25 October 1999

OMG XMI v. 1.1:

Revisions and

Recommendations

Summary

ad/99-10-04

OMG XMI Revision Task Force

A report prepared for
Object Management Group members
summarizing the proposed revision of the
OMG XMI specification v. 1.0.

This report summarizes the work of the first XMI Revision Task Force (XMI RTF) that was chartered by the Platform Technical Committee in January 1999 to produce a minor revision to the original OMG XMI Specification (version 1.0; document ad/98-10-05 and 06). It describes the scope and process of the RTF and outlines the areas of significant change in the recommended revision (version 1.1; document ad/99-10-02 and 03), including change bars. The RTF issues list is at the end of this document. This report summary concludes with recommendations for future revisions of the XMI specification.

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Scope

When producing the revised specification, the XMI RTF has endeavored to follow the guidelines stated in the *OMG Policies and Procedures* (document pp/99-05-01) regarding the scope of an RTF:

> An F/RTF is chartered by the appropriate TC to gather comments on a particular specification from OMG Members and others, and to decide whether changes are necessary in response to those comments. An F/RTF may recommend changes that provide clarification of the wording without changing its intent, or minor revisions that correct the detail of the specification without removing significant functionality. Enhancements to the specification are outside of the scope of the F/RTF, and must be deferred to a later RFP process.

Accordingly, the RTF has restricted itself to the following kinds of changes:

- Correction of technical and terminological inconsistencies.
- Clarification of ambiguous and incomplete specifications.
- Fixing typographical and grammatical errors.
- Tracking changes to related standards.

Process

The XMI RTF has been using an open process to deal with public and internally generated issues. Technical discussion and generation of proposed resolutions has occurred at a series of emails, teleconferences, and a meeting by XMI RTF members implementing XMI. Reports on the progress were presented and discussed at XMI RTF meetings held at successive OMG meetings. The results of these discussions were used to direct and prioritize the work. Drafts of the proposed revisions as well as updated issues list were presented at OMG meetings, email, teleconferences, and at meetings. The final draft of the XMI 1.1 specification (ad/99-10-02/3) was circulated on October 22nd, along with a report (ad/99-10-04) that details the resolution of each formal and informal XMI issue. (Informal issues describe noteworthy problems found by the document editors). A vote on the issues and proposals for XMI v. 1.1 was taken by email and an RTF teleconference on October 15th. The motion to recommend the issues and proposals passed with 7 votes in favor, 0 votes against, 0 abstentions, and 2 absent. The motion to recommend the final draft for adoption passed with 6 votes in favor, 0 votes against, 2 abstentions, and 1 absent.

Revision Changes

Major Changes

The RTF made one major technical change to the XMI specification. After XMI was adopted, the W3C added XML Namespaces as a Recommendation. The XMI 1.0 specification included references to expected compatibility mechanisms for Namespaces, so the changes needed were in the majority along the lines anticipated. In particular, the adoption of namespaces facilitates using several models and metamodels together and reduces the need for long XML element names.

The RTF made one major editorial change to the XMI specification. In addition to the existing specification format of the DTD and Document generation rules in Pseudo-code and OCL, a more formal specification has been made in EBNF. The formalization of the rules in EBNF clarifies the resulting output and clearly states the productions in terms of final form rather than in terms of a process. The result of properly applying the rules in either form is the same. The original rule specifications are maintained for reference, with the goal of migrating to the EBNF form alone in a future revision.

Foreshadowed Major Changes

The W3C is expected to adopt XML Schemas as a Recommendation during 2000. It is expected that XMI 1.1 documents will be compatible with XML Schemas and will be able to enable their use through additional options. Prototype work has already occurred to verify that progress on XMI is consistent with expectations for XML Schemas. The work on Namespaces above is a prerequisite for successful use of XML Schemas.

Minor Changes

The RTF made a number of changes to DTD generation. The most significant are as follows:

- **Providing expanded optional use of XML attributes.**
  Mapping a metamodel to XML often requires a choice between the use of XML elements or XML attributes. In XMI 1.0, use of XML attributes was minimal since it was important to evaluate their added value through practical use of XMI. Now that XMI has extensive experience, it is clear that XML attributes are very useful in specific cases.
- **Relaxing artificial ordering constraints.**
  There is a well-known tradeoff in XML regarding DTD validation of ordering and multiplicity. Unfortunately, the restrictions on the ability to specify order in DTDs prevented a guarantee that all XML document producers could work with all XML DTD producers when using the same metamodel. The ordering restrictions on DTDs have been reduced to accommodate XML document productions, with a small reduction in practical multiplicity enforcement. The multiplicity validation had been of minimal value in actual user's experience, while the ordering restriction difficulties had been significant.
- **Documenting datatype options.**
  The ability to handle end user datatypes is to a certain degree a matter of metamodel expressability. Under appropriate conditions, users may model their datatypes within their models and metamodels and exchange them with XMI. Complete freedom of datatype metamodeling will be available through future work of the MOF RTF.

Recommendations

The XMI RTF recommends the XMI version 1.1 specification for adoption, as per the RTF vote of October 25th, 1999.

In addition, the XMI RTF has identified a number of topics for work by future XMI RTFs. The main areas are:

- Tracking XML technologies by the W3C, specifically XML Schemas and XLinks.
- Tracking OMG meta information technologies, especially the MOF, UML, profiles, and upcoming metamodels. Specifically, data type independence in MOF and physical metamodeling in UML.
- Editorial changes to enable XMI to be easier to understand for those not already familiar with MOF.