Working Implementation Agreements for Open Systems Interconnection Protocols: Part 1 - General Information

Output from the June 1991 NIST Workshop for Implementors of OSI

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Workshop Editor: **Brenda Gray, NIST**

Foreword

This part of the Working Implementation Agreements was prepared by the Chair of the National Institute of Standards and Technology (NIST) Workshop for Implementors of Open Systems Interconnection (OSI).

Text in this part has been approved by the Plenary of the Workshop. This part replaces the previously existing chapter on this subject.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as strikeout. New and replacement text will be shown as shaded.

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Part 1 - General Information

0 Introduction

This document records working (not stable) implementation specification agreements of OSI protocols among the organizations participating in the NIST Workshop for Implementors of OSI. This work is not currently considered advanced enough for use in product development or procurement reference. However, it is intended that this work be a basis for future stable agreements. It is possible that any material contained in this document may be declared stable in the future, and the material should be considered in this light. In the status sections of each chapter as appropriate, specific functionality may be flagged as being "likely" to become stable at the next workshop.

Only non-stable text is included in this document. Errata to Stable material, as well as new stable functionality, is presented as an aligned edition (in replacement page format) issued at the same time as this document.

1 Scope

As each protocol specification is completed (becomes technically stable), it is moved from this working document to the stable companion document as described below:

> The companion document, "Stable Implementation Agreements for Open Systems Interconnection Protocols, Version 4 " records mature agreements considered advanced enough for use in product development or procurement reference.

This document supersedes the previous Working Document.

New text relating to any of the referenced subjects appears first in this working document. In general, new text must reside in this working document for at least one workshop period before being moved into the Stable Document.

Agreements text is either in this Working Document (not yet stable) or in the aligned Stable Document (has been declared stable). It is a goal that the same text not appear in the same position in both documents at once (except for part one). In rare exceptions, text that does not represent implementation agreements may appear temporarily; text will always be appropriately marked.

The benefit of this document is that it gives the reader a glimpse of new functionality, for planning purposes. Together with the aligned, associated stable document, these two documents give the reader a complete picture of current OSI agreements in this forum.

An implementor should look at the aligned section in the Stable Document to get the true current status of stable material. In this Working Document, all references to the Stable Document are to V4. Where appropriate, statements related to backward compatibility, interworking considerations, or agreement maintenance are given in this document. Architectural issues may also be considered as appropriate.

> **NOTE -** In this document, references are maintained in the individual parts as appropriate. Additional references for all of the subjects covered in this document may be found in the aligned parts of the Stable Implementation Agreements Document, Version 4.

2 Normative References

3 Definitions

4 Purpose of the Workshop

At the request of industry, the National Institute of Standards and Technology organized the NIST Workshop for Implementors of OSI to bring together future users and potential suppliers of OSI protocols. The Workshop accepts as input the specifications of emerging standards for protocols and produces as output agreements on the implementation and testing particulars of these protocols. This process is expected to expedite the development of OSI protocols and promote interoperability of independently manufactured data communications equipment.

5 Workshop Organization

See the aligned section of the Stable Implementation Agreements Document for information.

6 Use and Endorsement by other Enterprises

The Workshops are held for those organizations expressing an interest in implementing or procuring OSI protocols and open systems. However, there is no corporate commitment to implementations associated with Workshop participation.

The Agreements in this document were a basis for testing and product demonstrations in the Enterprise Networking Event in Baltimore, MD, June, 1988.

The agreements contained in earlier versions of this document were used for OSI demonstrations at the National Computer Conference in 1984 and at the AUTOFACT conference in 1985.

The agreements from several versions of this document have been adopted for use in implementations running on OSINET.

The MAP/TOP Steering Committee has endorsed these agreements and will "continue the use of the most current, applicable Implementors Workshop Agreements in all releases of the MAP and TOP specifications."

The COS Strategy Forum has "adopted a resolution stating that as a matter of policy COS should select as its sources of Implementation Agreements organizations or forums that are: (1) Broadly open, widely recognized OSI Workshops (NIST/OSI Workshops are first preference) ..."

The implementation specifications from the "Stable Implementation Agreements for Open System Interconnection Protocols" are referenced in Federal Information Processing Standard 146, "Government OSI Profile (GOSIP)."

7 Relationship of the Workshop to the NIST Laboratories

As resources permit, NIST, with voluntary assistance from industry, develops formal protocol specifications, reference implementations, tests and test systems for the protocols agreed to in the Workshops. This is work made available to the industry volunteers and to others making valid commitments to organized events and activities such as NCC, AUTOFACT, and OSINET. As soon as this work can be adequately documented, it is placed in the public domain through submission to the National Technical Information Service. Any organization may then obtain the work at nominal charge.

The NIST laboratories bear no other relationship to the Workshop.

8 Structure and Operation of the Workshop

8.1 Plenary

The main body of the Workshop is a plenary assembly. Any organization may participate. Representation is international. NIST prefers for the business of Workshops to be conducted informally, since there are no corresponding formal commitments within the Workshop by participants to implement the decisions reached. The guidelines followed are: 1) one vote per company or independent division, 2) only companies that regularly attend should vote, 3) only companies that plan to sell or buy a protocol should vote on its implementation decisions, 4) only companies knowledgeable of the issues should vote, and 5) no proxy votes are admissible. Other voting rules are contained in the draft Procedures Manual, Section 2.3.

8.2 Special Interest Groups

Within the Workshop there are Special Interest Groups (SIGs). The SIGs receive their instructions for their technical program of work from the plenary. The SIGs meet independently, usually during the Workshop. As technical work is completed by a SIG, it is presented to the plenary for disposition. Companies participating in a SIG are expected to participate in the plenary. Voting rules for SIGS are the same as voting rules for the plenary.

Special Interest Groups sometimes correspond with organizations performing related work, such as ANSI committees. Such correspondence should be sent through the plenary to the parent committee, such as ANSI X3T5 or ANSI X3S3. When SIG meetings take place between Workshops, the correspondence from these meetings should be addressed directly to the parent committee and copied to the Workshop plenary.

Following are procedures for cooperative work among Special Interest Groups:

a) Any SIG (SIG 1) or individual having issues to discuss with or requirements of another SIG (SIG 2) should bring the matter to the attention of the chairperson of that SIG (SIG 2);

b) The SIG 2 chairperson should bring the matter before SIG 2 for action;

c) SIG 2 should respond to the concerns or needs of SIG 1 or the individual in a timely manner;

d) If the matter cannot be satisfactorily resolved or if the request is outside the charter assigned to SIG 1, then it should be brought before the plenary;

e) SIGs are expected to complete work in a timely manner and bring the results before the plenary for disposition. However, the plenary may elect to act on any issue within the scope of the workshop at any time.

Following are the charters of the Special Interest Groups.

8.2.1 FTAM SIG

The charter is given as follows:

a) Scope:

1) to develop stable FTAM Agreements between vendors and users for the implementation of interoperable products;

2) in particular to maintain the FTAM Phase 2 and Phase 3 specifications with respect to experiences from implementations and from testing. It is a goal that FTAM Phase 3 will remain backward compatible with FTAM Phase 2;

3) to act as Registration Authority for OIW FTAM objects;

4) to define further FTAM functionality;

5) to conduct liaison with standardization bodies such as ISO SC 21 and ANSI X3T5.5;

6) to conduct liaison with and contribute to other bodies working on FTAM harmonization such as the Regional Workshops (EWOS, AOW) and the ISO SGFS to define Functional Standards;

7) to conduct liaison with vendor/user groups such as COS, MAP, TOP, and SPAG;

b) High priority work items:

1) Maintain FTAM Phase 2 and Phase 3 Agreements;

2) Maintain OIW FTAM object register;

3) Contribute to development of FTAM ISPs;

4) Specify use of general Character Set Agreements;

5) Specify requirements of FTAM to a Directory Service;

6) Specify use of Filestore Management functions;

7) Specify use of "run-length" compression;

c) Low priority work items:

1) Specify use of Security functions;

2) Specify use of Overlapped Access;

3) Specify use of ODA documents over FTAM;

4) Specify use of EDI documents over FTAM;

5) Specify use of Advanced Adaptive Compression Algorithm(s).

8.2.2 X.400 (MESSAGE HANDLING SYSTEMS) SIG

The charter is given as follows:

a) Scope of Work:

1) To develop Stable MHS Agreements among Vendors and Users for the implementation of interoperable products;

2) To conduct Liaison with Standardization Bodies, such as X3V1 as ANSI TAG to ISO/IEC JTC1 SC18, U. S. CCITT Study Group D for input to Study Group VII/Q18, and U. S. CCITT Study Group A for input to Study Group I;

3) To Actively work with other Regional Bodies, primarily (EWOS, AOW) but including others, to define International Standardized Profiles (ISPs) for CCITT X.400 MHS, and ISO/IEC MOTIS;

4) To Review Abstract Tests for X.400 and MOTIS and provide feedback to appropriate bodies;

b) Current Work Items:

1) MHS use of X.500 Directory;

2) Body Parts / Content Types;

3) MHS Security Issues;

4) Access Units;

5) MHS Registration Issues;

6) Maintain 1984 MHS Stable Agreements;

7) Contribute to development of MHS ISPs;

8) MHS routing;

c) Future Work Items for Next Year:

1) EDI over X.400 and MOTIS;

2) Distribution Lists over X.400 and MOTIS;

3) EDI Messaging;

4) MHS Management;

5) Character Sets and other Internationalization Considerations.

8.2.3 LOWER LAYER SIG

The Lower Layer SIG will study OSI layers 1-4 and produce recommendations for implementations to support the projects undertaken by the workshop and the work of the other SIGs. Both connectionless and connection-oriented modes of operation will be studied. The SIG will accept direction from the plenary for work undertaken and the priority which it is assigned.

The objectives of the Lower Layer SIG are:

a) Study OSI layers 1-4 as directed by the plenary - such study is to include management objects, security, ISDN user-network interfaces for use in conjunction with OSI network services, routing exchange protocols, etc.;

b) Produce and maintain recommendations for implementation of these layers;

c) Where necessary, provide input to the relevant standards bodies concerning layers 1-4, in the proper manner;

d) Review base standard abstract test suites with the goal of identifying the test cases required for the layer 1-4 Implementation Agreements. Develop test cases for Implementation Agreement functionality not present in the base standard (if any).

8.2.4 OSI SECURITY ARCHITECTURE SIG

GOAL: To develop an overall OSI Security Architecture which is consistent with the OSI reference model and which economically satisfies the primary security needs of both the commercial and Government sectors.

APPROACH: To define a security architecture encompassing the security addenda presently being specified at certain OSI layers, the required cryptographic algorithms and related key management functions, and the security management functions which must be performed between the layers and the peer entities defined in the OSI architecture.

OBJECTIVES:

a) to develop agreements based on IS/DIS;

b) to develop/draft NWI proposals for submission to national bodies on areas not covered by existing standards work;

c) to draft contributions on proposed NWIs;

d) to register security objects;

e) to provide consultancy to other SIGs;

f) to act as a well-focused group as follows:

1) to propagate security information;

2) to recommend and coordinate activities.

8.2.5 DIRECTORY SERVICES SIG

The charter is as follows:

a) To achieve the general goal of:

1) The production and promotion of functional implementation agreements based on ISO/CCITT specifications for Directory Services in accordance with the goals and objectives of the OSI Implementors' Workshop;

b) To reach the above goal by fulfilling the objectives of:

1) providing and maintaining functional implementation agreements for Directory Services in the form of Stable and Working OIW Implementors' Agreements;

2) serving in a leadership role in the development of an International Standardized Profile for Directory Services;

3) Developing Agreements on security issues as related to Directory Services;

4) serving in a consultative role to the other SIGs in the use of Directory Services by other OSI Applications;

5) registering Directory Services objects as necessary to accomplish the other objectives of the SIG.

8.2.6 VIRTUAL TERMINAL SIG

The charter is as follows:

a) Scope:

1) To develop agreements concerning implementation and testing of Virtual Terminal systems based on ISO 9040/9041 and their addenda. To monitor the X-window system and potentially develop implementors agreements for OSI compatibility;

b) Objectives:

1) Develop VTE-profiles to support diverse interactive applications and environments;

2) Develop Control Objects which may be referenced and used within VTE-profiles;

3) Register and maintain OIW VT objects;

4) Conduct liaison with standards organizations, other regional workshops and vendor/user groups as necessary;

5) Review and, if necessary, generate abstract test cases for VTE-profiles;

6) Harmonize OIW VTE-profiles with those from other regional workshops;

7) Adopt ISP format for OIW VTE-profiles under development;

8) Migrate existing OIW VTE-Profiles to ISP format;

9) Develop X-OSI Implementors' Agreement, if necessary;

10) Register and Maintain OIW X-OSI Objects;

11) Adopt ISP Format for OIW X-OSI Implementors' Agreements, if necessary;

12) Review and, if necessary, generate abstract test cases for X-windows;

c) High Priority:

1) Maintain stabilized OIW VTE-profiles and Control Objects;

2) Develop fully general TELNET profile in ISP format;

3) Develop Scroll Profile in ISP format;

d) Low Priority:

1) Develop abstract test cases;

2) Develop Page profile;

3) Migrate stable profiles to ISP format - Forms, TELNET, X.3, Transparent.

8.2.7 UPPER LAYERS SIG

The charter of the Upper Layers SIG is as follows:

a) Develop product level specifications for the implementation of:

1) Session service and protocol;

2) Presentation service and protocol;

3) ACSE service and protocol;

b) Remote Operations Service Element (ROSE);

c) Reliable Transfer Service Element (RTSE);

In addition, the specifications to be developed by the Upper Layers SIG will address issues that are common to layers 5-7 such as addressing, registration, etc. This SIG will review output and proposals from other SIGs to ensure consistency with international standards regarding Upper Layer Architecture;

The specifications developed will be done to support the requirements of all ASE SIGs;

The objectives of the Upper Layers SIG are to:

a) Study OSI Session, Presentation, ACSE, ROSE, RTSE and CCR;

b) Produce and maintain recommendations for implementations of these layers;

c) Where necessary provide input to the relevant standards bodies concerning Session, Presentation, ACSE, ROSE, RTSE, and CCR;

d) React in a timely manner (i.e., to develop corresponding implementor's agreements) to technical changes in ISO documents;

The following are the guidelines under which the Upper Layers SIG will operate:

a) Align implementation agreements with other organizations such as EWOS, AOW, and ISO;

b) Develop implementor's agreements that promote the efficiency of protocol implementations;

c) Develop implementor's agreements that promote ease in the verification of interoperability;

d) Develop necessary conformance statements.

8.2.8 NETWORK MANAGEMENT SIG

Will use phased workload approach to accommodate volume of emerging OSI management-related standards.

The SIG will:

a) Agree upon NIST Implementors OSI systems management reference model;

b) Develop product level specifications for implementations, relating to common services/protocols for exchanging management information between OSI nodes;

c) Develop product level specifications for implementations relating to specific management services for exchanging fault management (FM), Security Management (SM), Configuration Management (CM), Accounting Management (AM), and Performance Management (PM) information between OSI nodes;

d) Initiate and coordinate with appropriate layer SIGs product level specifications of layer-specific management information to support FM, SM, CM, AM, and PM;

As necessary, the SIG will:

a) Establish liaisons with various standards bodies;

b) Provide feedback for additional/enhanced services and protocols for OSI management.

8.2.9 OFFICE DOCUMENT ARCHITECTURE

The charter is as follows:

a) Scope:

1) To develop agreements concerning implementation and testing of Office Document Architecture (ODA) systems based on ISO 8613, its addenda and related international standards;

b) Objectives:

1) Develop ODA document application profiles to support a diverse set of applications and environments;

2) Register and maintain ODA document application profiles;

3) Conduct liaison with standards organizations, other groups developing ODA document application profiles, vendor/user groups and testing authorities as necessary;

4) Review and, if necessary, generate abstract test cases for ODA document application profiles;

5) Harmonize OIW ODA document application profiles with those from other international groups;

6) Participate, as necessary, in the ISO ISP processing of FOD-type profiles;

c) High Priority:

1) Develop and maintain OIW ODA document application profiles;

2) Harmonize OIW ODA document application profiles with other international groups;

3) Assist in the progression of OIW ODA document application profiles through the ISO ISP process;

d) Low Priority:

1) Develop abstract test cases;

2) Integrate addenda and extensions to the base standard into OIW ODA document application profiles;

3) Develop awareness of ODA in vendor and user groups.

NOTE - The Registration SIG has effectively completed its work. The charter items below may be removed in the future.

8.2.10 REGISTRATION SIG

The NIST OSI Workshop Registration Authority Special Interest Group (RA SIG) will deal with OSI Registration for the following areas:

a) Registration of NIST OSI Workshop-Specified Objects;

1) The NIST OSI Workshop RAD SIG will define the procedures for the operation of the NIST Registration Authority (i.e., NIST);

a) Define policies and procedures for the registration of objects defined by the NIST OSI Workshop;

b) Take account of currently existing OSI Workshop registration work;

c) Establish policies for the publication and promulgation of registered objects;

d) Liaise with other OSI Workshop SIGs, appropriate standards bodies (e.g., ANSI) and other appropriate organizations;

2) Support for ANSI (U.S.) Registration activities.

Promote the registration of MHS Private and Administrative Management Domain Names, Network-Layer-Addresses, and other Administrative Objects by ANSI or a surrogate appointed by ANSI. If ANSI feels that it cannot serve as the Registration Authority or delegate its authority to another organization, then the NIST OSI Workshop RA SIG should actively support the search for another organization to carry out this work.

This SIG will conduct a self-assessment, three NIST OSI Workshop Plenary Meetings after the Charter is approved, to determine if it has fulfilled its mission. Based on this assessment, the SIG will either be disbanded or continue. This procedure will continue until the SIG is disbanded.

8.2.11 TRANSACTION PROCESSING SIG

The charter is as follows:

a) reduce TR10000-format OSI TP Profile;

b) Describe TP's use of other profile services: ACSE, CCR, Pres., Dir.;

c) Produce CCR profile covering TP requiremnts;

d) Liaise with other internal and external organizations as required;

e) Communicate with EWOS and AOW to reach goal of an aligned profile;

f) Act as registration authority for OIW TP objects, as necessary.

8.2.12 MANUFACTURING MESSAGE SPECIFICATION (MMS) SIG

The charter is as follows:

a) Scope:

1) To create an open forum for discussion and agreements pertaining to MMS and issues related to MMS;

b) Objectives:

1) To produce agreements for implementations of MMS (ISO 9506);

2) To produce implementation agreements for IS implementations which enable existing DIS based implementations (such as specified in the MAP 3.0 specification) with minimal modifications to interoperate with IS implementations;

3) To produce implementation agreements on MMS Companion Standards (as recognized by ISO TC184/SC5/WG2) after those have reached ISO DIS or equivalent status;

4) Develop Conformance requirements;

5) Develop recommendations on MMS testing;

c) As Necessary:

1) Respond to defect reports as accepted;

2) Provide feedback on Addendum material;

3) To produce implementation agreements on any ISO DIS (or higher level) or equivalent document defining alternate mappings of MMS to an OSI or other international standards based manufacturing communications architecture such as might be progressed from IEC SE 65;

4) Provide input on ISP for MMS when the ISO process for it is defined;

d) High Priority Work Items:

1) Define a subset of MMS (ISO-9506) suitable for initial implementations;

2) Produce a set of implementation agreements appropriate to that initial subset of MMS encompassing the objectives;

3) Study ISO test methodologies and produce recommendations for MMS test implementations. If necessary, provide input on MMS specific requirements for the ISO

test methodologies;

4) Provide input to ISO on Abstract Test Cases to facilitate conformance and interoperability testing on the initial subset;

5) Provide input to ISO on the elaboration of service procedures for error conditions and on the relation of the use of specific error codes to these error conditions for the initial subset;

e) Low Priority Work Items:

1) Study and comment on DP level or equivalent documents relating to MMS activities defined in the objectives;

2) Develop subsequent subsets of MMS;

3) Produce a set of implementors agreements for the subsequent subsets;

4) Provide input on Test Cases for the subsequent subsets;

5) Provide input on errors for the subsequent subsets;

6) Provide input to ISO on MMS ASE specific management entities.

8.2.13 REMOTE DATABASE ACCESS SIG

The charter is as follows:

a) Scope:

1) For all RDA Implementations based on ISO 9579:

a) Develop Implementors' agreements;

b) Provide input to national and international standards organizations on RDA related standards and profiles;

c) Coordinate with other organizations on matters relevant to RDA;

2) Objectives:

a) Use ISO 9579 Generic RDA and the ISO SQL Specialization as a basis for Implementors' Agreements on the RDA SQL ASE and its application contexts;

b) Provide input to ANSI and ISO on the specification of an RDA ISP;

3) High Priority Work Items:

a) To develop a work plan for RDA Implementors' Agreements with an associated time schedule, using the following tasks as a basis:

1) review ULA agreements affecting RDA implementations;

2) specify limits on encodings in RDA pdus;

3) specify minimum conformance requirements for RDA implementations;

4) identify and describe recommended practices in the implementation of RDA services and protocols;

5) identify implementor defined items in ISO 9075 (SQL) affecting interoperability in an OSI environment;

6) identify implementor defined items in ISO 9579 (RDA) affecting interoperability;

7) identify RDA implementation requirements for CCR and TP;

8) harmonize ULA requirements with SQL requirements with respect to handling of variant character sets in RDA;

4) Low Priority Work Items:

a) Future RDA specializations, if any.

9 Points of Contact

OSI Workshop -Chairman	Tim Boland	NIST	(301) 975-3608
OSI Workshop - Registration	Brenda Gray	NIST	(301) 975-3664
Conformance Testing	Eva Kuiper	Hewlett Packard	(408) 447-3163
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FTAM SIG	Darryl Roberts	Unisys NCG	(805) 987-3441, ext. 2206
Lower Layers SIG	Fred Burg	AT&T	(908) 949-0919
Manufacturing Message Secification (MMS) SIG	John J. Baier	Allen-Bradley	(313) 998-2485
Network Management SIG - Co-Chairs	Paul Brusil George Mouradian	Mitre AT&T Bell Labs	(617) 271-7632 (201) 949-7671
ODA SIG	Jim Wing	IBM	(817) 962-4646
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Security SIG	James Galvin	Trusted Info. Systems	(301) 854-6889
Technical Liaison Committee	Einar Stefferud	NMA-Northrop	(714) 842-3711
TLC Task Group (Not a SIG)	Richard Hovey	Digital Equip. Corporation	(202) 383-5680
Transaction Processing SIG	Jeff Hildebrand	Boeing Computer Services	(206) 865-4893
Upper Layers SIG	Mark Thomas	Unix International	(908) 522-6671
Virtual Terminal SIG	Luke Lucas	Control Data Corporation	(612) 482-5534
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10 Profile Conformance

See Stable Implementation agreements.