Object Management Group

140 Kendrick Street
Building A Suite 300
Needham, MA 02494
USA

Telephone: +1-781-444-0404
Facsimile: +1-781-444-0320

Common Terminology Services Release 2 (CTS2)

Request For Proposal

OMG Document: ad/2009-09-17

Letters of Intent due: January 31, 2010
Submissions due: [May-24 2010]

Objective of this RFP

[From SFM 2.1.1] The goal of the Common Terminology Services 2 (CTS 2) Specification is to expand the original functionality outlined in HL7's Common Terminology Service (CTS) Specification. CTS 2 defines the functional requirements of a set of service interfaces to allow the representation, access, and maintenance of terminology content either locally, or across a federation of terminology service nodes.

For further details see Chapter 6 of this document.

1.0 Introduction

1.1 Goals of OMG

The Object Management Group (OMG) is the world's largest software consortium with an international membership of vendors, developers, and end

users. Established in 1989, its mission is to help computer users solve enterprise integration problems by supplying open, vendor-neutral portability, interoperability and reusability specifications based on Model Driven Architecture (MDA). MDA defines an approach to IT system specification that separates the specification of system functionality from the specification of the implementation of that functionality on a specific technology platform, and provides a set of guidelines for structuring specifications expressed as models. OMG has established numerous widely used standards such as OMG IDL[IDL], CORBA[CORBA], Realtime CORBA [CORBA], GIOP/IIOP[CORBA], UML[UML], MOF[MOF], XMI[XMI] and CWM[CWM] to name a few significant ones.

1.2 Organization of this document

The remainder of this document is organized as follows:

Chapter 2 - *Architectural Context* - background information on OMG's Model Driven Architecture.

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

Chapter 4 - *Instructions for Submitters* - explanation of how to make a submission to this RFP.

Chapter 5 - *General Requirements on Proposals* - requirements and evaluation criteria that apply to all proposals submitted to OMG.

Chapter 6 - *Specific Requirements on Proposals* - problem statement, scope of proposals sought, requirements and optional features, issues to be discussed, evaluation criteria, and timetable that apply specifically to this RFP.

Appendix A – *References and Glossary Specific to this RFP*

Appendix B – General References and Glossary

1.3 Conventions

The key words "**must**", "**must not**", "**required**", "**shall**", "**shall not**", "**should**", "**should not**", "**recommended**", "**may**", and "**optional**" in this document are to be interpreted as described in RFC 2119 [RFC2119].

1.4 Contact Information

Questions related to the OMG's technology adoption process may be directed to *omg-process@omg.org*. General questions about this RFP may be sent to *responses@omg.org*.

OMG documents (and information about the OMG in general) can be obtained from the OMG's web site *(http://www.omg.org/)*. OMG documents may also be

obtained by contacting OMG at *documents@omg.org*. Templates for RFPs (like this document) and other standard OMG documents can be found at the OMG Template Downloads Page at *http://www.omg.org/technology/template_download.htm*

2.0 Architectural Context

MDA provides a set of guidelines for structuring specifications expressed as models and the mappings between those models. The MDA initiative and the standards that support it allow the same model specifying business system or application functionality and behavior to be realized on multiple platforms. MDA enables different applications to be integrated by explicitly relating their models; this facilitates integration and interoperability and supports system evolution (deployment choices) as platform technologies change. The three primary goals of MDA are portability, interoperability and reusability.

Portability of any subsystem is relative to the subsystems on which it depends. The collection of subsystems that a given subsystem depends upon is often loosely called the *platform*, which supports that subsystem. Portability – and reusability - of such a subsystem is enabled if all the subsystems that it depends upon use standardized interfaces (APIs) and usage patterns.

MDA provides a pattern comprising a portable subsystem that is able to use any one of multiple specific implementations of a platform. This pattern is repeatedly usable in the specification of systems. The five important concepts related to this pattern are:

1. *Model* – A model is a representation of a part of the function, structure and/or behavior of an application or system. A representation is said to be formal when it is based on a language that has a well-defined form (“syntax”), meaning (“semantics”), and possibly rules of analysis, inference, or proof for its constructs. The syntax may be graphical or textual. The semantics might be defined, more or less formally, in terms of things observed in the world being described (e.g. message sends and replies, object states and state changes, etc.), or by translating higher-level language constructs into other constructs that have a well-defined meaning. The optional rules of inference define what unstated properties you can deduce from the explicit statements in the model. In MDA, a representation that is not formal in this sense is not a model. Thus, a diagram with boxes and lines and arrows that is not supported by a definition of the meaning of a box, and the meaning of a line and of an arrow is not a model—it is just an informal diagram.

2. *Platform* – A set of subsystems/technologies that provide a coherent set of functionality through interfaces and specified usage patterns that any subsystem that depends on the platform can use without concern for the details of how the functionality provided by the platform is implemented.

3. *Platform Independent Model (PIM)* – A model of a subsystem that contains no information specific to the platform, or the technology that is used to realize it.

4. *Platform Specific Model (PSM)* – A model of a subsystem that includes information about the specific technology that is used in the realization of that subsystem on a specific platform, and hence possibly contains elements that are specific to the platform.

5. *Mapping* – Specification of a mechanism for transforming the elements of a model conforming to a particular metamodel into elements of another model that conforms to another (possibly the same) metamodel. A mapping may be expressed as associations, constraints, rules, templates with parameters that must be assigned during the mapping, or other forms yet to be determined.

For example, in case of CORBA the platform is specified by a set of interfaces and usage patterns that constitute the CORBA Core Specification [CORBA]. The CORBA platform is independent of operating systems and programming languages. The OMG Trading Object Service specification [TOS] (consisting of interface specifications in OMG Interface Definition Language (OMG IDL)) can be considered to be a PIM from the viewpoint of CORBA, because it is independent of operating systems and programming languages. When the IDL to C++ Language Mapping specification is applied to the Trading Service PIM, the C++-specific result can be considered to be a PSM for the Trading Service, where the platform is the C++ language and the C++ ORB implementation. Thus the IDL to C++ Language Mapping specification [IDLC++] determines the mapping from the Trading Service PIM to the Trading Service PSM.

Note that the Trading Service model expressed in IDL is a PSM relative to the CORBA platform too. This highlights the fact that platform-independence and platform-specificity are relative concepts.

The UML Profile for EDOC specification [EDOC] is another example of the application of various aspects of MDA. It defines a set of modeling constructs that are independent of middleware platforms such as EJB [EJB], CCM [CCM], MQSeries [MQS], etc. A PIM based on the EDOC profile uses the middleware-independent constructs defined by the profile and thus is middleware-independent. In addition, the specification defines formal metamodels for some specific middleware platforms such as EJB, supplementing the already-existing OMG metamodel of CCM (CORBA Component Model). The specification also defines mappings from the EDOC profile to the middleware metamodels. For example, it defines a mapping from the EDOC profile to EJB. The mapping specifications facilitate the transformation of any EDOC-based PIM into a corresponding PSM for any of the specific platforms for which a mapping is specified.

Continuing with this example, one of the PSMs corresponding to the EDOC PIM could be for the CORBA platform. This PSM then potentially constitutes a

PIM, corresponding to which there would be implementation language specific PSMs derived via the CORBA language mappings, thus illustrating recursive use of the Platform-PIM-PSM-Mapping pattern.

Note that the EDOC profile can also be considered to be a platform in its own right. Thus, a model expressed via the profile is a PSM relative to the EDOC platform.

An analogous set of concepts apply to Interoperability Protocols wherein there is a PIM of the payload data and a PIM of the interactions that cause the data to find its way from one place to another. These then are realized in specific ways for specific platforms in the corresponding PSMs.

Analogously, in case of databases there could be a PIM of the data (say using the Relational Data Model), and corresponding PSMs specifying how the data is actually represented on a storage medium based on some particular data storage paradigm etc., and a mapping from the PIM to each PSM.

OMG adopts standard specifications of models that exploit the MDA pattern to facilitate portability, interoperability and reusability, either through ab initio development of standards or by reference to existing standards. Some examples of OMG adopted specifications are:

1. *Languages* – e.g. IDL for interface specification, UML for model specification, OCL for constraint specification, etc.
2. Mappings – e.g. Mapping of OMG IDL to specific implementation languages (CORBA PIM to Implementation Language PSMs), UML Profile for EDOC (PIM) to CCM (CORBA PSM) and EJB (Java PSM), CORBA (PSM) to COM (PSM) etc.
3. *Services* – e.g. Naming Service [NS], Transaction Service [OTS], Security Service [SEC], Trading Object Service [TOS] etc.
4. *Platforms* – e.g. CORBA [CORBA].
5. *Protocols* – e.g. GIOP/IIOP [CORBA] (both structure and exchange protocol), XML Metadata Interchange [XMI] (structure specification usable as payload on multiple exchange protocols).
6. *Domain Specific Standards* – e.g. Data Acquisition from Industrial Systems (Manufacturing) [DAIS], General Ledger Specification (Finance) [GLS], Air Traffic Control (Transportation) [ATC], Gene Expression (Life Science Research) [GE], Personal Identification Service (Healthcare) [PIDS], etc.

For an introduction to MDA, see [MDAa]. For a discourse on the details of MDA please refer to [MDAc]. To see an example of the application of MDA see [MDAb]. For general information on MDA, see [MDAd].

Object Management Architecture (OMA) is a distributed object computing platform architecture within MDA that is related to ISO's Reference Model of Open Distributed Processing RM-ODP[RM-ODP]. CORBA and any extensions to it are based on OMA. For information on OMA see [OMA].

3.0 Adoption Process

3.1 Introduction

OMG adopts specifications by explicit vote on a technology-by-technology basis. The specifications selected each satisfy the architectural vision of MDA. OMG bases its decisions on both business and technical considerations. Once a specification adoption is finalized by OMG, it is made available for use by both OMG members and non-members alike.

Request for Proposals (RFP) are issued by a *Technology Committee* (TC), typically upon the recommendation of a *Task Force* (TF) and duly endorsed by the *Architecture Board* (AB).

Submissions to RFPs are evaluated by the TF that initiated the RFP. Selected specifications are *recommended* to the parent TC after being *reviewed* for technical merit and consistency with MDA and other adopted specifications and *endorsed* by the AB. The parent TC of the initiating TF then votes to *recommend adoption* to the OMG Board of Directors (BoD). The BoD acts on the recommendation to complete the adoption process.

For more detailed information on the adoption process see the *Policies and Procedures of the OMG Technical Process* [P&P] and the *OMG Hitchhiker's Guide* [Guide]. In case of any inconsistency between this document and the [P&P] in all cases the [P&P] shall prevail.

3.2 Steps in the Adoption Process

A TF, its parent TC, the AB and the Board of Directors participate in a collaborative process, which typically takes the following form:

- *Development and Issuance of RFP*

  RFPs are drafted by one or more OMG members who are interested in the adoption of a standard in some specific area. The draft RFP is presented to an appropriate TF, based on its subject area, for approval and recommendation to issue. The TF and the AB provide guidance to the drafters of the RFP. When the TF and the AB are satisfied that the RFP is appropriate and ready for issuance, the TF recommends issuance to its parent TC, and the AB endorses the recommendation. The TC then acts on the recommendation and issues the RFP.

- *Letter of Intent (LOI)*

A Letter of Intent (LOI) must be submitted to the OMG signed by an officer of the member organization which intends to respond to the RFP, confirming the organization's willingness to comply with OMG's terms and conditions, and commercial availability requirements. (See section 4.3 for more information.). In order to respond to an RFP the organization must be a member of the TC that issued the RFP.

- *Voter Registration*

  Interested OMG members, other than Trial, Press and Analyst members, may participate in specification selection votes in the TF for an RFP. They may need to register to do so, if so stated in the RFP. Registration ends on a specified date, 6 or more weeks after the announcement of the registration period. The registration closure date is typically around the time of initial submissions. Member organizations that have submitted an LOI are automatically registered to vote.

- *Initial Submissions*

  Initial Submissions are due by a specified deadline. Submitters normally present their proposals at the first meeting of the TF after the deadline. Initial Submissions are expected to be complete enough to provide insight on the technical directions and content of the proposals.

- *Revision Phase*

  During this time submitters have the opportunity to revise their Submissions, if they so choose.

- *Revised Submissions*

  Revised Submissions are due by a specified deadline. Submitters again normally present their proposals at the next meeting of the TF after the deadline. (Note that there may be more than one Revised Submission deadline. The decision to set new Revised Submission deadlines is made by the registered voters for that RFP.)

- *Selection Votes*

  When the registered voters for the RFP believe that they sufficiently understand the relative merits of the Revised Submissions, a selection vote is taken. The result of this selection vote is a recommendation for adoption to the TC. The AB reviews the proposal for MDA compliance and technical merit. An endorsement from the AB moves the voting process into the issuing Technology Committee. An eight-week voting period ensues in which the TC votes to recommend adoption to the OMG Board of Directors (BoD). The final vote, the vote to adopt, is taken by the BoD and is based on technical merit as well as business qualifications. The resulting draft standard is called the *Alpha Specification*.

- Business Committee Questionnaire

The submitting members whose proposal is recommended for adoption need to submit their response to the BoD Business Committee Questionnaire [BCQ] detailing how they plan to make use of and/or make the resulting standard available in products. If no organization commits to make use of the standard, then the BoD will typically not act on the recommendation to adopt the standard - so it is very important to fulfill this requirement.

- Finalization

  A Finalization Task Force (FTF) is chartered by the TC that issued the RFP, to prepare an Alpha submission for publishing as a Formal (i.e. publicly available) specification, by fixing any problems that are reported by early users of the specification. Upon completion of its activity the FTF recommends adoption of the resulting Beta (draft) specification. The parent TC acts on the recommendation and recommends adoption to the BoD. OMG Technical Editors produce the Formal Specification document based on this Beta Specification.

- Revision

  A Revision Task Force (RTF) is normally chartered by a TC, after the FTF completes its work, to manage issues filed against the Formal Specification by implementers and users. The output of the RTF is a Beta specification reflecting minor technical changes, which the TC and Board will usually approve for adoption as the next version of the Formal Specification.

3.3 Goals of the evaluation

The primary goals of the TF evaluation are to:

- Provide a fair and open process
- Facilitate critical review of the submissions by members of OMG
- Provide feedback to submitters enabling them to address concerns in their revised submissions
- Build consensus on acceptable solutions
- Enable voting members to make an informed selection decision

Submitters are expected to actively contribute to the evaluation process.

4.0 Instructions for Submitters

4.1 OMG Membership

To submit to an RFP issued by the Platform Technology Committee the submitter or submitters must be either Platform or Contributing members on the date of the submission deadline, while for Domain Technology RFPs the submitter or submitters must be either Contributing or Domain members.

Submitters sometimes choose to name other organizations that support a submission in some way; however, this has no formal status within the OMG process, and for OMG's purposes confers neither duties nor privileges on the organizations thus named.

4.2 Submission Effort

An RFP submission may require significant effort in terms of document preparation, presentations to the issuing TF, and participation in the TF evaluation process. Several staff months of effort might be necessary. OMG is unable to reimburse submitters for any costs in conjunction with their submissions to this RFP.

4.3 Letter of Intent

A Letter of Intent (LOI) must be submitted to the OMG Business Committee signed by an officer of the submitting organization signifying its intent to respond to the RFP and confirming the organization's willingness to comply with OMG's terms and conditions, and commercial availability requirements. These terms, conditions, and requirements are defined in the *Business Committee RFP Attachment* and are reproduced verbatim in section 4.4 below.

The LOI should designate a single contact point within the submitting organization for receipt of all subsequent information regarding this RFP and the submission. The name of this contact will be made available to all OMG members. The LOI is typically due 60 days before the deadline for initial submissions. LOIs must be sent by fax or paper mail to the "RFP Submissions Desk" at the main OMG address shown on the first page of this RFP.

Here is a suggested template for the Letter of Intent:

This letter confirms the intent of <organization required> (the organization) to submit a response to the OMG <RFP name required> RFP. We will grant OMG and its members the right to copy our response for review purposes as specified in section 4.7 of the RFP. Should our response be adopted by OMG we will comply with the OMG Business Committee terms set out in section 4.4 of the RFP and in document omg/06-03-02.

<contact name and details required> will be responsible for liaison with OMG regarding this RFP response.

The signatory below is an officer of the organization and has the approval and authority to make this commitment on behalf of the organization.

<signature required>

4.4 Business Committee RFP Attachment

This section contains the text of the Business Committee RFP attachment concerning commercial availability requirements placed on submissions. This attachment is available separately as an OMG document omg/06-03-02.

Commercial considerations in OMG technology adoption

A1 Introduction

OMG wishes to encourage rapid commercial adoption of the specifications it publishes. To this end, there must be neither technical, legal nor commercial obstacles to their implementation. Freedom from the first is largely judged through technical review by the relevant OMG Technology Committees; the second two are the responsibility of the OMG Business Committee. The BC also looks for evidence of a commitment by a submitter to the commercial success of products based on the submission.

A2 Business Committee evaluation criteria

A2.1 Viable to implement across platforms

While it is understood that final candidate OMG submissions often combine technologies before they have all been implemented in one system, the Business Committee nevertheless wishes to see evidence that each major feature has been implemented, preferably more than once, and by separate organizations. Pre-product implementations are acceptable. Since use of OMG specifications should not be dependent on any one platform, cross-platform availability and interoperability of implementations should be also be demonstrated.

A2.2 Commercial availability

In addition to demonstrating the existence of implementations of the specification, the submitter must also show that products based on the specification are commercially available, or will be within 12 months of the date when the specification was recommended for adoption by the appropriate Task Force. Proof of intent to ship product within 12 months might include:

- *A public product announcement with a shipping date within the time limit.*
- *Demonstration of a prototype implementation and accompanying draft user documentation.*

Alternatively, and at the Business Committee's discretion, submissions may be adopted where the submitter is not a commercial software provider, and therefore will not make implementations commercially available. However, in

this case the BC will require concrete evidence of two or more independent implementations of the specification being used by end- user organizations as part of their businesses. Regardless of which requirement is in use, the submitter must inform the OMG of completion of the implementations when commercially available.

A2.3 Access to Intellectual Property Rights

OMG will not adopt a specification if OMG is aware of any submitter, member or third party which holds a patent, copyright or other intellectual property right (collectively referred to in this policy statement as "IPR") which might be infringed by implementation or recommendation of such specification, unless OMG believes that such IPR owner will grant a license to organizations (whether OMG members or not) on non-discriminatory and commercially reasonable terms which wish to make use of the specification. Accordingly, the submitter must certify that it is not aware of any claim that the specification infringes any IPR of a third party or that it is aware and believes that an appropriate non-discriminatory license is available from that third party. Except for this certification, the submitter will not be required to make any other warranty, and specifications will be offered by OMG for use "as is". If the submitter owns IPR to which an use of a specification based upon its submission would necessarily be subject, it must certify to the Business Committee that it will make a suitable license available to any user on non- discriminatory and commercially reasonable terms, to permit development and commercialization of an implementation that includes such IPR.

It is the goal of the OMG to make all of its technology available with as few impediments and disincentives to adoption as possible, and therefore OMG strongly encourages the submission of technology as to which royalty-free licenses will be available. However, in all events, the submitter shall also certify that any necessary license will be made available on commercially reasonable, non-discriminatory terms. The submitter is responsible for disclosing in detail all known restrictions, placed either by the submitter or, if known, others, on technology necessary for any use of the specification.

A2.4 Publication of the specification

Should the submission be adopted, the submitter must grant OMG (and its sublicenses) a world- wide, royalty-free license to edit, store, duplicate and distribute both the specification and works derived from it (such as revisions and teaching materials). This requirement applies only to the written specification, not to any implementation of it.

A2.5 Continuing support

The submitter must show a commitment to continue supporting the technology underlying the specification after OMG adoption, for instance by showing the BC development plans for future revisions, enhancement or maintenance.

4.5 Responding to RFP items

4.5.1 Complete proposals

A submission must propose full specifications for all of the relevant requirements detailed in Chapter 6 of this RFP. Submissions that do not present complete proposals may be at a disadvantage.

Submitters are highly encouraged to propose solutions to any optional requirements enumerated in Chapter 6.

4.5.2 Additional specifications

Submissions may include additional specifications for items not covered by the RFP that they believe to be necessary and integral to their proposal. Information on these additional items should be clearly distinguished.

Submitters must give a detailed rationale as to why these specifications should also be considered for adoption. However submitters should note that a TF is unlikely to consider additional items that are already on the roadmap of an OMG TF, since this would pre-empt the normal adoption process.

4.5.3 Alternative approaches

Submitters may provide alternative RFP item definitions, categorizations, and groupings so long as the rationale for doing so is clearly stated. Equally, submitters may provide alternative models for how items are provided if there are compelling technological reasons for a different approach.

4.6 Confidential and Proprietary Information

The OMG specification adoption process is an open process. Responses to this RFP become public documents of the OMG and are available to members and non-members alike for perusal. No confidential or proprietary information of any kind will be accepted in a submission to this RFP.

4.7 Copyright Waiver

Every submission document must contain: (i) a waiver of copyright for unlimited duplication by the OMG, and (ii) a limited waiver of copyright that

allows each OMG member to make up to fifty (50) copies of the document for review purposes only. See Section 4.9.2 for recommended language.

4.8 Proof of Concept

Submissions must include a “proof of concept” statement, explaining how the submitted specifications have been demonstrated to be technically viable. The technical viability has to do with the state of development and maturity of the technology on which a submission is based. This is not the same as commercial availability. Proof of concept statements can contain any information deemed relevant by the submitter; for example:

> “This specification has completed the design phase and is in 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 is incumbent upon submitters to demonstrate the technical viability of their proposal to the satisfaction of the TF managing the evaluation process. OMG will favor proposals based on technology for which sufficient relevant experience has been gained.

4.9 Format of RFP Submissions

This section presents the structure of a submission in response to an RFP. *All submissions* must contain the elements itemized in section 4.9.2 below before they can be accepted as a valid response for evaluation or a vote can be taken to recommend for adoption.

4.9.1 General

- Submissions that are concise and easy to read will inevitably receive more consideration.
- Submitted documentation should be confined to that directly relevant to the items requested in the RFP. If this is not practical, submitters must make clear what portion of the documentation pertains directly to the RFP and what portion does not.
- The key words "**must**", "**must not**", "**required**", "**shall**", "**shall not**", "**should**", "**should not**", "**recommended**", "**may**", and "**optional**" shall be used in the submissions with the meanings as described in RFC 2119 [RFC2119].

4.9.2 Required Outline

A three-part structure for submissions is required. Part I is non-normative, providing information relevant to the evaluation of the proposed specification. Part II is normative, representing the proposed specification. Specific sections like Appendices may be explicitly identified as non-normative in Part II. Part III is normative specifying changes that must be made to previously adopted specifications in order to be able to implement the specification proposed in Part II.

PART I

- •A cover page carrying the following information (a template for this is available [Inventory]):
  - The full name of the submission
  - The primary contact for the submission
  - The acronym proposed for the specification (e.g. UML, CORBA)
  - The name and document number of the RFP to which this is a response
  - The document number of the main submission document
  - An inventory of all accompanying documents, with OMG document number, short description, a URL where appropriate, and whether they are normative.
- List of OMG members making the submission (see 4.1) listing exactly which members are making the submission, so that submitters can be matched with LOI responders and their current eligibility can be verified.
- Copyright waiver (see 4.7), in a form acceptable to the OMG.

  One acceptable form is:

  "Each of the entities listed above: (i) grants to the Object Management Group, Inc. (OMG) a nonexclusive, royalty-free, paid up, worldwide license to copy and distribute this document and to modify this document and distribute copies of the modified version, and (ii) grants to each member of the OMG a nonexclusive, royalty-free, paid up, worldwide license to make up to fifty (50) copies of this document for internal review purposes only and not for distribution, and (iii) has agreed that no person shall be deemed to have infringed the copyright in the included material of any such copyright holder by reason of having used any OMG specification that may be based hereon or having conformed any computer software to such specification."

  If you wish to use some other form you must get it approved by the OMG legal counsel before using it in a submission.
- For each member making the submission, an individual contact point who is authorized by the member to officially state the member's position relative to

the submission, including matters related to copyright ownership, etc. (see 4.3)

- Overview or guide to the material in the submission
- Overall design rationale (if appropriate)
- Statement of proof of concept (see 4.8)
- Resolution of RFP requirements and requests

  Explain how the proposal satisfies the specific requirements and (if applicable) requests stated in Chapter 6. References to supporting material in Part II should be given.

  In addition, if the proposal does not satisfy any of the general requirements stated in Chapter 5, provide a detailed rationale.

- Responses to RFP issues to be discussed

  Discuss each of the "Issues To Be Discussed" identified in Chapter 6.

PART II

The contents of this part should be structured based on the template found in [FORMS] and should contain the following elements as per the instructions in the template document cited above:

- Scope of the proposed specification
- Proposed conformance criteria

  Submissions should propose appropriate conformance criteria for implementations.

- Proposed normative references

  Submissions should provide a list of the normative references that are used by the proposed specification

- Proposed list of terms and definitions

  Submissions should provide a list of terms that are used in the proposed specification with their definitions.

- Proposed list of symbols

  Submissions should provide a list of special symbols that are used in the proposed specification together with their significance

- Proposed specification

PART III

- Changes or extensions required to existing OMG specifications

  Submissions must include a full specification of any changes or extensions required to existing OMG specifications. This should be in a form that

enables "mechanical" section-by-section revision of the existing specification.

4.10 How to Submit

Submitters should send an electronic version of their submission to the *RFP Submissions Desk* (*omg-documents@omg.org*) at OMG Headquarters by 5:00 PM U.S. Eastern Standard Time (22:00 GMT) on the day of the Initial and Revised Submission deadlines. Acceptable formats are Adobe FrameMaker source, ODF (ISO/IEC 26300), OASIS Darwin Information Typing Architecture (DITA) or OASIS DocBook 4.x (or later).

Submitters should make sure they receive electronic or voice confirmation of the successful receipt of their submission. Submitters should be prepared to send a single hardcopy version of their submission, if requested by OMG staff, to the attention of the "RFP Submissions Desk" at the main OMG address shown on the first page of this RFP.

5.0 General Requirements on Proposals

5.1 Requirements

5.1.1 Submitters are encouraged to express models using OMG modeling languages such as UML, MOF, CWM and SPEM (subject to any further constraints on the types of the models and modeling technologies specified in Chapter 6 of this RFP). Submissions containing models expressed via OMG modeling languages shall be accompanied by an OMG XMI [XMI] representation of the models (including a machine-readable copy). A best effort should be made to provide an OMG XMI representation even in those cases where models are expressed via non-OMG modeling languages.

5.1.2 Chapter 6 of this RFP specifies whether PIM(s), PSM(s), or both are being solicited. If proposals specify a PIM and corresponding PSM(s), then the rules specifying the mapping(s) between the PIM and PSM(s) shall either be identified by reference to a standard mapping or specified in the proposal. In order to allow possible inconsistencies in a proposal to be resolved later, proposals shall identify whether the mapping technique or the resulting PSM(s) are to be considered normative.

5.1.3 Proposals shall be *precise* and *functionally complete*. All relevant assumptions and context required for implementing the specification shall be provided.

5.1.4 Proposals shall specify *conformance criteria* that clearly state what features all implementations must support and which features (if any) may *optionally* be supported.

5.1.5 Proposals shall *reuse* existing OMG and other standard specifications in preference to defining new models to specify similar functionality.

5.1.6 Proposals shall justify and fully specify any *changes or extensions* required to existing OMG specifications. In general, OMG favors proposals that are *upwards compatible* with existing standards and that minimize changes and extensions to existing specifications.

5.1.7 Proposals shall factor out functionality that could be used in different contexts and specify their models, interfaces, etc. separately. Such *minimalism* fosters re-use and avoids functional duplication.

5.1.8 Proposals shall use or depend on other specifications only where it is actually necessary. While re-use of existing specifications to avoid duplication will be encouraged, proposals should avoid gratuitous use.

5.1.9 Proposals shall be *compatible* with and *usable* with existing specifications from OMG and other standards bodies, as appropriate. Separate specifications offering distinct functionality should be usable together where it makes sense to do so.

5.1.10 Proposals shall preserve maximum *implementation flexibility*. Implementation descriptions should not be included and proposals shall not constrain implementations any more than is necessary to promote interoperability.

5.1.11 Proposals shall allow *independent implementations* that are *substitutable* and *interoperable*. An implementation should be replaceable by an alternative implementation without requiring changes to any client.

5.1.12 Proposals shall be compatible with the architecture for system distribution defined in ISO's Reference Model of Open Distributed Processing [RM-ODP]. Where such compatibility is not achieved, or is not appropriate, the response to the RFP must include reasons why compatibility is not appropriate and an outline of any plans to achieve such compatibility in the future.

5.1.13 In order to demonstrate that the specification proposed in response to this RFP can be made secure in environments requiring security, answers to the following questions shall be provided:

- What, if any, are the security sensitive elements that are introduced by the proposal?
- Which accesses to security-sensitive elements must be subject to security policy control?
- Does the proposed service or facility need to be security aware?
- What default policies (e.g., for authentication, audit, authorization, message protection etc.) should be applied to the security sensitive elements

introduced by the proposal? Of what security considerations must the implementers of your proposal be aware?

The OMG has adopted several specifications, which cover different aspects of security and provide useful resources in formulating responses. [CSIV2] [SEC] [RAD].

5.1.14 Proposals shall specify the degree of internationalization support that they provide. The degrees of support are as follows:

a) Uncategorized: Internationalization has not been considered.

b) Specific to <region name>: The proposal supports the customs of the specified region only, and is not guaranteed to support the customs of any other region. Any fault or error caused by requesting the services outside of a context in which the customs of the specified region are being consistently followed is the responsibility of the requester.

c) Specific to <multiple region names>: The proposal supports the customs of the specified regions only, and is not guaranteed to support the customs of any other regions. Any fault or error caused by requesting the services outside of a context in which the customs of at least one of the specified regions are being consistently followed is the responsibility of the requester.

d) Explicitly not specific to <region(s) name>: The proposal does not support the customs of the specified region(s). Any fault or error caused by requesting the services in a context in which the customs of the specified region(s) are being followed is the responsibility of the requester.

5.2 Evaluation criteria

Although the OMG adopts model-based specifications and not implementations of those specifications, the technical viability of implementations will be taken into account during the evaluation process. The following criteria will be used:

5.2.1 Performance

Potential implementation trade-offs for performance will be considered.

5.2.2 Portability

The ease of implementation on a variety of systems and software platforms will be considered.

5.2.3 Securability

The answer to questions in section 5.1.13 shall be taken into consideration to ascertain that an implementation of the proposal is securable in an environment requiring security.

5.2.4 Conformance: Inspectability and Testability

The adequacy of proposed specifications for the purposes of conformance inspection and testing will be considered. Specifications should provide sufficient constraints on interfaces and implementation characteristics to ensure that conformance can be unambiguously assessed through both manual inspection and automated testing.

5.2.5 Standardized Metadata

Where proposals incorporate metadata specifications, usage of OMG standard XMI metadata [XMI] representations must be provided as this allows specifications to be easily interchanged between XMI compliant tools and applications. Since use of XML (including XMI and XML/Value [XML/Value]) is evolving rapidly, the use of industry specific XML vocabularies (which may not be XMI compliant) is acceptable where justified.

6.0 Specific Requirements on Proposals

The Healthcare Services Specification Project (HSSP) [http://hssp.wikispaces.com] is a joint endeavor between Health Level Seven (HL7) [http://www.hl7.org] and the Object Management Group (OMG) [http://www.omg.org]. The HSSP was chartered at the January 2005 HL7 meeting under the Electronic Health Records Technical Committee, and the project was subsequently validated by the Board of Directors of both organizations.

The HSSP has several objectives. These objectives include the following:

- To stimulate the adoption and use of standardized "plug-and-play" services by healthcare software product vendors
- To facilitate the development of a set of implementable interface standards supporting agreed-upon services specifications to form the basis for provider purchasing and procurement decisions.
- To complement and not conflict with existing HL7 work products and activities, leveraging content and lessons learned from elsewhere within the organization.

Within the process, HL7 has primary responsibility for (1) identifying and prioritizing services as candidates for standardization; (2) specifying the functional requirements and conformance criteria for these services in the form of Service Functional Model (SFM) specifications such as this document; and (3) adopting these SFMs as balloted HL7 standards. These activities are coordinated by the HL7 Services Oriented Architecture SIG in collaboration with other HL7 committees, which currently include the Vocabulary Technical Committee (TC) and the Clinical Decision Support TC.

Based on the HL7 SFMs, OMG will develop "Requests for Proposals" (RFPs) that are the basis of the OMG standardization process. This process allows vendors and other submitters (known as "RFP Submitters") to propose solutions that satisfy the mandatory and optional requirements expressed in the RFP while leaving design flexibility to the submitters and implementation flexibility to the users of the standard. HL7 members will be involved in the RFP creation and evaluation process.

It is important to note that the HL7 SFMs will focus on specifying the *functional* requirements of a service, while OMG specifications will focus on specifying the *technical* interface requirements of a service. In many cases, SFMs will also describe an overall coherent set of functional capabilities. These capabilities may be specialized or subdivided from both functional and informational (semantic) perspectives to provide specific "profiles" that may be used as the basis for the OMG RFPs and/or implemented.

Note also that the full functional specification for this service is the "Common Terminology Services Release 2.0 Service Functional Model", which achieved Draft Standard for Trial Use (DSTU) status in the HL7 May 2009 ballot and is to be published

in October 2009. The HL7 Common Terminology Services Release 2 Service Functional Model elaborates the functional requirements for this RFP. This document is available from HL7at: http://www.hl7.org/dstucomments/.

6.1 Problem Statement

Note: The text below was taken from the HL7 CTS Version 2.0 Service Functional Model (SFM) section 2.1.1. See the Objectives section of this RFP document for an explanation of the relationship between the HL7 SFM and this RFP.

The goal of the Common Terminology Services 2 (CTS 2) specification stack is to provide a standardized interface for the usage and management of terminologies. Terminologies provide the atomic building blocks of shared semantics, concepts. In a shared semantics environment, CTS2 provides a modular, common and universally deployable set of behaviors which can be used to deal with a set of terminologies chosen by the users of the service in their deployment environment. The service will contribute to interoperability by supporting an easy access to the foundational elements of shared semantics. It will also foster the authoring of high-quality terminologies via its authoring profile. This goal is realized via the expansion of the original functionality outlined in HL7's Common Terminology Service (CTS) Specification. CTS 2 defines the functional requirements of a set of service interfaces to allow the representation, access, and maintenance of terminology content either locally, or across a federation of terminology service nodes.

The CTS 2 specification strives to expand on the original functionality outlined in HL7's Common Terminology Service specification, specifically looking to:

1. Establish the minimal common structural model for terminology behavior independent from any specific terminology implementation or interchange model, and how it is related to meta-data (information about data) and data (the information itself)
2. Integrate into CTS 2 the functional coverage outlined in the existing CTS specification.
3. Specify both an information and functional model that addresses the relationships and use of terminology, e.g. how value sets are built and queried, and how terminological information is validated.
4. Specify the interactions between terminology providers and consumers – how terminology users can submit unambiguous requests for corrections and extensions and how revisions to content are identified, distributed and integrated into running systems.
5. Specify how mapping between compatible terminologies and data models is defined, exchanged and revised.
6. Specify how logic-based terminologies can be queried about subsumption and inferred relationships.
7. Engage broad community participation to describe the dimensions of use and purpose for vocabularies and value sets. This aim will attempt to harmonize these efforts in terms of models, use cases, and requirements for creating a functional model for CTS 2.

6.1.1 Why terminology as a service?

A frequently asked question in the context of CTS2 is whether the problems around terminology should not be resolved using a common data repository. Historically, this

approach has been tried, and with some success. However, experience shows that in order to share functionality and content, a hub and spokes model forcing terminology consumers to use a common hub is more intrusive for users and introduces adoption barriers, especially in distributed environments. This service specification has the aim to overcome such barriers by a separation of behavior (software functionality) from content (the deployed terminologies). This way, in an implementation, adopters can chose the terminology contents they want and use the service functionality to provide the system behavior which is specific to their needs.

6.2 Scope of Proposals Sought

To address the above stated purpose of CTS2, the scope of functionality addresses several broad categories.

Terminology services represent functions necessary to manage, search, and access terminology content. Terminology services provide a consistent specification for accessing and managing terminology content, independent of the terminology content and underlying technology stack. Terminology content represents various resources including lists, value sets, taxonomies, and formal description logic based ontologies. The following thematic areas are considered in scope for CTS 2.

- Administration: This is a set of functionality that provides the ability to manage content as part of a terminology service. Administration functions include the ability to load terminologies, export terminologies, activate terminologies, and retire terminologies. These functions are generally protected and accessible by service administrators with appropriate authorization.
- Search / Query: This is a set of functionality that provides the ability to find concepts based on some search criteria. This includes restrictions to specific associations or other attributes of the terminology, including navigation of associations for result sets. This represents the primary utility for using terminology content in a number of application contexts.
- Authoring / Maintenance: This is a set of functionality that provides the ability to create and maintain content. From a terminology service perspective, this would include the appropriate APIs to add, change, or delete concepts and associations. This would also include the processing of change events from various terminology providers.
- Associations: This is a set of functionality that provides the ability to map concepts and the concept's associated attributes from a source terminology to a

concept in a target terminology, or create relationships between concepts within a single code system.

CTS 2 is intended to allow the look up and management of a wide variety of terminology components, including, but not limited to, Concepts, Associations, and Value Sets. This includes the ability to resolve content bound to a specific Context of Use (Concept Domain) or Jurisdictional Domain (Realm). At the functional level, the service interface will explicitly allow the query, definition, publication, and modification of the different terminology components that are required of terminologies and terminology services.

Conformance profiles are defined within this specification, and are intended to focus specific implementations of CTS 2 to address a specific class of functionality and pre-define minimum trait sets for each specified functional class. This will also allow for performance optimizations to be defined for terminology searches and queries (which are implementation considerations which will be considered in the technical specification arising from the OMG RFP process). The scope of this functional specification covers support for multiple terminology sources and a federated terminology environment.

6.3 Relationship to other OMG Specifications and activities

6.3.1 Relationship to OMG specifications

The Lexicon Query Service is a precedent work adopted in June, 2000 that will be superseded by this specification. Reference http://www.omg.org/cgi-bin/doc?formal/2000-06-31

SBVR (*formal/08-09-01*)

CTS2 is related to SBVR. SBVR is an OMG standard to support the authoring of business vocabulary and business rules based on a sophisticated MOF based vocabulary and business rules model which is derived from results of linguistics and mathematical logic research.

CTS2 also allows vocabulary authoring, but the CTS2 model is more general than the SBVR model as the aim of CTS2 it not primarily to author vocabulary for the usage in business rules. Whereas SBVR tooling is provided as an application for business vocabulary and rules authoring, CTS2 is a service which provides vocabulary management, authoring and query support in a distributed, loosely coupled fashion.

A business using both standards would probably want to import CTS2-available vocabularies into an SBVR authoring tool and vice-versa. This way, SBVR tooling could utilize externally authored vocabularies for rules authoring, while SBVR authored terminologies could be made queriable in a distributed fashion via CTS2. The standards are complementary and their usage can generate significant synergies.

In addition to the above, a number of existing industry specifications of relevance were identified and are elaborated in the CTS2 SFM in Appendix A.

6.3.2 Relationship to other OMG Documents and work in progress

OMG's ontology SIG has developed the *Ontology Definition Metamodel* (ODM), which "is a family of MOF metamodels, mappings between those metamodels as well as mappings to and from UML, and a set of profiles that enable ontology modeling through the use of UML-based tools." (formal/2009-05-01).

While the ontology SIG focuses on metamodels and tooling to define and express ontologies using UML-models, the CTS2 standard defines a SOA utility service to provide software support for query, authoring and management functionality for terminologies to other services, applications and human end users. So while one effort defines a modeling standard, the other defines a unit of software behavior.

Furthermore, there is a difference in the object of the activities of both standards: Terminologies (also designated as controlled vocabularies) are concept centric, i.e. they provide a set of concepts, representations of these concepts (designations and codes), definitions of their meanings and *binary* relationships of the concepts to each-other. They are not primarily used to represent knowledge, but to provide concept representations, the basic elements for computational semantics. Ontologies provide knowledge representation systems used to represent knowledge in a machine storable and interpretable manner which allows machine-based syntactic deduction ("reasoning").

There are terminologies which blur the line between controlled vocabulary and ontology, e.g. SNOMED-CT which has many characteristics of an ontology. However, even though CTS2 is not concerned with knowledge representation, it is targeted to provide interaction to terminology content.

6.4 Related non-OMG Activities, Documents and Standards

HL7 Common Terminology Services Release 1 (HL7 CTS Release 1)

The HL7 Common Terminology Services (CTS) specification[1] was developed as an alternative to a common data structure. The HL7 CTS Release 1 is an Application Programming Interface (API) specification that is intended to

[1] Available from http://www.hl7.org/store/index.cfm, available for purchase as part of the HL7 Version 3 Messaging Standard

describe the basic functionality that will be needed by HL7 Version 3 software implementations to query and access terminological content. The services-based CTS2 work is intended to supercede the API-specified HL7 CTS Release 1. This document has played a key role in the development and design of CTS 2.

The Lexical Grid

The LexGrid (Lexical Grid) provides support for a distributed network of lexical resources such as terminologies and ontologies via standards-based tools, storage formats, and access/update mechanisms. Currently, there are many terminologies and ontological resources available (ICD-9, NCI Thesaurus, SNOMED-CT). This can make it difficult to use these resources to their full potential. LexGrid was designed to bridge this gap using common tools, storage formats, and services.

Resources on the Lexical Grid include:

- API interfaces to access terminology content
- Multiple terminologies joined through shared indices
- Online Availability
- Locally extendable
- Cross-linked terminology sources

LexGrid Features

- Accommodation of multiple vocabulary and ontology distribution formats.
- Support of multiple data stores to accommodate federated vocabulary distribution.
- Consistent and standardized access across multiple vocabularies.
- Rich API for supporting lexical and graph search and traversal.
- Fully compatible with HL7-CTS implementation.
- Support for programmatic access via Java and web services.
- Open source tooling and code to facilitate adoption and use.

LexGrid provides the standardized building blocks and tools to take advantage of vocabulary and ontology content where and when needed, thereby providing the infrastructure necessary to support large-scale terminology adoption and use. The LexGrid terminology model and API set was a contributing source in the development of CTS 2.

6.5 Mandatory Requirements

Note – Submitters to this RFP should take into account the balloted HL7 Common Terminology Services Release 2 Service Functional Model (SFM) as part of producing their responses, which formed the basis for this RFP. Several of these requirements make explicit references to sections within the SFM. The CTS 2 SFM is available at: http://www.hl7.org/dstucomments/. In the event that a Normative edition of the CTS 2 SFM is published by HL7 prior to initial submissions, submissions must comply with the functional requirements of that edition or provide rationale explaining the exception.

1. Submissions shall present a MDA-capable Platform-Independent Model (PIM) covering the capabilities identified in the SFM expressed using UML with the exception of those which are listed as optional under 6.6.4. The PIM shall be independent of programming languages, semantic expression languages, postcoordination syntaxes and specific service technologies.

2. Submissions shall include a Platform Specific Model in the form of a Web Service endpoint (WSDL with a SOAP/HTML binding).

3. Submissions shall define explicit operations that support all of the capabilities defined in section 6 of the SFM with the exception of operations or operations characteristics appearing in Section 6.6 .4 of this document.

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   Note: There is no mandate that the mapping of operations to interfaces has to be one to one. For instance, in Section 6.2.1.3, the "List Code System Concepts" capability may be potentially realized via one or more interfaces. Parameters such as filter criteria and query controls have the potential to be addressed in different implementation styles. Decisions such as these are left to the submitters.

4. Conforming implementations shall realize at least one Service Profile defined in Section 7.4.2 of the CTS2 SFM.
5. Submissions that support the HL7 Profile shall support the vocabulary requirements as documented in:

   http://wiki.hl7.org/index.php?title=Category:V3_Methodology_Requirements
6. Submissions shall not preclude the use of the specification in multiple vertical markets, i.e. avoid operation names that are specific to healthcare or any other vertical market.
7. Interface specifications shall provide support for complex terminologies (directed acyclic graph, polyhierarchy, machine interpretable definitions, etc) Examples include: SNOMED-CT, ICD-9, ICD-10, LOINC, RxNORM, GeneOntology and Department of Defense Dictionary of Military and Associated Terms.
8. Submissions shall describe operations which support the ISO 11179.3 R2 Clause 10 notion of a conceptual domain. This functionality includes:

- List Conceptual Domain – Client supplies filter criteria and query control parameters, services provides list of conceptual domain IDs matching these criteria
- Return Conceptual Domain Details – Client supplies a list of concept domain identifiers, services provides array of conceptual domain metadata for the supplied conceptual domains
- Create Conceptual domain – Client supplies values for a conceptual domain, service creates conceptual domain and provides its identifier
- Maintain Conceptual Domain - Client supplies value updates for a conceptual domain, service updates conceptual domain

[MSOffice1]

6.6 Optional Requirements

1. Submissions may define additional CTS2 service profiles not covered in Mandatory Requirement #4.
2. Submissions may specify additional PSMs, e.g. an EJB service contract specification, and realize them.
3. Submissions may optionally describe behavior for the following operations defined in the SFM , i.e. the description in the PIM is *not mandated for the following operations*:
    - Check *value set* subsumption
    - Determine Transitive Concept Relationship
    - Create Lexical Association between Coded Concepts – description/support of this operation is optional but should be described by submitters wishing to support sophisticated cross-terminology mappings
    - Create Rules Based Association between Coded Concepts – description of this operation is optional but should be described by submitters wishing to support sophisticated cross-terminology mappings
    - Register for Notification
    - Update Notification Registration
    - Update Notification Registration State
4. Support for the HL7 Profile for CTS 2 is optional, but recommended for healthcare oriented implementations. The following capabilities from the CTS 2 SFM are mandatory for the HL7 CTS 2Profile:
    - List Usage Contexts

- Return Usage Context Details
- Create Usage Context
- Maintain Usage Context
- List Concept Domain Bindings
- Create Code System Supplement
- Update Code System Supplement
- Check Concept Domain Membership
- List HL7 Concept Domain
- Return HL7 Concept Domain
- Create HL7 Concept Domain
- Maintain HL7 Concept Domain[i]

5. Submissions may optionally include candidate language to assist interested purchasers in their procurement of implementations conformant with CTS2 service profiles.
6. Submissions may include mappings from the CTS 2 SFM nomenclature for applicability for use in specialized or other domain uses.

6.7 Issues to be discussed

1. Responders shall provide a justification for any deviations from the normative sections of the HL7 CTS Release 2 SFM (specifically sections 6 and 7).

   Note: This means that submissions must define a solution that covers the Inputs, Outputs, Pre-conditions, Invariants, Post-conditions and Exception Conditions as specified for each supported operation. If these are not met, then any deviation must be explained and justified.
2. Responders will discuss how their submission allows for concurrent support of terminologies with disparate metamodels (if the semantic profile(s) to be supported contain(s) disparate metamodels).
3. Responders shall describe how their submission can be used in multiple vertical markets (e.g. via supported vertical-market specific semantic profiles)
4. Responders shall discuss the usage of an external metadata discovery service to provide metadata about a CTS2 implementation as described in Section 5.2 of the SFM.
5. Responders shall discuss tradeoffs considered regarding the optimization of interactions with complex terminologies (e.g., SNOMED, ICD10) such as the

efficient access and query of concepts, designations, associations, and other terminology content.

6. Responders shall discuss what effect localization and internationalization of terminologies will have on technical implementations of CTS2.
7. Responders shall discuss the management of SNOMED-CT and discuss potential or actual integration points with the IHTSDO Workbench, a service authoring and management application (*not a service*) developed by IHTSDO.
8. Responders shall discuss how they support post-coordination or why they do not support post-coordination.
9. Responders shall discuss the approach taken to support terminology version management (versioning by time stamp and version number as described in section 10.4.2 of the SFM).
10. Responders should discuss how the PIM information model provides the necessary functional coverage outlined in the SFM information model.
11. Responders should discuss their approach to support overwrite and versioned updates on versioned terminology entities.

These issues will be considered during submission evaluation. They should not be part of the proposed normative specification. (Place them in Part I of the submission.)

6.8 Evaluation Criteria

1. Preference will be given to submissions that include an HL7 Semantic Profile.
2. Preference will be given to submissions that support multiple vertical markets, i.e. multiple Semantic Profiles.
3. Preference will be given to submissions that use SoaML for the specification of the service.
4. Preference will be given to submissions with a maximal coverage of the operations described in the SFM.
5. Preference will be given to submissions that support federated terminologies, and how it would allow for peer-to-peer as well as hierarchical service topologies to satisfy possible federated deployment requirements.

6.9 Other information unique to this RFP

Not applicable.

6.10 RFP Timetable

The timetable for this RFP is given below. Note that the TF or its parent TC may, in certain circumstances, extend deadlines while the RFP is running, or may elect to have more than one Revised Submission step. The latest timetable can always be found at the OMG *Work In Progress* page at http://www.omg.org/schedules under the item identified

by the name of this RFP. Note that “<month>” and “<approximate month>” is the name of the month spelled out; e.g., January.

Event or Activity	Actual Date
Preparation of RFP by TF	*17 August 2009*
RFP placed on OMG document server	*7 August 2009*
Approval of RFP by Architecture Board *Review by TC*	*17 September 2009 (anticipated)*
TC votes to issue RFP	*16 September 2009*
LOI to submit to RFP due	*January 31, 2010*
Initial Submissions due and placed on OMG document server (“Four week rule”)	*May 24, 2010*
Voter registration closes	*May 21, 2010*
Initial Submission presentations	*June 22, 2010*
Preliminary evaluation by TF	*September 22, 2010*
Revised Submissions due and placed on OMG document server (“Four week rule”)	*November 8, 2010*
Revised Submission presentations	*December 6, 2010*
Final evaluation and selection by TF *Recommendation to AB and TC*	*December 8, 2010*
Approval by Architecture Board *Review by TC*	*December 9, 2010*
TC votes to recommend specification	*December 2010*
BoD votes to adopt specification	*March 2011*

Appendix A References and Glossary Specific to this RFP

A.1 References Specific to this RFP

http://www.hl7.org/dstucomments/

A.2 Glossary Specific to this RFP

Appendix B General Reference and Glossary

B.1 General References

The following documents are referenced in this document:

[ATC] Air Traffic Control Specification, *http://www.omg.org/technology/documents/formal/air_traffic_control.htm*

[BCQ] OMG Board of Directors Business Committee Questionnaire, http://doc.omg.org/bc/07-08-06

[CCM] CORBA Core Components Specification, *http://www.omg.org/technology/documents/formal/components.htm*

[CORBA] Common Object Request Broker Architecture (CORBA/IIOP), *http://www.omg.org/technology/documents/formal/corba_iiop.htm*

[CSIV2] [CORBA] Chapter 26

[CWM] Common Warehouse Metamodel Specification, *http://www.omg.org/technology/documents/formal/cwm.htm*

[DAIS] Data Acquisition from Industrial Systems, *http://www.omg.org/technology/documents/formal/dais.htm*

[EDOC] UML Profile for EDOC Specification, *http://www.omg.org/techprocess/meetings/schedule/UML_Profile_for_EDOC_FTF.html*

[EJB] "Enterprise JavaBeans™", *http://java.sun.com/products/ejb/docs.html*

[FORMS] "ISO PAS Compatible Submission Template". *http://www.omg.org/cgi-bin/doc?pas/2003-08-02*

[GE] Gene Expression, *http://www.omg.org/technology/documents/formal/gene_expression.htm*

[GLS] General Ledger Specification, *http://www.omg.org/technology/documents/formal/gen_ledger.htm*

[Guide] The OMG Hitchhiker's Guide, *http://www.omg.org/cgi-bin/doc?hh*

[IDL] ISO/IEC 14750 also see [CORBA] Chapter 3.

[IDLC++] IDL to C++ Language Mapping, *http://www.omg.org/technology/documents/formal/c++.htm*

[Inventory] Inventory of Files for a Submission/Revision/Finalization, *http://doc.omg.org/smsc/2007-09-05*

[MDAa] OMG Architecture Board, "Model Driven Architecture - A Technical Perspective", *http://www.omg.org/mda/papers.htm*

[MDAb] "Developing in OMG's Model Driven Architecture (MDA)," *http://www.omg.org/docs/omg/01-12-01.pdf*

[MDAc] "MDA Guide" (*http://www.omg.org/docs/omg/03-06-01.pdf*)

[MDAd] "MDA "The Architecture of Choice for a Changing World™"", *http://www.omg.org/mda*

[MOF] Meta Object Facility Specification, *http://www.omg.org/technology/documents/formal/mof.htm*

[MQS] "MQSeries Primer", *http://www.redbooks.ibm.com/redpapers/pdfs/redp0021.pdf*

[NS] Naming Service, *http://www.omg.org/technology/documents/formal/naming_service.htm*

[OMA] "Object Management Architecture™", *http://www.omg.org/oma/*

[OTS] Transaction Service, *http://www.omg.org/technology/documents/formal/transaction_service.htm*

[P&P] Policies and Procedures of the OMG Technical Process, *http://www.omg.org/cgi-bin/doc?pp*

[PIDS] Personal Identification Service, *http://www.omg.org/technology/documents/formal/person_identification_service.htm*

[RAD] Resource Access Decision Facility, *http://www.omg.org/technology/documents/formal/resource_access_decision.htm*

[RFC2119] IETF Best Practices: Key words for use in RFCs to Indicate Requirement Levels, (*http://www.ietf.org/rfc/rfc2119.txt*).

[RM-ODP] ISO/IEC 10746

[SEC] CORBA Security Service, *http://www.omg.org/technology/documents/formal/security_service.htm*

[TOS] Trading Object Service, *http://www.omg.org/technology/documents/formal/trading_object_service.htm*

[UML] Unified Modeling Language Specification, *http://www.omg.org/technology/documents/formal/uml.htm*

[UMLC] UML Profile for CORBA,
http://www.omg.org/technology/documents/formal/profile_corba.htm

[XMI] XML Metadata Interchange Specification,
http://www.omg.org/technology/documents/formal/xmi.htm

[XML/Value] XML Value Type Specification,
http://www.omg.org/technology/documents/formal/xmlvalue.htm

B.2 General Glossary

Architecture Board (AB) - The OMG plenary that is responsible for ensuring the technical merit and MDA-compliance of RFPs and their submissions.

Board of Directors (BoD) - The OMG body that is responsible for adopting technology.

Common Object Request Broker Architecture (CORBA) - An OMG distributed computing platform specification that is independent of implementation languages.

Common Warehouse Metamodel (CWM) - An OMG specification for data repository integration.

CORBA Component Model (CCM) - An OMG specification for an implementation language independent distributed component model.

Interface Definition Language (IDL) - An OMG and ISO standard language for specifying interfaces and associated data structures.

Letter of Intent (LOI) - A letter submitted to the OMG BoD's Business Committee signed by an officer of an organization signifying its intent to respond to the RFP and confirming the organization's willingness to comply with OMG's terms and conditions, and commercial availability requirements.

Mapping - Specification of a mechanism for transforming the elements of a model conforming to a particular metamodel into elements of another model that conforms to another (possibly the same) metamodel.

Metadata - Data that represents models. For example, a UML model; a CORBA object model expressed in IDL; and a relational database schema expressed using CWM.

Metamodel - A model of models.

Meta Object Facility (MOF) - An OMG standard, closely related to UML, that enables metadata management and language definition.

Model - A formal specification of the function, structure and/or behavior of an application or system.

Model Driven Architecture (MDA) - An approach to IT system specification that separates the specification of functionality from the specification of the implementation of that functionality on a specific technology platform.

Normative – Provisions that one must conform to in order to claim compliance with the standard. (as opposed to non-normative or informative which is explanatory material that is included in order to assist in understanding the standard and does not contain any provisions that must be conformed to in order to claim compliance).

Normative Reference – References that contain provisions that one must conform to in order to claim compliance with the standard that contains said normative reference.

Platform - A set of subsystems/technologies that provide a coherent set of functionality through interfaces and specified usage patterns that any subsystem that depends on the platform can use without concern for the details of how the functionality provided by the platform is implemented.

Platform Independent Model (PIM) - A model of a subsystem that contains no information specific to the platform, or the technology that is used to realize it.

Platform Specific Model (PSM) - A model of a subsystem that includes information about the specific technology that is used in the realization of it on a specific platform, and hence possibly contains elements that are specific to the platform.

Request for Information (RFI) - A general request to industry, academia, and any other interested parties to submit information about a particular technology area to one of the OMG's Technology Committee subgroups.

Request for Proposal (RFP) - A document requesting OMG members to submit proposals to an OMG Technology Committee. Such proposals must be received by a certain deadline and are evaluated by the issuing Task Force.

Task Force (TF) - The OMG Technology Committee subgroup responsible for issuing a RFP and evaluating submission(s).

Technology Committee (TC) - The body responsible for recommending technologies for adoption to the BoD. There are two TCs in OMG – the *Platform TC* (PTC) focuses on IT and modeling infrastructure related standards; while the *Domain TC* (DTC) focuses on domain specific standards.

Unified Modeling Language (UML) - An OMG standard language for specifying the structure and behavior of systems. The standard defines an abstract syntax and a graphical concrete syntax.

UML Profile - A standardized set of extensions and constraints that tailors UML to particular use.

XML Metadata Interchange (XMI) - An OMG standard that facilitates interchange of models via XML documents.

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[i] In the CTS 2 SFM these capabilities are not prefixed with "HL7". This clarification was added to the RFP to clarify the distinctions between the ISO 11179 Conceptual Domain operations in the Mandatory Requirements.