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Final Changes to OpenMath 2, following the Helsinki meeting

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Abstract

A Discussion of the changes to the Draft OpenMath 2 standard after the last public release on the 11th May 2004.

1 Introduction

The OpenMath Society Workshop in Helsinki spent one session discussing the draft of OpenMath 2, based on the public draft of 11th May. The major features of that draft were introduced by Mike Dewar, the slides for that presentation will be available from the OpenMath website

The draft was accepted by the Society subject to some editorial corrections and one technical addition as described below.

2 Stylesheet Changes

There have been many changes to the stylesheets used to generate the final documents. The most noticeable changes being improved typography in the PDF version (especially in the area of large tables and examples) and a new (normative) version of the XHTML document, using one XHTML file per chapter rather than one large file for the whole document. Together with extra navigation and hyperlinking features.

3 Technical Changes

3.1 Binary Encoding

The only area where any technical changes have been made is in the binary encoding. As discussed at the Helsinki meeting an additional option to allow streaming of large integers has been added. This involves defining one new "tag" in the binary encoding, and modifying the grammar accordingly.

A further minor change to the binary encoding grammar was made to bring it more closely in to line for with the grammars for the abstract object model, and for the XML encoding. Some productions such as the arguments of an **error** term have been modified to allow 0 arguments rather than being constrained to 1-or-more as in the previous draft.

3.2 XML encoding

The version attribute on OMOBJ has been changed to xsd:string rather than xsd:float. (Primarily to avoid unwanted ambiguity as to whether "2" should be equal to "2.0" for example.)

4 Editorial Changes

The document has been spell checked again and there have been other similar minor changes not individually recorded. The following changes have also been made, most of which have resulted from editorial comments from Arjeh Cohen.

- An additional phrase was added to the abstract explicitly referencing that OpenMath 2 builds on OpenMath 1.1 (and a reference to OpenMath 1.1 is added to the bibliography).

> This document describes version 2 of OpenMath: a standard for the representation and communication of mathematical objects. This version clarifies and extends OpenMath 1.1 [OM_1.1].

- A new paragraph was added to the end of the abstract referencing the OpenMath primer Document, and the Primer was added to the bibliography.. This was felt at the Helsinki meeting to be particularly important as the "History" section giving background to the development of OpenMath has been removed from the OpenMath 2 standard (and is now in the Primer).

  > Further background on OpenMath and guidelines for its use in applications may be found in the accompanying Primer [OM_primer].

- In section 2.1.4, "The" added to clarify that the list of roles given is intended to be an exhaustive list rather than a representative sample.

  > ... *The* possible roles are:
  > *binder*...

- In Section 2.2, description of **Application** objects, use "child" rather than "argument" to refer to the children of an OpenMath Application. ("argument" being reserved for referring the second and later children, after the "'head'.
- In Section 2.2, description of **Attribution** objects, clarify the examples use of OpenMath symbols.
- in Section 3.1.2, description of References in the XML encoding, clarify that the URI references used may be relative:

  > These URI refererences will often be relative, in which case they are resolved using the base URI of the document containing the OpenMath;.

- New text and a new Figure were added to Section 3.2 to describe streaming of large integers. (These changes, and the changes to the grammar for the binary encoding described above mean that it is not feasible to show individual small changes inline, this section has had many small changes.)
- The Bibliography entries for RFC 2045 and RFC 2046 were updated to cite the canonical URI of these documents at www.ietf.org.

5 Changes Discussed at Helsinki but not made to the document

There was extensive discussion at Helsinki on the Use of the role property of symbols. Andreas Strottman argued that it should only be used as a usage hint and no system should constrain the use of symbols to particular roles. In particular he argued that a symbol such as $\forall$ should always be usable both as as a binder

$$\forall x.P(x)$$

and also (with the same meaning) as a function application

$$\forall(\lambda x.P(x))$$

However (as confirmed by a vote at the meeting) the majority view was that there was no harm, and possibly some good in forcing a system to use two different symbols (perhaps both called "forall" but in different content dictionaries) for these two uses and that there were real benefits in allowing a system to check that symbols were veing used in the ways intended by their definition.