booking forms will be printed and distributed to all EUUG Members early in January, 1990. If you would like a copy of the booklet sent to a Non-Member who you think may be interested please complete the form on the next page.

Costs will be as follows:

Tutorials

Tutorial per person if booked before	26th Feb.	Members Only £180
Tutorial per person if booked after	25th Feb.	Members Only £280
* Tutorial per person if Registration and payment on the door		Members only £380

Conference

3 Day Conference if booked before	26th Feb.	Members £180
		Non-Members £260
3 Day Conference if booked after	25th Feb.	Members £280
		Non-Members £360
*3 Day Conference if Registration and payment on the door		Members £380
		Non-Members £460

*These can only be accepted if space allows.

Students will be able to obtain a 50% reduction for the Conference. If there is enough space available students can apply for a 50% reduction for attending a Tutorial.

Conference & Tutorial Enquiries

Mrs Helen Gibbons
The Secretariat,
EUUG,
Owles Hall,
BUNTINGFORD, Tel: +44 763 73039
Herts. SG9 9PL Fax: +44 763 73255
U.K. euug@EU.net

Conference Registration Booklet Request Form

Please send a copy of the above booklet to:

Name .....

Company .....

.....

..... Date .....

Please complete and send to Mrs Helen Gibbons at the address above.

Advance Booking Form for Conference and Tutorials

Please complete this form and send it, with cheque or evidence of payment, to **EUUG Secretariat, Owles Hall, Buntingford, HERTSSG9 9PL, U.K** (Block Capitals please). Please note that forms sent without cheque or evidence of payment will be returned to you unregistered.

Surname ..... Usual First Name .....

Company/Organisation .....

Address .....

Country ..... Post/Zip Code .....

Telephone/Fax/Telex/Email .....

EUUG member? Yes ☐ No ☐ Student? Yes ☐ No ☐

Please read the sections on "COSTS" and remember that pre-booking saves money.

All payments must be made in pounds sterling (£)

CONFERENCE
Please reserve me a 3-day place for the Technical Sessions £ _____

TUTORIALS (members only)
Please reserve me a place for Tutorial No _____ on Monday 23rd April £ _____

Please reserve me a place for Tutorial No _____ on Tuesday 24th April £ _____

Do you require vegetarian meals? Yes ☐ No ☐

EUUG
Please send me as an institutional member
of EUUG via the appropriate national group Yes ☐ No ☐

TAPE
Please reserve me a copy of the Conference Tape ☐ £ _____

PAYMENT METHOD Total £ _____

☐ UK Cheque, Banker's Draft or Eurocheque. The cheque must be enclosed.
☐ Direct Payment. The bank advice note showing details and date of payment must be enclosed. All bank charges must be borne by you and not the EUUG—please tell the bank this. EUUG must receive the actual amount due.
☐ by VISA
☐ by ACCESS/EUROCARD/MASTER CARD

Name as it appears on the card (block capitals) .....

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Card Account No. ..... Date of Expiry .....

Signed ..... Date .....

USING—UNIX Systems Information Networking Group

Patrick J Eves
bpa!bpats!peves
peves@bpats.BELL-ATL.com

Information Systems Support
Philadelphia, PA, USA

Pat Eves is a Systems Analyst in the Informations Systems Department of the Bell Atlantic Corporation. Pat is responsible for UNIX Planning and Standardisation.

What is USING?

The UNIX System Information Networking Group (USING) is a non-profit association of users interested in fostering innovations and sharing ideas and experiences about UNIX system based solutions in the telecommunications industry. The objective of this organisation is to examine UNIX system issues and to provide a forum to discuss those issues pertinent to the telecommunications industry. Specific objectives include, but are not limited to, the following:

— Conducting workshops and common interest forums to discuss current telecommunication industry issues and concerns.

— Providing two-way communication between end users and industry.

— Providing a forum for discussion and solution of business problems though use of the UNIX operating system.

— Providing a forum for users and vendors to demonstrate UNIX system products and solutions.

— Facilitating the evolution, definition and communication of telecommunication standards.

— Providing a forum for the dissemination of information relating to the development of national and international standards of UNIX-based systems.

Background

Prior to the breakup of AT&T in 1984, UNIX system professionals (end-users, developers, managers and system administrators) throughout the Bell System had an information network to communicate issues, ideas and concerns relating to all aspects of the UNIX environment. After divestiture, AT&T had spun off the local telephone companies into 7 Regional Bell Operating Companies. The resources and the information network that were available within the Bell operating companies and AT&T prior to divestiture were no longer available. In 1986 the USING organisation was formed in an attempt to bridge the information gap between UNIX system professionals within the regional operating companies and to expand the scope to include other members of the UNIX system community in the fast growing telecommunications industry.

International Presence

More recently, USING members have demonstrated a growing interest for UNIX system products from outside the United States. Based on this interest, USING has decided to broaden its geographical scope to include Europe as well as The Far East. As a result, USING is encouraging membership and conference participation from international telecommunications professionals with an interest in the UNIX Operating System.

Sponsored Events

Since its inception in 1986, USING membership has grown to approximately 500 members. The first two annual conferences were held in Denver, Colorado. The third USING Conference will be held 26-28 March 1990 at the Hyatt Regency DFW Hotel in Dallas, Texas, USA. The conferences feature technical sessions, a solutions show, a vendor exhibit, and birds-of-a-feather gatherings. The first USING Workshop, focusing on UNIX System Administration, was held 18-19 September 1989 in Somerset, New Jersey, USA. In addition to the conferences and workshops, the USING Newsletter was created to further enhance communications between the organisation and its members and is published three times a year: April, August, and December.

Membership Information

USING membership is open to all telecommunications industry employees utilising or planning to utilise the UNIX operating system. The annual membership fee is $10.00 and the membership expires at the end of each calendar year. Membership is subject to the review and acceptance by the USING Executive Board. Send your request for a membership application to:

USING Membership
Dave Kledzik
Ameritech Applied Technologies
Room 5A
150 East Gay Street
Columbus
Ohio, 43215, USA

Additional Information

For additional information, please call +1 312 987 2323 or send your correspondence to:

USING
P.O. Box 1077
Lisle,
Illinois 60532, USA

Board Members

The current Executive Board Members and their present employers are:

President	Fred Stables	NYNEX Service Corp
Vice President	Chuck Dean	Bell Atlantic Corp
Secretary/Treasurer	Don Ackerson	AT&T
Membership Chair	Dave Kledzik	Ameritech Applied Technologies
Event Chair	Tom Raleigh	Bellcore
Media Chair	Sukan Makmuri	Teknekron Communications
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	Jerry Carlin	Pacific Bell
	Jeff Conner	Southwestern Bell
	Pat Eves	Bell Atlantic Corp
	Ashley Ewing	BellSouth Services
	Tom Foss	AT&T
	Hans Heilborn	Ericsson Telecom AB
	Tom Pottanat	NYNEX Science and Technology

Call for Papers

USING Conference—1990

Dallas, Texas
March 26-28, 1990

The UNIX Systems Information Networking Group (USING) is a non-profit association of users interested in fostering innovations and sharing ideas and experience about telecommunications industry UNIX system based solutions.

The 1990 conference will be held in Dallas, Texas March, 26-28, at the Hyatt Regency DFW Hotel. It will feature technical sessions, a solutions and vendor show, and birds-of-a-feather gatherings. The technical sessions will run from Monday through Wednesday March, 26-28, 1990. The overall theme of the conference will highlight networking and connectivity. The RBOC Solutions Show and the Vendor Exhibit will run from Tuesday through Wednesday, March, 27-28, 1990. A exhibition highlighting connectivity is planned. The primary intent of the vendor exhibit is to provide the opportunity to display advanced technology (software and hardware) relevant to the UNIX operating system in the telecommunications industry. For details on exhibiting at the Dallas vendor exhibition, please contact:

Chuck Dean
Bell Atlantic
2221-L Broadbirch Drive
Silver Springs, MD 20904-1985
301-989-5080

Conference Programme

The conference program is a forum for the presentation of new developments and uses of the UNIX operating system in the telecommunications industry. Papers and presentations in all areas of UNIX systems related research and development involving networking and the telecommunications industry are solicited for formal review for the technical program of USING Conference—1990. Accepted papers and presentations will be presented during the 3 days of the conference and published in the conference proceedings.

Appropriate topics for technical presentations include, but are not limited to:

- High-Speed Networks (FDDI, etc.)
- ISDN, BISDN, etc.
- Network Monitoring & Security
- UNIX System Networking
- Protocols
- Distributed Filesystems
- File Servers
- Video and Voice Applications
- Teleconferencing
- Hypermedia
- Distributed Applications
- Mail Systems
- Videotext
- UNIX Systems Based Network Services
- Standard Operating Environments
- Field Trials & User Experience
- Fault Tolerant Systems & Applications
- Telco Applications
- Switching Software & Support Systems

Submit either an extended abstract of 300 to 1000 words detailing the major points of the talk and its relevance or a full paper which contains a 100 to 300 word abstract. Acceptance or rejection of a paper will be based solely on the technical merits of the work as submitted, so preference will go to full papers 4-12 pages). An award will be give for the best paper. To qualify, the author must adhere to all deadlines and formats. The following schedule will be followed.

Jan. 5, 1990 Submission due
Jan. 19, 1990 Notification to authors
Feb. 2, 1990 Final camera ready presentation due

Send four copies of program submissions to our Program Chair:

Fred Staples
NYNEX Service Company
1166 A/A Room 8D1
New York City, New York 10036
212-395-3492

Guide to Authors

Submissions of extended abstracts instead of papers will be considered for the conference. For details about the required format and method of submission please contact Fred Staples.

Contact UNIX Professionals for 2 pence a Head

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Managers and Senior/professionals account for most (94%)** of those who receive the Newsletter. Half of these have have real purchasing power in terms of both multiuser and PC—systems and software.

The Newsletter has a circulation of 4000, each copy is read by an average 3.7 people** which means a readership of almost 15000.

What does it cost ?

A full-page printed as part of the Newsletter costs £300 (GBP) per page. Exciting eye-catching colours are £100 each. All prices are subject to (UK) VAT.

Your own printed material can be inserted and posted with the Newsletter for £300 for a single sheet of A4, other weights on request.

The front and back inside covers may be used at a cost of £600 each.

A discount of 25% is given if 4 or more consecutive advertisements are booked.

Non-members should add 50% to all advertising rates.

If there is pressure on space, advertisements will be 'booked' in order of receipt, with EUUG members being given preference over non members.

Artwork may be presented in camera ready or electronic format. If electronic format is used a paper copy should be sent to the editor.

The EUUG Newsletter is published 4 times a year, the copy date for adverts is the same as for articles.

Publication Schedule 1989

Copy Date	Publication Date
22 January	1 March
23 April	1 June
23 July	1 September
22 October	1 December

Enquiries should be made to the EUUG at the address on the back page.

Book your Advertisement NOW

Contact the EUUG NOW

** Figures from the 1989 EUUG Member survey by IDC.

EUUG Executive Report

Helen M W Gibbons
euug@EU.net

The European UNIX systems User Group
Owles Hall
Buntingford
United Kingdom

Helen Gibbons is the business manager of the EUUG and is contactable at the EUUG secretariat.

The EUUG Executive Committee met on 4th September in Paris in order to finalise reports for the meeting of the full Governing Board which took place at the end of the month on 23rd September 1989.

Both meetings reviewed the current membership status and financial situation in some detail. Membership, through the sixteen national groups, continues to grow steadily, though there has been no dramatic change in numbers recently. Future growth may however be expected as it is hoped that new groups may join in the near future from countries such as Spain, Switzerland and the USSR.

The accounts which are produced in detail by the Secretariat at Owles Hall for each Executive and Governing Board meeting, highlighted the fact that EUUG is now in its strongest financial position ever. This is primarily due to good cost control, profit from conferences, and excellent response from most national groups to the revised contribution collection mechanisms introduced this year. The reserves built up are now adequate and necessary for a stable base and for underwriting conference, networking, publications and other activities.

As a result it was agreed that there would be no rise in the subscription rates for 1990, which means that they have remained stable since 1986. When inflation is taken into account this represents reduced contributions in real terms.

Relationships with other groups continue to thrive. The EUUG has been approached by USING, a UNIX special interest group of Telecommunications Manufacturers, and several discussions have been held with OSF, UNIX International and X/Open.

During the Vienna conference there was a full meeting of the Executive Board of USENIX and joint meetings were held. Interrelations are planned on newsletters, journals, conferences, software distributions and other schemes.

Results of the membership survey recently undertaken by IDC have been coming through although the final report has not yet been completed. The questionnaire received a very good response and showed that the majority of members are senior professionals connected with Industry and are big UNIX users. The results seen so far show that 25% of the membership attend conferences and that the newsletter is popular. About 3.7 people on average read one copy.

The EUUG EUnet E-mail directory is now sold out. A new edition is being planned and will be available in January 1990. Orders may be sent beforehand to the EUUG Secretariat.

The Vienna conference was a success with approximately 400 participants. The tutorials were particularly popular and well attended. For the first time at an EUUG conference an E-mail link was running and was well used. It is hoped to continue the service. Conference proceedings are now available from the Secretariat at a cost of 20 GBP including postage and packing, cheque with order.

The next conference will be held in Munich 23rd-27th April 1990. There will be two days of tutorials and three days of technical conferences. Further details appear elsewhere in this newsletter. Offers of papers may still be accepted.

The EUnet backbone managers recently held a workshop at Breukelen in Holland and met again during the Vienna conference. The networking service is seen by members as very important and there are plans for its expansion. The Chairman of the backbone managers is Yves Devilliers of INRIA, France.

Public Relations activities within EUUG are increasing and two extra people have been co-opted to the Executive Committee to cope with the increased workload. This means that Kim Biel-Nielsen will retain primary responsibility for public and external relations and will be directly responsible for press relations, EUUG presentations and special projects, but he will now be helped by Johan Helsingius who will undertake relations with external groups and Norman Hull, who will concentrate on internal relations with the national groups.

Groups are reminded that a portable EUUG stand and slides describing the activities of the EUUG are available on request from Owles Hall.

For your reference here is a list of EUUG officials:

Chairman	Teus Hagen	+31 77 594082	teus@oce.nl
Vice Chairman	Michel Gien	+33 1 30 570022	mg@chorus.fr
Finance	Nigel Martin	+44 1 251 2128	nigel@inset.co.uk
Public Relations	Kim Biel-Nielsen	+45 42 894999	kbn@kontiki.dk
Conferences	Dr Ernst Janich	+49 731 1526 464	janich@nixulm.uucp
Conferences	Neil Todd	+44 491 671964	neil@gid.co.uk
Networks	Daniel Karrenberg	+31 20 5924112	dfk@cwi.nl
Publications	Philip Peake	+33 1 69 07 82 47	philip@vogon.cetia.fr
	Johan Helsingius	+358 0 427 632	julf@penet.fi
	Norman Hull	+353 503 31745	norman@q2rs.ie
	Frances Brazier	+31 20 5483885	frances@psy.vu.nl
Business Manager	Helen Gibbons	+44 763 73039	euug@EU.net

Conference Announcement

AUUG 90

Australian UNIX systems User Group
Conference and Exhibition 1990
September 25-28 1990, Melbourne, Australia

Summary

The 1990 Conference and Exhibition of the Australian UNIX systems User Group will be held at the World Congress Centre, Melbourne, Australia. Tutorial sessions will be held on Tuesday the 25th and the conference proper from Wednesday the 26th to Friday the 28th September 1990.

The conference theme is:

UNIX the Computing Platform for the 90s

Venue

The World Congress Centre is a new purpose built convention and exhibition centre located near the Yarra River. It is within the Central Business District with easy access to transport.

This is a major step up for the AUUG in the quality and size of venue and is in step with the growth of the UNIX operating system.

This Conference and Exhibition is to be held during the week before the VFL Grand Final and gives attendees the chance to attend Melbourne's Sporting Event.

Conference

The Conference held over three days will provide UNIX users a chance to hear speakers from Australia and overseas speak on a wide range of topics including the latest developments and uses of the UNIX operating system.

The conference dinner and the conference itself provide an unique opportunity to meet other people in the UNIX community.

Exhibition

The exhibition will be held in an attractive and well serviced venue, and is supported by major UNIX vendors. It is held in conjunction with the AUUG 90 conference which ensures exhibitors suitable contact will be made with potential buyers of their product.

Interested Exhibitors should contact ACMS promptly to ensure they obtain the optimum location to display their product. The ACMS contact address is given below.

Conference Secretariat

For all enquiries regarding registration, accommodation, and the Exhibition:

AUUG 90 Secretariat

c/o ACMS	Telephone:	International	+61 2 332 4622
26 Hopewell Street		National	(02) 332 4622
Paddington NSW 2021	Facsimile:	International	+61 2 332 4066
AUSTRALIA		National	(02) 332 4066

Please Note Change in venue and dates from previous announcements

Call For Papers

AUUG 90

Papers

Papers are invited on topics which will interest an audience of either Research, Technical, Industry, or Commercial UNIX users.

Some suggested topics are:-

- Future Directions
- Standards
- Networking
- Security
- Project Management
- Productivity Tools
- Database
- System Administration
- User Interfaces
- Windowing Systems
- Real Time Systems
- Multiprocessing

Papers that provide broad overviews, technical review, and/or descriptions of new and interesting work in the the subject areas are sought. Papers that describe current Work in Progress, and papers on other topics not listed but relevant to the UNIX user community are also welcome.

The Primary author of each paper accepted will receive ONE complementary admission to the conference and the dinner.

A special issue of the group's newsletter AUUGN containing the conference proceedings will be printed for distribution to the attendees at the conference and mailed to AUUG members who do not attend.

A 1000-2000 word extented abstract is required in early February 1990 which describes the nature of the paper and a summary of conclusions and/or results.

We also require that the author send their full contact details with their extended abstract, plus a full-size black and white photograph and a brief C.V. for publicity purposes. Note that full contact details should include full name and address, telephone number, facsimile number, and e-mail address.

Acceptance of papers will be based on an extended abstract and will be subject to receipt of the final paper by the due date. The Programme Committee Chair reserves the right to withhold final acceptance until the final paper is received. Abstracts and final papers should be submitted to:-

John Carey	Phone:	International	+61 3 587 1444
AUUG 90 Programme Committee Chair		National	(03) 587 1444
Labtam Information Systems Pty. Ltd.	Fax:	International	+61 3 580 5581
43 Malcolm Road		National	(03) 580 5581
Braeside Victoria 3195	Telex:	LABTAM AA335500	
AUSTRALIA	Internet:	john@labtam.oz.au	
	ACSnet:	john@labtam.oz	
	UUCP:	uunet!munnari!labtam.oz!john	

Timetable

Receipt of Extended Abstracts	Monday 5th February 1990
Letters of Acceptance	Monday 5th March 1990
Receipt of Final Papers	Monday 6th August 1990
Tutorials	Tuesday 25th September 1990
Conference and Exhibition	26th-28th September 1990

Tutorials

People wishing to present tutorials should contact David Purdue at Labtam Information Systems (see above for address).

Report from ICEUUG

Marius Olafsson
marius@rhi.hi.is

University of Iceland, Computing Services
Reykjavik
Iceland

Marius obtained a BSc Math from the University of Iceland in 1977, and a MSc Comp. Sci. in 1981 from the University of Alberta. He has been involved in computing since 1975, using various systems. He started working with UNIX back in 1979, using V.6 and has never looked back. He returned to Iceland in 1986 and is currently administering UNIX systems at the University's Computing Services.

The Icelandic UNIX Users Group (ICEUUG) was founded in November 1986. Now, at the end of the third year membership stands at 24 institutional members and 6 individual members.

Activities

ICEUUG holds monthly meetings during the winter months (there are quite a few of those here), but activity is low during the summer. Meetings on various topics of interest to the Icelandic UNIX community have been held and this winter representatives of vendors offering UNIX-related products in Iceland will be invited to discuss their products.

ICEUUG publishes a local newsletter, two or three times a year. Articles range from simple information to our members to tutorials on various aspects of using and administering UNIX systems.

Of continuing interest to us are the evolving standards on native language processing within UNIX systems. Our language makes it impossible for us to use the 7-bit standards as used by many (most) other European countries. Instead we have to use 8-bit character sets and thus traditionally have to replace many of the standard UNIX utilities with public-domain 8-bit-transparent versions. Members can obtain these from ICEUUG to enable their systems to conform to the Icelandic standards. There are of course vendors that actually offer 8-bit-clean UNIX systems, but there are many more that don't and even some that claim that they do, but when certain areas (e.g., networking) are looked at closely things break down. Few vendors seem to realise that 8-bit-clean must include such beasts as awk and sed. Initially, many seem to think that supporting 8-bit filenames is enough.

EUnet in Iceland

Currently there are 19 sites on the Icelandic portion of EUnet. We do not expect much increase in that number as the cost of the trans-Atlantic communications is prohibitive for us and it is therefore very hard to recruit new sites. The Icelandic EUnet uses RFC-822 addressing internally and uses the ISO-8859/1 character set for communications. This means that much of the mail/usenet-software must be modified, and ICEUUG assists sites wishing to make these modifications to join the net.

There are very close ties between ICEUUG and the Association for Research networking in Iceland (SURIS) and the Icelandic EUnet backbone is in the process of being moved to a machine owned by this organisation and operated by the University of Iceland. Iceland now has a connection to NORDUnet, but is no longer a member of EARN, and the previous EARN node in Iceland (ISEARN) no longer exists. We therefore rely solely on EUnet (and to some extent NORDUnet) for our network connections to the rest of the world.

ICEUUG Executive

Einar Kjartansson (Chairman)
National Energy Authority, Reykjavik (eik@os.is)

Marteinn Sverrisson
Science Institute, University of Iceland (matti@raunvis.hi.is)

Marius Olafsson
University of Iceland (marius@rhi.hi.is)

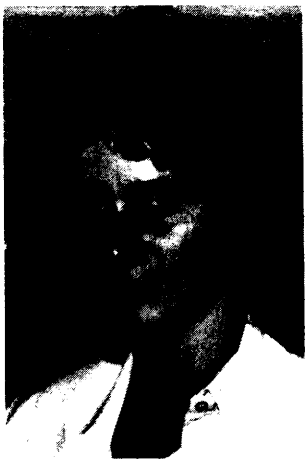
Earlier this year Andrew Mc Phearson <andrew@stl.co.uk> bravely travelled from London to Canterbury on his bicycle to raise money for charity. This event is recorded below:

Date: Sept 2nd 1989
Miles: 60
Time to complete: 10 hrs
Charity: Crisis (aka Crisis at Christmas)
£ raised: £250.90

News from the Netherlands

Frances Brazier
frances@psy.vu.nl

Dept of Cognitive Psychology
Vrije Universiteit
Amsterdam
The Netherlands



Frances has a master's degree in Mathematics and Computer Science, and has been doing research at the Department of Cognitive Psychology for the past 7 years. Human-machine interfaces and information retrieval are her major fields of interest.

Membership

Although the NLUUG does lose a few members every year the increase in numbers still continues as shown in the table below.

April 88	Nov 88	April 89	Nov 89	
59	71	80	89	academic members (@ Dfl 300)
133	157	164	178	industrial members (@ Dfl 600)
20	31	35	37	individual members (@ Dfl 100)
212	259	279	304	TOTAL

UNIX and Connectivity—Our Next Conference

Our next conference on UNIX and Connectivity will have been held by the time this newsletter is printed—on Nov 9th. The proceedings will also have been published. Copies are available to EUUG members at cost price—Dfl 30 (approx 13 ecu). Please contact Frances Brazier at the above address.

Abstracts of the technical presentations follow below as does a list of the tutorials.

XAA UNIX Application Architecture
Willy Witsel,
NCR Nederland BV, Amsterdam

The concept of XAA will be introduced and compared to IBM's SAA. SAA's architecture and communication facilities will be briefly described, as will the XAA concept, based on standard SVR4 functionality, X/Open, POSIX 1003 and other generally accepted standards.

Network Management in a Heterogeneous Environment
Larry Kluger,
Sun Microsystems Europe,
Bagshot, England

Network Management is a basic aspect for any distributed system. It need changes from 'nice

to have' to 'must have' as the number of workstations, servers, networks and applications grows.
Sun's network management philosophy, architecture and tools will be discussed, focusing on Sun's network management architecture.

X.400 The Realisation of Electronic Messaging within an OSI Framework

Richard van Schelven,
EGS, UNIX Software Development,
Erkrath, Germany

X.400 defines a Message Handling System with which it is possible to transmit information (text, data, graphics, digitised voice messages) worldwide from one communication system to another, independent of the underlying hardware architecture. The international X.400 standards and the corresponding European standards, their implementations and the present situation will be discussed.

SURFnet: DECnet-stronghold, TCP/IP Bastion or OSI-bulwark?

Erik Huizer, SURF-net BV, Utrecht

The technical developments of the past, present and future will be discussed. The possibilities and limitations of the network service (telecom switches, Cisco-routers), the transport service (Connectionless Network Services vs. Connection-Oriented Network Services) and the applications (mail routing, address translation, DECnet-, RSCS-, and OSI-services/protocols) will be presented.

Directory Navigation in the QUIPU X.500 System

Paul Barker, Colin J. Robbins,
University College London

OSI Directory Services have recently been standardised following the X.500/IS 9594 standard. An overview of the Directory Services model and the services offered will be provided.
QUIPU is one of the first implementations of the X.500 standard and was developed at UCL as part of the ESPRIT INCA project. The approach taken in representing Directory knowledge and handling Directory navigation across heterogeneous networks will be discussed.

EUnet Now and in the Future

Daniel Karrenberg (EUUG),
CWI, Amsterdam

EUnet's present situation will be described in detail as will the plans for the future.

Network Computing and its Applications

Bouwe van der Eems,
Apollo (subsidiary of Hewlett-Packard),
Houten

Network Computing allows users to value from various computer resources in the network: from execution of a part of an application on another machine to parallel execution of parts of an application on different machines. The system manager's tasks can be decentralised and/or executed in parallel in the network. The concept of Network Computing, its implementation and the availability will be presented as will a number of real cases.

PC LAN Integration in a UNIX Environment

Joop Veenis,
Geveke Electronics, Amsterdam

The recent history of network development, the different PC/host possibilities on Ethernet, and the PC LAN integration in a UNIX system will be discussed in turn. The architecture and functionality of PC LAN operating systems such as Novell's Advanced Netware, Microsoft's LAN Manager and other systems will be described.

MFTS/TRANSIF: Heterogeneous Communications Software in Europe

Ramesh Rao, M. B Abecasis,
R. Arnold & P. Day, SG2-B, Brussels

Multilateral File Transfer System is communication software for distribution of data and resources of many different computers. It uses the NIFTP protocol. The techniques chosen for inter-process communication in the implementation of MFTS on UNIX—TRANSIX—will be explained.

Amoeba— High Performance Distributed Computing

Sape Mullender,
Centrum voor Wiskunde en Informatika,
Amsterdam

The Amoeba Project is a project in which a

distributed operated system is being developed. This project started in 1980 and now involves the CWI, the Vrije Universiteit and Cambridge University (UK). The developments within this project will be described.

Revolution 89 or
"Distributing UNIX
Brings it Back to its Original Virtues"
Michel Gien, Frc Rozier,
Chorus Systems,
Saint-Quentin-en-Yvelines, France

CHORUS-V3 is the current version of the CHORUS Distributed Operating System. The CHORUS Architecture has been designed for building 'new generations' of open, distributed, scalable Operating Systems. In the presentation the architecture and the facilities provided by the Nucleus and by CHORUS/MIX, a UNIX system built with the CHORUS technology that provides a binary compatibility with UNIX System V and extended UNIX services supporting distributed applications, light-weight processes and real-time facilities, will be summarised.

Who Wants a Network?
Martijn de Lange,
ACE, Associated Computer Experts,
Amsterdam

While connectivity is just beginning to be appreciated and accepted by the 'real' end users, the R&D community is struggling with the newly introduced chaos and the inconsistencies in the swamp of interconnected systems. An assessment is given of current engineering practice and the challenges associated with the usage of networks and network related tools and interfaces in an engineering environment. The considerations that are background to the approach followed in the development of the SPIRIT Workstation, a high performance technical workstation, largely extend beyond simple peer-to-peer connectivity. It is highlighted that the exhausting and disaster-prone networking techniques of today will lead to utter chaos in the mid nineties when large scale networking will be common in end-user environments.

The following topics will be covered in the tutorials:

Bird's eye view of UNIX OS,
Rob Westerman,
West Consulting, Delft

Security in a (UNIX) Network,
Frans Schippers,
Xirion bv, Amsterdam

LANs on TCP/IP,
Hans van Staveren,
Vrije Universiteit, Amsterdam

Network File System (NFS),
Jos van der Meer,
Sun Microsystems Nederland,
Amersfoort.

In addition to the (parallel) technical sessions and tutorials an exhibition will be held. At the end of the day a forum will be held in which Theo de Ridder (SERC), Michel Gien (Chorus), Andy Tanenbaum (Vrije Universiteit), Sape Mullender (CWI), Martijn de Lange (ACE) and Marten van Gelderen (Xirion), will discuss the future of UNIX: "Beyond UNIX...".

UNIX and Parallel Systems

Our next conference, to be held on May 17th, will be on UNIX and Parallel Systems. Anyone interested in contributing to this event is invited to contact the NLUUG (address on the back cover of the Newsletter).

The Backbone

The Stichting NLnet, the organisation responsible for NLnet, has had a change of chairman: Ted Lindgreen is now responsible for the daily activities. Marten van Gelderen, the former chairman is still actively involved as a member of the Board.

IP-connectivity within Europe, InterEUnet is a topic which is receiving a lot of attention.

UKUUG Report

Mick Farmer
mick@cs.bbk.ac.uk

Birkbeck College
London
England

Mick is a lecturer at Birkbeck College (University of London) and the Secretary of the UKUUG. His interest is in all aspects of Distance Learning and he is the Senior Consultant (Software) for LIVE-NET, an interactive video network connecting London's colleges. He is also a member of the University's VLSI Consortium, mainly because the design tools draw such pretty pictures.

Membership

Our membership continues to increase in number, particularly commercial members. We are approaching saturation point in respect of academic members, most of which are also connected to JANET and UKnet. The table below shows the breakdown of our membership at the beginning of October.

Category	Number
Academic	98
Commercial	221
Honorary	5
Individual	48
Total	372

The UKUUG Executive is currently investigating the possibility of restructuring our membership categories, but no decision has been reached so far.

Winter 1989 Technical Meeting

Our next technical meeting is being held at the University of Wales College of Cardiff on 11/13 December, 1989 and will be hosted by Robert Evans from the Department of Computing Mathematics. As usual our Winter meeting has a strong networking flavour. Presentations already agreed include:

- ISO higher-level protocol developments
- ISODE latest developments
- X400 developments
- X500 directory service
- NFS/FTAM
- OSI transition plans for ac.uk
- RARE/COSINE developments
- IXI
- X windows over OSI
- Fidonet developments
- TCP/IP protocol stack

Also included are talks on the future of UKnet, EUnet, and Usenet. We are continuing the recent policy of running popular tutorials at our meetings, this time Jim Craigie will introduce X400 fundamentals. For further details contact Robert (robert@computing-maths.cardiff.ac.uk)

or the UKUUG Secretariat (ukuug@ukc.ac.uk).

UNIX System Administration Workshop

We are holding this one-day Workshop at the Institute of Education (Central London, England) on 14 February, 1990. It will be hosted by Neil Todd from GiD Ltd. Topics likely to be discussed include:

- Smart shells and menu systems
- Administration in a distributed environment
- System audit procedures
- Software integration and test procedures
- Data Protection Act
- Yellow Pages—friend or foe?

Further suggestions for topics and talks are welcome. Please contact Neil (neil@gid.co.uk) or the UKUUG Secretariat (ukuug@ukc.ac.uk).

As with our previous successful UNIX Security Workshop, a video of this event will be available (see the UKUUG Report in the Autumn '89 EUUG Newsletter).

Summer 1990 Conference

This meeting will be held at the Royal Lancaster Hotel (Central London, England) on 9/13 July, 1990 and it will be hosted by the UKUUG chair, Sunil Das (if he's not off somewhere Suniling :-). This major conference, entitled *UNIX—The Legend Evolves*, will feature many of the major workers in the UNIX and operating systems community. Those who have agreed to speak include:

- Dave Presotto, Rob Pike, and Ken Thompson from Bell Labs unveiling *Plan 9*, the next generation of UNIX at Bell Labs.
- Brian Kernighan from Bell Labs talking about the lessons we have learned for future software developments.
- Kirk McKusick and Mike Karels from the University of California, Berkeley talking about 4.3BSD Internals.
- John Bentley from Bell Labs (Programming Pearls).
- Andrew Tanenbaum from Vrije University (MINIX).
- Stuart Feldman from Bell Labs (make and f77).
- James Gosling from Sun Microsystems (Emacs).
- Doug Comer from Purdue University (XINU).
- Piers Dick-Lauder from the University of Sydney (Share scheduler).

This meeting will follow the traditional EUUG format and consist of two days of tutorials (Monday-Tuesday) followed by the three-day conference (Wednesday-Friday).

London UNIX User Group (LUUG)

This lively group continues to meet on the last Thursday of each month (except December). Andrew Findlay from Brunel University (Andrew.Findlay@brunel.ac.uk) is the organiser and he should be contacted for more information.

FaceSaver Project

We are in the process of implementing a FaceSaver system. It will be used for our Summer 1990 Meeting (see above) with a trial run during our Winter 1989 Technical Meeting (see above). We intend to offer this service to the EUUG and other affiliated groups.

Stop Bit

That's all for now folks!

USENIX Association News for EUUG Members

Donnalyn Frey
donnalyn@frey.com

Frey Communications
Fairfax, VA USA

Ms Frey is the USENIX Association Press Liaison. She provides members of the press, USENIX Association members, and EUUG members with information on the activities of the USENIX Association.

1990 Winter USENIX Association Conference

The 1990 Winter USENIX Conference will be held in sunny Washington, DC on January 20-26, 1990. The first two days will be devoted to tutorials, with the next three days for technical sessions. Topics which may be presented include UNIX and Artificial intelligence, Ada and UNIX, Software Release Systems and Servers, Architectures and Compilers, File Systems and Servers, Distributed Systems and Servers, Distributed Systems and Services, User Interfaces, and Novel Applications. For further information on the conference, contact the USENIX conference office.

The 1990 Summer USENIX Association Conference

The 1990 Summer conference will be held on June 11-15, 1990 at the Marriott Hotel in Anaheim, California, home of Disneyland. The Call for Papers will be announced in November 1989. For a copy of the Call for Papers, contact the USENIX Conference office.

1990 C++ Conference

The Call for Papers has been issued for the 1990 C++ Conference. The conference will be held in San Francisco, California on April 9-11, 1990. The conference is expected to be of interest to a broad range of C++ users and potential users. Tutorials are planned on April 9 to teach C++ to novices, as well as more advanced tutorials. Technical sessions are planned for April 10 and 11. Registration information on the conference will be available from the USENIX conference office in January.

The technical sessions will cover a spectrum of work on and with C++, including a diversity of users and applications. Papers are solicited on all aspects of C++, including:

- Applications
- Libraries
- Programming Environments
- Case Studies
- New or Improved Implementations

Extended abstracts (up to 2 pages) or papers (9 - 12 pages) must be received, either electronically or on paper, by **Friday, January 12, 1990.** Authors will be notified of acceptance by February 5 and must submit a full paper by April 9.

Queries should be directed to:

Jim Waldo
CHR 03 DE
Apollo Computer
300 Apollo Drive
Chelmsford, MA 01824
USA

waldo@apollo.com, decvax!apollo!waldo

(last resort) +1 508 256 6600 x 5747

Further Information on Conferences and Workshops

If you need further information on registering for upcoming USENIX Association conferences or workshops, contact the USENIX Conference Office at 22672 Lambert Street, Suite 613, El Toro, CA 92630, USA. Email to judy@usenix.org or {uunet,ucbvax}!usenix!judy or telephone at +1 714 588 8649. The conference office can provide you with information on the annual Computer Graphics, Large Installation Systems Administration, UNIX Security, and UNIX and Supercomputers workshops, as well as other workshops. The office can also provide information on the 1990 C++ conference and the semi-annual technical conferences. A schedule of upcoming events includes:

USENIX Association Future Meetings

Date	Location	Topic
11/16-17/89	Monterey, CA	Graphics Workshop V
1/23-26/90	Washington, DC	Semi-Annual Conference
4/9-11/90	San Francisco, CA	C++ Conference
6/11-15/90	Anaheim, CA	Semi-Annual Conference and Exhibition
Fall 90	Honolulu, HI	Software Development Environments joint workshop with SIGMA Project, Japan
Fall 90	Northeast US	MACH Workshop
1/22-25/91	Dallas, TX	Semi-Annual Conference
6/10-14/91	Nashville, TN	Semi-Annual Conference & Exhibition
1/20-24/92	San Francisco,CA	Semi-Annual Conference
6/8-12/92	San Antonio, TX	Semi-Annual Conference & Exhibition

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X User Group

Niall Mansfield
Unipalm Ltd
145 St Neots Rd
Hardwick
Cambridge CB3 7QJ
UK
nmm@unipalm.co.uk
+44 954 211797

An inaugrial meeting was held on 21st Nov in IEE Savoy Place, London.

Those interested please contact the above.

USENIX Winter Conference

This is being held from 22nd to 26th January 1990 at the Omni Shoreham hotel, Washington, DC, USA.

Conference programme:

	Wednesday 24 January	
9:00-10:30	Introductory Remarks Remarks from the Board	Dan Klein Ellie Young
Keynote Address	NASA's Manned Spacecraft Computers	Jim Tomayko
10:30-11:00	Morning Break	
11:00-12:30	Virtual Memory	Chair - Chet Juszczak
	A Dynamic File System Inode Allocation and Reclaim Policy	Ron Barkley, T. Paul Lee AT&T Bell Laboratories
	Insuring Improved VM Performance: Some No-Fault Policies	Danny Chen, *et al* AT&T Bell Laboratories
	An External Pager Implemented as a UNIX System V Release 4 Virtual File System	Dean Thomas Unisys Corporation
12:30-2:00	Lunch Break	
2:00-3:30	Architecture & Debuggers	Chair - John Mashey
	Implementing a Mach Debugger for Multithreaded Applications	Deborah L. Caswell, *et al* Hewlett-Packard Company
	pdb: A Network Oriented Symbolic Debugger	Paul Maybee Solbourne Computer, Inc.
	Some Efficient Architecture Simulation Techniques	Robert Bedichek University of Washington
3:30-4:00	Afternoon Break	
4:00-5:30	Applications	Chair - Susanne Smith
	Software Tickerplants on UNIX	Mark Luppi, *et al* Fusion Systems Group
	GENESIS and XODUS General Purpose Neural Network Simulation Tool	John Uhley, *et al* California Institute of Technology
	Keynote - A Language and Extensible Graphical Editor for Music	Tim Thompson AT&T Bell Laboratories

	Thursday 25 January	
9:00-10:30	Utilities	Chair - John Devitofranceschi
	Integrated Interactive Access to Heterogeneous Distributed Services	William E. Weihl Massachussets Institute of Technology
	The UNIX System Math Library, a Status Report	Steve Sommars AT&T Bell Laboratories
	Tcl: An Embeddable Command Language	John K. Ousterhout University of California, Berkeley
10:30-11:00	Morning Break	
11:00-12:30	Kernel Internals	Chair - Charlie Perkins
	An Event-based Fair Share Scheduler	Raymond B. Essick Prisma, Inc.
	Parallel STREAMS: a Multi-Processor Implementation	Arun Garg Sequent Computer Systems
	Implementing Berkeley Sockets in System V Release 4	Ian Vessey, Glenn Skinner Sun Microsystems
12:30-2:00	Lunch Break	
2:00-3:30	Networks	Chair - Alix Vasilatos
	Two Network Management Tools -or- (How Many Packets Would a Packet Router Route if a Packet Router Could Route Packets?)	Jeff Okamoto Hewlett-Packard Company
	Packet Trains on NSFNET National Backbone A Traffic Characterization	Steven A. Heimlich University of Maryland
	Pseudo-Network Drivers and Virtual Networks	Steven Bellovin AT&T Bell Laboratories
3:30-4:00	Break	
4:00-5:30	Special Session on Ethics and Computers	Moderator - Rob Kolstad

	Friday January 26	
9:00-10:30	User Interface Management Systems	Chair - Dan Geer
	The Serpent User Interface Management System	Brian Clapper, *et al* Software Engineering Institute
	Parallel Object-Oriented UIMS with Macro and Micro Stubs	Masami Hagiya, *et al* Kyoto University
	MTX - A Shell that permits dynamic rearrangement of process connections and Windows	Stephen A. Uhler Bell Communications Research
10:30-11:00	Morning Break	
11:00-12:30	File Systems	Chair - Kirk McKusick
	Using UNIX as One Component of a Lightweight Distributed Kernel for Multiprocessor File Servers	David Hitz, *et al* Auspex Systems Inc.
	A Highly-Parallelized Mach-based Vnode File System	Alan Langerman, *et al* Encore Computer Corporation
	Disk Scheduling Revisited	Margo Seltzer, *et al* University of California, Berkeley
12:30-2:00	Lunch Break	
2:00-4:00	Languages and Software Engineering	Chair - Dan Klein
	Postloading for Fun and Profit	Stephen C. Johnson Ardent Computer Corp.
	Multiple Site Source Reconciliation	Dodi Francisco, Lois C. Price TRW Financial Systems, Inc.
	CVS-II: Parallelizing Software Development	Brian Berliner Prisma, Inc.
	Ada and Binary UNIX Standards	Mitchell Gart Alsys Incorporated

Further details may be obtained from:

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EUnet Growing Up in Spain

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Dept. Ingeniería Telemática
ETSI Telecomunicación
Madrid, Spain

José A. Mañas is an Associate Professor at the Telematics Engineering Dept. (DIT) of the Technical University at Madrid (UPM). Since late 1987 he has been in charge of mail services provided by the Department to the research community. He is very fond of UNIX and is currently trying to become a guru, but it seems to be a difficult goal to reach. In the meantime, he spends his time lecturing on protocol engineering.

Introduction

The DIT (Dept. de Ingeniería Telemática) has been involved in mail services for some years. To a large extent, this department has been directly related to the evolution of a major part of the networking in Spain. In addition, it currently runs the Spanish backbone for EUnet, hosting the central node `goya`.

This paper presents an overview of the current status as seen from the EUnet world from the standpoint of: members, topology, distribution, resources, traffic and accounting. There are other networks in Spain, and cooperation is constructive in that it enables actual network topology to be hidden under unified addressing. The interoperability with these other networks is also considered, along with some figures on the amount of exchanged mail.

The given name of the Spanish entry host is `goya`. `Goya` offers three services: 'mail', 'news', and 'archive service'. The first two are fairly well known and deserve no further comment. The archive service is similar to other services around EUnet and other networks. It implements a mail accessible data base. Users send a request via mail, and something is sent back via mail in response. The first request is usually

```
To: Archive Server <info@dit.upm.es>
Subject: help
```

The amount of available information is about 30 Mbytes (after compressing); not very impressive, but it seems to be really useful in view of the number of users[1] So far we do not know whether this service will be subsumed by the EUnet distributed archive-service that is being set up, or whether perhaps both will be coordinated, or...

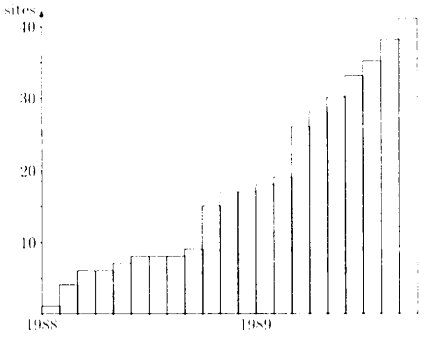
History

`Goya` began operation in the first quarter of 1986 with a link to `mcvax`. The net remained quite small for the first several years, and by early 1988

1. During last July, 92 requests were processed, and 2.520 Kbytes of information were sent.

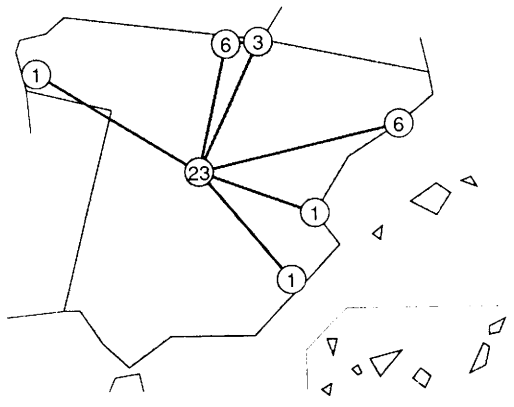
there was still only one registered site, namely `dit.upm.es`. Since January 1988 the net has evolved considerably and there are currently 41 registered sites providing service to more than 68 hosts. The actual number of hosts is difficult to estimate since domain addressing is strongly recommended to Eunet members, and most sites have only registered a frontend host. The number of users is even harder to estimate.

The following diagram shows the evolution of registered sites for the last two years. The growth is roughly linear; about 2 new sites per month.

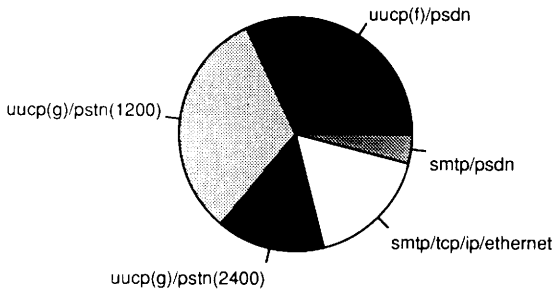


[1] During last July, 92 requests were processed, and 2 520 Kbytes of information were sent

The network topology is basically a star, centered at Madrid, where `goya` lives. The net is highly concentrated within Madrid, although the number of sites around the country is growing quickly. The following picture shows the distribution of sites in the country (figures denote the number of sites in each province)



With respect to the communication topology, most of the nodes work at 1200 on the PSTN. A few of them succeed in running 2400 modems, but this is usually restricted to Madrid due to the poor quality of public lines. An increasing number of nodes work on PSDN (x.25). Lastly, a few sites are connected to a common LAN, where SMTP/TCP/IP is used. For international transfers, there is a switched x.25 line working at 9600 bps. The following picture shows the distribution of links running each protocol stack.



Connection Types

Resources

The Spanish 'backbone', `goya` belongs to the DIT which takes care of its operation. `Goya` is a SUN-3/160 running at 3 MIPS, with 12 Mb of main memory and 600 Mb of disk storage.

There are two phone lines for incoming connections, accepting 2400, 1200, 600 and 300 bps transfers. There is also an x.25 line at 9600, that is used for incoming connections and to link with other backbones in Europe.

Human resources are harder to estimate since most of the department is more or less directly involved in communication issues, and everyone plays a rôle when problems crop up. It can be estimated that 1 effective person is fully devoted to the running of EUnet, with about 7 people hiding behind `<postmaster@Spain.EU.net>`. In addition, there is approximately 1 more effective person for gatewaying issues, relation to other networks, and so on.

These are all the resources available so far. With them, `goya` currently handles over 170 Mbytes per month. Let's try to get an idea of how it is distributed.

Layer 4 Traffic

First, focusing on layer 4 (transport in ISO/OSI), the following table shows the UUCP traffic classified per direct link to `goya`. Countries with a direct link are denoted by their top-level domain

(e.g., .fr for France). Cernvax, mcsun and mcvax are grouped apart since they usually handle much more traffic than what is expected for their respective host countries (.ch, .nl). The entry NAT reflects national traffic, that is, .es transactions.

1989	uucp traffic (Kbytes)								
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Ago**	**1989**
.de	2133	1821	1110	1833	1716	1659	2145	1644	14061
.dk	96	615	17	3307	108	63	167	39	4412
.fr	2892	2744	2794	2471	2382	2419	3301	1669	20672
.gr	0	7	174	177	352	38	708	103	1559
.it	96	32	11	11	45	876	42	1119	
.pt	38	23	30	22	46	25	18	1	203
.se	118	57	63	89	335	158	129	361	1310
.uk	399	1150	1851	2074	1738	763	1430	608	10013
cernvax	0	42	415	2904	1470	790	823	618	7062
mcsun	0	0	0	0	0	0	0	40678	40678
mcvax	47735	53710	65996	75407	69540	76037	79434	70321	538180
NAT	14868	21812	12965	51963	66018	58137	58142	58930	342835
TOTAL	68285	82077	85447	140258	143716	140134	147173	175014	982104

Layer 7 Traffic

Climbing up to layer 7 (application in ISO/OSI), and therefore concentrating on end-to-end mail transactions, the following table shows a classification of mail handled by goya. The data correspond to July 1989, when 9.505 messages circulated via goya. The numbers represent total number of Kbytes between zones.

from \ to	**eunet**	**rare**	**earn**	**EUR**	**ITC**
eunet	4,393	1,490	715	3,494	432
rare	767	202	0	400	10,118
earn	4,648	445	2	0	0
EUR	4,534	1,385	67	-	-
ITC	5,071	4,586	598	-	-

National nodes are classified according to network membership. EUnet is the Spanish part of EUnet; RARE is the Spanish part of RARE MHS. EARN is a bit more complicated, and covers the whole BITnet. The problem is that there is a national gateway into EARN where everything goes, whether hosts are national recipients or not. In fact, goya does not hold a list of EARN registered hosts.

EUR covers European sites. Geographically membership to Europe is extracted from top level domain or from EUnet host tables. Lastly, ITC covers intercontinental sites.

Obviously, there must not exist any international transit traffic, either European or Intercontinental. There should not be any traffic passing between any other two nets in Spain either, however the traffic exsists and is quite noticeable. It deserves some attention.

First of all, as a general comment, notice that domain addressing hides real network membership under a common .es top-level domain. Furthermore, EUnet is a quite well known entry point for Europe, and within EUnet, goya is the entry point for top-level domain .es. That is the reason for so much traffic entering Spain via goya, even traffic that is to be gatewayed into other networks.

Now, for the details:

1. rare → rare

   This traffic is due to a heavily used distribution list that is expanded at the EUnet side, but it is used by both EUnet and Rare people.

2. earn → rare

   This traffic is due to the fact (fault?) that we are grouping together senders having a .bitnet top-level domain, either national or international.

3. earn → earn

   This traffic results from the hiding of real network under common .es addressing.

Although within BITnet a Spanish node is declared as entry point (EB0UB011), some BITnet sites do not have very up to date tables.

4. rare → Europe and Intercontinental

   This traffic is a result of the service provided to Spanish RARE sites on an equal rights basis. We handle part of their mail for sites where EUnet connectivity is better, and they do the same for us.

5. European and Intercontinental → rare and earn

   Again, it is due to the hiding under `.es`.

There is an important conclusion to be derived from these comments: the current level of interoperability between networks makes it infeasible that any of the nets could survive without good cooperation with the others.

The Other End

Lastly, it may be interesting to know how is traffic distributed when one end is `.es`. Last July's traffic has been classified according to the other end. Numbers are Kbytes, once again. European UUCP hosts have been assigned to their respective host country. Extra-european ones are collapsed under `.uucp`. Hosts in BITnet are not classified either, and therefore they all show up under `.bitnet`.

domain	from	to
.ar	5	9
.au	7	91
.be	1	43
.ca	398	1
.ch	604	40
.cl	0	7
.de	508	468
.dk	45	82
.fi	90	246
.fr	1641	589
.ie	139	82
.it	28	248
.jp	8	2
.nl	590	141
.no	81	1
.nz	9	5
.pt	1	4
.se	48	7
.uk	1068	439
.us	25	5
.arpa	1499	3
.com	2150	145
.edu	7435	10458
.gov	1138	26
.mil	59	4
.net	1048	94
.org	1610	7
.cern	7	4
.irl	0	1
.oz	0	1
.uninett	443	0
.bitnet	6514	2130
.uucp	3001	1789

Other Networks

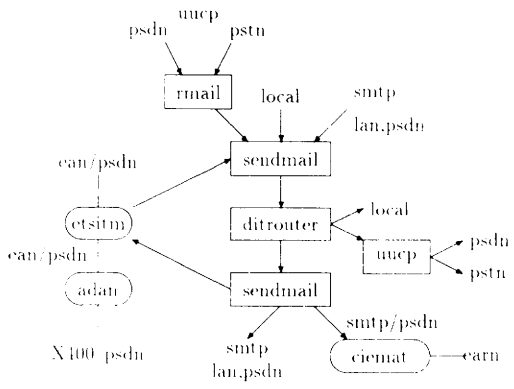
There are close relationships with EARN (BITnet), FAEnet (Spanish branch of HEPnet), and RARE MHS. All these networks are integrated under domain addressing (`.es`), and routing is handled entirely within the country.

For gatewaying into EARN and FAEnet, an agreement exists with `ciemat.es`, (a HEPnet site with a variety of computers) that is registered both at EARN and HEPnet. SMTP over PSDN is used between `goya` and `ciemat.es`.

With respect to RARE MHS, `goya` is directly registered in it. The EAN package permits straightforward gatewaying.

Software Architecture

There is a complex net of packages running to provide the services described above. The following picture describes their relationship.



`Sendmail` is the heart of everything. It accepts incoming messages via different media: UUCP (g) over PSTN, UUCP (f) over PSDN, UUCP (t) over TCP/IP/ethernet, SMTP over TCP/IP/ethernet, SMTP over PSDN, and from the EAN gateway into RARE MHS. This sendmail doesn't deliver mail, but rather concentrates on normalising addresses. Normalised messages are handed to `ditrouter`, a local version of Piet's `router` [2]. This package accesses data bases looking for delivery routes, checks for acceptable sender and recipients, logs traffic for later accounting, and delivers mail either locally, or via UUCP, or to a second `sendmail` if SMTP or further rewriting is required.

Accounting and Charging

There is a national project named IRIS that currently funds EUnet costs, which consists of public lines, and backbone and gateways operation. This program funds the other operational networks in Spain on an equal basis; namely EARN, FAEnet, and the pilot RARE MHS service. IRIS started last January 1988, and will run till the end of 1991.

This situation makes the everyday operation very comfortable, since it virtually runs for free. But this will not be the case for long; most notably for companies. Therefore, an accounting package is being developed from which we shall be able to distribute the costs when the funding stops.

Accounting is done at layer 7 (of ISO/OSI), that is, we don't care about transport transfers, focussing instead on end-to-end transfers. The routing software (`sendmail`) pays plenty of attention to removing routes and finding out real senders and real recipients. Messages are then classified according to 4 coarse cost areas: local, national, european, and intercontinental. Different weights are assigned to each area to get an overall figure that reflects the use of the net resources. This package providing the traffic data given above.

Accounting is also used for coping with fixed costs (lines, equipment, staff, ...) in such a way that these costs are paid proportionately to the amount of use of the net, but having an upper boundary for heavy users. One of the objectives is to keep a low hook-up fee, while at the same time keeping it reasonable for heavy users.

These accounting procedures provide a means of distributing costs. The idea is to have a number of fixed cost bands, and use the accounting to allocate users on the corresponding band. This avoids the details of exact billing, and permits easy pre-estimates of costs, something highly appreciated for planning.

News is charged on a fixed-cost basis. There are three levels: (1) no news, no cost; (2) any news you wish, full price; and (3) up to 10% volume of news (approximately), 10% price (exact). These bands permits easy billing, quasi-fixed costs, and somehow help new news' subscribers to keep costs small.

These accounting procedures are currently subject to discussion within the net, and they may be subject to modifications before actual implementation; but users have informally agreed on them for the time being. Now we have to look at the exact figures.

Problems

The major problems are the following:

- Lack of experience in running UNIX™. Most Spanish computer users are used to VMS™ systems, and UNIX makes them feel uneasy. I believe that gurus are really needed for running UNIX, and the lack of expertise at the site (and in the environment) provokes a negative reaction from [system] managers. This reaction gradually disappears as they become more expert and they see that things are actually running.
- Poor quality of public lines. Both phone lines and data lines perform poorly in Spain. Installation delays are on the order of months, or even years! High speed data lines are extremely difficult to get. On phone lines, it is pretty difficult to work at more than 1200 bps when you are to connect two cities. The system functions better during the night (of course: modems much prefer not hearing neighbour's conversations).

  This situation may drastically change when Trailblazers arrive (some day). Currently there are problems to get them at a reasonable price, and there are only a few of them in

2. Piet Beertema <piet@EU.net>

Spain (none in EUnet; all for private BBS).

- Absence of a national UNIX users group. There have been several attempts to one up, but all of them have failed so far. There seems to be nobody with the resources and abilities to run it. This fact prevents the more rapid introduction of UNIX in Spain, as well as a higher level of cooperation.
- Lack of source licenses. There have traditionally existed licensing problems from AT&T, due to certain flaws in the Spanish laws with respect to proprietary rights. The problems seem to be partly solved since Spain joined the EEC. But not completely, and the fact is that there are only three (3) source licenses for UNIX in Spain, which is really inadequate for a country with almost 40 million people. Out of these three licenses, only one is held by a university.

  This certainly prevents much enthusiasm for running UNIX at the universities, a fact which negatively impacts on the companies which recruit graduates from those universities. Nevertheless, the growing involvement of Spanish researchers in European projects is rapidly introducing a significant level of UNIX knowledge.

Expectations

The future can be reasonably foreseen. I expect mail sites to continue to grow in a linear fashion for some time. The number of News sites (currently only 3) should rise quickly as the quality of lines improves. There are a number of reasons to justify these expectations. Some of them were already outlined in the section on problems. I believe it is sensible to say that participation in Europe is greatly helping researchers to become aware of UNIX, and the growing number of UNIX machines in universities (something that is currently taking place) will mean a greater impact of UNIX on industry in the near future.

The unavailability of UNIX, together with very favorable treatment for universities (high discounts, basically), helped DEC to virtually fill up the university computing centers with VAXes running VMS. This situation has been changing more recently, however. Current DEC interests seem to be in other directions, and the university market is being taking over by Sun Microsystems and Hewlett-Packard, both strongly promoting UNIX.

This vision is somewhat oversimplified, but the the fact remains that the final outcome is a growing number of UNIX users, which directly results in a growing number of EUnet members.

There is an additional reason for expecting linear growth: IRIS, the National Program for networking in Spain, is strongly encouraging the connection of new sites. Having this service for free (although only for some time) greatly helps people to decide to start. Some decrease may be expected when the project ends.

We'll have to wait and see what the future has in store for EUnet as it continues to grow up in Spain.

Acknowledgements

There are many individuals that help to keep `goya` running. A few of them are heavily involved, and their work should be acknowledged: Inmaculada Pindado, José R. Alonso, José M. Rivero, and José L. Jiménez.

From: Inge Arnesen <ingea@ifi.uio.no>
Subject: Trailblazer in Norway
To: uknet@ukc.ac.uk

Re: Article in EUUG Newsletter— Trailblazer & TCP/IP services in Europe

For your information, the Trailblazer is approved by the Norwegian authorities and is currently available from among others, the former state owned monopoly, TBK. The trailblazer is increasing in popularity in Norway and is doing very well vs. the V.32 modems, but there are still few around, mainly because of the high cost and rather low advertising profile.

More information is available from:

TBK Comms. systems: +47 2 63 22 00.

Inge (BoB) ingea@ifi.uio.no

Inge Arnesen,
University of Oslo,
Norway.

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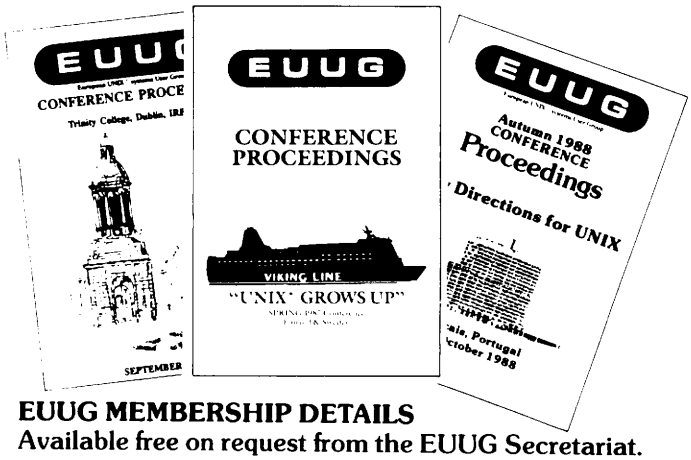

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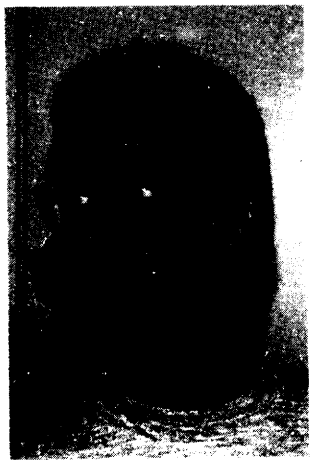
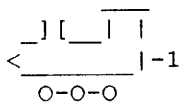
EUUG Software Distribution



Frank Kuiper
euug-tapes@cwi.nl

Centre for Mathematics and Computer Science
Amsterdam



To start with, the picture you see on this page is not neccessarily mine! It certainly was not so in the last issue of the EUUGN :-)
Comments I received about it ranged from: "Did you have an accident?", through: "Did you have plastic surgery done?", to: "I like your new looks!". (Ahem!)
But, if in the future Alain can more accurately describe my mug shot to a hasty printer, I will feel much better!

Since the last issue of the EUUGN there is one new tape available. It is the 'Vienna, autumn 1989 conference tape', EUUGD18 We decided to try a small experiment, the result of which is a tape absolutely loaded with games. All kinds you can think of: adventure games, tactical games, screen oriented, etc, etc. There are different sets, for the Sun architecture, the X environment, and a general one.
Some people thought this "a waste of bandwidth, effort, time and money", but most others seemed to be quite happy with it. At CWI we have a so-called 'Game Keeper <play@cwi.nl>'. He maintains most of the on-line available games at CWI. He helped in making this tape, by supplying bug-free games. So the games you find on this tape have an added value, above that of the versions you can get from the news network, archives, or bulletin boards. They work, and sometimes have added features. How about that for service.

For the Munich conference, spring next year, we also plan to have a conference tape. A very serious one this time. The theme of this tape will be 'Graphics'. If you have special request items, please contact me and I will try to get hold of the software.

If you have other things you would like to see become (part of) an EUUG Software Distribution, please tell me. I know that some people would like to have the X Test Suite, the latest version of Kermit, etc. And although it is rather time consuming for me to try and keep updates for every program ever distributed on an EUUG tape, I will try to do so. Especially with items like X, ISODE and ET++.

That's it for now. Below you'll find the list of currently available tapes and how to order them.
As always, anyone is invited to make their own tools, games, etc., available for publication on an EUUG tape. Please contact me for more details. Don't hesitate, just put the results of many nights of serious programming and hacking in the public domain, and you might even become famous!

This is a list of all the current (August 1988) EUUG software distributions. It is a short description of the available tapes. Any changes to the contents of the tapes, as well as announcements of new tapes will be placed in the EUUG Newsletter.
Prices of the tapes are in Dutch guilders (DFl), and do not include VAT-taxes. Prices include postage cost for surface mail within Europe. Any special shipment costs, like with DHL, will be billed through.
The first price listed is for reel-tapes in tar 1600 bpi format, the second one is for distributions on cartridge tapes in QIC-24 format. Prices for 800 bpi reel tapes and QIC-11 cartridges may differ from the ones listed.
Note that you have to be an EUUG member (or a member of a local UUG) to obtain tapes at list prices. Non-members will have to pay an extra DFl 300,- per tape.

EUUGD1 R6: UNIX V7 system, specially made for small DEC PDPs (11/23, 11/34, etc). The Kernel supports the UK terminal driver. V7 source licence minimum.
Price: DFl 120,-/180,-

EUUGD2: Early Pascal compiler of the Free University of Amsterdam. V7 source licence minimum.
Price: DFl 120,-/180,-

EUUGD3 R3: Currently not available. We're working an a new tape, dubbed "Starter Kit", containing public domain news and mail programs.

EUUGD4: Software tools, sampled by the Software Tools Users Group. Most of the software is written in Ratfor, for which a Fortran support tool is included. This tape is available in different formats: DEC RSX, DEC VMS, UNIVAC, IBM MVS, UNIX tar, MIT line feed format, and MIT card format (80 columns).
Price: DFl 150,-/180,-

EUUGD5: A collection of benchmark programs made up by EUUG.
Price: DFl 60,-/180,-

EUUGD6: (USENIX 83.1) USENIX tape, containing contributions from various UNIX System Group Members. This is a licence dependent distribution: V7, V32, SIII, V6 or no licence disclosure available.
Price: DFl 240,-/300,-

EUUGD7: UNIX\STAT Version 5.2. A collection of about 25 data manipulation and analysis programs written in C by Gery Perlman.
Price: DFl 60,-/180,-

EUUGD8: A collection of useful software, based on the so called Copenhagen tape (EUUG Unix conference Autumn 1985).

EUUGD9: A collection of useful software, based on the so called Florence tape (EUUG UNIX conference Spring 1986). Price: DFl 150,-/210,-

EUUGD10: MMDFIIb. Multichanel Memo Distribution Facility (version IIb). This is a powerful, domain oriented mail system with access control and the ability to communicate over a variety of network systems including TCP/IP, JANET, UUCP, PHONENET, etc. It has been ported to a variety of UNIX's including but not limited to 4.[123]BSD, 2.9BSD, System III/V on a variety of different hardware. You should first obtain a licence agreement by sending a message to euug-tapes@mcvax. Return the signed licence with your order.
Price: DFl 90,-/180,-

EUUGD11: This is the 'Boat' tape; the Helsinki EUUG 1987 spring conference. It contains about 25 Megabytes of programs, games, etc. Including: jove, less, nag, news, rn , uEmacs, uuencode and larn.
Price: DFl 120,-/180,-

EUUGD12: This is the Dublin EUUG 1987 autumn conference tape. It contains about 26 Megabytes of programs, games, etc. Including: copytape, crc_plot, fastgrep, jove, kermit, notes, uupc, nethack, cron, sendmail, mh, Recipes, brl-gw, isode, pcip, pctelnet.
Price : DFl 120,-/180,-

EUUGD13: The latest conference tape for the London EUUG 1988 spring conference tape. It contains things like: cake, chat, config, copytape, graphedit, kermit, little-st, mcc, mstools, news, pd-diff, pdtar, perl, postscript, psfig, pshalf, shar, rpc, moria4.85, omega, arc, backup, smail, sush, watcher, and much, much more.

Price : DFl 120,-/180,-

EUUGD14: -> NOW A NEW VERSION <- This is version 5.0 of this non-proprietary implementation of some of the OSI parallel protocols suites as defined by the International Organisation for Standardisation (ISO), the International Telegraph and Telephone Consultative Committee (CCITT), and the European Computer Manufacturer's Association (ECMA).

This release is coded entirely in C, and is known to run under the following operating systems without kernel modifications:

BSD 4.2 and 4.3
ULTRIX
AT&T UNIX SVR2 and SVR3
AIX
HP-UX
ROS
Pyramid OsX

Since a Berkeley UNIX system is the primary development platform for ISODE, the documentation and source are somewhat slanted towards that environment. The tape contains some 12Mb of both tools and documentation in machine readable form. EUUG will send you a tape only.
Price: DFl 120,-/150,-

If you want the complete documentation on paper (some 800 pages!) with the tape, you will have to order this distribution as follows:

Send a cheque or a purchase order for 200 Pounds Sterling to:

Department of Computer Science
Attn: Søren Sørensen
University College
Gower Street
London, WC1E 6BT
United Kingdom
Telephone: +44 1 387 7050, extension: 3680

Specify either 1600 bpi 1/2-inch reel tape, or sun 1/4-inch cartridge tape. The tape will be written with tar format and returned with a documentation set via DHL. Do not send tapes or envelopes. Documentation only is the same price.

EUUGD15: Here it is! The X11 Windowing system material, release 3: X11R3 This is one tape, containing the entire distribution from MIT in compressed format. Uncompressed this is some 87 Megabytes. This includes the core system, as well as much user contributed software.
Price : DFl 120,-/180,-

EUUGD16: This is the Brussels EUUG 1989 spring conference tape, and consist entirely of software from the GNU project from the Free Software Foundation (not to be confused with the OSF :-).
On this tape you will find: ispell, g++1.31, awk, gcc-1.33, gdb-3.1, Cscheme, emacs, lisp-manual, libg++1.32, binutils, bison, ghostscript, gas-dist, gawk2.02, gnews2.0, gnuchess, make3.27, oops-2.2, pace, ps-emacs, scheme, sed-1.01, tar-1.04 and torture.
Price : DFl 120,-/180,-

EUUGD17: This tape contains the software for ET++. From the abstract of the 'Autumn 1988 EUUG Conference Proceedings':
"ET++ is an object-oriented application framework implemented in C++ for a UNIX environment and conventional window system. The architecture of ET++ is based on MacAPP and integrates a rich collection of user interface building blocks as well as

basic data structures to form a homogeneous and extensible system.''
It totals some 18Mb of software that the people of the Institut fuer Informatik of the University of Zurich were so kind to let us, mere mortal souls, play with. Have fun.
Price: DFl 120,-/180,-

EUUGD18: This is the 'Vienna EUUG 1989 autumn conference tape', and consists entirely of games! There is a SUN specific set, a set for the X Windowing System environment, and a general useable set. All the games supplied are working, and have been tested at CWI by our 'Games Keeper <play@cwi.nl>'. For many games he added additional features, not found in the originals.
Some of the games included are: for SUN: Asteroids, Mahjongg, Othello, Qix, Sdi, Tetris. For the X environment: Xtrek, Xgo, Xwanderer, Xrobots. General games: Nethack, Adventure, Atc, Empire, Reversi, Yahtzee, Trek73, Backgammon, Corewars, MazewarsV, Vtrek, and lots, lots more.
If this doesn't bring some fun back into using computers, I don't know what else can :-)
Price : DFl 120,-/180,-

EUUG Software Distributions Order Form

If you want to order any tape, please write to:

EUUG Software Distributions
c/o Frank Kuiper
Centrum voor Wiskunde en Informatica
Kruislaan 413
1098 SJ Amsterdam
The Netherlands

For information only:

Tel: +31 20 5924121 (or: +31 20 5929333)
Fascimile: +31 20 5924199
Telex: 12571 mactr nl
Internet: euug-tapes@cwi.nl

Please note that for distributions D1, D2 and D4 (and in some cases also for D8) a copy of your source licence agreement with AT&T for at least UNIX version 7 should be enclosed. Note also that you have to be an EUUG member (or a member of a national UUG) to obtain tapes at list prices. Non-members will have to pay HFl 300,- per tape extra as handling fee. Please enclose a copy of your membership or contribution payment form when ordering. Do not send any money or cheques, you will be invoiced.

All reel tapes come in tar format, 1600 bpi. 800 bpi is possible on request. Cartridge tapes come in tar format, written with dd, with a blocking of 126b. This is a so-called QIC-24 format, written on a Sun. QIC-11 is available on request.

Name: .....

Address: .....

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I would like to order the following:

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EUUG (or national UUG) membership form enclosed? Yes / No
Copy of AT&T source licence enclosed? Yes / No

"I declare to indemnify the European UNIX systems User Group for any liability concerning the rights to this software, and I accept that EUUG takes no responsibilities concerning the contents and proper function of the software."

Signature: .....

Date: .....

This page may be photocopied for use.

ISO/IEC JTC1/SC22/WG15 (POSIX) Meeting October, 1989

Dominic Dunlop

The Standard Answer Ltd.

Equipped with an undergraduate degree in Electrical Engineering from the University of Bradford in England, Dominic sidled into the world of mini- and micro-computers. From there, he managed to effect an entry into the hallowed temples of , and has hung around there ever since, writing the odd paper, contributing to the odd standard, and starting the odd company. He became an independent consultant in January, 1989, and his latest company, The Standard Answer Ltd., has just bought its own UNIX computer.

Report to EUUG and Usenix on ISO/IEC JTC1/SC22/WG15 (POSIX) Meeting 11th-13th October, 1989

Introduction

Working Group 15 of Subcommittee 22 of Joint Technical Committee 1 of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IECJTC1/SC22/WG15") met in Brussels, Belgium, from the 11th to the 13th of October in order to further the POSIX standardisation effort. I was present at the meeting as an observer with the brief of reporting back to you. This report is the second jointly commissioned by the European UNIX systems User Group (EUUG) and Usenix. If you have any comments, or need clarification or further information, please contact me at the mail address above.

First, a summary of the most important aspects of the meeting:

Summary

- The big news is that the working group has recommended that ISO accepts the POSIX operating system interface in its current form as international standard (IS) 9945-1. Assuming that this recommendation is accepted, an international standard which is identical to IEEE Std 1003.1-1988 should be registered by ISO in the next few months.
- During the balloting of the standard at the international level, a number of comments were raised. These will be addressed by the production of a revised International Standard on short order—by next June according to the current schedule. The result will be a version of POSIX in which known problems are fixed, but which is not extended in any way.
- Extensions, such as real-time facilities, transparent network file access, and security features will be added in future releases of the international standard.
- The cooperation of the IEEE POSIX project in producing standards which are acceptable to ISO and to its members is critical to the timely production of ISO standards. Steps were taken to make sure that IEEE documents are produced in a format that is acceptable to ISO, and that IEEE work on the revision of its 1003.1 standard is synchronised with the work of the ISO working group.
- Draft 9 of IEEE 1003.2, the proposed IEEE shell and utilities standard, has been accepted as Draft Proposal (DP) 9945-2. This means that the movement towards an international standard in this area is now officially under way.
- The problems raised by the suggested adoption of the whole of issue 3 of the X/Open Portability Guide as a European prestandard (see report on May, 1989 meeting) seem to have receded: European

alignment with a number of formal international standards is finding acceptance as a viable and more useful alternative.

- The working group has set up 'rapporteur groups' on conformance testing, internationalisation, and security in order to ensure that future international standards for POSIX take account of the developments in, and of the requirements of, these important areas.
- The next meeting of the working group does not take place until June, 1990. Making a virtue of necessity, the group hopes to achieve much before that time.

POSIX as an International Standard

The international ballot period for Draft International Standard (DIS) 9945, *Portable operating system interface for computer environments*, closed at the beginning of September. The DIS is identical to draft 13 of the IEEE 1003.1 POSIX standard, which in turn is identical, except in details of layout, to Std 1003.1-1988 published by the IEEE.

Of 26 national standards bodies entitled to vote, 19 approved the standard, one (South Africa) abstained, and one (Japan) voted against. (The five remaining countries did not vote.) Broadly speaking, ISO rules require only 75% of those voting to vote in favour in order that a standard is accepted. Where there are only one or two votes against, as in this case, the situation is even more clear-cut. Nevertheless, ISO rules require the technical committee responsible for the standard to show that it has considered the concerns of the objectors, even if it has decided not to address them by amending the draft standard.

Japan's major worry was simply that the document did not *look* like an International Standard—a matter on which France, despite voting in favour, and ISO's Central Secretariat, had also voiced concern. Instead, DIS 9945 looks like what it is—the draft of an IEEE standard—and may consequently be difficult to navigate for those used to ISO's standard format for standards.

This editorial issue could be handled simply by instructing ISO's Central Secretariat to re-enter the document text, and set it in the required format. This would take perhaps a year, and would not address the large number of 'non-normative' changes already known to be required in the document as a result of work done by the IEEE over the past year. These changes are currently under discussion within the IEEE as P1003.1a. They are thought not to affect substance of the standard, merely clarifying it, fixing a number of small errors, and adding standard C function prototypes. However, ISO procedures sensibly require that any change to a draft standard must result in a new vote on the amended document, and consequently a further delay to the acceptance of a final standard.

Judging that it was more important to get a POSIX standard out in the field as soon as possible, rather than to ensure that its format and content was perfect in every way, the working group decided on a two step process:

1. Recommend that DIS 9945 is accepted in its current form as IS 9945-1. (The request to split the POSIX standard into multiple documents came as the draft standard was being balloted, with the result that its number has sprouted a –1.) ISO may decide to reprint the existing document, adding cover material to say that it is a standard. Alternatively, the standard may be published as a reference document: a few pages which tell the reader to go and look at a particular ANSI standard. (There is a precedent for this: the International Standards for COBOL and PL/1 simply point to ANSI documents.)

   If ISO accepts the recommendation, POSIX should become an International Standard within the next six months.

   ISO may turn down the request if it judges that the working group's plans to resolve outstanding issues are inadequate. Hopefully, this will not happen, because

2. The working group has undertaken to produce and ballot an amendment to the standard by 1st June, 1990. The amendment—actually 1003.1a produced by the IEEE—will fix all issues raised during the balloting of DIS 9945. What is more, the working group—or rather, the hard-pressed editor for the IEEE's POSIX project—will merge the addendum with the existing standard, producing a single document in a format acceptable to ISO. This, it is hoped, will be published as a revised standard late next year.

The Future of International Standards for POSIX

In my last report, I noted that the working group had requested that its project was split into several parts, resulting in several standards, numbered 9945-1, 9945-2 and so on, rather than a single standard 9945. This has happened, with the result that the operating system interface will be covered by 9945-1; shell and utilities by 9945-2, and system administration by 9945-3. No other numbers have yet been allocated. It is important to note that the apparent one-for-one correspondence between 1003.1 and 9945-1 will grow more tenuous as time goes on: facilities for real-time processing (1003.4), security control (1003.6) and transparent file access (1003.8) will be added to future versions of 9945-1. While 9945-2 corresponds to 1003.2, there is no connection between 1003.3 (Test Methods) and 9945-3. Instead, 9945-3—when it gets off the ground—will be based on the IEEE's 1003.7 work.

I also mentioned last time that ISO standards are supposed to be independent of any particular computer language. 9945-1 will probably lose its ties to C with its second amendment (that is, the amendment after the one described in the previous section). This will introduce a need for a new standard to describe its C bindings, and further standards to describe bindings for Ada, FORTRAN, and so on. While the IEEE language bindings are part of the 1003 project (1003.5 for Ada, and 1003.9 for FORTRAN), ISO practice is to allocate a completely new standard number for bindings work. Consequently, a request for a new number, with three designated parts, has been made. We will not know this number until next June.

Table 1 summarises correspondence between ISO and IEEE standards.

TABLE 1. Correspondence between ISO and IEEE Activities

ISO	IEEE	Topic	Notes
9945-1	1003.1	OS interface	Now
	1003.1a	Clean-up	1990
	1003.1b	Extensions, language independence etc.	Future
	1003.4	Real-time	Future
	1003.6	Security	Future
	1003.8	Transparent file access	Future
9945-2	1003.2	Shell & tools	First release
	1003.2a	User Portability Extension	Future
9945-3	1003.7	System administration	First release
1xxxx-1	—	C bindings	Future (probably to be done by new 1003 working group)
1xxxx-2	1003.5	Ada bindings	Future
1xxxx-3	1003.9	FORTRAN bindings	Future
—	1003.0	POSIX environment	Some overlap with ISO DP 10000, *International Standardized Profiles*
—	1003.3	Test methods	Under consideration by rapporteur group
—	1003.8	(Aspects besides T.F.A.)	Work elsewhere in ISO on RPC
—	1003.10	Supercomputing	Profile: relevant to DP 10000
—	1003.11	Transaction Processing	Profile; also relevant to SC21/WG3 database work
—	1201.x	X Window	See below
—	1224.x	Interfaces to OSI services	Not clear where these fit in ISO work: SC21 (OSI) seems to be against working on bindings

A word about windowing is in order. Work in a number of JTC1 SCs nibbles at the edges of the issue:

SC2 (Code sets):

Encoding of pictures. There is no connection between this work and X's bitmap distribution format.

SC18 (Office systems):
Office system user interface; Font and character information interchange (lots of this); page layout and document structure (even more of this)

SC22 (Languages):
Form interface management system—a new project involving interactive screen forms and such

SC24 (Graphics):
No work—even though SC24 looks like the obvious place to put windowing standardisation.

It is an article of faith that no international standard may encroach on another's territory, and that the terms of reference of each SC do not overlap. This presents difficulties in dealing with new (well, new in ISO terms) and widely-applicable technologies such as windowing. Perhaps it may be possible to hand the issue to SC24 without upsetting other SCs. Alternatively, it may be necessary for JTC1 to set up a whole new SC to run with it, and bring the currently fragmented work together. (This recently happened on security issues—see below.) Again, watch this space for more news.

9945-2 Shell and Tools Standard

The majestic machinery of JTC1/SC22 has sanctioned the use of draft 9 of IEEE 1003.2 as a draft proposal (DP), which embarks forthwith on a six-month balloting period. This period is to be synchronised with the IEEE's ballot, with the result that 1003.2 and 9945-2 move forward in lock-step, and should hit the streets simultaneously as identical American and international standards.

Document Format

In order to avoid future wrangles over document format with ISO's Central Secretariat, and to avoid time wasted in recasting IEEE standards into ISO's mould, *all* 1003 standards are to be created and balloted in a format acceptable to ISO. (And to the IEEE. And to the POSIX working groups. But mostly to ISO.)

WG15 is concerned that ISO's standards for standards were drawn up with relatively short documents in mind. For example, ISO's Central Secretariat objects to the line numbers which appear in draft 13 of 1003.1—even though it used the line numbers in referencing other changes that it wanted! Hopefully, an acceptable compromise will be reached. Working group chairs and editors will be told what the changes mean to them just as soon as a decision is reached.

Rapporteur Groups

The concept of rapporteur groups is an ISO invention. It refers to a group of "technical experts" (another ISO term) from a number of related standards efforts, or concerned with a specialised topic within a single standards effort, which meets to discuss its area of interest. Members of the group then report back to their own groups, in order to integrate the work of the rapporteur group and the standards efforts that it links.

WG15 has three rapporteur groups: Conformance, Internationalisation, and Security. Each addresses areas known to have applicability in fields broader than POSIX itself. For example, JTC1 has just created a whole new subgroup (SC27) to handle security, bringing together separate developments in SC18 (Office systems), SC20 (Data encryption), SC21 (Open Systems Interconnection), SC22 (Languages)* — and anything else which turns out to have security implications. (I mentioned this development in my last report, but managed to garble some of the references. Sorry about that...) Similarly, there is work on conformance testing and internationalisation both inside and outside ISO.

In Brussels, the rapporteur groups all held informal meetings separate from the main business of WG15. Since all three have only just got off the ground, there is little to report as yet, but watch this space!

X/Open Portability Guide as a European Standard?

At the May meeting of WG15, our minds were much exercised by a proposal from CEN (Comité Européen pour la Normalisation—The European Committee for Standardization) that the whole of the third edition of the X/Open Portability Guide (XPG3) should become a draft European prestandard. The arguments against doing this

* Why is the POSIX project a subdivision of the languages subgroup? Because it was the least unsuitable place in the ISO structure to put it at the time...

centre on the fact that the XPG is not a formal standard reached (slowly) through consensus, but an informal document which references formal standards where it can, but which then goes on to fill the gaps with *de facto* and suggested standards material. Increasingly, the European countries which form CEN's membership have come to realise that a document of this type, while useful in its own right (arguably more useful than existing formal standards, in fact), cannot be adopted as a European standard for both legal and practical reasons.

XPG3 has, however, helped to focus European minds on areas where formal standards are lacking. At the moment it looks as though the CEN project charged with producing a POSIX standard will build on the output of WG15. In addition to this, Germany is in favour of adopting as prestandards those parts of XPG3 which do *not* correspond to existing or emerging international standards—for example, ISAM, curses and X Window. The argument for this is that some kind of standard is urgently needed in these areas. The argument against, coming from Britain, Denmark, the Netherlands and others, is that CEN can only adopt standards which are public—*de facto* just isn't good enough, and besides, such things are outside the scope of the original work-order for a POSIX standard. At the moment, it looks as if this point of view will prevail.

As a sidelight to this issue, it seems that ISAM will eventually make it into the POSIX standard, as X/Open has expressed a desire to submit a base document to the 1003.1 working group.

Harmonisation and Synchronisation

The three previous headings—9945-2, rapporteur groups, and the CEN standard for POSIX—highlight a couple of important issues identified by JTC1:

Harmonisation:

> Standards covering identical or related topics should be in agreement; and

Synchronisation:

> Development work on standards covering identical or related topics should be developed in step with one another, both so that there is no unnecessary delay between the appearance of one standard and the appearance of another, and to avoid duplication of work—for example, the same ballot objection being made to and fielded by two separate groups.

WG15 has taken steps to synchronise its activities with those of the IEEE 1003 working groups, its main feeder. In some cases this means that WG15 will set IEEE timetables—almost a case of the tail wagging the dog, but necessary in order to arrive at international standards as quickly as possible.

To address the issue of harmonisation, WG15 discussed a new category of liaison to JTC1. Liaison is a mechanism which allows transnational and international setters and users of standards to monitor or to contribute to the work of ISO. Participation is otherwise the province of national standards bodies such as ANSI, JISC and DIN—ISO is currently bad at dealing with regional standards bodies such as CEN. The proposal embodied a combination of sticks and carrots which would allow other types of standards bodies to participate on condition that they undertook to align with relevant international standards within some reasonable time after publication. The working group reached no conclusion on this radical idea, and will discuss it again at its next meeting.

It will be a while before JTC1 gets around to considering any proposal of this nature. In the mean time, WG15 will continue to invite observers such as myself to its meetings.

Language Independence

As at the previous meeting, this topic was discussed at some length. The policy of JTC1 is that, ultimately, in the interests of precision and verifiability, all base standards should be written in some formal language which is itself the subject of an ISO standard. There is a small problem here: no formal language suitable for use in the POSIX project is yet the subject of a standardisation effort. (Although IEEE P1003.7, System Administration, is making use of ASN-1, a standardised formal language developed for use in describing communications systems.) If POSIX were to wait for a formal language to be standardised before breaking the current links between POSIX and C, nothing could be done for a couple of years. However, it is necessary to break the links with C as soon as possible, in order that additional bindings Ada and FORTRAN can be defined. The break will be made informally, by using English along with language-independent data types, and so on.

In parallel with this development by WG15, a research project funded by the European Community (EC) looks like funding the development of a description of the POSIX operating system interface in VDM-SL (Vienna Definition Method Specification Language). SC22 is actually thinking about standardising this formal language, which is already being used in the production of an ISO standard for Modula 2 by SC22/WG13. Welcoming what is, in effect, an offer to discover the problems involved in defining POSIX using a formal language, WG15 has sent a message of encouragement to the EC, while emphasising to SC22 that, as far as POSIX is concerned, the coming language-independent description is a necessary step on the path towards a formal definition.

The Portable Common Tools Environment

Another research project supported by the EC concerns the Portable Common Tools Environment, PCTE. Essentially a very sophisticated and all-encompassing object-based workbench for the support of Computer-Assisted Software Engineering (CASE), PCTE is the result of six years' work, and the investment of several million European Currency Units (ECUs) by government and industry—with more years and mega-ECUs to come. Among other organisations, NATO is a strong champion of the technology. The European Confederation of Computer Manufacturers (ECMA) has, over the last couple of years, been working on a PCTE standard which may (just) be ready in 1991, and which may then be offered to ISO.

What has this to do with POSIX? Well, PCTE was originally aggressively host-independent—independent, that is, both of hardware and, on systems where it was not to run native, of operating system. This made excellent sense six years ago when development started—using UNIX as a development host. Versions are currently available for several UNIX hosts, with VMS and IBM mainframe versions on the way. Times move on, however, and there is now (ISO Central Secretariat permitting) an international standard hardware-independent operating system which looks like becoming the predominant host for PCTE. It makes sense, therefore, for PCTE to align itself closely with POSIX, so avoiding unnecessary duplication or conflict of functionality. Following a morning of presentations by PCTE experts, WG15 agreed to keep members of the ECMA PCTE working group informed of its activities.

Date of Next Meeting

The next meeting of WG15 is to be held in Paris, France from the 11th to the 15th of June, 1990, and is to be hosted by AFNOR, the French national standards body.

The OPEN LOOK™ Graphical User Interface

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Ruth Klien is the Supervisor of Systems Engineering for user interfaces at AT&T Bell Laboratories.

Bill Sherman is a Distinguished Member of Technical Staff, working on user interface development at AT&T Bell Laboratories.

User Interface Technology: The OPEN LOOK™ Graphical User Interface

The concept of a graphical user interface was originally pioneered at Xerox PARC in the early 1970's. The objective was to provide users with a more natural means of interacting with the computer system, using icons and visual metaphors to 'drive' the system. Although these concepts were originally developed over 15 years ago, it's just within the past few years that they've emerged successfully in the commercial market place. They first gained popularity for single tasking operating system environments such as the Apple Mactintosh™ System and later for the MS-DOS™ System. Recently, they've begun to be popular for the multi-tasking UNIX® Operating System environment.

With the growing popularity of UNIX System V in the business market, a simplified user interface is considered to be a necessary element to gain acceptance by commercial end users. In response to this need, several user interfaces have emerged in the past year, and others are promised before year end 1989. Among these are the currently available OPEN LOOK and DECwindows™ User Interfaces ('UI'). And, the NextStep™ and OSF/Motif™ interfaces are targeted for availability later this year. This sudden proliferation of available and promised UNIX System user interfaces is creating an overwhelming situation, we describe the OPEN LOOK User Interface as an example of how the needs of this market can be met.

User Interface Software Architecture

The predominant architecture for UNIX System graphical user interface software is the client/server model. The client/server model gets its name from the fact that the window system has been taken out of the operating system and implemented as a user-level process, called a display server. 'Client' applications request graphics services of the display server via a byte stream protocol. Because of this simple interface, client applications may be distributed across machines throughout a local area network. In many client/server window systems (such as the X

Window System™), the window management functions are largely split out of the display server into a separate process, called a window manager. X and NeWS are examples of client/server window systems. There are 3 basic architectural levels shared by the client/server systems (Figure 1):

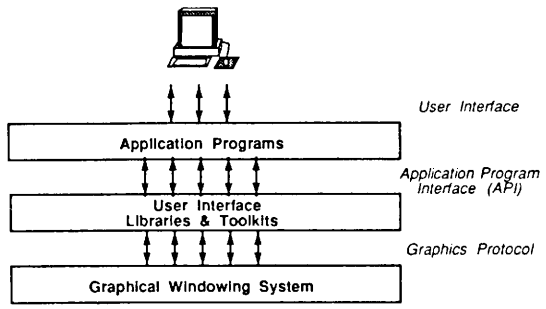

Figure 1. User Interface Architecture

- **The Graphical Windowing System**: This level provides the primitives for graphics operations as well as for windowing, i.e., displaying multiple applications, executing simultaneously, sharing a display device. Some of these systems, such as the X Window System, have no inherent user interface, and allow user interface software to be layered on top of it. OPEN LOOK UI, DECwindows XUI and OSF/Motif are all user interface systems that can be layered on top of X. X is the common platform choice since it provides the benefit of a standard and distributed architecture.
- **User Interface Libraries and Toolkits**: Toolkits simplify the task of writing applications that adhere to a specified user interface, and provide portability across platforms. They consist of a pre-defined user interface objects, such a menus, scroll-bars, buttons, etc. These objects are used by the application program to create the user interface. The programming interface used by the application developer is referred to as the Application Programmer Interface (API). The APIs for the various X Window System based user interfaces vary, although many of them have a common substructure (to be described later). Toolkits communicate with the underlying X Window System using the X graphics protocol. This graphics protocol is the same, no matter which toolkit is being used.
- **Application Programs**: Application programs written with a specific user interface Toolkit will present a consistent user interface to the end user. There is generally a User Interface Style Guide document that helps application designers to use the user interface elements in a common fashion. In addition to programs written by application developers, there are generally several system-level applications that come along with the user interface system. Minimally, this includes a Window Manager.

In this article, we'll describe:

- OPEN LOOK UI elements and design principles
- System-Level applications for a user interface environment.
- User Interface Toolkits and the OPEN LOOK API.

OPEN LOOK User Interface Elements and Design Principles

Features of the OPEN LOOK UI were designed by Sun Microsystems and AT&T, based on initial technology licensed from Xerox Corp. The overall design objective for the OPEN LOOK UI is to define a user interface that matches the computing environment needs of the next decade. That is, a user interface that meets the needs of evolving operating system and display device technology, yet provides interoperability with existing user interfaces prominent in the marketplace. We'll first describe the basic elements of the OPEN LOOK UI, and then discuss some of the design principles of the OPEN LOOK UI.

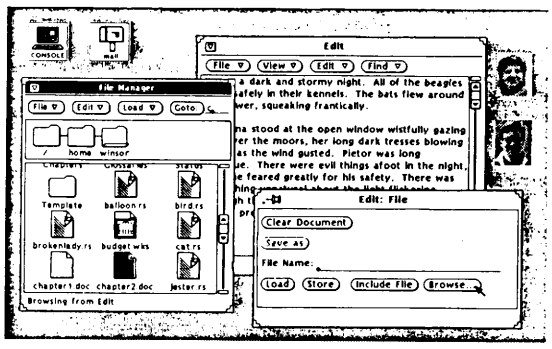

Figure 2. Typical OPEN LOOK UI Workspace

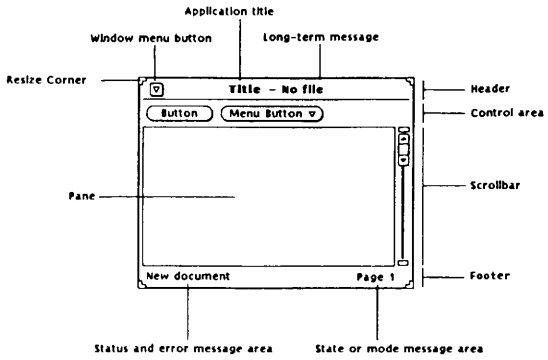

Figure 3. An OPEN LOOK UI Base Window

OPEN LOOK UI Elements

The screen display area in an OPEN LOOK UI environment is referred to as the Workspace (see Figure 2). Windows and icons are displayed on the Workspace. Windows are used to display applications to the user, and allow the user to interact with applications. Icons represent objects that the user can act upon, e.g., files or other applications. Multiple windows and icons can appear on the Workspace, and a mouse pointing device is used to select and operate on these objects. There are three mouse functions. SELECT selects objects and commands, ADJUST adjusts a selection, i.e., adds more objects to a set of selected objects, or toggles off selected objects from a set. MENU displays a menu associated with an object. We'll use the terms SELECT, ADJUST, and MENU to represent depressing the respective mouse button. Although there are three basic mouse button functions, these operations can be executed on systems with one, two or three button mice. On the OPEN LOOK UI Workspace, applications appear within a Base Window. These Base Windows have distinctive visual elements, (see Figure 3), including:

- **Resize Corners**, like pictures mounts, in the four corners of the window, used to resize the window.
- At the top of the window, the **Window Header**, which contains information about the application, and the Window Menu Button. The Window Menu Button is an accelerator for quickly executing a default window operation, such as closing a window into an icon.
- Below the Window Header is the **Control Area** with buttons that are used to 'drive' the applications. These buttons represent application specific operations. The user can activate an operation (depress SELECT on a button) or display a menu (depress MENU on a button). Buttons that have menus associated with them are designated by a triangle in the button.
- Below the Control Area is the window **Pane** which is the application display area. The OPEN LOOK UI window layout allows an application to have multiple control areas and multiple window panes. For example, a mail application which could have one control area and pane for incoming mail, and another set for outgoing mail.

- If there is not enough space in the window Pane to display the application data, then Scrollbars appear (either horizontal or vertical scrollbars). The OPEN LOOK UI scrollbar is visually modeled after an elevator, i.e., an elevator car riding on a cable with upper and lower cable anchors.
- At the bottom of the window, a **Footer** area for display of messages.

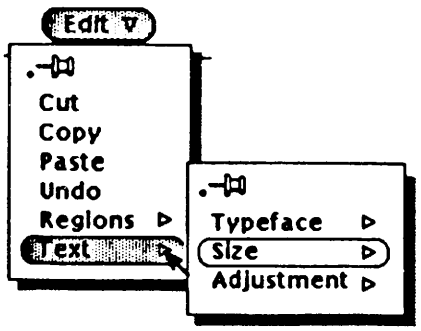

Figure 4. A Cascading Menu

When working with an application in a Base Window, the user gives commands to the application by operating on the buttons in the Control Area. The user can SELECT a button for immediate execution of a function, or can choose from a menu of subfunctions by doing a MENU operation on the button. Menus can 'cascade' into submenus, as in Figure 4. This example shows an Edit button, the menu for the Edit button, and a cascaded submenu. One thing worth noting in this example is the the menu and submenu each show one item with a ring around it. This ring designates the default choice for the menu and submenu. The ability to designate defaults simplifies the learning process for users inexperienced with a given application. Also, the OPEN LOOK UI provides accelerators to allow experienced users to quickly execute the default operation without having to cascade through the sequence of submenus.

In an OPEN LOOK UI environment, menus are not just associated with buttons in a Control Area, but may be associated with any object on the workspace. To see the menu, the user depresses the MENU mouse button while the mouse pointer is over the object. These menus are referred to as 'pop-up' menus, simply because they 'pop-up' on the display wherever the mouse pointer is positioned. For example, a Drawing application could have a pop-up menu that allows users to duplicate or delete a specific object. Pop-up menus minimise the mouse movement required for a given operation, which makes the interface more efficient for experienced users.

Once the user has chosen an operation from a Control Area Button or a menu, the application may require additional information to complete the operation. In such cases, the application can display a pop-up window to the user, requesting additional information needed to execute the command. These are referred to as **Command Windows**. For example, an application could display a command window to request that the user type in a file name for a save operation.

In addition to the command window, the OPEN LOOK UI provides three additional types of pop-up windows: Help Windows, Notice Windows, and Property Windows.

Help Windows display help information, as in Figure 5. The OPEN LOOK UI provides context sensitive help. The user places the mouse pointer over an item on the Workspace and depresses a Help Key on the keyboard. The Help Window pops up and the magnifying glass visual displays the object for which help has been requested.

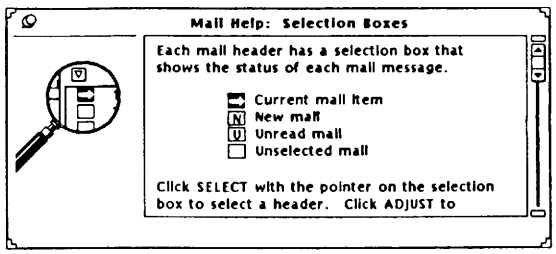

Figure 5. An OPEN LOOK UI Help Window

Notice Windows provide warning information to the user, as in Figure 6. In addition to the warning information, Notice Windows provide options for what to do next. In this example, the Save operation is designated as the default. As with menu items, the default is designated by a ring around the item. In fact, the ring visual is used throughout the OPEN LOOK UI to designate the default among a set of options.

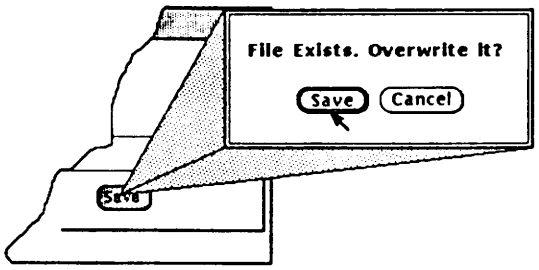

Figure 6. An OPEN LOOK UI Notice Window

Property Windows set characteristics for objects. All objects in an OPEN LOOK UI environment can have properties associated with them—the Workspace, application windows, and objects within an application's Pane. Figure 7 shows a Property Window for setting text characteristics. OPEN LOOK UI Property Windows provide a consistent method for setting object characteristics. Most other user interfaces do not provide such a capability, and as a result users need to hunt around to find out how a specific application's characteristics are set.

One thing to note about pop-up windows is that they are transient. That is, they pop-up to perform a specific operation., and then disappear. The OPEN LOOK UI provides a mechanism for the user to control these pop-up windows. With the exception of the Notice Window, all OPEN LOOK UI pop-up windows have the Pushpin visual in the upper left hand corner of the window. The user can SELECT the pushpin and 'pin' the pop-up window onto the workspace, similar to pinning an item onto a bulletin board. Once pinned, the pop-up window is no longer transient, but will stay up for multiple operations. This is another of the efficiency characteristics of the OPEN LOOK UI, freeing the user from going through a repetitive sequence of operations to get to the function they want to perform. For example, the Property Window shown in Figure 7 can be pinned to the Workspace and then used to set characteristics for multiple text objects. The user does not have to go through repetitive command sequences to bring up the pop-up window for each text object. In addition to appearing on pop-up windows, pushpins may appear on menus, as seen previously in Figure 4.

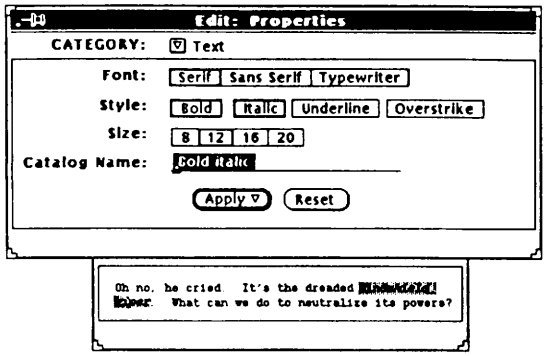

Figure 7. Property Window with Pushpin

Thus far, we've described how users control applications in the OPEN LOOK UI environment by operating on buttons in a Control Area. And, how these operations could result in the appearance of menus to choose subfunctions, or the appearance of pop-up windows to provide additional input needed to complete an operation. Although buttons are the most prevalent type of control element, the OPEN LOOK UI provides a wide variety of Controls. Controls are user interface elements which can appear within application Control Areas or pop-up windows, and provide users with distinctive visuals for different types of input. A sample set of OPEN LOOK UI Controls appears in Figure 8. These Controls include visuals such as Exclusive settings (letting a user know when they can select only one item from a list), and Non exclusive settings (letting the user know when they can select multiple items from a list), check boxes, gauges, etc.

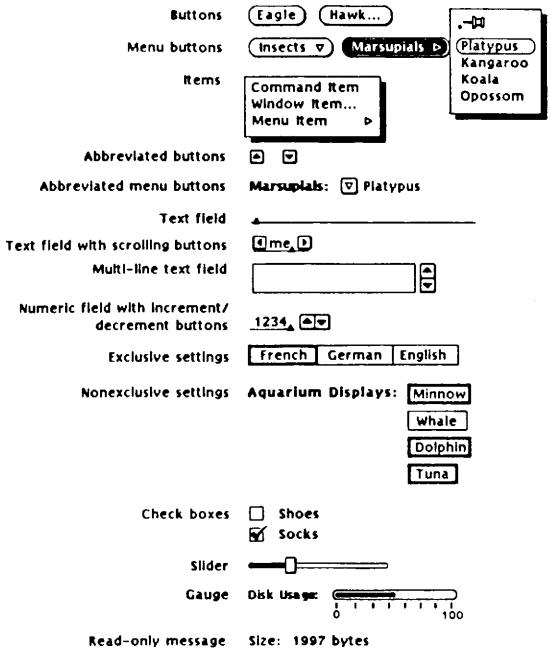

Figure 8. Some OPEN LOOK UI Controls

OPEN LOOK UI Design Principles

The design principles for the OPEN LOOK UI environment can be summarised as:

- Simplicity, consistency and efficiency of the user interface
- A thorough user interface specification document that unambiguously defines the elements of the OPEN LOOK UI.
- Portability and consistency across hardware platforms.
- A rich repertoire of visual elements and user interface functionality resulting in a more efficient application development process.
- Interoperability with other prominent user interface environments.
- Free from legal encumbrance.

The need for simplicity, consistency and efficiency in the user interface design is self-evident. These criteria were used throughout the OPEN LOOK UI design process and manifested themselves in characteristics such as an uncluttered visual appearance; the use of real world metaphors as visual objects (e.g., buttons, elevators, scrollbars, pushpins); context sensitive Help; a consistent method for setting Properties for objects, applications and the overall Workspace; the existence of defaults and consistent visual distinction of defaults; and the efficiency characteristics provided by pop-up menus, pushpins, and accelerators. One other significant consistency characteristic is the OPEN LOOK UI concept of input virtualisation. In an OPEN LOOK UI programming environment, inputs via the keyboard and mouse are defined by their function. The user can tailor their environment by re-mapping these functions using the Workspace Properties Window. For example, a left-handed user can re-assign the mouse functions of SELECT, ADJUST and MENU to whichever mouse buttons (or even keyboard keys) are most comfortable for them. Since the OPEN LOOK UI toolkits and programming interface deal with these as functions, not explicit mouse button numbers, all OPEN LOOK UI applications run by that user then respond appropriately to the re-mapped functions. No programming intervention is required.

Another key characteristic of the OPEN LOOK UI design process was the existence of a thorough user interface specification. This allowed the user interface to be designed independently of any specific hardware or operating system base. The OPEN LOOK User Interface Specification document describes the elements of the user interface and functionality to be provided by toolkits. The Specification document was distributed for industry review in July 1988, and has resulted in valuable industry feedback which has been incorporated into the May 1989 final draft. The existence of the Specification document facilitates portability and consistency of the user interface across various hardware platforms. For example, all visual elements are described in a device independent manner, as engineering drawings. To our knowledge, the OPEN LOOK UI is the only major user interface in the market which has a publicly available specification document.

The OPEN LOOK UI Specification defines a rich repertoire of user interface functionality and associated visual elements. This was motivated by

the desire to have a consistent user interface that was applicable to a broad spectrum of applications. The availability of this rich set of user interface elements in the programming environment results in the reduction of time for applications development.

Another of the OPEN LOOK UI design principles was interoperability with other prominent user interface environments. By 'interoperability', we mean the positive transfer of learned experience from one user to interface environment to another, so that users don't make drastic or frustrating errors. This required insuring that none of the elements of the OPEN LOOK UI conflicted with the two existing popular user interface environments in the market today.

Given the 'Look and Feel' lawsuits in the industry today, another of the design criteria was to make the user interface free from legal encumbrance. The OPEN LOOK UI is based on initial technology licensed from Xerox, and the specification was under legal review throughout the design process.

System-Level Applications

In and of itself, the specification of user interface elements alone do not provide an integrated user interface environment to the end user. There are basic system-level functions that users expect to perform as part of the overall user interface environment. And, users expect these functions to be consistent across various hardware platforms (i.e., multiple vendor environment). For this reason, the OPEN LOOK UI Specification document includes definition of the following system-level applications.

- **Workspace manager**: the workspace manager maintains the properties and state information of a user's environment between login sessions. Such properties include workspace colours, favourite programs list, where windows are placed, etc. The OPEN LOOK UI workspace manger is the first client application to execute, and it spawns other applications that the user desires to run.
- **Window manager**: The Window Manager controls the placement and positioning of windows on the Workspace. The Window Manager offers a window menu and controls (often called 'decorations') around the window border to allow the user to interact with the window manager. In addition, for the X Window System platform, the Window Manager is compliant with MIT's Inter-Client Communications Convention Manual (ICCCM). The ICCCM ensures that client applications from various environments communicate with window managers (and each other) in a consistent fashion. This is extremely important to software vendors who may be writing applications that interface to applications that interface to applications developed elsewhere.
- **File manager**: The rôle of a file manager is to allow users to view the file system and in applications graphically. Simple operations such as displaying, editing, copying and printing a file are typically accomplished by dragging icons around the work space with a pointing device.

The incorporation of basic functionality for these system level applications into the OPEN LOOK UI Specification is the direct result of the industry review process. End-users considered these system level functions to be integral elements of the overall user interface environment. The specification of basic functionality for these system level applications is among the differentiating factors in the OPEN LOOK UI design. This does not preclude the development of 'value-added' system-level applications that are not only OPEN LOOK UI compliant but have additional functionality (such as the ability to handle dynamic data pipes) as well.

Toolkits and APIs

User interface toolkits provide a set of building modules (library routines) for application programmers, freeing them from having to understand the window system details, and allowing them to concentrate on developing the application itself. There are several Toolkits that provide the OPEN LOOK UI. They vary based on the underlying graphical windowing system technology and specific customer base needs, e.g., the need to migrate an existing graphics customer base to the OPEN LOOK UI environment. In this article, we'll focus only on the OPEN LOOK UI Toolkit, commonly referred to as XT+, developed by AT&T.

The OPEN LOOK XT+ Toolkit is implemented as a layer on top of the X Window System Intrinsics. This means that the Application Programmer Interface (API) has three layers (Figure 9).

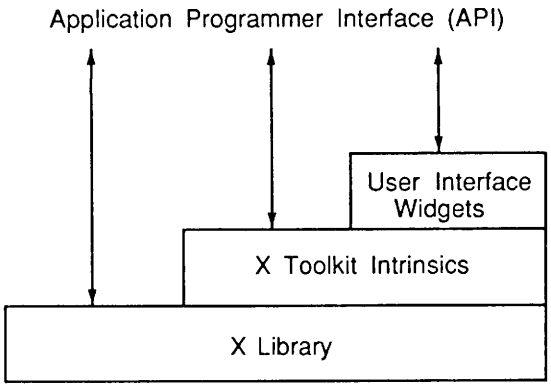

Figure 9. X Toolkit Architecture

- The X Library (Xlib) is a C-language procedural interface to the X protocol providing access to the low-level drawing and input-event operations.
- The Toolkit Intrinsics provide a common sub-structure and programming style for managing the object-oriented user interface environment. For example, all widgets are created and destroyed with calls to Intrinsics routines, regardless of which widget set is being used.
- The User Interface Widgets are the actual objects for the specified user interface.

These three levels make up the complete user interface Application Programmer Interface (API). Many applications will deal with only with the Widget-level API. Other applications may choose to interface with the Xlib layer for graphics drawing functions or with the Toolkit Intrinsics layer to create new widgets for an application or set of applications.

The OPEN LOOK XT+ Toolkit is implemented as a widget layer on top of the X Window System Toolkit Intrinsics. In fact, several of the user interface systems are implemented in this fashion. DECwindows is implemented as a widget layer, as will OSF/Motif. All three user interface systems have a common substructure in the Toolkit Intrinsics layer. And, this Toolkit Intrinsics layer mandates a new, common, programming style for applications development. When using any of the Intrinsics based user interface systems, a more rigorous division between application code and user interface code is enforced. In fact, it can be said that the user interface 'drives' the application. That is, an application function is executed as a result of a specific user interface operation. The Toolkit informs the application specific code that an operation has been performed via the use of callback routines. The applications programming style therefore typically consists of:

- First, laying out the user interface aspects of the application, i.e., which widgets will be used, and what application functions will be activated. For example, if you were building a spreadsheet application, you would lay out all of the menus, forms, scroll-bars, and cell arrangements first.
- Second, building up the application by filling in the callback routines. These define the application functions to be executed in response to user interface actions. For example, in the case of the spreadsheet application, the callback routines would include the logic for how cells interact, how fields are tallied, etc.

Of course, this is oversimplifying the design process for a complex spreadsheet application, but it provides a flavour of the object-oriented programming style enforced by the Toolkit Intrinsics. This object-oriented style is common to programming with the OPEN LOOK XT+ Toolkit, the DECwindows XUI Toolkit, and will be common for the OSF/Motif Toolkit. This programming style is new to many application developers and requires a reorientation of the typical program design process. It takes a while to learn and become proficient in this new programming style, although this rigorous separation of user interface from application semantics usually results in cleaner and more maintainable code. Our recommendation to application developers is to begin this learning process. Use one of the currently available toolkits, e.g., the OPEN LOOK XT+ Toolkit, and become familiar with the X and Toolkit Intrinsics programming environment.

The top layer of the Intrinsics-based APIs is the widget level. The programmer interfaces to the widget level differ among the various Intrinsics-based toolkits. The widget level embodies the

specific user interface objects and programming parameters for these objects. The widgets available with the OPEN LOOK XT+ Toolkit are shown in Figure 10.

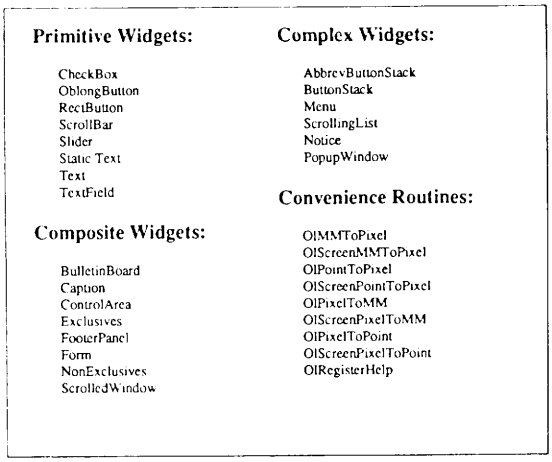

Figure 10. OPEN LOOK XT+ Widgets & Convenience Routines.

It is worth noting that the major design principles of the user interface specification are also design principles for the XT+ Toolkit implementations. Among the differentiating factors here are:

- **Device independence**. The toolkit provides convenience routines that allow for implementation of display resolution independent objects. In addition, the currently available OPEN LOOK UI fonts and bitmaps support execution on displays that cover the range from about 50 to just under 100 DPI (Dots Per Inch), in aspect ratios of 1:1. 5:6, and 3:4.
- **Ease of application implementation**. One of the direct implications of having a fully defined user interface specification document, is that the Toolkit widgets are rich in functionality. The user interface style is implemented in the toolkit, requiring fewer callback routines to the application. This makes it easier for software developers to implement in the OPEN LOOK UI environment.

Summary

We've focused on describing characteristics of the OPEN LOOK UI as an example of current graphical user interface technology. Specifically, the basic user interface elements, system-level applications, and the XT+ Toolkit implementation were described. Our intent has been to provide useful information to aid in the decision of which user interface is appropriate for your environment.

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For further information on the contents of this column, please contact Gillian Mogg *<gill@uel.uucp>*.

A Directory of Electronic Mail !%@:: Addressing and Networking Book Review

A Directory of Electronic Mail !%@:: Addressing and Networking, Donnalyn Frey and Rick Adams, A Nutshell Handbook, O'Reilly & Associates, Inc, 1989, ISBN 0-937175-93-0 (USA), Paper Back, 286 Pages pp.
Reviewed by Peter Houlder of University of Kent
uknet@ukc.ac.uk

This is a book for people, who fail to understand how people survive without electronic mail (email). It is the first book that endeavours to explain how all the diverse and ever-growing email networks interrelate.

The book starts with a Preface outlining how to use the book. This should be read carefully. It is followed by the first chapter adapted, courtesy of Daniel Karrenberg and Anke Goos, from the original in the European R & D E-mail Directory, published by the EUUG. This "User Introduction to Electronic Mail" is a valuable guide to the fundamentals of how email works.

The second chapter, all 207 pages of it, covers over 100 major world networks. Each entry is for a single network and is clearly and consistently structured. The first thing I like about each network entry is the accompanying map, showing the scope of the network and, where appropriate, its links to other networks. The text is on a separate page opposite the accompanying map. The text contains: *a description of the network, address structure and format, architecture, connections to other networks or sites, facilities available to users, contact, cross references to other networks, future plans and the date that information was last updated.* The last sentence is courtesy of the back of the book. Unfortunately it is not yet true. This however is not intended as a criticism, as the book is intended to be regularly updated and the information template will undoubtedly become more complete with each update. The lack of a certain completeness of information does not however detract from the book's worth.

On a personal level the book represents my first real job threat. As a network administrator, the formal specification of such whispered folklore is worrying; the user might actually be able to solve their own problems. The book is only 2 chapters long, but it also contains 5 appendices, a glossary and 3 sets of indices. These sections are an essential part of the book's structure. How else would you know that CINECA was an Italian network, or that the main South Korean network was called SDN.

As a summary I would highly recommend this book to all serious email users. It is a reference book, but it also contains sections, that intentional or not, are amusing. The Addressing, Architecture and Future Plans for South Africa are all described by one word unknown, no other entry is so incomplete ....

At present the book is only available over the counter in the USA, although it will soon be published directly in Europe. In the meantime it can be obtained from the EUUG, Owles Hall, Buntingford, Hertfordshire SG9 9PL, United Kingdom, price on application.

Calendar of UNIX Events

This is a combined calendar of planned conferences, workshops, or standards meetings related to the UNIX operating system. Most of this information came from the various conference organizers, although some was taken from ;login: (USENIX), 13, 1, Jan/Feb 1988, CommUNIXations (/usr/group), VII, 6, Nov/Dec 1987, and the /usr/group UNIX Resources Guide.

If you have a UNIX related event that you wish to publicise then contact either John Quarterman at *jsq@longway.tic.com* or Alain Williams at *addw@phcomp.co.uk* giving brief details as you see below.

Abbreviations:

APP	Application Portability Profiles
C	Conference
CT&LA	Conformance Testing & Laboratory Accreditation
S	Symposium
T	Tradeshow
U	UNIX
UG	User Group
W	Workshop

year mon days	**conference**	**(sponsor,) (hotel,) location**
1989 Dec 5-6	JUS UNIX Fair 89	Tokyo, Japan
1989 Dec 6-8	Sun UG C	Hilton, Anaheim, CA, USA
1989 Dec 8-9	Sinix UNIX Asia'89 C	World Trade Center, Singapore
1989 Dec 11-15	OSI Implementors W	NIST, G, MD
1989 Dec 11-13	UKUUG C	Cardiff, Wales, UK
1990 Jan	U in Gov. C&T	Ottawa, ON, Canada
1990 Jan 8-12	IEEE 1003	New Orleans, LA
1990 Jan 9-10	U in Gov. C&T	Ottawa, ON, Canada
1990 Jan 20-26	DECUS S	Toronto, Canada
1990 Jan 22-26	USENIX	Omni Shoreham, Washington, DC, USA
1990 Jan 23-26	UniForum	Washington Hilton, Washington, DC, USA
1990 Jan 29	IEEE 1003	New Orleans, LA, USA
1990 Feb 6-8	IETF	IAB, (FSU, Talahassee, FL), USA
1990 Feb 14	UKUUG W System Admin	Inst of Education, London, UK
1990 Mar 5-6	X3J11	New York City, NY, USA
1990 Mar 26-28	USING C	Dallas, Texas, USA
1990 Mar 26-29	DECUS S	Vasteras, Sweden
1990 Mar 27-30	AFUU C	Paris, France
1990 Apr	IEEE 1003	Montreal, Quebec, Canada
1989 Apr 9	POSIX APP W	NIST, G, MD, USA
1990 Apr 9-11	USENIX C++ Converence	San Francisco, CA
1990 Apr 23-27	EUUG	Munich, Germany
1990 Apr 23-27	IEEE 1003	Salt Lake City, UT
1990 May	U 8x/etc C&T	/usr/group/cdn, Toronto, ON, Canada
1990 May 2-4	IETF	IAB, (U. Washington, Seattle, WA), USA
1990 May 7-11	DECUS S	New Orleans, Louisiana, USA

1990 May 17	NLUUG C	Unix & Parallel Systems, Ede, Netherlands
1990 May 30-Jun 1	UNIX/90 C&T	/usr/group/cdn, Toronto, ON
1990 Jun 11-15	USENIX	Marriott Hotel, Anaheim, CA, USA
1990 Jul 9-11	15th JUS S	JUS, Tokyo, Japan
1990 Jul 9-13	UKUUG C	London, UK
1990 Jul 16-20	IEEE 1003	Danvers, MA
1990 Jul 31-Aug 2	IETF	IAB, ?, not in North America
1990 Sept 25-28	AUUG Conference	Southern Cross, Melbourne, Australia
1990 Autumn	USENIX C Software Development	Honolulu
1990 Autumn	USENIX W -MACH	Northeast USA
1990 Oct 22-26	EUUG	Nice, France
1990 Oct 31-Nov 2	UNIX EXPO	New York, NY
1990 Nov 5-9	10th Internat'l C on CC	ICCC, New Delhi, India
1990 Nov 8	NLUUG C	Open Systems, Ede, Netherlands
1990 Nov 15	POSIX APP W	NIST, G, MD, USA
1990 Dec 4-5	JUS UNIX Fair '90	JUS, Tokyo, Japan
1990 Dec 10-14	DECUS S	Las Vegas, NV, USA
1991 Jan 21-25	USENIX	Grand Kempinski, Dallas, TX, USA
1991 Jan 22-25	UniForum	Infomart, Dallas, TX, USA
1991 Feb	U in Government C&T	Ottawa, ON, Canada
1991 Feb 18-22	DECUS S	Ottawa, Canada
1991 May	U 8x/etc C&T	/usr/group/cdn; Toronto, ON, Canada
1991 May 6-10	DECUS S	Atlanta, GA, USA
1991 May 20-24	EUUG	Tromso, Norway
1991 Jun 10-14	USENIX	Opryland, Nashville, TN, USA
1991 Sept 16-20	EUUG	Budapest, Hungary
1991 Dec 9-13	DECUS S	Anaheim, CA, USA
1992 Jan 20-24	USENIX	Hilton Square, San Francisco, CA, USA
1992 Jan 21-24	UniForum	Moscone Center, San Francisco, CA, USA
1992 Spring	EUUG	Jersey, UK
1992 May 4-8	DECUS S	Atlanta, GA, USA
1992 Jun 8-12	USENIX	Marriott, San Antonio, TX, USA
1992 Autumn	EUUG	Amsterdam, Netherlands
1993 Jan	USENIX	Town & Country, San Diego, CA, USA
1993 Mar 2-4	UniForum	Washington, DC, USA
1993 Jun 21-25	USENIX	Cincinnati, OH, USA

Organising Bodies

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EUUG National group addresses can be found on the back cover of this newsletter.

Puzzle Corner

Mick Farmer
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Hello peeps,

Solution to Puzzle Number 5

Arithmetically, this puzzle presents no difficulty. B gains twelve hours and C loses twelve hours, both at the rate of one minute per day. This is achieved after 720 days when A is indicating twelve noon on the 720th day from 1st April 1898. Now 1900 was not a leap year so the date was noon on 22nd March, 1900.

Note that we get a different answer if the year had been 1998 because the year 2000 *is* a leap year!

Solution to Puzzle Number 6

The majority of solutions received followed the form that I expected, invoking the C compiler as `cc -D'program=/*' ...`. Typical of these was the program from jomp@uucp.mentor. The Pascal program contains the C program as a trailing comment. The C program contains the Pascal program as a leading comment, provided we can invoke the preprocessor:

```
program hybrid(output);
begin
    writeln('Hello Niklaus!');
end. {*/

int main(void)
{
    printf("Hello Dennis!\n");
}
```

However, what a delight to receive a solution from ch@uucp.dce which didn't require such trickery! This solution uses the fact that the construct `(*...` is valid C and also the alternative start of comment token in Pascal. It's all in the first line:

```
(*hello)(); /*)

program wirth(output);
begin
    writeln('Hello, Niklaus!');
end. {*/

int main(void)
{
    printf("Hello, Dennis!\n");
}
```

Solution to Puzzle Number 7

The solution obviously involves a piece of C code together with a copy of this C code stored as an array of strings. The difficulty involves a representation of the double quote character. The simplest solution I've got is given below, though I'd like to receive other solutions that you think are better.

```
#define QUOTE '"'
#include <stdio.h>

int main(void)
{
    int i, j;
    extern char *s[];
    s[0][15] = QUOTE;
    for (i = 0; *s[i] != '$'; i++)
        puts(s[i]);
    s[0][15] = '$';
    for (j = 0; s[j]; j++) {
        putchar(QUOTE);
        fputs(s[j], stdout);
        putchar(QUOTE);
        putchar(',');
        puts(s[2]);
    }
    for (i++; s[i]; i++)
        puts(s[i]);
}
```

```
char *s[] = {
"#define QUOTE '$'",
"#include <stdio.h>",
"",
"int main(void)",
"{",
"    int i, j;",
"    extern char *s[];",
"    s[0][15] = QUOTE;",
"    for (i = 0; *s[i] != '$'; i++)",
"        puts(s[i]);",
"    s[0][15] = '$';",
"    for (j = 0; s[j]; j++) {",
"        putchar(QUOTE);",
"        fputs(s[j], stdout);",
"        putchar(QUOTE);",
"        putchar(',');",
"        puts(s[2]);",
"    }",
"    for (i++; s[i]; i++)",
"        puts(s[i]);",
"}",
"",
"char *s[] = {",
"$",
"NULL };",
NULL };
```

Puzzle Number 8

The idea underlying the next two 'faded documents' puzzles is that an ancient document has been found containing an arithmetic problem. Only a few figures are still recognizable together with faint marks where other figures have been. The first is the classical *Seven sevens* first published in 1906. Reconstruct the division.

```
                          * * 7 * *
                    --------------------
  * * * * * 7 * )* * 7 * * * * * * * *
                    * * * * * *
                    -----------
                    * * * * * 7 *
                    * * * * * * *
                    -------------
                        * 7 * * * *
                        * 7 * * * *
                        -----------
                        * * * * * * *
                        * * * * 7 * *
                        -------------
                            * * * * * *
                            * * * * * *
                            -----------
                                      0
```

Puzzle Number 9

This problem consists of two multiplication skeletons, with no figures whatsoever. The first represents the multiplication of a number by itself, the second the multiplication of the resulting square by the first number to produce the cube of the first number.

```
      * * * *
      * * * *
      -------
    * * * * *
    * * * *
  * * * *
* * * *
- -------------
* * * * * * *
```

```
        * * * *
* * * * * * * *
-------------
        * * * *
    * * * *
  * * * *
* * * *
-----------------------
* * * * * * * * * * * *
```

Loads-a-puzzles,

Mick

EUUG Autumn Conference Abstracts

Here are the abstracts of the papers delivered at the EUUG Autumn conference held in Vienna this year.

Copies of the proceedings are available from Owles Hall at £20 each including post and packing (there is an order form elsewhere in this newsletter);.

Thanks are due to Stuart McRoberts <sm@ic.doc.ac.uk> and Jan-Simon Pendry <jsp@ic.doc.ac.uk> who organised the typesetting.

Are Standards the Answer?

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Moves are afoot to standardize every aspect of the UNIX world in order that the benefits of open systems can be realised. But what *needs* to be standardized? What *are* the benefits? And who really cares anyway? The answers to these questions turn out to be rather vague, and are not always a good fit onto the standardization activity which has taken place to date.

This paper examines the forces behind standardisation, reaching the conclusion that, while standardisation is a necessary process, it cannot and should not hope to have a significant effect on the diversity of ideas in the field of computer technology — or in any other field.

Engineering a (Multiprocessor) UNIX Kernel

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This paper describes the software engineering aspects of the DG/UX™ kernel, a symmetric multiprocessor UNIX kernel that runs on the Data General AViiON™ and ECLIPSE™ MV families of computers. The DG/UX kernel is a completely new implementation (not based on AT&T or Berkeley source code) that has applied modern software engineering techniques to improve the structure and modularity of the code. The result is a kernel that is more reliable, easier to maintain, and easier to enhance.

The paper discusses four major themes that have guided the engineering of the kernel to achieve the reliability, maintainability, and enhanceability goal. It describes how the themes of *hierarchy*, *information hiding*, *conventions*, and *tools* have been applied throughout the kernel and implemented using the standard C language and UNIX development environment. Finally some practical experiences in using this method to produce the finished DG/UX product are described.

An Implementation of STREAMS for a Symmetric Multiprocessor UNIX Kernel

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This paper describes a solution to running UNIX Streams in a multiprocessor environment. As for other layers of the UNIX kernel, every part of the streams code and every stream module can be executed on any CPU. The design is adaptable to various kernel implementations and only relies on the streams message mechanism.

Developing Writing Tools for UNIX Workstations

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The availability of networks of UNIX-based graphical workstations has stimulated new developments in authoring software. This paper presents our experiences along several fronts. First, we discuss the lessons learnt from developing a simple authoring tool to run on the Atari-ST, using the GEM operating system. This was always intended to be used by a single author and was not tied to expensive computer networks. With the arrival of a large network of powerful graphical workstations in our department, developments have recently transferred to them. We discuss the development of software using 1) the X11 toolkit and one of the readily available widget sets, 2) a configurable editor (GNU Emacs) to develop prototype applications, and 3) the Andrew toolkit to re-implement the original Atari authoring system, but this time providing a tool that will allow several authors to collaborate closely with each other. The practicalities of these approaches are discussed with reference to our own experiences.

Implementation of a Window Manager under X11R3

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A window manager in the X11 environment is responsible for the appearance of all X applications. It does the placement (moving, resizing, stacking etc.) of windows and can add some "decoration" (titlebars) to the top-level X windows. Additionally, it will enforce some policy on iconifying windows.

After a brief overview over the duty of a window manager and the responsibility of conforming clients, we will describe the design and implementation of a specific window manager. The implementation follows the guidelines given in the "Inter-Client Communication Conventions Manual" [ICCCM].

Special effort will be given to some of the less trivial aspects of a window manager. This includes discussion of colormap policy, icon concepts and some special X requests (synthetic events, save-set handling and additional properties).

The whole window manager is part of a bigger system that emulates an existing window system for SINIX† called COLLAGE‡ This system was realized using X toolkit widgets, and therefore the window manager is integrated in the toolkit environment. Problems that arose from this context are those with the reparenting of windows and the handling of events regarding the root window.

Teaching a Spreadsheet How to Access Big Databases

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While PCs are becoming commodity items, few attempts have been made to tap their processing power for *cooperative programs* in typical business applications. We view a cooperative program as set of distributed communicating processes with specialized tasks. In the context of a typical data entry/lookup application, the PC "process" might provide the user interface while a process running on a mainframe is responsible for database access. This might result in a fast, responsive user interface while lowering the mainframe and communications requirements. To explore the feasibility of this approach, we have built a sample cooperative program: a PC spreadsheet which can access a relational database running on a UNIX host. We describe different approaches to problem partitioning as well as our experience with using Sun Remote Procedure Call and BSD sockets as a programming interface for cooperative programs.

† SINIX is a trademark of Siemens AG, München.

‡ COLLAGE is a trademark of Siemens AG, München.

System Security – Administration Through Automation

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A suggested approach to implementing an automated computer security policy is presented. Policy considerations ranging from physical security to file permissions are discussed in detail. In each case, methods of integrating the security policy considerations into an automated procedure are described. The cost effectiveness of an automated policy is defined in terms of user education, administrator training, and relative advantages over alternative methods. A brief section on disaster recovery is also included, as the same approach to automation may be applied in this area as well. Finally, the resultant computing environment, with full security measures in place, is described from the user and administrator perspectives.

Lettermatrix for the Selection of Passwords Through the User

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In UNIX a user authenticates himself by entering a secret password. Most users choose simple passwords (short words and/or words with a special meaning), which are changed frequently. The result is a lack of security. In this paper, a new method for the selection of passwords by the user is beeing introduced. The method is based on a usual (traditional) secret password and on a lettermatrix, which is displayed on the screen of the user. The user has to find his way through the lettermatrix, based on his usual secret password, and he will find during and at the end of these steps, his actual password. These passwords constantly change (one-time passwords) and stand out because of their security.

User Experience with Security in a Wide-area TCP/IP Environment

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EUUG is currently considering establishing a TCP/IP based network on leased lines between its European members, similar to the North American Internet.

We know from stories from the USA that the Internet is breeding ground for things like the Internet Worm of November 1988. This gives natural basis for concerns about the security problems in the wide-area TCP/IP environment.

In the Scandinavian countries the NORDUnet has been operational since January 1989. NORDUnet connects most Nordic universities offering several services, among those TCP/IP. The NORDUnet is connected to the John v. Neumann

center in USA through a 64 Kb transatlantic line, effectively integrating it into the Internet.

I will here report on those considerations of security that we have been focusing on since it became evident that any computer science student of USA and Canada can connect to any TCP/IP-based service on all our machines.

How to Protect Your Software Through International Copyright Laws: Step-By-Step Instructions[1]

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This article will attempt to clarify some common misconceptions about copyright formalities as applied to intellectual properties. Due to the fact that these laws vary from country to country, the examples presented here should be viewed only as basic approaches to copyright protection, not a legal reference.

Taking these few necessary precautions to protect your work from theft or unauthorized alteration isn't nearly as much of a task as one might believe. Here, we set about taking the mystery out of what should be only a few simple procedures. The idea being stressed here is taking as many preventative measures as possible to protect your work. The effort required to do this is minimal.

UNIX in German Speaking Countries

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With hardware becoming less lucrative the next great battle in computers may be over software. Customers increasingly see versatile software as strategic tool to gain competitive advantages. This paper should help to answer the question if UNIX grants the application coverage in German speaking countries?

Using an Object-Oriented Model of UNIX for Fault Diagnosis

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The modification of an existing system based on a model of UNIX is described. Object-oriented programming techniques are employed in a new version of the model. This is combined with code for diagnosis of problems with UNIX and with a program to generate parts of the model automatically, producing a general diagnostic system. A demonstrator application for the system is developed.

Modelling the NFS Service on an Ethernet Local Area Network

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This article contributes to the field of performance evaluation based on simulation of queueing networks. Obtaining information on the performance of a local area network supporting the distributed file system traffic of NFS (Network File System) is the main goal of our work. We want to find out beforehand, with scientific methods and no more empirically, whether excess load brought about by the addition of connected workstations on the network, saturates the network. To achieve this goal, we studied NFS and the underlying protocols with a view to performance. Based on the generated load on the network and the processing delays, we retained the most relevant features in order to complete an NFS model. Then we chose the most appropriate software to build our model, which was QNAP (Queueing Network Analysis Package). Finally we designed and solved the NFS model, using simulation and by varying entry parameters.

One of the main results relates to the acquisition of an NFS model which does not yet exist, and of a methodology also usable in other environments. We are able to determine, by solving the model, the greatest number of connected workstations working together on the local area network. One also can use the model to choose between several network utilization policies, the most appropriate one, provided that the criteria were first fixed.

RISC vs. CISC From the Perspective of Compiler/Instruction Set Interaction

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This paper compares the utilization of a number of different computer instruction sets by a collection of compilers. Wherever possible, several compilers were used for each architecture. This paper demonstrates that CISC instruction sets are underutilized by compilers, while RISC instruction sets are nearly completely utilized. We observe that if an instruction exists on a computer, it should be usable by the compilers for that computer. Because CISC computers have large numbers of instructions which are not effectively used by

1. This paper is reprinted in this newsletter.

compilers, the instructions are superfluous. By eliminating superfluous and redundant instructions from architectures, future systems can run more efficiently, and algorithms can be executed with greater celerity.

On the Evaluation of the Performance of RISC Systems

Kurt P. Judmann

Technical University of Vienna

Modern computer systems from the PC-level up to Supercomputers claim to gain performance from using of a 'Reduced Instruction Set'. From the users and system analysts point of view it is hardly visible whether increased performance over other systems results from a reduced instruction set or from other design features. Such features can be cache hierarchies, parallel processing, pipelining or different implementation of the memory interface. This paper describes a model which can be used to calculate an average instruction execution time for instruction groups, and mixes of instruction groups of a given processor. It allows comparisons of different processors by using a code substitution method and helps in evaluating the effects of the different architectural features used in RISC systems. Although the model can be used for processors in general it is tailored to describe the techniques used in RISC processors.

SPARC – Scalable Processor Architecture

Dr. Martin Lippert

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This paper gives an overview over the technical concept of a new RISC architecture, called SPARC, developed by Sun Microsystems. SPARC stands for Scalable Processor ARChitecture – the design specification is published and licensable. Sun has licensed SPARC processors to several semiconductor vendors and over 50 computer manufacturers.

Its well known that RISC based microprocessors offer substantially more cpu power than systems with processors based on a traditional architecture with complex instruction sets. The term 'scalable' refers to the size of the smallest lines on a chip. As lines become smaller, chips get faster. However, some chips designs do not shrink well – they do not scale properly – because the architecture is too complicated. Because of its simplicity, SPARC scales well. Consequently, SPARC systems will get faster as better chip–making techniques are perfected.

In combination with efforts of unifying UNIX, SPARC based systems will allow binary compatibility among systems from different vendors like in the PC world today.

TeamSo: Team Software Development Support System

Eva Strausz & Janos Szel

Department of Electronics Computer and Automation Institute
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A software tool is introduced to help software development in team-work. This paper provides an overview of this package called TeamSo, and describes some of the most important design and implementation decisions.

A SQL Programming Interface for the Relational Database System Db++

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Database systems in the UNIX world are still a controversial topic splitting the research community. Today's users can choose between systems such as ORACLE, well known, broadly accepted, and expensive, or typical UNIX databases, such as the relational database system db++, integrated into the UNIX framework at a reasonable price but with rather low capabilities compared with the first group. The major shortcomings of db++ are the low-level programming interface, the lack of mechanisms for concurrent multiple access (multi-user) and the neglect of transaction based processing. This paper describes various extensions of the relational database system db++ based upon a high-level SQL programming interface. The main purpose is to maintain the obvious advantages of db++ by simultaneously increasing its functionality and general applicability with standardised mechanisms and concepts.

Processable Multimedia Document Interchange Using ODA*

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The EXPRES (Experimental Research in Electronic Submission) project promotes the electronic interchange of multi-media documents among the scientific research community. For this project we concentrate on the problem of effective interchange of processable multi-media documents. In particular, we are ignoring the transfer method. Instead we concern ourselves with the question of how a multi-media document created on one system can be viewed and edited on another system.

The obvious technique of performing translations between each pair of systems is impractical. In order to attack the problems efficiently, we make use of a standard representation. We have settled on the international standard Office Document Architecture (ODA)* as the intermediate format. This paper discusses how we implemented ODA for interchange.

TCP/UDP Performance as Experienced by User-Level Processes

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This paper is concerned with the presentation of empirical data on the performance of the internet protocols TCP and UDP as experienced by a distributed application. After a short summary of the main services provided by the internet protocols IP, UDP, and TCP, an abstract data type built on top of the well-known Berkeley IPC sockets is presented, which has been used to implement a benchmark experiment. The experimental design of this experiment is described and performance data are given for UDP and TCP under two different environments ('loaded' hosts and 'unloaded' hosts).

Resource Management System for UNIX Networks

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Although there are comfortable tools for UNIX administration on single, i.e. non-networked systems, there is a lack of such tools for (large) UNIX networks.

File sharing utilities such as RFS or NFS offer file-sharing and, in the case of NFS, automated updating of distributed data. A tool for central resource administration is missing.

UNISYS RMS (Resource Management System) allows central maintenance of distributed resources. A resource is any part of any component of the network that may be (re)configured, e.g. a user-id, a terminal port or a software product.

The 'heart' of RMS is a relational data base which runs on one specific node in the network called the RMS Server. The database application generates requests which are forwarded to the other systems in the network called the RMS Clients. Every update to the data base causes a chain of actions to be started on the clients.

A prototype of RMS is currently evaluated; it runs both on LAN (Ethernet) and WAN (X.25). The full RMS is currently under development at UNISYS Vienna.

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* *Office Document Architecture (ODA) and Interchange Format (ISO 8613)* International Organization for Standardization (ISO), 1988.

Interconnection of LANs, Using ISDN, in a TCP/IP Architecture

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Network interconnection is not really a recent problem: network architectures currently used, or planned, specify a level structure, inside which one can insert new wide or local area networks. Of course, ISDN is one of these networks that can be included in those architectures.

In this paper, we will point out which interconnections can be done between LANs and ISDN. We will then focus on the new services offered by the ISDN, especially the basic "S0" access, and how they can be efficiently used in this context.

System Administration of UNIX Networks: Two Approaches to Supporting the Management of Large, Distributed, Multi-Vendor Networks

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This paper discusses two aspects of the support of large, distributed, multi-vendor networks. First we will address user account management and show how a single system can manage a heterogeneous network. Second we will address file system backup and restore and present a system designed to coordinate backup for an entire network.

Porting Applications to the XVIEW Toolkit and the OPEN LOOK Graphical User Interface

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The OPEN LOOK Graphical User Interface Functional Specification has evolved over the past two years with the final draft, Revision 18, becoming available for review May 1989. Sun has implemented several prototype toolkits which captured the progress of the user interface design through its infancy and adolescence. With the impending maturity of the design, Sun offers product toolkits and a suite of applications built on those toolkits. This paper details the issues of transforming existing tools that run on SunView (Sun's kernel-based window system), into integrated applications running on XView, Sun's first OPEN LOOK, X toolkit.

X Display Servers: Comparing their Functionality and Architectural Differences to Diskless Workstations

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X Display Servers are a new generation of computing devices arriving on the scene. They consist of the now familiar high resolution bitmap screen, keyboard and mouse, replacing the single font tubes and keyboard as 'stdout' and 'stdin'. These devices contain a powerful microprocessor, local memory, network interfaces, built-in fonts, and run only the X11 server code (i.e., not running UNIX). They don't utilise any of the local compute power in application support. The applications, or clients, in X terminology, all run remotely on another host-based computer. The output of the remote client is displayed on the local display, managed by the X11 server. These devices appear to offer the same functionality as a Diskless Workstation. Can the two be compared in an apples-to-apples fashion?

A System for the Redirection of Graphical User-Interaction

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The redirection of user-interaction is complicated in a graphical environment due to the nature and variety of graphical actions, compared with character stream input/output. The solution is to redirect at a high level within the application. Accordingly, this system is designed to allow the redirection of all traffic between the user-interface and the underlying functionality of an application, to and/or from another program. This facility is quite flexible and has a variety of uses. These include facilitation of the automatic testing of the underlying functionality of graphics-interfaced applications, and allowing extensibility of user-interfaces, via the recording and replay of command macros. A prototype and some applications which use it have been implemented, demonstrating the main features of the system.

Performance Analysis for Shared Oracle Database in UNIX Environment

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The methodology used in order to execute a performance evaluation in UNIX environment, in a case of concurrent access to a common Oracle database, is presented. The reason of such an evaluation, as well as the model adopted to structure the benchmarks, are discussed. Some results obtained are presented, pointing out their meaning in relation to the different hardware configurations tested and the model itself.

A Transaction Monitor for SINIX

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The use of transaction monitors is widespread in the mainframe arena. Information retrieval-, booking-, warehouse control-, stock control- or personnel administration systems only work efficiently due to their use. Taking into account that the commercial EDP market is becoming more and more penetrated by UNIX systems, there is a rising demand for DB/DC applications. It is in this context that transaction oriented program to program communication gains importance in both homogeneous and heterogeneous computer networks including those containing UNIX systems.

The problems of the implementation of transaction monitors in UNIX systems in general and known implementations in particular are discussed.

As an example UTM (SINIX), Universal Transaction Monitor for SINIX (SINIX is the SIEMENS derivative of UNIX), is presented in more detail. In particular its interfaces to the user, interfaces to the system and how it is embedded in the SINIX system.

Connectivity in a heterogeneous environment is explained together with what types of partner can be addressed and how. It will be shown how UTM(SINIX) can help to integrate SINIX computers and their users into distributed DB/DC applications, how mainframes can be accessed and their power used.

An Approach to Reliability in Distributed Programming

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This paper proposes the use of a distributed concurrent language for the implementation of fault-tolerant distributed systems. In our approach, distributed software systems are composed of a set of cooperating processes, which communicate using the message passing model, and are placed on the various hosts of the distributed architecture. The interesting aspects of our approach are presented in terms of modularity, concurrency, portability and reliability. This approach is bound to the use of a high-level concurrent language in contrast to the traditional approaches for the implementation of the reliable distributed systems.

XEiffel: An Object-Oriented Graphical Library and an OPEN LOOK Based on it

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Object-oriented languages can be extended by user-defined classes libraries. In this paper I present XEiffel. It is a graphical extension of the object-oriented language Eiffel. It is based on the X Window system but adds to it some interesting object-oriented features. As XEiffel application I present an OPEN LOOK graphical interface toolkit. The whole work has been developed using SUN 3/60 workstations at UniRel.

Efficient Implementation of Low-Level Synchronization Primitives in the UNIX-Based GUIDE Kernel

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When developing new and complex applications on top of UNIX system, implementors are usually faced with synchronization problems whose solution is not simple. This is especially true when such applications are in fact a new system level which defines a different model of synchronization. Standard mechanisms normally provided are simple, general but not efficient enough when heavily used. Synchronization implementation should be of low cost with respect to other system components, but this is not usually the case. This paper first summarizes the synchronization mechanism required by our object-oriented environment, then describes the implementation of our final solution, which was derived in several steps, and finally presents experience and performance measurements of different progressive improvements.

UNIX and Object-Oriented Distributed Systems

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UNIX is a well established system interface, as can be seen from the work of POSIX and X/Open. It has been gradually extended to support distribution and embrace concepts such as object orientation. Systems like Mach try to make the kernel smaller while providing increased support for distribution. Object oriented systems promise the potential for re-usable software, along with higher level data modelling. The Esprit COMANDOS project is supporting distribution and object orientation. It intends to provide an integrated platform for the development and online management of distributed applications. Placing a UNIX interface on top of such a distributed object orientated kernel is a possible approach to integrating UNIX and distributed object systems, which is explored in this paper. The motivation for supporting UNIX in an object oriented distributed environment is presented. We describe then, the main features of the COMANDOS kernel. Finally, an approach to supporting UNIX with an object oriented kernel is outlined. Such an approach would provide a migration path for existing UNIX users towards a fully object oriented system. It would also provide to UNIX users not interested in object orientation access to the increased functionality available in a distributed system.

Social Aspects of EUUG and USENIX

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EUUG and USENIX conferences are quite similar in many ways, but they also differ, particularly in their social aspects. This paper presents some comments about technical and social events scheduled as part of the conference proper, and about more informal activities. The continental network cultures are contrasted. The purpose is not to show that one conference is better than another; many of the more basic features are not reproducible (and probably not desirable) in a different environment. But the organisers of each conference have benefitted in the past by adopting some features of the other, and still could do so.

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