The ISODE Consortium

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Abstract

The ISODE Consortium has been founded to support further development of the ISODE as a package on which vendors can build OSI products and as a package which continues to be used in the research community. The ISODE Consortium will provide the vendor-neutral architectural and administrative leadership that is required to make this work. The ISODE Consortium will aggressively evolve the ISODE, with particular focus on Directory Services and Message Handling Services.

The ISODE Consortium is a not for profit organisation, which is self supporting through membership fees and product licences. Membership is open to any organisation in any country. In addition, there is a special class of non-voting Individual Membership.

This document gives a general overview of the ISODE Consortium.

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1 Introduction

The ISODE package of OSI upper layer software and applications has been very successful in the research community. Many organisations have used the ISODE as a tool for working with a range of OSI applications, and the X.400 and X.500 components have been extensively deployed. On the basis of its technical strength, notwithstanding its openly available nature, a number of vendors have chosen to use the ISODE as a product base.

The ISODE Consortium will evolve the ISODE to make it more attractive and straightforward to build products on the ISODE, by addressing issues which could not effectively be met with the earlier setup. By focusing on system components, such as layer services and MTAs, the ISODE Consortium will allow vendors to take building blocks, which are complex and costly to build, and focus efforts on user interfaces to provide product differentiation. The cooperative approach being facilitated by the ISODE Consortium will allow for more cost effective development than would be possible for a vendor working alone.

The ISODE Consortium will take the ISODE out of the public domain, and commercial organisations will gain access to the source by joining the ISODE Consortium. This will later provide the ISODE Consortium with revenue from product licences, and thus ensure the long term viability of the ISODE Consortium. The ISODE Consortium will retain strong links with the research community, by making the ISODE available by means of a simply administered zero cost licence.

This document gives a summary of the business strategy of the ISODE Consortium, with focus on the technical direction in the medium term. Work which will be done in the first year, which will give short term benefit to members, is then described. The main document ends with a summary of the organisation and the types of membership available. Further details on benefits of membership and organisation of the consortium are given in a set of appendices.

2 Strategy

This section describes the technical direction that is being set for the ISODE Consortium, and the areas which are seen as critical for the first five years. This is a starting point, and the priorities and objectives of the ISODE Consortium will be influenced by and evolve according to its membership.

The major goal of the consortium is to evolve high end OSI-based applications, which can be used directly and as a basis for products. The development will be done by a mixture of direct work by the consortium, subcontract, and contribution from members. This combination will provide rapid and effective technical evolution.

The ISODE Consortium will put the ISODE into a commercial framework, which will make it a sound long term base for high functionality products. Links with the Research Community will be retained and strengthened. This linkage will be beneficial to the research community, which will be helped by the availability of ISODE based products, and to commercial organisations which will benefit from the usage and input of the research community.

Networked Application System Components The key components which the ISODE Consortium will work on will be application level components of networked applications. The major focus will be on "system" components such as MTAs (Message Transfer Agents) and DSAs (Directory System Agents). These complex components are a major strength of the ISODE, and a fundamental component of any product. There is relatively low potential for value added function compared to user interfaces, and so it is very attractive for vendors to buy in this technology. Conformance to base standards and key profiles will be fundamental. Demonstration user interfaces (user agents) will be supplied, typically from member contributions or based on public domain implementations. It is expected that most ISODE-based products will add value in this area.

This split means that APIs will be critical. All APIs used by the ISODE Consortium will be clearly defined, and will in general be publicly available. Consideration will be given to use of industry standard APIs, and selection of such APIs will be discussed with members. The XDS API (from the X.400 API Association / X/Open) will be provided over the existing ISODE DUA API.

Work will be done in a way which retains independence of lower layers, and the ability to use multiple stacks. Support for use over TCP/IP will be promoted in parallel with use over OSI lower layers.

X.400 and X.500 Message Handling Services and Directory Services will be the main focus of the ISODE Consortium, particularly in the first few years. They are seen both as useful end applications and as key building blocks, and the areas discussed below will be particularly focused onto these applications. Tracking standards, and conformance will be fundamental, as well as adding in new functionality and improvements. The OSI protocols will be a core component, but the overall system will include components for interoperability with non-OSI systems and private extensions where appropriate. A major change to the X.500 DSA will be to define a database API, so that new databases and mappings onto proprietary databases may be offered as value-added products.

Configurability Whilst the current components provide high functionality, they are too complex to configure, and there will be a transition to "plug and play". Whilst there is a lot of complexity, there is no reason why most of it should be visible. Substantial work will be undertaken to unify and simplify the tailoring and configuration of the ISODE in order to produce an easily installable and usable product.

Management Application management is a key problem, and the ISODE Consortium strategy has three basic components:

- The X.500 Directory will be used extensively. The directory is a distributed database, which is ideal for defining the configuration of OSI Services. For example: Mapping Application Entity Titles to presentation addresses; Dealing with X.400 UA Capabilities and routing; Storing public keys; Storing information on directory replication.
- A key type of management is the overview of a large number of system components (network and application) to monitor smooth running. This type of management must be open and lightweight, as a given component may need to be monitored from many locations. SNMP is the industry standard for this purpose, and will be used for ISODE applications.
- Detailed management of applications will in general need to know implementation specific details, and will usually be done by a small set of people. Implementation specific techniques will be used, to achieve the best possible management tailored to the application. The PP MTA Console has been a very successful application of this approach, and the direction will be continued.

CMIS/CMIP is an area which must be considered seriously and carefully by the consortium for all areas of management, and this will be reviewed in consulation with members.

Security Addition of effective security to the ISODE Applications is an important medium term goal. Use of X.509 public key based security is the technology most likely to be used. There are at least two ISODE-based security packages being developed in the research community (OSISEC in the UK, SECUDE in Germany) which should give a clear indication as to the viability of this technology, and may be an appropriate base for integration into later ISODE Consortium releases.

Performance Whilst broadly in line with the performance of similar products, improving the performance of the ISODE will be a high priority. It is important that the performance is comparable with equivalent non-OSI products. Three complementary areas will be worked on:

- The ASN.1 compilers used in ISODE need to be brought up to state of the art, both in functionality and in performance.
- Careful tuning of the full OSI Stack for the key applications.
- Use of a lightweight stack, with mappings onto COTS, CLTS, TCP, and UDP.

Integrating New Applications The issue of introducing new technology is important. In general, when a new area is being considered, a request for technology will be issued, which will allow for competing alternatives to be considered for inclusion into the ISODE. This may come from consortium members or from the research community. In some cases, developments will be undertaken or sponsored by the ISODE Consortium.

X.400 Message Store is a likely candidate for early addition. Remote access of a message database is highly desirable, and Message Store is the most promising candidate (although DFR could be a serious alternative). A decision on this area will be based on the results of developments in the research community, and on a number of early products.

3 First Release Components

The ISODE Consortium will make beta releases during its first year, and a full release towards the end of the first year. This section describes the value that will be added in that release.

Conformance There has been substantial work on interoperability testing with the ISODE components, but almost no work on conformance testing, which is a reflection of the way in which the ISODE has evolved. Conformance testing, the associated work to make systems conformant, and the specification of PICS to define conformance levels, is critical for a product. Whilst each product based on the ISODE will need separate certification by a test lab, there is a great deal that can be done to facilitate this.

The main component of this will be operation of conformance tests on ISODE, fixing problems found, and then providing notes on the tests, to facilitate product conformance testing. It may also be useful to formally test the ISODE reference implementation. PICSs will be provided. The ISODE contains a number of components which could be conformance tested. The priority components will be P1(1984), P1(1988) and X.500 (1988) DAP and DSP.

The ISODE Consortium has exchanged membership with COS (the Corporation for Open Systems), and conformance testing of the P1(1984) is underway. COS will use the ISODE X.400(1988) and X.500 as reference implementations, which will lead to early conformance testing of these components. It is hoped to establish a similar relationship with a European conformance testing organisation.

Source Restructure Substantial source restructuring will be key work. The PP X.400 will be integrated into the same source tree as the rest of the ISODE, which will remove awkward interdependencies. This unified source tree will be split into about ten clearly defined modules. APIs and interdependencies will be clearly defined and verified. Reasons for this approach are:

- Whilst there is structuring within the ISODE source, the interdependencies are too strong for the modularity to be effective. Some historical choices are causing evolutionary problems.
- It will facilitate use of selected modules (for service or product) in conjunction with non-ISODE modules on a mix and match basis.
- It will facilitate increasing the amount of effort applied on developing the ISODE, and for independent evolution of the separate modules.
- It will provide a structure for licencing.
- It will facilitate software vendors to sell specific components for use in conjunction with ISODE (e.g., UAs, DSA Database packages).

Continued Upgrade The continued upgrade, to increase portability and integrate a range of small enhancements will be important for vendors basing products on the ISODE. Unlike some vendors, who only supply a single reference implementation, vendor specific changes for portability will be integrated back into the consortium release. In addition to conformance the following is planned for the first release:

- A number of small pieces of work will be done to improve the overall functionality of MTA and DSA. The exact choice will be finalised during the first year, but will include MTA support for P_{edi} and domain name system.
- A database API for the QUIPU DSA. There will be a mapping of this API onto the current memory-oriented database, a disk database oriented towards organisational support, and a sample mapping onto an SQL database.
- MHS use of directory will be worked on by the ISODE Consortium, and this will be included in the first release if it does not cause significant delay or instability.

4 Membership

The consortium will raise revenue primarily by membership fees and product licences. Licencing arrangements are described in Appendix H. There are several types of membership, which are summarised in this section, with full details given in appendices.

Commercial This is for commercial organisations, who may be vendors or users of OSI products. Membership rate is determined by the annual revenue of the organisation. Full details are given in Appendix B.

Research This is for Academic/Educational organisations, and for not-for-profit, and government organisations with research as their primary purpose. There are two rates, with the lower being for academic institutions, and organisations with less than 150 members. Full details are given in Appendix C

Non-Commercial This is for not for profit, and government organisations which do not fit into the research category. There are four rates of membership, based on the size of the organisation. Full details are given in Appendix D.

User (Commercial or Non-Commercial) This is for user organisations, who will gain access to the ISODE by using products from ISODE Consortium members. For commercial organisations, the membership rate is determined by revenue, and for non-commercial organisations by the size of the organisation. Full details are given in Appendice B and D.

Research Consortia This is for organisation which are consortia which support research organisation. Research networks are typical members of this type. There are three rates of membership, determined by consortium size. Full details are given in Appendix E.

Research Project This is for collaborative research projects, which may contain organisations of any type. It allows access to the ISODE Consortium Releases, for use within the project, at a lower cost than for all of the project organisations to join the ISODE Consortium.

Individual A low cost membership for individuals Full details are given in Appendix G.

The classes of membership and membership rates are summarised in Table 1. Costs are given in US dollars and Pounds Sterling. The membership fees are annual, payable quarterly in advance.

Members, including individuals, who join the consortium before August 31st 1992 will be called Founding Members. Founding members will receive a 10% discount on all membership renewals after the first year. This will be in addition to general discount on renewal, which will be at least 10% for organisational members.

5 Organisation

The ISODE Consortium has been established as a professional non-profit corporation (US 501.c(3)). This initial startup was achieved by funding from MCC. MCC (Microelectronics and Computer Technology Corporation) is a research consortium of primarily US companies. MCC's objective is to act as a technology transfer agent between academic research and industry.

A parallel European organisation has also been established in the UK, which is indicative of the transatlantic nature of the ISODE Consortium.

Class	Size	Rate (US)	Rate (Europe)
Commercial 1	Revenue less than $10M	$10,000	£5,800
Commercial 2	Revenue less than $100M	$30,000	£17,400
Commercial 3	Revenue less than $500M	$60,000	£34,800
Commercial 4	Revenue greater than $500M	$90,000	£52,200
User 1 (Commercial)	Revenue less than $10M	$5,000	£2,900
User 2 (Commercial)	Revenue less than $100M	$10,000	£5,800
User 3 (Commercial)	Revenue less than $500M	$20,000	£11,600
User 4 (Commercial)	Revenue greater than $500M	$30,000	£17,400
Research 1	Academic	$3,000	£1,740
Research 2	Less than 150 employees	$3,000	£1,740
Research 3	Other	$6,000	£3,480
Non-commercial 1	Less than 150 employees	$10,000	£5,800
Non-commercial 2	Less than 5,000 employees	$30,000	£17,400
Non-commercial 3	Less than 200,000 employees	$60,000	£34,800
Non-commercial 4	Greater than 200,000 employees	$90,000	£52,200
User 1 (Non-commercial)	Less than 150 employees	$5,000	£2,900
User 2 (Non-commercial)	Less than 5,000 employees	$10,000	£5,800
User 3 (Non-commercial)	Less than 200,000 employees	$20,000	£11,600
User 4 (Non-commercial)	Greater than 200,000 employees	$30,000	£17,400
Research Consortium 1	Less than 10 members	$10,000	£5,800
Research Consortium 2	Less than 25 members	$20,000	£11,600
Research Consortium 3	25 or more members	$30,000	£17,400
Research Project	–	$5,000	£2,900
Research Project Member Fee	–	$3,000	£1,740
Individual	–	$70	£40

Table 1: Membership Rates

The president of the ISODE Consortium is Steve Hardcastle-Kille, who was previously a Senior Research Fellow at University College London, and has played a key role in the design and evolution of the ISODE.

The ISODE Consortium will initially be headquartered at MCC premises in Austin, Texas, and will establish a US office in Summer 1992. The ISODE Consortium will have a strong presence in Europe, and startup of the European office is planned for early 1993.

More details about the organisation are given in Appendix I.

6 Contact Information

Enquiries about the ISODE Consortium should be directed to the ISODE Consortium.

US Office

Address:	ISODE Consortium P.O. Box 200195 Austin TX 78720 USA
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X.400:	S=ic-info; O=ISODE Consortium; PRMD=ISODE; ADMD=0; C=GB;

A The ISODE

A.1 What is the ISODE

The ISODE is an implementation of selected OSI protocols and applications. The ISODE runs on a large number of UNIX and UNIX-like operating systems.

The original ISODE was "Openly Available", which means that it was not proprietary, but not in the public domain. This was necessary to include a "hold harmless" clause in the release. This meant that anyone anyone can get a copy of an openly available ISODE release and do anything they want with it, but no one takes any responsibility whatsoever for any (mis)use.

The ISODE is used extensively in the research community, and as a product component by a number of manufacturers. It is the most widespread openly available OSI implementation. The Directory implementation (QUIPU) is the dominant component of the only large scale OSI Directory so far deployed. The Message Handling System (PP) is used to provide a number of major X.400 MTA services, including gateway services between X.400 and RFC 822.

The key components of the ISODE are:

- Provision of Connection Oriented Transport Service, by mapping onto: vendor supplied stacks (typically TP4 over CLNS); CONS and X.25 (using TP0); TCP (using RFC 1006).
- Transport switch to allow simultaneous working over multiple stacks.
- The Connection Oriented OSI upper layers: Session and Presentation.
- Selected Application Service Elements (ASEs): Association Control (ACSE); Remote Operations (ROS); Reliable Transfer (RTS).
- OSI File Transfer Access and Management (FTAM): protocol libraries; server and responder.
- OSI Directory Service (QUIPU): DSA and selected DUAs.
- Message Handling Services (PP): A Message Transfer Agent, suited to volume switching and protocol conversion. This is not currently a part of the ISODE, despite the close association, but will formally be made a part of the ISODE.

A.2 Where the ISODE originated

Many people and organisations have contributed to the openly available ISODE. The major contributors, listed in alphabetical order, are:

- The Joint Network Team (UK Department of Education and Science) provided key funding.

- Marshall T. Rose wrote the core of the ISODE and the FTAM. He was sponsored by: Northrop Corporation; The Wollongong Group; and Performance Systems International.
- The Mitre Corporation.
- University College London.
- University of Nottingham.
- X-Tel Services Ltd.

Other contributors worthy of special note are: Brunel University; CSIRO; University of Michigan.

A.3 Evolution of the ISODE

The future technical evolution of the ISODE is discussed in Section 2. The ISODE Consortium will take the lead role in the substantial evolution of the ISODE.

Future releases of the ISODE, incorporating PP, will be made by the ISODE Consortium. There will be "final" openly available releases of the ISODE and of PP made by X-Tel Services. These releases will continue to be available.

B Commercial Membership

B.1 Benefits

Commercial membership is intended for commercial organisations that wish to strongly support the development of the ISODE and to influence its evolution. Reasons why different types of commercial organisation will benefit from membership are discussed in the later sections of this appendix. Commercial organisations which are research consortia as defined in Section E must join as Research Consortium Members. All commercial members receive the following benefits:

- Receive (source) usage licences for all ISODE releases (and beta releases) made during the period of membership. The usage licence will be for the indefinite use by the organisation licenced for the source obtained during the course of membership. This licence covers any form of use of the ISODE within the organisation. Sale of the ISODE to other organisations requires a licence. Licences are described in Section H.
- Automatically receive copies of each (source) distribution release.
- Membership of the policy steering committee. This committee will work by electronic mail and hold at least one meeting per year. Each

member will have one representative on the committee. This committee will allow the general organisational and marketing priorities of members to influence the evolution of ISODE.

- Participation in the technical steering group. This group will work by electronic mail, and hold meetings at least twice annually. Each full member will be entitled to send up to two representatives to these meetings. This forum will discuss technical issues relating to the development and evolution of the ISODE.
- Access to all beta releases of the ISODE and to beta releases of ISODE components where these are beta tested separately. In general, beta testing will only be done by members of the ISODE Consortium. In specific cases, individuals working for non-commercial organisations may be selected by the ISODE Consortium to perform beta testing.
- Support of full and beta releases, as described in Appendix J.
- Voting rights to elect the board of the ISODE Consortium.
- Voting rights on all other issues. This will be done through the policy steering committee.
- Inclusion in a members-only electronic mailing list for discussion of technical issues of interest to the members.
- Inclusion in working groups and associated electronic mailing lists with membership restricted to commercial members. It is intended that commercial members will strongly influence the evolution of the ISODE. Private mailing lists will be established, in order to ensure that commercial concerns, especially those related to establishing competitive ISODE-based products, are addressed. It is important that the ISODE Consortium does not compete with its membership.
- Receive ISODE Consortium marketing literature.
- Receive the ISODE Consortium newsletter.
- Admission to all open membership meetings.
- Receive information on the yearly conference.

B.2 User Membership (Commercial)

There is also an user membership (commercial) , which is intended for commercial organisations which wish to support and influence the ISODE Consortium, but do not need access to the source releases of the ISODE Consortium. User members will gain access to the ISODE by purchase of products based on the ISODE. Membership will allow them to influence the base system, and to facilitate competitive tender for products based on the ISODE.

User members (commercial) will receive all of the benefits of commercial membership, except that they will not receive copies of source (full or beta release) and the associated support and licencing. They will receive copies of the documentation associated with full ISODE Consortium releases.

B.3 Benefits for Vendors basing products on ISODE

For vendors basing products on the ISODE, the ISODE Consortium offers many advantages. Benefits relative to use of other systems include:

- Technical merits of the ISODE.
- The experience of operation of the ISODE within the research community.
- Use of a strong common core, on which value-added products can be built.
- Savings from being able to pool effort with other vendors on the development of core components.

Use of the versions of ISODE developed by the ISODE Consortium, as opposed to basing products on the earlier public domain versions offers the following advantages:

- A vendor neutral organisation, which will ensure the continued existence and evolution of the ISODE.
- Leverage of development by the consortium and by other members of the consortium.
- The ISODE Consortium will aggressively track new OSI standards, and aim to keep the ISODE at the forefront of OSI implementations. Liaison with, or participation in, OSI standardisation bodies may be undertaken.
- The ISODE Consortium will undertake conformance testing of the ISODE components, and work to ensure conformance to key profiles. PICSs will be developed for the ISODE components.
- Documentation. Work will be undertaken to improve the documentation. Technical writers will be employed to do this.
- APIs. The ISODE Consortium will support industry standard APIs, where appropriate. Private APIs will be developed to facilitate easy integration with applications.

B.4 Benefits for other Vendors

For organisations not basing products on the ISODE, the ISODE Consortium is still of substantial interest, and offers:

- The continued existence of a strong implementation, easily available within the research community, is critical to market establishment. The ISODE is the clear leader in filling this role.
- Use as a reference implementation for testing and exercising other vendor products. There is also potential for acting as a reference implementation for APIs.
- Early identification of key problems in implementing and deploying OSI services. The ISODE is particularly effective here, because of its wide deployment in the research community.

B.5 Benefits for User Organisations

For organisations whose sole interest in the ISODE Consortium is use of the ISODE package, and for whom the current functionality of the ISODE is broadly sufficient, there is no need for source access to the ISODE. Such organisations are natural customers of members of the ISODE Consortium who base products on the ISODE, as the ISODE Consortium should be facilitating this usage and not competing with its members who sell products based on the ISODE. User membership is appropriate for such an organisation. It will allow the organisation to influence the ISODE Consortium and will help in selecting vendors and support organisations.

For larger user organisations, particularly those in the computer and telecommunications industry or with high demands on services in these areas, full commercial membership of the consortium will be beneficial. It will allow these organisations to gain early exposure to the technology, and to influence the direction of ISODE and ISODE-based products.

Other user organisations may wish to make use of the ISODE to evaluate special needs and for internal experimentation. Such organisations might join the ISODE Consortium in order to access the ISODE Source, and to obtain information on and influence developments of the ISODE.

B.6 Benefits for Support Organisations

Because the ISODE Consortium does not undertake direct support of end user organisations, it encourages member organisations to take on such support. It will facilitate member organisations to take on such a role by providing back-end support and facilitating contact with potential customers.

B.7 Development by Member Organisations

A key component of the ISODE development will be contributions by member organisations. This is important leverage in an area of this level of complexity. It is expected, but not required, that bugfixes and small changes will be sent from member organisations to the ISODE Consortium. For larger contributions, the ISODE Consortium will provide financial incentives. This is done in several ways:

- If code is contributed in an area, no licence charges will ever be levied for this code to the organisation providing it. This will be achieved by an appropriate level of discount (up to 100%) on the relevant licence.
- The value of a contribution will be agreed between the organisation and the ISODE Consortium. This will be used as credit against product licences. This will be redeemable at an agreed percentage of the cost of the licences (typically 50%).
- Where product licence credit is not appropriate (e.g., because the value of the product is too high for the credit to be effectively redeemable or because the organisation does not require product licences), direct payment will be made.

The ISODE Consortium will need to place contracts for software development, as one component of the evolution of the ISODE. ISODE Consortium members will be given preference in the placement of such contracts.

C Research Membership

C.1 Benefits

Research membership is intended for academic organisations, and not for profit or government organisations which have research as their primary purpose. The eligibility for an organisation to join in this category will be determined by the ISODE Consortium in consultation with the organisation in question. Research organisations which are research consortia as defined in Section E must join as Research Consortium Members. Research members receive the following benefits:

- A source usage licence for the ISODE, which allows for unlimited use within the organisation. This licence, available to all research organisations (i.e., to any organisation eligible for research membership), is described in Section H.
- Automatically receive copies of each distribution release.
- Membership of the policy steering committee. This committee will work by electronic mail and hold at least one meeting per year. Each member will have one representative on the committee. This committee will allow the general organisational priorities of members to influence the evolution of ISODE.
- Participation in the technical steering group. This group will work by electronic mail, and hold meetings at least twice annually. Each

full member will be entitled to send up to two representatives to these meetings. This forum will discuss technical issues relating to the development and evolution of the ISODE.

- Access to all beta releases of the ISODE and to beta releases of ISODE components where these are beta tested separately. In general, beta testing will only be done by members of the ISODE Consortium. In specific cases, individuals working for non-commercial organisations may be selected by the ISODE Consortium to perform beta testing.
- Support of full and beta releases, as described in Appendix J.
- Voting rights to elect the board of the ISODE Consortium. It is anticipated that the majority of members of the ISODE Consortium will be commercial. For this reason, two out of seven places on the board will be elected by the non-commercial and research consortia members only, in order to ensure that the research community is represented.
- Voting rights on all other issues. This will be done through the policy steering committee.
- Inclusion in a members-only electronic mailing list for discussion of technical issues of interest to the members.
- Receive ISODE Consortium marketing literature.
- Receive the ISODE Consortium newsletter.
- Admission to all open membership meetings.
- Receive information on the yearly conference.

D Non-Commercial Membership

D.1 Benefits

Non-commercial membership is intended for not for profit, and government organisations that do not qualify as research members. Non-commercial organisations which are research consortia as defined in Section E must join as Research Consortium Members. Non-commercial members receive the following benefits:

- A source usage licence for the ISODE, which allows for restricted use within the organisation. This licence is described in Section H. This licence allows for 30 copies of the ISODE to be used internally. Additional licences may be purchased at the same terms as for commercial members.
- Automatically receive copies of each distribution release.

- Membership of the policy steering committee. This committee will work by electronic mail and hold at least one meeting per year. Each member will have one representative on the committee. This committee will allow the general organisational priorities of members to influence the evolution of ISODE.

- Participation in the technical steering group. This group will work by electronic mail, and hold meetings at least twice annually. Each full member will be entitled to send up to two representatives to these meetings. This forum will discuss technical issues relating to the development and evolution of the ISODE.

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- Inclusion in a members-only electronic mailing list for discussion of technical issues of interest to the members.

- Receive ISODE Consortium marketing literature.

- Receive the ISODE Consortium newsletter.

- Admission to all open membership meetings.

- Receive information on the yearly conference.

D.2 User Membership (Non-Commercial)

There is also a user membership (non-commercial), which is intended for non-commercial organisations which wish to support and influence the ISODE Consortium, but do not need access to the source releases of the ISODE Consortium. User members will gain access to the ISODE by purchase of products based on the ISODE. Membership will allow them to influence the base system, and to facilitate competitive tender for products based on the ISODE.

User members (non-commercial) will receive all of the benefits of non-commercial membership, except that they will not receive copies of source (full or beta release) and the associated support and licencing. They will receive copies of the documentation associated with full ISODE Consortium releases.

E Research Consortia

The ISODE has had strong links with the research community, in particular the Internet and national networks under the RARE umbrella. The ISODE Consortium intends to maintain and strengthen these links.

It is expected that the ISODE will be extensively deployed in the research community, and will be used to provide services at many sites. The ISODE Consortium will aim to provide the base technology needed for these services. Support of end users of the ISODE will usually be provided by ISODE Consortium members, who would typically be national research networks and Internet regional networks. Networks where ISODE is used extensively will be encouraged to become members of the ISODE Consortium, as these networks are seen as the best means to transfer this technology into the research community. Work of particular interest to the research community is:

- Development of leading edge services. The ISODE Consortium will be concerned with how OSI based services can be deployed in the research community to provide services.
- Internet and RARE Standards. The ISODE Consortium will track Internet standards and be involved in their specification. This continues the role of those working with the core of the ISODE. This will include interoperability with existing internet standards (e.g., X.400 and RFC 822 interworking) and setting new ones (e.g., RFC 1006).
- Work on improving the performance of ISODE components.
- The evolving Internet Directory Service, in conjunction with European Directory Services is seen as a flagship of the ISODE and the ISODE Consortium will be closely concerned with its evolution.
- Support of message handling services is vital. In the short term, the main focus will be on gateway services and well known entry points (WEPs). In the medium term, this will broaden to the effective deployment of a general X.400 based infrastructure.

E.1 Benefits

Research Consortium membership is intended for consortia established for research purposes or for support of research (e.g., provision of network services). A "consortium" is defined as an organisation which is itself a consortium or user-society, or otherwise has members or sponsors. These members, sponsors, or other participants in the consortium are called "members" of the consortium.

A consortium which is a non-commercial organisation must join as a Research Consortium Member of the ISODE Consortium and not as a non-commercial or research member.

A commercial organisation which is a consortium will by default join as a research consortium member. The membership fee will be the commercial rate if this is higher than the research consortia rate.

A consortium which is a commercial organisation may join as a commercial member, if explicit permission is given by the ISODE Consortium. In this case, the rights and privileges granted by the ISODE Consortium to the organisation extend only to the paid employees of the member organisation, and not to the members of the member organisation.

Any commercial organisation may join as a research consortium. The membership fee will be the commercial rate if this is higher than the research consortia rate. The reason for this, is for organisations which wish to have this type of membership, but are not formally consortia (e.g., a provider of network services for the research community, which is established as a commercial organisation with customers rather than members).

The benefits of research consortium membership are:

- It is intended that Research Consortium Members will influence the ISODE Consortium on behalf of their members.
- Receive a licence for ISODE, with the same conditions as commercial members.
- The Research Consortium will receive a licence to redistribute the ISODE to its research[1] members.
- Automatically receive copies of each distribution release.
- Membership of the policy steering committee. This committee will work by electronic mail and hold at least one meeting per year. Each member will have one representative on the committee. This committee will allow the general organisational and marketing priorities of members to influence the evolution of ISODE.
- Participation in the technical steering group. This group will work by electronic mail, and hold meetings at least twice annually. Each full member will be entitled to send up to two representatives to these meetings. This forum will discuss technical issues relating to the development and evolution of the ISODE.
- Membership of a closed group for research consortia members. Research Consortia members will represent organisations with a strategic view on the evolution and deployment of the ISODE within the research community. This group will ensure that the evolution of the ISODE meets these needs.

[1] Where the research status of an organisation is unclear, the status is determined by the ISODE Consortium.

- Access to all beta releases of the ISODE and to beta releases of ISODE components where these are beta tested separately. In general, beta testing will only be done by members of the ISODE Consortium. In specific cases, individuals working for non-commercial organisations may be selected by the ISODE Consortium to perform beta testing.
- Support of full and beta releases, as described in Appendix J.
- The Research Consortium may delegate its beta test rights to up to three non-commercial members. They may recommend further beta sites from their non-commercial members, to be accepted at the discretion of the ISODE Consortium.
- Voting rights to elect the board of the ISODE Consortium. It is anticipated that the majority of members of the ISODE Consortium will be commercial. For this reason, two out of seven places on the board will be elected by the non-commercial and research consortia members only, in order to ensure that the research community is represented.
- Voting rights on all other issues. This will be done through the policy steering committee.
- Inclusion in a members-only electronic mailing list for discussion of technical issues of interest to the members.
- Receive multiple copies of the ISODE Consortium marketing literature, for redistribution to its members.
- Receive multiple copies of the ISODE Consortium newsletter, for redistribution to its members.
- Admission to all open membership meetings.
- Receive information on the yearly conference.

F Research Project Membership

F.1 Benefits

Research Project membership is intended for collaborative research projects, which wish to make use of ISODE, but where some or all of the project members are not members of the ISODE Consortium. It also gives the project direct influence and representation in the ISODE Consortium. This appendix describes the mechanism and benefits of research project membership.

A research project must identify a lead organisation, which represents the project within the ISODE Consortium. The lead organisation has the right to distribute binary versions of the software to all research project members. For project members who are not otherwise members of the ISODE Consortium, the ISODE release is strictly for project use, and information on staff and machines where the software is in use must be given to the ISODE Consortium as evidence of this.

Where a project member requires source access, this may be obtained by that member paying a research project member fee. This will give the project member source access, strictly for use in the project. It does not give any additional rights.

The lead organisation must have source access to the ISODE, either by pating the research project member fee or by being a member of the ISODE Consortium in a class other than Research Project.

Research Project members receive the following benefits:

- The lead organisation will automatically receive copies of each (source) distribution release.

- The lead organisation may distribute binary versions of ISODE within the project.

- Membership of the policy steering committee. This committee will work by electronic mail and hold at least one meeting per year. Each member will have one representative on the committee. This committee will allow the general organisational and marketing priorities of members to influence the evolution of ISODE.

- Participation in the technical steering group. This group will work by electronic mail, and hold meetings at least twice annually. Each full member will be entitled to send up to two representatives to these meetings. This forum will discuss technical issues relating to the development and evolution of the ISODE.

- Access to all beta releases of the ISODE and to beta releases of ISODE components where these are beta tested separately. In general, beta testing will only be done by members of the ISODE Consortium. In specific cases, individuals working for non-commercial organisations may be selected by the ISODE Consortium to perform beta testing.

- Support of full and beta releases, as described in Appendix J.

- Voting rights to elect the board of the ISODE Consortium.

- Voting rights on all other issues. This will be done through the policy steering committee.

- Inclusion in a members-only electronic mailing list for discussion of technical issues of interest to the members.

- Inclusion in working groups and associated electronic mailing lists with membership restricted to commercial members. It is intended that commercial members will strongly influence the evolution of the ISODE. Private mailing lists will be established, in order to ensure that commercial concerns, especially those related to establishing competitive ISODE-based products, are addressed. It is important that the ISODE Consortium does not compete with its membership.

- Receive ISODE Consortium marketing literature.
- Receive the ISODE Consortium newsletter.
- Admission to all open membership meetings.
- Receive information on the yearly conference.

G Individual Membership

G.1 Benefits

Individual membership is intended for individuals who wish to support the ISODE Consortium. The benefits are:

- Automatically receive information on each distribution release.
- Inclusion in a members-only electronic mailing list for discussion of technical issues of interest to the members.
- Receive ISODE Consortium marketing literature.
- Receive the ISODE Consortium newsletter.
- Admission to all open membership meetings.
- Receive information on the yearly conference.

H Licences

There will be a final release of ISODE made prior to the establishment of the ISODE Consortium, which will remain openly available. Licences will pertain to releases of the ISODE made by the ISODE Consortium.

Source licences are available from the consortium. For research organisations, a source licence will be zero cost.

The ISODE Consortium will not sell binary licences. Organisations which need binary releases and support will obtain this from ISODE Consortium members, as products. It is expected that such products will be available at the same time as the ISODE Consortium is established.

H.1 Research Use Licences

Research use licences for full releases will be available at zero cost to all any organisations which would be eligible for research membership of the ISODE Consortium, both members and non-members of the ISODE Consortium. Beta releases will have similar licences, available only to members of the

ISODE Consortium. The licence administration will be minimised, and the procedure will be fully online. The most likely approach is that the source will be made publicly available in encrypted form, and a key distributed by electronic mail.

The licence will be for indefinite use by the organisation licenced.

If an organisation makes changes to an ISODE release made by the consortium, or develops software substantially based on the ISODE, the code must be handled in one of the following ways:

- Retained within the organisation.
- Released into the public domain.
- Made fully available to the ISODE Consortium at zero cost, for possible integration into a future ISODE Consortium release.

H.2 Commercial Use Licences

A commercial use licence is obtained by joining the ISODE Consortium as a commercial member, and applies to all releases made by the ISODE Consortium during the period of membership. It gives unrestricted use of the (source) ISODE package within the organisation. This applies to full and beta releases.

The licence will be for indefinite use by the organisation licenced, for the source obtained during the course of membership.

H.3 Non-Commercial Use Licences

A non-commercial use licence is obtained by joining the ISODE Consortium as a non-commercial member, and applies to all releases made by the ISODE Consortium during the period of membership. It gives restricted use of the (source) ISODE package within the organisation. This applies to full and beta releases. Use on up to 30 machines is covered by the membership licence. Use on further machines will require payment to the ISODE Consortium of the appropriate royalties.

The licence will be for indefinite use by the organisation licenced, for the source obtained during the course of membership.

H.4 Evaluation licences

Evaluation copies of the ISODE will be available for the cost of handling and materials. This will be a restricted licence for an identified machine for a period of one month.

H.5 Product Royalties

For members who wish to base products on the ISODE, a product royalties will be need to paid to the ISODE Consortium based on the number of copies shipped. For further information on product royalties, contact the ISODE Consortium directly.

I Organisation

I.1 Startup

The ISODE Consortium has been established as a professional non-profit corporation (US 501.c(3)). This initial startup was achieved by funding from MCC. MCC (Microelectronics and Computer Technology Corporation) is a research consortium of primarily US companies. MCC's objective is to act as a technology transfer agent between academic research and industry.

A parallel European organisation has been established in the UK.

I.2 Structure

The initial board members, in alphabetical order, are:

P. Cannata	MCC
L. Chapin	BBN Communications
D. Farber	University of Pennsylvania
S. Hardcastle-Kille	ISODE Consortium (ex officio)
D. Lynch	Interop Inc.
H. Smith	X-Tel Services Ltd.

During the first year, two more directors will be selected from the membership in consultation with the initial members. It is planned to choose directors who can represent the interests of medium to large vendors basing products on ISODE. Increasing the European membership of the board is also desirable. After one year, the entire board will be elected by the members of the ISODE Consortium. It is expected that board membership will evolve to largely contain employees of member organisations. Board members will serve as individuals and not as member representatives. Positions on the board are not salaried. The role of the board is:

- Overall policy and general direction of the consortium.
- Approves the budget for the consortium.
- Decides the funding of contracts and external projects.
- Oversees consortium operations and activities.

The president of the ISODE Consortium is Steve Hardcastle-Kille, who is also currently a Senior Research Fellow at University College London, and has played a key role in the design and evolution of the ISODE. He will be a full-time employee of the ISODE Consortium, and an ex-officio member of the board.

The ISODE Consortium will initially be headquartered at MCC premises in Austin, Texas. As soon as funding permits, an independent (US) headquarters will be established in a location to be determined by the board.

Whilst the ISODE Consortium is being started as a US Corporation, a European presence is viewed to have equal importance. The ISODE Consortium will establish a European office in Spring 1993.

The ISODE Consortium will establish an administrative and marketing section with responsibility in the following areas:

- Marketing the ISODE and the ISODE Consortium.
- Public Relations.
- Education: training; documentation; ISODE conferences and meetings.
- Support of consortium releases of the ISODE to members of the ISODE Consortium.
- Administration of distributing new releases.

At the end of the first year, it is intended that the ISODE Consortium will employ three full-time engineers.

The yearly conference will be an educational marketing event which will be self supporting from registration fees. This meeting might comprise:

- A one-day meeting for members.
- Tutorials.
- Presentation of recent and planned ISODE developments.
- Panel discussions.

I.3 Engineering

Engineering work will be in three distinct areas:

Development Addition of new components into the ISODE, and significant enhancements to existing components.

Release Engineering This will be decoupled from development. This area will ensure that ISODE releases work on "supported platforms", and will do appropriate QA on releases. It will also be responsible for regression testing and conformance testing. This area will coordinate and distribute bugfixes.

Liaison Technical liaison with: standards groups; implementor's groups (e.g., OIW); profile groups (e.g., EWOS, UK and US GOSIP); API groups (e.g., X/Open, X.400 APIA); Research Community (e.g., RARE and IETF).

Work on ISODE will be undertaken in a number of ways:

- Contributions by members of the ISODE Consortium.

- Contracts from the ISODE Consortium to work on specific items for development of the ISODE. These may be to commercial or to non-commercial organisations.
- Grants from the ISODE Consortium to non-commercial organisations to work on areas of longer term interest.
- Work by employees of members of the ISODE Consortium seconded to the ISODE Consortium.
- Work by employees of the ISODE Consortium.

The ISODE is currently managed by Julian Onions and Colin Robbins, who work for X-Tel Services. The ISODE Consortium will work closely with them and with X-Tel services, who are contributing some of their effort towards the ISODE Consortium. This will move to direct control by the ISODE Consortium, with work done using a mixture of the methods listed.

J Support

J.1 Reference Platform

The ISODE Consortium will support a reference platform, which can be made available to members of the ISODE Consortium to check the correctness of ports. The choice of platform will be made in consultation with members of the ISODE Consortium. Preference will be given to the hardware and software systems of member organisations.

J.2 Support of Members

Support will be provided to members of the ISODE Consortium for full releases of the ISODE made by the ISODE Consortium. Support will be provided for a full release until at least 12 months after the subsequent full release. A lower level of support will be offered for beta releases. Beta release support will be available only until the release is obsoleted. The ISODE Consortium will support its members in a number of ways:

- Formally, support will be available only for problems which the member can reproduce on the reference platform.
- Help with portability problems will be provided, and with integrating portability changes back into the ISODE Consortium release.
- ISODE Consortium engineers will work directly with members of the consortium to provide rapid and flexible response to problems.
- Maintenance of bug and patch databases, to be available to all members.

The ISODE Consortium will not engage in support of end sites (e.g., help with installation, configuration, and user problems). It will recommend (member) organisations who are prepared to undertake such support.

J.3 Supported Platforms

The following will be identified:

1. Platforms on which the ISODE is supported (supported platforms)
2. Platforms on which an ISODE-based product is available
3. Platforms on which the ISODE is believed to work

A database will be maintained of all three types of platform, and this will be made available to members.

Every supported platform must have a sponsor, who will be a commercial member. The sponsor will be responsible, directly or indirectly, for the initial port, and for maintaining the port. The sponsor will provide support for problems which are shown on the supported platform, but cannot be demonstrated on the reference platform.

If the sponsor is not able to do this directly two other options are available:

- The ISODE Consortium will maintain a list of member organisations who are prepared to provide such services.
- The ISODE Consortium, for a fee and provision of appropriate hardware, will be prepared to maintain and verify porting as a part of the release procedure.

It is possible for a platform to be sponsored by multiple consortium members (e.g., a well known platform, whose vendor is not a member of the ISODE Consortium).