An Introduction to 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 royalties. 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 brief overview of why the ISODE Consortium is needed, how it will be set up and organised, and its technical goals.

1 The ISODE

The ISODE is an implementation of selected OSI protocols and applications, which runs on a wide range of UNIX and UNIX-like operating systems. The key components of the ISODE are:

- Connection Oriented Transport Service (COTS) over vendor stacks:
  - TP4/CLNS
  - X.25 or CONS
  - 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.

Over a hundred people and organisations have contributed to the ISODE, and there is not space to credit all of the here. The ISODE was originated by Marshall T. Rose, and the current source tree is managed by Julian Onions and Colin Robbins. Organisations which deserve special mention are: The UK Joint Network Team (for providing funding); Northrop Corporation; The Wollongong Group; University College London; University of Nottingham; Mitre Corporation; X-Tel Services; Brunel University; CSIRO; University of Michigan.

2 ISODE Successes

ISODE was originally developed as a "development environment" to experiment with the OSI upper layers. The original ISODE was "Openly Available", which is effectively public domain, and spread rapidly through the research community and into many commercial organisations. It has been used for a very wide range of work, and is the most widely deployed OSI implementation. It has succeeded impressively in meeting its original goals.

Although the original ISODE was targeted primarily at programmers, the largest uptake has been by organisations wishing to use ISODE applications to run services. This is particularly true of the X.400 and X.500 components, but also FTAM to a lesser extent. The PP X.400 MTA is being used at an increasing number of mail gateways for its protocol conversion facilities between RFC 822 and X.400 and its suitability for high volume message switching. It is also being adopted by an increasing number of organisations as a "mail hub", due to its advanced management facilities.

The QUIPU X.500 implementation has been closely tied in with the pilot deployment of X.500 in the research community. This pilot now encompasses over half a million entries in over four hundred DSAs (Directory System Agents) in twenty countries. This includes the PSI White Pages Project in the US, and the PARADISE Project in Europe. QUIPU is the dominant DSA implementation used for this piloting, and QUIPU based DUAs are used extensively.

3 The ISODE Consortium

The ISODE Consortium is being set up in response to the success of the ISODE, and is intended to give the ISODE a firmer base so that it can continue to evolve and thrive. The ISODE Consortium intends to build on the successes of the current ISODE, and to address the weaknesses.

The ISODE Consortium will evolve the ISODE to make it more attractive and straightforward to build products on the ISODE, by tackling 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 royalties, and thus ensure the long term viability of the ISODE Consortium. The ISODE Consortium will also retain and strengthen links with the research community. The ISODE Consortium will make the ISODE available to academic organisations and government or not for profit organisations with research as their primary purpose by means of a simply administered zero cost licence. The ISODE Consortium will also work closely with organisations such as RARE and IETF.

4 Product Focus

The major goal of the consortium is to evolve high functionality 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 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 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. 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. 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.

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.

5 Technical Direction

Conformance There has been substantial work on interoperability testing with the ISODE components, but almost no work on conformance testing. Conformance testing, and the specification of PICS to define conformance levels will be a key aspect of early ISODE Consortium work.

Configurability Whilst the current components provide high functionality, they are too complex to configure, and there will be a transition to "plug and play".

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 industry standard SNMP will be used for overview monitoring of large numbers of components; Application specific management will be used for some purposes.

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.

Performance Whilst broadly in line with performance of similar products, improving the performance of the ISODE will be a high priority. Three complementary areas will be worked on: ASN.1 compilers; 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, this will be done by a request for technology. X.400 Message Store is a likely candidate for early addition.

6 Membership

The consortium will raise revenue primarily by membership fees and product royalties. There are several types of membership, which are summarised here.

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.

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.

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.

User This is for organisations that will gain access to the ISODE by using products from ISODE Consortium members.

Research Consortia This is for organisations 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.

Individual A low cost membership for individuals.

7 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 (Microelectronics and Computer Technology Corporation), which is a research consortium of primarily US companies. MCC's objective is to act as a technology transfer agent between academic research and industry.

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. This will be a full-time position when full operation starts.

The ISODE Consortium will establish a US office in May 1992 in the Washington, DC area. The ISODE Consortium will have a strong presence in Europe, and startup of the European office is planned for early 1993.

The initial board of directors of the ISODE Consortium is: Phil Cannata (MCC); Lyman Chapin (BBN); Dave Farber (University of Pennsylvania); Dan Lynch (Interop); Hugh Smith (X-Tel Services). The board will be elected by the membership. Members will participate in the Policy Steering Committed and Technical Steering Group to determine strategic and tactical direction for the ISODE Consortium.

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