EurOpen

News Letter

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Contents

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Editorial Team

EDITORIAL

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What is new with EurOpen ?

As you can see from the layout of this newsletter there has been a lot of work in the adoption of the new house style. This is a continuation of the changes announced with the new name in the Autumn.

The uniform style is being adopted for all our printed material including conference proceedings, announcements, letter heads...

National groups have also been encouraged to examine how we can be all seen to be part of a large group. The adoption of new national group logos is an important part of this. You can see the first results on the flat inside the front cover. We expect this work to be complete soon.

Conferences

You will find a full description and booking details for the next EurOpen conference starting page 6. This is being held north of the Arctic circle in Norway.

A look at the exciting conference and tutorial programme should convince you that you need to go and listen to the speakers.

You will find a report on the last conference in Nice on page 2, and the long term UNIX calendar on page 35.

EurOpen and UniForum are joining forces in 1992 to hold OpenForum Europe. There is a preliminary announcement in page 27.

EUnet Chief Executive

Please welcome Glenn Kowack to the EUnet backbone in Amsterdam. Glenn's appointment is part of the increasing professionalism within EurOpen. It will allow EurOpen and EUnet to work more closely and effectively with peer networks, research and network co-ordinating bodies.

Allow Glenn to introduce himself on page 43.

National Group Reports

You will find reports from the Spanish, French, UK and Dutch groups starting on page 28. The national groups are important as they are the grass roots of EurOpen membership and the first point of contact for most members.

Have you thought of volunteering a few hours of your time to help with you local group ? Do so. You will meet a group of like minded people who share a common enthusiasm for UNIX.

Helen Gibbons on page 22 explains the central structure of EurOpen and how the national groups fit in.

How successful are the National Groups ?

Once again it is time to tell you what the national group membership stands at. Since a straight membership count is unfair to the groups in the smaller countries I have also included total population and sorted it by the ratio of members in the population.

The table below produces some interesting results:

Country	Population (Millions)	Membership	Members per Million of Pop
Iceland	0.25	32	128
Denmark	5.1	386	76
Norway	4	225	56
Sweden	8.5	456	54
Finland	4.9	235	50
Netherlands	14	370	26
France	56	1110	20
Austria	7.6	129	17
Switzerland	6.0	71	11.8
Belgium	9.9	108	11
Portugal	9.8	105	10.7
United-Kingdom	57.1	588	10.3
Ireland	3.5	35	10
Germany	76	348	4.6
Italy	60	196	3.3
Hungary	10.6	16	1.5
Yugoslavia	22	16	0.73
Czechoslovakia	15.7	10	0.64
Spain	50	26	0.5
Soviet-Union	285.9	32	0.1

EUUG AUTUMN CONFERENCE 1990, NICE, FRANCE

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We are both working and studying at the Dortmund University in the Computer Science Departement. We have a few years experience in systems administration and are involved in UNIX and computer networks in general. At the last few EUUG conferences we dealt with the conference mailing system. We like visiting other countries by joining the EUUG conference.

From Ocotber 22th up to the 26th there was EUUG-time again and for the last time. The European UNIX community, approx. around 300 people, meet in Nice/France for the EUUG autumn conference.

The conference itself took place in the Acropolis, a big conference center in the middle of the town.

The first conference day focused on the aspect of software development and software hygenie. The two keynotes "Project Hygenie" and "Washing behind your ears: principles of software hygiene" discussed problems and mentioned experiences in this area. The essential point of the talk could be easily summarized to the following priciple by Vic Stenning: "...project hygiene is rather like any other form of hygiene: nothing spectacular comes from its presence, but the effects of its absence can be dramatic."

Other main topics covered by the conference were, as usual, networks and related things, others dealt with different user interfaces. Some talks were also known from the summer USENIX conference, e.g. Dell's "UNIX on very fast computers" and the talk about the "tmpfs".

One of the most interesting events was the first appearence of a Soviet UNIX-fan on an EUUG conference. The humourous talk from a member of the newly founded Soviet UNIX user group, titled "How we survived without the source" covered the development and the spread of UNIX in the USSR. Many people seemed interested in this talk, so after a partly empty conference room, this talk filled it up again. Remarkabley the announcement, almost a kind of invitation, that the Soviet UNIX unser group will hold a meeting at the same time the EurOpen-Conference in Tromsø.

The speaker added, that the SUUG conferece will be held not far away from Tromsø. But after a question from the audience he also admitted, that there will be no translation provided - the conference language is of course, or should I say unfortunately, Russian. All in all he was very interested in getting help for the emerging UNIX-(market) in the USSR.

On Wednesday evening the EUUG invited the conference attendees to a cocktail party where a "top secret" announcement would be made. The EUUG announced a change of its name and statute: EUUG becomes EurOpen. The change of name will reflect the change in UNIX, UNIX graduated from an OS for freaks to a ??? freaks is not quite the word, how about tekkies ? product used in all areas. Besides, UNIX is one of the symbols for the Open process itself (for details look at the editorial in the last newsletter). The EUUG doesn't want to be focused solely on UNIX. The "goal" of the organisation is to support "Open Systems" in general. The name change provoked a lively discussion on the netnews.

Another not so usual event was the talk by Kenneth R. van Wyk form CERT about "Computer Emergency Response - An International Problem". CERT is an organisation formed in the US by the DARPA shortly after the Internet worm of November 1988. CERT should be a point where messages about break-ins, viruses and that kind of stuff are collected and where user of computer systems and networks can get help if they know or think they have been hit by a virus or other incident. The talk was unusual because it was clearly not intended as a talk in first place. It was the intention from CERT to get help when working against European computer-criminals.

For an organisation in the US it is hard to get in touch with the right people/organisations in Europe (and other foreign) countries. Often there is a language barrier and laws are different which makes it even harder to get advice. Since computer-criminals doesn't care about borders or responsibilities, neither should there be such problems for the "policemen" of computers either. So the talk from Mr van Wyk was intendet to get this help in Europe.

The CERT is interested in working together with the EUUG/ EurOpen and the backbones in many European countries. As far as we've heard the EurOpen and the backbones have agreed to work together with CERT. We are looking forward in hearing more about this topic.

As usual the social event on Thursday was spectacular. This time the conference attendees where invited into an aquarium, the Marineland, near Nice. First there were two shows, one with an "orca" (an orca is a kind of shark) and another with dolphins. The most spectacular events of the show were first, when Daniel Klein, who participated to the show, had to put his head into the mouth of the "orca" and second when the trainer of the "orca" said to a few people standing at the edge of the basin (in the splashing zone) that they should leave this area. One of them did not react and he ended up totally wet.

The dolphin show was presented in an "funny" way. A speaker commented on the scene as if the dolphins were doing the comments. Unfortunately most of his show was in French, so a lot of people (including us) didn not get all the jokes. After the shows the conference dinner was held. In was located in the restaurant of Marineland. The restaurant was much to small for such a lot of people. This was even worse since many of the people couldn not see the various announcements, honours and jokes that took place.

Another drawback was, that the dinner was outside of the conference area. The only way to get there and of course to leave were special buses. Those buses left shortly after we had received the last part of the meal. So there was only a short time to talk to people and so on. We were very disapointed by this.

The mailing system received good use. After being a great success at the Munich conference with around 100 users, things went even better in Nice. Over 150 peoples used the system which offered mail, news and InterEUnet services. The mailing room in Nice was filled up with conference attendees for nearly the whole time. This was partly a consequence of the good placement of this room, not far from the exhibition and the conference room. Perhaps the organizers learned from the Munich experience with a conference on 3 floors.

The exhibition itself, was not so unusual. Unfortunately, some of the, mostly commercial, exhibitors weren not able to talk in another language than French... There were only a few non-commercial exhibitors around, e.g. the UKUUG face-server project, which is well-known from the Munich Spring conference. As the name suggest, they digitalized faces from conference attendees. It was also possible to make different print-outs like cards, dartboards, pictures and so on. It is still a problem to get the digitized pictures in any machine readable form. The pictures of all the EUUG-members are located on a machine within the UK that can not, for cost reasons, communicate with the rest of the world. Maybe the UKUUG and the facesaver people should overthink ther opinion in this point since it is of no use only taking the pictures - they must be avaible so that anyone can use the pictures with a face-mailer.

So much for that. I hope we'll see you at the next (and the first) EurOpen conference from May 20th to 24th in Tromsø Norway.

UNIX VIDEO QUARTERLY

UNIX Video Quarterly is a "video newsletter" available on VHS videotape that covers products, companies, people, and trade shows in the UNIX industry. Subscribers can watch hardware and software products being put through their paces, as well as see and hear strategic interviews with industry executives. UNIX Video Quarterly is ideal for MIS and end-user executives as well as developers, VARs, and distributors. Editorially, UNIX Video Quarterly is comparable to a high-end strategic newsletter, yet is interesting as well as informative. UNIX Video Quarterly is produced by David Fiedler, a long-time UNIX industry watcher and the world's most widely read UNIX columnist.

Charter subscriptions to UNIX Video Quarterly cost $195 in the U.S. and Canada, US$245 for overseas NTSC subscription (for instance, Japan) and US$310 elsewhere in PAL format. All prices include Priority Mail or Air Mail postage as appropriate. The cost for a subscription will be $395 worldwide beginning January 1, 1991. Preview tapes are available by prior arrangement.

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OPEN BUZZWORDS AND NPAs[1]

Stephen Frede
Greg Rose
Technical Director
Software Pty Ltd
Australia

Greg Rose (Technical Director) gained a BSc with first class Honours from the University of New South Wales as well as being awarded the University Medal for Computer Science in 1977. The thesis topic for his PhD program, currently suspended, was "Operating Systems Principals and Performance". Following software development and lecturing activity at the University of New South Wales and a period with Link Computer Systems, Greg was a founder of Fawnray Pty Ltd. In 1984 the Australian Industry Development Corporation invested in Fawnray with the intention of forming a general Unix system and application house, merging the company with Prance Computer Software Pty Ltd to form Neology Ltd where he was Director of Research. Significant development projects undertaken by Greg include data logging, acquisition and statistics, real-time supervisory control and power station monitoring and control. His Unix experience includes many device drivers and extensive changes to the operating system kernel for increased capabilities and performance. His porting experience includes implementation of Idris (a Unix work-alike) on the Digital Vax for Whitesmiths in Boston and planning and project management of Unix System V to the Elxsi multiprocessor and the Csironet workstation.

In recent times the computer industry has been moving towards increasingly "open" specifications. This has been evident in computer architectures, bus structures, and particularly operating systems and networks. The last bastion to fall appears to be that of trademarks, terminology and acronyms. This paper explores current efforts to bring these facets of the computer industry into the open, where a user friendly standards oriented approach can yield productivity gains in the standardisation of *de Jure* terminology rather than the current *de facto* usage.

Open Buzzwords

Regrettably, in the past, the computer industry has abounded with jargon terms, also known as buzzwords, which have generally been associated with particular hardware of software vendors. This practice must stop. Users are beginning to demand, in conjunction with Open Systems, the use of Open Buzzwords. That is, specific terminology for use in the computer industry which is of a non-proprietary nature. By far the most important enabler for this new technology is the NPA.

NPAs

An NPA is a vital part of the Opening of Buzzwords. An NPA is a Non-Proprietary Acronym, as opposed to a TLA[2] or Three Letter Acronym. TLAs appear to have been created by IBM[3] with such momentous successes as AMD[4] (Air Movement Device, more commonly known as a FAN, which is not an acronym).

TLAs have been such momentous buzzword enablers that other computer manufacturers have followed the *de facto* standard set thereby. Some examples which come to mind are CDC[5], ICL[6], CCI[7], and of course DEC[8].

Of course, there have been holdouts from this *de facto* standard. AT&T[9] not only added a fourth character, but it isn't even alphanumeric. DG[10] continued this divergence from their arch rivals by having a more ergonomic, shorter acronym; regrettably (for them) the marketplace has moved in the opposite direction, towards acronyms like WYSIWYG (What You See Is What You Get), self-evidently much more user friendly. This is opposed to

1 This paper was originally published in AUUGN - by the Australian UNIX User Group.

2 TLA is perceived to be a trademark of International Business Machines

3 IBM is perceived to be a trademark of International Business Machines

4 AMD is perceived to be a trademark of International Business Machines

5 CDC is perceived to be a trademark of Control Data Corporation

6 ICL is perceived to be a trademark of International Computers Limited

7 CCI is perceived to be a trademark of Computer Consoles Incorporated

8 DEC is perceived to be a trademark of Digital Equipment Corporation

9 AT&T is perceived to be a trademark of American Telephone and Telegraph

10 DG is perceived to be a trademark of Data General

the application itself, which is more likely to be WYSINWYW (... Not What You Want).

ETA[1] are (were) active by having a name which emulates a TLA without the drawback of needing an explanation for it.

In the early 1980's Zilog (not themselves an acronym) attempted to establish proprietary status for the SCA "Z", however courts ruled that degenerate acronyms are really just letters, and as such could not be trademarked. This was the first shot in the war for Buzzword Openness, establishing forever that there were buzzwords which could never be proprietary.

The fight against the *de facto* TLA standard has been entered by[2], but unfortunately they are not truly advocates of NPAs. A court ruling is expected soon in the suit brought by[3] alleging restraint of trade.

There is a schism between the two major factions attempting to establish *de facto* standards in the process of opening buzzwords. AI (Acronyms International) are in favour of pronounceable acronyms. Their name is, itself, a cry for assistance in this effort. Opposing them are the OSF (Overuse of Sibilants Forbidding pronunciation), who validly claim that of the 17576 possible TLAs, approximately 16473 are in use and only a small proportion of the others can be pronounced. Regrettably, there is internal dissent in the OSF regarding just how many are pronounceable, with the Australians asserting that all of them are[4], including OSF, while the European members believe that there are many more than 17576 in the first place.

The various Asian manufacturers, particularly the Japanese, seem to be remaining neutral in this conflict, since they are not worried about the possibility of running out of product descriptions.

1 ETA is perceived to be a trademark of Control Data Corporation

2 is perceived to be a trademark of Invisible Acronyms Backspace Backspace Corporation

3 is perceived to be a trademark of Nonproprietary Nonvisible Acronyms Backspace Backspace Backspace Limited

4 Aussies have been seen to pronounce things like WYSIAYG (What You See Is All You Get), and even command names like fsck(1m).

EurOpen

Spring '91

Distributed Open Systems in Perspective

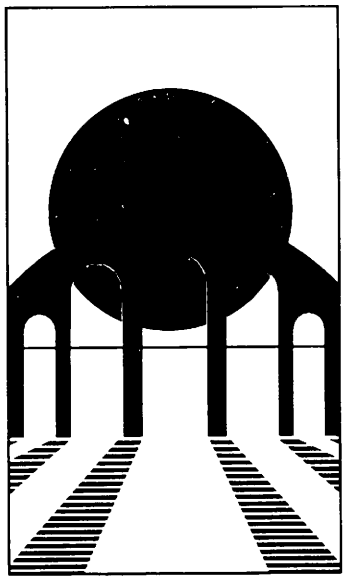
Conference and Exhibition

20-24 May 1991

at

Kulturhuset

Tromsø, Norway



The European Forum for Open Systems

EurOpen

EurOpen Spring Conference 1991

EurOpen (formerly EUUG) — The European Forum for Open Systems is a non-profit making organisation. It is an international federation of UNIX and Open Systems User Groups.

The EurOpen membership is comprised primarily of institutional and individual members of affiliated National Groups. There are at present 20 National Groups with a total membership of approximately 5,000 coming from such diverse backgrounds as software engineering, information technology, computer manufacturers, end-users, software houses, universities and research centres. EurOpen runs two major conferences each year on a European level.

The Spring '91 Conference will be held in Tromsø, Norway in conjunction with the Norwegian UNIX systems User Group (NUUG) at the Kulturhuset, Tromsø on 22nd, 23rd and 24th May. The Tutorials will be held at the SAS Royal Hotel, Tromsø on 20th and 21st May. The event will be accompanied by an Exhibition.

Distributed Open Systems

As Distributed Open Systems are becoming a fact, the issues involved are becoming more clear. The Conference Programme addresses present systems design, applications and related topics. The implications of Distributed Open Systems for the Open Systems community will be addressed in both the presentations and forum discussions providing a platform for exchange of ideas between all participants.

Conference & Tutorial Enquiries

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Tromsø, the gateway to the Arctic Sea and the Capital of Northern Norway, is located on an island well inside the Arctic Circle where the midnight sun is visible from mid-May until the end of July. Tromsø is the world's northernmost university city, and can offer a variety of activities when it comes to pleasure and nature.

PROGRAMME OF EVENTS

TUTORIALS — to be held at The SAS Royal Hotel

Monday 20th May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset
Tutorials start at 09.30

Tutorial M1 - UNIX on Modern Architectures

Tutor: Curt F. Schimmel

This intensive tutorial presents the issues involved with porting the UNIX operating system to modern computer architectures that make use of multiprocessors and cache memories. Attendees will gain an understanding of the design considerations modern architectures present to the operating system and will gain insight into the design of new architectures intended to support the UNIX operating system. Examples of modern RISC processors and the computer systems built around them are used to illustrate the concepts.

The first section of the course investigates the effects of various cache memory systems on the UNIX System V porting base. After an overview of cache system architecture is presented, four different cache organizations ranging from pure virtual to pure physical caches are studied including the tradeoffs of each, the impact on the kernel, and how to modify the kernel to properly control the cache.

The second section presents tightly coupled, symmetric multiprocessors. This includes a discussion of the mutual exclusion, synchronization, race conditions, and deadlock problems as they apply to the UNIX kernel. Several strategies for adapting the UNIX kernel to run on a multiprocessor are then presented, ranging from master/slave to multithreaded semaphore techniques, along with the tradeoffs of each approach.

The third section builds upon the first two by examining cache consistency in a multiprocessor system. An understanding of the cache consistency problems and the effects on the kernel is gained followed by an investigation of both hardware and software cache consistency algorithms for different cache organizations and multiprocessor kernel implementations.

The final section presents the differences between RISC Memory Management Units and more traditional style MMU's. This includes Translation Lookaside Buffer (TLB) management, referenced and modified bit handling, and TLB flushing and replacement techniques. Emphasis is placed on the effects of the kernel and the algorithmic changes needed.

Intended Audience
This tutorial is targeted at system programmers with 6 months or more of UNIX kernel internals experience. It is ideally suited for those who will be porting UNIX System V to a modern computer architecture in the future or those involved in the design of new computer architectures that need to support the UNIX operating system effectively. It is also ideal for anyone who wants to learn more about operating systems and modern computer architectures.

Curt Schimmel is an Operating System Architect at Amdahl Key Computer Laboratories. He received his M.S. in Computer Science from the Rensselaer Polytechnic Institute and his B.S. in Computer Science from the Rochester Institute of Technology with a minor in Computer Engineering. He has worked in many areas of UNIX kernel development and computer architecture including multiprocessor systems, demand paging, real-time, supercomputer enhancements, and kernel performance studies. For the past four years, he has been extensively involved in both the architectural and software design of large scale, high performance UNIX systems. Prior to this he was with AT&T Bell Labs where he worked on several releases of UNIX System V.

TUTORIALS — to be held at The SAS Royal Hotel

Monday 20th May

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Tutorials start at 09.30

Tutorial M2 - UNIX Standards

Tutors: Susanne Smith & John Quarterman

In the past year, at least ten new committees to develop standards for the UNIX environment have been formed. In this expanding universe information that ties all the various work together is hard to find. This tutorial will provide just this sort of information. First, some of the reasons for standards are presented followed by the goals which standardization hopes to achieve. Second, the processes used to make standards are discussed. The third part is an introduction to the bodies that actually form the standards. Fourth, and the bulk of the tutorial, is a description of the standards themselves. The following areas are presented: system interface, shell and utilities, conformance testing, profiles, real time, security, system administration, networking and communications, programming languages and user interfaces. Last is a list of sources for additional information.

Tutorial M3 - ISIS

Tutor: Keith Marzullo

Distributed systems are hard to program because their execution is asynchronous. Processes can fail at arbitrary times, messages can be delayed, and the real concurrency of a distributed system can make the resulting state of the distributed program very hard to reason about. The observation behind ISIS is that the {\em illusion} of synchronous execution can be captured without the resulting performance penalty of a fully synchronous system.

ISIS is a UNIX-based toolkit that has been ported to about a dozen different UNIX/platforms and distributed to over 750 sites, both academic and industrial. ISIS has been used to build or prototype a diverse set of programs, including factory floor managers, coarse-grain parallel graphic systems, stock brokerage systems, and fault-tolerant distribution services. And, in cooperation with the Chorus and Mach groups, ISIS is currently being reworked to run as an external server, which we believe will lead to a very light-weight and flexible suite of tools.

This tutorial will consist of three parts. First, the basics of fault-tolerance through active replication will be covered, including the structure and use of the protocols underlying ISIS and other similar systems. Then, the ISIS toolkit will be presented by working through several simple applications. Finally, an ambitious ISIS client, the Meta project, will be discussed. Meta extends the ISIS toolkit by supporting the decentralized control of distributed applications. This section will focus on taking a simple nondistributed application and using ISIS and Meta to make it distributed, fault-tolerant and adaptive.

This tutorial will be aimed for engineers and other practitioners of computer systems. A basic knowledge of UNIX, C, and other communication will be assumed, but no other previous knowledge of distributed systems, replication or fault-tolerance will be necessary.

Keith Marzullo is an assistant professor in the Computer Science Department of Cornell University, and is the co-principal investigator of the ISIS Research Project. His primary research focus has been the use and extension of ISIS to support reactive distributed control in both soft and hard real-time settings, and he is leading the development of the Meta project. He is also principal in ISIS Distributed Systems, a consulting firm specializing in distributed computing technologies.

PROGRAMME OF EVENTS

TUTORIALS — to be held at The SAS Royal Hotel

Monday 20th May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset
Tutorials start at 09.30

Tutorial M4 - Distributed Systems with UNIX

Tutor: Peter Meinen

The seminar introduces the basic concepts of distributed systems. It gives a survey of the architectures of distributed systems, the basic paradigms, possible problems, and the major design decisions to be taken.

The seminar is intended for system designers and developers who want to understand the design criteria of distributed systems and/or design and implement distributed systems with UNIX.

Prerequisites: basic understanding of UNIX; C for some examples

Contents:
What are distributed systems?
Motivation, application examples, history.

Architecture of distributed systems:
Architectural models, design goals, client-server model, remote-procedure-call (RPC) model, RPC binding, RPC protocols, transparency issues, RPC semantics.

Networks and protocols:
OSI reference model, connection-oriented vs. connectionless services, examples of transport protocols (TCP, UDP, OSI-TP, OSI-CLTP); presentation protocols; purpose, examples (SUN XDR, OSI ASN.1); protocol compilers.

Unix Services at the Transport Layer:
Berkeley socket concept, Transport Level Interface (TLI) in UNIX System V.

SUN's ONC remote-procedure-call and presentation protocols:
RPC protocol, port mapping, XDR protocol, program generation with protocol compiler rpcgen.

Design aspects of distributed systems:
Reliability, special RPC technics, authentication by standard methods and by cryptography.

Dr. Peter Meinen, born 1951 in Hannover (Germany) studied Mathematics and Computer Science at Technical University Munich (Germany) Diplom in 1975.

1975-1980, assistant at the Computer Science Dept. of Technical University Munich, computer architecture group. 1979 doctoral thesis about computer-hardware description languages.
1980- March 1990 Softlab GmbH, Munich. Starting in 1980, he designed and implemented UNIX-based software development tools for microprocessors (e.g. cross-compilers, remote debugging, project library). Trainer in UNIX, C, and software engineering. ESPRIT project HTDS (host-target development system). In 1987, he designed the distributed file system for Softlab's MAESTRO-II IPSE and was responsible for the implementation of MAESTRO-II's UNIX-based file servers and mainframe communication links. 1989 - March 1990 department head for OSI communication products.

In April 1990 he founded AKM Software GmbH, Munich, together with two colleagues. AKM is specializing in UNIX-based distributed application systems and software-engineering consultancy. Main projects include: Distributed high-speed image processing system for medical prescriptions (for health-insurance companies), control system for (geodetical) survey instruments.

TUTORIALS — to be held at The SAS Royal Hotel

Tuesday 21st May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset

Tutorials start at 09.30

Tutorial T5 - RISC Architectures

Tutor: Ashis Khan

The idea behind RISC architectures — relegating complexities to software — was well received in the industry. The first generation RISC processors attempted to achieve one goal: reduce the number of processor clocks taken to execute one instruction (C.P.I. or clocks per instruction) to one, by removing restrictions such as condition codes, complex addressing modes etc.

The second generation RISC processors saw two important developments to achieve higher performance. One was to increase the clock speed by taking advantage of exotic technologies such as ECL and the other approach was to develop newer pipeline techniques that allow more than one instruction being executed in one cycle.

The seminar on 'Recent Advances in CPU Architecture' will dwell on these two approaches. Higher processor clock rates widens the gap between the processor speed and main memory speed. Various techniques had evolved to smooth this mismatch — e.g. multi-level cache, two-level translation-lookaside buffer etc. Some implementation issues in ECL, GaAs and CMOS technologies pertinent to CPU design will be discussed. Case studies of commercial implementation will be presented.

The merits and demerits of new pipeline techniques, such as Siperpipeline, Superscalar, VLIW etc. will be covered. Real life examples will be studied.

Next topic in this seminar will be software for the RISC architectures. We will discuss what the various requirements for O/S and compilers are, and how the architecture and implementations satisfy these requirements. Case studies such as MIPS Compilers and MIPS O/S implementations will be made.

The tutorial will be presented by Ashis Khan from MIPS Computer Systems, Sunnyvale, California.

Ashis provides consultation on system designing with MIPS, RISC architecture and conducts seminars world-wide on contemporary RISC designs. He has published several articles on RISC architectural issues and has chaired sessions in MIDCON and WESCON conferences.

Ashis Khan's profile

Tutorial on Advances in Architecture and Compilers

1. Superscalar, Superpipeline, VLIW Architectures
   - — Define different types
   - — Comparative studies of the above three
   - — Compiler Issues in each type of architecture
   - — Real Life examples: i860, Multiflow etc.
2. Architecture and Implementation
   - — Overview of different technologies
     - — CMOS
     - — ECL
     - — GAS
   - — Implementation issues
     - — Processor speed and main memory speed
     - — level of integration
     - — System Design Problems at high speed
3. Register Set Design
   - — No. of registers
   - — Windowing
   - — Interprocedural register allocation
   - — How SPARC, 88K, 29K, Mips R3000 and Intel 80960 designed
4. Computational Bandwidth and Latency
   - — Performance increases with higher computational bandwidth
   - — Computational bandwidth increases latency
   - — Higher latency decreases performance
   - — How to make trade-offs
   - — Case Studies of different implementation strategy
5. Cache Architecture
   - — direct-mapped and set associative
   - — write through and write back
   - — physical and virtual cache
   - — multiprocessing and cache-design
   - — cache size, refill size and various optimization
6. Pipeline design and compiler scheduling
   - — load delay
   - — branch mechanism
   - — how compilers effectively reschedule inter-locked operations
7. O/S Considerations in a given Architecture
   - — Memory Management
   - — Virtual and Physical cache
   - — Context switch: requirements
   - — Protection Mechanisms
8. Effects of Compilers on Performance
   - — Study of Compiler effects on Performance
   - — Performance Analysis Tools
   - — How compilers and architectures relate
9. Optimization Techniques
   - — Examples of local and global optimization
   - — Advanced techniques
     - — Interprocedural Register Allocation
     - — Shrinkwrapping
     - — Others
10. Case study of Processor Architectures
    - — SPARC from SUN Microsystems
    - — IBM RIOS/6000
    - — Intel i860
    - — Motorola 88000
    - — AMD 29000

PROGRAMME OF EVENTS

TUTORIALS — to be held at The SAS Royal Hotel

Tuesday 21st May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset
Tutorials start at 09.30

Tutorial T6 - Writing Distributed Applications Using ANSA

Tutor: Cosmos Nicolaou

ANSA is an architecture for distributed systems, developed partially under the ESPRIT Integrated Systems Architecture project. Work has included tackling the problems involved in writing applications for distributed heterogeneous multi-vendor computer systems. From this work a software suite known as ANSAware has evolved, as an exemplar implementation of the architecture. ANSAware provides a platform for the creation, deployment and management of distributed applications.

This tutorial covers a brief tour of the ANSA architecture and the problems inherent in distributed systems, followed by an in-depth look at the way ANSAware assists the applications programmer in dealing with these problems. This will be a hands-on course, with the opportunity to explore the facilities provided by ANSAware whilst creating a distributed application. The tutorial ends with a discussion of the future directions for distributed systems in general and ANSAware in particular. Familiarity with C is required.

Cosmos Nicolaou is a member of the ANSA Research Team, with a special interest in multi-media, and plays a significant role in the continuing development of ANSAware.

Tutorial T7 - Introduction to Mach

Tutor: Nawaf Bitar

Mach is a novel operating system intended to recapture the original structural simplicity of UNIX while providing support for modern multiprocessor and distributed systems. The tutorial is intended for systems developers and technical managers who would like to learn about Mach, which also forms the basis of OSF/1, the Open Software Foundation's first operating system release.

The tutorial will study the Mach operating system in detail. It will first cover the Mach architecture, philosophy and vision and continue with a thorough study of the three major subsystems that comprise the kernel: task/thread management, virtual memory management and inter-task communication. Topics include external memory management, copy-on-write optimizations, message passing, and thread scheduling. Next will be a discussion of the facilities provided under the Mach environment including the Mach Interface Generator, the Network Message Server and the Network Memory Server. Finally, the tutorial will conclude with a presentation of Mach's future direction focusing on the micro-kernel architecture and the dekernelization of UNIX.

Nawaf Bitar is a software engineer in the operating systems group of the Apollo Systems Division of Hewlett-Packard Company where he is the Project Engineer for the HP OSF/DCE project. Previously, while at the OSF Research Institute, he was part of a cooperative effort with CMU to develop a Mach 3 based system. Prior to joining OSF, he initiated the Mach project at Apollo Computer, Inc. and continued his integral involvement through its evolution to the OSF/1 project.

TUTORIALS — to be held at The SAS Royal Hotel

Tuesday 21st May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset
Tutorials start at 09.30

Tutorial T8 – Introduction to X Concepts

Tutor: Berry Kercheval

This tutorial will give the attendee a solid grounding in the concepts and techniques needed to begin writing applications for the X Window System. While the use of a toolkit such as Xt is encouraged, a good grounding in Xlib, the 'assembly language' of X, is invaluable for comprehending the interaction of X clients with the server and workstation. The tutorial will cover the topics in a 'depth first' manner, emphasizing the concepts rather than covering every single Xlib function.

Topics covered will include: The X Programming Model; Basic Definitions; Xlib linkage; Events; Graphics Contexts; Drawing Graphics, Drawing Text; Colour; Resources; Properties and Interclient Communication Conventions.

A sample program, especially written for this tutorial, will be analyzed as the tutorial progresses.

Berry Kercheval received the Bachelor of Science degree from the University of California in 1977. Since then he has worked in Zehntel, Inc., the Lawrence Livermore National Laboratory and most recently, Intelligent Decisions Inc., a small consulting firm located in Sunnyvale, California. His interests include computer graphics, simulation and compiler design.

Only EurOpen National Group or Direct Members are permitted to attend Tutorials.
Each Tutorial lasts for one whole day and will start at 09.30 and finish approximately at 17.30.

PROGRAMME OF EVENTS

Kulturhuset

Wednesday 22nd May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset
Technical sessions start at 09.30

Provisional Technical Programme

Wednesday 22nd May

Frances Brazier — Programme Chair (Vrije University) (NL)	OPENING
Michael D. Schroeder (Digital Equipment Corp) (USA)	An Overview of Distributed Systems
	Coffee Break
Frances Brazier (Chair) (Vrije University) (NL)	OPERATING SYSTEMS
Sape J. Mullender (University of Twente) (NL)	Experience with Amoeba
Michel Gien, Marc Guillemont, Jim Lipkis, Doug Orr, Marc Rozier (Chorus systemes) (FR)	A New Look at Micro-Kernel Based UNIX Systems: Lessons in Performance and Compatibility
	Lunch
Simon Patience, Jose Rogado (Open Software Foundation) (FR)	OSF/1
Dave Presotto (Bell Labs) (USA)	Plan 9
	Coffee Break
Andrew Schuelke (UNIX International) (BE)	tba
	FORUM

Kulturhuset

Thursday 23rd May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset
Technical sessions start at 09.00

Provisional Technical Programme

Thursday 23rd May

Dag Johansen — Programme Committee (University of Tromsø) (NO)	OPENING SESSION
Bruce D. Shriver (D. H. Brown Assc. Inc.) (USA)	'Open Systems Distributed Computing and Interoperability Fact and Fancy'
	Coffee Break
Dag Johansen — Chair	ARCHITECTURE
Brad C. Johnson (Open Software Foundation) (USA)	Open Distributed Systems — Interoperability through Enabling Technologies
Dario Avallone (Ingegneria Information SPA) (IT)	Integration Mechanisms and Communcation Architecture in AxIS
Gordon Blair (Distributed Multimedia Research Group) (UK)	Incorporating Multimedia in Distributed Open Systems
	Lunch
Donal Daly — Chair	SCHEDULING
Wouter Joosen (Leuven University) (BE)	Design and Implementation of an Experimental Load Balancing Environment
Guy Bernard (Institut National des Telecommunications) (FR)	A Decentralized and Efficient Algorithm for Load Sharing in Networks of Workstations
Bertil Folliot (Laboratoire MASI) (FR)	Distributed Applications in Heterogeneous Environments
	Coffee Break
Elod Knuth — Chair	MANAGEMENT
R. Pike, D. Presotto, K. Thompson, G. Holzmann (Bell Labs) (USA)	Process Sleep and Wakeup on a Shared-memory Multiprocessor
Terje Fallmyr, David Holden, Otto J. Anshus (University of Tromsø) (NO)	Capturing the Behaviour of Distributed Systems
Keith Marzullo, Mark D. Wood (Cornell University) (USA)	Tools for Monitoring and Controlling Distributed Applications
	FORUM

PROGRAMME OF EVENTS

Kulturhuset

Friday 24th May

Registration from 08.00 in the Main Entrance Hall at the Kulturhuset
Technical sessions start at 09.30

Provisional Technical Programme

Friday 24th May

N.N.	OPENING SESSION
A. J. Herbert (Architecture Projects Management) (UK)	Distributing Objects
	Coffee Break
N.N. — Chair	LANGUAGE ISSUES
Henri E. Bal (Vrije University) (NL)	A Comparative Study of Five Parallel Programming Languages
Guido van Rossum, Jelke de Boer (CWI) (HIO Enschede) (NL)	Linking a Stub/Generator (AIL) to a Prototyping Language (PYTHON)
Frank Eliassen, Randi Karlsen (University of Tromsø) (NO)	Providing Application Interoperability using Functional Programming Concepts
	Lunch
N.N. — Chair	SERVER-BASED SOLUTIONS
V. Tschammer (GMD Fokus) (DE)	Domain-based Support for Service Administration and Server Selection
John T. Kohl (Digital Equipment) (USA)	Evolution of the Kerberos Authentication Service
Benoy DeSouza, Nawaf Bitar (Apollo Systems) (USA)	Architecture and Implementation of a User-Space NFS
	Coffee Break
	FORUM
H. Strack-Zimmerman	Forum Discussion
Frances Brazier — Programme Chair	Closing Session
	FINISH and See you in Budapest

RESERVE SPEAKERS

Laszlo Biczok (MTA-KFKI-MSZKI) (HU)	XEUS Director
Uwe Baumgarten (University of Oldenburg) (DE)	Merits of Language — Orientated Approaches for Constructing Distributed Systems
Ben M. Segal (CERN) (CH)	Scaleable Mainframe Power at Workstation Cost

Conference & Exhibition Venue

The Technical Sessions and the Exhibition will be held at:

Kulturhuset
Grønnegata 87
N-9000 Tromsø
Norway

Tel: +47 83 82064
Fax: +47 83 82068

(See map on page14)

The Kulturhuset is situated in the City Centre.

During the conference there will also be a Conference Bar in the Kulturhuset. The Bar opens at lunch-time and stays open till the end of the day, or as long as it is used by delegates.

Tutorials Venue & Conference Hotel

The Tutorials on Monday 20th and Tuesday 21st May will be held at the Conference Hotel.

SAS Royal Hotel
Sjøgata 7
N-9000 Tromsø
Norway

Tel: +47 83 56000
Fax: +47 83 85474

The SAS Hotel is situated in the middle of the city centre and is just a few minutes walk from the Kulturhuset.

Please note that registration for the tutorials will take place in the Kulturhuset and **not** the SAS Hotel.

Transportation

Tromsø Airport is located only 4km from the city centre. A cab ride from the airport to the city centre takes about 8 minutes and will cost approximately 75 NOK. There are also regular bus departures from the airport to the city centre. A bus ride will cost approximately 25 NOK and take about 10 minutes.

When in the city centre there will be no need for transportation, the most important venues are within walking distance from each other. The Conference Centre is located in the middle of the city centre, and is only a 5 minute stroll away from the Conference Hotel.

The Exhibition

The Exhibition will be held at the Kulturhuset on 22nd, 23rd and 24th May and will be open to delegates throughout the Conference.

All enquiries to:

Tage Stabell-Kulø
Department of Computer Science
University of Tromsø
N-9000 Tromsø
Norway

Tel: +47 83 44053
Fax: +47 83 44580

email: tage@staff.cs.uit.no

Social Event (Get-together)

Wednesday 22nd May

We have the pleasure of inviting you out to sea on a local ferry, which will take you on a trip among the skerries and islets outside Tromsø. On board we serve arctic shrimps the rough Nordic way, and you can taste the beer from the local brewery, which is the northernmost brewery in the world. Hopefully, the sea will be calm and the midnight sun shining. Departure is set at 19.00, and will be from the dock near the Conference Hotel.

The get-together is sponsored by Hewlett Packard and TBK.

HEWLETT PACKARD TBK

Conference Dinner

Thursday 23rd May

We have the pleasure of offering you a Journey through Arctic Cuisine — with its taste of the Arctic Ocean and the wild plains of the Far North!

The Conference Dinner is included in the price of the Conference and will be held at the SAS Royal Hotel in Tromsø on Thursday May 23rd at 20.00. This is a first class hotel situated in the middle of the city centre, not far from the harbour with its traditional Arctic vessels.

After dinner, you will be free to enjoy the warm atmosphere of Tromsø, 'The Gateway to the Arctic', in Charly nightclub next to the restaurant. But the nights are bright and hopefully sunny, and there is plenty going on elsewhere in the 'Paris of the North'.

Extra tickets are available for partners at 55 ECU each. Please refer to booking form on page 17.

Tape Distribution

EurOpen will provide a tape distribution service at the Tromsø Conference. The tape will cost 100 ECU and will be available in two formats:

1600 bpi, 1/2 inch , reel tape *and* 1/4 inch, QIC-24, cartridge.

The theme of this Conference Tape will be 'Networking'. The tape will contain a collection of public domain software, such as network tools (nfswatch, bind, telnet, amd), and complete environments (Athena, ISIS) and other goodies too numerous to list.

Only EurOpen National Group or direct members are permitted to order a tape.

Hotel Reservations

Delegates may use the services of SAS Conference Support who have been appointed as the official travel agency for the Conference. They will take care of all matters and questions related to delegates' stay in Tromsø. Please see booking form on page 19. They are ready to book accommodation in hotels of the listed categories and prices (in NOK). Please note the Conference Hotel (SAS Royal Hotel) is a category 5 hotel.

Hotel rate category	Single			Double		
	minimum	maximum	average	minimum	maximum	average
5	910	980	950	1030	1110	—
4	710	855	850	855	970	—
3	650	650	—	800	—	—
2	415	—	—	600	—	—

Even cheaper, private accommodation is available on request.

The daily room rates are indicated in Norwegian Crowns (NOK) and inlcude Continental breakfast and Service charges.

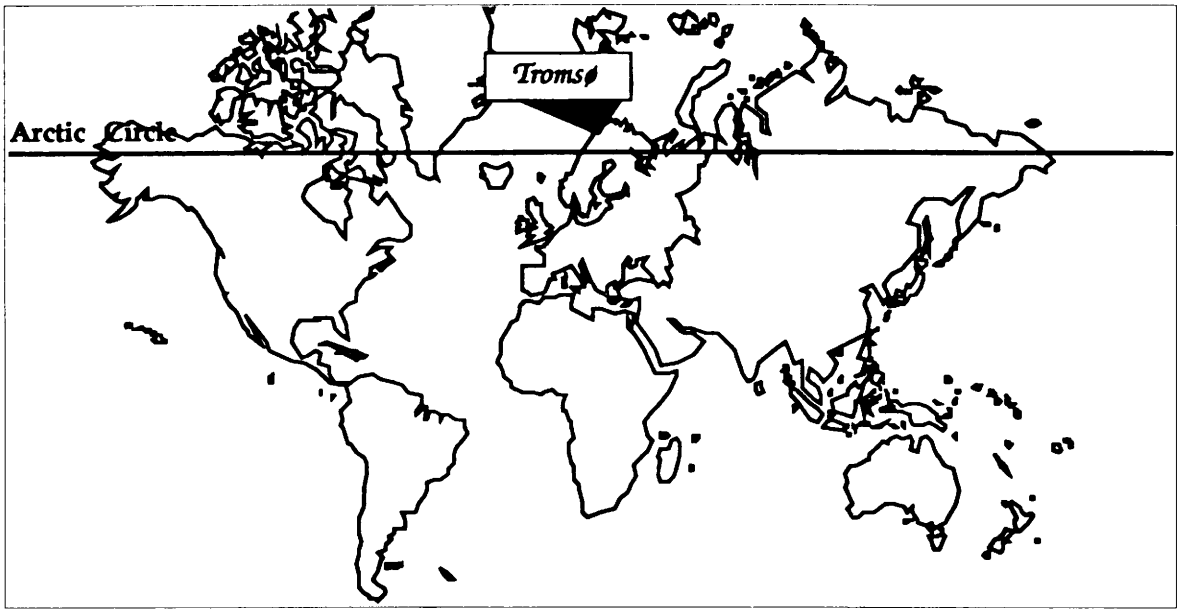
GENERAL INFORMATION

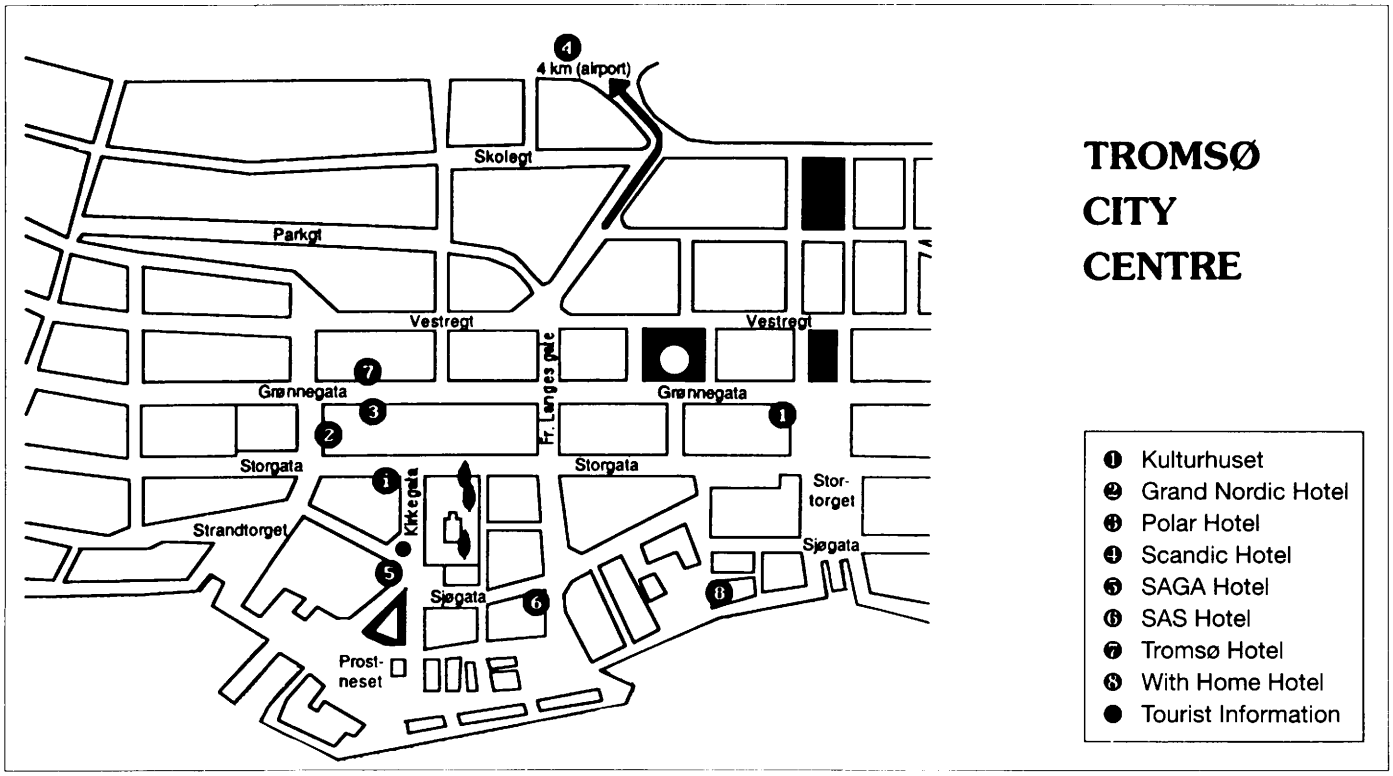
Tromsø

Tromsø is located at 69°40'N 18°56'E which is a one hour fifty minutes flight from Oslo, the capital of Norway. Tromsø is north of the Arctic Circle, and in these latitudes the midnight sun is visible from May 21st to July 24th. Delegates arriving early in Tromsø will also have the opportunity to join the celebration of the Norwegian Constitution Day which is on May 17th. This is a national holiday in Norway and it is celebrated in a traditional way with children's parades and brass bands playing in the streets. For those wanting more information about Tromsø and Norway, write to the following email address: tos-info@cs.uit.no.

Weather

May is probably the month in which we observe the greatest variation in weather. Although temperatures up to 24°C have been measured, the average temperature is about 8°C. Be prepared for occasional light showers, and bring your umbrellas and/or raincoats.





GENERAL INFORMATION

How to Pay & Book

PAYMENTS

EurOpen is a European Federation of National Groups and as such prefers to use the European Currency — ECU's — for payments. To pay in ECU's please note the two methods of payment.

1. By Direct Payment to EurOpen's ECU Bank Account

The Bank of Scotland
International Division
Operations Department
PO Box 86
120 St. Vincent Street
Glasgow G2 5DZ, Scotland

Account No. 41791 ECU 01
Bank Sorting Code: 80-20-13

Please tell your bank that you will pay all charges so that EurOpen will receive the full amount.

2. By UK Cheque or Bankers' Draft, made payable to EurOpen and drawn on a UK bank. Eurocheques are acceptable, but each cheque must be 170 ECU's or less.

EurOpen is setting up facilities in Europe for delegates paying by Credit Card in ECU's, but unfortunately this is a very new facility and not fully functional at the time of printing this booklet.

If you have real difficulties in paying in ECU's you may either pay in NOK (Norwegian Crowns) or £ Sterling using the following prices only.

N.B. Please note that these are fixed prices and may not be converted in accordance with any exchange rate at any time. If you choose the £ or the NOK option it must be at the prices stated.

		ECU	£	NOK
TUTORIALS				
Tutorial before 1st April	Members only	400	325	3530
Tutorial after 31st March	Members only	500	405	4415
Student price — 50% reduction*				
Tutorial and Payment on the door	Members only	600	485	5295
CONFERENCE				
3 Day Conference before 1st April	Members	400	325	3530
	Non-Members	600	485	5295
3 Day Conference after 31st March	Members	500	405	4415
	Non-Members	700	570	6175
Student price — 50% reduction*				
3 Day Conference Payment on the door*	Members	600	485	5295
	Non-Members	800	650	7060
Social Event & Conference Dinner — extra ticket		55	45	490
Conference Tape		100	80	885

* These can only be accepted if space allows.

To pay in £ or NOK please note the two methods of payment:

1. By direct Payment to EurOpen's bank, which is:

The Bank of Scotland
61 Grassmarket
Edinburgh EH1 2JF, Scotland

Account No. 00613997
Bank Sorting Code No. 80-31-50

Please tell your bank that you will pay all charges so that EurOpen will receive the full amount.

2. By UK Cheque or Bankers' Draft, made payable to EurOpen and drawn on a UK bank. Eurocheques are acceptable, but each cheque must be £100 or 1,300 NOK or less.

IF YOU WISH TO PAY BY CREDIT CARD (VISA, ACCESS, MASTERCARD OR EUROCARD) PLEASE USE THE £ PRICES ONLY. CARD DETAILS APPEAR ON THE BOOKING FORM.

Please indicate clearly on the booking form which currency you are using for payment. Your invoice will then be raised in this currency.

To book a place at the Tutorials and/or Conference, complete one booking form for each person and return it with full remittance or with evidence of payment to:

EurOpen
Owles Hall
Buntingford
Herts SG9 9PL, United Kingdom

Tel: +44 763 73039
Fax: +44 763 73255
email:europen@EU.net

Use a photocopy of the booking form for each person. Please note that bookings can only be accepted when accompanied by payment or evidence of payment.

Telephone bookings can be accepted when paying by Credit Card. Fax bookings can be accepted when paying by Credit Card or direct to the bank (proof of payment to be faxed also).

The EurOpen Secretariat will acknowledge your bookings by sending a receipted invoice together with full details for registration.

Cancellations

It is regretted that no refund of fees will be possible in cases of cancellation, unless the cancellation is made more than one month before the start of the Conference. No cancellation will be accepted unless it is sent to the EurOpen Secretariat in writing.

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. Applicants will be advised of their grant no later than two weeks after the closing date.

Applications should be made on the Student Grant Application form on page 18, together with a booking for the Conference on the other form. If your booking is dependent on obtaining the grant, please write on the top of your booking form: **"GRANT DEPENDENT".**

Priority will be given to:

1. **Students giving a talk at the Conference**
2. **Students doing work for EurOpen or a National Group**
3. **Students in full time education**
4. **Other deserving cases like research students**

You can apply for partial coverage of expenses for travel in Europe, accommodation and Conference fees, but not for meals. Student status, or other deserving status, must also be documented by a copy of a valid student registration card or the like. After the event, original bills must be included with the claims form.

Please note the closing date for student grants is 1st March 1991.

Electronic Mail at the Conference

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

To reach people at the Conference use the following address:

firstname_lastname_organisation@europen_conf.EU.net ***or***
firstname-lastname-organisation@europen-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.
Worldwide TELNET access via InterEUnet is also planned.

Language

The official language of the Conference will be English. No translation will be provided.

Liability

EurOpen will not accept any responsibility for damage to property or injury to persons during the entire event. Participants are recommended to arrange for their own personal travel and health insurances.

Costs

TUTORIALS	
Tutorial per person if booked before 1st April	Members only 400 ECU
Tutorial per person if booked after 31st March	Members only 500 ECU
Student price — 50% reduction*	
Tutorial per person if Registration and Payment on the door*	Members only 600 ECU
CONFERENCE	
3 Day Conference if booked before 1st April	Members 400 ECU Non-Members 600 ECU
3 Day Conference if booked after 31st March	Members 500 ECU Non-Members 700 ECU
Student price — 50% reduction*	
3 Day Conference if Registration and Payment on the door*	Members 600 ECU Non-Members 800 ECU
*These can only be accepted if space allows.	
Social Event & Conference Dinner — extra ticket	55 ECU
Conference Tape	100 ECU

Note: Closing date for all bookings is 15th May 1991.

EUROPEN EXECUTIVE REPORT

Helen M W Gibbons
European Forum for Open Systems (EurOpen)
Buntingford, UK

europen@EU.net

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

New Name

The new name, EurOpen, has in general been well received and everyone is now getting used to it. National Groups are bringing their logos into line in order to display a United European front to the outside world.

Structure

There has been some confusion among members as to how EurOpen is structured and who is responsible for decisions, such as the change of name. It is therefore perhaps worth pointing out that EUUG, as it was then, grew from the early 1980's as an organisation composed of national groups. Even before it became a limited company, annual meetings were held to coincide with the major conferences to which all known groups were invited to send representatives and this formed the nucleus of a Governing Board.

Later on, in 1987, the representatives of the National Groups decided to incorporate EUUG as a company registered in the UK because it was felt that EUUG needed legal protection since its expanded services were spawning a large cash flow commitment such as could no longer be underwritten by individuals if things went wrong. The UK was chosen because it was the UK originally which gave birth to the EUUG and therefore the original funding was from money in the UK. The registered office for the company is at present Owles Hall.

The EUUG was registered under the Companies Act of 1985 as a Company Limited by guarantee and not having a share capital.

Its stated objectives are:

- To promote and advance the knowledge, use and application of open computer systems using compatibility techniques pioneered by the UNIX operating system.
- To facilitate the exchange of information and view on the use and development of Open Systems.
- To inform public opinion upon the subject of Open Systems.
- To provide a focus for the standardisation of techniques used in Open Systems.
- To encourage internationalisation of Open Systems.

For the benefit of users of Open Systems.

The objective of EurOpen is to act as a Federation of National Open Systems User Organisations.

"A Memorandum and Articles of Association" was drawn up as a legal requirement to be lodged at Companies House, and, as it was obvious that the company as a legal entity could not possibly operate with 5,000 or so directors, it was agreed by the representatives of the National Groups who attended the annual meeting that the membership of the company would be vested in the National Groups themselves.

This means that although individual members of National Groups are treated as individual members of the Company (EUUG and now EurOpen), only the accredited delegate of a National Group is entitled to vote at company meetings. Individual members are not entitled to vote.

It was this Governing Board of National Groups which took the decision to change the name of EUUG to EurOpen. It was legally representing the individual members of each National Group and therefore was fully within its right to take the decision, as it would be to take any other.

The importance of pointing this out is to make sure that all members understand that if they have strong views about any aspect of the organisation of EurOpen, or it they wish to bring pressure to bear on any decision, they should do so through their National Group representative. If any member is not sure who this is, they should immediately contact the Secretary of their National Group for further information.

There are a few individual member of EurOpen who have joined direct because they work in a country where no National Group exists at present. Such individual members are not entitled to a vote, but if they wish to make representation they may do so via any member of the Executive Committee.

The Governing Board (made up of the National Group Representatives) at present meets twice a year to discuss policy and take decisions. The next meeting will be held in Tromsø on 18th and 19th May. A special sub-committee has now been set up to re-examine the by-laws which describe the day to day rules by which we operate.

The Executive Committee

The Executive Committee is the instrument by which the Governing Board carries out its policies. This is split into sub groups and working committees handling the various activities and, at present, these are as follows:

EurOpen Working Groups	Executive in charge	Norman Hull
	Backup	Michel Gien
	Participants	Frances Brazier Johan Helsingius Jean-Michel Cornu
Standards	Executive in charge	Johan Helsingius
	Backup	Michel Gien
	Participant	Nigel Martin
	Paid assistant	Dominic Dunlop
	Paid assistant	Henk Hesseliak
Marketing Studies	Executive in charge	Kim Biel-Nielsen
	Backup	Norman Hull
New National Groups	Executive in charge	Norman Hull
	Backup	Johan Helsingius
Relations to X/Open	Executive in charge	Frances Brazier
	Backup	Michel Gien
	Participants	Nigel Martin Johan Helsingius Norman Hull Teus Hagen
Relations with Other Organisations	Executive in charge	Michel Gien
	Backup	Frances Brazier
	Participant	Kim Biel-Nielsen
By-laws & Constitution	Executive in charge	Michel Gien
	Backup	Frances Brazier
	Participants	Nigel Martin Teus Hagen
	Paid assistant	Helen Gibbons
	Link with Governing board steering Cttee	Georges Schild
House Style	Executive in charge	Michel Gien
	Backup	Teus Hagen
Finances	Executive in charge	Nigel Martin
	Backup	Kim Biel-Nielsen

	Participant	Ernst Janich
	Paid assistant	Helen Gibbons
	LiR CGB SC	Kim Biel-Nielsen
Managers	Executive in charge	Michel Gien
	Backup	Frances Brazier
	Participants	Nigel Martin Teus Hagen Ernst Janich Norman Hull Johan Helsingius
Publications	Executive in charge	Frances Brazier
	Backup	Norman Hull
Events	Executive in charge	Ernst Janich
	Backup	Frances Brazier
	Participants	Neil Todd Helen Gibbons
	Paid assistant OpenForum Europe	Emile van Dantzig
EUnet	Executive in charge	Frances Brazier
	Paid Manager	Glenn Kowack
Software Distribution	Executive in charge	Frances Brazier
	Participant	Frank Kuiper
Public Relations	Executive in charge	Kim Biel-Nielsen
	Backup	Michel Gien

The Executive Committee met on 25th November 1990 in Amsterdam and on 13th and 14th January 1991 in London.

OpenForum Europe 1992

A most exciting event is being planned in co-operation with UniForum for 1992. Called OpenForum Europe, this will be a major Exhibition and Conference taking place on 25-28 November 1992 at the Jaarbeurs Congress Centre in Utrecht, The Netherlands.

This will be the first major event to reflect the rapidly growing market for Open Systems in Europe. Taking place on the eve of the single market, it is set to attract senior representatives from the information technology industry and its major customers. The technical, business and strategy issues surrounding Open Systems will be fully discussed during the Conference and Tutorial programme.

Emile van Dantzig is acting organiser on behalf of EurOpen and he can be contacted in the Netherlands on +31 30 281 820.

1991 Conferences

The next EurOpen Conference will be held in Tromsø, on 20-24 May 1991 and full details are included in this newsletter.

The Autumn Conference will take place in Budapest, Hungary from 16-20 September 1991 and a Call for Papers will be sent shortly. In the meantime ideas on themes and papers would be gratefully received. Please telephone me, Helen Gibbons, on +44 763 73039.

Also please bear in mind that we shall be offering a FREE CONFERENCE PLACE, if you are responsible for enrolling 5 delegates who have never been to an EUUG or EurOpen Conference before.

Start recruiting NOW - and book YOUR place free of charge.

Membership Directory

The new Membership Directory has now been sent out free of charge to members and the initial reaction to it is very favourable.

If you have not received one please contact your National Group to see why your name was not included on their mailing list.

Extra copies may be available for sale depending on availability.

PRESS RELEASE

MAJOR OPEN SYSTEMS USER ORGANISATIONS AGREE TO WORK TOGETHER

Dallas, 22 January 1991 ... Yesterday, representatives of 13 leading open systems user organisations from four continents meti n Dallas to discuss ways they could harmonise the demand for open systems and accelerate market development.

The meeting was theresult o fani nitiative taken by the X/Open User Counci and co-hosted with UniForum. "While we respect that all of these groups have special interests — in terms of industry sector, geography or architecture — there is sufficient commonality to warrant close co-operation ", said Walter debacker, chairman of X/Open's User Council.

The first meeting identified and agreed the priorities shared by the various organisations, and established an ongoing basis for co-operating and information exchange between the major organisations and the hundreds of users from government and commerce they represent. This world coalition of user organisation sseeks to achieve rapid proliferation of open systems. They agreed to co-operate on three key strategies:

Facilitate the development of open systems knowledge a tall levels of enterprise;

Accelerate the delivery of products that meet the business needs of interoperability and portability; and

Define a common process for satisfying user requirements.

Details of the proposals will not be discussed until the individual representatives have briefed their own organisations on the proposed joint actions and sought consensus agreement. Additionally, there are many other user organisations that have an emerging interest in open systems that were unable to attend the Dallas meeting. They will be briefed on the outcome of this first meeting and invited to join the co-operative venture. Their involvement with this initiative would be valuable.

The organisations have tentatively agreed to meet again in May in Vancouver, British Columbia, to review the results of the joint activities. The meeting will be hosted by the Corporation for Open Systems International.

Date: February, 1991

Contact: Michel Gien (Chairman EurOpen)
Tel: +33 1 30 648200

First Announcement

Will be held in conjunction with
EurOpen Hungary
On 16th — 20th September 1991
in Budapest, Hungary

Early bookings at discount prices will be available

Offers of papers and all enquiries for the Conference, Tutorials or Exhibition should be sent to

EurOpen Secretariat
Owles Hall
Buntingford, Herts
SG9 9PL, United Kingdom
Tel +44 763 73039
Fax +44 763 73255
E-mail europen@EU.net

OPEN FORUM EUROPE 1992

Your Opportunity to Reach the Heart of a Growing Market

Co-sponsored by UniForum and EurOpen

November 1991 sees the first pan-European conference and exhibition dedicated to Open Systems and the UNIX industry: OpenForum Europe 1992.

With the single, unified market within the European Community set to open for business in 1st January 1992, OpenForum offers a unique and timely opportunity for exhibitors and visitors alike.

Co-sponsored by UniForum and EurOpen, the European Forum for Open Systems, OpenForum will attract senior representatives from commercial and government user organisations, as well as system and software developers and vendors from all over Europe.

OpenForum Europe 1992 is your only chance to meet these key people one-on-one at a single event in the heart of Europe.

International Data Corporation (IDC) estimates that the market for Open Systems products and services in Western Europe is currently $10 Billion. It is forcast to grow to $20 Billion in 1995.

Date: The week of 23 November 1992

Venue: Jaarbeurs Congress Center, Utrecht, The Netherlands. This offers a total of over 2 million square feet plus a fully equipped conference centre.

Agenda: The event will comprise a conference on business and management issues surrounding Open Systems, a scheduie of technical tutorials and an exhibition of Open Systems products and services.

Access: The Jaarbeurs Congress Center is a 45 minute drive from Amsterdam Airport. The convenient journey by train takes less than one hour.

Accomodation: Utrecht is well served by 4 and 5 star hotels. The event organisers will make preferential rates available to exhibition and conference participants.

Your contacts: UniForum +1 408 986 8840 EurOpen +44 763 73039

Plan now for your Place at the Heart of Open Systems in Europe.

UUES

Belen de Vicente
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Belen de Vicente is one of the founders of the new Spanish Unix Users Group (UUES). After finishing her Computer Science studies she shares her activities between UNIX training and software developing. Currently she is concerned with Software Replaceable Units and she especially enjoys programming in Ada while skiing.

UUES is the brand new Spanish UNIX users group. It was founded in July 1990 by a group of professional and academic people interested in the progress of open systems.

The need for an association like UUES comes from the growing concern about Unix in Spain and from the lack of any organisational support to group these interests.

The main goals of UUES are the creation of a forum to exchange information about Unix and Open Systems, and to promote relationships with press and manufacturers in order to defend the users's interests. On the practical side, the exchange of information will come down specifically to periodical publications, interest groups and training in topics related to Open Systems.

Since its creation, UUES activities have been focused on the strengthening of the association, gaining its legal infrastructure and obtaining its integration with similar groups in Europe.

This year, UUES's goals are to attract new members (we have 120 now) and to start technical activities such as a Rapid Reference by e-mail and the development of special interest groups. Currently, two of these groups are emerging, one on X-Windows and another on supercomputing.

For more information about UUES, please find enclosed the following e-mail address:

uues-request@uu.es

IUUG REPORT

Annrai O'Toole
Dublin, Eire

aotoole@cs.tcd.ie

To paraphrase that great American, Mark Twain, "rumours of the demise of the IUUG are greatly exaggerated". The Irish Unix Users Group is alive and kicking and is certainly Open (even EurOpen) for business in 1991.

In November, the group had a busy and positive AGM. This AGM was attended by nearly all the members and its first order of business was to vote in a new constitution. This constitution provides a clear statement about the running and direction of the IUUG. The AGM also witnessed the election of new officers and members to the committee of the IUUG. To avoid any confusion here are the results of the election:

Officers

Chairman	Simon Kenyon
Secretary	Brian O'Donovan
Treasurer	Cormac Callanan
Network Admin.	Micheal Nowlan
PRO	Annrai O'Toole

General Committee

Tom Leonard
Donal Daly
Micheal Doherty

In line with the new committee and outlook for UNIX in Ireland a series of meeting have been arranged for the beginning of the new year, so here are some dates for your diary. Any unforeseen changes in these times will be publicised well in advance. In addition to these events, the IUUG have some extra items hidden up their sleeves, however it is still too early to make any announcements.

Date	Topic	Speaker
Jan 24	Minix	Tim Murphy
Feb 20	IBM AIX	Iain Bowering
Mar 25	GNU and Pub Domain S/w	Donal Daly
Apr 25	COMANDOS & OO UNIX	Annrai O'Toole
May	TeX & MetaFont	Wayne Sulivan
Jun	Motif	Robert O'Dea

Finally the committee of the IUUG would like to wish all their members a happy new year of UNIX and Open Systems bliss. We would also like to extend our best wishes to our European partners and hope that EurOpen will have a successful decade in promoting UNIX within federal Europe!

The IUUG can be contacted at: The IUUG, c/o The Maths Dept., Trinity College, Dublin 2, Eire.

Erratum

In the last (Volume 10, No 4) issue it was mistakenly stated that "The UNIX programming environment" was written by Kernighan and Plauger, this should, of course, been Rob Pike. Sorry Rob!

UKUUG COLUMN

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Mick is the Secretary of the UKUUG. His primary interests are Ornithology (restricted to the Western Paleartic at the moment because of cost) and Oenophilism (especially pre-1962 Bordeaux, pre-1980 Burgundy, and 1945 Port). His secondary interests include Software Consultancy (to pay for the above primary interests) and Distance Learning Methods (especially interactive video and hypertext). When not pursuing these and other interests he can be found at Birkbeck College (London) where he teaches in the Department of Computer Science.

He lives in Lewisham (South East London) with his wife Sue and a TV called Sonya. His neighbours have two children and a dog.

Start Bit

The UKUUG is now a limited company and, as such, is organised and run by a controlling Council. Initially this consists of the old Executive (Sunil Das, Mick Farmer, Zdrav Podolski) plus two people who've been helping behind the scenes for some time now, Andrew Macpherson (STC Ltd.) and Jim Reid (Strathclyde University). Welcome aboard gentlemen.

The Council is supported by an Advisory Committee of helpers and, yes, advisers. The size of our Advisory Committee fluctuates but currently numbers eight.

Membership Figures

Membership has continued to increase over the latter half of 1990. Our current membership is 578, broken down into the categories given in Figure 1.

Category	Members
Academic	122
Commercial	362
Honorary	5
Individual	74
Student	15
Total	578

Figure 1: *Membership Figures*

After two years with no increase, subscriptions are going to increase by approximately 5%. The new fees are given in Figure 2.

Category	Subscription
Academic	£165.00 + £24.75 VAT
Commercial	£165.00 + £24.75 VAT
Individual	£65.00 + £9.75 VAT
Student	£25.00

Figure 2: *Current subscription rates*

What's in a Name

Now that the change of name from EUUG to EurOpen has taken place we considered changing our name and logo. At a recent meeting of the Executive and Advisory Committees it was unanimously agreed that we would retain our existing name and logo.

Annual General Meeting

Our AGM was held at the Institute of Education, London (England) at the end of November. A lively discussion about EurOpen's fee structure took place with the following resolution being passed unanimously with no abstentions:

> "The UKUUG recognises that EurOpen is a federation of national groups and, as such, believes all benefits, privileges, and liabilities should be equally shared. Thus the subscription rate per national group member payable to EurOpen should be the same for each national group."

Winter '90 Technical Meeting

A very successful meeting was held at Queen's College, Cambridge (England) just before Christmas. Abstracts of the papers presented are printed elsewhere in this issue and copies of the proceedings, price £5.00, can be obtained from our Secretariat:

UKUUG Secretariat
Owles Hall
Buntingford
Herts SG9 9PL
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Tel: +44 763 73039
Fax: +44 763 73255

Dates for your Diary

- 15-17 July, 1991 — Summer Technical Meeting at Liverpool University, Liverpool (England).
- 16-18 December, 1991 — Winter Technical Meeting at Herriott-Watt University, Edinburgh (Scotland).
- Summer 1992 — Queen's University, Belfast (Northern Ireland).

If you and your organisation, be it academic or commercial, are interested in hosting either a Summer or a Winter meeting please contact Jim Reid (*jim@cs.strath.ac.uk*) in the first instance. There are many areas of the country that we haven't visited, e.g. the Midlands, the West Country, anywhere north of Glasgow, etc.

news@uk

Yes, that's the name of our bright, wonderful, witty news sheet to be launched in February this year. It will be a *Unigram*-style publication appearing six times per year. Among the proposed regular items are:

- News and views.
- People moving around.
- Gossip that's fit to print.
- Comment on this and that.
- Job adverts.
- Kit for sale.

Obviously, it's free to UKUUG members but others will have to subscribe. What are waiting for? Details from our Secretariat (address above). Contributions for *news@uk* to the editor, John Pettitt (jpp@specialix.co.uk).

Stop Bit

At our recent technical meeting in Cambridge a number of delegates said that they had in their possession the words of songs, ballads, poems, etc. concerning the early days of UNIX. We are interested in collecting these before they disappear in the mists of time, i.e. get thrown out on the disk attached to that old PDP-11. If you know any such pieces please send them to me at the usual e-mail address together with their provenance if known.

THE AFUU REPORT

Anne Garnery
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Five new members were elected to the AFUU board during our last Annual General Meeting. The AFUU board continues to be representative of the different categories of members affiliated to our group, with 3 members coming under end-users organisms, 4 coming under hardware companies, 3 coming under software companies, and 5 universities.

New chair, secretary and treasurer were elected :

Chair : Mr Jean-Luc ANTHOINE
(Institut Universitaire de Technologie de Belfort)

Secretary : Mr Francis Capy
(Non Standard Logics)

Treasurer : Mr Jean-Christophe Petithory
(Université de Paris VIII)

The previous vice-chairs have been reelected :

Mr Christophe Binot
(Hewlett-Packard)

Mr Patrick Burbaud
(Direction Generale des Impots)

Mr Jacques Guidon
(Agence Nationale du Logiciel, ANL)

The new board has declared to be in total agreement with the general objectives of AFUU.

At the moment, the projects previously launched during 1990 with Dominique Maisonneuve are to be continued. Among them :

Fnet-2G (French Network 2nd Generation)

Fnet-2G is a pilot project launched by AFUU in cooperation with several partners, on a proposal of the AFUU Network working group chair : Sylvain Langlois. It will experiment DIALUP, IP connectivity, new data communication technologies such as ISDN, network management and OSI services. It aims to integrate the results into the french Unix Network Fnet, and provide the users with training tutorials on these new technologies.

Server

The project of installing a server, launched 6 months ago, is ending at its last phase. It will allow our members and external people to obtain regularly reactualized informations on our objectives and activities, and will present our general documentation. So, any member, from any part of France, will be able to consult our library references, and ask for a loan. It is expected to be ready at the end of the first trimester.

NEWS FROM THE NETHERLANDS

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NLUUG, What is in a Name?

NLUUG, the Dutch User Group of UNIX and other Open systems. We will not spend much time talking about new names. Changing name? No. Changing logo? Yes. It will be in the direction of UKUUG's logo with some 3D aspects in it.

Membership

While the number of our members is still growing (20% last year) the board has decided to offer more and better services to our members in the future. At this moment NLUUG has 363 members, by category these are: 12% individual, 61% industrial and 27% academic members.

NLUUG Spring Meeting.

"System Management, Securing Open Systems in Open Networks?" is the topic of our next assembly the 8th of May 1991 at the Reehorst at Ede. The closing date for contributions has passed and the programme committee received a number of interesting abstracts. The final program will be available when this Newsletter is on your desk. The Spring assembly is traditionally strictly technically oriented while the Autumn assembly is both, technically and business oriented.

This time we will offer a so called "three tracks programme" for technical people and end-users. Case studies of (large) commercial accounts concerning management of multivendor Open Systems coupled in a network will be presented. Papers concerning security in general of Open Systems networks and practical tutorials about diverse electronic mail agents, system performance tuning and NFS/NIS(YP) will be also part of the programme. Product presentations in relation to the conference topics will complete the programme. We expect this will be a very interesting conference for people coping with system management of Open Systems in many respects.

NLUUG SPRING CONFERENCE 1991

8 May 1991
in "De Reehorst", Ede
The Netherlands

SYSTEM MANAGEMENT

Can Open Systems be Secure?

The purpose of the conference is to discuss recent developments in the field of System Management from different points of view; day-to-day reality, technical difficulties, scientific approach.

System Management currently is going though some rapid changes. Systems are more and more 'Open', connected through 'Open' networks, and the capacity of systems increases tremendously. The trend towards more Open-ness in both systems and networks may well be in conflict with security. Also, the procedures for system management are undergoing changes. from 'several system managers for one system' to 'several system managers for several systems' to 'one system manager for (many) more than one system'. Network management becomes an integral part of system management.

The theme covers, but is certainly not restricted to, the following topics:

- User administration
- Monitoring
- Access Control
- Software Installation
- Back-up procedures
- Accounting techniques

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Conference Details:

Time-schedule of conference:	09.30 - 17.00 hrs
Date of conference:	Thursday, 8 May 1991
Location of conference:	Ede, "De Reehorst", The Netherlands

In general, questions can be put to:

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CALENDAR OF UNIX EVENTS

This is a combined calendar of planned conferences, workshops, or standards meetings related to the UNIX operating system. The information here is collected by those listed below after an idea by John S. Quarterman of Texas Internet Consulting. The information comes from the various conference organizers, ;login:, Communications of the ACM, CommUNIXations, and many others. We encourage others to reuse this information, but we ask for proper acknowledgment, for example by including this statement.

If you have a UNIX related event that you wish to publicise then contact either John S Quarterman at *jsq@tic.com*, Alain Williams at *addw@phcomp.co.uk*, Susanne W Smith at *sws@calvin.wa.com*, or Carolyn Carr at *carolyn@usenix.org* giving brief details in the style that follows.

Abbreviations:

APP	Application Portability Profile
C	Conference or Center
CC	Computer Communication
G, MD	Gaithersburg, Maryland
GM	Generam Meeting
LISA	Large Installation System Administration
MHS	Message Handling Systems & Application Layer CommunicationProtocols
OSE	Open Systems Environment
S	Symposium
SEDMS	Symposium on Experiences with Distributed and MultiprocessorSystems
T	Tradeshow
U	UNIX
UG	User Group
W	Workshop

1991

Mar	IETF,*IAB, Wash. U, St. Louis, MO, USA (tentative)*
Mar 13-20	CeBIT 91, *Hannover, Germany*
Mar 21	DKUUG C Management Systems, *Denmark*
Mar 21-22	Distributed Systems - S, *Atlanta, Georgia, USA*
Mar 25	IUUG, GNU and Pub Domain S/w, *Dublin, Ireland*
Mar 25-28	Computers, Freedom, and Privacy C, *SFO Airport Marriott, CA, USA*
Mar 26-29	AFUU C, *CNET Paris La Defense, France*
Apr	NCR Unix User Group C, *San Antonio, Texas, USA*
Apr 1-5	Integrated Net. Man. S, *IFIP, IEEE, Arlington, VA, USA*
Apr 8-10	TC I18N UniForum, *Mission Viejo, CA, USA*
Apr 10-12	IEEE 1003, USENIX, Uniforum, EurOpen, *Miami, FL, USA (Tentative)*
Apr 15-19	IEEE 1003, *Swissotel, Chicago, IL, USA*
Apr 18	DKUUG C GUI and multimedia, *Denmark*
Apr 22-23	PortSoft, *Singapore, Bangkok, or Tokyo*
Apr 22-25	USENIX C++, *Washington DC, USA*
Apr 22-26	ISO/IEC JTC1 SC22 WG15, *Netherlands*
Apr 22-26	DECUS Muenchen Symposium, *Hannover, West-Germany*
Apr 25	IUUG Commandos & oo UNIX, *Dublin, Ireland*
May	IUUG TeX & MetaFont, *Dublin, Ireland*
May 6-10	DECUS S, *Atlanta, GA, USA*
May 9	APP/OSE Users Forum, *NIST, G, MD, USA*
May 13-17	ISO/IEC JTC1 SC22 WG15, *Netherlands*
May 15-17	i2u convention, *Milano, Italy*
May 15-17	Multi-User C Show, *UniForum Canada, Toronto, ON, USA*
May 15-17	IEEE TCOS Cptr Workstations, *Falmouth, MA, USA*
May 20-24	EurOpen, *Tromsø, Norway*
May 21-22	Coordination ad hoc, *WG15, Tromsø, Norway*
May 29	DKUUG C Comms and Network, *Denmark*
May 29-Jun 2	ENA C, *Seattle, WA, USA*
May 30	DKUUG C Systems development and CASE, *Denmark*
Jun	IUUG Motif, *Dublin, Ireland*
Jun 10-14	USENIX, *Opryland, Nashville, TN, USA*
Jun 16-19	Sun User Group, *Atlanta, GA, USA*
Jun 17-20	INET '91, *Copenhagen, Denmark*
Jun 20	DKUUG C Standardisation, *Denmark*
Jun 24-26	TC I18N, *UniForum, Toronto, ON*
Jun 25-26	PortSoft, *(very tentative)*
July	JUS Symposium, *JUS, Tokyo, Japan*
Jul 8-12	IEEE 1003, *Santa Clara, CA, USA*
Jul 15-17	UKUUG C, *Liverpool, UK*
Aug 5-8	Interex C, *SanDiego, CA*
Sept 10-12	European Sun User Group CT, *NEC, Birmingham, UK*
Sept 16-20	EurOpen, *Budapest, Hungary*
Sept 24-27	AUUG CT, *Darling Harbour, Sydney, Australia*
Oct 10-11	Multi-User C Show, *UniForum Canada, Montreal, Quebec*
Oct 21-25	IEEE 1003, *Southern Europe (location tentative)*
Oct 21-25	IEEE 1003, *Toronto/Vancouver (location tentative)*

Oct 30	IEEE CS SCC/SAB. *Nashville, TN, USA*
Oct 31	Sun UG-NL. *Netherlands*
Nov 4-8	ISO/IEC JTC1 SC22 WG15. *Stockholm, Sweden*
Nov 14	APP/OSE Users Forum. *NIST, G, MD, USA*
Dec	JUS UNIX Fair. *Tokyo, Japan*
Dec 16-18	UKUUG C. *Edinburgh, UK*
Dec 9-11	Sun User Group. *San Jose, CA, USA*
Dec 9-13	DECUS S. *Anaheim, CA, USA*

1992

Jan 13-17	IEEE 1003. *Orlando, FL, USA (location tentative)*
Jan 20-24	USENIX. *Hilton Square, San Francisco, CA, USA*
Jan 20-24	UniForum. *Moscone Center, San Francisco, CA, USA*
Mar 11-18	CeBIT 92. *Hannover, Germany*
Apr	EurOpen. *Jersey, UK*
Apr 6-10	IEEE 1003. *Scottsdale, AZ (location tentative)*
Apr 20-24	IEEE 1003. *Montreal, PQ, Canada (location tentative)*
May 4-8	DECUS S. *Atlanta, GA, USA*
May 18-22	ISO/IEC JTC1 SC22 WG15. *New Zealand (tentative)*
Jun 8-12	USENIX. *Marriott, San Antonio, TX, USA*
Jun 21-24	Sun Users Group. *Washington DC, USA*
Jul 13-17	IEEE 1003. *Alaska, USA (location tentative)*
Sept 8-11	AUUG C T. *World Congress Centre, Melbourne, Australia*
Autumn	ISO/IEC JTC1 SC22 WG15. *Denmark*
Nov 25-29	EurOpen/UniForum. *Amsterdam, Netherlands*
Oct 19-23	IEEE 1003. *Scottsdale, AZ, USA (location tentative)*
Oct 19-23	IEEE 1003. *Southern Europe (location tentative)*
Dec	UKUUG/UKnet, *Manchester, UK*

1993

Jan 25-29	USENIX. *Town & Country, San Diego, CA, USA*
Mar 15-18	UniForum. *Moscone Center, San Francisco, CA, USA*
Mar 24-31	CeBIT 93, *Hannover, Germany*
Jun 21-25	USENIX, *Cincinnati, OH, USA*

1994

Jan 17-21	USENIX. *Hilton, San Francisco, CA, USA*
Feb 7-10	UniForum. *Dallas Convention Center, Dallas, TX, USA*
Mar 16-23	CeBIT 94, *Hannover, Germany*
Jun 6-10	USENIX, *Boston, MA, USA*

1995

Mar 6-9	UniForum. *Dallas Convention Center, Dallas, TX, USA*

1996

Mar 11-14	UniForum. *Moscone Center, San Francisco, CA, USA*

1997

Mar 10-13	UniForum. *Moscone Center, San Francisco, CA, USA*

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

Here is a list of acronyms that you might find useful:

ACE	Advanced Computing Environments
ACM	Association for Computing Machinery
AFUU	The Association Française des Utilisateurs d'UNIX
AUUG	The Australian UNIX systems Users Group
DECUS	The Digital Equipment Computer Users Society
EurOpen	The European Forum for Open Systems, (was EUUG)
FNUG	Federation of NCR User Groups
GUUG	The German UNIX Systems User Group
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
Interex	The International Association of Hewlett-Packard Computer Users
JUS	Japan UNIX Society
MCNTI	Moscow International Center of Science and Technical Information
NCR UUG	NCR UNIX User Group, Inc.
NIST	The National Institute of Standards and Technology
NLUUG	The Netherlands UNIX Users Group
NSF	National Science Foundation
SAB	Standards Activities Board
SERC	NSF/Purdue/Forida Software Engineering Research Center
SUUG	Soviet UNIX Users' Group
Sinix	The Singapore UNIX Association
UKUUG	The United Kingdom Unix systems Users' Group
USENIX	The Professional and Technical UNIX Association
UniForum	The International Association of UNIX Systems Users

PUBLICATIONS

EurOpen Publications

EurOpen publications may be ordered from the Secretariat at Owles Hall.

The publications available are listed on the next page, it is planned that EurOpen members will be able to also order National Groups publications from one single point: the secretariat.

The EurOpen publications available are:

EurOpen Newsletter
Your EurOpen National Group membership gives you one free copy of this newsletter, you may order extra copies of the newsletter for distribution within your organisation. Please contact your national group who will arrange this for you.

Proceedings
Proceedings from some past conferences are still available. The list of those that you can order is on the next page.

European E-Mail directory
This is a must if you are a serious e-mail user. It provides you with a way of referencing e-mail sites thoughout Europe by means of several different indexes.

The second edition to this has been prepared and will be available soon.

USENIX Publications

We receive requests for USENIX publications and, as a result of our close cooperation with that organisation, we are pleased to announce a service by which a range of publications can be ordered through EurOpen. The range includes:

;Login:
This is the USENIX newsletter which is published every two months, and carries articles on a variety of topics of interest to UNIX users everywhere and usually runs to around 40 pages.

Computing Systems
This is the journal of the USENIX Association, a quarterly publication which is devoted to the analysis and understanding of advanced computing systems. It is perfect bound with a printed spine for ease of reference and usually runs to around 100 pages.

Proceedings
Some proceedings from past USENIX conferences and workshops are available from stock - the current list is enclosed with the attached order form.

4.3 BSD Manuals
These manuals have proved popular with EurOpen members but our stock is now exhausted. However, USENIX can continue to supply them direct and the only difference from the past ordering procedure is that you may have to wait a little longer to receive them direct from the States.

Ordering procedure. An order form is enclosed with details of how payment can be made by credit card, by direct payment to the bank or by certain types of cheque or banker's draft.

Publications available though EurOpen

;Login:	The USENIX newsletter	6 issues/year	£20.00
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4.3 BSD Manuals (EurOpen Members Only)	User's Manual Set Programmer's Set System Manager's Manual		Contact EurOpen at Owles Hall for prices
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	Cambridge	Autumn '84	£5.00
	Paris	Spring '85	£5.00
	Copenhagen	Autumn '85	£10.00
	Finland/Sweden	Spring '87	£20.00
	Dublin	Autumn '87	£20.00
	Munich	Spring '90	£20.00
	Nice	Autumn '90	£25.00
Directories	European E-Mail directory, 1st edition		£18.00
	European E-Mail directory, 2nd edition		£20.00

All prices include post and packing.

The price for ;Login: and Computing Systems is for a one year subscription.

Publications available from AFUU

The following publications are written in the French language

Dossier Benchmarks AFUU 1989 Results - 132 pages	Edition : mars 1990	
	Summary send upon request	35 ECUs
	Edition: mars 1991	50 ECUs
Réussir avec Unix	Edition : 1988 - 15 pages	5 ECUs

Petit guide destiné aux directeurs informatiques d'organismes ayant fait récemment le choix d'Unix.

Il traite de : L'environnement de développement sous Unix L'environnement d'exploitation sous Unix La formation La portabilité Les outils d'Unix Les outils du marché

Vivre avec Unix 2 - Administration du Systéme	Edition : 1988 - 16 pages	5 ECUs

Petit guide destiné aux techniciens des organismes qui ont fait récemment le choix d'Unix

Sommaire : Introduction Systéme de fichiers configuration de l'espace disque Création du systéme de fichiers Gestion des périphériques Gestion des impressions Administration quotidienne Assistance et environnement de l'utilisateur Sécurité Performances

(Vivre avec Unix 1 - Utilisation du systéme (Epuisé)	Edition 1988 - 16 pages	50 ECUs
CONVENTION UNIX 90 - Conferences proceedings		20 ECUs
End-users and solutions conferences proceeding	Edition Mars 1990 - 165 pages	20 ECUs
Technical conferences proceeding	Edition Mars 1990 - 198 pages	20 ECUs
CONVENTION UNIX 90 - Tutorials		

Are available the following tutorials (the others are no more available)

Sendmail, Annexe 1 et 2	Edition Mars 1990 - 112 et 205 pages	
	Par Yves Devillers (Inria)	15 ECUs
Postcript	Edition Mars 1990 - 119 pages	
	Par Gilles Dauphin (Telecom Paris)	15 ECUs
Langage C++	Edition mars 1990 - 77 pages	
	Par Frédéric Lung (Consultant)	15 ECUs

Unix Syst}me V administration	Edition mars 1990 - 160 pages Par Michel Wurtz (Institut Géographique National)	15 ECUs

Publications available from UKUUG

UNIX — The Legend Evolves 1990 Summer Proceedings, Royal Lancaster Hotel, London £25 + p&p

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EUnet REPORT

Glenn Kowack
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As mentioned elsewhere in this edition of the newsletter, I have recently accepted the position of EUnet manager. My academic background is in Mathematics (with plenty of Computer Science) and Experimental Psychology. My professional background is as a programmer, development manager, and as a consultant to new and changing companies. I also spent about six years helping to found and run a community radio station.

Upon arrival, new managers should make clear why their job is necessary and how they will approach the tasks at hand. Let's see what a manager's-eye-view of EUnet history reveals.

EUnet was begun by self-appointed technical experts who needed to satisfy their own networking requirements. The success of this volunteerism was due to, among others, two things: a vacuum of networking in Europe, and the relatively low cost of adding UUCP networking to then existing facilities. The vacuum left unsatisfied demand for networking and made it possible to be creative and let the technology quickly move where it might; low cost made it possible for many different groups to become involved without requiring very large investments or complex organizational commitments. At that time it was appropriate for key participants to simultaneously take technical and managerial roles.

The resulting technical success of EUnet is obvious: building and operating a combined TCP/IP and UUCP network supporting over 1600 sites. But even more amazing is the organizational and political success of this totally volunteer organization. In particular, the national backbone and user group structures, regular backbone meetings, and the EUnet committee structure distinguish EUnet from strictly *laissez-faire* networks. This has made it possible to provide service to approximately twenty different countries, nearly all of which speak different languages (often more than one per country), work in different regulatory environments, and support varied levels of technical expertise. The USENET in the United States, for all of its successes, never had to overcome obstacles such as these.

As European and international networking began to grow, there were more and more organizations involved, more technologies, and a demand for formal and contractual agreements. Outside organizations needed an EUnet representative with whom to confer and to be present at a large number of conferences. EUnet's distributed and divided-responsibility management approach began to reach its limitations. The final step was EUnet's adoption of IP technology: a managerial quantum leap from the previous UUCP technology. The financial and contractual requirements of IP (routers, dedicated lines) are simply outside of the bounds which all-volunteer organizations can support because of a difference in "granularity": UUCP nets can be built by many small steps; IP nets require a few large steps. The technology demands a change in organization.

The past all-volunteer approach is now stretched beyond its capabilities and the only alternative is professional management. This leads us to the next question: what can professional management bring to the organization?

- Experience

  A professional manager who has "been there before" can avoid running expensive experiments on the organization. This sort of "compute-ahead" is the only way to overcome the second law of thermodynamics. Also, a professional manager understands the expectations and techniques used by outside managers; this provides a good "impedance match" to other organizations.

- A single "root node" of coordination

  Now it is possible to go to a single person to find out what is being done and who is in charge of each activity. If the activity is without an owner, the single point of coordination can help find someone as soon as possible.

- Continuous dedicated presence

  Having someone who is always available, and not having both technical and managerial duties, increases the organizations ability to cover issues of representation, management, and structure.

- A single point of view

  Just as with a lookout aboard a ship, it is necessary to have a single person who spends his time scanning the horizon and constructing a sensible "big picture".

- A pair of hands

  Very often, large problems result from a small amount of work not being done earlier. The manager can do some of these.

Equipped with these capabilities, a manager may begin to solve the new challenges faced by EUnet. A key vehicle for accomplishing will be the IP network business plan. This document, which will

undergo many different revisions during the year, will call out and define the major financial, technical, and organization plans.

There is one other point that we must remember: the primary job of a manager is to make it possible for others to be as effective as they can be. The best vehicle for this is sometimes called "hard-soft" management. That is, establishing and communicating clearly-defined procedures, roles, and coordination techniques; these become the environment within which flexible, spontaneous, and creative work become possible. Doing this wisely will free up time by reducing administration, confusion, and rework. Carefully defined mechanisms will include external contracts; accounting and finance; procedures for calling, running, and recording meetings; and clear definitions of and deadlines for actions to be performed.

The location of hard-soft boundaries is not something a manager just drops onto an organization. They must be determined by a group process or they will quickly become a set of useless dead-letter laws. As I meet with different members and groups within EUnet you will frequently find me asking questions and working with people on just this issue: what structures and processes do we create and where do we set the "flexibility dial" for each of them?

Now lets take a quick overview: EUnet requires professional management in order to solve the results of success: size, new IP technology, and the needs of many different organizations. Professional management needs to focus on structure (finding what should be fixed and what flexible) and permitting network participants to be as effective as possible. Volunteer participation is and will remain a central part of EUnet for the foreseeable future.

EUnet has a rare opportunity: to provide new and more exciting networking services in an environment of very rapid growth. With the appropriate mix of continuing volunteer participation, professional experience, and wisely-defined structures, we will have the greatest possibility of inventing and providing new types of networking. I can't think of anything that could be more fun.

USL COLUMN

Chris Papayianni
Technical Director
UNIX System Laboratories Europe

Chris Papayianni is the Technical Director for UNIX System Laboratories Europe based in London. His responsibilities include directing and managing the technical programme. This consists of development projects, pre and post-sales technical support of new software products, training and consultancy and support of existing UNIX System V customers.

For Further information on this column please contact Gill Mogg on gill@uel.uucp. Gill is Market Communications Manager at USLE.

Open Distributed Computing —The USL Approach

There has been an explosive growth in the recent years in the number of computing environments around us. Today an organisation may have different hardware platforms, operating systems and networks as well as applications from a selection of vendors.

The computer environment may consist of personal computers, workstations and mainframes which are connected by local area networks, which are in turn interconnected by wide area networks to solve a single, distinct information sharing problem. Distributed technology solves many problems not addressed by today's computer networking. Like computer networking, distributed computing links together heterogeneous systems and depends on computer network services to make this work. However, distributed computing can be used to solve capacity problems by making sharing of resources and information as fast and easy as possible.

To achieve this goal, fully distributed computing is expected to maintain a single user view of all the resources in the network, even as a user moves from one physical workstation to another. Unlike simple networking, full distributed computing also expects to be able to move programs among network nodes to balance processor loads, without affecting the user view. In short, real distributed computing requires open and general solutions for freeing programs, data and physical users, from being tied down to one individual computer and hard disk.

Market View

Most users are not even marginally interested in technology for its own sake. They want functionality that allows them to meet their own business requirements. This means like any other business change, it will normally happen gradually, and by customer choice, paying careful attention to compatibility, and not by a flash cut to new technology. Figure 1 describes some of the typical issues faced by corporations today. The goal of UNIX System Laboratories (USLE) is to deliver systems software that supports open systems, preserves existing customer investment and provides maximum configuration flexibility, while remaining competitive and innovative in the marketplace.

1. Increased productivity and performance

Typical corporate computing departments are faced with a backlog of processing requests. To increase performance and productivity the trend is to decentralise data, enabling different business groups within an organisation to customise their applications for specialised business needs. When these business groups are geographically dispersed the sharing of resources and data become a critical issue, bringing with it complicated data integrity problems which need to be solved.

2. Accommodate change and investment

In a world of ever changing business needs and company mergers and acquisitions an organisation needs the maximum of configuration flexibility to accommodate internal changes and shifts in corporate goals. This should not mean a loss in existing investment, but flexibility to add to the existing configurations as needed.

Figure 1:

USL's Strategy for Distributed Computing

Working with UNIX International and industry partners, USL is creating or acquiring and integrating new areas of open systems software that expand upon the proven capabilities already shipping with UNIX System V Release 4 (SVR4). USL plans to provide the enabling substructure and interface 'hooks' that will allow third parties to build competitive and alternative service components. Placed upon the base operating environment, these components will coexist to form the broader set of services needed to support full distributed computing.

This additional component work will be done within a defined architectural context, or framework, termed Open Distributed Computing (ODC). This framework is one that organises and brings together the present - software which exists and is now shipping on open hardware platforms - and the future, represented by the new areas of software.

This framework ensures that no end user expectations will be raised that will not be delivered. It also means that when new functionality is delivered it will be designed to build upon, and use, the computing and networking investments that are already in place today. For example there is a large embedded base of LAN OS (like Novell), ONC/NFS and UNIX System V users. Another large embedded base is non-UNIX systems. System V RPC currently supports PC-DOS, OS/2, VMS, VM and others.

We estimate 1.2 million systems (from PC to mainframes) support NFS, of which about three quarters also have access to the underlaying RPC interfaces. That means that software developers can write applications today that can take advantage of existing computer resources without the user needing to install additional RPC software. Although we are not yet in the era of distributed applications, there are literally dozens of commercially available distributed applications based on ONC RPC. In addition, many large organisations have developed in house distributed applications.

USL is working closely with the UNIX International Distributed Computing Workshop to define the details of their Distributed Computing Framework. USL is developing ODC to be its implementation of this framework. The UI Distributed Computing Framework, expected to be published later this year, already includes a substantial set of services in the near/medium term integrated into a coherent package, in a manner consistent with the architectural philosophy just described. The directions given in the UI Distributed Framework are outlined in Figure 2.

1. Coherent multi-dialect remote procedure call support with a single standard API.
2. Multiple remote filesystem solutions, including NFS, enhanced NFS, and others.
3. Extensive use of the ISO X.500 international name services standard for most naming plus full ISO conformant version and an optimised version for local environments.
4. PC integration services, hooks for installing Sun's PC/NFS and the Locus PC Interface, and compatibility with Novell's portable Netware, Microsoft's Lan Manager/X.
5. Industry standard solutions for basic interoperability services; e.g. the standard network time synchronisation protocol NTP.
6. Modular support for authentication services, including Kerberos Version 5, and continuing support for Sun's secure IPC

Figure 2: *Framework for Open Distributed Computing*

Adopt Common Components to Help Unify the Industry

SVR4 today provides a strong suite of functionality to support the evolution of distributed computing in a way that ensures a migration path to future technologies. (see Figure 3)

- Remote procedure call (RPC)
  - Runtime transport independent
  - Stub Compiler
- Distributed File System
  - NFS: licensed by every major systems vendor
- Remote file sharing (RFS)
- External Data Representation (XDR)
- Naming Service
  - Network Information Service (NIS)
- Modular Network Applications Support
  - Streams
  - Application Interfaces (TLI, APLI, DLPI, NPI)
- 'Sockets' Generic Network Interface
- TCP/IP internet services
- Multi-vendor connectivity
- Application portability through X/Open's XPG3

Figure 3: *Existing Distributed Computing Features in SVR47*

While distributed computing will continue to evolve, the major components of UNIX System V's distributed computing strategy are available today, this includes the NFS and RPC technology derived from and compatible with Sun's ONC technology, complete file transparency under RFS, and the Berkeley and Internet distributed applications.

All this technology is protocol and media independent, which allows smooth transparent application migration to new networking technology as it becomes available. All applications currently written on top of the SVR4 TCP/IP will work unchanged when on OSI transport is installed.

This base is augmented by transaction management (TUXEDO Release 4) a full suite of STREAMS-based OSI products and the forthcoming Enhanced Security Release of SVR4.

TUXEDO TP System is a distributed transaction monitor which supports distributed database services in a coherent fashion, compliant with X/Open interfaces. Coupled with this is an announcement of an integrated OSI product offering from USL and RETIX to include X.400 messaging services and X.500 directory services, and Virtual Terminal (VT).

Build on Existing Tools

Not content with the current level of support for distributed computing, UNIX System V will continue to evolve to preserve its leadership position in distributed computing while other systems

play 'catch up'. Each of the services above in USL's strategy for distributed computing is discussed below, together with a view of how they are integrated into a coherent system.

Remote Procedure Call Support

Most remote procedure call applications in use today make use of the Sun ONC RPC service. Considerable experience and confidence has been gained in its use, and most interconnected UNIX systems support the remote procedure call service. Nevertheless, as systems evolve over time, there will be multiple RPC services in use.

RPC solutions that will be supported include Sun RPC, as well as the standard short term implementations of other major vendors. The UNIX System V approach is to move towards a common standard API and support tools. In this manner a variety of RPC services can be accommodated, and interoperability with numerous platform solutions can be achieved, with little burden on software developers. The target for convergence and interoperability of RPC technology is ISO compliant RPC. As the ISO RPC standard becomes defined, wide support for it can be anticipated, and USL will support it. In this way developers can move forward confidently on a System V base.

File System Services

Today the Network File System is among the most widely used remote filing services; it is fast, mature, and permits a straightforward implementation. NFS will be carried forward compatibility, a well as being enhanced in a number of ways e.g. following the Trusted Systems Interoperability Group extension recommendations. In addition, to ensure the widest possible interoperability and support for customer needs, RFS will be included together with basic file system services as implemented by other major vendors.

A given installation may choose to install one, some, or all of the file services which are provided. When multiple services are in use, they will operate together. That is, a user or program may access one remote file via NFS and another via some quite different service, unaware of the fact that different access protocols may have been required by the storage servers where the data resided.

Name Service

The means by which an object, whether a file, printer, person or organisation, is located must work smoothly among systems if networked operation is to be successful. UNIX System V will support the use of the X.500 protocols for this purpose. In the hierarchical naming environment which is typically expected, the high level will be supported by a full service X.500 conforming implementation. In this manner, UNIX System V systems will have the basis to interoperate with any other system which conforms to international standards. In order to maximise the coherence of the overall naming system, X.500 will also be used as the basic model for most other aspects of naming. However, for other parts of the name hierarchy, separate implementations which optimise local service will be used. In this manner, high performance can be achieved. Despite the need for multiple implementations, the interface spec will be compatible among them, minimising complexity.

PC Integration

There are more PCs in use than any other computer type, and increasing numbers of them are being networked in order to get their user's job done. We anticipate that UNIX System V will become the preferred servers for these systems due to superior cost/performance, widely available standard applications, and extensive connectivity facilities.

However, to achieve this goal, it is necessary that the PC user be easily able to integrate his personal computer into the server network. Maximising the user's ability to do so is an essential part of the UNIX System V distributed computing solution. Once again, instead of legislating a particular answer, an open system approach is taken, and the complete set of widely used solutions are either bundled or enabled on the UNIX System side. In the manner the PC user can make a choice of connection method depending on 'PC-eccentric' needs, and be confident that the chosen solution is supported on the UNIX System of interest. Service for PC NFS and PC Interface, each with hundreds of thousands of installed systems, is installable on the base UNIX System V software package. Portable Netware and an implementation of LAN Manager/X are also compatible as options.

Basic Interoperability Service

There are a number of basic services which are needed to keep a distributed computing environment operating effectively. Representative among these is the synchronisation of time on participating machines. After considerable experience, the industry has standardised on a particular protocol, NTP, which has been demonstrated to be straightforward and reliable. UNIX System V will therefore include NTP. There are many other choices, of course, and if other alternatives are shown to be useful and adopted as a standard, UNIX System V will support them as well.

Authentication and Security

Security approaches, whether for protecting the privacy and integrity of data, or to provide high quality authentication of users, servers and programs to one another, will certainly evolve over time, and multiple solutions can be expected to exist simultaneously in a networked system. The UNIX System V solution approach is to provide a modular interface by which multiple such facilities can be 'plugged in'. For authentication, the basic system will include two solutions, Kerberos Version 5 and the secure RPC service already in wide use commercially.

Summary of Distributed Computing

System V Release 4 was announced in November 1989 and is available today as a shipping product with substantial distributed computing functionality.

UNIX System Laboratories will expand on this with a charter that include OSI, Distributed Transaction Processing, and other elements of computing environments that span a much wider scope than the operating system.

USENIX ASSOCIATION NEWS FOR EUROPEN MEMBERS

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Winter 1991 Dallas Conference

The Winter 1991 Dallas USENIX Conference was held January 21 - 25, 1991 at the Grand Kempinski Hotel in Dallas, Texas. The theme of this conference was "What's next: by the year 2010, evolution or revolution? Unix derivative or Something Else?"

The Keynote Presentation

The keynote speaker at the conference was Flip Phillips, of the Pixar Animation Research and Development Group. Marc Donner wrote this review of the keynote presentation:

The keynote speaker at the Dallas conference was Flip Phillips, filling in for Eban Ostby, who was unable to attend due to illness. Phillips, an Animation Scientist (Technical Director and Animator) at Pixar, spoke from slides prepared by Ostby.

Phillips delivered a talk that was rich in technical detail. The overall message was that the techniques and skills required to produce and execute outstanding computer animations at Pixar are much the same as those required for good system programming. This was illustrated by a tour through the design of a collection of animation support tools developed at Pixar and used in their productions.

Phillips started off by briefly describing the original animation system developed at Pixar, a large and monolithic program that proved hard to modify and insufficiently general. Rather than continue to enhance this system, the people at Pixar decided to build a completely new system.

The new system was designed to be composed of multiple processes, taking advantage of the UNIX environment on which it was developed and run. In the process of describing the components, Phillips sought to demonstrate that the design and construction relied heavily on conventional system programming skills.

The animation support system designed at Pixar is built from seven subsystems. These subsystems include: file I/O, database, events, interactive I/O, graphics tools, animation tools, and modelling tools.

The 20 graphics tools are responsible for creating and maintaining an image on a display. The animation tools provide motion, and the modelling tools are used to orchestrate complete behaviours in the process of animation. The database system is the central repository of information concerning an animation, from which all of the tools receive parameters and into which they deposit information. The event handling system deals with the mouse, tablet, and other real-time activities.

Each of these components is required to run on all of the hardware platforms used at Pixar, including Sun Microsystems, CCI, and Silicon Graphics machines. This requirement presented significant challenges, since both BSD and System V interfaces were involved.

Some of the underlying system facilities that were required to implement this design include shared memory, interprocess communication, semaphores and other synchronization primitives, and a number of specialised languages with associated interpreters and compilers. In addition, a C language binding for graphics primitives, called RenderMan, was designed and implemented as part of the Pixar system.

The Pixar modelling system is based on a modelling language, designed by Ostby, that incorporates features of C, APL, and even awk. This language, in addition to vector operations based on APL primitives, includes concurrency primitives and articulated variables. An articulated variable is one that is varied externally to a routine during the routine's execution.

Shading and textures are produced with another specialised language. This language, also C-like, is used to generate surfaces procedurally. This technique has performance advantages over texture mapping, since no file operations are required when constructing a surface.

The quantity of data involved in animation and rendering is quite large and efficient algorithms for sorting are crucial to the task.

The talk ended with a showing of notable Pixar animations including short films and commercials: Luxo, jr, a Tropicana orange juice commercial, Red's Dream, an advertisement for Trident mint flavoured chewing gum, Tin Toy, an advertisement for LifeSavers Holes candy, Knick Knack, and an advertisement for Listerine mouthwash. As Phillips noted, the films, such as Tin Toy win the Oscar awards and the commercials, such as LifeSavers Holes candy, pay the rent. All, however, are technically excellent.

The program of the conference included:

- Kernels
- File system performance
- Threads and networks
- Interface tools
- Kernel panel
- File systems panel
- Programming tools
- File systems
- Objects in action
- Insecurity
- Distributed processing

and invited talks on:

Toolkit Graphics by Doug Blewett of AT&T Bell Laboratories

Troff Macro Programming by Sharon Murrel of AT&T Bell Laboratories and Jaap Akkerhuis of mt Xinu

UNIX Security Today and Tomorrow panel, organised by Pat Bahn of GTE Government Systems and moderated by Bill Cheswick of AT&T Bell Laboratories

System Administration by Rob Kolstad of Sun Microsystems

Using Distributed Objects by Vinny Cahill of the University of Dublin

Debugging X and X Toolkit Applications by Paul Kimball of Digital Equipment Corp.

The Terminal Room at the Conference

The USENIX Association hosted a Terminal Room with modems for a dialout connection and a T-1 connection to the Internet. Conference attendees could log onto their home or work systems to read their mail and contact other UNIX users directly from the conference. The USENIX Association thanks UUNET for the T-1 Internet connection and cisco, Digital Link, Graphon, NCD, Sun Microsystems, Talaris, Telebit, and Xylogics for the hardware that made the terminal room possible.

Best Student Paper Winner Garners Second Win

Margo Seltzer again won the Best Student Paper Award for her and Ozan Yigit's A New Hash Package for UNIX. Margo is a Ph.D. student at the University of California at Berkeley and Ozan is a software engineer at York University in Toronto.

Window System Contest

Lori Grob, of Chorus Systemes, program manager of the Dallas conference, filed this report of the entries and winners in the popular Window System Contest.

The contest was to name features that you would like to see in a window system. The rules of the contest (such as they were) were not interpreted strictly.

Some entries came up again and again:

windex - cleans all you windows at once

the boss window manager - at the approach of your management your tetris game/rogue/news ... changes into an icon marked overtime

patriot window features

scud window features

And Honourable Honourable mention to Henry Spencer who wanted a feature that would let him delete the features that he didn't want and reclaim the memory.

The following entries won Honourable Mention:

Pavolovian Response Windowing: If a mouse button is depressed in an area of the screen that is not valid, an electric shock† will be given to the user via the mouse. This allows for a quicker learning curve.

by Evan Marks

Benchmark Mode Window Decoration: The designated window suddenly appears more impressive than any other window on the screen. Causes confusion when applied to multiple windows simultaneously.

UniForum Mode Window Enlargement: Doubles the size of the indicated window but halves the information content.

by J. Schwab

An interactive C compiler with digitised sounds of Evi Nemeth's (USENIX Board member and Professor) voice. If ever someone type's an obvious mistake while editing a .c file, her voice will sound and laugh at you

by Brent Cromley

4D option: by analogy to the 3-D look of buttons in NeXTstep and Motif This option puts your workstation into hyperspace. This allows you to display results before they are computed.

by Eric Allman

Visual Focus: I was LOOKING at THAT window **** that's where I wanted my input to GO! (Now how do I tell vi to "undo everything I did in the last 10 seconds?")

by Dan Klein

The bad pun award to Evan Leibovitch for the following: An icon depiction of Sally Field: The Gidget Widget

† Requires hardware modification

3rd place to Rick Sabourin for: MWM: the manager window manager. It intelligently reconfigures itself to the ineptitude of the user. In an emergency, it kills all windows and runs a Lotus emulator.

2nd place to Brent Cromley (a young man who obviously spent all his time at the conference entering contests and hiding from his programming professors) for:

An animated screen saver that displays several frames of Rob Kolstad (USENIX Board member and moderator of the systems administration panel sessions) dancing in a tutu.

1st prize to Ben Fried and Mark Kennedy for the following 6 entries (sorted from good to best)

> PWM: The Pencom Window Manager - Flirts with you until you actually start using it.

DBWM: Dan Bernstein's Window Manager Argues for 10 weeks before resizing your window.

ASPWM: Alt.sex.pictures window manager icons your mother never told you about.

AWM: Allman's window manager - A little cryptic but functional and we just love that secret debug feature.

SunWM: Separately sold components to iconify, move, resize, put up menus... Unbundled means more freedom for customers.

CMUWM: Not a window manager, just a place holder for the one you can buy from OSF or TransArc.

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The 1991 USENIX Association Summer conference and Exhibition is in Nashville, Tennessee on 10-14 June 1991. The theme of the conference is multimedia in computing, entitled Multimedia — For Now and the Future. This will be one of the first conferences exploring multimedia in UNIX and advanced computing, including voice, video, animated graphics, touch, and music. Topics at the conference will include:

- Multimedia, applications, and research
- Hypermedia
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- Communications and networking
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- Sophisticated applications

The conference itself will include technical papers, tutorials, invited speakers, panel discussions, work in progress sessions, and birds of a feather sessions. This conference will include special tutorials on engineering for multimedia, as well as other new tutorials. The conference is accompanied by a technical exhibition, hosted by USENIX.

The conference and exhibition will be held at the vast Opryland Hotel, just outside Nashville, Tennessee. The hotel includes 7 restaurants, 6 lounges, a shopping arcade, 6 tennis courts, 3 swimming pools, and a golf course. For information on attending the conference and exhibition, contact the USENIX Conference Office.

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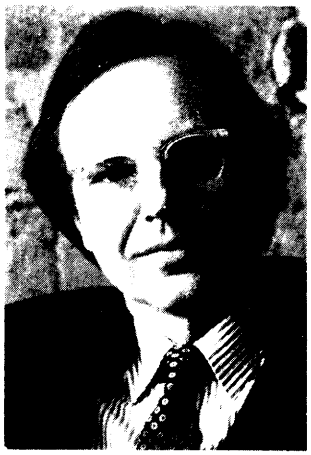
*Peter Collinson is a freelance consultant specialising in anything that will pay the maintenance of his machines. He has been associated with EUUG since its early days and is proud to be an honorary member. Peter thinks that the word UNIX should be allowed to be a noun but he still cannot work out whether he should use ++*argv or **++argv or ++**argv.* ***getopt*** *is for Users.*



This colum is run by Colston Sanger, of GID Ltd
doc.strange@gid.co.uk

Some Canterbury Tales

Well, it has finally happened. I have my new machine installed and running. "Hey, what's all this about", I hear you all shout loudly. "We didn't even know about the old machine, and you're telling us about this new one". OK. OK. Here's a bit of history.

When I decided to give up the daily grind of working for UKC and become a freelance UNIX† person, I felt that I needed a machine to keep me occupied when times were boring, to run my accounting package, to act as a mail host, calculator, diary, word processor and whatever else I do on a machine.

I wanted a Sun because it was not System-V-consider-it-standard and it could run X windows. At the time the most cost effective workstation that could be bought was the Sun386i. It was cheaper and faster than any competitor. I decided that I wanted a monochrome Sun386i/250 with 8 megabytes of memory, a cassette drive for backup and 300 megabytes of disc. I later added another 4 megabytes of memory and a standard AT two channel RS232 card.

On the whole the machine was OK. In the heat of last summer, I finally had a disc drive replaced because it suffered from Sun386i disc overheating disease. It was good going from the Sun3/60 that I had finally managed to get hold of at UKC to the 5 MIPS of the Sun386i, compilation was faster and X windows ran at somewhat closer the speed at which it is usable. Of course, you get used to the speed quickly and need to return to a slow machine from time to time to understand how lucky you are.

I have a lot of very bad things to say about Sun's European pricing policy – it seems to consist of importing the US price lists and changing the $ signs to £'s. To be fair this is not just Sun, the whole hardware industry seems to do this. It is getting crazy, many things are now small enough to be brought over by an individual and imported quite legally. The total cost including the air fare will be much cheaper than the UK list price and in many cases much cheaper than the discounted UK price. What do we lose by doing this? Warranty, I guess. But most things don't break in the first year and those that do are often flagged as problems on the net. I must stop this old old complaint and move on...

On the other hand, I have a lot of very good things to say about Sun's software. The whole question of portability is covered very well by Sun. You have *port* code to move it into Xenix, SCO UNIX, Ultrix and all the other 'IX-ses' – you simply compile it on a Sun. And it works.

To me this is worth a *lot*. I have a number of public domain programs that I just want to compile and have them work I don't understand how they work, and I don't want to. I just want to compile and run them.

It is worth a lot for development too. In the last year, I wrote, compiled and tested a program suite destined for a System V Bull machine. I did this entirely on my Sun, bashed the code onto the floppy as a tar image using the DOS emulator, moved the file into the target machine using kermit, unpacked and typed make. *Good stuff.*

It became apparent during the last year that Sun were no longer going to support the 386 range of machines. They failed to produced a new operating system release. They announced 486 upgrade and product, and then officially scrapped the idea. However they offered (and still offer) a very good upgrade path for existing Sun386i sites, replacing the machine with a SPARCstation 1+. Basically, the site retains the screen, keyboard, mouse, 300Mbyte disc and cassette drive. You obtain a new SPARCstation 1+ system unit that lives under the monitor. The system unit comes with 8Mbytes of memory as a standard, and you can order an 100Mbyte internal disc and a floppy. The disc and cassette live in an external unit that is formed by taking the old expansion cabinet from the 386i and adding a new plastic base.

Of course, the upgrade is half price in the USA – around $4000, translating into around £4000. But for this price, anyone would be crazy to ignore the offer – it's chance to replace a 5 MIPS machine by one that runs at 15 MIPS. It's an opportunity to move back into

† UNIX is a registered trademark of UNIX System Laboratories, Inc., a subsidiary of AT&T, in the U.S. and other countries.

the world of supported systems and on into the bright new SPARC based future that we are all being promised. The only possible reason for continuing with the Sun line is the desire to have an AT bus accessed by a reasonable UNIX system or perhaps the need to run DOS applications in the Sun DOS emulator. There are SPARC alternatives to the latter, one being European – SoftPC from Insignia in the UK†. Actually, this particular emulator is better than the original one I had on the Sun386i.

Anyway, the upgrade was ordered and delivered around a month ago (I am writing this in mid-December). There was some worry that the 8Mbyte of extra SIMM memory from my Sun386i would not work in the new machine. The engineer said that the company policy was that 'he could not officially advise me to put it in, nor was he allowed to do so'. However, he said that it should work and sipped coffee while I installed it into the machine – the machine rebooted saying "yes, I have 16 Mbytes now". It does seem that I should be putting 70nS SIMMS (or better) into my SPARC and I have installed 80nS. Are these running hot and will die at some point? Should I really change them for 'proper' SIMMS? I don't know. It would be nice to know the real story about SIMMs, I guess.

The engineer installed the latest SunOS release, version 4.1 and OpenWindows 2. He left at lunchtime and I set to work recovering my system. I had used dump to save images of the old Sun386i file systems. I had checked that when I ran restore on the SPARC, it would not be confused by the reverse byte ordering on the 386i. The good news is yes, the SPARC restore program announces that it needs to swap bytes, but continues running (full marks again, Sun). So I pulled back all my public domain sources and started compiling.

By around 2200, I had put up and tested everything except the X Window system. I was using the OpenWindows system as a base for running things, and being annoyed by the dreaded cmdtool and shelltool. Just which one do you run? Why is cut and paste so difficult?

OpenWindows 2

I spent the next day looking at OpenWindows 2. I suffer from lack of manuals, although there is a lot of on-line documentation and demos. First, the server runs both X and NeWS, and this is a goody. It's great to be able to have PostScript on the screen with fonts that actually map onto the fonts on my laser printer. Second, it does allow you to use the old SunView tools, the new OpenWindows tools and the various things that I have come to use from the research Athena set.

† Contact Insignia Solutions Ltd., Victoria House, 28-38 Desborough Street, High Wycombe, Bucks, HP11 2NF; phone: +44 494 459426.

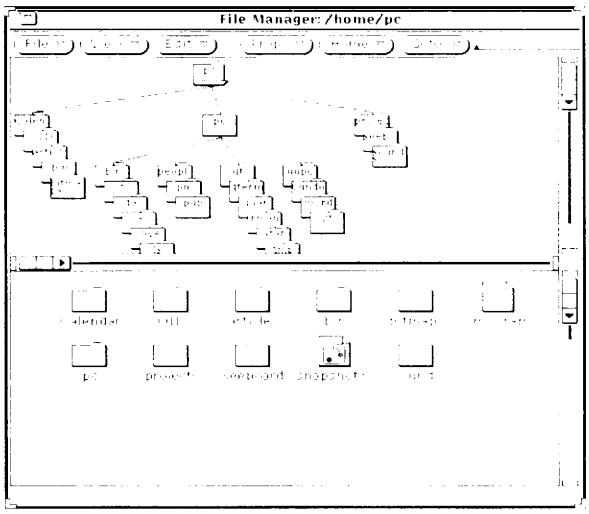


Figure 1: *The OpenWindows File Manager*

The OpenWindows interface is much more "Mac-like" that I am used to. The look of the file manager application is shown by the half-size screen dump in Figure 1. It shows the Xview 'look' of the window manager olwm, and the rather nice scroll bars supported by the widget set. The grips on the corners of the window allow you to easily resize things. The application is a 'direct manipulation' tool, you can pick files up and drop them into a wastebasket, or onto the printer application. This type of operation also works with mailtool and some of the other applications. Quite nice, but I personally find that I don't do that.

After playing with things for a bit, I decided to try and use the Athenative based applications – I especially wanted to use xterm, xmh and twm. I reloaded the X11R4 sources. I wanted to try and use as much of the existing X11 infrastructure as I possibly could so that I did not have to run two different universes. For one thing, I am now short of disc space. The idea is to use the libraries and include file from OpenWindows 2 and pretend that they were installed from the X11R4 sources.

I planted a lot of symbolic links from /usr/local/lib to /h/openwin/lib where OpenWindows 2 is installed. The main one is a link called X11 that points to the OpenWindows lib directory.

```
#!
#
#
#
:
:
```

This makes use of a useful feature of ln. I then created a copy of the include files in /usr/local/include/X11.

```
#!
#
#
#
```

```
do
    ln -s $name
done
```

This directory will be modified by the install process later. I planted another symbolic link from /usr/include/X11 to /usr/local/include/X11. That's it. The application libraries and include files for X11 are installed. All this may not be required if you ask for the OpenWindows package to be fully installed at load time, I didn't want its tendrils all over my system in case I needed to take it away.

Now for the Athena libraries. You need to install the Athena widget set from mit/lib/Xaw and also the miscellaneous utilities library in mit/lib/Xmu. Compile these and do a make install. You will find that real libraries now pop up in /usr/local/lib and the new include files in /usr/local/include/X11.

When compiling clients using the new libraries, you must tell the compile process to use installed libraries and include files. The easiest way to do this is to use imake replacing all the existing junk in ximake by:

```
XMIT = /X11.mit
XMKMF imake -I$(XMIT)/config -T$(XMIT)/config/X11.tmpl \
        -I$(XMIT)/config -DTOPDIR=$(XMIT) .
```

(Should be one line really).

The XMIT string should be set to the place where your X11 sources are stored. Then when compiling clients simply say:

```
xmkmf
make
```

I compiled twm, xbiff, xclock, xload, xmh and xterm with no problem.

Using Athena Clients Under OpenWindows 2

Athena clients seem to run happily. You will find that twm windows will need an extra button. There is a large cultural difference between the clients designed to run under olwm and twm. Athena clients usually have some way of allowing the user to make them go away – they come equipped with quit buttons or quit menu selections or something. OpenWindows clients expect the window manager to cause their death, and generally use the Quit selection on the drop down menu belonging to their outer frame.

Luckily, twm can cope with this. You simply add the line

```
RightTitleButton "target" f.delete
```

to your.twmrc file. This gives a cursor shape to use as a button bitmap (target) and an action to perform when the button is pressed (f.delete). You can add

```
LeftTitleButton ...
```

should you so desire. You will find that the button appears on all the subwindows of an application. The f.delete action is polite, in the sense that it is only actioned when a window requests it, so pressing the button in pop-up windows simply causes the bell to ring. You can see what this looks like from figure 2, an OpenWindows clock running under twm.

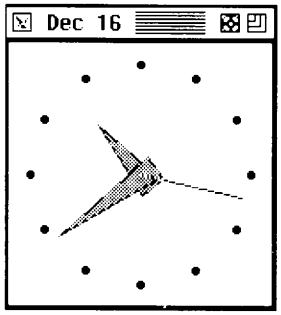


Figure 2: *OpenWindows Clock under twm*

The only other problem is that OpenWindows 2 does not offer the SHAPE extension, even though PostScript can do it so I would guess that it could. So you have to say goodbye to those nice shaped buttons and see through windows. My little boy is disappointed that he cannot fill the screen with zillions of xeyes, it's not the same with frames round them. More seriously, I miss this facility.

I have found that there are difficulties in mixing applications from NeWS, SunView, OpenWindows and Athena on the same screen. Things mostly work, but there are 'rough' edges and bugs in the server pop up. It is hard to put your finger on exactly what is wrong under what circumstances. There are problems with input focus and the text cursor, meaning that sometimes it appears to go away when doing mixed mode working. If you enter an OpenWindows application say calctool from an xterm – then when you return to the xterm your block cursor has gone away *as if* the focus is in another window. This seems to be dependent on the stacking order of the windows, OpenWindows ones like to be on the top of the stack.

NeWS applications seem reasonably well behaved and interwork fairly well. SunView applications seem reluctant to work with anyone. I suppose it's a wonder that they interwork at all. They will work but their images can get distorted with odd bits of graphics appearing in odd places. Also sometimes they change the cursor shape and you are stuck clicking away until the new shape is altered to something that is correct.

In some ways, I feel that the problems are minor. But yet again, I seem to have gone from an 'academic system' to a 'commercial' one encountering dumb problems on the way. The academic system works and has very few minor niggles. The commercial system works and has a number of large major niggles and a propensity for clients to crash from time to time.

Other Experiments

I tried to take a binary of the standard X11R4 server and run it. This didn't work because Sun appear to have changed the way that fonts are used – presumably to support the infinite font scalability

of the NeWS system. I could not see an easy way to get the Sun font set to interwork with a standard X11R4 server. I had wondered about whether I could slip in different window managers depending on what I am doing. I have given up with this idea for a bit.

I started to use GNU C to compile the various parts. I have installed the whole thing apart from the loader, largely because the GNU ld *program cannot cope with shared libraries. On a single user machine, shared libraries are great, saving masses of paging space and speeding up program loading. The GNU compiler simply works and generates much faster code than the standard Sun cc* compiler. I have changed all the programs that I can recompile to use gcc *to get the speed improvements. I never used it on the Sun386i, due largely to problems with COFF –*
although I believe that those problems have been fixed now.

A Story from the Net

Colston asked me for a joke. Well I love this next story, it appeared in alt.folklore.computers and was supplied by Brian Randell from the Computing Laboratory, University of Newcastle upon Tyne, UK.

"I can vouch for the following story, which happened in (I would guess) about 1960 at the English Electric site at Whetstone, near Leicester, England, whilst I was employed there as an applications programmer (but was actually devoting all my time to compilers - or "automatic programming" as we then called it).

"English Electric Whetstone housed two major departments, the Mechanical Engineering Laboratory and the Atomic Power Division. Their first digital computer was a DEUCE - effectively a slightly re-engineered version of the original Pilot ACE, developed at the National Physical Laboratory by a team that was originally headed by Alan Turing. It was a physically quite large machine, built from valves (vacuum tubes) and using mercury delay lines for high speed storage (about four hundred 32-bit words) and a magnetic drum (8k words, I believe). It was air-cooled, with a large fan under the floor pulling in air from outside, which was then blown over the electronics and allowed to escape into the computer room.

"Many stories can be told about the DEUCE, but the most memorable incident at Whetstone was the following. The computer was run overnight by a small operating staff, who recorded their activities in a log book. I and my colleagues were in the habit of checking this log book each morning, and at one time noticed that over a period of a few days there were a gradually growing number of reports of the machine failing, and of a nasty smell – but none of us connected these facts, or succeeded in tracking their cause. Then one day the underfloor fan started becoming somewhat noisier, the smell increased dramatically, and soon afterwards the machine failed abruptly and spectacularly, with red lights all over the power distribution board.

"What had happened was there had been a break in a sewer pipe – a pipe being fed by all the toilets in the large multi-story building whose ground floor housed the computer room. The sewage gradually backed up, and then overflowed into the hole in the ground housing the fan, and then into the fan itself, so as to be distributed evenly and efficiently – for a while at least – around the whole computer!

"It took days to dry out and disinfect the machine – but it was returned to service, though the maintenance engineer never lived down the incident."

Thanks Brian for permission to reprint.

5TH ANNUAL X TECHNICAL CONFERENCE

Paul Davey
IXI Ltd.
Cambridge, UK

B.Sc.(hons) in Computer Science from the University of Warwick (1986). Experienced Unix user, system programmer and system administrator. Has worked with BSD (Berkeley Software Distribution) and System V machines particularly graphics workstations in a mixed vendor ethernet networks. X Window System development experience with Xlib and OSF/Motif. Has written and presented both Unix and X Window System training courses for Apollo Computer, Hewlett Packard, and IXI.

The 5th annual X technical conference was held again in Boston from Jan 13th to 15th. People from all over the world joined the MIT X consortium to exchange information and ideas at the premier technical X event. Three days of activity comprising formal presentation of papers, slightly more informal tutorials and informal Birds of a Feather sessions (BOFS) packed a large amount of knowledge into a small amount of time.

Many topics of interest to application developers were covered, including Interactive User Interface Builders (seen by many as the next logical stage after current toolkits), PEX (The PHIGS extension to X), and the use of toolkits (including both Open Look and Motif).

The opening talk of the conference was made by Aaron Marcus on 'Future Developments in Advance Graphical User Interface Technology'. In his thought provoking presentation he covered such topics as Objectives, Metaphors, Design Factors and Cognitive and Navigation Models. Predicting future developments of HCI service centres, faster prototyping tools, and systematic design conventions. Among particularly interesting challenges for the 90's he included:

- Agents — automated synthesised personalities aiding users to access data in a familiar form, for example a TV weatherman.
- Complexity — beating the video recorder problem of bad and non standard interface design.
- Audio — use of 'earcons' and other feedback
- Video — usage with computer graphics, difficulty of use and control

Interactive Application Builders

A full day tutorial on Interactive Application Builders (IABs) gave 12 developers (by no means all of those working in this field) the chance to present a paper on their tools. UIMX made two showings under its own name and Hewlett-Packard's Interface Architect.

IAB's were a key part of this years conference. It was pointed out that this will be probably the last year in which developers are likely to be as open in sharing their design aims and methods. By next year many more of these products will have emerged fully into the market place.

Sun's OpenWindows Developer's Guide was the only dedicated Open Look UIB presented. This tool can produce PostScript code for Sun's proprietary graphics systems, or XView code, for the Sunview like custom X based toolkit, or OLIT code for the AT&T sourced Open Look Intrinsics Toolkit. Developer's Guide is already being used with Kanji text in Japan with other Asian languages soon to follow.

Most commercial IABs produce standard Intrinsics based toolkit code for either Open Look or Motif. These normally produce stand alone 'pure' MIT intrinsics toolkit code, though sometimes extra libraries are also required. Some toolkits do not use the standard intrinsics (they may still have widgets) and these must be seen as less standard than the OLIT and Motif based applications.

European involvement is IAB's included interactive graphical user interface builders such as XFaceMaker, from DEC's Paris Research Labs, XBUILD, from Siemens Nixdorf and Ingrid, from Esprit funded INSEC in Portugal. Sadly Imperial College's XDesigner and Sweden's TeleUSE were not represented.

Many people find that even the best of these tools still require at least an understanding of the basic toolkit principles underlaying them. Many tools only provide a framework for creating the initial user interface, without addressing the dynamic issues.

Simple Toolkits

Several approaches for simpler forms of X toolkits were described.

Among these were SUIT, a subroutine library of about 10 thousand lines of C allowing a GUI to be compiled transparently on Unix/X, Macintosh and DOS machines. Described as being designed to be quick and dirty the non intrinsics based toolkit is taught initially in 2 hours to undergraduate students with no widget programming experience at the University of Virginia. SUIT is available free to non profit and academic organisations.

Another small and easy to use toolkit has been implemented by John Ousterhout from UCB. Taking an existing development tool TCL, a standard command language intended to be embedded in applications, he has added a custom toolkit called Tk. Tk is Motif like but is driven from the shell like command language. The first application so far is a windowing shell called wish in which a directory browser was constructed with 20 lines of TCL commands.

An alternative approach was described by David Smythe of JPL in Pasadena. Carrying on a challenge suggested at last year's conference the X resource mechanism is used to describe not just resources (options) to widgets, but also the widget tree and the bindings to application code callback functions.

The Widget Creation Library (WCL) is a lightweight (small) package of C code which allows interfaces using standard Athena, Motif (and soon Open Look) widgets to be constructed rapidly without writing any C or even compiling. WCL code to produce a Motif periodic table showing all the motif widgets is 20% of the length of the original program in OSF's UIL (User interface language). WCL has an important advantage over the other simple toolkits in that it can be easily expanded to use any widgets based on the MIT intrinsics.

Subclassing and Widget Internals

Ralph Swick and Mark Ackerman gave a tutorial session on widget internals covering understanding and writing simple widgets and also discussed subclassing widgets in a talk to the whole conference. (Subclassing is the use of the object orientated features of the MIT intrinsics to reuse existing binary widget code by replacing or extending its component functions.) Since both are heavily involved with the development and support of the Athena widget set they set out to subclass Motif and Open Look widgets using only what is available to standard developers.

With nothing but the documentation and header files they were confident that this would prove an easy demonstration since the MIT intrinsics were intended to support subclassing. However to quote their paper directly

> "... the minimal documentation was, alas, not sufficiently common to support this assertion."

To subclass effectively they found that sight of source code is required due to undocumented internal functions.

This lack of even basic widget internals documentation was also raised at a BOF session of Motif developers. Vania Joloboff of the OSF explained that this was not a priority among OSF members, who are mainly hardware vendors not application developers.

MOTIF

Vania did however outline the benefits of the latest version of Motif (1.1). New features include a full validation test suite and caches gadgets for performance enhancement. UIL gains a Widget Meta Language used for generating the UIL compiler extending it to handle new widgets. UIL will also enter the core Application Environment Specification.

New widgets include an improved file selection box simpler menu functionality and a single line text field widget. Another welcome change is the rewriting of the Motif style guide and documentation for the toolkit has been improved. Mwm will also handle multiple screen displays.

Forthcoming attractions for version 1.2 include the promise of smaller dynamic data sections and to improve the response of Mwm on Xterminals. The major change will be in greatly increased support for internationalisation. X11R5 will provide an input method for compound character entry and this and other relevant standards will be used. An international text widget will be provided and source code should then be codeset independent. (The term Codeset rather than character set is used since for example, in Japan, three character sets are used at one time.)

Customisation

Customisation of X toolkit programs via the resource database has been was discussed by Jim Gettys of DEC. Reaffirming the original intentions he pointed out that although customisation can be a nuisance, software is rarely perfect. Resources allow an application to be fine tuned to particular situations.

Although support can be difficult, due to the extra permutations possible, resource using applications can be rapidly modified for unusual environments. Certain users of even ordinary software may need special treatment. For example some hardware may well have different keyboard layouts to that used while developing. Visually handicapped users and persons demonstrating software may need a larger font than was anticipated for normal use.

Andrew Peebles of MIPS took customisation to a new level by presenting the concept of an application toolkit. Unlike a widget toolkit the application toolkit comprises modules useful to application users, not developers. The user is invited to take the application apart and assemble it in the manner that suits him or her best. Using WCL Andrew's team provided five high level objects with their own resources in an application toolkit called the visual debugger. This interface to debuggers can be used as a front end to any text driven debugger and can change its appearance from an xdbx clone to a video recorder metaphor. About 10% of the internal users have extensively customised the visual debugger and it has just been released as a MIPS product.

Another issue of customisation was addressed by Chris Peterson, formerly of MIT. The resource database is a powerful tool, but is not a user friendly system. The large quantity of possible options and syntax of the database make it too complex for the average user. As a step towards solving this problem Chris described 'editres', a graphical resource editor.

Editres can display a tree of the widgets in a program, and can highlight them in the application and tree when a widget or widgets are selected. Resources can then be selected and changes made immediately before being committed to a file. Besides the graphical resource editor editres comprises a small library linked into the application and a protocol to transfer requests to the running application. A single line needs to be added to the source code to set up editres and it is expected to be released with X11R5.

Server Extensions

Jim Fulton of X terminal manufacturers NCD (Network Computing Devices) presented another proposal for R5. Since X terminals have no local disc space they currently obtain their fonts over the network via FTP or NFS. Different server font formats impede inter-operation and make new font formats (such as outlines) hard to install. The solution is a font server which supplies fonts to X servers. Intended to be simple but powerful the font server will be able to scale fonts further reducing disc space. Benefits include an increased ability to share fonts, and to make new fonts easier to support.

John Weber from DEC described work on an extension to handle digitised documents under X. The extension allows compression (via G3 and G4 fax and JPEG standards) of images passed from client to server saving network bandwidth. Image storage is device independent and special display hardware can be accessed via the protocol extension. Low resolution browsing and interactive enhancement are supported for such applications as catalogues and X-ray or satellite picture enhancement. From England, Tim Glauert presented a paper on a synchronisation extension to X. This extension provides millisecond accuracy between applications allowing two or more clients to be run in step or for an X application to be synchronised with external multi media controls.

PEX

Three presentations on PEX were made this year, as well as a tutorial and BOF sessions. PEX stands for PHIGS Extensions to X, where PHIGS is Programmer's Hierarchical Graphics System. An ISO standard since 1988 PHIGS is an API (Application Programmer's Interface) for 3-D graphics.

PHIGS is one of many possible API's that could be supported under PEX but the PEX-SI (Sample Implementation) has been coded to provide a PHIGS environment under X. Members of a team from Sun contracted to the X consortium have produced the PEX-SI server and API library. This has established that the PEX requires a few minor modifications but can supply support for a conforming and efficient PHIGS implementation.

Presentations on both the API and server were followed the next day by an extension to PEX, PEXIM or PEX Immediate Mode by Jim Hardenbergh of Stardent. PEXIM gives an alternative to the display list approach of PEX, providing a closer system to established proprietary graphics such as Apollo's GMR3D, Hewlett Packard's Starbase and Stardent's Dore'.

The Future

It has long been frustrating that a high speed, high resolution graphics workstation can make one sound by going 'beep'. Even under X, assuming the hardware supports it, it may go beep at a different volumes or pitch. High quality audio is beginning to appear on workstations and a team from DEC in association with the MIT Media Lab have been applying lessons learned in X to an Audio server. Their view is that audio should be handled in a separate server, which requires multi-threading and support for audio abstractions hiding such details as encoding and sampling rates.

Following X they are concentrating on 'mechanism not policy' and hope to be able to provide an audio toolkit layer with which to build tools such as telephone answering machines, voice mail, speech recognition and synthesis and digitization

From Japan, Hidyea Ichihara of NTT described research into multi-media applications with full motion video in multiple windows on an X display. A video recording of an experimental desktop conference terminal was shown comprising a general purpose workstation, audio video controller and video multiwindow controller, linked to the workstation by a SCSI bus. Sound is in stereo of course and moves with the location of the associated window. Hand written entry of data is also supported.

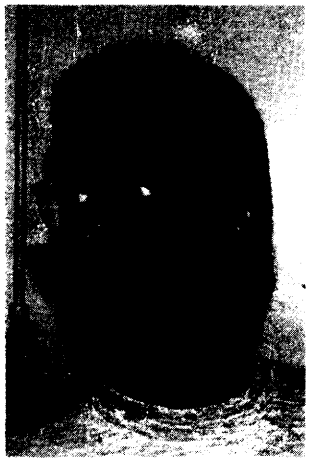
Hand written interaction was also demonstrated by a group from IBM's Thomas J. Watson Research Labs. Investigating pocket book computers they are working towards the concept of a 'fat clipboard', with input by stylus which writes an ink trail onto the screen. Besides a productivity increase advantages seen include easy drawing or sketching and the unobtrusiveness of the interface. A version of Lotus 123 adapted for hand written input proved 1.5 to 4 times faster to use. The team hope to produce a prototype X based portable this year.

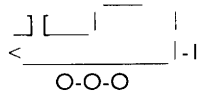
Once again the X technical conference provided a wide ranging forum for the discussion of the X window system. As someone lucky enough to have attended again I hope I have shared some of the benefits with you. X gathers more flexibility and power as time goes on. In the words of X consortium director Bob Scheifler, 'It's been a long hard year'.

EUROPEN SOFTWARE DISTRIBUTION

Frank Kuiper
Centre for Mathematics and Computer Science
Amsterdam, The Netherlands

euug-tapes@EU.net





I would like to take the opportunity and start with wishing you a "Gelukkig en gezond 1991". I hope that some of you will share their work, and make it available to the rest of the community, so everyone can benefit from good software.

This year does not start with a new tape as some of you may have anticipated. No, instead there are some more mundane matters to attend. The first one is a small price increase for all the software distributions: 10 guilders. The second one is the name change. All the distributions are now called "EurOpen" instead of "EUUG".

I would like to point out a few things though. Some of the software is available on more than one distribution. In general I make two different kind of distributions. The first kind are the so called "conference tapes". These most often contain a variety of applications and matters of interest. The second kind are dedicated application or theme distributions (like "GNU", "ISODE"). For these last kind of distributions, I try to collect new versions and make those available as often as possible. Distributions to which this has happened are "ISODE", "GNU", "X11 Windowing system" and the "AFUU/SSBA benchmark". Notice of new versions will be placed in this forum. In general I will not make new versions of "conference tapes".

Below you'll find the usual list of available distributions. As always, anyone is invited to make their own tools, games, etc. available for publication on an EurOpen 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 (January 1991) EurOpen 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 EurOpen Newsletter. I am working on a method so you can automagically, by e-mail, easily find out which program is on which distribution. For the moment you will have to e- mail, call, or write me to find out.

Prices of the tapes are in Dutch guilders (DFl), and do not include VAT-taxes. Prices do include postage cost for surface mail within Europe. Any special shipment costs, like with DHL, will be billed through.

The first price listed with each distribution, is for 1/2", 9-track, reel tapes in tar 1600 bpi format, the second one is for distributions on 1/4" cartridge tapes in (Sun) 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 EurOpen 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.

EurOpenD1 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 140.- (No cartridge version available.)

EurOpenD2:
Early Pascal compiler of the Free University of Amsterdam. V7 source licence minimum.
Price: DFl 140.- (No cartridge version available.)

EurOpenD3:
Starter Kit The tape contains many public domain mail, news, networking utilities, tools, attributes and information. It is THE tape for all who want to share in the joy of really feeling connected to the world in general, and the Unix TM world in particular! Programs you will find on this distribution are:

mail:	mh, elm2, sendmail (5.61 currently), smail, ida, mailway
network:	ka9q, snmp, uupc, uucp over x25
news:	bnews, cnews, nn, nntp, rn, vms, tmnn
gnu-tools:	gawk, grep, make, mh, tar
docmentation:	iso3166, ethernet-info, several RFC's
misc:	kermit, tn3270, vacation

In regard to the documentation a note. It is our intention to have National Groups supply information for the tape, in the local language, about how their network is set up, how to connect, what is and what is not (yet) possible, and some further guidelines. As we still have to build this database of local information, it will (hopefully frequently) happen that this Starter Kit distribution will be kept up to date and incorporate new software and documentation over time. This of course depends largely on the

amount of time I can make available for this and how input the local groups give. I will do my best.
Price: DFl 140.-/200.-

EurOpenD4:
Software tools, sampled (in 1982) 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 170,-/200,-

EurOpenD5:
Currently not available. See tape EurOpenD20 for new benchmark software.

EurOpenD6:
(USENIX 83.1) USENIX tape, containing contributions from various UNIX System Group Members. Created in 1983. This is a licence dependent distribution: V7, V32, SIII, V6 or no licence disclosure available.
Price: DFl 260,-/320,-

EurOpenD7:
UNIX|STAT Version 5.2. A collection of about 25 data manipulation and analysis programs written in C by Gery Perlman (1985).
Price: DFl 80,-/200,-

EurOpenD8:
A collection of useful software, based on the so called Copenhagen tape (EurOpen UNIX conference autumn 1985).
Price: DFl 140.-/200.-

EurOpenD9:
A collection of useful software, based on the so called Florence tape (EurOpen UNIX conference Spring 1986). Price: DFl 170,-/200,-

EurOpenD10:
MMDFIIb. Multichannel 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, 2.9 BSD, System III/V on a variety of different hardware. You should first obtain a licence agreement by sending a message to euug-tapes@EU.net. Return the signed licence with your order. Price: DFl 110,-/200,-

EurOpenD11:
This is the 'Boat' tape; the Helsinki EurOpen 1987 spring conference. It contains about 25 Megabytes of programs, games, etc. Including: jove, less, nag, news, rn, uEmacs, uuencode and larn.
Price: DFl 140.-/200.-

EurOpenD12:
This is the Dublin EurOpen 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 140.-/200.-

EurOpenD13:
The conference tape for the London EurOpen 1988 spring conference. It contains, amongst others, the following items: 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 140.-/200.-

EurOpenD14:
This is version 6.0 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 system 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. The EurOpen will send you a tape only.
Price: DFl 140.-/200,-

EurOpenD15:
The complete X11 Windowing system, as distributed by MIT, release 4: X11R4. Do to the vast growth in user contributed software, this distributions now totals 60 Mb in compressed form. This results in two 1/2", 9-track tapes, and one 600 ft, Qic-24, 1/4" cartridge. This includes the core system, as well as much, very much user contributed software. No patches, however.
Price: DFl 270.-/210.-

EurOpenD16:
This is the Brussels EurOpen 1989 spring conference tape, and consist entirely of software from the GNU project from the Free Software Foundation. Last update: autumn 1990. On this tape you will find: ispell, g++, awk, gcc, gdb, Cscheme, emacs, lisp-manual, libg++, binutils, bison, ghostscript, gas- dist, gawk, gnews, gnuchess, make, oops, pace, ps-emacs, scheme, sed1, tar and torture.
Price: DFl 140.-/200.-

EurOpenD17:
This tape contains the software for ET++. From the abstract of the "Autumn 1988 EurOpen 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 140.-/200.-

EurOpenD18:
This is the "Vienna EurOpen 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 140.-/200.-

EurOpenD19:
This is the "Munich EurOpen 1990 spring conference tape", and consist entirely of graphics material. Conversion programs, display tools, toolkits to build you own display program, and off course images, lots of pictures to play around with.
Price: DFl 140.-/200.-

EurOpenD20:
This tape contains benchmarking software and is named "AFUU/SSBA 1.2, benchmarks". The French group have done a good job creating a tape with all the necessary tools, so you can finally bring your machine down to it's knees, and see what it is really worth.
Price: DFl 80.-/200.-

EurOpenD21:
This is the "Nice EurOpen 1990 autumn conference tape", and consist of a number of different kinds of software, like: dtree, abc, new versions of various mail and news utilities, and PP5.0.
Price: DFl 140.-/200.-

EurOpenD22:
This is the "Postman Pat PP5.0" distribution. PP is a Message Transfer Agent, intended for high volume message switching, protocol conversion, and format conversion. It is targeted for use in an operational environment, but may also be useful for investigating Message related applications. Good management features are a major aspect of this system. PP supports the 1984 and 1988 versions of the CCITT X.400 / ISO 10021 services and protocols. Many existing RFC 822 based protocols are supported, along with RFC 1148 conversion to X.400. PP is an appropriate replacement for MMDF or Sendmail.
Price: DFl 140.-/200.-

EurOpen Software Distributions Order Form

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

EurOpen 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)
Fax: +31 20 5924199
Telex: 12571 mactr nl
Internet: euug-tapes@EU.net

Please note that for distributions D1, D2 and D4 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 EurOpen member (or a member of a national UUG) to obtain tapes at list prices. Non-members will have to pay DFl 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 1/2", 9-track, 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.

This page may be photocopied for use. Please print!

Name: _____

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E-mail address: _____

I would like to order the following:

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Tape format, either 1/2" 9-track, or 1/4" cartridge: _____

Copy of EurOpen (or national UUG) membership (or payment) form enclosed? Yes / No

Copy of AT&T source licence enclosed? (For D1, D2, D4.) Yes / No

"I declare to indemnify the European Forum for Open Systems for any liability concerning the rights to this software, and I accept that EurOpen takes no responsibilities concerning the contents and proper function of the software."

Date: _____ Signature: _____

PUZZLE CORNER

Mick Farmer
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mick@cs.bbk.ac.uk

Mick is the Secretary of the UKUUG. His primary interests are Ornithology (restricted to the Western Paleartic at the moment because of cost) and Oenophilism (especially pre-1962 Bordeaux, pre-1980 Burgundy, and 1945 Port). His secondary interests include Software Consultancy (to pay for the above primary interests) and Distance Learning Methods (especially interactive video and hypertext). When not pursuing these and other interests he can be found at Birkbeck College (London) where he teaches in the Department of Computer Science.

He lives in Lewisham (South East London) with his wife Sue and a TV called Sonya. His neighbours have two children and a dog.

Hello peeps,

Solution to Puzzle Number 14

We are interested in the resistance between B and H in Figure 1.

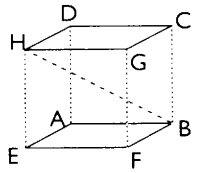

Figure1:

Short the three corners nearest to B together (A, C, F), and the three corners nearest to H together (D, E, G). This can be done without disturbing the current flow since all three of each set of shorted points are equipotential (or symmetric) points, and the shorts carry no current. Now there are three equal resistors in parallel between B and C, six between C and G, and three between G and H. The required resistence is 1/3 + 1/6 + 1/3 = 5/6 ohm.

Solution to Puzzle Number 15

The answer is the binary number 11111111111111111111, which is 2^{20} - 1, which equals 1048575 in decimal.

Solution to Puzzle Number 16

Each external door of the house has one door facing out, so you must show that there are an even number of door sides inside the house. If the house has N doors altogether, it has 2N door sides. The problem states that each room of the house has an even number of door sides facing into it. Thus there are an even number, say 2K, of door sides on the inside of the house. The number of door sides on the outside is then 2N - 2K, an even number.

Puzzle Number 17

I was staying at a country-house hotel over the New Year and witnessed a race between a man and a woman. The gardener and the cook ran a race to a point 100 feet straight away and back again. The gardener ran three feet at every bound and the cook only two feet, but she made three bounds for his two. Who won the race?

Puzzle Number 18

Here is a problem which, I believe, has not been solved nor its impossibility demonstrated. Play the knight once to every square of the chessboard in a complete tour, numbering the squares in the order visited, so that when completed the square is *magic*, adding up to 260 in each column and row, and the two long diagonals. My solution has a slight error in the diagonals alone.

If you have any favourite puzzles that deserve a wider audience then please send them (together with a solution :-) to me. They might appear in this column!

Loads-a-puzzles,

Mick

STANDARDS COLUMN

Dominic Dunlop
The Standard Answer Ltd.
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Dominic Dunlop has been hanging around the European UNIX scene for years now, industriously researching into why things won't work and assiduously spreading the bad news among those who will listen. Involved with POSIX during its growth from a single, short document to a multiplicity of legalistic tomes, he is currently paid to report to EurOpen (formerly EUUG) and USENIX members on the progress of the ISO POSIX working group.

For the past couple of years, these columns have discussed events and developments in the POSIX-related activities of the International Organization for Standardization (ISO). This time, I'm going to look at a lower — but arguably equally important — level in the standards development process: the Institute of Electrical and Electronic Engineers' Computer Society Technical Committee on Operating Systems Standards Subcommittee. Let's just call it IEEE-CS TCOS SS, or, better still, TCOS.

Last October, EurOpen agreed to provide funding for an institutional representative who would attend the quarterly meetings of TCOS, and provide a means of routing input from European users of open systems into the bewilderingly large variety of POSIX standards being developed by working groups under TCOS. I am that representative, and, since I'm spending your money, I'd better tell you what is going on, why it's important, and how you can help me out.

POSIX Development — Top Down or Bottom Up?

I've referred to the IEEE in my reports on ISO matters, since it is the IEEE which actually develops the POSIX standards. The IEEE routes its documents to ISO via ANSI, the American National Standards Institute. Translating this into ISO- speak, ISO has designated ANSI, its U.S. member body, as the development agency for the POSIX standards. ANSI, in turn, has delegated the work to the IEEE, an accredited body which it considers competent to create operating system standards through a consensus process which allows all interested parties to comment.

This makes the process of standards development look as though it proceeds from the top down: somebody associated with ISO decides that the time is right for a POSIX standard, identifies a means of getting the job done, and controls the process in an orderly, structured manner.

Life is not like that. No matter how much those who work at the ISO level would like to believe that they are, and always have been, in the driving seat, the movement towards POSIX started from the bottom and drifted up. It started in the early nineteen-eighties with /usr/group, a U.S.-based organization of suppliers and commercial users of open systems, now known as UniForum. This group created The 1984 /usr/group Standard, a minimal definition of an operating system interface corresponding broadly to the unprivileged services offered by AT&T's UNIX System III, together with selections from the Kernighan & Ritchie C language library. Slim but seminal, this document was passed into the IEEE (specifically, to the newly-formed TCOS) to provide the foundation of the POSIX standards. It also gave important input to ANSI in the creation of a standard for the C language.

Despite the fact that neither the IEEE nor ANSI puts any nationality requirement on the individuals (in the case of the IEEE) or the organizations (for ANSI) participating in the creation of their standards, both POSIX and C initially developed in the U.S. with little international input. The costs of travel and of assigning English-speaking technical experts to the task was (and is) one disincentive; another is the feeling, particularly in Europe, that standards activity should begin at home, rather than in the U.S.

By 1987, the international demand for standards for POSIX and C was obvious, and it was natural that ISO should get involved. To be pedantic — and the standards world is nothing if not pedantic — it was natural that Joint Technical Committee 1 (JTC1) of ISO and the International Electrotechnical Commission (IEC) should get involved. (JTC1 had been formed in the mid-eighties to end wrangles between ISO and the International Electrotechnical Commission over the right to create standards for information technology.) It was also natural that the project for the international standardization of the C language should be handled by JTC1's Subcommittee (SC) 22, which is concerned with programming languages. SC22 Working Group (WG) 14 was duly set up to do the job.

It was less natural for POSIX to be assigned to WG15, another new group under SC22. An operating system interface, after all, is hardly a programming language. Nevertheless, after an attempt to set up a new SC to handle system interfaces had failed for political reasons, SC22 picked up the work[1]. Both WG14 and WG15 appointed ANSI as the development agency for their respective standards, leaving us with today's situation.

At this point, I shall have to stop discussing C standardisation, as it is not a field in which I am active[2]. But I can tell you more than

you probably want to know about the activities of IEEE TCOS, which is at the work-face of POSIX development.

POSIX in the IEEE

When TCOS was set up in 1985, it had just one IEEE standards creation project under its control — project 1003, known as P1003. (Other well-known IEEE standards projects are 754 for floating point formats, and 802 for local-area networks.) P1003 quickly split into two sub-projects: P1003.1 for the operating system interface, and P1003.2 for the shell and tools. (Recently, these have come to be known as POSIX.1 and POSIX.2.) A working group was associated with each. The working groups were named after the projects: 1003.1 and 1003.2.

This splitting has continued, with over 20 projects currently active. Whenever a possible new POSIX-related standards activity is identified, its promoters can draw up a Project Authorization Request (PAR), and submit it to the Sponsor Executive Committee (SEC) of TCOS[1]. If approved (sponsored in IEEE terminology), and subsequently rubber- stamped by the IEEE Computer Society's Standards Activities Board (SAB), a new project is created. Most become sub- projects of the original 1003 project; some initiate new projects, such as P1201 on windowing environments.

If the subject of a new activity is closely associated with the interests of an existing working group, it is assigned to that group; if it is not, a new working group is set up. This means that there are fewer working groups than projects. As an example, the 1003.0 working group is concerned solely with the 1003.0 guide to the POSIX environment, but the 1003.1 working group now handles 1003.1, the operating system interface; 1003.16, C language bindings to operating system services; and 1003.18, a profile for a time-sharing POSIX-based system.

Once a working group has been formed, its job is to draft standards, making sure that they meet the needs of both suppliers and users of information technology. This is done through a somewhat baroque balloting process:

- Associated with each working group is a balloting group. The balloting group is typically formed shortly before the circulation of the first complete draft of the first standard developed by the working group.
- Balloting groups are drawn from the membership of a balloting pool. The pool has three types of member: individual members of the IEEE who have specifically applied to join the pool[2]; institutional representatives (IRs) accepted by the IEEE-CS SAB (see below); and national heads of delegation to the ISO POSIX working group.
- All members of the balloting pool are sent notice of the formation of each new balloting group. Those who respond become members of the group, subject to considerations of maintaining a balance between user and supplier representatives.
- Once a balloting group has been formed, it persists indefinitely with a static membership. Only if there are problems in getting the required 75% response to ballots is the membership of a group reviewed.
- It is almost never possible to join a balloting group after it has formed.
- Individuals or organisations outside the balloting group can make objections to, or comments on, the content of draft standards, just as can balloting group members. All objections from whatever source must be handled through a formal resolution process. However, only members of the balloting group can vote for or against the acceptance of a draft (or indeed, completed) standard.
- A draft is considered approved if it is accepted by 75% or more of those who vote either for it or against it[3].

Simple, huh? And I haven't even mentioned the appeals procedure!

Membership of a balloting group is a considerable responsibility: following notice of a ballot, IEEE rules give just 30 days to review a document which may run to almost a thousand pages, and to return any comments or objections to the ballot coordinator. And unless over 75% of the membership of the ballot group responds, the result is held to be invalid. When one considers that a document is likely to go through a dozen drafts before it becomes an approved standard, it is clear that balloters have to work hard (even if not all of the drafts are balloted). Recirculation ballots, initiated when changes are made to a draft in response to an initial ballot, increase the work- load further.

In order to make the task a little easier, TCOS has adopted a procedure called a mock ballot to handle the early drafts of a document. These are similar to mock examinations: the procedures are identical to the real thing, but it doesn't matter so much if it is flunked. In particular, no alarm bells start ringing in the IEEE's offices if a 75% response is not achieved.

What has all this to do with EurOpen?

EurOpen feels that it is important that the views of its membership are represented in two forums. Firstly, on the SEC, which decides on the authorization of POSIX-related projects and controls their development and coordination; and secondly, in the balloting pool from which those who vote on the content and acceptance of standards are drawn.

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1. SC21, which is responsible for the higher layers of OSI, for SQL and for office document architectures and the like, might have been a candidate, but, after a false start with OSCRL (see my last column), was not interested.
2. Although I can tell you that ISO 9899, the C standard, went to the printers late in 1990, but, at the time of writing, has yet to emerge. It is functionally identical to the U.S. standard, ANSI X3.159-1989.
1. PARs can also be used to request changes to the goals and terms of reference of existing projects.
2. The requirement for IEEE membership appears recently to have been dropped, although the rule book has yet to be amended.
3. If more than 30% of those who return their ballots abstain, things get more complicated. Let's not go into that.

The first objective has already been met: I am happy to be able to tell you that the SEC has unanimously accepted EurOpen's request for me to become its institutional representative[1]. I join existing IRs from a number of user groups and industry bodies: OSSWG (a group developing a real-time kernel for embedded systems), SHARE (the IBM user group), UniForum, UNIX International, USENIX and X/Open[2]. (UniForum and USENIX were particularly helpful in the preparation of EurOpen's application.)

Gaining IR status in the balloting pool takes longer, as EurOpen's request must be discussed by the SAB, but I hope to be able to report in the Spring Newsletter that it has been approved.

Luckily, this delay gives me a little breathing space to make a request. I need help from volunteers. If you feel competent to help EurOpen's newly-formed Standards Activities Management Group (SAMG) in formulating responses to IEEE POSIX ballots, please contact me at the mail address at the head of this article[3]. In particular, could experts on secure operating systems please get in touch, as the working group concerned with this aspect of POSIX, 1003.6, is in the process of forming a balloting group.

I hope to see you at the standards birds-of-a-feather session at EurOpen's spring conference in Tromsø, where members of the SAMG will be reporting on the latest developments in the Europe, the U.S.A. and the world at large.

1. Actually, the acceptance was "by acclamation", which is even better.
2. The Free Software Foundation (FSF) is likely to join the list later this year.
3. The other members of the SAMG are Johan Helsingius (julf@penet.fi) and Henk Hesselink (henk@ace.nl).

BOOK REVIEW

C Programming - A Complete Guide to Mastering the C Language

Augie Hansen
Addison Wesley, 1989
ISBN 0-201-19444-9
(UK) Price £19.95, Soft Back, 360 pp.

Reviewed by Rob Henley of Siemens SDG, Reading.
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Its refreshing to find a book on C programming which doesn't present the language as a universal panacea. This book is a straight forward, practical guide to the language written in a fluid and good humoured style.

The book assumes little previous programming experience, and covers a great deal of material from bits and bytes through to the program development cycle. The treatment may be too slow for experienced programmers, but would make an excellent introduction to C for an undergraduate or anyone wanting a gentle introduction to programming in a high level language. It is well indexed, but too wordy for a pure reference.

The overall organisation of the book is good, starting with the basics of what computer languages are all about and discussing how C fits in with other types of language and with UNIX and DOS environments. (In fact wherever the book touches upon environment sensitive areas, the differences between UNIX and DOS are clearly described.) The book then encourages the reader to get some hands-on experience with some simple programs before going on to systematically describe the main language features chapter by chapter. Each chapter has good clear code examples, although these are not as useful or interesting as those presented in Kernighan and Ritchie. They do nevertheless illustrate many good programming practices and the book particularly stresses the importance of good data structure design and data hiding. Each chapter also presents a set of exercises, although these tend to follow the chapter a little too closely to provoke much original thought! An original and useful feature are Programmer's Notebook entries interspersed throughout the text. These are short notes emphasising potential pitfalls (e.g. non-portability of unary plus).

The later chapters cover the program development process from analysis through design and coding and illustrate the application of this process in coding some common data structures (stacks, queues, linked lists etc).

Strong points of the book include a good realistic look at recursion and a demystification of I/O. The book is also strong on portability issues (e.g. big-endian/little-endian) and ANSII conformance (e.g. function prototyping).

Notable omissions are inter process communication (fork, exec, messages etc) and some of the other standard functions such as assert(). There are also one or two typos which could cause confusion and even a stray example which isn't discussed in the text, although the presentation of the material is generally excellent.

BOOK REVIEW

Sed & Awk

Dale Dougherty
O'Reilly & Associates, 1990
ISBN 0-9377175-59-5
(UK) Price , SoftBack, 394 pp

Reviewed by John Collins of Xi Software Ltd.
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This book describes in full detail, from the ground up, the standard Unix sed and awk utilities. It provides examples of use of all of the facilities and some handy information.

I think that the book explains well the basics of the use of both utilities, explaining well the interaction of the programs, standard input, standard output, scripts and other files, and also regular expressions, which many beginners find confusing, although I felt that the differences between shell wildcards, sed and awk regular expressions was glossed over a little - a pity because the example scripts all combine the shell with sed or awk, indeed they are as much about the shell as about sed or awk in places!

I thought that the layout of the book was generally good, but in a few places I found myself thinking that it lost out by describing both sed and awk together where a feature was being discussed in the context of sed, and then returning to it only briefly whilst discussing awk. This limits its usefulness as a reference for awk, and clouds it as a reference for sed.

I also don't like the way it lurches into and out of descriptions of awkcc, Gnu Awk etc. These details should be in appendices in my view, and the timing tests for various versions of awk and awkcc are totally uninteresting to me. It would be sufficient to say "use awkcc if you've got it and don't need to change the script much".

I did learn from the book how to use some of the more obscure features of sed such as the hold space, which I had never previously bothered to understand. However the book does point out that it is much easier to use awk for more complicated problems. It might have said in more detail what sed is better for!

The things I missed were more detailed discussions about handling multiple lines, control and non-ascii characters, and incredibly long lines, which on my system make sed go into a continuous loop printing out error messages and awk to core dump.

I don't think that there are any major errors in the book, although I did spot a few trivial misprints and the index has a lot of headings and references missing, for example if you don't know the name of the awk "gsub" function, you won't be able to find it from the index, which doesn't even include all the references to "gsub".

The thing which annoyed me about the examples were that they were contributed by other people (can't he write any himself?) and were followed by criticisms like "it would be more efficient to do it this way" (why not do it that way?).

This is probably quite a good book for a beginner and reasonably handy for the experienced user. I rather suspect, however that he or she'll only use it to describe the obscure sed features, and stick to the existing awk manuals.

BOOK REVIEW

Data Abstraction and Object-Oriented Programming in C++

Keith E. Gorlen, Sanford M. Orlow and Perry S. Plexico
John Wiley & Sons Limited
ISBN 0 471 92346 X
(UK) Price £18.95, Paperback, 403pp.

Reviewed by Lindsay F. Marshall, Computing Laboratory, University of Newcastle upon Tyne, UK.
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It takes a long time for a book to get from an idea to the book shop and there is always the danger that someone else will have filled the gap it is aiming at. When the proposition for this book first appeared there were almost no books on C++. The few that were appearing were either instantly out of date or of such poor quality that they were laughable. Now that it has finally hit the shelves what was a trickle has turned into a maelstrom. Writing about C++ is a growth industry (a malignant growth at that), so how does this book stand up against the competition?

Well, it's no contest. This is the book that programmers interested in using C++ for *real* work have been waiting for. It isn't an introduction to C with a couple of chapters describing the syntax of classes tacked on the end. Nowhere does it tell you how to write a *for* statement. It delivers what it promises by having the words Object-Oriented in its title. It gives the real thing, not imperative programming dressed up (at least, as far as that is possible in C++ ...).

Most users of C++ have heard of the NIH class library and probably have a copy stashed away somewhere as well. This book is the distilled knowledge of the people who built that library. Since the library is probably the largest amount of C++ code that most people have come across, this means that we are talking 80 or 90 proof, single malt. The book provides a wealth of examples drawn from the implementation of the NIH library and many more that show how you can use its objects to make other systems. There are useful tips on how to avoid the trap of writing imperatively and some practical, undogmatic ideas on Object-Oriented Design. The problem of "casting down" from a base type to a derived type gets a good airing and there is a full description of the solution to it adopted in the NIH library. There is sensible advice about naming conventions, how to use const, and when to use references instead of pointers.

What about the weak points? Well, by no stretch of the imagination is this a book for beginners, even though there is some excellent introductory material. You need to know C++ pretty well to get the full benefit of some of the ideas presented. Some of the language usage is already obsolete with the release of AT&T Version 2.1, though footnotes indicate this, and the aging process can only continue as ARM compatibility becomes more common. The format used for examples does not reflect the now common practice of placing the public parts of class definitions first and the private parts last. The authors also insist on the egregious Berkeley convention for placing {} pairs and use the equally ghastly *while(1)* to write infinite loops. Also encouraged is the practice of declaration at point of use, which would be fine if the language supported this correctly, but until that happy day, please, no.

So, if you think of yourself as a serious C++ programmer you need this book in your collection. Right up there next to the ARM and your old copy of Stroustrup. The price is not unreasonable and the book will pay for itself when you find that one special tip that saves your hide. The only thing that remains is to wonder why nowhere does the book tell you that the NIH libraries are freely available from any good FTP site?

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