Object Management Group

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Object Services RFP 3

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OMG TC Document 94-7-1

1.0 INTRODUCTION

1.1 Purpose

The Object Management Group's central mission is to establish an architecture and set of specifications, based on commercially available object technology, to enable **distributed integrated applications**. Primary goals are the *reusability*, *portability* and *interoperability* of object-based software components in distributed heterogeneous environments.To this end, the OMG adopts interface and protocol specifications that define an Object Management Architecture (OMA) that supports applications based on distributed interoperating objects.

The OMG is issuing this Request For Proposal (RFP) to continue to address the OMA component called **Object Services**. As described more fully in Section 5, this RFP solicits proposals for the following:

- Object Time Service
- Security for OMA compliant systems

Your submission may address one or more of these technologies.

A previous Object Services RFP (RFP1) led to the adoption by OMG of a set of specifications known as the **Common Object Services Specification, Volume 1** (COSS1) that includes services for Object Naming, Object Events, Object Life Cycle and Persistent Objects. Submissions to RFP2 which covered services for Object Relationships, Object Externalization, Object Transactions and Object Concurrency Control are currently being

evaluated by the **Object Services Task Force** (OSTF). Adopted specifications for these services will become COSS2.

Object Services are defined by the OMG as those interfaces and sequencing semantics that are commonly used to build well-formed applications in a distributed object environment built on an CORBA-compliant ORB. This RFP is one of a series dealing with Object Service categories which OMG feels are most fundamental to building these applications using the OMG Object Request Broker and OMG Object Model. While OMG recognizes that there are many areas which will eventually need to be addressed by Object Services, we are focusing on only the most basic services for the initial Object Services RFPs.

This RFP is intended to be read in conjunction with the *Object Services Architecture* (*OSA*), the *OMG White Paper on Security (WPS),* and *Object Services Roadmap* (*OSRM*) documents. The *OSA* describes the architecture for OMG Object Services. It specifies architectural goals and principles intended to guide the identification, specification, and selection of OMG object services. The *OSRM* describes the general ordering of selection of groups of Object Services and the process by which the entire set of Object Services will be specified. The *OMG White Paper on Security* provides an introduction to security concepts and architecture models, and describes requirements for security in future OMA compliant systems. Security affects the whole system, so the White Paper talks about the implications on the ORB, other object services and even object implementations as well as the requirements for security object services.

As outlined in Section 5 of this document, OMG based this RFP on a preliminary classification of Object Services and a terminology for describing them. If possible, please respond with information that corresponds to this model and terminology. If you do not believe this model is appropriate, please describe the improved model and terminology you believe OMG should use.

This RFP is organized as follows:

Section 2 - *Context* - background information on OMG's Object Management Architecture (OMA).

Section 3 - *Process* - background information on the OMG specification adoption process.

Section 4 - *RFP Scope, Objectives and Requirements* - objects, requirements and criteria that apply to all Object Services submitted to OMG.

Section 5 - *RFP3 Items* - description and requirements for Time Object Services and Security for OMA compliant systems.

Section 6 - *Instructions for Submitting* - explanation of how to make a submission to this RFP.

Section 7 - *Submission Review Process and Schedule* - summary of how RFP submissions will be reviewed and the schedule for review.

Appendix A - *Commercial Availability Requirements* - OMG requirements on the commercial availability of technology on which submissions are based.

Appendix B - *Object Services Architecture Revisions* - sections of the OSA that have been revised for use in this RFP.

1.2 References

The following documents are referenced in this RFP:

Object Management Architecture Guide, Revision 2.0, Second Edition, September 1, 1992. OMG TC Document 92-11-1

The Common Object Request Broker: Architecture and Specification, Revision 1.1, December 6, 1991. OMG TC Document 91-12-1

Object Services Request For Information, December 13, 1991. OMG TC Document 91-11-6

Object Services Architecture, Revision 1.0, October, 1992. OMG TC Document 92-8-4

OMG White Paper on Security, April 1994 OMG TC Document 94-4-16

Object Services Roadmap, October, 1992. OMG TC Document 92-8-5

Object Services RFP1, October 1992, OMG TC Document 92-8-6

Object Services RFP2, June 1992, OMG TC Document 93-6-1

Object Services RFP4, April 1994, OMG TC Document 94-4-18

These documents can be obtained by contacting the OMG Object Services Technology Desk at the address given above. Many OMG documents are also available electronically from the OMG's document server. Send a message containing the single line "help" to server@omg.org for more information.

For more information about this RFP send email to ostd@omg.org.

2.0 CONTEXT

2.1 Goal of OMG Object Services

The **Object Management Architecture Guide** (OMA Guide, Second Edition), published in 1992, defines OMG's technical objectives and terminology and provides the conceptual infrastructure upon which subsequent supporting specifications are to be based. The guide includes a Reference Model which identifies and characterizes the components, interfaces, and protocols that compose the OMA.

Figure 1 shows the four major parts of the OMA Reference Model. The solid boxes represent software with application programming interfaces. The dotted boxes represent categories of objects with object interfaces.

- The *Object Request Broker* (ORB) enables objects to transparently make and receive requests and responses in a distributed environment.
- *Object Services* is a collection of services (interfaces and objects) that support basic functions for using and implementing objects.
- *Common Facilities* is a collection of services that provide general purpose capabilities useful in many applications.
- *Application Objects* are objects specific to particular end-user applications.

Through a series of RFIs and RFPs, OMG is populating the OMA Reference Model with detailed specifications for each component and service. The **OMG Object Model**, published in 1992, defines *common object semantics* for specifying the externally visible characteristics of objects in a standard implementation-independent way. The **Common Object Request Broker Architecture** (CORBA 1.1), adopted in 1991, defines the programming interfaces to the ORB component (see page 28 of CORBA 1.1).

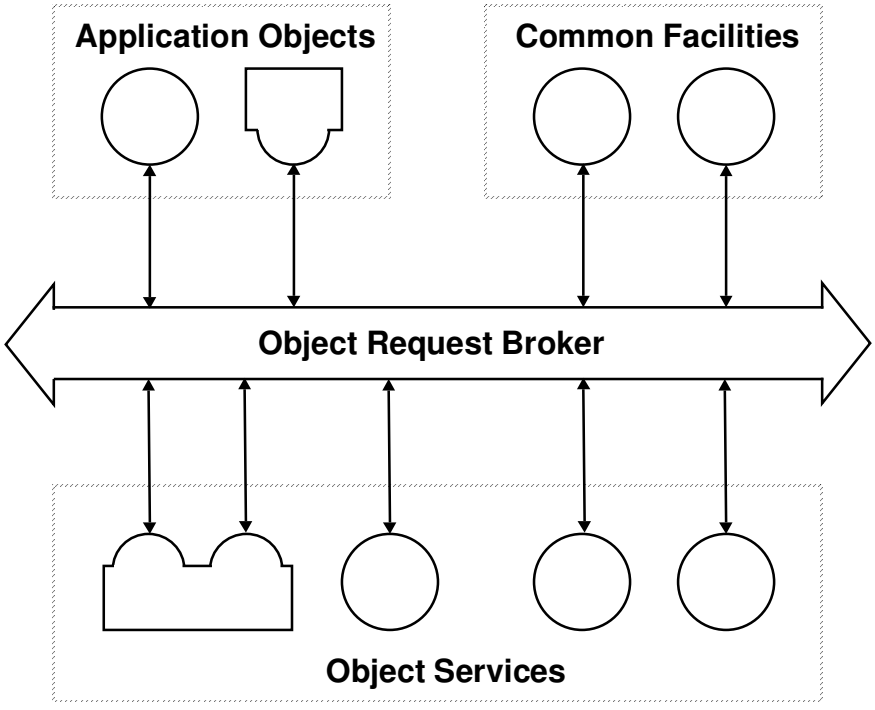

Figure 1: OMA Reference Model (see page. 5-2 of the OMA Guide)

An ORB provides the basic mechanism for transparently making requests to - and receiving responses from - objects located locally or remotely without the client needing to be aware of the mechanisms used to communicate with, activate, or store the objects nor where the objects are located. As such, it forms the *foundation* for building applications constructed from distributed objects and for interoperability between applications in homogeneous and heterogeneous environments.

Using an ORB, requests for an object's services are made without regard to the location or implementation of the object providing the service, i.e., without regard for the mechanisms used to represent, store, manage, invoke or communicate with the object. Objects made available through an ORB publish their interfaces using the Interface Definition Language (IDL) as defined in Chapter 4 of the CORBA specification. The IDL provides a programming language-independent way of specifying an object's operations and attributes.

To construct inter-working, portable clients and object implementations, it is necessary for software components to be able to rely on the availability of certain services regardless of their environment. OMG, through its Object Services Task Force, intends to focus initially on services that are basic in the sense that they are either *fundamental* for developing useful ORB-based applications composed of distributed objects, or that they provide a *universal* (application domain-independent) basis for interoperability.

The cost, performance, quality, and other properties of the service implementation may or may not be important in particular situations, so long as it has the expected behavior. These service interfaces define expected behavior for developers implementing these software components, as well as for users of the services. To support maximum use and reuse of these software components, it is essential to design them to depend on only the behavioral aspects (i.e. interfaces) of other components they use. Services should be defined so that they will support a variety of implementations, each potentially making a different set of engineering tradeoffs.

It is also important that there be agreement on the overall style and conventions to be used for Object Services. Failure to do so may cause problems ranging from inconvenience to non-interoperability. The characteristics of the first specifications to be adopted will set the "style" for later services.

Object Services should be suitable for a wide variety of object implementations and be designed to operate across multiple object systems. Object Services should be capable of supporting a wide range of environments and application domains that should not be application, programming language, hardware or operating-system dependent.

It is not expected that Object Services would provide all of the operations which may be useful to an application, rather, they provide the most general-purpose operations, without which it would be difficult to construct any well-formed application.

3.0 PROCESS

OMG adopts specifications for interfaces, based on existing technology, by explicit vote on a technology-by-technology basis. The specifications selected each fill in a portion of the OMA Reference Model. OMG bases its decisions on both business and technical considerations.

The OMG Technical Committee (TC) provides technical guidance to the OMG in making decisions about specifications. The TC is composed of representatives of all interested OMG member companies. It is chaired by the OMG Vice President of Technology, a full-time employee of the OMG.

The submissions to this RFP, taken within the specific response period, will be evaluated by the Object Services Task Force of the TC with the full TC then voting on a recommendation to the Board for approval. Once a specification (a technology, not source code or product) is adopted by the OMG Board, it will be available to both OMG members and non-members alike.

In responding to this RFP, the OMG feels that potential submitters should keep the following points in mind:

- Unlike a submission to an OMG Request for Information (RFI), it is expected that an RFP submission will require significant effort; several staff months of effort might be necessary.
- The OMG standards adoption process is an open process. Responses (including service specifications) to this and all other RFPs are public and available to members and non-members alike for perusal. No confidentiality or proprietary information of any kind will be accepted in a submission to this RFP.

4.0 RFP SCOPE, OBJECTIVES, AND REQUIREMENTS

4.1 Introduction

The goal of this RFP is to solicit submissions from the industry for technology that provides Time Object Services in the context of OMG's Object Management Architecture (OMA) and Security for OMA compliant systems. This section describes the objectives, requirements, and criteria for *all* Object Services, including the object security services, that submissions must take into account. Submissions must describe how they meet the general technical and non-technical requirements listed in Sections 4.3 and 4.4 below and provide information relative to the evaluation criteria described in Section 4.5 below.

A premise of this RFP is that Object Services can be expressed in terms of object interfaces defined using IDL. Such interfaces will either define types from which subtypes can be derived or services that can be requested by a client via an ORB.

Note that while Object Services will need to provide CORBA-compliant interfaces and be consistent with the OMG Object Model, the services themselves need not be constructed using an object-oriented paradigm.

4.2 Objectives of Object Services

The objectives of the Object Services requested in this RFP are:

- **To make an ORB "usable" for supporting commercial applications**

  To complete and extend the CORBA specification so that products based on it are commercially viable (usable).

  To promote interoperability.

- **To provide software "building blocks"**

  To provide interfaces for basic operations and/or interactions between software components. These operations should have an understanding of the larger issues, allowing later addition of greater functional richness as usage and implementation experience is gained. The interfaces should support a variety of different implementation strategies making different engineering tradeoffs.

  To establish conventions for future services.

  To promote technology that is as independent as possible of other technology, e.g., does not have significant system software dependencies, and is not highly dependent on other services.

  To establish "foundation" services, i.e., services that have most dependencies on them.

- **To leverage existing standards or to increase convergence of other standards**

  To leverage the high commercial investment in technology and mitigate the high cost of duplication and divergence between competing standards.

  To enhance the prospects for commercially available technology at the time of OMG board adoption (ideally multiple alternative implementations will exist).

  To endorse services for which sufficient relevant experience has been gained with: A) CORBA-based systems or B) comparable distributed heterogeneous systems.

  To standardize services that are attracting commercial investment today for which standard interfaces would be difficult to retrofit.

4.3 General Technical Requirements on Submissions

Submissions to this RFP shall satisfy the following general technical requirements (corresponding to Section 3.1 of the OSA) for any *object services* provided. It is recognized that Security submissions may specify technology which provides function, necessary for securing an OMA compliant system, which are not *object services* and therefore could not comply with all of the requirements of section 4.3. These requirements, however, do apply in their entirety to items outlined in Section 5.2.1.2 of this document.

- **Object service interfaces shall be object-oriented and shall be expressed in IDL**

  Any part of a service that is viewable as an object shall be viewed that way and given an IDL interface description.

  Any requirements that a service places on general objects shall be defined in IDL.The service shall use IDL naming conventions for interfaces, types, operations, attributes, etc.

  The service shall use IDL conventions for exceptions and exception parameters.

- **Proposed extensions to IDL, CORBA and/or the OMG Object Model shall be identified**

  Object Services shall be consistent with IDL, CORBA, and the OMG Object Model. It is a goal to minimize extensions required to the CORBA and define additional components that use the CORBA wherever possible.

  Moreover, Object Services should assume that there exist good implementations of the CORBA specification. They must not work-around early CORBA implementations if this will sacrifice uniformity and generality in the long term.

- **Operation sequencing shall be included where applicable**

  Behavior and sequencing of operations shall be part of that service's specifications.

- **Object service specifications shall not contain implementation descriptions**

  Maximum implementation flexibility should be preserved. However, provision should be made for application developers to control implementation choices (e.g., by pragmas or in some other way that does not affect the object service's functional interface).

- **Specifications shall be complete**

  There shall be no "magic" required. For example, object creation does not just happen, some operation must be called to make it occur. Similarly, a database does not magically know how to store the current state of an object, the object may need to cooperate.

- **Object services shall have precise descriptions**

  Object Services should have a precise description of their semantics and side-effects, if any. For example, an object service should distinguish interfaces and behaviors provided by a service from those it expects other object services to supply.

In addition, submissions should demonstrate adherence to the following architectural principles (corresponding to Section 3.2 of the OSA): Note: For compliance to these principles, all items in section 5.2.1.2 may be viewed as a single object service, not as independent object services.

- **Independence and modularity of object services**

  It should be possible to separately specify and implement each object service.

  (It may also be possible to view an existing software module as implementing a collection of one or more OMG object services.)

- **Minimize duplication of functionality (the Bauhaus principle)**

  Functionality should belong to the most appropriate service.

  Each service should build on previous services where appropriate.

- **No hidden interfaces among object services**

  Interfaces and behaviors must be specified sufficiently well so that implementations can be replaced and the parts will still work together. For example, the operation *PutInside(container, member)* works independently of the implementation of members (via a database, ORB, etc.).

- **Consistency among object services**

  Different object services must be able to work together.

- **Extensibility of individual object services**

  Object services should be extensible through an iterative process. It should be clear how extensions can be defined (e.g., via inheritance, delegation, etc.).

  Object Services should use the multiple inheritance capability of IDL wherever possible.

- **Extending the collection of object services**

  It should be possible to define and standardize new object services without having to redesign the system.

- **Configurability**

  It should be possible to configure object services in different combinations for different purposes.

In addition, submissions should *define, explain and/or demonstrate* the following:

- **Consistency with other COSS specifications**

  Consistency and compliance with COSS1 (and other COSS specifications, if they exist at the time of submission) wherever compliance is relevant and appropriate, including:

  Provision of factory objects as needed (see COSS1) to use the service or create objects managed by the service including the definition of all factory interfaces.

  Integration with current COSS services.

- **Conventions and guidelines**

  Conventions and guidelines defined, used or implied in the submission. See Section 3.3 of the OSA, Sections 3.5 and 5.5.3 of the OSRM for a description of why conventions and guidelines are important and for a list of conventions and guidelines that may be applicable to a submissions.

- **Mandatory versus optional interfaces**

Mandatory interfaces that are required to supported by compliant implementations as distinguished from optional interfaces that a particular implementation may or may not support. Optional interfaces need not be supported for an implementation to be said to be compliant. Complex optional interface schemes are not encouraged.

- **Constraints on object behavior**

  Constraints on object behavior over and above those defined by the object's interface semantics (aka "qualities of service") that implementations must take into account.

- **Integration with future object services**

  How the service can evolve to integrate with relevant future object service specifications. For additional guidance on this see Sections 3.4, 3.6 and 3.7 of the OSRM.

4.4 General Non-technical Requirements on Submissions

Your organization must provide a statement about your willingness to comply with the OMG's requirements (e.g., your willingness to make the proposed technology commercially available) in your Letter of Intent (see Section 6.1).

Submissions must include a "proof of concept" statement, explaining how the submitted specifications have been demonstrated to be technical viable.

It is important for the Task Force to understand the technical viability of an OMG submission during the evaluation process. The technical viability has a lot to do with the state of development of the technology submitted. This is not the same as commercial availability, which is an OMG Board of Directors consideration. Proof of concept statements can contain any information deemed relevant by the submitter, for example:

"This specification has completed the design phase and is the process of being prototyped."

"An implementation of this specification has been in beta-test for 4 months."

"A named product (with a specified customer base) is a realization of this specification."

It will also be incumbent upon the finalists to demonstrate to the OSTF's satisfaction the technical viability of their submission.

Any technology adopted by the OMG must be commercially available from a Corporate Member. A statement to the OMG Board of Directors describing how the submission meets this commercial availability requirement is required on adoption of a submitted specification.

4.5 Evaluation criteria

Although the OMG is adopting specifications, the OSTF is very concerned with the technical viability of implementations and will therefore use the following criteria above and beyond the requirements listed above in evaluating the submissions to this RFP:

- **Reliability**

  Implementations must be possible that provide a reliable service.

- **Performance.**

  Interfaces to Object Services should be designed with potential implementation performance tradeoffs in mind.

- **Scalability**

  Object Services should be designed for ease of scalability.

- **Portability**

  It should be easy to implement the specification on a variety of platforms. Implementation should not require use of a particular programming language.

For additional background information on these criteria see Section 3.2 of the OSRM.

5.0 RFP3 SPECIFIC ITEMS

This section describes each technology for which a proposal is being solicited. These descriptions are summaries of the information to be found in the *OSA* and the *OMG White Paper on Security*, which should be consulted for more details.

Proposals are required to provide the functionality described in these referendaries RFP as indicated by the phrase **shall provide**. Proposals are required to describe how they deal with issues in this RFP and referenced documents indicated by the phrase **should address**.

A proposal may be submitted for one or more of the technologies described in this section. Each is considered a separate architectural entity for which a submission may be made.

If a submitter believes that Object Time Service is integral to the provision of their Security proposal (i.e., the Object Time Service is integral to the provision of security in an OMA compliant system), the submitter may submit the technologies as a single entity. As a technical requirement for Object Services' independence and modularity of object services (see above, §4.3), a clear explanation of why the submitter believes the technologies must be treated as a single entity must be provided. Instead of describing two technologies as a single entity, a submitter may find it more advantageous to describe how one may depend on the other, and to describe how the submitted one places requirements on or interacts with the other.

5.1 Object Time Service Proposals

Proposals for an Object Time Service are being requested.

The Object Time Service shall provide a mechanisms for periodically synchronizing clocks in all component systems in a distributed environment. The Object Time Service provided must be capable of providing a *trusted time service* for use by the Security technology described in section 5.2 of this RFP.

5.1.1 Trusted Time Services

Trusted time service shall include the following characteristics:

- Integrity
- Availability
- Correct within a known error factor

For more information see §B.20 of the OSA which is attached as Appendix B of this document.

5.2 Security Proposals

Proposals for Security are being requested.

The security technology **shall provide** a set of mechanisms for securing a distributed object system that are:

- Applicable to a range of Security Policies.
- Conformant with the OMG Object Management Architecture.

For more information see the *OMG White Paper on Security.*

We recognize that the technology is more mature in some areas than others and it is expected that responses may be more detailed in the areas of mature technology than in areas where the technology is less mature.

5.2.1 Security Requirements

5.2.1.1 General Security Requirements to be addressed

Submissions to this RFP shall satisfy the following general security requirements. Submitters **should address** how their proposal either meets each of these requirements or describe how their submission will meet the appropriate criteria or considerations specified.

- **Architectural considerations**
  - Consistency
  - Scalability
  - Availability
- **Business concerns**
  - Regulatory considerations
  - Enforceability
  - Portability
  - Flexibility
  - Usability
  - Evaluation Criteria considerations
  - Performance considerations
  - Standards considerations
  - Security Mechanism independence

5.2.1.2 Functional Security Requirements

Security functionality that an RFP submission for Security **shall provide** are:

- Identification and Authentication
- Access Control
- Secure Communications
- Security Auditing
- Security Administration

  Submitters are expected to provide proposals for all functions listed.

Security functionality that an RFP submission for Security **should address** are:

- Nonrepudiation service

  Defined as methodologies to provide proof of origin of data to recipient or proof of delivery of data to sender to protect against subsequent attempts to falsely deny the receiving or sending of data.

5.2.1.3 Other Security Issues to be addressed

The following issues are considered requirements that an RFP submission for Security **should address**:

- Level of Portability for Security-aware applications
- Boundaries of the trusted domain, i.e. the purview of the Trusted Computing Base as described in OMG WPS section 4.4
- Interoperability between Objects accessed via different ORBs
- Levels of Interoperability
  - Interoperable communication protocols
  - Interoperable Security Mechanisms
  - Interoperable Security Policies

5.2.2 Security Model

Key to the evaluation of a Security submission will be an understanding of the security model on which the technology is based. An RFP submission for Security **shall provide** a description of the Security model that:

- Describes your overall architecture model in the context of OMA and how it complies with the OMA.
- Cover all items in 5.2.1.1 above
- Address questions raised in WPS Section 5.1
- Address how each of the items in section 5.2 of this RFP is covered
- Describes the *threats* for which protection is provided by the proposed technology.

5.2.3 Interfaces specific to Security

An RFP submission for Security **shall provide** an interface consistent with §3.1 of the OSA (see Section 4.3 of this RFP) for each of the security functions outlined in section 5.2.1.2 of this RFP and should address interfaces to the functions discussed in §4.5 of the WPS. In addition, submissions should consider the *Object Services Roadmap* and impact of future object services.

5.2.4 Extensions to CORBA

An RFP submission for Security shall fully specify changes to the CORBA interface and should address implications on the CORBA model, ORB interoperability and specifically cover the issues discussed in §5.3 of the WPS.

5.2.5 Extension to Object Services

An RFP submission for Security shall fully specify changes to the OSA intefaces and should address implications on the OSA model, on adopted and planned Object Services, and specifically cover the issues discussed in §5.4 of the WPS.

5.2.6 Impact on Common Facilities

An RFP submission for Security should address potential implications on future Common Facilities and specifically cover the issues discussed in §5.3 of the WPS.

6.0 INSTRUCTIONS FOR RESPONDING

6.1 General

Companies responding to this RFP shall designate a single contact within that company for receipt of all subsequent information regarding this RFP and RFP submissions. The name of this contact will be made available to all OMG members.

As a forewarning to organizations who intend to respond to this Object Services RFP, please note that responding to an RFP requires:

- A Letter of Intent signed by an officer of your organization signifying your intent to respond to the RFP and a statement of your organization's willingness to comply with the OMG's requirements (e.g., a statement describing your willingness to meet the commercial availability requirements). For a definition of commercial availability see Appendix A.
- The submission of the specification of technology as described in this RFP.

Documentation submitted in response to Object Time Services will be distributed to all of the members of the OSTF, while documentation submitted in response to Security will be distributed to all of the members of the OSTF and the ORBTF, and all documentation will be available to all OMG members.

The following points should also be noted:

1. *Independent submissions are solicited for 1) Security for OMA compliant systems and for 2) Object Time Services.*

   A company may respond to either or both items. Each item will however be evaluated independently by the OSTF. Thus submissions that do not present clearly separable proposals for multiple items may be at a disadvantage.

2. *Submissions to each individual item must be "complete"*

   A submission must provide complete service specifications for the item and address all the relevant requirements stated in the OSA and in the RFP.

It is anticipated that RFP items may not map cleanly onto technology described in some submissions. At least two situations may arise:

- A given technology may provide a solution to an RFP item and, in addition, provide *(or its design may necessitate*) an integrated approach to one or more other Object Services not included in the RFP. Submitters are invited to provide information on these additional services and give a rationale as to why these specifications should also be considered for adoption at the same time. However, information on these additional services should be clearly distinguished.
- A given technology (e.g. software product) may support both items in the RFP. So long as the interfaces for each item is separable, this is not precluded.

Submitters may provide alternative technology definitions, categorizations, and groupings so long as the rationale for doing so is clearly stated. Equally, submitters may provide an alternative model or framework for how Object technologies are provided within the OMA architecture if there are compelling technological reasons for a different approach.

6.2 Format of RFP Responses

The following outline describes what your submission should consist of and is offered to assist in the development of your submission. Responses should follow the following template and include specific references to supporting documents as necessary. Submitters should realize that submissions that are concise and easy to read will inevitably receive more consideration.

Please include an overview or guide to the material in the submission. Submitters are encouraged to confine submissions to the technologies requested. If this is not practical then submitters must make it clear what portion of the documentation/specification pertains directly to the RFP and what portion of the materials submitted are not relevant to the RFP.

According to the Policies and Procedures of the OMG Technical Committee, proprietary and confidential material may not be included in any submission to the OMG. Responses become public documents of the OMG. If copyrighted, a waiver of copyright for unlimited duplication by the OMG is required. A limited waiver of copyright to allow OMG members to make up to fifty (5) copies of the document for OMG review purposes only is also required.

You should include, for each technology, a description using the following template.

6.2.1 TECHNOLOGY DESCRIPTION

Describe the technology and how it provides (or does not provide) the functionality identified with the phrase "shall provide" this RFP

TECNOLOGY STRUCTURE

6.2.1.1 Overview

Provide an introduction to the structure of the technology and its capabilities.

6.2.1.2 Object and Interface Hierarchies

Identify the objects required for provision of this technology and any inheritance relationships that may exist between their interfaces.

6.2.1.3 Interface Description: IDL

Describe the signature of the interface i.e. the list of operations along with the parameters that are required. Provides a list of exceptions that may be returned by the operations. The OMG Interface Definition Language (IDL) must be used to specify the signatures associated with each object. Include definitions for all factory objects required to use the technology or objects created or managed by the technology.

Describe any extensions that may be needed to IDL in order to support the technology definition.

6.2.1.4 Interface Description: Behavior

Describe the semantics of the behavior observed as a result of using each specified operation. These descriptions may be provided in informal English. Describe any limitations in the technology's behavior.

6.2.2 RESOLUTION OF TECHNICAL AND NON-TECHNICAL ISSUES

Explain how the submission meets the general technical and non-technical requirements listed above in Sections 4.3 and 4.4 and provide information relevant to the evaluation criteria described in Section 4.5 and or the OMG White Paper on Security.

Provide a discussion and rationale in response to the technical issues indicated by the phrase "should address" in the technology descriptions in Appendix B and or the OMG White Paper on Security.

6.2.3 TECNOLOGY DEPENDENCIES

To provide the technologies described in submission, the objects identified may be designed to take advantage of other Object Services that are available. Identify any other objects that the described objects are composed of or take advantage of and provide an explanation of how and why these other objects are relied upon to provide the described technology. In particular, explain the relationship of the submitted specification to existing COSS specifications. For a list of potential object services, please refer to Appendix A of the *OSA*. For additional guidance on this see Sections 3.6 and 3.7 of the OSRM.

Identify any other technology dependencies such as other software that is presumed to exist to support the technology.

6.2.4 RELATIONSHIP TO CORBA

Describe how the technology uses CORBA features and fully specify any extensions of CORBA that are required, including extensions to IDL. For additional guidance on this see Section 2.4 of the OSRM.

6.2.5 RELATIONSHIP TO OMG OBJECT MODEL

Describe how the technology conforms to the OMG Object Model and/or what new components or profiles may be needed. For additional guidance on this see Section 2.5 of the OSRM.

6.2.6 STANDARDS CONFORMANCE

Identify conformance to any existing standards.

6.2.7 OTHER INFORMATION

Provide any other materials deemed to be relevant to the evaluation process.

6.3 How to Submit

OMG requests that electronic versions of your submission (typically ASCII, FrameMaker, Word, WordPerfect, or PostScript format) be sent to the Object Services Technology Desk (ostd@omg.org) at OMG by the submission deadline.

In addition, 50 hard copies of the submission should be sent to the Object Services Technology Desk at OMG within three working days after the submission deadline and 50 hard copies should be made available to attendees of the OSTF meeting immediately following the submission deadline. Your organization should be prepared to handle requests for additional copies of your submission.

Responses to this RFP (and other communication regarding this RFP) should be sent to:

Object Services Technology Desk
Object Management Group Inc.
Framingham Corporate Center
492 Old Connecticut Path
Framingham, MA 01701-4568
USA

Responses to this RFP must be received at OMG no later than 5:00 PM EST (22:00 UTC) February 13,1995. The outside of packages/envelopes containing submissions or any other communication regarding this RFP should be clearly marked “OBJECT SERVICES RFP3 SUBMISSION”**.**

6.4 Reimbursements

The OMG will not reimburse submitters for any costs in conjunction with their submissions to this RFP.

7.0 SUBMISSION REVIEW PROCESS AND SCHEDULE

The OMG Object Services Task Force (OSTF) will conduct the initial evaluations of the RFP submissions. It will recommend selected specifications to the Technical Committee (TC) which in turn will make a formal recommendation to the Board of Directors (BOD) to adopt the specifications. The OSTF is composed of interested OMG member companies and the TC is composed of representatives of all OMG member companies.

7.1 Review Process

The OSTF plans to a use a four step process for handling submissions to Object Services RFPs:

1. *Letter of Intent*

   A Letter of Intent (LOI) to submit will be due 60 days before the deadline for submissions.

2. *Submissions*

   Full submissions will be due by a specific deadline. Submitters are expected to have working implementations of their proposed specifications at the time of submission.

3. *Revised Submissions*

   There will then be a 120 day preliminary evaluation by the OSTF, and ORBTF for Security submissions, during which companies will have the opportunity to revise and/or merge their submissions.

4. *Specification Selection*

   Finalists may be requested to make demonstrations to the OSTF. The final specification recommendation by the OSTF, and ORBTF for Security submissions will take place 90 days later. The TC will then vote to recommend a specification to the BOD 3 to 5 weeks later.

All the above dates are approximate. For more detailed information on the OMG's Object Services adoption process and plans see Chapter 5 of the *OSRM*.

7.2 OS RFP Schedule

Day	**Event/*Activity***	**Actual Date**
	Preparation of RFP by OSTF	May 30, 1994
	Review by TC ("Three week rule")	
0	TC votes to issue RFP	July 30, 1994
	Preparation of submissions	
120	LOI to submit to RFP due	October 31, 1994
	Preparation of submissions	
225	Submissions due	February 13, 1995
	Preliminary evaluations by OSTF and	
	preparation of revised submissions	
305	Revised submissions due	May 8, 1995
	Specification selection by OSTF	
390	OSTF votes to select specifications	July, 1995
	Review by TC ("Three week rule")	
420	TC votes to recommend specifications	August, 1995
450	BOD votes to adopt specifications	September, 1995

APPENDIX A

A.1 Commercial Availability

For technology to be accepted and adopted by the OMG board of directors (see OMG policy titled “Policy Document on Adoption of Specifications - 2/12/90”) it must be commercially available within 12 months of adoption. This is required for proof of concept and expedient implementation of actual product and licensing procedures. Commercially available is delineated as:

- Technology that has been publicly announced as a product or embodied within another product.
- Technology that is of production/manufacturing quality, has cleared a process of product shipment authorization, and can be demonstrated at OMG request (including installation, documentation, service, and support,). Demonstrations must be available following RFP presentation to the OMG Technical Committee.
- Technology that can be referenced by at least two consumers (customers) of the technology.

This must be accompanied by a letter of authorization by an officer of the company proposing the technology.

A.2 Terms and Conditions

The OMG Business Committee has produced a document entitled “OMG Policy on Adoption of Specifications.” When reviewing submissions to each RFP, the specific items that the OMG Business Committee will be considering during the selection process are outlined below:

- The optimization of interoperability and portability goals across multiple platforms.
- Commitment by the proposed technology supplier to make the implementation available on commercially reasonable terms, applied in a non discriminatory fashion.
- Submission of a proposed price schedule and Standard License Agreement.
- A preferred, but not required, method for achieving multi-platform interoperability is source code licensing. Please include any provisions as such.
- Assurance that the results in the duplication of the “look and feel” of any aspects of such proponents implementations from specifications will not result in infringement or any obligation to pay royalties.
- Plans for future revisions, enhancements, maintenance and support.
- Agreement to grant the OMG a worldwide copyright including the right to copy and distribute the adopted interface specification at no cost to OMG. Implementations or instantiations of the specifications is owned by the developer.
- Upon OMG’s acceptance of the sponsoring company’s interfaces, the sponsoring company agrees to provide all documentation in an OMG prescribed format and in OMG endorsed terminology.

APPENDIX B

Object Services Architecture -- Revision 6.0 -- 17 May 1993

B.20 Object Time Service

B.20.1 Service Description and Requirements

The Object Time Service shall provide a mechanism for periodically synchronizing clocks in all component systems in a distributed environment.

The Object Time Service **should address**:

Ascertaining the order in which “events” occurred within a distributed environment.

Generating time-based events, e.g., generating events based on timers and “alarms.”

Computing the interval between two “events”.

In describing this service, it's important to re-iterate that we are not looking for an implementation (e.g., an algorithm) but object interfaces.

B.20.2 Related Standards and References

See the OMG OSTF RFI submission from Transarc.

OSF DCE 1.0 Introduction to DCE.

Unix International ATLAS ONC.

B.20.3 Relationship to Other Object Services, CORBA, and the OMG Object Model

The Object Time Service may depend on:

Event Service - the Time Service may use an Event Service as part of its interface (or implementation) or vice versa. For example, the Time Service may use the Event Service to propagate notifications of time-based events.