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IEEE P1003.0 Draft 13 – September 1991

X3T5 Open Systems Interconnection

X3T9 I/O Interface

Text

X3V1 Office and Publishing Systems

For more information, contact CBEMA, c/o X3 Secretariat, 311 First Street NW, Suite 500, Washington, DC 20001-2178, Telephone: (212) 626-5740.

C.3 The Informal Standards Organizations

The following organizations are some of the major trade associations, user groups, and professional bodies active in either promoting, implementing, or reviewing information technology standards.

BCS : British Computer Society

The BCS is a professional institution that participates in standards work, organizing specialist groups on specific subjects for input to BSI.

For further information, contact (information TBD).

CBEMA : Computer and Business Equipment Manufacturers Association

CBEMA is a trade organization whose primary function is to represent large manufacturers of hardware-based information technologies equipment in lobbying about public policy. In addition, it provides education programs, information exchange forums, and deals with the industry's public image.

CBEMA has long had an interest in standards. It serves as the secretariat for X3. It also offers a standards and technology program where its members can exchange information on standards issues and industry standards.

CBEMA's members are mostly large manufacturers because its dues are tied to corporate revenues and structured in a way that makes it too expensive for small companies to join. Members are either American companies or US subsidiaries of non-American companies.

For more information, contact CBEMA, 311 First Street, NW, Suite 500, Washington, DC 20001-2178, Telephone: (202) 626-5740.

CODASYL : The Conference on Data Systems Languages

The Conference on Data Systems Language (CODASYL) has been active since 1960 in the development of the COBOL language, through its COBOL Committee (CC). Since 1969, it also has been active in the development of a common Data Description Language for defining schemas and subschemas, and in a data manipulation language, through the DBTG Data Base Task Group of the CC. The activities of the CC are documented in the COBOL Journal of Development, which serves as the official COBOL language specification.

In 1969, ANSI (then the United States of America Standards Institute) issued the first COBOL standard. At that time, the X3.4 committee stated that X3.4 recognizes the CODASYL COBOL Committee as the development and maintenance authority for COBOL. In practice, this meant that ANSI agreed not to make any changes to the CODASYL-defined language specification. Although this agreement has been challenged over the years, the CODASYL-ANSI agreement is still strong. As a result, the CODASYL has enormous influence upon the COBOL language.

Toward the end of 1971, a new CODASYL committee was established—the Data Description Language Committee (DDLC). The DDLC was formed to serve the same functions for the schema DDL as the CC does for COBOL. That is, since the schema DDL is a conceptual schema and network-model database language for use with many programming languages, not just COBOL, the DDLC continues the schema DDL development and publishes its own Journal of Development documenting the language's current status.

The COBOL DML and subschema DDL (for defining an external view) of the DBTG are COBOL-specific and have remained part of the CC under the name "The COBOL Data Base Facility."

The CODASYL membership is composed of voluntary representatives, mostly from computer manufacturers and users in industry and the US Federal government.

COS: Corporation for Open Systems

COS is a US-based, international, nonprofit association of vendors and users, formed in 1985 to promote and accelerate the adoption of interoperable, multivendor products and services based on OSI and ISDN standards. To accomplish its goals, COS provides a user-vendor forum for the statement of user requirements and the discussion and management of the issues surrounding the deployment of open systems. COS also identifies test requirements, and sponsors test tools development and conformance and interoperability testing to verify that computer products and services conform to OSI or ISDN standards.

COS's membership consists of more than 60 prominent manufacturer, user, and telecommunication service organizations worldwide. COS cooperates with similar organizations such as SPAG Services in Europe and POSI in Japan. Other key groups in the worldwide promotion, implementation and testing of OSI and ISDN standards are affiliated with COS under its Alliance Associate program.

For further information, contact the Corporation for Open Systems, 1750 Old Meadow Road, Suite 400, McLean, VA 22102-4306, USA, Telephone: (703) 883-2700, Fax: (703) 848-8933. In Europe contact Corporation for Open Systems, Avenue des Arts 1-2, bte 11, 1040 Bruxelles, Belgique, Telephone: 32 2 210 08 11, Fax: 32 2 210 08 00.

EMUG/OSITOP: European Users Groups

These groups are involved in promoting and developing the MAP and TOP specifications (see below for MAP/TOP).

EPRI : Electric Power Research Institute

The Electric Power Research Institute's (EPRI) is an industry association concerned with electric power utilities. Its membership comprises more than 673 publicly and privately owned utilities in the United States. Besides providing a variety of utility-specific services to its membership, EPRI 's latest mission is to facilitate the use of open systems technology in the utility industry.

Toward this end, EPRI has developed a Utilities Communication Architecture (UCA), which is similar to the National Institute for Standards and Technology's (NIST) Government Open Systems Interconnect Profile (GOSIP) Version 2.0. Much of the UCA was developed by EPRI with the cooperation of Honeywell and Anderson Consulting.

EPRI 's specific open system interests span realtime UNIX, expert systems, and database access using RDA and SQL. Because of the financial structure of the utilities industry, EPRI wants to encourage these and other open systems technologies for equipment with a 12 to 15 year life cycle.

For further information, contact EPRI 's headquarters at 3412 Hillview Avenue, P.O. Box 10412, Palo Alto, CA 94303, Telephone: (415) 934-4212.

ESPRIT (European Strategic Programme for Research and Development in Information Technology)

The European Strategic Programme for Research and development in Information Technology is a European research programme initiative, started in 1982 and sponsored by the Commission of the European Communities. About 227 projects were implemented during the first phase of the project in five major work areas: advanced microelectronics, software engineering and technology, advanced information processing, office automation, and computer integrated manufacturing.

Nearly thirty projects have enabled substantial advances to be made in establishing internationally recognized standards. Examples of the Portable Communications Tool Environment (PCTE) project, the Communication Network for Manufacturing Applications (CNMA) project, and the Herode project, which has prepared an Office Document Architecture standard for adoption as an ISO standard.

The second phase of the Esprit programme will be concerned mainly with three areas—microelectronics and peripheral technologies; the creation of technologies and tools for the design of information processing systems; and enhancing the capacity for using and integrating information technology to extend the scope of its applications.

For further information contact ESPRIT , Director General, DG XIII, CEC, rue de la Loi 200, B-1049 Brussels, Belgium, Telephone: (32 2) 235 11 11, and Telex: 21877 comeu b.

ETSI : European Telecommunications Standards Institute

The European Telecommunications Standards Institute (ETSI), founded in 1988, is a voluntary standards organization involved in producing the telecommunications standards necessary to achieve a European unified market. ETSI was established outside the CEN /CENELEC framework. ETSI , however, works with CEN , CENELEC , and the European Broadcasting Union (EBU) in areas of mutual interest.

ETSI 's voting membership consists of postal administrations, along with manufacturers and trade associations, in each of the CEPT countries. Membership is not restricted to official representatives of member countries. The United States and US companies have been granted observer status.

Standards approved by ETSI are voluntary standards known as ETS (European Telecommunications Standards). ETSI also conducts prestandardization studies, develops technical reports and guidelines, holds conferences, workshops, seminars, and conducts interviews. ETSI 's interim standards are designated I-ETS.

For further information, contact the European Telecommunications Standards Institute, B.P. No. 52, F-06561 Valbonne CEDEX , France, Telephone: (33 92) 94 42 00, Telex: 470 040 F, and Fax Number: (33 93) 65 47 16.

EWOS : European Workshop for Open Systems

The EWOS is an ongoing regional workshop, formed in 1987, to provide and coordinate European input to the international standard profiles process. It was formed as the result of an initiative of SPAG , in conjunction with EMUG , OSITOP , CEN /CENELEC , CEPT , RARE /COSINE , and ECMA , and it assumes some of the responsibilities previously held by CEN /CENELEC. Membership in EWOS is not open to the United States.

EWOS is the focal point in Europe for the study and development of OSI profiles and corresponding conformance test specifications. EWOS documents have only to be submitted to public enquiry by CEN and CENELEC before becoming European Standards. EWOS 's is active in numerous networking and communications areas including File Transfer, Access, and Management (FTAM); Office Document Architecture (ODA); Message Handling Systems (MHS); Virtual Terminal (VT); Directory services; and Manufacturing Messaging Services (MMS).

For further information contact European Workshop on Open Systems (EWOS), rue de Brederode 13, B-1000 Brussels, Belgium, Telephone: 32 2 511 74 55.

FOCUS : FOCUS Committee

This UK committee was established in 1981 to identify issues on information technology standards and to determine action needed to promote effective progress. It makes recommendations to the Department of Trade and Industry on actions to fill gaps, prevent duplication, and remove incompatibilities.

INTAP (Interoperability Technology Association for Information Processing)

The Interoperability Technology Association for Information Processing, in Japan, is a national agency, funded by MITI. It deals with information technology, and specifically OSI products and advanced projects. INTAP is developing and providing conformance testing tools and services in Japan in cooperation with POSI.

MAP/ TOP User Group: (Manufacturing Automation Protocol and Technical and Office Protocol)

The MAP Task Force was formed in 1980 by engineers from seven General Motors (GM) divisions, to identify a common OSI-based networking standard for plant-floor systems. The Task Force grew to include all GM divisions, many other users, and many vendors. Its specifications are known as Manufacturing Automation Protocol (MAP).

The MAP specifications mostly reference OSI standards, but they also draw on ANSI, IEEE, EIA, CCITT, and various industry standards. Where standards do not exist, as in the case of the manufacturing messaging protocol, the MAP Task Force is either defining its own or instigating their formation by industry standards bodies.

In 1984, the MAP Users Group was formed, under the auspices of GM, with the Society of Manufacturing Engineers as its Secretariat. Its objective is to promote knowledge and use of MAP, and to insure input from users.

In 1985, Boeing sponsored a similar effort to specify common networking protocols, known as the Technical and Office Protocols (TOP), for the engineering and business offices. TOP is largely compatible with MAP, differing only at the lower two layers and the application layer where TOP addresses requirements of the technical and office user, rather than factory users.

Later in 1985, a TOP Users Group was formed. The entire effort became an international effort known as MAP/TOP, and the user group became the MAP/TOP User Group, which meets twice a year.

Today, the MAP/TOP User Group is an independent, self-funded organization that represents thousands of users worldwide, tied together through a worldwide federation of MAP/TOP user groups. Membership is open to either users or companies. The Industry Cooperative Services (ICS) is the worldwide secretariat. The MAP/TOP User Group also is a member of the Corporation for Open Systems (COS) and in North America, COS acts as the MAP/TOP User Group secretariat.

The MAP/TOP User Group is a Requirements Interest Group (RIG) of the Corporation for Open Systems (COS). This means that the MAP/TOP User Group generates requirements that vendors can use to built products. COS serves as the coordinator between users and vendors.

The MAP/TOP Task Force and User Group also is a major contributor of technical and conceptual ideas and specifications to the NIST, COS, and many of the IEEE POSIX Groups.

For further information contact the World Federation of MAP/TOP Users Groups, P.O. Box 1457, Ann Arbor, MI 48106, Telephone: (313) 769-4571, Fax: (313) 769-4064. In North America, also contact the Corporation for Open Systems at 1750 Old Meadow Road, Suite 400, McLean, VA 22102-4306, Telephone: (703) 883-2700, Fax: (703) 848-8933.

NCC : National Computing Centre

The NCC, centered in Manchester, England, though not a standardizing body, is active in developing codes of practice and providing testing and certification services for information technologies. It is currently leading a consortium to establish a harmonized European Test service for POSIX.

For further information contact National Computing Centre Ltd., Oxford Road, Manchester M17 ED, UK, Telephone: (061) 228-6333.

Network Management Forum

A vendor-driven group, the Network Management Forum is chartered to produce a commonly agreed-upon specification subset of ISO's network management protocols and the command sets to implement this subset. The promise of the NMF is that all of the network management products that its members come up with will conform to this common specification.

The NMF itself will produce no products nor will it specify implementations. Rather, the NMF will specify interfaces.

Major vendors belong to the NMF from both the computer (e.g., IBM, DEC, HP, Unisys) and telecommunications industries (e.g., AT&T, Northern Telecom, Telecom Canada). The NMF has published Release 1 of its specifications (1990). Member firms are developing products that conform to Release 1.

NMF information may be had from the organization at 40 Morristown Road, Bernardsville, NJ 07924. Telephone: (201) 766-1544.

NPSC: National Protocol Support Center

An Australian organization, the National Protocol Support Center was formed in 1986 as a joint effort between industry and the government. Like SPAG, COS, and POSI, the NPSC is promoting the adoption of OSI standards in information technology products and will be supporting a conformance testing capability in Australia. The Australian government, however, provides approximately 50 percent of the NPSC funding. For further information, contact (contact address and other information TBD).

Object Management Group

Founded in 1989 and headquartered in Framingham, MA, with marketing operations in Boulder, CO, the Object Management Group (OMG) is an international organization of more than 146 systems vendors, software developers and users. The OMG was founded to promote the theory and practice of object management technology in the development of software.

The OMG's goal is to develop a common framework, based on industry-derived guidelines, that is suitable for object-oriented applications. The adoption of this framework will make it possible to develop a heterogeneous applications environment across all major hardware and operating systems.

The OMG members are quick to form a consensus on certain object management issues because they see these issues directly affecting their software sales. For example, the OMG's object request broker design—key software needed to allow disparate open systems to request object services from remote sites—is supported by all the major object-oriented software vendors (e.g., IBM, Apple, Sun, DEC, HP, NCR, AT&T).

Further information is available from the OMG at 492 Old Connecticut Path, Framingham, MA 01701. Telephone: (508) 820-4300.

OSF: Open Software Foundation

The Open Software Foundation is a nonprofit, international vendor organization. Formed in 1988 by seven sponsoring computer manufacturers, its goals are to develop specifications for an open computing environment, develop software based on the specifications, and sponsor research and development in open systems.

OSF specifications are defined, and software developed, using an open process into which vendors and users have input and access. The specifications will be available, and the software licensable, to OSF members and nonmembers. Both members and nonmembers can also submit technologies to the OSF for consideration as an OSF specification and/or offering. Only OSF members, however, can participate in the selection of technologies or get early access to the software offerings. OSF's specifications and software will be based on IEEE's core POSIX system (POSIX.1 {2}). Other specifications and software will be based on a variety of international and national, as well as industry standards (e.g., AT&T System V.2 UNIX, Berkeley BSD UNIX, Massachusetts Institute of Technology's (MIT) X Window System and Kerberos Security System, Carnegie Mellon University's Mach Kernel, and X/Open's Transport Independent Interface). The remainder of OSF software will based on technologies contributed by numerous companies as part of OSF's Request for Technology (RFT) process.

In addition to its specification and software work, the OSF has created and funded a research institute to innovate and transfer open systems technology from universities and research labs to commercial companies.

OSF active-participation membership is open to computer hardware and software companies, government agencies, educational institutions, and other interested organizations worldwide. Memberships range from $25,000 a year for profit-making organizations to $5,000 a year for nonprofit organizations. The OSF currently has more than 65 sponsors and members, and more than $150 million in funding commitments through 1991.

For further information, contact OSF at Eleven Cambridge Center, Cambridge, MA, Telephone: (617) 621-8700. Alternatively, contact European headquarters at Open Software Foundation/Europe, Stefan-George-Ring 29, 8000 Munich 81, Germany, Telephone: (49 89) 930 920, or Open Software Foundation/Japan, ABS

Building, 2-4-16 Kudan Minami, Chiyoda-Ku, Tokyo 102, Japan, (81 3) 3 221 9770.

Petrochemical Open Software Foundation

Founded in Oct., 1990, the Petrochemical Open Software Corporation (POSC) was started by BP Exploration, Chevron, Elf Aquitane, Mobil and Texaco to facilitate the development of integrated computing technology for the exploration and production (E & P) segment of the international petroleum industry. Today, membership is open to all entities interested in the E & P industry. These members include other petroleum companies, E & P service companies, software vendors, computer manufacturers, and research institutes.

POSC's primary mission is the development of an industry-standard, open systems-based, software integration profile for E & P applications. This platform will be the interface between petrochemical software applications, database management systems, workstations and users. POSC activities focus on the development of an integrated E & P data model, a common look and feel user front-end, and a set of test suites enabling developers to evaluate their offerings against selected industry standards.

POSC is moving quickly and has sent out two public requests for inputs in several technical areas. Project teams for base standards, the E & P data model, and data access are in place. Staffing is in progress for other projects and special interest groups have been formed. POSC offerings will be released to industry for production over the next few years.

POSC is headquartered in Houston, TX at 10777 Westheimer, Suite 275, Houston, 77042. Telephone: (713) 784-1880.

POSI : Promoting Conference for OSI

The Promoting Conference for OSI was formed in Japan in November 1985 by six major computer manufacturers and the Nippon Telephone and Telegraph Corporation. Its raison d'etre is to promote the adoption of OSI standards by cooperating with other international groups that have the same objective, such as the European-based SPAG and the US-based COS. But conformance testing in Japan is being developed and will be provided by the INTAP.

For further information, contact (contact information TBD).

SPAG : Standards Promotion and Application Group

The Standards Promotion and Application Group (SPAG), founded in 1983, is a nonprofit, international research and development consortium of about 65 information technology manufacturers and users. In 1986, it became a company registered under Belgian law as SPAG Services s.a. SPAG's goals are to promote multivendor, interoperable products based on international standards, particularly OSI, and to keep its members informed about the latest developments in functional standards and conformance testing of products.

To achieve its goals, SPAG plays a leading role in the European Workshop on Open Systems (EWOS), publishes the Guide to the Use of Standards (GUS) regularly, and participates in the development of International Standard Profiles (ISPs). SPAG is particularly active in the development and marketing of test tools for manufacturing applications. Through its SPAG-CCT efforts, (a collaboration of European organizations) which arose out of the ESPRIT Project 955, SPAG is developing, and will be providing, conformance test tools for testing MAP/TOP 3.0, and conformance testing services to industry.

SPAG also is working within Europe to implement the certification infrastructure for OSI products, and is involved in a number of Conformance Test Services (CTS) projects within the Commission of European Communities (CEC). In addition, SPAG is active in Telecommunications areas and is leading a consortium developing verification services for the Broadband Networks project RACE.

Twelve shareholder companies make up SPAG's board of directors. The original founding companies—Bull, ICL, Nixdorf, Olivetti, Philips, Siemens, and STET—occupy seven seats on SPAG's twelve member board. The shareholder membership was subsequently expanded to include Alcatel, British Telecom, Digital Equipment Corp., Hewlett-Packard, and IBM, who occupy the five remaining board seats.

SPAG has close working relationships with its counterparts in North America (COS) and the Far East (POSI).

For further information, contact Graham Knight, at SPAG Services s.a., Standards Promotion and Application Group (SPAG), Avenue des Arts, 1-2 bte 11, 1040 Brussels, Belgium, Telephone: 32 2 210 08 11, Fax 32 2 210 08 00.

SQL Access Group

The SQL Access Group is a vendor group formed by a number of people in the ISO Remote Data Access (RDA) Group.

The SQL Access Group's charter is several fold. First, the Group is chartered to define a common subset of SQL functions to get around the many SQLs that exist. The specifications will include an SQL data format, as well as protocols for moving data within a multivendor SQL environment. Also included will be specifications for an enhanced SQL programming interface that will let developers write a single application that can access a variety of SQL databases. These SQL Access specifications are scheduled to be published in late 1991.

The SQL Access Group's second charter is to accelerate the work of the RDA group. Third, the SQL Access Group is working on putting more distributed functionality into RDA. Toward this end, each thing accomplished by the SQL Access group is fed back into the RDA group.

For further information, contact the SQL Access Group at (Address TBD).

UNIX International

UNIX International (UI) is a nonprofit industry organization formed to represent hardware manufacturers, system integrators, independent software vendors, value-added resellers, end-users, government agencies worldwide, industry standards bodies, and academic and research institutions who want to direct the evolution of System V UNIX. It has since expanded its scope to provide a framework for UNIX-based open systems work in the areas of desktop computing, corporate hub computing, and distributed computing.

Unlike X/Open, OSF, AT&T, and the IEEE, UI does not produce specifications, software, or standards. Its functions range from specifying technical and timing requirements for future System V versions and making suggestions about specific function designs to influencing AT&T UNIX licensing policies.

Using its ‘‘one-member, one-vote’’ approach, UI members formulate a consensus regarding the requirements and technical specifications for new System V UNIX versions. UI delivers its requirements to UNIX System Laboratories (USL), the AT&T spinoff that develops, distributed, and licenses UNIX. UI is USL's primary input source on technical requirements, conformance, and timing of releases. USL is committed to implement software to satisfy UI's requirements, unless there is a reason not to.

UI accomplishes its requirements and UNIX roadmap work through a series of work groups. UI members get early access to AT&T UNIX source code. UI also offers its members business opportunities seminars, porting guides and the use of member companies' porting centers, technical courses on various aspects of UNIX, and loaner or discounted systems from member companies.

For further information, contact UNIX International, Waterview Boulevard, Parsippany, NJ 07054, (201) 263-8400 or (800) 848-6495. In Europe contact UNIX International, Avenue de Beautieu 25, 1160 Brussels, Belgium, (32-2-672-3700). In the Asian Pacific region, contact Karufuru-Kanda Bldg. 8F, 1-2-1 Kanda Suda-cho, Chiyoda-du Tokyo 101, Japan, (81) 3-5256-6959.

User Alliance for Open Systems

The user Alliance for Open Systems was formed from two informal organizations (the Atlanta 17 and the Houston 30). The Alliance is currently a Requirements Interest Group (RIG) of the Corporation for Open Systems International (COS).

The Alliance is dedicated to overcoming barriers to open systems and speeding the development and deployment of open systems products. It intends to act as a catalyst toward the development and use of open systems. It will develop no specifications or products. Rather, the Alliance will create and support processes to influence and accelerate the availability of open systems technology (e.g., a repository of information about the cost benefits of open systems).

In 1990 the organization began its work by identifying barriers to open systems and global actions to eliminate those barriers. In 1991 the organization intends to start bringing resources to bear to achieve its goals. The Alliance has had one formal meeting (Dallas, March 1991) and will have its second formal meeting in

McLean, Virginia in Nov. 1992. Alliance committee work is ongoing throughout this period with three major subgroups in the formative stages.

For further information, contact the Corporation for Open Systems, 1750 Old Meadow Road, Suite 400, McLean, VA 22102-4306, Telephone: (703) 883-2700.

X.400 API Association

The X.400 API (Application Programming Interface) Association is an industry association formed initially to bring X.400 messaging into the PC LAN world. There are more than twenty companies in the association, and they include most of the current X.400 players.

Among its activities, the X.400 API Association developed an X.400 Application Programming Interface specification in conjunction with X/Open. These interfaces, completed in September 1990, are jointly owned by the X.400 API Association and X/Open. The two organizations contributed these interface specifications to the P1224 Group to use as a basis for the P1224 standard.

For further information contact (Address and other contact information: TBD)

X/Open

X/Open is an independent, nonprofit, consortium formed in 1984 to specify a complete, source-level-portable application environment. Although its members were initially vendors, X/Open's membership now encompasses users, system integrators, value-added resellers, government agencies worldwide, other industry-standards groups, and academic and research institutions.

Through an extensive market research program, X/Open works with members and nonmembers X/Open to identify user and market requirements for computer systems and software, prioritize the functional areas for X/Open to focus on, and determine the actual specifications for the X/Open environment. The prioritized requirements, identified directly drive X/Open's specification process.

The X/Open user requirements process, called the ''Xtra'' process determines requirements through one-on-one interviews and a series of market requirements conferences. The X/Open specifications are published in a series of books known as the X/Open Portability Guide.

The X/Open environment includes specifications for an operating system interface, networking, data management, programming languages, floppy disk formats, and internationalization, and distributed transaction processing. The X/Open Group does not normally define standards for these areas. Instead, it chooses from existing and emerging standards.

The underpinnings of the X/Open environment is based on the IEEE core POSIX (POSIX. 1 {2}) standard and parts of AT&T's System V Interface Definition (SVID). Most of the remainder of the specifications are formal international standards that are already accepted or likely to be accepted. However, to rapidly get standards into the field for practical use, where no formal standards exist, X/Open specifies industry standards and widely-accepted de facto standards (including some based on real-world products that have achieved consensus in the marketplace). In some instances where neither formal nor de facto specifications exist but there is a strong need for standards (e.g., internationalization and transaction processing), X/Open has itself defined specifications.

Besides producing specifications, X/Open cooperates technically with international standards bodies and private specification groups. To help users identify X/Open-compliant systems, the X/Open Group has developed a set of verification tests and a branding program.

X/Open was founded in Europe by Bull, Nixdorf, Olivetti, International Computers Ltd. (ICL) and Siemens. Its vendor membership was subsequently expanded to include AT&T, Digital Equipment Corp., Fujitsu, Hewlett-Packard, IBM, NCR, Nokia Data, Philips, Sun Microsystems, and Unisys. These vendors establish the X/Open specifications, although User and Independent Software Vendor (ISV) Advisory councils, which meet on a regular basis, as well as the ''Xtra'' process, provide the means for input from both users and ISVs. The user advisory council is composed of senior executives from Fortune 500 and International 1000 companies, as well as large government agencies in the US and Europe. The X/Open advisory council is composed of senior management of large software firms who have responsibility for planning and implementing corporate business strategies.

All members of X/Open are committed to supporting the environment defined. More than 100 software companies worldwide building compliant software products.

For further information, contact X/Open Company Ltd. at Apex Plaza, Forbury Road, Reading, Berkshire, RG1 1AX, UK, Telephone: 44 734 508 311. In the US, contact X/Open at 1010 El Camino Real, Menlo Park, CA 94025, Telephone: (415) 323-7992.

Annex D
(informative)
Electronic-Mail

Responsibility: Kevin Lewis

The following table lists currently-known e-mail addresses for active working group members. To correct your entry, send e-mail directly to Hal Jespersen, listed below.

Michelle Aden	Sun Microsystems	`aden@ebay.sun.com`	
Ralph Barker	UniForum	`...uunet!usrgrp!ralph`	
Carolyn Baker	MITRE	`cgb@d74sun.mitre.org`	
Timothy Baker	Ford Aerospace		
Rich Bergman	NOSC	`rich@tecr.nosc.mil`	
Andy Bihain	GTE Telops	`arb1@gte.bunny.com`	
Joseph Cote	Treasury Board of Canada		
Bernard Cox	NASA JSC		
Don Folland	CCTA	`def@cctal.co.uk`	
Thomas Ford	USAF	`tford@xpt.ssc.af.mil`	
Bob Gambrel	Unisys	`rjg@rsvl.unisys.com`	
Al Hankinson	NIST /NCSL	`alhank@swe.ncsl.nist.gov`	
Jim Isaak	DEC	`isaak@decvax.dec.com`	
Petr Janecek	X/Open	`p.janecek@xopen.co.uk`	
Hal Jespersen	POSIX Software Group	`hlj@posix.com`	
Lorraine Kevra	AT&T	`L.Kevra@att.com`	
Ruth Klein	AT&T	`ruthlk@attunix.att.com`	
Doris Lebovits	AT&T	`lebovits@attunix.att.com`	
Kevin Lewis	DEC	`klewis@gucci.dec.com`	
Heinz Lycklama	Interactive Systems	`heinz@ism.isc.com`	
Randolph Lynwood	NASA		
Doug MacDonald	General Electric		
Roger Martin	NIST	`rmartin@swe.ncsl.nist.gov`	
Dick McNaney	SAIC	`saic-02@huachuca-emh2.army.mil`	D
Pete Meier	IBM	`...uunet!aixsm!meier`	
Mary Lynne Nielsen	IEEE	`m.nielsen@ieee.org`	
Patricia Oberndorf	NADC	`tricia@nadc.navy.mil`	