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Request For Proposal

Information Models for Property and Casualty Insurance


Letters of Intent due: September 2007
Submissions due: December 2007

Objective of this RFP

This RFP solicits proposals for information models to address the data management needs of the P&C Insurance Community. It is expected that submitters of these models utilize the OMG’s Model Driven Architecture principles (http://www.omg.org/mda/). The following is a summary of information models requested:

- Glossary of P&C Business Terms and accompanying metadata (source, version, format for example)

Use of already existing industry standards (ACORD for example) as a source of the Glossary is strongly encouraged.

- Reference model (Party, Party Role, Address, Products for example) that support the concepts described in the business glossary

- A Conceptual Data Model representing P&C business concepts with a target audience of business Subject Matter Experts, users, business analysts for example.
• A fully attributed Logical (ER) Data Model with appropriate identifiers, logical
data types and relationships as appropriate.

• A Relational database Model (a.k.a. Physical Data Model) derived from the
Logical Data Model to support development and interoperability of transactional
systems.

• A Dimensional Model (a.k.a. Star Schema that consists of ‘Fact’ Tables and
‘Dimensions’) derived from the Logical Data Model to support P&C Analytics
(Data Warehouse/Data Mart, Business Intelligence Tools).

• An XML Schema Model to support P&C data exchange and development of web
services.

• P&C Ontology to support reasoning, rules engines and development of semantic
web services.

• XMI representation of the above models to facilitate interchange of P&C metadata
among data management tools.

• Traceability map of P&C Business Terms to models listed above as well as valid
semantic variations where applicable (synonyms, geographical variations etc.)

For further details see Chapter 6 of this document.

Discussion will take place on the mailing list pandc-rfp@.omg.org. Non-OMG members
may sign up for this list (by emailing request@omg.org) until the RFP is formally
approved and issued.

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,
it's 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],

[Note: The original text ends here. The additional text continues on the next page.]

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 (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), [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. 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.


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 respondent 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 extend this deadline 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 *Adopted 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 adopted submission for publishing as a formal, publicly available specification. Its responsibility includes production of one or more prototype implementations and fixing any problems that are discovered in the process. This ensures that the final available standard is actually implementable and has no show-stopping bugs. Upon completion of its activity the FTF recommends adoption of the resulting draft standard called the *Available Specification*. The FTF must also provide evidence of the existence of one or more prototype implementations. The parent TC acts on the recommendation and recommends adoption to the BoD. OMG Technical Editors produce the *Formal Published Specification* document based on this *Available 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 *Available Specification* by implementers and users. The output of the RTF is a revised specification reflecting minor technical changes.

### 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/02-04-02.
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/2002-04-02.

Commercial considerations in OMG technology adoption

A1 Introduction

OMG wishes to encourage rapid commercial adoption of the technologies (specifications and support measures) 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.
- 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.

In the case of the proposed adoption of support measures, the BC needs to have proof of the intent to use or recommend such support measures within 12 months of the date when the support measures were recommended for adoption by the appropriate Task Force.

A2.3 Access to Intellectual Property Rights

OMG will not adopt a specification or support measure 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 or support measure, 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 or support measure. Accordingly, the submitter must certify that it is not aware of any claim that the specification or support measure 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 or support measure 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 or support measure.
A2.4 Publication of the specification

Should the submission or support measures be adopted, the submitter must grant OMG (and its sublicensees) a worldwide, 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 or support measure 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 to the satisfaction of the TF managing the evaluation process, the technical viability of their proposal. 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. Parts 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

• The name of the RFP that the submission is responding to.

• 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 adopted 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 Postscript, ASCII, PDF, Adobe FrameMaker, Microsoft Word, and WordPerfect. However, it should be noted that a successful (adopted) submission must be supplied to OMG’s technical editors in FrameMaker source format, using the most recent available OMG submission template (see [FORMS]). The AB will not endorse adoption of any submission for which appropriately formatted FrameMaker sources are not submitted to OMG; it may therefore be convenient to prepare all stages of a submission using this template.

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

6.1 Problem Statement

6.1.1 P&C Information Management

The 21st century enterprise, being heavily technology dependent and globally dispersed, must be ‘Agile’ in order to successfully compete in the ‘Flat World’. With the continuing emphasis on outsourcing business processes and technology functions, running a globally dispersed, 24x7 organization poses its unique challenges as well. The above constraints almost mandate accurate understanding of the enterprise ‘Assets’ (People, Business Functions, Processes, Technology Portfolio, Information-‘Data and its Metadata’ to name a few) and the inter-dependencies among these ‘Assets’. Business stakeholders want the products and services to be delivered better, cheaper and faster while living with the behemoth legacy systems. Furthermore, globalization and the Internet have resulted in the need to define more loosely coupled, interoperable business processes and associated software components executable in distributed and heterogeneous environments.

In order to support the much needed ‘Agility’, business functions and associated processes must be supported by semantically accurate and reusable Information (Data and its associated Metadata). Information modeled and/or mapped to domain specific standards further enhances its value and interoperability. Service Oriented Architecture (SOA) is often touted as the solution that will drive ‘Agility’. XML based domain standards have been often used with success in exchanging information internally and externally. However the domain specific XML standards often cater to an inter-enterprise exchange of Data and offer very little (if at all) semantic richness and traceability to alternate realizations of the same Information (for example in databases and applications).

Typically, organizations develop their own XML Schemas using Schema editors. A side-effect of such an approach is that the XML tags are not in sync with the core business concepts. Therefore, developing an XML Schema model using the MDA approach by transforming a data model can not only preserve semantic accuracy and consistency but also preserves features like Primary/Foreign keys, relationships into ID and IDRefs in the XML Schema. Maintenance of XML Schemas generated from models is easier as well.

The OMG P&C WG has embarked upon applying the proven Model Driven Architecture approach (http://www.omg.org/mda/) to development of a set of P&C Information models traceable from an accepted set of business-driven concepts (Claim or Policy for example). We also recognize that there are several providers and consumers of such ‘Business Concepts’ in an enterprise. Therefore, the proposed P&C Information models must accommodate the need to represent the same business concept visually and otherwise (text for example) via a set of Models targeted for a variety of ‘providers and consumers’. Figure 1 depicts the above approach.
Fig. 1 P&C Business Glossary: the enabler of semantic accuracy, interoperability and traceability across models

In addition, these models must be exchangeable using industry standard formats (such as XMI) to drive interoperability among tools and repositories. For an overview of the Logical Architecture of the proposed P&C Information Models Standard, please refer to Fig. 2. In order to address needs of different stakeholders there are mandatory components and optional components of the proposed P&C standard.
6.1.2 Glossary of P&C Business Terms and accompanying metadata

It is widely recognized that lack of common understanding of business terms across an enterprise manifests itself into poor quality of its information systems culminating into erroneous decision making and higher cost. Traditional data integration approaches leading to development of data warehouses were portrayed as a solution to the mistakes made during database design and/or at the source of data acquisition (no validation of rules, formats etc.). However, data warehousing did not always solve the problem of semantic heterogeneity. A significant amount of money is spent on data quality tools to analyze why data does not conform to the rules defined in the data model or otherwise.

With the proliferation of web based applications often developed by geographically distributed development teams disconnected from the business users/SMEs, it becomes even harder to achieve semantic accuracy. Although traditional data dictionaries have been developed by many organizations, maintaining the currency and traceability of business terms across various models has been an uphill task. Typically, business analysts, data modelers, data integration/service integration experts approach the business user/SME to gather requirements. Even though the business terms are often
consistent, we end up with different semantics in data models, XML schemas, applications and databases. When valid reasons for variations in business concepts exist, it is hard to trace them to the original concept.

With the above factors in mind, submitters are urged to not only submit a standard Glossary of P&C Business Terms but also the ability to accommodate valid variations that are not part of the standard and used extensively while awaiting becoming part of a standard.

In addition, metadata pertinent to the business terms must be provided to develop and maintain a rich P&C Glossary. It is envisioned that documenting metadata like source of the P&C terms, format, date, version and valid variations will also lead to rationalization of terms used across the P&C industry.

Submitters are encouraged to use the business dictionary developed by ACORD.

P&C Terms and definitions are also documented in IBM’s IAA model (http://www-03.ibm.com/industries/financialservices/doc/content/solution/278918103.html), Prima-Solutions’ IBCS-reference model for insurance (http://www.primasolutions.com/frontOffice/produits/primalBCS.jsp?lang=in) and a dimensional model developed by Penn National. Submitters are encouraged to work with ACORD to rationalize the semantics captured in these models and submit an industry standard P&C Glossary.

Use of horizontal modeling standards like OMG’s Semantics of Business Rules and Vocabulary (SBVR, see section 6.3.4) can facilitate the documentation and maintenance of the glossary and related metadata.

Following reference model is in scope:

- Party, Party Role
  - Employee
  - Agent
  - Producer
  - Claimant
  - Line of Business
  - Adjuster
  - Driver
Third Party, and Legal

- Products
- Account
- Address
  - Location

6.1.3 A Conceptual Data Model (CDM) representing P&C business concepts with a target audience of business SMEs/users/analysts.

A conceptual model is a visual depiction of business concepts and their relationships at a high level. It describes ‘Things’ that matter to the business. ‘Party’ buys a ‘Policy’ that can be an Auto Policy, Home Policy is one such example. The P&C CDM must be developed using the standard P&C business glossary.

To enable interchange across various modeling tools, use of UML2.0 for developing the CDM is recommended.

6.1.4 A fully attributed Logical (ER) Data Model (LDM) derived from the Conceptual Data Model with appropriate Identifiers, logical data types and Relationships as appropriate.

A logical data model further refines the CDM by identifying Attributes that are pertinent to a business concept represented as an ‘Entity’ (‘Policy’ for example). It captures additional details about the ‘Policy’ including unique ways to identify a Policy as well as details of how a Policy may be related to other business concepts like ‘Party’ for example. It can also add further subsidiary Entities that are important but less fundamental to the business. The LDM must be derived from CDM and be platform independent. The P&C LDM must provide:

- P&C Entities and their definitions
- Attributes and their definitions
  - Identifiers like Primary key and optionally Foreign Keys as well as composite keys where more than a single attribute is needed to uniquely identify records.
  - Relationships among the entities (identifying and non-identifying, many-to-many, parent-child); Cardinality of relationships (as appropriate)
  - Valid Sub-types (including exclusive/inclusive, incomplete/complete) of Entities where appropriate.
Valid logical data types (also known as Primitive Types), domain names and Classwords

6.1.5 A Relational database model (a.k.a. Physical Data Model) derived from the Logical Data Model to support development of transactional systems.

The relational model must be derived from the P&C LDM. This model should be sufficient to represent a complete database but might be further refined to a RDBMS specific physical data model (supporting RDBMS specific datatypes, storage parameters for example). However, specifying RDBMS specific features is not within the scope of this RFP as the RDBMS often varies across and within an enterprise as well. Submitters must provide:

- P&C Tables and Columns
- Physical data types and precision
- Identifiers (as captured in the LDM i.e. Primary keys, Foreign Keys with appropriate constraints) but additional identifiers like Alternate key for Indexing/faster searching capability and Inversion Keys
- Resolution of many-to-many relationships (Association tables)
- Resolution of Sub-types (to avoid any performance degradation)
- Reference metadata (look-up tables like state codes, country codes etc. as appropriate). Use of standards where appropriate (like ISO Country Codes) is highly recommended

6.1.6 A fully attributed Dimensional Model (a.k.a. Star Schema) that consists of ‘Fact’ Tables and ‘Dimensions’) derived from the Logical Data Model to support P&C Analytics (DW/Data Mart, BI Tools). Though it is possible to realize dimensional models on dedicated multidimensional databases (such as Essbase) this RFP is requesting a physical realization on a relational database.

While developing transaction systems to support P&C business functions is deemed important, the need to analyze the data stored in these systems has resulted in Analytics oriented models for development of Data Warehouse/Data Marts and business intelligence reporting. Dimensional models are typically organized as Star Schema that consist of Fact Tables – that capture the ‘Measures’ like Revenue, Premium

Typically Fact Tables allow the aggregation of Measures to slice-and-dice information at varying levels of granularity. Often, non-measurable facts are also included (analyzing attendance for a course for example)
Dimensions in scope are:

- Geography
- Policy Dimension
- Industry Dimension
- Class Code Dimension
- Time Dimension
- Payment Dimension
- Litigation Dimension
- Services
- Subrogation Service Dimension
- Independent Service Adjuster Dimension
  - Events Dimension
- Accident
- Catastrophe
  - Loss Unit Dimension
- Statistical Codes Dimension
- Claim Occurrence Dimension

Dimensions are considered ‘Conformed’ if they adhere to a common structure, and therefore allow queries to be executed across star schemas. For example, the Calendar or Time dimension is commonly needed.

The P&C Dimensional model should consist of the following:

- Set of conformed Dimensions where applicable
- A set of Fact Tables that provide a standard set of measurements to support:
  - Regulatory requirements reporting
- Loss Analysis
- Policy Event analysis
- Underwriting analysis
- Policyholder behavior analysis
- Customer Risk analysis

(not a complete list)

A list of Fact Tables other than those described in section 6.5.5 for the Dimensional/Analytical model is an optional requirement. Each carrier may want to analyze the transactional data in different ways and ask different questions. Hence the Fact Tables and their granularity should be left to each carrier to implement internally. The exception to this may be any regulatory reporting scenarios where a standard set of reports/questions are asked and must be provided as part of compliance to regulatory requirements.

Examples of Fact Tables are:

- Policy Transaction
- Claim Snapshot

6.1.7 XML Schema model

Purpose of this model is to support P&C data exchange and development of Services. A key aspect of this standard is that the XML elements be traceable from the business concepts and logical, physical data models. This allows direct lineage to be established into different physical forms such as relational database, business analytics etc.

The XML Schema model will include:

- One or more XML Schemas (these may be factored as appropriate to promote reuse)
- Complex Types corresponding to Entities in the LDM
- XML IDs corresponding to Primary Keys in the LDM
- Nested elements and XML IDREFs corresponding to relationships in the LDM
• Simple Types corresponding to Domains in the LDM

6.1.8 P&C Ontology model to support semantic reasoning, rules engines

One or more ontology components for P&C, developed in parallel with and reusing the terminology represented in the Conceptual Data Model, including:

• UML-based representation using the UML profiles for the Resource Description Framework (RDF)
• Web Ontology Language (OWL) from the Ontology Definition Metamodel (ODM)
• An ODM-compliant XMI representation
• A description logics (DL) compliant RDF/XML serialized representation.
• Optional extensions may include ontology components developed in parallel with the XML Schema to augment data services with semantics for downstream use in Semantic Web Services.

6.1.9 Traceability maps of P&C Business Terms to models listed above as well as valid semantic variations where applicable (synonyms, geographical variations etc.).

Traceability of P&C business concepts across the models described above is critical to support the vision established by the OMG P&C WG. Traceability maps must include:

  o Traceability from the Business Glossary to their corresponding model elements in conceptual, logical, relational, dimensional, DDL, XML Schema, XMI and Ontology models.

  o Traceability must be bi-directional
  
  o Impact analysis of changes (if a business concept changes, what is the impact on the models that consume the business concept in question) i.e. dependency maps

6.2 Scope of Proposals Sought

In summary this RFP seeks proposals that cover the following P&C business areas:

• Glossary of P&C Business Terms and accompanying metadata (definition, source (SME/Authority/Standard…), format, date, revisions/version, Acronyms for example) covering the following:
Premium/Policy Management

- Provides the ability to measure the type of activities performed for a given Policy to evaluate the effectiveness of Policy processing.
- Supports analysis of the timeliness of Premium entry and audit activities. Some of the key information needed would include:
  - Premiums entered (Deposit, Endorsements, Audits)
  - New Business and Policy Count
  - Renewal Business and Policy Count
  - Cancelled Business and Policy Count
  - Inforce Business and Policy Count
  - Coverage Cancellations
  - Audit Activity (Timeliness, Completed)

Compensation

Contract Management

New Business (underwriting process)

Claims

- The key information provided will satisfy Calendar, Accident and Policy Effective date analysis and trending of:
  - Outstanding Loss Reserves
  - Paid Losses and Expenses (Legal, Other)
  - Recoveries (Deductible, Salvage, Subrogation)
- Key metrics can be viewed with additional detail by:
  - Claim
  - Claimant
  - Claims Service Organization
  - Accident Date
  - Calendar Date
- **Loss Location**
  - Provides the ability to measure the type of activities performed for a given claim to evaluate the effectiveness of claims processing.
  - Supports the analysis of actual expenses, merit increase calculations, or variable compensation payouts. Some of the key information would be:
    - Detail Expenses
    - Paid Loss
    - Reserve Adjustments
    - Number of Payments per Claim
    - Number of Times Reopened
    - Number of Transactions per Claim
      - Billing
      - Agency (TBD)
        - The key information provided will satisfy the analysis and trending of:
          - Written and Earned Premiums
          - Losses
          - Loss Ratios
          - Policy quotes, submissions and hit ratios
          - Planned vs. Actual
        - Key metrics can be viewed by:
          - Agency Group and Individual Agencies
          - Line of Business
          - Company
• Underwriting Organization
• Market Segments
• Time (Monthly, Quarterly, Yearly)

Use of already existing industry standards (ACORD for example) as a source of the Glossary is strongly encouraged.

  o Reference metadata that supports the above concepts (not a complete list)
    ▪ Party, Party Role
    ▪ Products
    ▪ Account
    ▪ Address
    ▪ Geography

Reference metadata modeled in other standards (such as Organization Structure metamodel – OSM and/or Party model from OMG and non-OMG standards like ACORD) should be leveraged.

• A Conceptual Data Model representing P&C business concepts with a target audience of business SMEs/users/analysts.

• A fully attributed Logical Data Model derived from the Conceptual Data Model with appropriate Identifiers, logical data types and Relationships as appropriate.

• A fully attributed Relational database Model (a.k.a. Physical Data Model) derived from the Logical Data Model to support development and interoperability of transactional systems.

• A fully attributed Dimensional Model (a.k.a. Star Schema that consists of ‘Fact Tables and Dimensions) derived from the Logical Data Model to support P&C Analytics (DW/Data Mart, BI Tools).

• An XML Schema model to support P&C data exchange and development of Data Services.

• P&C Ontology to support:
  
  o Development of semantic web services and use in Semantic reasoning, rules engines,
  
  o Support generation of OWL (Ontology Web Language) and Resource Description Framework, Common Logic, Topic Maps and Description Logic.

• Traceability of P&C Business Terms to models listed above as well as valid semantic variations where applicable (synonyms, geographical variations etc.)

6.3 Relationship to Existing OMG Specifications

6.3.1 UML 2

UML2 may be used for the Conceptual Data Model.

6.3.2 Ontology Definition Metamodel (ODM)

This provides coverage of conceptual information modeling in a variety of technologies (RDFS, OWL, Taxonomy Maps, Common Logic, ER) in both metamodel and UML 2 Profile. ODM must be used to represent the Ontology Model.

6.3.3 Semantics of Business Vocabulary and Rules (SBVR)

This covers business concepts and rules expressed in semi-formal natural language with a logic- and MOF-based formal underpinning. SBVR may be used to define the Business Glossary.

6.3.4 MOF Queries Views Transformations (QVT)

This covers the areas of model-to-model transformations. It may be used to express the derivations between the models required by this RFP.

6.3.5 Common Warehouse Metamodel (CWM)

Prior to the adoption of IMM (see next section) the CWM standard provides OMG’s normative metamodel for Relational Database and OLAP that must be used to represent the P&C XML Relational and Dimensional models.

The CWM Business Nomenclature metamodel may be used for the Business Glossary as a simpler alternative to SBVR, though the latter is preferred.
The non-normative CWM Extensions (CWMX) includes a metamodel for Entity Relationship that submitters may use for the CDM or LDM.

Note that the XML metamodel from CWM must not be used for this submission.

6.3.6 XMI

Prior to the adoption of IMM (see next section) the XMI standard provides OMG’s normative XML Schema metamodel that must be used to represent the P&C XML Schema model.

6.3.7 OMG Party Model

This provides a CORBA-oriented model for parties in a financial contract and may be relevant.

6.4 Related Activities, Documents and Standards

6.4.1 Information Management Metamodel (IMM)

This standard, under development [http://www.omgwiki.org/imm/doku.php](http://www.omgwiki.org/imm/doku.php) will provide metamodels and UML Profiles for XML Schema, Relational and Dimensional modeling. Submitters are strongly encouraged to intercept this standard.

6.4.2 ACORD global data Dictionary


6.4.3 ACORD P&C XML Schemas

6.4.4 Object Role Modeling (ORM)

Object Role Modeling (ORM, [http://www.orm.net/](http://www.orm.net/)) is a powerful method for designing and querying database models at the conceptual level, where the application is described in terms easily understood by non-technical users. In practice, ORM data models often capture more business rules, and are easier to validate and evolve than data models in other approaches. This may be used for visually representing the CDM.
6.4.5 IBM’s IAA model

6.4.6 Prima-Solutions’ reference model for insurance (IBCS-UML model)

http://www.prima-solutions.com/frontOffice/produits/primaIBCS.jsp?lang=in

Prima IBCSTM is an insurance object model (UML) covering most of the insurance domain areas. This model could serve as a source of definitions along with the ACORD and Penn National’s Analytics model

6.4.7 IDEF 1X

Submitters are referred to this as a commonly used notation that may be used for visually representing the LDM or RDM. See [IDEF1X] and [IDEF1X Hay]

6.4.8 Information Engineering

Submitters are referred to this as a commonly used notation that may be used for visually representing the LDM or RDM. See [IE Hay].

6.5 Mandatory Requirements

6.5.1 Glossary of P&C Business Terms as described in 6.1.2

Business Terms must be defined in English, though a more formal definition using SBVR is also encouraged.

The following metadata associated with each Business Term must also be provided:

- Format
- Source (date, version) Provenance
- Valid variations

Relationships between terms must be defined, such as:

- Generalizations/specializations
- Synonyms/aliases
- Related terms
6.5.2 Submitters must provide a P&C Conceptual Data Model (CDM) as described in 6.1.3.

The CDM shall consist of business Entities and Relationships.

Each shall be mapped to one or more Terms in the Business Glossary.

The CDM shall be represented using either UML or the CWMX Entity Relationship metamodel.

The CDM shall be visualized using one or more of the following notations: UML, IDEF1X, IE, ORM

6.5.3 Submitters must provide a fully attributed P&C Logical Data Model (LDM) as described in 6.1.4.

The LDM shall consist of Entities, Attributes, Relationships and Subject Areas.

Each shall be mapped to one or more Terms in the Business Glossary.

The LDM shall be represented using the CWMX Entity Relationship metamodel.

The LDM shall be visualized using one or more of the following notations: IDEF1X, IE.

6.5.4 Submitters must provide a P&C Relational Database Model as described in 6.1.5.

The relational model shall be expressed using the CWM Relational metamodel.

Each element shall be mapped to one or more elements in the LDM

It shall be visualized using one or more of the following notations: IDEF1X, IE.

The RDM shall also be provided as a non-normative SQL Data Definition Language file.

6.5.5 Submitters must provide a P&C Dimensional Model as described in 6.1.6.

The dimensional model shall be expressed using the CWM OLAP and Relational metamodels.

Each element shall be mapped to one or more elements in the LDM

It shall be visualized using one or more of the following notations: IDEF1X, IE.
The RDM shall also be provided as a non-normative SQL Data Definition Language file.

6.5.6 Submitters must provide a P&C XML Schema model as described in 6.1.7.

The XML Schema model shall be expressed using the XML Schema metamodel in the XML standard.

Each element shall be mapped to one or more elements in the LDM

It shall be visualized using a UML Profile or a proprietary notation.

The XML Schema shall be provided as a usable and publishable XSD file.

6.5.7 Submitters must provide a P&C Ontology as described in 6.1.8

A P&C Ontology shall be provided, expressed using the OWL metamodel in the ODM standard. Support for generation of OWL (Ontology Web Language) and Resource Description Framework, Common Logic, Topic Maps and Description Logic shall also be provided.

- All elements shall be traced to the Business Glossary.
- It shall be visualized using the UML Profile for ODM.
- It shall be provided as a usable OWL file.

6.6 Optional Requirements

6.6.1 A list of Fact Tables other than those described in section 6.5.5 for the Dimensional/Analytical model is an optional requirement.

6.6.2 Provision of Transformations

Submitters may provide formal QVT transformations for the derivations listed in Needs to be discussed. Candidate Transformations:

- Conceptual model to Logical data model
- Logical data model to relational database model
- Logical data model to Dimensional model
6.7 Issues to be discussed

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.)

6.7.1 Rationale for physical model derivation

Where submitters have needed to make design choices then these must be described together with their rationale. For example:

- The use of elements or attributes or both) in XML Schema

6.7.2 Business traceability

Submitters shall describe how the traceability incorporated into their models allows for understanding of physical elements through linkage back to the business concept.

6.7.3 Impact analysis

Submitters shall describe how the traceability incorporated into their models allows for impact analysis – for example the effect of changing a Relationship in the LDM. For several such scenarios they shall describe how to determine, through navigation/query of the proposed models, the physical elements affected.

6.7.4 Translation of Business Glossary to other languages

Submitters shall be responsible for translation of the P&C Business Glossary to languages other than US English as needed including ongoing maintenance (an optional requirement).

6.8 Evaluation Criteria

Proposals will be evaluated on:

- Ability to seamlessly transform one representation of a model to another without losing semantic integrity

- Similarity and compatibility with existing Glossary and XML Schema standards for P&C from ACORD
6.9 Other information unique to this RFP

None.

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.

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Appendix A  References and Glossary Specific to this RFP

A.1  References Specific to this RFP

The following documents are referenced in this document:

[ACORD Global Data Dictionary]

[IDEF1X FIPS184]
http://www.itl.nist.gov/fipspubs/idef1x.doc

[SQL 92]
ISO Standard

/XML Infoset]
W3.org

A.2  Glossary Specific to this RFP

P&C Business Glossary

Conceptual Model

Logical Data Model

Physical Data Model

Relational model

Dimensional model

XML Schema model

P&C Ontology

IDEF 1X  - Commonly used notation for logical models of relational databases, standardized by NIST See [IDEF1X FIPS184] and [IDEF1X Hayes].
**Information Engineering (IE)** – Widely used traditional software development method, focused on data analysis. Includes a commonly used data modeling notation, most famous for using ‘crows feet’ to represent multiplicity.

**Data Definition Language (DDL)** – The part of SQL (typically) used for declaring information structures (Tables, Columns, Schemas) as opposed to manipulating them.

### Appendix B General Reference and Glossary

#### B1 General References

The following documents are referenced in this document:

- [BCQ] OMG Board of Directors Business Committee Questionnaire, [http://www.omg.org/cgi-bin/doc?bc/02-02-01](http://www.omg.org/cgi-bin/doc?bc/02-02-01)
- [CSIV2] [CORBA] Chapter 26
[GLS] General Ledger Specification,  


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

[IDLC++] IDL to C++ Language Mapping,  

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

http://www.omg.org/docs/omg/01-12-01.pdf


http://www.omg.org/mda

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

[MQS] “MQSeries Primer”,  

[NS] Naming Service,  


[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,  

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

[RM-ODP] ISO/IEC 10746


B2 General Glossary

Glossary - a list of terms in a special subject, field, or area of usage, with accompanying definitions

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 the OMG's 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 – Platform TC (PTC), that focuses on IT and modeling infrastructure related standards; and Domain TC (DTC), that focus 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.