UNIX NEWS

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X/OPEN MAPS OUT FUTURE OF CAE

The rise of X/Open as the driving force in standardising the open systems environment continues unabated, with new plans revealed this week. The future of its Common Application Environment, which sets out a standard set of requirements for software development, is to be mapped out in a document known as the "Prospectus of Market Demand," due to be published in the Autumn. The document will be based on recommendations thrashed out at its recent meeting in Montreal. Attendees were drawn from three areas, existing X/Open members - limited to one representative each, to tame their infuence - non-member hardware manufacturers, such as Cray and Amdahl, as well as over 100 delegates from the open systems user community. Those from the last two categories were invited to contribute proposals and ideas for a wide range of features to included in future specifications of the CAE - the idea being for X/Open to bring its software application programme into line with specific market requirements. The meeting was broken down into ten working groups, each focusing on a particular area of interest - such as networking, migration, compilers and testing - the results are to be incorporated into the CAE, with a commitment from members that they will develop products in accordance with these guidelines.

DEC READY WITH NEW MIPS MACHINES
- MARKET PRESSURE INTENSIFIES

Signs that a general slowdown in the technical computer systems business intensified this week with the news that DEC is to continue with an aggressive series of product launches in July, introducing a low-end DECstation 2100 using a slower version of the Mips R2000 Risc processor, and high-end asymmetrical multi-processors with 3D graphics. Two versions of the top-end BI bus machines are anticipated; the System 3300 (using the R2000 chip) and 3400 (using the R3000), and DEC is also expected to introduce other non-RISC machines and a low-end MicroVAX. The DEC deal will pile on the pressure at Sun, where poor fourth quarter results and rumours that the Sparcstation 1 will be very late, have been the first signs of a stumble in the highflying workstation company. But sales of the new DEC systems are not thought to have been spectacluar, as software is still in relatively short supply for the machines, while margins for sales of the traditional VAX lines are still more attractive to the company.

...AND SPEEDS ULTRIX FOR RISC STATIONS

DEC has looked again at its implementation of Ultrix on the new DECstation range of workstations that utilise RISC processors from Mips Computer Systems Inc, and come up with a faster version. Ultrix-32 version 3.1 and Ultrix Worksystem Software version 2.1 will be available both on the VAX and DECstation ranges, but on RISC- based systems it should result in performance increases of up to 30%, according to DEC. Although performance gains do not apply to the VAX implementation of the new release, DEC has added Ultrix support for the 3300 and 3400 VAX systems, as well as for its 128Mb solid state disks, its RF30 150Mb and 400Mb DSSI disks, RRD 40 optical disks and various communications boards for the VAX range. The new version can be installed as a patch to Ultrix version 3.0 and UWS 2.0, avoiding the need for full scale integration at customer sites, said DEC.

AT&T HAS C++ RELEASE 2, OPEN LOOK AGREEMENT

Release 2.0 of C++, described as the first "industrial strength" release of the object-oriented language, will be available to industry vendors by the end of June, according to AT&T, which released the new version at the Usenix show in Baltimore last month. Release 2 includes all the major features the author of the language, Dr Bjarne Stroustrup of AT&T Bell Laboratories, has developed to date, notably multiple inheritence, where a child object can inherit the properties of more than one parent. There is also expanded documentation and a product support programme. Vendors supporting the product included HCR Corp, which is providing the first packaged version of the compiler, Mentor Graphics, using the language to develop its next generation design tools, Ontologic Inc, working on a oblect-oriented database, and hardware vendors including Sun, Apple and Apollo/Hewlett- Packard. AT&T has also agreed with Sun Microsystems Inc that each will incorporate the other's X Window-based tool kits - AT&T's X Toolkit, Sun's XView - for the Open Look user interface into their source code products, so that developers can take their pick.

APOLLO TWEAKS SERIES 10000
- CONTINUES DEVELOPMENT

Hewlett-Packard has quashed rumours that its RISC based Apollo Series 10000 graphics personal supercomputer may be discontinued, revealing that a new and more powerful successor is under development "right at this moment." A string of performance enhancements for the existing Series 10000 have also been announced, which suggests that the company is gearing up to compete all the way down the line with the likes of Stellar Computer Inc and Ardent Computer Corp for the top end of the graphics marketplace. No timescale for the new Apollo machine has been suggested, but the company says that by tweaking software in the existing Series 10000, particularly at the compiler level, performance enhancements of up to 80% have been achieved. However the good news for customers is seems that these enhancements will not affect the price of the Series 10000 - it remains at $69,900 for an entry level model. As well as the performance boost, a range of communications and storage features are also being made available for the 10000. To allow greater connectivity, a SCSI bus has now been added to the 10000, which already features VME and PC-AT compatible offerings. And new 1.4Gb and 2.8Gb disk systems will allow users to configure up to 5.6Gb of storage, and a new 1600/6250 bits- per-inch nine track tape drive and 2.3Gb 8mm tape drive offers further back up storage. IBM's Token Ring network is now supported, which means that customers can choose between two Ethernet, IBM Token Ring or Apollo Token Ring networks in any combination.

...AND HP WILL USE EXTENDED NCS

At the same time, H-P is also set integrate Apollo's Network Computing System, NCS, into its systems, following joint development by Apollo and DEC which has extended the remote procedure call component of NCS - it will eventually lead to support for wide area networking. In other news flowing out of H-P's acquisition, it seems that there will be no attempt to fully integrate H-P and Apollo's respective Unixalikes, HP-UX and Domain. Rather the company plans to wait and use the Open Software Foundation's OSF1 as a common operating system across the various Unix systems.

SHOWCASE

*** *European Unix User Show 1989* ***

During his keynote speech at the conference, **Peter Cunningham** wasn't giving any clues away about the future of **Unix International** - bearing in mind recent speculation that the group may be considering a move to bring the reins of Unix nearer to its grasp. However he did shed some light on a few of the less esoteric goings on within the organisation - the Unix International Road Map is due for completion by the end of the year. It's aim is to provide a path plan for the direction of Unix development over the next five years, with timescales for future Unix releases, allowing software and hardware companies to coordinate their own development efforts accordingly. On the workgroup side, specifications for the multi-processing version of Unix are due to be set by Q3 this year, the design approach will be finalised by the end of the year, and the product is expected to hit the streets sometime during 1991.

Altos Computer Systems has boosted its systems line with a new range of peripherals for the 386 Series 1000. Included in the announcements are 190Mb and 700Mb disks, disk expansion cabinets, a 2Gb back-up unit from Exabyte, uninterruptible power supply, and a new terminal, the Altos VII. Also added were a 9 track tape drive interface and the new SCSI II interface, which doubles existing data transfer rate. And Altos has provided additional logins on the latest version of its operating system, Altos System V/386, which now supports up to 64 users. On the software side, Altos has introduced a new bundle of office automation software under the title Altos Open Office, which brings together Word Perfect 4.2, SCO Professional, JSB Multiview along with mail and calender facilities within a single package. Price in the UK is £3795 for 386 Series 1000 and 2000 system, with an unlimited user licence.

ICL has added to the DRS400 (previously Clan 4) range of Motorola-based systems it buys in from **Datamedia Inc** with two new systems: the DRS400 Level 70 and Level 75. The systems use the Motorola 68030 processor running at 25MHz, and are the first to use ICL's own port of Unix System V.3.2, now called DRS/NX. The new systems add to the top end of the DRS 400 range, supporting from 16 to over 40 active users, and are likely to be used as workgroup or departmental systems. Prices for a full 24 user configuration start at around $45,000.

UK company **Baydel Ltd** of Leatherhead, Surrey, is taking Sun boards and adapting the supporting hardware and software, for the mechanical and industrial niche markets. Based on the Sun-3 and -4, there is a 386, 25MHz tower file server, and a supermini. Both use 600Mb Winchesters, a small system disc and standard 150Mb tape cartridge. Terminal support is serial, or via Ethernet running under TCP/IP. The machines run Unix 3.2 and include NFS. Each is available in stand alone or rack mount enclosures for industrial, ruggedised, military and TEMPEST applications.

VisionWare Ltd chose the European Unix Show as its launchpad last week, and the new company is currently negotiating for the acquisition of exclusive rights to Systime's VisionWare software product range. The flagship product is PC-Connect, which allows PCs to act as a front-end to Unix machines using Microsoft Windows: it is currently re-badged by Altos, and deals are also in place with **Bluebird, Computer Consoles Inc**, UK computer manufacturer **Jarrogate**, and software distributors **Sphinx Ltd**. Products in the pipeline include SQL-Connect, giving PC users the ability to make SQL queries of a host based relational database management system, and new suite of Unix based utilities using MS-Windows.

Software Tools '89

Last month's heatwave in the UK didn't put off the enthusiastic visitors to the 1989 Software Tools exhibition held in London's Wembley Exhibition Centre, though at some of the more popular stands they were getting a free sauna thrown in with product demonstrations.

At the show **DEC** announced that it is to support some of **Systematica's** Virtual Software Factory products on its systems - the analyst/designer workbench packages are to be manufactured, marketed and supported by DEC throughout Europe under a software agreement. First to become available will be HOOD-SF, the commercial version of the workbench built by Systematica for the **European Space Agency**. Priced at £8,500 on VAX/VMS systems, it includes DECwindows and DECnet support, and Ultrix versions will follow in a couple of months. HOOD- SF supports the Hierarchical Object Orientated Design method, and incorporates automatic Ada generation. Towards the end of the year, SSADM-SF will become available, supporting the Structured System And Design Methodology, which is mandated by the CCTA for all UK civil government projects. DEC's UK CASE marketing manager **Chris Martin** says that it will be developed to include the new version 4 of SSADM when it appears in October.

As a result of this deal, Systematica has formed a separate subsidiary, **Systematica Digital Products**, to service DEC and its customers. Based in Bornemouth, Hants, Systematica Ltd is getting hard to ignore. **Cognos Inc**, the Canadian software house recently signed up for the Virtual Software Factory, (UX No 231), and more recently **Information Builders** announced that its new Focus Application Creation Tool was built using it (UX No 234). Systematica says that the product, the first parts of which were released in 1987, pulled in £2m of sales in its first year.

DEC also revealed a new release of VAXset, its package of software engineering tools - now include DECwindows support, as well as the availability of XD Ada MC68020 V.1 - a family of cross development tools for developing real time Ada solutions, launched in conjunction with **SD-Scicon** in Madrid at the Ada Europe Conference last week. And DEC says that Vax Ada V.2, VAXELN Ada V.2, VAX LISP V.3 and VAX Document V1.2 are also now available.

Cognos Software was itself much in evidence at the show, with the prototype version of PowerCASE, a software engineering development package developed with Systematica's VSF, (see above), running on a Sun 360 workstation. Using Cognos' own design methodology the tool enables designers to develop a system through each phase in the standard life cycle model right down to coding in Cognos' own Power-House 4GL. Versions for **Hewlett Packard's** HP-UX and **Apollo** machines are said to be under development. Pricing and availability will be revealed later this year. In addition it is thought that Cognos software will be developed to run on AIX in IBM's AS/400, where it is already featured under OS/400. Cognos is also to set up a Research and Development Centre at its European headquarters in Bracknell, Berkshire. There are reported to be around 3,500 sites worldwide using the range of Cognos software, about 700 of which are in the UK. UK **Kodak** company **Yourdon**, based in London, used the show to launch a multi user CASE tool called Cradle, running on Apollo workstations at present, which will be ported to Sun's kit and DEC VAX systems by December. Like many other tools on show at the exhibition Cradle is a development environment that encompasses the system design lifecycle through most of its stages. A ten user licence costs £30,000. It supports Yourdon's own structured method, YSM, which is claimed to improve on SSADM by incorporating a real time element for the development of real time systems, and generates code in Ada, C and Pascal. In addition, a version that incorporates object orientated design capability will be available from the end of the year. Previously Yourdon software ran on PCs, and there are around 600 sites currently using its applications.

HARDWARE NEWS
80486 SYSTEMS

Birmingham's Apricot Computers plc has made good its promise to be out early with an i486-based machine with the launch of its VX FTserver range, codenamed Titan and claims to have boosted the performance of the i486 with a specially designed Hypercache, 128-bit wide and 8k deep, which allows the i486 to operate in its burst mode. The aggressively priced servers come in two ranges: the VX 400 series of MS-DOS (or optional OS/2) network servers, aimed at MS-Net, Lan Manager, Novell Netware/386 and Lan server operation; and the VX 800 Series for Unix. Memory configuration and serial I/O provision are the major differences between the two ranges, with the Unix models boosting standard RAM from 4Mb to 16Mb and featuring 32 or 64 channel serial support as standard. There are four models in each range, beginning with the Model 10, based on a 25MHz 80386 and with 117Mb hard disk, and followed by the 25MHz i486 Models 30, 60 and 90, which are configured with 338Mb, 638Mb and 1047Mb hard disks (SCSI or RLL) respectively. Using the Micro Channel Architecture bus, the systems support Ethernet (Token Ring optional) and VGA graphics on the Motherboard, and also includes fault tolerant features through the Advanced System Controller subsystem, with uninterruptible power supply, system environment control, disk shadowing and system diagnostics. A back-up option using digital audio tape technology from Hewlett-Packard and Sony, for 1.2Gb storage on a single DAT cartridge will be available fourth quarter. Also available is Apricot's Security System, with security management software and security card, as on the Qi workstations. The new systems will form the core of Apricot's distributed computing policy along with the Qi PS/2 compatibles and AT-based Xen workstations, but may impact low- end sales of the Sequent VX 9000 multi-processor minis. Prices range fron £8000 to 22,000, with a low-end i486-based 400/30 rated at 15 Mips and including 4Mb RAM, SCSI drive system and 338Mb hard disk still breaking the £10,000 price barrier. A VX 800/30, three times more powerful than a similarly configured Altos 2000/20-8, would cost just under £12,000, compared with £40,000 for the Altos, claimed Apricot. Shipments begin July for the 386 versions, and September for i486 machines.

IBM has announced a 80486- based desktop machine, for delivery in the fourth quarter - but the offer is limited to upgrades for customers with the PS/2 Model 70 A21 and will not be marketed as a finished product. Called the PS/2 486/25 Power Platform, the board is claimed to offer up to 80% higher performance in business applications than the 80386 CPU it replaces, and up to three times the performance in numeric-intensive applications. The board includes the 25MHz 80486, which has integrated maths co-processor, cache memory controller with 8Kb of internal cache memory, and replaces the multi-chip equivalent that makes up the 80386 processor. The new board - which has to be fitted by a dealer - costs $4,000 - £3,000 in the UK, and people who want one will have to buy the Model 70 A21 first. However, despite claims of 100% capacity with the 80386, AIX Unix apparently needs further testing, due to its "direct 32-bit addressing", and will not be available for the new processor until the first quarter of 1990.

SERVERS

Oracle has announced four new servers for Unix 386, OS/2, Vines and NetWare 386. The first three are available form the fourth quarter, priced at £3,000, 2,000 and £4,000 respectively. The NetWare 386 version will follow in 1990 - no price given.

NEWS ROUNDUP

After so many years of explosive growth, the news that Sun Microsystems fourth quarter results are likely to be "significantly below" those for the same quarter last year came as quite a shock: the company blames the conversion to a new management information system, coupled with the introduction of five major new products back in April (UN No 3), and says the problems will be "largely confined to the quarter". Although acceptance of the new product lines has been good, the production ramp is being impaired "by an insufficient supply of certain components", a situation confounded further by continuing strong sales of Sun's traditional products. The company may make a slight loss for the quarter, but says it expects fiscal 1990 "to be an excellent year".

The race to produce next generation Intel-based i486 machines has now begun in earnest: the UK's Apricot Computers Ltd was first out with a machine custom built for the chip, and sees the role of the processor as ideal for network servers. IBM disagreed, saying that raw processor power was not the most important element of a server, and promptly launched an i486 upgrade option for the PS/2 Model 70 A21, which allows a user to run Autocad up to three times faster, (see above). In its turn, Dell Computer Inc was sceptical of IBM simply replacing its 80386 with the new processor without re-designing the rest of the machine to cope. Dell, which launched its own Unix machines in the UK last month (UN No 2), says it will be an early player in the i486 market, and already has a machine working in the labs. First availability of i486 hardware will be in the fourth quarter of the year.

But hold on to those orders for i486 boxes - Intel Corp has already started talking about the 80586, saying that the part [will integrate 4 million transistors, against 1.2 million for the 80486, and looks to have it available by 1993.

The Open Software Foundation has issued its third Request For Technology, following on from its user interface and vendor neutral distribution format RFTs. This time it is looking for distributed computing technology, and hopes to identify the core technologies needed to support distributed applications including services such as remote procedure calls, naming of network resources, authentication and network security, presentation services and distributed file systems - corresponding to the Session, Presentation and Application layers of the OSI model. A decision on selected technologies will be made by November, with shipments expected by the middle of 1990.

Apple Computer Inc's A/UX is now very slowly emerging onto the UK market, but it now looks as if Apple's real Unix push will wait for the release of next generation Macintosh IIs, expected to make their first appearance in January 1990, according to MacWeek.

RISC NEWS

Data General's 88000 based AViiON systems were on show for the first time in Europe this week at the European Unix User Show. The AV/300 workstation series range from £6,154 for the bottom of the range 17 Mips system, up to £20,292 for the 20 Mips equivalent. The AV/500 multi-user/server systems start at £26,510, going up to £104,127.

TIS Ltd is introducing the low-end RISC systems from **MIPS Computer Systems** launched back in February onto the UK market, The 12 Mips M/12 server, available from July, will sell for under £20,0000. TIS is also introducing the MIPS RS10 family of low-end X-Window display workstations, which have up to 4.5Mb memory, support Ethernet and TCP/IP, and sell in the US for $3,200 - no UK prices as yet.

Bipolar Integrated Technology Inc, Beaverton, Oregon has come out with the first ECL implementation of **Sun Microsystems'** Sparc RISC architecture, claiming the six-chip set to be the world's fastest microprocessor, enabling desktop workstations to run at three to four times the speed of those out today. The BIT Sparc is claimed to run at over 65 MIPS and a peak 40 MFLOPS. Bipolar is offering samples now, volume early next year, but didn't give a price for the set.

WORKSTATIONS

Sony Microsystems has launched a new mid-range NEWS workstation - the 68030-based NWS-1500 series. Rated at 3.9 Mips, the new system includes a 68881 coprocessor, 4Mb memory expandable to 32Nb, Lance Ethernet controller and SCSI interface all on a single board measuring 23cm by 29cm: no prices given.

Regma UK Ltd, Houghton Regis, Bedfordshire, has been appointed European OEM for Palo Alto, California based Document Technologies' Image Processing workstations. The 80286, "true" 200 dots per inch version, with 100Mb Winchester drive is available now, prices start at £5,000. The 80386, 400 dots per inch machine will follow soon. At the top end, as a stand alone machine with a rasta processor box, 900Mb Toshiba optical disk drive, image scanner and printer, the cost rises to £18,500. The Image Processors run the Xtended Mode Operating System - XMOS - a multi-processing, multi-tasking, real-time kernel supporting various library, windowing and network options, and can be hosted by Unix, PC and DEC VAX systems. The workstations are aimed at small to medium sized users who need to store and process large numbers of A4 documents, and can be linked into mainframe and minis.

A company from Palo Alto, California claims to have come up with a networking system that improves the performance of the Network File System, NFS, on Sun servers by at least 50%. **Legato Systems** has introduced Prestoserve, a hardware/software product that acts as a filesystem accelerator, cutting network server overheads and speeding up critical NFS functions. It comes with a software tape, VME bus board and documentation. Priced at $8,000 it will be available from September.

DIGITAL STORAGE

Hewlett-Packard has given a big boost to the Data Digital Storage, (DDS), standards group with the launch of the HP 3450A digital data storage tape drive for OEMs. The 5 /14" form drive comes with a SCSI controller, DAT cartridges which store up to 1.3Gb of data in the DDS format, and will be available in August. Its main use will be to serve as an archiving backup for workstations, low end minicomputer and high end PCs. Search time however is around 20 seconds, about 1,000 times slower than a Winchester drive. Two DAT standards are vying for supremacy at the moment. DDS uses a sequential recording technique that means changes have to be appended. However it has a faster transfer rate than its Data/DAT competitor - 183Kb per second against 177Kbps - and stores slightly more - 1.3Gb as opposed to 1.2Gb. Data/DAT is more like a disk drive, it has a direct search technique, however DDS is expected to become more like Data/DAT over time. So far twelve companies are lined up on the Data/DAT team, including **Apple Computer** and **Hitachi**, but only Gigatrend has a product available as yet.

OTHER SYSTEM NEWS

NCube Corp and **Oracle Corp** have finally got together and launched the NCube 2 Scalar Supercomputer running Unix V.3, and a version of the Oracle relational database - once it is ready. A user interface is provided by Sun-3 and -4 workstations, The building block for the NCube systems is a VSLI single-chip 64-bit processor integrated with an error-correcting memory management unit, message routing hardware and input-output processors. The NCube 2 can utilise up to 8,192 of the chips - each with 64Mb of dedicated memory - providing up to 60,000 MIPS and 27,000 GFLOPS First deliveries of the NCube 2 are set for next month with prices starting at $500,000 for an entry level 64 processor model, rising to $2m plus for a machine with thousands of processors. **Arrow Computer Systems**, Epsom, Surrey, which currently sells NCube kit into Europe and the UK is to introduce the NCube 2 as soon as it is available.

ITL Information Technology plc, Hemel-Hempstead, UK, has added the latest 68020 and 68030 based fault tolerant multi- processors from Sequoia Systems Inc, as the Model 96E and the Model 97. The 96E is Sequoia's 200 machine, priced at £250,000 for up to 100 users. The Model 97 is a 32 processor version of Sequoia's 300 system, and will go to at least 2,000 users, with a start price of £450,000. The 96E and 97 are being launched ahead of ITL's own UK developed fault tolerant machine, which is promised by Christmas. It is understood to come in below the 96E, and provides an upward migration path for smaller ITL users.

Prime Computer Inc has extended its 80386-based EXL Unix family down with a new EXL MBX model aimed at from two to 10 users in small work groups, costing $8,200 to $30,000. It runs Prime's version of Unix System V.3.1 with support for MS-DOS using Locus Computing Corp's Merge 386 and the Prime Information EXL and version of Pick. It takes up to 33 asynchronous lines and up to 470Mb disk; main memory goes from 2Mb to 16Mb. The EXL MBX is available immediately in the US.

Floating Point Systems Inc, the Beaverton, Oregon company has added a SuperMAX second generation matrix algebra accelerator module for its FPS M64 attached scientific processors. The company claims that the new accelerator can do 152 MFLOPS, at a price of $130,000 to give a cost per MFLOPS of just $855. As many as eight SuperMAXes can be added to an FPS M64/60 to give peak performance of 1.2 GFLOPS. SuperMAX is targeted at users with very large matrix applications.

THE ROAD TO TRUSTED UNIX
by William Fellows

Recent, and well documented intrusions of Unix systems by "trojan horses" such as virus attacks, worms, and other security breaches via covert channels, have, over the last few months highlighted the problem companies face when trying to maintain security using a multi-user operating system underwritten by a rationale of openness and portability. Naturally the spotlight has fallen on ways and means of finding solutions to these problems, and a number of firms are taking a leading role in developing secure Unix packages. One of the more lively presentations from a Conference that accompanied the European Unix User Show was on this theme, delivered by Peter Alsberg, chairman of Addamax Corporation. The impetus of the secure Unix industry is focused on developing "trusted" Unix systems, that is systems which are trusted to block certain threats, but not others, encapsulating a more rigorous approach than the concept of "security," in which a system may be secure because it blocks threats A, B and C, but is not secure because it does not block threats X, Y and Z. A trusted system is said to be one which enforces precisely stated security policies which are designed to counter specific threats to security.

Rainbow standards

The US National Computer Security Center, (NCSC), has what is known as the "Rainbow" series of standards for defining security in various information technology arenas. The familiar Orange book defines criteria for evaluating trusted computer systems, (TCSEC). The Red book deals with trusted networks and the Blue book deals with PCs. Others include the Green book for password management, the Brown book for audit security and the Yellow book, which defines what can be used where. As yet there is no book for evaluating security in databases. TCSEC evaluation classes range from minimal security - D; through discretionary access controls, (DAC), comprising of discretionary security - C1, and controlled access - C2; to mandatory access controls, (MAC), with labelled security - B1, modular security - B2, and isolated domains - B3; up to verified security, a formal proof of security - A1. However it would seem that none of these are a replacement for sound engineering, nor are they prescriptions for specific solutions or functional or requirement specifications. What they do provide are assurances of security from testing, through specification, verification and configuration to distribution and documentation.

Commercial controls

Most commercial systems it appears, do have some kind of discretionary access controls, though according to Alsberg these are usually near to C1 and C2 criteria and far from B3 security. Unix has no concept of mandatory access controls, so developing B level compliant systems with Unix tends to be a very costly and time consuming process - such controls have complex effects on the file system, shared resources and devices running off it. Often it is precisely these shared resources that open up "covert channels," allowing data to be passed between users when in fact it should have only restricted access. To minimalise the presence of covert channels in systems, Alsberg says that system design should be addressed to level B2 and above, and although there will always be shared resources, the worst offenders can be designed out. Vaccines and innoculations, such as those prescribed by companies such as Sun after the Arpnet worm attack at the end of last year, are only one shot solutions and are virus specific. Mandatory controls in particular can help contain damage when incursions like this take place. Unix can be made trusted, and the Unix interface can be used at all classes Alsberg argued, "its just a matter of time and money, but the trick is to keep it Unix ".

Demand, development & the future

The demand for trusted Unix systems is being fuelled by NATO, the US Department of Defense and the UK Ministry of Defence, who are all engaged in $100m+ purchases - the US Government as a whole will require C2 on everything by 1992, and is committed to spending $1 billion. At this time over 70 systems of all types have been submitted for NCSC evaluation, but only nine have been evaluated and approved - seven at C2 level, and one each at B1 and A1. There is however only one evaluated trusted Unix, Gould's C2 Unix. Everything else is under evaluation, though research and development efforts are presently concentrated at the B1 level. A B2 Unix from AT&T is likely sometime after 1991, which will almost certainly force a similar offering from the Open Software Foundation. As for the future, Alsberg sees B1 Unix being an off-the-shelf standard by 1993, B2 shortly after, and B3/A1 Unix applications becoming available from specialist houses around the same time. Because of the niche market target areas, Alsberg thinks B3 or higher systems are unlikely to be targeted by Unix International or the OSF, the main commercial markets being in the B2 hemisphere.

DTI PUSHES UK INDUSTRY TO 1992

The UK Department of Trade and Industry's sibling Open Systems Technology Transfer programme took its first paces last month, with a briefing held in London, addressed by the Secretary of State, Lord Young. With the single European market looming close, the scheme, funded to the tune of £12m, aims to raise the collective consciousness of entrepreneurial capital to an awareness of the benefits, and need for open systems. "I didn't see any of the earrings or sandals that usually go along with open systems conferences," said Professor Chris Edwards of the Cranfield School of Management, opening the meeting - however much of what was heard turned out to be less desirable than outdated stereotypes - namely a lot of hot air. Indeed it was more than half way through the proceedings before the word Unix was even uttered. Lord Young at least seems to be a willing participant in his own Department's "Challenge of Open Systems," arguing that the "strategic importance of open systems must not be underestimated," and urging companies reluctant to abandon their proprietary systems to "reconsider!" Alex Henderson, IBM's UK director of commercial and industrial relations had the now familiar task of trying to reconcile IBM's schizophrenic attitude towards open systems solutions, holding up AIX in one hand, and qualifying proprietary kit in the other with the assertion that IBM "doesn't believe that individual supplier specifications will go away." As far as Unix is concerned he said "would you build an operating system for a very large mainframe that also runs on a micro? I don't think so." So much for Lord Young's Open Systems Challenge. It was left to David Butler, chairman of Butler Cox plc, to bring some sense to the affair, warning that if the message of open systems is getting through, there are others that are not. UK businesses it seems are far behind competitors in meeting the challenge that 1992 presents - European companies are "acting as though the changes have already taken place," citing the case of Infonet, the private data communications service owned by Computer Systems Corp - in August of last year it sold off shares to many of the top continental post and telecommunications organisations, which are astutely tooling up for post-1992 activity already.

LETTER TO THE EDITOR

Dear Sir,

As an ardent supporter of object-oriented methods I was naturally pleased that you chose to devote an entire page to the recent conference on Methods of Object-Oriented Software Engineering (UN No 3). However, you seem to have misinterpreted my views on the subject. The main thrust of my talk at the conference was that we must be careful not to oversell object-oriented methods. for we shall diminish their importance if we hail a new panacea and then fail to deliver. It is often difficult to overcome the cynicism of managers in the software industry who have seen many claimed "breakthroughs" turn out to be no more than trivial advances. If object-orientism is "like a religion" then it is in the sense that at present, we do not have the measured studies to back up the claims of improved productivity and quality. Object-orientism is **not** a panacea - but taken together with other advances in technique such as prototyping and evolutionary development, it promises to revolutionise the development of software in the long term.

With regard to Ada programming language, it is not tied to any particular design method but certain of its facilities make it appropriate, albeit in a rather limited way, as a target for object-oriented designs. My remark that "it is more of a teaching aid" referred not to Ada but to a technique for identifying objects from specifications proposed by Abbott and Booch.

John Daniels, REX Systems. (Copies of John Daniels' paper are available from the author by writing to REX Systems at 18 Brooklyn Road, London SE5 4HN, Tel 01 656 8804)

OPERATING SYSTEMS

IBM has changed the rules on its AIX/370 implementation of Unix, which runs under the VM operating system, and has switched from a flat monthly licence charge for the software to a graduated monthly charge tied to the size of 370 on which it is to run. The operating system now also supports the 3480 Magnetic Tape Subsystem. It will appear on limited availability next quarter, and the AIX PS/2 programs that had been delayed to the fourth quarter will now be available in the third - but only where they are to be used in conjunction with AIX/370. The supported version of VS Fortran under AIX/370 has also been put back one release - users will now need VS Fortran 2.5 rather than 2.4. The graduated charges for AIX/370 range from a one-time $29,760 a month on a baby 9370 to $204,800 or $6,825 a month on a 3090-600S; for Network File System - AIX/370 NFS - prices range from a one-time $1,980 or $79 a month to $13,650 or $455 a month on a 3090-600S.

AEG AG's Modular Computer Systems Inc in Fort Lauderdale, Florida has come out with a string of announcements led by its heavily previewed Real/IX operating system, which it describes as the first pre-emptive real-time Unix for its Classic Tri-Dimensional minicomputers. It is object-code-compatible with Unix System V and fully meets the System V Interface Definition and System V Verification Suite. Out in August, Real/IX will be included into the system prices for the Tri-D 9300 and 9700 and is separately priced at $12,000 for some existing systems. Also of some note is a new General Language System that offers three industry-standard compilers - C, Fortran 77 and Pascal - for flexible coding, interlanguage callability, and easy portability among its machines. Modcomp also announced Oracle Version 6.0 and related tools on the Classics, at from $19,000 for the base system, from December. A new DECnet Network Interface, integrates all ModComp Classics, 16- as well as 32-bit under MAX IV or MAX 32, into a DECnet Phase IV network. It starts at $10,000 from August. A new Ada Compiler System is supported under Real/IX and MAX 32 and an interface to Oracle is planned. Starting at from $22,000, it will be available in first quarter 1990.

Tadpole Technology, of Cambridge, UK, has released a full implementation of the VxWorks real-time operating system for its TP32 VME and TP33 Multibus II single board computers, using the 68030 processor. The VxWorks operating system runs under Unix for target real-time applications development, and is available for Motorola and Sparc-based computers.

Kodak-owned Unix operating system supplier **Interactive Corp** Interactive has un-bundled its products into a series of Unix system software modules, allowing systems designers and VARs to choose their own configuration. Interactive's Architech Series packages the modules into three main areas - application, network and workstation - allowing configurations ranging from non- networked run-time environments to full software development platforms. Along with the base 386/ix System V.3.2 compatible operating system, Interactive offers starter, extender and developer configurations within the three categories. An application starter system, for instance, is priced at $745 for a single user system including 386/ix operating system, VP/ix MS-DOS under Unix, the Ten Plus user interface and documentation: a multi-user version costs $1,445. An extender pack would also include PC-Interface, while the developer pack - priced at $1,445 single-user, $2,145 multi-user - has the full Unix software development system and text processing utilities.

NETWORKING AND COMMUNICATIONS

Hard on the heels of its multi-protocol router (UN No 3), **cisco Systems**, Menlo Park, California has a new protocol translator for X.25 and TCP/IP communication links. The two slot server chassis which runs a 68020, has 1Mb of system memory, Ethernet and serial interfaces with TCP/IP and X.25, can host up to 100 concurrent sessions and costs $9,400. It allows full interchange to take place between X.25 and TCP/IP on the host and server, and automatically converts between the different parameters.

The number of Token Ring-based local area networks in the UK has overtaken Ethernet installations, according to a new report by **Apt Data Services Ltd** and **Benchmark Research Ltd**. The study found that 36% of local area networks are Token Ring, compared to 33% Ethernet, but adds that "the transition is nothing like the sweeping aside of Ethernet that some US reports have predicted". Token Ring applications featured the fastest rate of increase of any protocol, although Ethernet ones still show a steady increase. Other protocols, such as CSMA/CA and broadband, are said to be healthy, without witnessing the rapid growth of the two dominant systems. The report, Local Area Networks in the UK, is published by APT Data Services Ltd, on London 528 7083, and and costs £345.

APPLE MAC NEWS

In what could prove a significant threat to **Apple Computer Inc's** proprietary Macintosh market, a Burbank, California company, **Bawamba Software Inc**, has released the first version of a software package that is claimed to effect quick conversion of applications written for the Macintosh to run on MS-DOS and OS/2 personal computers. The company says its Multiplatform Compatibility Package will enable a developer to change C or Pascal source code from a Macintosh program to MS-DOS or OS/2 source code in weeks instead of the months it would take to do a rewrite. Bawamba is also doing a version to convert Macintosh software to Unix, using the Open Look front end.

Spectrum Concepts Inc, New York has a software system expected to give Apple Macintosh computers wide access to corporate communications networksx. XCOM 6.2 for the Macintosh is based on IBM's Advanced Program-to-Program Communications Logical Unit 6.2 specifications, and any XCOM 6.2 computer can exchange files, jobs and reports with any other XCOM 6.2 computer. XCOM 6.2 is available for IBM VTAM hosts, S/36, S/38, AS/400, MS-DOS and OS/2, DEC VAX, AT&T 3B2, Apollo and Sun workstations. Due out in September, it costs $450, and needs MACAPPC installed.

PROGRAMMING AND LANGUAGES

The BBN Advanced Computers subsidiary of Bolt Beranek & Newman Inc, Cambridge, Massachusetts is offering the Xtra integrated programming environment for its Butterfly GP1000 parallel processor. Xtra stands for X Tools for Runtime Analysis, and is[based on the X Window System. Xtra includes a TotalView source-level multiprocess debugger to enable the programmer to watch the effects of many processes running simultaneously, and by having a group of related processes to share a single breakpoint via a single menu command, TotalView causes all related processes to stop so that the programmer can examine the state of any or all of them. TotalView is $5,000 and is available now for the Butterfly GP1000. Gist is bundled with the Butterfly and is planned to be an integrated Xtra module late this year, and additional modules will appear early next year.

Database Technologies, Brookline, Massachusetts, has released version 2.5 of its C-Data Manager, an object orientated programming and database building tool. C-Data Manager is aimed at CAD/CAM, AI, text processing and graphics environments. Written in C, it is supported on Sun for $350, Macintosh, $150, PCs, $150, and VAX systems, $400.

US software house Empirical Research has set up a UK base in Lichfield, Staffordshire, and is introducing the Unix Driver Guru - basically a book on disk for Unix programmers, which provides information on writing or modifying Unix device drivers, from an overview of design right down to technical information on specific system calls and functions. Examples of device drivers are included on the disk for SCSI, input/output, liquid crystal display, and a high speed disk controller device driver for VME/SMD interface boards. Unix Driver Guru costs £95 and runs on PCs. Also new from Empirical is MINDS - a text retrieval system developed by US firm Terus. Files of ASCII text are indexed - without the need for complex preparation - and MINDS can then be interrogated using plain language questions. MINDS for DOS cost £100, Unix V.3.2 versions range from £550 to £1,500 depending on configuration, and a Xenix flavour is under development.

Last month, two versions of object-oriented Pascal were released by rival language developers Microsoft Corp, Redmond, Washington, and Borland International, Scotts Valley, California. Microsoft's QuickPascal has a windows-based editor, and is said to be the fastest implementation available, cost is $99. Borland's Turbo Pascal (5.5) is more expensive at $150 (or $250 for the professional version), but includes both dynamic and static objects, and (like C++) constructor and destructor key words for initialising and deinitialising objects. Both products take their starting point from Apple's Object Pascal, and include an integrated debugger and third party support libraries.

Micro Focus Plc has added a report writer for Unix systems. The company claims that Co-Writer/2 can be used to supply "fourth generation functionality" within a Cobol application. Co-Writer/2, for use with Cobol/2, is also available for MS- DOS and OS/2; no prices given.

CASE AND DATABASES

DEC has resolved the thorny issue of an SQL relational database for use with its Ultrix Unixalike by buying Ingres from Relational Technology Inc to use as the basis of what will become its own proprietary SQL database for Ultrix, promising that third party applications written for it will be portable to its own Rdb/VMS database, which is being bundled with VMS 5.0, and to other open systems. It is likely that it will bundle a run-time version the resulting product, for which no date has been given, with Ultrix, much to the annoyance of suppliers of rival databases such as Oracle Corp.

Information Builders Ltd put out a series of announcements out together at the UK Computer Measurement Group user meeting in Glasgow last month, leading off with a move into computer aided software engineering products, IBM MVS and MVS/XA versions of its Level V expert system development software and a Systems Applications Architecture-compliant version of PC/Focus using Presentation Manager which will give the company SNA LU6.2 communications for the first time. Information Builders also promised its ACE repository as competition to IBM's long awaited, but as yet unannounced, repository by the fourth quarter of this year, and unveiled a list of new implementations of Focus. The new machines on which Focus is now supported include those from Sequent Computer Systems Inc, adding to the growing list of Unix versions available (Sun, Apollo, AT&T and Pyramid); and support on Tandem Computers under the Guardian operating system is scheduled for delivery in one year. A new Sybase server version of Focus is also launched under Unix, having already been made available under VMS. The software engineering product is called FACT, for Focus Application Creation Tool, and is a way of automating structured development methodologies. It was built with Systematic Ltd's Virtual Software Factory, (see page two).

After four years of development, Columbia Software Inc of the eponymous Maryland town has come up with a fully-integrated forms processor with database capabilities, called FormBase. So far the product runs only on MS-DOS boxes - release 3.1 and up - using the 80286 up, and needs 640Kb memory. Xerox has an exclusive worldwide marketing agreement for the product. Priced at £495 in the UK, the forms processor will be available from next month as part of the Rank Xerox Desktop Software range.

INTERFACES AND OTHER NEWS

Santa Cruz Operation has begun distributing the first developer kits for Open Desktop, the Unix-based systems and applications software bundle. Including OSF/Motif as the front-end graphical interface, RTI's Ingres database and SCO Xenix with networking and virtual memory, a run-time Open Desktop package is due to sell for a $1,000 price tag, The developer's version provides application software, updates, online support systems, however initial versions do not include the Ingres or Locus PC Xsight components, which will be added over the next few weeks. List price is $5,000 until September 1st.

Phoenix Technologies Ltd, Norwood, Massachusetts has developed a new version of its PhoenixPage systems software, enabling vendors of Unix workstations to offer as an application on their systems the full function of an Adobe Systems PostScript printer, which then prints to a cheapo non-intelligent laser printer. Running under the host operating system, the new implementation of PhoenixPage uses the system's CPU, memory and disk storage to perform printer management functions typically handled by a laser printer's controller. Integrators can then opt for lower-cost laser printers while remaining compatible with several page-description languages and printing standards, not only PostScript, but also PCL from the Hewlett-Packard LaserJet Series II, HPGL and CGM.

There's more interesting news on the Japanese saga that we have been following over the last few weeks; according to Tom Mace, Unix International's director of marketing, Unix Software Operation's System V development work will "ultimately" be merged or integrated with the Sigma project's own Unix work - Japan's Ministry of Trade and Industry has spent some $200m on the Sigma project so far, and it's standard Unix workstation, the project's goal, is due to be released sometime next year.

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Motorola has managed to reduce its MVME147 double board set, which runs a 20MHz 68030 with 8Mb memory, down to single board size using surface mount technology, reducing the space occupied by components on the board, offering the capability for increased processor power on its Delta series: Motorola is also now offering an entry level version, the MVME147 SRF, which uses a 16MHz 68030 with 4Mb memory.

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Unisys has introduced some network products for A Series mainframes, allowing existing applications to communicate over BNA and TCP/IP without modification, to OS/1100, PC and Unix systems - licenses will range from about £10,700 for the low end A1 to £35,000 for the high end A17.

Olivetti and Oracle Corp have signed an OEM agreement allowing both organisations to independently sell Oracle tools on the Olivetti LSX range of Motorola (and Motorola compatible Edge processor) based systems: Oracle has also finalised a joint marketing agreement with Bull HN Information Systems, where the two companies will work together on marketing Oracle software on the entire Bull range.

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Integrated Solutions Limited, the SD-Scicon spin-off artificial intelligence software house, has added more hardware platforms for its Poplog multi-language program development environment: it is now available on Sequent Symmetry and Sun 386i and Sparc micros.

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Cincinnati, Ohio based Tominy Inc says it has ported its Mach 1 Application Development Environment to AT&T's 3B2 sytems and 68030 platforms - Mach 1 is claimed to permit integration of multivendor software development environments: runtime licence starts at $1,000, development licence at $1,750.

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The OSF/Motif Interface is expected to go on general release from July.

Solbourne Computer Inc has signed agreements with distributors in Australia, Greece, Taiwan and Isreal totalling $19.8 million over the next 12 to 36 months: the deals are with Solbourne Computer Australia Pty Ltd in Kew; ACE-Hellias in Athens (a subsidiary of American Computers and Engineers Inc, Los Angeles); Solbourne Computer Isreal Ltd (owned by Omnitech Ltd in Tel Aviv); and Syscom Computer Engineering in Taipei, Taiwan.

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Sun Microsystems has launched a new GXi graphics accelerator card for the Sun 386i, claiming that graphics performance is boosted from three to ten times: using the 5 MIPS TMS34010 graphics processor from Texas Instruments, with software drivers from Sun, and costs $2,750 (£2,250 in the UK) for existing Sun 386i users.

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Strand Software Technologies, a division of Watford, Hertfordshire-based AI Ltd has officially launched its commercial programming language designed for parallel processing called Strand88: the language has a foreign language interface enabling existing systems to be embedded in a Strand harness to bring out the latent parallelism in their design, and preserving large amounts of existing code; Strand88 is currently available on Sun Microsystems and Intel iPSC/2 kit, and 60-day test drives cost £150, deductable from any ensuing software licence.

WHEELIN' AND DEALIN'

There were several clouds over Unix skies this month despite the blazing summer sunshine - H-P says up to 750 jobs may go at Apollo following the acquisition back in April. Control Data Corp got rid of its toublesome UK Systime Ltd business last month - the solution is dismemberment by management buyout - five separate companies are being created out of the ashes. The bones of failed Unix systems pioneer Plexus Computers Inc look like going to Recognition Equipment Inc, and Zilog Inc, last remanent of oil giant Exxon Corp's ill fated plunge into computer technology in the mid-seventies has been sold to its management. Latest victim of the stampede to Unix form proprietary systems is Qantel Inc, Hayward, California, which is abandoning further development of its Sigma line and putting efforts in to a new range of Unix hardware and software scheduled for the Autumn. Also set for Autumn is a new range of graphics computers from Ardent. Big spenders of the month come on down - Canon Inc has paid £100m for a 16% stake in Steve Jobs' NeXT Inc, ICL is buying a 40% stake in manufacturing systems specialist MetaTech BmbH, and, hotting up the pace of the elctronic design automation market, the Racal-Redac group has snapped up HHB Systems Inc for $19m, as well as the Thom'6 subsidiary of French Telesysteme, part of France Telecom, for £300,000. Computer Associates International Inc, already the world's biggest software company by some distance, plans to get even bigger - by acquiring Cullinet Software Inc, Westwood, Massachusetts, in a share exchange offer which values the company at $333m. UK Altos accounting reseller Office Automation of Norwich has announced it is to merge with Inta Electronics of Wokingham, Berkshire in a bid to speed up its growth. Volume manufacturing of low-cost Sparc-based desktop systems will soon emerge from Taiwan, following an announcement from Sun Microsystems Inc of licensing agreements for the use of Sparc processor and system software with leading Taiwanese PC manufacturers Datatech Enterprises Company Ltd and Tatung Company. Toshiba's low end Sparc machine is set for launch early next year, and Prime is set begin marketing Sun systems later this year. And Sun itself has made its first move into retail distribution, signing an agreement with the publicly-quoted Dataphaz Inc, a Tempe, Arizona-based ComputerLand franchisee. On the X-Windows front, Tektronix is taking Network Computing Devices' X Terminal and extending it for high end graphics capability, and 18 Japanese manufacturers are planning to develop a standard X terminal for Unix systems. The US Semiconductor Industry Association is backing the incorporation of a new memory chip manufacturing company, US Memories Inc, which is supported by major US manufacturers led by IBM, DEC and Hewlett-Packard Co - the new company will fabricate 4M-bit memory chips to IBM's design for the companies backing the $1,000m project. Cambridge-based Sinclair Research is working on a 250 MIPS Risc processor likely to be available within a year. Users will be given the capability of writing their own instructions for customised versions of the chip, which will have 256 bytes of user ROM and will cost £2,000. Finally, the UK Prison Service's computerisation project known as LIDS, or Local Inmates Database System, part of the Home Office's HOUSE initiative - Home Office Unix Systems Environment - has awarded its first contract to Bull HN Information Systems Ltd, for 128 Unix XPS-100 systems valued at £3.5m. The systems, together with 1700 terminals, will be installed in prisons around the country by the end of 1992, to provide comprehensive details on all inmates.

Contacts

Addamax US 301 590 0090. Altos UK 753 23024. Apple UK 1 573 7797. Apricot Computers UK 21 456 1234. Apollo UK 908 366 188. Apt Data Services UK 1 528 7083. AT&T UK 567 7711. Bawamba US 818 843 1627. Baydel UK 372 378811. BBN US 617 873 2000. Bipolar US 503 629 5490. cisco Systems US 415 326 1941. Cognos Software UK 344 486668. Columbia Software US 301 997 3100. Data General UK 572 7455. DEC UK 734 864 717. Dell UK 344 860456. Empirical Research UK 543 258811. Floating Point 503 641 3151. Hewlett-Packard UK 344 424898 IBM UK 256 56144. ICL UK 1 788 7272. Information Builders UK 1 903 6111. Intel Corp UK 793 696000. Interactive Systems Corp UK 494 26211. ITL UK 442 42277. Legato US 415 329 7880. Micro Focus UK 635 32646. Microsoft UK 734 500741. Mips Computers UK 628 890535. NCube US 503 629 5088. Open Software Foundation Belgium 32 2647 7740. Oracle UK 1 948 6911. Modcomp UK 734 786808. Phoenix Technology US 617 551 4000. Prime Computer UK 5727 7400. Regma UK 582 867222. Relational Technology Ltd UK 1 351 7722. Santa Cruz Operation UK 923 816344. Sony Germany 010 49 221 59 66532. Spectrum Concepts US 212 385 3455. Sun UK 1 276 62111. Systematica Ltd UK 202 297292. Tadpole 223 461000. TIS UK 628 810909. Unix International Inc US 201 263 8400. VisionWare UK 532 529292. Yourdon UK 1 637 2182. X/Open UK 1 834 4874.